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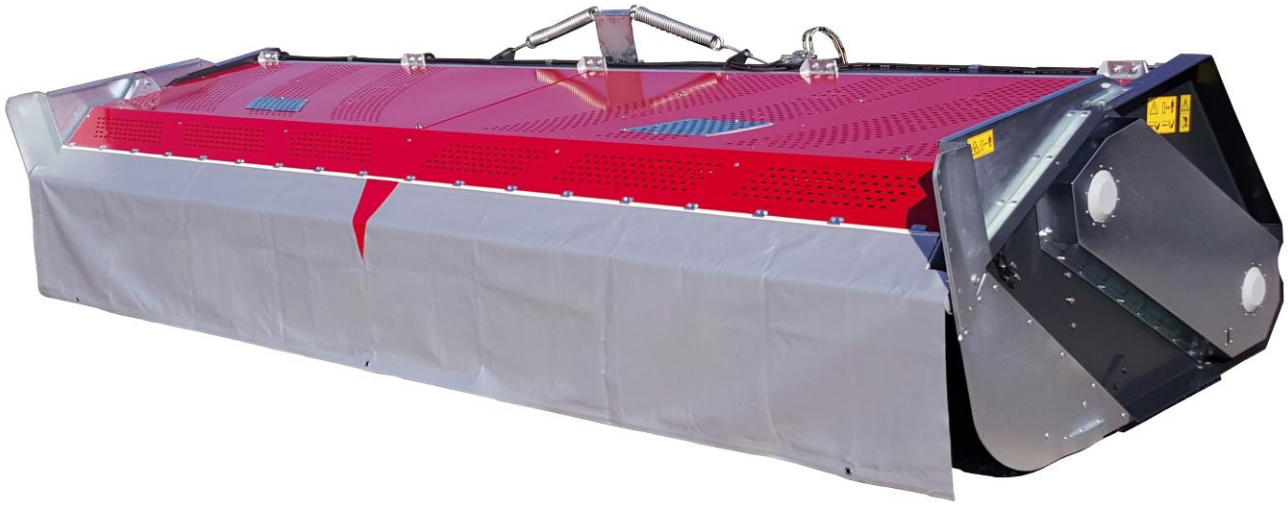
USE AND MAINTENANCE INSTRUCTION MANUAL

DIRECT CUT BAR

MPD 612C – MPD612L – MPD 760

serial number year



Document revision

Rev. no.	Date	Reason for revision
00	**10.01.2014**	Issued
01	**01.03.2016**	First draft
02	**18.12.2018**	Second draft

1. CONTENTS

2. PREMISES

2.1 SCOPE OF DOCUMENT

This **ORIGINAL INSTRUCTION MANUAL** is an integral part of the machine and is intended to:

- create operator awareness about safety issues;
- provide information on the safe handling of the machine, when packed and unpacked;
- provide information on correct machine installation;
- offer detailed knowledge of machine operation and limitations;
- provide information on proper use in safe conditions;
- provide information on how to carry out maintenance operations correctly and safely;
- provide information on how to safely dismantle the machine, protecting operators and the environment.

Machine operators are obliged to carefully read the contents of the Instruction Manual in the sections that concern them. The time taken to do so will be mitigated by the ability to properly run the machine and use it in safe conditions.

This document presumes that wherever the machine will be installed, local workplace health and safety laws will be respected.

Instructions, drawings and documentation contained in this Manual are of a confidential nature, the property of the manufacturer and cannot be neither partially nor wholly reproduced.

If changes are made to this document by the manufacturer, the client is responsible for ensuring that only updated versions of the Manual are effectively available.

2.2 HOW TO READ THE INSTRUCTION MANUAL

The Manual has been divided into independent chapters, each of which is intended for a specific type of operator (CONDUCTOR AND MAINTENANCE TECHNICIAN), for whom responsibilities have been defined in order that the machine can be run in safe conditions.

The order of chapters corresponds to the temporal logic of the machine's life.

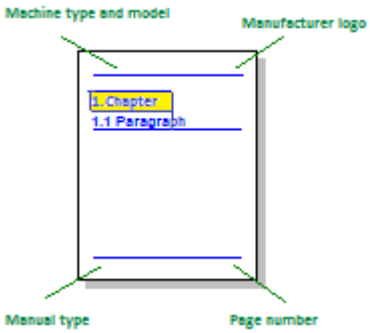
To facilitate the immediate comprehension of the text, terms, abbreviations and pictograms are used whose meaning is defined in paragraph 6 of this chapter.

The manual is divided into chapters identified by a progressive number.

The paragraphs and sub-paragraphs are in turn progressively numbered.

Each sheet contains: machine type and model (or serial number), manufacturer logo, document type (even pages), restrictions of use (odd pages).

Photographic illustrations, technical drawings, tables are progressively numbered in each chapter (if necessary).



ABBREVIATIONS

Sect.	Section	**Chap.**	Chapter	**Para.**	Paragraph
Pg.	Page	**Fig.**	Figure	**Tab.**	Table

UNIT OF MEASUREMENT

The units of measurement used are those recognised by the **I**nternational **S**ystem (**SI**).

2.3 STORING THE INSTRUCTION MANUAL

The Instruction Manual must be stored and kept with the machine during all transfers of ownership during its life.
The condition of the Manual must be protected by handling it with care, using clean hands and without resting it on dirty surfaces. None of its pages or parts must be removed, torn or arbitrarily modified. The Manual must be stored in an environment protected against humidity and heat, near the machine to which it refers.
Upon request the manufacturer can provide additional copies of the machine Instruction Manual.

2.4 METHOD OF UPDATING THE INSTRUCTION MANUAL

The Manufacturer reserves the right to change the design and make improvements to the machine without notifying Clients, and without updating the Manual already delivered to the user.
Furthermore, if modifications agreed to with the Manufacturer and involving changes to one or more chapters of the Instruction Manual are made to the machine installed at the Client premises, the Manufacturer will send holders of the relevant Instruction Manual the chapters affected by the changes, including a new complete revised version of the same.
It is the responsibility of the user, in accordance with the instructions sent with the updated documentation, to replace all the old chapters in the existing copies with the new chapters, and the first page and contents with those containing the new revision level.

2.5 RECIPIENTS

The Manual is intended for: Installer, Operator and Qualified Maintenance Personnel.

EXPOSED PERSON
any person that is entirely or partly in a hazardous area

OPERATOR
person or persons responsible for installing, operating, adjusting, cleaning, repairing or moving a machine and performing maintenance operations

QUALIFIED PERSONNEL or QUALIFIED OPERATOR
persons that have followed specialised training courses etc., who have experience in the installation, start-up and maintenance, repair, transport of the machine.

Qualification of recipients
The machine is intended for professional and not generalised use; it can therefore be used by qualified figures, in particular persons:

- of a legal age;
- with the physical and psychological capacity to perform particularly technical works;
- who have been suitably trained on how to use and maintain the machine;
- deemed suitable by their employer to perform the task assigned to them;
- capable of understanding and interpreting the operator manual and safety precautions;
- who know the emergency procedures and how to implement them;
- who have the capacity to use the specific type of equipment;
- who are familiar with the specific standards;
- who have understood the operating procedures defined by the machine manufacturer

2.6 GLOSSARY AND PICTOGRAMS

This paragraph lists uncommon terms or terms with an unusual meaning, abbreviations, pictograms (and their meaning) to indicate the operator qualification and machine status. Their inclusion makes it easy to quickly and unambiguously provide information needed in order to use the machine correctly and in safe conditions.

2.6.1 GLOSSARY (ATTACHMENT I, 1.1.1 DIRECTIVE 2006/42/CE)

HAZARD potential source of lesions or damage to health

HAZARDOUS AREA any area within and/or near the machine where the presence of a person constitutes a risk to the health and safety of that person

EXPOSED PERSON any person who is found in a hazardous area

OPERATOR person or persons responsible for installing, operating, adjusting, cleaning, repairing or moving a machine and performing maintenance operations

RISK combination of the probability and seriousness of a lesion or damage to health, which may arise in a hazardous situation

GUARD element used to guarantee protection by way of a tangible barrier

PROTECTIVE DEVICE reduces the risk, either on its own or combined with a guard

INTENDED USE use of the machine conformant to the information provided in the instructions

REASONABLY FORESEEABLE INCORRECT USE use of machine other than that indicated in the instructions, but which may result from foreseeable behaviour

MAN-MACHINE INTERACTION any situation in which an operator finds themselves interacting with the machine during one of its operating phases

OPERATOR QUALIFICATION minimum level of skill required by an operator to perform the described operation

NUMBER OF OPERATORS suitable to perform the described operation in the best way possible, and determined by a manufacturer analysis. Using a different number of operators may affect the result or place the involved persons in danger

MACHINE STATUS includes operating methods, the condition of safety devices (guards included/excluded, emergency stop pressed, power supply disconnected, ...)

RESIDUAL RISKS that remain despite the adoption of protective measures integrated into the machine design, and despite the protective devices and complementary measures adopted

SAFETY COMPONENT intended to perform a safety function; any faults and/or malfunctions in said component may place the operators at risk

2.6.2 PICTOGRAMS

Descriptions preceded by these symbols contain **information or important safety precautions**. Failure to observe these warnings may create the risk of operator accidents, void the contractual warranty, release the manufacturer from all liability.

OPERATOR QUALIFICATION PICTOGRAMS

SYMB.	DESCRIPTION
	**Conductor of lifting and handling equipment:** operator enabled to use equipment for the lifting and handling of materials and machines (strictly abiding by the manufacturer instructions), in accordance with the local laws of the country where the machine is installed.
	**Machine conductor:** operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.
	**Mechanical maintenance technician:** qualified technician, able to run the machine in normal conditions, to operate on mechanical parts to make adjustments, perform maintenance and any necessary repairs. **Technicians are not authorised to operate on live electrical systems.**
	**Electrical maintenance technician:** qualified technician, able to run the machine in normal conditions, in charge of all electrical-type interventions for the machine's regulation, maintenance and repair. **Technicians are able to operate in the presence of voltage in junction boxes and cabinets.**

MACHINE STATUS PICTOGRAMS

SYMB.	DESCRIPTION
	**Machine off**: with the power supply isolated.
	**Machine in motion**: with automatic operation, mobile guards closed and interlocking devices active, fixed guards closed.
	**Machine on**: still and ready to start (stand-by conditions), mobile guards closed with safety device included and fixed guards closed.

SAFETY PICTOGRAMS

MANDATORY (white on blue background and a circular shape)

PICTO	NAME	PICTO	NAME
	MANDATORY SAFETY GLOVES		MANDATORY SAFETY HELMET
	MANDATORY SAFETY FOOTWEAR		MANDATORY PROTECTIVE SUIT

PROHIBITION (black on white background with red border, circular shape)

PICTO	NAME	PICTO	NAME
	ACCESS PROHIBITED BY UNAUTHORISED PERSONS		PROHIBITED TO CLEAN, OIL, GREASE, REPAIR OR ADJUST PARTS IN MOTION
	DO NOT REMOVE SAFETY DEVICES		PROHIBITED TO PERFORM WORKS BEFORE DISCONNECTING THE POWER

HAZARD (black on yellow background with black border and triangular shape)

PICTO	NAME	PICTO	NAME
	HAZARDOUS VOLTAGE		MOVING PARTS
	CRUSHING OF UPPER LIMBS		GENERAL HAZARD

SIGNS IN MANUAL

GENERIC CAUTION SYMBOL
This symbol is used to indicate important elements or operating sequences or ones that may be hazardous to operators

3. GENERAL INFORMATION

3.1 MANUFACTURER DETAILS

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3.2 MACHINE IDENTIFICATION DATA AND PLATES

Each machine is identified by a plate bearing the non-removable reference data of the machine itself (Figure 3.1). Mass refers to the machine weight without options and running at full capacity.

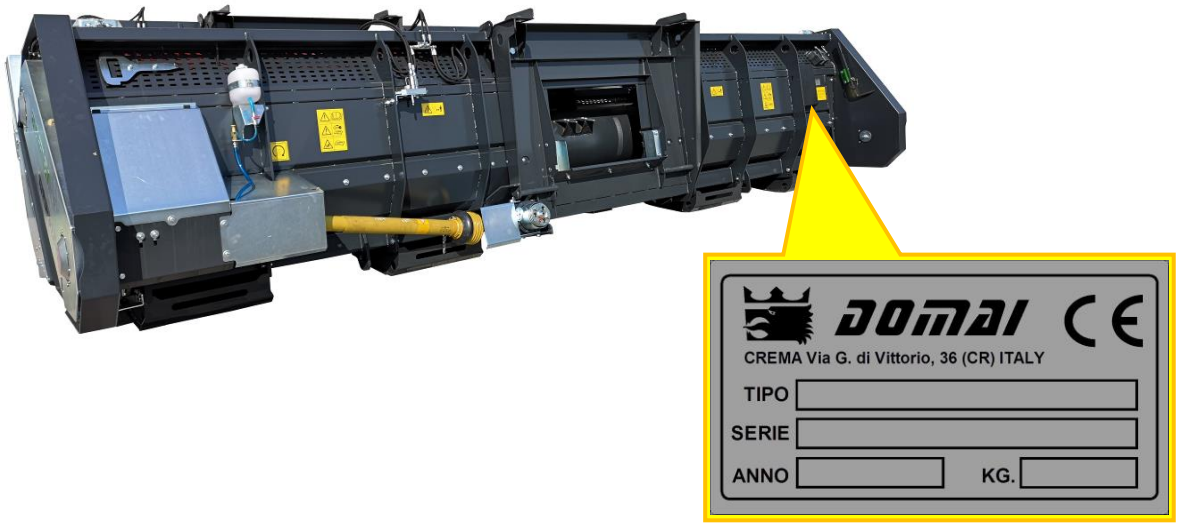

FIGURE 3.1 - IDENTIFICATION PLATE

FOR EVERY COMMUNICATION ABOUT THE MACHINE PLEASE REFER TO THE SERIAL NUMBER

3.3 DECLARATIONS

The machine is manufactured in compliance with pertinent and applicable European Union Directives at the time of its release into the market.

The machine does not fall within the categories described by Attachment IV of Directive 2006/42/CE.

MACHINE OPERATION PROHIBITED

The machine must not be placed into operation after having undergone structural changes or integrations with other components that are not considered routine or special maintenance operations, without having been once again declared as compliant with the requirements of Directive 2006/42/CE and applicable CE Directives.

It cannot be placed into operation until the user has fulfilled all their obligations.

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CE

[1] **Dichiarazione – Originale**

[1.1] **DICHIARAZIONE DI CONFORMITA'**
[1.2] ALLEGATO II, punto 1, sezione A della DIRETTIVA 2006/42/CE

[2] **IL FABBRICANTE**
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26013 CREMA (CR) – ITALIA

[2.1] **DICHIARA CHE LA MACCHINA**

[3] Descrizione — [3.4] Macchina per la raccolta di colture erbacee da sfalcio
[4] Tipo
[5] Serie
[6] Denominazione Commerciale — [6.5] Multi Power Disk – Barra taglio diretto
[7] Uso Previsto — [7.4] Raccolta colture erbacee da sfalcio

[8] **È CONFORME ALLE DIRETTIVE**

- [9] Direttiva 2006/42/CE del Parlamento Europeo e del Consiglio del 17 maggio 2006 relativa alle macchine e che modifica la direttiva 95/16/CE.
- [10] Direttiva 2014/30/UE del Parlamento Europeo e del Consiglio del 26.02.2014 concernente l'armonizzazione delle legislazioni degli Stati membri relative alla compatibilità elettromagnetica (rifusione).
- [11] Direttiva 2014/35/UE del Parlamento Europeo e del Consiglio del 26.02.2014 concernente l'armonizzazione delle legislazioni degli Stati membri relative alla messa a disposizione sul mercato del materiale elettrico destinato a essere adoperato entro taluni limiti di tensione.

[12] **RIFERIMENTO NORME ARMONIZZATE APPLICATE** EN ISO 12100

[13] **RIFERIMENTO NORME E SPECIFICHE TECNICHE APPLICATE** ISO 11684

[14] **AUTORIZZA**

[15] DOMAI SRL - Via G. Di Vittorio, 36 – 26013 CREMA (CR) – ITALIA, a costituire il fascicolo tecnico.

[16] Crema (CR),

DOMAI SRL
Massimo Dominoni, Amministratore

Translation:

[1] DECLARATION – Original
[1.1] CONFORMITY DECLARATION [1.2] ATTACHMENT II, item 1 section A of DIRECTIVE 2006/42/EC
[2] THE MANUFACTURER DOMAI SRL [2.1] DECLARES THAT THE MACHINE
[3] Description [3.1] Machine for corn harvest [3.2] Machine for sunflower harvest
[3.3] Machine for soy, wheat, barley and similar crops harvest [3.4] Machine for collection of herbaceous crop hay
[4] Type [5] Serial number
[6] Commercial Name [6.1] Corn header [6.2] Sunflower rows header [6.3] Sunflower header with pans
[6.4] Header for soybean harvest [6.5] MULTI POWER DISK – Direct Cut Bar
[7] Foreseen use [7.1] Corn harvest [7.2] Sunflower harvest
[7.3] Soybean, wheat, barley and similar crops harvest [7.4] collection of herbaceous crop hay
[8] FOLLOWS THE DIRECTIVES
[9] Directive 2006/42/EC of the European Parliament and of the Council of 17th May 2006 on machinery and amending Directive 95/16/EC
[10] Directive 2014/30/UE of the European Parliament and of the Council of 26th February 2014 concerning the harmonization of the laws of the Member States relating to electromagnetic compatibility (recast).
[11] Directive 2014/35/UE of the European Parliament and of the Council of 26th February 2014 concerning the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment intended to be used within certain voltage limits
[12] REFERENCE TO HARMONISED STANDARDS
[13] REFERENCE TO TECHNICAL STANDARDS AND SPECIFICATIONS USED
[14] AUTHORIZES [15] DOMAI SRL - Via G. Di Vittorio, 36 – 26013 CREMA (CR) – ITALIA, to make the technical dossier
[16] Place [17] Date [18] Signature / Administrator

3.4 APPLICABLE LEGISLATION AND REGULATIONS

3.4.1 APPLICABLE LEGISLATION

- Directive **2006/42/CE**, “Machinery Directive”
- Directive **2014/30/UE**, “Electromagnetic Compatibility”
- Directive **2014/35/UE**, “Low Tension”

3.4.2 APPLICABLE REGULATIONS

- **EN ISO 12100**, "Safety of machinery - General design principles - Risk assessment and reduction"
- **EN 13857**, "Safety of Machinery - Safety distances to prevent hazardous areas being reached by upper and lower limbs"
- **EN 349**, "Safety of Machinery - Minimum gaps to avoid crushing of parts of the human body"
- **EN 614-1**, "Safety of machinery - Ergonomic design principles - Part 1 Terminology and general principles"
- **EN 614 -2**, "Safety of machinery - Ergonomic design principles - Interactions between the design of machinery and work tasks"
- **EN 894-1**, "Safety of Machinery - Ergonomic requirements for the design of display and control actuators - General principles for human interactions with display and control actuators"
- **EN 894-2**, "Safety of machinery - Ergonomic requirements for the design of displays and control actuators - Displays"
- **EN 894-3**, "Safety of machinery - Ergonomic requirements for the design of displays and control actuators - Control actuators"
- **EN ISO 14120**, "Safety of machinery – Guards - General requirements for the design and construction of fixed and movable guards"
- **EN ISO 13849-1**, Safety of Machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2006)
- **EN ISO 4413**, Oleohydraulics - General safety rules and requirements for systems and their components (ISO 4413:2010)
- **EN ISO 4414**, "Pneumatics - General safety rules and requirements for systems and their components" (ISO 4414:2010)
- **CEI EN 60204-1**, (CEI 44-5), "Safety of Machinery - Electrical equipment of machines - Part 1: General principles"
- **EN ISO 4254-1** "Agricultural machinery - Safety - Part 1: General principles"
- **ISO 11684** “Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Safety signs and hazard pictorials: General principles”

In regards to dated references, only the cited edition shall be applied. For non-dated references, the latest edition of the document of reference shall be applied (including updates).

3.5 WARRANTY

The Machines are covered by a warranty, as stated in the sale terms. If malfunctions or faults covered by the warranty occur during the warranty period, the Manufacturer will repair or replace the defective parts. Any changes made by the user shall void the warranty. This is true particularly when the changes affect the safety devices, reduce their efficiency, or when non-original spare parts are used, or parts other than those indicated by the manufacturer.

The Warranty shall be effective from the date on the Delivery Note and shall be valid for 36 months. All parts subject to normal wear and tear are excluded from the warranty, as well as labour costs, any transfer, accommodation and boarding costs for our staff.

The Warranty does not cover damage to the Machine caused by transport and/or handling, Operator errors, failure to perform maintenance in accordance with the instructions of this Manual, faults and/or breakages not attributable to the malfunction of the machine itself.

4. SAFETY

4.1 GENERAL SAFETY WARNINGS

CAUTION

Before starting the Machine, carefully read the instructions in this Manual and carefully follow the precautions

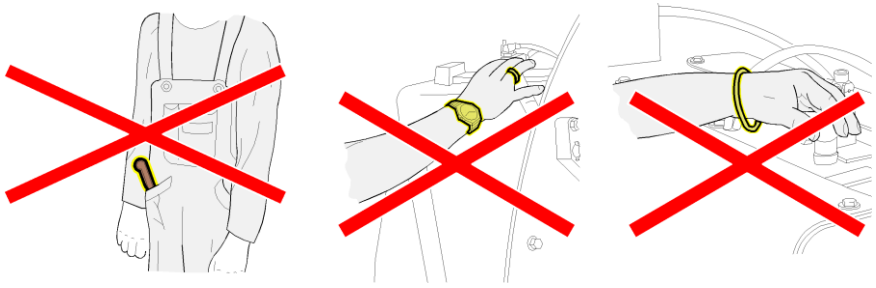
The manufacturer has made every effort to design an intrinsically safe machine, insofar as is possible. The machine has also been fitted with protective and safety devices. Instructions are provided with the machine to ensure it is used safely and correctly. For this purpose, the following information has been provided for all man-machine interaction:

- minimum operator qualification required;
- number of operators needed;
- machine status;
- residual risks;
- mandatory or recommended personal protective equipment;
- prevention of human error;
- prohibited/mandatory actions in relation to reasonably foreseeable incorrect conduct.

This information must be strictly complied with.

The user may supplement the information provided by the manufacturer with additional work instructions if appropriate, which obviously must not contradict the instructions contained in this Manual, in order to contribute to the safe use of the machine.

Special attention must be afforded to **CLOTHING** worn by anybody operating on the machine. Avoid the use of clothing with hooks, ties or other loose clothing that may become entangled in parts of the machine. Do not wear bulky rings or bracelets that may lead to hands being caught in parts of the machine.



When necessary, the Manual will specify additional recommendations regarding preventive measures, personal protective equipment, information that aims to prevent human error and forbidden actions relative to reasonably foreseeable incorrect conduct.

It is nonetheless essential to diligently abide by the following instructions:

- it is forbidden to run the machine in automatic mode without fixed and/or mobile guards
- it is forbidden to obstruct the safety devices installed on the machine
- operations performed in less than totally safe conditions must be performed by strictly following the instructions provided in the relevant descriptions
- after any operation in less than totally safe conditions, the machine status must be restored
- do not tamper with, or modify the machine or its parts.

In the event of a malfunction due to failure to comply with the above instructions, the manufacturer shall not be liable for the consequences

IMPORTANT: the manufacturer shall be held harmless and released from all liability for damage caused by the machine to persons, animals or things in the following circumstances:

- **use by personnel that has not been suitably trained;**
- **improper use;**
- **defective power supply;**
- **incorrect installation;**
- **lack of maintenance or required cleaning;**
- **unauthorised tampering or changes;**
- **use of non-original spare parts or parts not specifically intended for the machine model;**
- **total or partial failure to comply with the instructions;**
- **use contrary to specific national regulations;**
- **natural disasters or exceptional events.**

4.1.1 GENERAL RULES

Moving elements must always be used in accordance with manufacturer instructions, as stated in this Manual, which must always be available for consultation in the workplace. All safety devices positioned on moving elements to prevent accidents and protect operator safety must neither be tampered with nor removed. The person using the machine must promptly inform their employer or person in charge about any defects or anomalies.

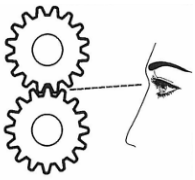
4.1.2 CHECKS AND INSPECTIONS

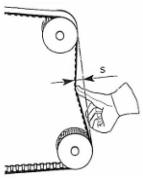
These must be performed by skilled persons, must be visual and operational, and must aim to guarantee the safety of the machine. The following must be inspected:

- load-bearing structures (there must be no cracks, breakages, damage, deformations, corrosion, wear or alterations, ...)
- mechanical parts
- safety devices installed on the machine
- connections using pins and screws
- machine functionality
- machine status
- seals and efficiency of systems.

The outcomes must be reported on a dedicated form.

If worn or defective parts are not promptly replaced, the manufacturer shall not be held responsible for damage caused by accidents that may occur as a consequence.





After all maintenance, regulation or cleaning operations, always check that no objects have been left among the moving parts.

CAUTION: if anomalies are found, these must be resolved prior to starting the machine up again.

4.1.3 PROHIBITIONS

In order to guarantee maximum safety, the following is PROHIBITED:

- **tampering with parts of the machine**
- **leaving moving elements unattended**
- **using the machine in less than totally efficient conditions**
- **tampering with the machine to alter its originally intended use**
- **manually placing moving parts in motion in the absence of a power supply.**

4.2 INTENDED USE

The **DIRECT CUT BAR** (hereafter also "machine") is defined as a set of devices, the function of which is to cut and harvest herbaceous crop hay.

The machine can be used on all flat surfaces. Use on land with protruding rocks, masses or large stones is considered incorrect and improper. Moreover, the bar is not designed to cut and harvest very inclined products very close to the ground.

The machine must not be used for any purpose other than those mentioned in this manual.

4.3 HAZARDOUS AREAS AND RESIDUAL RISKS

Due to its shape, constructive prerogatives and the work cycle that needs to be performed, the machine presents several **non-removable risks**.

AREAS EXPOSED TO HAZARDOUS MOVEMENTS

Persons other than the operator must not linger around the machine. If this occurs, stop the machine and force them to move away

AREAS EXPOSED TO RISK OF DRAGGING

To prevent risks caused by dragging due to moving components or materials (drive transmissions, auger, knives and disk plate) do not operate in areas at risk unless the machine has been stopped. The areas are indicated on the machine and in these instructions

AREAS EXPOSED TO RISK OF CRUSHING

Before operating on components controlled by actuators, check that after the latter have been isolated from the power supply, there is no residual power that may generate motion or potentially hazardous actions. The areas are indicated on the machine and in these instructions. This risk may also arise during machine handling operations

AREAS EXPOSED TO RISKS DUE TO SUSPENDED LOADS

To prevent risks due to suspended loads, do not operate in the areas indicated on the machine and in these instructions, until the load has been completely lowered. If this is not possible, place the load into safe conditions, supporting it with adequate supports or stoppers (this operation must be performed by skilled personnel)

AREAS EXPOSED TO RISK OF CUTTING

To prevent risks due to cutting (generated by the blades or knives), do not operate in areas at risk until the machine has been stopped. This operation must only be performed while wearing cut-resistant gloves. These precautions must be adopted even after the machine has been disconnected from the power supply. The areas are indicated on the machine and in these instructions

AREAS EXPOSED TO RISK OF PROJECTILE MATERIALS

To prevent risks due to projectile materials during use (stones, pebbles, ...) do not access the operating area indicated in these instructions until the machine has been stopped

Residual risks, warnings, obligations are indicated on the machine by special signage (Figure 4.1), only one side of the machine is shown in the figure, the pictograms on the other side are identical).

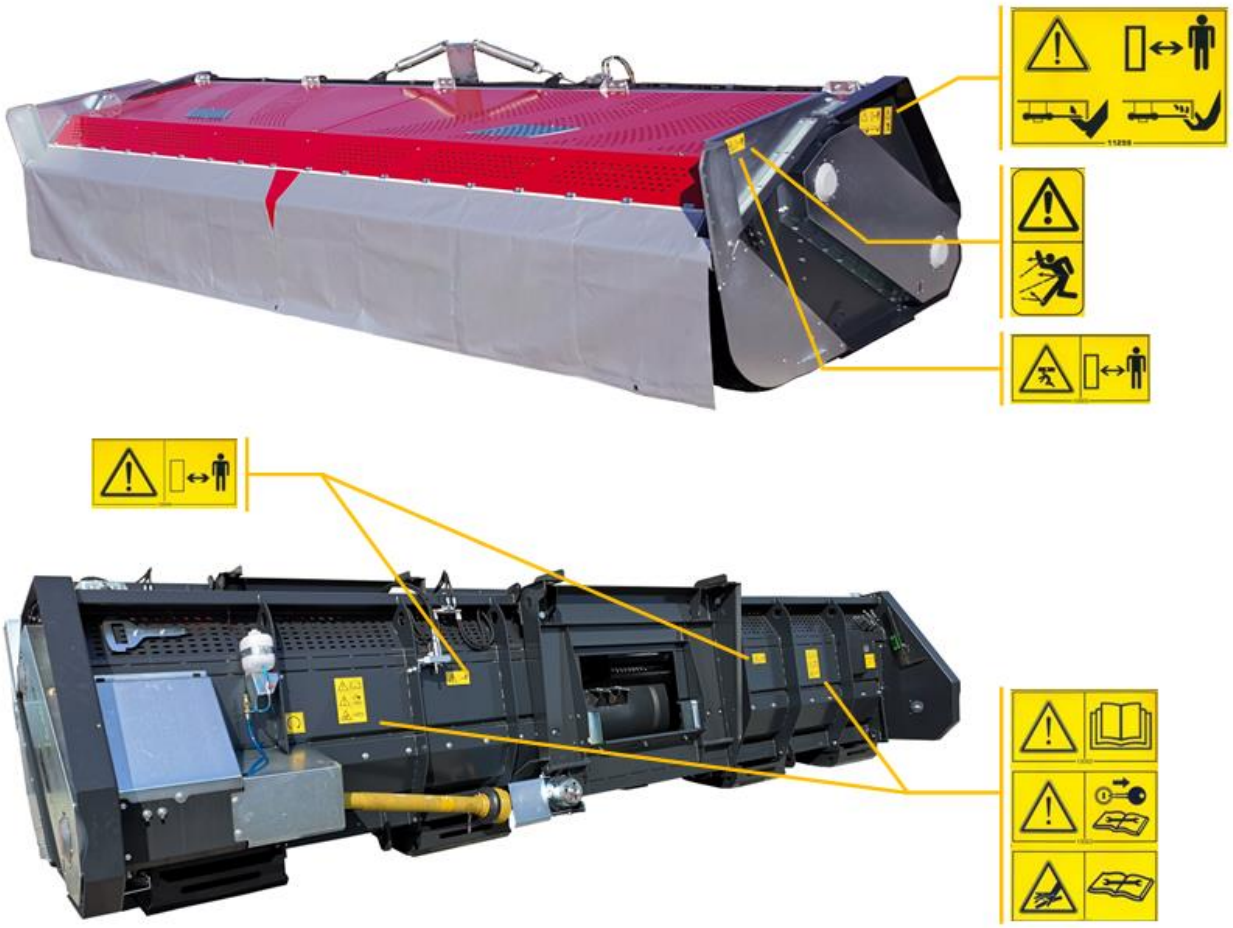
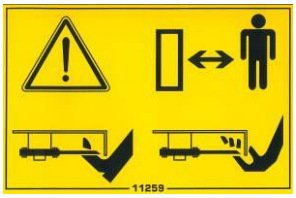


FIGURE 4.1 - RESIDUAL RISK WARNINGS

 HAZARD KEEP A SAFE DISTANCE, CUTTING ELEMENTS	 HAZARD PROJECTILE MATERIALS	 READ THE INSTRUCTION MANUAL BEFORE USING THE MACHINE
 BEFORE PERFORMING ANY OPERATIONS ON THE MACHINE, STOP THE OPERATING MACHINE ENGINE, REMOVE THE KEY AND CONSULT THE INSTRUCTIONS	 HAZARD READ THE INSTRUCTION MANUAL BEFORE OPERATING ON THE WATER SYSTEM	 HAZARD DUE TO MOVING SUSPENDED LOADS KEEP A SAFE DISTANCE

CAUTION:

- **It is strictly forbidden to remove the safety plates. Failure to comply with this rule shall result in the full assumption of responsibility by the user.**
- **The client is responsible for keeping the safety plates clean and in good condition, and for ensuring they are replaced should they become illegible.**
- **The client is responsible for putting any extra safety plates on the machine, if required by internal procedures.**
- **The machine may bear plates that are not illustrated in this manual, as in the case of commercial equipment**

4.4 REASONABLY FORESEEABLE RISKS OF INCORRECT USE

In addition to residual risks, and despite having indicated the correct way to behave, foreseeable situations of incorrect behaviour (**incorrect use**) may arise.

FORESEEABLE INCORRECT USE	ASSOCIATED RISK	PREVENTIVE MEASURES ADOPTED
Removal of fixed guards	Contact with moving parts Crushing Dragging Cuts and shearing	Warning and prohibition signs Information in manual Call the operator to attention
Poorly positioned adjustable guards	Projectile materials Contact with moving parts Crushing Dragging Cuts and shearing	Warning and prohibition signs Information in manual Call the operator to attention

FORESEEABLE INCORRECT USE	ASSOCIATED RISK	PREVENTIVE MEASURES ADOPTED
Transporting people during use and/or during circulation on roads	Falls Moving parts	Warning and prohibition signs Information in manual Call the operator to attention
Use of the structure as a supporting / elevating surface	Fall Moving parts	Warning and prohibition signs Information in manual Call the operator to attention
Insufficient or incorrect maintenance	Broken machine parts Risk of projectile objects and/or materials	Warning signs Information in manual
Improper handling of machine	Crushing	Warning and prohibition signs Information in manual
Presence of unauthorised persons near the machine	Contact with moving parts Risk of projectile objects and/or materials	Warning and prohibition signs Information in manual Call the operator to attention

4.5 SAFETY DEVICES

1. **PLATE-TYPE CLUTCH**, to avoid risks due to the plate transmission.
2. **PAWL CLUTCH**, to avoid risks due to the auger transmission.
3. **GUARDS**
   Adjustable to avoid risks due to projectile materials, designed and manufactured pursuant to Standards EN 953, EN ISO 13857, EN 349 (Figure 4.2, ref. A).
   Fixed, designed and manufactured pursuant to Standards EN 953, EN ISO 13857, EN 349 (Figure 4.2, ref B, C).
4. **PTO SHAFT PROTECTION**
5. **PROTECTIVE FRONT TARPAULIN** applied to adjustable guards on the inlet to limit projection of materials, stones and pebbles during use (Figure 4.2, ref. D)
6. **SHUT-OFF VALVE** located at the entrance to the hydraulic circuit to guarantee the stability of the oil pressure coming from the forage harvester and to prevent unexpected and hazardous movements

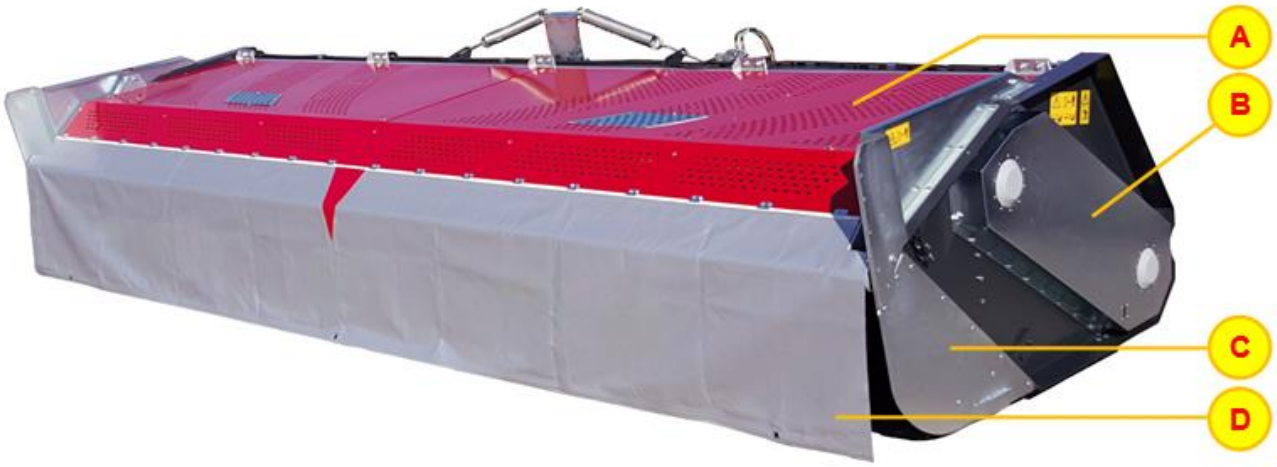


FIGURE 4.2 - SAFETY DEVICES

4.6 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Where indicated on the Machine or in the Manual, personal protective equipment must necessarily be worn by the operator.

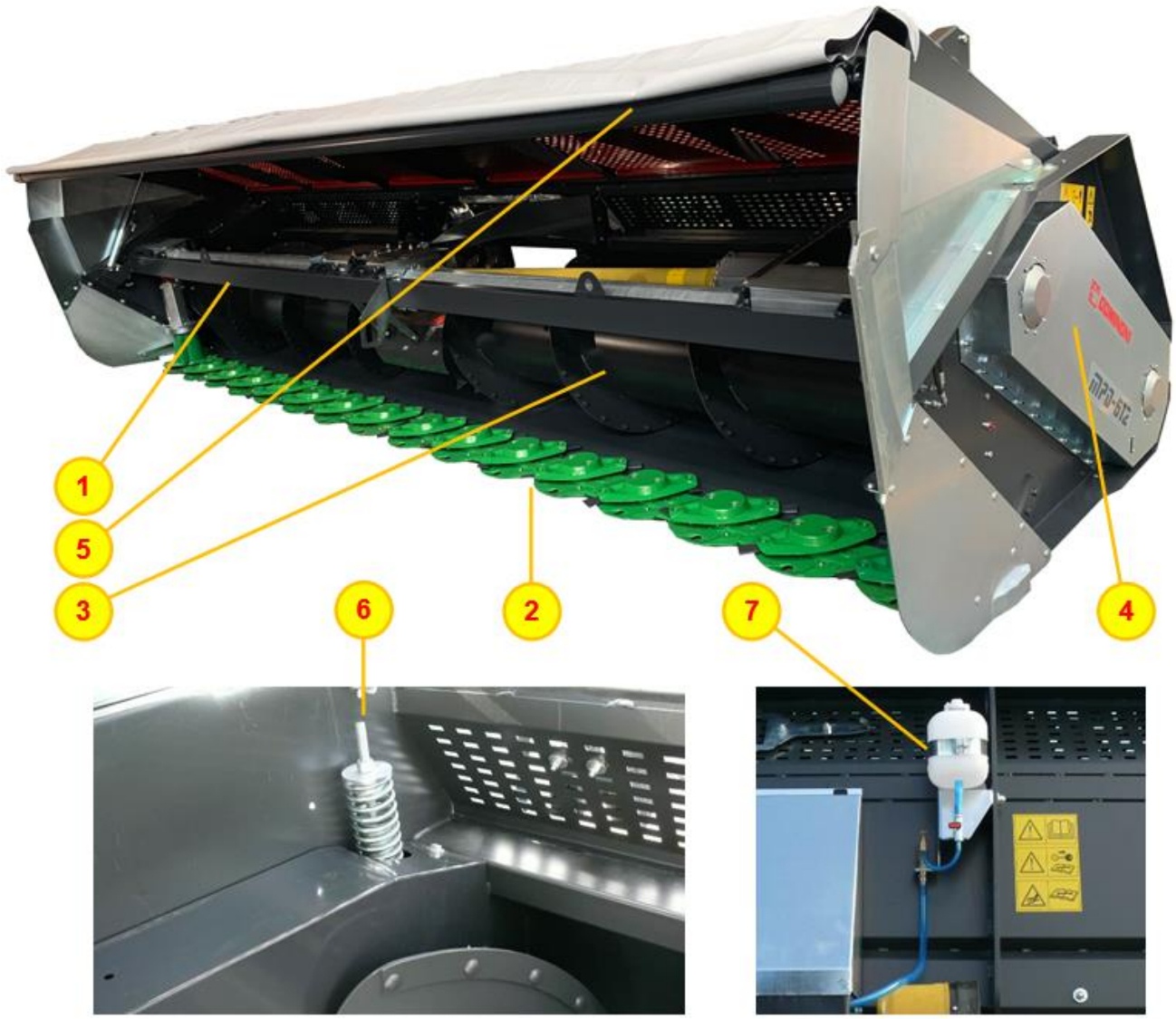
5. DESCRIPTION OF MACHINE

5.1 OPERATING PRINCIPLE

The bar coupled onto the forage harvester advances in the field. The disk plates rotate, overlapping but without coinciding, cutting the product. As the disk plates advance and strike, the cut product is carried towards the auger, which conveys it to the forage harvester feeder channel.

5.2 MAIN COMPONENTS

1. **FRAME** formed by tubes, profiles and parts welded to each other
2. **CUTTING ELEMENTS (DISK PLATES)**
3. **AUGER FEEDER** with opposing spirals, conveys the product into the forage harvester
4. **OIL BATH TRANSMISSION**
5. **ADJUSTABLE GUARD,** to prevent risks caused by projectile materials
6. **SPRINGS** to lighten the auger feeder
7. **LUBRICATION** auger transmission chain



CAUTION

The images and drawings included in this document refer to some of the machine's possible configurations

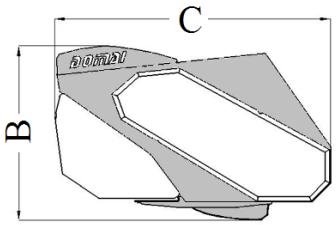
RIGHT and **LEFT** indications are to be interpreted as if looking at the machine from the back (facing the direction of advancement)

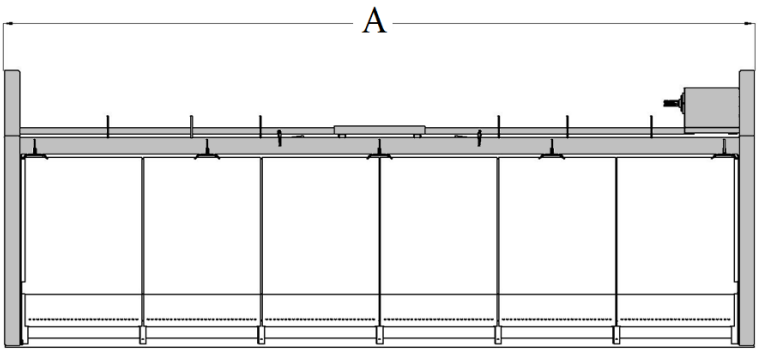
5.3 TYPE AND SERIES

MPD XXX L YY F

- F – FLOATING (if present)
- YY – FORAGE HARVESTER (type)
- L – DRIVE (if not present – central drive, if present L – lateral drive)
- XXX – WORK DISTANCE (612, 760, in centimeters)
- MPD – DIRECT CUT HEADER

5.4 DIMENSIONS





MODEL	A *[mt]*	B *[mt]*	C *[mt]*	WEIGHT *[kg]*
MPD 612C	6,10	1,40	2,20	2.950
MPD 612L	6,10	1,40	2,20	3.150
MPD 760	7,60	1,40	2,20	3.920

CAUTION

- **The weights shown may vary by ± 5%.**
- **The weight that can be carried by the forage harvester must be equal to at least the weight of the machine**
- **For conditions of transportation and road circulation (lifting and stability of the tractor) please see paragraph TRANSPORTATION AND ROAD CIRCULATION of the present document.**

5.5 TECHNICAL DATA

CHARACTERISTIC	U.M.	
INLET OPENING	mm	800

5.6 INLET DATA

CHARACTERISTIC	
INLET TENSION	12 V
HYDRAULIC CIRCUIT PRESSURE	Max 220 bar

5.7 ENVIRONMENTAL CONDITIONS

The machine has been designed to be used outdoors in atmospheres that are not chemically aggressive. It can operate in normal environmental conditions.

5.8 LIGHTING

For routine activities (maintenance, cleaning) it is sufficient to use a normal light source.

5.9 VIBRATIONS

In operating conditions compliant with specifications for the correct use of the machine, vibrations do not create any hazardous situations.

5.10 NOISE EMISSION

This machine has been designed and manufactured in order to reduce its noise level from the source.

Based on test runs (loaded) performed, it is declared that the machine described herein has an **Leq less than 80 dB(A)**

The above-mentioned values have been determined following measurements taken on a machine with comparative technical features, representative of the machine in question. Sound levels in the workplace will need to be measured in accordance with laws in force in the country of use.

5.11 TOOLS

The machine is equipped with:

- lever to dismantle the auger chain
- lever for quick knife dismantling.

5.12 STANDARD SUPPLY

The machine is supplied ready for operation. The following is supplied:

- INSTRUCTION MANUAL
- PLATE WITH CE MARKING
- DECLARATION OF CE CONFORMITY

6. INSTALLATION

6.1 TRANSPORTATION & HANDLING

Conductor of lifting and handling equipment: operator enabled to use equipment for the lifting and handling of materials and machines (strictly abiding by the manufacturer instructions), in accordance with the local laws of the country where the machine is installed.

CAUTION

CRUSHING, KNOCKING, TRIPPING, ABRASION, CUTTING, FALLING AND SUSPENDED LOAD HAZARDS

MAXIMUM LOAD

ALWAYS CHECK THE LIFTABLE WEIGHT OR THE CAPACITY OF THE LIFTING MEANS

Personnel responsible for handling the machine must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves, safety shoes and helmet.

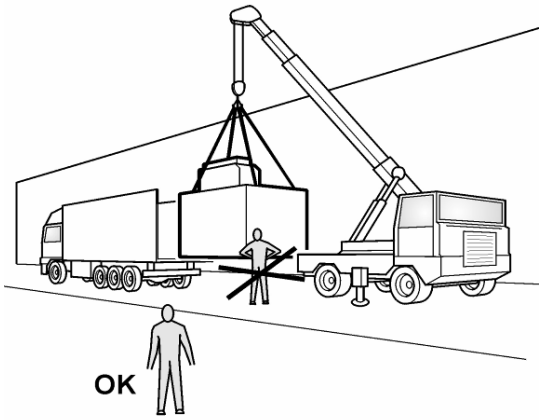
When the parcels arrive, personnel in charge of transportation and handling must follow the instructions contained in this document, step by step.

Block off the area, or in some way prevent access to unauthorised persons or in any case persons unfamiliar with the hazards associated with this phase.

Do not remove the barriers until positioning, installation and assembly operations have been completed.

Clean the area surrounding the machine's final position so as to prevent slips, trips and falls.

When handling the machine, workers must ensure that there are no unauthorised persons in the vicinity.



6.2 HANDLING

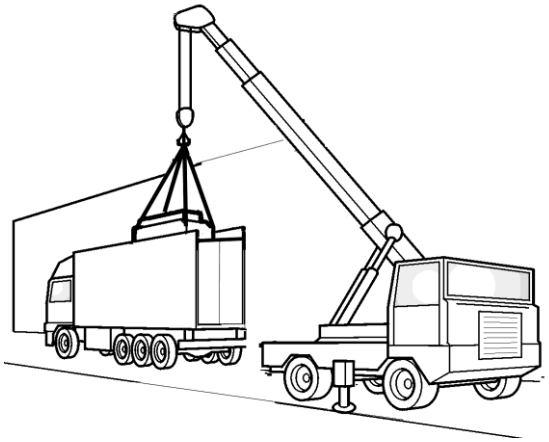
Loading and **unloading** operations must be performed by lifting from above using either steel ropes, tarpaulins or chains able to support the weight and dimensions of the elements being transported.

Before moving larger and heavier than normal components, check that there are no smaller parts in the area. Even if light, these parts may be the cause of knocks or crushing and must be handled and moved with care before all other operations.

Position the light parts in such a way that they do not create an obstruction or hindrance.

Procure some ropes or chains of a suitable length and capacity, ensure they are in good condition with hooks on one end and eyelets on the other.

After removing the covers on the back perforated metal sheet, attach the hooks to the predetermined lifting points identified on the machine (**Errore. L'origine riferimento non è stata trovata.**) and the eyelets to the hooks on the lifting means, making sure the ratchets keep them in place.



Slowly move the Machine to a minimum height (max 20 cm), assisted by a helper if vision is obscured. Delicately place the machine on the ground.

When lifting or shifting the Machine or its components, always proceed with care and avoid abrupt movements, jerking and excessive oscillation.

The resting surface must be able to support the Machine. It is the Client's responsibility to check and/or properly size the structure to ensure it can withstand the static and dynamic loads generated by the machine.

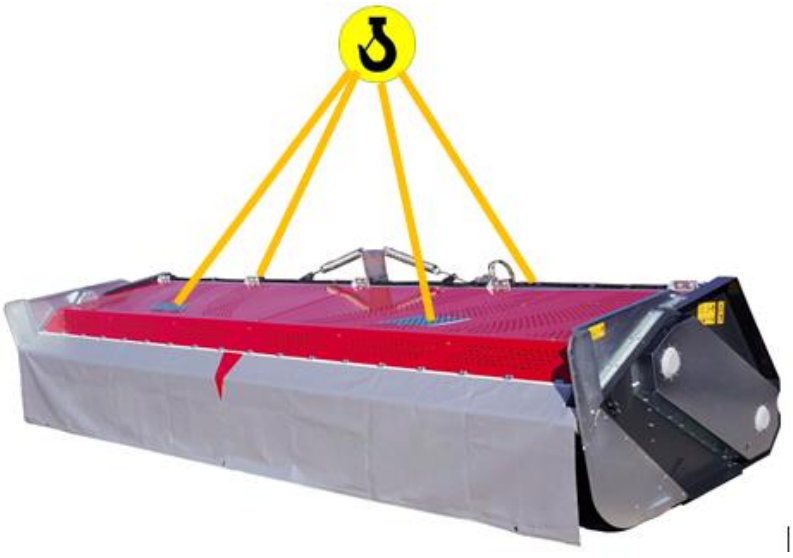


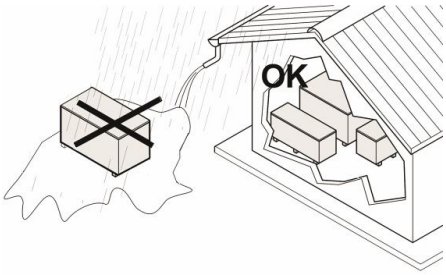
FIGURE 6.1 - LIFTING

6.3 STORAGE

The manufacturer recommends storing the machine in a dry, indoor location at a temperature between 5°C and 35°C inclusive.

If inactive, the machine must be:

- stored in a closed area;
- protected against knocks and prodding;
- protected against humidity and excessive fluctuations in temperature;
- protected against contact with corrosive substances;
- regularly check the condition of visible parts to prevent the formation of surface oxidation.



6.4 PRELIMINARY CHECKS

Mechanical maintenance technician: qualified technician, able to run the machine in normal conditions, able to run the machine with a held action command (JOG) with protective devices deactivated, able to operate on mechanical parts to make adjustments, perform maintenance and any necessary repairs. **Technicians are not authorised to operate on live electrical systems.**

Once assembly is complete and prior to starting up the machine, check the following:

- safety systems, protective devices and signage
- that screws, bolts and circuit connections are properly tightened
- that the machine has not been damaged during its assembly
- the condition of cables and tubes
- the free movement and rotation of all moving parts

6.5 USE OF TORQUE WRENCH

During the various steps and operations described in this document, tighten the screws using a Torque Wrench (not supplied with the machine). The torque is shown in the Table.

DIN 267		new		4.8		5.8		6.8		8.8		10.9		12.9	
		old		4S		5S		6S		8G		10K		12K	
Ø	WRENCH	PITCH		PITCH		PITCH		PITCH		PITCH		PITCH		PITCH	
		Large	fine	Large	fine	Large	fine	Large	fine	Large	fine	Large	fine	Large	fine
mm	mm	mm	mm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm
M2	4	0,4	–	0,2 0,2	- -	0,2 0,2	- -	0,2 0,3	- -	**0,3** **0,4**	- -	0,4 0,5	- -	0,5 0,6	- -
M2,5	5	0,45	–	0,3 0,4	- -	0,4 0,5	- -	0,5 0,6	- -	**0,6** **0,8**	- -	0,9 1,1	- -	1,1 1,3	- -
M3	5,5	0,5	–	0,5 0,6	- -	0,7 0,8	- -	0,8 1,0	- -	**1,1** **1,3**	- -	1,5 1,9	- -	1,8 2,3	- -
M3,5	6	0,6	–	0,8 1,0	- -	1,1 1,3	- -	1,3 1,5	- -	**1,7** **2,1**	- -	2,4 2,9	- -	2,8 3,5	- -
M4	7	0,7		1,3 1,5	- -	1,8 1,9	- -	1,9 2,3	- -	**2,5** **3,1**	- -	3,5 4,3	- -	4,2 5,2	- -
M5	8	0,8	–	2,5 3,0	- -	3,1 3,8	- -	3,7 4,5	- -	**4,9** **6,0**	- -	6,9 8,5	- -	8,3 10	- -
M6	10	1,0	–	4,2 5,2	- -	5,3 6,5	- -	6,4 7,8	- -	**8,5** **10**	- -	12 15	- -	14 18	- -
M7	11	1,0	–	7,0 8,6	- -	8,7 11	- -	10 13	- -	**14** **17**	- -	20 24	- -	24 29	- -
M8	13	1,25	1,0	10 13	11 14	13 16	14 17	15 19	16 20	**20** **25**	22 27	29 35	31 38	34 42	37 46
M10	17	1,5	1,25	20 25	21 26	25 31	26 33	30 37	32 39	**40** **50**	42 53	57 70	59 74	68 84	71 89
M12	19	1,75	1,5	34 42	36 45	43 53	45 56	52 64	54 67	**69** **85**	72 89	97 119	101 125	116 143	121 150
M14	22	2,0	1,5	55 68	59 74	68 84	74 92	82 101	89 111	**110** **135**	118 148	154 190	166 208	185 228	199 250
M16	24	2	2	85 106	90 113	106 132	112 141	128 159	135 170	**128** **212**	180 226	240 298	253 318	287 357	303 382
M18	27	2,5	2,0	118 145	124 155	147 182	155 194	176 218	186 233	**235** **290**	248 310	330 402	349 436	397 490	419 523
M20	30	2,5	2,0	166 206	174 218	208 258	217 273	249 310	261 327	**332** **413**	347 436	467 580	489 614	561 697	586 736

The torque values correspond to 80% of the yield point, furthermore, each box contains two values, the first of which refers to a friction coefficient of 0.10 and the second to a friction coefficient of 0.14.

The torque values are to be considered indicative. They may vary significantly depending on the type of joint (rigid, semi-rigid, elastic, etc.), the material on which the screws are tightened, the length of the screws, the tightening method (pulse, friction, continuous torque, etc.), the finish of the thread,... It is recommended to perform tests on the joints to identify the most suitable method of tightening. If the joint is made by nuts or self-locking lock nuts, the torque value must be increased by approx. 15%.

7. INSTRUCTIONS FOR USE

7.1 COUPLING TO FORAGE HARVESTER

Machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.

Personnel responsible for coupling the Machine must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves and safety shoes.

When selecting the forage harvester to which the bar will be connected, take into account the power and stability requirements to prevent the risk of tipping, overturning or malfunction.

The machine must be connected to the forage harvester by one operator only.

- Align the forage harvester with the grass cut bar.
- Slowly move the forage harvester forward and couple the conveyor channel.
- Lift the bar.
- Before getting down from the forage harvester, disengage the gear, engage the parking brake, turn off the engine and remove the ignition keys.
- Check that all protective devices are in full working order.
- If present, connect the PTO shaft to the forage harvester PTO. Pressing down the dowel pin (or lock nut), completely insert the universal joint.
- Release the dowel pin or lock nut and insert the universal joint fork until the pin clicks into its housing.
- When the connection has been made, block the rotation of the PTO shaft protection using the supplied chain.
- Connect the hydraulic circuit to the forage harvester (see also relevant paragraph of this document).
- Climb up onto the forage harvester again and lower the machine.
- The bar is now ready.

7.2 CONNECTIONS

Machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.

Personnel responsible for connecting the Machine must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves, safety shoes, safety visor or glasses.

7.2.1 HYDRAULIC CONNECTION

Insert the quick couplings into the forage harvester's dual action attachments.

Before making the connection, clean the couplings and release the residual oil pressure.

7.2.2 PTO CONNECTION (PTO SHAFT)

The PTO shaft must be of a suitable size and all protective devices must be fully operational

7.3 CHECKS PRIOR TO START-UP

Machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.

Personnel responsible for checking the Machine must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves, safety shoes, safety visor or glasses.

Before starting up the machine:

- visually inspect the entire machine and make sure there are no persons or materials that may obstruct the machine's normal operation, and that no objects have been accidentally left above or inside the machine
- correct connection of all power supplies

7.4 ISOLATING THE MACHINE

Machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.

Personnel responsible for isolating the Machine's power supply must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves, safety shoes, safety visor or glasses.

For all operations where specifically stated (see also relevant paragraphs), the machine must be isolated from sources of power.

- **HYDRAULIC**, disconnecting the quick couplings from the forage harvester.
- **PTO**, disconnecting the PTO shaft from the forage harvester.

The operator must make sure it is not possible to reactivate the power supplies.

7.5 WORKSTATIONS

During the coupling phase, the operator is inside the cabin.

When connecting the universal joint and hydraulic system, the operator is at the rear of the forage harvester (see also paragraph COUPLING TO FORAGE HARVESTER).

The direct cut bar is controlled by the forage harvester's controls. See the relevant instructions for further information.

In all operating conditions, the machine is designed for use by one operator only.

7.6 USING THE EQUIPMENT

Bring the bar near the point where mowing will start.

Lower the bar to the working height, adjust the inlet opening according to the height of the product. Turn off the forage harvester and remove the keys.

Get down from the forage harvester and open the lubrication valve of the auger chain.

Climb up onto the forage harvester and turn it on. Engage the power take-off. The bar will be inserted with the engine at minimum speed and in the working position.

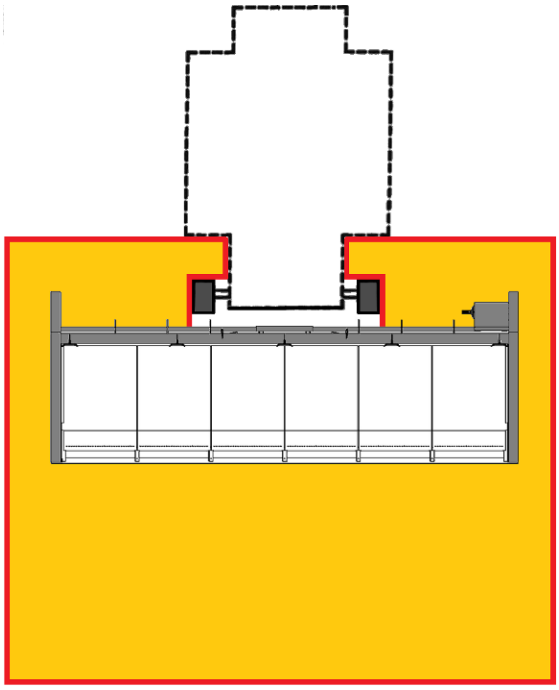
Start mowing, adjusting the harvesting speed to suit the product and forage harvester.

Once the end of the harvesting section has been reached, close the inlet completely, lift and manoeuvre the machine.

Once properly aligned and before working another section, lower the machine, open the inlet again and begin to harvest.

7.7 OPERATING AREA

During use, sufficient space must be left around the machine, **never less than 20 meters up front and 2 meters elsewhere. The OPERATING AREA is represented in the drawing below**.

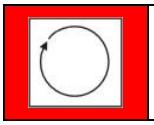


CAUTION the operating area must never be occupied to ensure that NOTHING AND NO-ONE can interfere with the machine. Persons not directly in charge of using the Machine are forbidden to enter the working area.

The manoeuvring area, working and operating area can be checked using the forage harvester's rear-view mirrors and the operator's line of vision.

CAUTION when in reverse, there may be some blind spots.

7.8 OPERATING MODES

	**Machine in motion**: with automatic operation, mobile guards closed and interlocking devices active, fixed guards closed.

The machine has only one operating mode: **MANUAL**, where all actions are performed further to operator consent (from the forage harvester). No other modes are foreseen.

If it becomes necessary to interrupt works or transport, disengage the gear, engage the parking brake, turn off the motor and remove the keys from the ignition of the forage harvester.

7.9 REGULATION

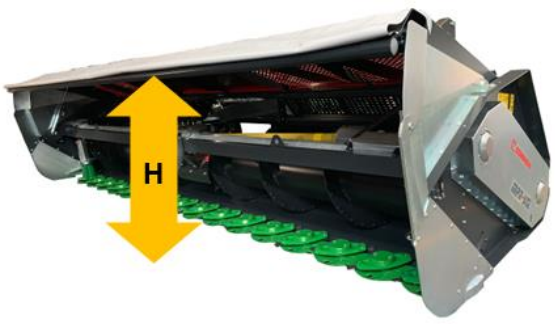
	**1st level machine conductor:** operator without any specific skills, able to perform simple tasks, or run the machine using the buttons on the keypad, load and unload materials used during production, with guards installed and active.
	**Machine off**: with the power supply isolated.

7.9.1 INLET OPENING

When the bar is not in work mode and at the time of ignition, the perforated metal sheet **must be completely lowered**, thereby allowing the connected tarpaulin to perform its protective function.

This tarpaulin can **only be lifted when harvesting very tall products** that need the tarpaulin to be raised in order to make room for their introduction.

The tarpaulin must be **immediately lowered after harvesting** these tall products so that it can once again perform its protective function.



The front guard is opened and closed from the forage harvester cabin.

7.9.2 SKID HEIGHT

The skid height determines the height at which the herbaceous product will be mowed or cut.

The height must be manually regulated from the back by way of the bolts. The position of the pads is indicated on the graduated scale near the component.

7.9.3 AUGER ROTATION SPEED

The auger rotation speed must be compatible with the product cutting length. The auger can rotate at two different pre-set speeds.

Remove the transmission guard on the left side of the machine.

Loosen the chain stretcher by detaching the spring.

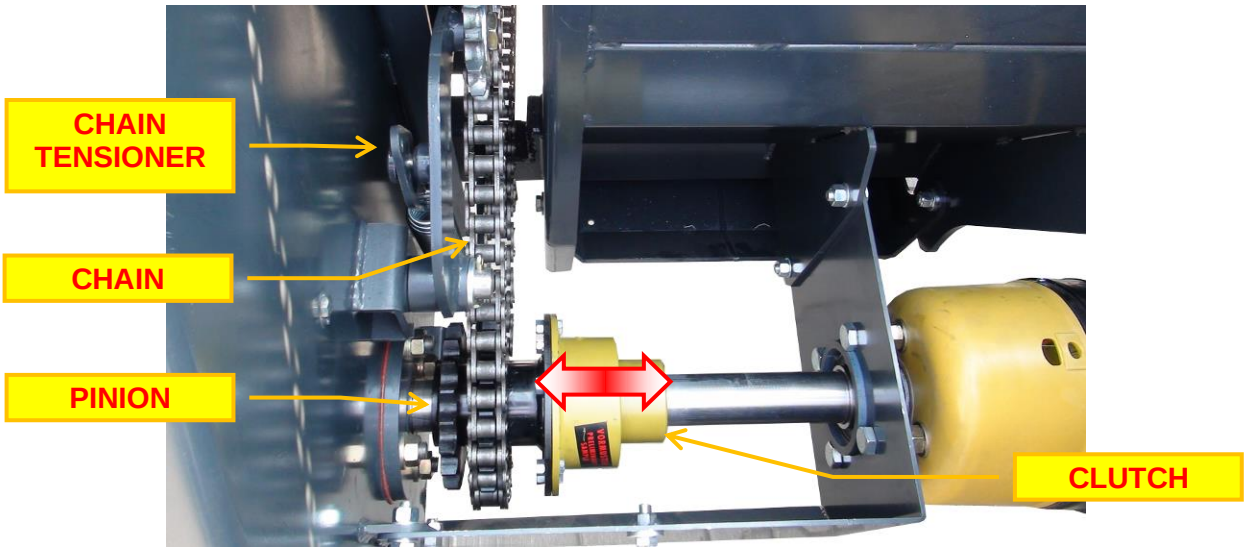
Dismantle the auger drive chain.

Loosen the clutch screws, manually sliding it until obtaining the correct coupling between the chain and the desired pinion.

Fasten the clutch again, making sure that the fixing screw is centred with the lock hole on the shaft.

Couple the spring to the chain stretcher again.

Reassemble the transmission guard.



7.9.4 LIGHTENING THE AUGER FEEDER

By tightening or loosening the adjustment nut, the auger weight can be adjusted to reduce strain and improve performance for all types of products.

7.9.5 LUBRICATING THE AUGER CHAIN

Using the oil dropper, the oil flow can be adjusted to 2-3 drops per second.

7.10 BAR BLOCKAGE AND CLOGGING

If the bar becomes blocked or clogged during use, causing parts to stop, immediately disengage the command and act on the forage harvester's inverter.

If the problem persists:

- disengage the command from the forage harvester
- **before getting down from the forage harvester, disengage the gear, engage the parking brake, turn off the engine and remove the ignition keys**
- wear safety gloves and using suitable tools (grappling hooks, sickles, ...) remove the material.

Never perform these operations when the machine is running.

7.11 RELEASE FROM FORAGE HARVESTER

Machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.

Personnel responsible for coupling the Machine must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves and safety shoes.

The machine must be released from the forage harvester by one operator only.

- From the forage harvester, lift the bar.
- Before getting down from the forage harvester, disengage the gear, engage the parking brake, turn off the engine and remove the ignition keys.
- Disconnect the hydraulic circuit (see also paragraph ISOLATING THE MACHINE of this document).
- After removing the guards, disconnect the PTO shaft from the forage harvester (see also paragraph ISOLATING THE MACHINE of this document).
- Release the forage harvester channel blocks.
- Climb up onto the forage harvester again and lower the bar to the ground or onto the carriage supports.
- Wait for the conveyor channel to be released and move back with the forage harvester, disconnecting it from the bar.

7.12 TRANSPORTATION AND ROAD CIRCULATION

The bar (machine) can only circulate when detached from the forage harvester and transported on a suitable and approved vehicle (carriage). Prior to any transportation:

- make sure the machine is properly secured to the transport means (carriage)
- clean the machine of any soil or residue.

When travelling on a public road, **ALWAYS** respect the road rules, taking into account the road characteristics and conditions, traffic, the physical condition of the driver and the weather, and the condition of the vehicle.

CAUTION

- **For information on moving the machine, always refer to the paragraphs in this document.**
- **the weight of the machine affects the stability of the tractor-carriage unit, and therefore influences braking and steering capacity.**

7.13 STORAGE AT END OF SEASON

Machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.

Personnel responsible for storing the Machine must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves, safety shoes, safety visor or glasses.

Park the bar on flat, level and solid ground (yard).

Release any residual pressure in the hydraulic circuit.

Protect the hydraulic couplings (connectors) using the supplied caps. Remove the sumps.

Clean the bar of any residue and dirt (see also CLEANING chapter).

Clean and lubricate the shafts of the hydraulic jacks and machine joints.

Lubricate the bar (see also LUBRICATION chapter).

Reassemble the sumps.

Check the knives and screws (see also ROUTINE MAINTENANCE and SPECIAL MAINTENANCE chapter).

7.14 DECOMMISSIONING

1st level machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the buttons on the keypad, load and unload materials used during production, with guards installed and active.

During long idle periods, the following action must be taken:

- disconnect all sources of power
- cover the machine with a tarpaulin

8. MAINTENANCE AND CLEANING

8.1 ISOLATING THE MACHINE

For all operations, except where otherwise indicated, the machine must be isolated from all sources of power. For more information, see the relevant paragraph.

8.2 WARNINGS

Mechanical maintenance technician: qualified technician, able to run the machine in normal conditions, able to run the machine with a held action command (JOG) with protective devices deactivated, able to operate on mechanical parts to make adjustments, perform maintenance and any necessary repairs. **Technicians are not authorised to operate on live electrical systems.**

CAUTION

CRUSHING, SUSPENDED LOADS HAZARD

Prior to performing any operations under the raised bar, lower the load safety and securing device on the cylinder rod of the forage harvester.

If this device is not present, do not perform any operations under the lifted machine.

Personnel responsible for Machine cleaning/maintenance must have read the Safety Rules at the beginning of this Manual and must wear a safety suit, safety gloves and safety shoes.

The manufacturer shall not be held liable for the user's failure to comply with the listed recommendations and for all use that does not conform to the instructions in this document.

Before starting works, display a sign stating "MACHINE UNDER MAINTENANCE/BEING CLEANED" in a visible position.

Do not use solvents and flammable materials.

Take care not to release cooling and lubricant fluids into the environment.

Do not climb onto machine parts insofar as these have not been designed to support human weight.

8.3 CLEANING

Machine conductor: operator without any specific skills, able to perform simple tasks, or run the machine using the commands with the protective devices installed and active.

Machine off: with the power supply isolated.

OBLIGATION

RESTORE GUARDS

At the end of works, restore and correctly replace all protective devices or guards that have been removed or opened.

8.3.1 GENERAL CLEANING

CAUTION

PROJECTILE MATERIAL HAZARD

OBLIGATION

USE OF VISOR OR GLASSES

The machine must be cleaned **at the end of every work cycle** with pressurised blows of air, taking care not to damage the systems and looking out for projecting objects.

8.3.2 DISK PLATE CLEANING

CAUTION

AREAS EXPOSED TO RISK OF CUTTING

OBLIGATION

USE PROTECTIVE GLOVES

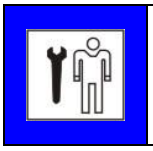
At the end of every working day check that there is no accumulated soil, residue or dirt in the cavity between the disk plate and the blade, which may otherwise obstruct the movement of the disk plates (see figure to the side).

Remove any residue and dirt using a sharp tool or object.

8.3.3 SIDE GUARD CLEANING

Prior to storing the machine at the end of the season, dismantle the machine's side guards and check for any dirt and residue; clean if necessary.

8.4 LUBRICATION



Mechanical maintenance technician: qualified technician, able to run the machine in normal conditions, able to run the machine with a held action command (JOG) with protective devices deactivated, able to operate on mechanical parts to make adjustments, perform maintenance and any necessary repairs. **Technicians are not authorised to operate on live electrical systems.**

	**Machine off**: with the power supply isolated.

	**OBLIGATION** **RESTORE GUARDS** At the end of works, restore and correctly replace all protective devices or guards that have been removed or opened.

Using a manual pump (in order to avoid damage to the seals and gaskets), grease the transmissions, auger, disk plates in line with the following instructions (Figure 8.1 and Table 8.1).
Use the predetermined greasing points for these operations.
Lubrication is complete when slight oozing is noted.

After the first few hours of operation it is recommended to perform an overall check of lubrication/ greasing levels.

THE MAINTENANCE PROGRAM DESCRIBED IN THE RELEVANT TABLE MUST IN ANY CASE BE FOLLOWED TO MAINTAIN THE EFFICIENCY OF OPERATIONS AND GUARANTEE THE SAFETY OF THE MACHINE. Table 8.2.

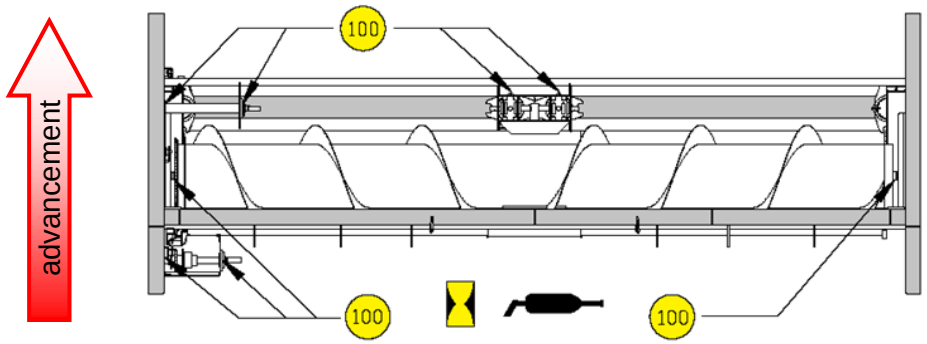


FIGURE 8.1 - LUBRICATION POINTS

Lubrication	TIME INTERVAL	MACHINE STATUS	SYMBOL
PTO shafts	every **10** hours and at start of season	Isolation for Maintenance	
Vertical universal joint fork	every **100** hours and at start of season	Isolation for Maintenance	
Bearings	every 1**00** hours and at start of season	Isolation for Maintenance	
Replace disk plate bar oil	every **2000** hours	Isolation for Maintenance	
Replace gearbox oil	every **2000** hours	Isolation for Maintenance	
Replace transmission chain oil	every **2000** hours	Isolation for Maintenance	

TABLE 8.1 - LUBRICATION

8.4.1 REPLACE DISK PLATE BAR OIL

Lift bar and rotate it for a few minutes to heat the oil.

Stop the forage harvester machine.

Before getting down from the forage harvester, disengage the gear, engage the parking brake, turn off the engine and remove the ignition keys.

Insert safety locks on hydraulic cylinders of forage harvester channel.

Tilt the bar on one side (Figure 8.2).

Place a container with a suitable capacity under the drainage cap at the oil drip point.

Unscrew the drainage cap, leaving the oil to drip.

When complete, close the cap.

Open the oil filling cap.

Fill the transmission compartment by pouring the right amount and quality of oil (according to instructions in the relevant paragraph of this document Lubrication oil/grease table).

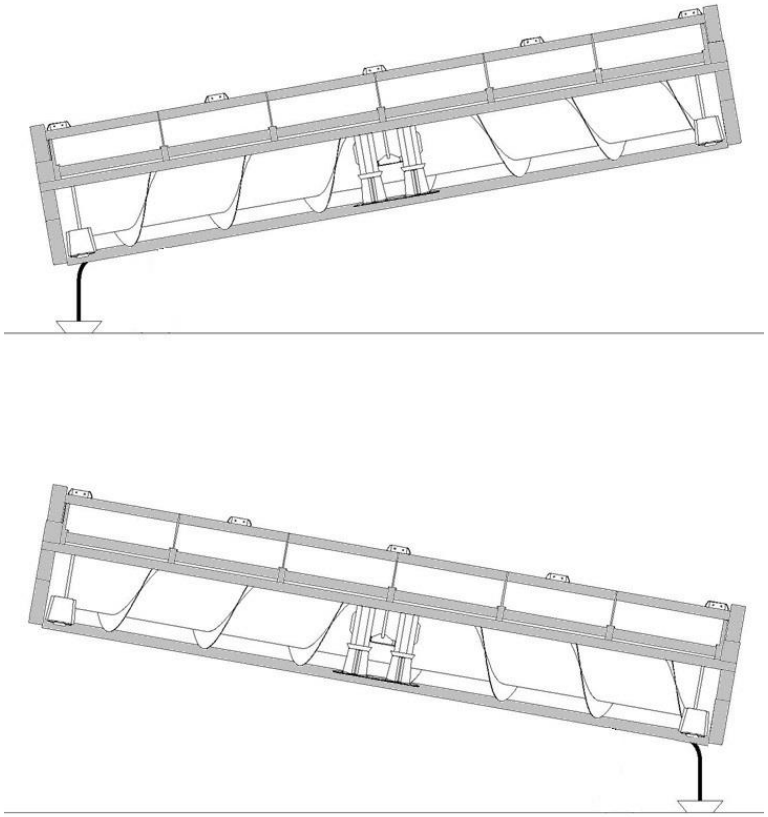
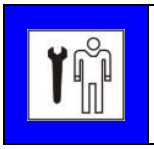


FIGURE 8.2 - TRANSMISSION OIL DRAINAGE

8.4.2 LUBRICATION OIL/GREASE TABLE

Oil for each KUHN disk plate bar box	**2.25** litres **SAE 80W90 / API GL5** (extreme pressure)
Oil for COMER transmission transfer case	**1.10** litres **SAE 80W90 / API GL5** (extreme pressure)
Oil for side transmission	**4** litres **SAE 80W90 / API GL5** (extreme pressure)
Oil for auger lubrication	**BIODEGRADABLE**
Grease for bearings	**MULTIPURPOSE**

8.5 ROUTINE MAINTENANCE



Mechanical maintenance technician: qualified technician, able to run the machine in normal conditions, able to run the machine with a held action command (JOG) with protective devices deactivated, able to operate on mechanical parts to make adjustments, perform maintenance and any necessary repairs. **Technicians are not authorised to operate on live electrical systems.**

CAUTION

AREAS EXPOSED TO RISK OF CUTTING

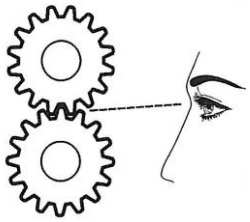
OBLIGATION

RESTORE GUARDS
At the end of works, restore and correctly replace all protective devices or guards that have been removed or opened.

After the first **25** hours of machine operation, and at least once per year (preferably at the start of the season), check all connections with screws and bolts using a torque wrench (see also relevant paragraph).

The machine has been designed to reduce Routine Maintenance to a minimum, but it is always the responsibility of the operator to judge its condition and suitability for use. It is recommended to stop the machine and intervene each time performance is less than optimal; this will ensure continuous maximum performance and the efficiency of safety systems.

Visually check the condition of individual parts, checking that there are no changes due to yielding or deformation.



MAINTENANCE	TIME INTERVAL	MACHINE STATUS	SYMBOL
Disk plates and knives, visually check condition	every **15** hours	Isolation for Maintenance	
Auger chain, visually check condition	every **15** hours	Isolation for Maintenance	
Protective devices, check condition	every **150** hours	Isolation for Maintenance	
Transmission chain (side), visually check condition	every **300** hours	Isolation for Maintenance	
Plate-type clutch, check condition	start of season and every **500** hours	Isolation for Maintenance	

TABLE 8.2 - PROGRAMMED MAINTENANCE

The above-described operations must be performed within the indicated time intervals. Albeit simple, these operations must be performed by Qualified Personnel. Programmed routine maintenance includes inspections, tests and operations that aim to prevent downtime and faults, keeping the machine and its parts subject to wear under control.

Failure to comply with these instructions shall relieve the manufacturer from all liability for the intents and purposes of the Warranty.

8.5.1 KNIVES AND FIXING ELEMENTS, CHECK CONDITION

CAUTION

AREAS EXPOSED TO RISK OF CUTTING

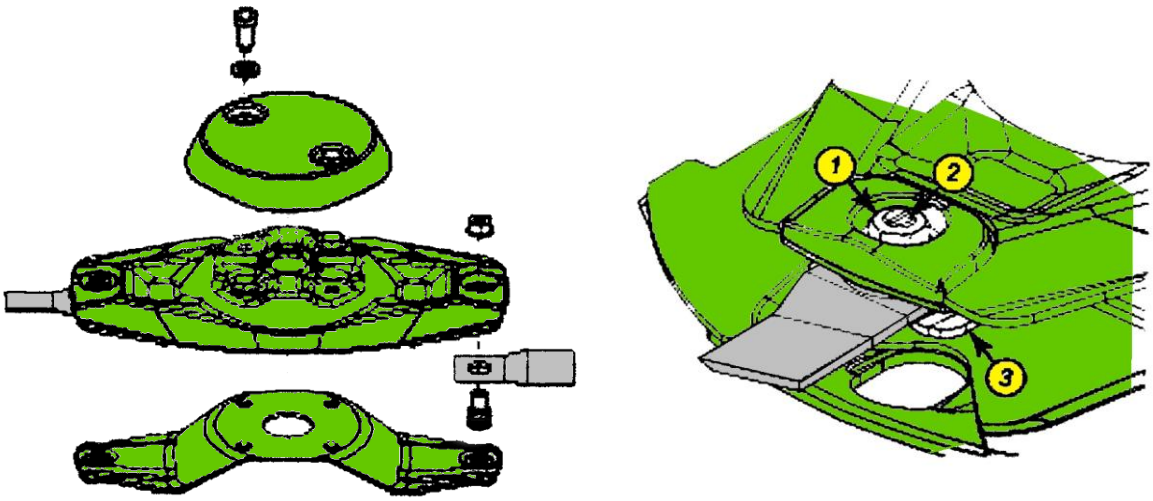


FIGURE 8.3 - DISK PLATE

Knives (Figure 8.3) must be replaced if worn and damaged. Uneven ground may cause cracks and the deformation of knives.

The size of (with reference to Figure 8.4 and Figure 8.5):

- **C** must always be greater than **65 mm** (2.6”)
- **B**, measured at 10 mm (0.4”) from the disk plate (**A**), must always be greater than **20 mm** (0.78”)
- **L** (ovalisation of fixing bore) must not exceed **22 mm** (0.86”).

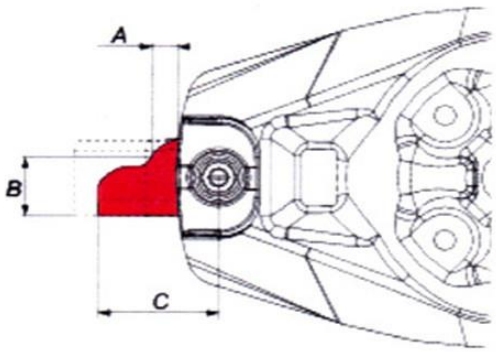


FIGURE 8.4 - KNIFE

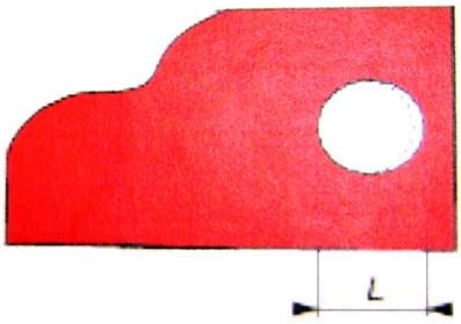


FIGURE 8.5 - KNIFE

The **fixing elements of knives** (Figure 8.3, ref. 1, 2, 3) must be replaced when:

- a visible deformation is found
- the thread is worn or inefficient
- the worn head is touching the screw pin
- the diameter **D** of the screw body is less than 11 mm (0.43”).

The radial clearance (**d,** Figure 8.6) between a worn screw and new knife must not exceed 10 mm (0.4”).

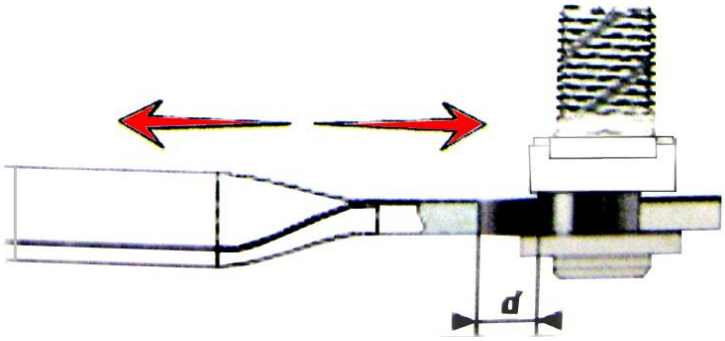


FIGURE 8.6 - KNIFE, RADIAL CLEARANCE

8.5.2 PLATE-TYPE CLUTCH, CHECK CONDITION

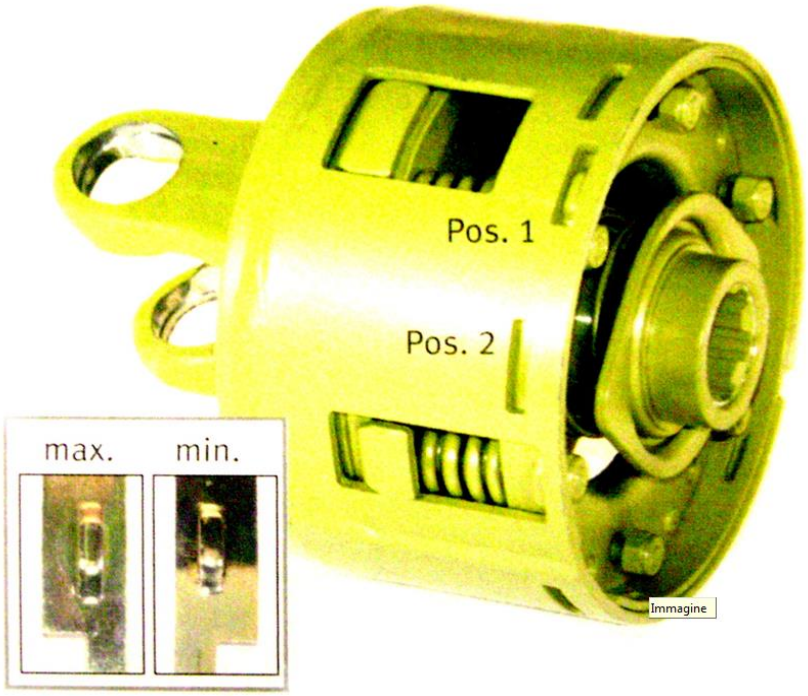


FIGURE 8.7 - PLATE-TYPE CLUTCH

With reference to Figure 8.8:

- Remove the stop ring (**1**).
- Screw the nuts (**3**).
- Remove the stop ring (**2**).
- Remove the spring stack (**4**).
- Remove the disk plates (**5, 6, 7, 8**).
- Clean the disk plates or replace them if excessively worn.

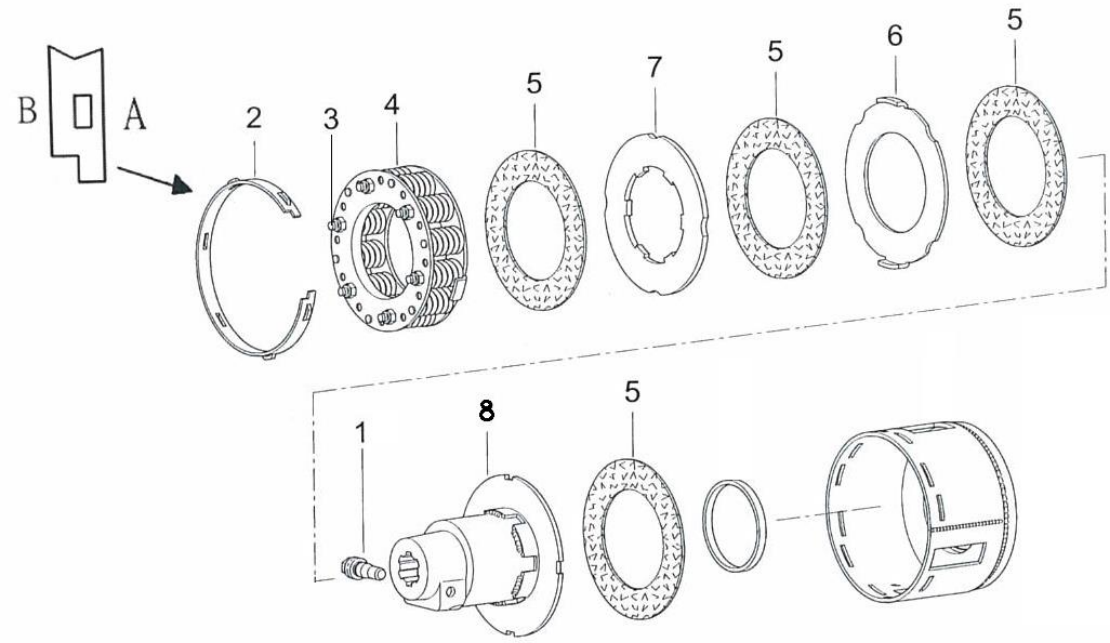


FIGURE 8.8 - PLATE-TYPE CLUTCH (EXPLODED)

Reassemble the clutch by performing the listed steps in reverse, making sure that the stop ring (**2**) is asymmetrical and that it is reassembled with side A facing the inside of the clutch.

If the disks are worn, the spring pressure can be increased by turning the stop disk (**2**) with side B facing the inside but maintaining the same assembly position.

Any other assembly would result in a change to the twisting moment. Do not change the calibration of the twisting moment as this may cause serious damage to the bar parts.

After long periods of inactivity, the clutches must be opened and cleaned before starting up the bar again.

8.6 SPECIAL MAINTENANCE

Mechanical maintenance technician: qualified technician, able to run the machine in normal conditions, able to run the machine with a held action command (JOG) with protective devices deactivated, able to operate on mechanical parts to make adjustments, perform maintenance and any necessary repairs. **Technicians are not authorised to operate on live electrical systems.**

CAUTION

CRUSHING, KNOCKING, TRIPPING, FALLING AND SUSPENDED LOAD HAZARDS

OBLIGATION

RESTORE GUARDS

At the end of works, restore and correctly replace all protective devices or guards that have been removed or opened.

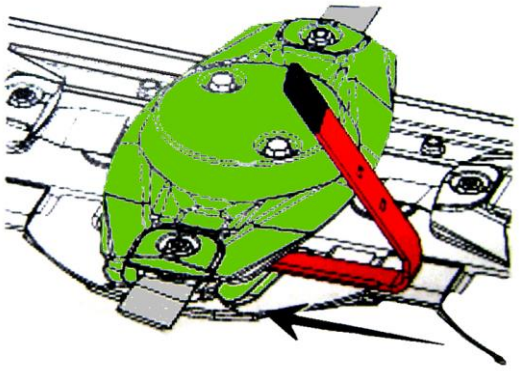
All actions must be performed with the machine isolated from all sources of power, unless otherwise indicated.

8.6.1 REPLACING KNIVES OR FIXING ELEMENTS

	CAUTION
	AREAS EXPOSED TO RISK OF CUTTING

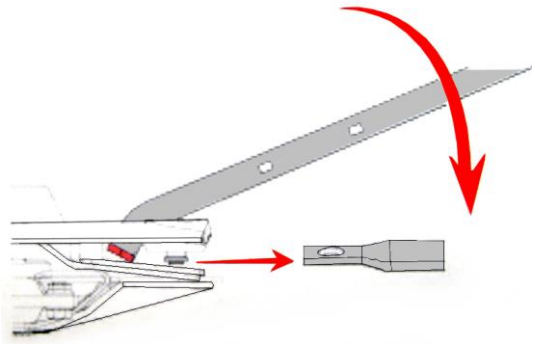
DETACHMENT

Insert the special tool all the way between the disk plate and spring loaded blade.



Rotate the tool from top to bottom to release the spring loaded blade from the head of the screw.

Check the condition of the screw and fixing nut. Replace if necessary.



Blunt knives use additional power and compromise the quality of the cut.

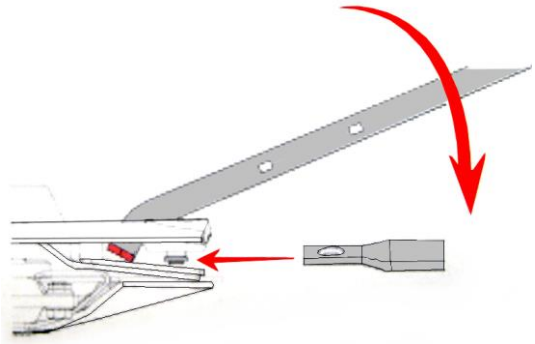
ASSEMBLY

The knives can be turned over on the same disk plate to use the second edge, or they can be replaced. An arrow engraved into the knives indicates the direction of rotation of the disk plate.

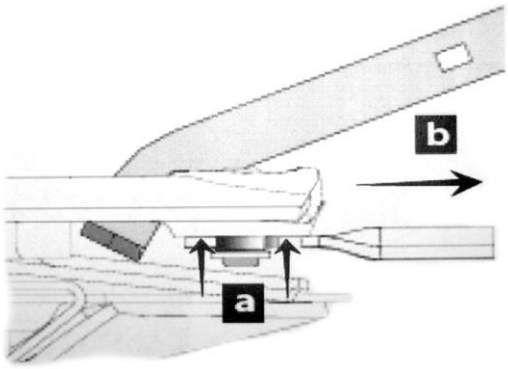
Insert the special tool all the way between the disk plate and spring loaded blade.

Rotate the tool from top to bottom to release the spring loaded blade from the head of the screw.

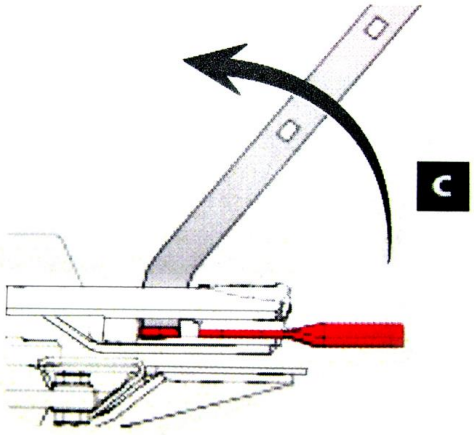
Insert the new knife into the screw head.



Insert the knife all the way towards the top and pull it towards yourself before loosening the special tool (ref. A, B, C).



Check that it is completely locked in and that the knife freely rotates in the screw head.



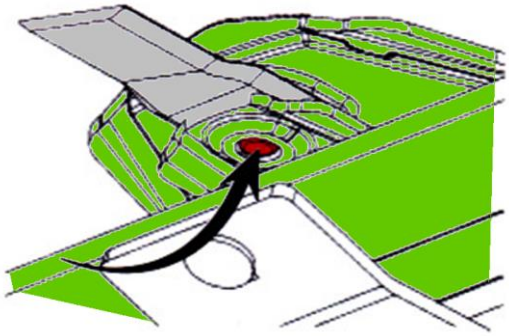
Check that the screw head freely engages in the spring loaded blade hole.

Remove the special tool.

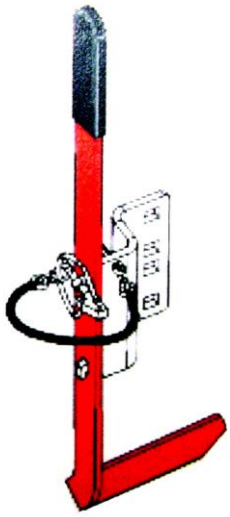
Rotate the disk plate half a turn.

Repeat the steps for the other knife.

Repeat the steps on the other disk plates.



When all operations are complete, place the special tool back into its housing.



In the event of replacement, always replace both disk plate knives to avoid imbalances.

8.6.2 REPLACING THE DISK PLATES

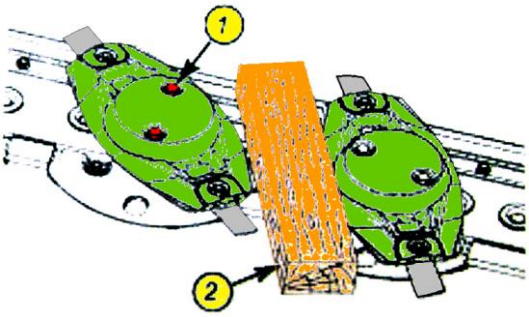
CAUTION

AREAS EXPOSED TO RISK OF CUTTING

Block the movement of the disk plates with a piece of wood (**2**).

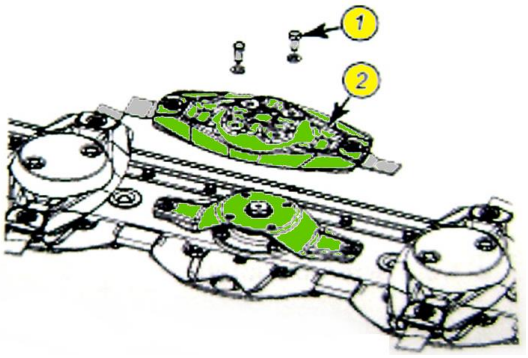
Remove the two screws (**1**) and their elastic washers.

Remove the tapered disk plate cover.



Remove the two screws (**1**) and their elastic washers.

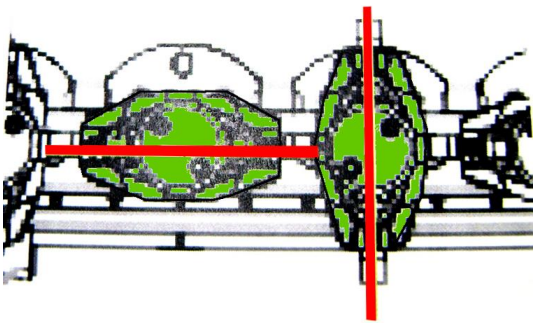
Remove the disk plate (**2**).



During assembly, position the disk plate perpendicular to the nearby disk plates.

Place the elastic washers with the convex side facing upwards.

Tighten the screws.



8.6.3 REPLACING THE SPRING LOADED BLADES

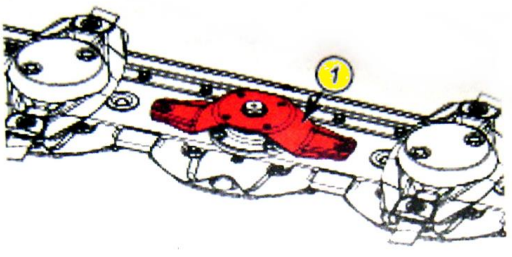
CAUTION

AREAS EXPOSED TO RISK OF CUTTING

Remove the disk plate (see relevant paragraph of this document).

Replace the spring loaded blade.

Reassemble the disk plate (see relevant paragraph of this document).



8.6.4 REPLACING THE DRIVE CHAIN

The chain needs to be replaced when the tension indicator in the sump (guard) is in the **red section** (Figure 8.9). In this condition, the chain has exceeded the allowable stretching limit.

If the indicator is in the **yellow section** (Figure 8.9), the chain has reached the allowable stretching limit.

In normal operating conditions with the chain at a nominal tension, the indicator is in the **green section** (Figure 8.9).

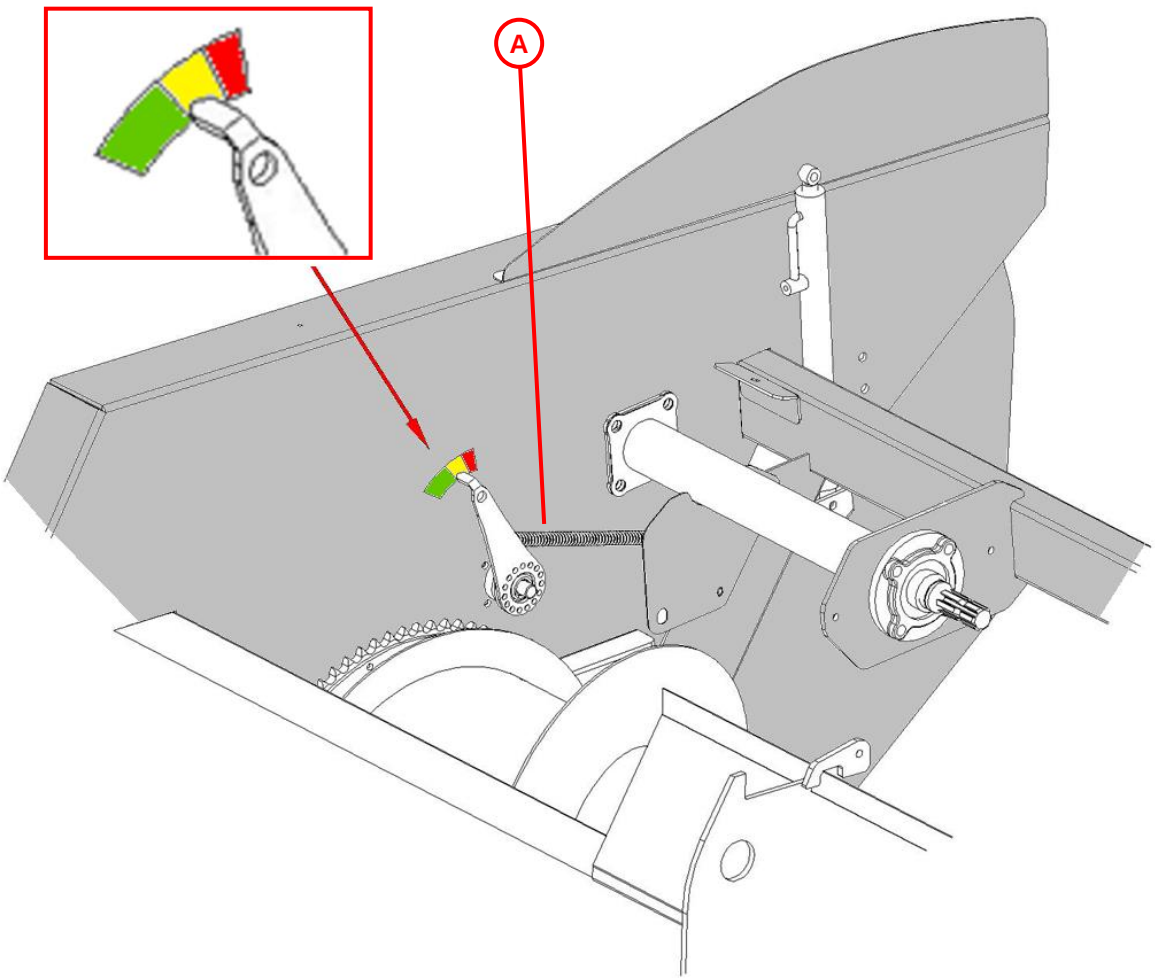


FIGURE 8.9 - TRANSMISSION

To replace the chain, lower the bar to the ground.

Before getting down from the forage harvester, disengage the gear, engage the parking brake, turn off the engine and remove the ignition keys.

Completely drain the sump of the lubricating oil by unscrewing the cap in the lower part.

It is now possible to remove the side sump.

Disconnect the spring from the chain stretcher (Figure 8.9, ref. **A**).

Remove the chain by removing the connecting link.

Check the condition of the plastic slide. If worn, replace it.

Assemble the new chain, closing the connecting link.

Connect the chain stretcher spring to adjust the chain traction until the indicator is in the green section again.

Close the side sump by screwing the oil cap.

Fill the sump with lubricating oil again, in line with the quantities reported in the **LUBRICATION OIL/GREASE TABLE**.

8.6.5 REPLACING THE AUGER CHAIN

The auger chain needs to be replaced when it is worn.

To replace the chain, lower the bar to the ground.

Before getting down from the forage harvester, disengage the gear, engage the parking brake, turn off the engine and remove the ignition keys.

Remove the left rear sump.

Manually rotate the chain until the connecting link can be easily extracted.

Remove the chain stretcher spring using the supplied wrench.

Remove the chain by removing the connecting link.

Assemble the new chain, closing the connecting link.

Connect the chain stretcher spring using the supplied wrench.

Reassemble the rear sump, fixing it with the bolt.

8.6.6 HYDRAULIC CIRCUIT

CAUTION

PRESSURISED FLUIDS.

9. SPARE PARTS & ACCESSORIES

9.1 ASSISTANCE

The Manufacturer is always available for all types of information regarding the machine. The Client must ask questions in clear terms, making reference to this Manual and the machine serial number.

9.2 SPARE PARTS

Contact the manufacturer for all spare parts. ALWAYS USE ORIGINAL SPARE PARTS The manufacturer shall not be liable for breakages, malfunctions or damage to persons or things resulting from the use of non-original spare parts.

The use of non-original spare parts shall void the conditions of the Warranty (if still valid) and relieve the manufacturer of all responsibility. Spare parts must be ordered from: **ricambi@domai.com.** In order to ensure clear communication with our technicians during the order phase, please follow the procedure:

- **contact the spare parts service and indicate the machine serial number**
- **describe the fault encountered**
- **describe the faulty element (also using the help of the spare parts catalogue attached to this document)**
- **trace the machine assembly to which the part belongs (also using the help of the spare parts catalogue attached to this document)**

The machine is delivered with a spare blade and clutch disk plate kit.

9.3 SPARE PARTS CATALOGUE

The **SPARE PARTS** catalogue is attached to these instructions and must be referred to for all needs. For parts not included in the lists, refer to the component number reported on the drawing.

10. ASSEMBLY AND DISMANTLING OF PARTS

10.1 DECOMMISSIONING AND DISMANTLING

Also refer to the information in the Installation chapter

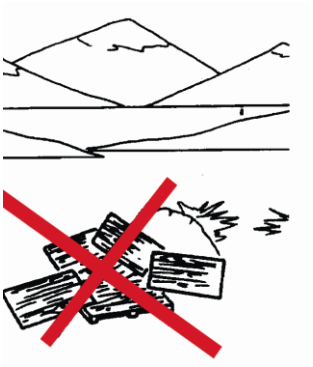
	ATTENZIONE
	THE MACHINE MUST BE OFF AND AT ROOM TEMPERATURE.

Isolate the power supply (electric, pneumatic and hydraulic) as indicated in the relevant paragraph of this document.

In order to properly store the machine, **all fluids must be drained (in particular the oils)**.

When dismantling the machine, all plastic, metal and electrical components must be separated and sent to authorised waste disposal centres in accordance with laws in force.

DO NOT DISPOSE OF COMPONENTS IN THE ENVIRONMENT



The machine has been produced using the following materials:

STEEL	whole machine
RUBBER (ELASTOMERS)	belts, gaskets
PLASTICS	guiding slides, tensioners, air pipes, etc. ...

10.2 WASTE DISPOSAL

It is the responsibility of the user to ensure that waste is disposed of correctly in line with laws in force in the country of use.

Lubricants and replaced parts must be disposed of in accordance with laws in force in the country of use.

11. TROUBLESHOOTING

For errors and faults not described in this Manual, contact the Manufacturer.

EVENT	CAUSE	PROCEDURE	PARA.
Blocked auger (clutch makes loud noise when sliding)	Clogging due to overfeeding	Remove excess material and reduce harvesting speed.	7.10
	Presence of foreign bodies	Manually remove the foreign bodies	7.10
Poor cutting quality	Worn or deformed knives	Replace knives	8.6
	Incorrect knife assembly	The arrow engraved on the knives must correspond with the direction of rotation	8.5
	High harvesting speed	Reduce harvesting speed.	-
The product doesn't enter the bar	Inlet not sufficiently open	Widen the inlet	7.9
	High harvesting speed	Reduce harvesting speed.	-
Bar stops and clutch slips	Presence of foreign bodies	Manually remove the foreign bodies	7.10
	High harvesting speed	Reduce harvesting speed.	-
Poor adaption of bar to uneven ground	Bar lock lever engaged	Disengage lock lever	-
	Poor regulation of compensation springs	Adjust compensation spring tension	-
	Incorrect regulation of forage harvester buoyancy pressure	Adjust forage harvester buoyancy pressure	7.9
	High harvesting speed	Reduce harvesting speed.	-
Accumulation of soil in front of plate-holder	Bar not sufficiently lightened	Adjust forage harvester buoyancy pressure	-
	Very moist working conditions	Adjust bar working height	7.9
Pads excessively worn	Excessive bar pressure on ground	Adjust bar buoyancy pressure	7.9

TABLE: 11.1 - DIAGNOSTICS AND TROUBLESHOOTING