Spearhead

R Series Flail Mowers
R190/R225/R245/R270

Edition 1.1 – August 2016
Part No. 8999047

HANDBOOK & PARTS MANUAL

Spearhead

R Series Flail Mowers
R190/R225/R245/R270

Handbook & Parts Manual

Please ensure that this manual is handed to the operator before using the machine for the first time. The operator must fully understand the contents of this manual before using this machine.
(If the machine is resold the Manual must be given to the new owner.)

Important Note
The information contained in this manual is correct at the time of publication. However, in the course of constant development, changes in specification are inevitable. Should you find the information given in this book different to the machine it relates to please contact the “After Sales Department” for advice.

Spearhead Machinery
Green View
Salford Priors
Evesham
Worcestershire
WR11 8SW
Tel: 01789 491860
Fax: 01789 778683
www.spearheadmachinery.com
enquiries@spearheadmachinery.com

CE Declaration of Conformity, Conforming to EU Machinery Directive 2006/42/EC

We, Spearhead Machinery Ltd, Green View, Salford Priors, Evesham, Worcestershire, WR11 8SW hereby declare that:

Product .....

Product Code.....

Serial No.....

Type.....

Manufactured by: Alamo Manufacturing Services (UK) Limited, Station Road, Salford Priors, Evesham, Worcestershire, WR11 8SW

Complies with the required provisions of the Machinery Directive 2006/42/EC. The Machinery Directive is supported by the following harmonized standards:

- BS EN ISO 14121-1 (2007) Safety of Machinery – Risk Assessment, Part 1: Principles Part 2: Practical Guide and Examples of Methods.
- BS EN ISO 12100-1 (2010) Safety of Machinery – Part 1: Basic Terminology and Methodology Part 2: Technical Principles.
- BS EN 349 (1993) + A1 (2008) Safety of Machinery – Minimum Distances to avoid the Entrapment of Human Body Parts.
- BS EN 953 (1998) Safety of Machinery – Guards General Requirements for the Design and Construction of Fixed and Movable Guards.
- BS EN 982 (1996) + A1 (2008) Safety Requirements for Fluid Power Systems and their Components. Hydraulics.

The EC Declaration only applies if the machine stated above is used in accordance with the operating instructions.

Signed 

(On behalf of Spearhead Machinery Ltd)

Status General Manager

Date .....

Contents

General Information

Always read this manual before fitting or operating the machine – whenever any doubt exists contact your dealer or the Spearhead Machinery Service Department for advice and assistance.

Use only Spearhead Genuine Service Parts on Spearhead Equipment and Machines

DEFINITIONS – The following definitions apply throughout this manual:

WARNING
An operating procedure, technique etc., which – can result in personal injury or loss of life if not observed carefully.

CAUTION
An operating procedure, technique etc., which – can result in damage to either machine or equipment if not observed carefully.

NOTE
An operating procedure, technique etc., which – is considered essential to emphasis.

LEFT & RIGHT HAND
This term is applicable to the machine when attached to the tractor and is viewed from the rear – this also applies to tractor references.

Machine Description & Purpose Of Use

The R series of machines are '3-point linkage' tractor mounted mid-sized flail mower/shredders suitable for tractors of 50HP and above. Designed primarily for the mulching of grasses, brambles, bushes, branches, vines, and general crop residues their tough construction and choice of working widths of 1.9m, 2.2m, 2.4m or 2.7m with offsetting capability of up to 400mm make them ideal for both agricultural users and general 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.

Machine Identification

Each machine is fitted with an identification plate with the following information:

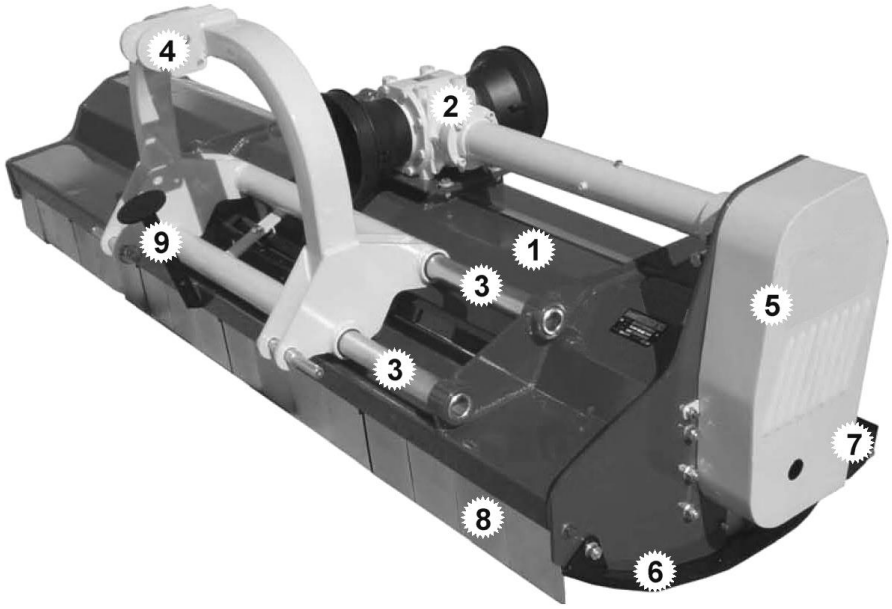
1. Machine (Part Number)
2. Machine Serial No.
3. Machine Weight

When ordering spares or replacement parts from your local dealer it is important to quote both Part Number and Serial Number as stated on the identification plate so the machine and model can be quickly and correctly identified.

Technical Data

Component Identification

1. **Frame**
2. **Gearbox**
3. **Sliding Tubes**
4. **3-Point Linkage**
5. **Belt Drive / Belt Guard**
6. **Skid**
7. **Rear Roller**
8. **Protection Flaps**
9. **Stand Leg**



Technical Specifications

SPECIFICATION	R190	R225	R245	R270
Working Width *(mm)*	*1920*	*2270*	*2420*	*2720*
Tractor Power Requirement *(HP)*	*50*	*60*	*74*	*80*
PTO Speed *(RPM)*	*540*	*540*	*540*	*1000*
Hammer Blades *(No.)*	*24*	*28*	*30*	*34*
Y-Blades *(No.)*	*48*	*56*	*60*	*68*
Machine Weight *(kg)*	*410/430*	*462/487*	*495/515*	*525/545*
Offset Capability *(mm)*	*400*	*400*	*400*	*400*
Linkage *(Type)*	*3-point Cat 2*	*3-point Cat 2*	*3-point Cat 2*	*3-point Cat 2*
Machine Width *(mm)*	*2080*	*2430*	*2630*	*2880*

Optional Equipment

The following options are available on these machines:

- **Front Linkage**
- **Hammer Flails**
- **Y-Blade Flails**

The cutting capability of the each particular type of flail will be dependant on the sort and hardness of the material being cut, but in general the following cutting thicknesses apply:

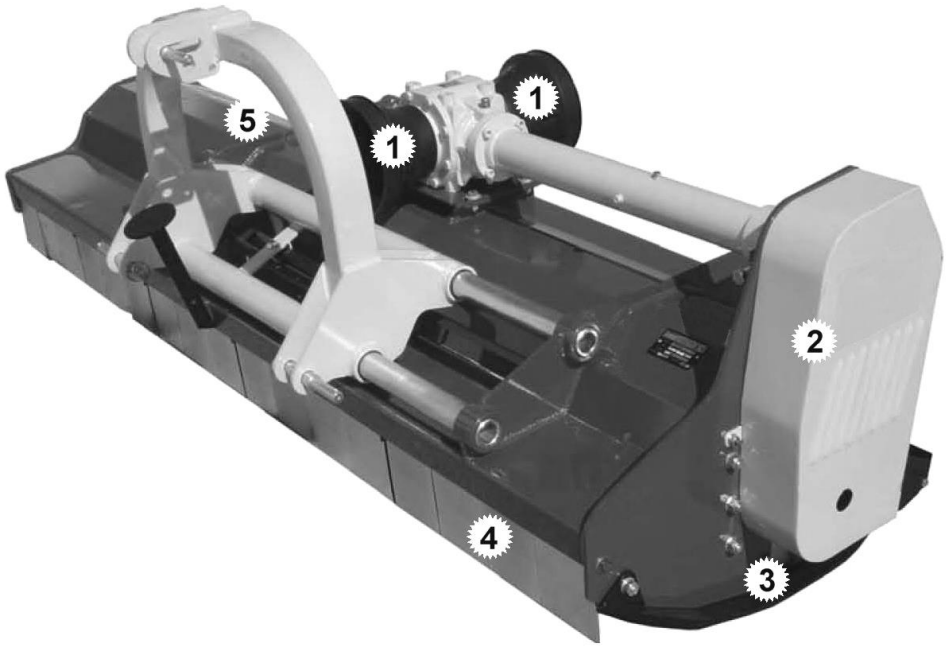
Y-blade flails – *for materials up to a maximum of 30mm diameter.*
Hammer flails – *for materials up to a maximum of 45mm diameter.*

Noise Level

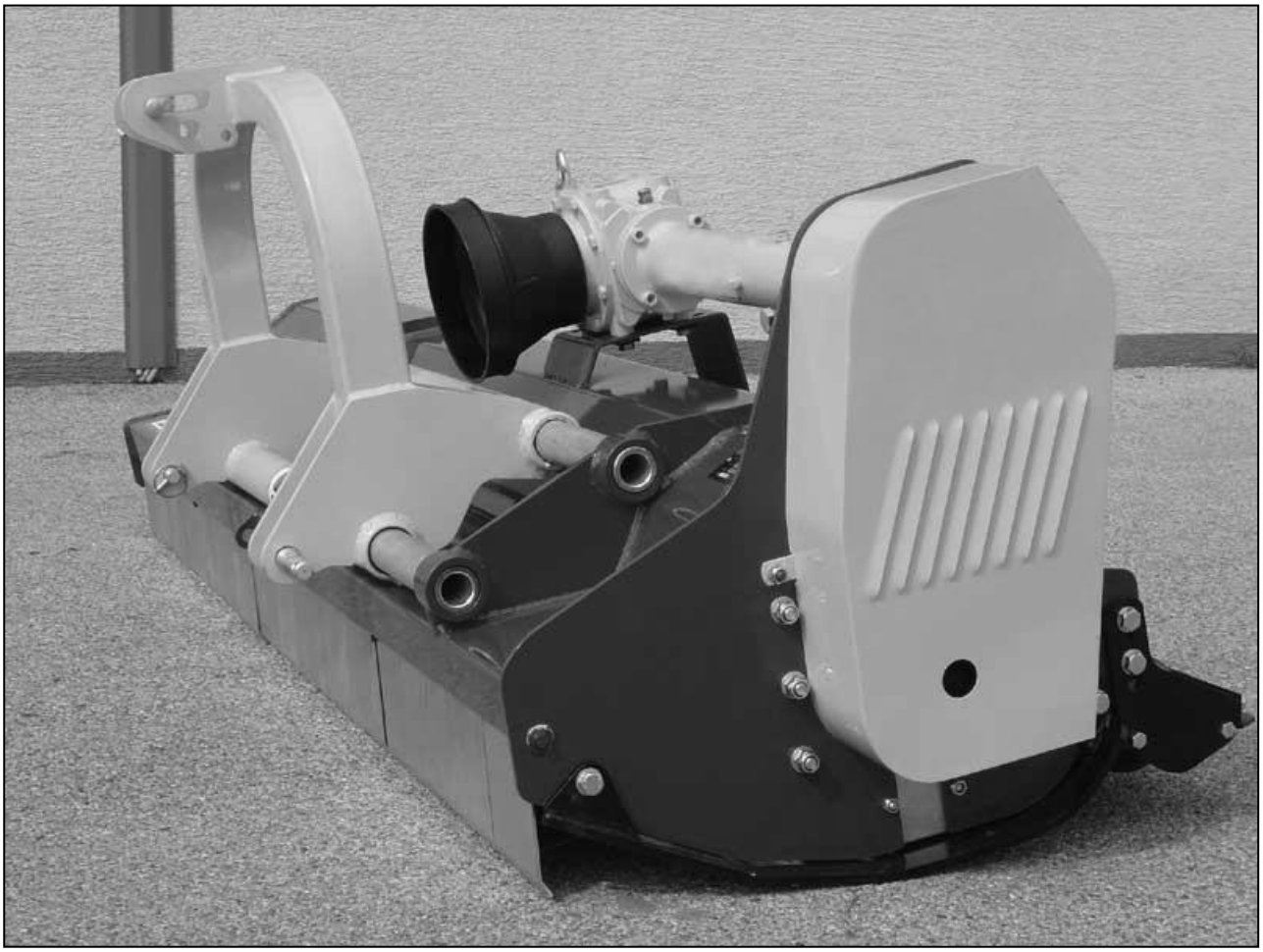
The sound level of this machine, as measured at the operator's ear, is within the range of 70 to 90 dB when the rear window of the tractor is open. We recommend that ear protectors are worn and the tractor windows kept closed at all times when operating this machine.

Safety Features

Location Of Machine Safety Features



1. PTO Shaft Shields
2. **Drive Belt Guard**
3. **Side Skids**
4. **Protection Flaps**
5. **Safety Decals**



Safety Information

General Safety Rules:

- ▲ Always read and follow the instructions for the use and maintenance of the machine before carrying out any work operations or servicing tasks.
- ▲ Improper use of the machine is both highly dangerous to persons and damaging to the machine components – only use the machine for its designated task.
- ▲ Both operators and the maintenance fitters should be familiar with the machine and fully aware of dangers surrounding improper use or incorrect repairs.
- ▲ Before starting, checks to both tractor and machine must be carried out as regards: functionality, road safety, accident prevention rules.
- ▲ Even when using the machine correctly, stones or other objects may be thrown a long distance. Therefore nobody must stand within the danger area. Special attention must be paid when working near roads or buildings.
- ▲ Use tractor's fitted with safety cabs.
- ▲ The condition of flails and of machine guards must be checked before beginning the daily work - they must be replaced if damaged or missing before you use the machine.
- ▲ During checks or repairs, make sure nobody could start the machine by mistake.
- ▲ Never wear loose or fluttering clothes.
- ▲ Never carry passengers on the tractor.
- ▲ Never carry passengers on the machine.
- ▲ Never connect the power takeoff with the engine running.
- ▲ Never approach the machine until the rotor has completely stopped.
- ▲ Do not enter the working zone of the PTO shaft. It is dangerous to approach the rotating parts of a machine.
- ▲ Keep the PTO shaft guard in good condition.
- ▲ Before starting, check the surrounding area for the likely presence of children and/or animals.
- ▲ Do not stand near the machine when it is operating.
- ▲ The PTO shaft must be assembled and disassembled only with the engine stopped and the starting key removed.
- ▲ Before connecting the power takeoff, check that the speed and the rotational direction correspond to those of the machine.
- ▲ Immediately replace missing or damaged safety decals.
- ▲ Before leaving the tractor with the machine attached, proceed as follows:

  1. Disconnect the power takeoff,
  2. Put the machine steadily on the ground using the tractor's hydraulic lift.
  3. Apply the hand brake and, if the ground is steeply sloping, wedge the tractor.
  4. Remove the starting key.

Transportation Safety

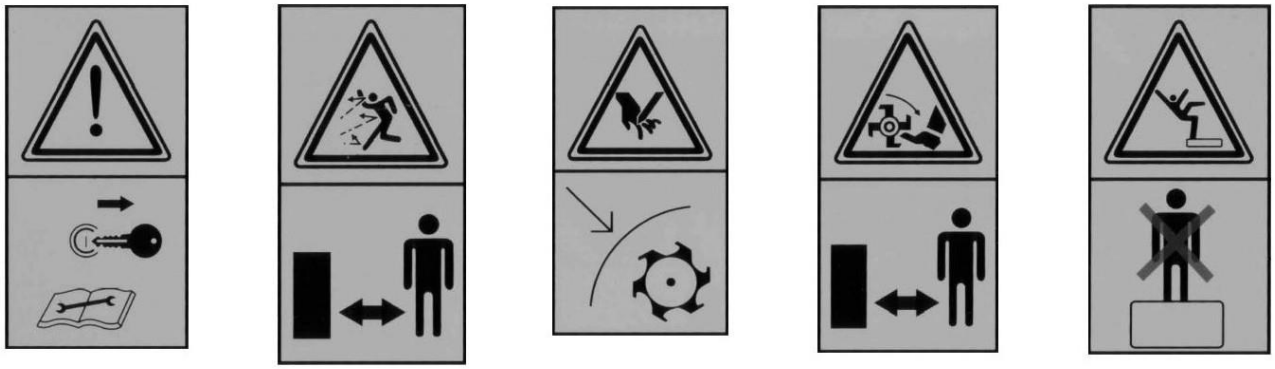
- ▲ In transport, reduce speed, especially on bumpy roads, the weight of the machine may render driving difficult and damage the machine itself.
- ▲ Ensure the levers that operate the hydraulic lift are locked, to avoid the lowering of the machine during transport.
- ▲ When driving on public roads, respect all road rules in force.
- ▲ Never transport the machine with the rotor running, even for short distances.

Operating Safety

- ▲ Pay special attention when working with the machine not to touch fixed objects such as road drain, walls, shafts, kerbs, guard rails, tracks etc. This could cause the breakage of the flails, which would be thrown out of the machine at very high speed.
- ▲ If wires, ropes or chains should become entangled in the rotor stop immediately to prevent damage or dangerous situations; stop the rotor and the tractor, take out the starting key. Put working gloves on; clear the rotor with the aid of pliers or shears. Do not try to disentangle by inverting the rotational direction of the rotor.
- ▲ Do not use the machine when excessive vibration is experienced, as this may cause breakage and serious damage - find the cause of the vibration and eliminate it before using the machine again.

Although the information given here covers a wide range of safety subjects, it is impossible to predict every eventuality that can occur under differing circumstances whilst operating this machine. No advice given here can replace 'good common sense' and 'total awareness' at all times, but will go a long way towards the safe use of your Spearhead Machinery machine.

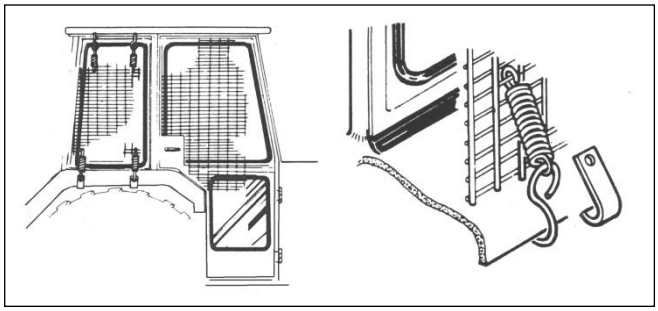
Safety Decals



1. 2. 3. 4. 5.

1. Always switch machine off, remove starting key and read instruction manual before performing service or maintenance work on the machine.
2. Keep a safe distance from the machine at all times - risk from projection of objects.
3. Risk of hand injury – always ensure all guard are fitted and in place when machine is operating.
4. Risk of feet injury – keep at a safe distance from the machine when it is operating.
5. Never stand or ride on the machine.

Vehicle/Tractor Preparation



We recommend vehicles are fitted with cabs using 'safety glass' windows and protective guarding when used with our machines.
Fit Operator Guard (part no. 73 13 324) using the hooks provided. Shape the mesh to cover all vulnerable areas.
Remember the driver must be looking through mesh and/or polycarbonate glazing when viewing the machine in all positions - unless the vehicle/ cab manufacturer can demonstrate that the penetration resistance is equivalent to, or higher than, that provided by mesh/polycarbonate glazing. If the tractor has a roll bar only, a frame must be made to carry both mesh and polycarbonate glazing. The operator should also use personal protective equipment to reduce the risk of serious injury such as; eye protection (mesh visor to EN1731 or safety glasses to EN166), hearing protection to EN352, safety helmet to EN297, gloves, filter mask and high visibility clothing.

Vehicle Ballast

It is imperative when attaching 'third-party' equipment to a vehicle that the maximum possible stability of the machine and vehicle combination is achieved – this can be accomplished by the utilisation of 'ballast' in order to counter-balance the additional equipment added.
Front weights may be required for rear mounted machines to place 15% of total outfit weight on the front axle for stable transport on the road and to reduce 'crabbing' due to the drag of the cutting unit when working on the ground.
Where a machine works to the side of the tractor rear weights may be required to maintain a reasonable amount of rear axle load on the opposing wheel.

All factors must be addressed in order to match the type and nature of the equipment added to the circumstances under which it will be used - factors that effect stability are:

- Centre of gravity of the tractor/machine combination.
- Geometric conditions, e.g. position of the cutting head and ballast.
- Weight, track width and wheelbase of the tractor.
- Acceleration, braking, turning and the relative position of the cutting unit during these operations.
- Ground conditions, e.g. slope, grip, load capability of the soil/surface.
- Rigidity of implement mounting.

Suggestions to increase stability:

- Increasing rear wheel track - *a vehicle with a wider wheel track is more stable.*
- Ballasting the wheel; it is preferable to use external weights but liquid can be added to around 75% of the tyre volume – water with anti-freeze or the heavier Calcium Chloride alternative can be used.
- Addition of weights – care should be taken in selecting the location of the weights to ensure they are added to a position that offers the greatest advantage.
- Front axle locking, check with tractor manufacturer.

The advice above is offered as a guide for stability only and is not a guide to vehicle strength. It is therefore recommended that you consult your vehicle manufacturer or local dealer to obtain specific advice on this subject, additionally advice should be sought from a tyre specialist with regard to tyre pressures and ratings suitable for the type and nature of the machine you intend to fit.

Attaching The Machine To The Tractor

Attachment of the machine to the tractor should always be performed on a firm level site.

Before attachment always ensure:

- The machine is in good condition.
- All safety guards are in good working condition and correctly fitted.
- All flails are correctly fitted and undamaged.
- Lubrication points are well greased and the gearbox oil level is correct.
- Drive belts are tensioned correctly.
- The tractor PTO rpm and direction of rotation correspond to that of the machine.

Attachment Of The Mower

Drive the tractor 'squarely' up to the machine.

Position the tractors lower linkage at a height where it is approximately in line with the lower linkage points (A) on the machine – *refer to photo below.*

Drive tractor slowly towards the machine until the lower linkage points correspond.

Fit linkage pins and secure with spring clips.

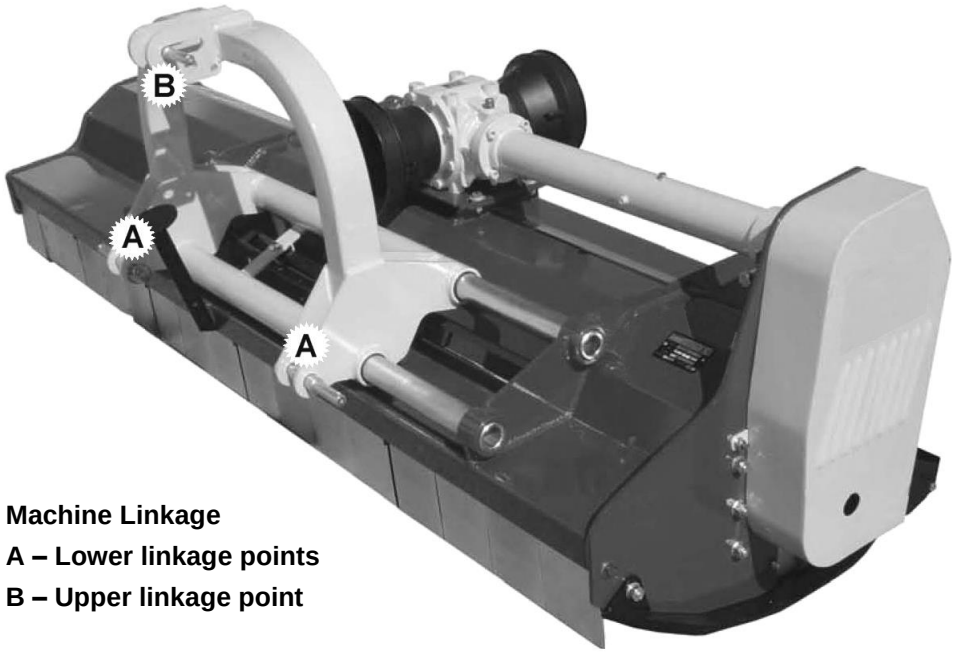
Fit top link to upper linkage point (B) – *this may be floating or fixed depending on the work terrain - refer to set up and adjustment page for specific details on this subject.*

Raise the machine slightly on the tractors hydraulics – adjust top link to bring the machine into the perpendicular position.

Fit check chains and/or stabilisers to tractor lower links to centralise and secure the machine in position.

Fit PTO Shaft and attach torque chains – *refer to following page for details of shaft measurement.*

Attach hydraulic hoses - *hydraulic sideshift models only.*

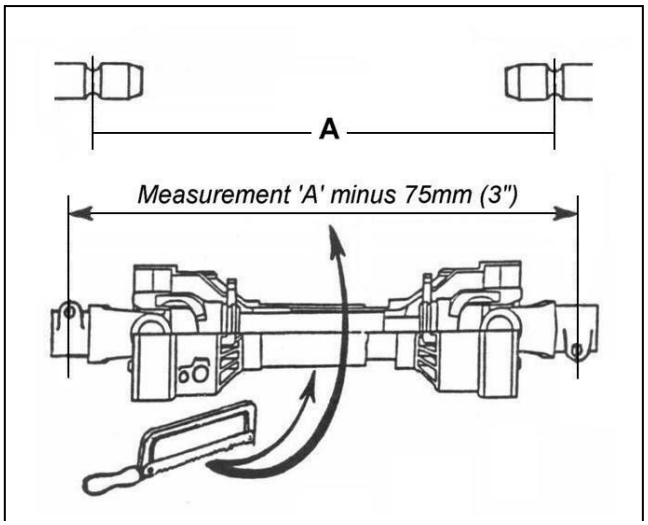


Machine Linkage
A – Lower linkage points
B – Upper linkage point

PTO Shaft

PTO Shaft Management

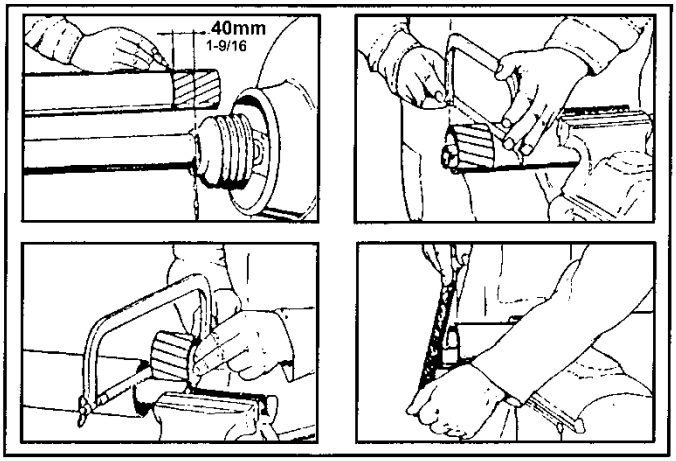
Measure the PTO shaft and cut to the dimension shown – the finished length of the PTO shaft should be 75mm (3”) less than the measured distance ‘**A**’ - between tractor shaft and gearbox stub shaft - to enable fitting.
NOTE: *For subsequent use with different tractors measure again, there must be a minimum shaft overlap of 150mm (6”).*

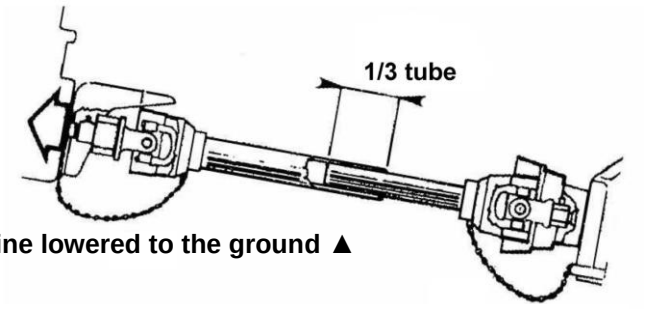


Fit PTO in position and attach the torque chains to a convenient location to prevent the shaft guards from rotating.

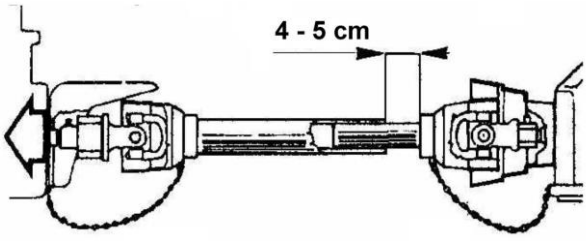
PTO SHAFT LENGTH ADJUSTMENT

1. Shorten outer plastic tube to 40mm less than the shortest envisaged shaft length.
2. Remove the marked tube.
3. Remove same length from inner plastic tube and metal shaft profiles (inner and outer).
4. De-burr all edges and remove ‘swarf’ to ensure smooth operation.



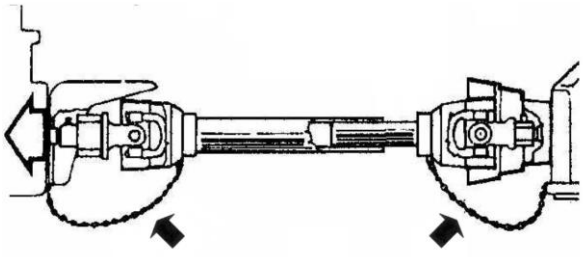


Approximate overlap length of PTO shaft with machine lowered to the ground ▲



Approximate gap length of PTO protection tube with machine in working position ▲

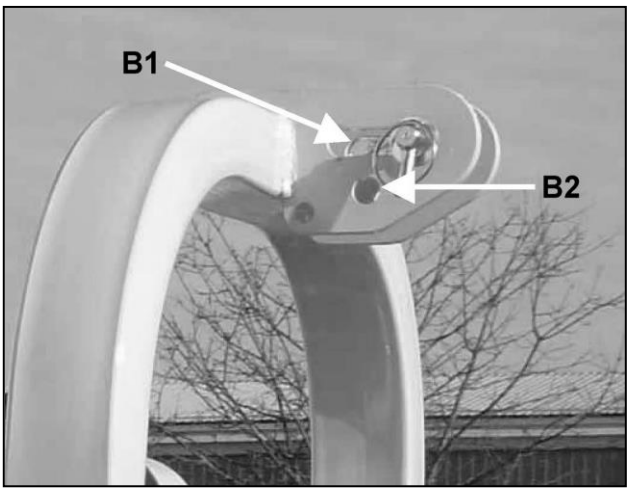
Fit torque chains to shaft guards to prevent rotation ►



Top Linkage

The machines top linkage point (B) has two working modes; floating and fixed – *refer to photo below.*

Top linkage working positions ►



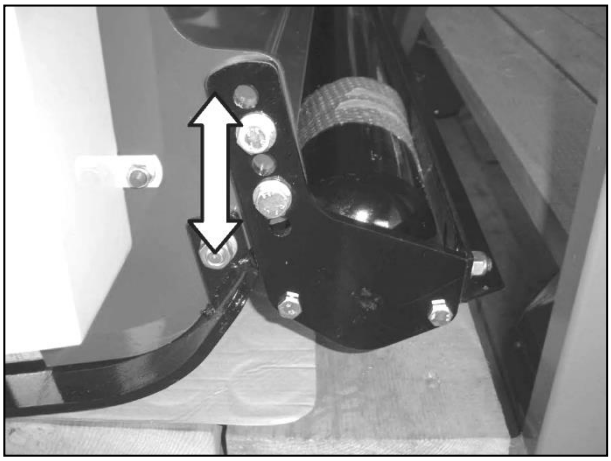
Floating position (B1) should always be used when working on hilly or uneven terrain to protect the machine and linkage from damage.

Fixed position (B2) may be used when working on even level terrain such as playing fields and other similar areas that present a lower degree of stress on the linkage.

WARNING:
Always use top linkage floating position (B1) when working on hilly, sloping or undulating terrain.

Setting Up & Adjustment

The height of cut is dependent on working conditions and volume of material. The cutting height can be regulated with the hydraulic system on the tractor and/or rear roller adjustment – *see photo opposite*.
The minimum height of cut should be between 1 – 3cm.

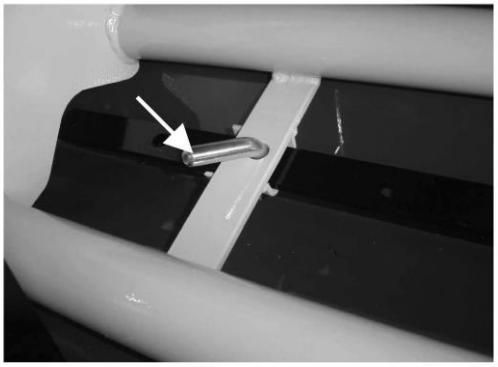


NOTE: The machine must always run on the rear roller not the side skids – side skids are a protection feature and in normal working conditions remain clear of the ground.

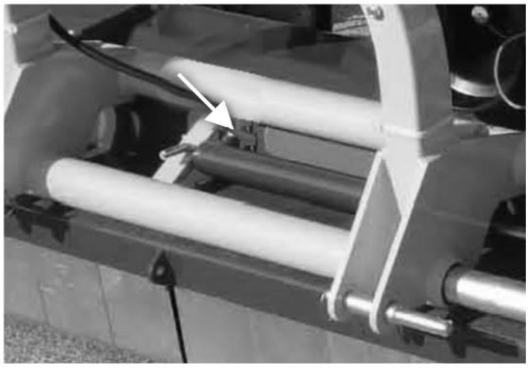
Do not allow the rotor flails to contact the ground - set roller height to allow a minimum flail to ground clearance of 1 to 3cm.

Offsetting

The machine can be placed into an offset position to allow for work beyond the width of the tractor – *depending on the particular specification of the machine offsetting operation will either be manual or hydraulic.*
Manual adjustment is performed by removal of the locking pin and physically sliding the unit sideways before replacing the pin when the desired offset position is achieved.
On machines fitted with hydraulic offset, adjustment to the required position can be carried out from the tractor cab by operation of the hydraulic side-shift ram.
In both cases the machines must be raised clear of the ground to allow for free sideways movement.
DANGER: Ensure the machine is switched off and the rotor stationary when moving manual machines into the offset position – never attempt to perform this procedure with the machine running.



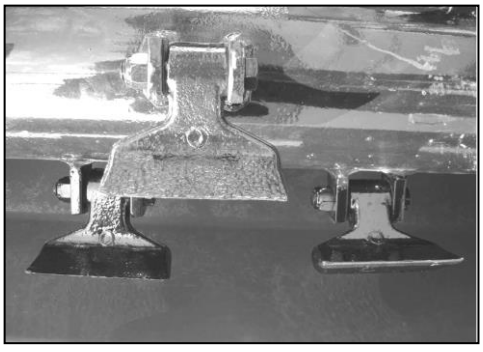
Manual Offset Model – Locking pin



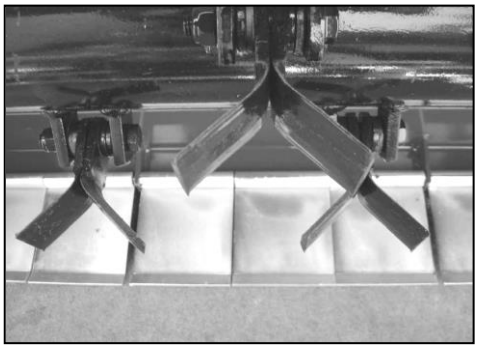
Hydraulic Offset Models – Ram location

Flails

As standard, the machine is equipped with Hammer type flails, but as an option can be fitted with Y-blade flails. The hammer type flails are more suited to harder working with the ability to cut materials up to 45mm *(1¾")* diameter. Y-blade flails can cut up to 30mm *(1¼")* diameter material – *these figures are under normal use and may differ depending on the type and nature of the material being cut.*
The design of the mower is such that during work the rotor unit cuts the material and projects it upwards into the frame, as the material falls back into the rotor it is cut again several times until it is small enough to be discharged from the rear of the machine.



Hammer Flails



Y-Blade Flails

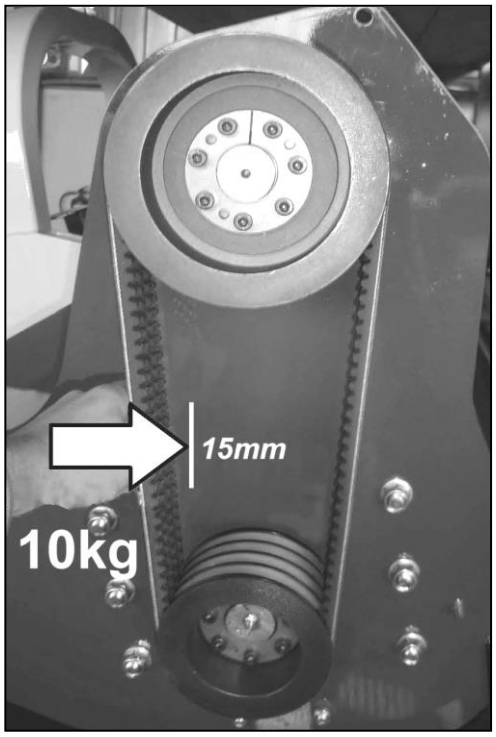
The rotor unit should be inspected on a daily basis prior to work to check for damaged or missing flails – *always replace damaged or missing flails immediately*. Flail bolts should be checked for tightness on a regular basis and re-tightened as required before attempting to use the machine.
WARNING: Checking of rotor components should only be carried out with tractors engine switched off, starting key removed and the PTO shaft disconnected. Always 'prop up' the machine using suitable supports before attempting to inspect or work on components underneath it.

Drive Belts

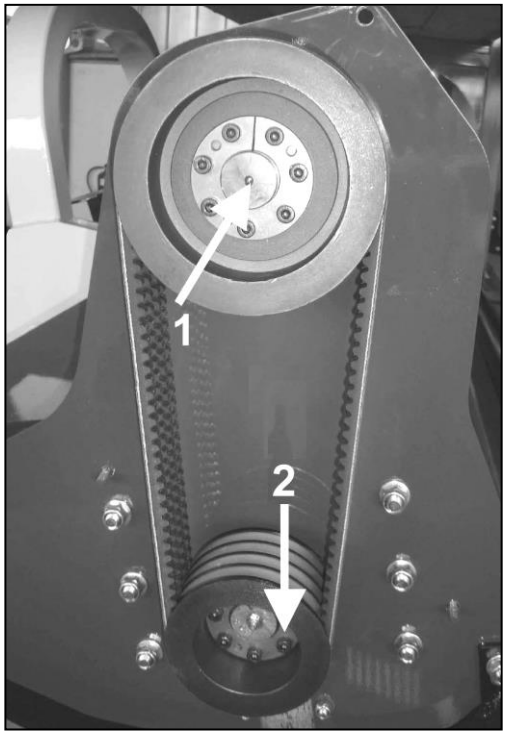
Belt Tension

It is important for both optimal machine performance and long lasting belt life that belts are correctly tensioned at all times. Tension is correct when a force of 10 kg exerted on the belts at their mid-point between the upper and lower pulleys deviates the belts by 15mm.
If the belts require tensioning follow the procedure stated below.

After an initial first 1 hour of work check belt tension and taper locks *(indicated 1 & 2 in the photo below right)* – **tighten if required.**



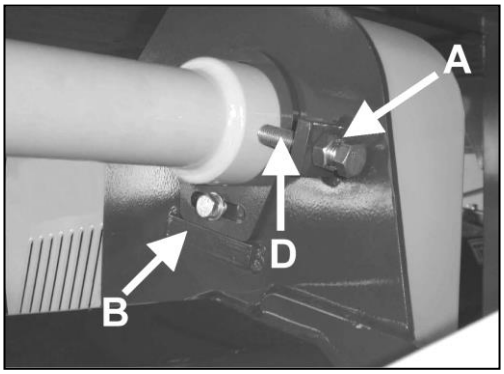
Belt Tension – 15mm deviation under 10kg pressure at mid-point of belt run



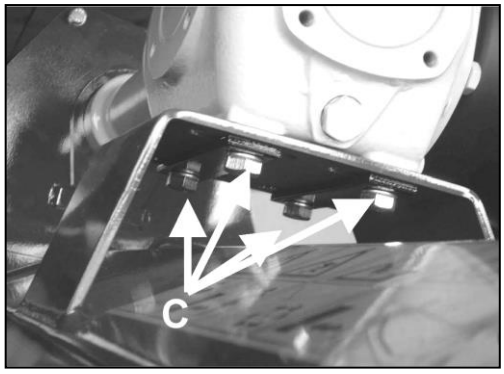
Taper Locks – check tightness on new machines after initial 2 hours of work

Belt Adjustment

Adjustment of the belt tension is performed by loosening the adjuster locking nut (A) and slackening half-shaft lock bolt (B) along with the four gearbox mounting bolts (C) – *refer to photos below*. Adjuster bolt (D) can then be turned to increase or decrease belt tension until belt deviation matches the required measurement – *see above.* Belt tensioning should be performed when the belts are cold. Re-tighten bolts 'B' and 'C' and locknut 'A' when belt tension is correct.



Location of Belt Tension Adjusters



Location of Gearbox Mounting Bolts

WARNING: Checking of belts and drive components should only be carried out with tractors engine switched off, starting key removed and the PTO shaft disconnected. Never attempt to run the machine with the belt guard removed – Replace guard after tensioning before starting the machine.

Pre-Operational Checks

Before commencing work with the machine the following checks should be performed:

- Make a visual inspection of the machine to ensure it is in good operational condition.
- Check all safety guarding is in position and in full working order.
- Check rotor for missing or damaged flails and replace if required.
- Check all greasing points are well lubricated.
- Check gearbox oil level.
- Check belt tension and adjust if required.
- Check PTO speed and direction match that of the machine.

Operation

Ensure that the operator is suitably qualified to use a machine of this nature and that they have fully read and understood this manual - they should be aware of all safety aspects relating to the safe use of the machine. It is advisable that all 'first time' operators practice using the machine in a clear safe area prior to work in order to familiarise themselves with its operation.

After the initial first 1 hour of work with a new machine, nuts and bolts should be checked for tightness and the drive belts inspected and re-tensioned if required – *refer to belt section for details.*

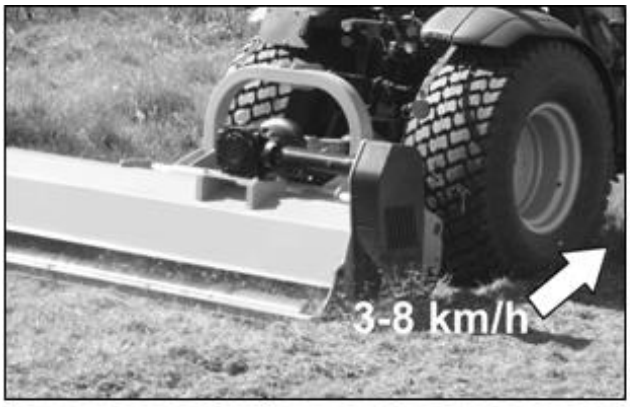
Prior to starting work the area should be checked for dangerous objects such as large stones, wood, wire, glass etc. – hazardous objects should be removed from the area prior to operation with the machine. The location of unmovable or natural hazards should be noted, or if necessary 'marked', to indicate to the operator that the area should either be avoided or additional caution adopted whilst working around the hazard.

Starting Work

With the machine switched off, lower it into a position approximately 10cm above the ground, start the machine and allow it to build up to the correct working speed before gently lowering the it onto the ground - the machine is now in its work position and forward travel can begin.

Forward Speed

The forward working speed will depend on the working conditions and nature of the material being cut. Optimal speed will be in the region of 3-8 km/h *(2-5 mph).*



Optimal forward working speed 3-8 km/h


Raise the machine before turning or reversing

Reversing & Turning

When reversing or turning the unit the machine must always be lifted clear of the ground to avoid damage.

Transport

The following must be observed at all times when transporting the machine:

- Machine must always be switched off.
- Machine must be raised.
- Speed must be kept to a minimum especially on bumpy roads or terrain.
- Always abide with local laws and road regulations.
- Be aware of the machines width.

Detachment & Storage

Detaching The Machine

- Removal of the machine should be performed on a firm level site. The procedure for detachment is as follows:
- Gently lower the machine fully to the ground.
- Switch off the tractor and remove its starting key.
- Remove the PTO driveshaft.
- ‘Chock’ the rear roller to prevent movement of the machine during the detachment procedure and whilst in storage.
- Detach hydraulic hoses where applicable.
- Remove the top link and both pins from the lower attachment points.
- Carefully and slowly drive the tractor clear of the machine.
- Clean and lubricate the machine in preparation for next use.

Storage

For extended periods of storage it is advisable that the machine be kept in a clean dry environment protected from the elements to avoid risk of corrosion. The machine should be thoroughly cleaned and lubricated prior to storage. At this point it is good practice to check the machine for worn or damaged components - any parts that require replacing should be ordered and fitted at the earliest opportunity so the machine is fully prepared for the next seasons work.

Maintenance

All maintenance, cleaning and repair operations must be performed with the machine firmly lowered to the ground and detached from the tractor or with the PTO disconnected, engine switched off and starting key removed. For any repairs or maintenance that requires access from underneath, the machine should be firmly and safely raised and propped using suitable purpose designed supports capable of bearing the machines full weight. Care should be adopted at all times when working with or under a raised machine.

Maintenance Tasks

The following preventative maintenance tasks should be performed at the timescales stated to both maximise efficiency and prolong the working life of the machine.

After first 1 hour of work - new machine or machine fitted with new belts.

- ✓ Check all nuts and bolt for tightness – *retighten if required.*
- ✓ Check belt tension and taper lock tightness – adjust / tighten if required *(refer to belt section for details of adjustment).*

After every 8 hours of work

- ✓ Check all nuts and bolt for tightness – *retighten if required.*
- ✓ Check belt tension and adjust if required – *refer to belt section for details of adjustment.*
- ✓ Check wear and condition of flails – *replacing missing, or damaged flails immediately.*
- ✓ Check condition of safety guards – *repair or replace if not performing their function.*
- ✓ Lubricate grease points – *see below for locations of the machines grease points.*
- ✓ Check gearbox and half-shaft oil level – *top up if required.*
- ✓ Check rotor – *remove foreign objects that may be fouling or lodged in the rotor.*
- ✓ Check frame and 3-point hitch – *ensure all components are in a safe working condition.*

After every 100 hours

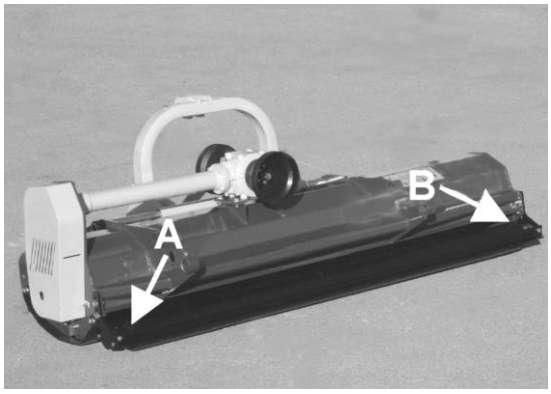
- ✓ Grease PTO driveshaft – *separate telescopic drive and apply grease to internal shaft.*

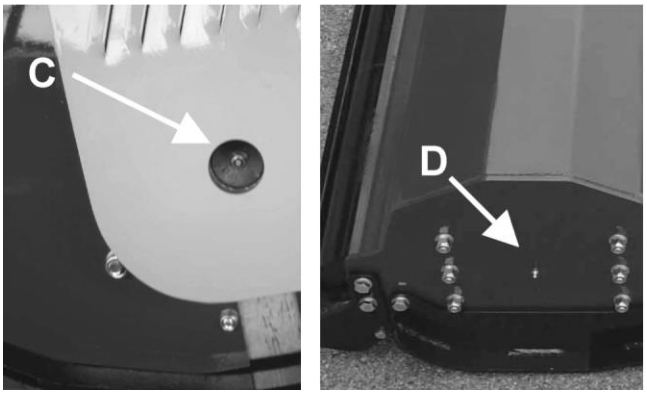
Every 12 months

- ✓ Change gearbox and half-shaft oil

Grease Points

Lubricate the points indicated below using type LIS 3 grease.



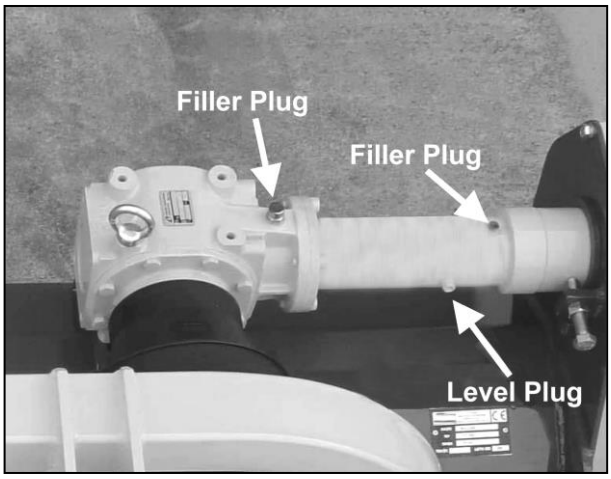


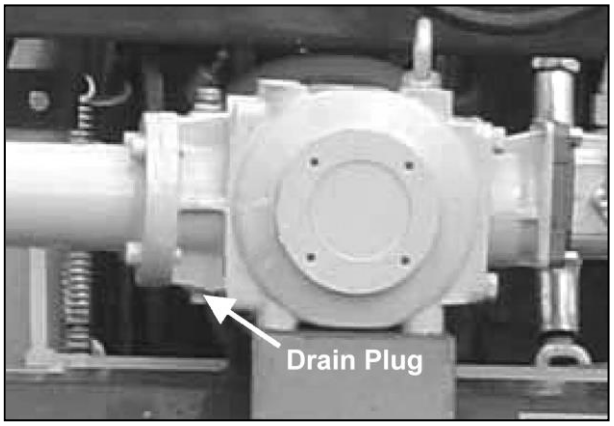
A. Rear Roller L/H Bearing
B. Rear Roller R/H Bearing

C. Rotor Shaft L/H Bearing
D. Rotor Shaft R/H Bearing

Gearbox Lubrication

The photos opposite shows the lubrication access points for the gearbox and half-shaft – lubricant level should be checked on a daily basis during work and topped up only if required.
Checking of the lubricant level is performed by removal the level plug on the half-shaft – the lubricant should be inline with the bottom of the plug aperture. 'Topping up' of the lubricant is performed via the filler plugs *(shown opposite)* to a point where the oil starts to 'dribble' out of the level plug. Replace and tighten all plugs before using the machine.
Gearbox and half-shaft lubricant should be replaced annually.
The drain plug for changing the lubricant is located on the bottom of the gearbox as indicated in the photo opposite.





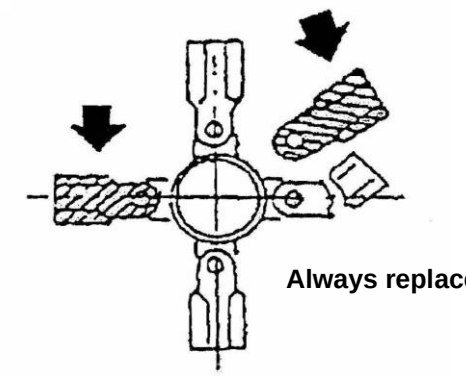
Capacity & Lubricant Type

2.0 Litres - SAE90

Flail Replacement

The rotor and flails should be inspected for wear or damage on a regular basis – missing, damaged or worn flails should be replaced immediately. When replacing a flail the diametrically opposite flail should also be replaced at the same time in order to maintain rotor balance.

DANGER: Machine and tractor should be switched off and the starting key removed at all times when inspecting or maintaining the machine – Never work on a machine that is switch on and running.



Always replace flails in opposing pairs

Rotor Vibration

If vibration of the rotor is experienced the machine should be stopped immediately – this is often a sign that a flail is either missing or severely damaged, if this is the case do not use the machine until the problem has been rectified. If vibration continues, or occurs for no apparent reason, the rotor must be checked and, if necessary, rebalanced before using the machine again. Contact your local dealer for further advice or assistance on this subject.

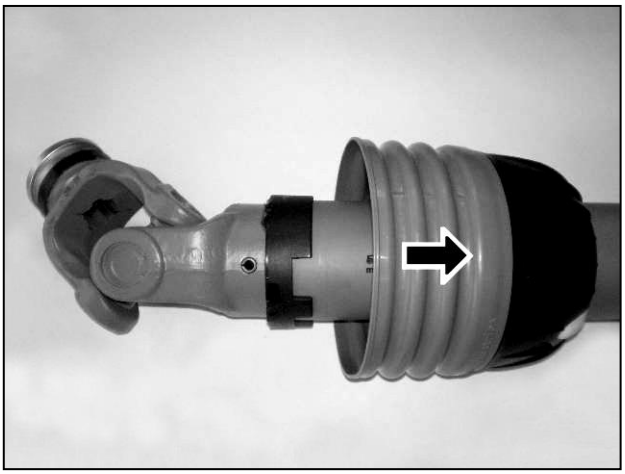
PTO Shaft Lubrication

The PTO shaft should be lubricated on a regular basis using lithium based grease – each end of the shaft has 2 greasing points; one for lubrication of the universal joint and one for lubricating the rotating fixing ring of the shaft shield – access to the lubrication points is gained by releasing the shaft shield from its fixing ring and sliding it back along the body of the driveshaft – *the procedure and lubrication frequency is illustrated below.*

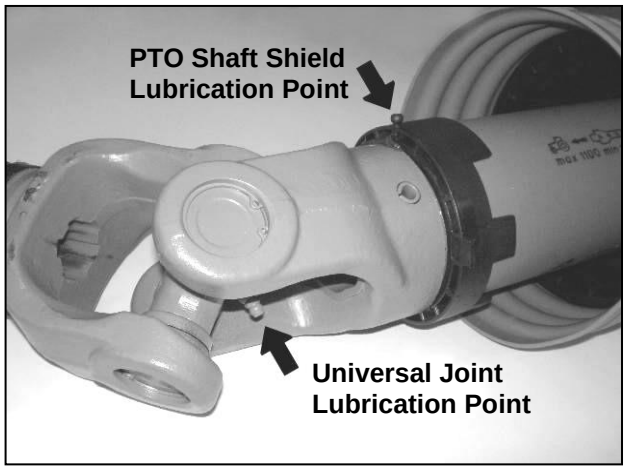
Shaft shield fixing clasps

Insert screwdrivers into the clasps

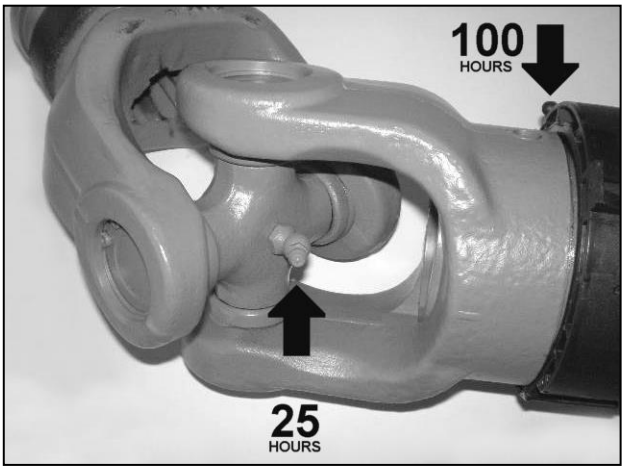
Prise clasps open to release the shield



Slide shield back to reveal universal joint



Location of lubrication points



Recommended lubricating frequency

Slide the shaft shield back into place after lubrication ensuring the clasps relocate correctly in the fixing ring – always fit torque chains to the shields to stop them from rotating with the shaft during operation.

Troubleshooting

PROBLEM	POSSIBLE CAUSES	REMEDIES
Irregular Cut	Worn, bent or broken flails	*Replace flails*
	RPM too low	*Increase RPM*
	Machine not level to the ground	*Correct mounting on tractor*
	Clogged material caused by excessive forward speed	*Reduce forward speed*
Noise	Loose bolts	*Check and tighten bolts*
	Damaged components	*Repair or replace*
Noisy gearbox	Lack of lubrication	*Top up oil to correct level*
	Worn gears	*Replace worn components*
	Worn bearings	*Replace worn components*
Vibration	Broken, worn or missing flails	*Replace flails*
	Rotor out of balance	*Balance or replace rotor*
	Worn rotor bearings	*Replace rotor bearings*
Excessive backlash in joints	Worn pins	*Replace pins*
Tight bearings	Bearings dirty or ungreased	*Clean and grease*
	Violent lowering down of machine	*Lower machine gently*
Belts overheating	Belts slipping on pulleys	*Tension belts*
	Flails contacting the ground	*Raise cutting height*
	Working speed too high	*Reduce working speed*

Machine Disposal

Disposal of this machine and any of its component parts must be performed in a responsible and inoffensive manner respecting all current laws relating to this subject. Materials forming this machine that must undergo differentiated division and disposal are:

– Steel
– Mineral Oil
– Rubber
– Plastic

The Spearhead Warranty

Spearhead warrants that the Spearhead machine referred to in the Warranty Registration Form will be free from defects in materials and workmanship for a period of 12 months from the date of sale. This warranty does not affect your statutory rights, but merely adds to them. Should you have a problem within 12 months from the date of sale please contact your original Spearhead dealer, or Spearhead's Service Department. Any part found to be defective during this period will be replaced or repaired, at Spearhead's discretion, by the dealer or a Spearhead Service Engineer.

Spearhead Warranty Conditions

1. The Warranty Registration Form must be completed and returned to Spearhead within 30 days of the date of sale

2. This warranty does not cover defects arising from fair wear and tear, wilful damage, negligence, misuse, abnormal working conditions, use in competition, failure to follow Spearhead's instructions (oral or written, including all instructions and recommendation made in the Operator's Manual) or alteration or repair of the machinery without Spearhead's approval.

3. The machinery must have been serviced in accordance with the Operator's Manual and the Service Log must have been kept up to date and made available to the dealer should service, repair or warranty work be undertaken.

4. This warranty does not cover claims in respect of wearing parts such as blades, flails, paintwork, tyres, belts, hydraulic hoses, bearings, bushes, linkage pins, top links, ball ends unless there is a manufacturing or material defect or the cost of normal servicing items such as oils and lubricants.

5. This warranty does not cover any expenses or losses incurred whilst the machinery is out of use for warranty repairs or parts replacement.

6. This warranty does not extend to parts, materials or equipment not manufactured by Spearhead, for which the Buyer shall only be entitled to the benefit of any such warranty or guarantee given by the manufacturer to Spearhead. Only genuine Spearhead replacement parts will be allowable for warranty claims.

7. All parts replaced by Spearhead under warranty become the property of Spearhead and must be returned to Spearhead if Spearhead so request. Such parts may only be disposed of after a warranty claim has been accepted and processed by Spearhead.

8. Spearhead is not liable under this warranty for any repairs carried out without Spearhead's written consent or without Spearhead being afforded a reasonable opportunity to inspect the machinery the subject of the warranty claim. Spearhead's written consent must, therefore, be obtained before any repairs are carried out or parts replaced. Use of non- Spearhead parts automatically invalidates the Spearhead Warranty. Failed components must not be dismantled except as specifically authorised by Spearhead and dismantling of any components without authorisation from Spearhead will invalidate this warranty.

9. All warranty claims must be submitted to Spearhead on Spearhead Warranty Claim Forms within 30 days of completion of warranty work.

Using the machine implies the knowledge and acceptance of these instructions and the limitations contained in this Manual.

Spearhead Warranty

Extended Warranty

As an extension to the 12-month warranty set out above, Spearhead will provide an additional 12-month warranty cover subject to the Spearhead Warranty Conditions above and the Extended Warranty Conditions below.

Extended Warranty Conditions

1. The extended warranty applies to hydraulic pumps, motors, valves and gearboxes only. It does not apply to other parts, to consumables such as lubricants, seals or filters or to labour charges.

2. The machinery must have had an annual service carried out by an Authorized Spearhead Dealer or a Spearhead Service Engineer within 1 month of the first anniversary of the date of sale and the Service Report form must have been completed and stamped by the servicing dealer or Spearhead Service Engineer and sent to Spearhead within 14 days after the first annual service.

3. The extended warranty does not cover costs of transportation of the machinery to or from the dealer or Spearhead or the call out costs or traveling expenses of on-site visits

Transfer of Warranty

The Spearhead warranty may be transferred to a subsequent owner of the machinery (for use within the UK) for the balance of the warranty period subject to all of the warranty conditions and provided that the Change of Owner form is completed and sent to Spearhead within 14 days of change of ownership.

Spearhead reserves the right to make alterations and improvements to any machinery without notification and without obligation to do so.

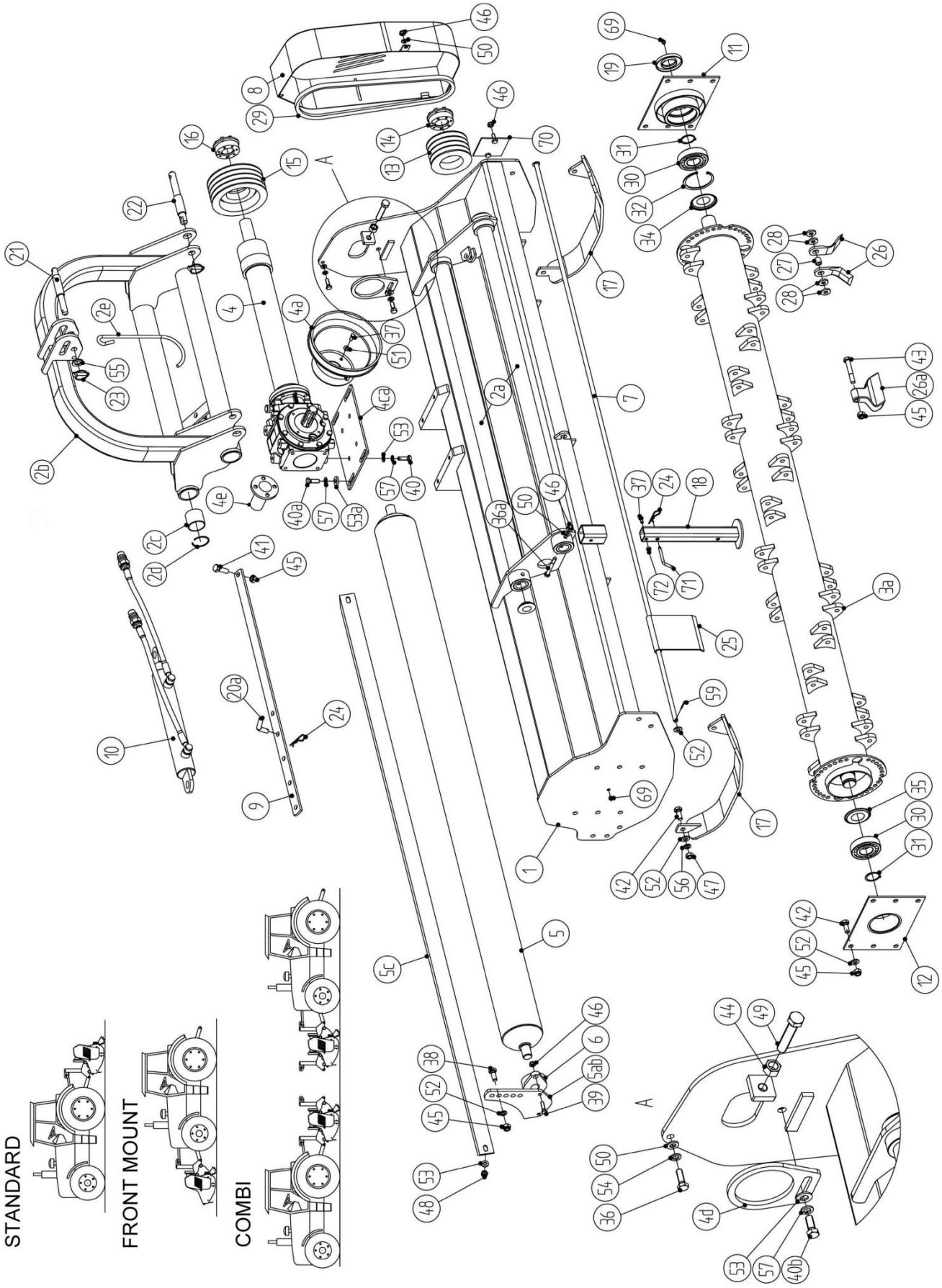
Spearhead

R Series Flail Mowers

R190/R225/R245/ R270

Parts Manual

Taper Lock Torque Setting = 45Nm



ITEM NO.	PART NO.	DESCRIPTION.	QUANTITY			
			190	225	245	270
1	1061435	FRAME R190	1	-	-	-
1	1061444	FRAME R190 LH	1	-	-	-
1	1061436	FRAME R225	-	1	-	-
1	1061447	FRAME R225 LH	-	1	-	-
1	1061437	FRAME R245	-	-	1	-
1	1061463	FRAME R245 LH	-	-	1	-
1	1061438	FRAME R270	-	-	-	1
1	1061464	FRAME R270 LH	-	-	-	1
1a	1061440	FRAME R190 FRONT	1	-	-	-
1a	1061445	FRAME R190 FRONT LH	1	-	-	-
1a	1061442	FRAME R225 FRONT	-	1	-	-
1a	1061448	FRAME R225 FRONT LH	-	1	-	-
1a	1061465	FRAME R245 FRONT	-	-	1	-
1a	1061466	FRAME R245 FRONT LH	-	-	1	-
1a	1061467	FRAME R270 FRONT	-	-	-	1
1a	1061468	FRAME R270 FRONT LH	-	-	-	1
1b	1061441	FRAME R190 COMBI	1	-	-	-
1b	1061446	FRAME R190 COMBI LH	1	-	-	-
1b	1061443	FRAME R225 COMBI	-	1	-	-
1b	1061449	FRAME R225 COMBI LH	-	1	-	-
1b	1061450	FRAME R245 COMBI	-	-	1	-
1b	1061469	FRAME R245 COMBI LH	-	-	1	-
1b	1061451	FRAME R270 COMBI	-	-	-	1
1b	1061470	FRAME R270 COMBI LH	-	-	-	1
2a	1061424	SLIDING TUBE	2	-	-	-
2a	1061425	SLIDING TUBE	-	2	2	2
2b	1061430	LINKAGE	1	1	1	1
2b	1061241	LINKAGE LEFT	1	1	1	1
2c	1061423	SLEEVE	4	4	4	4
2d	1061431	SPRING RING	4	4	4	4
2e	1061551	HOOK FOR PTO SHAFT	1	1	1	1
3a	1061543	ROTOR SHAFT R190 H *with bearings*	1	-	-	-
3a	1061544	ROTOR SHAFT R190 Y *with bearings*	1	-	-	-
3a	1061545	ROTOR SHAFT R225 H *with bearings*	-	1	-	-
3a	1061546	ROTOR SHAFT R225 Y *with bearings*	-	1	-	-
3a	1061547	ROTOR SHAFT R245 H *with bearings*	-	-	1	-
3a	1061548	ROTOR SHAFT R245 Y *with bearings*	-	-	1	-
3a	1061549	ROTOR SHAFT R270 H *with bearings*	-	-	-	1
3a	1061550	ROTOR SHAFT R270 Y *with bearings*	-	-	-	1
4	1061623	GEARBOX 311-615	1	-	-	-
4	1061624	GEARBOX 311-780	-	1	-	-
4	1061625	GEARBOX 311-615 LH	1	-	-	-
4	1061626	GEARBOX 311-780 LH	-	1	-	-
4	1061627	GEARBOX 311-615 (2-EXIT)	1	-	-	-
4	1061628	GEARBOX 311-780 (2-EXIT)	-	1	-	-
4	1061629	GEARBOX 312-950 LH	-	-	1	1
4	1061630	GEARBOX 312-950 (2-EXIT)	-	-	1	1

ITEM NO.	PART NO.	DESCRIPTION.	QUANTITY.			
			190	225	245	270
4a	1061484	PTO SHAFT SHIELD PVC	1(2)	1(2)	-	-
4a	1061246	PTO SHAFT SHIELD PVC	-	-	1(2)	1(2)
4b	1061106	UNDERLAYING PLATE	2	2	-	-
4c	1061462	PLATE 312	-	-	1	1
4ca	1061533	PLATE 311	1	1	-	-
4d	1061142	GEARBOX FLANGE	1	1	1	1
4e	1061439	SHIELD	1	1	1	1
4e	1061522	SHIELD 2006	1	1	1	1
5	1061153	REAR ROLLER R190	1	-	-	-
5	1061107	REAR ROLLER R225	-	1	-	-
5	1061433	REAR ROLLER R245	-	-	1	-
5	1061434	REAR ROLLER R270	-	-	-	1
5a	1061143	REAR ROLLER BRACKET - LEFT	1	1	1	1
5b	1061155	REAR ROLLER BRACKET - RIGHT	1	1	1	1
5c	1061452	SCRAPER R190	1	-	-	-
5c	1061453	SCRAPER R225	-	1	-	-
5c	1061454	SCRAPER R245	-	-	1	-
5c	1061455	SCRAPER R270	-	-	-	1
6	1061415	BEARING WITH CASING	2	2	2	2
7	1061158	FLAP BAR – R190	1	-	-	-
7	1061109	FLAP BAR – R225	-	1	-	-
7	1061458	FLAP BAR – R245	-	-	1	-
7	1061459	FLAP BAR – R270	-	-	-	1
8	1061159	BELT SHIELD	1	1	1	1
8	1061133	BELT SHIELD LH	1	1	1	1
9	1061111	OFFSETTING (MECHANICAL)	1	1	1	1
10	91.013.51	OFFSETTING (HYDRAULIC)	1	1	1	1
11	1061160	BEARING CASING – LEFT	1	1	1	1
12	1061161	BEARING CASING - RIGHT	1	1	1	1
13	1061113	PULLEY 130/4	1	1	-	-
	1061479	PULLEY 130/5	-	-	1	1
14	1061163	ELVE CLUTCH 80/45	1	1	1	1
15	1061114	PULLEY 180/4	1	1	-	-
	1061414	PULLEY 180/5	-	-	1	1
16	1061165	ELVE CLUTCH 80/40	1	1	1	1
17	1061418	SKID – LEFT	1	1	1	1
	1061417	SKID - RIGHT	1	1	1	1
17a	1061413	SIDE SHIELD (if no skid)	2	2	2	2
18	1061632	SUPPORT FOOT	1	1	1	1
19	1061402	OIL WASHER	1	1	1	1
20	1061082	PIN	1	1	1	1
21	1061168	PIVOT PIN CONNECT 19/25	1	1	1	1
22	1061169	PIVOT PIN CONNECT 22/28	2	2	2	2
23	1061097	PIN	3	3	3	3
24	1061076	PIN	2	2	2	2
25	1061170	FLAP 70	1	-	-	-
	1061098	FLAP 130	1	1	2	-

ITEM NO.	PART NO.	DESCRIPTION.	QUANTITY.			
			190	225	245	270
25	1061171	FLAP 140	12	15	15	19
26	1061034	Y-BLADE	48	56	60	68
26a	1061100	HAMMER	24	28	30	34
27	1061416	Y SLEEVE	24	28	30	34
28	1061036	Y SPACER	96	112	120	136
29	21233.01	BELT XPB 1250	4	4	5	5
30	1061173	BEARING	2	2	2	2
31	1061174	SLIDE PC – EXT 45	2	2	2	2
32	1061175	SLIDE PC – INT 100	1	1	1	1
34	1061176	BEARING CASING	1	1	1	1
35	1061177	BEARING CASING	1	1	1	1
36	9313065	BOLT	1	1	1	1
36a	9213185	BOLT	2	2	2	2
37	9313034	BOLT	4	4	4	4
38	1061092	BOLT	4	4	4	4
39	9213075	BOLT	4	4	4	4
40	9300139	BOLT	4	4	-	-
	9313067	BOLT	-	-	4	4
40a	9313076	BOLT	5	5	5	5
41	1061412	BOLT	1	1	1	1
42	9313148	BOLT	16	16	16	16
43	1061145	BOLT	24	28	30	34
44	9213167	BOLT	1	1	1	1
45	1061042	LOCKNUT	31	33	37	41
46	9143005	LOCKNUT	10	10	10	10
47	1061121	NUT	4	4	4	4
48	9143006	LOCKNUT	2	2	6	6
49	9113007	NUT	1	1	1	1
50	9100105	WASHER	5	5	5	5
51	9100104	WASHER	4(8)	4(8)	4(8)	4(8)
52	05.281.14	WASHER	21	21	21	21
53	9100106	WASHER	9	9	5	5
	1061337	WASHER	-	-	4	4
54	9100205	SPRING WASHER	1	1	1	1
55	9100108	WASHER	1	1	1	1
56	05.282.08	SPRING WASHER	4	4	4	4
57	9100206	SPRING WASHER	5	5	1	1
	9100207	SPRING WASHER	-	-	4	4
59	1061077	SPLIT PIN	1	1	1	1
69	1061079	GREASE NIPPLE	2	2	2	2
70	1061144	CLOSING PLATE	1	1	1	1
71	1061631	PIN	1	1	1	1
72	9143004	LOCKNUT	1	1	1	1
73	1026004	PTO SHAFT	1	1	-	-
	42695.01	PTO SHAFT	-	-	1	1

Spearhead Machinery Ltd
Green View
Salford Priors
Evesham
Worcestershire
WR11 8SW
Tel: 01789 491860
Fax: 01789 778683
www.spearheadmachinery.com
enquiries@spearheadmachinery.com