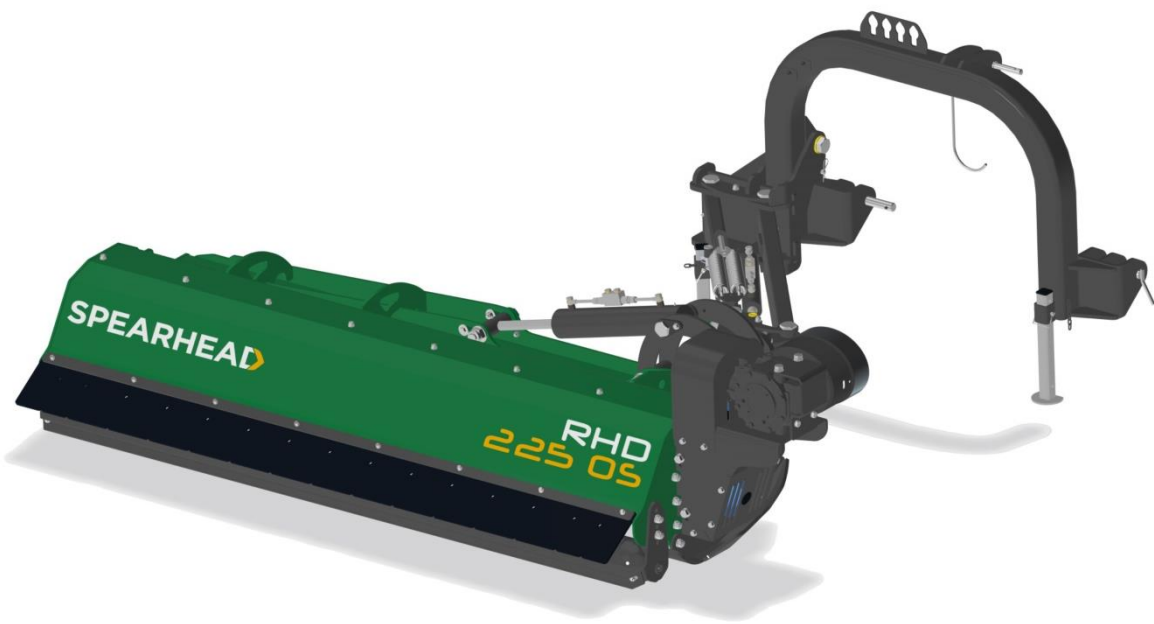


SPEARHEAD

RHD 160/190/225 OFFSET FLAIL MOWERS



Edition 1.4 - October 2019
Part No. 8999071

HANDBOOK & PARTS MANUAL

Model type: Type modèle : <i>Entwerfen Sie Typ:</i>		RHD Offset Series
Model number: Nombre modèle : <i>Entwerfen Sie Zahl:</i>		956 _____
Serial numbers: Numéros de série : <i>Seriennummern:</i>	Machine: Machine: <i>Maschine:</i>	S _____
	Cutting implement: Instrument de coupe: <i>Schneidenwerkzeug</i>	S _____
	Other: Autre: <i>Anderer:</i>	
Name of owner: Le nom de propriétaire : <i>Name des Eigentümers:</i>		
Date of delivery / installation: La date de livraison/l'installation : <i>Datum der Lieferung / Installation:</i>		
IMPORTANT		
<p>At the point of transfer of ownership record the above information. Note the serial number of your machine and always quote it in any communication with us or your dealer. (The serial number plate is located on the machine mainframe.) This is particularly important when ordering spares. Remember to include all numbers and letters.</p> <p>The information given throughout this manual is correct at the time of publication. However, in the course of constant development of Spearhead machines, changes in specification are inevitable. Should you find the information given in this book to be at variance with the machine in your possession, you are advised to contact the Spearhead Service department where up-to-date information will be provided.</p> <p>The manual can contain standard and optional features and is not to be used as a machine specification. The machine has been tested and is considered safe if carefully used. Ensure your operator is properly trained in its use and maintenance.</p>		
IMPORTANT		
<p>Au point de transfert de possession enregistre les informations ci-dessus mentionnées. Noter le numéro de série de votre machine et mentionnez les dans toute communication avec nos services ou votre revendeur. (La plaque de numéro de série est localisée sur le central de machine). Ceci est important pour la commande de pieces detachees. Pensez a noter tous les numeros et toutes les lettres.</p> <p>Les informations donnees dans ce manuel sont correctes cependant, du fait de developpement constant des machines Spearhead. Changements dans les caracteristiques sont inevitables. Si vous trouvez que les informations donnees ne correspondent pas a votre machine veuillez contacter le service des reparations ou des informations plus recentes vous seront donnees.</p> <p>Ce manuel peut montrer des caracteristiques optionnelles et ne peut pas etre considere comme specification de la machine. Cette machine a ete testee, et elle est consideree comme fiable a condition d'une bonne utilisation. Assurez-vous que votre operateur est qualifie en ce qui concerne l'utilisation de la machine ainsi que son entretien.</p>		
WICHTIG		
<p>Am Punkt der Übertragung des Eigentumsrecht zeichnet die oberen Informationen auf. Merken Sie die Seriennummer von Ihrem maschine ein und geben sie diese immer an, wenn sie sich an uns oder ihren händler wenden. (Die Seriennummerplatte ist auf der Maschinenzentraleinheit befunden). Das ist besonders bei ersatzteilbestellungen wichtig. Vergessen sie nicht, alle zahlen und buchstaben zu notieren.</p> <p>Die angaben indiesem handbuch sind bei veröffentlichung korrekt. Aufgrund der konstanten weiterentwicklung von Spearhead maschinen sind jedochänderugden in der spezifikation unvermeidlich. Wenn die information in diesem handbuch nicht mit ihrer maschine übereinstimmen, nehmen sie bitte kontakt mit der Spearhead kundendienstabteilung auf, die ihnen gerne die aktuellen information zukommen lässt.</p> <p>Das handbuch kann sowohl beschreibungen für die standard ausführung als auch für zubehör enthalten und ist nicht als maschinenspezifikation zu verwendet. Die maschine ist getestet und bei sachgemäßem betrieb als sicher befunden worden. Sorgen sie dafür, dass ihr bedienpersonal in anwendung und wartung richtig geschult wird.</p>		

This machine is produced by Ino Brezice on behalf of Spearhead Machinery Limited.

EC DECLARATION OF CONFORMITY

Conforming to EU Directive 89/392/CEE

We,

Of Ino Brezice, Krška vas 34b, 8262 Krška vas, Slovenia.

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

FLAIL MOWER MKS PLUS

MODEL	SERIAL NO	YEAR
MKS PLUS 160		
MKS PLUS 190		
MKS PLUS 225		

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

Directive 89/392/CEE

Directive 91/368/CEE

Directive 93/44/CEE

Directive 93/68/CEE

Directive 2006/42/CEE

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

SIST-EN 292-1

SIST-EN 292-2

SIST EN 745

INO Brezice

RHD Offset Series Flail Mower

The RHD offset series of machines are '3-point linkage' tractor mounted universal flail mower/shredders designed primarily for the mulching of grasses, brambles, small bushes, branches, vines, and general crop residues. Their tough construction, working widths of 1.6, 1.9 or 2.25m and offset makes them ideal for maintenance use in all green areas, vineyards, orchards, on verges and in scrubland by farmers and contractors alike.

These machines should only be used to perform tasks for which they were designed – use of the machine for any other function may be both dangerous to persons and damaging to components and is therefore not advisable.

Its designed for intensive use, under the angle +90°/-65°.

IMPORTANT

This operator's manual should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this manual was provided with the machine.

This machine is designed solely for ground vegetation control and must not be used for any other purpose. Use in any other way is considered as contrary to the intended use. Compliance with, and strict adherence to, the conditions of operation, service, and repair, as specified by the manufacturer, also constitute essential elements of the intended use.

This machine should be operated, serviced, and repaired only by persons who are familiar with its characteristics and who are acquainted with the relevant safety procedures.

Accident prevention regulations, all other generally recognised regulations on safety and occupational medicine, and all road traffic regulations must always be observed.

Any arbitrary modifications carried out to this machine may relieve the manufacturer of liability for any resulting damage or injury.

It is potentially hazardous to fit or use any parts other than genuine **Spearhead** parts.

The company disclaims all liability for the consequences of such use which, in addition, voids the machine warranty.

Contents List

1	Machine Description	6
	1.1 Machine Identification	6
	1.2 General Arrangement	6
	1.3 Noise	7
	1.4 Specification	7
	1.4.1 Standard Specification.....	7
	1.4.2 Working In Different Specification	7
	1.4.3 Optional Equipment.....	8
2	Safety	9
	2.1 Level Of Danger	9
	2.2 Safety Rules	9
	2.2.1 General	9
	2.2.2 Attachment On The Tractor And Transport	10
	2.2.3 PTO Drive.....	10
	2.2.4 Hydraulic System.....	11
	2.2.5 Safety Rules During Use.....	11
	2.3 Safety Decals	12
	2.4 Safety Guarding	12
3	Machine Operation	13
4	Transport & Attachment Of The Machine.....	14
	4.1 Transport To The Customer	14
	4.2 Attachment And Detachment From The Tractor	14
	4.3 Fitting The PTO Shaft	15
	4.4 Tractor Stability	15
5	Adjustment & Setting Up	16
	5.1 Regulation of the height of cut	16
	5.2 Belt Tension Adjustment	16
6	Operating	17
7	Finishing Work	19
	7.1 Storage.....	19
	7.2 Cleaning	19
8	Maintenance	20
	8.1 Belt Tension Control.....	20
	8.2 Oil Level Control.....	21
	8.3 Bolt Tightening	21
	8.4 Greasing.....	21
	8.5 Plan For Maintenance Jobs	22
	8.6 Replacement Of Flails.....	23
	8.7 At The End Of The Season.....	23
	8.8 Disposal.....	23
9	Troubleshooting	24
10	Spare Parts	25
	10.1 Ordering Spare Parts	25
	10.2 Main Cowl & Rotor Assembly	26
	10.3 Headstock Assembly	27
	10.4 Part Numbers	28

1 Machine Description

1.1 Machine Identification

Each flail mower is equipped with a serial plate; see Figure 1 that includes the following data in this order:

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

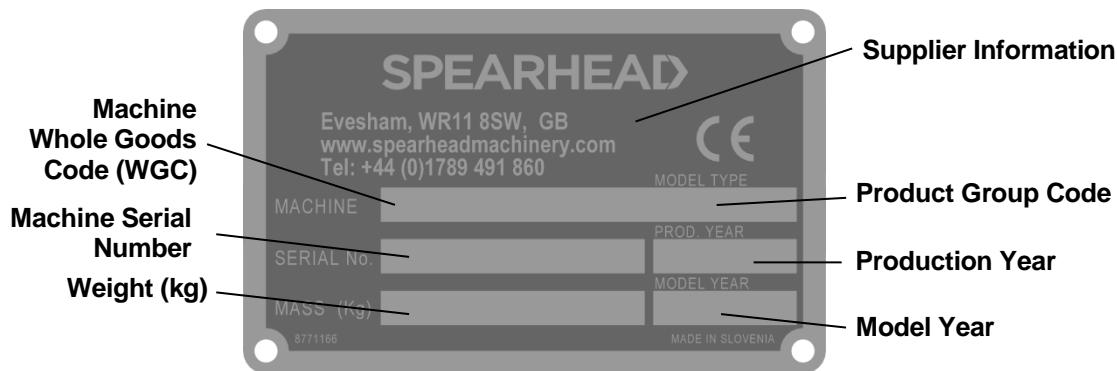


Figure 1 – Serial Plate

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

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

1.2 General Arrangement

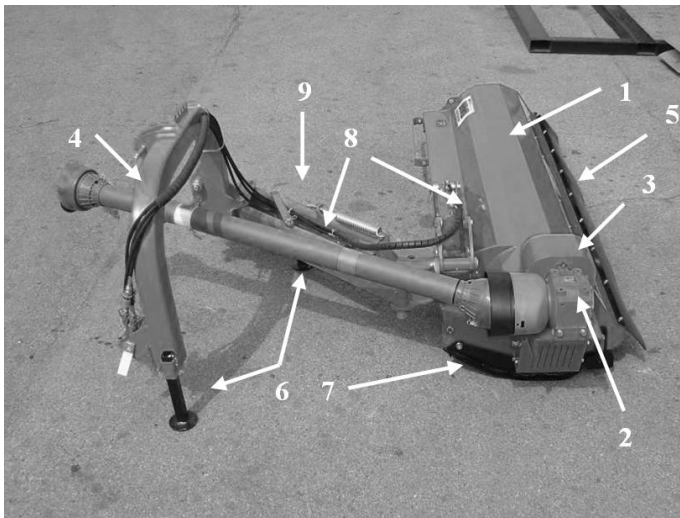


Figure 2 – General Arrangement

1	Frame	6	Support Foot
2	Gearbox	7	Skid
3	Belt Drive	8	Hydraulic Cylinder
4	3-point Linkage	9	Mower Arm
5	Rear Roller		

1.3 Noise

The sound level of this machine, as measured at the operator's ear, ranges from 70 to 90 dB when the rear window of tractor is open. We recommend the use of ear protectors

1.4 Specification

1.4.1 Standard Specification

Type	Unit	RHD 160 Offset	RHD 190 Offset	RHD 225 Offset
Working Width	Cm	162	192	227
Minimum Tractor Power	HP/kW	50-70 (37-52)	70-95 (52-70)	80-110 (60-82)
Minimum Tractor Weight	Kg	2500	2700	2900
Minimum Tractor Width	Cm	200		
Drive	RPM	540		
Weight	Kg	645	735	775
Linkage	CAT	2/3		
Angle	Degrees	+90/-65		
Y-blade	Qty	40	48	56
Hammer	Qty	20	24	28
Width	Cm	210	240	275
Length	Cm	210		
Height	Cm	100		
Transport Length	Cm	165		
Transport Height	Cm	95		

Table 1 – Machine Specification

1.4.2 Working In Different Specification

With reference to Figure 3 and Figure 4.

Dimension	Unit	RHD 160 Offset	RHD 190 Offset	RHD 225 Offset
A	Cm	162	192	227
B	Cm	200		
C	Cm	34		
D	Cm	274	304	339
E	Cm	160	190	225

Table 2 – Working In Different Positions Specification

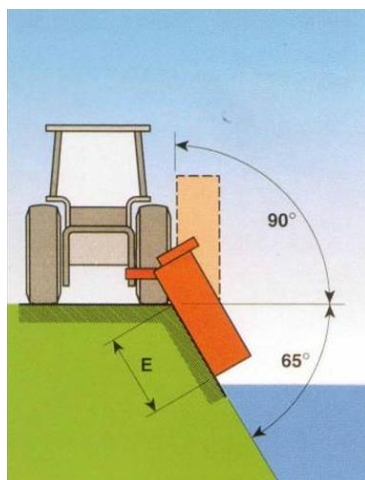


Figure 3

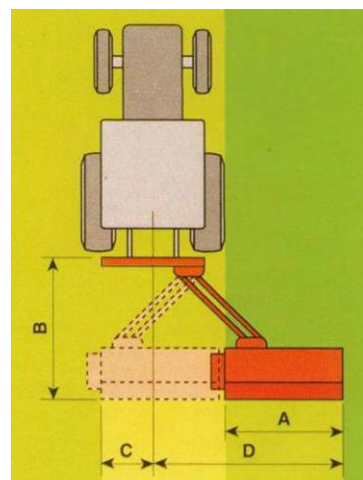


Figure 4

1.4.3 Optional Equipment

RHD offset flail mower is in standard equipped with hammers. However, the machine can be specified with:

- Y blade (for cutting material till max. 3 cm in diameter)
- Hammers (for cutting material till max 5 cm in diameter) – STANDARD fitment

2 Safety

2.1 Level Of Danger

The operator must read, understand and follow all of the Safety instructions. Serious injury or death may occur unless care is taken to follow the warnings and instructions provided. The level of safety is indicated in three levels and the following notation is used throughout this operator instruction book;



DANGER! Level 1; alerts for imminent death or critical injury.



WARNING! Level 2; warns of serious injury or possible death.



CAUTION! Level 3; indicates possible injury.

IMPORTANT: Special instruction related to either the flail mower, tractor or the working environment

NOTE: Special instruction related to either the flail mower, tractor or the working environment

2.2 Safety Rules

2.2.1 General

- 2.2.1.1 Before starting, checks on the tractor and the machine must be carried out as regards: functionality, road safety, accident prevention rules.
- 2.2.1.2 Together with the operating and maintenance rules for the machine it is necessary to consider general health and security rules and warnings.
- 2.2.1.3 Before starting it is mandatory to know everything regarding the equipment and operating of the machine. Reading instructions among operating is too late.
- 2.2.1.4 Security and warning decals on the machine are very important. Respect them always.
- 2.2.1.5 Even when using the machine correctly, stones or other objects may be thrown on a long distance. Therefore nobody must stand within the danger area. Special attention must be paid when working near roads or buildings.
- 2.2.1.6 Use tractor with the cabin.
- 2.2.1.7 Whenever using public roads, respect traffic rules.
- 2.2.1.8 Never wear loose or fluttering clothes.
- 2.2.1.9 Keep the machine clean to avoid fire danger.
- 2.2.1.10 Before starting check the surrounding area for the likely presence of children and/or animals.
- 2.2.1.11 Never carry passengers on the machine
- 2.2.1.12 At connecting the machine on the tractor put a support foot into the working position (up). After removal put the support foot into the standing position (down). Take care about the stability of the machine when it is removed.
- 2.2.1.13 Never overload the machine and the tractor. Use the ballast if necessary.

- 2.2.1.14 Start the machine only if all guards of the machine are fit on proper places.
- 2.2.1.15 It is forbidden to stand in the range of operating of the machine.
- 2.2.1.16 Do not enter the working zone of the PTO shaft. It is dangerous to approach the rotating parts of the machine.
- 2.2.1.17 Keep a safety distance from drive parts outside of the machine (PTO shaft, hydraulic pipes).
- 2.2.1.18 Before leaving the tractor with the machine attached disconnect the tractor, put the machine steadily on the ground (with the hydraulic lift), apply the hand brake and if the ground is steeply sloping, wedge the tractor. Take out the starting key.
- 2.2.1.19 Do not enter the zone between the tractor and the machine. It is strongly forbidden to be in this zone if the tractor is not properly disconnected, hand brake applied and starting key taken out.

2.2.2 Attachment On The Tractor And Transport

- 2.2.2.1 Before attaching the machine on or detaching it of the tractor be sure that hydraulic lift system is in a neutral position.
- 2.2.2.2 Check that a category of 3-point linkage on the tractor corresponds to that one on the machine.
- 2.2.2.3 Be careful! There is a danger of injuries when working near or with 3-point linkage.
- 2.2.2.4 It is forbidden to be in the zone between the tractor and the machine while working with the hydraulics.
- 2.2.2.5 Put the 3-point linkage into the position that moving of the machine during transport is not possible.
- 2.2.2.6 During transport secure the lever of hydraulic lift to avoid any unplanned moving the machine.
- 2.2.2.7 It is mandatory to install a horizontal blockade during transport and at bigger machines a vertical blockade must be installed, too.
- 2.2.2.8 Never leave the tractor cab when the tractor is working.
- 2.2.2.9 Adjust driving speed to the road conditions.

2.2.3 PTO Drive

- 2.2.3.1 Use only PTO shafts with all guards, as directed by the producer.
- 2.2.3.2 All guards on PTO shaft must be in good order.
- 2.2.3.3 Take care that all guards on the PTO shaft are in proper position during transport or operating. Respect the producer's instructions.
- 2.2.3.4 The PTO shaft must be assembled or disassembled only with the engine stopped and the starting key removed.
- 2.2.3.5 Take care that PTO shaft is correctly fitted on and correctly secured.
- 2.2.3.6 The guards of the PTO shaft must be fixed to the machine and to the tractor with chains, to prevent rotation.
- 2.2.3.7 Before starting always check that the speed and the rotational direction correspond to those on the machine.

- 2.2.3.8 At some tractors a number of rotations depend on the speed and a direction of rotating depends on the direction of driving. Take care about that.
- 2.2.3.9 Before starting the PTO shaft be sure, that no one is in the danger area.
- 2.2.3.10 Never try to start the PTO shaft when the tractor engine is disconnected.
- 2.2.3.11 It is forbidden to be in the zone of drive axle exit, when it is engaged.
- 2.2.3.12 After the drive is disconnected wait that the drive axle stops to rotate completely. Never approach before it stops.
- 2.2.3.13 Never carry out maintenance of a machine or tractor whilst the engine is running. The engine should be switched off and the key removed.
- 2.2.3.14 If the PTO shaft is damaged, immediately stop with any operating.

2.2.4 Hydraulic System

- 2.2.4.1 Take care! Hydraulics is under very high pressure.
- 2.2.4.2 At connecting the pipes on the tractor check that the pressure is not too low.
- 2.2.4.3 Hydraulic connections must be marked to avoid wrong connection. And consequently changing of the operation (lifting instead of lowering and vice versa).
- 2.2.4.4 We recommend that an official service tests the pipes before operating and then at least ones per year. Damaged or worn pipes should be replaced immediately with others of the same specification.
- 2.2.4.5 At checking pipes it is necessary to wear protection clothes and gloves to avoid injuries.
- 2.2.4.6 The oil under high pressure may sweep into the skin causing serious infections. In this case contact a doctor immediately.
- 2.2.4.7 Before working on the hydraulic system lower the machine, take pressure out and stop the tractor.
- 2.2.4.8 Approximate using period of the pipes is 6 years. After that the pipes should be replaced to avoid any damage.
- 2.2.4.9 Used oils and greases must be stored and disposed of according to antipollution rules.

2.2.5 Safety Rules During Use

- 2.2.5.1 Never start or continue to work with the machine if the tractor or the drive axle are engaged
- 2.2.5.2 Always remove the starting key after you stopped the tractor.
- 2.2.5.3 Periodically check that bolts and nuts are tightened properly.
- 2.2.5.4 At maintaining it is sometimes necessary to lift the machine. It is mandatory to put under the machine an appropriate support to avoid falling the machine at eventual damage on hydraulics.
- 2.2.5.5 Use the gloves and appropriate tools at changing sharp parts of the machine to avoid injuries.
- 2.2.5.6 Used oils and greases should be removed according to the rules.
- 2.2.5.7 Always disconnect electric cables on the tractor before any welding or other operation when using electricity is necessary.

2.2.5.8 Only original spare parts should be installed.

2.3 Safety Decals

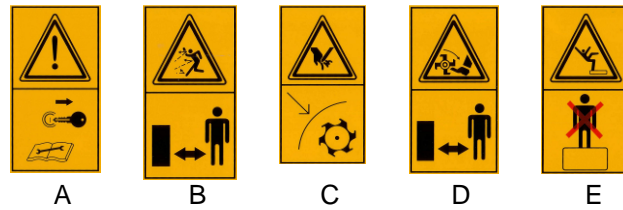
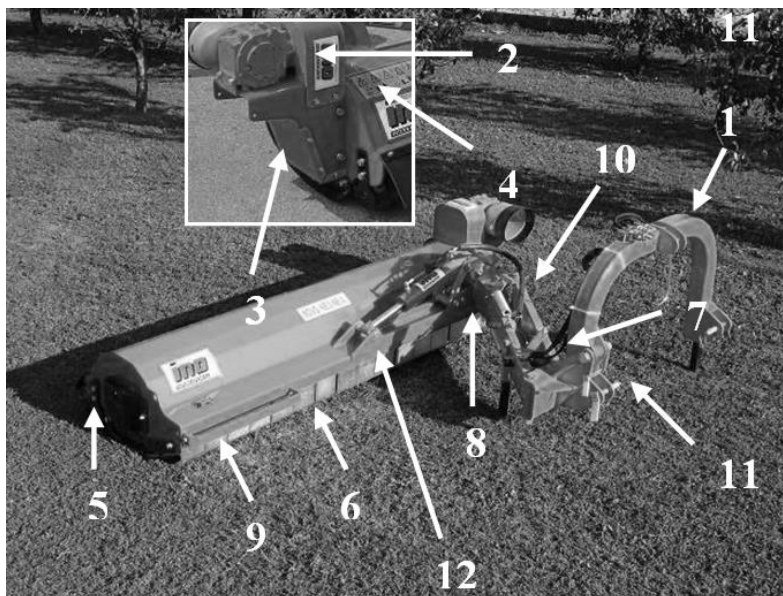


Figure 5 – Safety Decals

- A. Always take off previously the machine of the tractor and read the instructions carefully before starting servicing and or lubrication operations.
- B. Keep at a safety distance from the machine to avoid the risk of projection of objects.
- C. Never remove the guards while the parts of the machine are moving. It is dangerous to injure the hands.
- D. Keep at a safety distance from the machine to avoid the risk of cutting the feet.
- E. It is forbidden to mount on the machine because of the risk of fall

2.4 Safety Guarding



- 1 Headstock
- 2 Upper Belt Shield
- 3 Lower Belt Shield
- 4 Safety Decals
- 5 Side Guard
- 6 Flaps
- 7 Horizontal Ram
- 8 Vertical Ram
- 9 Frame Guard
- 10 Mechanical Breakaway
- 11 Three-point Linkage
- 12 Ram Mount

Figure 6 – Safety Guarding

3 Machine Operation

The machine is equipped with hammers (Figure 7) on the rotor shaft or with y-blades (Figure 8) as an option. Hammers are appropriate for more hard work, for material with diameter till 5 cm. Y-blades are used for material with diameter max. 3 cm. While rotating working tools cut the material and lift it under the top of the frame. Falling material is again cut several times by rotating hammers (or Y-blades).

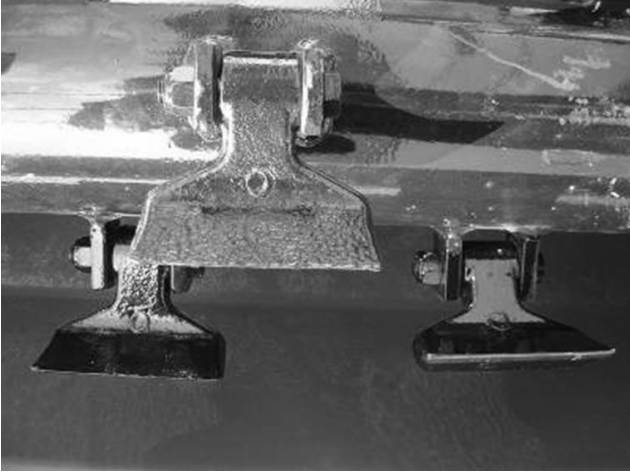


Figure 7

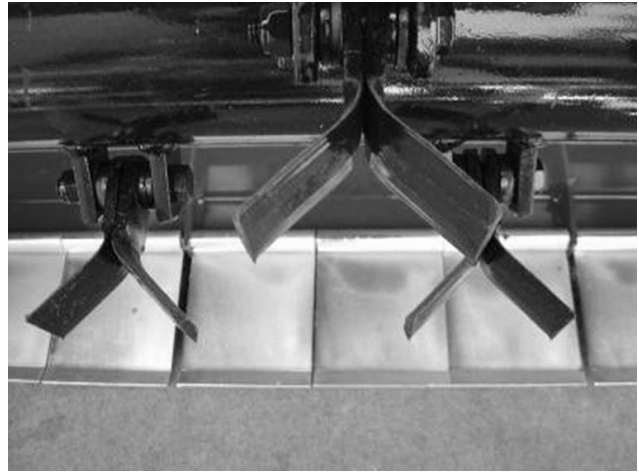


Figure 8



Figure 9



Figure 10



Figure 11

4 Transport & Attachment Of The Machine

4.1 Transport To The Customer

Unload the machine with special care to avoid any damage. For unloading use special holes on the frame (Figure 12). Check that all nuts and bolts are fixed and tightened.

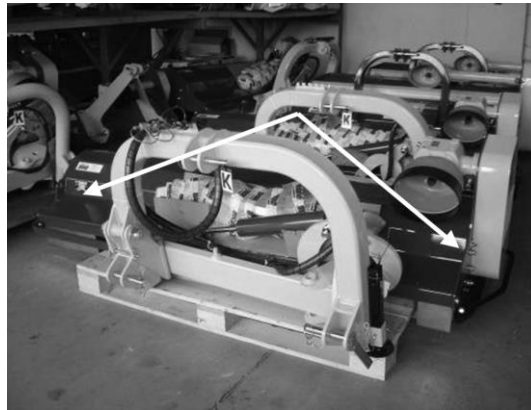


Figure 12

According to the dimensions of the machine and different possibilities of the transport, the machine can be sent split assembled on the pallet or in the box.

4.2 Attachment And Detachment From The Tractor

Before any operation check:

- That the machine is in good condition,
- That all guards are on proper places and in good condition,
- That working blades are complete and undamaged,
- That all greasing points are greased well and that in gearbox is oil enough,
- Appropriate tensioned belts,
- That rpm and direction of rotation on the drive axle correspond to those on the machine.

To attach the machine to the tractor, bring the tractor lower lines near the machine, to the points corresponding to the pins. Insert the pins and secure them with the spring clips. Fit the top link, raise the machine to a perpendicular position with the ground. Adjust the two tractor lower linkage stabilizers thus fixing the machine to the tractor in a central position. Connect the hydraulic cylinders and check if it works.

Before transport put the machine in to the proper horizontal central position if this is RHD 160 (Figure 13). Flail mowers RHD 190 and 225 are transported in a vertical position because of its total width (Figure 14).



Figure 13



Figure 14

IMPORTANT: 3-point hitch of the machine must be in a symmetrical position with the tractor.

IMPORTANT: At connecting hydraulic pipes first split both parts of hydraulic connecting ends for each hydraulic cylinder and properly connect with those on the tractor.

IMPORTANT: At the machine attached put both support feet into a transport position.

4.3 Fitting The PTO Shaft

Attach the machine on the tractor. Split the tubes into both parts and put one part on the tractor and another on the machine. At the machine lying on the ground, minimum overlapping of the tubes mustn't be less than 1/3 of total length. Cut too long part of the tube and clean the edges. Cut on the proper length also the guard as on Figure 16. Measure the length when the PTO shaft is in horizontal position. Grease before putting them together.

IMPORTANT: Too long PTO shaft can seriously damage tractor or flail mower.

IMPORTANT: Never put PTO shaft on the tractor without all guards and chains fitted properly (Figure 16).

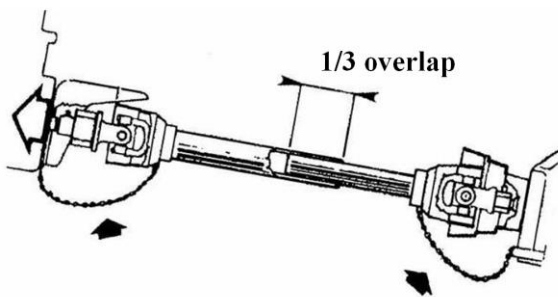


Figure 15
Appropriate Length Of PTO Shaft At The Machine On The Ground

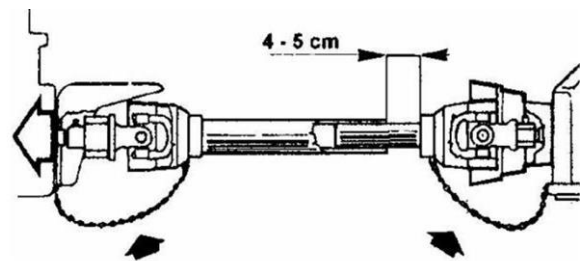


Figure 16
Appropriate Length Of The Guard At Machine Lifted

4.4 Tractor Stability

IMPORTANT: At attachment of the machine on the tractor always take care about allowed weight of the attachment and axle load. First axle of the tractor should always be loaded with min.20% of the weight of the tractor itself. This is very important especially on this machine because of its distance between the tractor and working part of the machine. Put the ballast on the front axle if necessary.

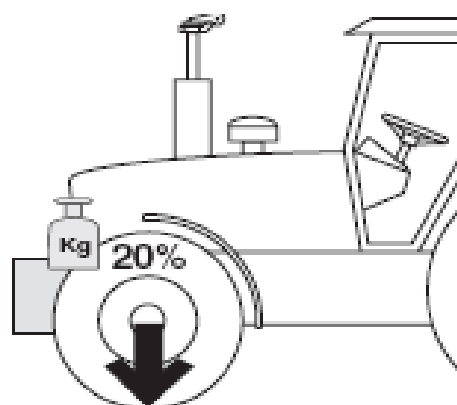


Figure 17

5 Adjustment & Setting Up

5.1 Regulation of the height of cut

Height of cut depends on working conditions and volume of the material. The height of cut can be regulated with the hydraulic system on the tractor or/and with adjusted rear roller of the machine (Figure 18).

The min. height of cut should be between 1 and 3 cm. The machine should always run on the rear roller and not on the skids.

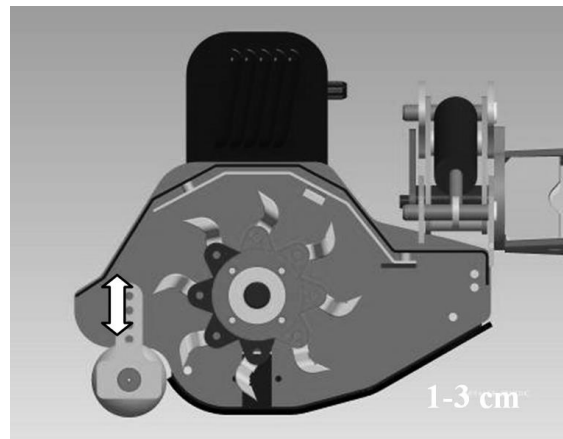


Figure 18



DANGER! Working tools never touch the ground. The skids are only the protection against injuries. They do not touch the ground.

5.2 Belt Tension Adjustment

Appropriate belt tension is one of conditions for optimal operating of the machine and for long lasting of the belts themselves.

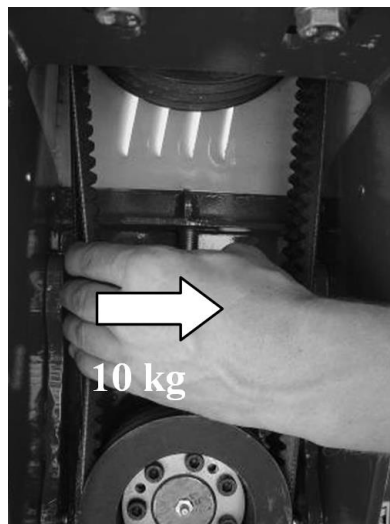


Figure 19



WARNING! Tension the belts only when tractor is disconnected and starting key taken out.

IMPORTANT: Appropriate belt tension is achieved when at pressing on the belts with the force of 100 N (i.e. 10 kg), we reach a deviation of the belt 1.5 cm!

6 Operating

IMPORTANT: Before operating it is necessary to do the following:

- 6.1.1.1 Move away a transport blockade of the machine
- 6.1.1.2 Move away the pin to activate a mechanic breakaway. Put it on the proper position.
- 6.1.1.3 Lift both support feet.
- 6.1.1.4 If there is an uneven terrain, use floating system – move away the inserted plate.

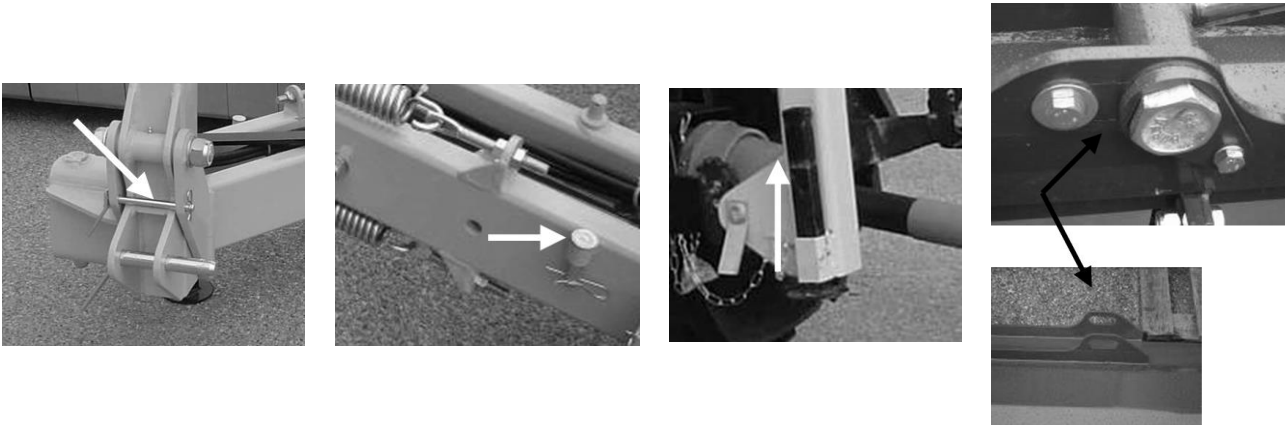


Figure 20



Figure 21

IMPORTANT: Before starting check the terrain first for some stones, wood and other.

IMPORTANT: If there is no other sign, max rpm of PTO shaft is 540 rpm.

IMPORTANT: Before starting lift the machine for 10 cm. After starting the machine, put it on the ground into the working position gently.

Working speed depends on working conditions and on the material cut. Optimal speed is between 3-8 km/h. In the case of bigger material reduce the speed to avoid slipping of the belts.



WARNING! It is strongly forbidden to activate PTO shaft if the machine is touching the ground in the vertical position (Figure 22).

IMPORTANT: At using hydraulic on the machine it is necessary to lift the machine enough to avoid touching the ground (Figure 23).



Figure 22

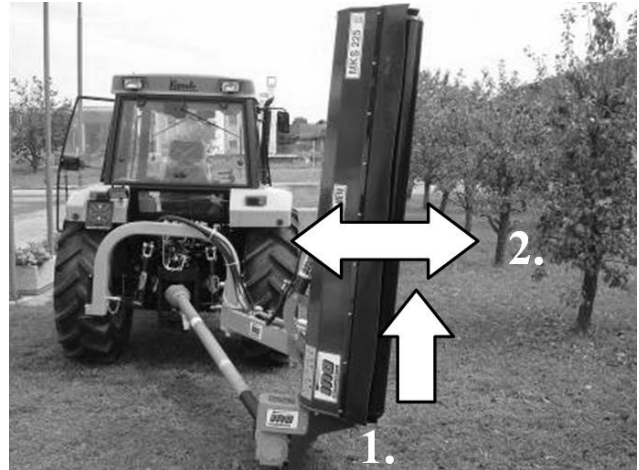


Figure 23

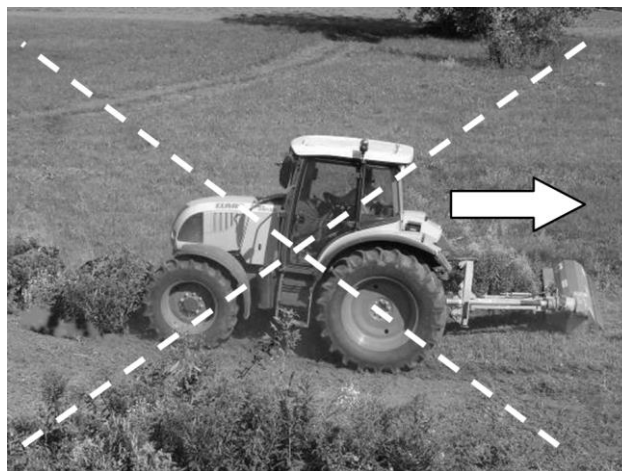


Figure 24

IMPORTANT: During reverse movement lift the machine of the ground to avoid damaging it. (Figure 24)

IMPORTANT: During turning lift the machine

Very important part of equipment is mechanic breakaway (Figure 25). At touching the stone or other obstacle mechanic breakaway allows that body of the machine moves away to avoid injury. At touching any barrier stop immediately and drive back that springs turn back into the normal position, lift the machine, bypass the obstacle and continue with normal work.

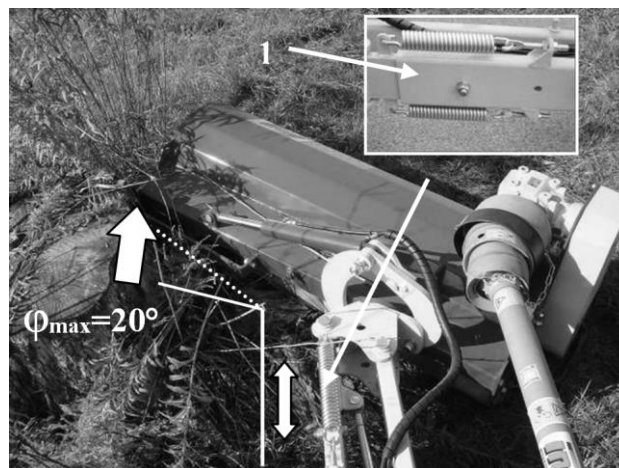


Figure 25

7 Finishing Work

After the job done disconnect the PTO shaft, lift the machine and transport it onto the appropriate place.

IMPORTANT: During transport reduce the speed, especially on bumpy roads. The weight of the machine may render driving difficult and damage the machine itself. During transport the machine must be always in the transport position.

IMPORTANT: PTO shaft must be disconnected during transport.



DANGER! At disconnecting the machine respect the warning rules for connecting the machine.

IMPORTANT: Before disconnection of the machine put on a pin-blockade of the linkage (Figure 26 (2)).

7.1 Storage

Put the machine on the flat not soft ground. Put the support feet into the appropriate position. (Figure 27). To avoid a corrosion store the machine on a dry place.

In the case of small place put together the arm of the mower and push the machine to the tractor that arm comes close to the body of the machine. Put the support feet into the standing position and lift down the machine. Disconnect the PTO shaft and put it on the hook (Figure 26 (1)). Disconnect the machine from the tractor 3-point hitch. Put a blockade for linkage on (Figure 26 (2)).

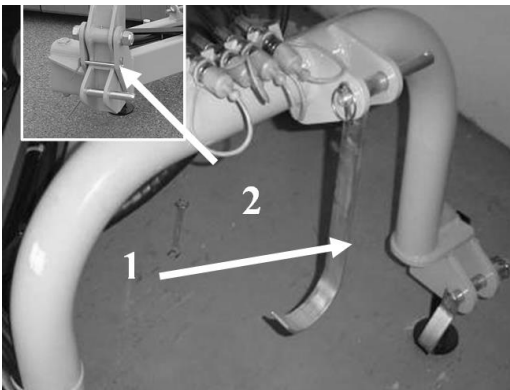


Figure 26



Figure 27



WARNING! At disconnecting the machine from the tractor block the rear roller with a piece of wood for stability of the machine.

7.2 Cleaning

To avoid any corrosion clean the machine after each working day, especially working tools, bearings etc. Be careful to avoid damaging hydraulic pipes, bearings and colour.



Figure 28

8 Maintenance



WARNING! All maintenance, cleaning and repair operations must be carried out with the machine firmly lowered to the ground and detached from the tractor, or with disconnected PTO, engine off and starting key out.

IMPORTANT: A time of maintenance is defined according to the normal use of the machine. If the machine is used in very hard conditions, the time between maintenance operations must be shorter.

IMPORTANT: Take care that grease nipples on the machine are always clean.

IMPORTANT: After each maintenance operation check that all guards are fitted on the proper place.

8.1 Belt Tension Control

First remove upper belt shield (Figure 29 (1)) and check the belt tension. If the belts are not tensioned properly, release the nut (Figure 31 (2)) and 4 bolts on gearbox support (Figure 29 (2)). Tension the bolt (Figure 31 (1)) till the belts are tensioned correctly. Tension the nut again. Check again the belts tension and fit the belt shield.

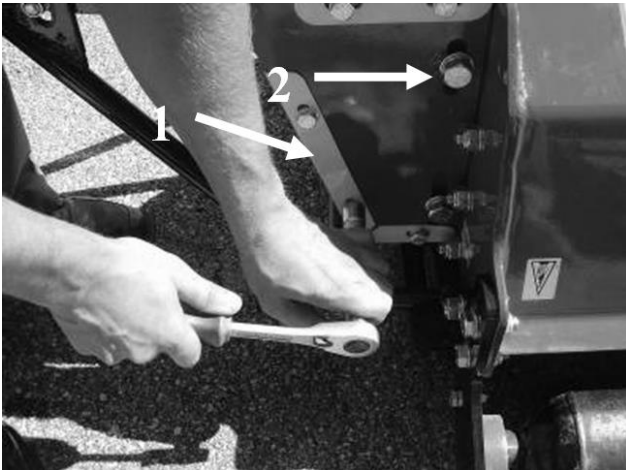


Figure 29



Figure 30

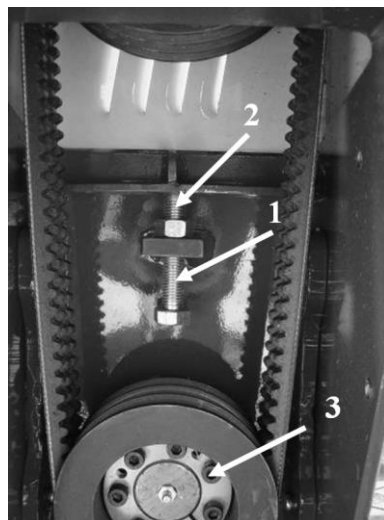


Figure 31

IMPORTANT: Appropriate belt tension is achieved when at pressing on the belts with the force of 100 N (i.e. 10 kg), we reach a deviation of the belt 1.5 cm!

IMPORTANT: After 2 h of working it is necessary to tighten the bolts on the elve clutch. Do that always in the circle one by one, more times. Repeat this operation at least 4 times, when it is still possible.

8.2 Oil Level Control

Use always the same type of oil, SAE 90. For gearbox we need 1.2 l of oil. Use the hole on the top of gearbox for filling in (Figure 32(1)). For pouring in use a funnel. Pour in the oil till the level of the control plug on the gearbox). A plug for oil control is placed on the side of the gearbox (Figure 32(2)). For changing the oil use plug under the fixing plate – unscrew it (Figure 32 (3)).

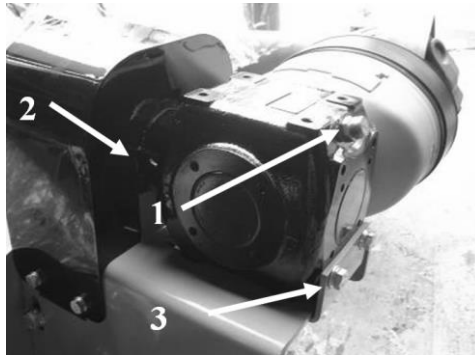


Figure 32

8.3 Bolt Tightening

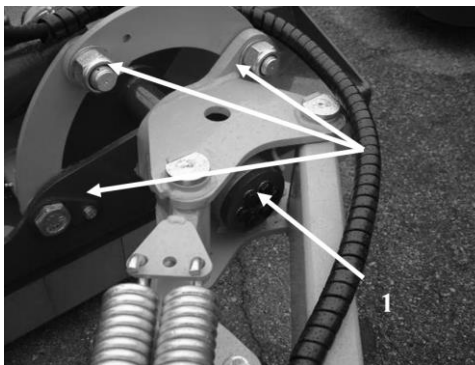


Figure 33

IMPORTANT: On every eight hours check that all nuts are tighten enough.

IMPORTANT: Never tighten the nuts on the connecting part (Figure 33 (1)) completely; the connecting parts must remain movable. Proper tighten nuts are when tighten the nuts till the end and then loose them for ¼ of the round.

IMPORTANT: At greasing use the gloves. After greasing always wash your hands.

IMPORTANT: Use type LIS 3 for greasing.

8.4 Greasing

The machine has the following greasing points:

- Left and right bearing on the rotor shaft (Figure 40(1), Figure 41)
- Left and right bearing on the rear roller (Figure 40 (2))
- Pins of the arm (Figure 34, Figure 36)
- Connection (Figure 35)
- End parts of PTO shaft
- Hydraulic cylinder (Figure 37)
- Lifting system (Figure 38, Figure 39)

IMPORTANT: Before any greasing operation read these instructions.

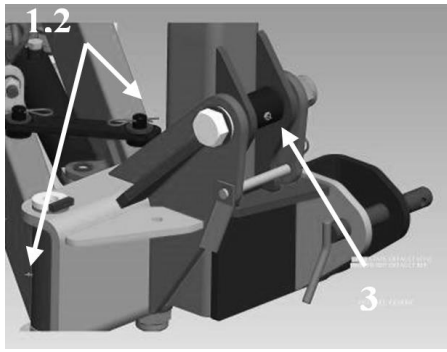


Figure 34

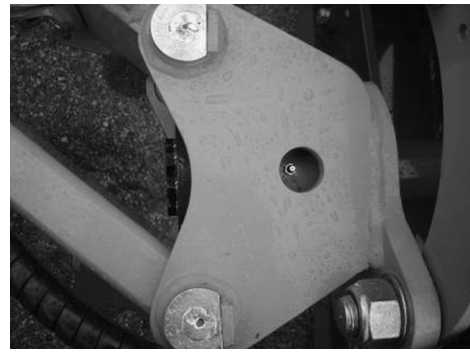


Figure 35

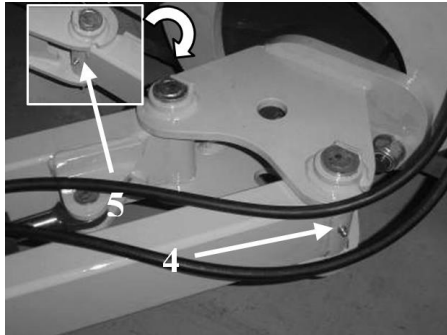


Figure 36



Figure 37

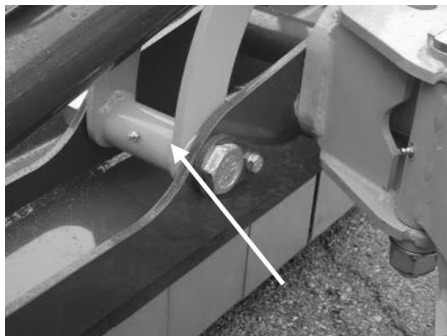


Figure 38

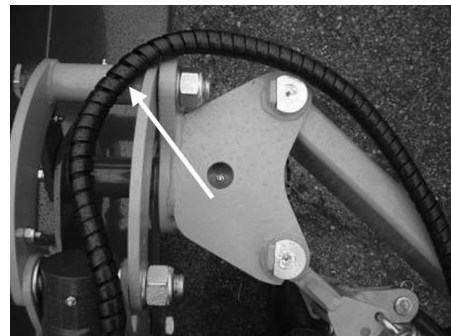


Figure 39

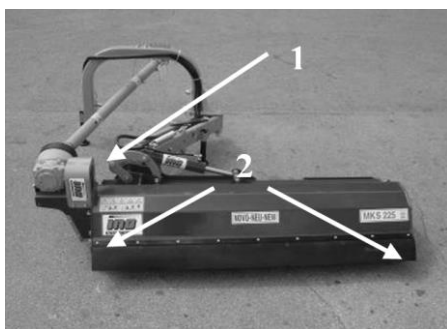


Figure 40



Figure 41

8.5 Plan For Maintenance Jobs

8.5.1.1 After first two hours of work always:

- Check the belt tension
- Check if all bolts and taper locks are tightened enough

Do the same also after each belt changing.

8.5.1.2 After every 8 hours always check:

- If the nuts are tightened enough,
- A wear and condition of working tools,
- Belts and taper locks,
- A condition of safe guards,
- Oil level in the gearbox,
- That any foreign parts are not stuck on the rotor shaft,
- That the frame and the 3-point hitch are in good condition,
- That all parts are greased well.

8.5.1.3 On every 100 hours we recommend to:

- Check and grease the PTO shaft

8.5.1.4 On every 12 months we recommend to:

- Change the oil in the gearbox and check the belts tension.

8.6 Replacement Of Flails

Immediately after you notice that flails are damaged, change them. If it is necessary to change only few flails, always change the broken or worn one and the one diametrically opposite in order to maintain the balance. If the rotor shaft is vibrating after changing the blades, immediately stop the machine. The machine must be balanced before any work.

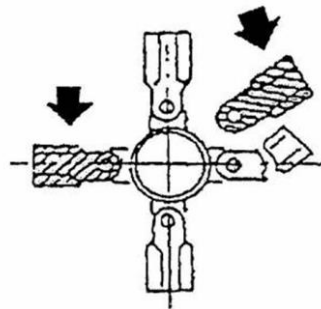


Figure 42

8.7 At The End Of The Season

At the end of the season we recommend to clean the complete machine, change eventual broken or worn parts, tighten the bolts, the belts, grease the parts and oil the parts with damaged colour. Put the machine on a dry and flat ground.

8.8 Disposal

If the machine is out of order, all its parts that might cause dangers have to be made inoffensive. Materials, forming the machine that has to undergo a differentiated division, are:

- Steel, mineral oil, rubber, plastic

All the above mentioned operations and the disposal have to be carried out in total respect of the present provisions of law on the subject.

9 Troubleshooting

Trouble	Causes	Remedies
Irregular Cut	Worn, bent or broken flails	Replace the flails
	Too low RPM	Increase RPM
	Machine is not in the level with the ground	Correct mounting on the tractor
	Clogged material due to excessive working speed	Reduce the working speed
Noise	Loosen bolts	Tighten the bolts
	Damaged parts of the machine	Find damages and repair the machine
Noise In The Gearbox	Lack of oil	Fill till level
	Worn gears	Replace
	Worn bearings	Replace
Vibrations	Broken or worn flails	Replace
	Unbalanced rotor	Balance or replace
	Worn rotor bearings	Replace
Excessive Backlash In Joints	Worn pins	Replace
Damaged Bearings	Dirty or ungreased bearings	Clean and grease
	Violent impact on the ground when the machine is lowered	Lower it gently
Belts Overheating	Belts slipping	Tension the belts
	Working flails are touching the ground	Adjust the height of cut
	Too fast working speed	Reduce the speed

10 Spare Parts

10.1 Ordering Spare Parts

When ordering parts, please refer to you parts list to help your dealer with your order.

Please provide the following information:

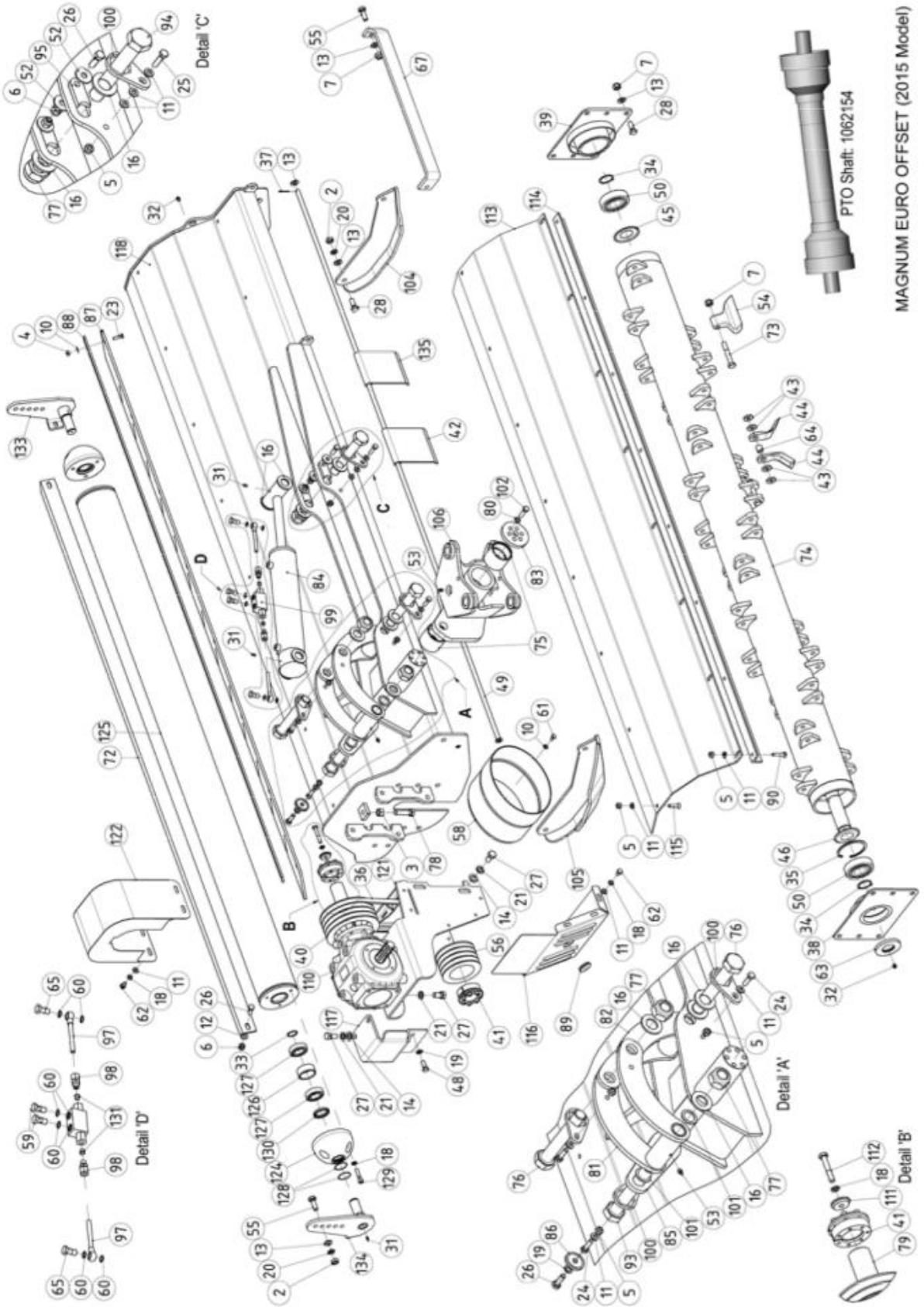
- Model Number
- Part Number and quantity
- Description
- Serial number of machine
- Delivery instructions (e.g. next day)

Delivery is normally via carrier direct to your dealer.

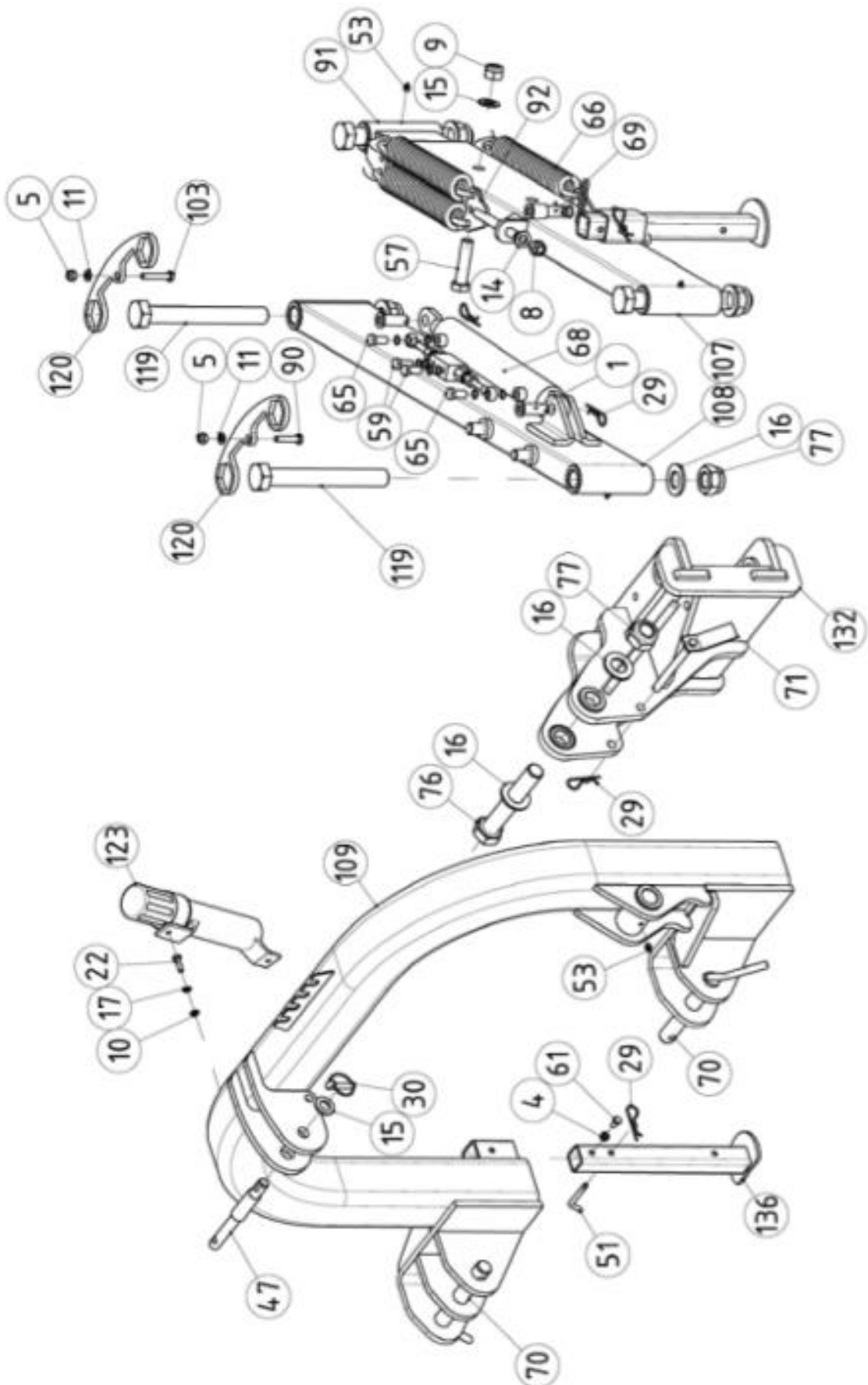
Services that are currently available are Next Day, with the additional option of before 9:00am, 10:30am or Noon.

Carriers also offer a 2-3 day service for heavier items. For light and small parts, these can be posted first of second-class mail.

10.2 Main Cowl & Rotor Assembly



10.3 Headstock Assembly



10.4 Part Numbers

ITEM NO.	PART NO.	DESCRIPTION.	QUANTITY.		
			160	190	225
1	1061532	PIN	2	2	2
2	1061121	NUT	8	8	8
3	9113007	NUT	1	1	1
4	9163004	NUT	8	9	10
5	9163005	NUT	19	20	22
6	9163006	NUT	4	4	4
7	1061042	NUT	34	38	42
8	9163007	NUT	2	2	2
9	1061343	NUT	1	1	1
10	9100104	WASHER	12	13	14
11	9100105	WASHER	31	32	34
12	9100106	WASHER	2	2	2
13	05.281.14	WASHER	23	23	23
14	1000106	WASHER	8	8	8
15	9100108	WASHER	2	2	2
16	1062006	WASHER	17	17	17
17	9100204	SPRING WASHER	2	2	2
18	9100205	SPRING WASHER	11	11	11
19	9100206	SPRING WASHER	3	3	3
20	05.282.08	SPRING WASHER	8	8	8
21	9100207	SPRING WASHER	10	10	10
22	9313054	BOLT	2	2	2
23	9313064	BOLT	6	7	8
24	9313075	BOLT	7	7	7
25	9313025	BOLT	1	1	1
26	9313076	BOLT	5	5	5
27	9313067	BOLT	10	10	10
28	9313148	BOLT	16	16	16
29	1061076	SAFETY PIN	6	6	6
30	1061097	PIN	1	1	1
31	1061554	GREASE NIPPLE	2	2	2
32	1061079	GREASE NIPPLE	2	2	2
33	1061481	CIRCLIP	2	2	2
34	1061174	CIRCLIP	2	2	2
35	1061175	CIRCLIP	1	1	1
36	21233.01	BELT	3	4	4
37	1061077	SPLIT PIN	1	1	1
38	1061160	BEARING CASING - L	1	1	1
39	1061161	BEARING CASING - R	1	1	1
40	1061164	PULLEY 180/80-3	1	-	-
	1061114	PULLEY 180/80-4	-	1	1
41	1061163	TAPERLOCK	2	2	2
42	1061171	FLAP 140	11	12	15
	1061482	FLAP 50	1	-	-
	1061170	FLAP 70	-	1	-

ITEM NO.	PART NO.	DESCRIPTION.	QUANTITY.		
			160	190	225
43	1061036	WASHER	80	96	112
44	1061034	Y-BLADE (OPTION)	40	48	56
45	1061176	BEARING GUARD - L	1	1	1
46	1061177	BEARING GUARD - R	1	1	1
47	1061168	PIN	1	1	1
48	9213066	BOLT	2	2	2
49	1062009	FLAP BAR 160	1	-	-
	1061158	FLAP BAR 190	-	1	-
	1061109	FLAP BAR 225	-	-	1
50	1061173	BEARING	2	2	2
51	1061083	PIN	2	2	2
52	1062010	WASHER	4	4	4
53	1061310	GREASE NIPPLE	8	8	8
54	1061100	HAMMER	20	24	28
55	1061687	BOLT	6	6	6
56	1061162	PULLEY 130/80-3	1	-	-
	1061113	PULLEY 130/80-4	-	1	1
57	1062068	BOLT	1	1	1
58	1061046	PTO SHAFT SHIELD	1	1	1
59	1062016	BOLT	4	4	4
60	1062069	WASHER	16	16	16
61	9313034	BOLT	6	6	6
62	1062017	BOLT	10	10	10
63	1062171	OIL SEAL	1	1	1
64	1061416	SLEEVE	20	24	28
65	1062019	BOLT	4	4	4
66	1062020	SPRING	2	4	4
67	1062022	FRAME GUARD	1	1	1
68	1062023	HYDRAULIC RAM	1	-	-
	1062247	RAM 1062023 c/w VALVE ASSEMBLY	1	-	-
	1062024	HYDRAULIC RAM	-	1	1
	1062248	RAM 1062024 c/w VALVE ASSEMBLY	-	1	1
69	1062025	PIN	1	1	1
70	1062026	PIN	2	2	2
71	1062027	PIN	1	1	1
72	1062029	SCRAPER 160	1	-	-
	1061452	SCRAPER 190	-	1	-
	1061453	SCRAPER 225	-	-	1
73	1061542	BOLT	20	24	28
74	1062031	ROTOR 160 c/w HAMMERS & BEARINGS	1	-	-
	1061543	ROTOR 190 c/w HAMMERS & BEARINGS	-	1	-
	1061545	ROTOR 225 c/w HAMMERS & BEARINGS	-	-	1
75	1062033	BUSHING	2	2	2
76	1062035	BOLT	2	3	3
	1062071	BOLT	1	-	-





ITEM NO.	PART NO.	DESCRIPTION.	QUANTITY.		
			160	190	225
77	1062036	NUT	9	9	9
78	9213127	BOLT	1	1	1
79	1062003	BUSHING	1	1	-
	1062072	BUSHING	-	-	1
80	1062037	WASHER	6	6	6
81	1062039	LEVER (RIGHT)	1	1	1
82	1062040	LEVER (LEFT)	1	1	1
83	1062041	WASHER	1	1	1
84	1062042	HYDRAULIC RAM	1	-	-
	1062249	RAM 1062042 c/w VALVE ASSEMBLY	1	-	-
	1062043	HYDRAULIC RAM	-	1	1
	1062250	RAM 1062043 c/w VALVE ASSEMBLY	-	1	1
85	1062044	LEVER	1	1	1
86	1062045	WASHER	1	1	1
87	1062100	RUBBER GUARD 160	1	-	-
	1062099	RUBBER GUARD 190	-	1	-
	1062098	RUBBER GUARD 225	-	-	1
88	1062103	BAR 160	1	-	-
	1062102	BAR 190	-	1	-
	1062101	BAR 225	-	-	1
89	1062046	CAP	1	1	1
90	9213095	BOLT	6	7	9
91	1062051	SUPPORT	1	1	1
92	1062052	SPRING TENSIONER	2	2	2
93	1062053	BOLT	1	1	1
94	1062054	BOLT	1	1	1
95	1062055	FLOAT LOCK	1	1	1
96	1062251	VALVE	2	2	2
97	1062252	HYDRAULIC CONNECTION	4	4	4
98	1062253	CONNECTION BUSHING	4	4	4
99	1062056	VALVE (COMPLETE)	2	2	2
100	1062059	PIN LOCK	4	4	4
101	1062155	WASHER	2	2	2
102	9313086	BOLT	6	6	6
103	1062129	BOLT	1	1	1
104	1062254	SKID (LEFT)	1	1	1
105	1062255	SKID (RIGHT)	1	1	1
106	1062256	CONNECTION BRACKET	1	1	1
107	1062257	ARM (R)	1	1	1
108	1062258	ARM (L)	1	1	1
109	1062259	LINKAGE – 160	1	1	1
	1062260	LINKAGE – 190/225	1	1	1
110	1062261	GEARBOX	1	1	1
111	1062159	WASHER	1	1	1
112	9213125	BOLT	1	1	1

ITEM NO.	PART NO.	DESCRIPTION.	QUANTITY.		
			160	190	225
113	1062162	INNER SKIN - 160	1	-	-
	1062161	INNER SKIN - 190	-	1	-
	1062160	INNER SKIN - 225	-	-	1
114	1062165	BAR 160	1	-	-
	1062164	BAR 190	-	1	-
	1062163	BAR 225	-	-	1
115	9213085	BOLT	5	6	8
116	1062262	BELT SHIELD LOWER	1	1	1
117	1062167	GEARBOX GUARD	1	1	1
118	1062263	FRAME – 160	1	-	-
	1062264	FRAME – 190	-	1	-
	1062265	FRAME – 225	-	-	1
119	1062231	BOLT	4	4	4
120	1062232	LOCK BAR	2	2	2
121	1062195	GEARBOX SUPPORT	1	1	1
122	1062266	BELT SHIELD UPPER	1	1	1
123	1062267	DOCUMENT HOLDER	1	1	1
124	1062268	ROLLER END	2	2	2
125	1062269	REAR ROLLER - 160	1	-	-
	1062270	REAR ROLLER - 190	-	1	-
	1062271	REAR ROLLER - 225	-	-	1
126	1062272	SPACER	2	2	2
127	1062273	BEARING	4	4	4
128	1062274	WASHER	4	4	4
129	9213095	BOLT	6	6	6
130	1062275	WASHER	2	2	2
131	1062276	BUSH	2	2	2
132	1062277	CONNECTION BRACKET - 160	1	-	-
	1062278	CONNECTION BRACKET – 190/225	-	1	1
133	1062279	ROLLER BRACKET - LEFT	1	1	1
134	1062280	ROLLER BRACKET - RIGHT	1	1	1
135	1061098	FLAP	1	1	1
136	1061632	SUPPORT LEG	1	1	1
137	1062281	HYDRAULIC HOSE*	1	1	1
138	1062282	HYDRAULIC HOSE*	1	1	1
139	1062154	PTO SHAFT	1	1	1

*NOT ILLUSTRATED

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