

This instruction book covers

the

**DOWDESWELL ,STANDARD
HYD-FOLDING STANDARD
AND HEAVY DUTY
POWER HARROW RANGE**

Plate No
PH-00
0397

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Please note. To help staff identify your **DOWDESWELL POWER HARROW** in the event of a problem, and when ordering spares, it is advised that you fill in the name plate below from the information supplied on the serial number plate attached to the head stock of the machine.

Dowdeswell	
Engineering Co. Ltd.	
<i>Blue Lias Works, Stockton</i>	
<i>Nr. Rugby, Warwickshire. CV23 8LD</i>	
<i>Made In England</i>	
Mod. <input type="text"/>	Year: <input type="text"/>
CE <input type="text"/>	No. <input type="text"/>

For your Power Harrow
Spares contact :-
Dowdeswell (Norfolk) Ltd
Mendham Lane
Harleston
Norfolk
IP20 9DP

Telephone: (01379) 852115/6
Facsimile: (01379) 852067

Plate No PH-02 0397

WARRANTY

Should defective material and/or workmanship used in manufacture give rise to failure, the products themselves or the components and sub-assemblies affected, will be replaced or repaired free of charge during the warranty period. The fitting of non Dowdeswell parts, or repairs, or modifications carried out by unauthorised persons may invalidate the warranty. No major work is to be undertaken without prior consultation with Dowdeswell Engineering Co. Ltd.

Save to the extent covered by the warranty, the Company shall not be liable in any circumstances for any loss, injury or expense, whether direct or indirect, which may arise for any reason whatsoever from any defect in or otherwise in connection with any goods supplied or work done by the company.

REPLACEMENT PARTS

Use only genuine **DOWDESWELL** spares as these replacement parts are designed for your machine to give the best possible performance and also have the full backing of the warranty. See the parts section for the required part number and description when ordering spares.

Definition of Front, Rear, Left Hand and Right Hand

Throughout this handbook the terms 'Front', 'Rear', 'Left Hand' (LH) and 'Right Hand' (RH) are derived from the tractor drivers position facing forward in the normal forward direction of travel of the machine.

Left Hand Side. The side which is on the left only when an observer is facing in the normal forward direction of travel of the machine i.e. the operator looking forward from the rear of the machine.

Right Hand Side. The side which is on the right only when an observer is facing in the normal forward direction of travel of the machine.

IMPORTANT

This operators handbook should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this handbook was supplied along with the machine.

The dealer/distributor should read through the operating and safety instructions with the customer and ensure that they are fully conversant with these instructions prior to handing over the machine.

On delivery of the machine, the dealer/distributor should complete the warranty registration document and have it countersigned by the customer. The document is proof that the correct procedures have been followed.

The warranty registration document is invalid unless returned to DOWDESWELL ENGINEERING LIMITED or the importer within fourteen days of delivery to the customer.

On taking delivery of your DOWDESWELL machine check that it is as ordered and that it has not been damaged in transit. Please report any shortfall to your dealer.

The contents of this handbook, although correct at the time of publication, may be subject to alteration by the manufacturer without prior notice.

DOWDESWELL ENGINEERING LTD. operate a policy of continual product development. Therefore, some illustrations and/or text within this publication may differ from your machine.

The copyright of this handbook is the property of DOWDESWELL ENGINEERING Co. LTD. Blue Lias Works, Stockton, Rugby, Warwickshire CV23 8LD. This handbook is issued on the condition that it must not be used, copied or exhibited without their written permission.

INTRODUCTION

INTRODUCTION TO THE MANUAL

The provision of this manual is a requirement of the Supply of Machinery (Safety) Regulations 1992.

This manual has been written and provided to enable users of the DOWDESWELL Products to:

- Understand how the machine operates.
- Be able to operate the machine safely and without hazard to either the operator or persons in the vicinity.
- Be able to use the machine to its full potential.

The operator must read all of the manual and fully understand its contents before attempting to operate, adjust or service the machine.

The contents of this manual are intended as a guide to the operation and servicing of the machine. It is not a training manual.



This symbol indicates important safety messages within this handbook. When you see this symbol be alert to the possibility of injury to yourself or to others and carefully read the message that follows.

Whilst all care and attention has been taken in the design and production of all DOWDESWELL products, as with all machinery there remains a certain amount of risk to personnel whilst the machine is in use.

It is strongly recommended that operators take all possible precautions to ensure both their own safety and that of others that may be in the vicinity.

In accordance with the Supply of Machinery (Safety) Regulations 1992, note: *The equivalent continuous A-weighted sound pressure level at the drivers seat does not exceed 70 dB(A).*

SAFETY PRECAUTIONS

The Dowdeswell Power Harrow has been designed and constructed to comply with current Safety Regulations. However, as with all machinery there will be inherent dangers whilst operating and carrying out maintenance on the machine. The following list of items should, therefore, be brought to the attention of all persons operating or working on the machine and should be complied with at all times.

OPERATION



- Ensure operators have read and are familiar with the instructions contained in this publication.
- Consult the tractor manufacturer's manual for instructions on mounting implements and safe working methods.
- Make certain that all guards, covers, warning labels and safety devices are correctly fitted and operative.
- Ensure the work area is clear of bystanders, warning should be given before operating machine or attachments.
- Inspect the work area for obstructions which may constitute a hazard.
- Disengage all clutches and shift into neutral prior to starting the tractor engine.

- Wear substantial footwear.
- Avoid loose clothing which may be caught in moving parts.
- Wear gloves when handling worn implements or parts with sharp edges.
- Ensure the Power Harrow is not operated by children or untrained persons.
- Use the Power Harrow only for the purpose for which it was designed, tested and in accordance with the instructions contained in this publication.
- Interpret left or right as the left or right hand of the operation when sitting on the tractor seat and facing forward.
- Observe all safe driving procedures such as reducing speed on slopes and sharp turns. Be aware of weight and overall width and length of machine and attachments at all times.
- Be alert for hidden obstructions, should an obstruction be struck, stop and check for damage to the Power Harrow before proceeding.
- Avoid working on ground where there is a risk of the tractor overturning.
- Do not cultivate across the face of slopes.
- Avoid disengaging the tractor transmission before raising the Power Harrow from the ground.
- Keep yourself clear of any moving parts of the Power Harrow or parts which may be hot from operation.
- Never check oil levels when the Power Harrow is running.

- Never carry out adjustments and repairs to a mounted Power Harrow until the tractor engine is switched off and the Power Harrow is firmly supported or lowered to the ground.
- Make sure the Power Harrow is lowered, PTO drive is disengaged, the gear shift is in neutral, the brake is applied, the engine stopped and the ignition key is removed before you leave the tractor seat.

TRANSPORT



- Ensure operator and bystanders are at a safe distance from machine and do not encroach whilst raising/lowering machine or attachments to/from transport position.
- Beware of trap points when raising/lowering and fitting/removing locking devices to machine or attachments.
- Ensure all mounting and locking devices are correctly fitted and free from fatigue on machine and attachments before transport.
- When replacing locking or mounting devices use only the **correct genuine Dowdeswell parts**.
- Disengage PTO drive when transporting.
- Ensure machine and attachments are stable and tractor has sufficient front weights to facilitate safe driving conditions.
- Only transport machine at a speed suitable for conditions. Beware of the weight and overall width and height of machines and attachments at all times.
- Always avoid steep slopes and unduly rutted surfaces which may destabilise both tractor and machine causing hazards for other road users.

- Always comply with all current national and local road regulations at all times.

MAINTENANCE



- Stand Power Harrow on level ground and leave in a stable condition when disconnecting, use stands where provided.
- Inspect the Power Harrow for damage. Replace damaged or worn parts.
- Check that all bolts, nuts and fasteners are tight.
- Carry out lubrication and maintenance as detailed in this publication.
- Remove PTO shaft and clutch when leaving free standing to protect from effects of weather.



Always take immediate remedial action if an oil leak occurs. Never place a hand near the leak, oil under pressure can penetrate the skin and enter the blood stream. Wear barrier cream on hands if possible. Always thoroughly wash all parts of the body exposed to oil as soon as possible and use an appropriate hand cream. Dispose of rags and old oil in an approved manner.



Safety is the responsibility of the persons working with the machine. Think "SAFETY" at all times. Read and remember the contents of this handbook

DESCRIPTION

The Dowdeswell Power Harrow has been designed to a very high specification to cope with the arduous conditions encountered on heavy British land.

The gear train rotor drive system has an exceptionally high design capability and runs in a semi-fluid grease in a heavy steel hull assembly. Bearings fixed top and bottom of the hull give maximum rigidity to the rotors. All top bearings are greaseable.

Various cultivation techniques and a variety of tasks can be handled by the Power Harrow. It is however, particularly suitable for creating seedbeds in one pass on ploughed land and ideal for producing deep seedbeds with moisture retained in the lower soil layers, quickly and economically.

By varying the speed of rotation of the soil working blades, the cultivation depth and the forward travel speed of the tractor the Power Harrow will produce a range of tilths in most soil types.

The 'speedset' gearbox is available with a choice of four speeds as standard and further gears as an option.

Standard equipment on all models includes Crumbler roller, Floating rear levelling bar and fixed bottom link points.

Optional equipment includes Packer Rollers, Optional Blade speeds, Transport kit, Wheel Track Eradicators, Drill 'A' Frames, Rear PTO kit and a rear Hydraulic Linkage (Heavy Duty Only). A folding 6m Drill kit for toolbars is available for 6m Power Harrows.

SPECIFICATION : HEAVY DUTY POWER HARROW

To identify your Dowdeswell Power Harrow refer to serial number plate attached to headstock. The block marked **MOD.** Identifies machine width and model.

e.g. **300H**

300 signifies working width (3.0m)
H signifies model (Heavy Duty)

	300H	350H	400H
Max. Power at PTO HP (kW)	180	(134)	
Three Point Linkage	Optional CAT 2 or 3		
Transmission (R.P.M)	Optional 540 or 1000		
Tillage width (m)	3.0	3.5	4.0
Overall width (m)	3.2	3.7	4.2
Number of Rotors	12	14	16
Weight with Packer Roller (kg)	1635	1885	2200
Weight Crumble Roller (kg)	1520	1750	2040

Blade Speeds 540 R.P.M and 1000 R.P.M

Pick Off Gear L.H R.H

304	21	18
337	20	19
373	19	20
414	18	21

Optional gear sets available.....

231	23	15
274	22	17
459	17	22



*Refer to gearbox section for instructions for changing
Pick-off gears only run the Pick-off gears in the
combinations stated - Do not mix gear sets.*

SPECIFICATION: STANDARD POWER HARROW

To identify your Dowdeswell Power Harrow refer to serial number attached to headstock. The block marked **MOD** identifies machine width and model.

e.g. **300S**

300 signifies working width (3.0)
S signifies model (Standard)

	250S	300S	350S	400S
Max. Power at PTO HP (kW)		130 (97)		
Three Point Linkage		Category 2 only		
Transmission (R.P.M.)		Optional 1000 or 540		
Tillage width (m)	2.5	3.0	3.5	4.0
Overall width (m)	2.7	3.2	3.7	4.2
Number of Rotors	10	12	14	16
Weight with Packer Roller (Kg)	1300	1445	1625	1855
Weight with Crumble Roller (kg)	1230	1340	1510	1725

Speeds available with gear sets supplied:

Blade Speed		Pick-off Gear	
540 R.P.M	1000 R.P.M	L.H	R.H
236	299	19	16
265	335	18	17
297	376	17	18
333	421	16	19
Optional Gear sets available:			
187	236	21	14
210	266	20	15
374	---	15	20
421	---	14	21



*Refer to gearbox section for instructions for changing
Pick-off gears only run the Pick-off gears in the
combinations stated - Do not mix gear sets.*

SPECIFICATION: HYDRAULIC FOLDING STANDARD

To identify your Dowdeswell Power Harrow refer to serial number plate attached to headstock. The block marked **MOD** identifies machine width and model.

e.g. **600S**

600 signifies working width (6m)
S signifies model standard

	S600	S800
Max. Power at PTO HP (kW)	260	(195)
Three Point Linkage	Category 3 (Opt Cat 4 Lower link only)	
Transmission (R.P.M)	1000	1000
Tillage width (m)	6.0	8.0
Overall width	6.2	8.2
Folded transport width (m)	2.9	2.9
Folded transport height -		
-From Lower Hitch Point (m)	3.0	4.0
Number of Rotors	24	32
Weight with Packer Roller (kg)	3900	4500
Weight with Crumble Roller (kg)	3500	4210

Drive is supplied to the Power Harrow via a fixed **1000 R.P.M.** input 'SPLITTER' gearbox to 'SATELLITE' gearboxes on the individual units. Blade speeds are alternated by changing Pick-off gear arrangements on 'SATELLITE' gearboxes. ('SATELLITE' gearboxes are 540 R.P.M.)

Blade speeds	Pick-off gear	
1000 R.P.M	L.H	R.H
282	19	16
317	18	17
355	17	18
398	16	19



Refer to gearbox section for instructions for changing Pick-off gears only run the Pick-off gears in the combinations stated - Do not mix gear sets. Each satellite gearboxes must be run with the same gear combination.

NEW MACHINE

Lubrication and General

On receipt of a new machine check that it meets the required specification then carry out a preliminary maintenance. Ensure Power Harrow is standing on level ground and is stable prior to inspection.

- 1) Check all oil and grease points and moving parts as shown under “Lubrication and Maintenance” section.
- 2) Check all bolts, nuts and fasteners, particularly blade bolts, have been tightened as detailed in blade section.
- 3) Check through the filler cap of the gear train housing that the level of self-levelling grease comes to the middle of the gears. As shown “in” Lubrication and Maintenance section.

Power Take Off, Drive Shaft and Clutch

For delivery reasons the PTO drive shaft may have been removed from the machine. If so it should be refitted as detailed in both “clutch” and “attaching to tractor” sections.



**SERIOUS DAMAGE CAN RESULT
FROM FAILURE TO CARRY OUT
THE ABOVE PROCEDURES !**



ATTACHING TO TRACTOR

TRACTOR SUITABILITY



Consult tractor manufacturers manual and specification to ensure it is of sufficient capacity and correctly maintained to operate the Power Harrow and any attachments safely in all conditions.

Failure to do so may result in un-warranted damage to both tractor and implement, and risk injury to both operator and bystanders.

P.T.O SHAFT

With the Power Harrow standing on level ground and locking devices fitted where applicable adjust depth control pins until the gearbox input shaft is horizontal. Reverse the tractor to the Power Harrow to give 15cm (6") **Minimum** engagement of the male half shaft in the female tube when connected to the tractor. This establishes the minimum safe working length of the PTO shaft for connection to the tractor.



It is essential that the PTO drive shaft is set to a safe working length and the male shaft does not bottom or separate from the female tube under all conditions of use and transport.

TRACTOR ALIGNMENT

Position the lower link ball joints in line with the Power Harrow mounting brackets. The mounting brackets on rigid machines maybe reversed to suit CAT 2 or CAT 3 and moved forward if necessary to suit PTO shaft length. Connect the lower links with pins and lynch pins provided.

ATTACHING TO THE TRACTOR

Adjust the tractor top link as necessary to connect it to the machine with the pin provided. Both top and bottom link positions on Heavy Duty model have unequal hole sizes to take stepped pins which are either Category 2 or 3.

Attach the PTO drive shaft to the tractor, ensuring the quick release pin engages the spline shaft groove.

Attach the guard chains to the tractor and Power Harrow.

Adjust the sway blocks or check chains of the tractor so there is only 5cm (2") of movement in the linkage. Adjust the tractor linkage so the Power Harrow is both central to the tractor and level with the back axle.

For driving stability and safety ensure sufficient front weights are fitted to compensate for the mounted Power Harrow and any attachments.

Before engaging the tractor PTO check that the operating length of the drive shaft maintains the minimum 15cm (6") of male-female engagement when the machine is in the working and raised positions, and does not completely close when the shaft is horizontal.

When raised the angle of the drive shaft must never exceed 40 degrees from the horizontal or damage may occur. It may be necessary to limit the movement by means of the control quadrant.

To disconnect the Power Harrow follow the same procedure in reverse, ensuring that the machine is stable prior to disconnection.

GEARBOX



Disengage PTO drive and switch off tractor engine before attempting any of the following procedures or maintenance on the gearbox. Beware of hot oil when removing covers if the implement has been used prior to maintenance.

Ensure all fixings and seals/gaskets are in good condition to avoid 'oil seepage' during use.

Ensure all breathers are operational and not surrounded by debris which will obstruct air flow.

OIL LEVEL

Check gearbox oil level by means of the dipstick situated at the rear of the Pick-off gear compartment(Standard, Heavy Duty) As follows:-

- 1)Clear away dirt from around dipstick plug.
- 2)Unscrew dipstick and wipe away oil residue.
- 3)Insert dipstick into hole so the underside of the plug rests on top of the gearbox. The correct oil-level should be between the two marks on the dipstick.
- 4)Fill with SAE 140 gear oil as required.
- 5)Replace Dipstick and screw plug securely in position. HYD-Folding machines central splitter gearbox oil level is set by means of a level plug at the rear of the box. Remove level plug and fill with SAE 140 gear oil until oil reaches level hole, and then securely refit plug.

SPEED/GEAR CHANGE

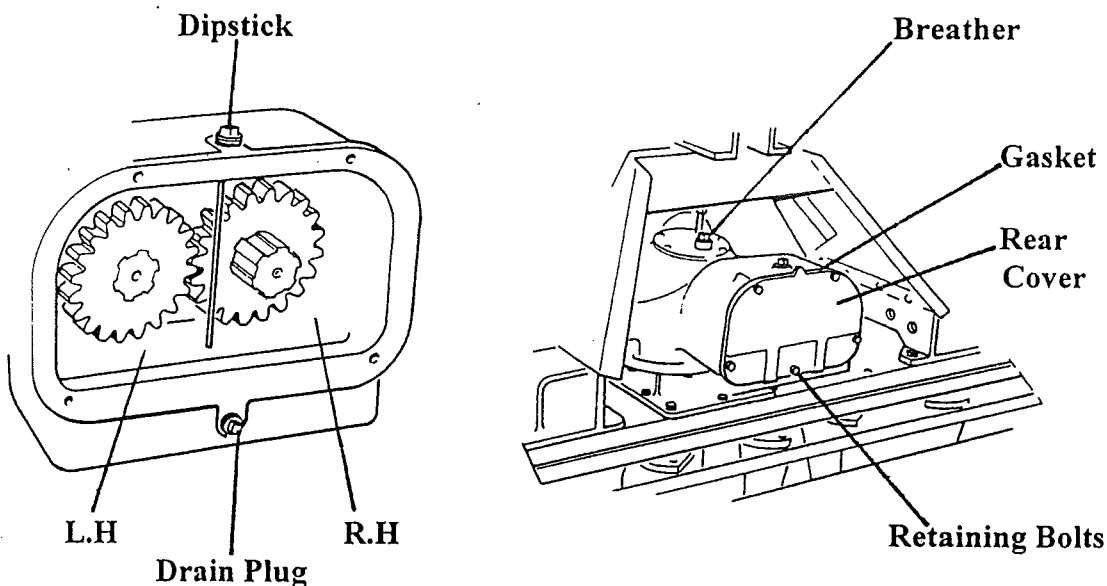
Two pairs of gears are supplied with each new machine and further pairs can be supplied as an option. Consult relevant "Specification" section for blade speeds and options. A blade speed chart is also fitted to the rear of the headstock.

540 or 1000 is clearly stamped on the front of the pinion cover to identify transmission requirements of each gearbox.

GEARBOX

TO CHANGE GEARS

- 1) Power Harrow should be raised and tilted forward to move oil from rear of box.
- 2) Clean away any dirt from around the rear of the gearbox and undo the five bolts retaining the rear cover. Remove cover and gasket.
- 3) Remove existing gears and replace with the required pair as detailed in "Specification" to give the required blade speed.
- 4) Refit rear cover and gasket, securing with the five bolts.
(The same procedure also applies when rear power take off kit is fitted).



CLUTCH



Disengage tractor PTO drive and switch off tractor engine before setting or adjusting clutch unit.

Drive from the tractor (or "Splitter" gearbox 6m and 8m) to the Power Harrow gear box is taken through a dry plate safety overload clutch. The overload clutch unit protects the Power Harrow transmission should the blades encounter an obstruction. If set too loosely the blades will turn erratically leading to excessive friction plate wear and a poor work finish. If set too tight it will not provide the necessary protection to both machine and tractor transmissions.

CLUTCH

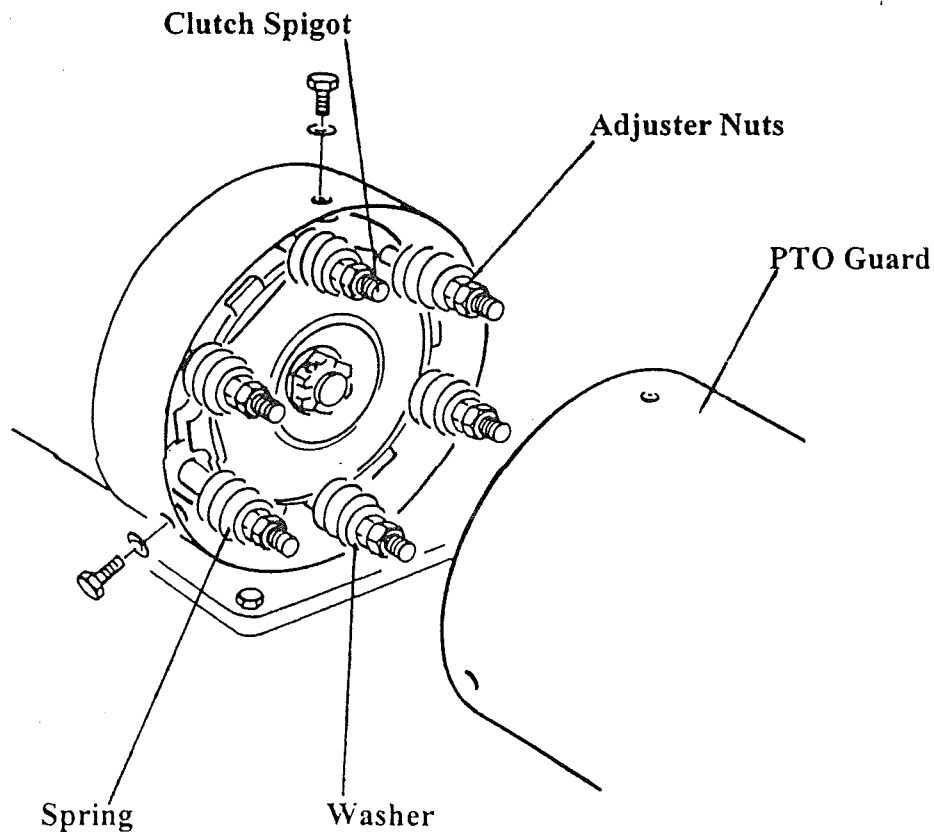
TO SET/ADJUST CLUTCH

- 1) Disengage tractor PTO drive and switch off tractor engine.
- 2) Disconnect the PTO shaft guard and safety check chain. Remove the outer clutch guard from machine.
- 3) Remove clutch unit adjuster nuts, washers and springs.
- 4) Locate PTO drive shaft clutch plate over the spigot on the clutch unit and fit springs, washers and nuts finger tight to hold in position.
- 5) Tighten two opposite nuts in tandem until the springs are coil bound to centralise unit.
- 6) Tighten other nuts to finger tight to the washer then tighten each nut an additional:-

1) 3/4 TURNS - 1000 R.P.M. TRANSMISSION

2) 1/2 TURNS - 540 R.P.M. TRANSMISSION

- 7) Slacken off the two coil bound springs and reset as outlined in (f).
- 8) Refit PTO drive shaft guard and clutch unit guard, securely fasten safety guard chain.



BLADES

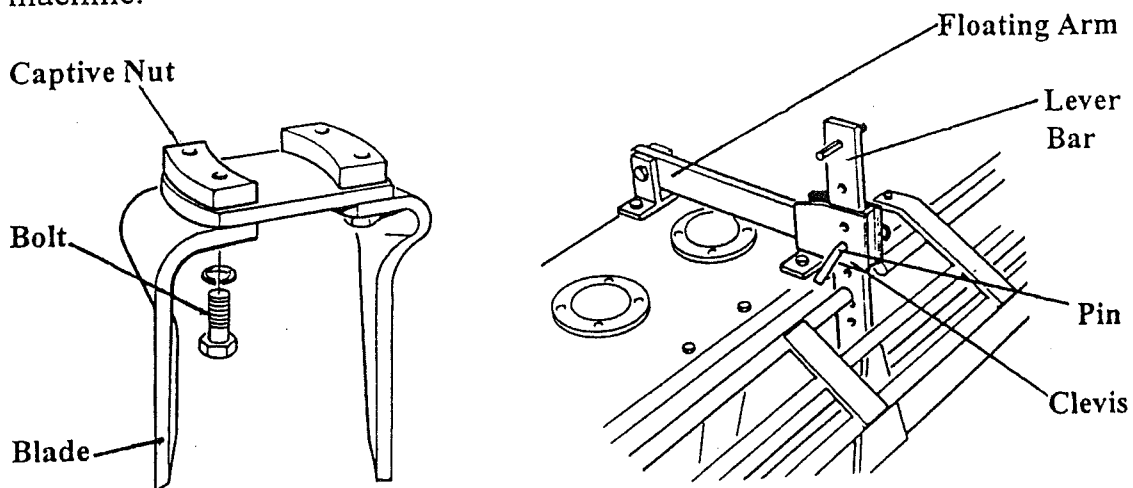


Disengage tractor PTO drive and switch off tractor engine before attempting any maintenance on blades.

Dowdeswell Power Harrow blades are designed to produce seed beds of exceptional quality with the moisture retained in the lower soil layers. 12" forged "L" blades are standard on all machines. The blades are held in place by dia 16mm High tensile bolts (grade 12.9) Heavy coil spring washers and a double captive harden nut.(see below left) Flanged nyloc nuts are available as an option.

Bent, broken or badly worn blades impair efficiency and should be replaced immediately.

Use only genuine Dowdeswell blades and fixings when re-furbishing your machine.



LEVELLING BAR



Beware of trap points and unsupported weight swing when adjusting levelling bar.

The rear mounted levelling bar is attached to two floating arms and is adjustable vertically by holes in the mounting arms. Pins and 'R' clips lock the levelling bar into the cleaves of the floating arms at the desired height.(see above right)

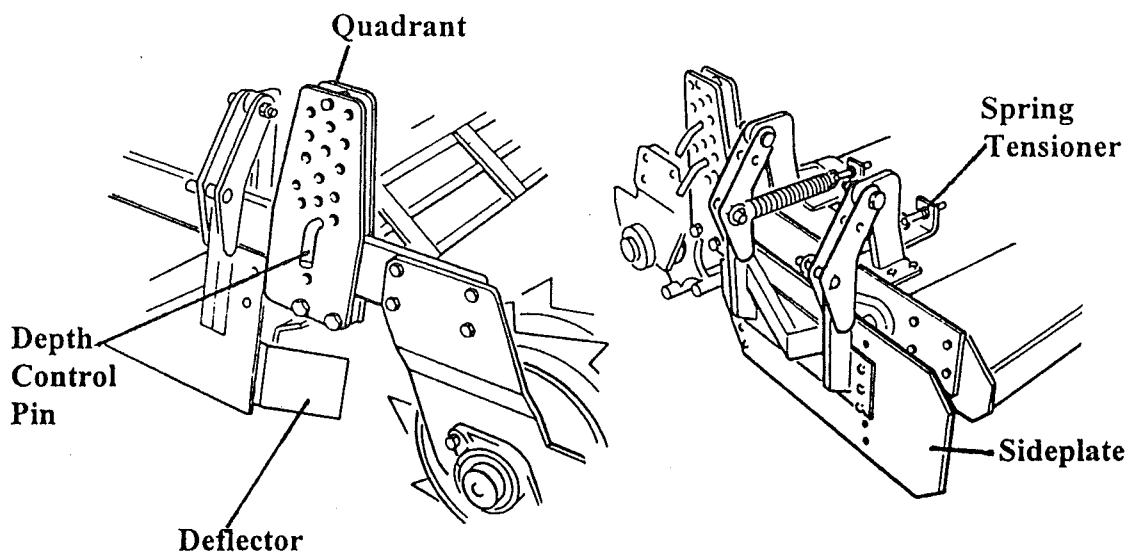
Correct setting of the levelling bar keeps an even and level seedbed whilst retaining unbroken clods in the rotors to be broken down.

DEPTH CONTROL



Do not adjust depth control while machine is work or motion. Disengage PTO drive and switch off tractor engine. Beware of trap points and machine stability when adjusting.

Tillage depth is recalculated by means of a rear mounted roller. To adjust the working depth, raise Power Harrow and select new position for depth control pin in depth adjustment quadrant. Each hole position provides a variation in working depth of approx. 2.5cm (1").(see below left)



SIDE PLATES



Before adjusting sideplates disengage tractor PTO drive, switch off engine and beware of trap points during adjustment.

The Sideplates are adjustable in height by a series of holes to suit working depth and are fixed in position by six nuts and bolts. The Sideplates are spring loaded to retain cultivated soil within the working width of the Power Harrow, But allowing large stones or debris to pass through thus protecting the end rotors.

Adjustable deflectors are positioned at the rear of the sideplate to guide cultivated soil under the Roller and prevent ridging and an uneven seedbed.(see above right)

HYDRAULIC-FOLDING STANDARD



Be aware of the overall height and width of machine when lowering or raising for/after transport, ensure bystanders do not encroach during operation and fit all locking devices before moving off. Keep all Hydraulic fittings clean and ensure all pipe fittings are securely fastened. Do not attempt raising or lowering of Power Harrow unless tractor is on level and stable ground and there is no risk of overturning.

To Raise For Transport

Ensure tractor is on level, stable ground.

Disengage tractor PTO drive, select neutral gear and apply brake.

Raise Power Harrow at least 15cm (6") off ground.

Ensure tractor engine is switched off, remove locking pin and place in stowage port provided. On machines fitted with **Hydraulic Catches** ensure Lock Arm is in 'down' position.

Check surrounding area for obstructions which may cause a hazard during raising. Be aware of the overall height of implement when raised.

Steadily raise Power Harrow to transport position and "lock" hydraulics.

Switch off tractor engine, Fit locking pins in position and secure with lynch pins provided. On machines fitted with **Hydraulic Catches** ensure lock Arm has 'sprung' into the lock position. Do not cross under Power Harrows folding path until pins are securely in place or Catch has fully locked in transport position.

Check all mounting and locking devices are correctly fitted and free from fatigue and ensure machine and tractor are in a stable condition before moving off.



Avoid transport on steep slopes and uneven ground that may de-stabilise tractor and machine.

HYDRAULIC-FOLDING STANDARD

TO LOWER FOR WORK

Ensure tractor is on level, stable ground.

Select neutral gear and apply brake.

Charge rams to fully raised position, "lock" Hydraulics and switch off engine.

Ensure surrounding area is clear of obstructions, and onlookers are clear of folding path. Be aware of overall width when fully lowered.

Remove locking pins from front of machine do not 'cross' folding path of machine.

On machines fitted with **Hydraulic Catches** fully charge Lift rams and then release Lock Arm by charging the Catch rams

Steadily lower machine to work position.

Turn off tractor engine and fit locking pins, secure in position with lynch pins provided.

TRANSPORT KITS



Be aware of trap points and weight shift when operating transport kit. Avoid transport on steep or very uneven surfaces that may de-stabilise tractor and machine.

Transport Kits are available on 3.5m and 4.0m Standard and Heavy Duty models of Power Harrow.

A **Central kit** is for Power Harrows only, an **Offset Kit** is available for use when 'A' frame drills are fitted.

TO LOWER FOR TRANSPORT

Disengage PTO drive, select neutral gear, apply brake.

Manually lower drawbar and fit locking pin.

Remove locking pin from Hydraulic wheels and lower to transport position.

Fit locking pin and secure with lynch pin provided.

TRANSPORT KITS

TO LOWER FOR TRANSPORT

Lower Power Harrow on to wheels and drawbar jack.
Ensure Power Harrow is stable and level (use drawbar jack to level machine.)
Disconnect PTO drive shaft and support in hook provided.
Disconnect transport kit Hydraulics and tractor top link.
Release lower hitch points and engage tractor pick up hitch in drawbar eye.
Move jack to transport position.



Be aware of overall length and stability of Power Harrow when transporting. Ensure all locking and mounting devices are correctly fitted and free from fatigue before moving off.

RAISING FOR WORK

Move jack to park position and lower pick up hitch.
Connect tractor lower links, select neutral gear and apply brake.
Connect tractor top link and transport kit Hydraulics.
Raise Power Harrow until wheels and jack are clear of ground.
Remove drawbar lock pin and manually raise so rubber buffer rests on strut.
Remove locking pin from transport wheels and raise to “park” position.
Fit locking pin and secure with lynch pins provided.
Connect PTO drive shaft and secure safety guard chain.

REAR POWER TAKE OFF KIT

Both Standard and Heavy Duty Power Harrows have an optional Rear Power Take Off kit. The RPTO shaft is secured in the cover by a bearing and drive is supplied from the input shaft via a splined coupler. The RPTO kit is capable of transmitting up to 15 HP (12kW). The RPTO kit is supplied fully assembled to aid easy fitment.

TO FIT R.P.T.P KIT

Tilt Power Harrow slightly Forward, Disengage PTO drive and switch off tractor engine.

Clean away any dirt from around the Pick-off gear cover. Undo the five retaining bolts and remove cover and gasket.

Place gasket on RPTO cover.

Fit cover by rotating RPTO shaft to align coupler and gearbox input shaft splines.

Secure in place with five retaining bolts.

If a pulley is required to be fitted on the RPTO shaft, remove guard and fit as detailed by manufacturer.



Be ware of hot oil in gearbox if machine has been in use prior to fitting.

DRILL 'A' FRAME KIT

An optional drill 'A' frame kit can be supplied for Heavy Duty and Standard Power Harrows.

TO FIT 'A' FRAME

Fit four bosses through holes in the rear of the hitch mounts.

Place 'a' frame over rear of hitch mounts and secure in place with four bolts and nyloc nuts provided.

Set adjustable top link and secure in place with pins and lynch pins provided.

Consult manufactures drill fitting instructions for mounting of drill on 'A' frame.



The fitting of an 'A' frame drill will significantly add to the weight of the machine ensure sufficient front weights are fitted to the tractor for stability.

REAR-HYDRAULIC LINKAGE KIT (HEAVY DUTY MODEL ONLY)

A rear Hydraulic linkage kit is available as an option for the Heavy Duty Power Harrow.

The rear Hydraulic linkage is designed for trailed drills with a **lift capacity of 2300 kg**. The linkage allows the drill to “float” on its own wheels whilst in work. The linkage will lift the drill up and over the rear roller to compact the weight and overall length of the machinery for turning in the headlands and transporting.

The kit is supplied fully assembled for ease of fitment. The kit and ram weighs 525 kg.



Ensure Power Harrow is standing on level ground and in a stable condition before fitting rear Hydraulic linkage. Use lifting equipment to aid fitment and avoid injury.

TO FIT REAR HYDRAULIC LINKAGE KIT

Remove existing top hitch plate and struts.

Lift the linkage and rest the top hitch mount plate on the headstock and secure in place.

Remove cross bar and link arms from linkage whilst supporting ‘A’ frame section.

Fit lower link arms to rear hole of hitch mount in tandem with fitting to ‘A’ frame pivot pin and secure in place with nyloc nuts, collar, and spring pins

Refit cross bar into linkage and struts to top hitch mount and secure in place.

REAR-HYDRAULIC LINKAGE KIT (HEAVY DUTY MODEL ONLY)

OPERATION

Set lower link plates to suit hitch points on drill. Read drill manufactures hand book fitting instructions before mounting drill.

Attach lower link points using locking plate and pin provided.

Fit and adjust top link assembly to suit drill.

Connect Hydraulic fitting to tractor spool (Note the linkage works on a single acting ram.)

Clear area of bystanders and lift the linkage up and down to ensure correct operation. Rubber buffers are fitted to stop the linkage overcentering when in use.

Always fit safety strap when raised for transport.



Ensure all mounting and locking devices are correctly fitted and free from fatigue before transporting Power Harrow and drill.

WHEEL MARK ERADICATORS

To eliminate wheel marks rigid Eradicators can be mounted on the front guard tool bar. Two types of Eradicator Assemblies are available -Light Duty and Heavy Duty. The operating depth is adjusted by releasing the U-Bolts, sliding the bar up or down as required and retighten the U-bolt (Light Duty) and by sliding arm and clevis adjustable by selecting correct pin holes in Eradicator arm (Heavy Duty).

Sideways adjustment is made by loosening the clamping bolts on the bracket and sliding the assembly to the required position.

LUBRICATION AND MAINTENANCE

Lubricants:-

Gearbox	- SAE 140 gear oil
Gear Train	- BP Energrease FG00-EP (approx.) 25kg/3m 29kg/3.5m 32kg/4m
Grease Points (inc. U/J Bearings)	- Litium Based
PTO Drive Shaft	- Graphite or moly bdenum disulphide grease
Oil Points	- General Purpose

SERVICE SCHEDULE

On delivery and after the first 8 hours

Nuts, Bolts and Keyways	Tighten
Power Harrow	Lubricate

Every 50 Hours

Nuts, Bolts and Keyways	Tighten
Power Harrow(PTO Drive Shaft Telescopic sections & Top Bearings)	Lubricate
Gearbox Oil Level	Check
Power Harrow Components	Check condition
Change Oil after first 10 Hours work and subsequently every 500 Hours.	

End of Season

Power Harrow	Keep dry with waterproof cover
Power Harrow	Clean down thoroughly
Power Harrow Components	Check condition
Guards, safety devices and logos	Check condition
Nut, Bolts and Keyways	Tighten
Power Harrow	Lubricate
Paintwork	Check and Touch up
Power Harrow	Store under cover away from birds and rodents

OPERATIONAL INSTRUCTIONS

As a general principle fine tilths are produced by a combination of fast blade rotation and slow forward tractor speed, slow blade rotation and faster tractor speed produces progressively coarser tilths.

The following operational characteristics should also be borne in mind.

- 1) Slower blade rotational speeds require less power than higher speeds.
- 2) High blade rotational speeds increase blade wear and may damage soil structure.
- 3) High travel speeds and fast blade rotation should be used only for preparing shallow seedbeds on previously broken ground.
- 4) As far as possible avoid cultivation when the soil is excessively wet or very dry. In conditions of high moisture content the soil may “ball” and clog the blades, low moisture content produces dust and high blade wear.

WORKING INFORMATION

Set the depth control pins to the required tillage depth and adjust the levelling bar accordingly.

Ensure the tractor hydraulics are set to “position” not “draft” control. Engage the tractor PTO and drive forward progressively lowering the blades into the ground until full tillage depth is achieved.

Proceed for a short distance and check whether the resultant tilth is satisfactory and uniform across the width of the machine. If not, make appropriate adjustments to produce the required tilth utilising the slowest blade speed which allows a reasonable ground speed.

Should any problems be experienced in obtaining a high quality tilth consult the “Operators Checklist”.

OPERATORS CHECKLIST

Before commencing cultivation ensure:

- 1) Guards and safety devices are in position and working.
- 2) The tractor hydraulics i.e. in “Position Control”.
- 3) The PTO drive shaft does not exceed an angle of 20 degrees and the Power Harrow is set to lift only 10-20cm off the ground.

OPERATORS CHECKLIST

Should difficulty be experienced in obtaining a satisfactory tilth the following action should be taken.

Tilth Too Coarse

Increase blade speed.
Reduce tractor travel speed.
Lower levelling bar.
Work soil in drier condition.

Soil "Balls" On Blades

Replace badly worn or bent blades.
Increase blade speed.
Remove any obstacles from blades.
Work soil in drier condition.



When cultivating on hillsides drive with caution and work up or down slopes if possible to reduce terracing effect. Always raise the Power Harrow and disengage the PTO drive when turning at headlands.



CONTENTS

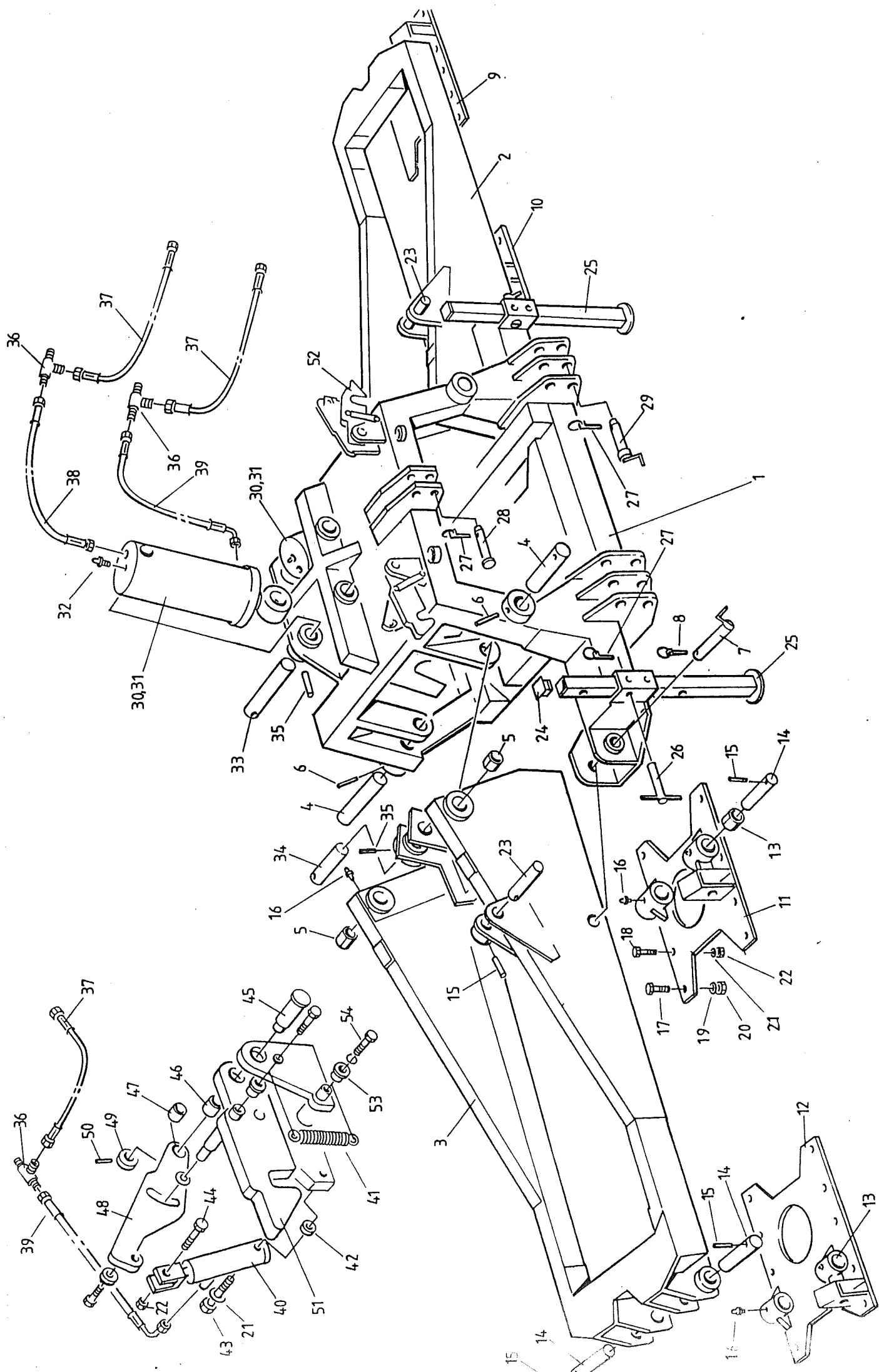
Page No.	Title
1	Contents List
2	Identification Plate
3/4	Mounting Beam
5/6	Splitter Gearbox Assembly
7	Tractor Drive Shaft Assembly
8	Side Drive Shaft Assembly
9	Safety Clutch
10/11	Gearbox Assembly (540 RPM)
12	Centre Drive
13	Driven Head Assembly
14	Hull & Top Cover Assembly
15	Levelling Bar Assembly
16	Sideguard Assembly
17	Depth Control Assembly
18	Packer Roller

Please note. To help staff identify your **DOWDESWELL POWER HARROW** in the event of a problem, and when ordering spares, it is advised that you fill in the name plate below from the information supplied on the serial number plate attached to the head stock of the machine.

Dowdeswell	
Engineering Co. Ltd.	
<i>Blue Lias Works, Stockton</i>	
<i>Nr. Rugby, Warwickshire. CV23 8LD</i>	
<i>Made In England</i>	
Mod. <input type="text"/>	Year. <input type="text"/>
CE	No. <input type="text"/>

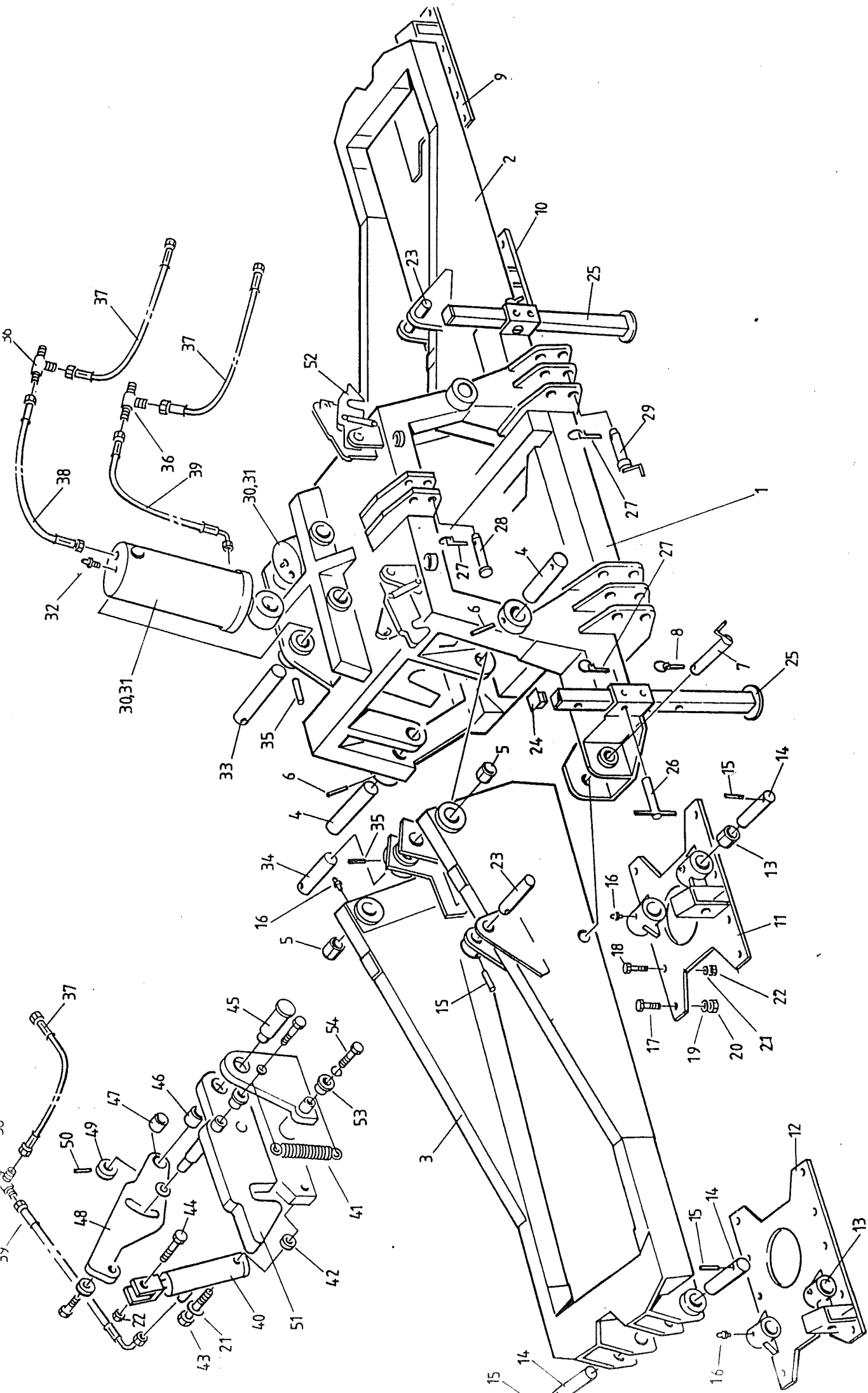
For your Power Harrow
Spares contact :-
Dowdeswell (Norfolk) Ltd
Mendham Lane
Harleston
Norfolk
IP20 9DP

Telephone: (01379) 852115/6
Facsimile: (01379) 852067



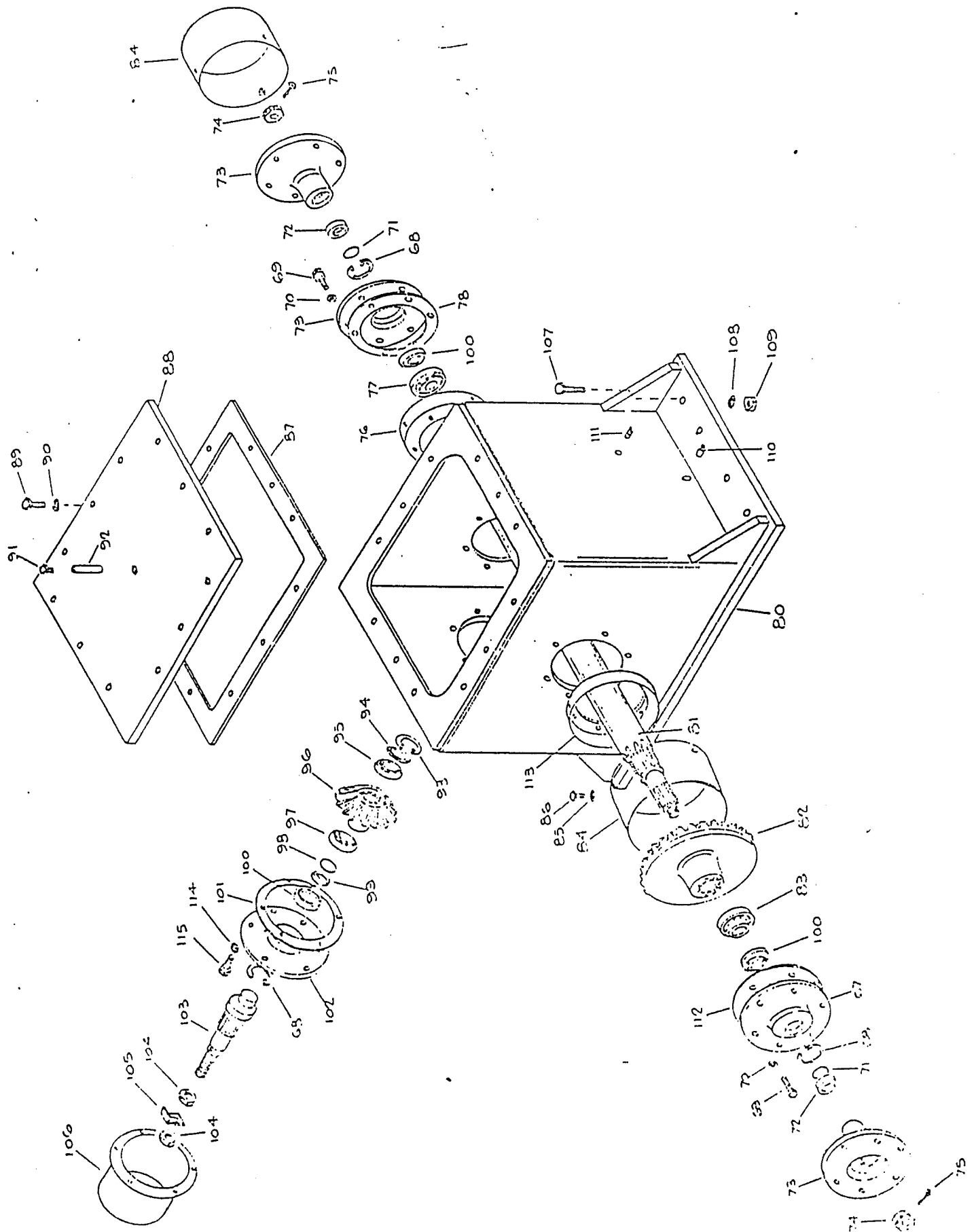
MOUNTING BEAM ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QUANTITY	
			6.0m	8.0m
1	822265	Headstock	1	1
2	822197	Folding Wing L.H.	1	
2	822254	Folding Wing L.H		1
3	822198	Folding Wing R.H	1	
3	822255	Folding Wing R.H		1
4	822084	Pivot Pin	4	4
5	256065301	Pivot Bush	8	8
6	208086960	H.D. Spirol Pin	4	4
7	822079	Lock Pin	2	2
8	208092100	H.D. Lynch Pin	2	2
9	822052	Outer Mount L.H.	1	1
10	822043	Inner Mount L.H	1	1
11	822050	Inner Mount R.H.	1	1
12	822054	Outer Mount R.H.	1	1
13	254044300	Mount Bush	16	16
14	822081	Mount Pin	8	8
15	208086610	Spirol Pin	10	10
16	202030020	Grease Nipple	12	12
17	820953	Blade Bolt	24	24
18	309112555	Hx Hd Bolt M12(fine)x55 lg Grade 10.9	16	16
19	209019420	H.D Spring Washer M16	24	24
20	307516055	Nyloc Nut M16(fine)	24	24
21	308120040	Spring Washer M12	18	18
22	307512055	Nyloc Nut M12(fine)	18	18
23	822297	Hyd-Catch Lock Pin	2	2
24	208044090	Plastic Insert	2	2
25	822091	Prop Stand	2	2
26	650247	Prop Stand Pin	2	2
27	208092060	Lynch Pin	5	5
28	822076	Top Link Pin CAT 3	1	1
29	822301	Hitch Pin CAT 3	2	2
(opt 29)	(822304)	(Hitch Pin CAT 4)	(2)	(2) <i>CLOSELY MATCH</i>
30	822086	5 1/2" Bore Ram Assy	2	<i>440</i>
30	822262	6" Bore Ram Assy		2 <i>440</i>
31	127400	5 1/2" Bore Ram Seal Kit	*	
31	1290200	6" Bore Ram Seal Kit		*
32	900431	Grease Nipple	4	4
33	822083	Ram Pin (long)	2	2



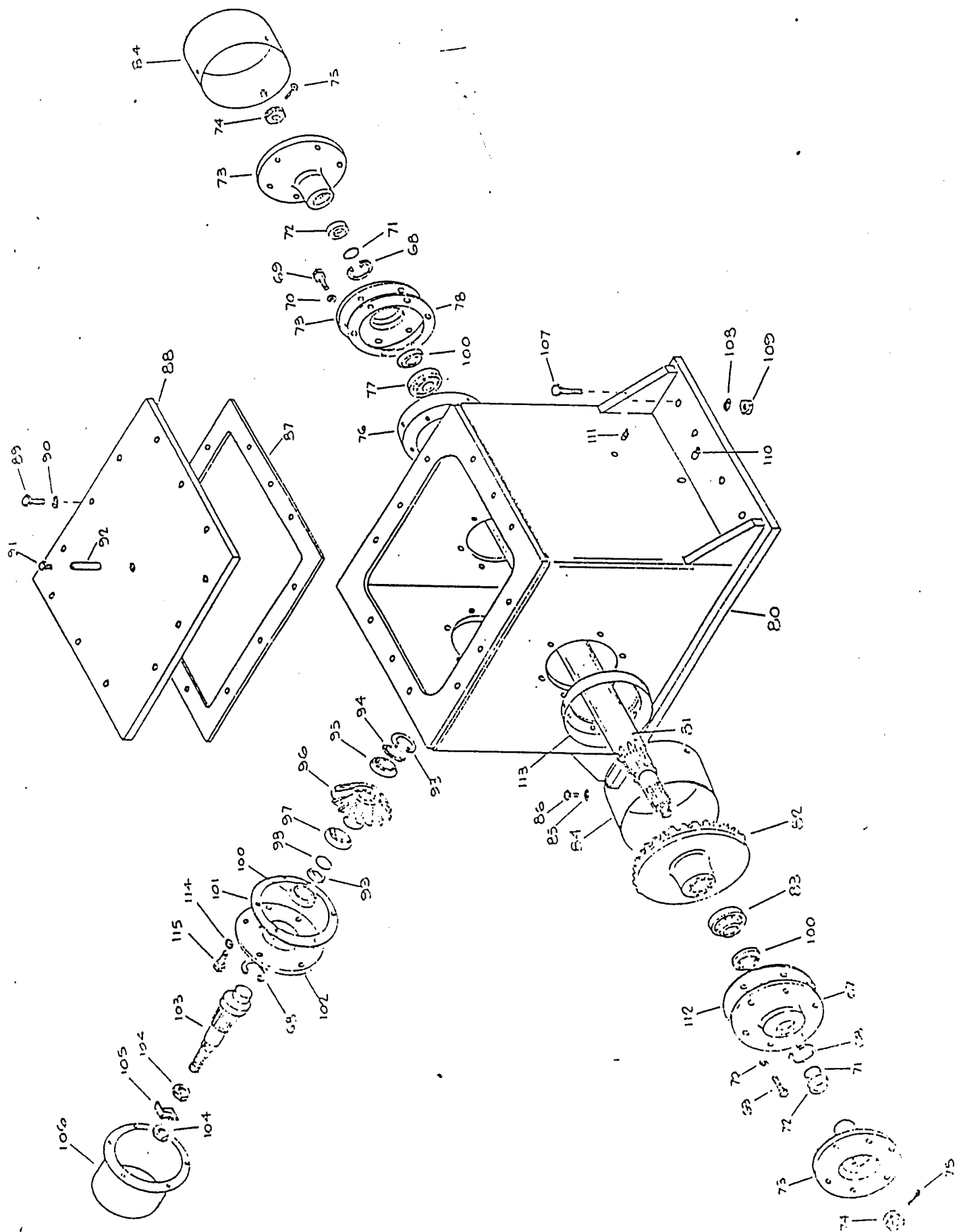
MOUNTING BEAM ASSEMBLY

ITEM	PARTNUMBER	DESCRIPTION	QUANTITY	
			6.0m	8.0m
34	822082	Ram Pin (short)	2	2
35	208086630	Spirol Pin	4	4
36	202035480	T-Piece 3/8" BSP (all male)	3	3
37	822089	Tractor Hose Assy	3	3
38	822087	Hose Assy (short)	2	2
39	822088	Hose Assy (long)	3	3
40	306889	Hyd-Catch Ram	2	2
41	306899	Hyd-Catch Spring	2	2
42	822298	Ram Spacer	2	2
43	309112805	Hx Hd Bolt M12(fine)x80 lg Grade 10.9	2	2
44	309112455	Hx Hd Bolt M12(fine)x45 lg Grade 10.9	2	2
45	822296	Hyd-Catch Pivot Pin	2	2
46	254044300	Lock Arm Bush	2	2
47	252528153	Trigger Bush	2	2
48	822295	Trigger	2	2
49	822299	Retaining Collar	2	2
50	208086430	Spirol Pin	2	2
51	822294	Lock Arm R.H	1	1
52	822293	Lock Arm L.H.	1	1
53	822300	Retaining Washer	6	6
54	301406145	Hx Hd Setscrew M6x14 lg	6	6



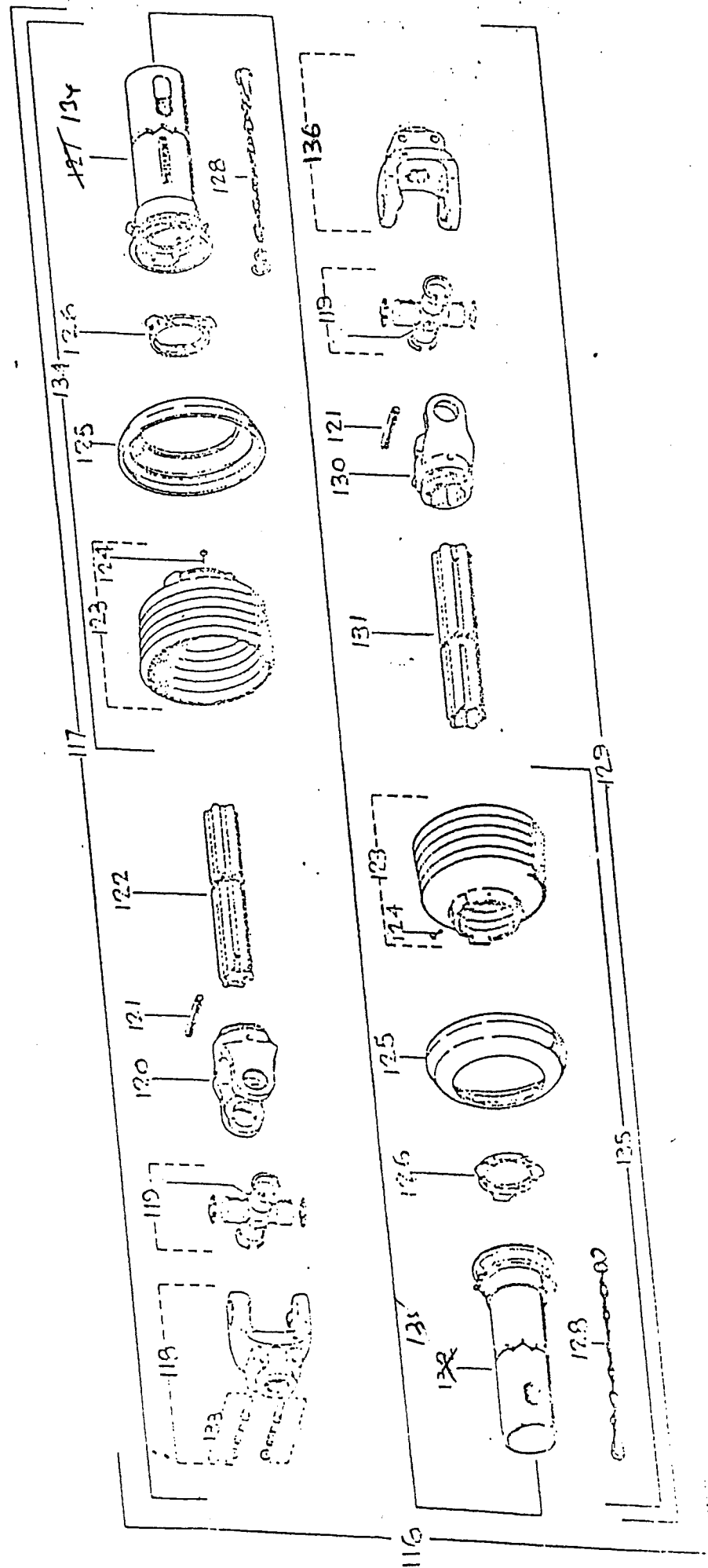
SPLITTER GEARBOX ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
67	821477	Crownwheel Bearing Housing	1
68	208101480	Circlip Internal	3
69	301412250	Hex Head Setscrew M12 x 25 Lg Grade 8.8	12
70	308120040	Spring Washer dia 12	12
71	202025670	'O' Ring	2
72	821475	Oilseal Sleeve	2
73	821474	Drive Coupling	2
74	800330	Slotted Nut	2
75	208016760	Split Pin dia 5 x 80 Lg	2
76	821486	Guard Support RH	1
77	255510232	Taper Bearing (30211)	1
78	821476	Gasket	1
79	821473	Support Bearing Housing	1
80	821456	Gearbox	1
81	821479	Layshaft	1
82	821480	Crownwheel 31T	1
83	255512311	Taper Bearing (30311)	1
84	821485	Sideguard	2
85	308100045	Spring Washer dia 10	6
86	301410205	Hex Head Setscrew M10 x 20 Lg Grade 8.8	6
87	821454	Gasket	1
88	821455	Top Cover	1
89	301410250	Hex Head Setscrew M10 x 25	12
90	308100040	Spring Washer dia 10	12
91	335270	Breather	1
92	330040	Extension Tube	1
93	208101520	Circlip Internal dia 100	1
94	203025258	Support Washer	1
95	255510261	Taper Bearing (32211)	1
96	821470	Pinion 20T	1
97	257012261	Taper Bearing (30214)	1
98	202025660	'O' Ring	1
99	821472	Oilseal	1
100	269065102	Oilseal	3
101	821481	Gasket	1
102	821471	Pinion Bearing Housing	1
103	821451	Pinion Shaft	1



SPLITTER GEARBOX ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
104	821452	Locknut	2
105	821453	Tab Washer	1
106	821482	Front Guard	1
107	301216555	Hex Head Bolt M16 x 55 Lg Grade 8.8	8
108	308160045	Spring Washer dia 16	8
109	307216015	Hex Nut M16	8
110	203031190	Drain Plug 1/2" BSP	1
111	203031160	Level Plug 1/8" BSP	1
112	821478	Gasket	1
113	82489	Guard Support LH	1
114	308120040	Spring Washer dia 12	6
115	301412250	Hex Head Setscrew M12 x 25 Lg Grade 8.8	6



TRACTOR DRIVE SHAFT

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
116	821358	Universal Joint Assembly 1000 RPM	1
117	204067560	Male Half Shaft Complete with guard	1
118	204047928	Quick Release Yoke 1 3/4" (20)	1
(opt 118)	(204047923)	(Quick Release Yoke 1 3/8" (21))	(1)
119	204066244	Cross & Bearing Kit	2
120	204047924	Inboard Yoke	1
121	204066247	Spring Pin	2
122	204067580	Male Profile Tube	1
123	204067590	Guard Cone	1
124	204067600	Screw	2
125	204067610	Reinforcing Collar	2
126	204067620	Bearing Ring	2
N.A. 127	204067630	Outer Half Guard	1
128	204067640	Safety Chain	3
129	204047570	Female Half Shaft Complete With Guard	1
130	204047925	Inboard Yoke	1
131	204067650	Female Profile Tube	1
N.A. 132	204067660	Inner Half Guard	1
133	204066248	Quick Release Pin Kit	1
134	204067750	Outer Half Guard Complete	1
135	204067760	Inner Half Guard Complete	1
136	204047931	Clamp Yoke 1 3/4" (20)	1

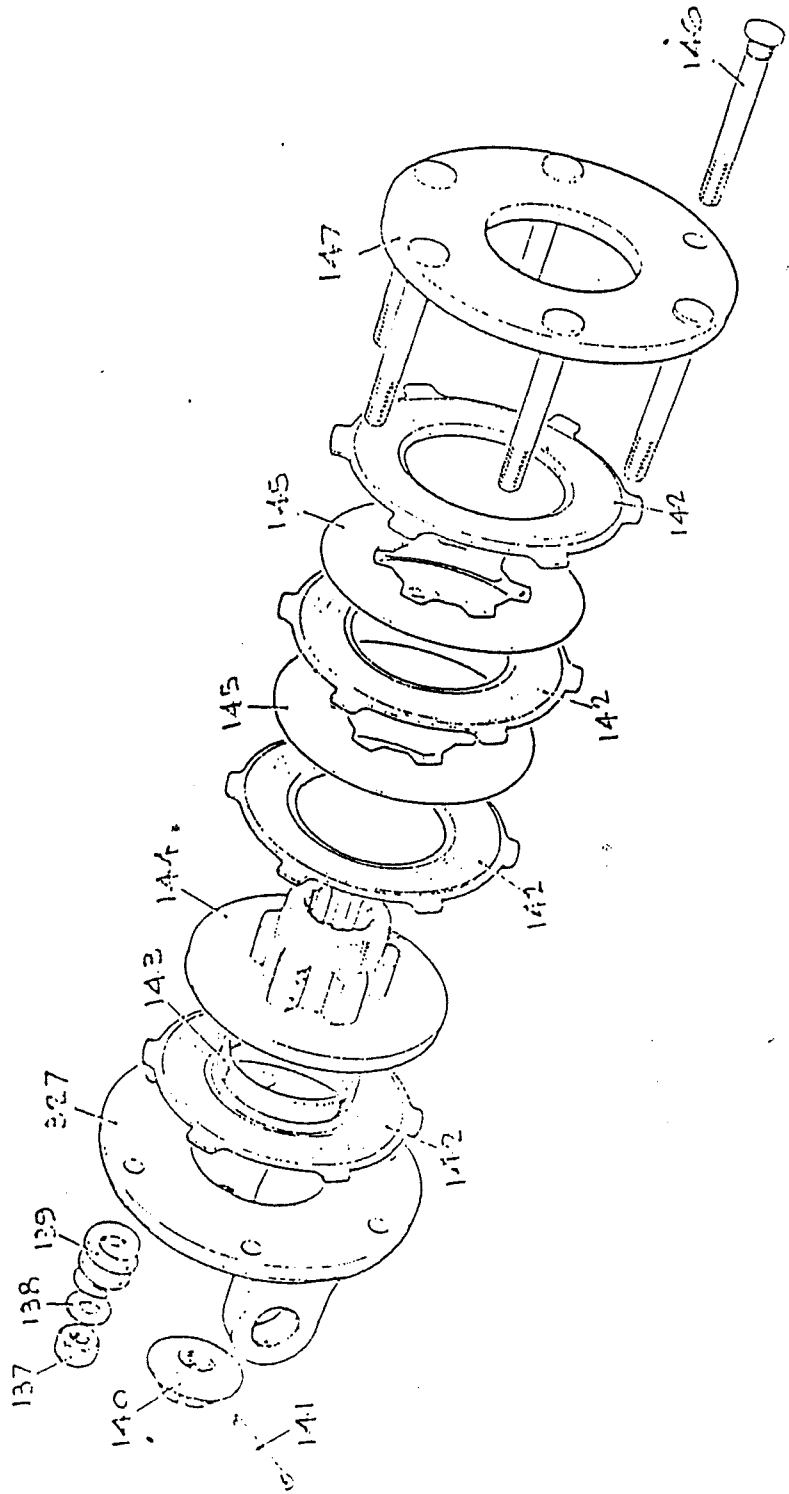
SIDE DRIVE SHAFTS

Illus. No	Part Number	Description	Qty	Bulletin/Note
RIGHT HAND SIDE DRIVE SHAFT				
330-<	821494	U/J ASSY - 1000 - YOKE PLATES	1	Qty was 2 untill 01/03/2000
331-<	204067670	PTO SHAFT - MALE HALF ASSY.	1	
341-<	204067680	PTO SHAFT - FEMALE HALF ASSY.	1	
LEFT HAND SIDE DRIVE SHAFT				
330-<	822014	U/J ASSY - 1000 - EXTENDED - YOKE PLATES	L.HD 1	Added in 01/03/2000
331-<	204068280	PTO SHAFT - MALE HALF ASSY.	1	
341-<	204068300	PTO SHAFT - FEMALE HALF ASSY.	1	
332	204047820	YOKE PLATE	4	
333	204046920	SPIDER KIT	4	
334	204047860	YOKE - MALE SHAFT	2	
335	204046950	TENSION PIN (10 x 90mm)	4	
336-<	204067690	SHAFT-MALE	1	
336-<	204064408	SHAFT-MALE (S4 x 760mm)	1	
337	204067700	#N/A		
338	204067600	#N/A		
339	204046780	Bearing Ring	4	
340	204067720	#N/A		
342	204047870	YOKE - FEMALE SHAFT	2	
343-<	204067730	SHAFT-FEMALE	1	
343-<	204064409	TUBE-FEMALE (S5 x 745mm)	1	
344	204067740	#N/A		
345-<	204067770	PTO GUARD - OUTER HALF		
345-<	204060250	#N/A		
346-<	204067780	PTO GUARD - INNER HALF		
346-<	204060260	#N/A		
347				

-<=Alternative

SIDE DRIVE SHAFT

ITEM	PART NUMBER	DESCRIPTION	QUANTITY	
330	821494	Universal Joint Assembly	2	1 R.A. side only
331	204067670	Male Half Shaft Complete With Guard	2	March 2000
332	204047820 ✓	Flange Yoke	4	
333	204046920 ✓	Cross & Bearing Kit	4	
334	204047860 ✓	Inboard Yoke	2	
335	204046950 ✓	Spring Pin	4	
336	204067690	Male Profile Shaft	2	
337	204067700	Guard Cone	4	
338	204067600	Screw	4	
339	204067710	Bearing Ring	4	
340	204067720	Outer Half Guard	2	
341	204067680	Female Half Shaft Complete With		
	204068300	Guard	2	
342	204047870 ✓	Inboard Yoke	2	
343	204067730	Female Profile Tube	2	204064409
344	204067740	Inner Half Guard	2	
345	204067770	Outer Half Guard Complete	2	
346	204067780	Inner Half Guard Complete	2	204060200
				1 L.A. side only
				March 2000
				822014 Universal Joint Assembly
				204068240 Male Half Shaft c/w Guard
				204012790 Axle Cap
				204046740 Blank only



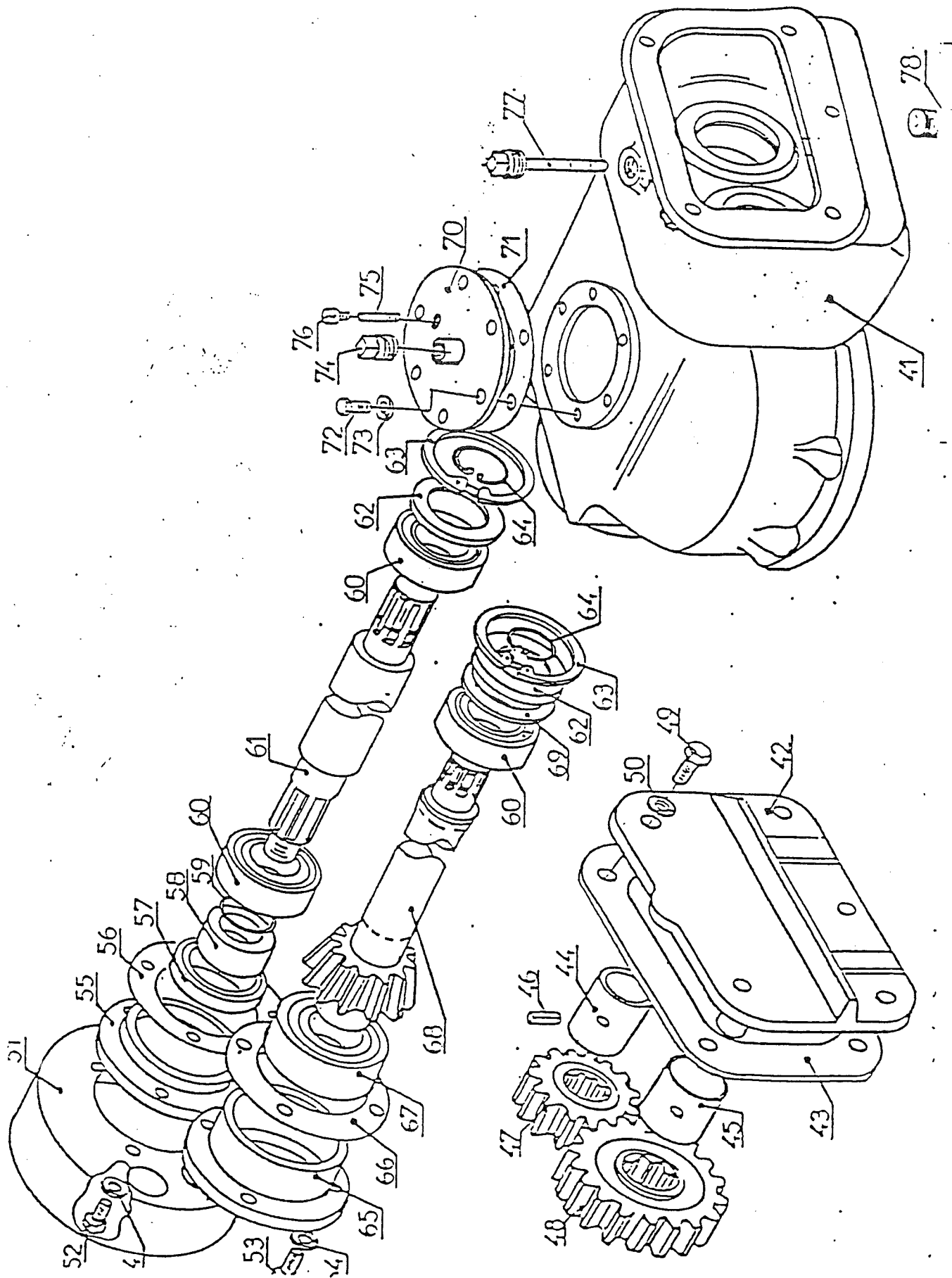
SAFETY CLUTCH (335075)

ITEM	PART NUMBER	DESCRIPTION	QUANTITY (Per Assy)
137	307512015	Nut	6
138	308120025	Washer	6
139	650349	Spring	6
140	65540	Special Nut	1
141	208016010	Split Pin	1
142	650347	Friction Disc	4
143	650345	Sleeve	1
144	67239	Clutch Disc	1
145	650346	Wearing Disc	2
146	330359	Stud	6
147	330358	Pressure Plate	1

327 204047820 YAWK PLATE

1 *

* NOT PART OF
CLUTCH ASSY 335075



GEARBOX ASSEMBLY (540 R.P.M)

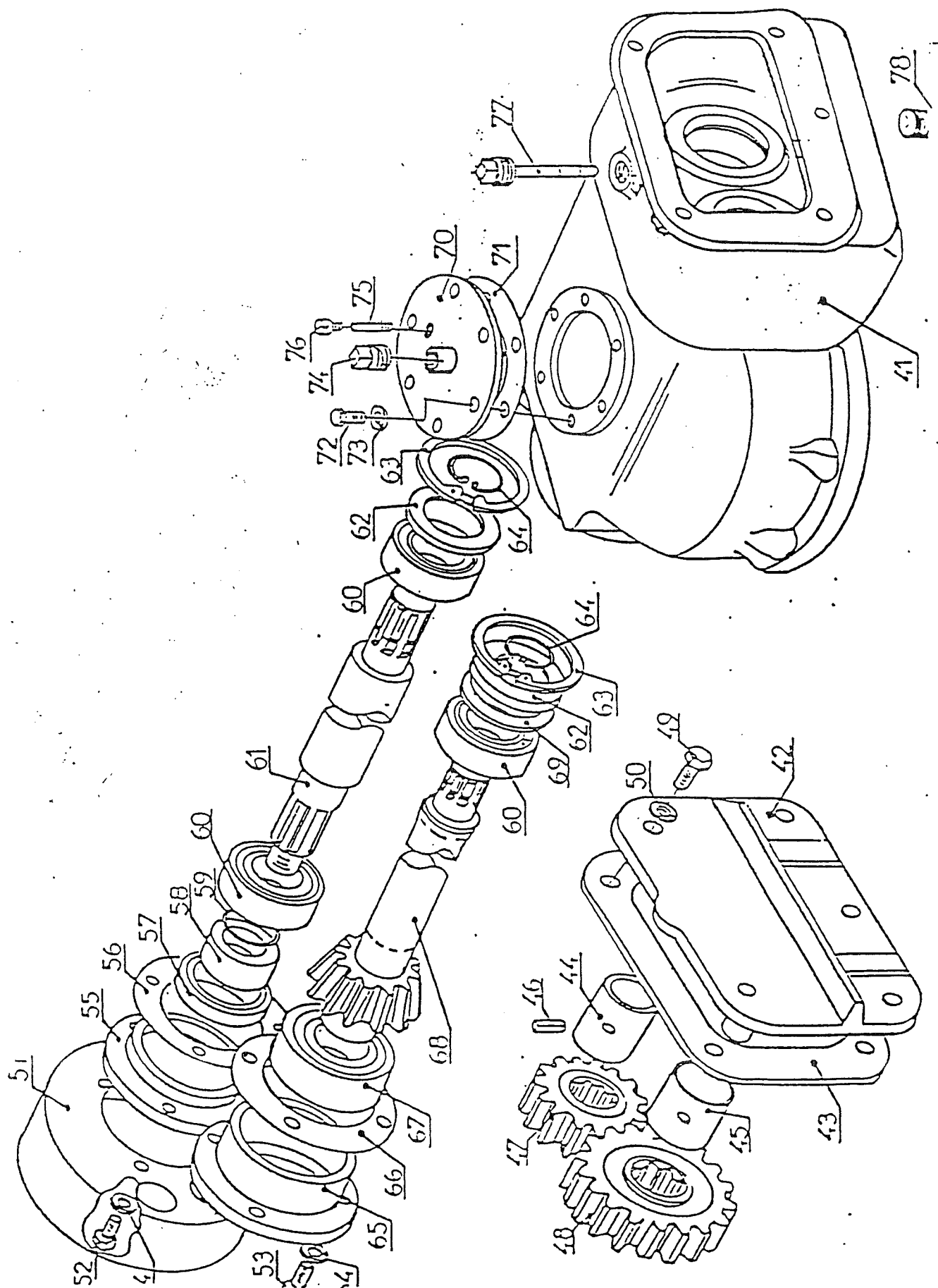
822917 L.H. - CAM 822009 L.H.D. STD CLUTCH
822915 R.H. - CAM 821195 R.H.D. — L

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
		<u>CAM CLUTCH</u>	
41	821750	Gearbox LH	1
41	821238	Gearbox RH	1
42	800022	Pick-Off Cover	1
43	800023	Pick-Off Cover Gasket	1
44	821261	Spacer (RH)	1
45	821262	Spacer (LH)	1
46	208012090	Tension Pin	2
47	800034	Pick-Off Gear 17T (STD 540 RPM)	1
48	800035	Pick-Off Gear 18T (STD 540 RPM)	1
48	800036	Pick-Off Gear 16T	1
48	800037	Pick-Off Gear 19T	1
48	800038	Pick-Off Gear 20T (Optional)	1
48	800039	Pick-Off Gear 15T (Optional)	1
49	301410255	Setscrew M10 x 25 Lg Grade 8.8	5
50	308100045	Spring Washer	5
51	821247	Guard Support	1
52	335388	Special nut BOLT	6
53	301412305	Setscrew M12 x 30 Lg Grade 8.8	2
54	308120045	Spring Washer M12	8
55	821246	Input Cover	1
56	821252	Gasket	1
56	821249	Shim 0.1	As req.
56	821250	Shim 0.2	As req.
56	821251	Shim 0.5	As req.
57	267555122	Oilseal	1
58	335029	Sleeve	1
59	202023950	'O' Ring	1
60	251735122	Bearing HM803149/HM03110	3
61	821242 <u>821857</u>	Input Shaft	1
62	800024	Thrust Washer	2
63	208101480	Circlip	2
64	2080 <u>02</u> 790	Circlip	2
65	821244	Bearing Carrier	1
66	821256	Gasket	1
66	821253	Shim 0.1	As req.
66	821254	Shim 0.2	As req.
66	821255	Shim 0.5	As req.
67	255595641	Bearing JM207049/JM207010	1
68	800028	Pinion (13T)	1
68	800027	Spacer	1

NOT USED AFTER LOSS
BATCH 1996/7

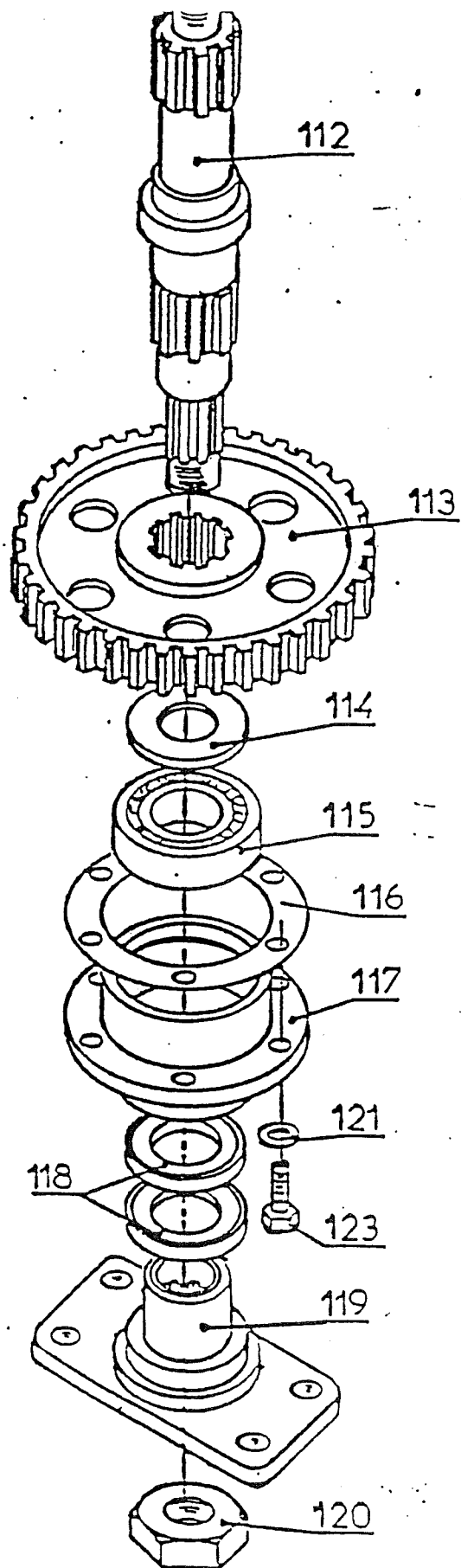
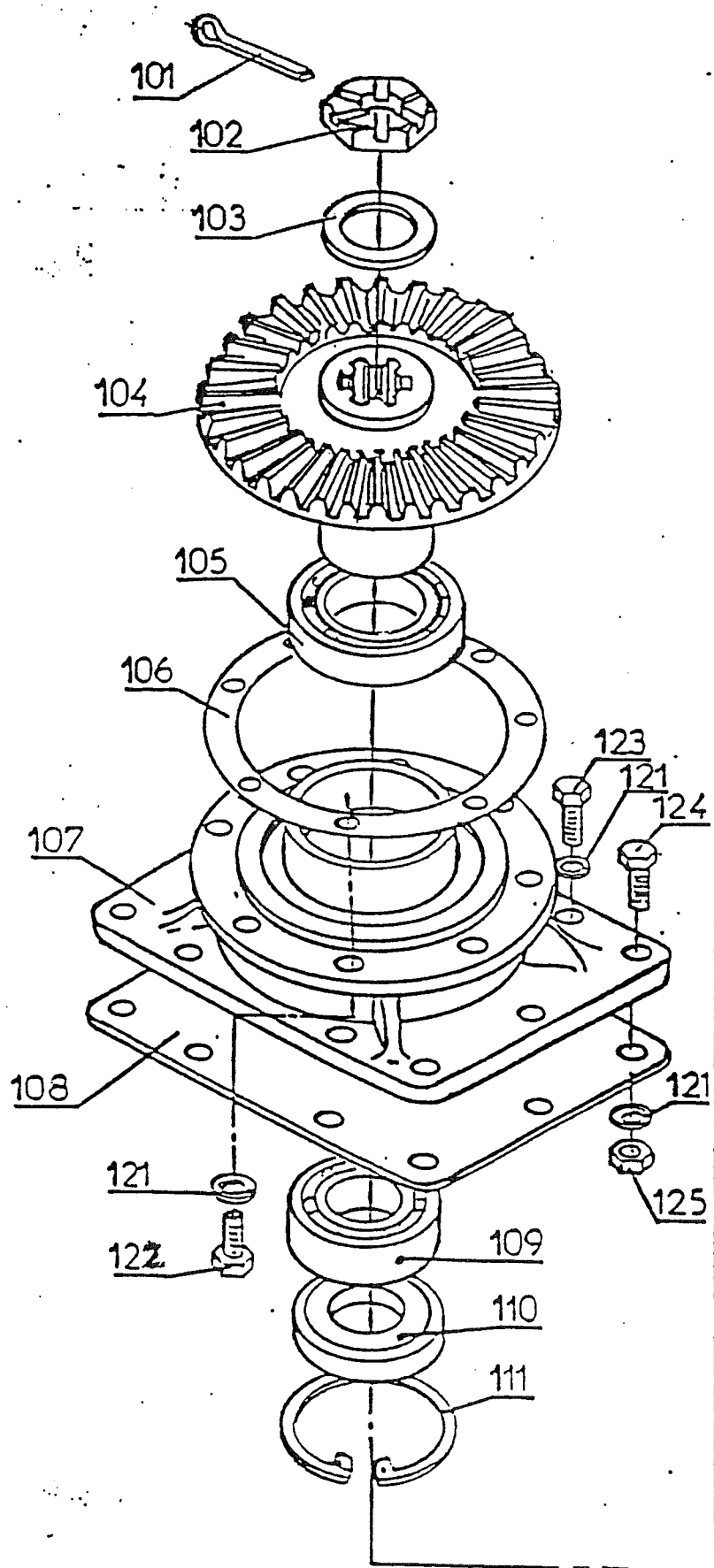
10

Plate No
HFSTDPH-10
0296



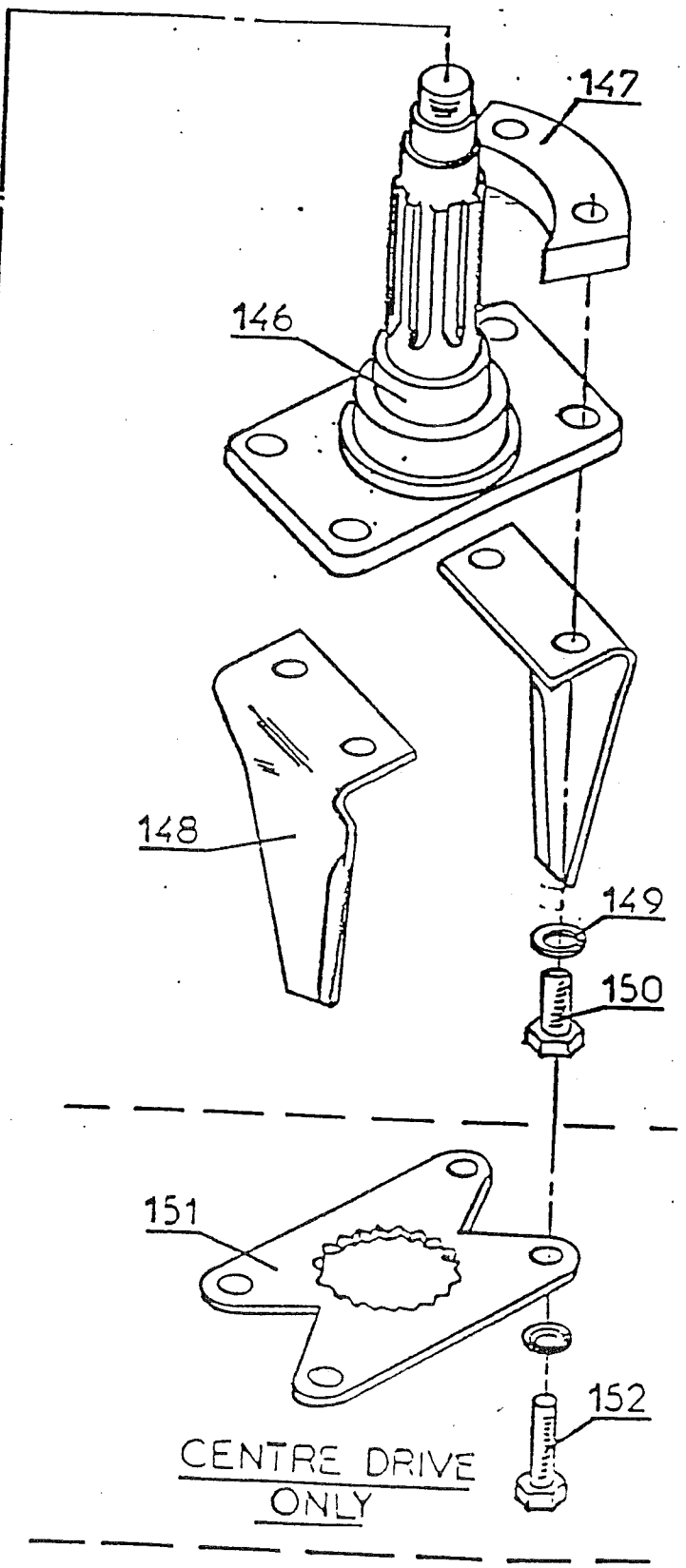
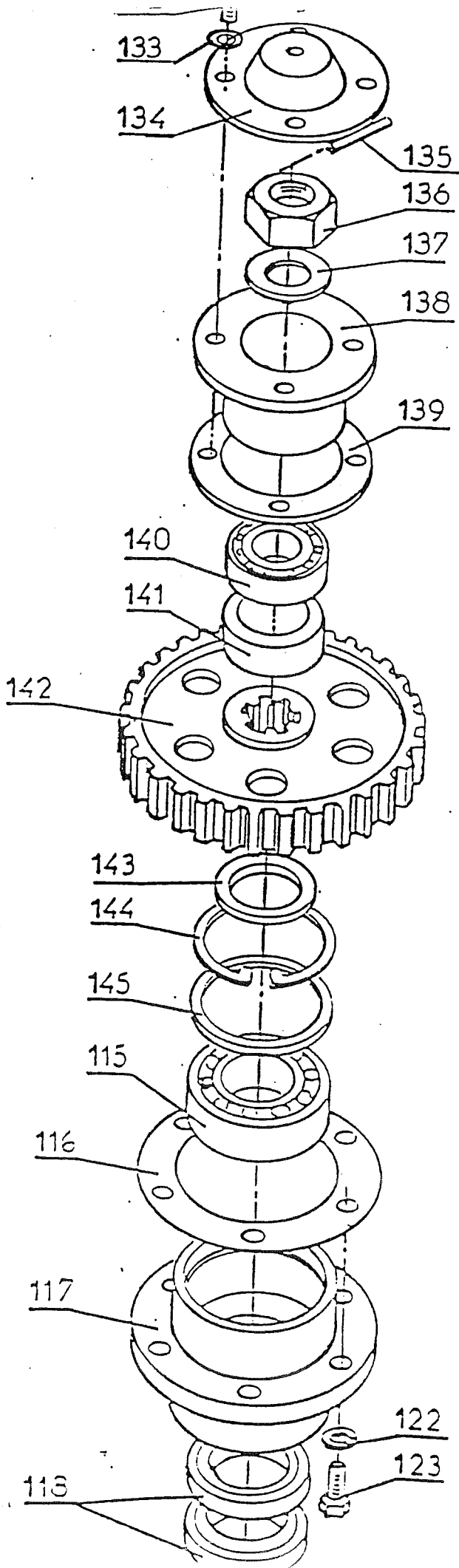
GEARBOX ASSEMBLY (540 R.P.M)

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
68	821243	Pinion Shaft	1
69	800032	Shim 0.3	As req.
69	800033	Shim 0.1	As req.
70	821078	Top Cover	1
71	821079	Top Cover Gasket	1
72	301408205	Setscrew M8 x 20 Lg Grade 8.8	6
73	308080045	Spring Washer	6
74	203031200	Sq. Hd. Plug 3/4" BSP	1
75	330040	Extension Tube	1
76	335270	Breather	1
77	821133	Dipstick	1
78	203031030	Sq. Hd. Plug 3/8" BSP	1



CENTRE DRIVE Assy 821559

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
101	208010240	Split Pin	1
102	61079	Special Nut	1
103	821085	Washer	1
104	800055	Crownwheel 25T	1
105	252542101	Bearing 29520/29585	1
106	821260	Gasket	1
106	821257	Shim 0.1	As req.
106	821258	Shim 0.2	As req.
106	821259	Shim 0.5	As req.
107	821239	Gearbox Base	1
108	821090	Base Gasket	1
109	255595641	Bearing JM207049/29585	1
110	263730041	Oilseal	1
111	208101500	Circlip	1
112	821129	Drive Shaft	1
113	821018	Drive Gear	1
114	821088	Spacer	1
115	254510265	Bearing	1
116	821089	Gasket	1
117	821015	Bottom Bearing Housing	1
118	268055102	Oilseal	2
119	821193	Blade Mount	1
120	821087	Special Nut	1
121	308120120	'Schnorr' Washer M12	30
122	301412305	Setscrew M12x30 lg	8
123	309312355	Setscrew M12(Fine) x 35 lg Grade 10.9	10
124	309112455	Hx Hd Bolt M12(Fine) x 45 lg Grade 10.9	6
125	307512055	M12 Nyloc Nut(Fine)	6



Left Hand Harrow:-
Left Hand Blades

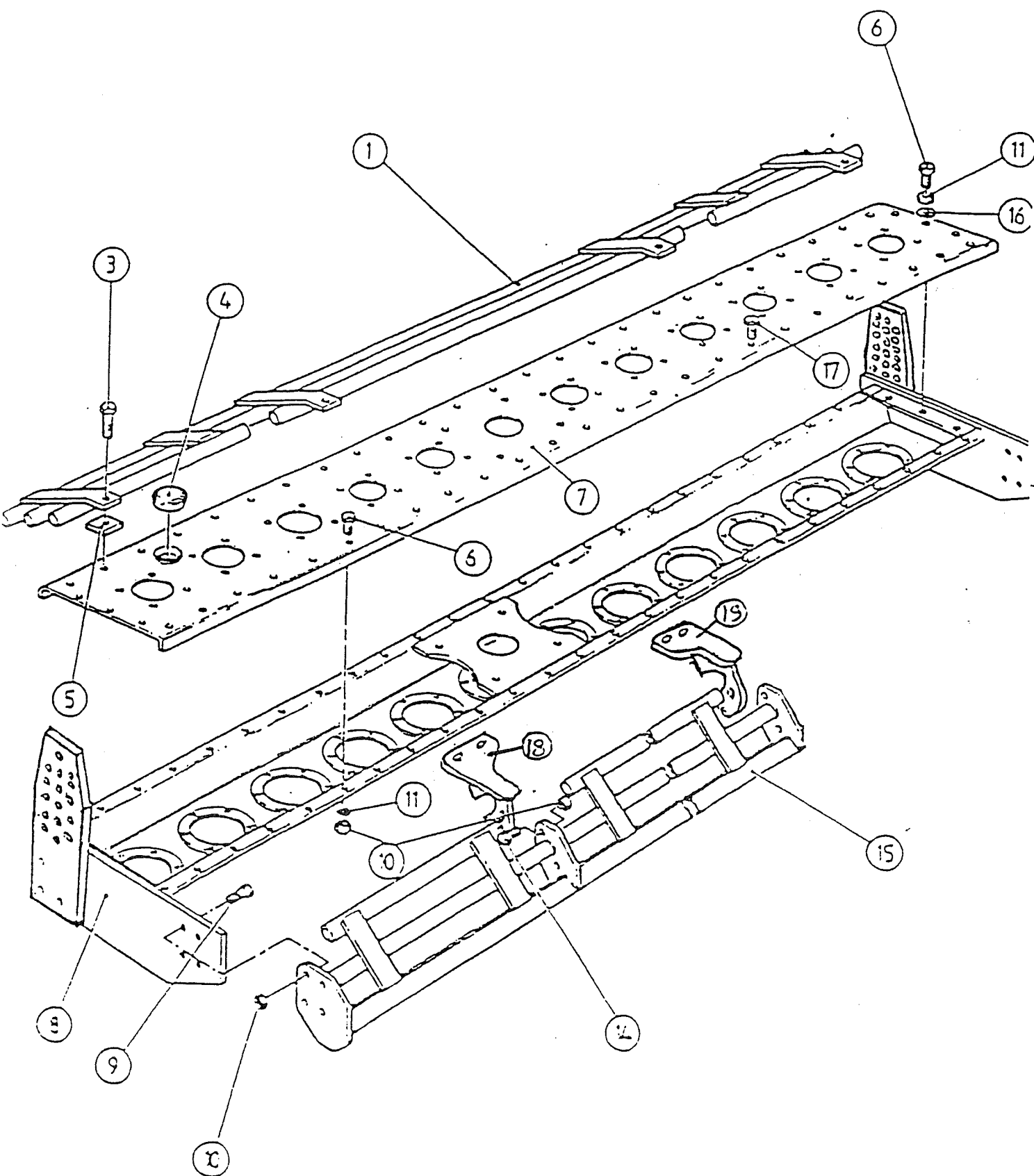
Right Hand Harrow:-
Right Hand Blades

ON CENTRE DRIVE

DRIVEN HEAD ASSEMBLY

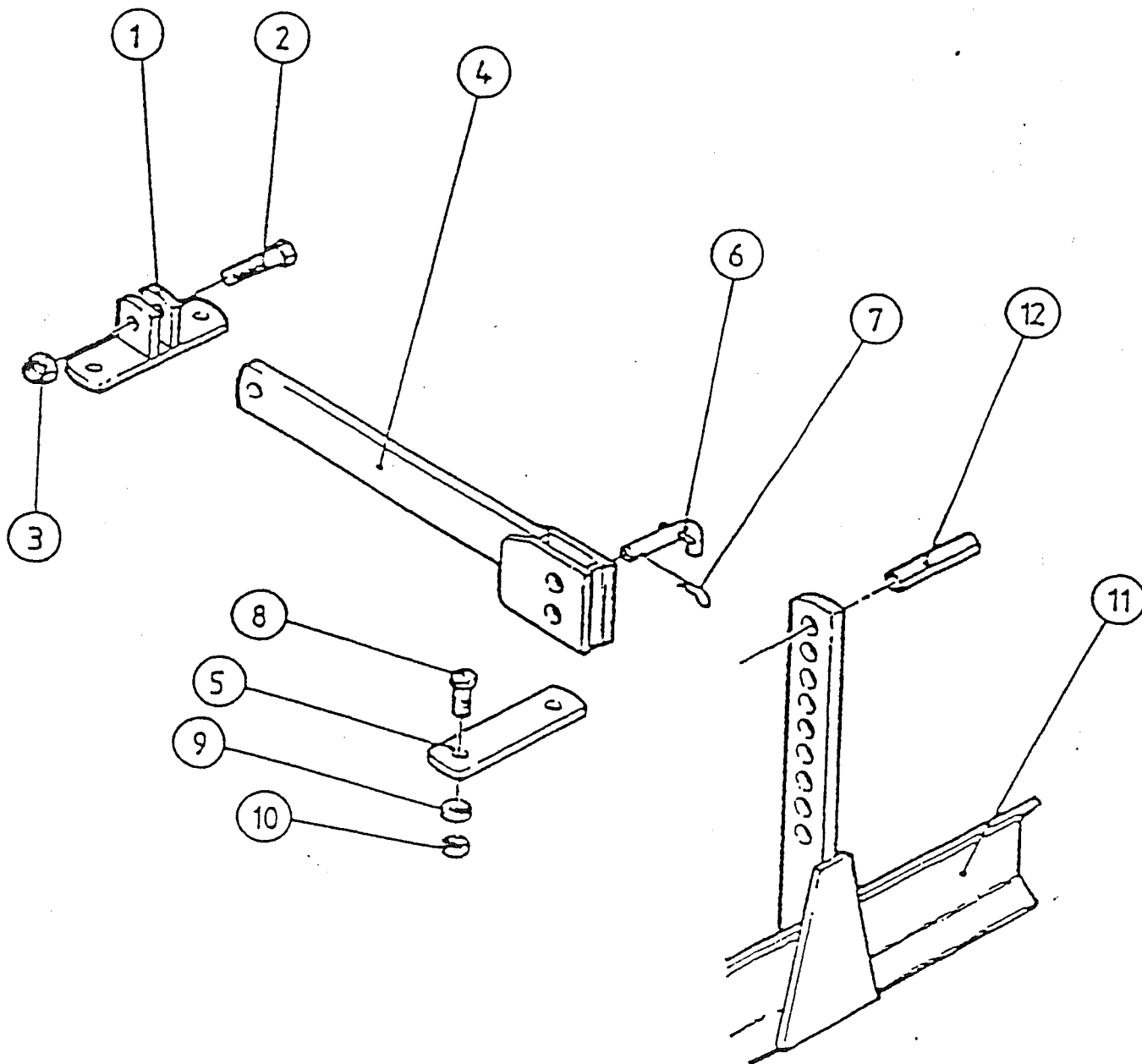
ITEM	PART NUMBER	DESCRIPTION	QUANTITY	
115	254510265	Bearing	1	
116	821089	Gasket	1	
117	821015	Bottom Bearing Housing	1	
118	268055102	Oilseal	2	
122	308120120	'Schnorr' Washer M12	6	
123	309010305	Setscrew M12(Fine) x 35 Lg Grade 8.8	6	
131	202030020	Lubricator 1/8" BSP	1	
132	309310305	Setscrew M10(Fine) x 30 Lg Grade 8.8	4	
133	308100120	'Schnorr' Washer M10	4	
134	821095	Top Bearing Cap	1	
135	208086200	Spirol Pin dia 4	1	
136	307730250 307720025	Locknut M30 (Fine)	1	
137	308300295	Flat Washer M30	1	
138	821091	Top Bearing Housing	1	
139	821094	Gasket	1	
140	253580210	Bearing	1	
141	821092	Top Spacer	1	
142	821017	Driven Gear	1	
143	821093	Lower Spacer	1	
144	208101520	Circlip	1	
145	821096	Support Washer	1	
146	821192	Driven Shaft	1	
147	820366	Clamp Nut	6.0m	8.0m
148	820380	Blade RH	48	64
148	820381	Blade LH	24	32
149	209019420	Spring Washer M16 (H.D)	24	32
150	820953	Blade Bolt (55)	96	128
151	821194	Locking Plate	88	120
152	820954	Blade Bolt (60)	2	2
			8	8

Note Items 151, 152 are for use with Centre Drive only.



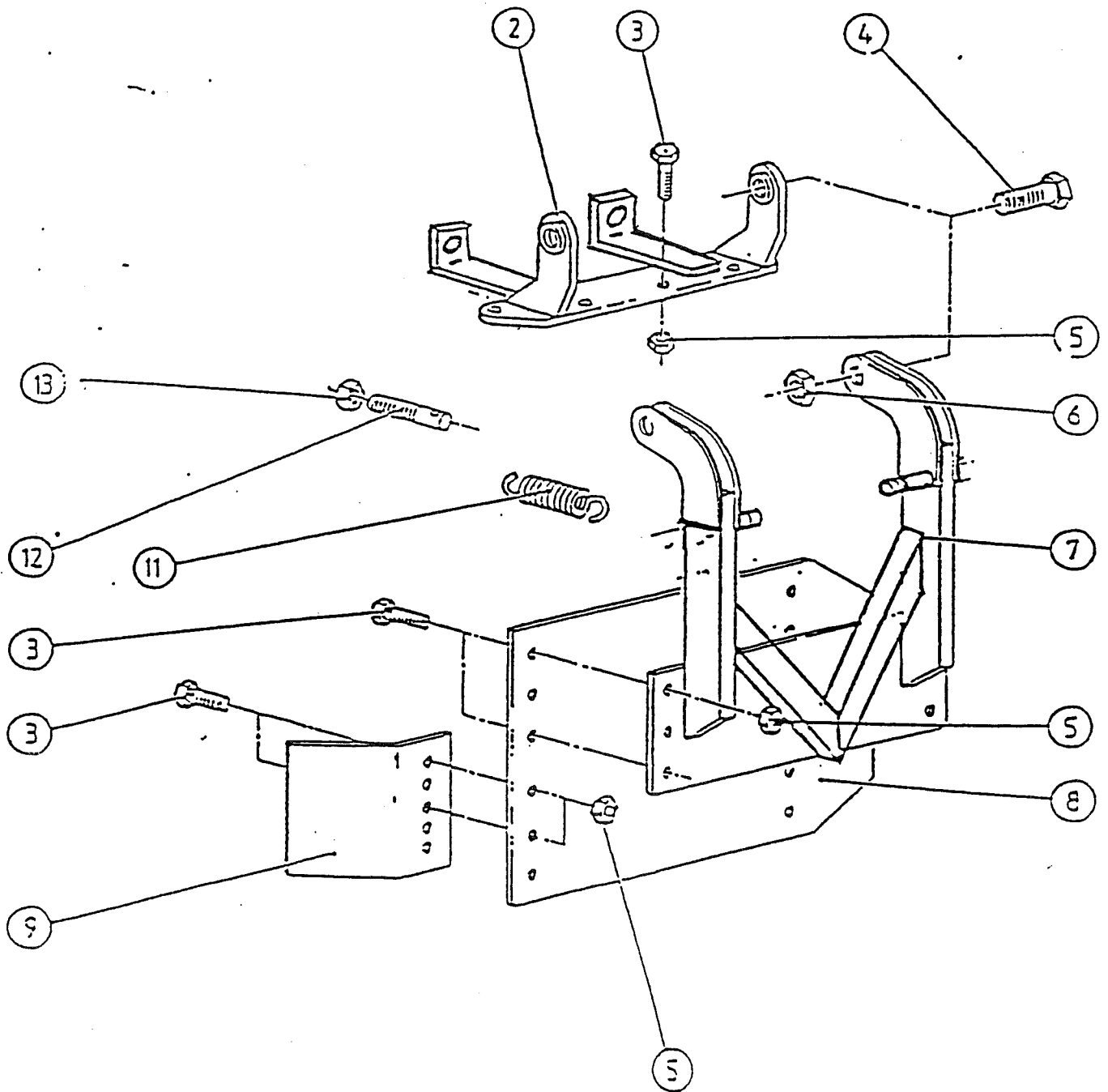
HULL & TOP COVER ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QUANTITY	
			6m	8m
1	822036	Rear Guard LH	1	
1	822041	Rear Guard RH	1	
1	822231	Rear Guard LH		1
1	822234	Rear Guard RH	1	
3	301112705	Bolt M12(Fine) x 70 Lg Grade 8.8	4	4
4	203036250	Cap	1	1
5	820189	Spacing Block	3	6
6	301312305	Setscrew M12(Fine) x 30 Lg Grade 8.8	48	52
7	822021	Top Cover LH	1	
7	822023	Top Cover RH	1	
7	822217	Top Cover LH		1
7	822219	Top Cover RH		1
8	822015	Hull LH	1	
8	822019	Hull RH	1	
8	822210	Hull LH		1
8	822214	Hull RH		1
9	301112505	Bolt M12(Fine) x 50 Lg Grade 8.8	8	8
10	307512055	Nyloc Nut M12 (Fine)	36	40
11	308120120	'Schnorr' Washer M12	30	34
14	301112405	Bolt M12(Fine) x 40 Lg Grade 8.8	4	4
15	822025	Front Guard	2	
15	822221	Front Guard		2
16	308120015	Plain Washer	6	6
17	821037	Dowel Bolt	12	28
18	821722	Guard Clamp RH		1
19	821722	Guard Clamp LH		1
N/S	821236	Gasket	4	4
N/S	821699 820689	Gasket 3m/6m	4	
N/S	821236	Gasket		4
	820696	Gasket 4m/8m		4



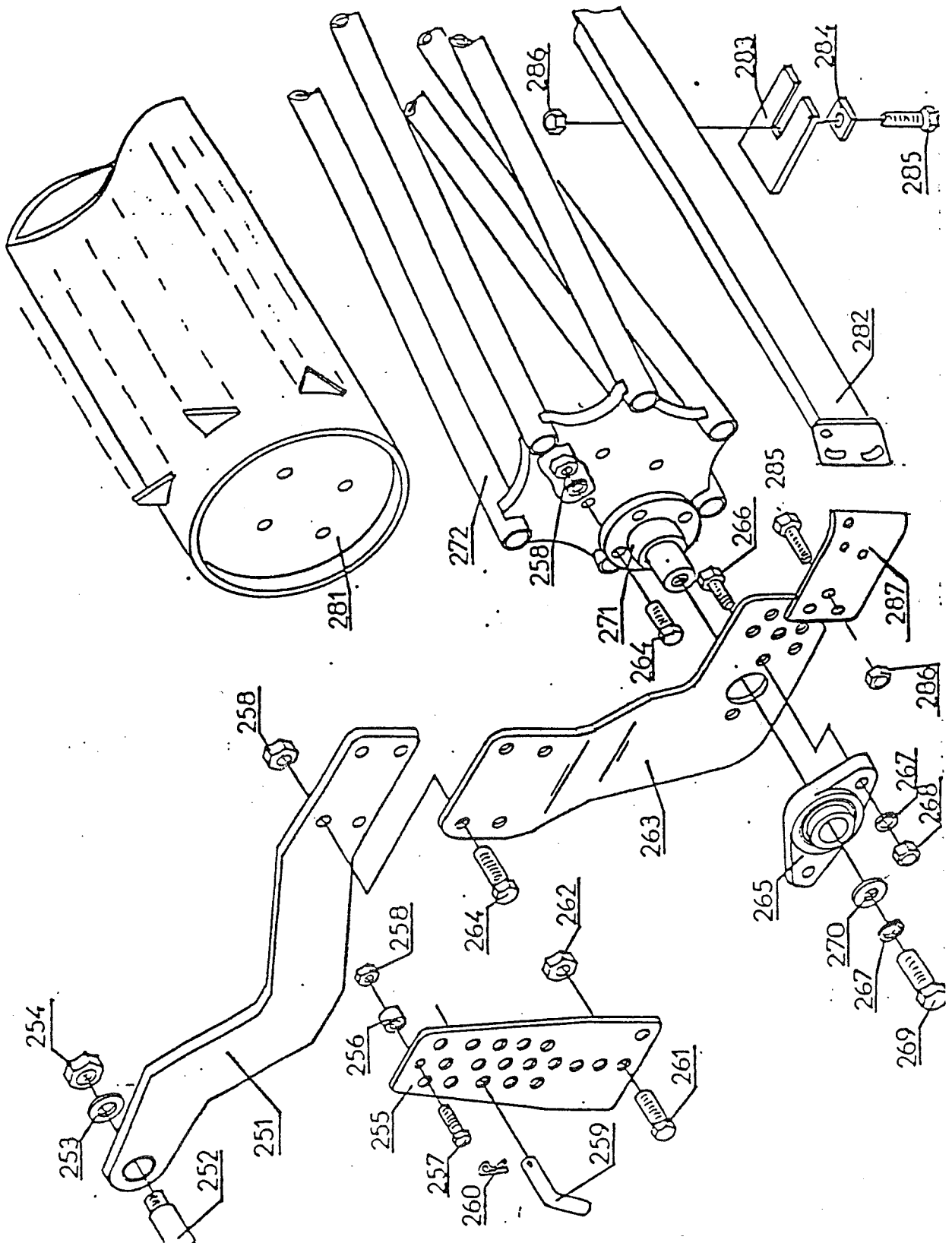
LEVELLING BAR ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	820082	Pivot	2
2	301116805	Bolt M16(Fine) x 80 Lg Grade 8.8	2
3	307516055	Nyloc Nut M16(Fine)	2
4	820087	Lever	2
5	820083	Pivot Base	2
6	821182	Pin	2
7	208014410	'R' Clip	2
8	301112455	Bolt M12(Fine) x 45 Lg Grade 8.8	8
9	308120045	Spring Washer	8
10	307512055	Nyloc Nut M12(Fine)	8
11	822031	Levelling Bar 6.0m LH	1
11	822033	Levelling Bar 6.0m RH	1
11	822226	Levelling Bar 8.0m LH	1
11	822228	Levelling Bar 8.0m RH	1
12	2080980035	Tension Pin (dia 12 x 120 Lg)	2



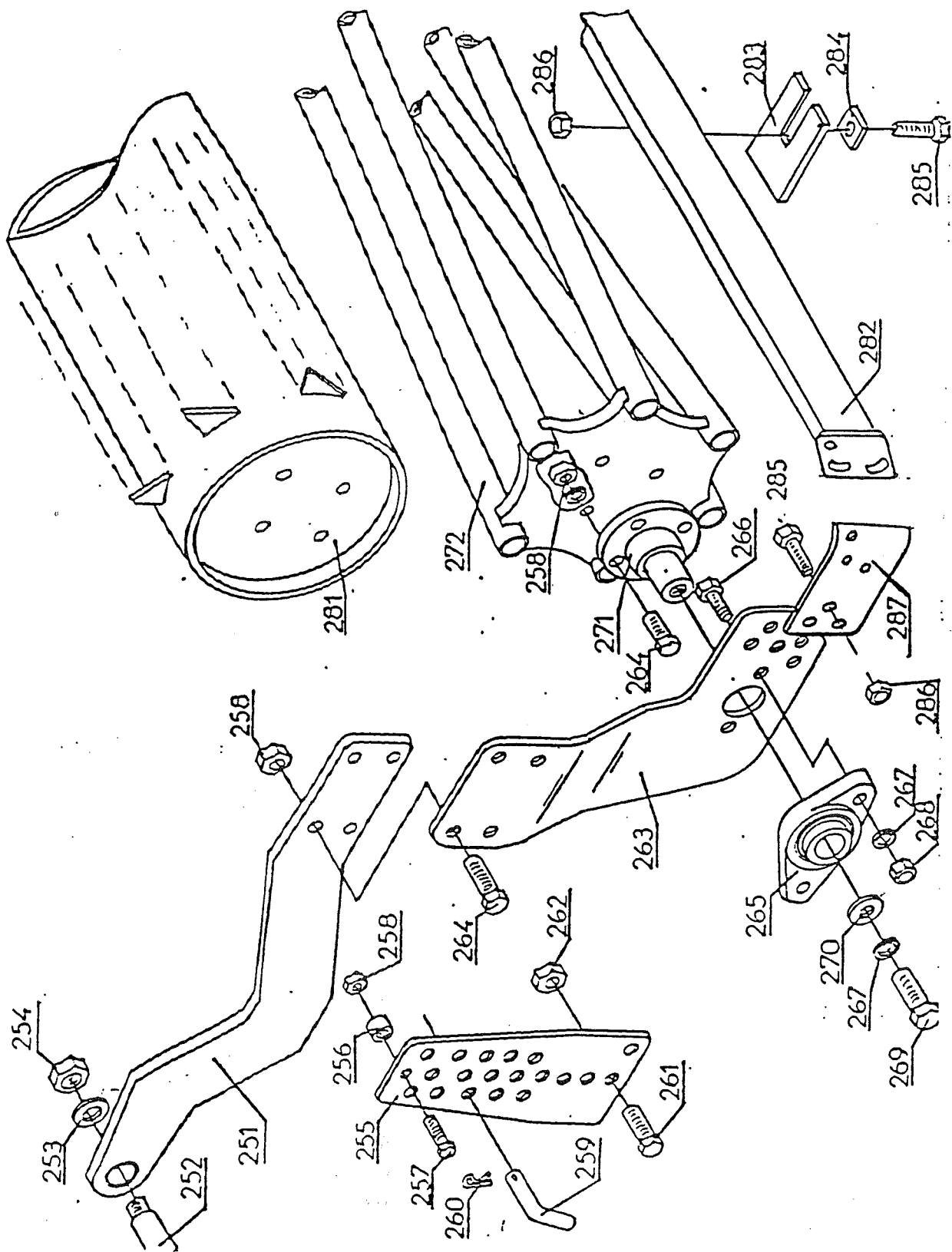
SIDEGUARD ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
2	821580	Pivot Bracket	2
3	30112505	Bolt M12(Fine) x 50 Lg Grade 8.8	22
4	301120705	Bolt M20(Fine) x 70 Lg Grade 8.8	4
5	307512055	Nyloc Nut M12(Fine)	22
6	307520055	Nyloc Nut M20(Fine)	4
7	821055	Mounting Bracket	2
8	820292	Sideguard	2
9	820414	Deflector	2
11	900471	Spring	4
12	040900	Spring Tensioner	4
13	107210015	Nut 5" 8" UNC	8



DEPTH CONTROL ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
251	820917	Roller Arm LH	1
N/S	822309	Roller / Tyne Arm L.H	1
N/S	820918	Roller Arm RH	2
252	821629	Pivot Bolt	4
253	308160015	Flat Washer M16	4
254	307216055	Nyloc Nut M16	4
255	821571	Depth Control Plate	4
256	821637	Spacer	4
257	301112605	Hex Head Bolt M12(Fine) x 60 Lg Grade 8.8	4
258	307512015	Nyloc Nut M12(Fine)	36
259	822057	Pin	8
260	208014410	'R' Clip	8
261	301220805	Hex Head Bolt M20 x 80 Lg Grade 8.8	8
262	307220055	Nyloc Nut M20	8
263	821634	Roller Plate LH	2
N/S	821635	Roller Plate RH	2
264	301112455	Hex Head Bolt M12(Fine) x 45 Lg Grade 8.8	32
265	255015521	Flange Bearing dia 50	4
266	301116555	Hex Head Bolt M16(Fine) x 55 Lg Grade 8.8	8
267	308160045	Spring Washer M16	12
268	307516055	Nyloc Nut M16(Fine)	8
269	301416350	Setscrew M16 x 35	4
270	822060	Washer	4
271	822061	Axle	4
272	822067	Crumble Roller 6.0m	2
272	822245	Crumble Roller 8.0m	2
N/S	822313	Tyne Stem	1
N/S	822314	Tyne Clamp Bolt	1
N/S	307216015	Tyne Clamp Lock Nut	1
N/S	222037005	Ducks Foot Point	1
N/S	208109430	Plough Bolt c/w Nut	2



PACKER ROLLER (OPTIONAL)

ITEM	PART NUMBER	DESCRIPTION	QUANTITY	
			6m	8m
281	820896	Packer Roller 6.0m	2	
281	820891	Packer Roller 8.0m		2
282	821777	Scraper Bar 6.0m	2	
282	821774	Scraper Bar 8.0m		2
283	821780	Scraper	52	70
284	820341	Clamp Washer	52	70
285	301316455	Setscrew M16(Fine) x 45 Lg Grade 8.8	52	70
286	307516055	Nyloc Nut M16(Fine)	60	76
287	821764	Sideplate RH	2	2
N/S	821763	Sideplate LH	2	2