

USER AND & MAINTENANCE MANUAL

DRAGO

Corn head



olimac

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This guide refers to the following machine:

Name	CORN HEAD FOR HARVESTING CORN
Model:	DRAGO
Manufacturer:	OLIMAC s.r.l Via Cuneo, 41 - 12040 Margarita (CN) – ITALY

1. INTRODUCTION

To our customers

Thank you for purchasing our OLIMAC corn head.

The OLIMAC "DRAGO" series corn head is a fine piece of agricultural equipment to be installed on a combine harvester for harvesting corn.

The information contained in this manual applies to any "Drago" model supplied by our company.



CAUTION! This manual is an integral part of your equipment and should be kept with it also in the event of sale, as it is essential to the operators' training.

Read this manual carefully to learn how to operate safely.

"DRAGO" equipment is built with a fixed or folding frame, with variable row spacing. Upon request, our equipment can be supplied with a stalk chopper.

IMPORTANT WARNINGS!

This manual provides information regarding the general characteristics of the piece of equipment for training personnel how to operate safely.

Pay attention to the decals on the equipment signalling potential dangers and recommended behaviours for your safety (Danger - Caution - Caution) followed by specific instructions. Such precautions are intended to ensure the safety of the operators using the piece of equipment. Read them carefully.

Make sure the safety signs on the corn-head are clearly visible. Replace lost or damaged signs. Make sure that the new components on the equipment and its spare parts include the safety decals available from your OLIMAC dealer.

Learn how to use the equipment and how to operate its controls properly.

Do not let untrained personnel operate the corn head.

Keep your equipment in proper working condition. Unauthorized changes or modifications to it may result in the impairment of its functions and/or safety, and affect its efficiency.

If you are unsure of the operational procedures outlined in this manual or if you require any form of assistance, do not hesitate to contact your OLIMAC dealer before performing any action.

**FAILURE TO FOLLOW THE INSTRUCTIONS CONTAINED IN THIS MANUAL
COULD RESULT IN SERIOUS INJURIES**

IMPORTANT: Use original spare parts only.

State the type and serial number of your corn head when ordering spare parts.

Corn head serial number:

The serial number is marked on a metal plate on the upper right side of the frame. We strongly recommend specifying the details indicated on the plate before ordering spare parts.

SERIAL N.

TYPE OF HRVR.....

DATE OF PURCHASE.....

**IMPROVEMENTS**

OLIMAC constantly checks and seeks to improve its products. We reserve the right to make changes in new supplies without making any changes and/or additions to the equipment previously sold.

2. INTENDED USE

The machine is designed and intended to be used after assembly onto a combine harvester for harvesting corn/sunflowers.

The machine is mechanically driven and hydraulically and electrically powered by the combine harvester.

During operation, the workspace is the cabin of the combine harvester.

Machine operating range:

Environmental (Tmax and min, etc.): machine designed to operate outdoors.

Minimum Operating Temperature = 0° C

Maximum Operating Temperature = 45° C

Maximum humidity = 85%

Maximum Storage Temperature = 70° C

Minimum Storage Temperature = -20° C

Operations envisaged: machine designed for harvesting corn/sunflowers.

Operator: read and understand the user and maintenance manual.

Power supplies: the equipment is powered by connecting the PTO shafts to the drive of the vehicle on which it is intended to be installed by the operator.

MACHINE OPERATION

The use of this machine requires connection to the drive vehicle via a PTO shaft. The operator works from the cabin of the vehicle on which the machine is mounted and from which the operator can (and must) issue all the commands needed for the intended use of the corn head. No other operators are envisaged or required in positions other than the cabin mentioned above.

Machine operation consists in "taking" the plant and dragging it downwards through a pair of stalk rollers installed on each row.

The cob of corn is separated from the plant and dragged towards the bottom of the machine where the screw conveyor collects the product.

OPERATOR INTERACTIONS WITH THE MACHINE:

From the cabin of the combine harvester, the operator is able to perform the following tasks:

- folding lateral rows (depending on model)
- setting speed (depending on combine harvester models)
- starting and stopping mechanical transmission,
- lifting/lowering the corn head.

The other operations carried out by the operator are:

- loading/unloading equipment
- maintenance
- cleaning

3. IMPROPER USE

The machine must never be used:

- for purposes other than those outlined in chapter 2;
- in potentially explosive and aggressive environments, or where concentrations of dust or oily substances suspended in the air are high;
- by untrained and uninformed personnel;
- when safety devices are unavailable, have been removed or tampered with;
- with any electrical jumper and/or other means that exclude utilities/parts of the machine;
- for operations other than those specified in this manual.



Failure to comply with the instructions provided in this manual could result in damage to property and/or injury.

4. GENERAL SAFETY INFORMATION

Assuming that the "Drago" corn-head has features characterised by a considerable level of danger, given the nature of the harvesting system, the operator and any persons within the operational range of the machine must make sure all the safety precautions described in this manual, as well as those included in the user manual of the combine harvester, are complied with.



Carefully and accurately read this manual and the combine harvester user manual before operating the equipment.

- Make sure that everyone is fully aware of how the machine operates before starting it.
- Before starting the corn head, check its functionality and safety in traffic.
- Pay attention to the safety regulations expected to be implemented by the operator as well as the recommendations made in this manual!
- The warning signs affixed highlight hazardous operations. Observe them as they are intended to ensure your safety.
- Before starting work, get acquainted with the implementation elements and devices and how to use them! Do not wait until you are working. It will be too late!
- The combine harvester should always have enough weight on the rear axle to allow safe operation. In particular harvesting conditions, more weight may be needed on the rear axle in order to ensure adequate stability.
- Pay attention to the admissible axle loads and total weights!
- The behaviour of the main machine during the work activities and the steering and braking systems are influenced by the machine (accessory) fitted to it. Make sure there is enough space to allow steering and braking.
- The operator must be the only person sitting on the combine harvester during operations. Do not allow anyone to climb on the combine harvester during operation.
- Keep all the guards and shields in place and never work around the head or the combine harvester during operation.
- Do not wear loose clothes that could get caught in moving parts.



CAUTION - Before working on the machine, perform all safety operations as described in following chapters.

**DANGER MOVING PARTS**

The stalk rollers and the corn head gathering chains, the screws and other moving parts cannot be fully protected as this would affect their operation.

Always stand at a safe distance from moving parts during operation.

AVOID ENTRAPMENT.

To avoid entrapment:

- no activity or operation is to be carried out while operators are standing near the head during operation;
- operators must not wear unsuitable clothing, such as belts or loose pieces of fabric;
- intervention with makeshift elements during normal operation or in the event of anomalies, is forbidden;
- any operation, including the unclogging of the head, must be carried out while the machine is off and not powered, as described in the following chapters.



Failure to comply with the following instructions may be fatal, as the harvesting system is aggressive.

In the event of entrapment:

- secure the machine by removing/disconnecting all power sources;
- depending on the case, disassemble and remove the parts involved in the entrapment, or manually rotate movable parts in the opposite direction, making sure that no further injury is caused.

NOISE PROTECTION

Prolonged exposure to loud noises can cause hearing loss or damage.

The nature of the machine and its operating principle involve a significantly high level of noise. Actual exposure will vary depending on the combine harvester and conditions of use.

Notwithstanding the user's obligation to check the actual exposure of the worker under the relative conditions of use, OLIMAC recommends the use of appropriate protective equipment, such as earmuffs or earplugs to protect against exposure to noise.

**AVOID OVERHEATING NEAR HYDRAULIC PRESSURIZED PIPING**

Flames can be generated by overheating near pipes containing pressurized fluid, resulting in severe burns to the operator and those standing by.

Do not use welding torches near these pipes or near other flammable materials. The pressurized pipes may be accidentally cut when heat spreads beyond the flame area.



PROTECT YOURSELF AGAINST HIGH-PRESSURE SPURTS

Spurts from high-pressure nozzles can penetrate skin and cause serious injuries.

Store these spurting elements in such a way as to prevent contact with your hands or body.

In the event of an accident, call a doctor immediately.

TYRES Important: read your user manual for specifications regarding the types of tyres required on the combine harvester when operating with the corn head.



Chapter 11 of this Manual includes a list of the safety decals applied to the machine.

5. TECHNICAL CHARACTERISTICS

MAXIMUM WEIGHT SPACING 75 CM.

FRAMES WITH MIN SPACING 55 CM. MAX 80 CM.

Corn head			Stalk chopper
Number of rows	Spacing distance (cm)	Weight – kg	Weight – kg
4	55 to 80	1120	80
5	55 to 80	1400	100
6	55 to 80	1685	120
8	55 to 80	2250	160
9	55 to 80	3200	200
12	55 to 80	4130	265
16	55 to 80	5500	350
Folding corn head			Stalk chopper
5	70 to 80	1560	100
6	70 to 80	1960	120
7	70 to 80	2190	140
8	70 to 80	2510	160

SIZE OF FRAMES WITH 55 TO 80 SPACING							
FIXED FRAME (B)			FOLDING FRAME (D)				
ROW	SPACING 55CM	SPACING 80 CM	CLOSED FRAME	OPEN FRAME	MAX HEIGHT (C)	DEPTH	
4	-----	320 CM	-----	-----	120	OPEN (A)	CLOSED (A1)
5	300 CM	400 CM	270 CM	380 CM	120 CM	240 CM	150 CM
6	355 CM	480 CM	305 CM	455 CM	120 CM	240 CM	150 CM
7	410 CM	560 CM	320 CM	530 CM	120 CM	240 CM	150 CM
8	465 CM	640 CM	330 CM	605 CM	120 CM	240 CM	150 CM
9	520 CM	720 CM	380 CM	680 CM	120 CM	240 CM	150 CM
12	685 CM	960 CM	-----	-----	120 CM	240 CM	150 CM
16	905 CM	1280 CM	-----	-----	120 CM	240 CM	150 CM

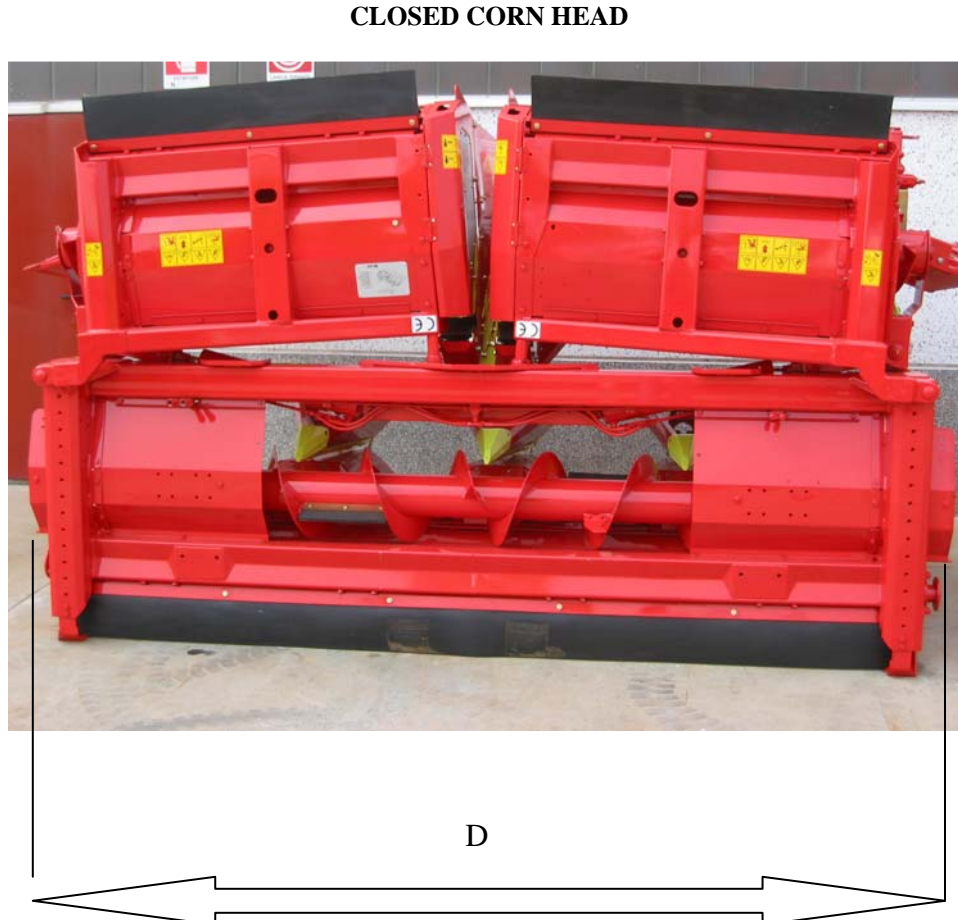
Minimum Operating Temperature = 0 ° C

Maximum Operating Temperature = 45° C

Maximum humidity = 85%

Maximum Storage Temperature = 70 ° C

Minimum Storage Temperature = -20° C

CORN HEAD MEASUREMENTS**CLOSED CORN HEAD**

6. SUPPLY, TRANSPORTATION, INSTALLATION AND CONNECTION TO A COMBINE HARVESTER

SUPPLY

The OLIMAC corn head is supplied with fixed supports installed below the frame for standing it on the ground during operations, storage or transport.

For space reasons, a special stand can be provided to allow storage in an upright position and easy access for the adjustment and the lubrication of the corn head.



Each corn head must be suited to the combine harvester used and the specifications are mentioned in the delivery note included with the corn head.

All combine harvester drive parts and universal joints are packaged separately and included in the delivery.

HOISTING

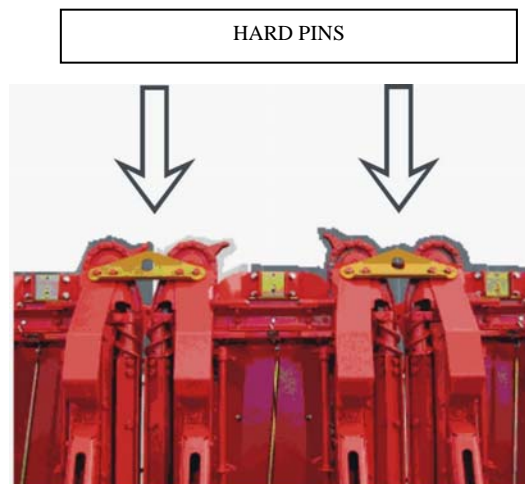
When performing the manoeuvres described below, MAKE SURE THAT:

- any operation carried out with equipment such as hoists, cranes, slings, etc., is performed by qualified personnel TRAINED to use such devices;
- no one stands or walks under or close to suspended loads;
- the hoisting equipment used has a capacity 25% greater than the weight of the machine, as specified on the metal plate on the upper right side of the frame;
- staff appointed to carry out manoeuvres use appropriate PPE;
- the anchorage is carried out using the supports provided for such purpose.



DANGER OF CRUSHING AND FALLING OF SUSPENDED LOADS: take all the precautions required by the applicable regulations and the instructions provided in this manual.

Use only the coupling points provided for hoisting the device.



Use ropes and/or harnesses appropriate to the weight to be lifted and check their efficiency before use.



DANGER OF CRUSHING AND FALLING OF SUSPENDED LOADS: take all precautions required by the applicable regulations and the instructions provided in this manual.

TRANSPORT

During transport operations using trucks, the corn head must rest on its supports or on a suitable transport rack to keep it vertical.

The user must guarantee the stability of the equipment during all phases. For this purpose, it is mandatory to secure the machine with a rope passing through the holes in the drawbar.

Loading and Unloading.

The corn head must be harnessed in the appropriate coupling points as shown in the spare parts catalogue. To balance the load, secure two ropes on top of the external frame.



Caution:

- the operator must perform all loading and unloading activities safely.
- there must be no one within the range of action of the crane.
- transport must be carried out using suitable devices.
- before lifting, check the condition of the ropes and the connections fastened to the machine.

Moving a corn head attached to the front of the combine harvester:

- make sure that the safety signs and lights mounted on the corn head and on the combine harvester are efficient and that the reflecting materials are clean and visible. Replace or repair any damaged or worn parts;
- whenever not provided for by the highway code, during the movement of the combine harvester equipped with a corn head, make sure that an accompanying vehicle drives 300 m ahead of the vehicle to signal the presence of the "oversize load";
- the driving speed must be appropriate to the traffic and/or potential hazards, always in compliance with all road traffic regulations;
- avoid any behaviour that might be an obstacle or danger to other vehicles, avoiding the creation of long tailbacks behind the vehicle;
- no one must park or stand close to the moving vehicle or when the engine is started during the corn head testing phase;
- keep children and unauthorized persons out of the range of the machines;

MOUNTING THE CORN HEAD ON A COMBINE HARVESTER

IMPORTANT: before mounting the corn head on the combine harvester, check the efficiency of all the moving parts and the hoisting equipment, particularly the tyre load, the brake system, the hydraulic hoisting system and the load balance to ensure the efficiency of the steering system mounted on the rear axle. (20% of the total mass must be shifted towards the rear axle).

Couple the corn head to the combine harvester on a flat surface to verify the correct tilt angle.

Carefully clean the adapter and the connection on the coupling points in order to secure coupling.



DANGER:

all assembly operations and power connections must be carried out strictly after the following safety measures are performed:

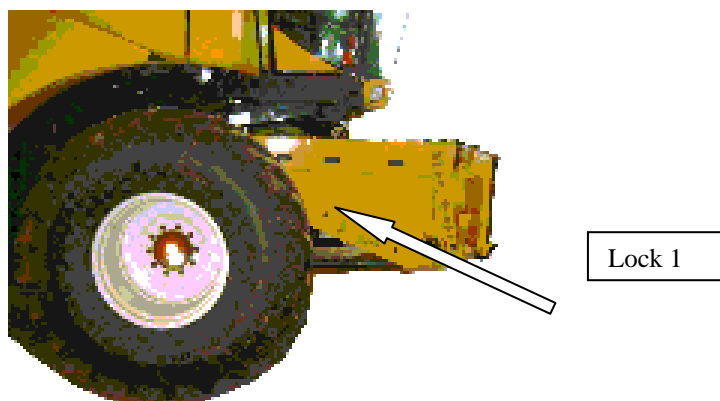
- always turn off the engine,
- engage the handbrake,
- remove the ignition key and connect the pipe safety lock in position on the lift cylinder,
- hang a "DO NOT USE" sign in the operator's cabin on the combine harvester.

Failure to engage the safety lock may result in injuries or death.

All operations are to be performed when the machine is disconnected from any source of power and when all the moving parts are idle.

Use suitable PPE for each of the operations.

IMPORTANT: the pipe lock pin 1 must be fully inserted in the pocket below the upper bar of the corn head. The coupling is carried out in the same way as for a wheat reaper.



COUPLING

Before mounting the corn head on the combine harvester, check the efficiency of all the moving parts and the hoisting equipment.

The coupling operations must be carried out in open, flat areas free from obstacles.

After making sure that the area is clear from people:

- **start the combine harvester and cautiously move the feeding pipe towards the corn head coupling point;**
- **lower the pipe so that it is a few centimetres below the head support bar;**
- **position the combine harvester so that the pipe is centred over the corn head opening and move the pipe forward until it couples completely with the corn head;**
- **slowly raise the pipe until the corn-head is completely off the ground (a few centimetres).**

If the coupling is not correct, lower the pipe back to the ground and lift it again. This should correct any misalignment. Before lifting the corn head completely, make sure that the adapter is properly attached to the head.

Secure the lower hooks to the coupling point only after making sure that the lifting operations can be performed safely. Then connect the universal joints and the hydraulic and electrical parts.



DANGER MOVING PARTS AND CRUSHING

During installation, no one must be allowed to stand between the corn head and the combine harvester.



The incorrect coupling of the channel to the corn head can result in the detachment of the corn head and cause it to fall. Failure to comply with the above can result in death or serious injury.

CAUTION: verify the correct tilt angle of the corn head in relation to the ground. Failure to comply with this instruction can result in increased power consumption of the corn head or the breakage of a stalk chopper. When the front plates of the assembly touch the ground the rear support should be raised by 70/90 mm.



If the tilt angle is not correct, uncouple the head and adjust the coupling.

If the level is lower than 70 mm, increase the distance between the top coupling pin and upper beam of the frame; vice versa, if the level is higher than 90 mm, set the coupling point closer.

If the tilt angle is correct, lift the device completely, making sure that the head does not knock against the cabin of the combine harvester (this applies to folding corn heads).



Always turn off the engine, engage the hand brake, remove the ignition key and set the pipe safety lock in position on the elevator cylinder before working under the corn-head or the feeder. Failure to engage the safety lock may result in injuries or death.



Secure the lower pins between the corn head and the adapter so that the machine is fully locked into the adapter. Failure to comply with this instruction can result in the detachment of the corn head and cause it to fall.

HYDRAULIC CONNECTION (for folding heads only):

The two hydraulic pipes for the forward and backward adjustment of the wheat -bar reel, mounted on the folding corn head, allow the folding of the lateral rows.

Before folding the lateral rows for road transport, clean the upper beam of the corn head to allow correct coupling.

IMPORTANT Press the hydraulic command as the corn head opens up, before starting work in the field, to allow the total lateral compression of the pistons.

Failure to do this can cause a misalignment of the support of the screw conveyor.

The folding corn heads must be stopped before being folded.



RISK OF CRUSHING: the folding of the lateral rows must be operated from the cabin of the combine harvester only, only after ensuring that no one is standing within the danger zone.



ELECTRIC WIRING

Connect the wiring of signal lights to the electrical connector of the combine harvester.

If the corn head is equipped with an automatic work level control, couple the connector into the connector of the combine harvester. If the corn head is equipped with the optional Field Drag feature, couple the connector to the connector of the combine harvester.



ELECTROCUTION RISK: regularly check the conformity and integrity of the electrical insulation.

UNIVERSAL JOINT

Secure the PTO shaft first to the corn head and then to the lift pipe shaft, making sure that the pin of the universal joint couples with the shaft groove.



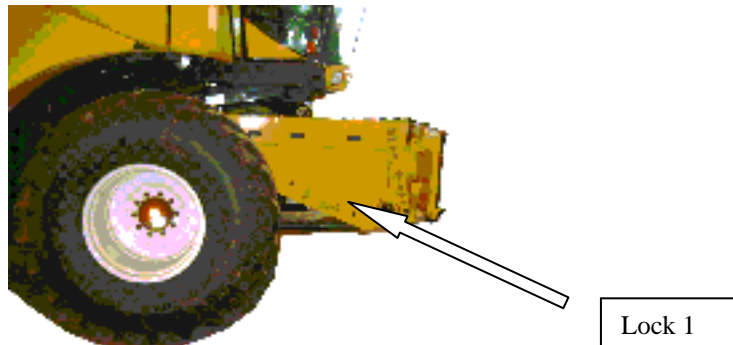
DANGER MOVING PARTS: the mechanical transmission must not be powered in the absence of suitable protections.

Regularly check the integrity and conformity of the drive shafts and their guards.



REMOVAL OF THE CORN HEAD FROM THE COMBINE HARVESTER

To detach the corn head from the combine harvester, lift the head completely and connect the safety lock of pipe 1.



Always turn off the engine, engage the hand brake, remove the ignition key and set the feeder safety lock in position on the elevator cylinder before working under the corn head or the pipe. Failure to connect the security locks can result in injury or death.

Disconnecting the universal joint:

Remove the universal joint from the side of the lift pipe and place on the special support.



Disconnecting the power supply:

Disconnect all electrical wiring connecting the corn head to the combine harvester.

Disconnecting the hydraulic supply (for folding heads only)

Disconnect the hydraulic clutches connecting the corn head and the combine harvester.



Remove the retaining clips between the adapter and the elevator pipe. After releasing the retaining clips, remove the pipe safety lock. Slowly lower the corn head until the pipe adapter is free from the corn head "beam". Then, increase the distance between the rear part and the corn head.



Make sure that everyone is at a safe distance from the machine before raising or lowering the corn head.

7. WORKING PHASES

BEFORE STARTING THE FIELD WORK

Run the following checks before working on the field

- 1) Make sure that the parts coupling the corn head to the combine harvester are NOT worn nor corroded;
- 2) Clean the coupling parts;
- 3) Perform lubrication operations (see the table of lubricants);
- 4) Run the checks on the main machine (combine harvester) as required by the manufacturer;
- 5) Check the tightening of nuts and bolts and the efficiency of the guards and shields.



Always turn off the engine, engage the hand brake, remove the ignition key and set the feeder safety lock in position on the lifting cylinder before working under the corn head or the pipe. Failure to connect the feeder safety lock can cause injury or death.
After the corn head has been assembled and all the checks are performed, the corn head is ready to be used in the field.

Make sure that all safety guards and shields are in place and that they are properly secured.

Make sure that the total mass of the combine harvester and the corn head is properly distributed on the axles of the machine.

Starting harvesting

- 1) Place the corn head as close as possible to the harvesting line and the ground.

For the folding model:

- 2) start opening the machine and keep the hydraulic system command pressed for a few seconds after opening.
- 3) make sure that all the joints at the coupling points adhere completely and are free from foreign bodies.



Do not start the harvesting operations without making sure that no one is standing within the range of action of the machine.

Basic adjustment of the corn head.

Due to their construction and operating purposes, the knife stalk rollers, the gathering chains, the conveyer screw and the stalk choppers cannot be fully protected.

For this reason, a safe distance **MUST** be kept from all these parts during operation.

All operations performed on the machine must be carried out with caution, with adequate equipment to prevent accidents and carefully following the safety instructions described in this guide.

Adjustment from the operator's cabin:

The opening and closing of the deck plates with the electrical adjustment system is to be performed using the relevant electrical control in the cabin and while the harvester is functioning.

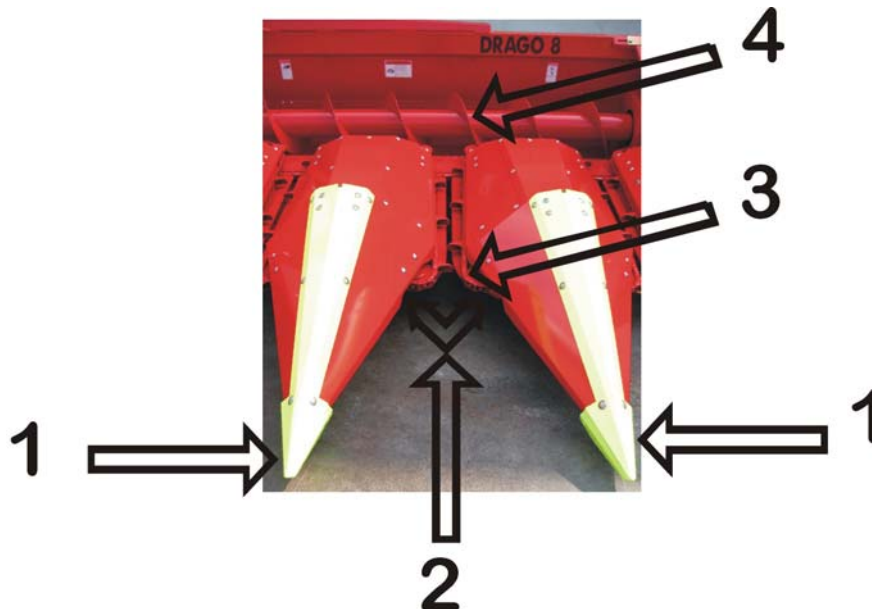
The harvesting height is adjustable using the hydraulic control of the combine harvester feeder pipe (see the user and maintenance manual of the combine harvester)

OPERATION OF THE CORN HEAD

The divider noses (1) are located between the harvesting rows which open and invite the rows of the corn plants into the harvesting system.

The stalk rollers (2) grasp the stalk of the corn plant and pull it down, passing it between two plates placed above the stalk rollers, which allow the plant to pass through the lower part of the corn head and retain the cobs of corn above the plates.

When the cob reaches and rests on top of the deck plates, the gathering chains (3) convey the cobs with a rotating motion into the central feeder (4) that carries the yield into the conveyor pipe of the combine harvester.



STARTING WORK IN THE FIELD

Run the combine harvester at a low speed to become familiar with the corn head and only then set the device at full speed.

After going round the field a few times, stop the corn-head and turn off the engine. Make sure that the moving parts are in order and that no overheating has occurred.

All bolts must be tightened and the chains properly adjusted.



DANGER MOVING PARTS AND FLYING OBJECTS: do not approach when the corn head is moving and stay at a safe distance (at least 30 metres) from the machine.
Pay attention to flying foreign bodies caused by the rotating parts.
Failure to observe this warning can result in injury or death.

CORN HEAD ADJUSTMENTS

After going round the field a few times, check the functionality of the device; in the event of anomalies, read the **Troubleshooting - Adjustments** chapter.

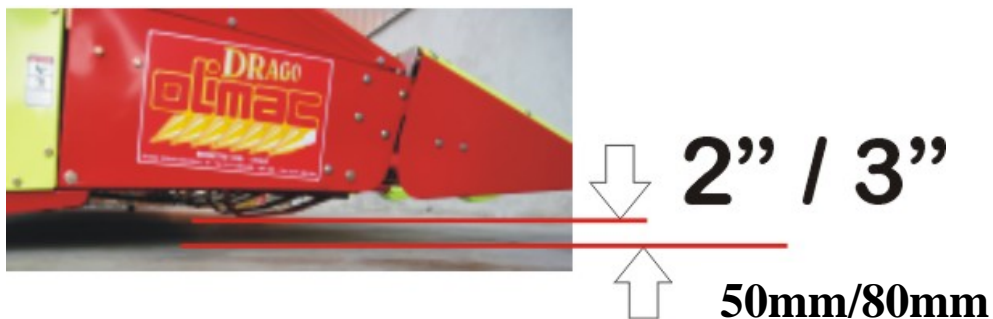
DRIVE AND OPERATE WITH CAUTION:

Drive carefully in order to keep the head centred with respect to the rows.

Do not force the corn head or the combine harvester and avoid overloading the elements of the main power supply to prevent breakage. Introduce the corn head into the field at a low speed, then increase the speed to a rate suitable for the field where you are operating.

Pay attention to any clutch slippage or other unusual noises.

Failure to run a correct row selection may result in yield loss. Use the corn head with the front slides at a height of about 50/80 mm above the ground.



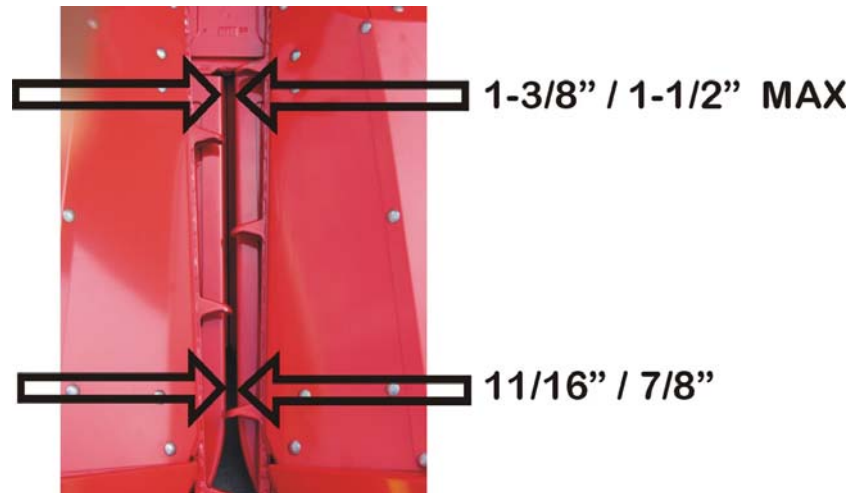
DECK PLATES (automatic)

The deck plates (photo) are designed to pull the corn cob from the stalk. The deck plates self-adjust on both sides, so that the stalks are always in the best position to be gathered by the rollers. This "patented" system is essential to guarantee the best performance of the corn head and keep the loss of yield to minimum levels. Its basic adjustment ranges from 4 mm at the back and + -1 mm at the front.



The deck plate may be adjusted on three different levels:

- 1-minimum opening at rest, 8-10 mm (18-22 mm recommended)
- 2-maximum opening when working, 45-50 mm (35-38 mm recommended)
- 3-working pressure, 0-35 mm (25-30 mm recommended)



BEFORE ADJUSTING: always turn off the engine, engage the hand brake, remove the ignition key and set the feeder safety lock in position on the lifting cylinder, before working under the corn head or the channel. Failure to connect the feeder safety lock can result in injury or death.

In the event of clogging of some of the harvesting parts, the operator must perform the following operations:

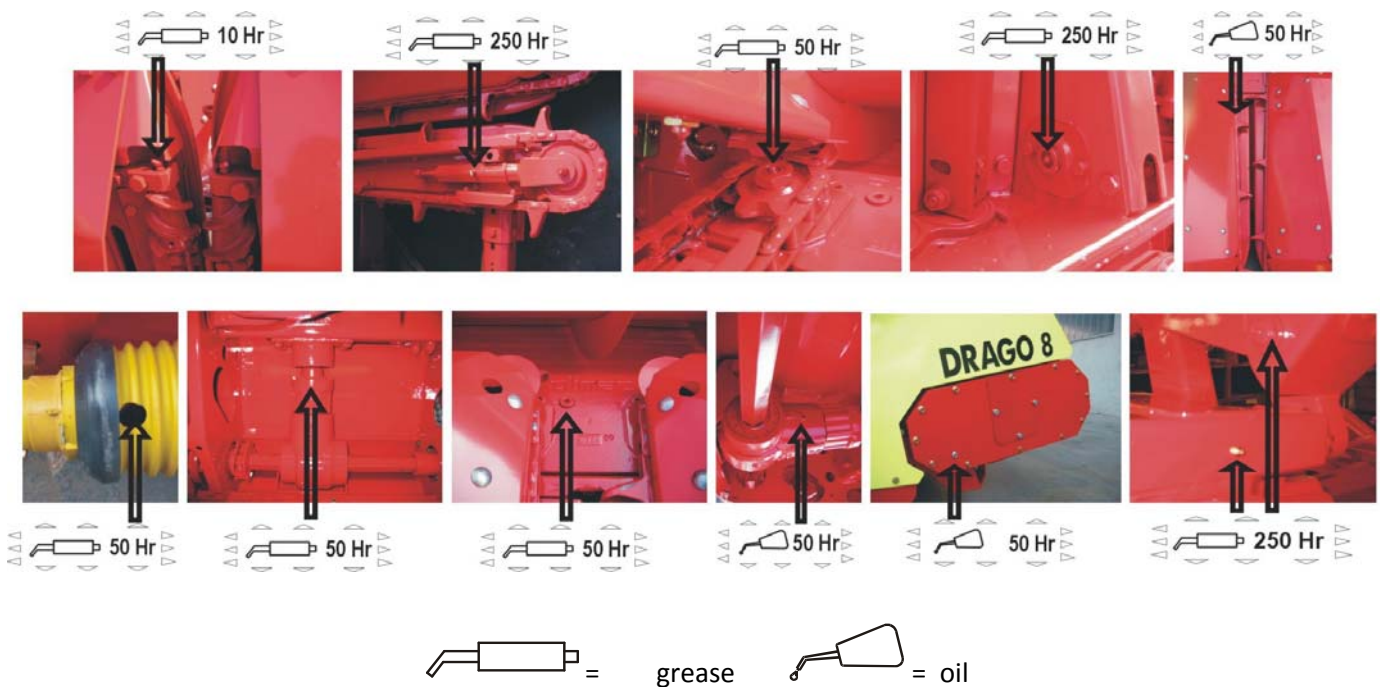
- reverse the direction of the main machine and move it by a few metres;
- rotate the harvesting parts in order to unload the excess product;
- if manual intervention is required, the operator must place the machine on a flat surface, turn off the engine, engage the emergency stop, put on gloves and operate on the parts that are clogged.

In the event of mechanical failure, the drive shaft must be disconnected before performing any repair.

8. LUBRICATION

LUBRICATION

IMPORTANT - Lubricate the grease point as described in the work programme. Failure to follow these instructions can result in a shorter life of the component.



The "lubrication programme" indicated below is recommended when operating in normal harvesting conditions. When harvesting conditions are very demanding, the suggested programme should be performed more frequently.

Only good quality multi-purpose grease must be used in this programme. Before lubricating, clean the devices from dirt and dust. After lubricating, remove the excess grease to prevent accumulations.



Before lubricating the corn head or carrying out any maintenance, always take the following precautions:

- 1- lower the corn head to the ground or, if raised, connect the lock cylinder.
- 2- turn off the engine of the combine harvester, engage the hand brake and remove the key before leaving the operator platform.
- 3- make sure that the main drive (cardan joint) is detached from the tow coupling.

Proper lubrication and maintenance with a regular time schedule is vital for the proper maintenance of your equipment. To ensure long service and efficient operation, follow the lubrication and maintenance programme described in this manual. The use of appropriate fuels, oils, greases and filters, as well as keeping the greasing tools clean, will extend the life of the machine and the component.

Whenever possible, keep lubricants and containers in areas protected from dust, fuels and other contaminants. Store the containers in such a way as to prevent the accumulation of water and dust. Make sure that each container is properly labelled to identify its content. Properly dispose of the containers and the residual lubricant at the dedicated collection points.

IMPORTANT: always use original OLIMAC spare parts.

LUBRICATION PROGRAMME

The following lubrication programme is recommended under normal harvesting conditions. In severe harvesting and operational conditions, the programme must be implemented more frequently

MAXIMUM TIME INTERVAL

Description	Initial lubrication	After 10 hours of operation or daily	After 50 hours of operation or weekly	After 250 hours of operation or once during the season
1) Stalk roller	X	X		
2) Gathering chain tensioner				X
3) Top chain gear			X	
4) Deck plate adjustment piston				X
5) Gathering chain	X		X	
6) Corn head PTO drive shaft - U-Joints - Cardan joint			X	
7) Slip clutches			X	
8) Group gear box check	X		X Check the level and top up if necessary	
9) Intermediate gear box check			X Check the level and top up if necessary	
10) Group chain box			X Check the level and top up if necessary	
11) Folding frame greasers (folding models only)				X

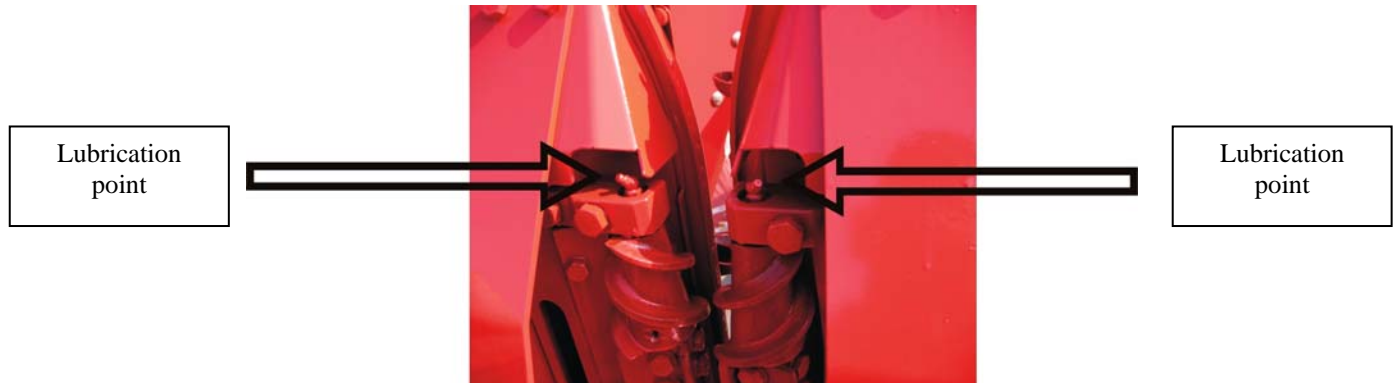
1) Stalk roller

Lubricate every 8-10 hours of use with MOBIL EPO grease.

Pump the grease into the greaser until it comes out of the gaskets clean.

IMPORTANT: halve the lubrication times indicated in the table if harvesting flattened corn plants.

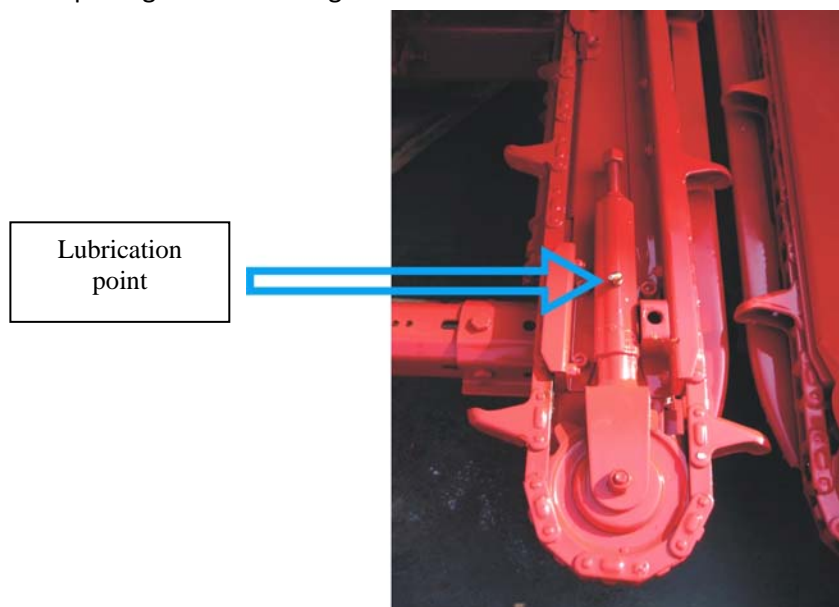
Greasing can be difficult in the first few days of corn head use as the gaskets are very tight. Greasing will be easier if carried out after a few minutes of operation.



2) Gathering chain tensioner

Lubricate every 250 hours of operation or at the end of the season with MOBIL EPO grease.

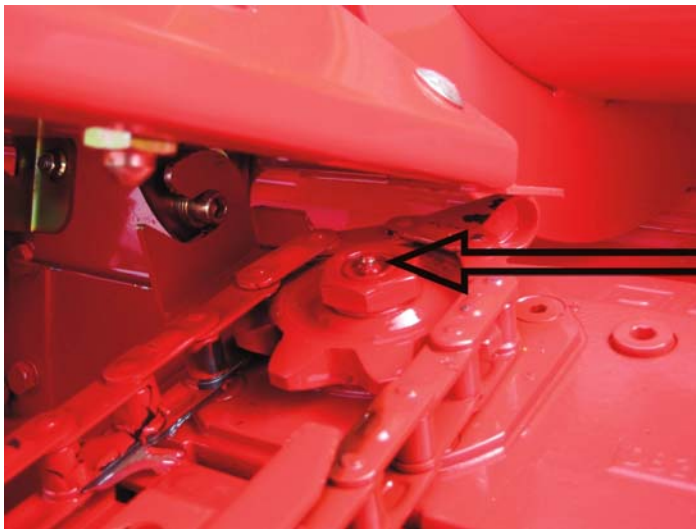
Pump the grease into the greaser until it comes out from the front of the support.



3) Top chain gear

Lubricate every 50 hours of operation with MOBIL EPO grease.

Two doses into the greaser will be enough to properly lubricate the upper bearing of the gearbox.



Lubrication
point

4) Deck plate adjustment piston

Lubricate every 250 hours of operation or at the end of the season with MOBIL EPO grease.

Fill the inside of the piston until the grease comes out of the drainage hole.



Lubrication
point

5) Gathering chains

Lubricate the gathering chains with SAE 30 oil every 50 hours of operation. Lubricate also at the beginning and the end of the harvesting session.

Note: spin the chains for a few minutes before lubricating. If the chain is hot, the penetration of the oil between the inner pins and the bushings will be deeper.

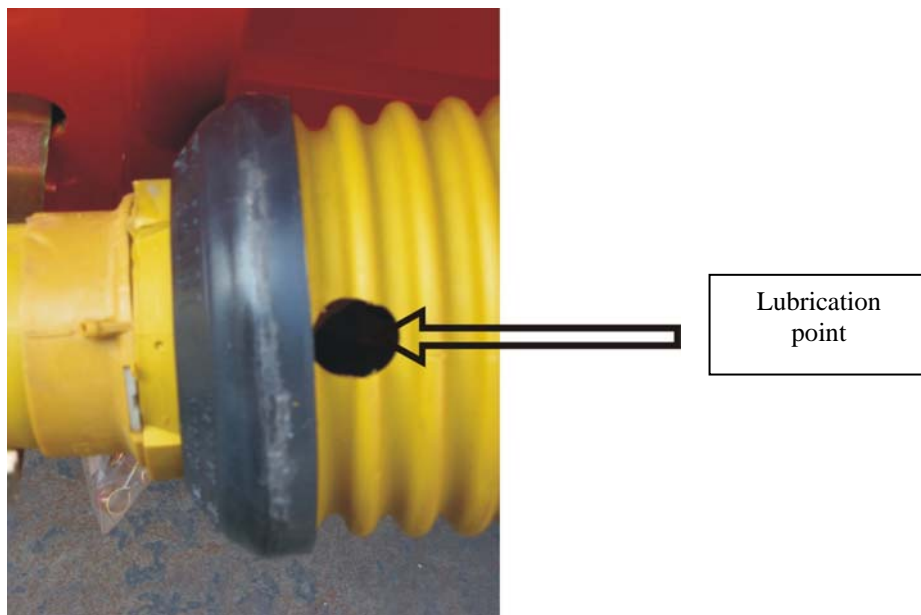


Never lubricate the harvesting chains when the corn head, the basic components, or the engine are running.



6) PTO drive shaft (cardan joint)

Every 50 hours of use, lubricate the U-joints, the plastic bearings of the guards and the telescopic sliding part of the PTO drive shaft with MOBIL EPO grease. Make sure that the telescopic sliding part of the drive shaft is free to move.

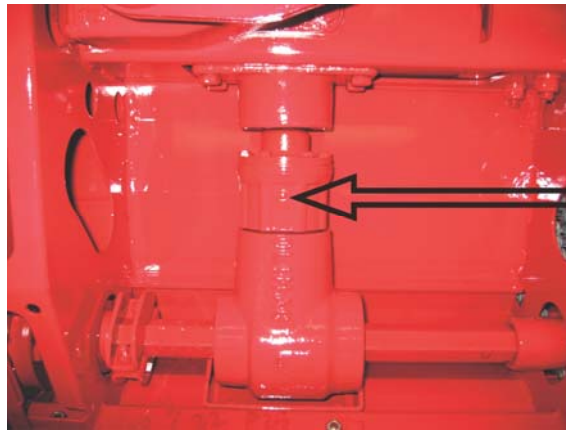


7) Slip clutches

Lubricate every 50 hours of operation or at the end of the season with MOBIL EPO grease.

Two doses will be sufficient to lubricate each clutch.

Note: excessive lubrication can result in improper clutch operation. On the contrary, a lack of lubrication will result in the clutch "freezing" and not working properly.



Lubrication
point

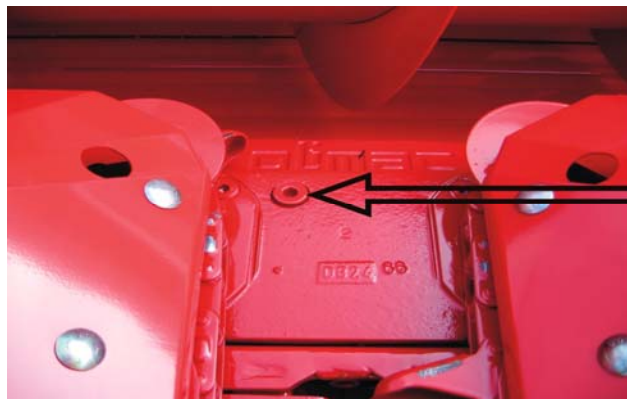
8) Unit gearbox

Every 50 hours of operation check whether it is necessary to top up with MOBIL EPO grease.

Position the gearbox horizontally before checking the level.

The maximum content is 4.5 kg.

The level of lubricant inside the gearbox is checked through the oil level plug and must be between the minimum and maximum level lines.



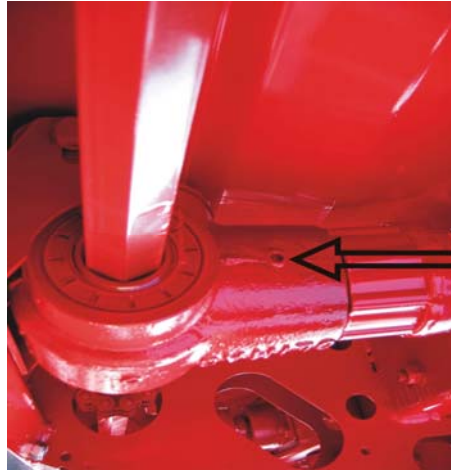
Lubrication
point

9) Intermediate gearbox

Every 50 hours of operation, check whether topping up with Mobil GEAR SHC 460 is necessary. Position the box horizontally before checking the level.

The maximum content is 0.4 kg.

The amount of lubricant inside the gearbox is checked through the oil level plug; once unscrewed, the oil should be clearly visible.



Lubrication
point

10) Unit drive gearbox

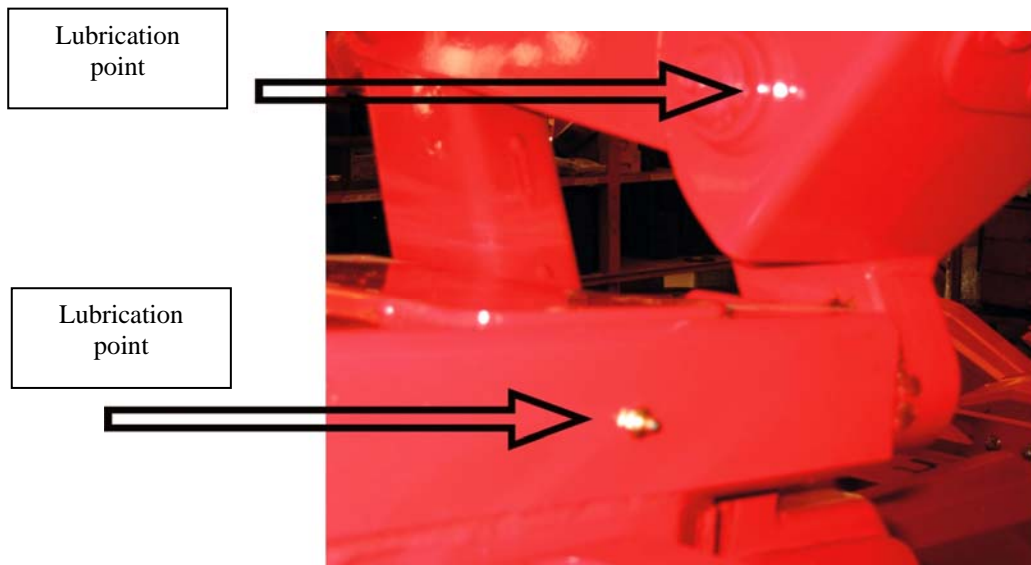
The main drive chain of the unit is located inside the first transmission gearbox. Every 50 hours, check the plug (1) and, keeping the corn head on the ground, make sure that the oil reaches the level of the inlet used for topping up. Top up with oils specifically for gears. The chain box can hold approximately 5.5 litres of oil.



Lubrication
point

11) Folding frame greasers (folding models only)

Lubricate every 250 hours of operation or at the end of the season with MOBIL EPO grease.
Top up until the grease comes out.



IF THE REQUIRED LUBRICATION IS NOT PERFORMED ON YOUR EQUIPMENT IN COMPLIANCE WITH THE SPECIFICATIONS IT MAY BREAK OR ENDURE ANOMALOUS WEAR.

9. MAINTENANCE

Failure to perform the specified maintenance can result in inefficient use of the corn head and a consequent waste of time.

The recommended maintenance intervals refer to average working conditions.

Perform maintenance more frequently when working with the combine harvester in difficult conditions, due to external factors such as the weather or the type of field harvested.



DANGER:

before carrying out any maintenance work, secure the machine performing the following operations:

- **always turn off the engine,**
- **engage handbrake,**
- **remove the ignition key and engage the pipe safety lock in the position on the elevator cylinder,**
- **hang a sign reading "DO NOT USE" on the cabin of the combine harvester.**

Failure to engage the safety lock may result in injuries or death.

All maintenance operations are to be performed when the machine is disconnected from every source of power and when all the moving parts are idle.

Use suitable PPE for each of the operations.

Maintenance is divided into two types:

9.1 MAINTENANCE DURING THE WORKING SEASON

DAILY MAINTENANCE DURING USE

Performing checks carefully before using the corn head, preferably on a daily basis, prevents breakdowns and delays in the harvesting processes.

Perform the following checks and adjustments:

1. lubricate the corn head according to the instructions indicated in the "Lubrication" section of this manual. Under critical conditions, reduce lubrication intervals;
2. check the integrity and proper maintenance of electrical insulation and plumbing;
3. always check for oil leakages or ruptures of the greasing systems;
4. check the tightening torques of the mechanisms and tighten or replace as required;
5. always check the integrity and the proper tightening of the stalk chopper knives which, working at about 15 cm from the ground, may break; replace immediately if broken.

IMPORTANT: running the corn head parts without introducing it into the harvesting phase can cause vibrations or metallic noises.

In this case, check the tightening of the bolts and that no rotating component is broken or not properly installed (choppers and rollers or U-joints not properly inserted).

Failure to perform this check can result in breakage inside the gearbox.

WEEKLY MAINTENANCE or EVERY 50 HOURS OF USE.

- 1- Check on the main chain tension.
- 2- Check on the gathering chain tension.
- 3- Check on the self-tensioning of the screw conveyor chain.

9.2 MAINTENANCE AT THE END OF THE WORK SEASON:**DANGER:**

before carrying out any maintenance work, secure the machine following these steps:

- always turn off the engine,
- engage the handbrake,
- remove the ignition key and set the channel safety lock in position on the elevator cylinder,
- hang a "DO NOT USE" sign on the operator's cabin on the combine harvester.

Failure to engage the safety lock may result in injuries or death.

All operations are to be performed when the machine is disconnected from every source of power and when all the moving parts are idle.

Use suitable PPE for each of the operations.

IMPORTANT: do not use high-pressure water jets directly on the bearings or any other element that can easily be affected by infiltrations for cleaning purposes. High-pressure water can pass through the seals and cause damage. Dry these areas and, after lubricating them, run the equipment for a few minutes.

MAINTENANCE SCHEDULE AND PLANNED ADJUSTMENTS

1. Remove all the shields of the corn head.
2. Clean the corn head thoroughly.
3. Accumulated silt and straw will keep moisture on the metal parts, causing rusting.
4. Check the gathering chain wear, and restore tension.
5. Check the gathering chain runner wear.
6. Check the wear of the deck plates.
7. Check the knife wear and the correct setting of the stalk roller.
8. Check the adjustment of the weed knives of the stalk roller.
9. Check adjustable stalk chopper bearings wear.
10. Check the stalk chopper wear.
11. Check the feeder drive chain wear.
12. Check the gearbox drive chain wear.

REMOVING OR REPLACING SHIELDS

Central shield:

- A) Fold the nose over the shield.
- B) Release the shield locking system.



- C) Raise the shield and pull it towards yourself to remove it from the corn head.



DANGER:

be careful of sharp edges and sharp components. While raising the shield, pay attention to the risk of crushing. Use appropriate PPE (gloves and shoes).
Perform manual handling with a colleague to avoid overloading. Handle the nose with care.

Side shield

- A) Fold the nose over the shield.
- B) Remove all the screws marked with an arrow.



Guard screws



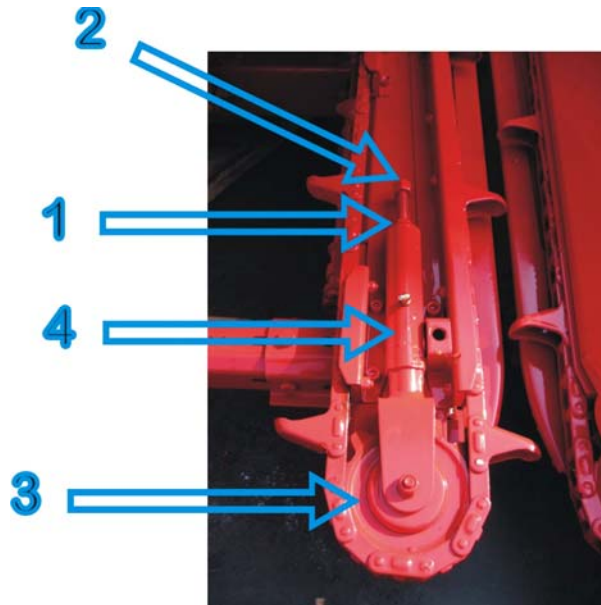
Guard screws

- C) Lift the side shield to secure its support, making sure the screw enters the lower section.
Failure to follow this procedure may result in the sudden dropping of the side shield, causing injury.
- 2) Clean any external bodies from the corn head.
 - 3) Check the wear of the gathering chains and restore their tension.

The chain must be replaced when the front chain support slot of the gathering chains pops up. Prompt replacement will ensure minimum pinion wear.

To replace the gathering chain, proceed as follows:

1. Unscrew counter-nut 1.
2. Completely remove screw 2.
3. Replace it, installing the synchronized chains.
4. Tighten screw 2 until the front gear 3 enters support 4, with a 5-8 mm stroke before the complete lock.
5. Once the adjustment is complete, tighten counter-nut 1.



IMPORTANT: the gathering chains should be positioned so that the teeth of one chain fit into the space between the teeth of the opposite chain. If the teeth touch each other they may cause breakage or malfunction.

To install it correctly, loosen the chain and slide on the drive gearwheel on the gearbox until the tabs (teeth) of the chains fit into the spaces between the teeth of the opposite chains.

IMPORTANT: if corn is lost through the harvesting system (harvesting unit), immediately check the correct adjustment and the level of efficiency of the knives, the deck-plates and the positioning of the chains.

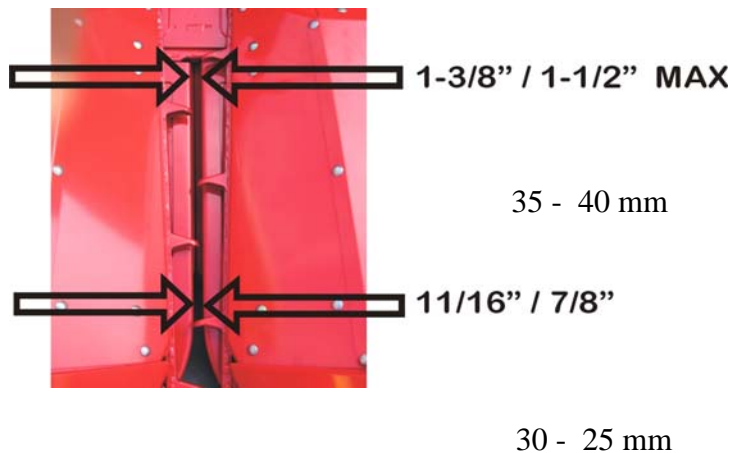
Replacing the deck plates

1. Remove all the shields and the gathering chains.
2. Remove screw 1
3. Remove the deck plates and replace them with the new ones.

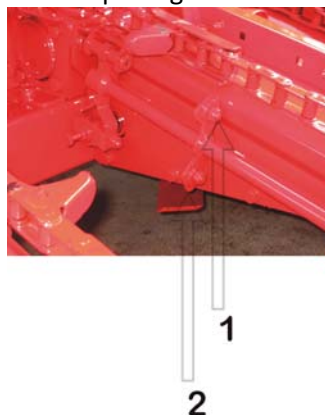
Adjusting the deck plates.

To properly adjust the deck plates, make sure that the level reaches 30/40 mm, as shown in the image. If this distance is not available, open or close the front of the row group.

- a. The deck plates must have an opening between 3 and 5 mm wider at the back than at the front.



- b. The minimum opening (at rest) is 10/25mm (18-22 mm recommended) and it may be modified by turning the diamond-shaped device located on top of the plate lever.
- c. The maximum opening (when working) is 30/50 mm (35-38 mm recommended) and may be modified by turning the diamond-shaped device located at the bottom of the plate lever.
- d. Both the minimum and the maximum openings should always be centred over the stalk roller.



- e. The operating pressure can be adjusted between 10-35 mm (25-30 mm recommended); by loosening the counter-nut and then tightening the screw, the motion of the plate will be "harder"; on the contrary, by loosening the screw, the motion of the plate will be less "hard".

1" / 1-3/16"



IMPORTANT: BEFORE MAKING ANY ADJUSTMENTS OTHER THAN THOSE SPECIFIED IN THE USER & MAINTENANCE MANUAL PROVIDED UPON DELIVERY OF THE MACHINE, CONTACT YOUR OLIMAC DEALER.

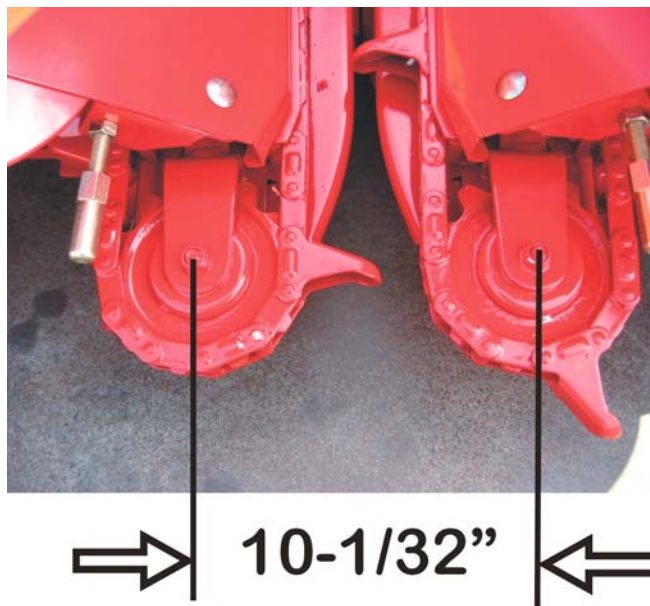
Check the wear of the knives and the proper timing of the stalk roller.

To adjust the stalk roller knife, make sure the height is set at 260 mm at the point shown in the picture.

For a correct grip of the stalk, the roller knives must be set as follows:

at the front (where the stalk enters), the distance between the opposite blades must be between 1.5-2.5 mm and, at the rear (near the gearbox), the distance must be between 0-0.5 mm.

Make sure that the blades are always correctly phased.



10-1/32"

260 mm

In normal working conditions, the adjustment of the stalk roller knife should usually be carried out every 600/800 hectares.

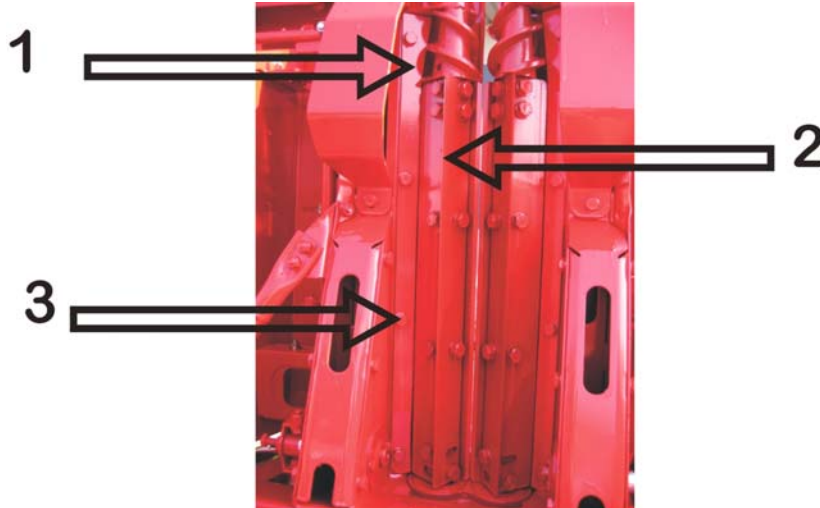
The wear of the knife is especially visible in humid conditions (morning or evening) and you will notice a "dirty" harvest, with foliage and stalks clogging the main harvester feeder, or the excessive loss of small corn cobs through the deck plates.

A programmed adjustment (600/800 hectares) will result in even wear of the knife over its entire length, without requiring an early replacement.

7) Check the adjustment of the stalk roller weed knives.

The weed knives (1) prevent weeds and rubbish from wrapping around the rollers (2). They should be installed as close as possible to the stalk rollers without touching them.

Loosen the bolts (3) and set each knife at a maximum of 1.5 mm from the stalk roller knife. Tighten the bolts according to the specifications.

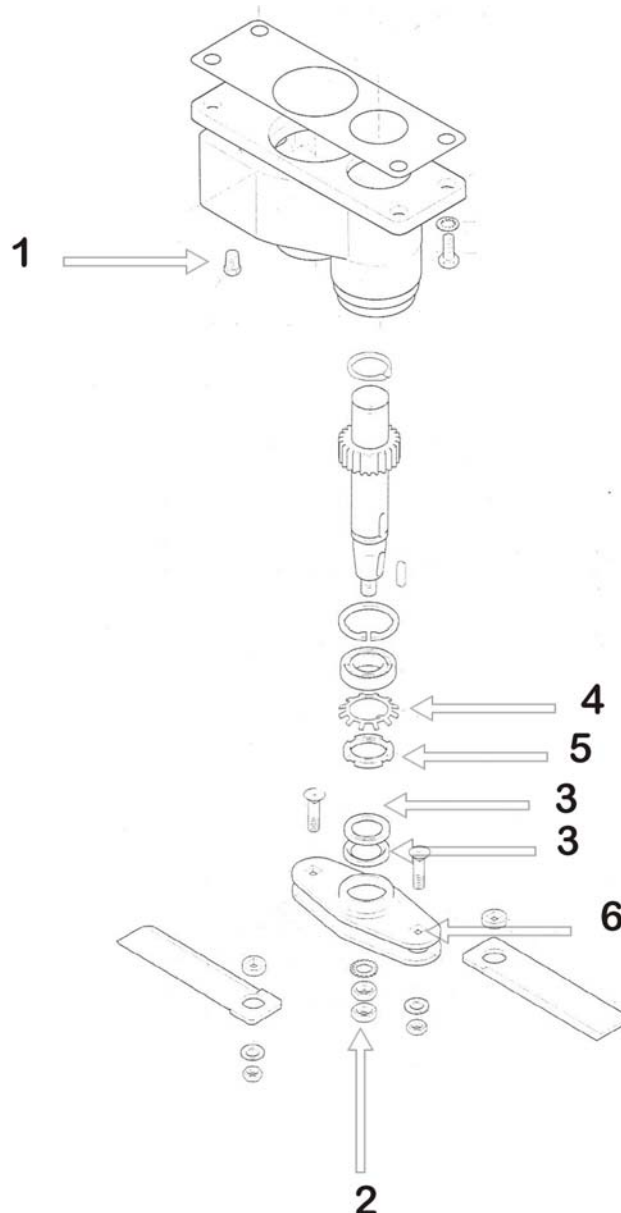


8) Check the wear of the adjustable stalk chopper bearings.

To check the wear of the stalk chopper bearings, hold the knife support and try to "flip it". If even the slightest movement is detected, adjustment is necessary:



- Unscrew the grease outlet plug (1).
- Unscrew the nut holding the knife support (2).
- Drain all the grease from the box.
- Remove the gaskets (3).
- Lower the safety tab (4).
- Tighten the collar (5) with a torque wrench, by applying a rotational momentum of 1000/1200 Nm (almost blocking it).
- Unscrew the collar (5) by almost ¼ of a turn.
- Raise the safety tab (4).
- Mount the two sealing gaskets (3).
- Mount the knife support (6).
- Tighten the nut that locks the knife support with a rotational momentum of 230 Nm



9) Check the wear of the stalk chopper knives.

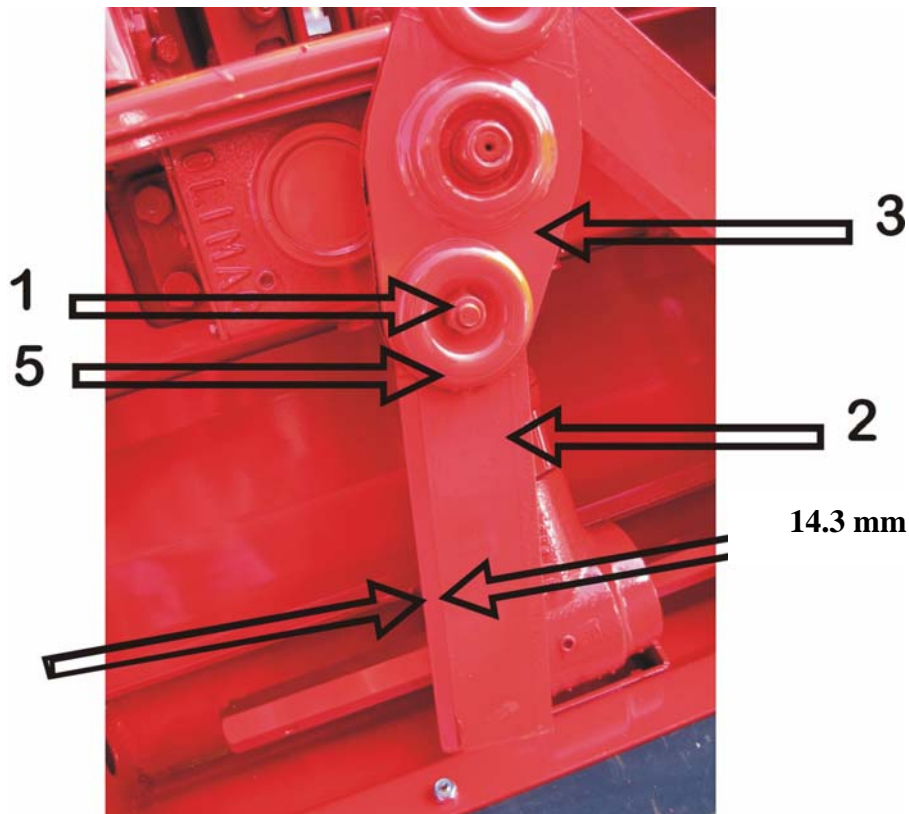
The stalk chopper knife can be used on both sides.

When you notice wear of about 15 mm at the end of the knife, rotate it by 180° to optimise the wear on the other side of the blade.

IMPORTANT: THE STALK CHOPPER KNIVES OPERATE AT ABOUT 15 CM FROM THE GROUND, ARE SUBJECT TO COLLISIONS WITH FOREIGN BODIES AND ARE THEREFORE SUBJECT TO SUDDEN BREAKAGES. PROMPTLY REPLACE THE BROKEN PART TO AVOID VIBRATIONS WHICH WOULD CAUSE THE BREAKAGE OF THE STALK CHOPPER BOX.

To replace the component:

- Loosen the nut (1).
- Pull the knife (2) from its support (3).
- If the bushing inside is oval (4), replace it.
- If the nut protection is worn (5), replace it.
- Insert the knife when the inner bushing is mounted.
- Tighten the nut (1) with a rotational momentum of 86 Nm



DANGER:

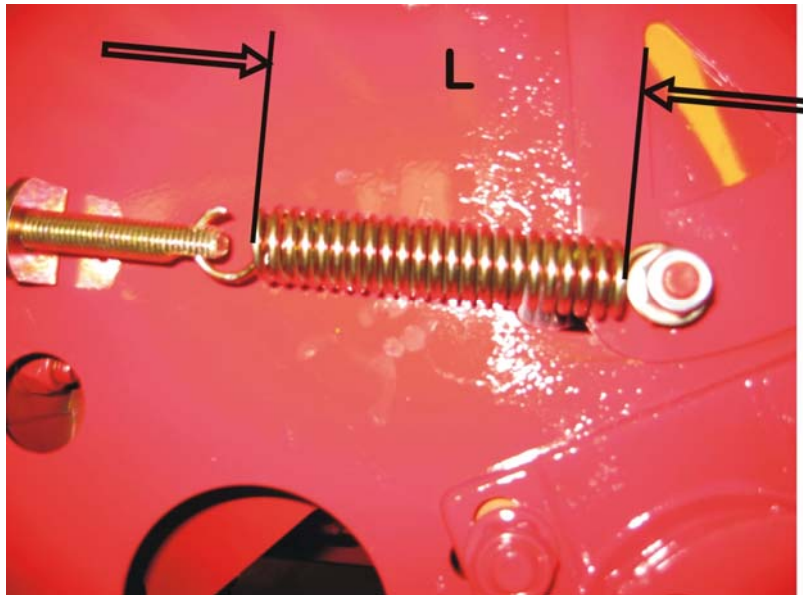
The stalk chopper knives must be mounted carefully, checking the tightness of the "nuts-bolts" locking parts. Failure to follow this instruction may result in their being thrown out during rotation, causing possible injury or death.

10) Check the wear of the feeder activation chain, restore its tension.

The chain should be replaced when the measurement along a straight, tight line of ten pins is greater than 173 mm; immediate replacement may guarantee minimum pinion wear.



To restore tension, reset the extension spring to $L = 105 \text{ mm}$.



11) Check the unit activation box chain wear, reset its tension.

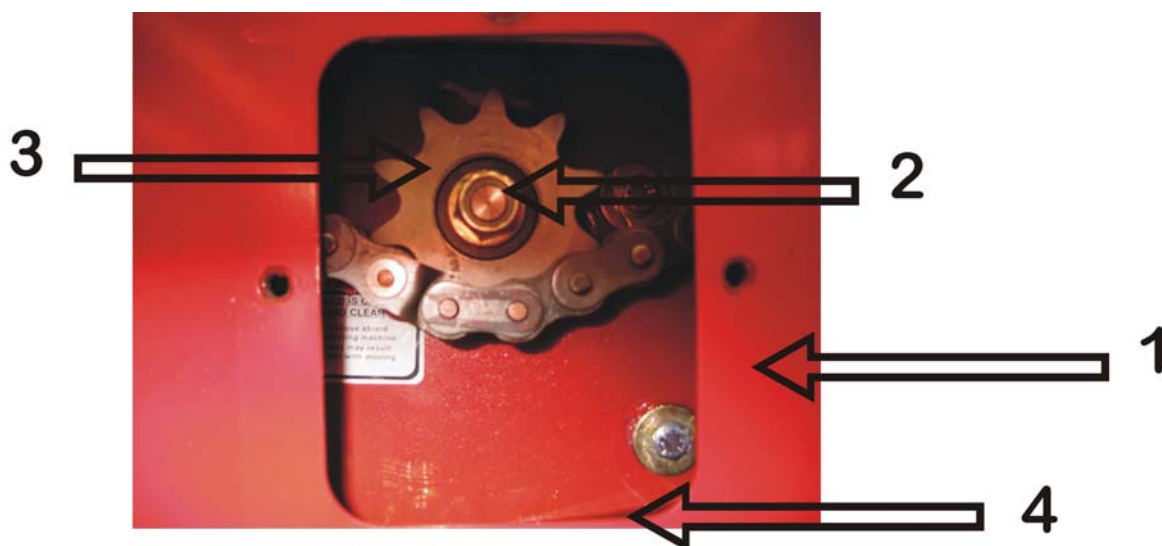
The chain should be replaced when the measurement along a straight, tight line of ten pins is greater than 236 mm; immediate replacement may guarantee minimum pinion wear.



To restore tension:

- Remove the inspection cover (1).
- Unscrew the nut (2) of the tensioning device.
- Move the tightening device (3) towards the chain under moderate pressure.
- Check the tension on the part of the chain opposite (4) to the tightening device, which must have a swing of $12\text{mm} \pm 2$.
- Tighten the nut (2) of the support to 214 Nm
- Reinstall the inspection cover (1)

IMPORTANT: a chain that is too tight will cause excessive wear of the chain itself.



Coupling the chain.

When the chain is secured, the closure at the end of the lock spring must be placed in the direction of travel of the chain, as shown in the figure.



10. FAILURE ANALYSIS

Most of the problems affecting corn heads are caused by improper adjustments.

The following failure analysis table will help you solve problems, suggesting the probable cause and recommended solutions.

While trying to solve a problem, make sure that it is not caused by other issues.

SYMPTOM	PROBLEM	SOLUTION
LOSS OF CORN COBS IN THE FIELD FROM THE FRONT OF THE DEVICE	Inadequate corn head tilt	Adjust the tilt angle as specified in chapter 5 of this manual
	Excessive corn head speed	Reduce the speed of the corn head by operating on the drive ring gear
	Field speed too slow	Increase the speed of the combine harvester in the field
	Working downhill	Install corn savers
LOSS OF CORN COBS IN AT THE SIDE OF THE CORN HEAD	Harvesting does not occur by selecting the rows as they are planted	Follow the rows as they are planted
	The unit is not centred on the row	Adjust the spacing as equal or narrower than the corn rows in the field
CORN CUT BY THE ROLLERS	Low speed of the corn head	Increase the speed of the corn head by operating on the drive ring gears so that the stalk never ends up inside the gearbox
	Worn roller knives	Move the blades closer to each other, as indicated in chapter 8 of this manual
	Row unit open	Close the row unit, checking the reference height in chapter 8 of this manual
	Worn deck plates	Replace them, as reported in Chapter 8 of this manual
	Deck plates not properly adjusted	Perform the basic adjustments as indicated in chapter 8 of this manual Before changing the settings, please contact your Olimac dealer
LOSS OF GRAIN THROUGH THE ROLLERS	Worn roller knives	Move the blades closer to each other, as indicated in chapter 8 of this manual
LOSS OF GRAIN THROUGH THE ROLLERS	Excessive speed of the corn head	Reduce the speed of the corn head, operating on the drive ring gears so that the stalk disappears through the rollers before entering the gearbox
	Low speed of the corn head	Increase the speed of the corn-head, operating on the drive ring gears so that the stalk never ends up inside the gearbox
WRAPPING AROUND THE STALK ROLLER	Worn roller knives	Bring the blades closer to each other as indicated in chapter 8 of this manual
	Stalk roller weed knife not properly adjusted	Check the adjustment of the stalk roller weed blades as indicated in chapter 8 of this manual

SYMPTOM	PROBLEM	SOLUTION
FRONT CLOGGING	Slack harvesting chains	Check the tension of the gathering chains as indicated in chapter 8 of this manual
EXCESSIVELY HIGH PERCENTAGE OF STALKS IN THE MACHINE	Unsuitable speed	Check the speed of the corn head
	Worn roller knives	Move the blades closer to each other, as indicated in chapter 8 of this manual
POWER INCREASE FOR OPERATION OF THE CORN HEAD	Stalk chopping system	Caution, power consumption increases when the stalk chopper is installed.
	Corn head tilt angle too low	Adjust the tilt angle as indicated in chapter 5 of this manual
	Worn roller knives	Move the blades closer to each other, as indicated in chapter 8 of this manual
	Worn chopper blades	Replace the blades of the stalk chopper as indicated in chapter 8 of this manual
INSUFFICIENT STALK CUTTING	Corn head tilt angle too high	Adjust the tilt angle as indicated in chapter 5 of this manual
	Low speed of the corn head	Increase the speed of the corn head, operating on the drive ring gear
	Worn chopper blades	Replace the blades of the stalk chopper as indicated in chapter 8 of this manual

In the event of clogging of some harvesting parts, the operator must proceed as follows:

- reverse the direction of the main machine and move it by a few metres;
- rotate the harvesting parts in order to unload the excess product;
- if manual intervention is required, the operator must park the machine on a flat surface, turn off the engine, engage the emergency stop, put on gloves and operate on the clogged parts.

In the event of mechanical failure, the drive-shaft must be disconnected before performing any repair.

11. SAFETY SIGNS

Safety signs (decals) are attached to our equipment, marking the level of attention required by the operator.

DANGER

This indicates a situation of possible immediate threat which, unless avoided, may result in death or serious injury. The colour associated with DANGER is RED.

WARNING

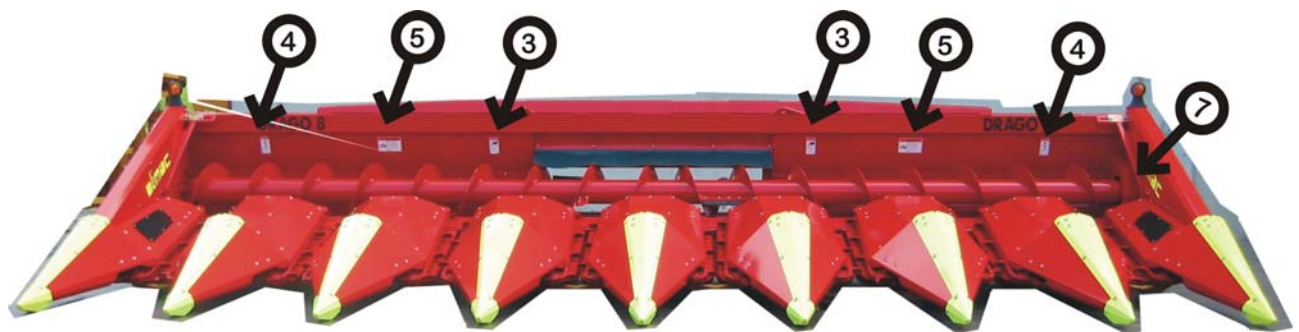
This indicates a specific type of behaviour to avoid, which could be dangerous and, unless avoided, may result in death or serious injury. The colour associated with WARNING is ORANGE.

CAUTION

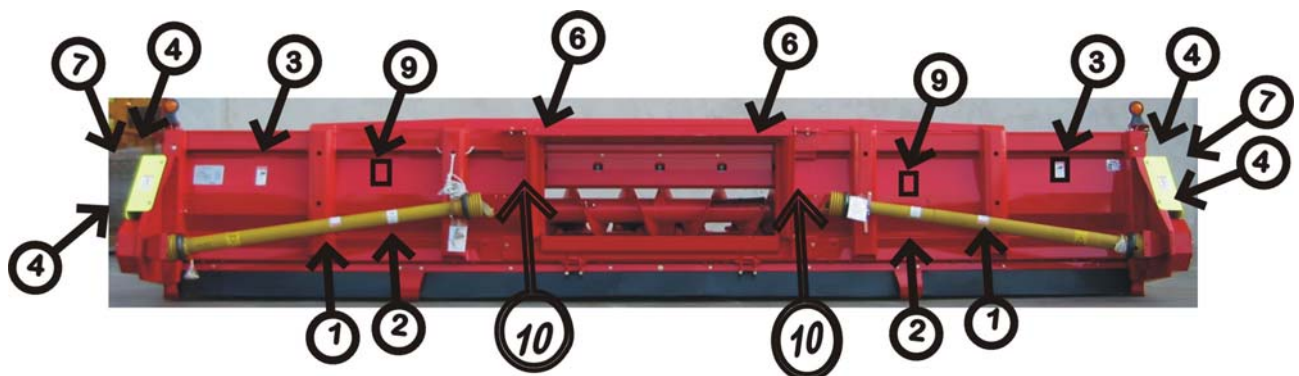
This indicates a recommended behaviour which, if ignored, could result in a situation of danger. It is also used to alert against unsafe practices. The colour associated with CAUTION is YELLOW.

The safety decals shown below must be placed on your equipment in the area indicated. They are intended to contribute to your personal safety and that of your collaborators. Please take this manual, walk around your machine and get acquainted with the contents and the position of the components of the device. Look over these decals and the instructions in this manual with the operator of your machine.

Keep the decals clear and legible. Should decals be missing from the specific parts, you can get new ones from your OLIMAC dealer.













FRONT VIEW OF THE MACHINE



REAR VIEW OF THE MACHINE

THE DECALS ARE AS FOLLOWS:

No.	POSITION	STICKER
1	<p>The "DANGER" decal 1 is located on the inner surface of the protections.</p> <p>DANGER – Shield missing Do not operate.</p>	
2	<p>The "DANGER" decal 2 is located on the outer protection.</p> <p>DANGER – Rotating driveline – Contact can cause death - Keep away!</p> <p>Do not operate without:</p> <ul style="list-style-type: none"> - all driveline, tractor and equipment shields in place - drivelines securely attached at both ends - driveline shield that turn freely on driveline 	
3	<p>Four no. 3 "DANGER" decals are placed on the front and rear parts of the corn head frame, on the side of the pipe opening.</p> <p>DANGER – Rest header on the ground or set header lift cylinder safety lock before going under unit.</p> <p>Failure to comply will result in death or serious injury.</p>	
4	<p>Six no. 4 "DANGER" decals are placed on both the front and rear parts, and on the sides of the corn head.</p> <p>Danger- Projection of foreign bodies. Do not come near the machine in motion. Failure to comply will result in death or serious injury.</p>	
5	<p>"WARNING" decal no. 5 is positioned at the front of the frame.</p> <p>WARNING - Stop corn head drive and shut off engine before unclogging rolls. Rolls and gathering chains move faster than you can release stalks. Failure to comply will result in serious injury or death.</p>	

No.	POSITION	STICKER
6	The "WARNING" decal no. 6 is located on top of the bar (beam). WARNING - Slippery surface Do not use this area as a step or platform. Failure to comply will result in serious injury or death.	
7	No. 7 "WARNING" decals are placed below the feeder and the drive on the side of the chain box. WARNING – <u>SHIELD IS OPEN STAND CLEAR</u> Replace or close shield before operating machine. Severe injury may result from contact with moving parts.	
8 folding models only	No. 8 "DANGER" decals (folding models only) are placed on the back and on the side of the corn head. DANGER – Do not come near the machine during the folding process. Failure to comply will result in death or serious injury.	
9 European fixed models only	Placed under the feeder and at the side of the chain box.	
10	Placed on the back and the side of the corn head.	

CAUTION!!! In the event of a failure, immediately contact a workshop, an authorized dealer or OLIMAC and do not use the machine until permission has been granted by trained personnel.

CAUTION!!! altering, tampering with or bypassing the safety devices installed on the machine is strictly forbidden.

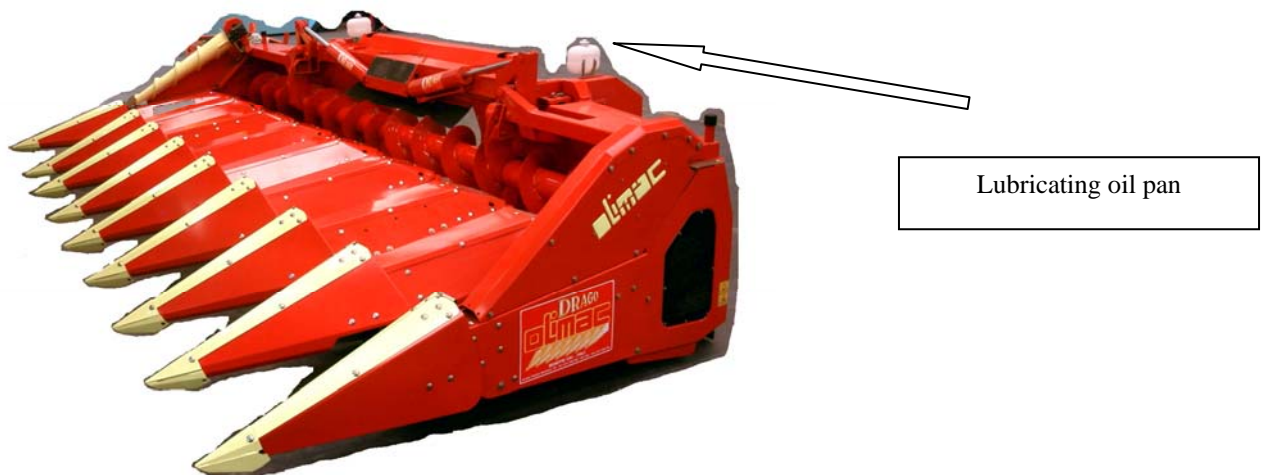
12. LIST OF REFERENCE REGULATIONS

This machine was manufactured in compliance with Machinery directive 2006/42/EC.

13. DISPOSAL

Before dismantling the machine, it must be disconnected from the combine harvester.
The materials and components of the machine are not harmful, nor do they pose a danger of fire or explosion, and the dismantling of the machine can be carried out in compliance with normal dismantling procedures.

Caution! The oil contained in the lubricant trays is highly pollutant so it must not be discarded in the environment or disposed of in unsuitable areas; the procedures and regulations provided for by the law regarding waste disposal must be complied with.



14. COPY OF THE CE DECLARATION OF CONFORMITY

A copy of the CE declaration of conformity issued by the manufacturer follows.