

# SPEARHEAD

## ROLLIFLAIL 120/160/200 HD OFFSET



Edition 2.0 – December 2020  
Part No. 8999058

# HANDBOOK

# ROLLIFLAIL HD OFFSET

## IMPORTANT

### VERIFICATION OF WARRANTY REGISTRATION



#### DEALER WARRANTY INFORMATION & REGISTRATION VERIFICATION

It is imperative that the selling dealer registers this machine with Spearhead Machinery Limited before delivery to the end user – failure to do so may affect the validity of the machine warranty.

To register machines go to the Spearhead Machinery Limited web site at [www.spearheadmachinery.com](http://www.spearheadmachinery.com), log onto 'Dealer Inside' and select the 'Machine Registration button' which can be found in the Service Section of the site. Confirm to the customer that the machine has been registered in the section below.

Should you experience any problems registering a machine in this manner please contact the Spearhead Service Department on 01789 491867.

#### Registration Verification

Dealer Name:	.....
Dealer Address:	.....
Customer Name:	.....
Date of Warranty Registration:	...../...../.....
Dealer Signature:	.....

#### NOTE TO CUSTOMER / OWNER

Please ensure that the above section has been completed and signed by the selling dealer to verify that your machine has been registered with Spearhead Machinery Limited.

**IMPORTANT:** During the initial 'bedding in' period of a new machine it is the customer's responsibility to regularly inspect all nuts, bolts and hose connections for tightness and re-tighten if required. New hydraulic connections occasionally weep small amounts of oil as the seals and joints settle in – where this occurs it can be cured by re-tightening the connection – refer to torque settings chart below. The tasks stated above should be performed on an hourly basis during the first day of work and at least daily thereafter as part of the machines general maintenance procedure.

**CAUTION: DO NOT OVER TORQUE HYDRAULIC FITTINGS AND HOSES**

#### TORQUE SETTINGS FOR HYDRAULIC FITTINGS

HYDRAULIC HOSE ENDS		
BSP	Setting	Metric
1/4"	18 Nm	19 mm
3/8"	31 Nm	22 mm
1/2"	49 Nm	27 mm
5/8"	60 Nm	30 mm
3/4"	80 Nm	32 mm
1"	125 Nm	41 mm
1.1/4"	190 Nm	50 mm
1.1/2"	250 Nm	55 mm
2"	420 Nm	70 mm

PORT ADAPTORS WITH BONDED SEALS		
BSP	Setting	Metric
1/4"	34 Nm	19 mm
3/8"	47 Nm	22 mm
1/2"	102 Nm	27 mm
5/8"	122 Nm	30 mm
3/4"	149 Nm	32 mm
1"	203 Nm	41 mm
1.1/4"	305 Nm	50 mm
1.1/2"	305 Nm	55 mm
2"	400 Nm	70 mm

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## Safety

- Never operate the machine with other people present, as it is possible for debris, including stones, to be discharged from the front and rear of the flail hood.
- Always ensure all cab safety guards are in place and all tractor windows closed.
- Never allow an inexperienced person to operate the machine without supervision.
- Never allow children to play on or around the machine at any time.
- Never attempt any maintenance or adjustment without first disengaging the PTO, lowering to the ground, stopping the tractor engine applying the tractor parking brake and on level ground.
- Before leaving the tractor cab always ensure that the machine is firmly on the ground, and the rotor has stopped spinning.
- Never stop the engine with the PTO engaged.
- Always check that all guards are properly fitted, check there are no damaged or loose parts. Particular attention should be given to the flails to ensure they are not damaged, cracked or missing.
- Never operate with flails missing.
- Always operate PTO at recommended speed 540/1000 R.P.M. as indicated on the decal.
- Always inspect work area for wire, steel posts, large stones and other dangerous materials and remove before starting work.
- Never operate with wire/debris around rotor. Stop immediately.
- Never attempt to use the machine for any purpose other than that it was designed for.
- Ensure that all warning labels are always visible and that they are not damaged, defaced or missing.
- Never transport with the PTO engaged.
- When parking up, always lower to the ground

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## Safety Warning Stickers



Carefully read Operator's Manual before handling this machine. Observe instructions and safety rules when operating.



Shut off engine  
Remove key



Keep nuts and bolts tight, check every 8 hours.



Stay clear of mower flails/blades



Keep a safe distance  
When the machine is running



Beware of escaping fluid



Do not remove/open guard.

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## Introduction

The Spearhead Rolliflail 120 Offset, Rolliflail 160 Offset and Rolliflail 200 Offset are robust high capacity flail mowers that are easy to operate and maintain, but to ensure trouble-free operation this manual should be carefully studied.

## Safety First

Do not start the machine until you fully understand operation and safety precaution requirements.

## Tractor Requirements

- Spearhead strongly recommends using a 60+HP tractor for 1.2m, 80+HP tractor for 1.6m and 100+Hp tractor for the 2.0m
- with **CATEGORY 2** front or rear linkage.
- Minimum tractor weight including ballast must be 2500kg.
- PTO must be independent live drive to enable continuous PTO drive even when tractor clutch is pressed down.
- Before hitching, ensure position control is selected. Do not attempt to hitch in draft control.
- Check chains and stabilizers must be in good working order to hold the machine firmly. Do not operate without checking that chains and stabilizers are tight.
- Spearhead particularly recommend 'turn buckle' type check chains.
- Set linkage lift rods to an equal length.
- Two double acting spool are required.
- Clockwise rotating tractor PTO as standard, anti-clockwise available as an option.



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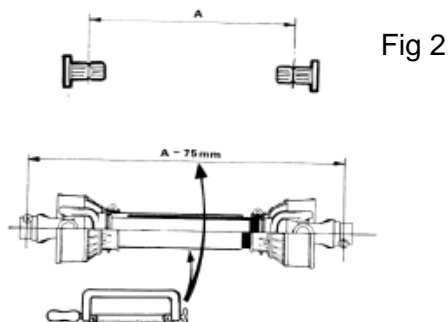
## Attaching To The Tractor

Fit the machine to the tractor linkage in the standard way, ensuring the correct match of linkage (**CAT 2 pins**). Check that the top link is in good order and threads are well lubricated, (as fine adjustment to height of cut is regulated by the top link). Use stabilizers to take any free movement out of lower link arms. Before fitting the machine to the tractor linkage you should ensure there is sufficient front weight to ensure the front wheels are always in contact with the ground. This is most important for safe transport and stability when turning on slopes.

Before fitting the PTO for the first time, it may be necessary to adjust the length. There should be maximum engagement of the sliding tubes without bottoming at the shortest operation position. To check, first connect the mower to the tractor. Pull the PTO shaft apart and connect to the tractor PTO output shaft and the gearbox input shaft. Hold the half shafts next to each other in the shortest working position.

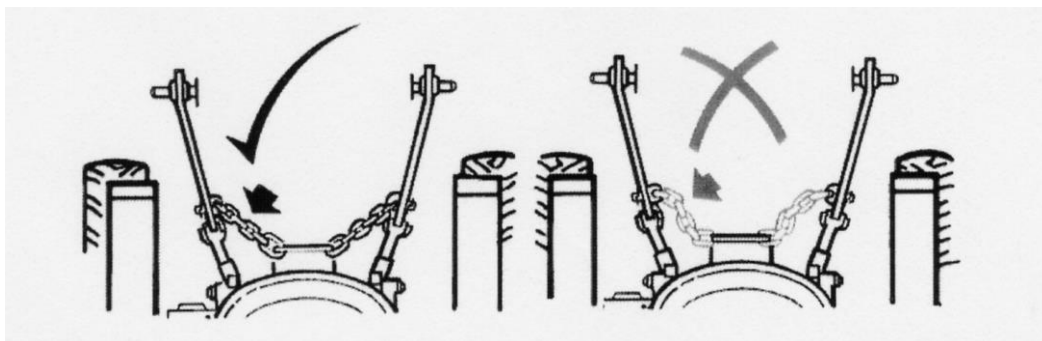
### **NOTE – CHECK ROTATION OF OVERRUN CLUTCH BEFORE CUTTING PTO SHAFT**

If necessary, shorten the inner and outer guard tubes equally (Fig. 2). Shorten the inner and outer sliding profiles by the same length as the guard tubes. File all sharp edges and remove burrs. Grease sliding profiles.



To fit the PTO, first clean and grease. Press pins on the yoke and simultaneously push the PTO drive shaft on to PTO shaft of the tractor until pins engage.

The PTO shaft is fitted with a non-rotating safety guard. It should be secured to the machine and tractor with the two retaining chains provided.



### Warning

Fully tighten check chains and linkage stabilisers to hold the machine rigid. There must be no side ways movement, it is dangerous.

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## Setting Up & Adjustment

### Hydraulic Offset

Can be moved from central to fully offset by operating the tractor external spool valve to the desired position

### Front Linkage Mounting

Tractor front PTO's has no standard rotation so it may be necessary to turn the gearbox through 180 degrees (top to bottom), to compensate for this irregularity. It is important the rotor rotates (Fig. 5a) to ensure the flails cut.

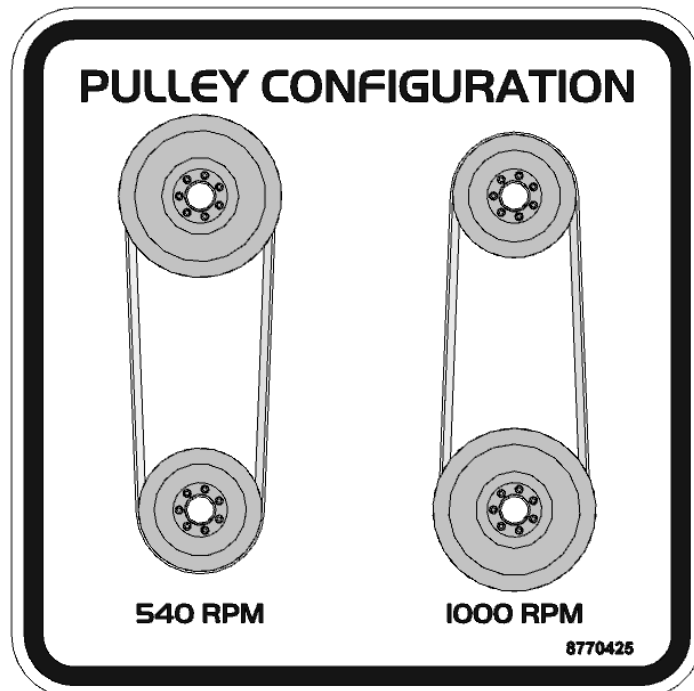
### 540 or 1000 RPM

If the tractor has only 540rpm PTO, the larger pulley should drive the smaller pulley to act as an increaser.

If the tractor has only 1000rpm PTO, the smaller pulley should drive the larger pulley to act as a reducer.

(Fig. 5). **Never operate the PTO at 1000 RPM with the larger pulley driving the smaller gearbox pulley.** This will drive the rotor at higher speed and will result in severe damage to the machine.

Fig. 5



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## Operation

Engage the PTO only when the tractor engine is at low revs to prevent shock damage to machine. Slowly increase the engine revs to achieve the standard 1000/540 RPM PTO speed, as indicated by the decal. ***If at any time serious vibration occurs, stop the engine immediately and check that no flails are missing, (following all safety precautions). The cause must be found and rectified immediately or other components may be affected.***

When in work, lower the machine head into float so that it drops to the ground, then lower link arms until roller is in full contact with the ground. allowing the machine to follow the contours of the ground with the head in float. Select a sensible forward speed bearing in mind the density of growth, the terrain, and the available horsepower, taking extra care when turning, particularly on slopes. When turning it is not necessary to lift the machine off the.

Quality of finish is determined by the forward speed i.e. a slow speed will produce a high quality of cut, whereas faster forward speeds are used when high output is first priority.

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## Rotor Care

- Always** operate at the correct PTO speed, 540/1000 r.p.m.
- Always** inspect the condition of flails and bolts on a very regular basis.
- Always** replace bushes, bolts and nuts when replacing flails.
- Always** use genuine flails, bolts and nuts. The flails and bolts are made to a very high standard from a high tensile steel, being fully heat treated and subjected to rigorous testing in very stringent conditions to comply with our rigid quality control requirements
- Never** operate with bolts loose or flails missing.
- Never** change to a different spec or type of flail, this will immediately put the rotor out of balance.
- Never** engage rotor at high PTO speeds.

**Remember, the rotor is highly complex and expensive to manufacture, please treat with care and enjoy the benefits of the Spearhead Rotor.**



### Warning

Rotor is balanced to be run at PTO speed, do not operate above or below this speed. Optimum rotor speed 2200r.p.m.



### Warning

Never carry out any servicing or maintenance work without first disengaging the PTO and stopping the tractor.

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## Servicing & Maintenance

### Gearbox



- Before first use check gearbox oil level, thereafter check every 8 hours.
- After the first 50 hours drain and replace the gearbox oil, thereafter annually. Replace with EP90.
- Regularly inspect gearbox seals. If oil is leaking replace immediately. This is your responsibility to maintain a long and reliable working life.
- Check that gearbox bolts are fully tightened, and secured with loctite.



#### Warning

Check that all gearbox bolts remain tight. When the machine is new there will be a 'bedding in' period when very frequent checking is important.



#### Warning

It is imperative the screws are checked on the pulley taper locks (once bedded in, loctite compound may prove useful).



#### Warning

Never carry out any servicing or maintenance work without first disengaging the PTO and stopping the tractor.

### Flail Rotor (Daily)

- Grease all bearings daily.
- Check there is no wrapping of string, plastic, grass or other debris on rotor shaft and rear roller bearing.
- Check the condition of flails and ensure all retaining bolts are tight. When flails are replaced, care must be taken to maintain balance of the rotor shaft, do not change to a different type.
- Check flail retaining bolt and nut for tightness, 160lb.ft – 200Nm.
- Never operate with any flails missing. This will cause severe vibration and lead to rapid bearing wear and quickly cause the hood to crack.

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- Blunt flails leave an untidy finish and absorb excessive power, when re-sharpening always wear protective clothing and goggles.
- When flails are showing severe wear, damage or cracking, they must be replaced immediately. Never attempt to weld the flails, as this will make them very brittle, thus extremely dangerous. Do not take risks with the cutting flails, if in doubt replace.
- When replacing flails always replace bolts and nuts for new.
- Regularly check that all bearing bolts are tight.
- It is imperative the screws are checked on the taper locks (once bedded in loctite glue may prove useful).

## Greasing

Daily grease all points shown below.

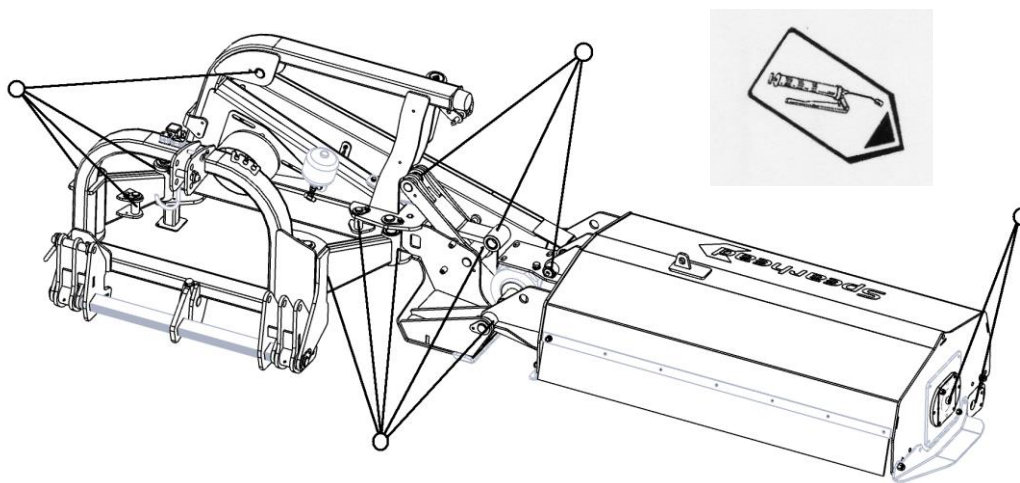


Fig 6

Fig. 6  
Grease point for rotor, cross shaft and rear roller bearings.



### Warning

Grease rotor bearing and rear roller at least every 8 hours and especially after washing.

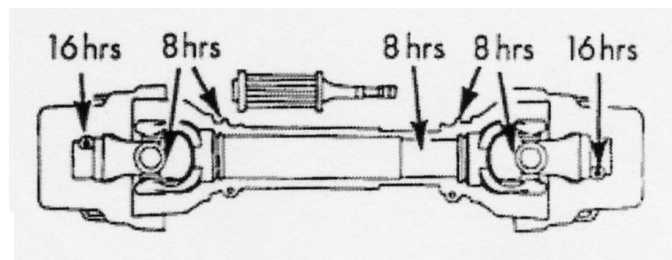
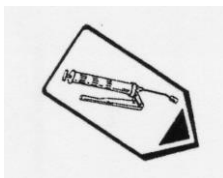


Fig 7

Fig. 7  
Dismantle and clean PTO sliding surfaces and re-grease universal joints.

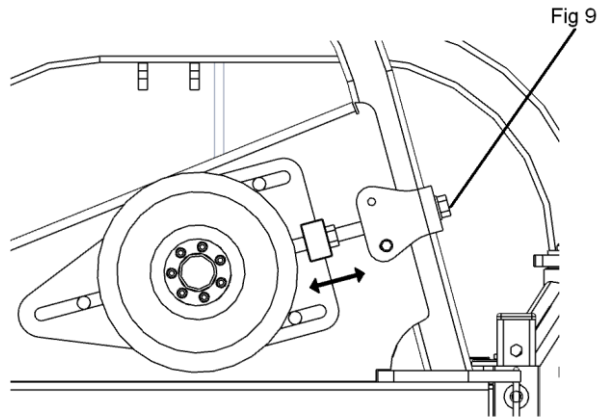
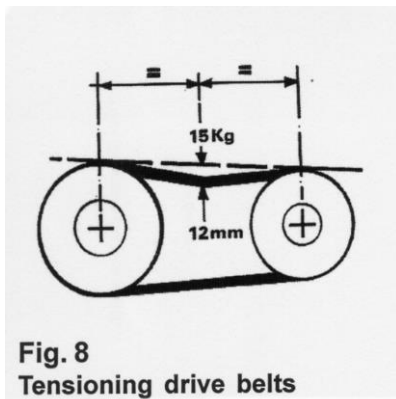
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## Regularly

- Check the condition of drive belts, ensuring they are aligned and properly tensioned to avoid any unnecessary belt wear. The belt is tensioned by an adjuster bolt, (fig 9)
- Remove both guards for access when tensioning belts; ensure belts are running in line after adjustment. The tension required is shown in figure 8

### N.B.

The pulleys are fitted with taper locks which have 7 screws to tighten, and 3 holes to aid removal in the pulley centers.



- Check there is no wrapping of string, plastic, grass or other debris on rear roller.

## Skids

When operating on abrasive soils, particularly in stubbles and similar conditions with thin ground cover, excessive skid wear may be expected

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## Storage

At the end of the season before storing, thoroughly wash the machine off, removing all traces of grass and dirt. Great care must be taken when washing with high-pressure hoses, do not hold the water jet close to the paintwork. Use steam cleaners with caution and be sure to remove all detergents to avoid any discoloring or damage to paint. Grease all grease points until fresh grease shows.

## Transportation

Please observe Public Highway Regulations, concerning transport of machines and securely attach a registration/lighting board. Take care when travelling over rough ground to avoid bouncing the machine on the tractor linkage, causing unnecessary strain. When in transport pin must be fitted to stop head falling.

### **Servicing Checklist** *(see relevant sections for full details)*

#### **Regularly**

Gearbox: Inspect seals, check bolts for tightness.

Flail rotor: check bolts for tightness, check condition of flails, check retaining bolts for tightness, check rotor bearing bolts for tightness.

#### **Daily**

Maintain correct belt tension.

Check gearbox oil level.

Grease PTO shaft.

Grease all points as shown in diagram.

#### **Every Year**

Drain and replace gearbox oil with EP90.



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## Torque Settings

Size:	Tensile strength:	Description:	Torque setting - Nm.
M8	12.9	Pulley clamps	45
M10	8.8	General fasteners	65
M12	8.8	General fasteners	114
M16	8.8	Roller plate bolts	280
M14	10.9	Flail bolts	200
M24	8.8	Head stock bolts	950

## Troubleshooting

Problem	Cause	Solution
Gearbox Overheating	Oil level incorrect Oil grade incorrect Implement overloaded Wrong P.T.O. speed	Check oil level Check oil grade Reduce forward speed Ensure tractor P.T.O. speed matches implement.
Excessive Belt Wear	Belt and Pulley condition Pulley Alignment Incorrect belt tension Overloading of implement	Replace if necessary Check Alignment Tension belts to spec. Reduce forward speed or increase height of cut.
P.T.O. wear UJ failure	Working angle too great Shaft incorrect length i.e. Bottoming out Lack of maintenance	Reduce offset of implement Resize P.T.O. shaft as recommended Grease P.T.O. shaft as recommended.
Cut quality	Flails worn Rotor speed/Direction Crop condition.	Replace worn flails Check tractor P.T.O. speed Look for suitable conditions.
Rotor bearing failure	Rotor out of balance Wire/string in bearing Lack of maintenance Water in bearing.	See rotor vibration Replace bearings Re-balance/replace rotor Remove debris.

Spearhead Machinery  
Station Road  
Salford Priors  
Evesham  
Worcestershire  
WR11 8SW

Tel: 01789 491860

Fax: 01789 778683

[www.spearheadmachinery.com](http://www.spearheadmachinery.com)

[enquiries@spearheadmachinery.com](mailto:enquiries@spearheadmachinery.com)