

Spearhead

Multi-Cut 160 & 200

Handbook & Parts Book

3rd Edition – June 2004

Please ensure that this manual is handed to the operator before using the machine for the first time. The operator must fully understand the contents of this manual before using this machine.

(If the machine is resold the Manual must be given to the new owner.)

Important Note

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

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Spearhead Multi-Cut 160 & 200

EC Declaration of Conformity, Conforming to EEC Directive 89/392/EEC, 98/37/EC & 98/38/EC

We, Spearhead Machinery Ltd, Green View, Salford Priors, Evesham, Worcestershire, WR11 8SW declare under our sole responsibility that the :

Product

Product Code

Serial No

Flail Head Serial No

Type

Manufactured by the above company complies with the required provisions of the directive 89/392/EEC, 98/37/EC and 98/38/EC and AMD 91/368/EEC, AMD 93/44/EEC, AMD 93/68/EEC and conforms with European norm. BSEN 292; Part 1: 1991 Safety of Machinery – Technical, Methodology; Part 2: 1991 Safety of Machinery - Technical Specifications and other national standards associated with its design and construction as listed in the Technical File.



Signed.....

(On behalf of Spearhead Machinery Ltd)

Status General Manager

Date.....

Spearhead Multi-Cut 160 & 200

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Important Safety



Safety

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

Spearhead Multi-Cut 160 & 200

Safety Stickers



Warning
Stay clear of mower blades.



Warning
Shut off engine and remove key.



Warning
Keep a safe distance when the machine is running.



Warning
Beware of escaping fluid.



Warning
Do not remove/open guard.



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



Warning
Beware of overhead electrical power line.



Warning
Check all nuts are tight every 8 hours.

Spearhead Multi-Cut 160 & 200

Introduction

The Spearhead Multi-Cut 160 and 200 are very robust high capacity Rotary Cutters which are easy to operate and maintain. To ensure trouble-free operation this manual should be carefully studied.

Safety First

Do not start the machine until you fully understand operation and safety precaution requirements. Always ensure the operators are proficient with the operation of this type of this machine.

Tractor Requirements

- Spearhead strongly recommends 75hp-plus tractor with **CATEGORY 2** rear linkage.
- Ensure there is sufficient weight on front wheels of the tractor for safe transport and stability.
- PTO must be independent live drive to enable continuous PTO drive even when tractor clutch is pressed down.
- Before hitching, ensure position control is selected. Do not attempt to hitch in draft control.
- Check chains and stabilizers must be in good working order to hold the machine firmly. Do not operate without checking that chains and stabilizers are tight.
- Spearhead particularly recommend 'turn buckle' type check chains
- Set linkage lift rods to an equal length.

Spearhead Multi-Cut 160 & 200

Attaching To The Tractor

Fit the machine to the tractor in the standard way, ensuring the correct match of linkage (category 2). Check that the top link is in good order and threads are well lubricated. Use stabilisers to take any free movement out of lower link arms.

Before fitting the machine to the tractor linkage you should ensure there is sufficient front weight to ensure the front wheels are always in contact with the ground. This is most important for safe transport and stability when turning on slopes.

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

If necessary, shorten the inner and outer guard tubes equally (Fig. 1). Shorten the inner and outer sliding profiles by the same length as the guard tubes. File all sharp edges and remove burrs. Grease sliding profiles.

To fit the PTO to the machine, first remove bolt and tapered pin from the slip clutch yoke and push onto splined shaft of gearbox ensuring it is fully engaged before refitting retaining bolt/pin.

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

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

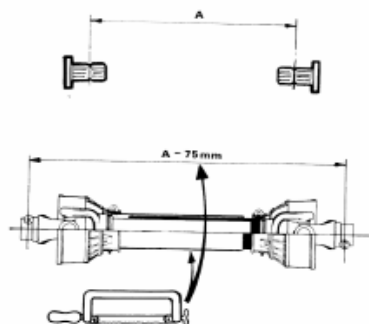


Fig 1

Spearhead Multi-Cut 160 & 200

Setting Up & Adjustment

Height

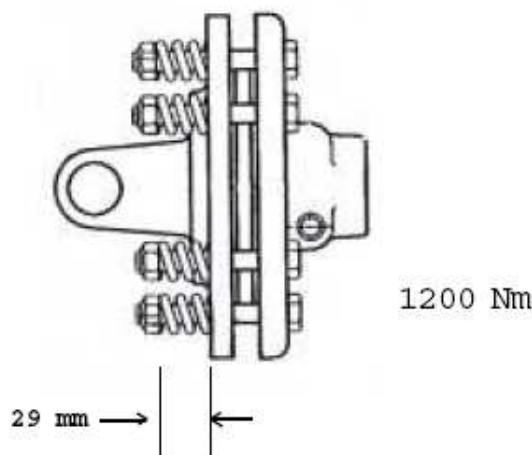
Cutting height adjustment is achieved by raising or lowering the wheel. Lowering the wheel produces a longer cut, raising the wheel leaves a shorter cut. Always set machine level front to rear and side to side.

The wheel acts a 'middle skid', therefore it should be set to take equal weight to the skids. When set properly this should prevent scalping.

Machine Protection

To prevent gearbox damage the PTO is fitted with a slip clutch. When cutting in conditions where solid objects are likely to be found it is recommended that the operator reduces the engine revs to allow the blades to pivot more easily when striking solid objects, and proceed with caution.

The clutch settings should not be altered without reference to the Spearhead Service Department. Never over-tighten the pressure springs on the slip clutches, this could result in severe damage to the gearbox and drive lines, as well as infringing the warranty. (The correct length of the spring is 29mm).



Important

If the machine has been laid up for any length of time, there is a risk of the clutch plates resting and seizing together. Never operate the machine in this condition as there will be no protection to the drive line and gearboxes against shock loading. Refer to after storage (page 14).

Spearhead Multi-Cut 160 & 200

Operation

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

When in work, lower the machine to the ground carrying all its weight on the skids/wheel, allowing the machine to follow the contours of the ground and ensuring there is sufficient slack in the wire ropes. Select a sensible forward speed bearing in mind the density of growth, the terrain, and the available horsepower, taking extra care when turning, particularly on slopes.

When turning, it is not necessary to lift the machine off the ground but instead allow sufficient room to turn in a large radius. The machine only needs to be raised when turning in a tight corner or reversing over dense undergrowth or when operating on the front linkage.

The machine is fitted with, as standard, 3 high lift blades complete with fin, to aid spreading/mulching.

Transportation

Please observe Public Highway Regulations concerning the towing of implements, and securely attach a registration and lighting board. Take care to slow when travelling over rough ground and avoid bouncing machine on linkage causing unnecessary strain.

Spearhead Multi-Cut 160 & 200

Safety First

- Never leave the tractor seat without first disengaging the PTO and stopping the engine.
- Ensure all rotating parts have stopped turning.
- Never attempt any repairs, maintenance, service or any other checks with the machine carried on the tractor hydraulics.
- Always fully lower to the ground, or securely prop the machine on substantial servicing stands.
- Always replace all guards and retaining chains after servicing/maintenance is completed.



Important

On delivery of your machine check that the dealer has completed the P.D.I. form ensure the warranty registration form is completed and returned.

It is imperative that the following checks are carried out in order not to invalidate your warranty; these are carried out **before the first operation, after the first hour, then after 4 hours**. These checks are:

- Wheel nuts and tyre pressure (50psi)
- Gearbox bolts
- Blade bolts are fully tightened and in particular the castle headed nut on the blade rotor
- Retaining bolts on the drive shaft
- Grease all points
- After the first 50 hours drain and replace the gearbox oil. Replace with EP90 Gear oil
- It is your responsibility to maintain, to ensure a long reliable working life

Torque Settings

The Torque figures given below are recommended maximum settings only.

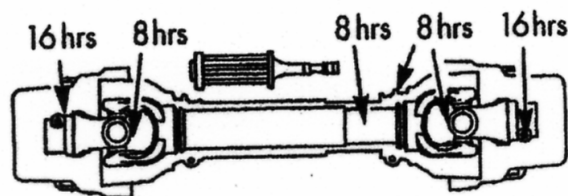
Size:	Tensile strength:	Description:	Torque setting: Nm
M16	8.8	Gearbox bolts	280
M16	8.8	Blade carriers	280
M24	8.8	Blade bolts	950

Spearhead Multi-Cut 160 & 200

Daily/Every 8 hours

- Grease all grease points, on PTO.
-
- Check condition of blades and blade bushes and ensure all retaining bolts are fully tight.
-
- Check gearbox oil, replenish with 'EP90' gear oil as necessary to the correct level line on the dipstick provided with each gearbox.
-
- Dismantle and clean PTO sliding surfaces and re-grease. Grease universal joints (Fig. 3).

Fig. 3



Every 20 hours

- Grease PTO inner tube and push pins (Fig. 3)

Regularly

- Check there is no wrapping of string, plastic, grass or other debris between rotor boss and blades.
- Inspect gearbox seals for leaks.
- Regularly check the rotor boss retaining castle nut for tightness (part no.5771409). First remove the split pin, select the correct size socket in 3/4" drive and fully tighten the nut.
- When replacing the split pin, do not slacken the nut to align the hole, always tighten.
- Failure to regularly check this nut will result in serious wear to hub, which is expensive to repair.
- It is most important that all gearbox and blade bolts are regularly checked to be very tight. **When the machine is new there will be a 'bedding in' period where very frequent checking is important.**

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Blades

Caution! When carrying out maintenance work on or near the blades be careful of free-swinging blades over-centring and falling. It is recommended that protective headgear, gloves and goggles are worn.

The blades can be re-sharpened by grinding the cutting edges and care must be taken that the blades are of the same weight and length after grinding. Do not over heat when grinding, as this will affect the hardness of the blades.

All the blades are free swinging and swivel on hardened steel bushes, which are easily replaced. When replacing blades, it is important that blades are replaced in sets, in order to retain balance of the rotor. Bushes must be replaced when new blades are to be fitted.

Bushes must be replaced when new blades are to be fitted.

If the blades are showing any signs of severe wear, damage or cracking, they must be replaced immediately. Never attempt to weld the blades; this will make them very brittle thus extremely dangerous. Do not take risks with the cutting blades - if in doubt, replace.

Note – The slip clutch is there to protect the drive train. If the blades strike a large obstacle they may get damaged or break, so avoid these conditions.

Optional Chain Kit

This is available for use in stony conditions for scrub clearance but is not suitable for thick material.

Skids

When operating on abrasive soils, particularly in stubbles and similar conditions with thin ground cover, excessive skid wear may be expected. To provide extra protection and to prolong life of the skids, special hard facing rods are available.

If working in wet and muddy conditions, ensure that debris is not allowed to build up on the deck.

Spearhead Multi-Cut 160 & 200

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. Store PTO shaft in a dry place.

After Storage

Disassemble the slip clutch and with an emery cloth remove all traces of rust on the metal clutch plates. Check condition on the friction plates, if there is any sign of over hearing, wear or cracking, replace with new. Do not attempt to use the machine with damaged slip clutch plates.

Assemble the clutch and tighten the bolts to achieve a spring length of 29mm. Do not over tighten or the clutch will not work.

Check condition of the tyre (where applicable) and then follow the maintenance procedure covered in the servicing part of this manual. Pay particular attention to the condition of the guards and blades.

Remember the 1000 and 2000 Swipe is designed to withstand the most rigorous conditions and, with a little care and attention, will give many years of trouble free service.

So as not to invalidate the warranty and to avoid problems, use only genuine parts and make sure the machine is not driven at a speed in excess of 540rpm on the PTO.

Spearhead Multi-Cut 160 & 200

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 would 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, willful 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.
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

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Extended Warranty

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

Extended Warranty Conditions

1. The extended warranty applies to hydraulic pumps, motors, valves and gearboxes only. It does not apply to other parts, to consumables such as lubricants, seals or filters or to labor 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.
3. The extended warranty does not cover costs of transportation of the machinery to or from the dealer or Spearhead or the call out costs or traveling expenses of on-site visits.

Transfer of Warranty

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

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

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Parts List

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Ordering Parts

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

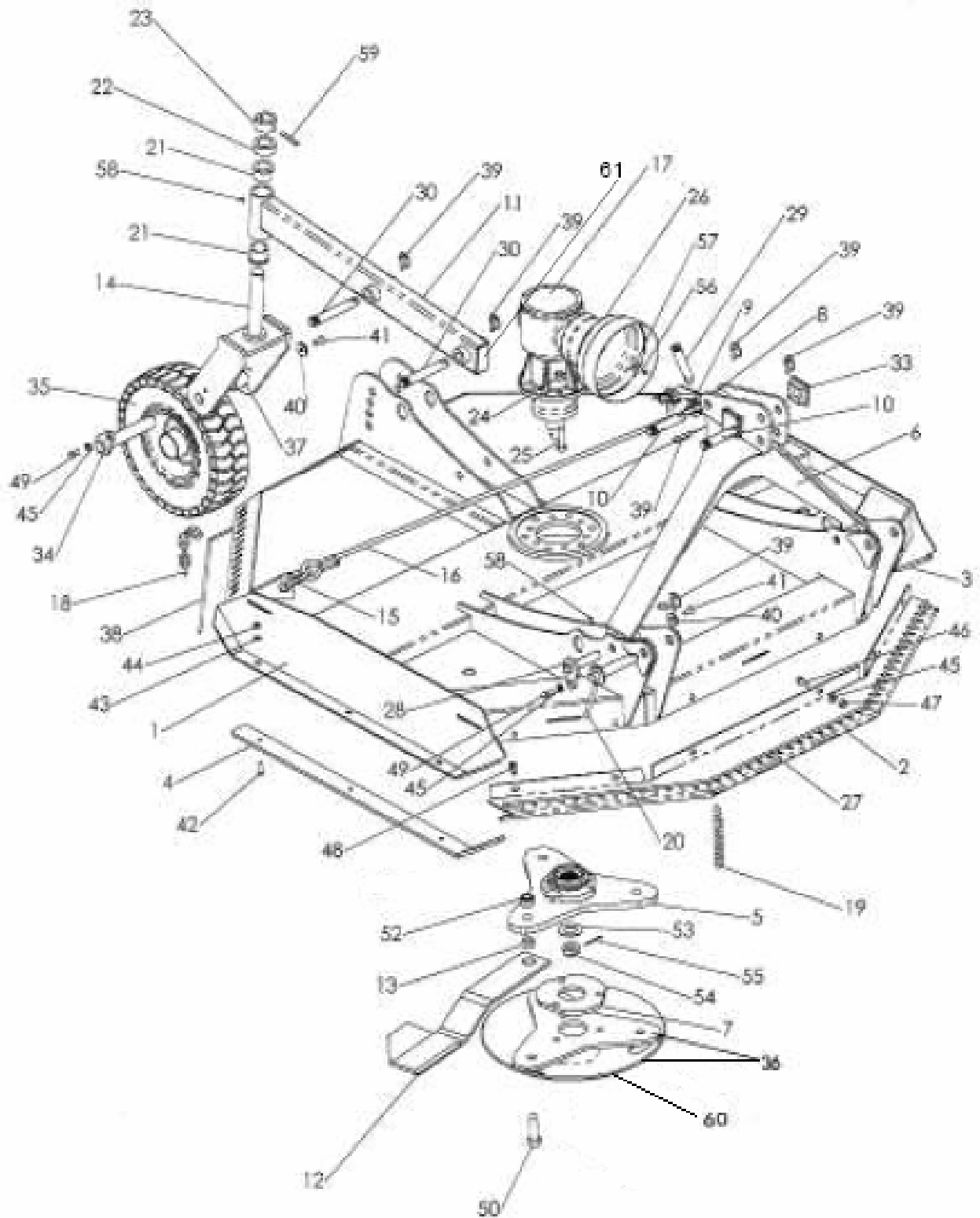
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Key:

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

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Main Frame Assembly



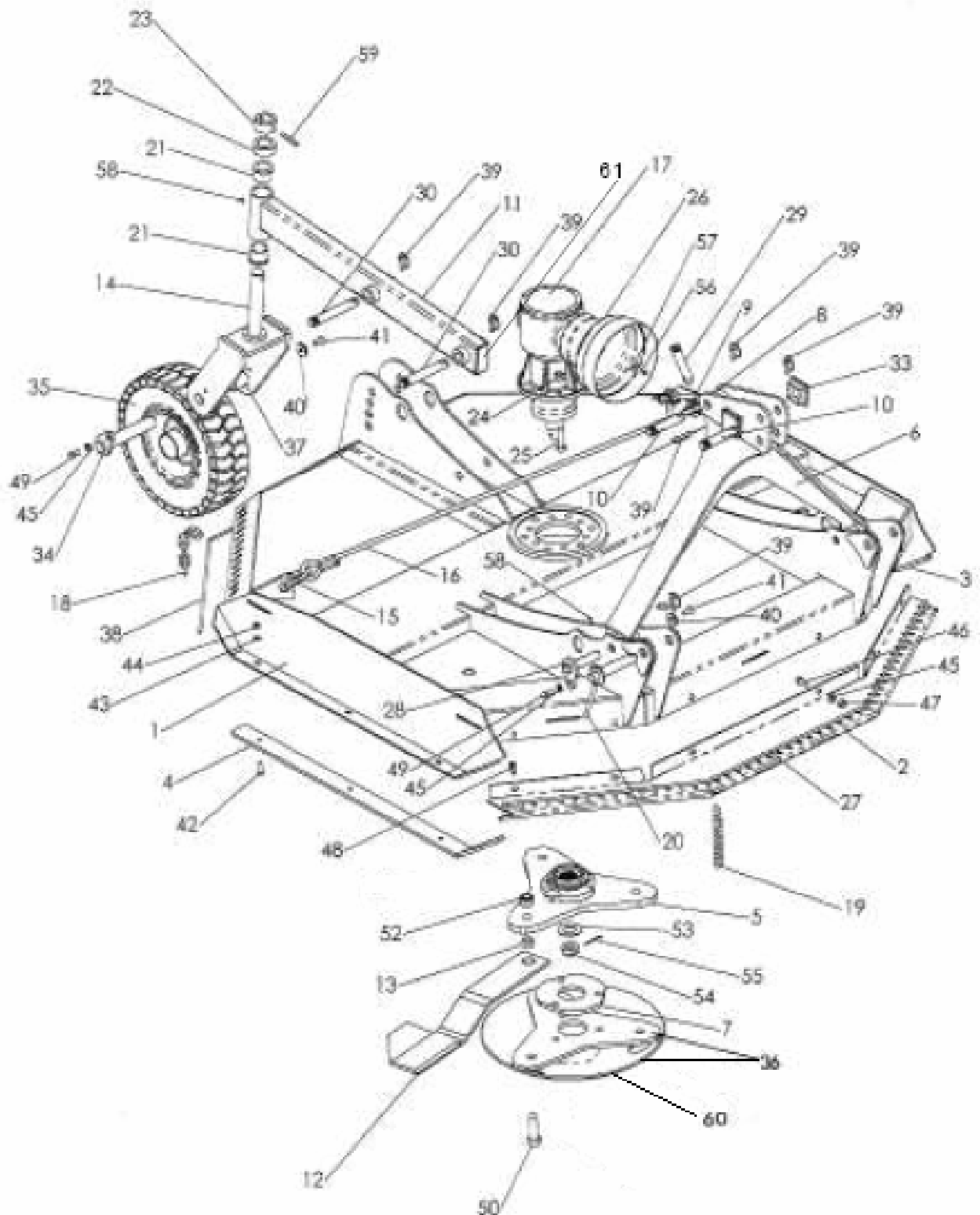
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Main Frame Assembly

REF. NO	PART NO.		DESCRIPTION
	1600 SWIPE	2000 SWIPE	
1	1560100B	1770202R	BODY
2	1560106A	1770227	BRACKET
3	1770685A	1770204A	LH SKID
4	1770685AR	1770204AR	RH SKID
5	1770602-3	1770220	HOLDER
6	177613A		HEADSTOCK
7	1770604-3	1770222	SPACER
8	1560120		BRACKET
9	1560121		PULLEY
10	6310203		PIN
11	1770401A		ARM
12	7770700	7770718	BLADE
13	7770707		BUSH
14	1770399A		YOKE
15	6777575		SHACKLE
16	6770922	6770928	WIRE ROPE
17	5770004	5770002	GEARBOX
18 & 19	8770621		CHAIN
20	6310208		PIN
21	4600127-A		BUSH
22	1777524		BUSH
23	1777700		BUSH
24	2770447		NUT
25	2770423	2770423	BOLT
26	5770105	5770105	GUARD/COVER
27	6770908	6770923	WIRE ROPE
28	1777761		PIN
29	6310203A		PIN
30	6310235		PIN
33	8777518		GUARD/COVER
34	1560130		PIN
35	6770680		WHEEL ASSEMBLY
36	1770630	1770221	BLADE CARRIER
37	1560131		BUSH
38	6770905	6770919	WIRE ROPE
39	6310206		PIN
40	1777209		WASHER

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Main Frame Assembly



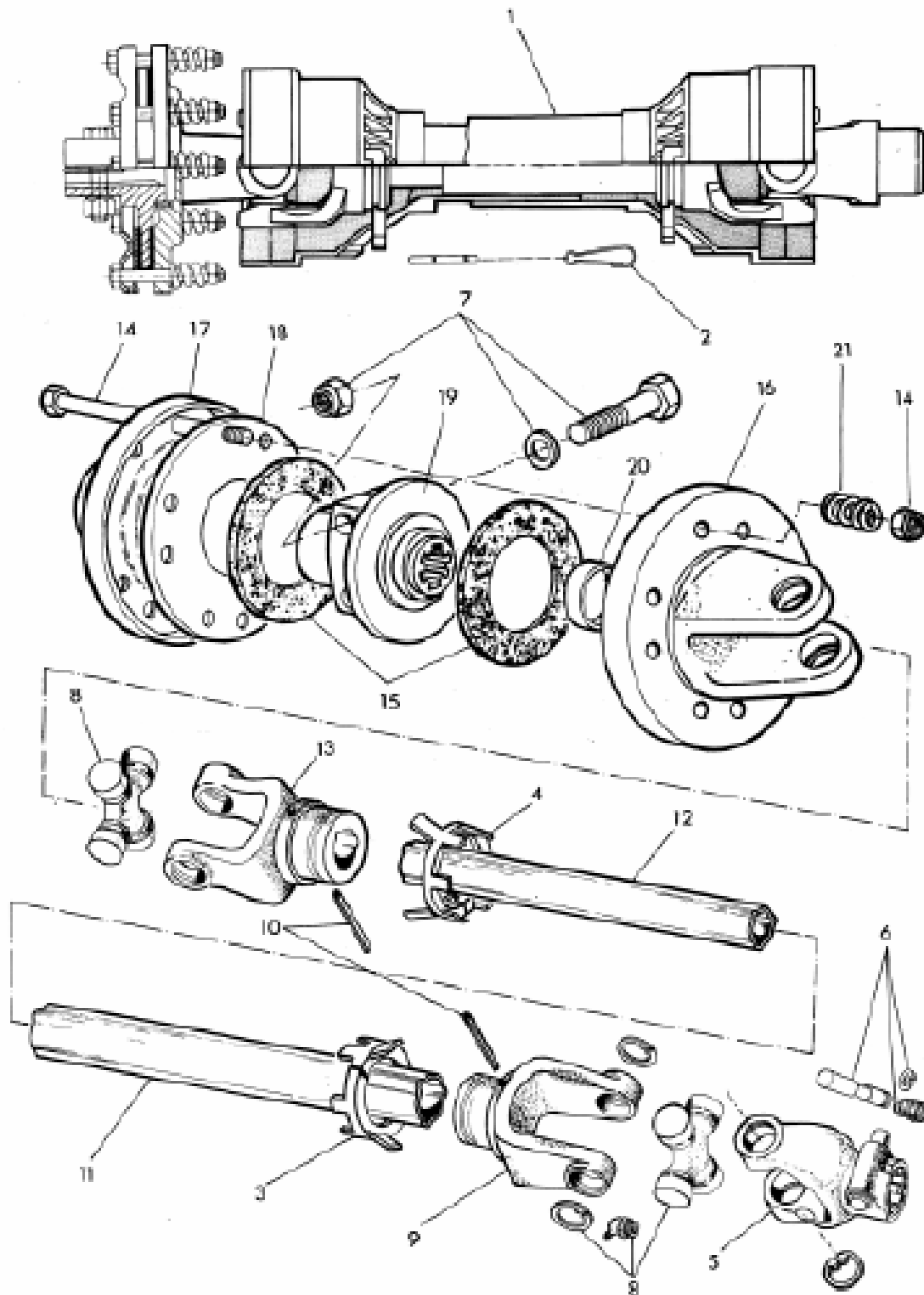
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Main Frame Assembly

REF. NO	PART NO.		DESCRIPTION
	1600 SWIPE	2000 SWIPE	
41		2770506	BOLT
42		2770509	BOLT
43		2770434	WASHER
44		2770412	NUT
45		2770436	WASHER
46		2770420	BOLT
47		2770417	NUT
48		6770907	CLIP
49		2770484	BOLT
50		2770413	BOLT
51		2770404	BOLT
52		2770414	WASHER
53		5771410	WASHER
54		5771409	NUT
55		2770512	PIN
56		2770431	BOLT
57		2770244	NUT
58		2770467	GREASE NIPPLE
59		2770479	PIN
60	7770726	7770728	PLATE
61		8777510	PLASTIC INSERT

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PTO Shaft Assembly



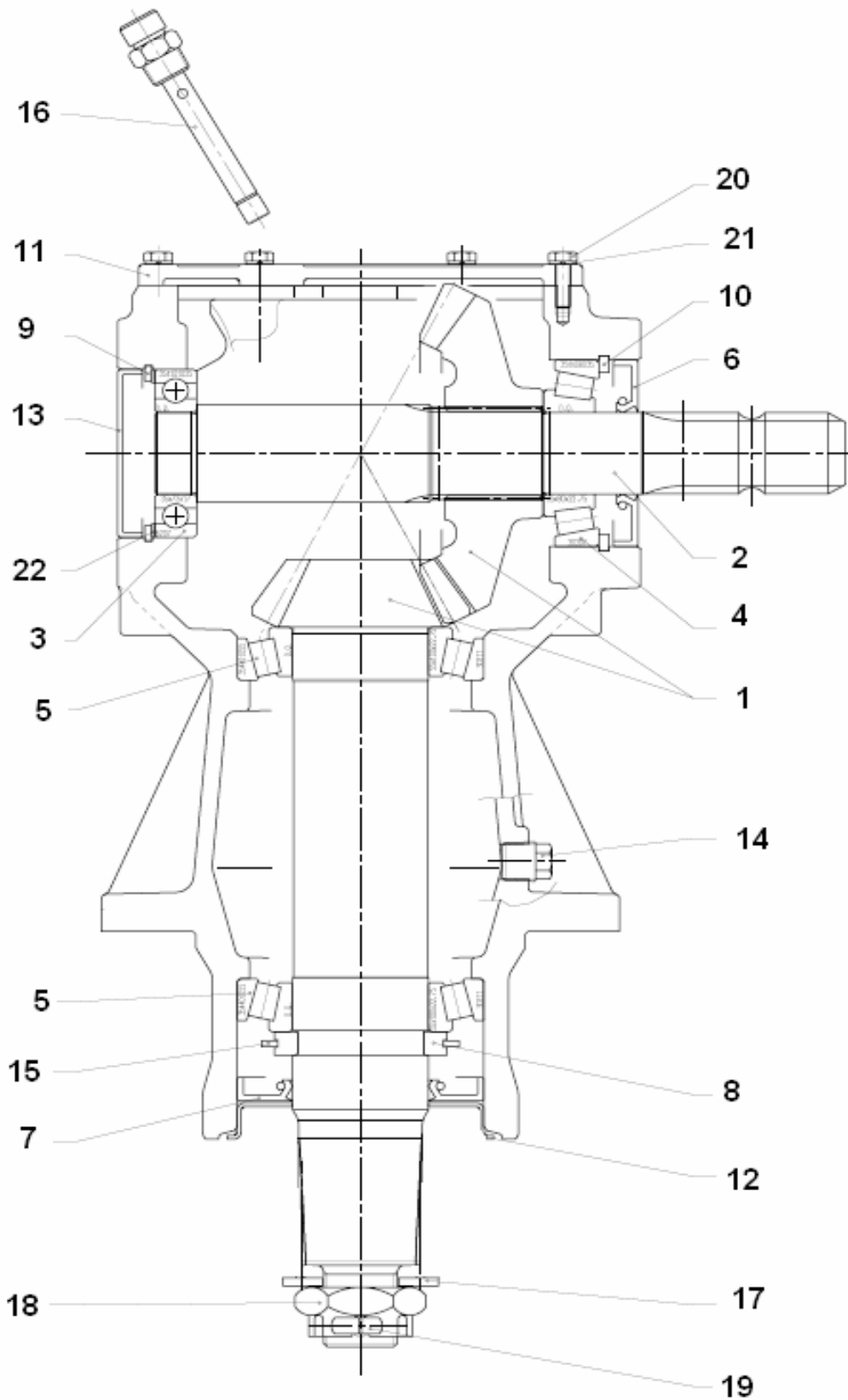
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PTO Shaft Assembly

REF. NO	PART NO.	DESCRIPTION
	5770079	PTO SHAFT ASSEMBLY
1	5772262	GUARD/COVER
2	5771020	CHAIN
3	5771308	BEARING
4	5771313	BEARING
5	5771299	YOKE
6	5771023	PLUG
7	5770091	BOLT SET
8	5771301	CROSS JOURNAL
9	5770095	YOKE
10	2770542	PIN
11	5772277	TUBE
12	5772278	TUBE
13	5770096	YOKE
14	5771325	NUT & BOLT
15	5771320	PLATE
16	5771318	YOKE
17	5771324	PLATE
18	5771323	PLATE
19	5770093	6 SPLINE
20	5771319	BUSH
21	5771317	SPRING
22	5771320	PLATE

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Gearbox Assembly



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Gearbox Assembly

REF. NO	PART NO.	DESCRIPTION
1	5771418	GEAR SET – 1600
	5771419	GEAR SET – 2000
2	5771403R	SHAFT
3	4771600	BEARING
4	4771601	BEARING
5	4771602	BEARING
6	4771124	SEAL
7	4771500	SEAL
8	5771422	COLLET
9	2771600	CIRCLIP
10	2771129	CIRCLIP
11	5771401	GUARD/COVER
12	5771406	GUARD/COVER
13	4771503	SEAL
14	5771415	PLUG
15	2771108	CIRCLIP
16	5771416	DIPSTICK
17	5771410	WASHER
18	5771409	NUT
19	2770477	PIN
20	5771407	BOLT
21	2771408	WASHER
22	6771423	SHIM SET