Auto-Reset
Subsoiler
Please fill in the general details below (Where applicable)

<table>
<thead>
<tr>
<th>MODEL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WIDTH</td>
<td></td>
</tr>
<tr>
<td>MOUNTED/TRAILED</td>
<td></td>
</tr>
<tr>
<td>HOPPER TYPE</td>
<td></td>
</tr>
<tr>
<td>SPECIAL</td>
<td></td>
</tr>
</tbody>
</table>

Please fill in Serial plate details: Serial plate is located on headstock or drawbar

| 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.


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. Ml Agr. E
Technical Director.
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 buyer's 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
AUTO RESET SUBSOILER
DEEP SOIL LOOSENER

OPERATORS MANUAL & PARTS BOOK

CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>2. INSTALLATION</td>
<td>1</td>
</tr>
<tr>
<td>3. OPERATION</td>
<td>2</td>
</tr>
<tr>
<td>4. TRANSPORT</td>
<td>3</td>
</tr>
<tr>
<td>5. MAINTENANCE</td>
<td>3</td>
</tr>
<tr>
<td>6. ASSEMBLY</td>
<td>5</td>
</tr>
<tr>
<td>7. SPARE PARTS</td>
<td>8</td>
</tr>
</tbody>
</table>
1. INTRODUCTION
The **AUTO RESET SUBSOILER** is a fully mounted 3, 5 or 7 tine V frame type configuration soil loosener, designed to operate to maximum depth of 300mm (12 inches). The 20mm thick high tensile steel tine shanks are fitted with replaceable cast sub surface wearing points and wings specially designed to keep draught to a minimum and penetration to maximum.
A Double Disc rear roll is fitted to all models for use both to reduce and consolidate soil and to control the working depth of machine.

2. INSTALLATION
**NOTE:** REFER TO DETAILED HYDRAULICS SECTION FOLLOWING THESE INSTRUCTIONS FOR DETAILS ON MAINTAINING THE AUTO RESET SYSTEM.

ATTACHING TO TRACTOR
1. Couple up to tractor linkage, the normal setting is with the lower link arms in the lowest hitch setting, and the top link in the highest setting for maximum rear roller stability.

2. Couple the two main circuit lines to one double acting service. This will control the tines. The pipes are fitted into ports A and B on the top of the block.

3. Couple the third pipe (having a one way check valve adjacent to the manifold) to a second service, ensuring this is set to float, or lower. **This line requires a free flow return to the tractor, as it allows oil to return to the tractor in the event of circuit failure through overload.**

If a free flow return or float is not available, route this line direct to the tractor oil tank, to ensure oil can return unimpeded.

WORK SETTINGS
1. Raise the implement, fully raise the tines, then pressure the tines fully down, and the machine is set for work.

2. Depth is adjusted by locating the pinned tines in their holders up or down to achieve the desired depth.
3. OPERATION
During work the AUTO RESET SUBSOILER should run reasonably level to achieve consistent working effect of all tines. It is important to set the machine up correctly in order to achieve an efficient and worthwhile operation. Although the AUTO RESET SUBSOILER can work down to 300mm (12 inches) this does not mean that running at this depth is always worthwhile, taking time to identify where there is a problem in soil profile and working to the minimum depth to eliminate this could save a lot of otherwise wasted diesel and time. It is also very important not to operate below critical depth of the tine, this is where the tine no longer produces upward movement of soil and effectively behaves as a mole plough, therefore not producing the shattering effect desired.

Deep soil loosening is normally carried out with best results in hard dry conditions, in such conditions the pressure required from the roller is high. If the crumbler is not providing enough pressure this may be an indication that the draught control system of the tractor is preventing the unit from regulating its own depth via the crumbler roller. In this case it may be necessary to either reduce the sensitivity of the draught control system or turn it off altogether.

Where a high crumbler roller pressure is not required but raising the roller causes the machine to pull itself in too deep, then it will be necessary to use the draught control of tractor to prevent this. While the draught control system is being used entering into work should be done smoothly and progressively, if the machine is dropped into work too fast the draught control system on tractor will sense the sudden increase in load and raise the hydraulics accordingly. The machine will appear not to be able to penetrate the surface, slowing drop and forward speed down should prevent this.

In work it is permissible to use the tine circuit to raise the tines if draft requires reduction, allowing the mainframe to remain fully lowered keeping the surface pressing effect at its maximum. As such, set the linkage to minimum draft control, fully down.

Note when off hitching, adjust the tine height to support the mainframe evenly between tine points and rear roller for maximum stability. Operate both circuits in float prior to decoupling.

NOTE there will still be some residual pressure in the circuit downstream of the main control valve manifold.

⚠️ The hydraulic circuit employed on this machine is pressurised, and as such can be extremely dangerous. Refer to detailed instructions overleaf before attempting any maintenance on the machine.

Setting instructions are included on the detailed manifold circuit diagrams included with this manual.

CLOD FORMATION
If the conditions are such that large clods are being left on the surface that the Double Disc roller cannot break it may be necessary to perform a shallow pass with a cultivator (50-100mm) prior to soil loosening operation.
4. TRANSPORT
Before transport of AUTO RESET SUBSOILER make sure there is enough clearance between tines and ground, it may be necessary to alter the toplink or rear lift arms to gain adequate clearance.
Ensure that there is adequate weight on the front of tractor to enable the machine to be picked up safely and to provide enough load on the front wheels to retain stability and steering during road speed transport where motion of tractor may accentuate weight of machine over rear wheels.

5. MAINTENANCE

⚠️ WARNING - ENSURE MACHINE IS SAFELY SUPPORTED WHILE CARRYING OUT MAINTENANCE IN CASE BALANCE OF WEIGHT IS ALTERED ALLOWING MACHINE TO BECOME UNSTABLE.

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 initial 15 hours of work a once a week check is sufficient. See daily and weekly service sections for routine maintenance details. Keep all nuts and bolts tight and check them regularly, more often when the implement is working in hard conditions where vibration is more apparent. Follow maintenance procedures thoroughly to ensure maximum machine life.

DAILY SERVICE
1. Grease Double Disc axle bearings until grease shows. This flushes the old grease and any contaminants out of the bearing. Use a standard agricultural grease.

2. Check points and rings for wear and replace if necessary.

3. Check for broken or bent scrapers and replace or straighten.

WEEKLY SERVICE
1. Grease Double Disc roll bearings. (See Daily Service section)

2. Tighten all nuts and bolts to the torques specified below.

<table>
<thead>
<tr>
<th>GRADE</th>
<th>M16</th>
<th>10 KG.M. (73 lb.ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6</td>
<td>8.8</td>
<td>24 KG.M. (176 lb.ft)</td>
</tr>
<tr>
<td>8.8</td>
<td>46</td>
<td>48 KG.M. (352 lb.ft)</td>
</tr>
<tr>
<td>10.4</td>
<td>8.8</td>
<td>80 KG.M. (587 lb.ft)</td>
</tr>
<tr>
<td>10.9</td>
<td>8.8</td>
<td>110 KG.M. (807 lb.ft)</td>
</tr>
<tr>
<td>4.6</td>
<td>8.8</td>
<td>150 KG.M. (1100 lb.ft)</td>
</tr>
<tr>
<td>4.6</td>
<td>8.8</td>
<td>110 KG.M. (807 lb.ft)</td>
</tr>
<tr>
<td>8.8</td>
<td>280 KG.M. (2055 lb.ft)</td>
<td></td>
</tr>
</tbody>
</table>
Do not use hammer to assist in the tightening of bolts or use an incorrect bolt as severe damage to implement or injury could result.

3. Do not over tighten pivot bolts as this will prevent smooth operation of hinges and lead to possible premature wear of mating surfaces.

4. Grease relevant points daily with an agricultural grease.

5. Replace damaged scrapers.

6. Replace any wearing parts when necessary, failure to do so may result in further expense being incurred due to damage of a larger part. For example, a tine point should be replaced before the shank starts to engage the soil.

**END OF SEASON SERVICE**

1. Grease Double Disc roll bearings. (See Daily Service section)
2. Grease all exposed bolt threads.
3. Grease all exposed rods on hydraulic cylinders.
4. Check for worn or damaged components and replace as necessary.
5. Tighten all nuts and bolts. (See Weekly Service section)

**FINAL INSPECTION**

Check all nuts and bolts are fully tightened

Check scrapers are set correctly and are not fouling the Double Disc roll.
6. ASSEMBLY

NOTE: LIFTING EQUIPMENT AND TWO PERSONS MAY BE REQUIRED DURING ASSEMBLY OF SUBSOILER DUE TO WEIGHT OF SOME COMPONENTS

WARNING - ENSURE MACHINE IS SAFELY SUPPORTED DURING ASSEMBLY IN CASE BALANCE OF WEIGHT IS ALTERED, FOR EXAMPLE WHEN ATTACHING DOUBLE DISC ROLLER.

NOTE: - Left and right hand items are identified by viewing from the rear of machine in direction of travel.
SPECIFIC INSTRUCTIONS RELATING TO AUTO RESET TINE HYDRAULICS

TAMPERING WITH A PRESSURISED HYDRAULIC SYSTEM IS POTENTIALLY EXTREMELY DANGEROUS.

Please refer to circuit diagram AS0998 at rear of manual when referring to these instructions.

The circuit allows for the tines to be pressurised down into work, whereupon a relief valve (REF. X) limits this applied tractor down pressure to a value less than the main system accumulator (80b x 2 litre). This allows tines to trip in work, the oil being absorbed by the main accumulator. A secondary (rod side) accumulator ensures this side of the cylinder is maintained full of oil to minimise cavitation and seal damage. A pre charge valve (REF. Z) restricts return rod side oil flow to the tractor as the tines are pressurised down to ensure this secondary circuit is charged.

In operation, oil is locked in the cylinder circuit at a pressure determined by the relief valves 90-120 bar full bore side (REF. X) and 20 to 60 bar rod side (REF. Z). This occurs at all times, even with the circuit in float at the tractor, provided the tines are fully down. For extremely stony conditions, adjust the valve (REF. X) to read 90 bar on the gauge as the tines are pressured down. For heavy soils with little stone where compaction is present it is possible to increase this pressure to 120 bar.

Do not tamper with the hydraulic lines or fittings as pressurised oil can be extremely dangerous.

To de-pressurise the circuit, identify and adjust the following valves on manifold #2.

All valves can be identified by stamped codes adjacent to each valve (identified on the drawing through the references contained in this procedure).

- Set tractor hydraulics to neutral, machine raised.
- Adjust pre charge valve (REF. Z) fully clockwise. If necessary, note the number of turns that it takes for the system to be reset.
- Adjust relief (REF. X) fully anticlockwise. If necessary, note the number of turns that it takes for the system to be reset.
- Set tank return line circuit to float or down to return oil to tractor.
- Set main system to float, or allow oil pressure to be released in both directions.
- Refer to pressure gauges on machine. Ensure both read zero before attempting any maintenance. Repeat the above procedure until both gauges read zero in all circumstances.

Follow detailed setting sequence overleaf to reset the system prior to returning to work, or alternatively revert the above valves back to their original setting (number of turns).
VALVE SETTING SEQUENCE - Factory Setting (Read in conjunction with AS0998)

1. Raise machine, to ensure tines are fully clear of the ground at depth.

2. Adjust reliefs (REF. X), (REF. T) and precharge valve (REF. Z) all clockwise fully.

3. Adjust flow control (REF. Y) fully anti clockwise, then clockwise 1½ turns.

4. Raise tines, then pressure fully down. Set failsafe (REF. T) to between 190-220 bar. If available pressure is insufficient to achieve this, set to ½ turn clockwise above that where valve relieves at tractor maximum pressure.

   NOTE: if tines do not relieve under severe overload, this valve should be reduced (anti clockwise) until this occurs in work, otherwise damage may occur.

5. Pressure tines down, and set accumulator relief (REF. X) to 90 bar as tines are lowered.

6. Adjust precharge valve (REF. Z) 1/8 turn anti clockwise.

7. Pressure tines down and check cylinder pressure reads 90 bar and the corresponding rod pressure reads between 20-40 bar (achieved by adjusting precharge valve (REF. Z)).

8. Put main circuit in float, check above pressures are maintained at least at the lower values indicated.

VALVE ADJUSTMENT - To Suit Field Conditions

(a) Normal / Stony conditions

To avoid damage to tines and chassis in severe stone conditions reduce accumulator relief (REF. X) as tines are held in 'lower' to read 90 bar.

(b) Hard, stone free conditions

It is permissible to increase gauge pressure for accumulator relief (REF. X) as tines are held in 'lower' to read up to 120 bar with a cylinder pressure between 40-60 bar rod pressure for working in hard, stone free conditions.
DD RING PRESS MAINTENANCE: SPECIFIC DETAILS.

The axles on this roller are tensioned by the main axle through the centre of the rings and bearings.

SPECIALIST EQUIPMENT IS REQUIRED TO DISASSEMBLE THESE AXLES, PLEASE REFER TO PARTS LISTINGS FOR DETAILS.

CONSULT YOUR APPROVED SIMBA DEALER UNDER ALL CIRCUMSTANCES IF DISASSEMBLY IS REQUIRED FOR ANY REASON.

Maintenance of these rollers is limited to daily greasing of the bearings to flush out dirt, and regular inspection to ensure the assemblies are tight, and scrapers are correctly set. The axles can be tightened provided the bearing pillar ‘U’ bolts are loosened to avoid preloading the bearings as they move sideways to each other. Ensure the bearing pillars are re-tightened to the mainframe after this. It is not usual to have to tighten the axles as they are preloaded at the factory for life.
7. SPARE PARTS

ABBREVIATIONS USED IN SPARE PARTS MANUAL:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT</td>
<td>CATEGORY</td>
</tr>
<tr>
<td>L/H</td>
<td>LEFT HAND</td>
</tr>
<tr>
<td>R/H</td>
<td>RIGHT HAND</td>
</tr>
<tr>
<td>N/A</td>
<td>NOT APPLICABLE</td>
</tr>
<tr>
<td>N.I</td>
<td>NOT ILLUSTRATED</td>
</tr>
<tr>
<td>PT NO</td>
<td>PART NUMBER</td>
</tr>
<tr>
<td>~</td>
<td>GREASE POINT</td>
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</tbody>
</table>

SPARE PARTS ORDERS

When ordering spare parts please refer to the parts list in this manual and quote the part number, the model number and the serial number of the machine for the item required.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART NO</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>COMMENTS</th>
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</thead>
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<td>P00007</td>
<td>BOLT M16x40 GR. 8.8</td>
<td>1</td>
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<tr>
<td>2</td>
<td>P00071</td>
<td>NIPPLE - GREASE</td>
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<tr>
<td>3</td>
<td>P01358</td>
<td>NUT PLAIN M16</td>
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<td>4</td>
<td>P01646</td>
<td>BUSH SPRUNG - Ø40xØ32x32</td>
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<td>P01901</td>
<td>BOLT M16x80 GR. 8.8</td>
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<td>P02008</td>
<td>NUT LOCK M16</td>
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<td>NUT LOCK M24</td>
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<td>P02038</td>
<td>WASHER SPRING M16</td>
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<td>P02481</td>
<td>ROLL PIN Ø16x40</td>
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<td>P02602</td>
<td>WASHER FLAT M16</td>
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<td>11</td>
<td>P02604</td>
<td>WASHER FLAT M24 Ø50</td>
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<td>12</td>
<td>P09060</td>
<td>WING - PROLIFT LOW</td>
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<tr>
<td>13</td>
<td>P09075</td>
<td>BOLT M24x125 GRS</td>
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<td>14</td>
<td>P09148</td>
<td>POINT - PROLIFT CrFe</td>
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<td>15</td>
<td>P09157</td>
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<td>16</td>
<td>P09161</td>
<td>PIN Ø25x72</td>
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<td>17</td>
<td>P09166</td>
<td>LYNCH PIN CAT 2 LOCKING</td>
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<tr>
<td>18</td>
<td>P09270</td>
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<td>19</td>
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<td>20</td>
<td>P10490</td>
<td>TINE - SHEAR TYPE TINE</td>
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<tr>
<td>21</td>
<td>P12018</td>
<td>WEARSHIN PROLIFT REVERSIBLE</td>
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<td></td>
</tr>
<tr>
<td>22</td>
<td>P11181</td>
<td>WEAR SHROUD</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
PILOT TO OPEN CHECK VALVE
LOW LEAKAGE TYPE CRBD XEN 3:1

PRECHARGE VALVE SET 20-40b (40-60b)
COUNTERBALANCE CCCA LIN
cw=reduce pressure

LOCATION
Z
REF.
SLO 300 FRONT
T.R.S. FRONT

FLOW CONTROL
VALVE NCBB LCN
cw=increase flow

LOCATION
Y
REF.
SLO 300 TOP
T.R.S. BOTTOM

RELIEF VALVE (ACCUMULATOR)
RPCC LWN SET 90b (120b)
Altve. RDBA LWN SET 90b (120b)
cw=increase pressure

RELIEF VALVE FAILSAFE
RPCC T LWN SET 220b
Altve. RDBA T LIN SET 220b
cw=increase pressure

LOCATION
X
REF.
SLO 300 REAR
T.R.S. REAR

LOCATION
T
REF.
SLO 300 BOTTOM
T.R.S. TOP

MANIFOLD #1

MANIFOLD #2

READ THIS DRAWING IN CONJUNCTION
WITH VALVE SETTING SEQUENCE

SOLO 300 / TRIP RESET SUBSOILER TINE HYDRAULIC CIRCUIT
PRESSED PILLAR P7696

BEARING P5431
DISC RING P8192

SPOOL P8188

INTERNAL SPACER P8191

12 QTY DISC RINGS / 5 QTY SPOOLS

BEARING SPOOL P8189

NUT SPOOL P8190

SPLIT PIN P2489

AXLE 1857mm P7730B

M60 CASTLE NUT P1698

2/11/00 AXLE LENGTH CHANGED FROM 1845 TO 1857mm. PT NO NOW P7730B

PRESS - 8 DISC RING AXLE LAYOUT (INBOARD PILLAR)

DRAWN 09/09/00
UPDATE 02/11/00
PART NUMBER
FROM SERIAL NO.
TO SERIAL NO.
ISSUE
DRAWING NO. B AS0523
SIMBA DOUBLE DISC RING TENSIONER UNIT:-
For disassembly and reassembly of Simba Double Disc axles
(Includes instructions for use)
P08906