

Spearhead

HD Flail Head 1.2M & 1.6M



Edition 1.1 – August 2011
Part No. 8999052

HANDBOOK & PARTS MANUAL

Spearhead HD Head

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

.....

Spearhead HD Head

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Spearhead HD Head

Introduction

Flail Head range:

- HD Heavy Duty, suitable for contractors requiring high output.
 - 1.2m
 - 1.6m

A range of very robust high capacity flail heads to suit many applications that are easy to operate and maintain. To ensure trouble-free operation this manual should be carefully studied.

The term Left and Right hand applies to the machine when coupled to the tractor and viewed from the rear, this also applies to the tractor.

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.

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.)

Spearhead HD Head

Stickers



Warning
 Avoid fluid escaping under pressure. Consult technical manual for services procedures.



Warning
 Shut off engine and remove key before performing maintenance or repair work.



Warning
 Danger – flying objects keep safe distance from the machine as long as the engine is running.



Warning
 Beware of overhead electrical power line.



Warning
 Stay clear of mower flails.



Warning
 Carefully read operator's manual before handling this machine. Observe instructions and safety rules when operating.



Warning
 Do not remove / open guard..



Warning
 Check all nuts are tight every 8 hours.

Spearhead HD Head

Safety Recommendations

Beware of the following Potential Dangers associated with the use of this machine:

- Becoming trapped when hitching or unhitching.
- Tractor overbalancing when arm is extended.
- Electrocution due to hitting overhead power lines.
- Getting caught on rotating power take off (PTO).
- Being hit or caught by any moving part, e.g. belts, pulleys, arms, cutting head.
- Being hit by flying debris or machine parts due to machine damage.
- Machine overbalancing when not in use.
- Injection of high pressure oil from damaged couplings or hydraulic hoses.
- Accidents due to collision with other machines, or debris left on road.

Always

- Ensure the operator has read this handbook and has been trained to use the machine.
- Ensure all cab safety guards are in place and all tractor windows closed.
- Before leaving the tractor cab always ensure that the flail head is firmly on the ground, no weight is on the machine's hydraulics and the rotor has stopped spinning.
- Check that all guards are properly fitted and there are no damaged or loose parts. Particular attention should be given to the flails to ensure they are not damaged, cracked or missing.
- Inspect work area for wire, steel posts, large stones and other dangerous materials and remove before starting work.
- Beware of the danger of overhead power cables. The operator must be aware of the maximum height and reach of the machine when working under power cables. The minimum legal height for 11,000 and 22,000-volt cables is 5.2 metres from the ground. When fully extended, the machine may well exceed this height so extreme caution should be practised. For more information contact the Health and Safety Executive or your local power company.
- Ensure that all warning labels are always visible and that they are not damaged, defaced or missing..
- Lower the head to the ground when parking up.
- Fit locking pins to slew and height before transport and before unhitching when applicable.
- Wear ear defenders if operating without a quiet cab or with the cab windows open.
- Ensure tractor guards are fitted correctly and are undamaged.
- Work at a safe speed, taking into account terrain, passing vehicles and obstacles.
- Ensure that the tractor meets the minimum weight recommendations of the machine manufacturer and that ballast is used if necessary.
- Check that machine fittings and couplings are in good condition.
- Follow the manufacturer's instructions for attachment and removal of machine from the tractor.

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- Use clear warning signs to alert others to the type of machine working in the vicinity. Signs should be placed at both ends of the work site and should be in accordance with Department of Transport recommendations.
- Ensure flails are of the type recommended by the manufacturer, are securely fitted and are undamaged.
- Ensure hydraulic pipes are correctly routed to avoid damage from chafing, stretching, pinching or kinking.
- Disengage the machine, stop the engine and remove the key before leaving the tractor cab for any reason.
- Clean up any debris left at the work site.
- Ensure that when you remove the machine from the tractor it is secured in a safe position using the stands provided.

NEVER

- 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 head.
- Never operate the machine until you have read and understood the relevant Handbook and are familiar with the controls.
- Never use a machine that is poorly maintained or has guards that are damaged or missing.
- Never allow an inexperienced person to operate the machine without supervision.
- Never use or fit a machine onto a tractor if it doesn't meet the manufacturer's specification.
- Never use a machine if the hydraulic system shows signs of damage.
- Never attempt to detect a hydraulic leak with your hand, use a piece of card.
- 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 the head to the ground, stopping the tractor engine and applying the tractor parking brake.
- Never leave the cab without removing the ignition key.
- Never operate the tractor or any controls from any position other than from the driving seat.
- Never stop the engine with the PTO engaged.
- Never operate with flails missing.
- Never operate PTO **above** recommended speed, 540 R.P.M.
- Never operate with wire around the rotor. Stop immediately.
- Never use the head at an angle, which may throw debris towards the cab.
- Never attempt to use the machine for any purpose other than that it was designed for.
- Never transport with the PTO engaged.
- Never enter the working area of the machine (risk of injury!).
- Never transport with the controls live, always turn off electrical isolator switch (red) and disconnect supply.

Spearhead HD Head

Attaching your head to the machine

Assuming you have followed the instructions in the operators manual you will have mounted the machine to the tractor rear linkage, connected the PTO and an electrical supply, now the machine arms can be operated from the tractor seat.



Warning

Take care when removing/connecting hydraulic fittings as they may contain high pressure oil !

1. Place the flail head along the tractor nearside wheel in the work position, about 1 metre away. Use a hydraulic jack and support stands to level the head if required.
2. Start the tractor and select 540 PTO.
3. Switch on machine electrics via the control panel.
4. Operate the joystick lever and slew switch to place the boom fully forward into the work position about ½ metre off the ground and 1 metre away from the tractor wheel. Use the controls move the boom to enable the head to be attached.



5. Disengage the PTO, switch off the electrics, turn off the tractor and remove the key before leaving the cab.
6. Attach the flail head to the boom using clamps and bolts supplied, we would recommend centre mounting at this point.
7. Ensure all connections are clean and free of any contamination before removing any blanking plugs.
8. Identify the pressure hose on the boom and the pressure port of motor (nearest anti-cav valve) also the returns hose and returns port. Using the hoses supplied make the correct connections as identified

Spearhead HD Head

previously, the small hose is for the motor case drain this is returned separately to top of tank.

9. Raise boom to lift the flail head clear of the ground before making a test run at low PTO speed, run for 5 minutes, stop and recheck all connections for oil leaks.
10. Restart machine, allow oil to warm before running at full speed to ensure smooth running without any vibration (do not exceed 540 R.P.M.).



Warning

It is most important the operator fully understands the procedure for attaching/un-attaching the flail head to/from the reach mower. The following text must be fully understood before attempting to attach the head. If there is any doubt please contact your supplying dealer or Spearhead Service Department. Failure to follow the correct procedure

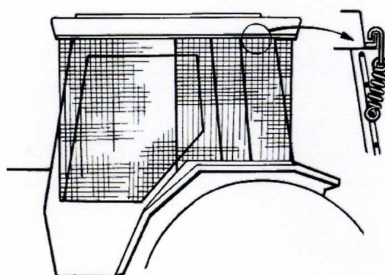
To attach/unattached the head could result in personal injury or machine damage. Any resulting damage to a machine is not covered by warranty.

Always be sure to select a level firm surface, such as concrete before attaching.

When operating the tractor or machine's controls do so only when seated in the tractor cab. Do not allow anyone to stand on or amongst linkage for any reason.



Operate the main arm to bring the frame horizontal by lowering the head weight to the ground.



Use only tractors with safety glass. If windows are not laminated safety glass, polycarbonate glazing must be fitted between operator and cab meshing. Shape mesh to cover all windows that the driver will look through to view flail head in any operating position. Mesh can be retained by springs and clips supplied, but it is the operators responsibility to ensure guarding is firmly in place.

Spearhead HD Head

Running Up Your Machine

1. First ensure the rotor is in the 'off' position and PTO drive is disengaged, then start the tractor.
2. Engage PTO into gear and run machine up to low revs, allowing oil to circulate for about 15 minutes before operating arms.
3. Re-check oil level, - check for oil leaks. All Spearhead machines have been run-up and checked thoroughly. However, hose connections can become loose in transit and these should be checked again before the machine is put to work.
4. Operate the arms through the full amount of travel; check all movements are functioning correctly.
5. Place flail head near ground in a safe position and with tractor engine revs low, select 'start' position for the flail motor.
6. Once the rotor is settled, slowly increase speed of PTO to 540 R.P.M. and run for a further 5 minutes. Slowly reduce speed and then disengage PTO.
7. Check all hoses for kinks, pinching, chafing and leaks.
8. Re-check oil level.



Warning

The rotor will take a long time to stop. Never leave the cab until PTO is disengaged, engine stopped and rotor has stopped spinning.

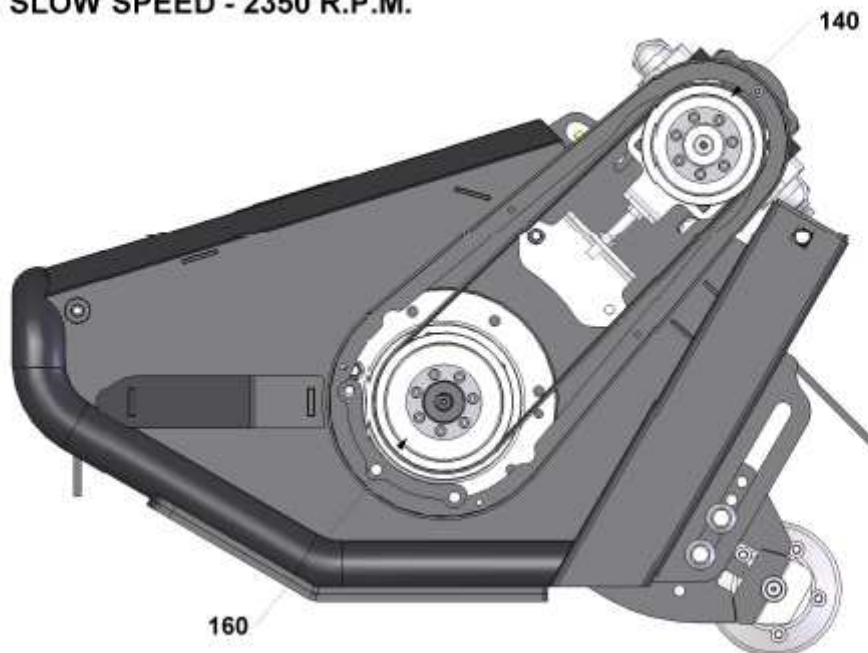
Spearhead HD Head

Belt Drive Setup

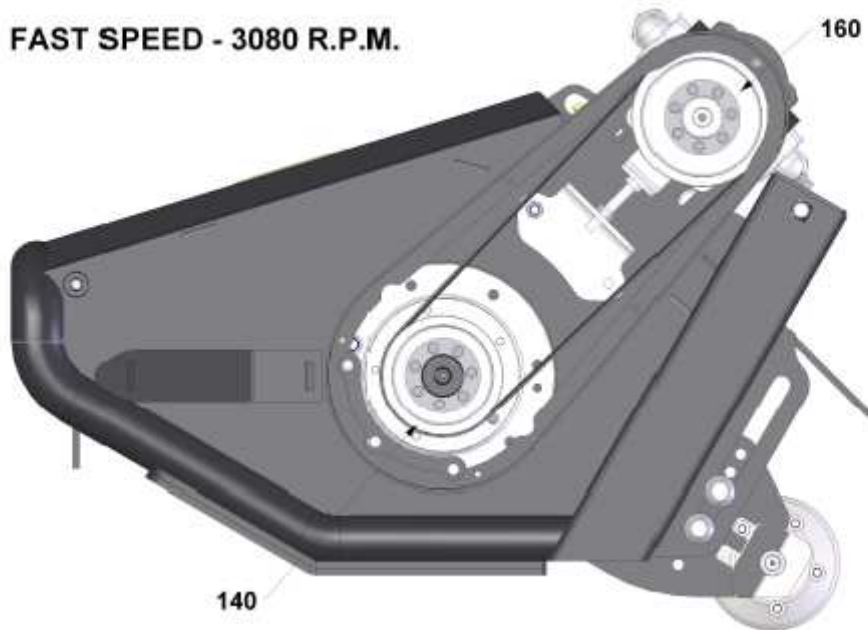
Belt Drive optimises cutting performance with a choice of rotor speeds.

- Standard 2350 rpm to provide extra torque with more power for grass mowing and overgrown hedges (rotor pulley 160 Ø. Motor pulley 140 Ø).
- Faster 3080 rpm to provide extra cutting tip speed for fine finish on annual hedge trimming (rotor pulley Ø140 - motor pulley Ø160).

SLOW SPEED - 2350 R.P.M.



FAST SPEED - 3080 R.P.M.



Spearhead HD Head

Cutting Head Set-Up

Cutting Width

Standard 1.2m is suitable for both grass and hedges, and optimises power to weight ratio.

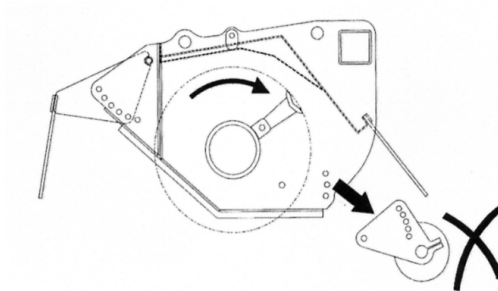
Optional 1.6m is best used for hedge trimming to reduce the number of passes.

However, there is less power per flail, and an increased weight penalty, which is not recommended on long reach machines and especially not for grass cutting.



Warning

Never attempt to operate the machine without the rear roller correctly fitted. The roller performs a key safety function should the rotor shaft pick up wire. It is essential for operator safety that it remains in place. It is also an essential structural part of the cutting head. Removing it will cause premature wear on rotor bearings and will lead to fatigue on the fabrications.

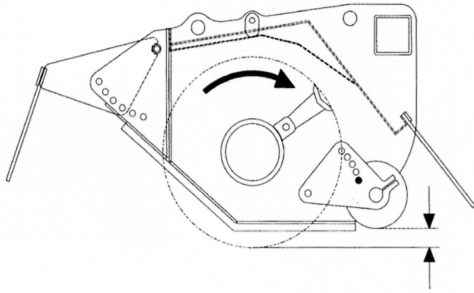


Spearhead HD Head

Hedge Cutting

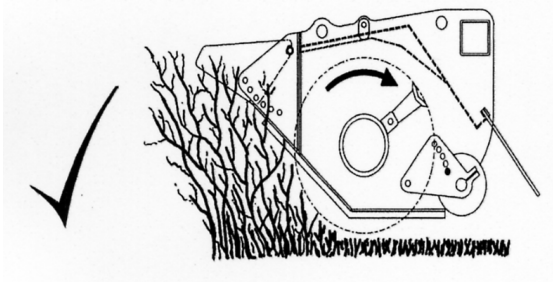
Recommended for hedge cutting

- 1.2m or 1.6m rotor
- T" flails or "Boot" flails
- Rear flap
- Front flap



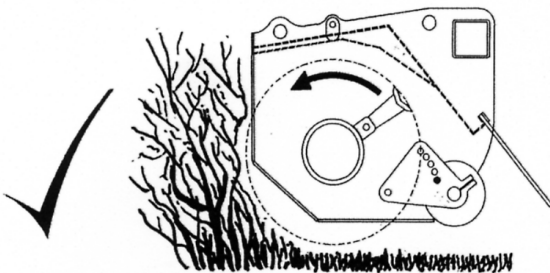
Roller Set-Up

The roller should be raised so that it is clear of the top of the hedge. The adjustable front guard should be set as low as possible without restricting the ability of the hedge to enter the cutting head.



Normal Hedge Cutting

Flail is cutting upwards-reducing flying debris to minimum and leaving a tidy finish. Open adjustable front hood as required.



Rough Cutting

Reverse rotation if necessary. Down cut is not good for the hedge and leaves an untidy finish. Only use this position when rough cutting in heavy growth.

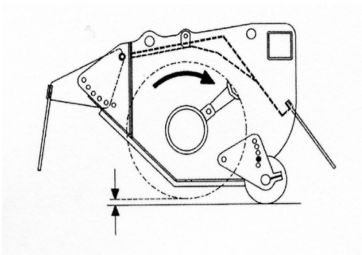
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Grass Cutting

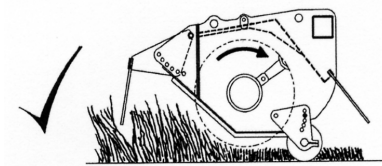
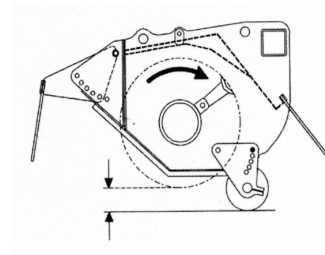
Recommended for grass cutting

- 1.2 rotor
- Cowl wear plate
- "C" flails or "Back to Back" flails
- Optional - "Boot" flails
- Front and rear flap
- Head float and Angle Float
- Auto-pilot

Note: The 1.5m head is not recommended for grass cutting.

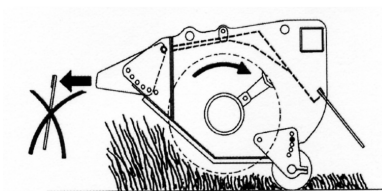
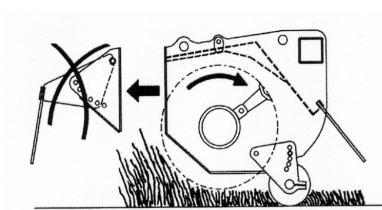


Cutting Height Adjustment



Grass Cutting

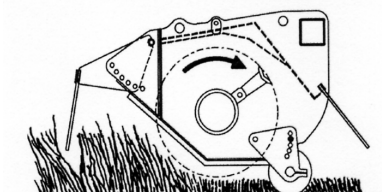
Set rear roller down to control cutting height. Have rubber flap fitted to the front and rear of head and close down the adjustable front hood to reduce flying debris to a minimum.



Do not operate without front and rear flap.

Do not verge mow without a rear roller.

Do not verge mow with rear roller set too high; remember the rear roller is used to control the cutting height.



Spearhead HD Head

Operation Warnings



Warning

Please read all the following operation warnings carefully

- Never drive the tractor with arm out-stretched (except when cutting). When moving from work always first retract arms. Transport with care, metal fatigue is always caused by careless transportation and misuse. If the ground is uneven or bumpy, **slow** down.
- Read this manual and be fully familiar with all operational maintenance and safety procedures.
- Practice in open space without rotor running until familiar with controls. **Take care working the head close to the tractor as it may be possible to strike the tractor**
- Remember one of the clever features of the Twiga range is its ability to operate within a very narrow space, often within the tractor's width. This will mean it is quite possible for the flail head to foul the tractor. When in confined space the main arm will need to be slightly slewed backwards from normal working position. Practice all these positions and be very familiar with your machine before ever attempting work.
- Never operate above the recommended PTO speed of 540 R.P.M. Failure to heed this warning will result in severe damage i.e. reduced belt and pulley life (when fitted); **greatly increased oil temperature**; risk of rotor going out of balance, as well as reduced machine life, and may cause expensive repairs.
- Failure to start and stop the rotor at a low PTO speed or to operate at the correct speed will result very quickly in severe motor and/or pump damage.
- Never attempt to slew arms when fully out stretched - always retract before operating the slew. Be very careful when operating on sloping ground.
- Never attempt to slew arms with the head on the ground, always raise the head before slewing.
- Never attempt to operate the machine while going backwards. It will immediately damage the arms and possibly the flail head. Remember, before selecting reverse gear always lift the flail head out of work and retract the arms towards the tractor.
- Never change/reverse the rotor rotation until it has come to a standstill, serious damage will occur leading to premature pump and/or motor failure.

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Transport to work position

- Remove locking pin from slew post.
- Ensure rotor/motor switch is off.
- Engage PTO low revolutions.
- Lower main lift ram only, until main arm is vertical.
- Extend dipper arm outward.
- Slew arm forward through 90°.
- Position head till horizontal, just above ground.



Warning

Ensure slew locking pin is removed, or machine damage will occur.

Engaging Head Drive

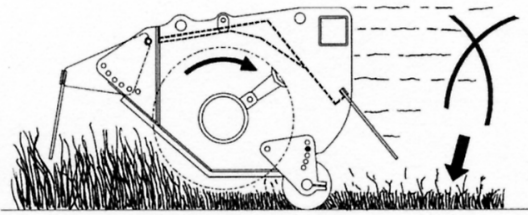
- Select 540 rpm PTO and run with low engine revs.
- With flail head in safe position move rotor control lever (5) to 'ON'.
- **Cold start** - it is important not to run at full speed with cold oil. Run at low speed for at least 15 minutes to allow oil to warm up.
- Afterwards slowly increase engine revs to obtain correct PTO speed, 540rpm.
- Never attempt to start rotor while under load.

Disengage Head Drive

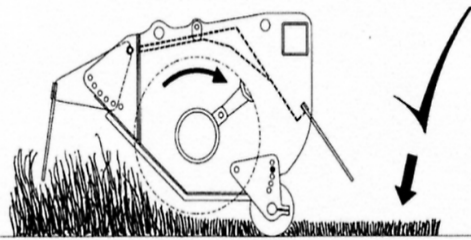
- Slowly decrease engine revolutions to a fast idle.
- Move rotor control lever (5) to 'OFF'.
- Never increase or decrease PTO speed rapidly, this could seriously damage pumps and motor.

Spearhead HD Head

Tractor Forward Speed

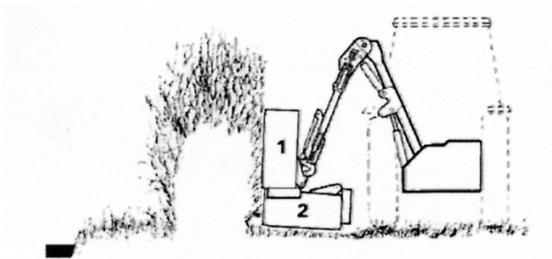


Too high a forward speed will impair the finish, leaving it looking ragged, and cause over frequent use of the break back, which will overheat the oil.

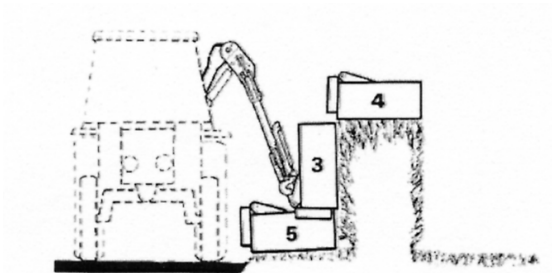


A slower forward speed improves the standard of the finish.

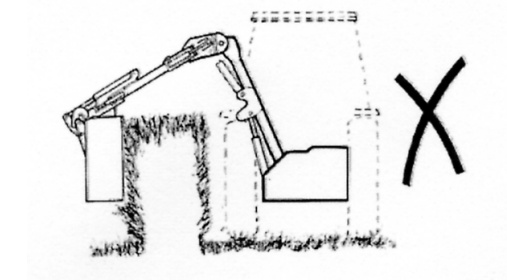
Cutting Sequence



Cut field side and bottom of hedge first.



Cutting hedge from roadside



Warning

Never operate with flail rotor facing towards the tractor. This is potentially dangerous with debris being thrown towards the tractor, and unseen hazards may cause damage as the break-back cannot function.

Spearhead HD Head

Wire Trap

This is located under the front hood. It must not be interfered with in any way

Any wire must be removed immediately.

Lower rotor to ground, select rotor control lever to 'off' and wait until rotor stops spinning. Disengage P.T.O. and stop engine before leaving cab.



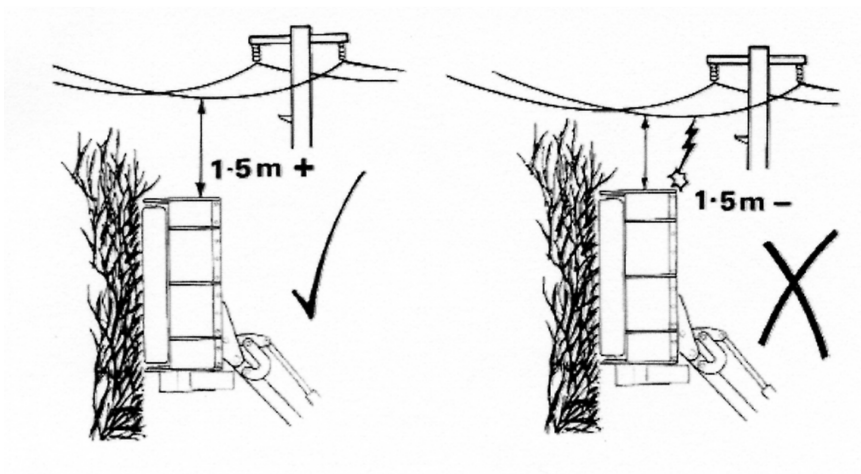
Warning

Wire is extremely dangerous and must be avoided at all times. Inspect work area before commencing, removing all loose wire and clearly marking fixed wire



High Voltage Cables

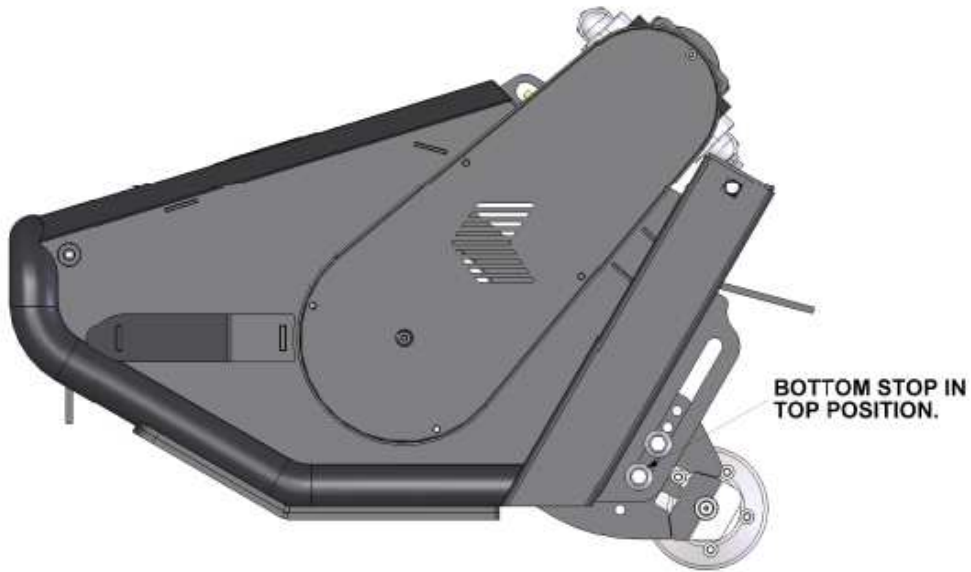
Always be very aware of overhead cables. Between poles wires can be well within reach of the machine. If in any doubt of the danger, consult your local electricity company regarding a safe procedure for work.



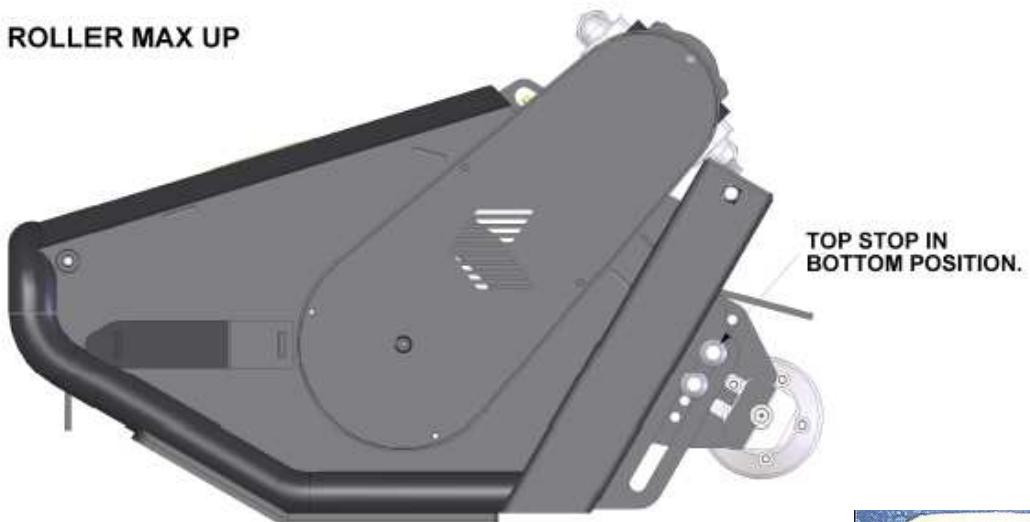
Spearhead HD Head

Hydraulic Rear Roller

ROLLER MAX DOWN



ROLLER MAX UP



The hydraulic rear roller is controlled by a switch on the control panel. The control of the rear roller is either raised or lowered, there is no in-between height control. Height is set as above for either hedge or grass cutting.

Hydraulic rear roller control switch. Positions depend on machine options specified.

Note

To ensure the roller moves freely it's important to keep the roller side plates and head cowl clean and lubricated.



Spearhead HD Head

Service & Maintenance

Greasing/Lubrication Points

All the following grease points need to be greased daily



Head Rotor & Roller

Grease every 8 hours (5-10 pumps)

Greasing/Lubrication

Washing your machine

Grease all your machine and optional parts after each time you wash your machine.

Motor Drive - Belt Drive

Motor drive splines are lubricated via the pulley shaft and should be greased every 40 hours with 5 pumps of grease.

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Service & Maintenance

Hydraulic Hoses

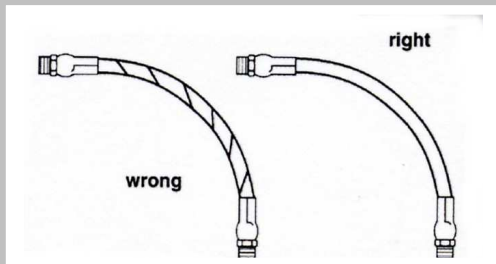
Carefully check condition of all hoses during routine service, paying particular attention to chafed outer casing. Securely wrap with waterproof adhesive tape to stop the metal braid from rusting.

Daily inspect all hydraulic hoses and fittings to be in good order. Any damages or leaks must be rectified immediately, this is part of the daily maintenance and it is your responsibility to help ensure a long reliable working life. Spearhead provide a tool kit to enable hoses to be tightened as part of routine maintenance.

Hoses with damaged metal braid should be replaced.

When replacing hoses, quote number stamped on fitting at one end. The Spearhead hydraulic system works at very high pressure. Use only genuine hoses, a burst hose could be very dangerous.

Always replace hoses in exactly the same way they were removed, and to avoid twisting during fitting use two spanners to slacken and tighten.



Warning

Hose is weakened when installed in twisted position. Also, pressure pulses in twisted hose tend to fatigue wire and loosen fitting connections. Design so that machine motion produces bending rather than torsion.

Always check the yellow protective sleeving is in good order, replacing sleeving is far cheaper than replacing expensive hoses.

Hose warranty is limited to replacement of hoses due to faulty materials or manufacture. Warranty will not be considered on hoses damaged by chaffing, abrasion, cuts or pinching while in work, or to damaged threads due to over tightening.

Recommended torque settings for nut

BSP (size)	Tightening (Nm)	Torque (lbs/ft)
1/4"	24	18
3/8"	33	24
1/2"	44	35
3/4"	84	62
1"	115	85

Recommended torque settings for hose unions in conjunction with bonded seals

BSP (size)	Tightening (Nm)	Torque (lbs/ft)
1/4"	34	25
3/8"	75	55
1/2"	102	75
3/4"	183	135
1"	203	150

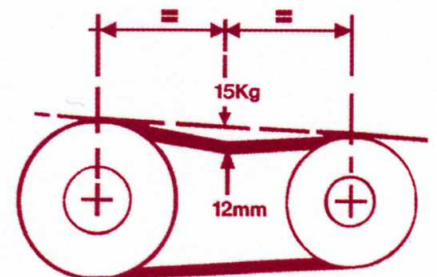
All hose connections are of a "Parker" soft seal type and only need 1/2 a turn more than finger tight to become leak proof. When dismantling, the hose should be manually flexed to relieve any pressure, and the retaining nut slackened before complete disassembly.

Spearhead HD Head

Service & Maintenance

Routine Checks

- Grease all bearings daily.
- Check there is no wrapping of string, plastic, grass or other debris on rotor shaft and rear roller bearings.
- Check the condition of flails and ensure all retaining bolts are tight. When flails are replaced care must be taken to maintain balance of rotor shaft, do not change to a different type.
- Flail retaining bolt and nut torque setting is 365Nm.
- Flail head is supplied centre mounted to get best travel on crowd ram.
- Never operate with any flails missing. This will cause severe vibration and lead to rapid bearing wear and quickly cause the head to crack.
- 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 and extremely dangerous. Do not take risks with the cutting flails, if in doubt replace.
- When replacing flails always replace bolts, nuts and bushes with new.
- Regularly check that all rotor bearing bolts and hydraulic motor retaining bolts are tight.
- With a new machine or if new bolts have been fitted, particular attention needs to be applied to regular tightening of the new bolts. (1hr - 4hrs then daily).
- Check the condition of drive belt, ensuring they are aligned and properly tensioned to avoid any unnecessary belt wear. Remove guard for access to adjuster when tensioning the belt, and ensure it is running in line after adjustment.



Warning

When end mounted, head may foul on machine.

Do not slide head mounting bracket past centre stops to extreme end on 1.6 metre head.

Spearhead HD Head

Service & Maintenance



Warning

Before you attempt to do any repair, service, maintenance or adjustment on your machine, ensure the engine has stopped and the key is removed. PTO is disengaged, handbrake secure, and the head is firmly on the ground.

Storage

Before storing away, thoroughly wash the machine, 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, be sure to remove all detergents to avoid any discolouring or damage to paint. Grease all grease points until fresh grease shows. Slacken rotor drive belts (where fitted).

It is important where possible to store undercover to protect against rain and sunlight. Always ensure a firm level surface.

Remember: regular maintenance will greatly increase the life of the machine.

Spearhead HD Head

Service & Maintenance

Torque Settings

The Torque figures given below are recommended maximum settings only.

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
M14	10.9	Flail bolts	200
M16		Flail bolts	
M16	8.8	Head bracket bolts	280

Regular Service Chart

Service Hours	Service points	Grease	Check
8 hrs	Bolts are fully tightened		X
8 hrs	Condition of flails		X
8 hrs	Condition of hoses especially for chafing		X
8 hrs	Flail bolts are fully tightened		X
8 hrs	Flail head retaining bolts are fully tightened		X
8 hrs	Inspect leaks from fittings and pipes		X
8 hrs	Rotor bearing bolts are fully tightened		X
8 hrs	Rotor Bearings	X	
8 hrs	Motor bolts are fully tightened		X
8 hrs	Rear roller	X	
8 hrs	Maintain correct belt tension on head (only with belt drive heads)		X
50 hrs	Motor spline Drive	X	

Spearhead HD Head

Trouble Shooting

Problem	Cause	Solution
Excessive belt wear	Belt and pulley condition	Replace if necessary
	Pulley alignment	Check alignment
	Incorrect belt tension	Tension belts to spec
Cut Quality	Overloading of implement	Reduce forward speed or increase height of cut
	Flails worn	Replace worn flails
	Rotor speed/direction	Check tractor PTO speed
Rotor bearing failure	Crop condition	Look for suitable conditions
	Rotor out of balance	See rotor vibration
	Wire/string in bearing	Remove wire/string
Rotor vibration	Lack of maintenance	Grease bearings to schedule
	Water in bearing	Expel water with grease
	Flails broken or missing	Replace flails
Oil overheating	Bearings worn or damaged	Replace bearings
	Rotor shaft bent	Re-balance/replace rotor
	Build up of debris	Remove debris
Hydraulics not responding	Incorrect speed	Check rotor R.P.M.
	Oil level incorrect	Fill tank to correct level
	Oil grade incorrect	Drain and refill tank with correct grade oil
	PTO speed too fast	Ensure the tractor's PTO speed matches implement
	Ambient temperature too high	Reduce work rate / install oil cooler
Drive line broken	Machine overloaded	Reduce forward speed or increase height of cut
	Oil level low	Fill oil to correct level
	Oil pump suction filter blocked	Replace filter element
	Oil leak in pressure line	Check machine of leaks
	Drive line broken	Check pump is rotating

Spearhead HD Head

Pump & Motor Failure

There are many reasons for pump and motor failure, cavitations (suction of air), peak pressure, contamination. These can be avoided by the following:

- Never run out of oil
- Never run a cold machine straight up to speed, ensure the engine idle speed before engage/disengage the head motor.
- Never increase or decrease engine speed quickly
- Regularly check that suction hose and pump fittings are tight.
- Never stop or start the rotor at 540 R.P.M.
- Never cause sudden movements to the arms via your controls or bumps in the ground as pressure spikes will be transmitted back to the pump, resulting in failure.
- Avoid striking the rotor on obstacles i.e., road gullies as this causes pressure spikes.
- Never transport the machine with the PTO in gear.
- Never select 1000 speed gear for economy start up, speed is too high.
- Never operate above recommended PTO speed 540r.p.m. and risk overheating.

Remember: pump and motor warranty is limited to replacement due to faulty materials or manufacture. Cavitations, contamination and peak pressures are easily detected on inspection, warranty will not be considered if failure is due to misuse.

Spearhead HD Head

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 HD Head

Extended Warranty - UK Only

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 Authorised 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 travelling 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.

**HD Flail Head
1.2M & 1.6M**

Parts Book

Edition 1.1 – August 2011

Spearhead HD Head

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Spearhead HD Head

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

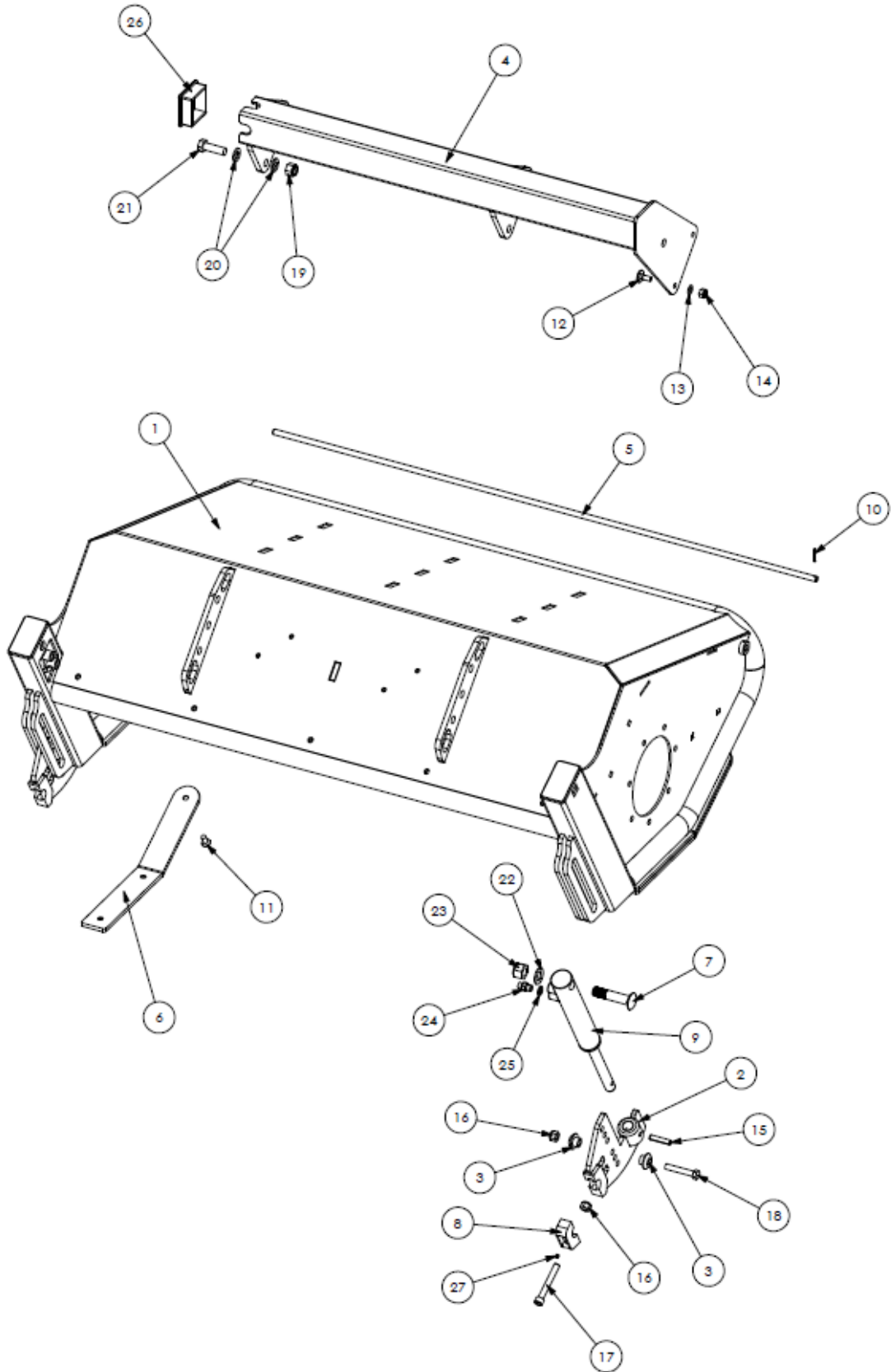
The information contained in this manual is correct at the time of publication. However, in the course of constant development, changes in specification are inevitable. Should you find the information given in this book different to the machine it relates to, please contact the "After Sales Department"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

Key:

(LH)	=	Left hand
(RH)	=	Right hand
(LP)	=	Low pressure hydraulics
(HP)	=	High pressure hydraulics
(RR)	=	Rotor reverse

Spearhead HD Head

1.2M HEAD SHELL - S180018.20
1.6M HEAD SHELL - S180018.40



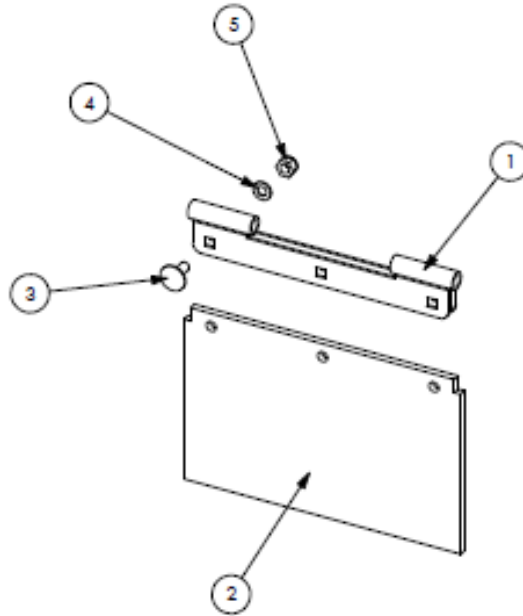
Spearhead HD Head

I.2M HEAD SHELL - S180018.20
I.6M HEAD SHELL - S180018.40

REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180730	1	-	COWL ASSEMBLY - 1.2M
1	180810	-	1	COWL ASSEMBLY - 1.6M
2	180731	2	2	ROLLER BRACKET
3	180737	8	8	HYD ROLLER STOP WASHER
4	180796	1	-	MOUNT RAIL - 1.2M
4	180811	-	1	MOUNT RAIL - 1.6M
5	180799	1	-	HINGE BAR - 1.2M
5	180816	-	1	HINGE BAR - 1.6M
6	180800	2	2	SKID
7	180803	2	2	RAM BOLT
8	040000D	2	2	ROLLER CLAMP
9	3580682	2	2	RAM
10	T6351	1	1	M4 X 30 ROLL PIN
11	2770554	6	6	M10 X 25 SKT CSK SCREW
12	2770255	2	2	M10 X 25 COACH BOLT
13	2770434	2	2	M10 FLAT WASHER
14	2770412	2	2	M10 NYLOCK
15	30.074.61	2	2	M10 X 50 ROLL PIN
16	2770417	8	8	M12 NYLOCK
17	2770347	4	4	M12 X 80 SKT CAP BOLT
18	05.291.28	4	4	M12 X 65 BOLT
19	2770447	6	6	M16 NYLOCK NUT
20	2770454	12	12	M16 FLAT WASHER
21	05.291.36	6	6	M16 X 55 BOLT
22	2770517	2	2	M20 FLAT WASHER
23	2770409	2	2	M20 NYLOCK
24	3360080	4	4	1/4" M-M
25	3260070	4	4	1/4" BONDED SEAL
26	8777516	1	1	PLASTIC CAP
27	05.388.03	2	2	M6 X 6 GRUB SCREW

Spearhead HD Head

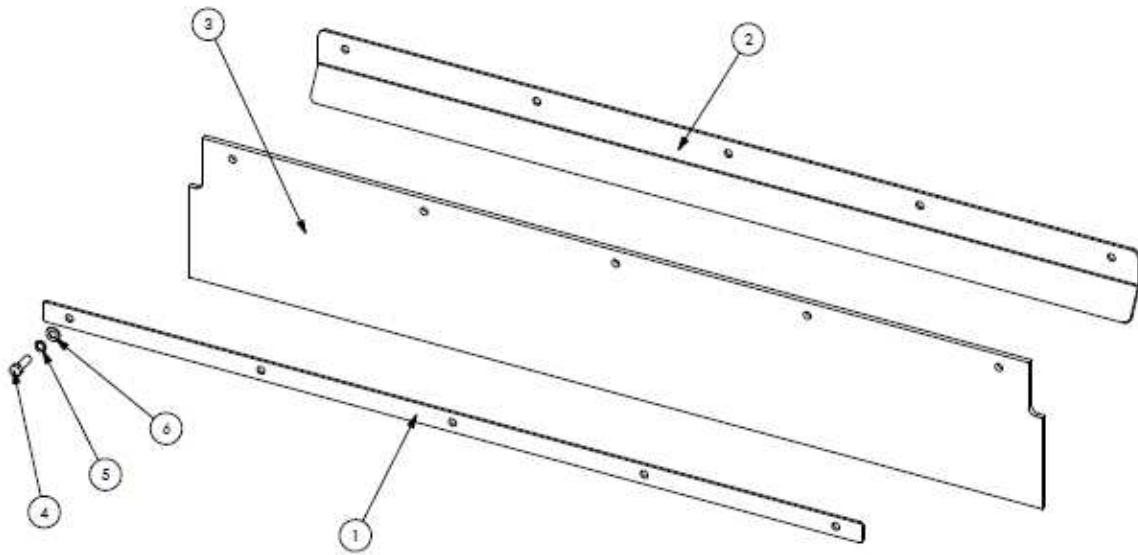
1.2M FRONT FLAP - S180018.2I
 1.6M FRONT FLAP - S180018.4I



REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180806	1	-	MOUNT BRACKET - 1.2M
1	180812	-	1	MOUNT BRACKET - 1.6M
2	8400225	1	-	RUBBER FLAP - 1.2M
2	8400226	-	1	RUBBER FLAP - 1.6M
3	04.435.01	3	3	M10 X 30 COACH BOLT
4	2770434	3	3	M10 FLAT WASHER
5	2770412	3	3	M10 NYLOCK

Spearhead HD Head

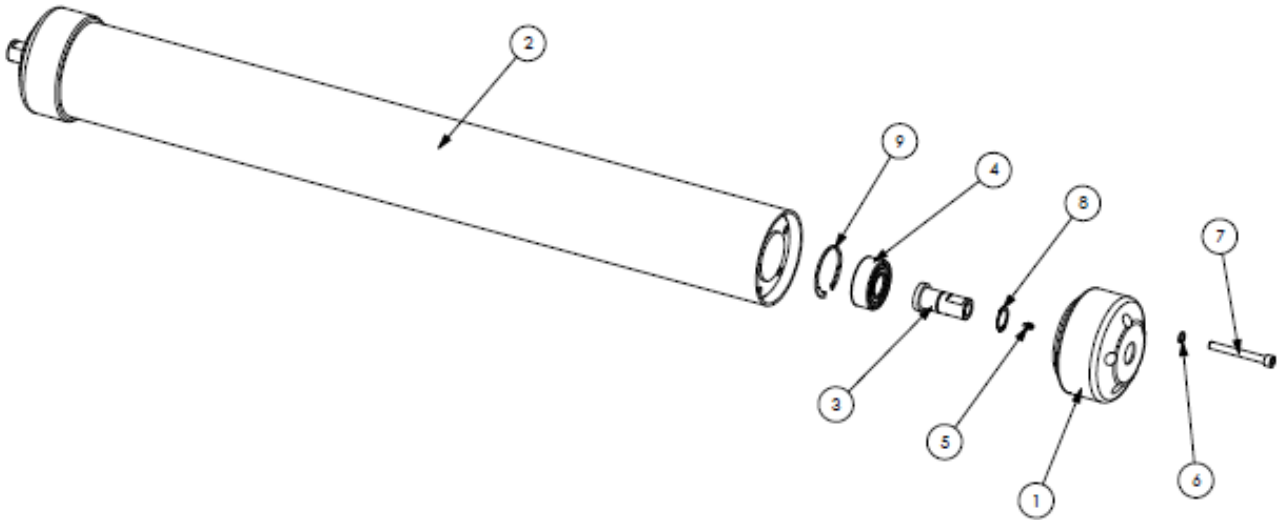
1.2M REAR FLAP – S180018.22
 1.6M REAR FLAP – S180018.42



REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180801	1	-	RETAINING STRIP - 1.2M
1	180813	-	1	RETAINING STRIP - 1.6M
2	180805	1	-	KICK UP STRIP - 1.2M
2	180814	-	1	KICK UP STRIP - 1.6M
3	8400222	1	-	RUBBER FLAP - 1.2M
3	8400227	-	1	RUBBER FLAP - 1.6M
4	2770421	5	5	M10 X 30 BOLT
5	2770469	5	5	M10 SPRING WASHER
6	2770434	5	5	M10 FLAT WASHER

Spearhead HD Head

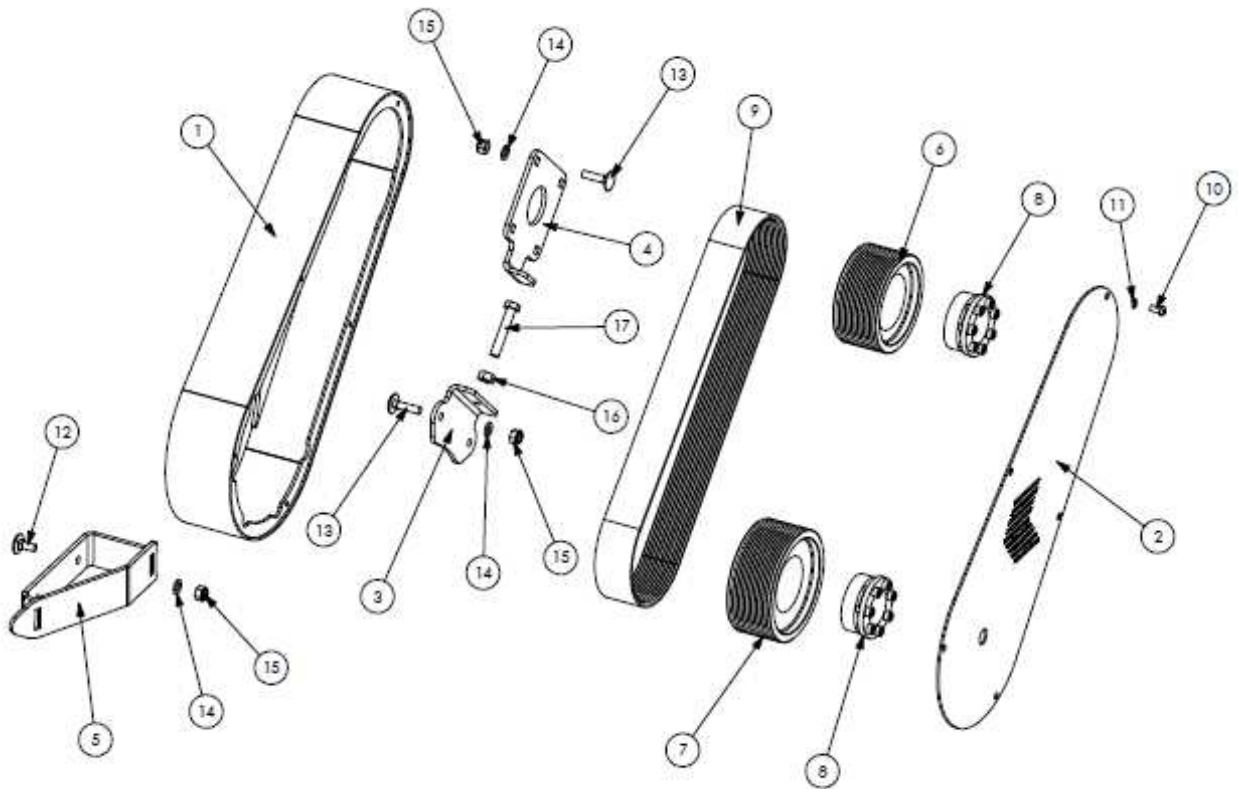
1.2M REAR ROLLER – S180018.23
 1.6M REAR ROLLER – S180018.43



REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180735	2	2	END CAP
2	180736	1	-	ROLLER TUBE - 1.2M
2	180815	-	1	ROLLER TUBE - 1.6M
3	180785	2	2	STUB SHAFT
4	4771608	2	2	BEARING
5	2770467	2	2	M6 ST GREASE NIPPLE
6	2770469	10	10	M10 SPRING WASHER
7	2770482	10	10	M10 X 90 SKT CAP BOLT
8	2777519	2	2	CIRCLIP
9	2771108	2	2	CIRCLIP

Spearhead HD Head

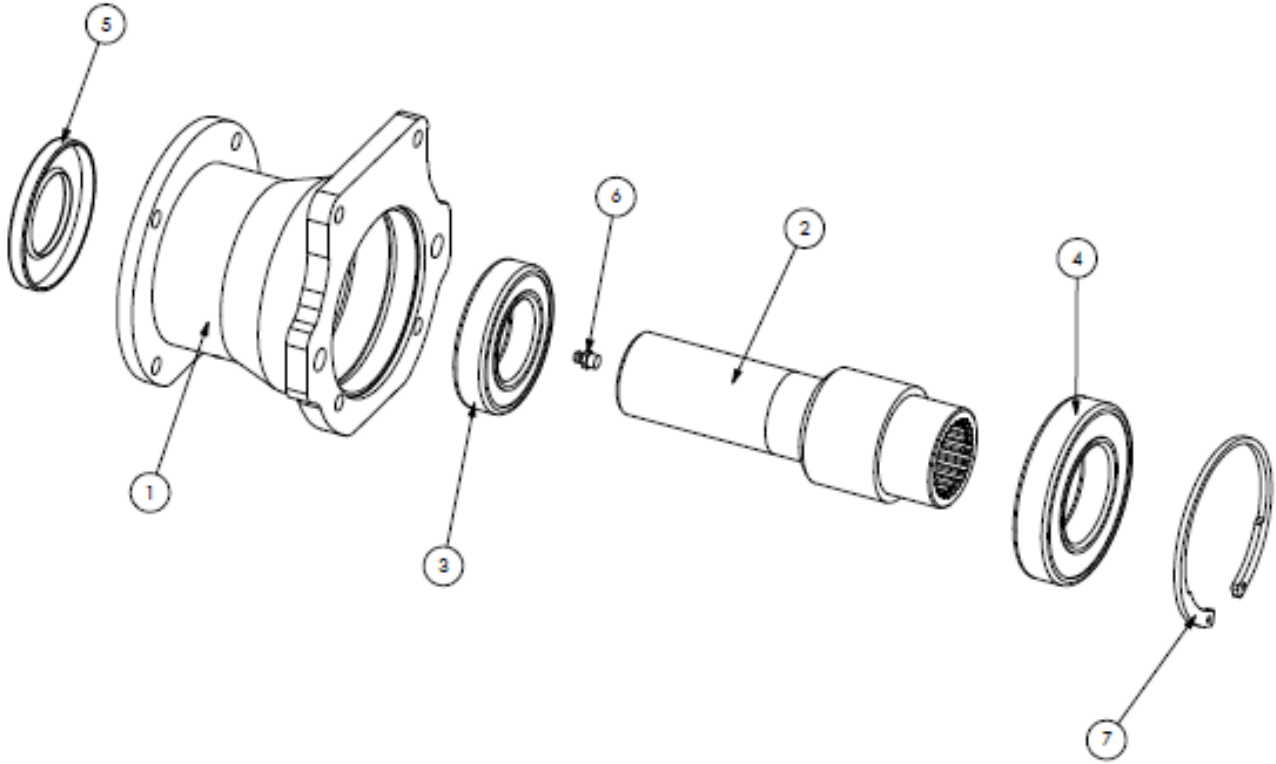
BELT DRIVE – S180018.24



REF NO.	PART NO.	QTY.	DESCRIPTION
1	180790	1	BELT GUARD
2	180791	1	BELT GUARD COVER
3	180794	1	BELT TENSIONER BRACKET
4	180795	1	PULLEY SUPPORT CLAMP PLATE
5	180798	1	SHIELD
6	4770946	1	140 PULLEY
7	4770948	1	160 PULLEY
8	4770922	2	50mm SHAFT CLAMPING ELEMENT
9	4770971	1	BELT
10	2770370	5	M8 X 15 SKT BUTTON BOLT
11	2770433	5	M8 SPRING WASHER
12	04.435.01	2	M10 X 30 COACH BOLT
13	9293085	6	M10 X 40 COACH BOLT
14	2770434	8	M10 FLAT WASHER
15	2770412	8	M10 NYLOCK NUT
16	2770536	1	M12 FULL NUT
17	2770382	1	M12 X 70 BOLT

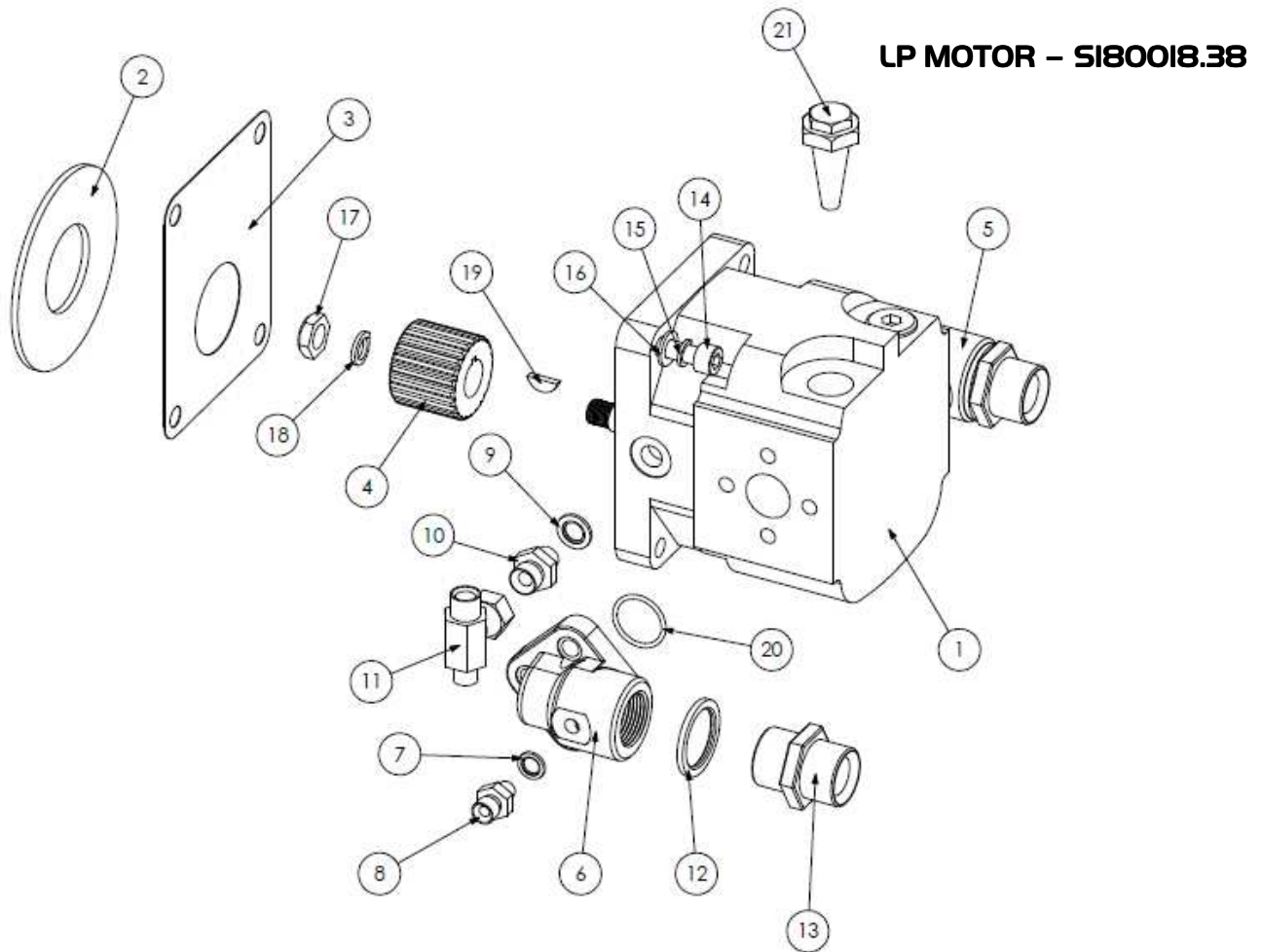
Spearhead HD Head

PULLEY SUPPORT – S180018.25



REF NO.	PART NO.	QTY.	DESCRIPTION
1	180792	1	BEARING HOUSING
2	180793	1	STUB SHAFT
3	4771607	1	BEARING 50X90
4	4771611	1	BEARING 60X110
5	3570678	1	SEAL 50X90X10
6	2770468	1	M6 GREASE NIPPLE
7	05.959.25	1	CIRCLIP

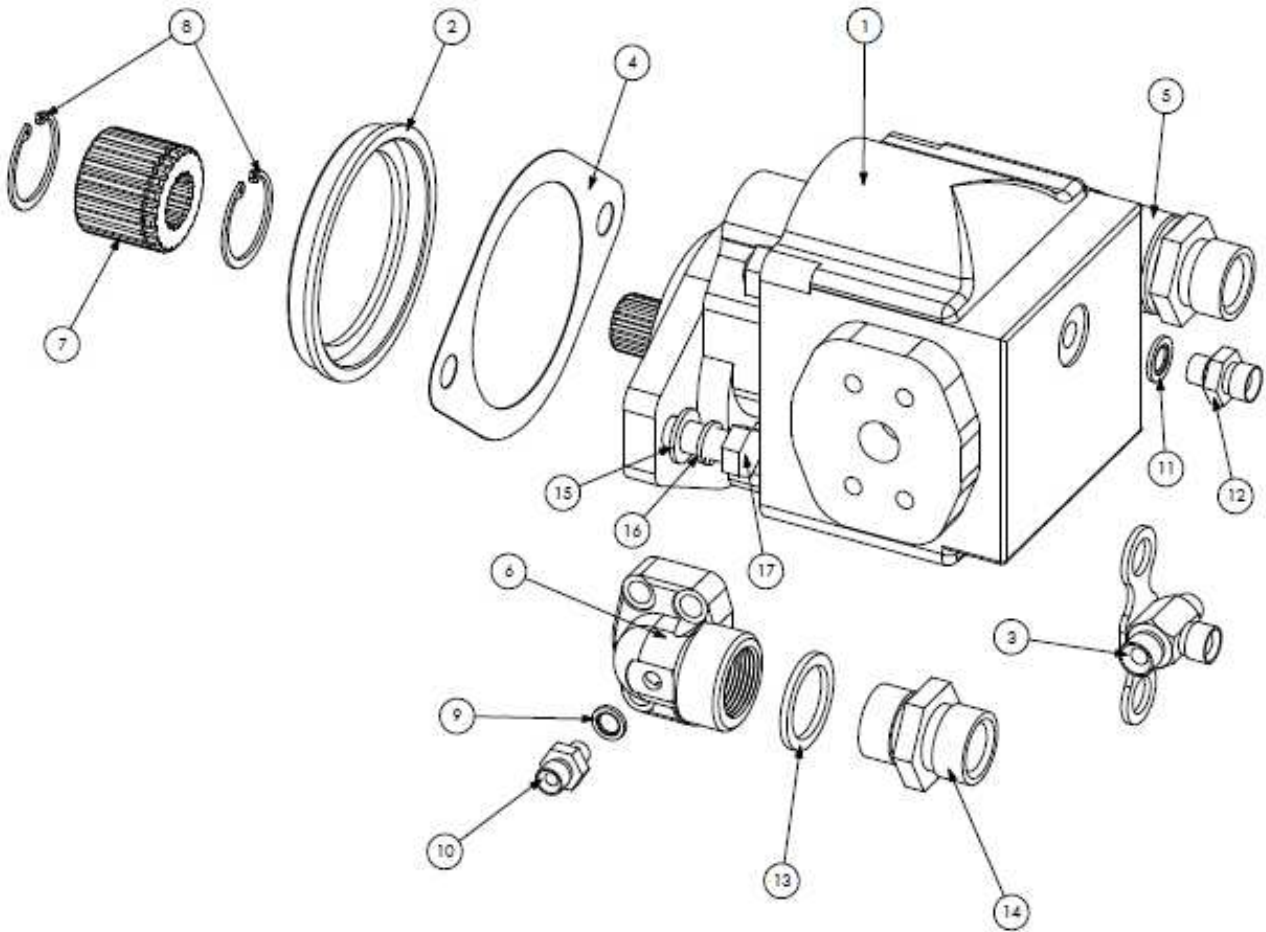
Spearhead HD Head



REF NO.	PART NO.	QTY.	DESCRIPTION
1	3151034	1	MOTOR - 34cc
2	180797	1	SPIGGOT WASHER
3	3151019	1	GASKET
4	3151028	1	GEAR
5	3151008	1	PORT ELBOW
6	3151098	1	PORT ELBOW - 1/8" PORT
7	3260069	1	1/8" BONDED SEAL
8	3250150	1	1/8"-1/4" M-M
9	3260070	1	1/4" BONDED SEAL
10	3360083	1	1/4"-3/8" M-M
11	04.056.04	1	3/8"-1/4"-3/8" TEE
12	3260074	2	1" BONDED SEAL
13	3360092	2	1" M-M
14	30.072.27	4	M10 X 35 SKT CAP SCREW
15	2770469	4	M10 SPRING WASHER
16	2770434	4	M10 FLAT WASHER
17	2770350	0	M14 FINE HALF NUT
18	2770457	0	M14 SPRING WASHER
19	4772226	0	WOODRUFF KEY
20	3261001	0	O RING
21	3610049	1	ANTI CAVITATION VALVE

Spearhead HD Head

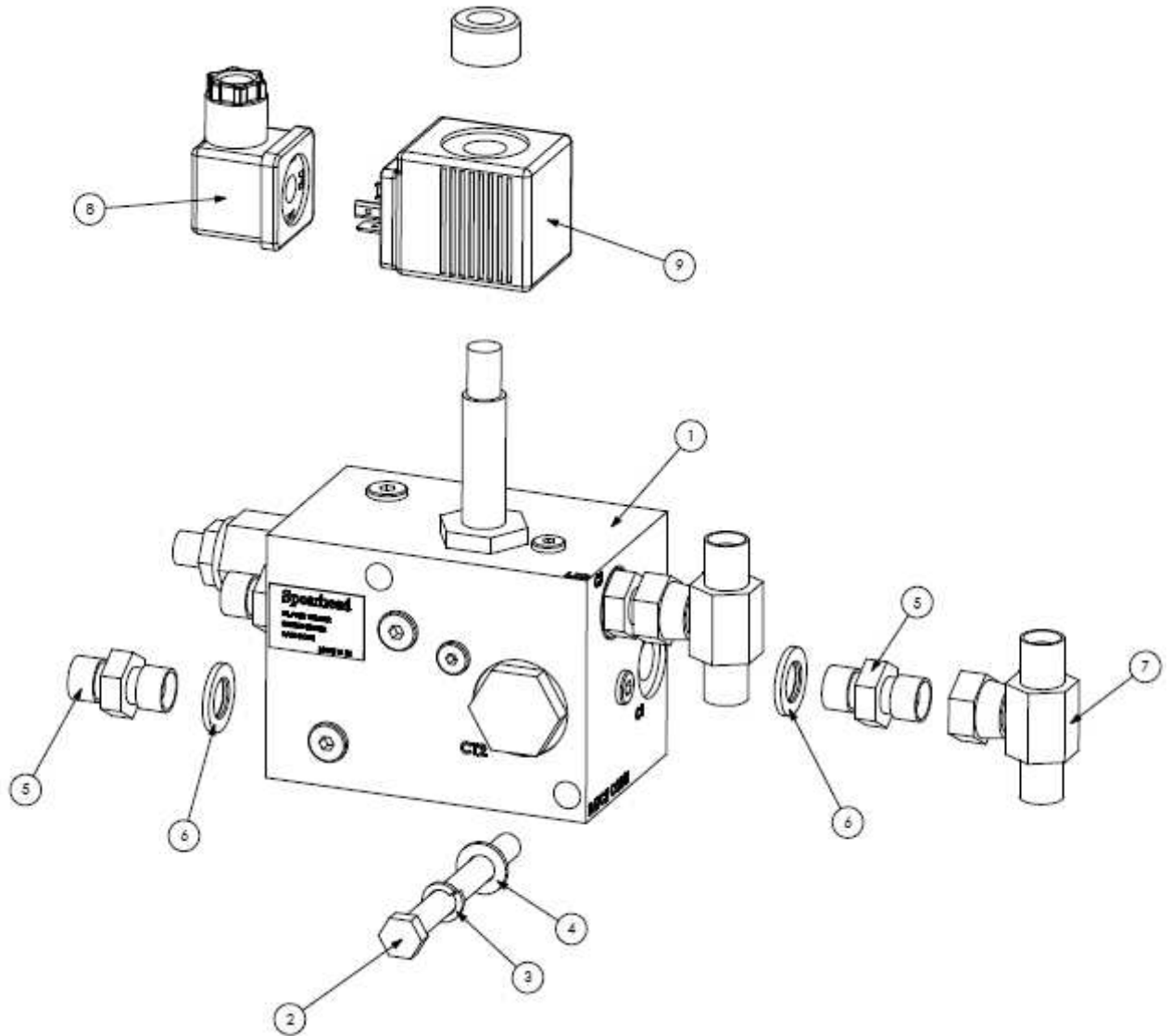
HP MOTOR – S180018.27



REF NO.	PART NO.	QTY.	DESCRIPTION
1	3151091	1	MOTOR
2	180804	1	SPIGOT WASHER
3	180807	1	RETURNS TEE
4	3151032G	1	GASKET
5	3151097	1	3/4" PORT ELBOW
6	3151100	1	3/4" PORT ELBOW WITH 1/8" PORT
7	3151083	1	SPLINED BUSH
8	2777522	2	CIRCLIP
9	3260069	1	1/8" BONDED SEAL
10	3250150	1	1/8"-1/4" M-M
11	3260070	1	1/4" BONDED SEAL
12	3360083	1	1/4"-3/8" M-M
13	3260074	2	1" BONDED SEAL
14	3360092	2	1" M-M
15	2770455	2	M14 FLAT WASHER
16	2770457	2	M14 SPRING WASHER
17	2770453	2	M14 X 35 BOLT

Spearhead HD Head

HYDRAULIC ROLLER VALVE – S180018.28

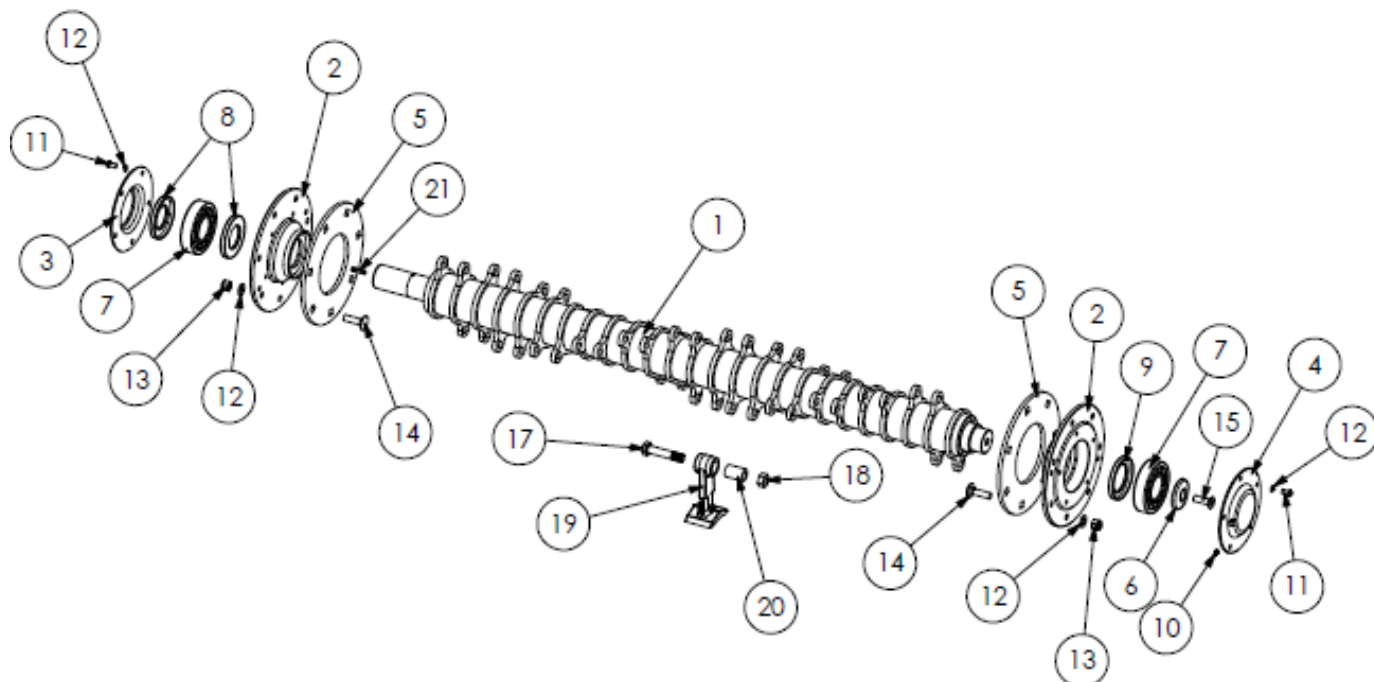


REF NO.	PART NO.	QTY.	DESCRIPTION
1	3610082	1	VALVE ASSEMBLY
2	2772289	2	M8 X 80 BOLT
3	2770433	2	M8 SPRING WASHER
4	2770432	2	M8 FLAT WASHER
5	3360080	4	1/4" M-M
6	3260070	4	1/4" BONDED SEAL
7	3460101	2	1/4" TEE
8	3610048	0	DIN CONNECTOR
9	3610030A	0	COIL

Spearhead HD Head

1.2M T FLAIL ROTOR – S180018.29

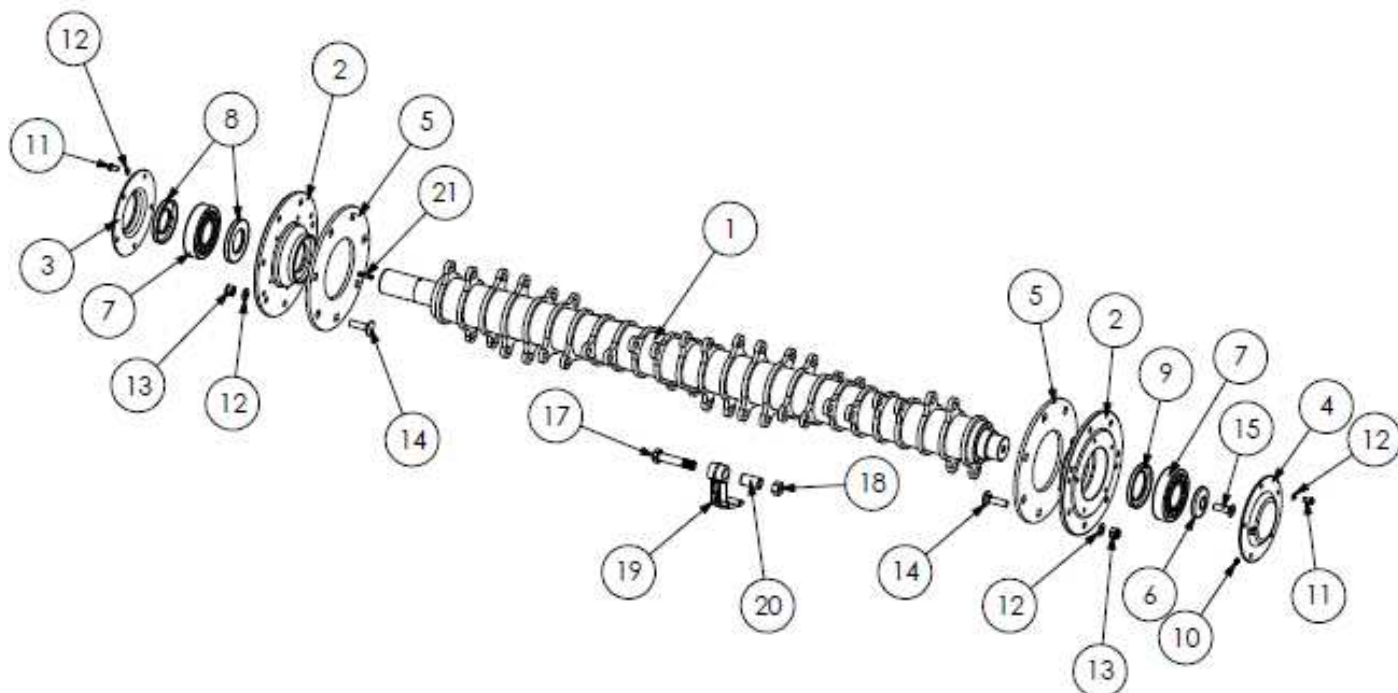
1.6M T FLAIL ROTOR – S180018.44



REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180738	1	-	T FLAIL BELT DRIVE ROTOR - 1.2M
1	180744	-	1	T FLAIL BELT DRIVE ROTOR - 1.6M
2	180786	2	2	BEARING HOUSING
3	180787	1	1	DRIVE END CAP
4	180788	1	1	NON DRIVE END CAP
5	180789	2	2	CLAMP PLATE
6	1777208	1	1	RETAINING WASHER - 65mm
7	4771610	2	2	BEARING
8	3570678	2	2	SEAL 50mm
9	3570679	1	1	SEAL 60mm
10	2770467	1	1	M6 ST GREASE NIPPLE
11	2770370	10	10	M8 X 15 SKT BUTTON BOLT
12	2770433	10	10	M8 SPRING WASHER
13	2770436	14	14	M12 FLAT WASHER
14	2770417	14	14	M12 NYLOCK
15	05.839.35	11	11	M12 X 40 COACH BOLT
15	2770440	3	3	M12 X 50 COACH BOLT
16	2770398	1	1	M12 X 40 SKT CSK SCREW
17	T7943	24	32	M16 X 80 FLAIL BOLT
18	05.968.04	24	32	M16 V LOCK NUT
19	1840093C	24	32	T FLAIL
20	184.106	24	32	T FLAIL BUSH
21	2770639	1	1	M6 EXTENDED GREASE NIPPLE

Spearhead HD Head

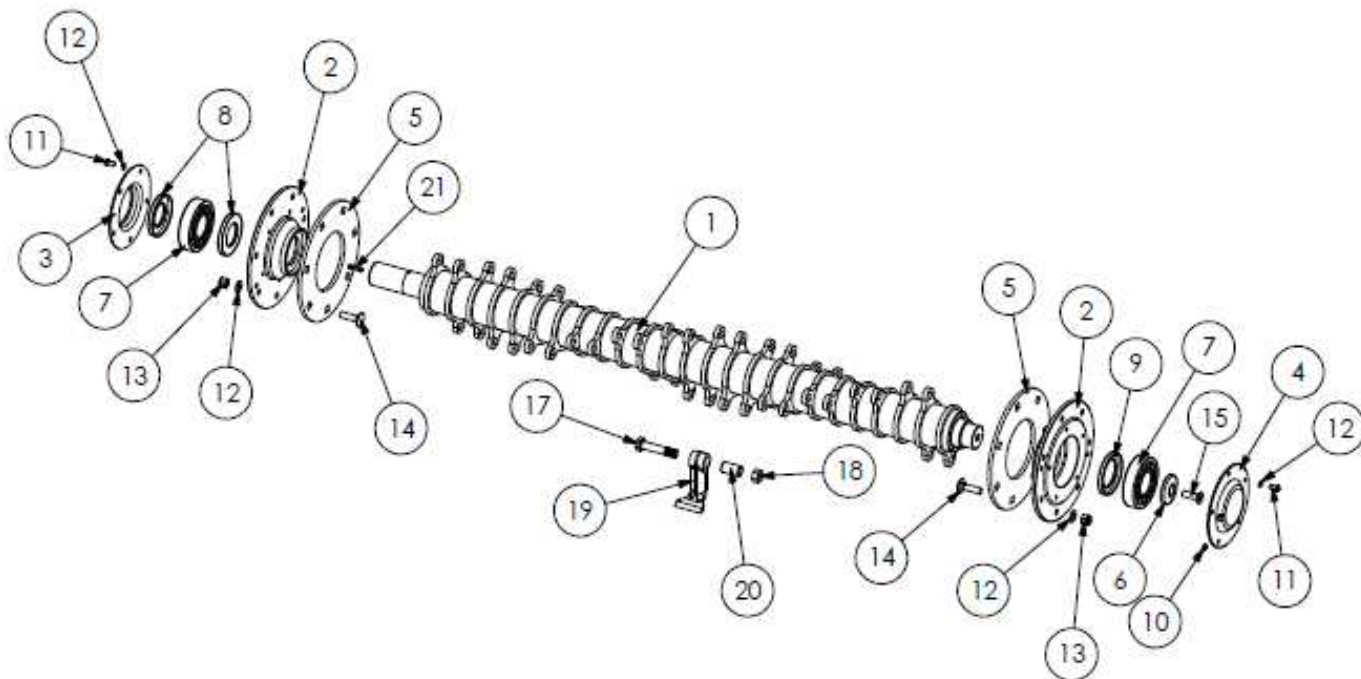
1.2M LH C FLAIL ROTOR – S180018.30
1.6M LH C FLAIL ROTOR – S180018.45



REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180739	1	-	LH C FLAIL BELT DRIVE ROTOR - 1.2M
1	180745	-	1	LH C FLAIL BELT DRIVE ROTOR - 1.6M
2	180786	2	2	BEARING HOUSING
3	180787	1	1	DRIVE END CAP
4	180788	1	1	NON DRIVE END CAP
5	180789	2	2	CLAMP PLATE
6	1777208	1	1	RETAINING WASHER - 65mm
7	4771610	2	2	BEARING
8	3570678	2	2	SEAL 50mm
9	3570679	1	1	SEAL 60mm
10	2770467	1	1	M6 ST GREASE NIPPLE
11	2770370	10	10	M8 X 15 SKT BUTTON BOLT
12	2770433	10	10	M8 SPRING WASHER
13	2770436	14	14	M12 FLAT WASHER
14	2770417	14	14	M12 NYLOCK
15	05.839.35	11	11	M12 X 40 COACH BOLT
15	2770440	3	3	M12 X 50 COACH BOLT
16	2770398	1	1	M12 X 40 SKT CSK SCREW
17	T7943	24	32	M16 X 80 FLAIL BOLT
18	05.968.04	24	32	M16 V LOCK NUT
19	7198390	24	32	C FLAIL
20	180808	24	32	C FLAIL BUSH
21	2770639	1	1	M6 EXTENDED GREASE NIPPLE

Spearhead HD Head

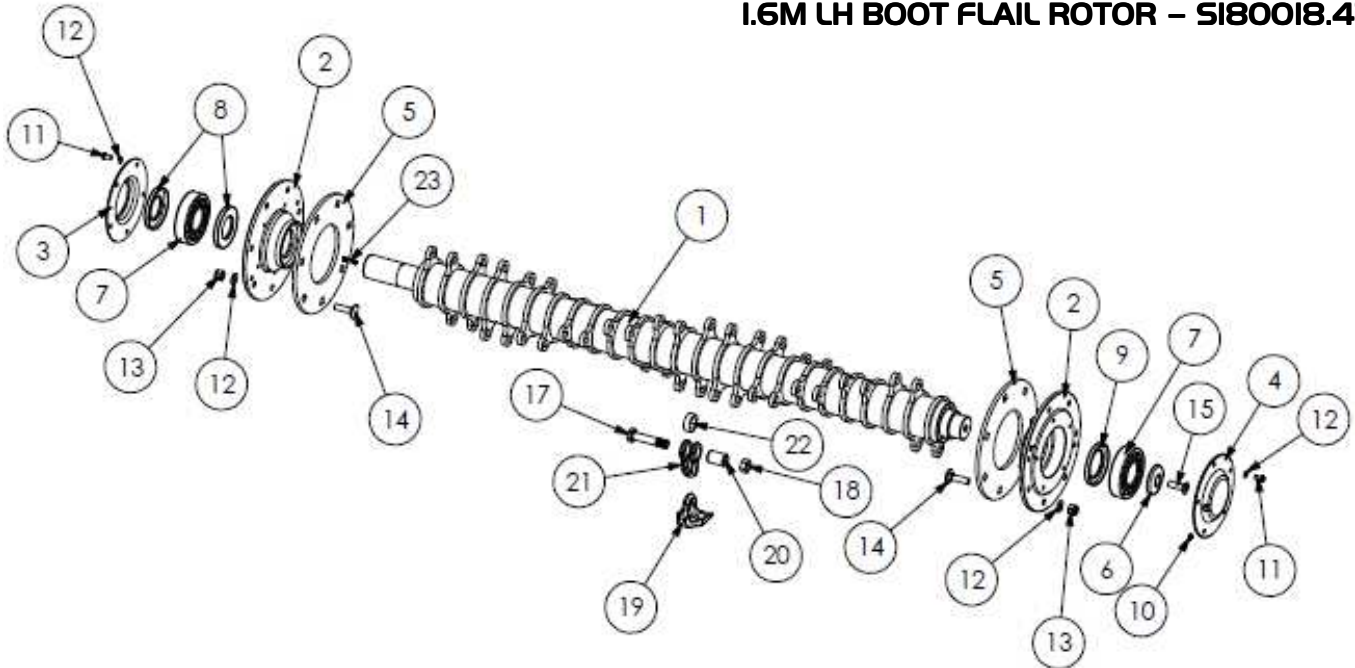
1.2M RH C FLAIL ROTOR - S180018.31
 1.6M RH C FLAIL ROTOR - S180018.46



REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180740	1	-	RH C FLAIL BELT DRIVE ROTOR - 1.2M
1	180746	-	1	RH C FLAIL BELT DRIVE ROTOR - 1.6M
2	180786	2	2	BEARING HOUSING
3	180787	1	1	DRIVE END CAP
4	180788	1	1	NON DRIVE END CAP
5	180789	2	2	CLAMP PLATE
6	1777208	1	1	RETAINING WASHER - 65mm
7	4771610	2	2	BEARING
8	3570678	2	2	SEAL 50mm
9	3570679	1	1	SEAL 60mm
10	2770467	1	1	M6 ST GREASE NIPPLE
11	2770370	10	10	M8 X 15 SKT BUTTON BOLT
12	2770433	10	10	M8 SPRING WASHER
13	2770436	14	14	M12 FLAT WASHER
14	2770417	14	14	M12 NYLOCK
15	05.839.35	11	11	M12 X 40 COACH BOLT
15	2770440	3	3	M12 X 50 COACH BOLT
16	2770398	1	1	M12 X 40 SKT CSK SCREW
17	T7943	24	32	M16 X 80 FLAIL BOLT
18	05.968.04	24	32	M16 V LOCK NUT
19	7198390	24	32	C FLAIL
20	180808	24	32	C FLAIL BUSH
21	2770639	1	1	M6 EXTENDED GREASE NIPPLE

Spearhead HD Head

1.2M LH BOOT FLAIL ROTOR - S180018.32
1.6M LH BOOT FLAIL ROTOR - S180018.47

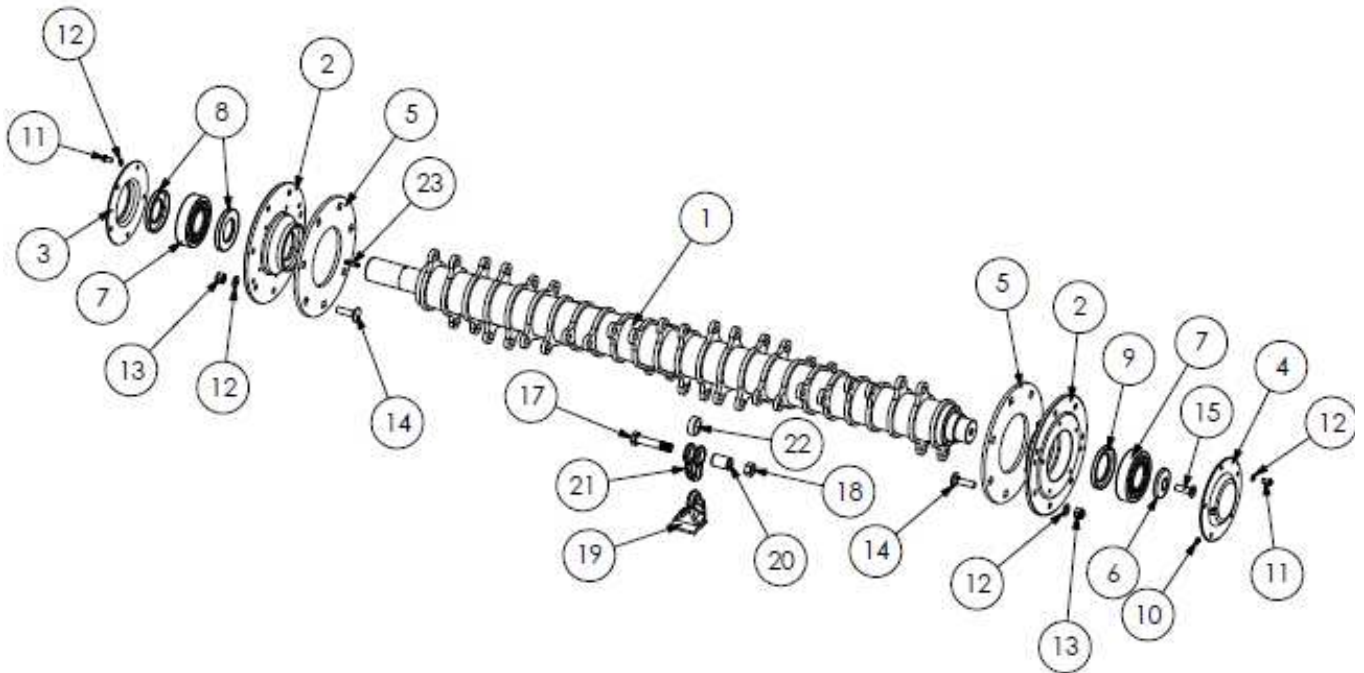


REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180741	1	-	LH BOOT FLAIL BELT DRIVE ROTOR - 1.2M
1	180747	-	1	LH BOOT FLAIL BELT DRIVE ROTOR - 1.6M
2	180786	2	2	BEARING HOUSING
3	180787	1	1	DRIVE END CAP
4	180788	1	1	NON DRIVE END CAP
5	180789	2	2	CLAMP PLATE
6	1777208	1	1	RETAINING WASHER - 65mm
7	4771610	2	2	BEARING
8	3570678	2	2	SEAL 50mm
9	3570679	1	1	SEAL 60mm
10	2770467	1	1	M6 ST GREASE NIPPLE
11	2770370	10	10	M8 X 15 SKT BUTTON BOLT
12	2770433	10	10	M8 SPRING WASHER
13	2770436	14	14	M12 FLAT WASHER
14	2770417	14	14	M12 NYLOCK
15	2770440	11	11	M12 X 40 COACH BOLT
15	05.839.36	3	3	M12 X 50 COACH BOLT
16	2770398	1	1	M12 X 40 SKT CSK SCREW
17	T7943	24	32	M16 X 80 FLAIL BOLT
18	05.968.04	24	32	M16 V LOCK NUT
19	09.902.01	24	32	BOOT FLAIL
20	7314223	24	32	BOOT FLAIL BUSH
21	7190175	24	32	SHACKLE
22	7190172	24	32	SPACER
23	2770639	1	1	M6 EXTENDED GREASE NIPPLE

Spearhead HD Head

1.2M RH BOOT FLAIL ROTOR - S180018.33

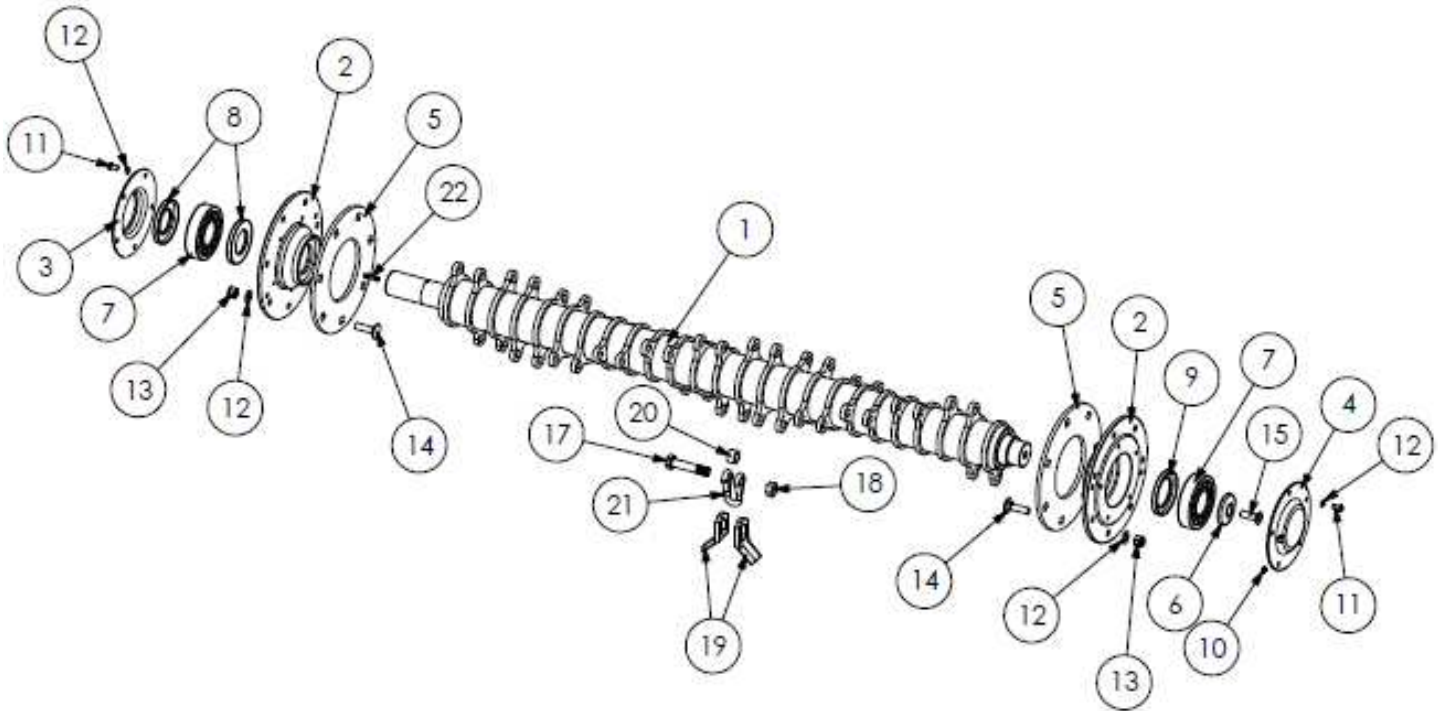
1.6M RH BOOT FLAIL ROTOR - S180018.48



REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180742	1	-	RH BOOT FLAIL BELT DRIVE ROTOR - 1.2M
1	180748	-	1	RH BOOT FLAIL BELT DRIVE ROTOR - 1.6M
2	180786	2	2	BEARING HOUSING
3	180787	1	1	DRIVE END CAP
4	180788	1	1	NON DRIVE END CAP
5	180789	2	2	CLAMP PLATE
6	1777208	1	1	RETAINING WASHER - 65mm
7	4771610	2	2	BEARING
8	3570678	2	2	SEAL 50mm
9	3570679	1	1	SEAL 60mm
10	2770467	1	1	M6 ST GREASE NIPPLE
11	2770370	10	10	M8 X 15 SKT BUTTON BOLT
12	2770433	10	10	M8 SPRING WASHER
13	2770436	14	14	M12 FLAT WASHER
14	2770417	14	14	M12 NYLOCK
15	05.839.35	11	11	M12 X 40 COACH BOLT
15	2770440	3	3	M12 X 50 COACH BOLT
16	2770398	1	1	M12 X 40 SKT CSK SCREW
17	T7943	24	32	M16 X 80 FLAIL BOLT
18	05.968.04	24	32	M16 V LOCK NUT
19	09.902.01	24	32	BOOT FLAIL
20	7314223	24	32	BOOT FLAIL BUSH
21	7190175	24	32	SHACKLE
22	7190172	24	32	SPACER
23	2770639	1	1	M6 EXTENDED GREASE NIPPLE

Spearhead HD Head

1.2M BACK TO BACK FLAIL ROTOR – S180018.34
1.6M BACK TO BACK FLAIL ROTOR – S180018.49

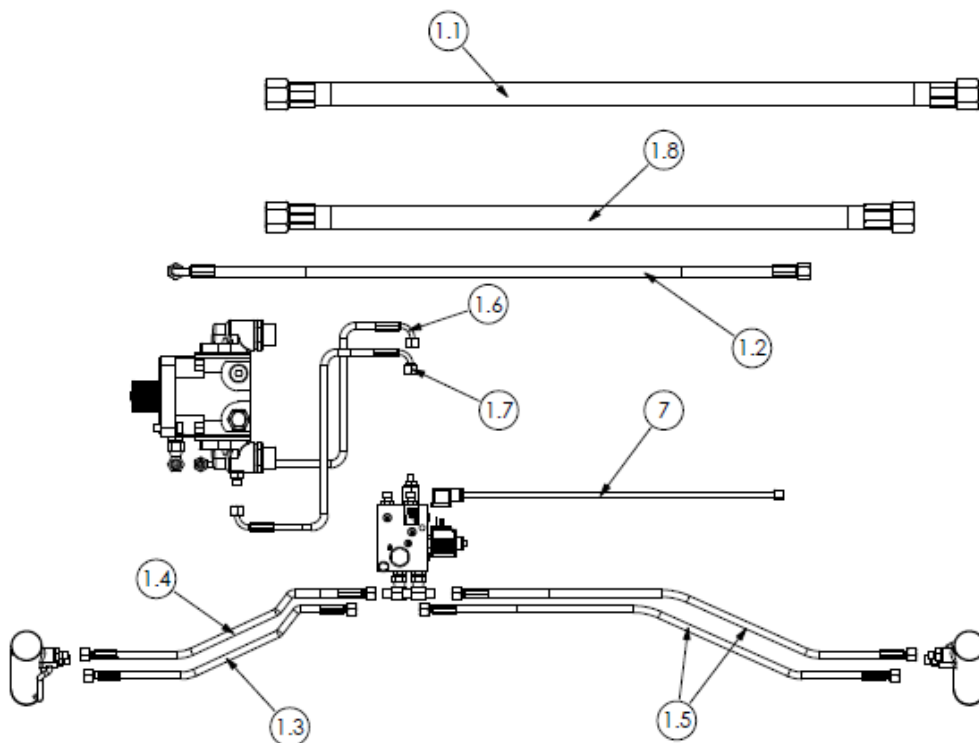


REF NO.	PART NO.	QTY. 1.2M	QTY. 1.6M	DESCRIPTION
1	180743	1	-	B2B FLAIL BELT DRIVE ROTOR - 1.2M
1	180749	-	1	B2B FLAIL BELT DRIVE ROTOR - 1.6M
2	180786	2	2	BEARING HOUSING
3	180787	1	1	DRIVE END CAP
4	180788	1	1	NON DRIVE END CAP
5	180789	2	2	CLAMP PLATE
6	1777208	1	1	RETAINING WASHER - 65mm
7	4771610	2	2	BEARING
8	3570678	2	2	SEAL 50mm
9	3570679	1	1	SEAL 60mm
10	2770467	1	1	M6 ST GREASE NIPPLE
11	2770370	10	10	M8 X 15 SKT BUTTON BOLT
12	2770433	10	10	M8 SPRING WASHER
13	2770436	14	14	M12 FLAT WASHER
14	2770417	14	14	M12 NYLOCK
15	05.839.35	11	11	M12 X 40 COACH BOLT
15	2770440	3	3	M12 X 50 COACH BOLT
16	2770398	1	1	M12 X 40 SKT CSK SCREW
17	T7943	24	32	M16 X 80 FLAIL BOLT
18	05.968.04	24	32	M16 V LOCK NUT
19	7190166	48	64	BACK TO BACK FLAIL
20	180118	24	32	SPACER
21	PS9902007	24	32	SHACKLE
22	2770639	1	1	M6 EXTENDED GREASE NIPPLE

Spearhead HD Head

1.2M LP HYDRAULIC CIRCUIT – S180018.35

REF NO.	PART NO.	QTY.	DESCRIPTION
1	3751005	1	1.2M LP BELT DRIVE HOSE KIT
1.1	3751005.01	1	1" RETURNS HOSE
1.2	3751005.02	1	3/8" MOTOR CASE DRAIN HOSE
1.3	3751005.03	1	1/4" RAM ROD HOSE
1.4	3751005.04	1	1/4" RAM BASE HOSE
1.5	3751005.05	2	1/4" RAM ROD/BASE HOSE
1.6	3751005.06	1	1/4" VALVE RETURNS HOSE
1.7	3751005.07	1	1/4" VALVE PRESSURE HOSE
1.8	37510050.8	1	1" PRESSURE HOSE
7	8770654	1	LOOM



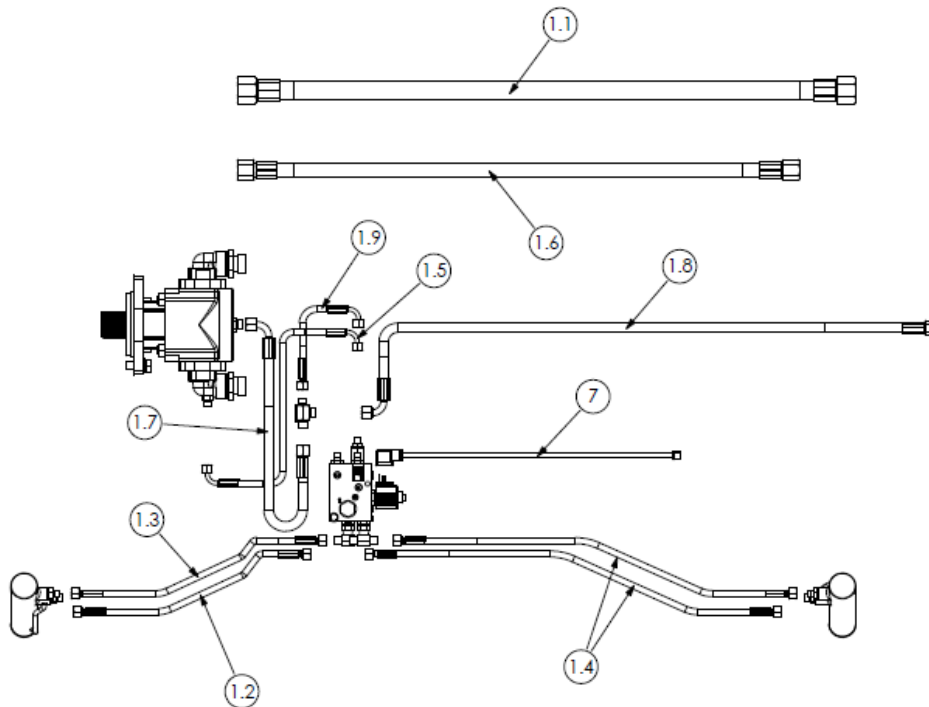
1.6M LP HYDRAULIC CIRCUIT – S180018.50

REF NO.	PART NO.	QTY.	DESCRIPTION
1	3751020	1	1.6M LP BELT DRIVE HOSE KIT
1.1	3751020.01	1	1" RETURNS HOSE
1.2	3751020.02	1	3/8" MOTOR CASE DRAIN HOSE
1.3	3751020.03	1	1/4" RAM ROD HOSE
1.4	3751020.04	1	1/4" RAM BASE HOSE
1.5	3751020.05	2	1/4" RAM ROD/BASE HOSE
1.6	3751020.06	1	1/4" VALVE RETURNS HOSE
1.7	3751020.07	1	1/4" VALVE PRESSURE HOSE
1.8	3751020.08	1	1" PRESSURE HOSE
7	8770654	1	LOOM

Spearhead HD Head

I.2M HP HYDRAULIC CIRCUIT – S180018.36

REF NO.	PART NO.	QTY.	DESCRIPTION
1	3751006	1	1.2M HP BELT DRIVE HOSE KIT
1.1	3751005.01	1	1" RETURNS HOSE
1.2	3751005.03	1	1/4" RAM ROD HOSE
1.3	3751005.04	1	1/4" RAM BASE HOSE
1.4	3751005.05	2	1/4" RAM ROD/BASE HOSE
1.5	3751005.07	1	1/4" VALVE PRESSURE HOSE
1.6	3751006.01	1	3/4" PRESSURE HOSE
1.7	3751006.02	1	3/8" TEE TO MOTOR
1.8	3751006.03	1	3/8" MOTOR CASE DRAIN HOSE
1.9	3751006.04	1	1/4" VALVE RETURNS HOSE
7	8770654	1	LOOM



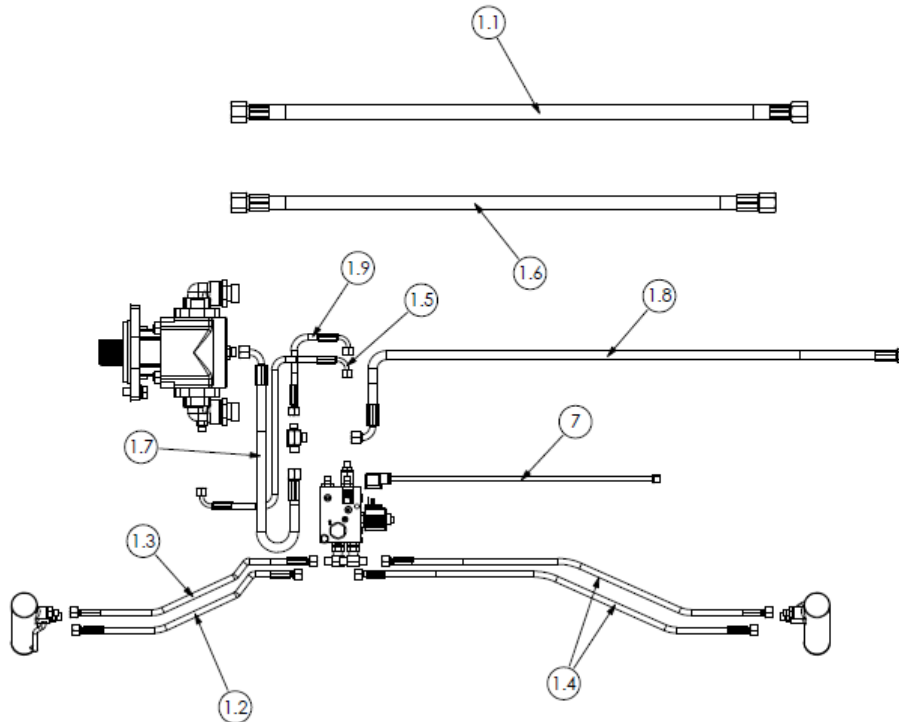
I.6M HP HYDRAULIC CIRCUIT – S180018.51

REF NO.	PART NO.	QTY.	DESCRIPTION
1	3751021	1	1.2M HP BELT DRIVE HOSE KIT
1.1	3751020.01	1	1" RETURNS HOSE
1.2	3751020.03	1	1/4" RAM ROD HOSE
1.3	3751020.04	1	1/4" RAM BASE HOSE
1.4	3751020.05	2	1/4" RAM ROD/BASE HOSE
1.5	3751020.07	1	1/4" VALVE PRESSURE HOSE
1.6	3751021.01	1	3/4" PRESSURE HOSE
1.7	3751006.02	1	3/8" TEE TO MOTOR
1.8	3751021.02	1	3/8" MOTOR CASE DRAIN HOSE
1.9	3751006.04	1	1/4" VALVE RETURNS HOSE
7	8770654	1	LOOM

Spearhead HD Head

1.2M HP RR HYDRAULIC CIRCUIT – S180018.39

REF NO.	PART NO.	QTY.	DESCRIPTION
1	3751017	1	1.2M HP RR BELT DRIVE HOSE KIT
1.1	3751005.03	1	1/4" RAM ROD HOSE
1.2	3751005.04	1	1/4" RAM BASE HOSE
1.3	3751005.05	2	1/4" RAM ROD/BASE HOSE
1.4	3751005.07	1	1/4" VALVE PRESSURE HOSE
1.5	3751006.01	1	3/4" PRESSURE HOSE
1.6	3751006.02	1	3/8" TEE TO MOTOR
1.7	3751017.01	1	3/4" RETURNS HOSE
1.8	3751006.03	1	3/8" MOTOR CASE DRAIN HOSE
1.9	3751006.04	1	1/4" VALVE RETURNS HOSE
7	8770654	1	LOOM



1.6M HP RR HYDRAULIC CIRCUIT – S180018.52

REF NO.	PART NO.	QTY.	DESCRIPTION
1	3751022	1	1.6M HP RR BELT DRIVE HOSE KIT
1.1	3751005.03	1	1/4" RAM ROD HOSE
1.2	3751005.04	1	1/4" RAM BASE HOSE
1.3	3751005.05	2	1/4" RAM ROD/BASE HOSE
1.4	3751005.07	1	1/4" VALVE PRESSURE HOSE
1.5	3751006.01	1	3/4" PRESSURE HOSE
1.6	3751006.02	1	3/8" TEE TO MOTOR
1.7	3751022.01	1	3/4" RETURNS HOSE
1.8	3751006.03	1	3/8" MOTOR CASE DRAIN HOSE
1.9	3751006.04	1	1/4" VALVE RETURNS HOSE
7	8770654	1	LOOM

Spearhead HD Head

DECALS – S180018.37



8770307



8770322



8770306



8770357



8770359



8770360



8770373

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