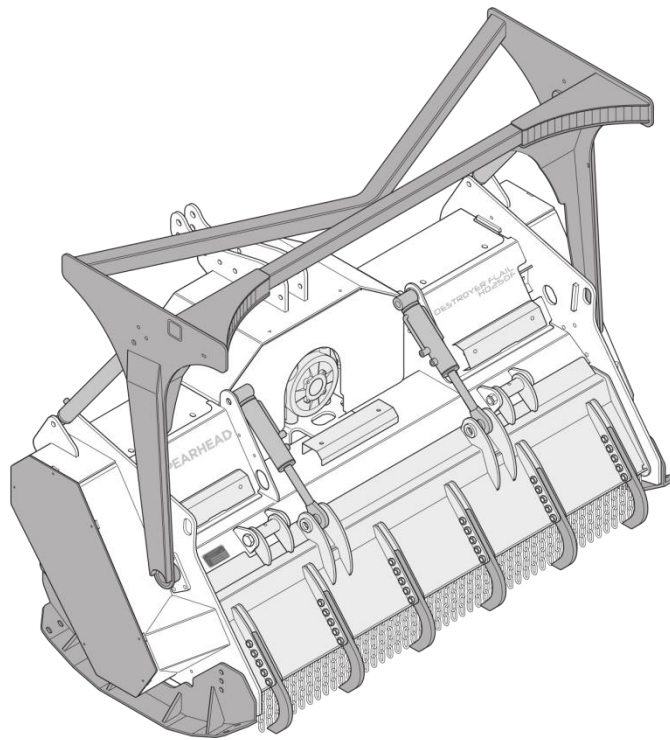


# SPEARHEAD

## DESTROYER FLAIL HD250F FLAIL MULCHER



Edition 1.0 - June 2018  
Part No. 8999123

# HANDBOOK

<b>Model type:</b> Type modèle : <i>Entwerfen Sie Typ:</i>		<b>Destroyer Flail HD250F</b>
<b>Model number:</b> Nombre modèle : <i>Entwerfen Sie Zahl:</i>		<b>9910133</b>
<b>Serial numbers:</b> Numéros de série : Seriennummern:	<b>Machine:</b> Machine: <i>Maschine:</i>	<b>S</b> _____
	<b>Cutting implement:</b> Instrument de coupe: <i>Schneidenwerkzeug</i>	<b>S</b> _____
	<b>Other:</b> Autre: <i>Anderer:</i>	
<b>Name of owner:</b> Le nom de propriétaire : <i>Name des Eigentümers:</i>		
<b>Date of delivery / installation:</b> La date de livraison/l'installation : <i>Datum der Lieferung / Installation:</i>		

### IMPORTANT

At the point of transfer of ownership record the above information. Note the serial number of your machine and always quote it in any communication with us or your dealer. (The serial number plate is located on the machine mainframe.) This is particularly important when ordering spares. Remember to include all numbers and letters.

The information given throughout this manual is correct at the time of publication. However, in the course of constant development of Spearhead machines, changes in specification are inevitable. Should you find the information given in this book to be at variance with the machine in your possession, you are advised to contact the Spearhead Service department where up-to-date information will be provided.

The manual can contain standard and optional features and is not to be used as a machine specification.

The machine has been tested and is considered safe if carefully used. Ensure your operator is properly trained in its use and maintenance.

### IMPORTANT

Au point de transfert de possession enregistrez les informations ci-dessus mentionnées. Noter le numéro de série de votre machine et mentionnez les dans toute communication avec nos services ou votre revendeur. (La plaque de numéro de série est localisée sur le central de machine). Ceci est important pour la commande de pièces détachées. Pensez à noter tous les numéros et toutes les lettres.

Les informations données dans ce manuel sont correctes cependant, du fait de développement constant des machines Spearhead. Changements dans les caractéristiques sont inévitables. Si vous trouvez que les informations données ne correspondent pas à votre machine veuillez contacter le service des réparations ou des informations plus récentes vous seront données.

Ce manuel peut montrer des caractéristiques optionnelles et ne peut pas être considéré comme spécification de la machine. Cette machine a été testée, et elle est considérée comme fiable à condition d'une bonne utilisation. Assurez-vous que votre opérateur est qualifié en ce qui concerne l'utilisation de la machine ainsi que son entretien.

### WICHTIG

Am Punkt der Übertragung des Eigentumsrecht zeichnet die oberen Informationen auf. Merken Sie die Seriennummer von Ihrer Maschine ein und geben sie diese immer an, wenn sie sich an uns oder ihren Händler wenden. (Die Seriennummerplatte ist auf der Maschinenzentraleinheit befunden). Das ist besonders bei ersatzteilbestellungen wichtig. Vergessen sie nicht, alle Zahlen und Buchstaben zu notieren.

Die Angaben in diesem Handbuch sind bei Veröffentlichung korrekt. Aufgrund der konstanten Weiterentwicklung von Spearhead Maschinen sind jedoch Änderungen in der Spezifikation unvermeidlich. Wenn die Information in diesem Handbuch nicht mit Ihrer Maschine übereinstimmt, nehmen sie bitte Kontakt mit der Spearhead Kundendienstabteilung auf, die Ihnen gerne die aktuellen Informationen zukommen lässt.

Das Handbuch kann sowohl Beschreibungen für die Standardausführung als auch für Zubehör enthalten und ist nicht als Maschinenspezifikation zu verwenden. Die Maschine ist getestet und bei sachgemäßem Betrieb als sicher befunden worden. Sorgen sie dafür, dass ihr Bedienpersonal in Anwendung und Wartung richtig geschult wird.

**This machine is produced by ZANON S.R.L. on behalf of  
Spearhead Machinery Limited.**

**EC DECLARATION OF CONFORMITY**

**Conforming to EU Directive 2006/42/EC-2000/14/EC**

We,

Of ZANON S.r.l., via Madonnetta, 30. 35011 Campodarsego (Padova) - Italy.

Declare with our exclusive responsibility that the interchangeable equipment to be coupled with an agricultural tractor called:

**TN/DT SERIES MOWERS**

MODEL	SERIAL NO	YEAR
TN 2500		

To which this declaration refers, complies with the following legislative provisions and harmonised product standards:

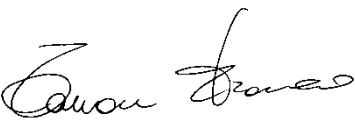
Directive 2006/42/EC (Machinery Safety)

In order to verify conformity, the following standardised technical specifications have been applied:

EN 349: 1993+A1:2008	EN 1037:1995+A1:2008	EN ISO 3746:2010	EN ISO 4254-1:2013
EN ISO 4254-12:2012	EN ISO 4413-1:2010	EN ISO 11202:2010	EN ISO 12100:2010
EN ISO 13524:2009	EN ISO 13849-1:2008	EN ISO 13857:2008	EN 15436-1:2008
EN 15436-2:2008	CEN/TS 15436-3:2009	EN 15436-4:2009	

**ZANON S.r.l.**

Mr Franco Zanon

Signed  .....

On behalf of Zanon S.r.l.

Date: / /

## Destroyer Flail HD250F Flail Mulcher

This manual contains the instructions for installation, use and maintenance of the Destroyer Flail HD250F Flail mulcher hereafter more simply called the "Mulcher."

The mulcher is designed and built to mulch branches, overgrown vegetation and trunks up to 30 cm in diameter. Any other use is deemed improper and, therefore, potentially dangerous for the safety of the operator or of any exposed persons. This manual is an integral part of the mulcher, defines the scope for which it was built, and contains all the information required for its proper and safe use.

Regular machine operation depends on its correct use and adequate maintenance: it is advisable, therefore, to follow these instructions carefully to prevent any situation that could compromise the machine's operation and durability. It is also important to follow that which is described in this manual since Spearhead declines any liability resulting from negligence or from not observing these norms, since it would result in the warranty being annulled.

It is mandatory to verify upon delivery that the mulcher is integral and complete in all its parts. Any complaints must be presented in writing within 8 (eight) days from receiving the machine. Spearhead can however be contacted at any time for immediate and precise technical assistance and anything required for optimum operation and maximum performance of the equipment. Upon receiving the product, carefully read the manual and carefully follow the instructions contained in it.

### IMPORTANT

All technical material or description in this manual is exclusively owned by Spearhead who prohibits the complete or partial reproduction of the same unless written approval has been issued by the Spearhead.

Data, illustrations and descriptions in the manual cannot be considered binding. Spearhead reserves the right to make changes at any time that it considers to be suitable for improvement or for a constructive or commercial requirement.

This manual reflects the state of techniques at the time of marketing the flail mulcher and cannot be considered inadequate if updated at a later date due to modifications of related legal provisions.

**Spearhead declines any and all liability for damages caused by the flail mulcher to persons, animals or property, resulting from use other than that described in this manual, or due to damage caused by negligence or by not observing the instructions contained in this manual.**

The manual should be carefully stored in a suitable area to guarantee its physical integrity; it should be easy to access by anyone authorised to consult it. The manual is an important document that should accompany the flail mulcher and all users should be held responsible for safeguarding it.

For additional information or clarifications regarding anything contained in this manual, or if the manual deteriorates, is destroyed or lost, using the flail mulcher is prohibited and it is mandatory to request a new manual as soon as possible exclusively through:

#### **Spearhead Machinery Limited**

Green View, Salford Priors,  
Evesham, Worcestershire, WR11 8SW

Direct download via Spearhead's online PDF manual library

<http://dealerinside.spearheadmachinery.com/dealerinside/manuallibrary/default.aspx>

For technical enquiries email: [mwaddoups@spearheadmachinery.com](mailto:mwaddoups@spearheadmachinery.com) or call +44 (0)1789 491867

For parts enquiries email: [snel@spearheadmachinery.com](mailto:snel@spearheadmachinery.com) or call +44 (0)1789 491862

**The following manual is an integral part of the product and must be stored carefully, in order that it keeps its integrity and can be consulted repeatedly throughout the entire life of the flail mulcher.**

The flail mulcher is manufactured to conform to the provisions contained in Directive 2006/42/EC. It is therefore equipped with EC marking and accompanied by the following EC conformity declaration.

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# 1 Machine Description

## 1.1 Intended Usage

### 1.1.1 Allowed Uses

The mulcher is designed and built to mulch branches, overgrown vegetation and trunks up to 30 cm in diameter.

When the mulcher works it guarantees the required level of safety even in the presence of an insignificant malfunction of its components or hazardous operating conditions, however, always within the permitted uses.

With reference to the above, the following are considered allowed uses:

-- Using the mulcher to mow crop residue.

The mulcher must not be used for purposes other than those described in this manual.

### 1.1.2 Improper Uses

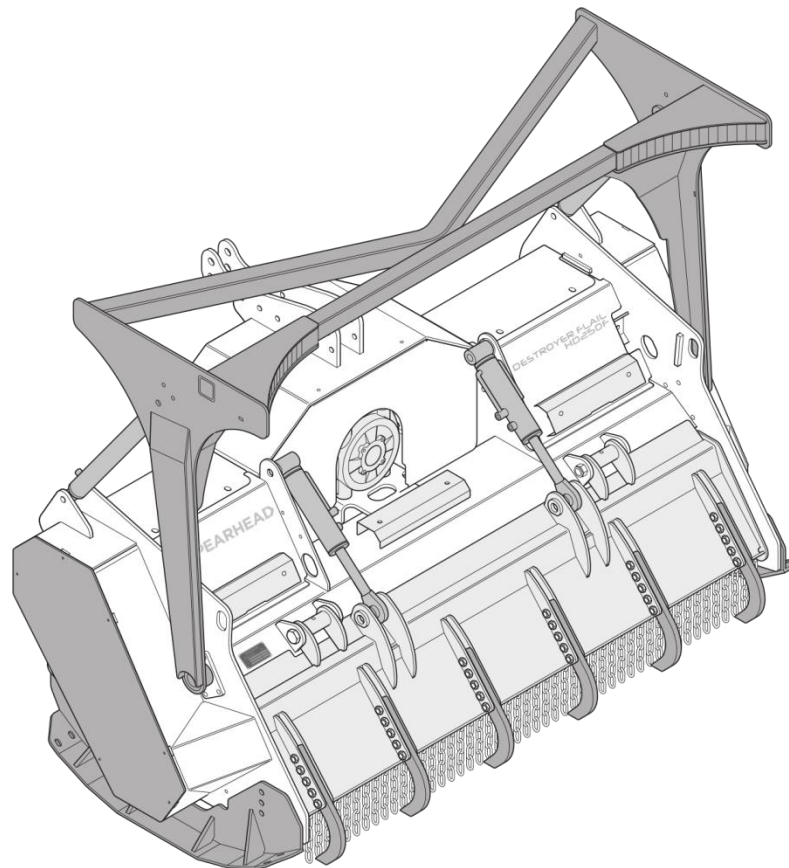
The mulcher, due to its typical construction, may also be suitable for uses other than from those foreseen by the manufacturer. For this reason Spearhead has selected, as non-exhaustive examples, a series of improper uses that can be reasonably foreseen, which are:

- Using the mulcher to mulch trunks with a diameter exceeding 30 cm;
- Using the mulcher to mulch or cut hedges;
- Using the mulcher for shredding purposes near frequented areas.

The uses listed above and those not specifically indicated in this manual, including reasonably foreseeable improper uses, are peremptorily prohibited.



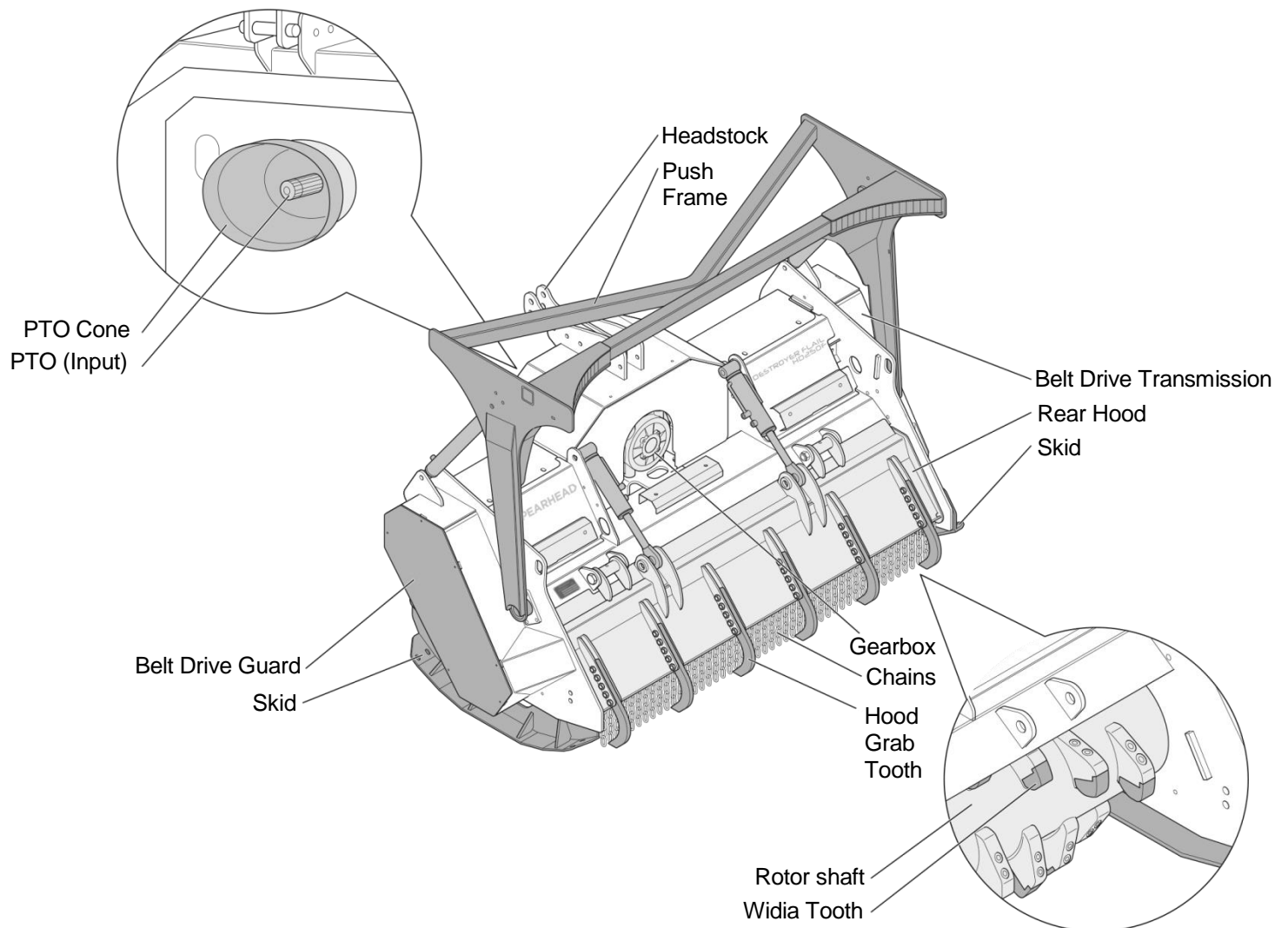
**DANGER!** Spearhead declines any and all liability for damages caused by the flail mulcher to persons, animals or property, resulting from use other than that described in this manual, or due to damage caused by negligence or by not observing the instructions contained in this manual.



**Figure 1.1 Spearhead Destroyer Flail HD250F**

## 1.2 General Arrangement

With reference to Figure 1.2, the mulcher is a machine designed and built exclusively for mulching operations directly on the field. It shreds plant remains, allowing you to mulch branches, overgrown vegetation and logs. It must not be used for other uses or with other materials. The mulcher consists of the following parts:



**Figure 1.2**



## 1.3 Identification

Each flail mulcher is equipped with a serial plate; see Figure 1.3 that includes the following data in this order:

- EC Marking.
- Manufacturer marking.
- Name and address of the manufacturer.
- Machine Whole Goods Code (WGC).
- Machine Product Group Code.
- Serial number of the machine.
- Year of construction.
- Mass in kg.
- Model year.

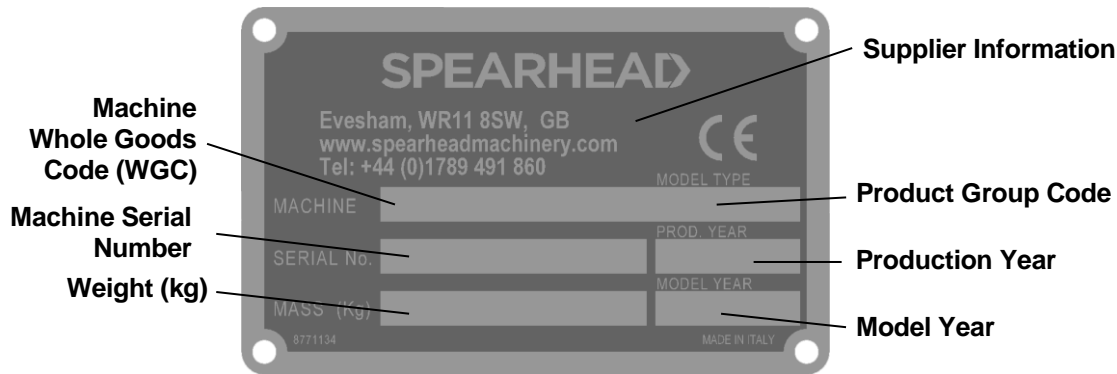


Figure 1.3

Data on the manufacturer's plate should always be referred to when requesting assistance and/or supply of spare parts.

This data can identify the flail mulcher and its characteristics, certifying that it responds to current regulations. For this reason the plate **should never therefore be removed** nor be used for other purposes; if the flail mulcher is dismantled, it should be destroyed to prevent any form of abuse.

## 1.4 Machine general specification

Destroyer Flail Series (1)	HD 250F
Working Width	250cm
HP Power Requirement	130-200hp
Number of Teeth	72
Weight	2750kg
Width	292cm
Length	145cm
Height	120cm
Hitch To Tractor	3-point Universal
PTO Speed	1000 rpm
Primary Transmission	PTO Input Shaft
Secondary Transmission	Belts
Rear Hood	Hydraulic
Tractor Connection	Standard hydraulic outlets

### Notes:

- (1) Spearhead constantly reviews and improves product designs and reserve the right to change this information. Actual machines may vary from the above specification. Contact your Spearhead Sales representative if you have any queries.

## 1.5 Sound Level

The air noise level created by the mulcher under operating conditions was detected using a sound level meter with integrator.

The measurements were carried out in accordance with ISO 1680-2 at the operator station with the mulcher activated empty. Tests performed under the conditions indicated by the standard produced the following results:

**-- Tractor with open cab:**

Equivalent weighted sound pressure average level:  $L_{pAm} = 80.7 \text{ dB(A)}$ .

**-- Tractor with closed cab:**

Equivalent weighted sound pressure average level:  $L_{pAm} = 78.8 \text{ dB(A)}$ .

Sound power level:  $L_{WA} = 107.1 \text{ dB(A)}$ .

The level of airborne noise emitted by the mulcher is indicated with reference to the provisions set out in Directive 2006/42/EC and does not consider the provisions of Directive 2000/14/EC concerning the environmental noise emission by machinery and equipment intended for outdoor use because the machine is not included in Annex I - Part A of Legislative Decree no. 262 of 4 September 2002, legislative implementation of the above mentioned Directive.

## 1.6 EC marking of the flail mulcher

Directive 2006/42/EC specifies the minimum conditions with which a machine can be placed on the EU market. All machines can only be marketed and put into service if the health and safety of persons, domestic animals or property are not affected. The mulcher is not an actual machine because it does not have its own drive system, however, for legal purposes, it is considered interchangeable equipment because once it is coupled to the agricultural tractor it provides a new function to the assembly and in all respects it is equivalent to a machine and must therefore meet the essential health and safety requirements of the Machinery Directive.

The mulcher does not fall under one of the machine categories indicated in the list set out in Annex IV of the Directive (particularly dangerous machinery). In order to certify the conformity of the machine with the provisions of Directive 2006/42/EC, before placing the product on the market, Spearhead applied the procedure described in Art. 5. In this sense, the manufacturer has provided for: compliance with the relevant safety requirements; availability of the technical file as stipulated in Annex VI; implementation of all the tests and inspections required by the reference standards and compliance with the essential health and safety requirements indicated in Annex I of the Directive itself. The construction technical file, which contains the basic project information and all the characteristics related to machine safety, was drafted in accordance with the provisions of Annex VI-Part A, and can be made available by the individual indicated in the CE Declaration of Conformity for any verification carried out by the supervisory authorities, following a justified request, as provided for by the relevant laws in force.

Once Spearhead has verified that the machine has been designed and built in accordance with the provisions of Directive 2006/42/EC and that it can be used safely in the service conditions specified in this manual, it places the flail mulcher on the market and accompanies the machine with:

- **Usage instructions booklet (User manual)**
- **EC Declaration of conformity**
- **EC Marking**

In designing and manufacturing the mulcher, Spearhead has complied with obligations resulting from applying related European legislative provisions and precisely the following European provisions:

- Directive 2006/42/CE (Machinery safety).

For verification of conformity to European legislative provisions indicated above, the manufacturer applied the following European standards and technical rules:

- **EN 349:1993+A1:2008:** MACHINERY SAFETY - Minimum distance to keep from crushing human body parts.
- **EN 1037:1995+A1:2008:** MACHINERY SAFETY - Preventing unexpected start-up.
- **EN ISO 3746:2010:** ACOUSTICS - Determining the sound power levels of sources using sound pressure - Control method on a reflecting surface by measuring an enveloping surface.
- **EN ISO 4254-1:2013:** AGRICULTURAL MACHINERY - Safety - Part 1: General requirements.
- **EN ISO 4254-12:2012:** AGRICULTURAL MACHINERY - Safety - Part 12: Disc and drum rotary mowers and flail mowers.
- **EN ISO 11202:2010:** ACOUSTICS - Noise emitted by machinery and equipment – Determination of emission sound pressure levels at a work station and at other specified positions – Site control method
- **EN ISO 12100:2010:** MACHINERY SAFETY - Basic concepts, general principles for design.
- **EN ISO 13524:2009:** Machines for road maintenance - Safety requirements.
- **EN ISO 13849-1:2008:** MACHINERY SAFETY - Safety-related parts of control systems - Part 1: General principles for design.
- **EN ISO 13857:2008:** MACHINERY SAFETY - Safety distances to prevent hazard zones being reached by upper and lower limbs.
- **EN 15436-1:2008:** Equipment for maintenance of green areas along road sides - Part 1: Terminology.
- **EN 15436-2:2008:** Equipment for maintenance of green areas along road sides - Part 2: Performance evaluation.
- **CEN/TS 15436-3:2009:** Equipment for maintenance of green areas along road sides – Part 3: Classification.
- **EN 15436-4:2009:** Equipment for maintenance of green areas along road sides - Part 4: Acceptance of delivery of the machines by the user.

## 2 Safety

### 2.1 Level of danger

The safety of the operator and exposed persons is the main concern of the designer and the manufacturer of the machine. When designing a new machine, one tries to plan for all possible danger situations and risks connected to using the machine, adopting the steps necessary to make the equipment as safe as possible. The number of accidents remains very high however, especially due to incautious and awkward use of the machine. It is therefore recommended to carefully read this manual and this section in particular, regarding safety standards, avoiding behaviour that is inappropriate or in contrast with the instructions contained in this manual.

Pay attention to the following danger signal where contained in this manual and follow safety instructions.



#### **DANGER!**

Level 1 - This signal warns that if the described operations are not carried out properly, they will cause serious injury, death or long-term health risks.



#### **WARNING!**

Level 2 - This signal warns that if the described operations are not carried out properly, they may cause serious injury, death or long-term health risks.



#### **CAUTION!**

Level 3 - This signal warns that if the described operations are not carried out properly, they may cause damage to the machine.

### 2.2 Terminology

The indicated levels of danger refer to specific risk situation that may occur during machine use and may involve the same machine, the operator and any exposed persons (according to Directive 2006/42/EC). With the purpose of highlighting situations or operations that may result in risks, the meanings of terms used in this manual are indicated here:

- **HAZARDOUS AREA:** Any area in and/or around a machine where the presence of an exposed person constitutes a risk to the health and safety of said person. (Attachment I, Point 1.1.1., Letter b), Directive 2006/42/EC).
- **EXPOSED PERSON:** A person fully or partly in a hazardous area (Attachment I, Point 1.1.1., Letter c), Directive 2006/42/EC).
- **OPERATOR:** The person or personnel in charge of the installation, the operation, the adjusting, the cleaning, the repairing and the moving of the machine. (Attachment I, Point 1.1.1., Letter d), Directive 2006/42/EC).
- **USER:** the person, entity or company, who purchased or rented the machine and intends to use it according to the intended use foreseen by the manufacturer.
- **SPECIALISED PERSONNEL:** any person specifically trained and approved to carry out maintenance or repair interventions that require particular knowledge of the machine, its operation, the installed safety devices, intervention modes. It must be capable of recognising danger present on the actual machine, therefore avoiding at risk situations.
- **RISK:** a combination of the probability and seriousness of injury or damage to health which can arise in a dangerous situation.
- **GUARD:** a part of the machine that is used to specifically guarantee protection by way of a material barrier.
- **PROTECTION DEVICE:** a device that reduces risk (unlike the guard) either on its own or together with the guard.
- **INTENDED USE:** the use of the machine in accordance with the information provided in the operating instructions.
- **REASONABLE FORESEEABLE MISUSE:** the use of the machine different to the information provided in the operator's instructions, which may be the result of readily predictable human behaviour.
- **AUTHORISED ASSISTANCE CENTRE:** The Authorised Assistance Centre, legally authorised by the Manufacturer, is formed by specialised staff able to carry out all types of assistance, maintenance and repair work, even of a certain complexity, required to maintain the machine in perfect working order.



**WARNING!** Carefully read the following rules. If the instructions described are not followed, a situation may arise which causes irreparable damage to the machine or property, or injury - even severe - to people or animals. Spearhead declines all responsibility for damage caused by not complying with the safety and injury prevention regulations described below. Spearhead also declines any responsibility for damage caused by improper use of the machine and/or as a result of modifications made without authorisation by the manufacturer.

## 2.3 Safety Decals

The flail mulcher is equipped with safety decals warning about residual risks present on the machine that were not possible to eliminate. Figure 2.1 specifies the meaning of symbols contained in the decals. The operator must memorise the meaning of these decals. The labels should always be kept clean and replaced immediately if they are fully or partially detached or damaged.

**ATTENZIONE** - Avviare lentamente per evitare dannose sollecitazioni agli organi di trasmissione.  
**ATTENTION** - Démarrer lentement pour éviter des sollicitations dangereuses aux organes de transmission.  
**ATTENTION** - Start slowly to prevent dangerous shock loads to transmission components.  
**ACHTUNG** - Langsam anlaufen lassen, um Überlastung der Antriebsorgane zu vermeiden.  
**CUIDADO** - Arrancar lentamente para evitar esfuerzos peligrosos a los órganos de transmisión

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Decals with indications and particular warnings for maintenance and a correct use of some parts of the machine. The respect of these decals lengthens the duration and the efficiency of the flail mulcher.

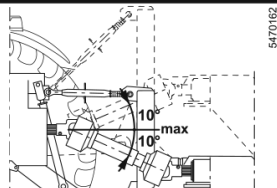
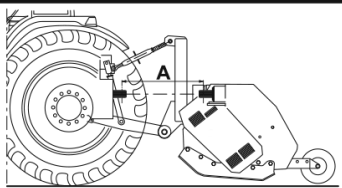


CONTROLLARE OLIO AL PRIMO UTILIZZO DELLA MACCHINA  
 CONTROLAR EL ACEITE LA PRIMERA VEZ QUE SE UTILIZA LA MÁQUINA  
 CONTRÔLER L'HUILE LORS DE LA PREMIÈRE UTILISATION DE LA MACHINE  
 CHECK THE OIL BEFORE USING THE MACHINE FOR THE FIRST TIME  
 VOR DER ERSTEN INBETRIEBNAHME DER MASHINE, DEN ÖLSTAND PRÜFEN.

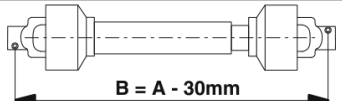
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Check the oil level the first time the machine is used.

**MONTAGGIO CORRETTO TRASMISSIONE CARDANICA**  
**CORRECT FITTING OF PTO SHAFT**  
**BRANCHEMENT CORRECT DE LA TRANSMISSION À CARDANS**  
**RICHTIGE MONTAGE DER GELENKWELLE**  
**CONEXION CORRECTA DE LA TRANSMISION DE CARDAN**



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B = A - 30mm

Indicates the correct functioning of the PTO shaft.



**ATTENZIONE**  
**DISTANZA DI SICUREZZA 50 mt.**

**ATTENTION**  
**SAFTY DISTANCE 50 mt.**



Keep clear from the moving machine;  
 Keep at a safe distance.  
 Keep away from moving parts.



Use the protection mask



Use protection gloves



Use protection muffs



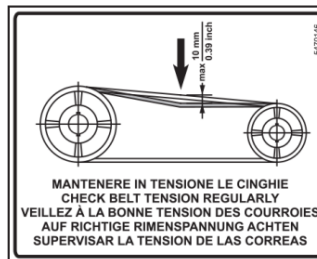
Use the protective overalls



Use protective footwear



Greasing point.



Indicates maximum adjustment movement (1cm = 5 Kg) of the belt, for correct transmission.



Read the use and maintenance manual with care prior to starting up the machine.



Risk of cutting off feet.  
Keep at a safe distance.  
Do not remove protections before halting and disconnecting the machine.



Always disconnect the machine from the tractor prior to any maintenance and/or lubrication work.



Risk of cutting off hands.  
Keep at a safe distance.  
Do not remove protections before halting and disconnecting the machine.



Risk of falling.  
It is prohibited to climb onto the machine.



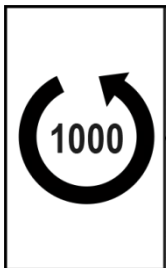
Risk of entanglement in the PTO shaft.  
Keep away from moving parts.



Risk of ejected objects.  
Stay at a safe distance.



Risk of crushing.  
Do not stand between the machine and the tractor.



Maximum PTO shaft RPM.



Risk of entanglement on belts.  
Do not approach moving parts.



Lifting point.

Figure 2.1

Figure 2.2 shows an indication of the precise points on the machine where the safety decals and serial plate are usually applied by the manufacturer.

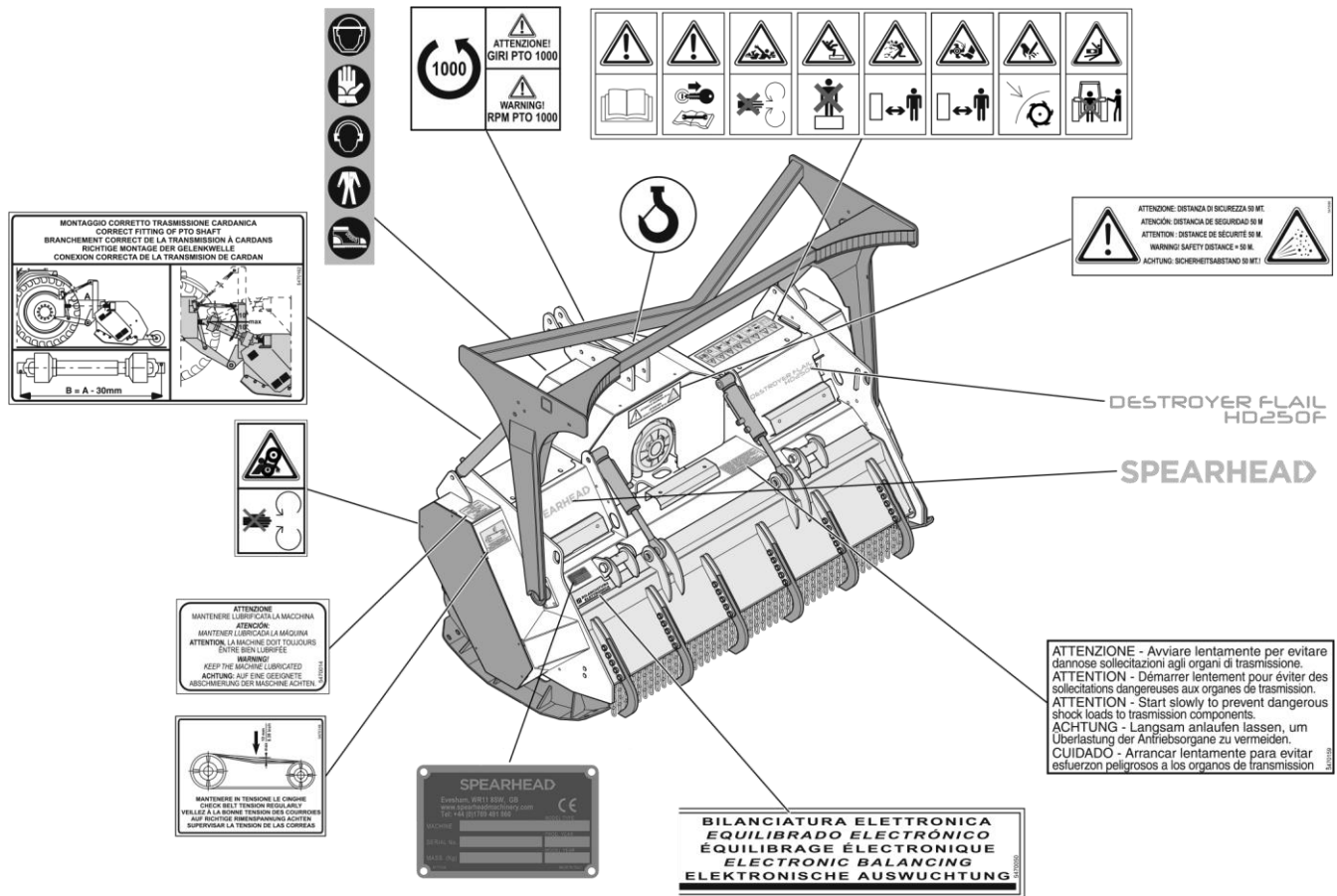


Figure 2.2

## 2.4 Personal Protective Equipment

In general it is necessary to wear suitable clothing for the work to be carried out. In particular, as far as flail mulching use, obey the following provisions:

- **It is mandatory** to use clothing which is as suitable as possible, meaning not too loose and without any protruding or moving parts (for example ties or necklaces). Do not wear belts, rings and chains. Always use sturdy safety footwear. Long hair must be tied using a specific cap.
- **It is mandatory** to use protective goggles or a mask before proceeding with the work in order to protect the face and eyes from vegetable fragments which may be projected outwards during mulching.
- **It is mandatory** to use protective muffs in order to safeguard hearing from noise from the equipment during work.

## 2.5 Ecology and pollution

Below are the minimum provisions to be followed in order to reduce the risk of environmental impact connected to the use of the machine according to European directives related to the Eco-compatibility of products connected to power (Directive 2009/125/EC) and Restrictions in the use of dangerous substances in electrical and electronic equipment (Directive 2011/65/EU):

- If the Country where the machine is used foresees specific sound emission limits, it is best to adapt to the provisions in these standards, if necessary, being supplied with suitable protective equipment (earplugs, muffs, etc.).
- **It is mandatory** to respect current legislation of the Country where the flail mulcher is used, related to use and disposal of lubricants and products used for machine cleaning and maintenance, observing the recommendations of the manufacturer of those products.
- If replacing worn parts or during demolition, one must follow anti-pollution laws foreseen in the country where the flail mulcher is used.
- **It is prohibited** to pour products used for cleaning or polluting substances into the sewerage drain, on the ground, in watercourses, or into the environment.
- **It is mandatory** to collect products used for cleaning and polluting substances in appropriate containers, store them and deliver them to companies authorised for their disposal.

### 2.5.1 Disposal

When the flail mulcher reaches the end of its working life, it is best to take a few precautions in order to avoid the risk of environmental pollution. The various parts of the machine must be treated as if they were special waste. The machine must be disassembled, grouping the various parts and components into similar materials (rubber, metal, plastic, etc.), with each being disposed of according to existing anti-pollution laws locally of where the machine was used. Please note that, in general, **exhausted lubricating oil, rubber parts and scrap metals are special waste**.

### 2.5.2 Preparation for storage

If the machine is to be stored unused for a long period, it is recommended to:

- Treat the flail mulcher according to the instructions contained in Section 5.2 "Cleaning the flail mulcher" paragraph;
- Check the machine and have any damaged parts replaced;
- Fully tighten all screws and bolts, in particular those which secure the Widia teeth;
- Perform a general thorough lubrication;
- Place the flail mulcher in a dry area where it cannot be touched by persons not authorised to use it, and rest it on struts of wood.
- Protect the entire machine with a tarpaulin.

If these operations are carried out properly, the user will find the flail mulcher in perfect condition when it is required again.

If the flail mulcher is to be dismantled, comply with the relative anti-pollution legislation of the local area of use. It should not be forgotten that the manufacturer is always available if you require any assistance or spare parts.

It should not be forgotten that the manufacturer is always available if you require any assistance or spare parts.

## 2.6 Safe use

- **It is prohibited** to use the flail mulcher in ways that are different from the indications contained in Section 1.1 “Intended use”.
- **It is prohibited** to use or have the flail mulcher used by anyone who has not read and completely understood the information contained in this manual.
- **It is prohibited** to use or have the flail mulcher used by personnel that are not competent or properly trained or not in good health or physical condition.
- **It is forbidden** to drive the agricultural tractor attached to the flail mulcher or have it driven by personnel without an appropriate driving licence.
- **It is forbidden** to approach or stand close to the flail mulcher when the machine is running.
- **It is forbidden** to stop between the agricultural tractor and the flail mulcher (area taken up by the PTO shaft) if the combustion engine is running.
- **It is forbidden** to abandon the driver’s seat on the agricultural tractor with the combustion engine running when the flail mulcher is running.
- **It is forbidden** to alter, tamper with or bypass the safety devices provided by the manufacturer.
- **It is forbidden** to operate when the decals indicating the warning signs are missing or damaged. Have them immediately replaced with other decals having the same meaning.
- **It is forbidden** to use the flail mulcher when even one split pin, elastic pins or shims supplied with the machine is missing.
- **It is prohibited** to come close and/or touch moving parts during the work.
- **It is prohibited** to tamper with, remove, damage or exclude any part of the machine.
- **It is forbidden** to deposit items on the flail mulcher which can harm persons or animals or damage property should they fall.
- **It is forbidden** to abandon the flail mulcher and leave it unattended. The machine and the work area should always be monitored.
- **It is forbidden** to transport persons or items on board the flail mulcher while driving with the tractor.
- **It is mandatory** to check that all the safety devices of the flail mulcher are intact and functional before using it.
- **It is mandatory** to check that the agricultural tractor on which the flail mulcher is installed is of adequate power, weight and configuration, compatible with the model fitted.
- **It is mandatory** to disconnect the flail mulcher PTO shaft from the tractor PTO and set the control lever of the tractor hydraulic linkage in the blocked position when driving on the road with the flail mulcher lifted.
- **It is mandatory** to use the type of PTO shaft indicated by the manufacturer of the flail mulcher.
- **It is mandatory** to set the control lever of the linkage in the blocked position before connecting or disconnecting the flail mulcher from the three-point hitch of the tractor.
- **It is mandatory** to comply with highway regulations in force in the country where the flail mulcher is used.
- **It is mandatory** to verify that the ground on which the tractor moves is level and sturdy, before using the machine.
- **It is mandatory** for the environment where the machine operates to have adequate lighting. Insufficient or excessive lighting may pose a risk to the operator.
- **It is mandatory** to familiarize yourself with the control devices and their functions prior to starting work;
- **It is mandatory** to make sure that the maximum number of revolutions of the PTO is set to 1000 rpm before powering it.
- **It is mandatory** to make sure that the PTO shaft is connected properly and is fitted with the security devices required before powering the PTO.
- **It is mandatory** to use suitable clothing. Strictly avoid long or loose clothing that could be caught in any way by moving parts. Wear suitable helmets, glasses, gloves, footwear, etc.
- **It is mandatory** to disconnect the PTO shaft connecting the gearbox of the flail mulcher to the tractor PTO before starting any maintenance.
- **It is mandatory** to lower the flail mulcher attached to the linkage unit, switch the combustion engine off and remove the ignition key from the dashboard of the tractor and engage the parking brake before leaving the driver’s seat.
- **It is mandatory** for the maintenance and adjustments to always be performed with the machine switched off and disconnected from the power.
- **It is mandatory** to stop the machine and inspect it if abnormal vibration is noted or have it inspected by personnel assigned by the manufacturer until the causes are identified and eliminated.
- **It is mandatory** to contact a dealer if the machine stops during operations or a component malfunctions.
- **It is mandatory** to always verify, before starting up the flail mulcher, that no persons and/or animals are within 50 metres in any direction from the machine.
- **It is mandatory**, if the agricultural tractor has no closed cabin, for the operator to use ear protectors and a dust mask if the working ground lifts a considerable amount of dust.
- **It is mandatory** to periodically verify that the screws and bolts are tightened and secure, especially those that secure the teeth.
- **It is mandatory** to use the types of lubricating oils indicated by the manufacturer.
- **It is mandatory** to periodically check the integrity and functionality of the safety devices.



- **It is mandatory** to comply with the laws in force in the country of installation on the use and disposal of products used for cleaning and performing maintenance on the machine, considering the recommendations of the manufacturer of the given products.
- **It is mandatory** for the flail mulcher to be handled without being subjected to impact with other objects which could compromise the optimal functionality of the machine.
- **It is mandatory** for the flail mulcher to be lifted adequately and with suitable lifting accessories and harness and according to the regulations in force in the country where these operations take place.
- **It is mandatory** for maintenance on the flail mulcher to only be performed by skilled and specialized personnel, in strict compliance with the instructions in this manual, and any worn or damaged parts should be replaced.
- **It is mandatory** to always use original spare parts when carrying out repairs and maintenance.
- **It is mandatory** to store the flail mulcher in a safe place which is protected from the elements, when the work is completed.

The flail mulcher has been designed and built in accordance with current safety regulations. Special maintenance (repairs) must only be performed by qualified personnel and original spare parts must be used.

## 2.7 Safe maintenance

In order to guarantee safe maintenance of the flail mulcher it is necessary to respect the following provisions:

- **It is prohibited** to remove or tamper with the safety devices.
- Periodically check safety device integrity and operation.
- Periodically check screws and bolts tightness.
- **It is mandatory** to periodically verify the condition of the hoses. They must not be cut or have abrasions, otherwise immediately replace them with other hoses having the same characteristics.
- **It is mandatory** to comply with the recommended oils.
- **It is mandatory** to switch the tractor engine off and always disconnect the PTO shaft before cleaning or performing maintenance on the flail mulcher.
- **It is mandatory** to strictly perform maintenance on the flail mulcher according to the instructions in this manual and replace the damaged or worn parts with original spare parts only.
- **It is mandatory** for maintenance on the flail mulcher to only be performed by skilled and specialized personnel, in strict compliance with the instructions in this manual.
- **It is mandatory** to always use original spare parts when performing repairs and maintenance on the flail mulcher. Using non-original parts immediately renders the warranty null and void and can compromise the durability and reliability of the machine.
- **It is mandatory** for parts or components of the flail mulcher to be lifted adequately and with suitable lifting accessories and harness and according to the regulations in force in the country where these operations take place.
- **It is forbidden** to perform welding, flame-cutting or modify the structure of the flail mulcher.
- The dangers signalled on the machine by way of decals of suitable dimensions, applied on the flail mulcher in easy to see places.
- These decals give the proper indications in an essential manner in order to avoid danger and prevent the risk of damage or injury. These decals must always be kept clean and immediately replaced when removed, even partially, or damaged: **it is prohibited** to operate the flail mulcher when even one of these signs is missing from the spot where it was installed by the Manufacturer.
- **It is mandatory** to save and keep this manual for the entire life of the flail mulcher.



## 3 Machine Preparation

Before starting to use the flail mulcher it is mandatory to read and perfectly understand the instructions contained below.

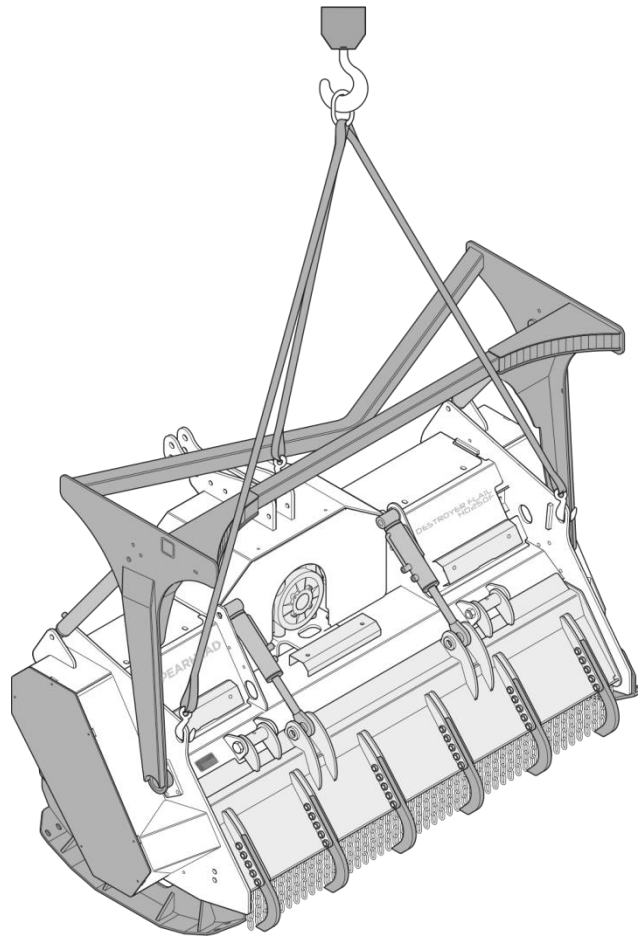


**WARNING!** Read the instructions contained in Section 2 “Safety”.

### 3.1 Transport

The flail mulcher is supplied fully assembled and protected with a “heat-shrink” nylon cover. Handles protrude from the cover for lifting and vertical handling of the mulcher with straps or cables able to withstand the machine’s weight, as illustrated in Figure 3.1.

To transport by carriage make sure that the flail mulcher is securely anchored to the floor with suitable standard ropes or straps, in accordance with the requirements set out in Section 4.4.



**Figure 3.1**



**CAUTION!** The machine must be lifted with maximum care and by using lifting devices suitable for the weight and size of the same.



**CAUTION!** Due to the danger of this operation, it must be performed by expert and responsible personnel. For the lifting device to be used **it is mandatory** to comply with the safety regulations prescribed by the laws in force in the country where the machine is used. Do not touch the flail mulcher and do not stop within the operating range of the crane.

After transportation, remove the protection film and check that the machine was not damaged in any way. Spearhead cannot be held responsible for any damage caused by handling carried out any differently from that described in the manual.

## 3.2 First use



**DANGER!** Connecting the flail mulcher to the agricultural tractor is a very dangerous phase. Ensure you carry out the entire operation in strict compliance with the instructions.

The flail mulcher features a gearbox with a 1 3/4" spline power take-off that can be adapted to any agricultural tractor PTO with a PTO shaft. Upon the first installation, simply remove the machine from the packaging and set it up correctly. The installation, adjustment and testing of the flail mulcher involve hazardous operations. Carefully read all the instructions described in this manual. If in doubt, contact the manufacturer directly. In any case, before commissioning the flail mulcher, immediately after transport, check that the machine supplied is intact and complete. The flail mulcher can be installed and subsequently removed from the agricultural tractor according to the requirements of the user.



**DANGER!** Spearhead cannot be held liable for damage to persons, animals or property, caused by non-compliance with the safety and accident prevention regulations or operations which do not conform to the information provided in the user and installation instructions.

### 3.2.1 Prior to installation

Before installing the flail mulcher it is advisable to check the suitability, good condition and adjustment of the agricultural tractor on which it will be installed:

- 3.2.1.1. Begin by first checking the power in kW or hp and the minimum mass required of the agricultural tractor. They must match the minimum characteristics stipulated by the manufacturer of the flail mulcher, which are indicated in this manual in Section 1.4 "Machine general specification" paragraph;
- 3.2.1.2. Move the tractor to the place where the flail mulcher was deposited after being transported and stop it in a safe and practical position for assembly to be performed on level ground;
- 3.2.1.3. Lift the flail mulcher with a lifting device of adequate capacity and move the machine near the rear part of the tractor, in line with the three-point hitch support. Move the tractor in reverse to attach the equipment to it;



**WARNING!** Due to the danger of this operation, it must be performed by expert and responsible personnel. Do not touch the flail mulcher and do not stop within the operating range of the lifting device.

### 3.2.2 Application to the tractor



**WARNING!** Clean and clear the installation area from any obstruction before starting to work. The area must be specifically closed off and personnel not assigned to the works must be made to move away. The available means must be verified to be intact and suitable. The operator must also tighten all the bolts and fittings properly, using suitable tools.



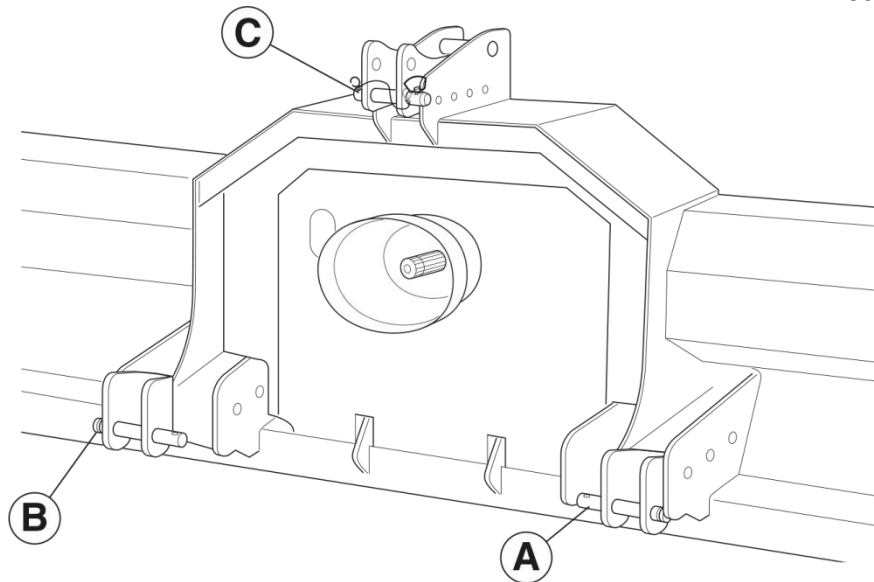
**DANGER!** All the following assembly and installation operations must be carried out with the tractor engine switched off.

The application of the mulcher to the tractor must take place on flat ground. All the mulchers are applicable to any tractor equipped with a universal three-point hitch.

The Manufacturer declines all responsibility for the breakage of the tractor.

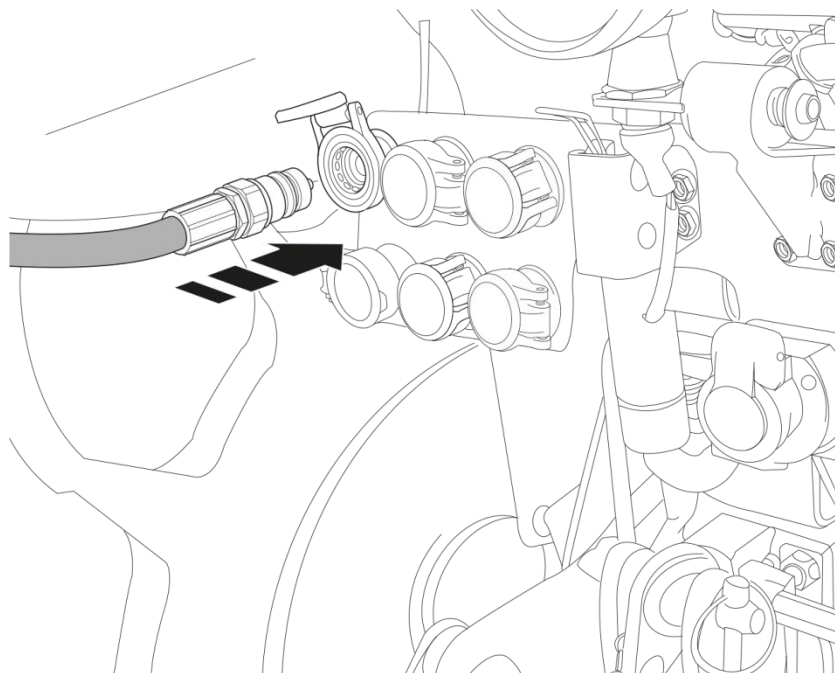
Proceed as follows for the coupling, see Figure 3.2:

- 3.2.2.1 Use appropriate protective gloves to move the tractor back until the lower link arms are inside the plates (A) and (B). Insert the pin into the preset hole and secure it with the split pins.
- 3.2.2.2 Switch the tractor off and engage the parking brake.
- 3.2.2.3 Lock the lower link arms on the tractor with the appropriate chains and parallel tighteners: this precaution must take place in order to avoid any transversal movement of the flail mulcher.



**Figure 3.2**


- 3.2.2.4 Verify that the protection rotates freely and secure it with the appropriate chain. Remove the support from the PTO shaft.
- 3.2.2.5 Connect the headstock top link (C), securing it with the appropriate pins and split pins, and use the tractor adjustable top link to adjust correctly, making sure that the upper surface of the flail mulcher is parallel to the ground. This is very important in order to obtain parallelism between the rotor shaft and the tractor power take-off.
- 3.2.2.6 Operating in these conditions limits the stress on the power take-off and prolongs the working life duration of the PTO shaft and the flail mulcher itself.
- 3.2.2.7 The correct position of the tractor/flail mulcher unit is such when the flail mulcher is at a distance from the tractor so that the PTO shaft does not extend beyond 5-10 cm from the maximum closing position.
- 3.2.2.8 Connect the mulchers hydraulic hoses, which control the rear hood, to the appropriate connectors on the tractor, see Figure 3.3.
- 3.2.2.9 Engage the PTO and accelerate up to a minimum of 400 rpm. Then test lift the flail mulcher to verify proper operation.





**Figure 3.3**


### 3.2.3 PTO shaft

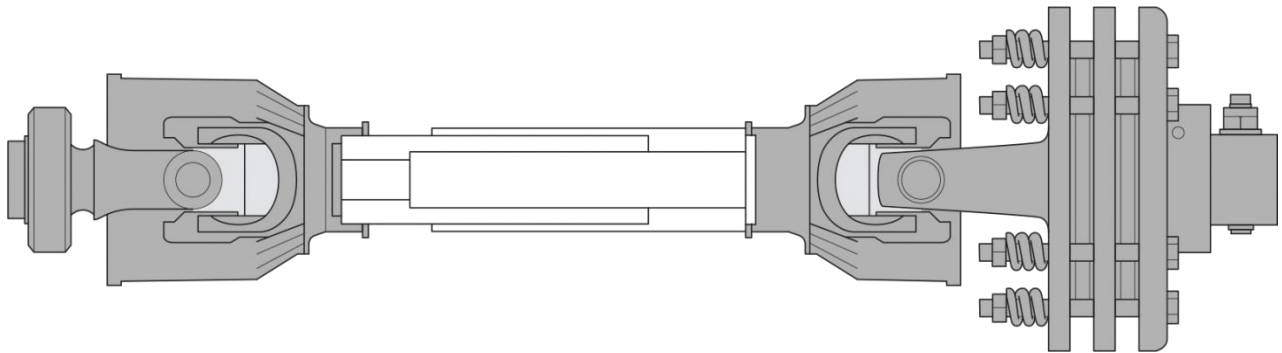
It is mandatory to only use the PTO shaft supplied as standard by Spearhead, shown in Figure 3.4. Spearhead assumes no liability if a PTO shaft other than the one supplied is used.

 **DANGER!** A PTO shaft applied to a tractor is a mechanical part, which, when operating, can be extremely dangerous for those using it. Therefore, you must be extremely careful regarding operations that involve these mechanical parts.

 **CAUTION!** Before starting the power take-off, ensure that the rotation speed is the same as that required for the mulcher (1000 rpm).

 **WARNING!** Spearhead declines any and all liability for damages caused by the mulcher to persons, animals or property, resulting from use other than that described in this manual, or due to damage caused by negligence or by not observing the instructions contained in this manual.

 **CAUTION!** It is forbidden to operate with the PTO shaft worn or damaged. Before starting to work, replace the PTO shaft.  
For any spare parts only contact the Authorised Centres.



**Figure 3.4**

The mulcher is fitted with a free-wheel in the transmission box and can also be applied to a crawler tractor or in any case with no double clutch, without the danger that the inertia of the rotor prevents stopping the mulcher/tractor assembly.

## 4 Usage Instructions

### 4.1 Before use

Prior to starting up the flail mulcher, carry out the following operations;

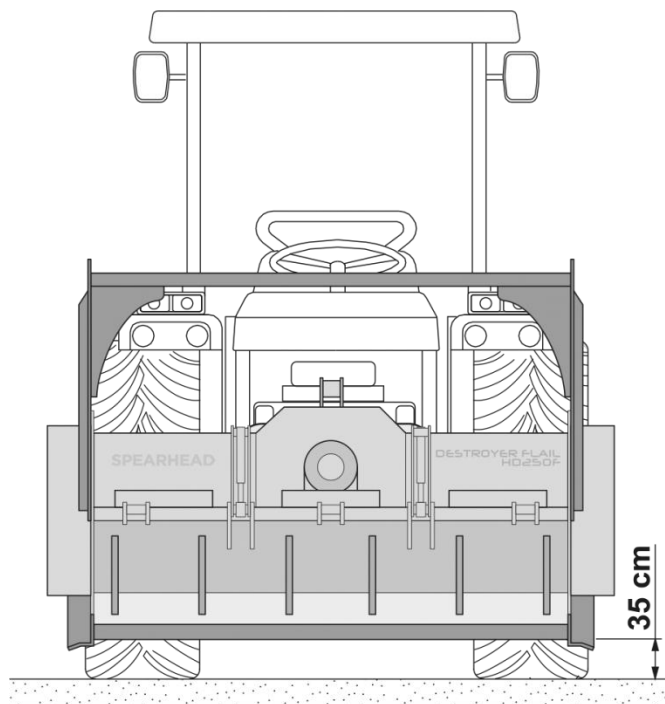
- 4.1.1. Check that all the screws and nuts are fastened, especially those that secure the teeth;
- 4.1.2. Check that the PTO shaft is inserted correctly between the gearbox and the tractor PTO and also check the operation of the hydraulic pump and the distributor.



**WARNING!** Before operating the Mulcher, check the efficiency of the power systems and familiarize yourself with the controls.

During transport and every time the flail mulcher must be lifted with the tractor it is fastened to, the lifting device should be adjusted so that the machine is lifted from the ground by about 35 cm, see Figure 4.1.

Furthermore, verify that all blocking devices are activated so that the flail mulcher is absolutely safe.



**Figure 4.1**

The authorisation for road use (valid for one year and renewable) is issued by:

- the National Road Board of the town in which the journey starts as regards the national road network;
- the region as regards the rest of the road network.

### 4.2 Machine settings

A number of adjustments can be made on the flail mulcher to help the operator in the various working conditions that may arise.

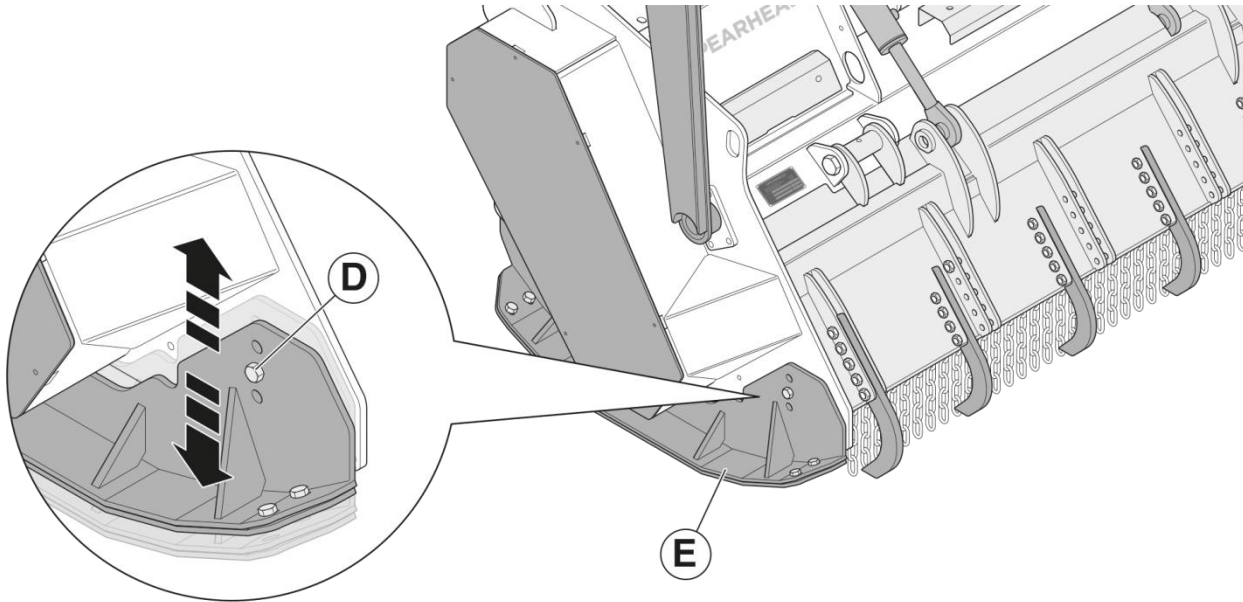
#### 4.2.1 Adjustment of the skids and roller

Adjust the position of the skids so that the Widia teeth do not come out of the plane made by the two skids. In this way, even if there are irregularities in the ground, the Widia teeth will not penetrate the ground itself. It is important to check that the flail mulcher is perfectly parallel to the ground in order to obtain perfect operation.



**WARNING!** To carry out these operations the P.T.O. must be disconnected. The tractor must be braked and

- 4.2.1.1. Place the machine on a level surface with two spacers of approx. 12 cm set inside the machine at the rotor ends. Brake the tractor, switch it off and remove the keys from the dashboard.
- 4.2.1.2. Remove the bolts (D), see Figure 4.2.
- 4.2.1.3. Adjust the position on the skid (E) taking care to move it by the same amount, both in front and at the back.
- 4.2.1.4. Reassemble bolts (D) and tighten them.
- 4.2.1.5. Perform the same operation for the opposite skid.
- 4.2.1.6. Start up the tractor and move the machine.

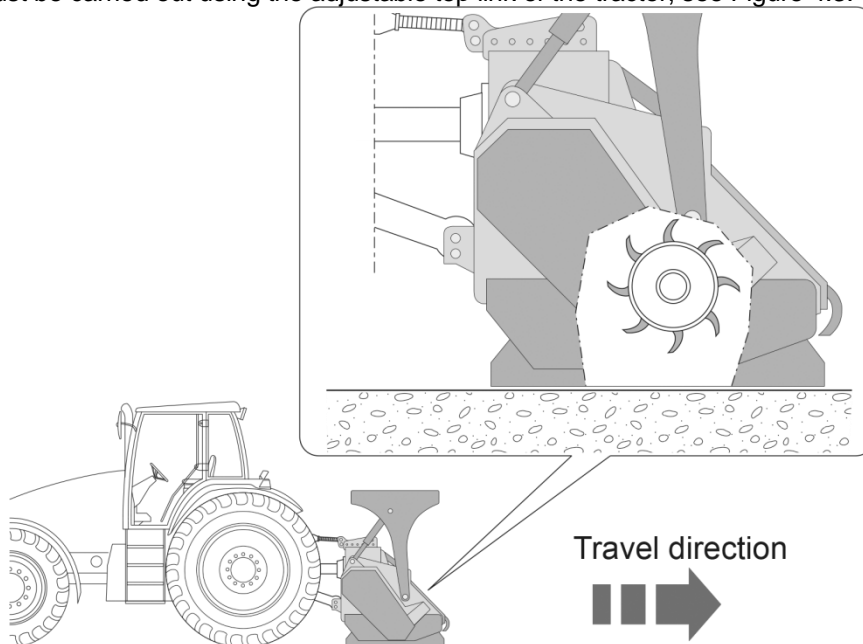


**Figure 4.2**

## 4.2.2 Adjustment of working height

To correctly adjust the working height of the mulcher, it is necessary:

- The adjustment must be carried out using the adjustable top link of the tractor, see Figure 4.3.



**Figure 4.3**



### 4.3 Using the flail mulcher

After having familiarized yourself well with the controls, dressed in the correct PPE (personal protective equipment) required, set the machine in the desired working position, and having connected the gearbox and secured it properly to the tractor PTO by means of the PTO shaft, start the tractor engine, disengage the parking brake, and engage the PTO while maintaining the engine at low rpm.

**Before starting work, make sure that there are no exposed persons and/or animals near the machine. Otherwise, have them move away.**

**NOTE: CHECK THE INSPECTION HOOD IS PROPERLY CLOSED.**

On start-up, move slowly with the tractor; gradually and slowly lower the flail mulcher until it reaches the ground. Then, the engine can be brought to the work speed.

**It is recommended** not to press the accelerator pedal rapidly when the tractor is stationary and the PTO is engaged and the flail mulcher is not running. This can cause damage to the machine and the tractor.

The processed material is shredded correctly by maintaining the tractor at a low forward speed and the rotor rotating at a regular speed.

**N.B: Spearhead recommends that you ALWAYS use a tractor equipped with a closed booth.**



**CAUTION!** The speed of the tractor with the mulcher working must never exceed 5km/h in order to avoid breakage or damage.



**DANGER!** During work, stones or other objects found in the terrain can be lifted and projected by the rotating Widia teeth. Constantly check that there are no persons or animals within the operating range of the flail mulcher see Figure 4.4.



**WARNING!** Spearhead declines any and all liability for damages caused by the flail mulcher to persons, animals or property, resulting from use other than that described in this manual, or due to damage caused by negligence or by not observing the instructions contained in this manual.



**WARNING!** Do not let the mulcher run idle. When working do not go round bends with the mulcher lowered. **It is mandatory** to always lift the Mulcher when changing direction or reversing the drive.

During transportation and any time when it becomes necessary to lift the flail mulcher, it is necessary to adjust the tractor lifting unit so that the flail mulcher itself is lifted more than about 30-35cm from the ground.

Avoid driving on public roads when the flail mulcher is dirty with earth, grass or at any time when it produces dirt or obstructs the traffic on the roads.

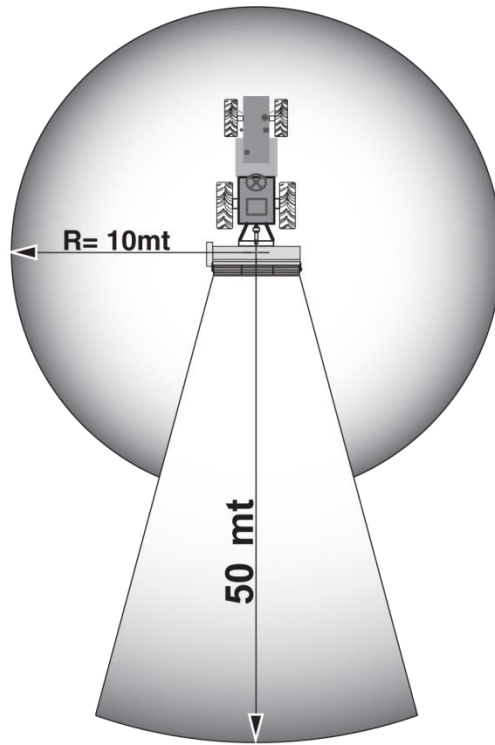


Figure 4.4



**WARNING!** Pay the utmost attention to the shape and arrangement of the logs to avoid cutting trees that might hit the operator when they fall.

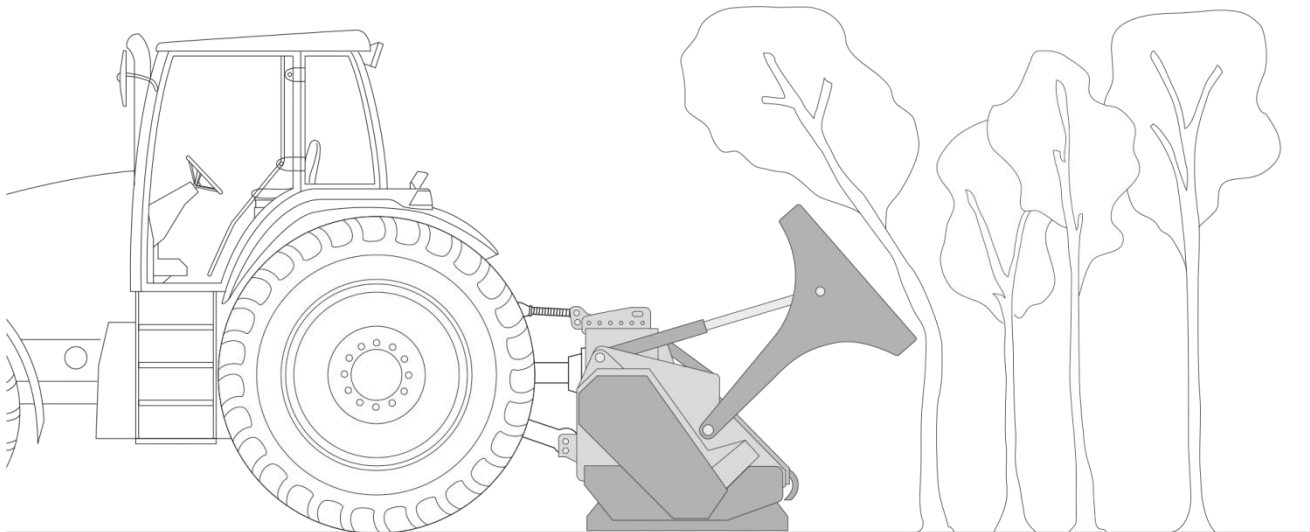


Figure 4.5

## 4.4 After use

A few guidelines must be complied with when the work is complete; in order to make sure the flail mulcher is stable when released from the tractor:

- 4.4.4.1 Move to the storage area of the flail mulcher, making sure that the supporting surface is flat and free from obstructing material.
- 4.4.4.1 Place the flail mulcher on the ground by lowering the rear link arms of the tractor.
- 4.4.4.2 Switch the tractor off and engage the parking brake.
- 4.4.4.3 Before leaving the driver's seat of the tractor remove the ignition key from the dashboard.
- 4.4.4.4 Disconnect the drive shaft that connects the gearbox with the tractor PTO.
- 4.4.4.5 Release the adjustable top link from the headstock top bracket by releasing the appropriate pins and split pins.
- 4.4.4.6 Release the chains and tensioners from the two lower link arms.
- 4.4.4.7 Release the pins from the lower link arms by releasing the relevant pins.
- 4.4.4.8 Climb into the driver's seat of the tractor, start up and move the tractor away from the flail mulcher.

Store the equipment, preferably in a covered area, on a suitable and flat surface.  
Follow the instructions given in Section 2.5.2 "Preparation for storage" in this manual.

## 4.5 Safety devices

There are safety devices in the flail mulcher to safeguard the operator.



**WARNING!** The safety devices must not be tampered or excluded. They should always be kept in perfect working order.

The following are installed:

**FIXED PROTECTION** – PTO guard cone/shafts - PTO protection covers both crosses and prevents hands from being introduced into the rotating area of the PTO shaft.

**FIXED PROTECTION** - Belt protection covers - Belt protection covers both belts and prevents hands from being introduced into the lateral transmission area.


**DOUBLE SAFETY PROTECTION** - a number of chain rings and placed in the lower part of the machine prevents the soil and/or fragments of vegetation from being projected outwards.


**FIXED WARNINGS** – Warning safety decals - The warning decals of the residual risk on the machine essentially indicate an existing danger, a prohibition or requirements that are to be met for the operator's safety and for the flail mulcher to operate correctly and remain intact.




## 5 Maintenance

Routine maintenance operations are listed below. Extraordinary maintenance operations (repairs of parts or components) can be carried out by specialised personnel authorised by the manufacturer.

 **WARNING!** The schedule is for information purposes only and depends on normal operation conditions. Conditions can in fact change depending on the service, the environment and on frequency of use. If conditions are particularly awkward, the frequency of maintenance operations should be amended accordingly.

 **WARNING!** It is mandatory to make sure that the PTO shaft connecting the gearbox of the flail mulcher is disconnected from the agricultural tractor PTO before starting any maintenance.

 **WARNING!** After maintenance, always restore any safety devices that may have been removed, so that they are in place before new work is started.

**It is recommended** to always use oil of the same type and quality as used previously when refilling or changing the oil. Greasing points should be cleaned carefully before lubrication, to prevent mud, dust or foreign bodies from mixing with the lubricant.

- **It is mandatory** that any repair and/or maintenance intervention be carried out by an operator with suitable physical and intellectual requirements.

- **It is mandatory** to verify that during maintenance or repair operations, unauthorised personnel are kept away from the flail mulcher.

- **It is prohibited** to deactivate protection and safety devices. When it becomes necessary to deactivate these devices in order to carry out extraordinary maintenance, the operation must only be completed for extraordinary maintenance and only by a maintenance mechanic, who will guarantee operator safety and avoid any damage to the machine, as well as restoring the effectiveness of the same devices at the end of maintenance operations.

- **It is mandatory** to switch the engine of the agricultural tractor which the flail mulcher is connected to off before performing any maintenance or mechanical setting, and disconnect the PTO shaft.

- **It is recommended** to perform all maintenance that is not covered in this manual in an authorised service centre.

- Before restarting the flail mulcher after lubrication and/or maintenance, **it is mandatory** to wait for the authorization of the mechanical maintenance technician who must verify that:

- The works have been completed;

- The flail mulcher works perfectly;

- The safety devices are in their correct place and fully functional;

- No other operations are being performed on the flail mulcher.

### 5.1 Periodic Maintenance

In order to guarantee proper operation of the flail mulcher and improved operator safety, it is necessary to periodically intervene with controls and maintenance operations listed in the table shown below.

	Upon the first use	The first 8 work hours	Every 8 work hours	Every 50 work hours	Every 400 work hours
General check	■	■			
Tightening of screws and bolts	■	■	■		
Check the wear of the Widia teeth and their locking screws	■		■	■	
Greasing spiders and Cardan shaft	■	■		■	
Greasing rotation points	■		■		
Verify gearbox oil level	■			■	
Complete change of gearbox oil	■				■
Check transmission belt tension	■		■		
Tightening locking sets, pulleys and pinions (with torque wrench) (44 Nm)	■		■		



**WARNING!** The machine must be checked by an authorised concessionary if any of its parts are worn or in poor condition.



**WARNING!** Replace the hydraulic tubes each time they are damaged or, in any case, before the sixth year. The used hydraulic oil must be properly collected and must not be dispersed into the environment since, according to the laws in force, it is classified as dangerous waste and for this reason it must be given to the proper collecting centres. Please, refer directly to the closest company for the collection of the used oils.

### 5.1.1 Maintenance on the Widia Teeth



**WARNING!** Spearhead is not liable for damage caused by the vibrations generated by mulching rotors that are not balanced after replacing the Widia teeth. Any requests for replacement under warranty or reimbursement for damage caused due to the rotors malfunctioning will not be accepted.

The Widia teeth, with which the mulcher is equipped, are suitable for work on normal terrain. It is mandatory to check their intactness and state of wear daily. Should the Widia teeth break or deform during work, they must be replaced immediately. Replacing an individual tooth is not recommended. This can be done only when all the other teeth are in optimal condition and, in any case, in order not to compromise the proper operation of the rotor, it is mandatory to also replace the opposing tooth so as not to cause an imbalance in the masses.

To guarantee perfect operation, we recommend always replacing all the Widia teeth rather than just the damaged ones. After replacing the teeth, it is mandatory to electronically re-balance the rotor to guarantee the proper operation of the mulcher without vibrations, which can cause serious damage to the machine.

To replace worn or broken teeth it is necessary to:

- 5.1.1.1 Position the mulcher and tractor on flat ground;
- 5.1.1.2 Raise the mulcher with the tractor linkages to the maximum height possible;
- 5.1.1.3 Place adequate support stands under the mulcher on both sides for the machine to be perfectly stable;
- 5.1.1.4 Halt the tractor and put on the emergency brake;
- 5.1.1.5 Be equipped with adequate tools and proceed with the replacement of the teeth: forcibly tighten the securing screws;
- 5.1.1.6 Before installation, weigh the individual Widia teeth as differences in weight are inevitable;
- 5.1.1.7 Select pairs of Widia teeth that have the same weight and mount them on the rotor in opposite diametrical positions.

The quality and integrity of the mulcher and its safety depend on the how the Widia teeth are cared for. They must be replaced immediately when damaged. Normal wear is exceeded and accentuated when operating on sandy terrains or if the mulcher is positioned too low and frequently bumps against any obstacles, which can lead to distortions or cracks in the Widia teeth.

Tooth damage inevitably leads to worse work quality, increased vibrations, possible damage to the mulcher, as well as partial or total breakage of the Widia teeth with consequent dangerous high-speed projection of metal fragments in the area the machine is operating.

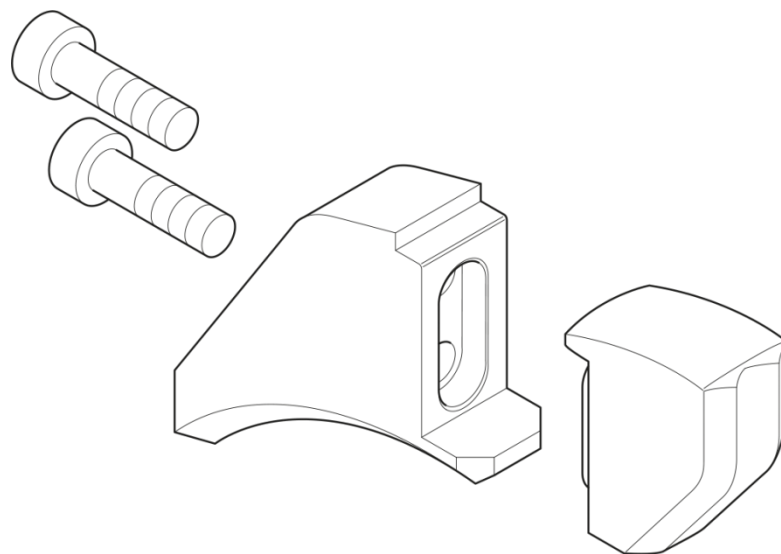
It is mandatory to make sure, when replacing the Widia teeth, that the hole for the tool lynch pin seat is not oval-shaped and does not exceed the original diameter by more than **2 mm**.

For Widia teeth; see Figure 5.1:

- Tooth wear is directly proportional to the work done.
- The fixing of the tooth is performed using two screws, see Figure 5.1. Each time you replace the tooth also must be replaced the relative screws.



**CAUTION!** Only use original spare parts



**Figure 5.1**

## 5.1.2 Belt maintenance

The driving force is transmitted to the mallets holder rotor of the mulcher by belts with adjustable tension. From time to time, or if the belts malfunction or slide, check the tension of the transmission belts from the special slot and, if necessary, replace them.

With reference to Figure 5.2, operations to be carried out are the following:

- 5.1.2.1 Remove the nuts fastening the protective casing;
- 5.1.2.2 Turn the tie rod screw (A) to adjust the belts tension;

It is advisable to be equipped with a metal ruler of adequate length, and by placing it on the edge of the two pulleys, it must touch all four edges of the pulleys themselves.

Press on the belts, in the central area between the two pulleys, with a force of 4/5kg: the force must cause a deformation on the individual belt of 1cm.

At this point:

- 5.1.2.3 Tighten screw (A) and replace the protective casing removed earlier;

The belts are stretched when being worked over time: when replacing a worn or broken belt, for a correct distribution of forces, **it is mandatory** to replace the entire set of belts. The replacement part number is ZA00109, with x10 being required.

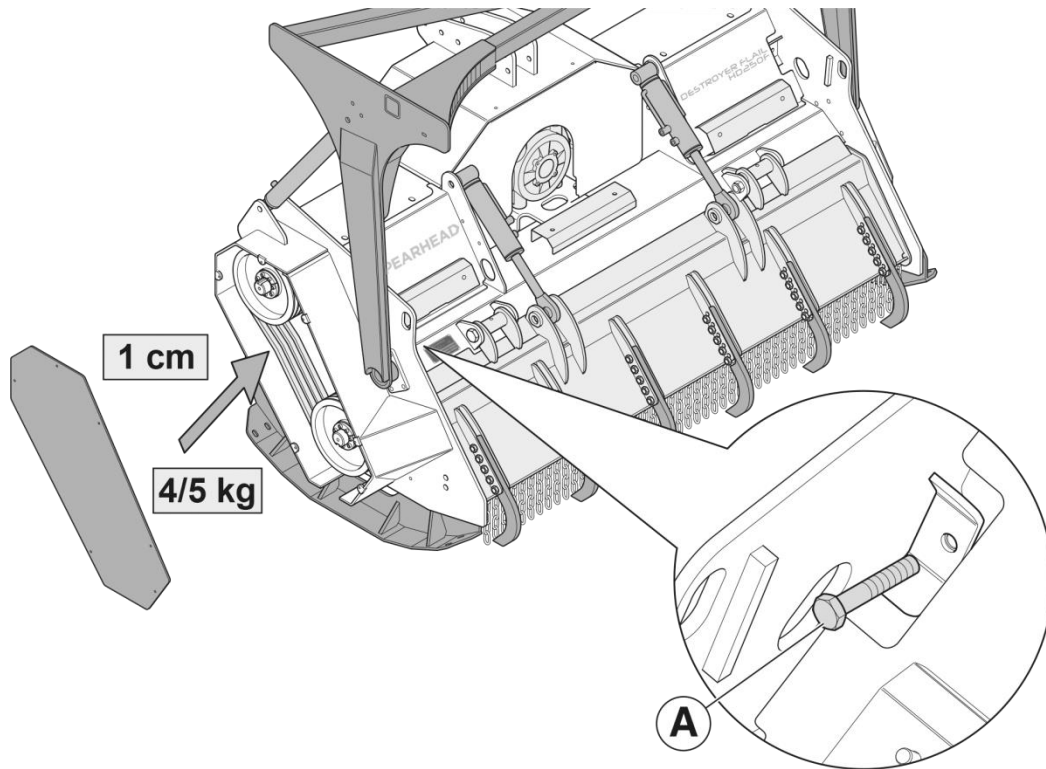


Figure 5.2

## 5.2 Cleaning the flail mulcher



**DANGER!** This operation is extremely hazardous so the following instructions must be followed.

- Wear protective gloves and shut off the thermal engine of the agricultural tractor, subsequently disconnecting the PTO shaft;
- For cleaning at the end of work, before completely stopping the machine, leave it on for 20-30 seconds so that any material residue is ejected;
- The flail mulcher must be cleaned inside using an air jet and rags.
- Eliminate any residue of material or dust from the external surface of the machine.



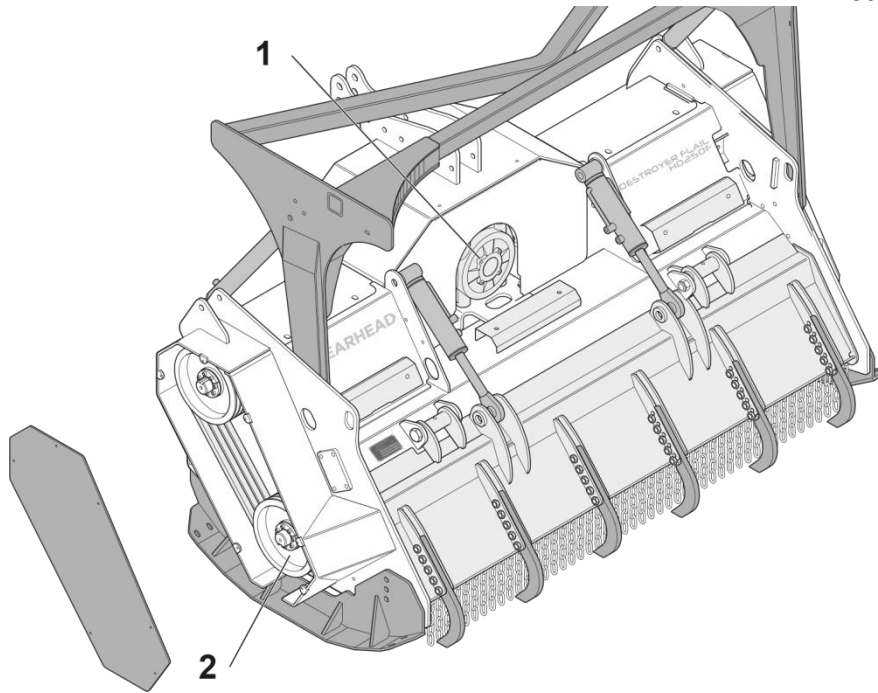
**WARNING!** It is strictly prohibited to clean the flail mulcher with water or other liquid substances.

## 5.3 Lubricants

With reference to Figure 5.3, the following lubricants are to be used for the different parts of the machine:

- For the transmission box (1): **SHELL SPIRAX S2 A 80W-90 or equivalent** responding the API - GL5/MIL-L-2105C specifications is recommended. The quantity of oil is **0.8 lt.** Do not exceed the prescribed quantity;
- For all (2) greasing points: **SHELL RETINAX WB 2 GREASE or equivalent** is recommended.





**Figure 5.3**



## 6 Troubleshooting

If the flail mulcher malfunctions, search the causes and the solution of the problems in the following table:

PROBLEM	CAUSE	REMEDY
Excessive grinding of the product to be cut	Flail mulcher too low	Slightly raise the flail mulcher from the ground, adjusting the height
	Forward speed too slow	Increase the advancing speed
Scarce grinding of the product to be cut	Flail mulcher too high	Slightly lower the flail mulcher from the ground, adjusting the height
	Forward speed too high	Reduce the advancing speed
	Terrain too wet or muddy	Wait for the terrain to dry
Clogging of the rotor and grinding sieve	Terrain too wet or muddy	Wait for the terrain to dry
	Flail mulcher too low	Raise the flail mulcher from the ground
	Forward speed too high	Reduce the advancing speed
Drop in rotor speed	Belt overheating	Adjust belt tension
The flail mulcher bounces on the ground or vibrates	Foreign bodies stuck between the Widia teeth	Clean the rotor and teeth
	Widia teeth mounted incorrectly, without the helical layout or with the edge penetrating the terrain	Check and re-install the teeth
	Worn or broken teeth	Replace the teeth
	Deformation of the rotor due to foreign bodies having hit the central part	Replace the rotor. Contact the Spearhead service centre
Roller support bearing seizure	No oil lubrication	Verify oil level



## 7 Spare Parts

For routine maintenance or repair spare parts may be obtained from the Spearhead parts department.

To obtain correct part numbers; refer to the Spearhead interactive on-line parts book. This is available at [dealerinside.spearheadmachinery.com/partsmanuals/manual.aspx](http://dealerinside.spearheadmachinery.com/partsmanuals/manual.aspx). You will need to enter the machine serial number. The correct part numbers must be quoted when ordering spares.



## 8 Warranty Information

Despite our best efforts to ensure that your new machine is delivered on time, works correctly and is defect free, some defects do infrequently slip through our quality net. Equally, when in use, accidents happen and damage is caused. To cover these situations Spearhead operates a Warranty policy.

### 8.1 Warranty policy

#### 8.1.1 Warranty registration

All machines must be registered, by the selling dealer with Spearhead, before delivery to the end user. On receipt of the goods it is the buyer's responsibility to check that the Verification of Warranty Registration in the Operator's Manual has been completed by the selling dealer.

#### 8.1.2 Limited warranties

All machines supplied by Spearhead are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months, unless a different period is specified.

All spare parts supplied by Spearhead and purchased by the end user are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 6 months. All parts warranty claims must be supported by a copy of the failed part invoice to the end user. We cannot consider claims for which sales invoices are not available.

The warranty offered by Spearhead is limited to the making good by repair or replacement for the purchaser any part or parts found, upon examination at its factory, to be defective under normal use and service due to defects in material or workmanship. Returned parts must be complete and unexamined. Pack the component(s) carefully so that any transit damage is avoided. All ports on hydraulic items should be drained of oil and securely plugged to prevent seepage and foreign body ingress. Certain other components, electrical items for example, may require particular care when packing to avoid damage in transit.

This warranty does not extend to any product from which Spearhead's serial number plate has been removed or altered.

This warranty does not apply to any part of the goods, which has been subjected to improper or abnormal use, negligence, alteration, modification, fitment of non-genuine parts, accident damage, or damage resulting from contact with overhead power lines, damage caused by foreign objects (e.g. stones, iron, material other than vegetation), failure due to lack of maintenance, use of incorrect oil or lubricants, contamination of the oil, or which has served its normal life. This warranty does not apply to any expendable items such as blades, belts, clutch linings, filter elements, flails, flap kits, skids, soil engaging parts, shields, guards, wear pads, pneumatic tyres or tracks.

Temporary repairs and consequential loss - i.e. oil, downtime and associated parts are specifically excluded from the warranty.

Warranty on hoses is limited to 12 months and does not include hoses which have suffered external damage. Only complete hoses may be returned under warranty, any which have been cut or repaired will be rejected. Machines must be repaired immediately a problem arises. Continued use of the machine after a problem has occurred can result in further component failures, for which Spearhead cannot be held liable, and may have safety implications.

If in exceptional circumstances a non-Spearhead part is used to affect a repair, warranty reimbursement will be at no more than Spearhead's standard dealer cost for the genuine part.

Except as provided herein, no employee, agent, dealer or other person is authorised to give any warranties of any nature on behalf of Spearhead.

For machine warranty periods in excess of 12 months the following additional exclusions shall apply:

- Hoses, exposed pipes and hydraulic tank breathers.
- Filters.
- Rubber mountings.
- External electric wiring.
- Bearings and seals

All service work, particularly filter changes, must be carried out in accordance with the manufacturer's service schedule. Failure to comply will invalidate the warranty. In the event of a claim, proof of the service work being carried out may be required.

Repeat or additional repairs resulting from incorrect diagnosis or poor quality previous repair work are excluded from warranty.

***NB Warranty cover will be invalid if any non-genuine parts have been fitted or used. Use of non-genuine parts may seriously affect the machine's performance and safety. Spearhead cannot be held responsible for any failures or safety implications that arise due to the use of non-genuine parts.***

### 8.1.3 Remedies and procedures

The warranty is not effective unless the Selling Dealer registers the machine, via the Spearhead web site and confirms the registration to the purchaser by completing the confirmation form in the operator's manual.

Any fault must be reported to an authorised Spearhead dealer as soon as it occurs. Continued use of a machine, after a fault has occurred, can result in further component failure for which Spearhead cannot be held liable.

Repairs should be undertaken within two days of the failure. Claims submitted for repairs undertaken more than 2 weeks after a failure has occurred, or 2 days after the parts were supplied will be rejected, unless the delay has been authorised by Spearhead. Please note that failure by the customer to release the machine for repair will not be accepted as a reason for delay in repair or submitting warranty claims.

All claims must be submitted, by an authorised Spearhead Service Dealer, within 30 days of the date of repair.

Following examination of the claim and parts, Spearhead will pay, at their discretion, for any valid claim the invoiced cost of any parts supplied by Spearhead and appropriate labour and mileage allowances if applicable.

The submission of a claim is not a guarantee of payment.

Any decision reached by Spearhead is final.

### 8.1.4 Limitation of liability

Spearhead disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.

Spearhead makes no warranty as to the design, capability, capacity or suitability for use of the goods.

Except as provided herein, Spearhead shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, the manufacturer's liability hereunder for damages incurred by the purchaser or others shall not exceed the price of the goods.

No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than one (1) year after the cause of the action has occurred.

### 8.1.5 Miscellaneous

Spearhead may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.

If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.



Applicable law may provide rights and benefits to the purchaser in addition to those provided herein.

## 8.2 How to make a claim

In the event of a warranty claim being made, the process of making a claim will be carried out entirely by your selling agent. This is an arrangement that exists between Spearhead Ltd and its agents. All claims will be made via the Spearhead web site.

Qualifying warranty claims can only be made providing the machine has been previously registered with Spearhead by the selling dealer within 10 days of delivery and installation.

The correct part numbers must be quoted when ordering spares, see section 8.3 below.





**IMPORTANT:** Any pumps, motors gearboxes, rams or electric control units fitted to any machine that fails during the first twelve months of warranty must be returned to us unexamined. Warranty will be rejected if they have been dismantled. This only applies to the first twelve months of warranty.

## 8.3 How to obtain the correct spare part numbers

To obtain correct part numbers; refer to the Spearhead interactive on-line parts book. This is available at [dealerinside.spearheadmachinery.com/partsmanuals/manual.aspx](http://dealerinside.spearheadmachinery.com/partsmanuals/manual.aspx). You will need to enter the machine serial number. The correct part numbers must be quoted when ordering spares.

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