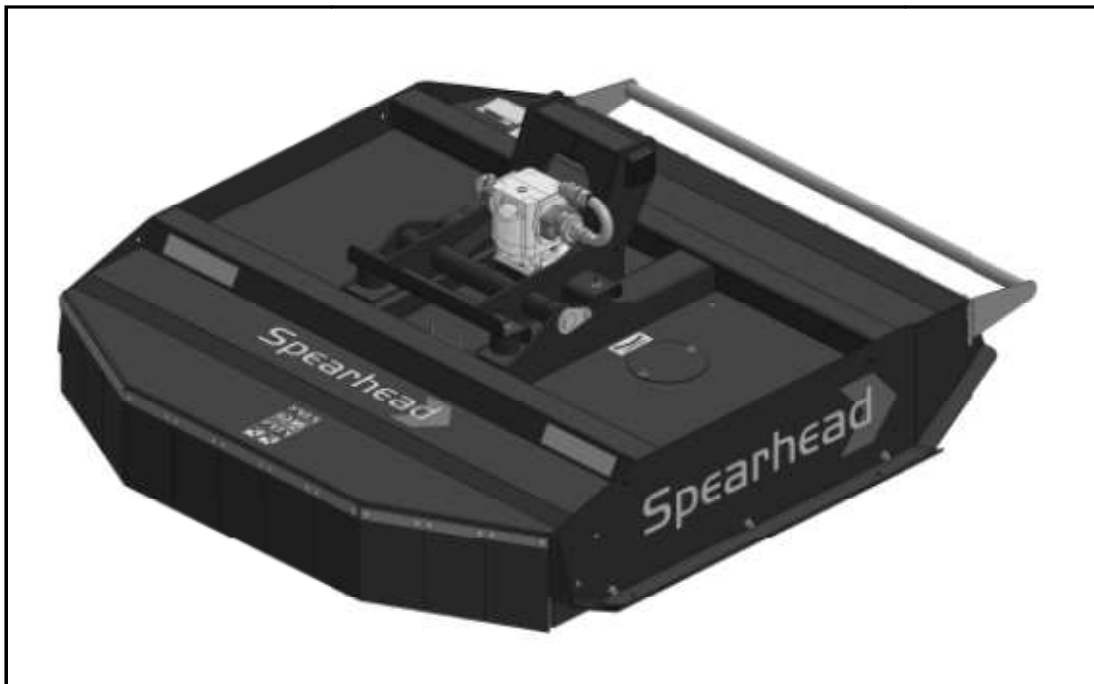


# Spearhead

## MD 120/150 GEAR ROTARY HEAD



Edition 1.0 – August 2014  
Part No. 8999086

**HANDBOOK & PARTS MANUAL**

# Spearhead MD 120/150 Rotary Head

## 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

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

#### 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

# Spearhead MD 120/150 Rotary Head

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## WARRANTY POLICY

### WARRANTY REGISTRATION

All machines must be registered, by the selling dealer with Spearhead Machinery Ltd, before delivery to the end user. On receipt of the goods it is the buyer's responsibility to check that the Verification of Warranty Registration in the Operator's Manual has been completed by the selling dealer.

#### 1. LIMITED WARRANTIES

- 1.01. All machines supplied by Spearhead Machinery Limited are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months, unless a different period is specified.
- 1.02. All spare parts supplied by Spearhead Machinery Limited are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 6 months.
- 1.03. The manufacturer will replace or repair for the purchaser any part or parts found, upon examination at its factory, to be defective under normal use and service due to defects in material or workmanship. Returned parts must be complete and unexamined.
- 1.04. This warranty does not apply to any part of the goods, which has been subjected to improper or abnormal use, negligence, alteration, modification, fitment of non-genuine parts, accident damage, or damage resulting from contact with overhead power lines, damage caused by foreign objects (e.g. stones, iron, material other than vegetation), failure due to lack of maintenance, use of incorrect oil or lubricants, contamination of the oil, or which has served its normal life. This warranty does not apply to any expendable items such as blades, flails, bushes, belts, flap kits, skids, shields, guards, wear pads or pneumatic tyres.
- 1.05. Temporary repairs and consequential loss - i.e. oil, downtime and associated parts are specifically excluded from the warranty.
- 1.06. Warranty on hoses is limited to 12 months and does not include hoses which have suffered external damage. Only complete hoses may be returned under warranty, any which have been cut or repaired will be rejected.
- 1.07. Machines must be repaired immediately a problem arises. Continued use of the machine after a problem has occurred can result in further component failures, for which Spearhead Machinery Ltd cannot be held liable, and may have safety implications.
- 1.08. Except as provided herein, no employee, agent, dealer or other person is authorised to give any warranties of any nature on behalf of Spearhead Machinery Ltd.
- 1.09. For machine warranty periods in excess of 12 months the following additional exclusions shall apply:
  - 1.09.1. Hoses, external seals, exposed pipes and hydraulic tank breathers.
  - 1.09.2. Filters
  - 1.09.3. Rubber mountings
  - 1.09.4. External electric wiring.
  - 1.09.5. Labour and mileage costs.
- 1.10. All service work, particularly filter changes, must be carried out in accordance with the manufacturer's service schedule. Failure to comply will invalidate the warranty. In the event of a claim, proof of the service work being carried out may be required.

***NB Warranty cover will be invalid if any non-genuine parts have been fitted or used. Use of non-genuine parts may seriously affect the machine's performance and safety. Spearhead Machinery Ltd cannot be held responsible for any failures or safety implications that arise due to the use of non-genuine parts.***

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## **2. REMEDIES AND PROCEDURES**

- 2.01. The warranty is not effective unless the Selling Dealer registers the machine, via the Spearhead Machinery web site and confirms the registration to the purchaser by completing the confirmation form in the operator's manual.
- 2.02. Any fault must be reported to an authorised Spearhead Machinery dealer as soon as it occurs. Continued use of a machine, after a fault has occurred, can result in further component failure for which Spearhead Machinery Ltd cannot be held liable.
- 2.03. Repairs should be undertaken within two days of the failure. Claims submitted for repairs undertaken more than 2 weeks after a failure has occurred, or 2 days after the parts were supplied will be rejected, unless the delay has been authorised by Spearhead Machinery Ltd.
- 2.04. All claims must be submitted, by an authorised Spearhead Machinery Service Dealer, within 30 days of the date of repair.
- 2.05. Following examination of the claim and parts the manufacturer will pay, at their discretion, for any valid claim the cost of any parts and an appropriate labour allowance if applicable.
- 2.06. The submission of a claim is not a guarantee of payment.
- 2.07. Any decision reached by Spearhead Machinery Ltd is final.

## **3. LIMITATION OF LIABILITY**

- 3.01. The manufacturer disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.
- 3.02. The manufacturer makes no warranty as to the design, capability, capacity or suitability for use of the goods.
- 3.03. Except as provided herein, the manufacturer shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, the manufacturer's liability hereunder for damages incurred by the purchaser or others shall not exceed the price of the goods.
- 3.04. No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than one (1) year after the cause of the action has occurred.

## **4. MISCELLANEOUS**

- 4.01. The manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.
- 4.02. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.
- 4.03. Applicable law may provide rights and benefits to the purchaser in addition to those provided herein.

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## 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**

.....

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## GENERAL INFORMATION

Read this manual before fitting or operating this equipment. Whenever any doubt exists contact your dealer or the Spearhead Service Department for assistance.

**Always use 'Genuine Spearhead Parts' on Spearhead machinery and accessories.**

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 the damage of either machine or equipment if not observed carefully.

**NOTE:**

An operating procedure, technique etc., which is considered essential to emphasise.

**LEFT AND RIGHT HAND:**

This term is applicable to the machine when fitted to the tractor and viewed from the rear.  
This also applies to tractor references.

**Note:** The illustrations in this manual are for instructional purposes only and may on occasion not show some components in their entirety. In some instances an illustration may appear slightly different to that of your particular model but the general procedure will be the same. E&OA.

## MACHINE & DEALER INFORMATION

*Record the Serial Number of your machine on this page and always quote this number when ordering parts. Whenever information concerning the machine is requested remember also to state the make and model of tractor to which the machine is fitted.*

**Machine Serial Number:**

**Installation Date:**

**Machine Model details:**

**Dealer Name:**

**Dealer Address:**

**Dealer Telephone No:**

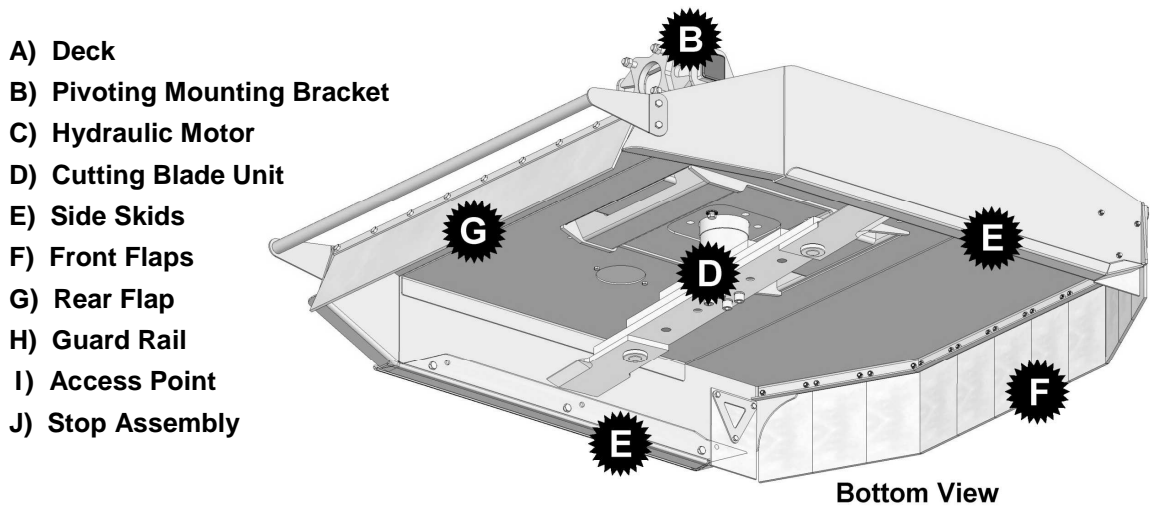
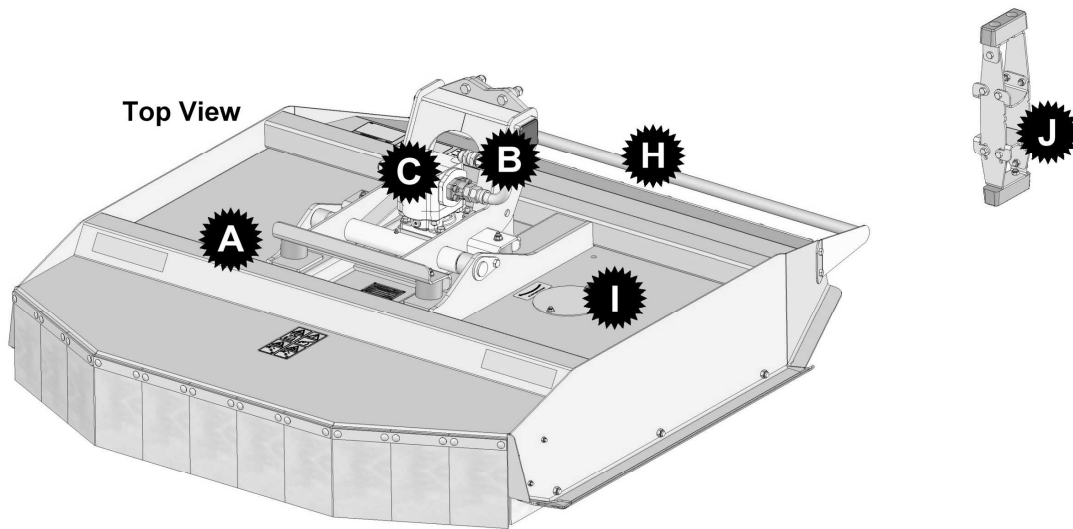
**Dealer Email Address:**

## NOISE STATEMENT

The equivalent daily personal noise exposure from this machine, measured at the operators' ear, is within the range 78 – 85 DB. These figures apply to a normal distribution of use where the noise fluctuates between zero and maximum. The figures assume that the machine is fitted to a tractor with a quiet cab with the windows closed in a generally open environment. We recommend that the windows are kept closed. With the cab rear window open the equivalent daily personal noise exposure will increase to a figure within the range 82 – 88 DB. At equivalent daily noise exposure levels of between 85 and 90 DB, ear protection is recommended, it should be used if any window is left open.

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## COMPONENT LOCATION & IDENTIFICATION



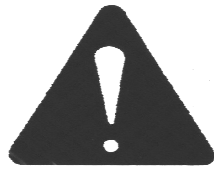


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## SAFETY SECTION

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### SAFETY INFORMATION



**This component / accessory is primarily designed for fitment to Power Arms, therefore all safety aspects for this component relate to the safe use of those machines and will be stated in the safety section of its operation manual. A copy of the same safety information is provided below in order to reiterate and refresh your memory.**

This machine has the potential to be extremely dangerous, in the wrong hands it can kill or maim. It is therefore imperative that the owner, and the operator of this machine, read the following section to ensure that they are both fully aware of the dangers that do, or may exist, and their responsibilities surrounding its use.

The operator of this machine is responsible not only for their own safety but equally for the safety of others who may come into the close proximity of the machine, as the owner you are responsible for both.

#### **POTENTIAL SIGNIFICANT DANGERS ASSOCIATED WITH THE USE OF A MACHINE:**

- ▲ *Being hit by debris thrown by rotating components.*
- ▲ *Being hit by machine parts ejected through damage during use.*
- ▲ *Being caught on a rotating power take-off (PTO) shaft.*
- ▲ *Being caught in other moving parts i.e.: belts, pulleys and cutting heads.*
- ▲ *Electrocution from Overhead Power Lines (by contact with or 'flashover' from).*
- ▲ *Being hit by cutting heads or machine arms as they move.*
- ▲ *Becoming trapped between tractor and machine when hitching or unhitching.*
- ▲ *Tractor overbalancing when machine arm is extended.*
- ▲ *Injection of high-pressure oil from hydraulic hoses or couplings.*
- ▲ *Machine overbalancing when freestanding (out of use).*
- ▲ *Road traffic accidents due to collision or debris on the road.*

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## **BEFORE USING A MACHINE YOU MUST:**

- ▲ *Ensure you read all sections of the operator handbook.*
- ▲ *Ensure the operator is, or has been, properly trained to use the machine.*
- ▲ *Ensure the operator has been issued with and reads the operator handbook.*
- ▲ *Ensure the operator understands and follows the instructions in operator handbook.*
- ▲ *Ensure the tractor front, rear and sides are fitted with metal mesh or polycarbonate guards of suitable size and strength to protect the operator against thrown debris or parts.*
- ▲ *Ensure tractor guards are fitted correctly, are undamaged and kept properly maintained.*
- ▲ *Ensure that all machine guards are in position, are undamaged, and are kept maintained in accordance with the manufacturer's recommendations.*
- ▲ *Ensure that blades and all fixings are genuine components supplied by the manufacturer specifically for the machine and are securely attached with no parts missing or damaged.*
- ▲ *Ensure hydraulic pipes are carefully and correctly routed to avoid damage by chaffing, stretching or pinching and that they are held in place with the correct fittings.*
- ▲ *Always follow the manufacturer's instructions for attachment and removal of the machine from the tractor.*
- ▲ *Check that the machine fittings and couplings are in good condition.*
- ▲ *Ensure the tractor meets the minimum weight recommendations of the machine's manufacturer and that ballast is used as necessary.*
- ▲ *Always inspect the work area thoroughly before starting to note obstacles and remove wire, bottles, cans and other debris.*
- ▲ *Use clear suitably sized warning signs to alert others to the nature of the machine working within that area. Signs should be placed at both ends of the work site. (It is recommended that signs used are of a size and type specified by the Department of Transport and positioned in accordance with their, and the Local Highways Authority, guidelines).*
- ▲ *Ensure the operator is protected from noise. Ear defenders should be worn and tractor cab doors and windows must be kept closed. Machine controls should be routed through proprietary openings in the cab to enable all windows to be shut fully.*
- ▲ *Always work at a safe speed taking account of the conditions i.e.: terrain, highway proximity and obstacles around and above the machine. Extra special attention should be applied to Overhead Power Lines. Some of our machines are capable of reach in excess of 8 metres (26 feet) this means they have the potential to well exceed, by possibly 3 metres (9' 9"), the lowest legal minimum height of 5.2 metres from the ground for 11,000 and 33,000 volt power lines. It cannot be stressed enough the dangers that surround this capability, it is therefore vital that the operator is fully aware of the maximum height and reach of the machine, and that they are fully conversant with all aspects regarding the safe minimum distances that apply when working with machines in close proximity to Power Lines. (Further information on this subject can be obtained from the Health & Safety Executive or your Local Power Company).*

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- ▲ *Always disengage the machine, kill the tractor engine, remove and pocket the key before dismantling for any reason.*
- ▲ *Always clear up all debris left at the work area, it may cause hazard to others.*
- ▲ *Always ensure when you remove your machine from the tractor that it is left in a safe and stable position using the stands and props provided and secured if necessary.*

## **WHEN NOT TO USE THIS MACHINE:**

- ▲ *Never attempt to use this machine if you have not been trained to do so.*
- ▲ *Never use a machine until you have read and understood the operator handbook, are familiar with it, and practiced the controls.*
- ▲ *Never use a machine that is poorly maintained.*
- ▲ *Never use a machine fitted to a tractor that does not have suitable front, rear and side(s) cab guarding made of metal mesh or polycarbonate.*
- ▲ *Never use a machine if guards are missing or damaged.*
- ▲ *Never use a machine on which the hydraulic system shows signs of wear or damage.*
- ▲ *Never fit, or use, a machine on a tractor that does not meet the manufacturer's minimum specification level.*
- ▲ *Never turn a machine cutting head to an angle that causes debris to be ejected towards the cab.*
- ▲ *Never start or continue to work a machine if people are nearby or approaching - Stop and wait until they are at a safe distance before continuing. WARNING: Some Cutting Heads may continue to 'freewheel' for up to 40 seconds after being stopped.*
- ▲ *Never attempt to use a machine on materials in excess of its capability.*
- ▲ *Never use a machine to perform a task it has not been designed to do.*
- ▲ *Never operate the tractor or machine controls from any position other than from the driving seat, especially whilst hitching or unhitching the machine.*
- ▲ *Never carry out maintenance of a machine or a tractor whilst the engine is running – the engine should be switched off, the key removed and pocketed.*
- ▲ *Never leave a machine unattended in a raised position – it should be lowered to the ground in a safe position on a level firm site.*
- ▲ *Never leave a tractor with the key in or the engine running.*
- ▲ *Never carry out maintenance on any part or component of a machine that is raised unless that part or component has been properly substantially braced or supported.*
- ▲ *Never attempt to detect a hydraulic leak with your hand – use a piece of cardboard.*
- ▲ *Never allow children near to, or play on, a tractor or machine under any circumstances.*

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## ADDITIONAL SAFETY ADVICE

### *Training*

Operators need to be competent and fully capable of operating this machine in a safe and efficient way prior to attempting to use it in any public place. We advise therefore that the prospective operator make use of relevant training courses available such as those run by the Agricultural Training Board, Agricultural Colleges and Dealers.

### **Working in Public Places**

When working in public places such as roadsides, consideration should be paid to others in the vicinity. Stop the machine immediately when pedestrians, cyclists and horse riders etc. pass. Restart only when they are at a distance that causes no risk to their safety.

### **Warning Signs**

It is advisable that any working area be covered by suitable warning signs and statutory in public places. Signs should be highly visible and well placed in order to give clear advanced warning of the hazard. Contact the Department of Transport or your Local Highways Authority to obtain detailed information on this subject. The latter should be contacted prior to working on the public highway advising them of the time and location of the intended work asking what is required by way of signs and procedure. – *'Non-authorized placement of road signs may create an offence under Highway Regulations'*.

### **Use of Warning Signs**

- ▲ *On two-way roads one set of signs is needed facing traffic in each direction.*
- ▲ *Work should be within 1 mile of the signs.*
- ▲ *Work only when visibility is good and at times of low risk e.g.: NOT during 'rush-hour'.*
- ▲ *Vehicles should have an amber-flashing beacon.*
- ▲ *Ideally, vehicles should be conspicuously coloured.*
- ▲ *Debris should be removed from the road and path as soon as practicable, and at regular intervals, wearing high visibility clothing and before removing the hazard warning signs.*
- ▲ *Collect all road signs promptly when the job is completed.*

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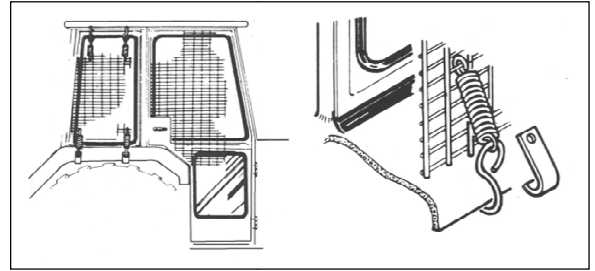
**Although the information given here covers a wide range of safety subjects, it is impossible to predict every eventuality that can occur under differing circumstances whilst operating this machine. No advice given here can replace 'good common sense' and 'total awareness' at all times, but will go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

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# Spearhead MD 120/150 Rotary Head

## 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 using the hooks provided. Shape the mesh to cover all vulnerable areas. The driver must be looking through mesh and/or polycarbonate glazing when viewing the flail head in any working position - 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.*

*Rear weights may be required to maintain a reasonable amount of rear axle load on the opposite wheel from the arms when in work; for normal off-ground work i.e. hedge cutting this should be 20% of rear axle weight or more for adequate control, and for ground work i.e. verge mowing with experienced operators, this can be reduced to 10%.*

*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 – in the instance of Power Arm Hedgecutters it must be remembered that the machines centre of gravity during work will be constantly moving and will differ from that during transport mode, therefore balance becomes critical.*

*Factors that affect stability:*

- 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 head 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).

**NOTE:** *The advice above is offered as a guide for stability only and is not a guide to vehicle strength. It is 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.*

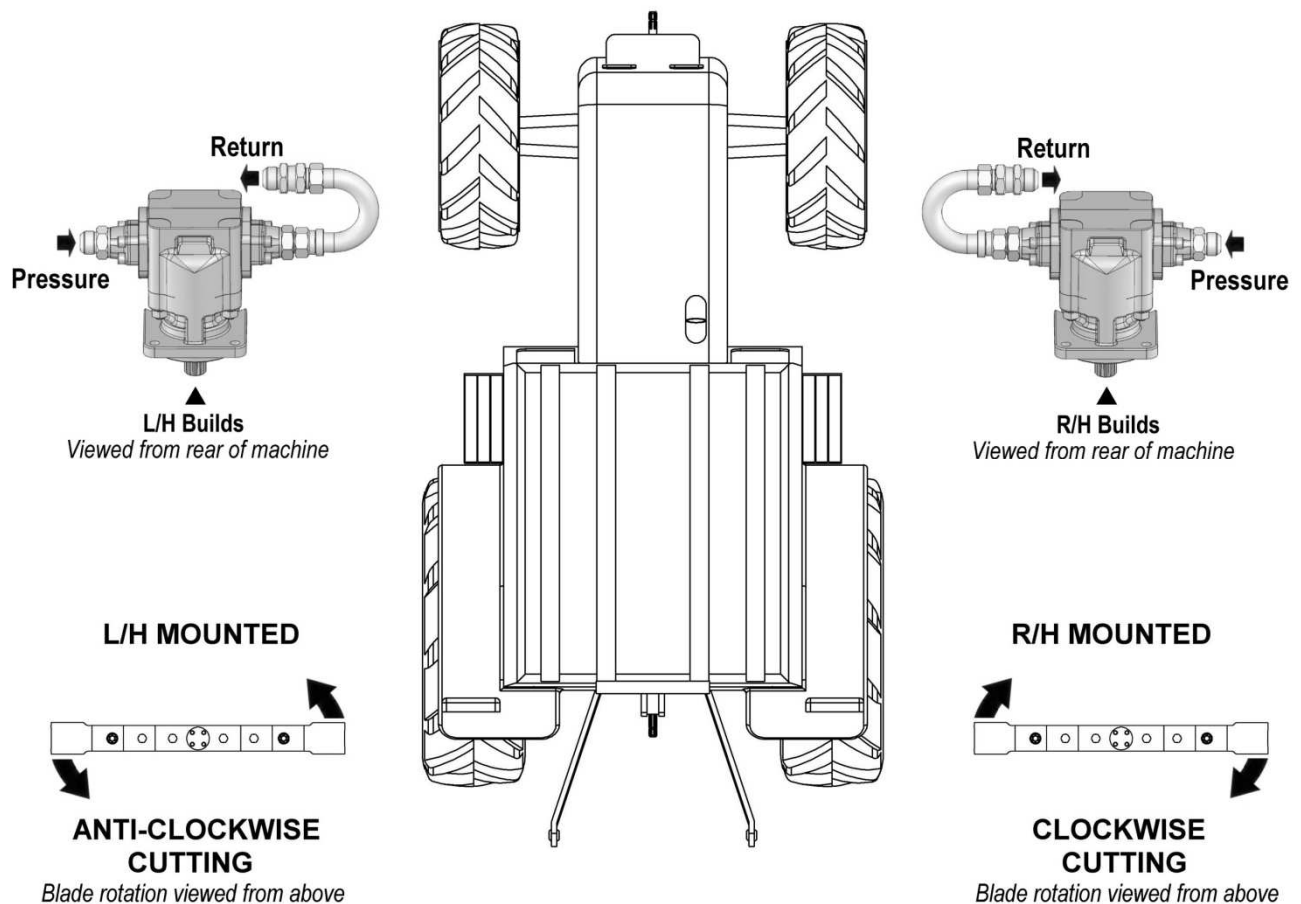
# Spearhead MD 120/150 Rotary Head

## OPERATION

The Rotary Head was designed for cutting scrub, brush and foliage of up to 4" (100mm) in diameter or multiple branches that have a total cross section area of equivalent size.

### Cutting Direction

It is recommended that the direction of cutting should always be such that the blades are cutting away from the operator at the point where the material first enters the machine; i.e. anti-clockwise for left hand mounted machines and clockwise for right hand mounted machines (when viewed from above). Refer to the illustrations below for the correct hydraulic motor connections to produce the required cutting direction.



**WARNING!** When rotating parts are in motion, serious injury may occur if caution is not adopted or danger is not recognized. Never allow bystanders within 300 feet of the machine when in operation. Extreme care should be taken when operating near loose objects such as gravel, rocks and debris - these conditions should always be avoided.

The rotating parts in this machine have been designed and tested for rugged use. However, they could fail upon impact with heavy solid objects - such as steel guard rails, concrete abutments, etc., causing them to be thrown at a very high velocity. Never allow the cutter head to contact such objects; inspecting the area to be cut for such objects and removing them prior to mowing will help eliminate these potential hazards.

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Once on location, lower the mower deck slightly above the material to be cut, so the mower does not have to start under a load. With the tractor at an idle, engage mower. Bring tractor RPM up to the correct working speed (\*) and slowly lower deck to ground level. Maintaining even speed will ensure a clean cut.

(\*) NOTE: *Working speed will be dependant on the particular machine and model that this accessory is being operated on; refer to the operation manual for that machine for details.*

When mowing on the ground, the unit should always be 'carried' rather than 'dragged' on the side skids. Dragging the unit will increase the side loads on the boom, decrease the horsepower available to the cutter head, and reduce the ability of the accumulator to carry part of the weight of the boom during mowing operations. It is recommended that it is carried in such a way that a proportion of its weight is supported by the boom of the operating machine, and a proportion carried by the side skids. When worked in this manner the skids, in association with the pivoted mounting, will allow it the freedom to follow the natural contours of the ground.

During mowing operation the correct operating speed should be maintained to prevent radical changes in mower spindle speeds, reducing risk of cutter assembly damage.

For cutting brush it is usually best to stop the tractor and swivel the boom and mower into foliage. The horizontal positioning action of the boom is designed to position the cutting head and provide a limited pressure relief when excessive pressure is applied to the boom. Never force the cutting head into heavy branches or stumps - damage to the unit may result.



**CAUTION!** When using the rotary cutting head for trimming trees and shrubs, let the mower 'saw' into them. Do not lower the mower head down directly onto a tree or stump. The mower blades are designed to cut with the end, any misuse can cause damage to the blade and risks placing the operator in a hazardous situation.



**CAUTION!** Powering the boom down, forcing mower deck onto ground may damage mower deck and it's attachment to the boom, creating a potentially hazardous situation.



**CAUTION! DO NOT** use excessive force when positioning cutting head into heavy branches or stumps. Damage to the unit may result. It is best to let the cutter head 'eat away' slowly at heavy cutting jobs.



**CAUTION!** If foliage falls on top of mower deck causing tractor to become unstable, move the boom 'Forward' and 'Out' to relieve tipping of the tractor. Lower mower deck to ground and shut down unit. After all motion stops, remove foliage from mower deck.

The mower will operate more efficiently in tougher conditions and with less power if the knives are kept sharp. If the mower begins to vibrate, stop the tractor, check for wire wrapped in the spindle or damaged knives. When replacing knives; replace all knives with new knives to ensure proper balance so the mower will not vibrate. Severe vibration will result if knives with unequal wear are used.

Begin a pass at the top side of the trees and work down with each consecutive pass. When cutting trees and shrubs; use a lower speed to allow the knives time to cut as well as mulch the foliage.

# Spearhead MD 120/150 Rotary Head



**WARNING!** If bystanders approach within 300 feet while mower is in operation turn mower switch 'OFF' immediately. After shutdown, never leave the tractor or allow bystanders to approach within 300 FEET of the unit until all motion stops completely.

If cutter shaft jams and stops, turn mower switch to 'OFF', and swivel boom 'AFT'. Normally this action will clear the cutter head. If not, roll mower deck until adjacent to the secondary boom, and then lower boom to rest mower deck on ground. Shut off the tractor, set parking break, allow all motion to cease. At that point it is safe to leave the tractor and clear the cutter heads manually.

If wires, rope or chains should become entangled in the rotor stop immediately to prevent damage or dangerous situations; stop the rotor and tractor and remove the starting key. Put working gloves on and clear the rotor with the aid of pliers or shears. Do not attempt to disentangle by inverting the rotational direction of the rotor.

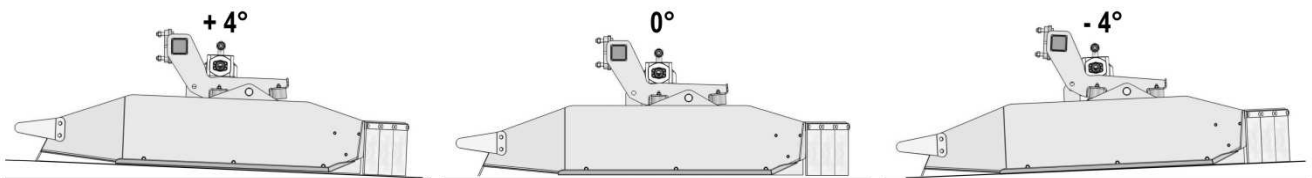
Begin each pass at the top side of the trees and work down with each consecutive pass. Use a low speed to allow the cutting blades time to mulch as well as cut the foliage. When the initial pass has been made, disengage the mower, and return boom to a safe travel position. Return to starting point and make next pass, etc.

## Side Skids

The side skids have 2 mounting positions allowing the machine to cut at a height of either 2" (50mm) or 3" (75mm). Altering the cutting height is by selection of either the upper or lower skid mounting holes on the main frame; ensure that the same hole positions are selected on both sides of the machine. Never attempt to use the machine without skids fitted or with the skids mounted at different heights.

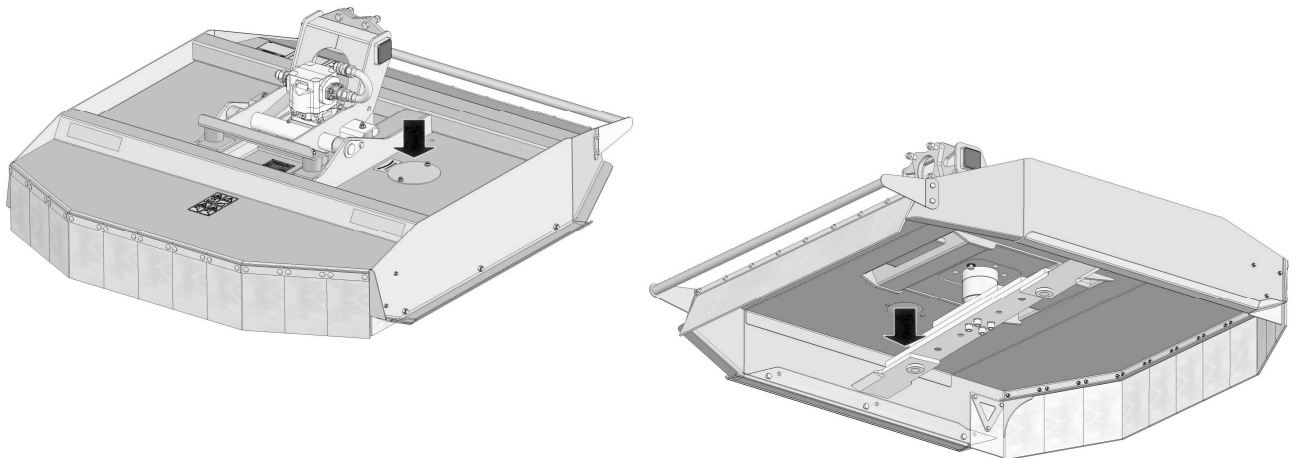
## Pivoted Mounting

The mounting bracket is pivoted to permit the unit deviation from the horizontal by  $\pm 4^\circ$ ; this allows the machine to follow the contours of the terrain on ground cutting work, thus providing a cleaner finish.



## Blade Nut Access Point

A removable cover is located on the deck of the machine to allow access to the blade bolt nut. If removed for service or maintenance work always ensure it is correctly replaced before using the machine.





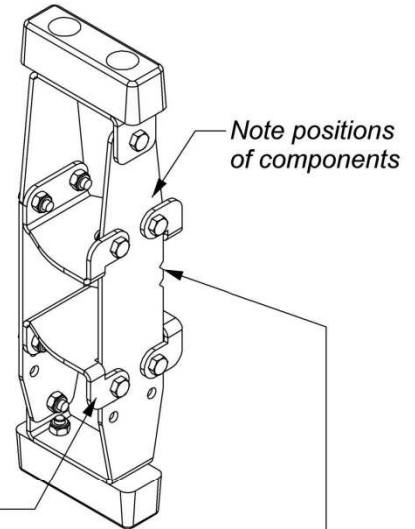
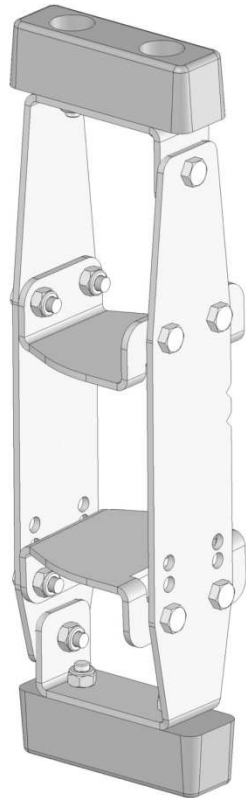
# Spearhead MD 120/150 Rotary Head

## Deck Stop

A Stop assembly is provided for placement on the connecting boom of the operating machine; it is multi-adjustable for use on 100mm square section or 100/110mm tapered section booms.

Its function is primarily to stop the deck coming into contact with the machines arm components when the head is fully angled, but also acts as a support for the unit during transportation.

The stop should be assembled to the required configuration to fit the specific boom and positioned on the boom at a height where the rubber buffers contact an outer point on the top of the deck when the unit is fully angled in either direction.

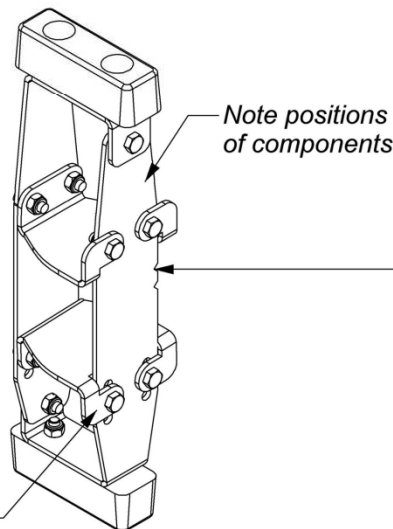


Note positions of components

ASSEMBLED FOR:  
100MM SQUARE ARM SECTION

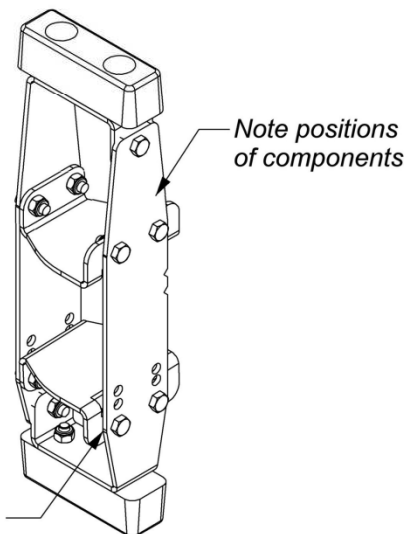
### ASSEMBLY NOTE:

The notches should be nearest to the top of the dipper arm and facing towards the head pivot tube.



Note positions of components

ASSEMBLED FOR:  
100MM WIDE TAPERED ARM SECTION



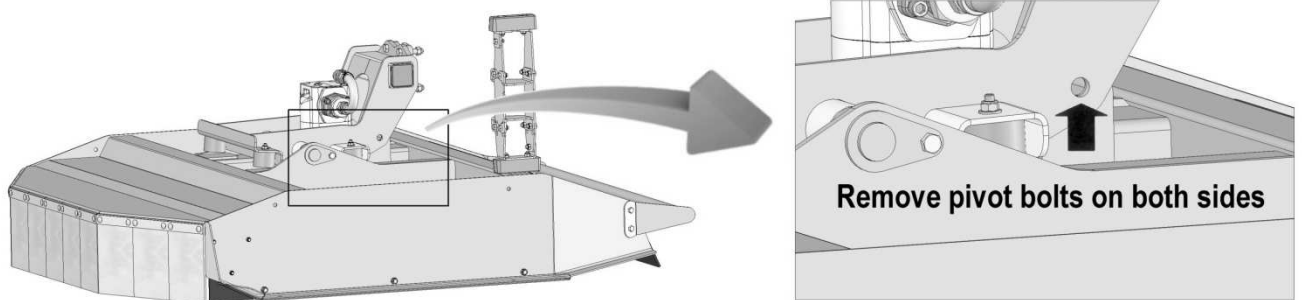
Note positions of components

ASSEMBLED FOR:  
110MM WIDE TAPERED ARM SECTION

# Spearhead MD 120/150 Rotary Head

## OPERATING WITH LIFT FLOAT KIT

For lift float operation pivot bolts must be removed from both sides of the pivot assembly.



### To Test Operation

Set the height of the skids to the required approximate cut height above ground level.

From the operating position in the tractor cab, extend the machines arm fully and place the cutting head on the ground.

Activate the float - *this can be done either manually or with the switch kit option.*

Operate lift up - *it is normally for there to be an initial delay as the oil fills the float bottle first before transferring to the ram.*

Return lift control to the neutral when the cutting head lifts off the ground. **Caution! the arm may continue to lift for a few seconds.**

It will be noticed that lift operation is now spongy.

Gently operate 'lift down' and stop when the skids touch the ground.

### During Operation

The weight carried on the skids is now controlled by the amount of oil trapped in the lift circuit. The lighter the load on the skids the less they will wear, therefore their working life will be extended. Adding oil (lift up) will make the load on the skids lighter, removing oil (lift down) will make the load on the skids heavier.

Adjust the amount of oil when the ground height of the work changes relative to the tractor and /or when altering the working distance of the cutting head to the tractor. Continual adjustment will be required on uneven or undulating terrain.



**CAUTION!** the cutting head will still be need to be lifted over objects and in places where the ground is raised between the skids; there may be some delay on lift so extra care and reduced forward speed should be adopted.

### After Operation

Place the cutting head fully on the ground to release the trapped pressure from the float circuit, switch off the floats to revert to normal arm operation for work and/or transport.



**DANGER!** Never loosen lift connections with pressure trapped in the lift circuit.

**DANGER!** Float should not be used in transport.



**CAUTION!** The work area should be inspected prior to work and all hazardous objects removed or suitably marked so that they can be avoided during operations.

# Spearhead MD 120/150 Rotary Head

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## TRANSPORTATION

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### **Transport Position**

When transporting between job sites, or between cutting passes, the following procedure should be followed; shut off the power to the cutting head and allow all motion to come to a complete stop. Raise the boom to its highest position taking care to avoid all overhead obstructions such as power cables, trees etc. Rotate the deck to a position where it contacts the stop buffer before then folding the arms of the machine into a position where it is as compact as possible. Fit and secure any transport locks and close the lift ram tap if applicable.

Check before transporting that the unit has ample clearance from the tractor tyres and other tractor or machine components. The unit is now in position for transportation.

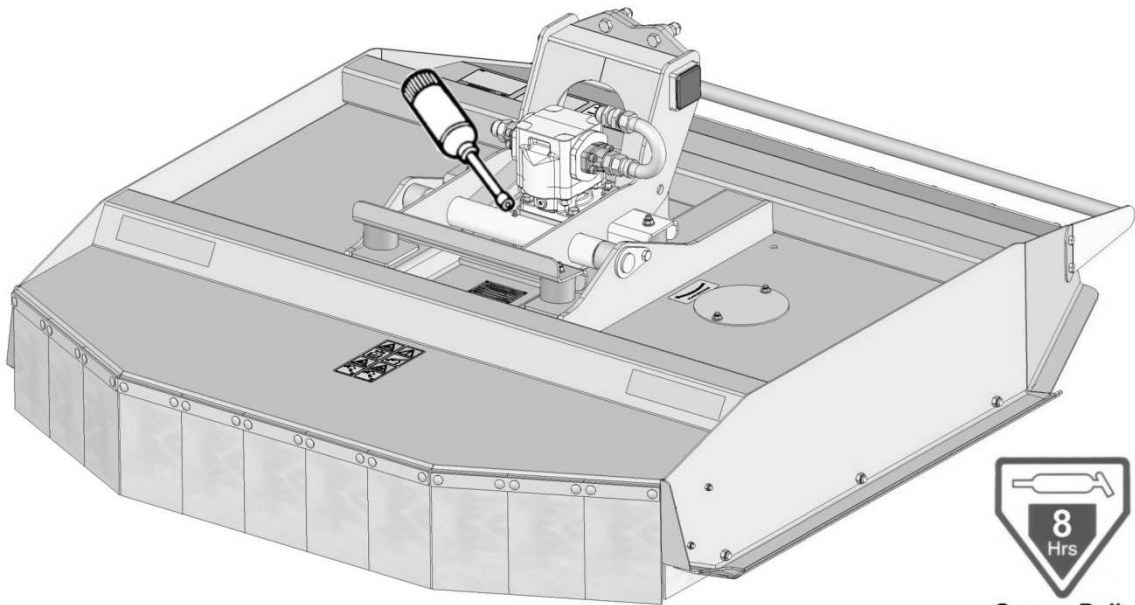
### **Transport Speed**

Transport speeds should be kept to a minimum on uneven terrain, and in all conditions avoid driving at a speed which causes exaggerated bouncing as this will put unnecessary strain on the tractors top hitch position

# Spearhead MD 120/150 Rotary Head

## MAINTENANCE

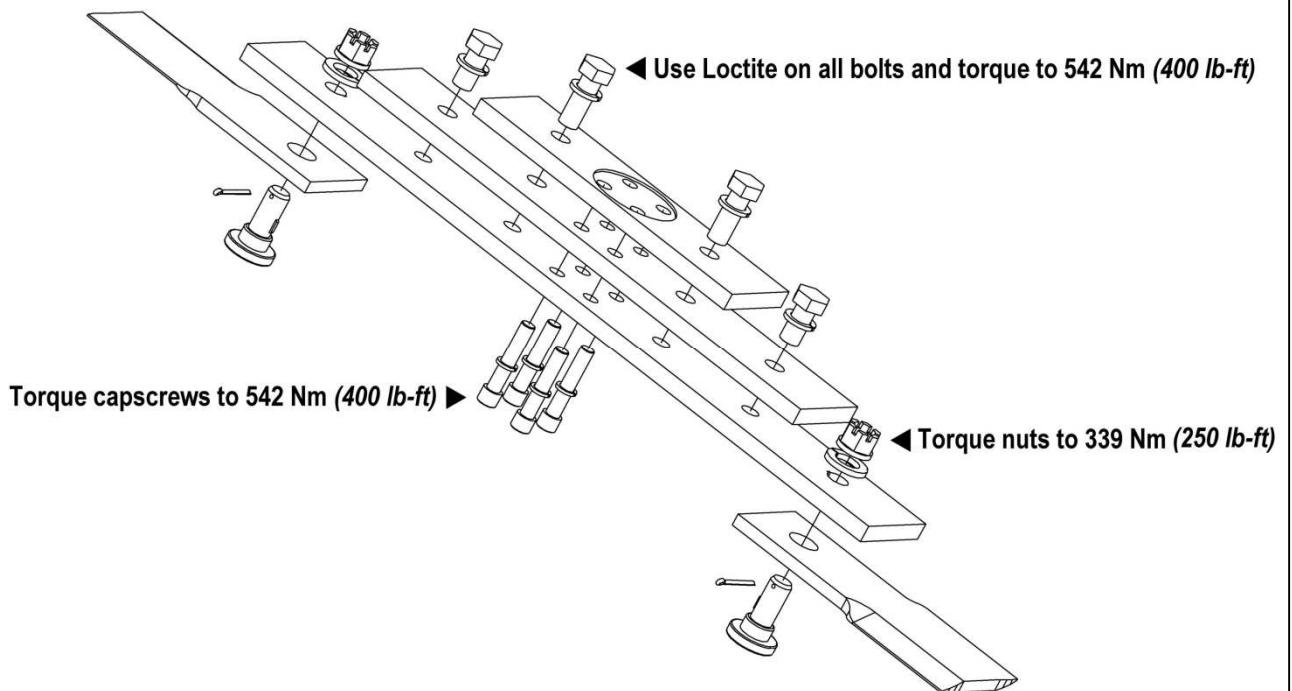
Maintenance duties on the machine have been kept to a minimum, the grease point indicated below should be lubricated on a daily basis prior to work and the level of oil in the bearing housing checked. Top up to plug level (as and when required) using EP90 gearbox oil. Oil capacity is 560ml (18.9 US fl.oz.). Check for oil leakage around the spindle assembly on a daily basis.



**Grease Daily**

After work and always prior to storage the machine should be cleaned to remove dirt and debris. Grease the point indicated above prior to storage. Wherever possible the machine should be stored in a clean dry location protected from the elements.

### Blade Bar Torque Figures



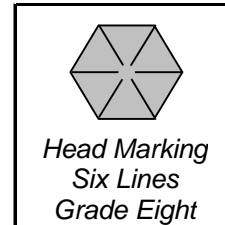
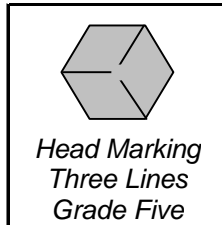
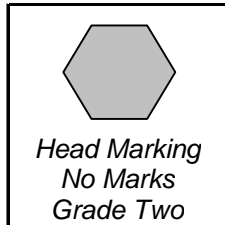
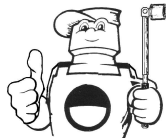
# Spearhead MD 120/150 Rotary Head

## TORQUE SETTINGS FOR FASTENERS

The Chart below lists the correct tightening torque for fasteners. The Chart should be referred to when tightening or replacing bolts in order to determine the grade of bolt and the correct torque unless specific torque values are assigned in the text of the manual.

Recommended torque is quoted in Foot-Pounds and Newton-Metres within this manual. The equation for conversion is 1 Nm. = 1.356 ft. lbs.

### TORQUE VALUES FOR IMPERIAL BOLTS



**NOTE:**  
The values in the chart apply to fasteners as received from the supplier, dry or when lubricated with normal engine oil. They DO NOT apply if special graphited, molydisulphide greases, or other extreme pressure lubricants are used. This applies to both UNF and UNC coarse threads.

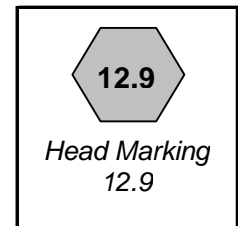
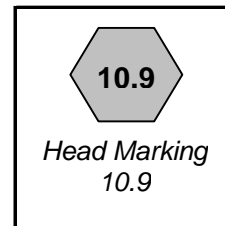
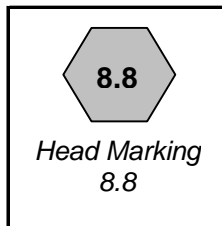
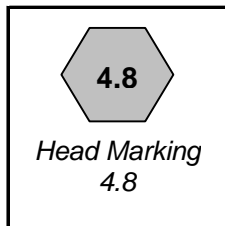
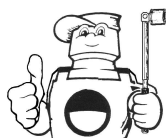
Bolt Dia.
1/4"
5/16"
3/8"
7/16"
1/2"
9/16"
5/8"
3/4"
7/8"
1"
1-1/8"
1-1/4"
1-3/8"
1-1/2"

Value (Dry)	
ft.lb.	Nm.
5.5	7.5
11	15.0
20	27.0
32	43.0
50	68.0
70	95.0
100	135.0
175	240.0
175	240.0
270	360.0
375	510.0
530	720.0
700	950.0
930	1250.0

Value (Dry)	
ft.lb.	Nm.
9	12.2
18	25.0
33	45.0
52	70.0
80	110.0
115	155.0
160	220.0
280	380.0
450	610.0
675	915.0
850	115.0
1200	1626.0
1550	2100.0
2100	2850.0

Value (Dry)	
ft.lb.	Nm.
12.5	17.0
26	35.2
46	63.0
75	100.0
115	155.0
160	220.0
225	305.0
400	540.0
650	880.0
975	1325.0
1350	1830.0
1950	2650.0
2550	3460.0
3350	4550.0

### TORQUE VALUES FOR METRIC BOLTS.



Bolt Dia.
6mm
8mm
10mm
12mm
14mm
16mm
18mm
20mm
22mm
24mm
27mm
30mm

Value (Dry)	
ft.lb.	Nm.
4.5	6.1
11	14.9
21	28.5
37	50.2
60	81.4
92	125.0
125	170.0
180	245.0
250	340.0
310	420.0
450	610.0
625	850.0

Value (Dry)	
ft.lb.	Nm.
8.5	11.5
20	27.1
40	54.2
70	95.0
110	150.0
175	240.0
250	340.0
350	475.0
475	645.0
600	810.0
875	1180.0
1200	1626.0

Value (Dry)	
ft.lb.	Nm.
12	16.3
30	40.1
60	81.4
105	140.0
165	225.0
255	350.0
350	475.0
500	675.0
675	915.0
850	1150.0
1250	1700.0
1700	2300.0

Value (Dry)	
ft.lb.	Nm.
14.5	20.0
35	47.5
70	95.0
120	160.0
190	260.0
300	400.0
410	550.0
580	790.0
800	1090.0
1000	1350.0
1500	2000.0
2000	2700.0

# Spearhead MD 120/150 Rotary Head

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## Ordering Your Part's

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

Part number and quantity  
Description  
Machine model number  
Serial number of the machine  
Delivery instructions (e.g. next day).

Delivery is normally via carrier direct to your dealer. Please check with your dealer for stock availability and arrangement of dispatch. Ensure you or your dealer has sufficient cover for parts requirement outside factory hours.

When ordering your seal kits please quote both codes stamped on the base of the cylinder.

## Important Note

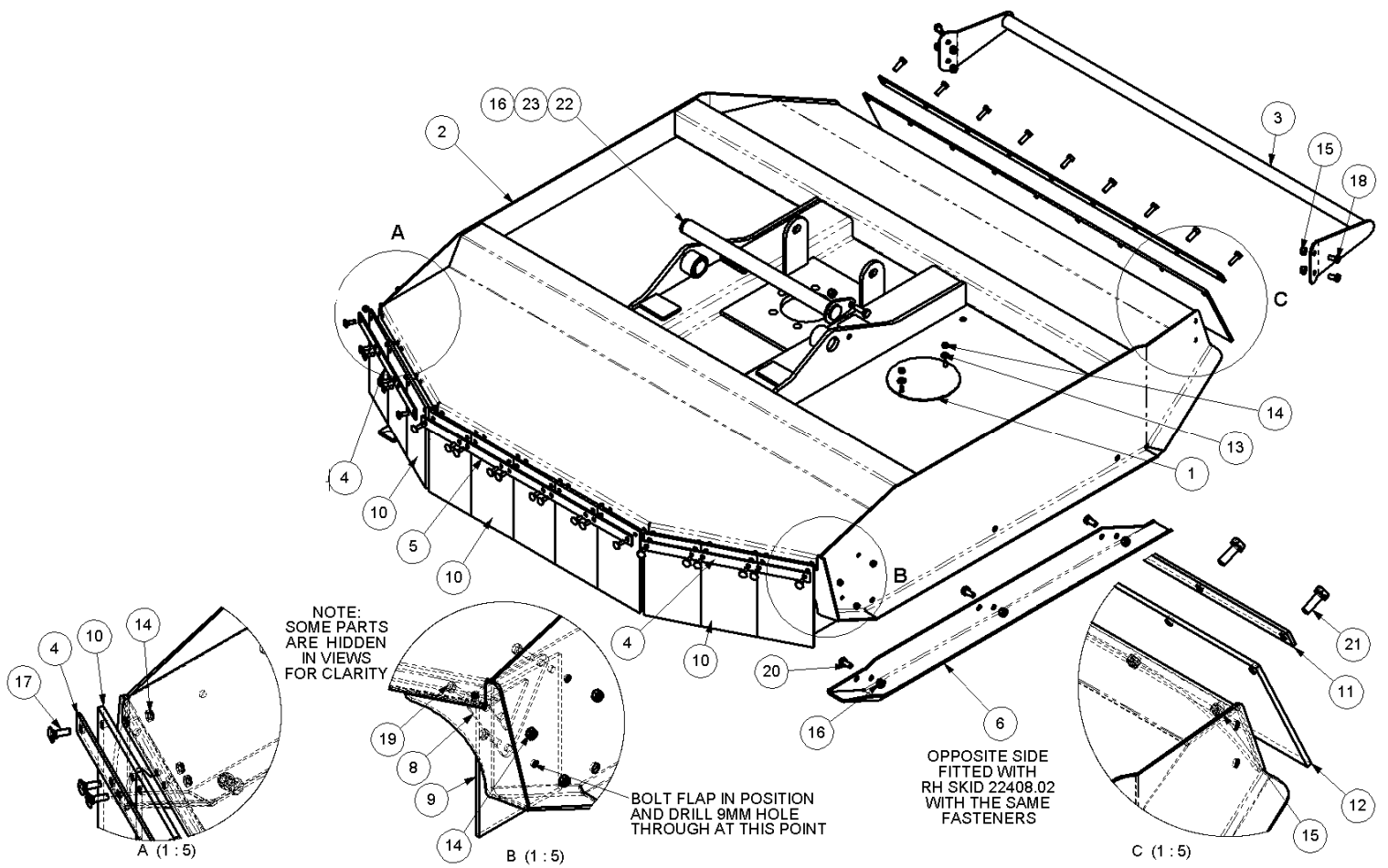
The information contained in this manual is correct at the time of publication. However, in the course of constant development, changes in specification are inevitable. Should you find the information given in this book different to the machine it relates to, please contact the "After Sales Department"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

## Key:

(LH) = Left hand  
(RH) = Right hand

# Spearhead MD 120/150 Rotary Head

## 1039735 - Casing Module:



# Spearhead MD 120/150 Rotary Head

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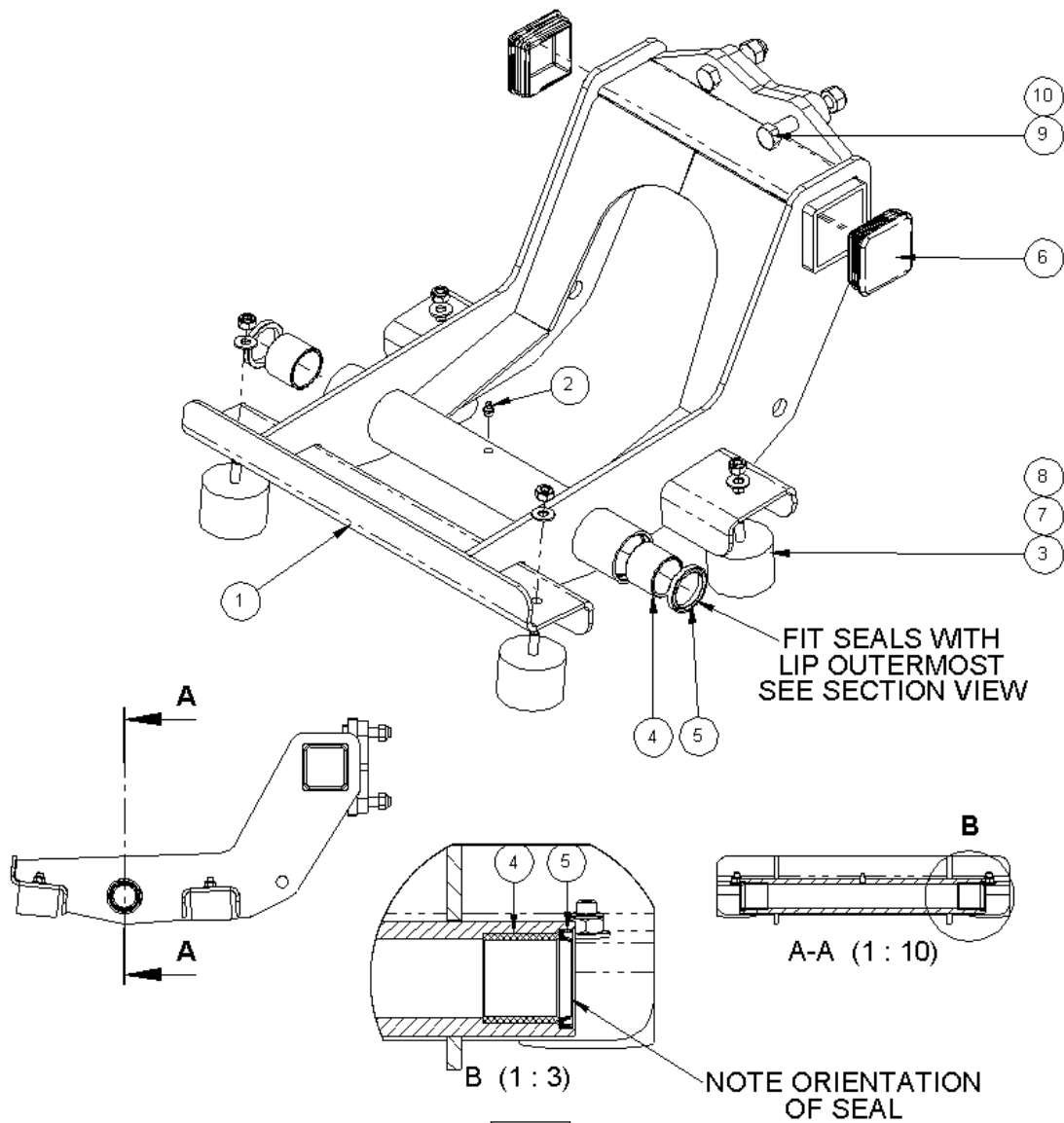
## 1039735 - Casing Module:

ITEM NO.	PART NO.	DESCRIPTION.	QTY.
1	21833.01	COVER	1
2	22405.03	CASING W/ASSY	1
3	22406.01	GUARD BAR W/ASSY	1
4	22407.01	CLAMP STRIP	2
5	22407.02	CLAMP STRIP	1
6	22408.01	SKID - LH	1
7	22408.02	SKID - RH	1
8	22409.01	CLAMP PLATE	2
9	41296.02	FLAP	2
10	7190035	FLAP	11
11	7290347	CLAMP STRIP	1
12	7290348	FLAP	1
13	9100104	WASHER	2
14	9163004	NUT	30
15	9163005	NUT	13
16	9163006	NUT	7
17	9293054	BOLT	22
18	9313045	SCREW	4
19	9313054	SCREW	6
20	9313056	SCREW	6
21	9313065	SCREW	9
22	22421.01	PIN W/ASSY	1
23	9313076	SCREW	1



# Spearhead MD 120/150 Rotary Head

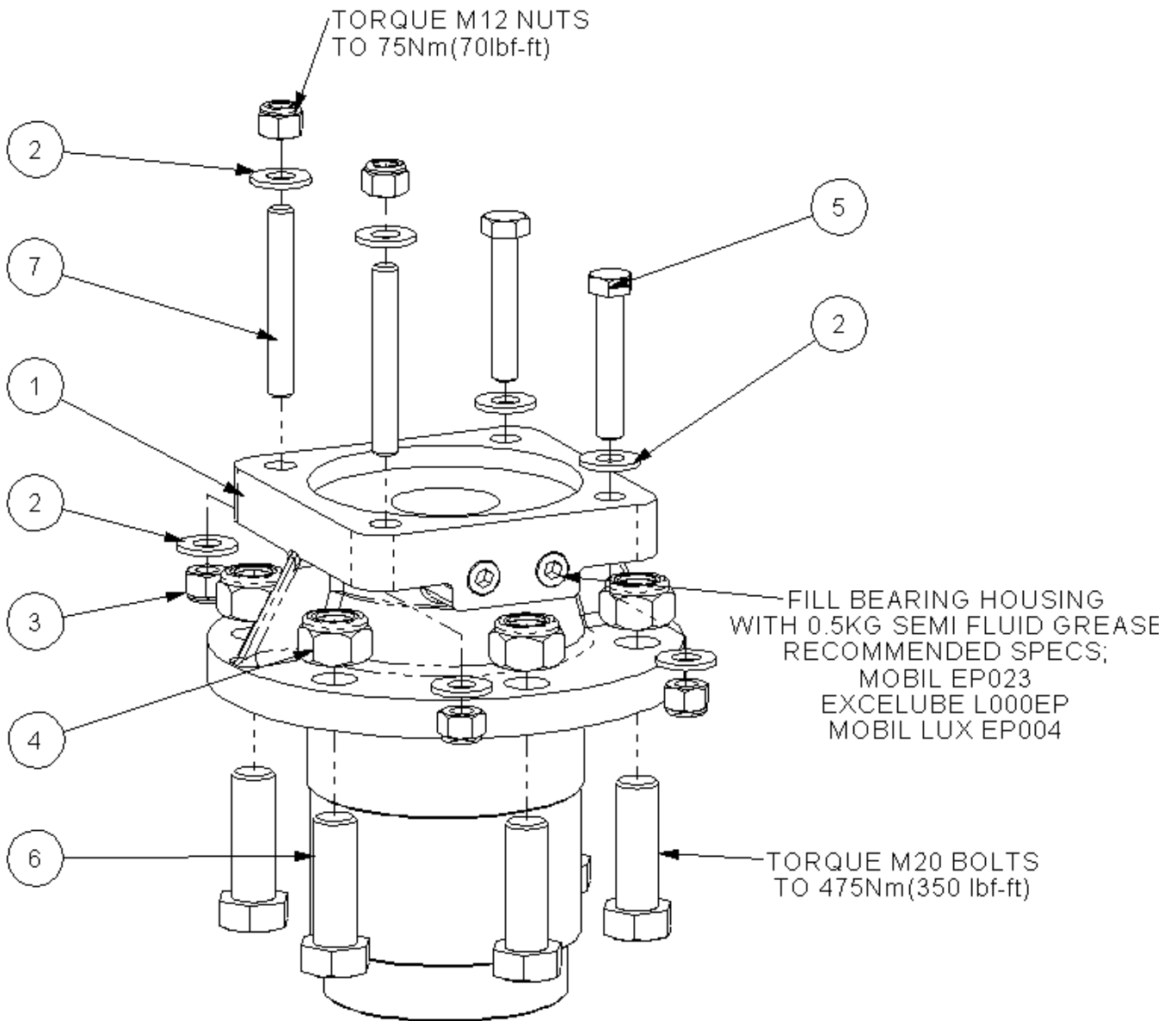
## 1039736 - Bracket Module:



ITEM NO.	PART NO.	DESCRIPTION.	QTY.
1	22386.08	PIVOTING W/ASSY	1
2	0901121	GREASER	1
3	1337114	BUFFER	4
4	21385.01	BUSH	2
5	8629219	ROTARY SHAFT SEAL	2
6	41580.01	PLUG	2
7	9100105	WASHER	4
8	9163005	NUT	4
9	12.714.75	BOLT	4
10	T7942	NUT	4

# Spearhead MD 120/150 Rotary Head

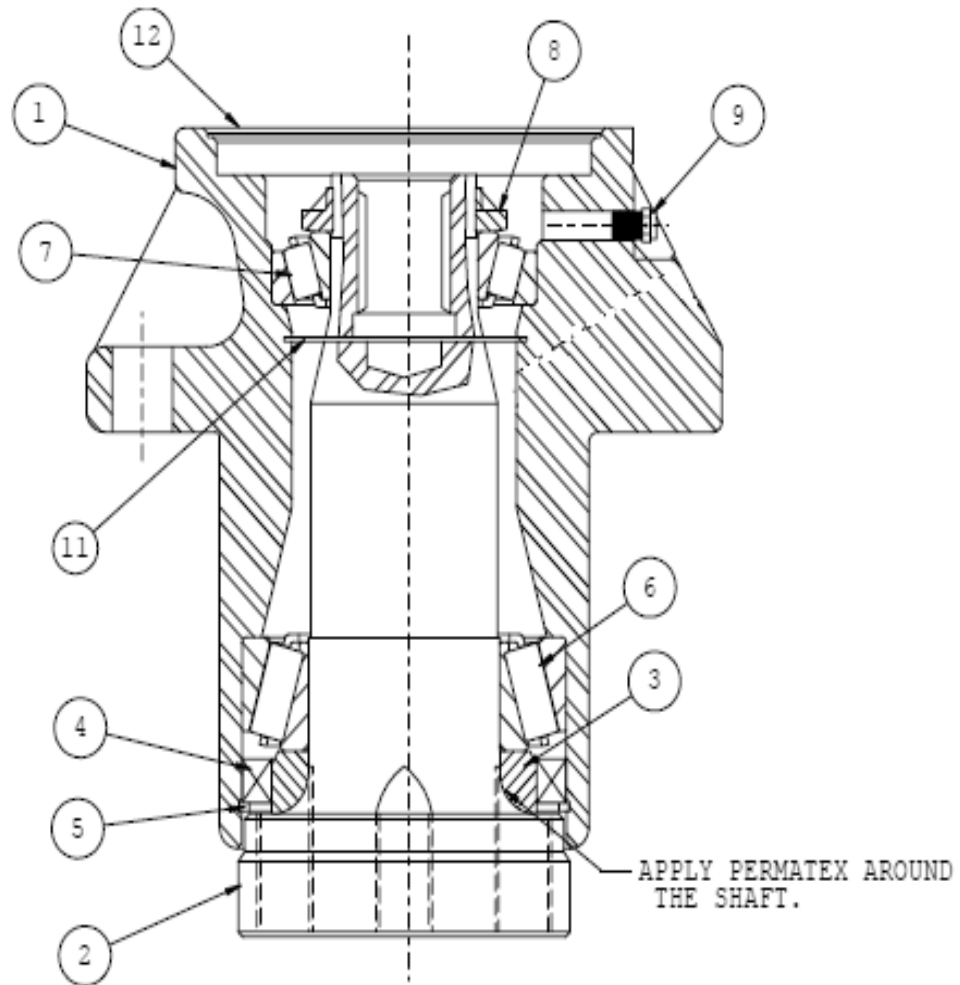
## 1039729 C - Bearing Unit Module:



ITEM NO.	PART NO.	DESCRIPTION.	QTY.
1	02960553B	SPLINDLE ASSY	1
2	9100106	WASHER	8
3	T78095	NUT	6
4	9163008	NUT	6
5	T2703	BOLT	2
6	9213128	BOLT	6
7	23016.01	STUD	2

# Spearhead MD 120/150 Rotary Head

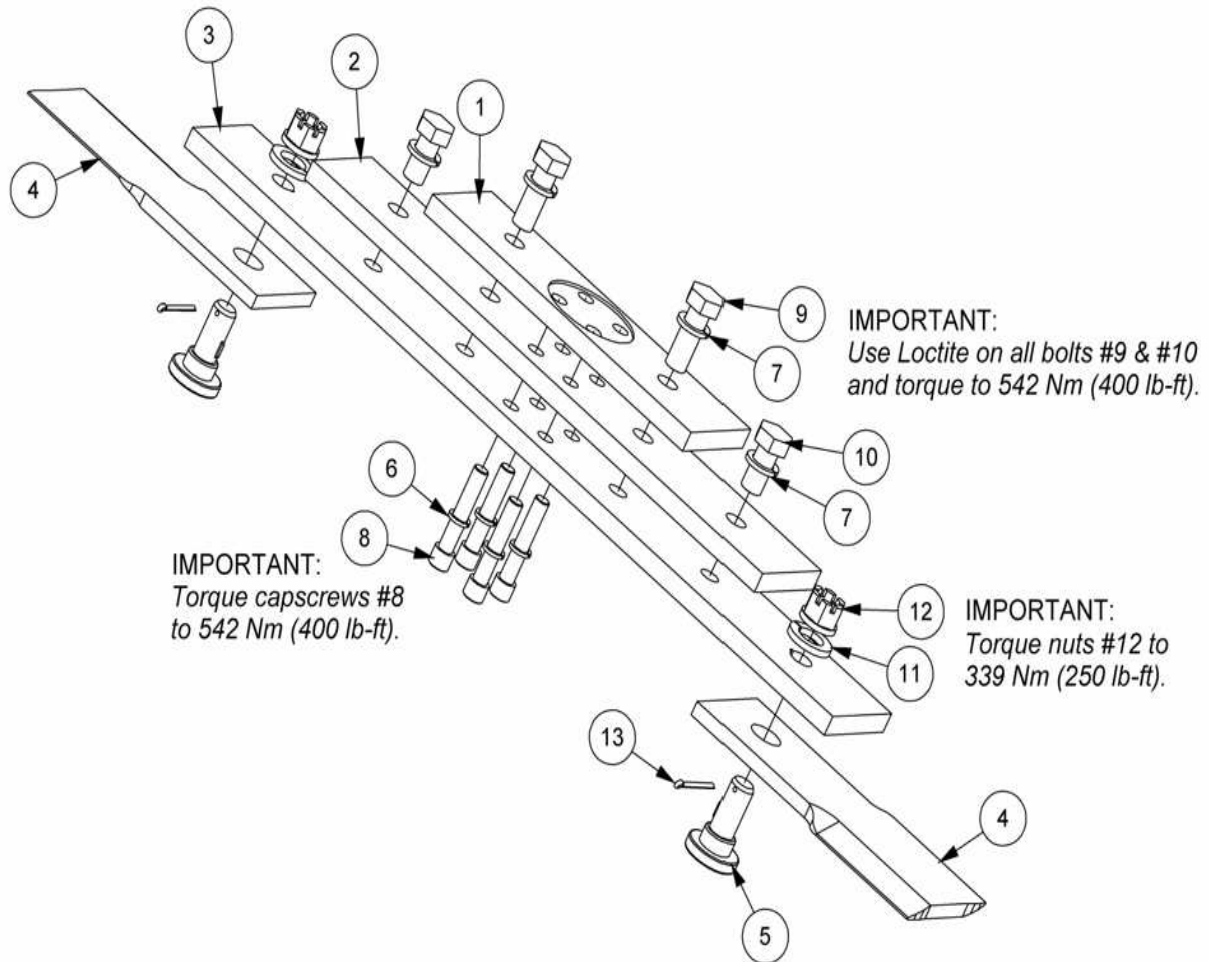
## 02960553 B - Spindle Assembly:



ITEM NO.	PART NO.	DESCRIPTION.	QTY.
0	00999612	GREASE	1
1	02963815	SPLINDLE HOUSING	1
2	02960561	SPLINED SPINDLE	1
3	02960558	BEARING RING	1
4	02960559	SEAL	1
5	00754627	SNAP RING	1
6	02960557	BEARING - BOTTOM	1
7	00769938	BEARING - TOP	1
8	02962030	NUT	1
9	02959018	GREASER	1
10	00565000	PLUG - 1/8 NPT	1
11	02976756	RETAINING RING	1
12	02963060	SPINDLE COVER	1

# Spearhead MD 120/150 Rotary Head

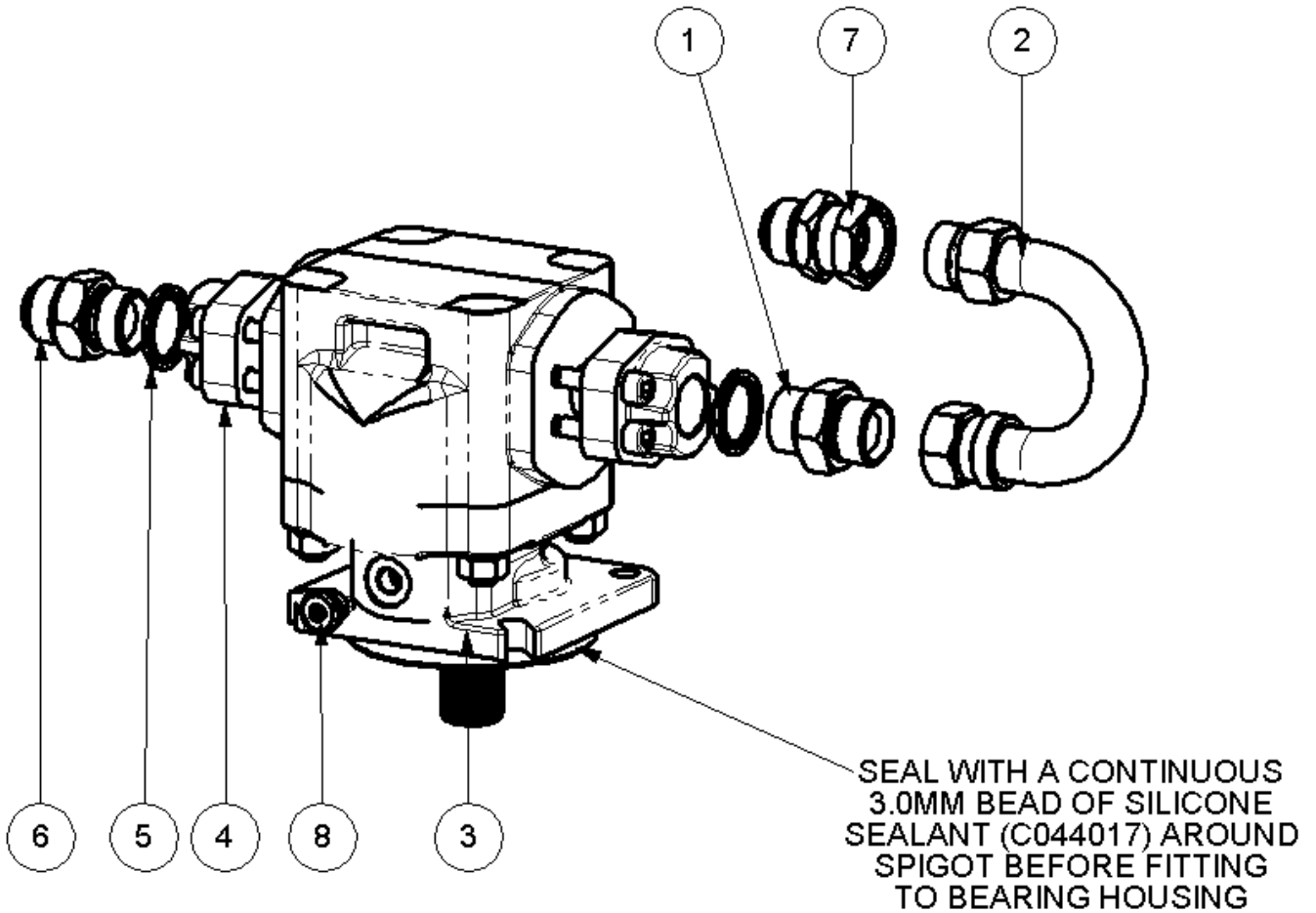
## 02782300 - Blade Assembly Module:



ITEM NO.	PART NO.	DESCRIPTION.	QTY.
1	02781600	BLADE BAR LEAF	1
2	02781700	BLADE BAR LEAF	1
3	02781800	BLADE BAR LEAF	1
4	02761500	BLADE SET	1
5	02782900	BLADE BOLT	2
6	00003901	SPRING WASHER	4
7	02032200	SPRING WASHER	4
8	02782000	CAP SCREW	4
9	02782100	HEX SCREW	2
10	02782200	HEX SCREW	2
11	02957089	SPRING WASHER	2
12	00020900	FLANGE NUT - SLOTTED	2
13	00023200	ROLL PIN	2

# Spearhead MD 120/150 Rotary Head

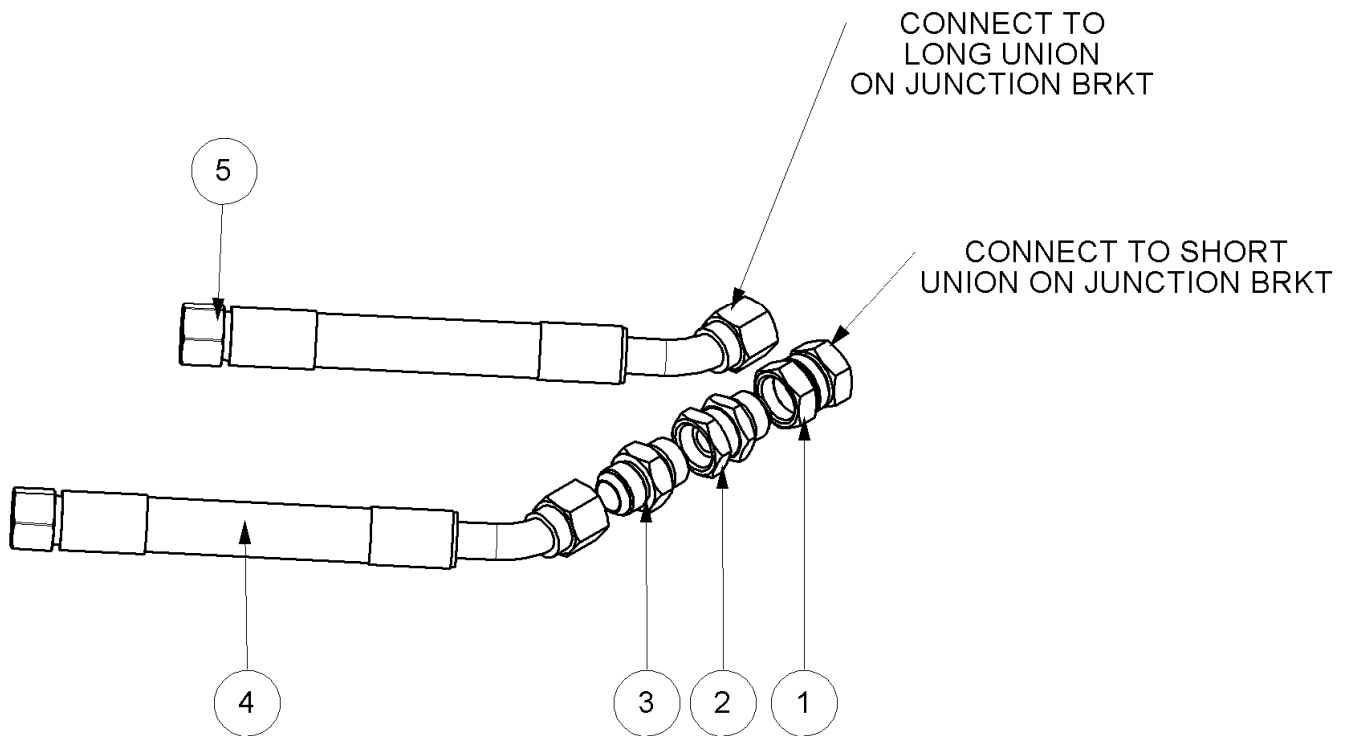
## 1039739 - Motor Module:



ITEM NO.	PART NO.	DESCRIPTION.	QTY.
1	05.434.01	ADAPTOR	1
2	46043.01	PIPE	1
3	8301327	MOTOR	1
4	8581566	FLANGE	2
5	8650108	SEAL	2
6	8581256	ADAPTOR	1
7	8581233	ADAPTOR	1
8	5851436	ADAPTOR	1

# Spearhead MD 120/150 Rotary Head

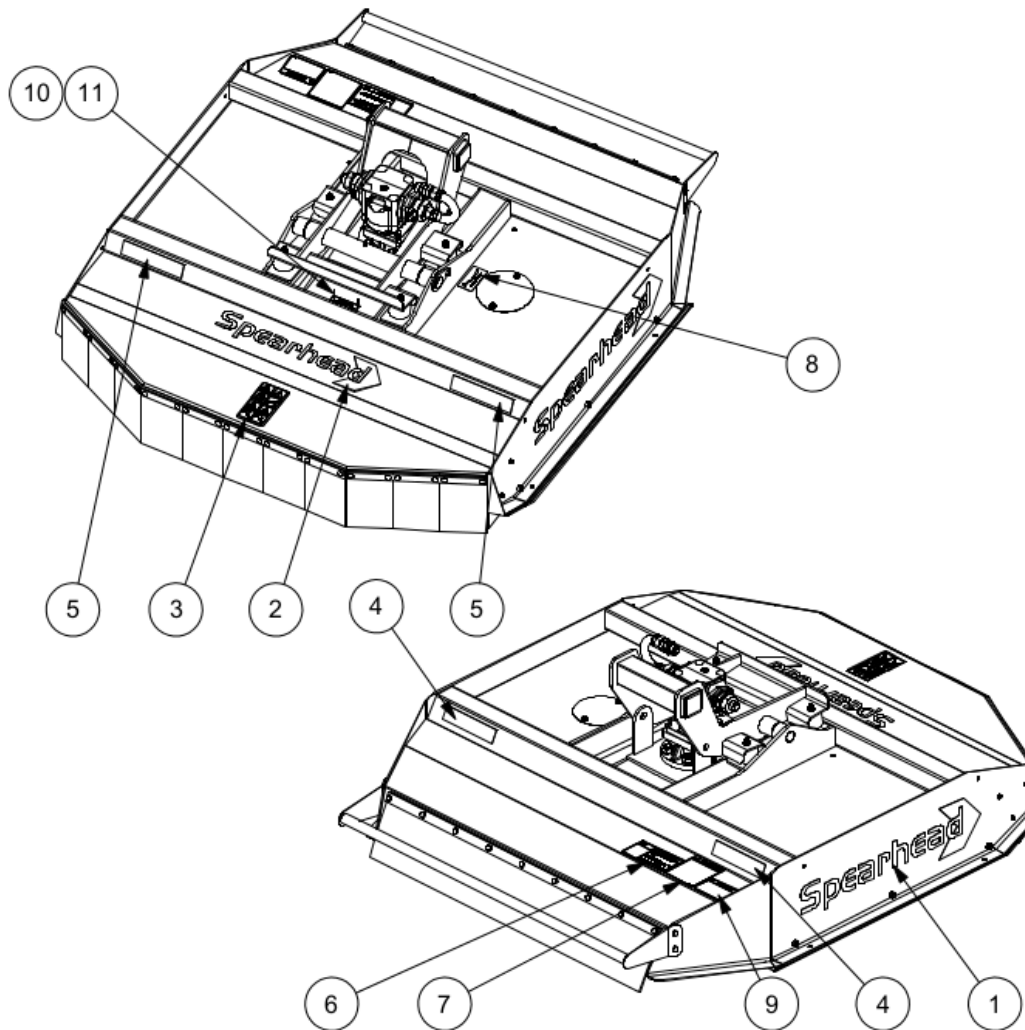
## 1039740 - Hyd Module:



ITEM NO.	PART NO.	DESCRIPTION.	QTY.
1	8581595	ADAPTOR	1
2	8581233	ADAPTOR	1
3	8581256	ADAPTOR	1
4	41677.13	HOSE	1
5	41677.14	HOSE	1

# Spearhead MD 120/150 Rotary Head

## S180042.01 - Decal Module:



ITEM NO.	PART NO.	DESCRIPTION.	QTY.
1	8770371	SPEARHEAD DECAL - 840MM	2
2	8770373	SPEARHEAD DECAL - 615MM	1
3	09.821.35	SAFETY DECAL	1
4	1458392	REFLECTOR - RED	2
5	1458393	REFLECTOR - YELLOW	2
6	24028	WARNING DECAL	1
7	02965262	WARNING DECAL	1
8	D138	BLADE ROTATION DECAL	1
9	D354	DANGER DECAL	1
10	7103230	POP RIVET	4
11	8770330	SERIAL NO. PLATE	1





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