

**3B & C Series
Rigid Disc Harrows**



Please fill in the general details below (Where applicable)

MODEL	
WIDTH	
SPECIAL	

Please fill in Serial plate details: Serial plate is located on the rear of the disc mainframe.



MODEL NO.	
SERIAL NO.	



DECLARATION OF CONFORMITY

Simba International Limited hereby declare that the Product described in this Operators Manual, and defined by the Serial Number Plate attached to the Chassis of the Machine (a part copy of which is detailed overleaf and must be completed indicating the relevant machine details), conforms with the following Directives and Regulations, and has been certified accordingly.

EC Machinery Directive 89/392/EEC, as amended by 91/3688/EEC, 93/44/EEC, and 93/688/EEC.

In order to fulfill the requirements of health and safety described in the EC Directive, the following standards and technical specifications have been taken into account:

**EN 292 - 1
EN 292 - 2**

THE MANUFACTURER

Simba International Limited
Woodbridge Road
SLEAFORD
NG34 7EW
Lincolnshire
NG34 7EW
England.

Telephone 01529 304654.

CERTIFIED ON BEHALF OF SIMBA INTERNATIONAL LIMITED.

Philip J. Wright. BSc (Hons) C Eng. MI Agr.E
Technical Director.



WARRANTY
TERMS AND CONDITIONS
2004

In this warranty Simba International Ltd., is referred to as "the Company".

1. Subject to the provisions of this warranty the Company warrants each new machine sold by it to be sold free from any defect in material or workmanship for a period of 12 months from date of receipt by the end-user.

Some specific items have additional warranty over and above the standard 12 months. Details of these can be obtained upon request directly from the distributor or Simba International Ltd.

2. If the machine or part thereof supplied by the Company is not in accordance with the warranty given in clause 1 the Company will at its option:
 - (a) make good the machine at the Company's expense, or
 - (b) make an allowance to the purchaser against the purchase price, or
 - (c) accept the return of the machine and at the buyers option either:
 - I) repay or allow the buyer the invoice price thereof, or
 - II) replace the machine as is reasonably practical.
3. This warranty shall not oblige the Company to make any payment in respect of loss of profit or other consequential loss or contingent liability of the Purchaser alleged to arise from any defect in the machine or impose any liability on the Company other than that contained in clause 2.
4. Any claim under this warranty must be notified to the Company in writing specifying the matters complained of within 12 months from the date of receipt by the Purchaser or his nominee of the machine.
5. Any claim under this warranty must be made by the original purchaser of the machine and is not assignable to any third party.
6. If the purchaser hires out the machine to any third party the warranty shall apply only to matters notified to the Company in writing within 90 days of the date of delivery and clause 4 shall be read as if the period of 90 days were substituted for the period of 12 months.
7. The warranty will cease to apply if:
 - (a) any parts not made, supplied or approved in writing by the Company are fitted to the machine or
 - (b) any repair is carried out to the machine other than by or with the express written approval of the Company or
 - (c) any alterations not expressly authorized by the Company in writing are made to the machine or
 - (d) the machine is damaged by accident or
 - (e) the machine is abused or overloaded or used for a purpose or load beyond its design capabilities, or used in conjunction with a tractor whose power output capability exceeds the stated implement power requirement by more than 40%.
 - (f) the machine is operated as part of a 'cultivation train' where more than one implement is being towed, without the express written approval of Simba International Ltd.
 - (g) any maintenance is not carried out in accordance with the service schedules in the operator's manual.
 - (h) the Installation and Warranty Registration Certificate is not received by Simba International Ltd., Service Dept., Woodbridge Road, Sleaford, Lincs. England. NG34 7EW, **within 7 days** of installing a new machine.

SIMBA INTERNATIONAL LTD

SERIES 3/3B AND C SERIES RIGID DISC HARROW

OPERATORS MANUAL AND SPARE PARTS

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1. INTRODUCTION

Offset Disc Harrows will achieve excellent results if they are set up and operated correctly. It is important to note that a little time setting the machine up initially will greatly increase performance and efficiency.

The Offset Disc Harrow may be used for either primary or secondary cultivations, for example straw incorporation or use following the plough. A Press Roll used in conjunction with the Disc Harrow will firm the surface, retain moisture and provide ideal conditions for subsequent passes. A three point linkage kit is available to enable the use of light, mounted equipment behind the Discs e.g. light spring tine or packer roller.

2. DISC HARROW ADJUSTMENTS

BACKGROUND, PROCEDURE AND PRE-OPERATION SET UP

- NOTE:**
- i. All references to "left" and "right" hand are when standing behind the disc harrow, with the machine moving away.
 - ii. When attempting work adjustments, alter one setting at a time, then drive forward sufficiently to ensure that the disc has achieved a stable working position after each adjustment.
 - iii. The addition of an implement (e.g. press roll) to the rear of the disc will generally alter the operation and require adjustments to be made to the disc. Ensure any such implement is attached prior to adjusting as outlined in the subsequent sections.

A) TRACTOR

1. Whenever possible, ensure that the **tractor drawbar** is able to swing freely to the left from the central position by removing the left hand locking pin.
2. Providing the tractor drawbar swings freely (i.e. not in constant contact with the left hand stop) steerability of the tractor will not be significantly affected.
3. If the tractor drawbar cannot swing, it is sometimes necessary to adjust the implement drawbar to minimise the steering effect on the tractor. See the Trouble Shooting Section page 9 for further details. A revised front shackle hitch is available for extreme cases.
4. When the disc harrow is to be pulled by Track Marshall crawlers equipped with a 'reduced angle' type, swinging drawbar (integral with linkage), a purpose built, offset drawbar is available from Track Marshall for use with offset hitch implements.

B) DRAWBAR - HEIGHT ADJUSTMENT

Alternative drawbar height settings are available to match the implement to the tractor drawbar.

1. The standard drawbar setting is in the central hole.

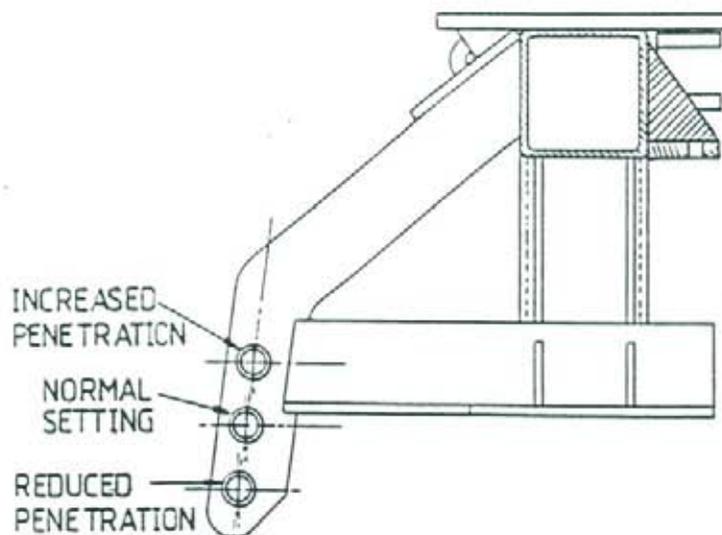


FIGURE 1

2. When in work, this should enable the drawbar to be 50 to 100mm higher at the tractor end.
3. Adjustment from this setting should not be necessary except in the following circumstances:-
 - a) Adjust to the **TOP** hole for:-
 - Excessively high tractor drawbars.
 - Extreme conditions to increase penetration.
 - b) Adjust to the **BOTTOM** hole for:-
 - Light land conditions - primary or secondary cultivations.
 - Low tractor drawbars.

C) GANG ADJUSTMENT

Gang angle (inclusive angle between gangs) adjustment was traditionally the means of controlling depth and maintaining the implement squarely behind the tractor.

- Increasing angle increased penetration and depth.
- Decreasing angle decreased penetration and depth.

- Increasing front/decreasing rear swings implement to the left.
- Increasing rear/decreasing front swings implement to the right.

Since the gang angle adjustment also dictates the soil cultivation effect, it is beneficial to set the gangs to give the required cultivation and control depth by other means (page 4).

1. Increasing front gang angle increases soil and residue cut, thrown and mixed.
2. Reduced rear gang angle reduces re-inversion of incorporated matter from the front gang.
3. Minimising both gang angles imparts a "chopping" and breaking action as a secondary cultivation without raising large amounts of wetter material from below, to the surface.
4. Most machines incorporate a "standard" and "minimum" angle setting corresponding to "normal" and "secondary" cultivations. Select the appropriate setting according to the majority of work to be undertaken (pages 17,18).

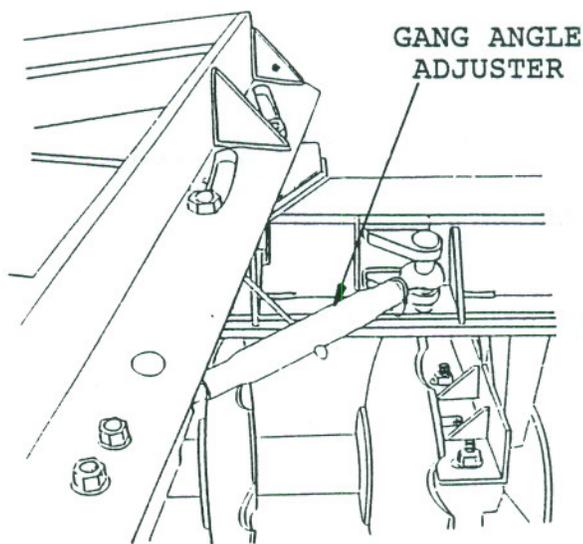


FIGURE 2

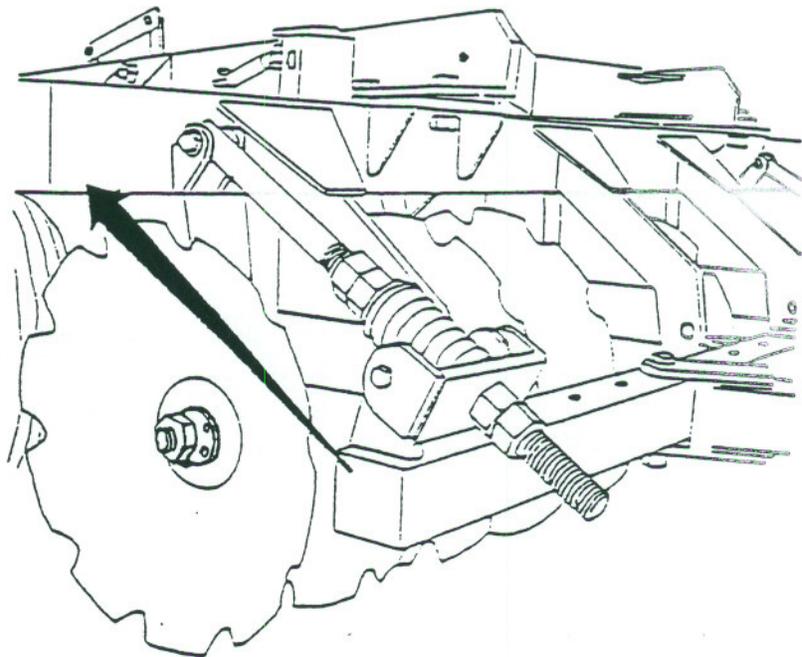
5. Within the above settings the angles can be adjusted from maximum angle (bolts at front of slots for front gang, rear of slots for rear gang) according to the desired result.
6. A typical "starting setting" as a proportion of maximum would be:-
 - Primary Cultivations: Front $\frac{3}{4}$ to $\frac{1}{2}$
Rear $\frac{1}{2}$ to $\frac{1}{4}$
 - Secondary Cultivations: Front $\frac{1}{2}$ to $\frac{1}{4}$
Rear $\frac{1}{4}$ to $\frac{1}{2}$

D) DEPTH CONTROL

The traditional means of depth control via gang angle setting has already been outlined (Section C). The ability to maintain a consistent depth by angle adjustment is dependent largely upon the field conditions (primarily soil resistance) also being constant. It is therefore normal to limit working depth by means of the transport wheels, thereby enabling angle selection to be based on cultivation requirements such as amount of mixing, etc

1. Adjust depth limiting stops according to final desired depth, ensuring they are adjusted equally each side.
2. Ensure disc penetrates until wheels contact the ground when set for depth. Increase gang angles if necessary until this occurs.

E) PITCH ADJUSTMENT



"UPWARD" ADJUSTMENT
TO SHORTEN SPRING/
COLLAR ASSEMBLY.

FIGURE 3

Adjustment of the levelling spring/collar assembly (ies) enables the balance of weight between the front and rear gangs to be varied. Essentially, the assembly should be regarded as a top link on a mounted implement, for example shortening the assembly will increase weight on the front of the machine, increasing penetration.

NOTE: The use of additional implements behind the disc harrow (e.g press roll) will alter the front to rear balance in work and as such usually requires an adjustment of the spring collar assembly (ies). Adjustment of the unit, with or without additional implements is by the following procedure irrespective of the type of implement attached behind.

1. Set the assembly to suit the tractor drawbar height. With the disc fully raised (and rear roll coupled and also raised, if fitted with transport wheels) the front central blade should be 50 to 75mm closer to the ground than the corresponding blade on the rear gang. Adjust by moving both pairs of nuts.
2. Shortening the assembly will move the front gang nearer to the ground and is adjusted easiest with the disc raised when the disc is used on its own or lowered when used in conjunction with a rear roll.
3. Lengthening the assembly will move the rear gang nearer to the ground and is adjusted easiest with the disc lowered when the disc is used on its own or raised when used in conjunction with a rear roll.
4. Adjust the spring compression. With the disc raised, adjust the upper pair of nuts until the spring is compressed, leaving a gap of 3 to 4mm between each coil.
5. In work, shortening the levelling spring/rod assembly increases the effectiveness of the front gang, i.e.

- Improves front gang penetration.

- Increases the tendency for the disc to swing to the LEFT about the hitch pin.

Lengthening the assembly increases the effectiveness of the rear gang, i.e.

- Improves rear gang penetration, reduces front gang penetration.

- Increases the tendency for the disc to swing to the RIGHT about the hitch pin.

6. ON MACHINES WITH TWO LEVELLING SPRING ASSEMBLIES it is possible to counteract uneven cut depth across the cultivated width by adjusting one assembly relative to the other.

For example, if more penetration is required on the front left hand side of the machine, shorten the assembly on this side.

If less penetration is required on the front right hand side of the machine, lengthen the assembly on this side.

F) DRAWBAR - LATERAL ADJUSTMENT

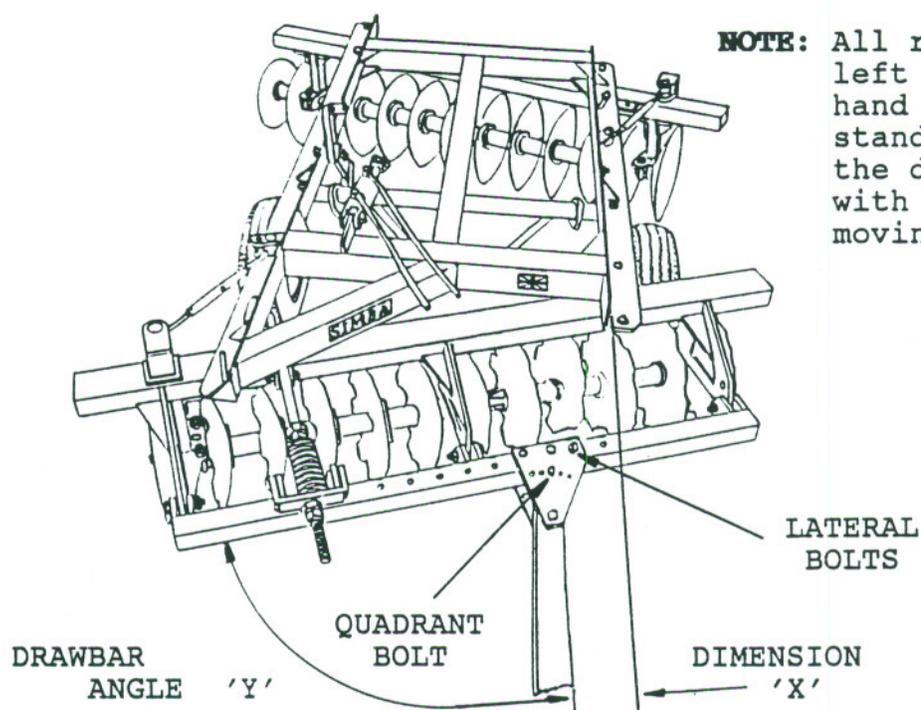


FIGURE 4

The disc harrow will operate correctly when adjusted to be offset to the tractor centre line. The amount of offset will vary with gang angle (this is self compensating by the design of the gang to drawbar attachment) and implement width.

NOTE: Adjustments are described assuming that the front gang is on 3/4 to maximum angle setting (bolts to front of slots). If otherwise, allowances should then be made accordingly.

1. Adjust the drawbar lateral setting (DIMENSION 'X') by relocating the three lateral drawbar plate to cross drawbar bolts.

- Reducing DIMENSION 'X' will reduce the steering effect on the tractor (ie reduces the tendency for the tractor drawbar to swing hard to the left)

MODEL	DIMENSION 'X'
Series 1 to 4 Rigid 6' to 14'	300 - 200mm
Series 1, 2 Folding 12' to 14'	400 - 200mm
Series 1 to 3 Folding 14' to 18'	300 - 100mm
Series 1 to 3 Folding 20' +	300 - 200mm

DIMENSION 'X' indicates an "average" working setting.

2. Adjust the drawbar angle 'Y' by relocating the quadrant bolt on the drawbar plates.

- Drawbar should normally be parallel with the top frame side members with the front gang on 3/4 to maximum angle.

NOTE i. **DO NOT** attempt to adjust the drawbar settings before adjusting the gang angle and pitch.

ii. Once set to suit the tractor and ground conditions the drawbar angle and lateral settings **DO NOT** NORMALLY REQUIRE FURTHER ADJUSTMENT.

G) **TORQUE TUBE**

All disc harrow frames have an inbuilt 'twist' which counteracts the natural tendency for the front right and rear left hand gang corners to penetrate more easily.

Some models which incorporate a range of gang widths for a common frame have the ability to vary the torque setting. This is preset at the factory, and should not be adjusted without prior consultation with SIMBA.

3. OPERATIONAL ADJUSTMENTS AND TROUBLE SHOOTING.

As a general guide the disc harrow should be initially set prior to work as outlined in the preceding sections.

It should then be possible to adjust to the specific conditions by reference to the fault/remedy guide.

NOTE: A detailed outline of various cultivation techniques to incorporate straw with disc harrows is available from Simba Machinery entitled:-

"Straw Incorporation Systems".

For primary cultivations (Straw/Residue Incorporation) the object is to invert soil and bury trash with the front gang leaving the rear gang to chop and mix rather than reinvert. A common cause of poor incorporation is to attempt to work too deeply on the first pass. By working the disc at the settings indicated the second pass will usually attain sufficient depth.

The most common method of straw incorporation is to use the disc harrow in conjunction with a press roll, ahead of a subsurface cultivator, or alternatively ahead of the plough, or a heavy disc. In both cases, the method of work is the same.

1. One pass with the disc harrow (and suitable press roll) to cut and mix the straw and soil to a depth of 75 to 100 mm, leaving a consolidated finish to encourage volunteer germination and provide weather insurance if wet or dry.

NOTE: In wetter years the use of a following press roll may not be required. Reduced gang angles and working depths may be appropriate on the first pass to ensure trafficability in later passes.

2. Possible subsurface cultivation to eliminate any problem areas of compaction. Ensure a consolidating roll is used in conjunction with the subsurface cultivator.
3. Second disc and press pass to 125 to 150mm depth giving a broken down, consolidated mix with the opportunity to cultivate out volunteer regrowth. Alternatively, plough or heavy disc to depth.

Generally a forward speed of 5/7 M.P.H. (8/11 K.P.H.) will achieve optimum results, maximising inversion and burial. Speeds in excess of those stated above will tend to give a deterioration in the quality of the work. This may be seen as a ridge and trough effect across the work surface due to soil being thrown too far by the leading discs, the rear discs then are unable to turn enough soil back.

IMPORTANT - NEVER turn to the right with the machine in work.

TROUBLE SHOOTING

Referring to the chart below attempt only **one adjustment at a time** starting from the top of the chart, then drive forward sufficiently far enough to ensure that the disc has achieved a stable working position before carrying out the next adjustment (if necessary).

NOTE: All references to "left" and "right" hand are when standing behind the disc harrow, with the machine moving away.

FAULT

REMEDY (SECTION REFERENCE)

1. Disc steers tractor (pushes tractor rear end left).

Ensure tractor drawbar can swing freely from centre to the left (A,1; A,2).

Reduce gang angles, providing cultivation is acceptable (C).

Move drawbar hitch to the left via quadrant hole, increasing 'Y' (F,2).

Move drawbar hitch to the left via rear 3 bolts, reducing 'X' (F,1).

2. Rear of disc hangs to the left.

Lengthen the levelling spring rod(s) to raise the front gang and lower the rear gang (E,5).

Decrease the angle of front disc gang (C).

Increase the angle of rear disc gang (C).

Move the implement hitch to the right, reduce 'Y', then increase 'X' (F).

3. Rear of disc hangs to the right.

Shorten the levelling spring rod(s) to lower the front gang and raise the rear gang (E,5).

Increase the angle of the front disc gang (C).

Decrease the angle of the rear disc gang (C).

Move the implement hitch to the left, increase 'Y', then reduce 'X' (F).

TROUBLE SHOOTING cont'd

FAULT

REMEDY (SECTION REFERENCE)

4. Disc penetrates deeper one side.

- general

Adjust levelling spring rod(s):

- Shorten to increase depth of front gang (E,5).

- Lengthen to reduce depth of front gang (E,5).

- Front right side too deep.

Insufficient torque adjustment:

- Adjust each levelling spring rod (E,5; E,6).

- Consult Simba factory (G).

- Front left side too deep.

Excessive torque adjustment:

- Adjust each levelling spring rod (E,5; E,6).

- Consult Simba factory (G).

- Entire left side too deep (light land)

Relocate cross drawbar:

- Lower to bottom hole (B,3).

- Move front drawbar to left hand side on cross drawbar, 3 bolt lateral adjustment, reduce 'X', and if necessary 'Y' (F,1).

5. Disc fails to penetrate.

Check depth control stops (D).

Check gangs are in normal settings and increase gang angles if appropriate to cultivations (C).

Shorten levelling spring rod(s) (E,5).

Check blades for wear.

Check specification is right for ground conditions.

Raise cross drawbar to top holes (B,3).

HYDRAULIC DEPTH CONTROL

OPERATIONAL CHARACTERISTICS AND FAULT FINDING

The hydraulic circuit is designed to limit the pressure on the rod side of the double acting hydraulic cylinder to be only sufficient to raise the wheels up to the adjustable depth control stops. This inhibits axle movement in work, thus minimising wear to the axle linkage and pivot points.

Excess pressure which would damage the axle assembly opens the relief valve and the oil flow is returned in an open circuit to the tractor.

The hydraulic circuit therefore exhibits the following characteristics:-

1. Tractors which automatically return to the neutral setting at the limit of the cylinder stroke will need to be manually returned to neutral.
2. Tractors with high oil flow rates (exceeding 10 gallons per minute) can overload the capacities of the circuit.

Symptoms can be:

- failure to fully raise the wheels up to the depth control stops.
- premature operation of the tractor relief valve.
- premature switching of the tractor pump to "idle" setting (closed centre pumps only)

In all cases reduce tractor oil flow rate (if this is adjustable) until the system functions correctly.

Consult the factory if the system still fails to operate satisfactorily.

4. TRANSPORT



WARNING - TRANSPORT STRAPS SHOULD BE FITTED BEFORE THE MACHINE IS TRANSPORTED.



WARNING - DO NOT ATTEMPT TO LOWER THE MACHINE WITH THE TRANSPORT STRAPS FITTED AS THIS WILL RESULT IN DAMAGE TO THE MACHINE.

Fully raise the machine, then fit the transport straps between the topframe and the carrier arm. Both straps **MUST** be fitted before the machine is transported.

NOTE: When removing the transport straps the following should be observed:-

Raise the machine to relieve pressure on the straps.

Exercise **CARE** when extending the axle cylinder to ensure that the machine is not lowered which would damage the machine.



WARNING - LOWERING THE MACHINE WITH THE TRANSPORT STRAPS FITTED WILL DAMAGE THE MACHINE.

NOTE: Exercise great care if the disc harrow is used to transport a press roll on public highways as the combination will become a very long vehicle, especially when an End Tow press roll or Landpacker is transported.

5. MAINTENANCE



WARNING - WHEN WORKING ON MACHINES IN THE RAISED / TRANSPORT POSITION ALWAYS ENSURE THAT THE TRANSPORT STRAPS ARE FITTED.



WARNING - WHEN WORKING UNDER MACHINES ALWAYS ENSURE THAT THEY ARE FULLY SUPPORTED AND WILL NOT TIP UP SHOULD THE BALANCE OF WEIGHT BE MOVED (FOR EXAMPLE - SHOULD A GANG BE DETACHED).

Any disc axle nuts must be checked daily as if they are allowed to work loose, damage to the discs, spools and bearings may occur. Always bend over the locking tabs after tightening the disc axle nuts.

NEW MACHINES

On a new machine tighten all nuts and bolts after 5 hours work and again after 15 hours. This also applies to parts that have been moved or replaced. After the initial 15 hours of work a once a week check is sufficient.

NOTE: When tightening the main axle nuts, loosen the bearings to avoid preloading the bearings, housings and pillars.

DAILY SERVICE

1. Grease disc axle bearings until grease shows. Use a standard agricultural grease. Greasing these bearings flushes the old grease and contaminants out of the bearing.
2. Grease top axle plummer block until grease shows.
3. Grease axle carrier arm until grease shows.
4. Check disc blades for damage. Damaged discs may lead to damage or failure of other components.
5. Check hydraulic connections for leaks. Leaking hydraulics may allow the machine to lower in work or road transport.

WEEKLY SERVICE

1. Tighten all nuts and bolts including wheel nuts. Vibration through the machine may cause the nuts and bolts to work loose leading to wear.

IMPORTANT: - Never use a hammer to assist tightening of nuts and bolts.
- Using an incorrect size or grade of bolt may result in damage to the implement.

MAXIMUM NUT AND BOLT TORQUES

M16 GRADE 8.8	-	24 KG.M.	(176 lb.ft.)
M20 GRADE 8.8	-	48 KG.M.	(352 lb.ft.)
M24 GRADE 8.8	-	80 KG.M.	(587 lb.ft.)
M30 GRADE 8.8	-	150 KG.M.	(1100 lb.ft.)
M36 GRADE 8.8	-	280 KG.M.	(2055 lb.ft.)

WHEEL NUT TORQUES

5 STUD HUBS 5/8" B.S.F.	-	20.7 KG.M.	(150 lb.ft)
6 STUD HUBS M18	-	27.7 KG.M.	(200 lb.ft)

2. Check all disc axles are tight. If the disc axles are allowed to run loose the discs will become worn in the centre and may wear into the disc axle. If this occurs the axle will not be able to be tightened correctly.

Carry out the following procedure if a disc axle requires tightening.

- a) On axles with two bearings loosen the bearing mounting bolts on one pillar.

On axles with three bearings loosen the mounting bolts on the outer pillars.

NOTE: This is to allow the bearing to move slightly when tightening the axle. This ensures that the bearings are not preloaded, which could lead to early bearing failure.

NOTE: When the axle needs tightening again, on two bearing axles loosen the bearing that was not loosened the previous time.

- b) Undo and remove the locking plate bolt, then remove the locking plate.
 - c) Fit one of the disc axle spanners onto the nut at the opposite end of the gang that is being tightened. The spanner should be jammed onto the ground to prevent it from slipping when the axle is tightened.
 - d) Tighten the axle. Continue to tighten the axle until the locking plate can be refitted. **DO NOT** back the nut off to allow the plate to be fitted.
 - e) Refit and tighten the locking plate bolt.
 - f) Tighten the bearing bolts.
3. Check tyre pressures. Running the implement with tyres at the incorrect pressure may cause excessive wear, over heating and possible failure.

<u>TYRE SIZE</u>	<u>MAX. P.S.I.</u>	<u>MAX. BAR</u>
11.5/80-15, 10 PLY	60	4.0
400/60-15.5, 10 PLY	50	3.5

END OF SEASON SERVICE

- 1. Grease all disc axle bearings to flush any soil away from the bearing.
- 2. Grease all pivot points (see Daily Service Section).
- 3. Grease any exposed bolt threads especially the levelling bar to ease adjustment.
- 4. Grease any exposed areas of hydraulic cylinder rods to prevent them from becoming pitted.
- 5. Strip and grease all toplinks
- 6. Wheel bearings are prepacked with grease at the factory but should be inspected and regreased.
- 7. Check for worn or damaged components. Replace if necessary to avoid damaging other components.
- 8. Tighten all nuts and bolts. (see Weekly Service section)

9. Disc gang bearings, if disassembled for inspection, should be retightened by the adding or removal of shims.

The bearings should then be able to turn when a torque of 7 - 12 ft. lbs. is applied to the sleeve, with the cap bolts tightened to 50ft. lbs.

NOTE:- In the absence of torque setting equipment, it should be just possible to rotate the spacer collar, (pressed onto the sleeve) by one hand, with the cap bolts fully tightened.

WEARING PARTS

Any wearing parts must be replaced as necessary or damage to a more expensive item may occur.

6. ASSEMBLY

Lifting equipment and two men are recommended to assemble the Disc Harrow due to the weight and positioning of certain components.

Depending upon the width your disc harrow should arrive fully assembled. Most machines will arrive as three separate units:-

1. Top frame/Lift axle assembly.
2. Front gang/Drawbar assembly.
3. Rear gang.

NOTE: Left and right hand items may be identified by viewing from the rear of the machine in the direction of travel.

The following procedures, outline the assembly of machines arriving in a partially assembled state. For ground up assembly details refer to page 19.



WARNING - ALWAYS ENSURE THE MACHINE IS SAFELY SUPPORTED, BEFORE ANY WORK IS CARRIED OUT.

A) FRONT GANG/DRAWBAR

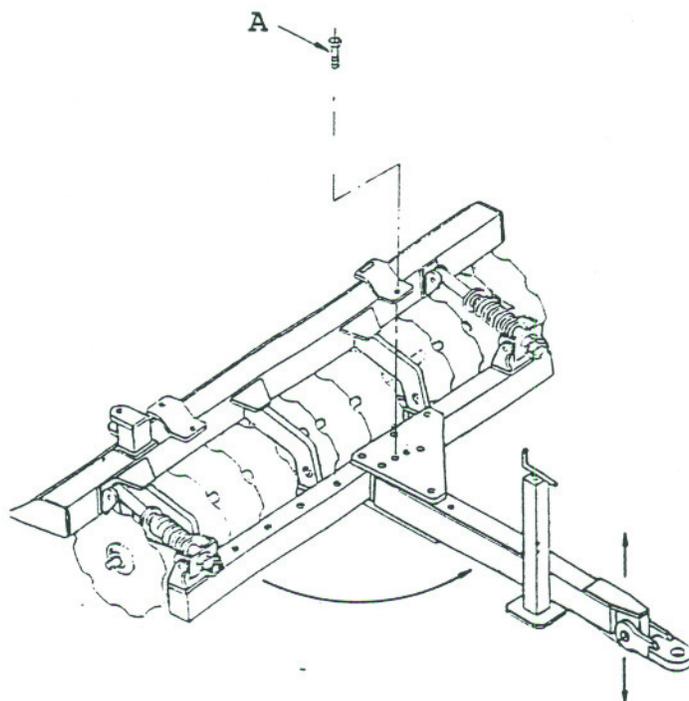


FIGURE 5

1. Support assembly.
2. Swing **drawbar** outwards.
3. Loosely fit **quadrant bolt** (A).
4. Adjust **jack** to level the assembly on even surface.

B) TOP FRAME/AXLE

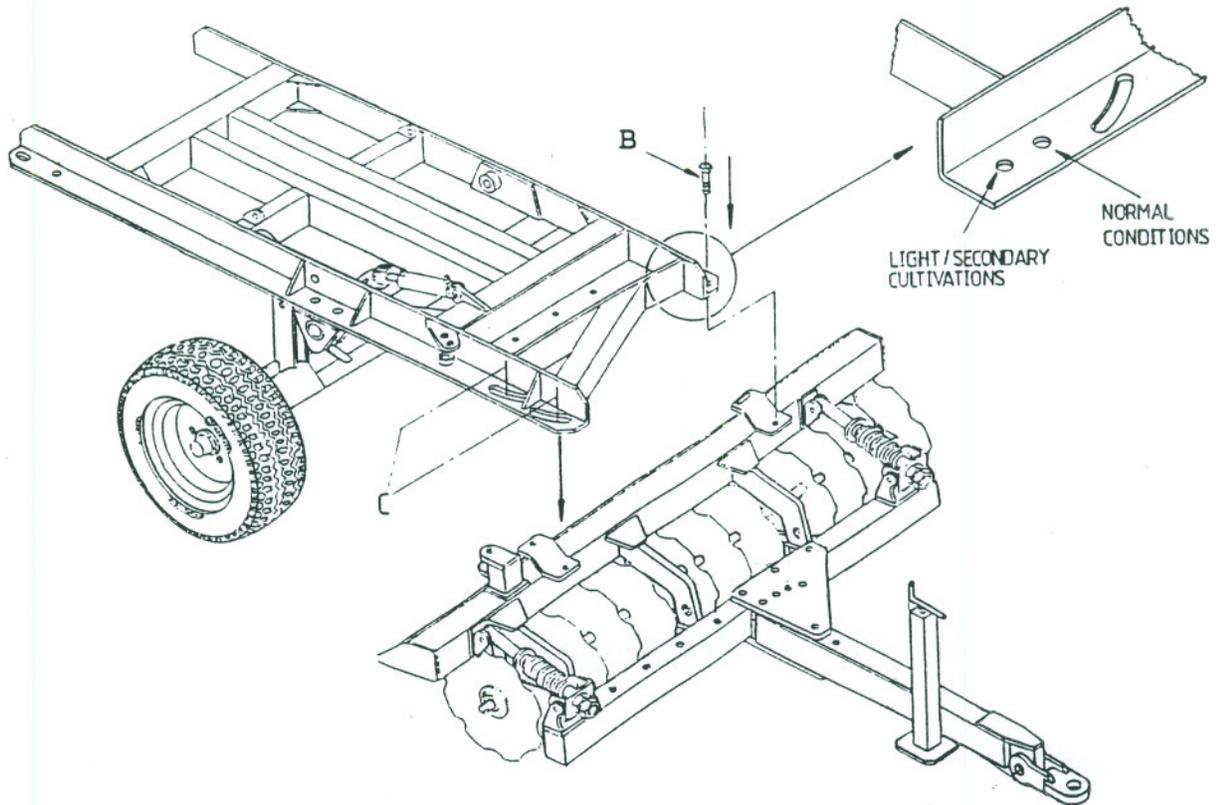


FIGURE 6

5. Position the top frame over the front gang carrier.
6. Align and fit **pivot bolt (B)** into the desired setting.
7. Fit the remaining **3 bolts**:- swing the top frame until the mounting bolts are fully forwards along slots 'C' (ie to maximum angle).
8. Tighten all of the mounting **bolts**, leaving **1mm gap** for ease of angle adjustment.
9. Fit the **toplink type gang adjuster** or the **hydraulic angling cylinder** (if fitted).

C) REAR GANG

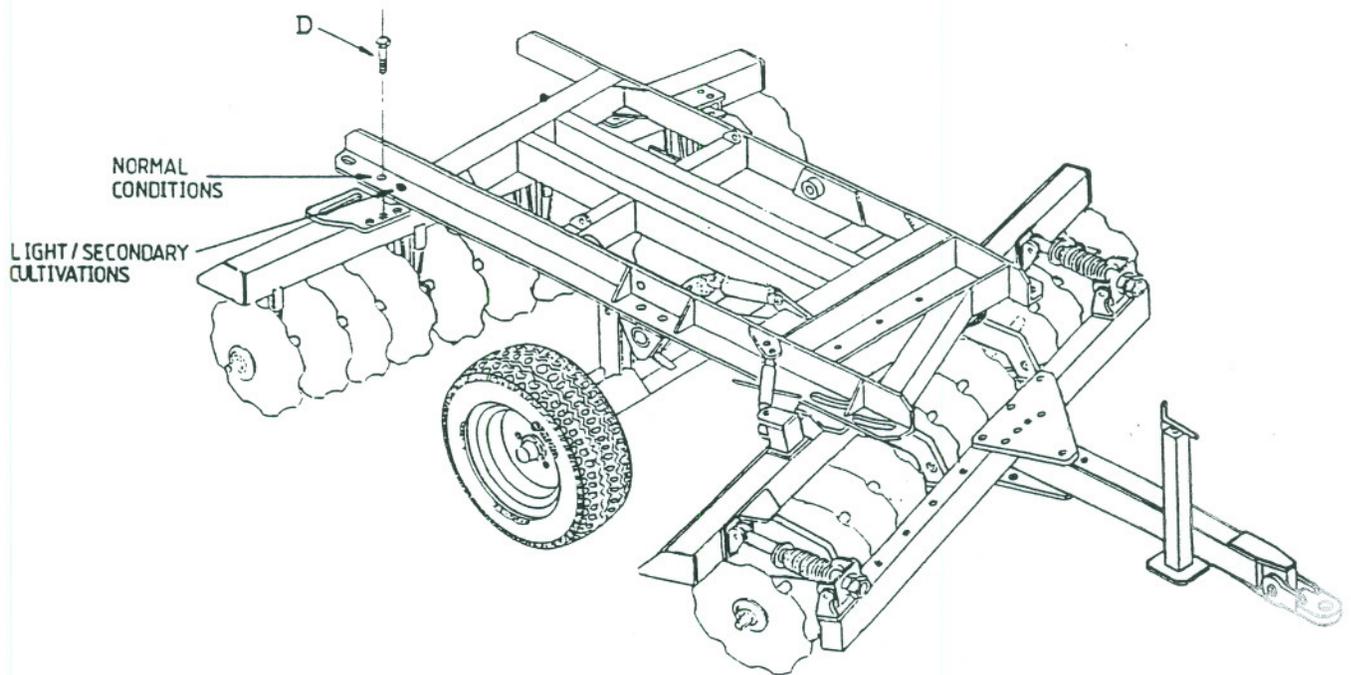


FIGURE 7

10. Couple up the hydraulics and extend the **lift cylinder(s)** to raise the top frame. If a tractor is unavailable, a forklift may be used to lower the top frame onto the rear gang carrier.
11. Position the rear gang assembly, align **bolt (D)** into desired setting.
12. Fit the remaining **bolts**, and adjuster as per steps 7 - 9.

D) ASSEMBLY OF STRIPPED MACHINE

1. Assemble the disc axles ensuring that the axle nuts (item 1 page 30) are fully tightened and the locking plates (item 2 page 30) fitted.
2. Using lifting equipment raise the topframe (item 1 page 24) to 1 metre approx., above the ground. Lower the topframe onto trestles at each end of the frame. Do not place the trestles in the centre of the topframe.
3. Grease the machined ends of the top axle (item 19 page 32) then slide the plummer block bearings (item 1 page 32) onto the axle.
4. Using lifting equipment, raise the top axle under the top frame so the mounting bolts (item 2 page 32) may be fitted.
5. Bolt the two carrier arms (item 4 page 32) to the inside of the topframe angle with the special pivot bolts (item 5 page 32).
6. Manoeuvre the bottom axle (item 7 page 32) under the top frame. Raise the axle up to the arms of the top axle. Fit the top to bottom axle mounting bolts through the lower holes in the bottom axle legs.
7. Bolt the long arm of each carrier arm to the top hole in each axle leg.
8. Raise the front gang carrier (item 5 page 24) up under the topframe.
9. Fit the gang to topframe bolts (item 2 page 24). The front gang pivot bolt should be fitted in the drilled hole, second from the front, of the left hand side topframe rail. Adjust the gang angle until the remaining three bolts may be fitted.
10. Raise the rear gang carrier (item 7 page 24) up under the topframe.
11. Fit the gang to topframe bolts. The rear gang pivot bolt should be fitted in the drilled hole in the rear of the right hand side topframe rail (not in the slotted hole). Adjust the gang angle until the remaining three bolts may be fitted.
12. Tighten all of the mounting bolts, leaving a gap of approx. 1mm to ease angle adjustment.
13. Bolt the cross drawbar (item 5 page 28) to the middle of the three holes in the gang carrier pull points.
14. Bolt the levelling spring bracket (item 12 page 28) to the mounting points on top of the cross drawbar. Ensure that the two bushes are fitted into the bracket before tightening the bolts.

15. Wind two of the levelling bar nuts (item 11 page 28) all the way up the the levelling spring bar (item 10 page 28).
16. Slide the collar (item 15 page 28) and spring (item 14 page 28) onto the levelling bar then pass the bar through the hole in the bracket.
17. Bolt the top end of the levelling bar to the mounting point on the front of the gang carrier box section.
18. Wind the second pair of levelling bar nuts onto the bar.
NOTE: Some models may have two levelling spring assemblies fitted. Repeat steps 14 to 18 for the second unit.
19. Loosely bolt the two lateral drawbar plates (item 8 page 28) to the upper and lower sides of the cross drawbar.
20. Slide the drawbar (item 1 page 28) between the two drawbar plates then fit the pivot bolt (item 9 page 28) and the quadrant bolt (item 9 page 28).
21. Bolt the restricted shackle (item 3 page 28) to the pull point on the end of the drawbar.
22. Fit the hose mast (item 17 page 28) to the remaining hole in the drawbar.
23. Bolt the two outer depth control boxes (item 37 page 32) to the underside of topframe. Fit the inner boxes (item 38 page 32) so that they are flush with the underside of the outer boxes.
24. Fit the wheels to their hubs then tighten the wheel nuts as tight as possible. The axle assembly will need to be raised to enable the wheels to be fitted.
25. Fit the lift axle hydraulic cylinder(s) between the top frame and the top axle with the rod end to the top axle.

PIPING UP SINGLE CYLINDER TYPE LIFT AXLES AND RELIEF VALVE (page 32)

26. Fit a 'T' adaptor (item 28) into the port at the piston end of the cylinder. Ensure that a dowty washer (item 22) is fitted under the adaptor. Two dowty washers may be required to bring the adaptor into the correct position.
27. Fit a male - female adaptor (item 23) into the port at the rod end of the cylinder. A dowty washer should be fitted between the adaptor and the port.
28. Fit the relief valve onto a 'T' adaptor (item 24) with a dowty washer between the mating faces. The arrow on the valve body should be pointing away from the adaptor.
29. Fit an UNRESTRICTED male - male adaptor (item 26) into the relief valve ensuring that a dowty washer is fitted.

30. Connect a 2ft hose (item 27) to the male - male adaptor.
31. Attach a male - female 90° elbow (item 29) to the 'T' adaptor.
32. Connect the relief valve and 'T' adaptor unit onto the male female adaptor.
32. Join the 2ft hose to the 'T' adaptor in the hydraulic cylinder. The hose will require a loop to enable fitting.
34. Attach the longest of the two hoses (item 30) to the 'T' adaptor in the port at the piston end of the cylinder.
35. Connect the shorter of the two hoses (item 31) to the 90° elbow.
36. Fit an UNRESTRICTED male - male adaptor and a male quick release coupling to the end of the shorter hose.
37. Fit a RESTRICTED male - male adaptor (item 32) and a male quick release coupling (item 33) to the end of the longest hose.
38. Tighten all of the hydraulic connections.

PIPING UP TWIN CYLINDER TYPE LIFT AXLES AND RELIEF VALVE (page 36)

26. Fit a banjo block (item 24) to both ports on each cylinder.
27. Fit a 3ft hose (item 25) to each of the banjo blocks.
28. Join the hoses at the piston end of each cylinder together with a four way adaptor (item 33).
29. Join the hoses at the rod end of each cylinder together with a four way adaptor (item 33).
30. Fit a male - male adaptor (item 36) into the end of the relief valve (item 35) ensuring that the arrow on the valve body is pointing towards the adaptor. Fit a dowty washer between the adaptor and the valve.
31. Fit a 2ft hose (item 34) to the adaptor in the relief valve.
32. Attach the relief valve onto the rearmost outlet from the four way adaptor joining the rod side of both cylinders.
33. Connect the 2ft hose to the rearmost outlet from the four way adaptor joining the piston sides of both cylinders.
34. Attach the longer of the two hydraulic hoses (item 29) to the four way adaptor from the rod side of the cylinders.
35. Attach a RESTRICTED male - male adaptor (item 27) and a male quick release coupling (item 28) to the end of the hose.

36. Fit the shorter of the two hydraulic hoses to the four way adaptor from the piston side of the cylinders.
37. Attach an UNRESTRICTED male - male adaptor and a male quick release coupling to the end of the hose.
38. Tighten all of the hydraulic connections.

FITTING DISC GANGS (PAGE 30)

39. Position the front disc axle gangs ahead of the machine.
40. Raise the topframe then remove the trestles.
41. Lower the topframe onto the disc axle bearings (item 13). Care must be taken when lowering the topframe to avoid damaging the bearing grease nipples (item 14).
42. Bolt the bearings to the underside of the bearing pillars.
43. Position the rear disc axle gangs behind the machine.
44. Repeat steps 41 and 42.

NOTE: Bearing protection plates are available as an option to be bolted to the underside of each bearing housing. The protection plates are fitted using the main bearing mounting bolts.

45. Ensure that all nuts and bolts and hydraulic connections are tight (see Weekly Service Section).

BOLT ON REAR DRAWBAR (page 24)

46. Bolt the two drawbar drop arms (items 21,22) to the insides of the angle at the rear of the topframe.
47. The drawbar beam (item 23) should be bolted across the pad on the end of each drop arm.
48. The rear shackle (item 26) may be bolted in any position along the drawbar beam, as long as it is within the confines of the two drop arms.

OPTIONAL REAR PIPE WORK (page 34)

NOTE: If the optional pipe work to the rear is to be fitted the two 'T' adaptors in steps 26 and 28 will be replaced by two four way adaptors (item 34 page 32).

49. Attach an 11ft hydraulic hose (item 36) to the four way adaptor (item 34) in the end of the relief valve.
50. Attach a 12ft hydraulic hose (item 36) to the four way adaptor in the port on the piston side of the hydraulic cylinder.

51. Work the two hoses to the rear of the disc harrow along the topframe.
52. Fit two bulk head adaptors into the hydraulic outlet mounting plate.
53. Attach the two hoses to the bulk head adaptors, then two female quick release couplings (item 35) onto the rear of the bulk heads.

TESTING

Connect a tractor to the disc harrow drawbar, then couple up the hydraulics.

Pressurise the hydraulics to raise the machine, i.e lower the transport wheels, until the wheels are just taking the weight of the machine.

Tighten the wheel nuts to the torque settings detailed in the Weekly Service Section.

When the wheel nuts are tight raise the machine fully.

Lower the machine to the ground, then continue to raise the wheels until they touch the outer depth control boxes at which point the relief valve on the machine should prevent the wheels from being raised any further.

SPARE PARTS ORDERS

Please note when ordering spare parts quote part number, model number, and serial number of machine.

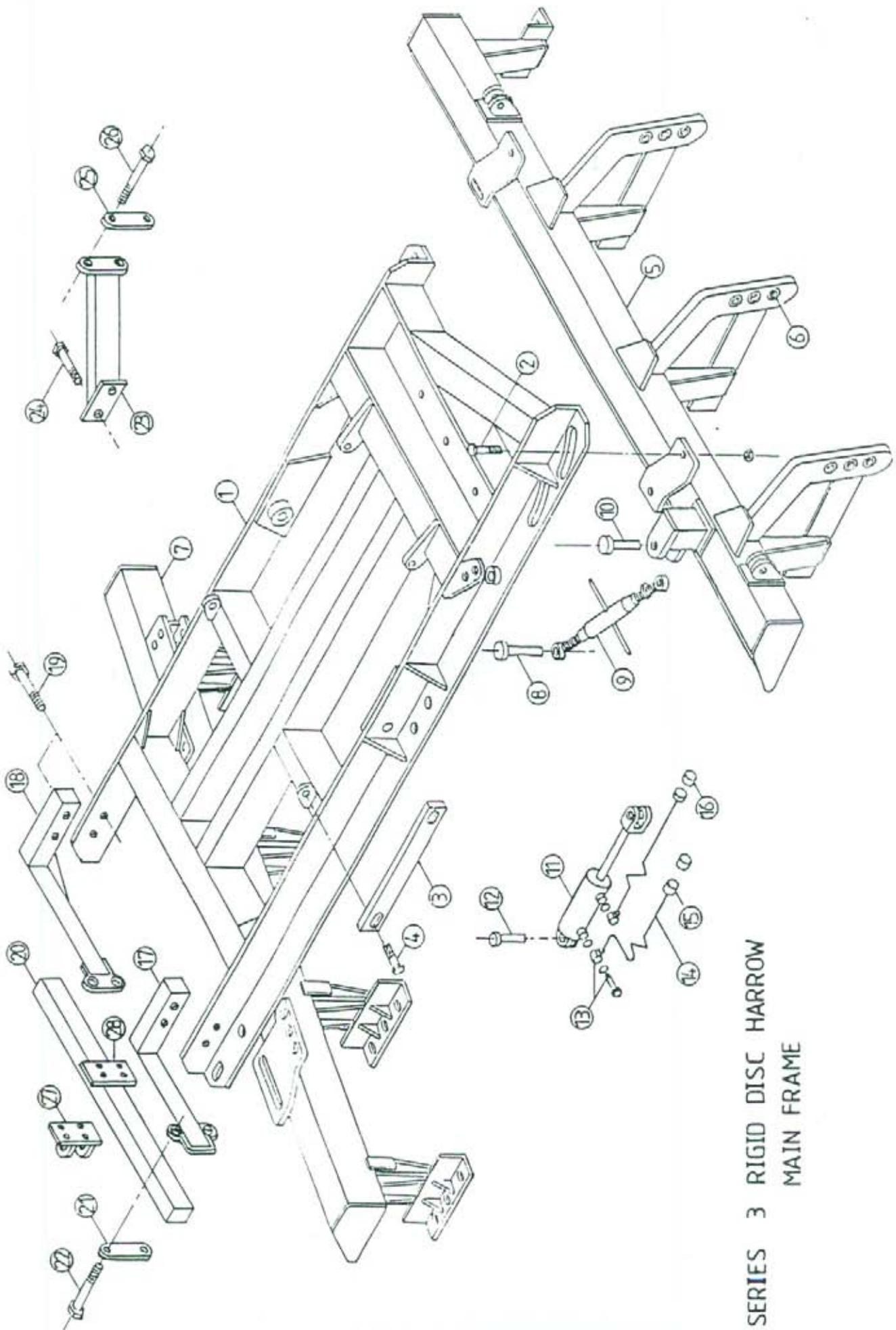
Parts in brackets **MUST** be ordered separately if they are required.

Eg. 0036 BOLT M30 (NUT 2011)

ABBREVIATIONS USED IN SPARE PARTS MANUAL

D/A	-	DOUBLE ACTING
FT	-	FEET
F/WASHER	-	FLAT WASHER
MM	-	MILLIMETRE
N.I.	-	NOT ILLUSTRATED
PT.NO.	-	PART NUMBER
R/H	-	RIGHT HAND
S/WASHER	-	SPRING WASHER
	-	GREASE POINT

NOTE: Right and left hand items are identified by viewing from the rear of the machine in the direction of travel.



SERIES 3 RIGID DISC HARROW
MAIN FRAME

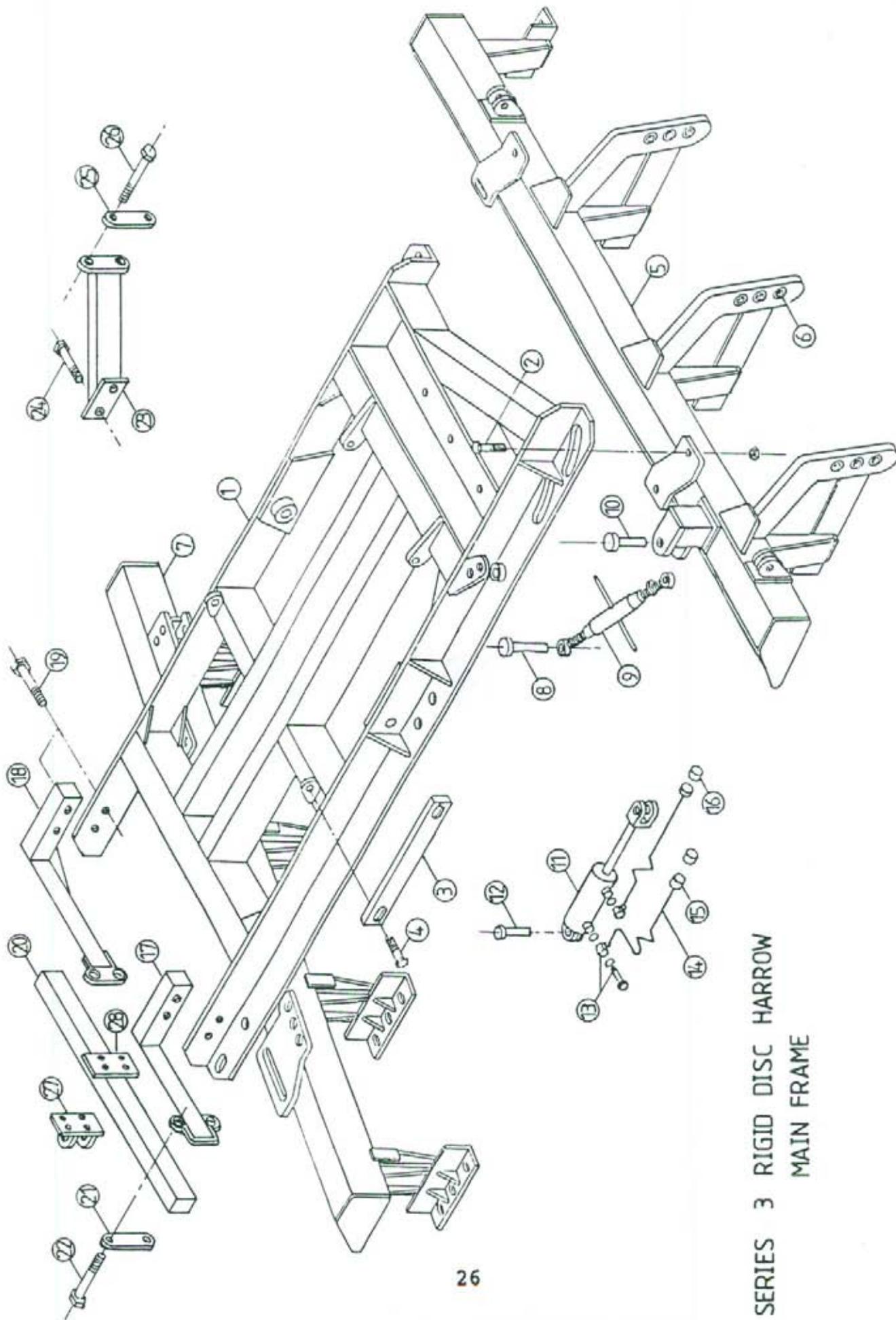
SERIES 3/3B RIGID DISC HARROW

MAINFRAME AND GANG CARRIERS

<u>ITEM NO.</u>	<u>PT.NO.</u>	<u>DESCRIPTION</u>
1	----	SERIES 3/3B TOPFRAME
	1645	TOPFRAME AXLE RAM POINT SPRUNG TENSION BUSH
2	0054	FRAME/GANG BOLT M30 (F/WASHER 3763, NUT 2011)
3	2420	TRANSPORT STRAP
4	0015	TRANSPORT STRAP BOLT M24 (F/WASHER 2604, S/WASHER 2593, NUT 0717)
5	----	FRONT GANG CARRIER
6	0121	FRONT GANG BUSH
7	----	REAR GANG CARRIER
8	0713	TOPLINK PIN 25 x 170mm (LYNCH PIN 2484)
9	0157	TOPLINK
10	1054	TOPLINK PIN 25 x 140mm (LYNCH PIN 2484)

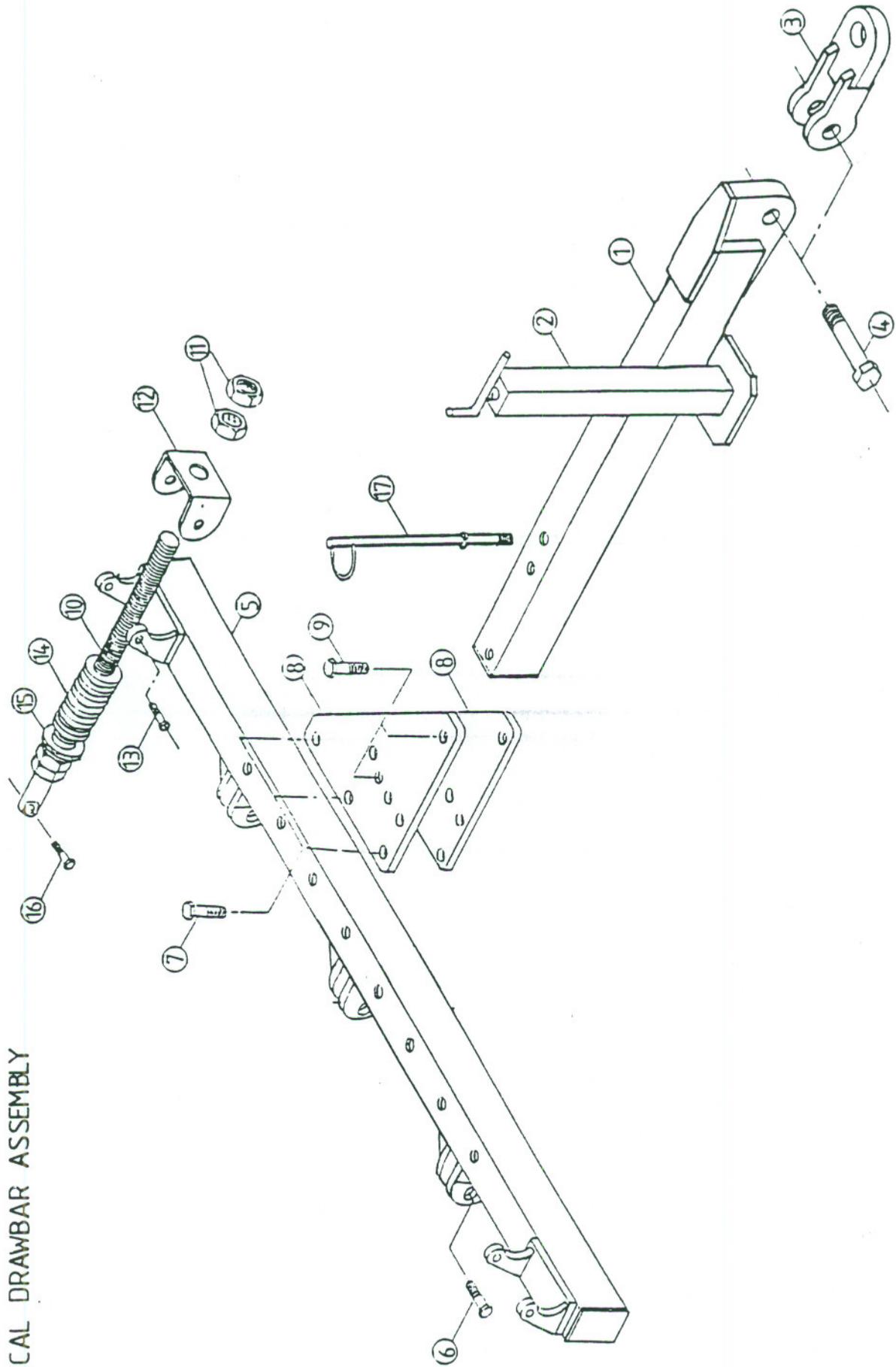
OPTIONAL HYDRAULIC GANG ANGLING

10	0713	PIN 25 x 170mm (LYNCH PIN 2484)
11	1913	HYDRAULIC CYLINDER 75 x 250 D/A
	0167	SEAL KIT FOR 75 x 250 D/A CYLINDER
12	1274	PIN 25 x 115mm (LYNCH PIN 2484)
13	0200	BANJO BLOCK
	2263	1/2" BSP BONDED WASHER
	0724B	RESTRICTED BANJO BOLT
14	0176/0199	HYDRAULIC HOSE (STATE LENGTH REQUIRED)
15	0203	MALE - MALE ADAPTOR
16	0205	QUICK RELEASE COUPLING
17	2675	REAR DRAWBAR ARM R/H (LONG 350mm cts)
18	2674	REAR DRAWBAR ARM L/H (LONG 350mm cts)
19	0034	ARM RETAINING BOLT M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
20	2676/2680	REAR DRAWBAR BEAM
21	2671	DRAWBAR RETAINING PLATE
22	0789	REAR BEAM BOLT M24 (F/WASHER 2604, S/WASHER 2593, NUT 0717)
23	2681	STRENGTHENING STRUT - USED ON SOME LARGER MODELS WHEN A REAR DRAWBAR IS NOT USED
24	0030	STRUT RETAINING BOLT M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
25	2686	STRUT RETAINING PLATE
26	0776	STRUT RETAINING BOLT M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
27	1953	REAR DRAWBAR SHACKLE
28	2682	REAR DRAWBAR SHACKLE RETAINING PLATE
	0789	RETAINING BOLT M24 (F/WASHER 2604, S/WASHER 2593, NUT 0717)



SERIES 3 RIGID DISC HARROW
MAIN FRAME

TYPICAL DRAWBAR ASSEMBLY



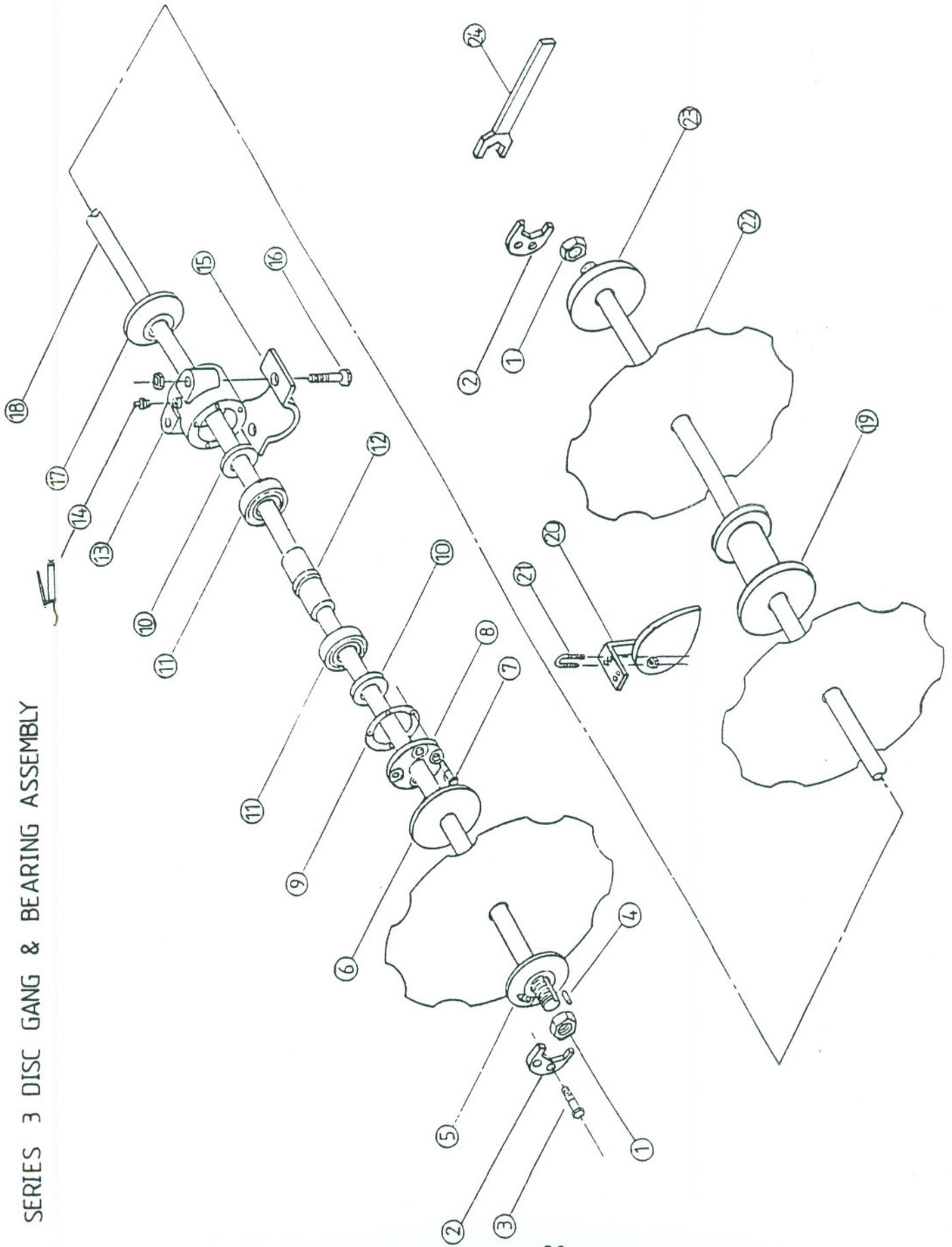
SERIES 3/3B RIGID DISC HARROW

DRAWBAR ASSEMBLY

<u>ITEM NO.</u>	<u>PT. NO.</u>	<u>DESCRIPTION</u>
1	2388	FRONT DRAWBAR
2	1090	SCREW JACK
3	3666B	SHACKLE TYPE Q
	2668	OFFSET SHACKLE - TYPE M (HITCH PIN HOLE DIA. 33mm) - NOT ILLUSTRATED
	2669	OFFSET SHACKLE - TYPE N (HITCH PIN HOLE DIA. 40mm) - NOT ILLUSTRATED
4	0983	SHACKLE BOLT M30 (S/WASHER 2598, NUT 0896)
5	----	CROSS DRAWBAR
6	0030	PULL POINT BOLT M30 (F/WASHER 2608, 2598, NUT 0896)
7	0789	FRONT DRAWBAR BOLT - 6FT & 9FT MODELS - M24 (F/WASHER 2607, S/WASHER 2593, NUT 0717)
	1075	FRONT DRAWBAR BOLT - 10FT & OVER MODELS - M39 (F/WASHER 2609, S/WASHER 2632, NUT 0239)
8	2475	DRAWBAR PLATE - UP TO 9FT MODELS
	2394	DRAWBAR PLATE 10FT & OVER MODELS
9	0789	DRAWBAR PLATE BOLT - 6FT & 9FT MODELS - M24 (F/WASHER 2607, S/WASHER 2593, NUT 0717)
	3222	DRAWBAR PLATE BOLT - 10FT & OVER MODELS - M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
10	0320	LEVELLING BAR
11	0248	LEVELLING BAR NUT
12	4121	LEVELLING SPRING BRACKET
	4122	LEVELLING BRACKET BUSH
13	4025	LEVELLING SPRING BRACKET BOLT M24 (F/WASHER 2604, NUT 2010)
14	0322	LEVELLING SPRING
15	0316	LEVELLING BAR GUIDE
16	2725	LEVELLING BAR RETAINING BOLT M24 (F/WASHER 2604, S/WASHER 2593, NUT 0717)
17	0305	HOSE SUPPORT M24 (F/WASHER 2604, S/WASHER 2593 NUT 0717)

WHEN ORDERING SPARE PARTS PLEASE QUOTE PART NUMBER,
MODEL AND SERIAL NUMBER.

SERIES 3 DISC GANG & BEARING ASSEMBLY



SERIES 3/3B RIGID DISC HARROW

DISC GANG AND BEARING ASSEMBLY.

<u>ITEM NO.</u>	<u>PT.NO.</u>	<u>DESCRIPTION</u>
1	0248	AXLE NUT
2	0249	LOCKING PLATE 15mm
3	0007	LOCKING PLATE BOLT M16 (S/WASHER 2038)
4	0250	RETAINING PIN 14mm
5	0251	AXLE END CONVEX SPACER
6	0224	BEARING CONCAVE SPACER
7	0001	BEARING HOUSING CAP BOLT M10 (S/WASHER 2035)
8	0218	BEARING HOUSING CAP
9	4030	FIBRE GREASE GASKET THIN
	4031	FIBRE GREASE GASKET THICK
10	0220	GREASE SEAL, DOUBLE LIPPED (2 PER HOUSING)
11	0221	BEARING CUP AND CONE (2 PER HOUSING)
12	0227	BEARING HOUSING SLEEVE
13	0223	BEARING HOUSING CASTING
14	0071	GREASE NIPPLE
6-17	0226	BEARING HOUSING COMPLETE (EXCEPT 15, 16)
15	0225	BEARING PROTECTION PLATE (OPTIONAL)
16	0023	BEARING HOUSING BOLT M24 (F/WASHER 2605, S/WASHER 2593, NUT 0717)
17	0217	BEARING CONVEX SPACER
18	----	THREADED AXLE - SEE BOTTOM OF PAGE.
19	0257	SPOOL
20	0894	FRONT MOULDBOARD SCRAPER L/H
	0895	REAR MOULDBOARD SCRAPER R/H
21	0002	SCRAPER 'U' BOLT M12 (F/WASHER 2601, NUT 2007)
22	0281	DISC BLADE 700mm PLAIN - SERIES 3
	0282	DISC BLADE 700mm CUTAWAY - SERIES 3
	0278	COVERING DISC 650mm PLAIN - SERIES 3
	0283	DISC BLADE 750mm PLAIN - SERIES 3B
	0284	DISC BLADE 750mm CUTAWAY - SERIES 3B
	0281	COVERING DISC 700mm PLAIN - SERIES 3B
23	0254	AXLE END CONCAVE SPACER
24	0924	DISC AXLE SPANNER

EN16T DISC AXLE LENGTHS

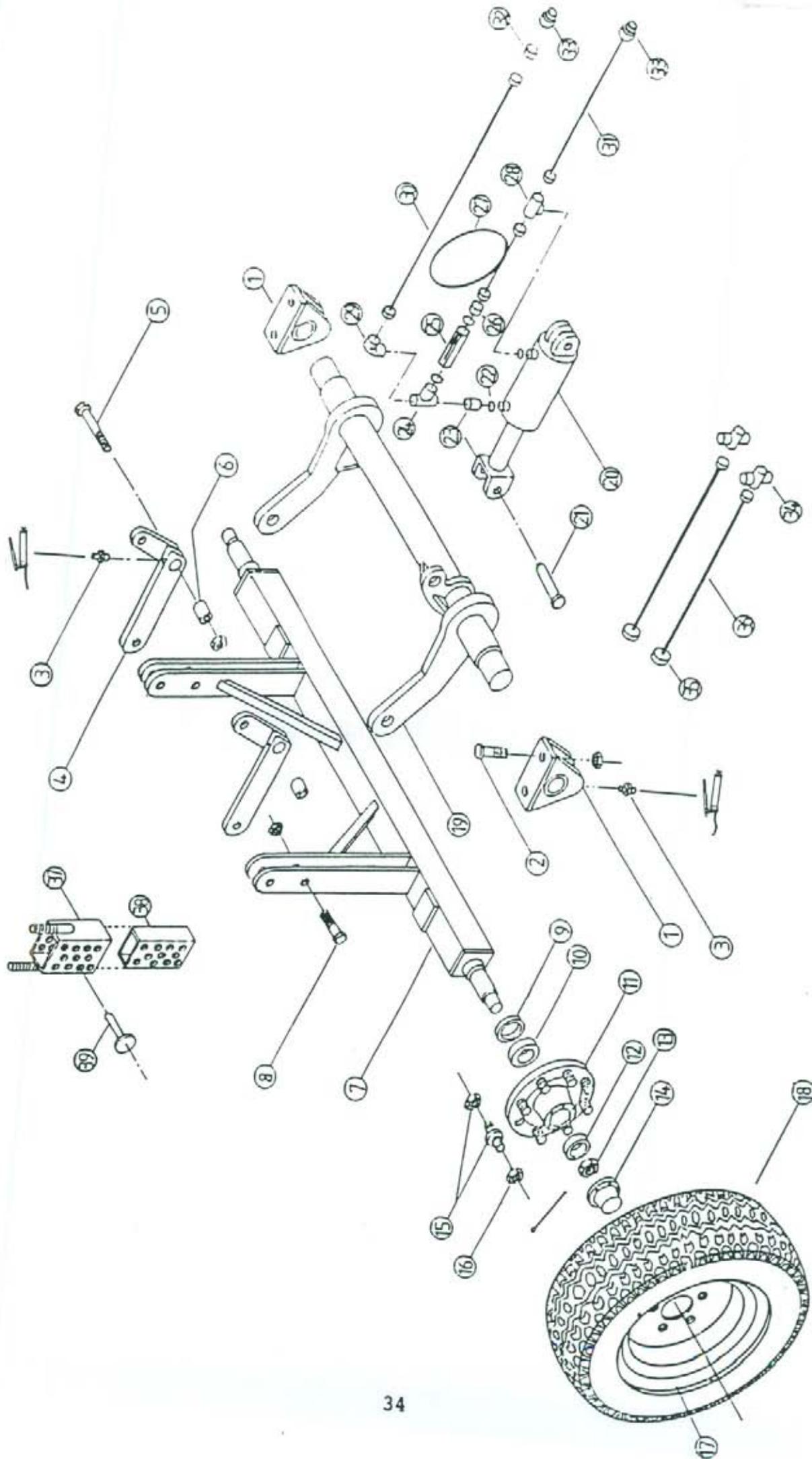
<u>MACHINE WIDTH</u>	<u>STANDARD</u>	<u>PT.NO.</u>	<u>COVERING DISC</u>	<u>PT.NO.</u>
1.53M (5FT)	1360mm	3631	-	
2.40M (8FT)	1060mm	3632	1360mm	3631
3.0M (10FT)	1360mm	3631	1680mm	3633
3.6M (12FT)	1680mm	3633	1960mm	3634

WHEN ORDERING SPARE PARTS PLEASE QUOTE PART NUMBER,
MODEL AND SERIAL NUMBER.

SERIES 3/3B RIGID DISC HARROW

TRANSPORT AXLE AND HYDRAULIC SYSTEM - SINGLE CYLINDER MODELS

<u>ITEM NO.</u>	<u>PT.NO.</u>	<u>DESCRIPTION</u>
1	0068	PLUMMER BLOCK
2	0014	PLUMMER BLOCK BOLT M24 (F/WASHER 2604, S/WASHER 2593, NUT 0717)
	0941	PLUMMER BLOCK BOLT M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
3	0071	GREASE NIPPLE
4	2413	CARRIER ARM
5	0983	CARRIER ARM BOLT M30 (F/WASHER 2608, NUT 2011)
6	2416	CARRIER ARM BUSH
7	----	BOTTOM AXLE
8	3120	AXLE BOLT M30 (NUT 2011)
9	0439	GREASE SEAL
10	0440	INNER BEARING CUP AND CONE
11	0438	HUB CASTING
12	0440	OUTER BEARING CUP AND CONE
13	0443	CASTLE NUT (SPLIT PIN 2488)
14	0445	DUST CAP
	0446	RETAINING BOLT (3 PER HUB REQUIRED)
	0444	GASKET
15	0707	WHEEL STUD RIGHT HAND
16	0448	WHEEL NUT RIGHT HAND
9-16	0437	5 STUD HUB COMPLETE RIGHT HAND
17	0140	5 HOLE RIM TO SUIT 11.5/80-15 TYRE
18	0138	11.5/80-15, 10 PLY TYRE (TUBE 0139)
19	2434	TOP AXLE FRAME (SINGLE CYLINDER MODELS)
20	0160	HYDRAULIC CYLINDER 100 x 230 D/A
	0161	SEAL KIT TO SUIT 100 x 230 D/A CYLINDER
	4126	CYLINDER CLEVIS SPRUNG TENSION BUSH
21	1274	PIN 25 x 115mm (LYNCH PIN 2484)
22	2263	1/2" BSP BONDED WASHER
23	0206	MALE FEMALE ADAPTOR
24	0204	'T' ADAPTOR
25	3061	RELIEF VALVE
26	0203	MALE - MALE ADAPTOR
27	0176	2FT HYDRAULIC HOSE
28	0204	'T' ADAPTOR
29	2734	MALE FEMALE 90° ELBOW
30	0190	16FT HYDRAULIC HOSE
31	0189	15FT HYDRAULIC HOSE
32	3236	RESTRICTED MALE MALE ADAPTOR
33	0205	MALE QUICK RELEASE COUPLING

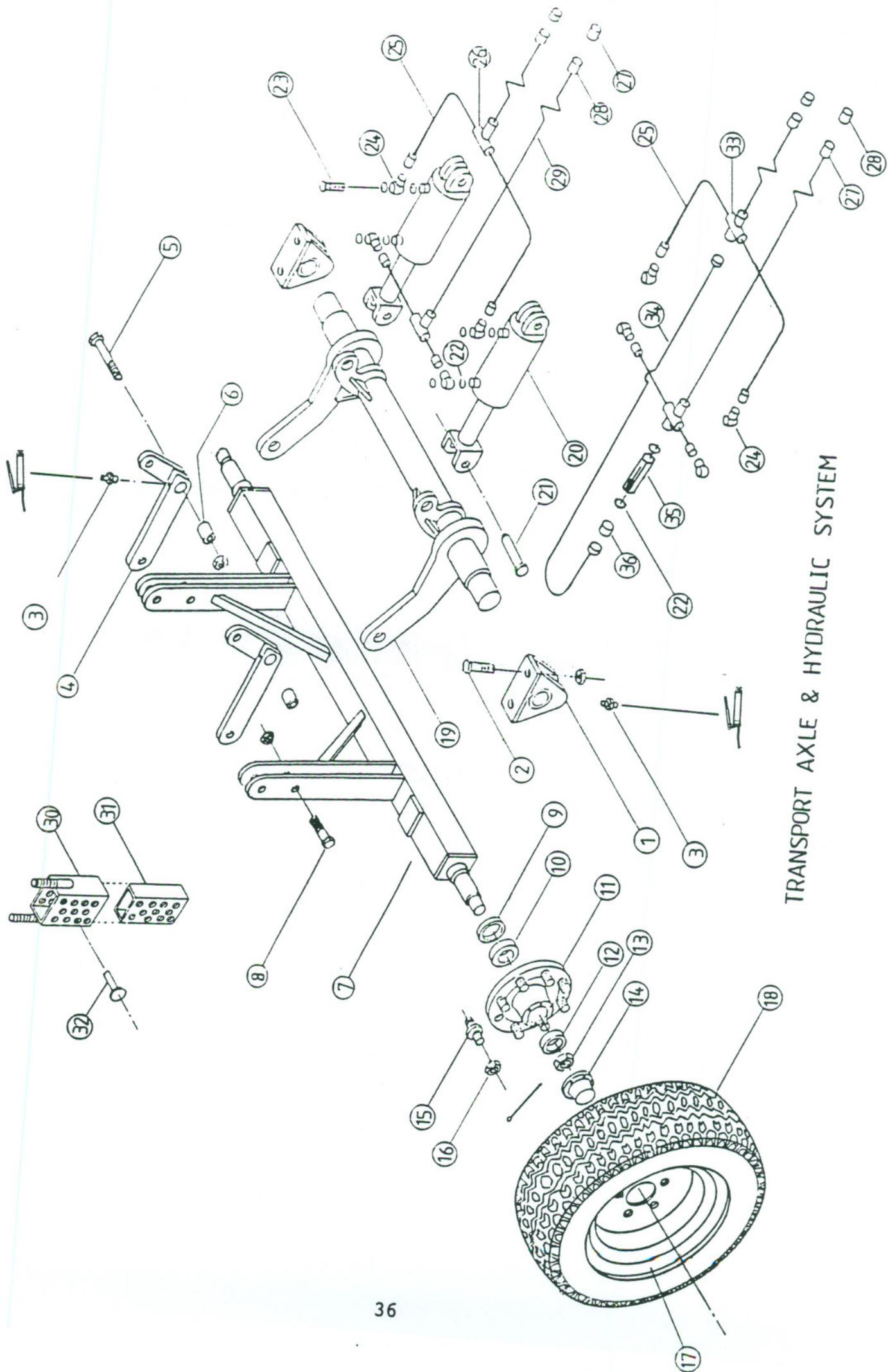


TRANSPORT AXLE & HYDRAULIC SYSTEM

OPTIONAL PIPE WORK TO REAR

34	0209	FOUR WAY ADAPTOR
35	2730	FEMALE QUICK RELEASE COUPLING
36	0185	11FT HYDRAULIC HOSE
	0186	12FT HYDRAULIC HOSE
37	2712	OUTER DEPTH CONTROL BOX
38	2713	INNER DEPTH CONTROL BOX
39	1071	ADJUSTMENT PIN 25 x 130mm (LYNCH PIN 2484)

WHEN ORDERING SPARE PARTS PLEASE QUOTE PART NUMBER,
MODEL AND SERIAL NUMBER.



TRANSPORT AXLE & HYDRAULIC SYSTEM

SERIES 3/3B RIGID DISC HARROW

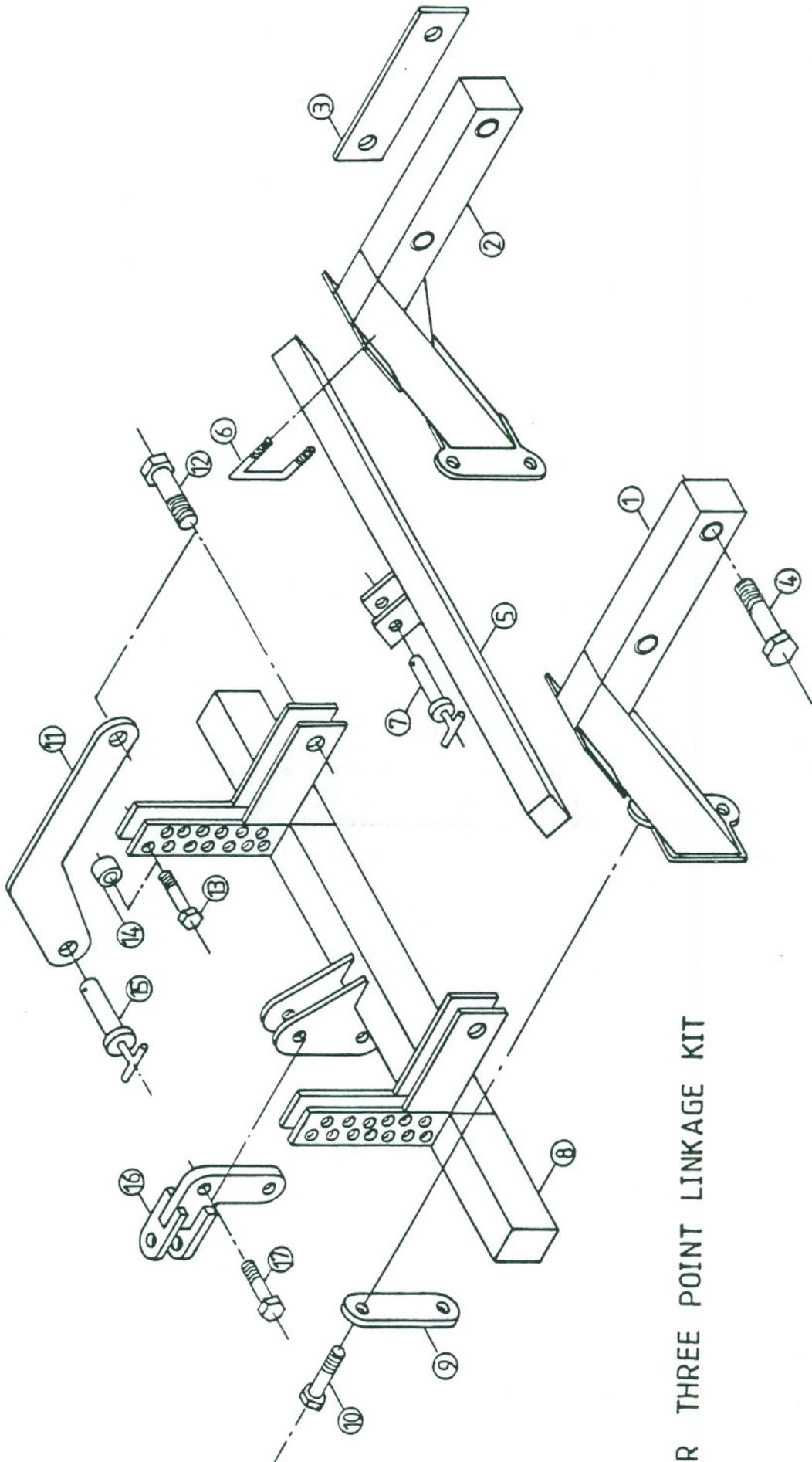
TRANSPORT AXLE AND HYDRAULIC SYSTEM - TWIN CYLINDER MODELS

<u>ITEM NO.</u>	<u>PT.NO.</u>	<u>DESCRIPTION</u>
1	0830	PLUMMER BLOCK UP TO 14FT MODELS
2	0014	PLUMMER BLOCK BOLT M24 (F/WASHER 2604, S/WASHER 2593, NUT 0717)
	0941	PLUMMER BLOCK BOLT M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
3	0071	GREASE NIPPLE
4	2413	CARRIER ARM
5	0983	CARRIER ARM BOLT M30 (F/WASHER 2608, NUT 2011)
6	2416	CARRIER ARM BUSH
7	----	BOTTOM AXLE
8	3120	AXLE BOLT M30 (NUT 2011)
9	0365	GREASE SEAL
10	0366	INNER BEARING CUP & CONE
11	0462	HUB CASTING
12	0367	OUTER BEARING CUP & CONE
13	0710	CASTLE NUT (SPLIT PIN 2488)
14	0370	DUST CAP
	0469	RETAINING BOLT (3 PER HUB REQUIRED)
	0739	GASKET
15	0709	WHEEL STUD RIGHT HAND
16	0471	WHEEL NUT RIGHT HAND
9-16	0641	6 STUD HUB COMPLETE RIGHT HAND
17-18	4128	400/60-15.5, TYRE & RIM COMPLETE
19	2435	TOP AXLE FRAME
20	0160	HYDRAULIC CYLINDER 100 x 230 D/A
	0161	SEAL KIT TO SUIT 100 x 230 D/A CYLINDER
	4126	CYLINDER CLEVIS SPRUNG TENSION BUSH
21	1274	PIN 25 x 115mm (LYNCH PIN 2484)
22	2263	1/2" BSP BONDED WASHER
23	0201	BANJO BOLT
24	0200	BANJO BLOCK
25	0176	2FT HYDRAULIC HOSE
26	0204	'T' ADAPTOR
27	0205	MALE QUICK RELEASE COUPLING
28	0203	MALE MALE ADAPTOR
29	0189	15FT HYDRAULIC HOSE
30	2712	OUTER DEPTH CONTROL BOX
31	2713	INNER DEPTH CONTROL BOX
32	1071	ADJUSTMENT PIN 25 x 130mm (LYNCH PIN 2484)

RELIEF VALVE KIT

27	3236	RESTRICTED MALE MALE ADAPTOR
33	0209	FOUR WAY ADAPTOR
34	0176	2FT HYDRAULIC HOSE
35	3061	RELIEF VALVE
36	0203	MALE -MALE ADAPTOR

WHEN ORDERING SPARE PARTS PLEASE QUOTE PART NUMBER,
MODEL AND SERIAL NUMBER.



REAR THREE POINT LINKAGE KIT

SERIES 3/3B RIGID DISC HARROW

REAR THREE POINT LINKAGE

<u>ITEM NO.</u>	<u>PT.NO.</u>	<u>DESCRIPTION</u>
1	2673	REAR DRAWBAR ARM R/H (150mm HOLE CENTRES)
	2675	REAR DRAWBAR ARM R/H (350mm HOLE CENTRES)
2	2672	REAR DRAWBAR ARM L/H (150mm HOLE CENTRES)
	2674	REAR DRAWBAR ARM L/H (350mm HOLE CENTRES)
3	2957	SPACER PLATE (ONLY FITTED TO 8ft)
4	0034	RETAINING BOLT M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
5	2958	UPPER HITCH POINT BEAM (875mm MODELS)
	2959	UPPER HITCH POINT BEAM (1480mm MODELS)
6	2284	BEAM RETAINING 'U' BOLT M16 (F/WASHER 2602 S/WASHER 2038, NUT 1358)
7	1725	UPPER HITCH PIN CAT 2
8	2960	LOWER HITCH POINT BEAM (1000mm MODELS)
	2961	LOWER HITCH POINT BEAM (1605mm MODELS)
9	2671	LOWER HITCH POINT BEAM RETAINING PLATE
10	0789	RETAINING PLATE BOLT M24 (F/WASHER 2604, S/WASHER 2593, NUT 0717)
11	2962	LOWER LINK ARM
12	0054	LINK ARM PIVOT BOLT M30 (F/WASHER 2608, S/WASHER 2598, NUT 0896)
13	0012	LINK ARM FLOAT RESTRICTOR BOLT M20 (F/WASHER 2603, S/WASHER 2332, NUT 1172)
14	2963	SPACER BUSH
15	1728	LOWER HITCH PIN CAT 2
16	2964	TRAILED IMPLEMENT SHACKLE HITCH POINT
17	0019	SHACKLE BOLT M24 (F/WASHER 2604, S/WASHER 2593 NUT 0717)

WHEN ORDERING SPARE PARTS PLEASE QUOTE PART NUMBER,
MODEL NUMBER AND SERIAL OF THE MACHINE.

①

SIMBA // SERIES 2

②



③

DANGER
 NEVER WORK UNDER RAISED OR FOLDED IMPLEMENTS UNLESS ALL SECTIONS ARE SAFELY SUPPORTED.



REFER TO INSTRUCTION MANUAL BEFORE ANY MAINTENANCE WORK.

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⑤



⑥

SERIES 2-3-4
DISC HARROWS

④

MAINTENANCE

DAILY SERVICE

- GREASE DISC AXLE BEARINGS UNTIL GREASE SHOWS.
- GREASE TOP AXLE PLUMMER BLOCK UNTIL GREASE SHOWS.
- GREASE AXLE CARRIER ARM UNTIL GREASE SHOWS.
- CHECK DISC BLADES FOR DAMAGE.
- CHECK HYDRAULIC CONNECTIONS FOR LEAKS.

- CHECK ALL DISC AXLES (SEE OPERATORS MANUAL IF LOOSE).
- CHECK TYRE PRESSURES. ADJUST IF NECESSARY.

END OF SEASON SERVICE

SEE OPERATORS MANUAL FOR INSTRUCTIONS.

OPERATION

DO NOT TURN RIGHT WITH MACHINE IN WORK.

WEEKLY SERVICE

- TIGHTEN ALL NUTS AND BOLTS INCLUDING WHEEL NUTS.



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 Made Great in Britain



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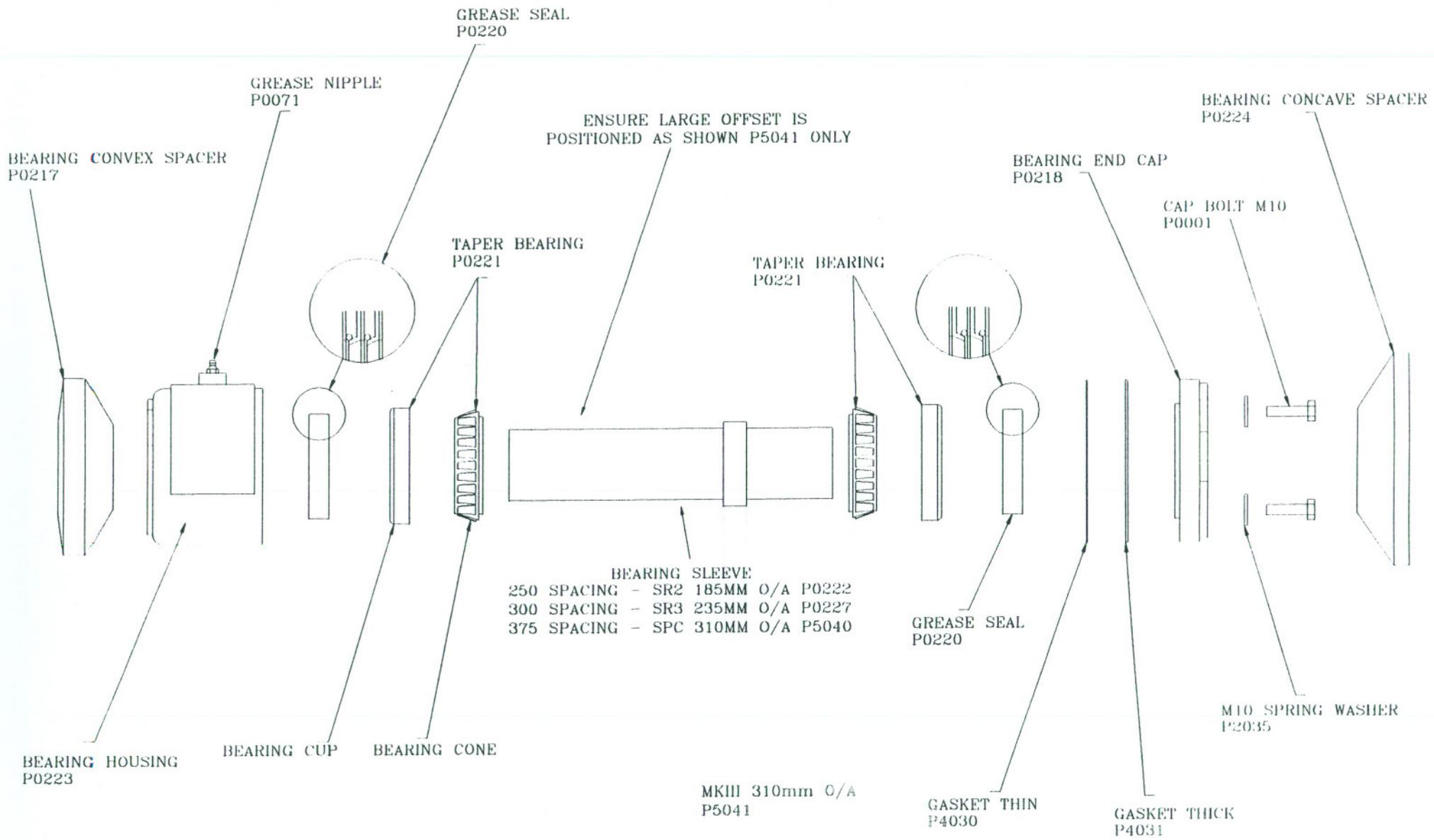
SIMBA STICKERS

<u>ITEM NO.</u>	<u>PT. NO.</u>	<u>DESCRIPTION</u>
1	4186	SERIES 2 (SMALL)
	4211	SERIES 2 (LARGE)
	4187	SERIES 2B (SMALL)
	4212	SERIES 2B (LARGE)
	4188	SERIES 3
	4189	SERIES 3B - (SMALL)
	4190	SERIES 3B - (LARGE)
	4191	SERIES 4
2	2912	SIMBA "S" - (SMALL)
	2913	SIMBA "S" - (LARGE)
3	2918	* DANGER (RAISED SECTIONS)
4	4152	* MAINTENANCE
5	2906	SIMBA - (SMALL)
	2907	SIMBA - (MEDIUM)
	2908	SIMBA - (LARGE)
6	2911	UNION JACK (BRITISH MANUFACTURED)
7	2909	SIMBA ADDRESS
8	4218	OPERATORS MANUAL AND SPARE PARTS BOOK (NI)

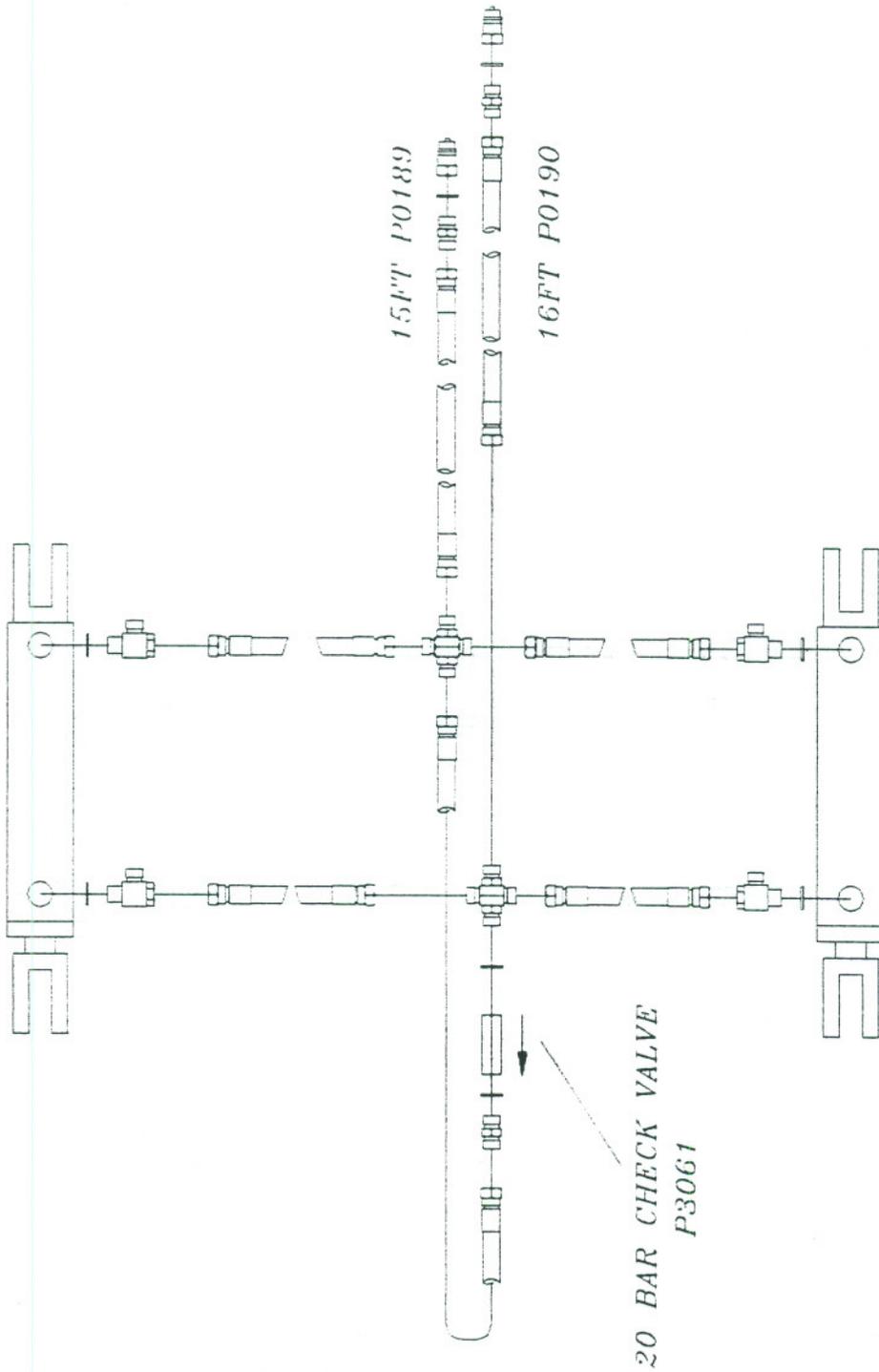
* **IMPORTANT: ALWAYS REPLACE SAFETY AND MAINTENANCE STICKERS IF WORN.**

WHEN ORDERING SPARE PARTS PLEASE QUOTE PART NUMBER,
MODEL NUMBER AND SERIAL OF THE MACHINE.

C SERIES SUPPLEMENT



FROM SERIAL NO	TO SERIAL NO	ISSUE	REF NO
7272	PRES	1	SP00024



J x 9" CYL P0160
SEAL KIT P0161

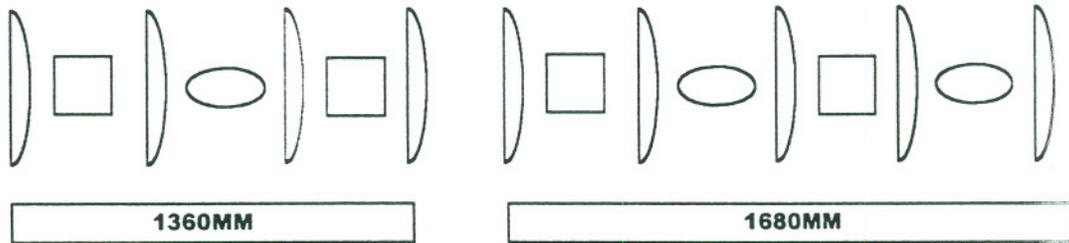
RIGID C SERIES LIFT CIRCUIT

FROM SERIAL NO.	TO SERIAL NO.	ISSUE	REF NO.
7272	PRES	1	SP00023

HYBRID DISC GANG SPECIFICATIONS AND LAYOUT

S3/4 - 10' RIGID REAR GANG

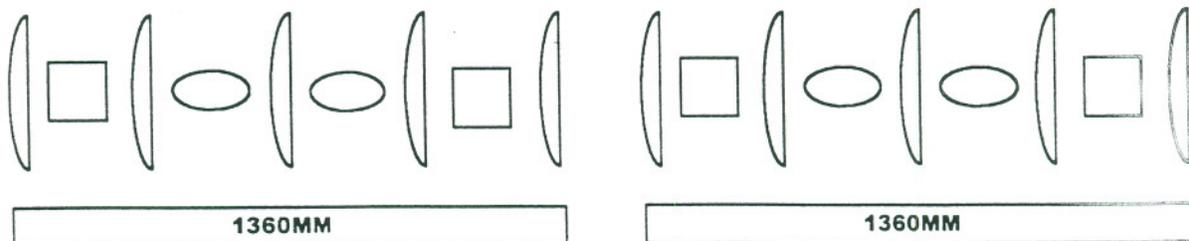
BLADES	SPACING	SPOOLS	SCRAPERS	BEARINGS
Ø32 - 8	375MM	P5041 - 3	P7430 - 9	P5039 - 4
Ø30 - 1				



VIEWS FROM REAR

S3/4 - 10' RIGID FRONTGANG

BLADES	SPACING	SPOOLS	SCRAPERS	BEARINGS
Ø30 - 9	300MM	P0257 - 4	P0894 - 10	P0226 - 4
Ø28 - 1				



VIEWS FROM REAR

