User instructions

MACHINE:

Model: Multi G3 Chopper

Serial no.: 2018…….MC

Heecon BVBA
Maxburgdreef 11
B – 2321 Meer
Belgium

E: info@heeconbvba.com
T: 0032 3315 0609 (BE)
T: 0031 8520 12282 (NL)
M: 0032 495 272529
F: 0032 3315 0608

Date: June 2018

Toronto, Ontario, Canada

This document is a translation of the Dutch language original for information purposes and is prepared as a guide for English speaking users. In the event of a discrepancy, the Dutch original version shall prevail.

Contents

1. Details manufacturer

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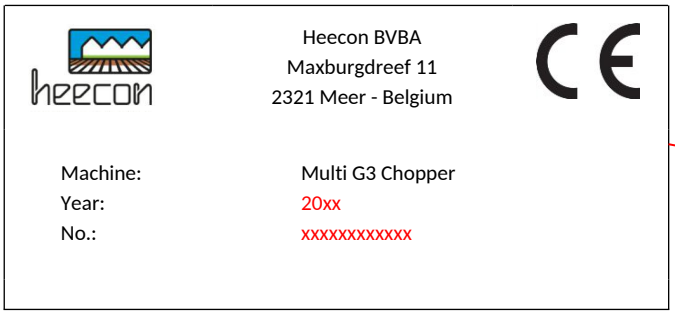
2. Details machine

2.1 General information

Name of the machine:	**Multi G3 Chopper**
Construction year:	**20xx**
Serial number:	**xxxxxxxxxxxx**

2.2 Name plate and location



3. EC-declaration of conformity

EC-DECLARATION OF CONFORMITY FOR MACHINES
(according to attachment II.1.A of the Machine Guideline)

Heecon BVBA
Maxburgdreef 11
2321 Meer, Belgium

Declares with this document that the following machine:

MACHINE:	**Multi G3 Chopper**
No:	**xxxxxxxxxxx**
CONSTRUCTION YEAR:	**20xx**

measures up to all requirements specified in the following EC-guidelines:

2006/42/EG	**RICHTLIJN 2006/42/EG VAN HET EUROPEES PARLEMENT EN DE RAAD van 17 mei 2006 betreffende machines en tot wijziging van Richtlijn 95/16/EG (herschikking)**

zoals vastgelegd in het Publicatieblad van de Europese Unie

en verklaart voorts dat de volgende (onderdelen van) geharmoniseerde normen zijn toegepast

NBN EN ISO 12100:2010	**Veiligheid van machines - Basisbegrippen voor ontwerp - Risicobeoordeling en risicovermindering (ISO 12100:2010)**
EN ISO 13849-1:2008	**Veiligheid van machines - Onderdelen van besturingssytemen met een veiligheidsfunctie - Deel 1: Algemene regels voor ontwerp (ISO 13849-1:2006)(+ AC:2009)**
NBN EN ISO 13850:2015	**Veiligheid van machines - Noodstopfunctie - Ontwerpbeginselen (ISO 13850:2015)**
NBN EN ISO 13857:2008	**Veiligheid van machines - Veiligheidsafstanden ter voorkoming van het bereiken van gevaarlijke zones door de bovenste en onderste ledematen (ISO 13857:2008)**
NBN EN ISO 14119:2013	**Veiligheid van machines - Blokkeerinrichtingen gekoppeld aan afschermingen - Grondbeginselen voor het ontwerp en de keuze (ISO 14119:2013)**

If any modifications are applied to the concept, without prior written permission from the manufacturer, the responsibility of the manufacturer will expire.

Location: Meer Date: ……

On behalf of the management Heecon BVBA

Name: .....

Function: .....

Signature: .....

4. General conditions

This machine has been designed and built according to the most recent and best available techniques.

Before starting the use of the machine, please ensure all users read these instructions very thoroughly. You will get the most benefit from your investment if you strictly follow the instructions for use, maintenance and inspection. The same applies for the user instructions of driving elements, such as the engine, which are supplied by the manufacturer.

In these user instructions, the term “operate” is understood to mean:
The setting up, working with and the cleaning of the machine and performing simple maintenance work

This manual is part of the machine and must therefore be transferred to the new owner in the event of sale. The new owner has to be made aware of the advice given in this document. If you require a new manual, e.g. because it got damaged or lost, contact the manufacturer immediately.

4.1 Target audience

Operation, maintenance and cleaning of the machine must only be carried out by professionally trained persons.

The customer is responsible for the training of its employees in accordance with the applicable legislation. The training of employees can be taken care of by (a) specialist(s) employed/engaged by the manufacturer.

The machine must only be operated by adults.
The dimensions of the protection guards are based on persons from ±14 years old.

4.2 Intended use

The machine is only suitable for use in the (greenhouse) horticultural sector, and in combination with the use of a suitable collecting medium for the processed material. The various functionalities that fall within the scope of the intended use are described in Chapter XX of these user instructions. Any other use is excluded from the liability of the manufacturer.
During normal use all conditions as specified by the manufacturer for operation, maintenance and repair have to be complied with. The machine must only be operated, maintained and repaired by persons who are familiar with the machine and who are aware of the dangers involved. To prevent accidents, you should continue to comply with all rules and regulations relating to safety, health and hygiene.
This machine is not suitable for use in areas with an explosion hazard.

4.3 Warnings regarding ways in which the machine is not to be used or reasonably foreseeable misuse

The following can be considered as reasonably foreseeable misuse:

- Locking the operating levers (e.g. by be tying them to the machine frame) to make the machine run continuously. The operating levers may only be operated with human muscle strength and may in no case be locked.
- Intervention in the feed ports prior to shutdown of the moving parts. During operation of the machine, the moving parts of the feed cannot be completely guarded. Residual risks have been identified using warning signs and the machine is equipped with emergency stop buttons at critical locations.
- Changing the set operating pressure of the hydraulic installation without the approval of the manufacturer.

- Working with the machine without all the safety devices being restored or activated.
- Poor maintenance/cleaning of the machine after use.
- Using the machine as a step-up to get to another location: climbing on top the machine with possible unwanted activation of moving parts.
- Inappropriate transport/movement of the machine.
- Any other use that is not described in these user instructions.

4.4 Marking conventions

In this user instructions, each text on safety is indicated with the following symbol:

	***Warning for danger!*** ***Failure to comply with the instructions may result in (serious or very serious) injuries***

4.5 Liability and guarantee

The above-mentioned intended use must not be derogated from without the written permission of the manufacturer. If the intended use is derogated from, all product liability and warranty will lapse. The same applies for non-recommended use or reasonably foreseeable ways of misuse of the machine.

Personally making changes to the machine without the written consent of the manufacturer is not allowed. This will invalidate any product liability and responsibility of the manufacturer, as well as any potential warranty claims for any resulting damage caused. In addition, it may adversely affect the safety of your machine.

5. Composition and characteristics of the machine

5.1 General description of the functioning of the machine

The Multi G3 Chopper is a multi-purpose machine designed for use in the (greenhouse) horticultural sector, in particular for:

1. The shredding (read: chopping into small bits) of biodegradable horticultural crops (hereinafter referred to as “crops”), such as tomatoes, bell peppers and cucumbers.
2. The clearing out of substrate, such as rock wool, perlite and coconut, but also the churning out of waste of strawberry or raspberry crops and leaves of tomato or bell pepper plants.

The machine must always be used in combination with a suitable collection container for the transport of the processed material.

The Multi-G3 Chopper consists of a basic machine and can, for the desired application, be equipped with various interchangeable parts (see 5.2). The chopping rotor can also be removed from the basic machine.

The machine will be powered by a John Deere 6.8L OEM Diesel engine (Final Tier4/Stage IV Platform). This engine is equipped with a SCR-system (Selective Catalytic Reduction) for the reducing of the emissions of nitrogen oxides. Since 2005 European standards are aiming on reducing polluting emissions of diesel engines by setting limits for the emission of nitrogen oxides. The European Euro VI standard is operative since September 2014, and has been brought to life to reduce the pollution by diesel engines, and decreasing its environmental-impact. The SCR technology treats the exhaust fumes after the combustion. The harmful nitrogen oxide molecules are being converted in a catalysator which reduces the emission of the diesel engines. AdBlue® takes care of this with the SCR-system from an external tank which is not connected with the diesel tank.

When the diesel engine runs, the combustion of the fuel produces nitrogen oxides when the oxygen and nitrogen are being mixed together. The AdBlue® is injected in the exhaust pipe between the engine and the SCR-catalyst. At high temperatures the AdBlue® is being converted in ammonia and carbon-dioxide. When the nitrogen oxide reacts with the ammonia inside the catalyst, the harmful NOx-molecules will be converted in harmless nitrogen (N2) and water (H2O). This chemical reaction will cause the decreasing effect on the environment. NOx+NH3 = H2O +N2. The AdBlue® tank should always be filled so the SCR-system can operate correctly. If the tank runs empty, the engine won’t be able to start. A warning light will light up on the dashboard that the tank needs to be refilled.

5.2 Functionalities of the machine

5.2.1 Basic-machine

The basic-machine consists of the machine frame and the diesel engine with the transmission components, the 2 mat winding systems, the track undercarriage and operating systems. The chopper with chopping rotor and chute can be dismounted from the basic machine. This is made possible so the machine can be easily equipped with interchangeable parts. (auger)

5.2.2 Auger with chopping rotor

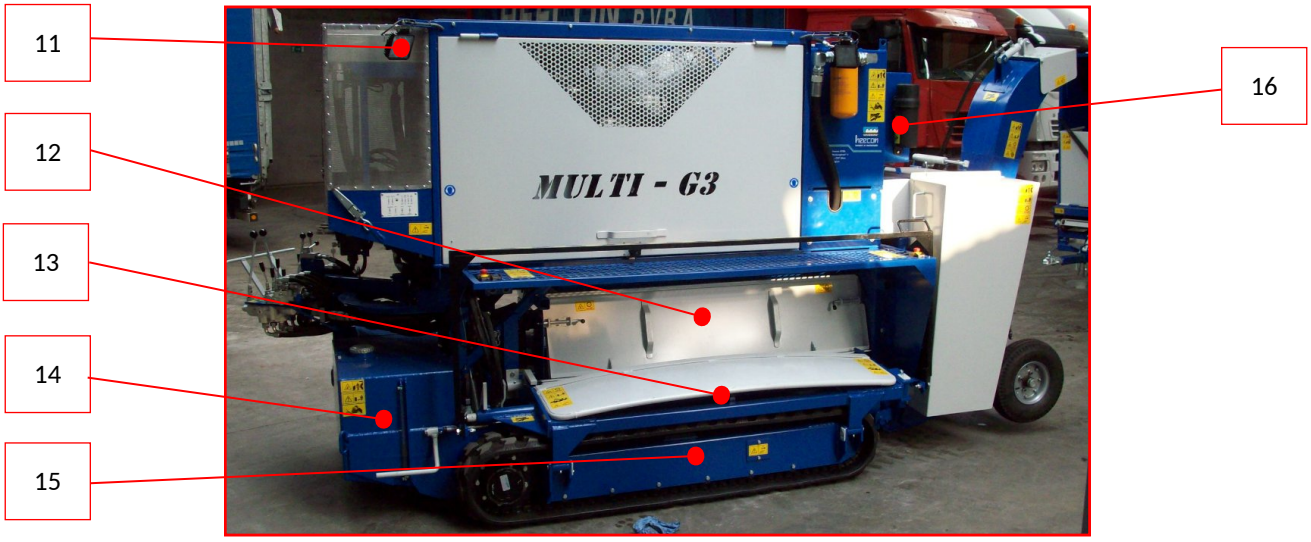
In this function, substrate for the cultivation of fruit crops, such as rock wool, perlite and coconut fibre, but also leaves of tomato or bell pepper plants are cleared away. The substrate is often cleared away straight after shredding: the mats are unwound immediately after shredding, and the substrate is placed on these mats. The mats are then wound up again using the winding unit, and the substrate is compressed with the exchangeable screw and immediately

transported to a suitable collection container. From this container, the compressed substrate is then disposed of with a suitable loader/grab.

The machine is equipped with an input and sheet-winding unit on both sides, so both sides of the machine can be used for inserting the crops. The hydraulic pump powers the hydraulic-motors of the moving parts such as: input-roll, mat winding system and the auger.

5.3 Parts and names

5.3.1 Multi G3 Chopper

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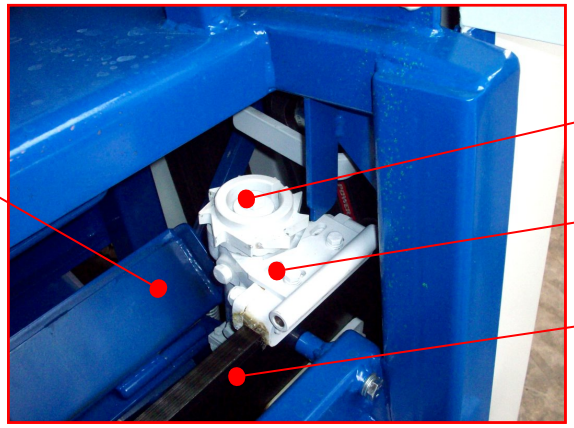
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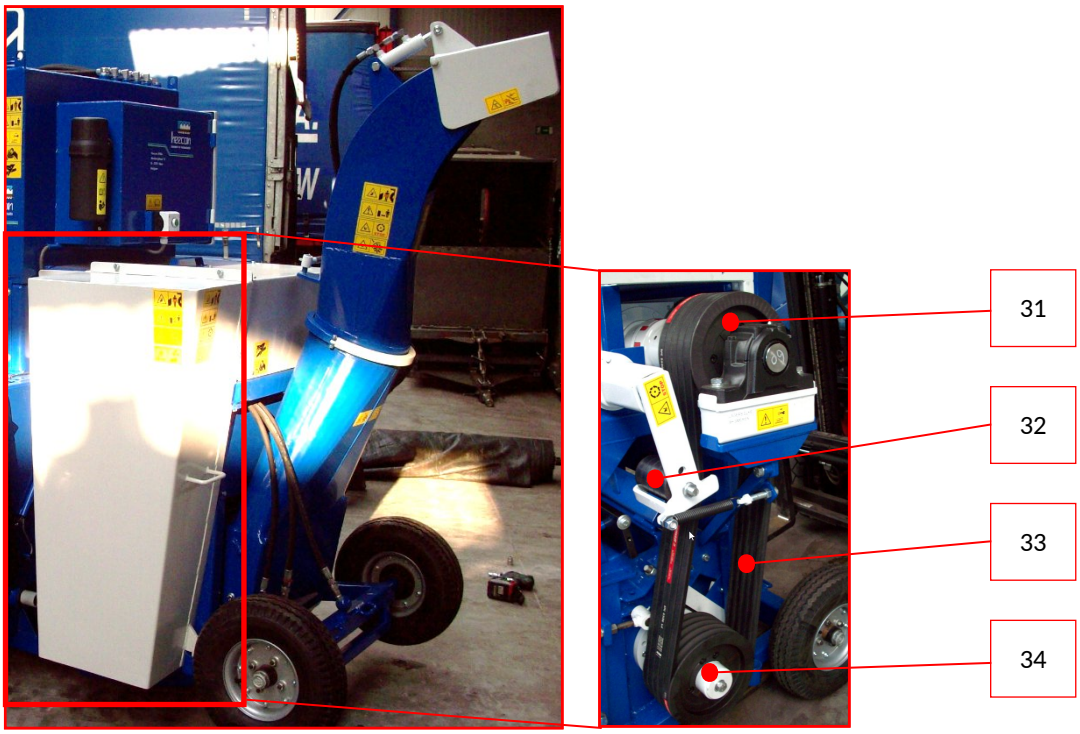
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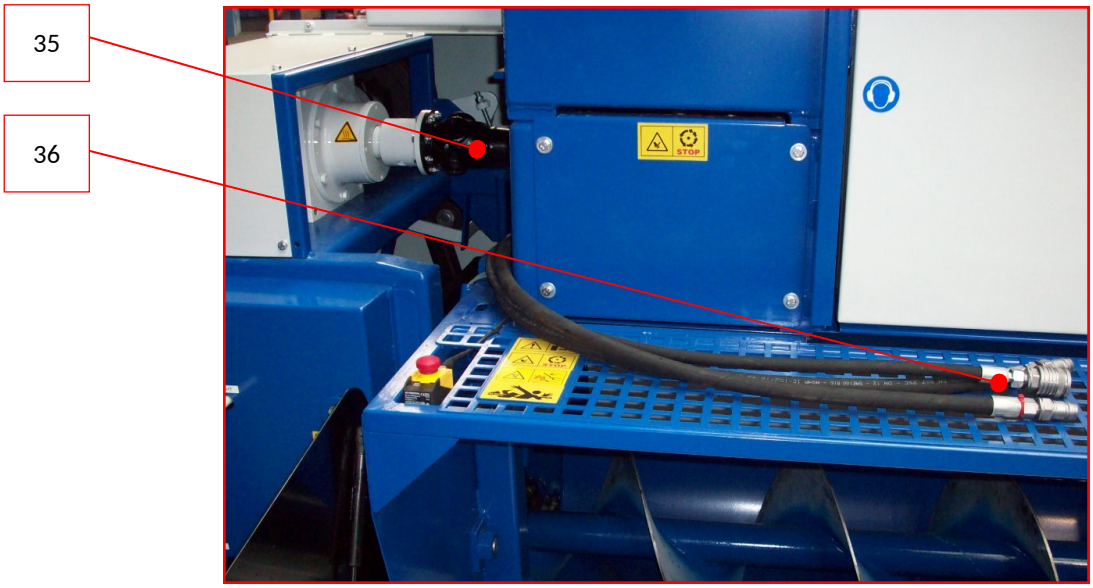
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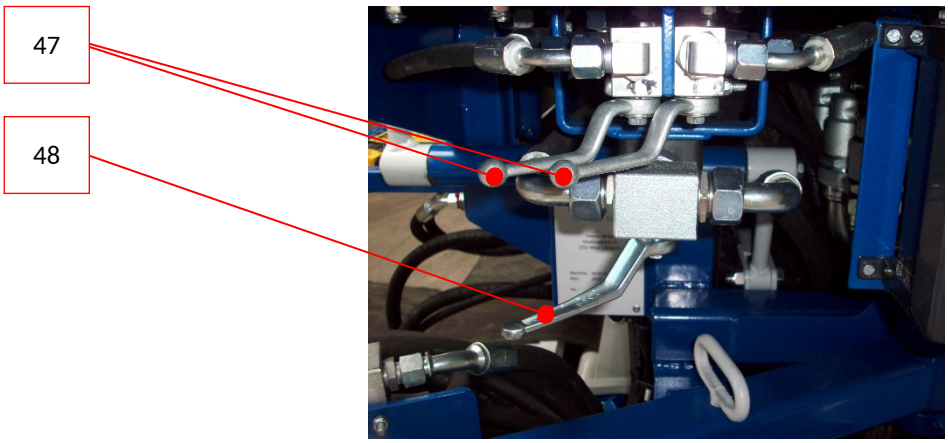
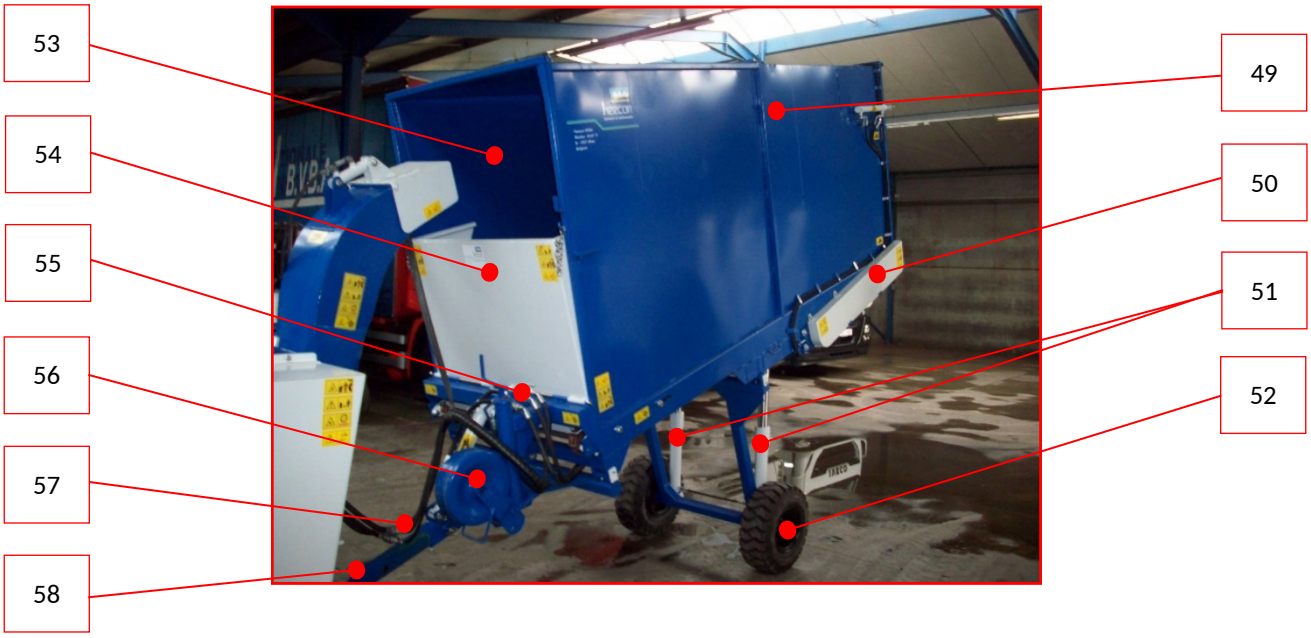
1	John Deere diesel engine
2	Cooling radiator diesel engine with fan
3	Storage space/toolbox
4	Auger
5	Left mat winding unit
6	Left track undercarriage
7	Lever chopping rotor coupling
8	Controls system (movable)
9	Diesel Exhaust Fluid (DEF) tank with dosing system
10	Input-rool (dismountable)
11	Lighting (#4)
12	Guard/crash plate auger (to be placed on the left & right side depending on use of the machine)
13	Right mat winding system
14	Fuel tank
15	Right track undercarriage
16	Storage shute User manual
17	Adjustable output shute
18	Hydraulical cylinder adjustable output shute
19	Output shute
20	Axle chopping rotor
21	Wheels chopping unit

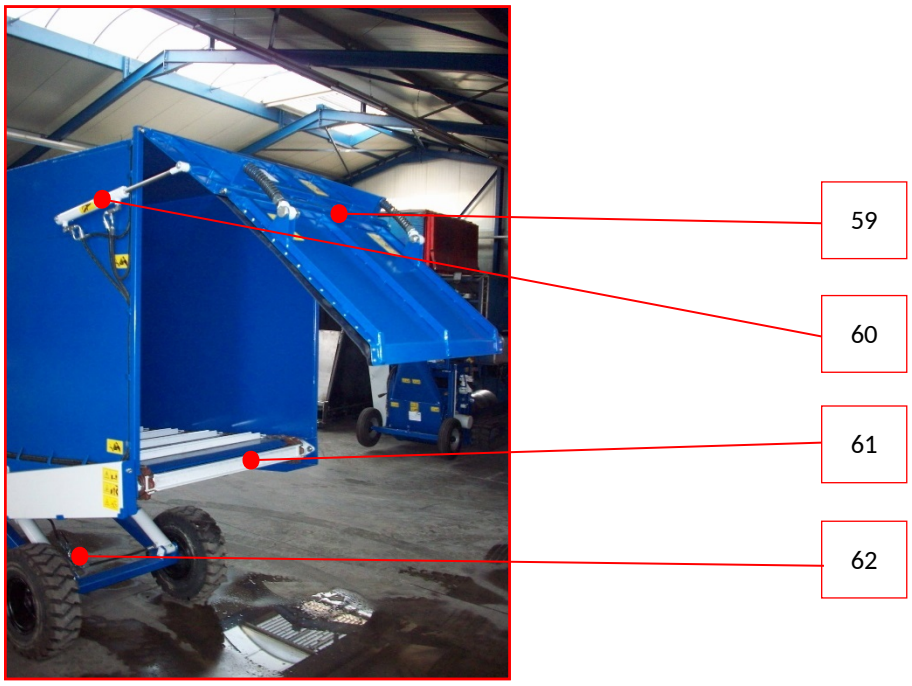
22	Hydraulical cylinder output chute
23	Gearbox with cover
24	Operation grindstone chopper unit
25	Lever moving cover grindstone unit
26	Tow bar storage container
27	Movable cover grindstone unit
28	Hight adjustment grindstone
29	Grindstone holder with grindstone
30	Guiding grindstone (left & right movement)
31	Axle drive gearbox
32	Tensioner V-belts
33	V-belts transmission chopper unit
34	Axle chopper rotor
35	Power Take Off shaft motor
36	Hydraulic connection hoses receiving hopper (#3)
37	Protection cover input (#2)
38	Lever for positioning movable adapter for mat winding (#2)
39	Movable adapter to mount/dismount mat roll (#2)
40	Guiding roll mat winding unit (#2)
41	Mat winding unit (#2)
42	Safety guard input unit (#2)
43	Solid adapter mat winding unit (#2)
44	Hydraulic motor mat winding unit (#2)
45	Locking mechanism mat roll (#2)
46	Operating lever locking mat roll guide (#2)



47	Hydraulic valves opening & closing left & right mat winding units (#2) Valves to the left: controlling the left cylinder for opening/closing the left mat winding unit active. Valves to the right: controlling the right cylinder for opening/closing the right mat winding unit active.
48	Hydraulic valves controlling left or right hydraulic motors for the mat winding unit Valve to the left: left side hydraulic mat winding unit active Valve to the right: right side hydraulic mat winding unit active.

5.3.2 Receiving hopper



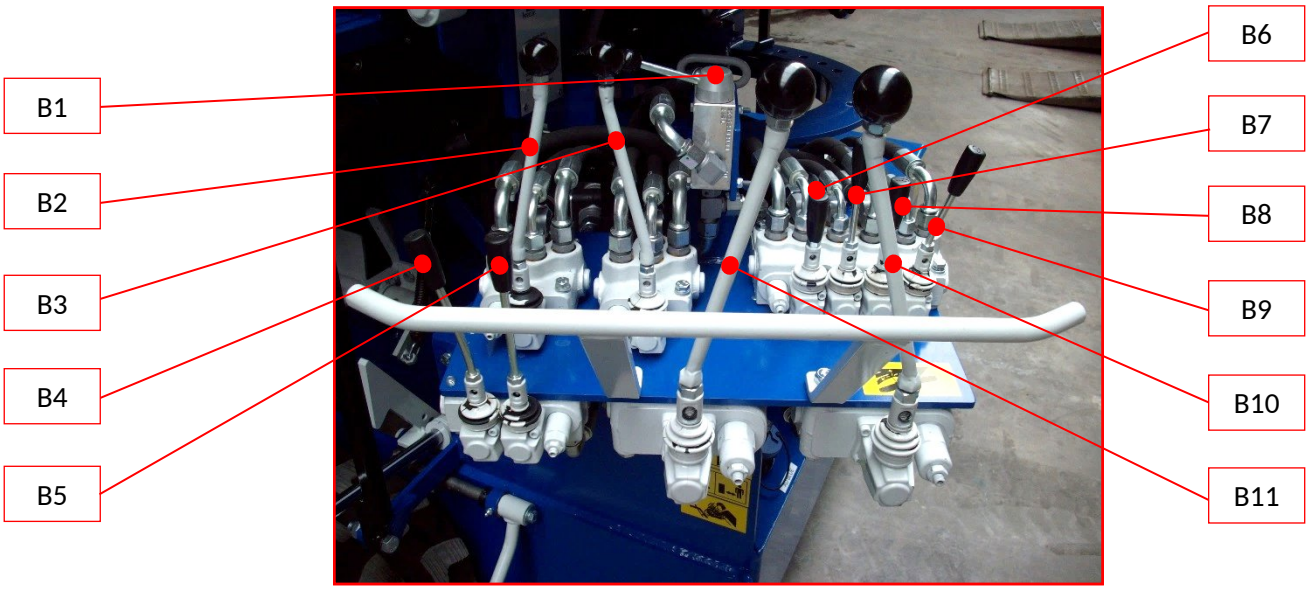


49	Receiving hopper
50	Conveyer chain drive for receiving hopper
51	Hydraulic cylinders for height adjustment hopper (#2)
52	Wheels (#2)
53	Input opening
54	Pull-out front wall of receiving hopper
55	Hydraulil valves emptying hopper/height adjustment
56	Ball coupling for connecting to the tow bar of the main machine
57	Hydraulic connection hoses
58	Ball coupling
59	Output hatch
60	Hydraulic cylinder opening/closing output hatch (#2)
61	Transport chain
62	Hydraulic valve locking height adjustment

5.4 Operating systems

	***The operation levers can only be used by human handling, and may never be locked in position by any other means.***

5.4.1 Operating system



B1

Speed control feed (horizontal feed belt + feed roller chopping rotor)
Turning clockwise = increasing speed
Turning counterclockwise = decreasing speed

B2

Control system left track
Control valve forward = track moves forward
Control valve backward = track moves backward

B3

Control system right track
Control valve forward = track moves forward
Control valve backward = track moves backward

- **Hydraulical valves (55) straight on the hoses:**

B4

Control conveyor belt hopper
Control valve forward = conveyor belt rotating forward (empty) + opening hatch.
Control valve backward = hatch closing + conveyor belt stops turning.

- **Hydraulical valves(55) parralel to hoses:**

Control adjusting height recieving hopper.
Control valve forward = recieving hopper going up
Control valve backward = recieving hopper going down.

B5

Control chute flap
Control valve forward = flap moves up
Control valve backward = flap moves down

B6

Control height recieving hopper
Control valve forward = recieving hopper going higher
Control valve backward = recieving hopper going down.

B7

Control rotating output chute
Control valve forward = output chute rotating to the right
Control valve backward = output chute rotating to the left

B8

Control input roll
Control valve forward = input roll on
Control valve backward = input roll off

B9

Control open/close feed left mat winding unit
Control valve forward = feed is closed
Control valve backward = feed is opened, only possible if the mechanical latch (b26) is released. If feed is open, the mat winding unit cannot run.

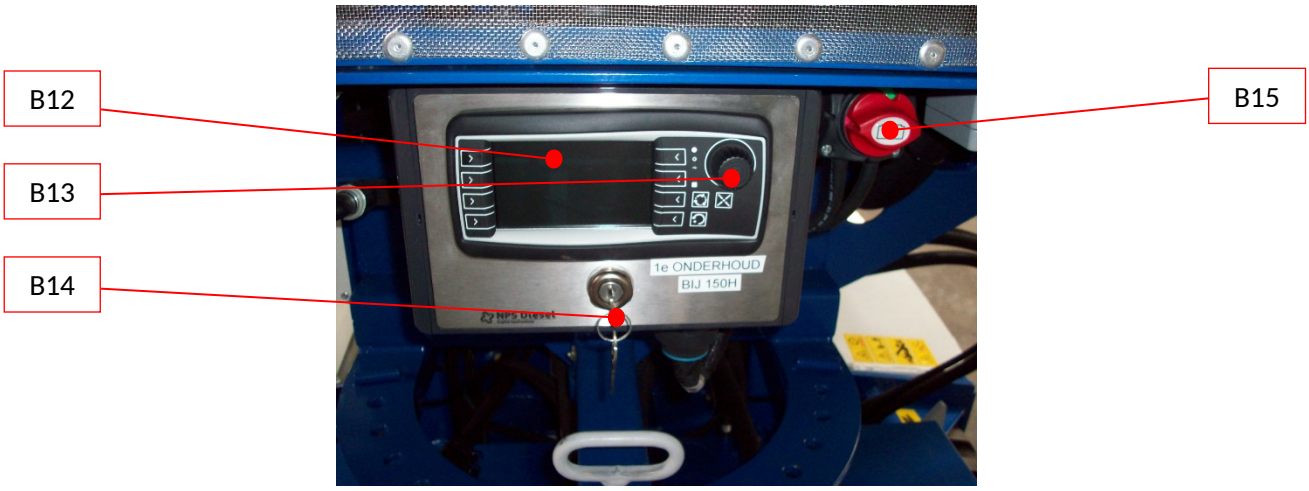
B10

Control feed unit
Control valve forward = feed: conveyor belts and feed roller/screw go forward
Control valve backward = discharge: conveyor belts and feed roller/screw go backward

B11

Control right mat winding unit, winding and unwinding
Control valve forward = winding
Control valve backward = unwinding

5.4.2 Other controls



B12

Display Engine data (See user instructions provided by John Deere)

B13

Engine speed control
Turn knob clockwise = Increase engine speed
Turn knob anti-clockwise = Decrease engine speed

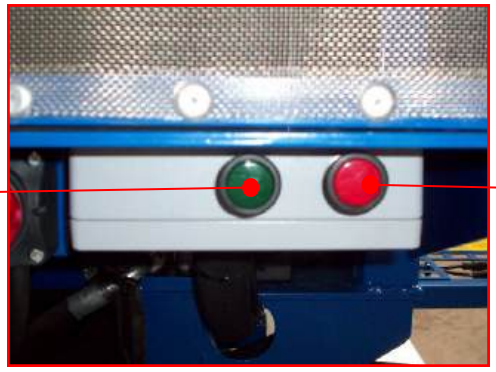
B14

Key switch engine
Key clockwise = Turn on engine
Key counter clockwise = Turn off engine

B15

Main switch engine
Important note:
When the switch is set to 'OFF', the red turn knob can be removed as protection again unwanted reactivation.

B16



B17

B16

On/off switch lighting
Switch pulled out = lights on
Switch pushed in = lights off

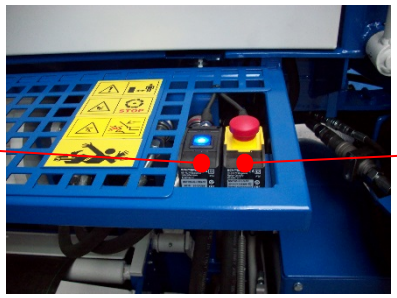
B17

On/off switch fan oilcooler
Switch pulled out = fan on
Switch pushed in = fan off

B18

B18

Safety control (2nd operator) winding back with open mat winding unit
Push switch = rewinding (turning back) the mat winding unit
Release switch = stop rewinding (turning back) the mat winding unitBelangrijke
Note:
Switch should only be operated in combination with (B11) when mat winding unit is opened.



Emergency stop (#4)

B19

	**Important note:** **By activating an emergency stop only the hydraulic moving parts of the input unit, mat winding unit and recieving hopper will stop. The chopper rotor will NOT be stopped. A stop by the chopper rotor can be performed by disconnecting the coupling on the motor. (7).**

B20

Reset switch (#2)

5.5 Characteristics drive/power

Electrical:
The safety circuit (emergency stops, safety switch(es)) works on the battery voltage of the engine (alternator).

- 12 V (battery voltage)

Hydraulic:

- Operating pressure: 170 bar
- Max. pressure: 200 bar

6. Safety

6.1 Safety indicators on the machine

6.1.1 Explanation of the icons

The following icons are applied on the machine:

 S010	***Attention!*** ***Please read the user instructions carefully before using the machine***
 S009	***Attention: Danger of crushing!*** ***Do not stand between the machine and other objects***
 S001	***Attention!*** ***Keep clear of the machine***
 S003	***Attention: Rotating parts!*** ***Winding danger***
 S005	***Attention: Fire hazard!*** ***Keep open flame/fire away from hydraulic/fuel hoses***
 S007	***Attention: Danger of cutting!*** ***There are moving parts/cutting knives under the guard***
 S004	***Attention: Falling items!*** ***Stay clear of the moving machine parts***
 S008	***Attention: pressurised hydraulic oil!*** ***Risk of serious injury when oil penetrates the skin***
 S006	***Attention!*** ***Avoid unwanted activation of the machine. Consult the user instructions and remove the key from the ignition before starting maintenance and repair work.***
 S002	***Attention: Turning parts!*** ***Wait until the machine has come to a complete stop before manual intervention***
	***The use of safety shoes is required***

	*The use of a breathing mask is required*
 S012	*The use of hearing protection is required*
	*The use of safety goggles is required*
	*Attention: burning hazard!* *Parts with high temperatures.*

6.1.2 Location

	• *Moving parts receiving hopper* • *Controls*
	• *Input receiving hopper* • *Output hatch receiving hopper* • *Chopper unit* • *Output chute chopper unit*
	• *Mat winding unit* • *Input unit* • *Input receiving hopper* • *Output hatch receiving hopper* • *Chopper unit* • *Output chute chopper unit* • *Front, back and both sides of the machine*
	• *Mat winding unit* • *Input unit* • *Chopper unit*
	• *Nearby hydraulic components/hoses* • *Fuel tank*
	• *Transport chain receiving hopper* • *Chopper unit*

	• *Mat winding unit* • *Input unit* • *Input receiving hopper* • *Output hatch receiving hopper*
	• *Nearby hydraulic components/hoses*
	• *Chopper unit* • *Safety cover chopper unit drive* • *Maintenance points moving parts*
	• *Mat winding unit* • *Input unit* • *Moving parts receiving hopper* • *Chopper unit* • *Output chute chopper unit*
	• *Protection cover engine*
	• *Protection cover engine*
	• *Protection cover engine*
	• *Protection cover engine*
	• *Hot parts engine*

6.2 Safety regulations

6.2.1 General safety regulations

	*Besides the safety regulations which are provided in this manual always follow the general safety instructions of the workplace to prevent accidents.*

	*The machine can only be operated by competent persons who:* • *At least 18 years old;* • *Are not using medication or drugs which may affect the responsiveness;* • *Are fully informed about and who understand the functions and controls of the machine.*
	*Familiarise yourself with the controls and their effects before you start work. During this when you are at work is too late.*
	*Before you can start using the machine, it is necessary that you have proper knowledge of can apply the safety regulations for working with this machine.*
	*Never leave the machine unattended without first removing the key from the ignition.*
	*Do not use the machine if it is damaged or not complete. Every damaged or missing part needs to be fixed or replaced immediately.*
	*Never change the setting on the machine without asking for a written approval from the manufacturer. Only work with the pre-set settings of the machine.*

6.2.2 Electrical

	*Avoid direct contact of the electrical parts with a water jet or excessive water.*
	*Do not use the machine when any electrical components or wires/cabling are damaged. Replace immediately lose or damaged parts.*

6.2.3 Mechanical

	*Dangerous and moving parts of the machine are covered with safety covers or other safety regulated measures when possible. Despite the functionality of the machine it is not possible to cover all moving or dangerous parts. When using the machine always be careful, and work according to the following regulations!!*
	*NEVER insert your hands into the feed ports or other moving parts of the machine. This may result in serious or very serious injuries. In case of emergency, use the emergency stop.*

	*Do not wear baggy clothing or loose hair in the vicinity of the machine.*
	*Before starting the use of the machine, check the proper functioning of all safety devices (guards, emergency stops, safety switches on movable guards). Do not remove or disable the safety devices.*
	*Check the hydraulic hoses for any damages before using the machine. High pressure liquids like hydraulic oil can be released under high pressure, be inserted in the skin and cause severe injuries. If any injury occurs contact a medical expert immediately.*
	*During use, only the operators may be in the vicinity of the machine. All other persons must keep a safe distance.*
	*Only use the machine in combination with a suitable collection container. No persons should be within the range of the discharge chute of the machine.*
	*Always wear safety clothing while working with the machine:*
	• *Suitable safety shoes*
	• *Suitable safety goggles*
	• *Suitable safety ear protection (+85dB(A))*
	• *Suitable dust mask*
	*Never exceed the pre-set maximum working pressure of the machine.* • *The hydraulic pressure may not exceed 200 bar.* *Exceeding the maximum pressure could result in damaging the parts, which can result in severe injuries.*
	*Install or remove the mats only if the feed is completely open. (the input will be disabled)*
	*Always ensure that only plants are fed into the machine. Remove all metal objects from the plant material before attaching the mat or feeding the crop bundle into the machine.*

	*When the machine is in use, no person should be on the mat or crops.*
	*Do not use the machine on a slope, to avoid the machine from tilting.*

6.2.4 Additional safety

	*Ensure that the working area is sufficiently lit when working outside normal daylight hours. Avoid strobing effects of ambient lighting, so ensure proper visibility of moving parts.*
	*Always thoroughly clean the machine after use. If necessary, disinfect the machine.*
	*Always follow the safety instruction data sheets for the chemical products which are used by cleaning and maintaining the machine.*
	*Avoid smoking or open fire nearby the machine. Flammable products may be present on or in the machine (hydraulic oil). In dry conditions the dust and crops are also a fire hazard.*
	*Always use the machine in a well-ventilated environment. The engine's combustion gases are toxic and may result in poisoning or suffocation.*
	*Operating the machine in conditions with a high temperature/humidity can result in dehydration, drowsiness, fatigue, etc. Take frequent break and drink sufficient water.*
	*Always wear safety gloves related to the hot oil hoses. When inserting or removing mat rolls, or inserting the crops hoses will be present nearby the action. Only use undamaged mats and make sure the crops are positioned correctly on the mats (see 8.2 for example of this procedure).*
	*Always follow the safety regulations of the battery. Always use electrical protected tools, and use the proper safety clothing when working on or with the battery. The acid in the electrolyte can cause burning hazard toe yes, and skin.*
	*Always follow the safety regulations of the DEF (AdBlue®) while refilling and using.*

6.2.5 Safety regulations during maintenance, cleaning or repairing.

	*After every use, and before cleaning, maintaining, or repairing always turn of the machine, and remove the key from the ignition. This will prevent accidental activation of the engine. Always follow the provided energy-isolated procedures of the client.*
	*Never open or remove the guards while the engine is running. Correctly replace all guards and safety devices after maintenance.*
	*The machine can only be repaired by qualified and skilled personnel. Spare parts and repairs should always be consulted by the manufacturer. Only use correct tools which are approved by the manufacturer and described in this manual.*
	*Singlehanded modifications to the machine are not allowed without consulting the manufacturer and getting approval to do so.*
	*Maintenance waste should always be disposed of in the legally prescribed manner. Prevent environmental pollution during maintenance work.*
	*Always wear cut-resistant gloves when working close to the cutting knives or other sharp machine parts.*
	*Always wait with manipulation (maintenance) of hot machine parts until they have cooled down sufficiently, to avoid scalding.*
	*Grinding the cutting head knives is the only procedure that should take place with the engine running. Engine speed 1500 revolutions per minute (rpm). The grinding procedure is explained later in these user instructions. The instructions should be strictly followed.*
	*Beware while moving the machine. Make sure the path is free of tools, loose components or present people.*
	*Beware of the risk of getting your lower and/or upper extremities crushed when changing exchangeable parts. Always use the specified PPEs.*

6.3 Safety devices

Diesel engine safeguards:
The diesel engine has several safeguards, such as: oil pressure, alternator and water temperature. If the oil pressure is too low, the alternator voltage is too low, and the water pressure is too high, the diesel engine will cut out. For more information: see the John Deere user instructions (no.: 6068HF2085).

Fixed guards:
All moving parts are optimally shielded with fixed guards to prevent risk of injury. These fixed guards can only be loosened and removed using suitable tools. All fixed guards should be remounted before the machine is being used again.

Emergency stops:
When an emergency stop is pressed during operation, all functions of the machine will be stopped. The machine can only be restarted using the control switches after releasing the emergency stops.
Important note:
By activating an emergency stop only the hydraulic moving parts of the input unit, mat winding unit and recieving hopper will stop. The chopper rotor will NOT be stopped. A stop by the chopper rotor can be performed by disconnecting the coupling on the motor.

Safety switches on movable guards:
All movable guards are equipped with safety switches, to stop the dangerous moving parts of the machine when these guard are opened.

Overpressure protection:
As a default, the hydraulic valves are protected against overpressure (200bar).

7. Instructions for mounting, installation and connection

The following couplings and connections have to be made:

7.1 Connect & disconnect receiving hopper

7.1.1 Disconnecting receiving hopper

Start the basic machine according to 8.1.1

Put the hopper in the lowest position. (front and backside)

Frontside hopper:
Put the hydraulic valves **(55)** parralel to the hoses, and use operatinglever **(B4)** to put the front of the hopper in the lowest position.
Operating valve forward = recieving hopper going up
Operating valve backward = recieving hopper going down

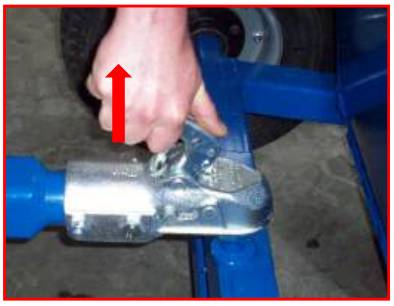
Backside hopper:
Put the hydraulic valves **(55)** and **(62)** parralel to the hoses, and use operating lever **(B6)** to put the front of the hopper in the lowest position.
Operating valve forward = recieving hopper going up
Operating valve backward = recieving hopper going down

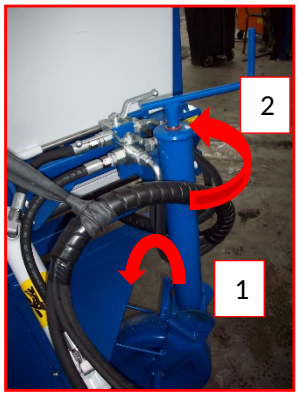
Stop the basic machine according to 8.1.2

Disconnect the hydraulic coupling between the receiving hopper, and the basic machine **(36)**.

Note:

When the coupling doesn't release easily u can release the remaining pressure in the hose by moving the operation levers of the receiving hopper a few times back and forward. **(B4)** and **(B6)**



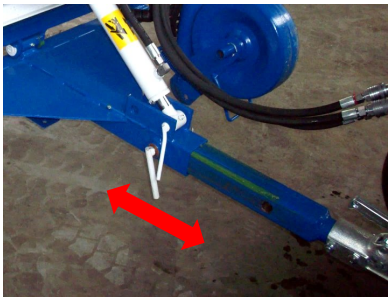


Disconnect the ball coupling **(58)** and turn the wheel down (counter clockwise) **(56).** Make sure u fold the part down before turning the wheel down. When holding the ball coupling, and turning the wheel down, the hopper should lift itself up from the ball coupling.

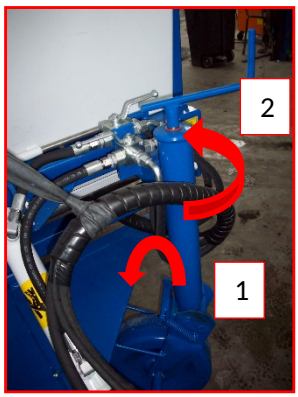
The receiving hopper is now disconnected, and the basic machine can be moved.

7.1.2 Connecting receiving hopper

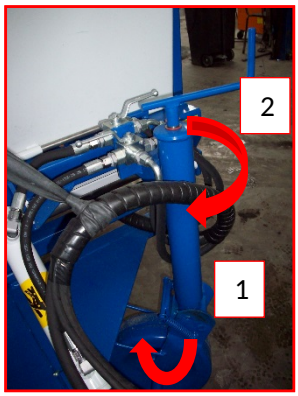
Stop the basic machine according to 8.1.2



The distance to the basic machine can be adjusted by sliding the complete coupling in or out. Ensure that the lock pin is put back into place after changing the distance.



Turn the wheel down, by turning the lever contraclockwise **(56)** When the coupling is high enough u can position the coupling over the ball coupling from the basic machine.



When the coupling is correctly positioned above the ball coupling, turn the wheel back up by turning the lever clockwise **(56)** The hopper will go down, and the coupling will click and lock into place. When the connection has been made u can fold the part pack up in position. **(56)**

Connect the hydraulic coupling between the receiving hopper, and the basic machine **(36)**.

The connections are matching and marked in a way that u can only connect them in that one way.

The receiving hopper is now connected to the basic machine, and is ready to be used.

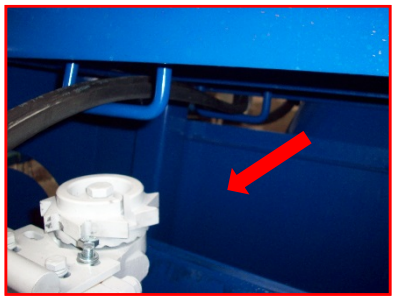
7.2 Connecting / disconnecting chopper-unit

7.2.1 Disconnecting Chopper-unit

	***After every use, and before cleaning, maintaining, or repairing always turn of the machine, and remove the key from the ignition. This will prevent accidental activation of the engine. Always follow the provided energy-isolated procedures of the client.***
	***Beware of the risk of getting your lower and/or upper extremities crushed when changing exchangeable parts. Always use the specified PPEs. While connecting/disconnecting the chopper-unit always be sure u have good contact with the forklift driver. (forklift driver needs to have the proper certificates) Always proceed with caution, and follow the instructions with care.***

Disconnect the Receiving hopper according to 7.1.1 and stop the machine according to 8.1.2.

Remove the blue cover from the power take-off connection.



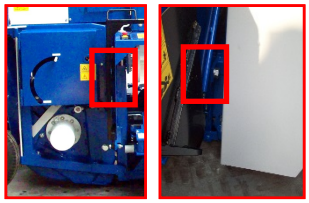
Pull 3 hydraulic connection hoses from the receiving hopper, and put them on the protection cover of input unit.

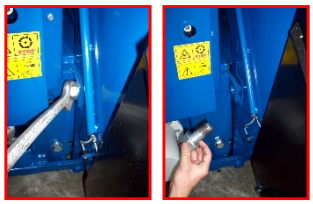
Disconnect the 4 hydraulic hoses that run from the chopper unit to the basic machine.

Position the forks of a forklift below the chopper unit. (like the picture)

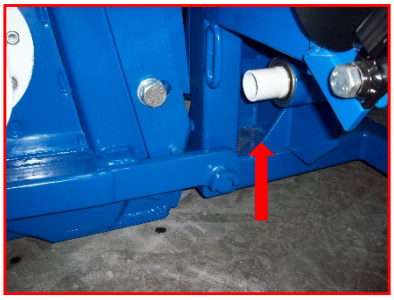
Lift the forks against the bottom of the chopper unit so that the chopper unit is being supported by the forklift.

Be sure the forks are spread out enough so that the chopper unit can't tilt after disconnecting.





Disconnect the 2 mounting bolts on both sides of the chopper unit.



Lift the chopper unit out of its suspension points, and slide the unit backwards so the coupling with the power take-off slides away from the engine.

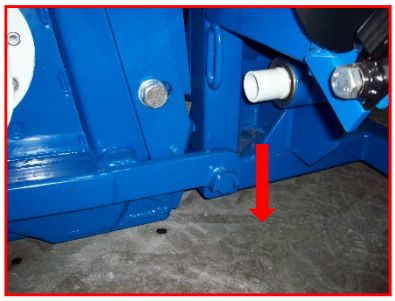
The chopper unit is now disconnected from the basic machine.

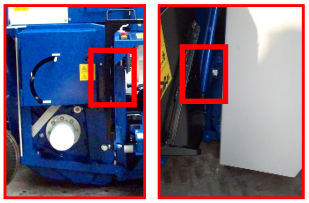
7.2.2 Connecting chopper unit

	***After every use, and before cleaning, maintaining, or repairing always turn of the machine, and remove the key from the ignition. This will prevent accidental activation of the engine. Always follow the provided energy-isolated procedures of the client.***
	***Beware of the risk of getting your lower and/or upper extremities crushed when changing exchangeable parts. Always use the specified PPEs. While connecting/disconnecting the chopper-unit always be sure u have good contact with the forklift driver. (forklift driver needs to have the proper certificates) Always proceed with caution, and follow the instructions with care.***
	Disconnect the receiving hopper according to 7.1.1 and stop the machine according to 8.1.2.

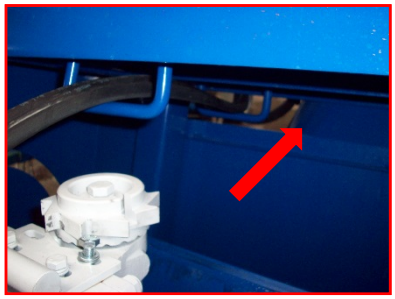
Disconnect the blue protection cover from the power take-off. Be sure u can see enough for guiding the power take-off while connecting the chopper unit.

Slide the chopper unit forward by using a forklift. The power take-off and coupling should connect with the engine. While sliding the parts together both the coupling and the power take-off should be manually positioned aligned with each other. The coupling and power take-off are marked with a (yellow) line. Both lines need to be aligned before sliding it all together. Lift the chopper unit in the suspension point when the connection is made.

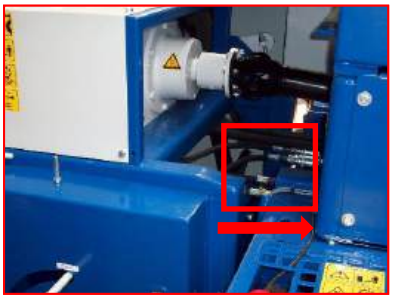


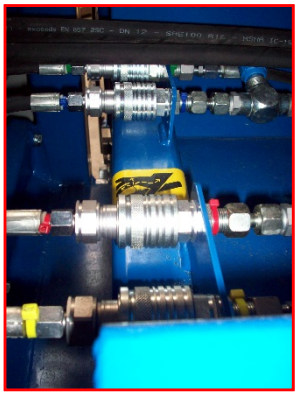


Connect the 2 bolts on both sides of the chopper unit. By bolting the chopper unit to the basic machine u will secure the chopper unit in position.



Take the 3 hydraulic connection hoses that come from the receiving hopper and put them through the brackets, so they are positioned at the back of the chopper unit.





Connect the 4 hydraulic hoses that come from the hydraulic cylinders from the chopper unit to the basic machine. All the connections are marked by colour so the connections should fit in one way only.

Reconnect the bleu safety cover that covers the power take-off.

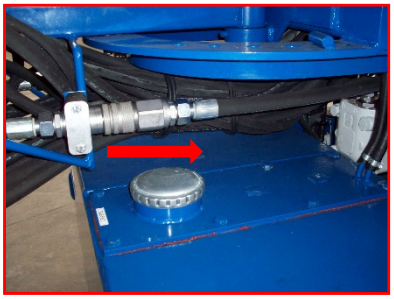
7.3 Connecting/disconnecting the auger

7.3.1 Disconnecting auger

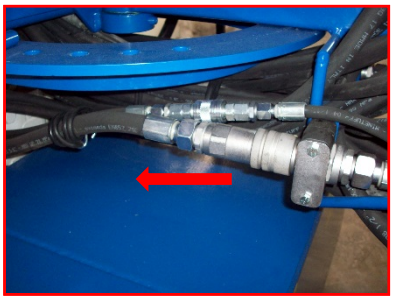
	***After every use, and before cleaning, maintaining, or repairing always turn of the machine, and remove the key from the ignition. This will prevent accidental activation of the engine. Always follow the provided energy-isolated procedures of the client.***
	***Beware of the risk of getting your lower and/or upper extremities crushed when changing exchangeable parts. Always use the specified PPEs. While connecting/disconnecting the chopper-unit always be sure u have good contact with the forklift driver. (forklift driver needs to have the proper certificates) Always proceed with caution, and follow the instructions with care.***

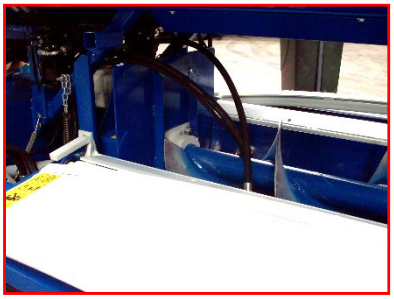
Disconnect the chopper unit according to 7.2.1

Remove the crash plate **(12)** from the (side were the input hasn't been used) input-unit.

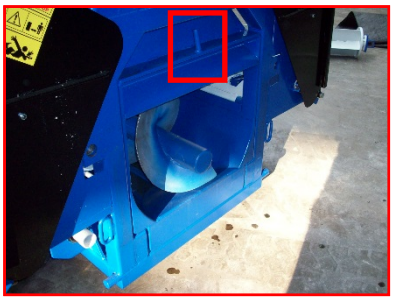


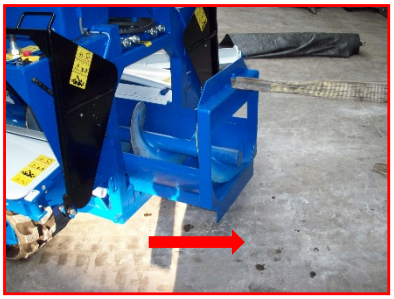
Disconnect the 3 hydraulic hoses that run under the operating panel like in the picture.





Pull the hoses back to the auger. (like in the picture)





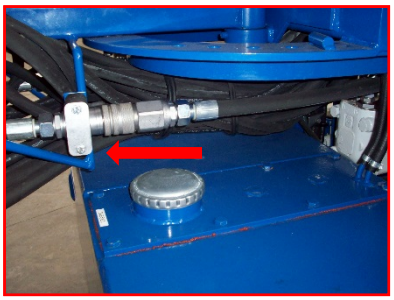
Pull the auger by using a suitable strap and a forklift. Gradually pull the auger out of the basic machine. Connect the strap to the hook on the front of the auger.

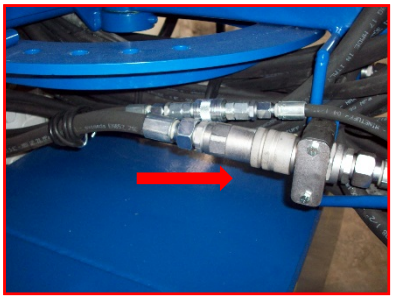
Take the auger with the forks of the forklift when the auger is halfway pulled out of the machine. (the auger will begin to tilt a little) Carefully take the auger completely out of the machine.

7.3.2 Connecting auger

	***After every use, and before cleaning, maintaining, or repairing always turn of the machine, and remove the key from the ignition. This will prevent accidental activation of the engine. Always follow the provided energy-isolated procedures of the client.***
	***Beware of the risk of getting your lower and/or upper extremities crushed when changing exchangeable parts. Always use the specified PPEs. While connecting/disconnecting the chopper-unit always be sure u have good contact with the forklift driver. (forklift driver needs to have the proper certificates) Always proceed with caution, and follow the instructions with care.***

Slide the auger completely in the basic machine using a forklift.





Connect the 3 hydraulic connections that runs under the operation panel. (like its shown in the picture)

Connect the chopper unit according to 7.2.2

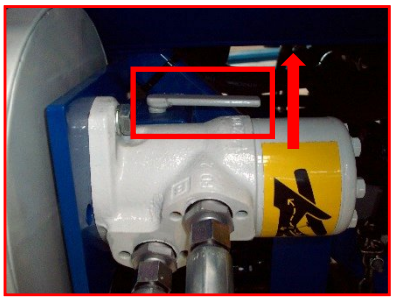
7.4 Connecting/disconnecting input-roll

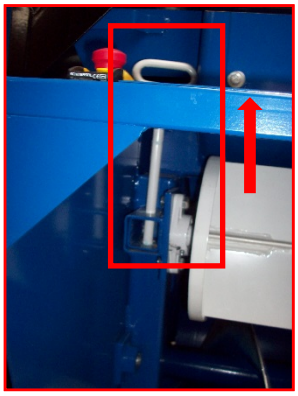
The input-roll will help the consistency of crops input, and is easily installed on the side were the crops are being chopped.

7.4.1 Disconnecting input-roll

	After every use, and before cleaning, maintaining, or repairing always turn of the machine, and remove the key from the ignition. This will prevent accidental activation of the engine. Always follow the provided energy-isolated procedures of the client.
	Stop the machine according 8.1.2.

Disconnect the 2 hydraulic hoses of the input-roll.



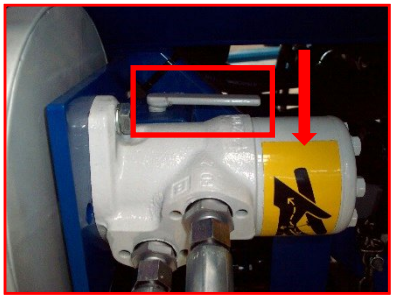


Remove the lock-pins on both sides of the input-roll.

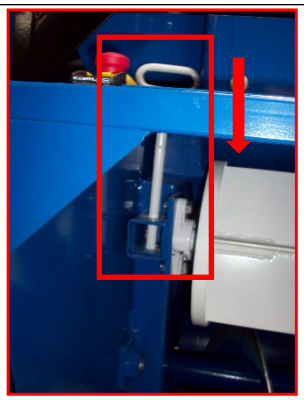
Lift the input-roll with 2 people out of the suspension points.

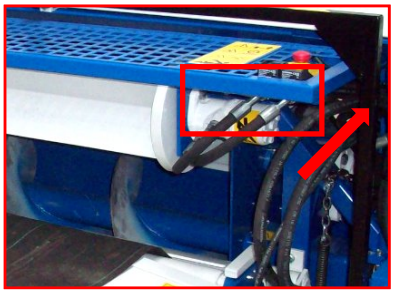
7.4.2 Connecting the input-roll

	***After every use, and before cleaning, maintaining, or repairing always turn of the machine, and remove the key from the ignition. This will prevent accidental activation of the engine. Always follow the provided energy-isolated procedures of the client.***
	Stop the machine according 8.1.2.



Place the input-roll in its suspension points. Make sure the roll is placed correctly, and put the lock-pins on both sides into position.





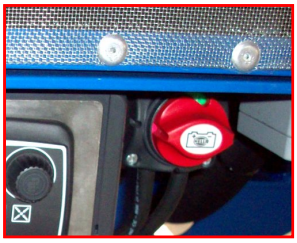
Connect the 2 hydraulic hoses of the input-roll.

8. Operating instructions

8.1 Starting the basic machine

Important!! ***For the standard instructions of the engine, consult the instruction manual provided by John Deer.***

Make sure the clutch of the chopper rotor is **NOT** enabled. Press the lever forward (see picture) **(7)**



Turn on the main power switch of the engine. **(B15)**

Start the engine by turning the key in the ignition clockwise **(B14)**
Let the engine run at 1200rpm until the engine is warm enough (85/97°C).
Set the engine speed.

The engine speed can be set in 2 ways:

- Continuous speed using the turning knob **(B13)**
- Set fixed speeds as indicated on the display **(B12)**

8.2 Stopping the basic machine

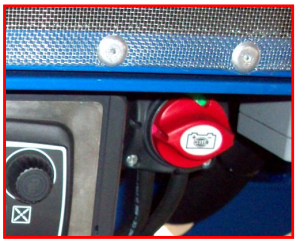
Important!!

For the standard instructions of the engine, consult the instruction manual provided by John Deere.

Turn of the clutch of the chopper unit by pushing the lever of the engine clutch forward **(7)**.
Let the engine run stationary for 2 minutes at 1000/1200 rpm before u stop the machine, so the engine can cool down.

- If the cleaning process of the SCR system just took place, let the engine run stationary for 4 minutes at 1000/1200 rpm before shutting down the engine.
- If maintenance is planned on the SCR system after use, let the engine run stationary at 1000/1200 rpm for 10 minutes before shutting down the engine.

Stop the engine by turning the ignition key counter clockwise. **(B14)** Remove the key from the ignition to prevent unwanted reactivation.



Turn OFF the main engine power switch **(B15)**. Remove the key from the ignition to prevent unwanted reactivation.

Important!!
Wait for at least <u>4 minutes</u> before switching of the main engine power switch after stopping the engine. The SCR system is purging itself from the DEF automatically after stopping the engine. When u ignore this time, the remaining DEF can freeze in case of cold circumstances and cause damage to the system. For additional information regarding the engine, consult the John Deere instruction guide.

8.3 Using the mats

8.3.1 Unwinding the mat

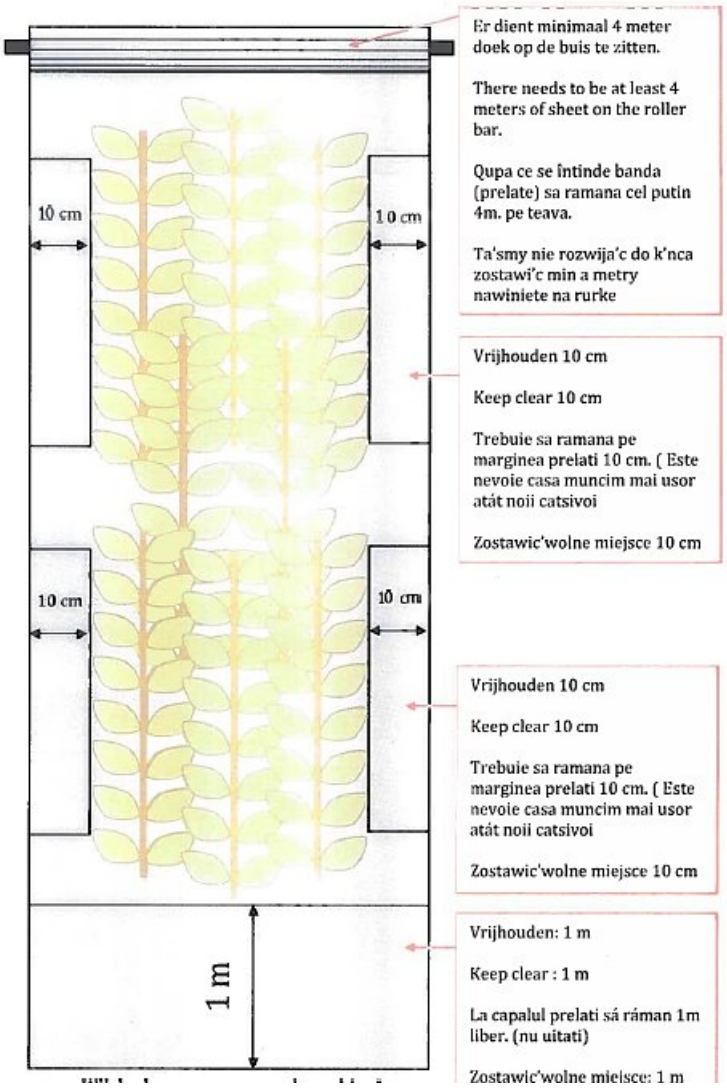
Make sure that the mats are unwound the right way. The mats should leave the roll from the top. Unwind the mat as straight and centrally aligned as possible. The mat should be unwound along the full width.

8.3.2 Placing the plants on the mats

A minimum of 1 meter of mat should be clear of crops at the end of the row. At the beginning there should be sufficient length of mat on the roll so u can connect the roll in the machine in a correct and safe way. There should be enough mat on the roll left that u can reach the other side of the corridor without the mat disconnecting from the roll.

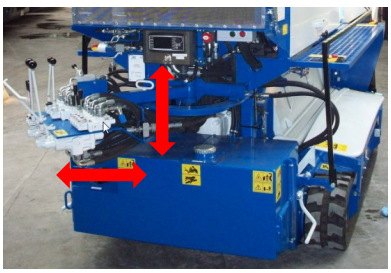
	***Remove all material other than plants from the mat before fitting it underneath the chopper. Metal and/or other objects can become dangerous projectiles when they enter the chopper.***
	***The cloth should contain no folds or cracks, to avoid dangerous manual interventions when being rolled up. Cloths with folds or cracks make rolling up difficult, which tends to pull on the cloth while rolling up. This is very much to be avoided because in these cases there is a risk of being pulled into the machine.***

Position the crops on the mats in such a way that they are distributed lengthwise on the mats. The mats should be clear of crops for 10cm on each side. The correct way to place the crops on the mats is shown on the pictures. Avoid cumulation of crops. When these instructions are followed the machine will work at its best, and the mats will last longer.



8.3.3 Choosing side of input unit

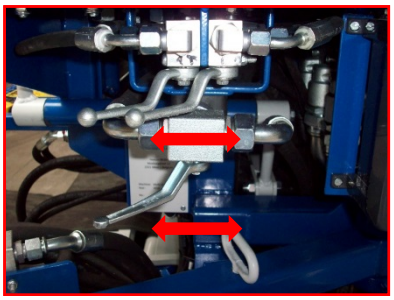
The machine can operate on both sides. To switch side u need to follow the instructions:



Take the locking pin out of the frame. Place the operating panel to the desired side **(8)**. Put the locking pin back into the frame, to secure the operating panel from swinging while the machine is operational.

Position the crash plate on the side were the input unit is not being used. **(12)**

Position the input-roll **(10)** into the input unit (on the side u are going to use) according to 7.4.2.



Point the 2 hydraulic valves to the side u are going to use. **(47) & (48)**

- Hydraulic valve lever pointing left **(47)**: Cylinders for opening and closing the left side mat winding unit active.
- Hydraulic valve lever pointing right **(47):** Cylinders for opening and closing the right mat winding unit active.
- Hydraulic valve lever pointing left **(48)**: Hydraulic motor mat winding unit left side active.
- Hydraulic valve lever pointing right **(48)**: Hydraulic motor mat winding unit right side active.

Position the safety guard **(42)** on the side u are not going to use completely in.

Position the safety guard **(42)** on the side u are going to use completely out.

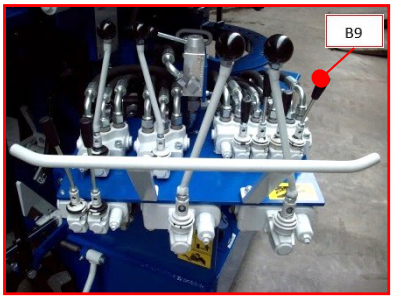
8.3.4 Positioning the mat in the mat winding unit

	***To fit the mat, the mat winding unit has to be fully open, ensuring the moving parts of the feed and mat winding unit cannot be started while the mat is fitted.***

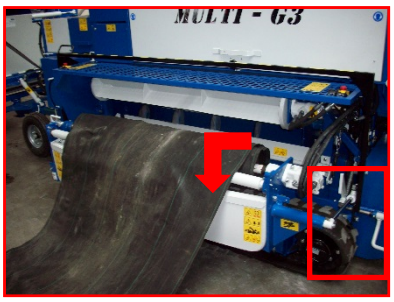
Check if the machine is correctly assembled according: 7.1.2, 7.2.2, 7.3.2 and 7.4.1. and make sure u selected the correct input unit according to: 8.3.3.

Start the basic machine according to 8.1. Set the rpm to 2350 rpm.

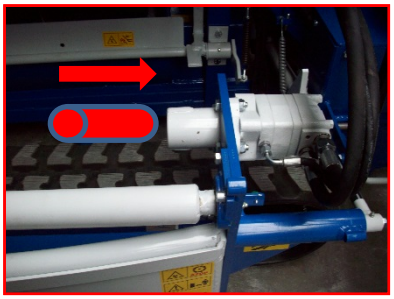
Position the safety guard **(42)** on the side u are going to use completely back. (to the machine) The mat winding unit, auger and input-roll can't turn anymore.



Push the mat winding unit open with lever: **(B9).** This is only possible if the mechanical locking shutter **(46)** is opened (by foot).
Hydraulic valve lever backward = input winding unit will be opened.
The position plate **(41)** of the input unit will be positioned vertically when doing so. When the mat winding unit is opened the mat winding cannot start winding.

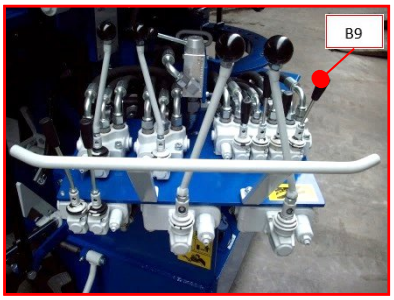


Unlock the movable adapter **(39)** by using the mechanical locking shutter **(38)**
The movable adapter will position itself out.



Place the metal pipe of the roll in the solid side of the mat winding system.

Put the movable adapter **(39)** back inside and lock the shutter **(38)** again.



Close the mat winding unit by pushing the lever **(B9).**
Hydraulic valve lever forward = input mat winding unit closing.
The position plate **(41)** of the input unit will mechanically be set back into its horizontal position.

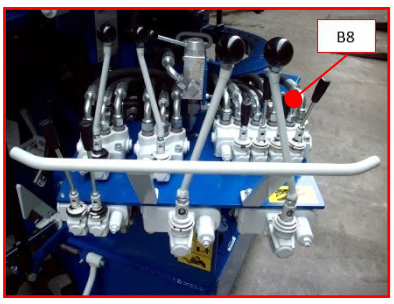
Place the safety guard **(42)** of the input unit completely forward.

The mat winding unit and input unit can now be turned on again.

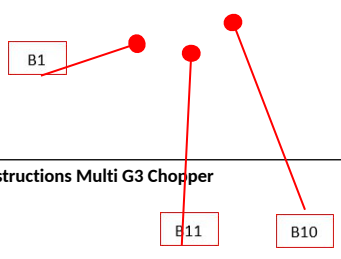
8.3.5 Winding the mats and chopping the crops

⚠	***NEVER insert your hands into the feed ports or other moving parts of the machine. This may result in serious or very serious injuries. In case of emergency, use the emergency stop.***

Engage the clutch of the chopper rotor by pulling the engine clutch lever **(7)** backwards.



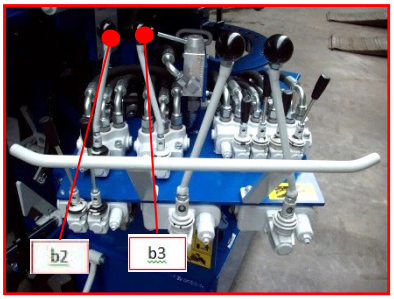
Engage the input-roll by pushing the hydraulic valve lever **(B8)** forward.
Hydraulic valve lever forward = input-roll active.
Hydraulic valve lever backward = input-roll not active.



Control of the feed unit (screw) and straight winding up of the mat is done by simultaneous operation of the control valves **(B10)/(B11).** When both control valves **(B10)/(B11)** are pulled, the auger moves the substrate back out from the chopper and the mat is unwound. Pushing the control valves **(B10)/(B11)** will move the substrate into the auger, by on the one hand winding up the mat and

on the other hand turning the screw toward the collection container/auger machine. This is how the machine is normally used. Releasing these valves will immediately stop the feed unit (auger).
The control valve **(B1)** can be used to set the speed of the feed unit (auger).

- Turn clockwise = increase speed
- Turn counter clockwise = reduce speed



The control valves **(B2)/(B3)** control the track undercarriage and therefore the position of the entire machine. This way you can position the mat on the roll, and make small adjustments if necessary

Important note:
The capacity of the machine is determined by the machine operator and by the type of substrate. The highest capacity is achieved by equally distributing the substrate. The mat winding speed is determined by the volume of substrate placed on the mat. The judgment of the machine operator is very important:

- A uniform feeding of substrate increases the capacity, extends the life span of the machine, keeps the users safe and reduces the risk of faults and unnecessary wear
- Making sure the cutting knives are sharpened and fine-tuned is really important. The frequency to do so is being determined by the things that do not belong in the chopper. (metal objects, plastics, nylon, rockwool and all other object that aren't growing in the greenhouses.

Important note:

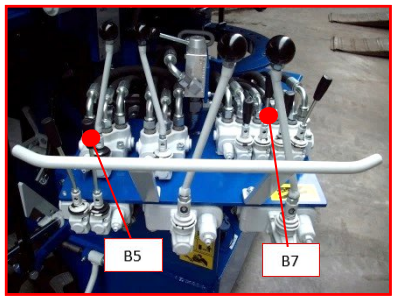
In case of clogging of the plants of mat the winding unit can be unwind. To do so, the safety control **(B18) (2nd operator)** needs to be set simultaneously with **(B11)**.
Switch pressed = winding back out
Switch released = winding back out stops

8.3.6 Aiming the output chute

	Only use the machine in combination with a suitable collection container. No persons should be within the range of the discharge chute of the machine.

	During use, only the operators may be in the vicinity of the machine. All other persons must keep a safe distance.

The blow direction and distance of the shredded material are determined by the position of the adjustable chute **(19)** and the adjustable chute outlet **(17)**.



The chute **(19)** can be turned in position by using the hydraulic valve. **(B7)**

- Hydraulic valve forward = chute turning right
- Hydraulic valve backward = chute turning left

The adjustable chute outlet**(17)** can be adjusted by using the hydraulic valve**(B5)**

- Hydraulic valve forward = outlet moving up
- Hydraulic valve backward = outlet moving down

8.3.7 Setting and operating the receiving hopper

	Only use the machine in combination with a suitable collection container. No persons should be within the range of the discharge chute of the machine.

	During use, only the operators may be in the vicinity of the machine. All other persons must keep a safe distance.

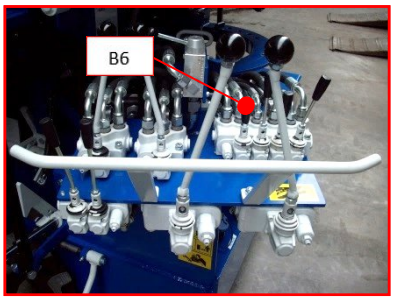
To connect the (HEECON) receiving hopper check 7.1.2

	***Always make sure that blow direction and distance of the chute is aimed towards to opening of the receiving hopper before starting the chopper!!***

	***When the receiving hopper is emptied, the chopper should temporarily be turned off!!***

To determine the volume of material in the receiving hopper, the height of the hopper can be set to the outlet of the chute. Put the backside of the receiving hopper as high as possible when u start chopping. U can lower the hopper while chopping.

Frontside recieving hopper:
Put the hydraulical valves **(55)** parralel to the hoses, and use operation lever **(B4)** to position the frontside of the hopper on the correct height.
Hydraulic valves forward = recieving hopper going up
Hydraulic valves backward = recieving hopper going down



Backside receiving hopper:
Put the hydraulical valves **(55)** and **(62)** parralel to the hoses, and use operating lever **(B6)** to position the back of the hopper on the correct height.
Hydraulic valves forward = recieving hopper going up
Hydraulic valves backward = recieving hopper going down

Put the hydraulic valve **(55)** back perpendicular on the hose when the hopper is in the required height.

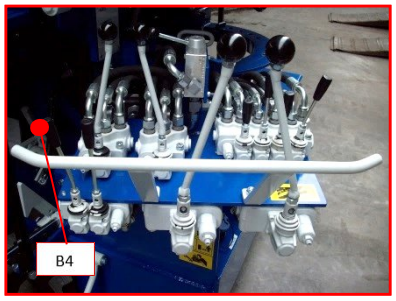
When the hopper is almost full, it should be emptied into a transport container for disposal of the shredded material. This should be done according to these steps:

1. Stop the operation of the feed unit and mat winding unit by releasing the control valves **(B10)/(B11)**. The input-roll should stop as well.

2. Position the transport container underneath the unopened collection container with a suitable means of transport (forklift).

3. Put the hydraulic valves **(55)** perpendicular on the hoses.

4. Empty the hopper by starting the bottom chain. The discharge flap of the hopper will also open. The discharge is activated by valve **(B4)**. The operator should ensure that the transport container is not overloaded. See the load diagram for means of transport.
   Control valve forward = conveyer belt moves forward (empty) & flap will open automatically.
   Control valve backward = flap closes & conveyor belt stops.



When the receiving hopper is empty:

1. Stop the conveyer belt of the hopper by moving the operating valve **(B4)** in its original position.
2. Move the transport container away from the collection container.
3. Close the output flap of the hopper by pulling valve **(B4)** backward.

8.3.8 Removing the mat from the winding unit

The method to remove the mat is analogous to the method to fit the mat as discussed in 8.3.4.

9. Instructions for maintenance

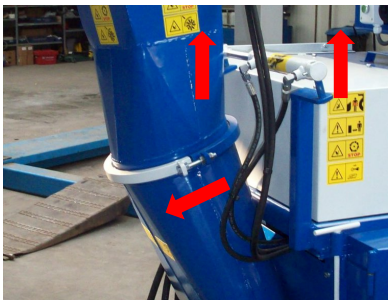
9.1 Emptying a blocked chute

	***When the chute is blocked, first switch off the engine and remove the key from the ignition.***

	***Only unscrew the guard from the chute after the basic machine has been fully switched off and the key has been removed from the ignition. Wait until the chopping rotor has come to a complete stop. Take into account that the chopping rotor does not stop rotating as soon as the engine switched off.***

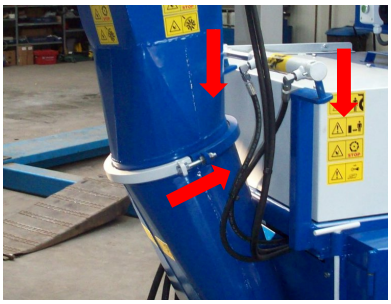
	***Be aware of the weight of both the metal and the plant material. Be careful that the guard will not fall off under the weight. Remove the guard with at least 2 persons, so that 1 person can support the guard while it is being unscrewed***

Stop the basic machine according to 8.2



Disconnect the hydraulic cylinder **(22)**
Unlock the chute, and remove the white locking ring from the chute.

Disassemble the chute **(19)**
Remove the blocked chopped crops with correct tools. Wear cut-resistant gloves as protection against cuts as a result of possible contact with the knives of the chopping rotor.



Connect the chute **(19)** back and reattach the white locking ring back to the chute.
Re-connect the hydraulic cylinder **(22)**.

9.2 Grinding the rotor knives

	***Please be aware of the great danger of the moving and rotating parts during grinding. Grinding must be done with an open guard. Never grind the knives when you are alone and always use extreme caution. Never reach into the moving and rotating parts with your hands when you are sharpening the knives and in no case wear baggy clothing!*** ***In case of emergency, use the emergency stop!***

9.2.1 Starting the grinding process

Stop the basic machine according to 8.2

Open the movable protection cover of the chopper rotor by pulling the lever **(25)** down.

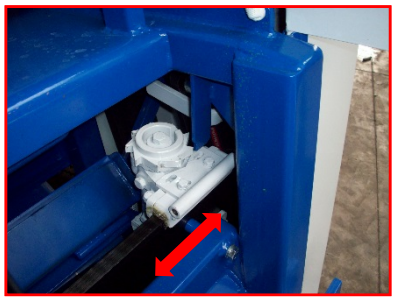
Turn the operating handle of the grinding stone for the chopper rotor **(24)** in the holder. With this handle u can operate the grinding stone manually during the grinding process.

Start the basic machine according to 8.1. Set the speed of the engine to 1500rpm

Engage the clutch of the chopping rotor by pulling the clutch lever **(7)** backwards.

Start the grinding of the rotor knives by moving the grinder stone **(29)** manually forwards and back.

To complete a full grinding cycle u should run the grinding stone 5 times back and forth.



When the grinding stone does not hit the rotor knives anymore, the stone can be set back against the knives by completing a few grinding cycles. When the stone is fully left or fully right the stone drops slightly down in position **(28)** one hit at a time.

9.2.2 Stopping the grinding

Stop the movement of the grindstone **(29)** when the grindstone has fully moved to the left to its original position.

Stop the basic machine according to 8.2.

Remove the operating bar of the grinding unit, and put it back in the provided opening.

Close the movable cover of the chopper rotor by pushing the lever **(25)** completely to the top.

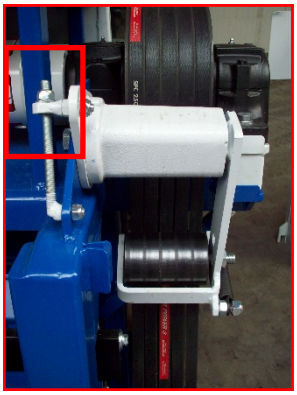
9.3 Adjusting the V-belt

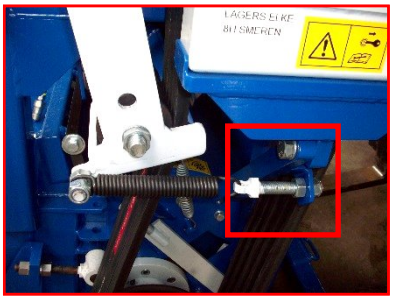
	***Only open the movable guard for the V-belt after the engine has been switched off and the key has been removed from the ignition. Wait until the chopping rotor has come to a complete stop.***

	***Take into account that the chopping rotor does not stop rotating as soon as the engine switched off.***

Stop the basic machine according to 8.2. Remove the key from the ignition to prevent unwanted reactivation.

The V-belt is situated behind the V-belt guard. Open the guard by removing the bolts.

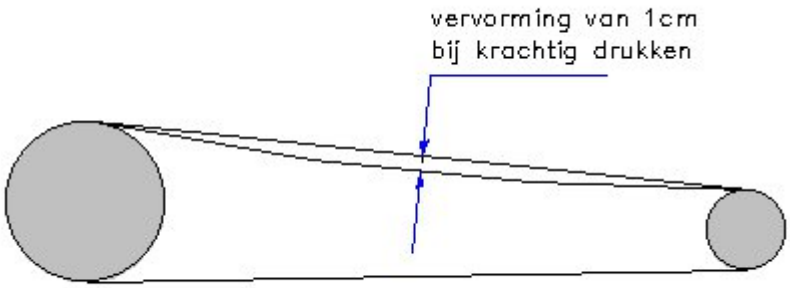




The tension on the V-belt is determined by moving the tension roller in relation to the V-belt. This roller can be moved by tightening or loosening the bolts behind the tension roller. The right tension on the V-belts is important to ensure the life span and good functioning of the machine. The tension has to be set by an experienced mechanic.

After u have provided the correct tension to the belts, mount back the safety cover.

The right tension on the V-belt under normal conditions (see below) can be checked by firmly pushing on the V-belt. The distortion should be ±1cm (see drawing below).



To avoid unnecessary stretching of the V-belts, it is recommended to relax them at the end of the season (loosened).

Important note:
What are normal conditions?

Ⓟ Plant material without produce attached to be processed.

What are abnormal conditions?

Ⓟ The plant material to be processed is still fresh and contains produce (cucumbers, tomatoes etc.). The produce introduces liquid into the machine during the shredding process. This liquid makes the entire machine and also the V-belts wet, which make the V-belts slip. This cannot be solved by tightening the V-belts. Under these conditions, the machine operator should steer the feed in such a way that slipping is prevented and the head maintains speed. This increases the chance of the chute getting blocked and the V-belts wearing too quickly.

9.4 Checking and topping up fuel

	***Avoid smoking or open fire near flammable or combustible products.***

ATTENTION	***Avoid spilling chemical products to prevent environmental pollution. Always use suitable containers***

The fuel tank is located at the bottom, under the operating panel.

Check the fuel stop level in the fuel tank on the basis of the sight glass on the tank. Top up the fuel if necessary.

Stop the basic machine according to 8.2. Remove the key from the ignition to prevent unwanted reactivation.

Open the filler cap on the top of the tank and add fuel through the filler hole. Avoid fuel spillage.

9.5 Checking and topping up hydraulic oil

	***Avoid smoking or open fire near flammable or combustible products***

ATTENTION	***Avoid spilling chemical products to prevent environmental pollution. Always use suitable containers. Dispose of all waste in accordance with the regulatory requirements.***

The hydraulic tank is located between the engine and the chopper unit.

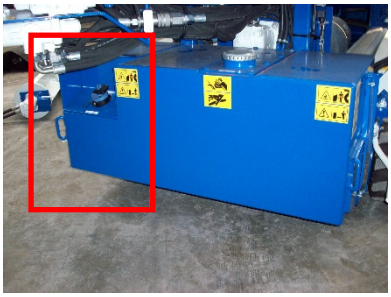
Before each season, the oil level and oil filter have to be inspected. Check the oil level with a dipstick. If necessary, top up the hydraulic oil through the filler cap on the tank. The normal oil level is approx. 7cm from the top of the oil reservoir. Use Q8 Handel 68 oil or an equivalent product.

Replace the oil filter if necessary.

In the event of a leak, repair the leak and immediately top up the oil level to the original level.

9.6 Checking and topping the diesel exhaust fuel (DEF)

	***For maintenance and repair work, shut off the engine and remove the key from the ignition to prevent unwanted activation of the engine***
	***Avoid contact by the DEF with eyes, and avoid swallowing. Use a suitable safety goggle. In case of contact with the eyes, rinse for at least 15 minutes with clean water. Check the safety data sheet of the used DEF***
Important!	***Check the provided instruction manual by John Deere concerning the use and storage instructions of the DEF***



The DEF tank and DEF dosing unit are located next to the fuel tank.

The DEF tank is equipped with a level measurement. When the level gets low, there will be an indication on the engine-display, **(B12)** and the DEF tank needs to be refilled. Filling the tank should be done through the filling cap on top of the tank.

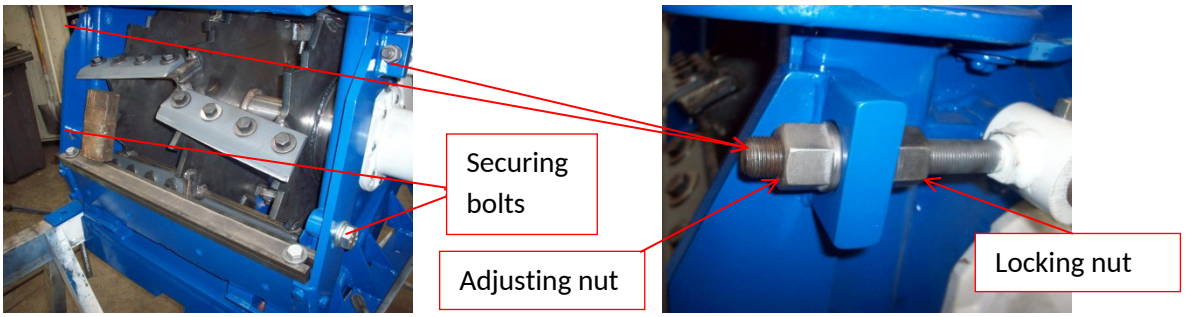
Check the instruction manual provided by John Deere regarding the symbols on the engine display. **(B12)**.

9.7 Adjusting the bed knife of the chopper unit

	***For maintenance and repair work, shut off the engine and remove the key from the ignition to prevent unwanted activation of the engine***
	***Never open or remove the guards while the engine is running. Correctly replace all guards and safety devices after maintenance.***
	***Always wear cut-resistant gloves when working close to the cutting knives or other sharp machine parts.***

Stop the basic machine according to 8.2. Remove the key from the ignition to prevent unwanted reactivation.

Dismount the chopper unit: see 7.2.1



Loosen the securing bolts on both sides of the chopping rotor half a turn

- The bed knife can then be adjusted as follows:
  - Loosen the securing bolts on both sides of the chopping rotor a quarter turn.
  - Tighten the adjusting nut on both sides of the chopping rotor a quarter turn.
  - Repeat these steps until the chopping knives hardly touch the bed knife anymore.

Fully tighten the securing bolts on both sides of the chopping rotor.

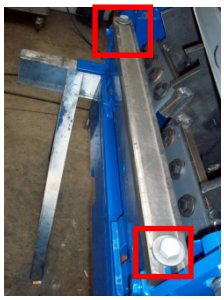
Assemble the chopping unit back: see 7.2.2

9.1 Changing the bed knife of the chopping rotor

⚠	***For maintenance and repair work, shut off the engine and remove the key from the ignition to prevent unwanted activation of the engine.***
⚠	***Never open or remove the guards while the engine is running. Correctly replace all guards and safety devices after maintenance.***
⚠	***Always wear cut-resistant gloves when working close to the cutting knives or other sharp machine parts.***

Stop the basic machine according to 8.2. Remove the key from the ignition to prevent unwanted reactivation.

Dismount the chopping unit: see 7.2.1



- Loosen the 3 mounting bolts of the bed knife.
- Replace the knife or turn it around (once).
- Tighten the 3 mounting bolts to 250Nm.
- Push back the bed knife according to 9.7.

Assemble the chopping unit back: see 7.2.2

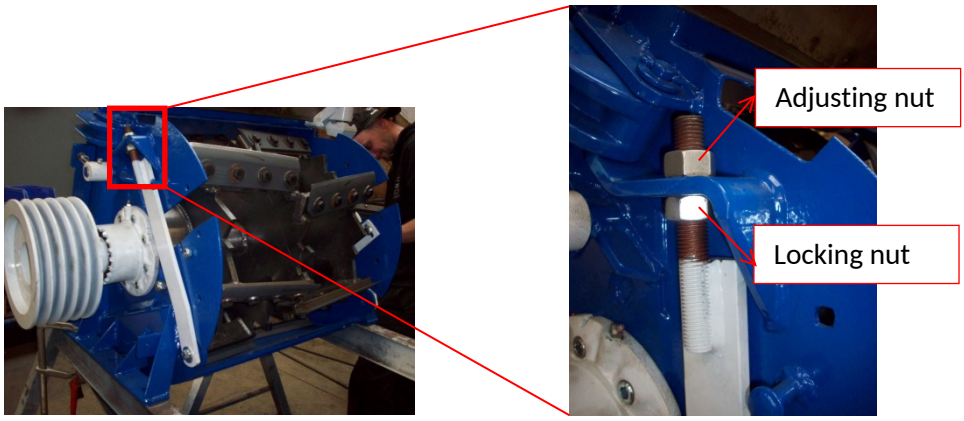
9.2 Set the ground clearance of the blades

	***This activity must be carried out with the engine switched off. Always remove the key from the ignition to prevent unintentional start-up of the engine.***
	***Never open or remove the guards while the engine is running. Reinstall all guards and other safety devices correctly after maintenance.***
	***Always wear cut-resistant protective gloves when working near the cutting blades or other sharp parts of the installation.***

Stop the basic machine according to 8.2. Remove the key to protect against unintentional start-up.

Dismount the chopper unit: see 7.2.1

Open the protection covers on both sides of the chopper rotor.



- The ground clearance to the chopper blades can be adjusted as follows:
  - Loosen the lock nut on both sides of the chopper rotor by a quarter of a turn.
  - Tighten the adjusting nut on both sides of the chopper rotor by the same quarter turn.

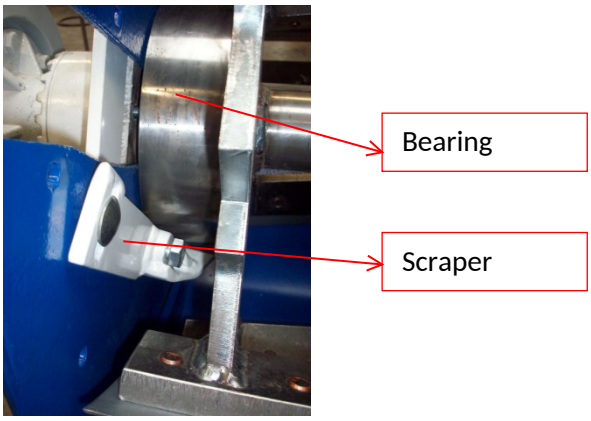
Repeat these steps until the chopping blades slightly touch the base.

Close the covers back after completing the action.

Assemble the chopper unit back: see 7.2.2

9.3 Adjust the scraper bearings chopper rotor

	This activity must be carried out with the engine switched off. Always remove the key from the ignition to prevent unintentional start-up of the engine.
	Never open or remove the guards while the engine is running. Reinstall all guards and other safety devices correctly after maintenance.
	Always wear cut-resistant protective gloves when working near the cutting blades or other sharp parts of the installation.

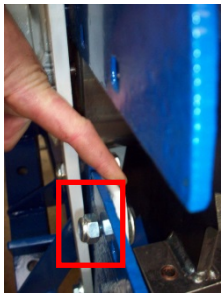


The scrapers must touch the bearings on both sides of the chopper rotor and must be adjusted once per season. The adjustment is done as follows:

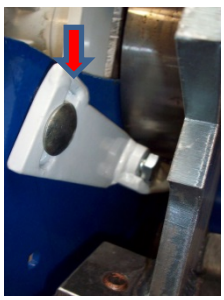
Stop the basic machine according to 8.2. Remove the key to protect against unintentional start-up.

Dismount the chopping unit: see 7.2.1

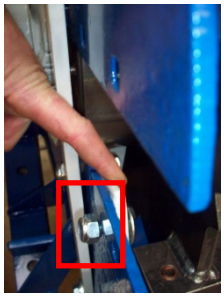
Open the safety covers on both sides of the chopping rotor.



Loosen the M12 fastening nuts of the scrapers on both sides of the chopper rotor.



Beat the scrapers with a light hammer and chisel slightly down until the front of the scraper touches the bearings again. Do this for both sides of the chopper rotor.



Tighten the M12 fastening nuts of the scrapers on both sides of the chopper rotor.

Close the covers back after completing the action.

Assemble the chopper unit back: see 7.2.2

9.4 Replacing rotor blades

⚠	***This activity must be carried out with the engine switched off. Always remove the key from the ignition to prevent unintentional start-up of the engine.***
⚠	***Never open or remove the guards while the engine is running. Please note that the rotation of the rotor does not stop at the moment the engine is switched off. Reinstall all guards and other safety devices correctly after maintenance.***
⚠	***Always wear cut-resistant protective gloves when working near the cutting blades or other sharp parts of the installation.***
⚠	***If any parts of the old blade have broken off, make sure that these parts do not remain on the bottom guard of the rotor. Also make sure that nothing is left behind in the protective covers.***

Stop the basic machine according to 8.2. Remove the key from the ignition as protection against unintentional start-up.

Demount the chopping unit: see 7.2.1

If the blade to be replaced is on the underside of the machine, turn the rotor manually until the blade is in a manageable position.

Now remove the blade by unscrewing the four bolts securing it.

Replace the removed blade with a new blade and attach it with the 4 bolts.

After replacing some or all of the rotor blades, check whether the lower blade needs to be adjusted or replaced. For adjusting the lower blade, refer to 9.7 and for replacing the lower blade, refer to 9.8

Adjust the ground clearance to the rotor blades in accordance with 9.9

Assemble the chopper unit back: see 7.2.2

9.5 Lubricating the machine

This activity must be carried out with the engine switched off. Always remove the key from the ignition to prevent unintentional start-up of the engine.

Use normal bearing grease as a lubricant. All rotating and moving parts are equipped with a grease nipple.
All lubrication points should be greased approximately **every 8 operating hours**.
The following lubrication schedule must be observed:

What?	**Frequency?**
Cutterhead bearings	2x / day (4h)
Tensioner bearings	2x / day (4h)
Feed rollers bearings	1x / day (8h)
Cloth roll-up system bearings	1x / day (8h)
Discharge conveyor belt bearings	1x / day (8h)
Rotor clutch bearings	1x/week
Gaffel axle coupling	1x/week
Main drive shaft	1x/week
Clutch cover plate	1x/season
Hydraulic cylinders cloth guide	1x/day (8h)
Hydraulic cylinder base plate cloth rolling unit	1x / day (8h)
Hydraulic cylinder of sharpening unit	1x / day (8h)
Check oil level in gearbox	1x/season
Gearbox oil change (Orion oil)	1x/500 hours

9.6 Cleaning the machine

This activity must be carried out with the engine switched off. Always remove the key from the ignition to prevent unintentional start-up of the engine.

To ensure a long service life for the machine, the following is recommended:

- Clean the machine after every working day and after the season with a high-pressure cleaner and remove plant remains. Always wear at least a pair of goggles and waterproof protective clothing.
- Use a non-acidic or neutral detergent.
- Inject the non-painted parts or rub them with oil
- Lubricate all lubrication and hinge points and bearings so that moisture can escape.

Never spray electrical components directly with full water jet. This can give rise to electrical faults that may compromise the safe and proper operation of the machine.

9.7 Maintenance of the engine

This activity must be carried out with the engine switched off and the battery main switch turned off. Always remove the key from the ignition to prevent unintentional start-up of the engine.

For the necessary maintenance of the engine, please refer to the enclosed operating instructions of the John Deere motor (type 6068)

9.8 Other periodic inspections/checks

What?	Frequency	How?
Hydraulic hoses	Before each season	Visually
Level hydraulic oil (see 9.5)	Daily	Visually
Safety systems (emergency stops, safety switches)	Each time before using the machine	Start machine, check all safety system separate
Screw- and bolt connections / hinge points	Before each season	Lubrication
Check star couplings (#2)	Daily	Visually
Thoroughly clean the entire machine	Daily	If necessary, dismount parts
Knives / counter knives	Daily/based on use	Check / sharpen / replace
V-belts	Daily	See 9.3
Tighten chain	Weekly	See 9.3
Safety stickers	Daily before starting work	Visually / Replace in no longer legible
General visual inspection	Daily before starting work	Visually
Engine and engine parts	Refer to engine user manual	Refer to engine user manual

10. Fault Analysis

Error	Cause	Measure / solution
Fault analysis diesel engine	Refer to John Deere engine user manual	Refer to John Deere engine user manual
Hydraulic system does not work properly	Hydraulic oil level too low	Top up the hydraulic tank with hydraulic oil (TRADE 68)
	Leak in hydraulic hose(s)	Check hoses and repair
	Hydraulic pump(s) is (are) worn	Replace hydraulic pump(s)
	Hydraulic motor(s) is (are) worn	Replace hydraulic motor(s) Check star coupling
Safety systems (emergency stops, safety switches) not working	Damaged / contaminated	Check connection and repair
Receiving hopper is not responding	Hydraulic couplings not in order/insufficient	Check connection and repair
V-belts slipping	-Damp V-belts	Dry the V-belts
	-belts too loose	Tension of the belts
No shredded material output	Dull or defective blades / wind paddle worn out	Sharpen / replace blades
Exhaust pipe blocked		Replace wind paddle
Oil overheating	Oil cooler contaminated / defective	Clean/replace cooler
Extreme vibration	Unbalanced shaft in chopper unit	Check parts on the chopper unit shaft

11. Parts overview (Spare parts)

(to be added)

12. Electrical plans

(to be added)

13. Hydraulic plans

(to be added)

Never change the pre-set pressure without written approval from the manufacturer.