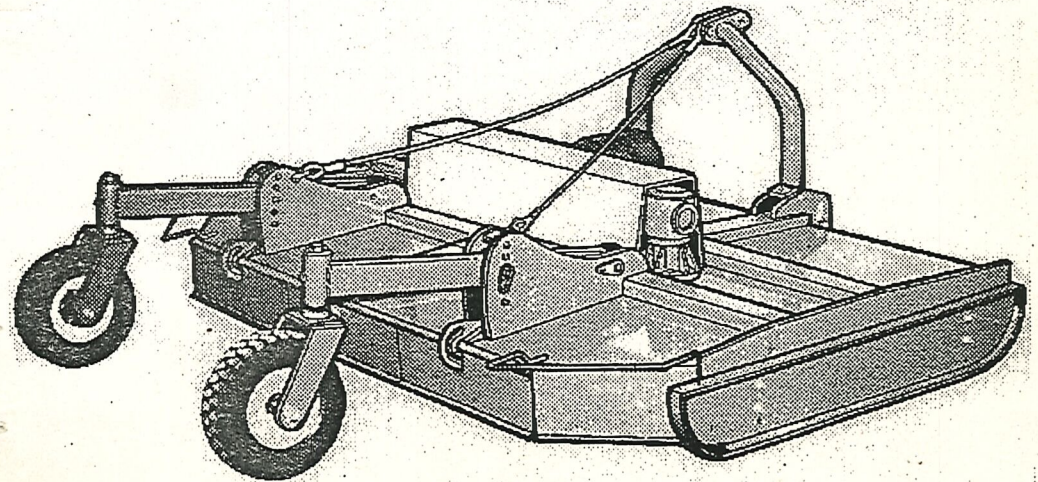


OPERATOR'S MANUAL

3000-6W Rotary swipe



Spearhead

Spearhead

3000-6W

Rotary swipe

Operator's manual

First edition

Important

The purchaser should ensure that this manual is handed to the operator before using the machine for the first time and should be satisfied that the operator fully understands the contents of this manual before being allowed to proceed. If the machine is resold the Operators Manual **must** be given to the new owner.

Fill in the details below, you will find it useful to refer to when ordering spare parts.

Serial No.

Date of Delivery

Dealer's Address

Telephone No.

Spearhead Machinery Limited

Pershire Trading Estate, Pershire,
Worcestershire WR10 2DD
Tel: 01386 556748 Fax: 01386 561398

Spearhead

EC declaration of conformity, conforming to EEC directive 89/392/EEC

We, Spearhead Machinery Ltd, Pershire Trading Estate, Pershire, Worcestershire WR10 2DD declare under our sole responsibility that the

product

product code

serial no. & date

type

Manufactured by the above company complies with the required provisions of the directive 89/392/EEC, 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 – Terminology, methodology; Part 2; 1991 safety of machinery – Technical specifications and other national standards associated with its design and constructions as listed in the Technical File.

Signed

on behalf of Spearhead Machinery Ltd

Status

Date



Safety

- Before use, always check that all guards are properly fitted.
- Check there are no damaged or lost parts. Particular attention should be given to the blades to ensure they are not damaged, cracked or missing. Never operate with broken or missing blades.
- Never operate the machine with other people present as it is possible for debris, even large stones to be discharged from the front and rear of the machine. Keep all tractor windows closed.
- Do not allow children to play on or around the machine at any time.
- Never attempt any maintenance or adjustment without first disengaging the p.t.o., lowering the machine to the ground and stopping the tractor engine. Before leaving the tractor at any time always be sure the p.t.o. is disengaged and the rotors have stopped spinning.
- Never stop the engine with the p.t.o. engaged.
- Ensure that all warning labels are always visible and that they are not damaged, defaced or missing.
- Never attempt to use the machine for any purpose other than that it was designed for.
- Where applicable, check condition of tyres and that all wheel nuts are tight.
- During transport, ensure linkage stabilisers are fully tightened and always observe public highway regulations.

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Introduction

The 3000-6W is a very robust high capacity rotary cutter that is easy to operate and maintain. To ensure trouble-free operation this manual should be carefully studied.

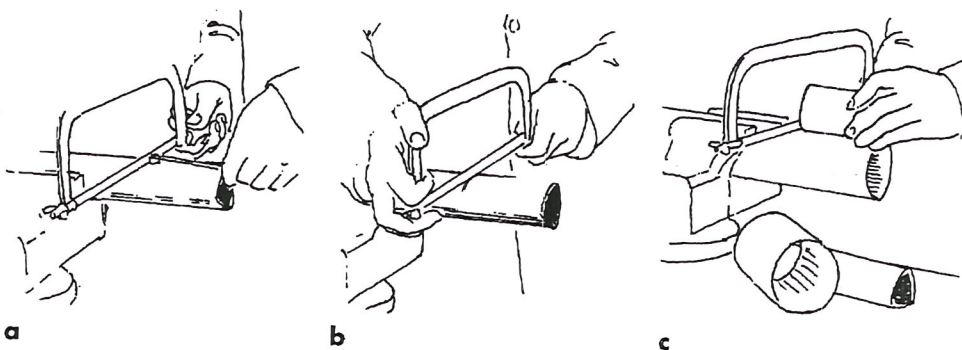
Safety First

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

Attaching to the tractor

Fit the machine to the tractor in the standard way ensuring the correct match of linkage (category 1 or 2 linkage pins). Check that the top link is in good order and threads are well lubricated. Use stabilisers to take any free movement out of the 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 p.t.o. 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 p.t.o. shaft apart and connect to the tractor p.t.o. output shaft and the gearbox input shaft. Hold the half shafts next to each other in the shortest working



**Fig 1 Shortening the
p.t.o. drive shaft**

a Check shaft tube surplus length. **b** Cut surplus length from shaft tubes. File sharp edges and remove burrs. **c** Shorten shield tubes to the same length. Grease inner shaft tube and install shield.

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 p.t.o. first clean and grease press pins on the yoke and simultaneously push the p.t.o. drive shaft onto p.t.o. shaft of the tractor until pins engage.

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

Setting up and adjustment

Height Cutting height adjustment is achieved by raising or lowering the two outer skid plates and rear wheels. Lowering the skid plates and wheels produces a longer cut, raising the skid plates and wheels leaves a shorter cut. Always set to equal hole settings from front to rear and side to side, on the skids and the wheels. The weight of the machine should be equally distributed between the skids and wheels. When set properly this should prevent scalping.

Machine protection

To prevent gearbox damage the p.t.o. is fitted with a slip clutch. When cutting in extreme conditions where solid objects are likely to be found it is recommended the operator reduces the engine revs to allow the blades to pivot more easily when striking solid objects.

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 to the warranty (The correct length of spring is 29mm).

Important

If the machine has been laid up for any length of time, there is a risk of the clutch plates rusting and seizing together. Never operate the machine in this condition as there will be no protection to the drive line and gear-boxes against shock loading. To free the clutch plates first slacken all pressure spring bolts and run up the machine for a short period, deliberately try to cause the clutch to slip. Finally re-tighten the tension spring bolts to their original length, taking great care not to over-tighten. If in any doubt, consult Spearhead's Service Department or your local Spearhead Dealer for further advice.

Operation

Engage the p.t.o. 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 p.t.o. 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, 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 to reverse over dense undergrowth or when operating on the front linkage.

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

When operating particularly in confined areas it is possible to cut going backwards but it is advisable to slightly raise the machine particularly if in dense growth where there is a risk of hitting hidden solid obstacles obscured by dense undergrowth.

Transportation

Please observe Public Highway Regulations, concerning the towing of implements, and securely attach a registration and lighting board.

Servicing & Maintenance

Safety first

- Never leave the tractor seat without first disengaging the pto and stopping the engine.
- Ensure all rotating objects 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 completed

Important On delivery of your machine check that the Dealer has completed the p.d.i. form, ensure the warranty registration form in this manual is completed and returned.

Servicing and maintenance

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,



Warning

Never carry out any servicing or maintenance work without first disengaging the p.t.o. and stopping the tractor engine.

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- gearbox bolts,
- oil in the gearbox,
- 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.

Daily

- Grease all grease points, including p.t.o.
- Check condition of blades and blade bushes ensure all retaining bolts are fully tight.
- Check gearbox oil, replenish with EP90 gear oil as necessary to the correct level line on the dip sticks, provided with each gearbox.

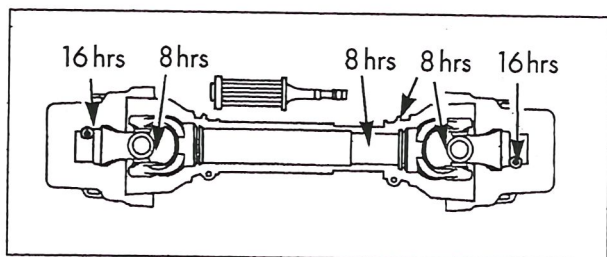


Fig 2

P.t.o. drive and grease points

Every 8 hours

- Dismantle and clean p.t.o. sliding surfaces and re-grease. Grease universal joints. (Fig 2)

Every 20 hours

- Grease p.t.o inner tube and push pins (Fig 2)

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 $\frac{3}{4}$ " 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.**

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, 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 re-placed. When replacing blades, it is important that blades are replaced in pairs, in order to retain balance of



the rotor. 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.

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 from Spearhead Service Department.

If working in wet and muddy conditions, ensure that mud thrown from tractor wheels is not allowed to build up between the deck.

Storage

Before storing away, thoroughly wash the machine removing all traces of grass and dirt. Grease all grease points until fresh grease shows. Store P.t.o. 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 of the friction plates, if there is any

sign of over heating, 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 guards and blades.

Remember the 3000-6W 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 540r.p.m. on the p.t.o.

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Parts lists

Ordering parts

When ordering parts please refer to your parts list to help your dealer with your order. Please provide the following:

- model no.

- part no. and quantity

- description

- serial number of machine

- delivery instructions (eg. next day)

Delivery is normally via carrier direct to your dealer. Services that are currently available are Next Day with the additional option of before 9am, 10.30am or Noon. Carriers also offer a 2-3 day service for heavier items. For light and small parts, these can be posted first or second class mail.

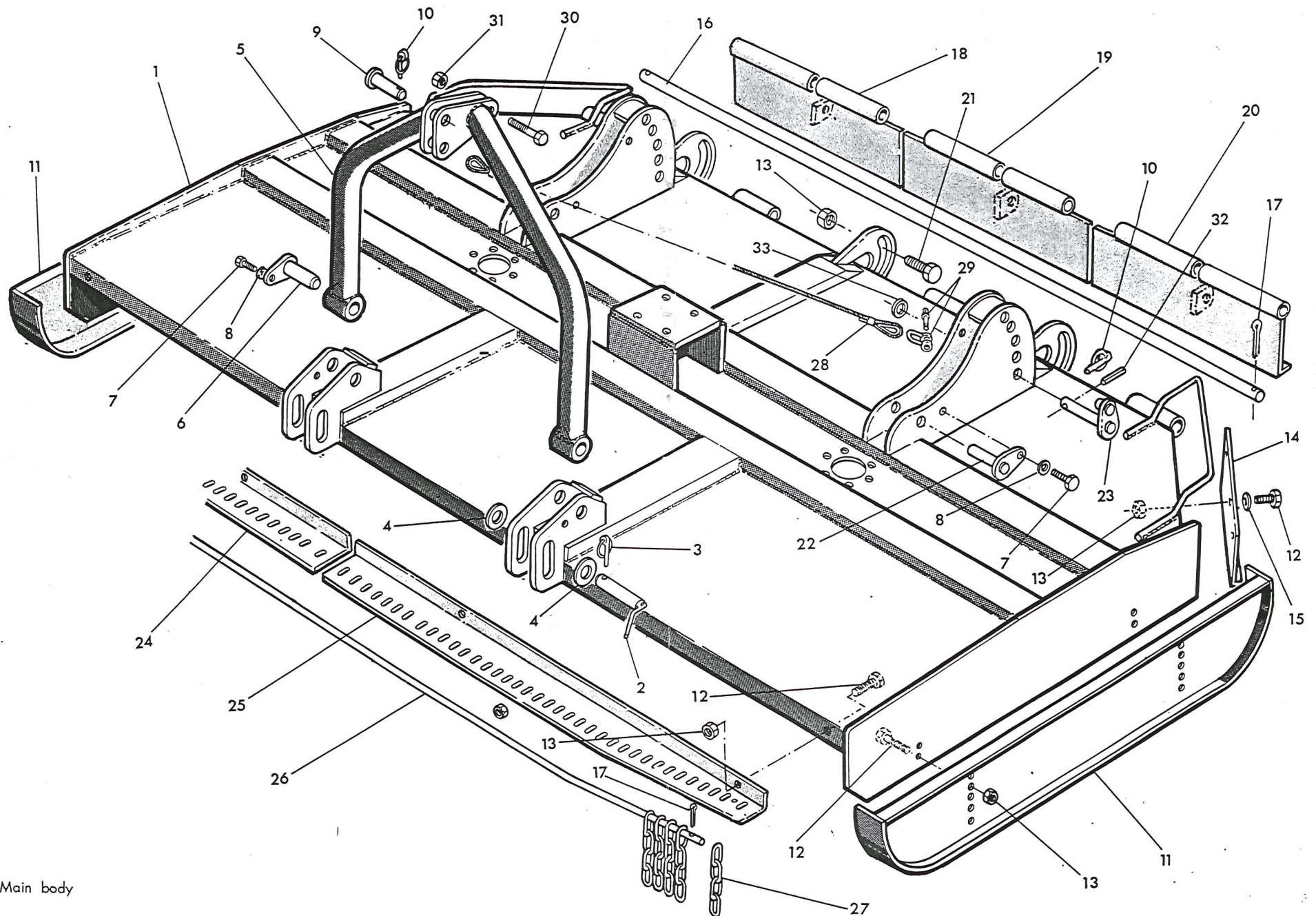


Fig 3 Main body

3000-6W Main body (Fig.3)

Fig. Ref.	Part number	Item description	No. used
1	1770400	Main body	1
2	6310208	Cranked pin	2
3	6310206	Lynch pin	2
4	2770470	Washer	4
5	1777613	Headstock	1
6	1777611	Pear pin	2
7	2770407	Screw	8
8	2770434	Washer	8
9	6310203	Top link pin	1
10	6310206	Lynch pin	1/3
11	1560102L	Skid L/H	1
	1560102R	Skid R/H	1
12	2770420	Bolt	18
13	2770417	Nyloc nut	15
14	1770410	Side flap	2
15	2770436	Washer	21
16	1770406	Hinge length 2190mm	1
17	2770513	Split pin	4
18	1770409	Adjustable flap	1
19	1770409	Adjustable flap	1
20	1770409	Adjustable flap	1
21	2770443	Bolt	3
22	1770624	Pear pin	2
23	1770634	Pear pin with lug	2
24	1770404	Right hand chain guard	1
25	1770403	LH chain guard	1
26	1770405	Chain retaining bar	1
27	8770621	Chain - 4 links	72
28	6770916	Wire rope	2
29	6777575	Shackle	2
30	2770463	Bolt	1
31	2770447	Nyloc nut	19
32	2770475	Roll pin	2
33	2770464	Washer	2

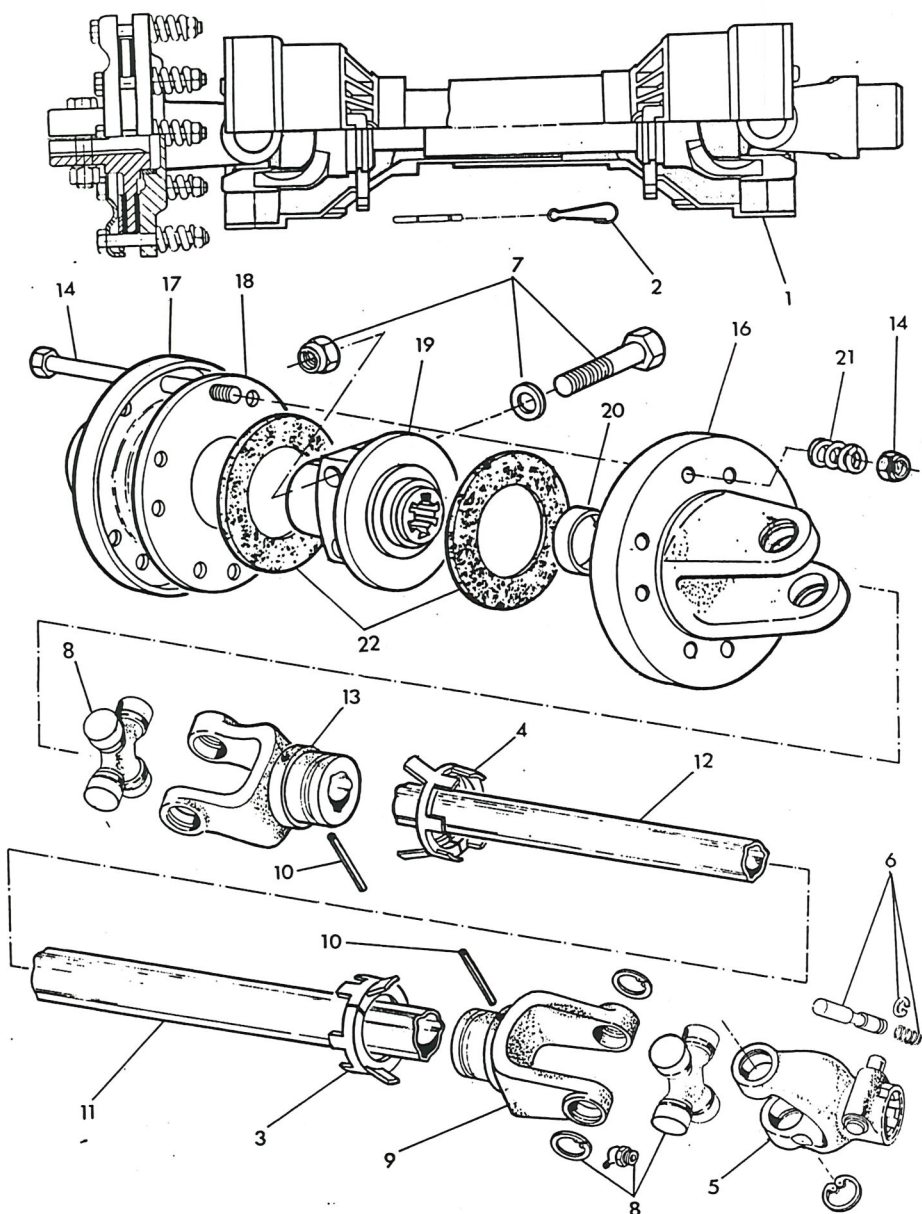


Fig 4 Pto shaft

Pto shaft (Fig.4)

Fig. Ref.	Part number	Item description	No. used
1	5770120	Complete pto cover	1
2	5771020	Retaining chain	2
3	5771308	Outer bearing	1
4	5771313	Inner bearing	1
5	5771299	Yoke Q.R.	1
6	5771023	Complete push button	1
7	5770091	Bolt set (2)	1
8	5771301	Cross journal assembly	2
9	5770095	Outer tube yoke	1
10	2770542	Roll pin	2
11	5772277	Outer tube	1
12	5772278	Inner tube	1
13	5770096	Inner tube yoke	1
14	5771325	clutch Plate bolt c/w nut	8
15	5771320	Clutch plate	2
16	5771318	Flange yoke	1
17	5771324	Pressure plate	1
18	5771323	Inner plate	1
19	5770093	Flange hub 6 spline	1
20	5771319	Bush	1
21	5771317	Spring	8
22	5771320	Clutch plates	2

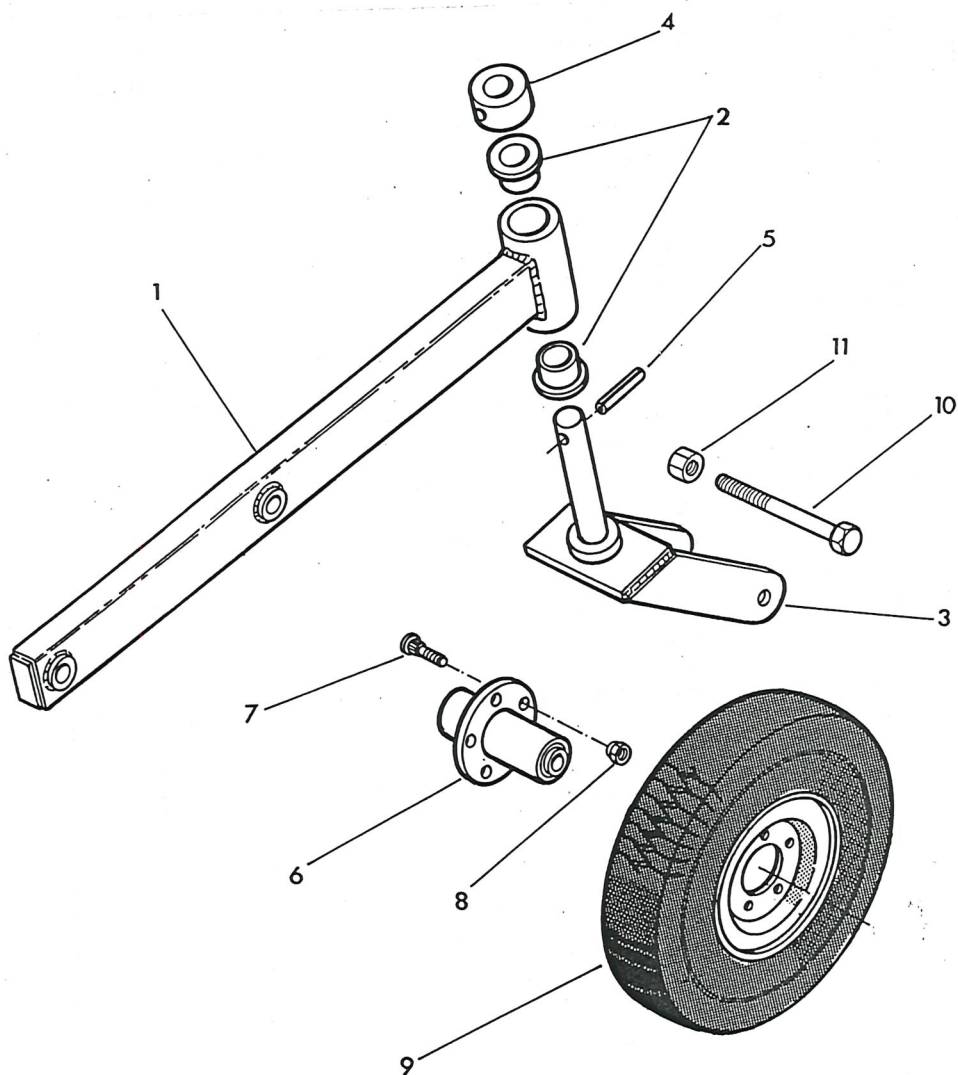


Fig 5 Wheel kit

Wheel kit (Fig.5)

Fig. Ref.	Part number	Item description	No. used
1	1770401	Wheel arm	2
2	4600127	40mm Bronze bush	4
3	1770402	Wheel yoke	2
4	1777700	Top wheel bush	2
	2770467	M6 grease nipple	2
5	2770480	Roll pin	2
6	6770676	Hub	2
7	6770677	Wheel stud	12
8	6770678	Wheel nut	12
9	6770675	Wheel	2
10	2770538	Bolt	2
11	2770409	Nyloc nut	2

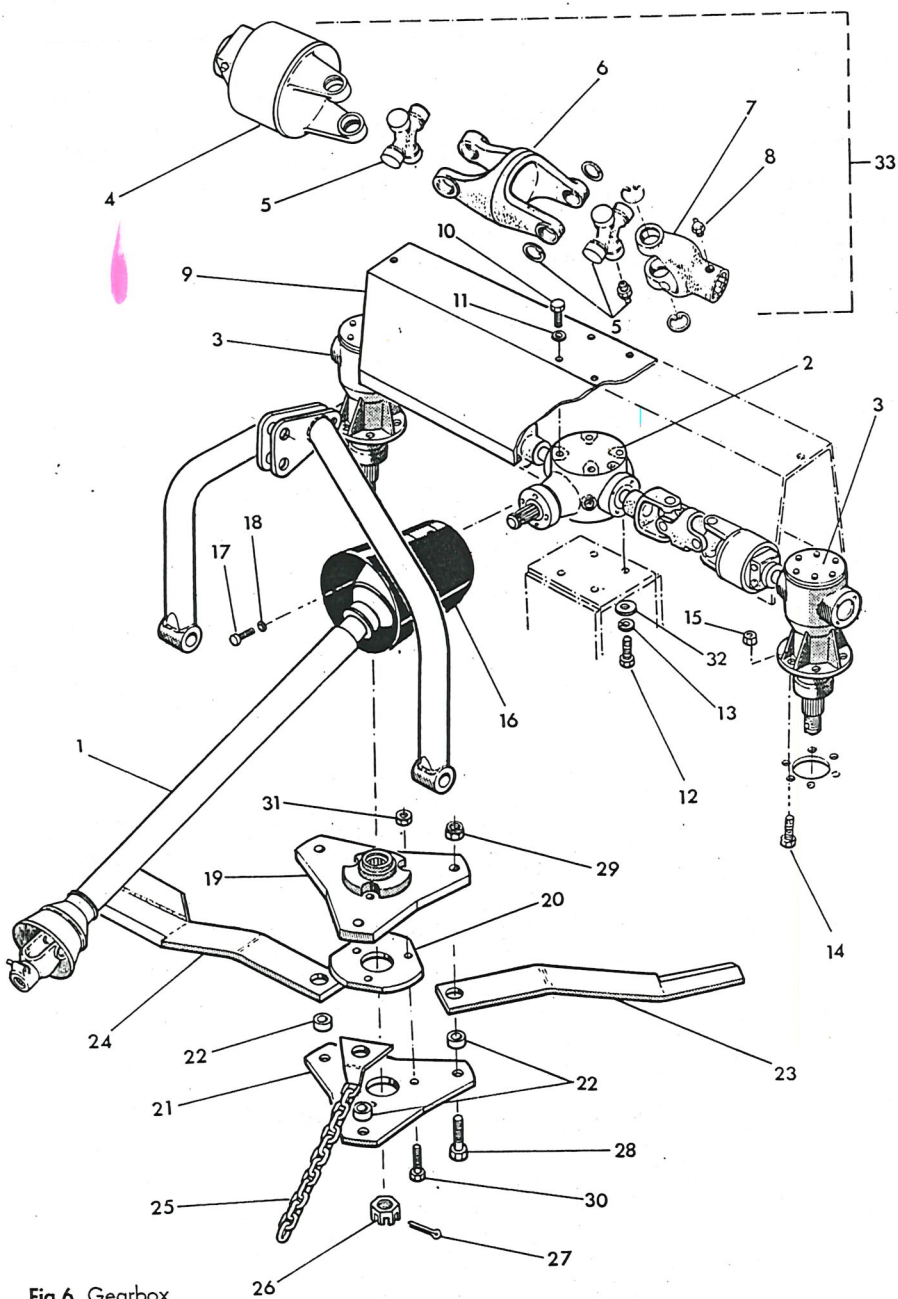


Fig 6 Gearbox

3000-6W Blade and gear box assembly (Fig.6)

Fig. Ref.	Part number	Item description	No. used
1	5770079	Pto shaft c/w clutch	1
2	5770011	Centre gearbox	1
3	5770004	Rotor gearbox	2
4	5770122	Rubber bonded yoke	2
5	5771301	Cross journal	4
6	5770092	Back to back yoke	2
7	5770121	Floating yoke (6 spline)	2
8	2770467	Grease nipple	2
9	1770411	Gearbox guard	1
10	2770473	Bolt	4
11	2770454	Washer	4
12	2770425	Bolt	4
13	2770456	Spring washer	4
14	2770423	Bolt	12
15	2770447	Nyloc nut	12
16	5770106	Plastic cone	1
17	2770401	Screw	4
18	2770432	Washer	4
19	1770407	Upper blade holder	2
20	1770604/3	Blade carrier spacer	2
21	1770408	Blade carrier lower	2
22	7770707	Blade bush	6
23	7770706	LH blade (optional)	3
	7770705	RH blade (optional)	3
24	7770703	LH blade c/w fin	3
	7770702	RH blade c/w fin	3
25	1560108	Chain kit for 3000-6W (optional)	6
26	5771409	Castle nut	2
	5771410	Domed washer	2
27	2770477	Split pin	2
28	2770413	Blade bolt	6
29	2770414	Blade nyloc nut	6
30	2770404	Bolt	6
31	2770447	Nyloc nut	6
32	2770454	Flat washer	4
33	5770065	Complete flexible joint	2

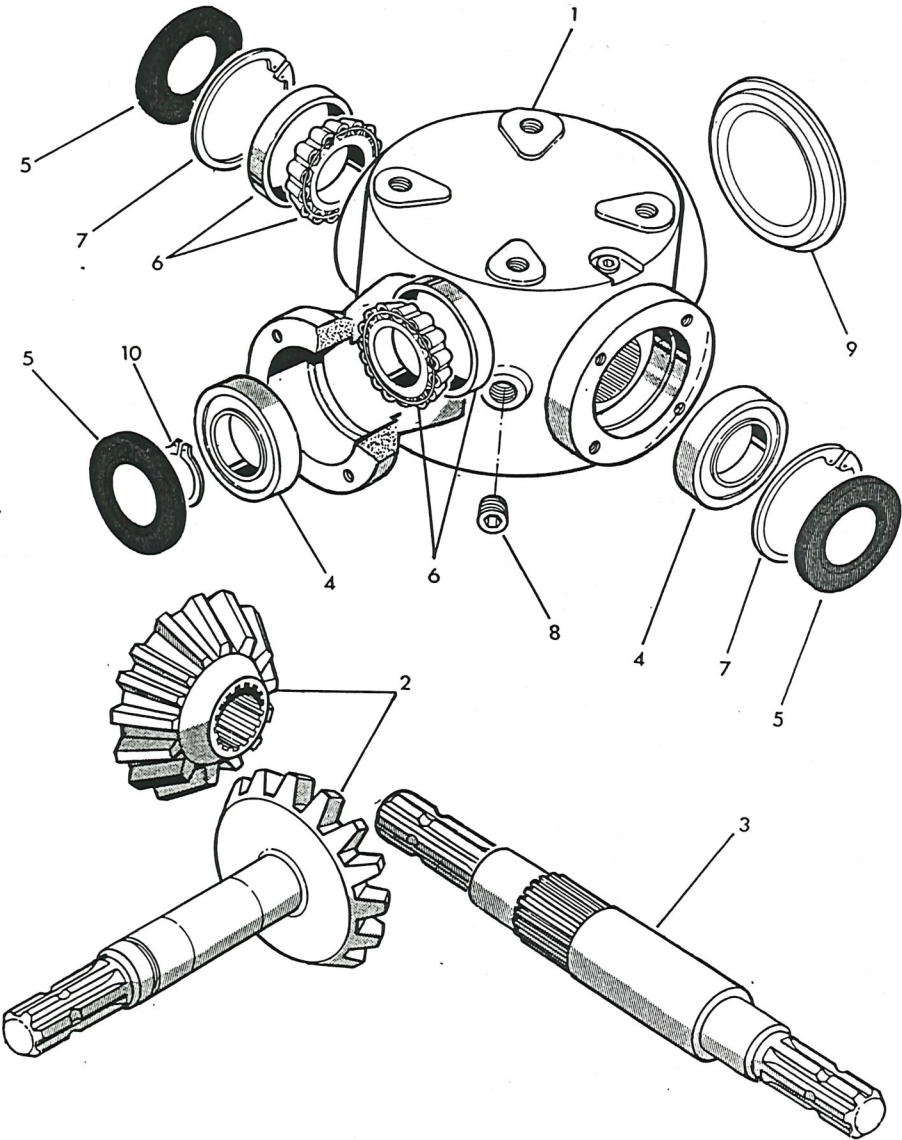


Fig 7 Centre gearbox

3000-6W Centre gear box (part no.5770011) (Fig.7)

Fig. Ref.	Part number	Item description	No. used
1	5771500	Casing	1
2	5771501	Gearset	1
3	5771506	Shaft	1
4	4771599	Bearing	2
5	4771507	Seal	3
6	4770660	Bearing	2
7	2777517	Circlip	2
8	5777208	Plug	1
9	5771507	Cover	1
10	2777518	Circlip	1
	5771508	Shim set	

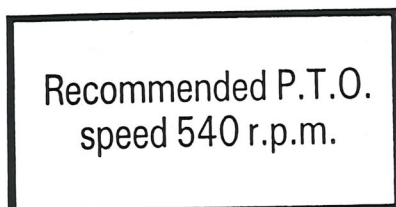


Fig 8 Stickers

3000-6W STICKERS (Fig.8)

Fig ref.	Part number	Description	No.
1	8770306	Keep bolts tight	2
2	8770305	Recommended pto	1
3	8770304	Danger sticker	4
4	8770307	GB sticker	2
5	8770308	Important sticker	1
6	8770322	Grease point	2
	8770296	3000-6W sticker	1
	8770303	Spearhead (large) greeen	1