

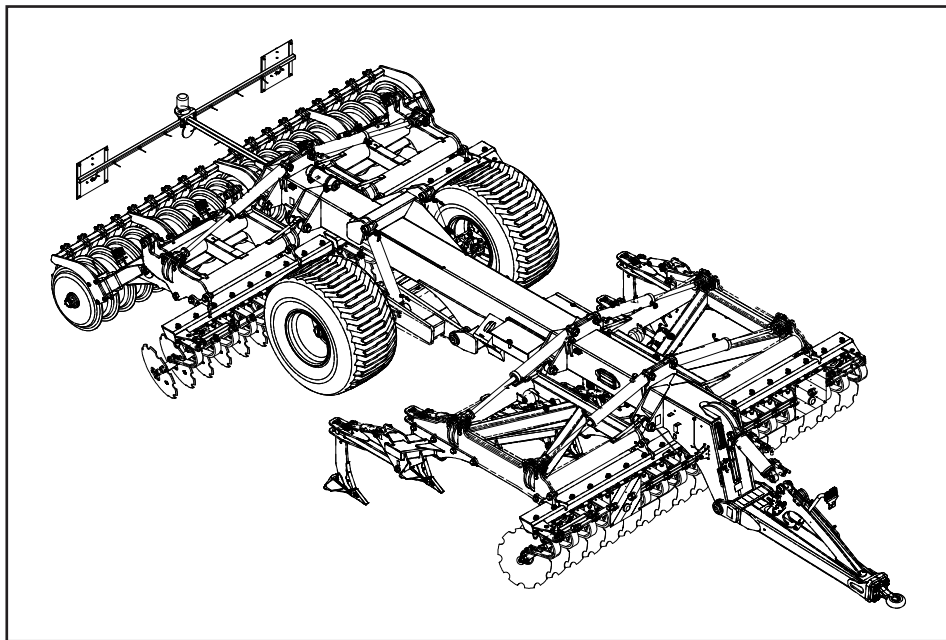
# Operator Manual

Simba SLD420 / SLD460 / SLD540 / SLD600

 **Great Plains**  
Manufacturing, Inc.  
[www.greatplainsmfg.com](http://www.greatplainsmfg.com)



*Read the operators manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!*



*Illustrations may show optional equipment not supplied with standard unit.*

ORIGINAL INSTRUCTIONS

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602-227M-ENG Rev A

EN

**ENG** If you require a copy of this document in your native language please contact your dealer or Great Plains.

**CZE** Požadujete-li kopii tohoto dokumentu ve svém rodném jazyce, obraťte se prosím na svého prodejce nebo na společnost Great Plains.

**HUN** Ha szeretné ezt a leírást magyarul is megkapni, kérjük, értesítse a forgalmazóját vagy a Great Plains-t.

**FRA** Pour obtenir un exemplaire du présent document dans la langue de votre choix, veuillez contacter votre représentant ou Great Plains.

**LIT** Jei prireiktų šio dokumento kopijos Jūsų gimtąja kalba, kreipkitės į savo platintoją arba į „Great Plains“.

**BUL** Ако ви е необходимо копие на този документ на родния ви език, моля да се обърнете към вашия дилър или към Great Plains.

**RUM** Dacă aveți nevoie de o copie a acestui document în limba dumneavoastră natală vă rugăm să vă contactați dealerul sau Great Plains.

**RUS** Чтобы получить копию данного документа на вашем родном языке, обратитесь к своему дилеру или в компанию «Great Plains»

**GER** Wenn Sie ein Exemplar dieses Dokuments in Ihrer Muttersprache brauchen, dann wenden Sie sich bitte an Ihren Händler oder an die Great Plains.

**DECLARATION OF CONFORMITY**

Great Plains UK Ltd. hereby declare that the **Great Plains Simba SLD**, as defined by the Serial Number attached to the Machine Chassis, conforms with the following Directives and Regulations, and has been certified accordingly.

**EC Machinery Directive 2006/42/EC.**

**The Supply of Machinery (Safety) Regulations 2008.**

**The Provision and Use of Work Equipment Regulations 1998.**

Specifically related harmonised standards are:

**EN ISO 12100-1: 2003 (Safety of Machinery).**

**EN ISO 12100-2: 2003 (Safety of Machinery).**

**EN ISO 4254-1: 2009 (Agricultural machinery - Safety - General Requirements).**

THE MANUFACTURER:

Great Plains UK Ltd.  
Woodbridge Road  
SLEAFORD  
Lincolnshire  
NG34 7EW  
England

Telephone (+44) (0)1529 304654.

CERTIFIED ON BEHALF OF GREAT PLAINS UK LTD:



Colin Adams  
Managing Director



## WARRANTY

### TERMS AND CONDITIONS

In this warranty Great Plains UK 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 installation with 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 Great Plains UK 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 or part thereof at the Company's expense, or
  - (b) make an allowance to the purchaser against the purchase price of the machine or part thereof, or
  - (c) accept the return of the machine and at the buyers option either:
    - I) repay or allow the buyer the invoice price of the machine or part thereof, or
    - II) replace the machine or part thereof 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 14 days from the date of repair.
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 1 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%. For the purpose of these terms and conditions, "stated implement power requirement" refers to wheeled tractors unless specifically stated. These power requirements should be reduced by 20% when used in conjunction with tracked tractors.
  - (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 Great Plains UK 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 Great Plains UK Ltd., Service Dept., Woodbridge Road, Sleaford, Lincolnshire, England, NG34 7EW, within 7 days of installing a new machine.

# Machine Identification

Enter the relevant data in the following list upon acceptance of the machine:

<b>Serial Number</b>	
<b>Type of Machine</b>	
<b>Machine Width</b>	
<b>Year of Construction</b>	
<b>Delivery Date</b>	
<b>First Operation</b>	
<b>Accessories</b>	

**Dealer Address:** Name: \_\_\_\_\_  
Street: \_\_\_\_\_  
Place: \_\_\_\_\_  
Tel.: \_\_\_\_\_  
  
Dealer's Customer No.: \_\_\_\_\_

**Great Plains Address:**

Great Plains UK Ltd.  
Woodbridge Road Ind. Est.  
Sleaford  
Lincolnshire  
NG34 7EW

Tel.: +44 (0) 1529 304654  
Fax: +44 (0) 1529 413468  
E-Mail: simba@greatplainsmfg.com

Great Plains Customer No.: \_\_\_\_\_

# Contents

Introduction.....	8
Foreword .....	8
Warranty Guidelines .....	8
<b>1. Safety Data .....</b>	<b>9</b>
1.1 Safety Symbols.....	9
1.2 Use for the Intended Purpose .....	11
1.3 Operational Safety .....	11
1.4 No Liability for Consequential Damage .....	11
1.5 Road Traffic Safety .....	12
1.6 Accident Prevention.....	12
1.6.1 Hitching-up the machine.....	12
1.6.2 On the Hydraulic System.....	12
1.6.3 Changing Equipment.....	13
1.6.4 During Operation .....	13
1.7 Servicing & Maintenance.....	13
1.8 Operating Areas.....	14
1.9 Authorised Operators .....	14
1.10 Protective Equipment .....	14
<b>2. Transportation and Installation .....</b>	<b>15</b>
2.1 Delivery.....	15
2.2 Transportation.....	15
2.3 Installation .....	15
2.4 Hitching Up .....	16
2.4.1 Hitching up a Tractor to the Simba SLD / Preparing for Transport .....	16
2.5 Air Brake Coupling Procedure .....	16
2.5.1 When Coupling .....	16
2.5.2 When De-coupling .....	17
2.6 Folding and Unfolding.....	17
2.6.1 Unfolding into the Work Position .....	17
2.6.2 Folding into the Transport Position .....	17
2.7 When driving on the road .....	18
2.8 Parking the machine.....	18
<b>3. Technical Data Simba SLD .....</b>	<b>19</b>

<b>4.</b>	<b>Adjustment/Operation .....</b>	<b>20</b>
4.1	Description.....	20
4.2	Disc Units .....	21
4.4	Pro-Lift Tines .....	22
4.5	Pro-Lift Wings .....	23
4.6	Double Disc Roller.....	23
4.7	Work Settings .....	24
4.8	Starting Settings .....	24
4.9	Using Shims .....	26
4.10	Depth Control .....	27
4.11	Work Instructions.....	27
4.12	Parking the machine.....	27
4.13	Checks.....	28
<b>5.</b>	<b>Servicing and Maintenance.....</b>	<b>29</b>
5.1	Servicing.....	29
5.2	Cleaning .....	29
5.3	Disc Hub Maintenance .....	29
5.3.1	Tightening Disc Hubs.....	29
5.3.2	Bearing Seals .....	30
5.4	Brakes & Wheel Hubs .....	30
5.5	Tines.....	30
5.6	Double Disc Axles.....	31
5.7	Wing Pitch .....	31
5.8	Hydraulics.....	31
5.9	Pro-Lift Trip Reset Tine Hydraulics .....	32
5.10	Preparation for Storage .....	33
5.11	Operator Support.....	33
5.12	Maintenance Intervals .....	33
5.13	Maintenance Overview .....	34
5.14	Lubricating the Machine .....	36
5.15	Handling of Lubricants.....	36
5.16	Lubricants & Hydraulic Oil.....	37
5.17	End of Season Service/Storage.....	38
<b>6.</b>	<b>Faults and Remedies .....</b>	<b>39</b>

## Introduction

### Foreword

Make sure you have read and follow the Operating Instructions carefully before using the machine. By doing so, you will avoid accidents, reduce repair costs and downtime and increase the reliability and service life of your machine. Pay attention to the safety instructions!

Great Plains will not accept any responsibility for any damage or malfunctions resulting from failure to comply with the Operating Instructions.

These Operating Instructions will assist you in getting to know your machine and in using it correctly for its intended purposes. First, you are given general instructions in handling the machine. This is followed by sections on servicing, maintenance and the action to be taken should a malfunction occur.

These operating instructions are to be read and followed by all persons working on or with the machine, e.g.:

- Operation (including preparation, remedying of faults in the operating sequence and servicing).
- Maintenance (maintenance and inspection)
- Transportation.

Together with the Operating Instructions, you receive a Spare Parts List and a Machine Registration form. Field service technicians will instruct you in the operation and servicing of your machine. Following this, the Machine Registration form is to be returned to your dealer. This confirms your formal acceptance of the machine. The warranty period begins on the date of delivery.



We reserve the right to alter illustrations as well as technical data and weights contained in these Operating Instructions for the purpose of improving the machine.

### Warranty Guidelines

The period of liability for material defects (warranty) relating to our products is 12 months. In the case of written deviations from the statutory provisions, these agreements shall apply.

They shall become effective upon installation of the machine with the end customer. All wear parts are excluded from the warranty.

All warranty claims must be submitted to Great Plains via your dealer.



# 1. Safety Data

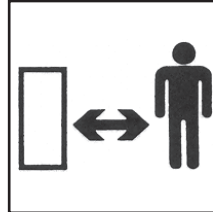
The following warnings and safety instructions apply to all sections of these Operating Instructions.

## 1.1 Safety Symbols

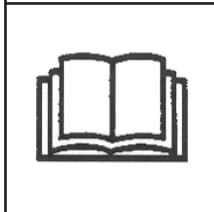
### On the machine



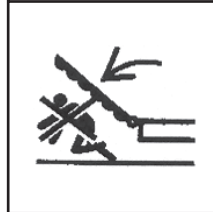
Parts may fly off during operation. Keep a safe distance away from the machine!



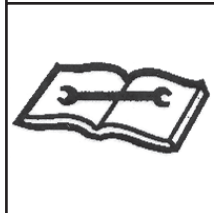
Read and observe the Operating Instructions before starting up the machine!



Keep clear of the working range of foldable machine components!



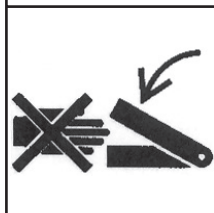
Watch out for escaping pressurised fluids! Follow the instructions in the Operating Instructions!



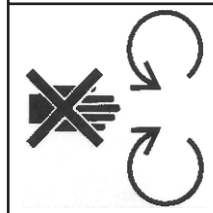
No passengers are allowed on the machine!

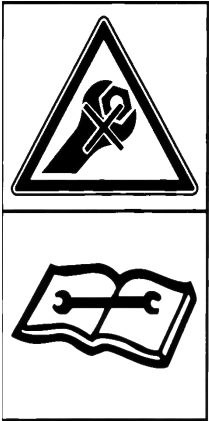


Never reach into areas where there is a danger of being crushed by moving parts!



Never reach into any revolving parts!





Refer to Operating Instructions before attempting maintenance.

### Operating Instructions:

The Operating Instructions distinguish between three different types of warning and safety instructions. The following graphic symbols are used:



Important!



Risk of injury!



Risk of fatal and serious injuries!

It is important that all the safety instructions contained in these Operating Instructions and all the warning signs on the machine are read carefully.

Ensure that the warning signs are legible. Replace any signs that are missing or damaged.

These instructions must be followed in order to prevent accidents. Inform other users of the warnings and safety instructions.

Do not carry out any operations which may affect safe use of the machine.

All references to left and right in this manual are made from the rear of the machine, facing the direction of travel (unless otherwise stated).

## 1.2 Use for the Intended Purpose

The Great Plains Simba SLD is built using the latest technology and in accordance with the relevant recognised safety regulations. However, risks of injury for the operator or third parties and impairment of the machine or other tangible assets can arise during use.

The machine is only to be operated when in a technically perfect condition and for the intended purpose, taking into consideration safety and risks and following the Operating Instructions. In particular, faults that can impair safety are to be remedied immediately.

Original parts and accessories from Great Plains have been specially designed for this machine. Spare parts and accessories not supplied by us have not been tested or authorised. Installation or use of non-original Great Plains products may have a detrimental effect on specific design features of the machine and affect the safety of machine operators and the machine itself. Great Plains will accept no liability for damage resulting from the use of non-original parts or accessories.


The Great Plains Simba SLD is designed solely as a cultivation implement. Use for any other purpose, e.g., as a means of transport, will be deemed to be improper use. Great Plains will accept no liability for damage resulting from improper use. The risk will be borne solely by the operator.


Use of the Simba SLD behind high power tractors (in excess of 40% above the maximum recommended) can lead to high loads and stresses which can cause long term structural damage to the chassis and key components. Such overloading can compromise safety and is to be avoided.


## 1.3 Operational Safety

The machine is to be put in operation only after instruction has been provided by an employee of the authorised dealer or an employee of Great Plains. The "Machine Registration" form is to be completed and returned to your dealer.

All protective and safety equipment, such as removable protective equipment, must be in place and functioning reliably before the machine is put in use.

 Check screws and bolts regularly for tightness and retighten if necessary.


 In the event of malfunctions, stop and secure the machine immediately.

 Ensure that any faults are remedied immediately.

## 1.4 No Liability for Consequential Damage

The Simba SLD has been manufactured by Great Plains with great care. However, problems may still occur when it is used for the intended purpose. These may include:

- Worn wearing parts.
- Damage caused by external factors.
- Incorrect driving speeds.
- Incorrect setting of the unit (incorrect attachment, non-adherence to the Setting instructions).

 It is crucial to always check your machine before and during operation for correct operation and adequate application accuracy.

Compensation claims for damage which has not occurred to the machine is excluded. This includes any consequential damage resulting from incorrect operation.

## 1.5 Road Traffic Safety

When driving on public roads, tracks and areas, it is important to observe the relevant road traffic laws as well as the specific regulations relating to this machine.



Pay attention to the permitted axle loads, tyre carrying capacity, and total weight in order to maintain adequate braking and steerability (these figures are shown on the serial plate).



Passengers on the machine are strictly forbidden!



Max. road transport speed 16mph (25km/h).

## 1.6 Accident Prevention

In addition to the Operating Instructions, it is important to observe the accident prevention regulations specified by agricultural trade associations. It is the Operator's responsibility to ensure that all other persons are excluded from the danger zones surrounding or on the machine during its operation.

It is the Owner's responsibility to ensure:

- the Operator is trained and competent to use the machine & tractor,
- the tractor is suitable for the machine
- adequate Risk and COSHH assessments have been undertaken regarding the machine's use. Specifically, these include issues concerning contact with the soil, dust, crop residues, chemicals, lubricants and other compounds during operation or maintenance, and the possibility of stones being ejected at high speed during work.



Beware of trapping hazards when manipulating moving parts (changing tine depth for example). Ensure any heavy components are fully supported when removing pins / bolts.

### 1.6.1 Hitching-up the machine

There is a risk of injury when hitching/unhitching the machine. Observe the following:

- Secure the machine against rolling.
- Take special care when reversing the tractor!
- There is a risk of being crushed between the machine and the tractor!
- Park the machine on firm, level ground.

### 1.6.2 On the Hydraulic System

Do not connect the hydraulic lines to the tractor until both hydraulic systems (machine and tractor) are depressurised.



Any hydraulic system containing an accumulator can remain under pressure permanently (even after following manual depressurisation procedures with a tractor / implement combination). It is therefore important to check all lines, pipes, and screw connections regularly for leaks and any recognisable external damage.



The hydraulic circuit contains specialised fittings which should not be tampered with under any circumstances. Do not attempt to modify hose routings or hose clamping arrangements, doing so may cause serious damage to the machine and/or injury.

Only use appropriate aids when checking for leaks. Repair any damage immediately. Spurting oil can cause injuries and fires!

In case of injury, contact a doctor immediately.

The socket and plugs for the hydraulic connections between the tractor and the machine should be colour-coded in order to avoid incorrect use.

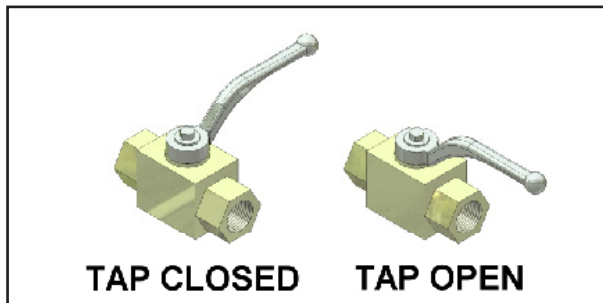


Fig. 1.01: HydraulicTaps

### 1.6.3 Changing Equipment

- Secure the machine to prevent it from accidentally rolling away!
- Use suitable supports to secure any raised frame sections suspended above you!
- Caution! Risk of injury due to projecting parts!



Never climb on to rotating parts such as the roll unit. These parts may rotate causing you to slip and suffer serious injury!



Removing components during maintenance may affect the stability of the machine. Ensure it is fully supported in case of unexpected weight shifts.

### 1.6.4 During Operation

Ensure that the working range and the area around the machine are clear (children!) before operating the machine.

Always ensure adequate visibility!

Do not stand on the machine while it is in operation!

Operators must have a valid driving licence in order to drive on public roads. In the operating area, the operator is responsible for third parties.

The person in charge must:

- provide the operator with a copy of the Operating Instructions, and
- ensure that the operator has read and understood the instructions.
- make sure that the operator is aware of the specific regulations relating to the machine when driving on public roads.

## 1.7 Servicing & Maintenance

Ensure that regular checks and inspections are always carried out within the periods required by law or specified in these Operating Instructions.

When carrying out service and maintenance work always:

- switch off the tractor engine and remove the ignition key.
- wait until all the machine parts have stopped moving.
- depressurise the hydraulic system.

Many hydraulic circuits contain lock or overcentre valves which can retain pressure in the lines even after depressurising the tractor side of these circuits. If in doubt, consult trained personnel (such as your local Great Plains Dealer) to ensure such valves are depressurised to the correct procedure before removing or servicing any parts connected downstream of these valves.

Check all hydraulic lines for leaks, loose connections, chafe marks and damage. Remedy any deficiencies immediately! Pay particular attention to hose renewal intervals as outlined in the specific sections which follow. ALL hydraulic hoses have a safe maximum working life of 6 (SIX) years from date of installation, provided they remain in a safe condition. Hoses which exceed 6 years of age should be replaced, or inspected and certified by a suitably qualified person to have an extended life period which should be recorded.

Pay particular attention to those items which require specialist service tools or training to be carried out by qualified personnel. Do not attempt to service these items yourself! These include items retaining pressure (e.g. accumulator circuits), or force (e.g. spring tines), and DD Rolls of any type.

Prior to performing maintenance and servicing work, ensure that the machine is positioned on solid, level ground and is secured to prevent it rolling away. Do not use any parts to climb on to the machine unless they are specifically designed for this purpose.

Before cleaning the machine with water, steam jets (high-pressure cleaning apparatus) or other cleaning agents, cover all openings into which, for reasons of safety or operation, no water, steam or cleaning agents are to penetrate (bearings, for instance).

Lubricate all the lubricating points to force out any trapped water.

When carrying out servicing and maintenance work, retighten any loose screw connections.

When servicing the machine take precautions against soil, dust, seed coatings, oil or any other hazardous substances that you might encounter.

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 should be sufficient depending on daily work rates.

## 1.8 Operating Areas

The operating areas include the drawbar, hydraulic connections and depth adjustment equipment as well as all operating points requiring maintenance.

All operating areas will be specified and described in detail in the following chapters on servicing and maintenance.

Observe all safety regulations included in the section dealing with Safety, and in the subsequent sections.

## 1.9 Authorised Operators

Only those persons who have been authorised and instructed by the operator may operate the machine. The operator must be at least 16 years of age.

## 1.10 Protective Equipment

For operation and maintenance, you require:

- Tight fitting clothing.
- Strong protective gloves (to provide protection against sharp-edged machine components).
- Protective goggles (to stop dirt getting into your eyes).



## 2. Transportation and Installation

Transportation and initial installation of the machine are described in this chapter.

### 2.1 Delivery

The machine is normally delivered, fully assembled.

- The machine can be lifted off with a crane or other suitable lifting equipment.
- The machine should be hitched to a tractor and driven off a low-loader.

### 2.2 Transportation

The Simba SLD can be transported on public roads by hitching it up to a tractor or on a low-loader.

- It is important to observe the permitted dimensions and weights when transporting the machine.
- If the machine is transported on a trailer or a low-loader, it must be secured using straps or other devices.
- Before transporting the machine on public roads, it must be adjusted to its transportation position and the stipulations relating to road transportation fulfilled.



The transportation width can vary according to the adjustment of working parts (eg. discs, roll, etc). It may be necessary to adjust these elements in order to achieve the minimum transport width.



Adjustments, including the attachment of transport devices, should be made at ground level; lowering the machine may be necessary to achieve this.

- The maximum permissible transport speed is 25 km /h.

### 2.3 Installation

When carrying out installation and maintenance work there is a higher risk of injury. It is important that you familiarise yourself with the machine and read the Operating Instructions beforehand.

Operator instruction and initial installation of the machine are carried out by our service technicians or authorised distributors.

The machine must not be used in any way beforehand! The machine can only be released for operation after instructions have been provided by our service technicians or authorised distributors.

- If any modules or parts have been removed for transportation, these shall be mounted by our service technicians/authorised dealers before the instruction takes place.
- Check all important screw connections!
- Lubricate all nipples and joints!
- Check all hydraulic connections and lines for damage.

## 2.4 Hitching Up

### 2.4.1 Hitching up a Tractor to the Simba SLD / Preparing for Transport



When hitching-up the machine, ensure that no-one is between the tractor and the machine.



When the Simba SLD is parked for extended periods of time it should ideally be left in the unfolded, i.e. work, position for stability, safety and ease of access for maintenance. However, parking the Simba SLD in the folded position (using the parking pins provided) is acceptable in the normal course of operation.



**Tractor Oil Flow Adjustment:** As a general rule the tractor oil flow rate should be set in the lowest setting before starting. This can then be increased to allow the desired rate of operation as applicable. This will minimise excessive oil flow and consequent power usage and heat generation.

1. Ensure the tractor hydraulics are depressurised and in the locked or closed (not float) setting.
2. Couple the hydraulic hoses to the tractor ensuring that the two wing hoses (yellow) are together, the two lift circuit hoses (red) are together, the trip-reset line hoses (green) are together and the roll circuit hoses (blue) are together.
3. Use the hydraulics to raise or lower the height of the shackle before hitching up to the tractor drawbar clevis.



Do not use the tractor pick-up hitch to attach the machine to the tractor. This could cause damage to the tractor and the machine.

4. Carefully operate the hydraulics to lower the drawbar and tilt the Simba SLD onto the road transport wheels. Retract the drawbar cylinder onto the shims and lower the machine using the lift axle cylinders.
5. If the machine is already folded it is now ready for transport. If the machine is unfolded then operate the fold circuit. Refer to 2.6.2.

## 2.5 Air Brake Coupling Procedure

Please refer to the following procedure when coupling or decoupling any item of Great Plains machinery fitted with an AIR brake or AIR and HYDRAULIC brake system. Please note that this procedure does not apply to any machines fitted with a HYDRAULIC system ONLY.

### 2.5.1 When Coupling

1. Reverse up to the machine and connect the machine to the tractor as instructed to in Section 2.4.1.
2. With the machine connected couple the air lines. When coupling ensure the yellow line is attached first followed by the red line.
3. Your brake hoses are now attached and are ready for operation.
4. Continue with the coupling process as instructed in Section 2.4.1.



## 2.5.2 When De-coupling

1. Bring the machine to the parking position as instructed to in Section 2.9.
2. With the machine still connected to the tractor remove the red brake line followed by the yellow line.
3. Your brakes will now be ON and will hold, ensuring they have been adjusted and maintained correctly, the machine in position. (note: if the machine's tank is drained of air once all lines have been detached the brakes will come off (same situation as pushing the shunt valve).
4. Continue de-coupling the machine until it is fully disconnected.



By following the above instructions you will see that at NO point in the coupling or decoupling process has the red line been left in the tractor on its own. This is intentional and should be considered the 'rule' to coupling the hoses.

## 2.6 Folding and Unfolding

### 2.6.1 Unfolding into the Work Position

1. Fully raise machine.
2. Set tines to fully extended cylinders (on hydraulic tine models only).
3. Unfold machine - fully extend the wing cylinders.
4. Set tine pressures on front two gauges.

### 2.6.2 Folding into the Transport Position

1. Fully raise machine.
2. Retract the tines so they do not protrude past the 3 metre transport width when folded.
3. Fold machine fully.
4. Lower the machine.
5. Fit shims in drawbar cylinder.
6. Remove excess soil from machine.



Road transport speed should not exceed 16mph (25kmh).



If storing the machine for extended periods of time fit the storage strap across the wings.

## 2.7 When driving on the road

When driving on the road the machine must be converted to the transportation position.



When driving on the road, raise the machine completely to prevent the working elements dragging on the ground.

## 2.8 Parking the machine

In order to avoid damage as a result of moisture, the machine should be parked, if possible, indoors or under cover.



When manoeuvring the machine, pay attention to your surroundings. Ensure that nobody is in the manoeuvring area (watch for children!).

- Park the machine on level and solid ground.
- Fit chocks under the wheels
- Raise the machine and remove shims from the lift axle cylinders.
- Lower the machine to the ground, ensuring that it is stable.
- Remove the drawbar pin and drive forward slowly until hitch is clear of tractor drawbar.
- Lower the drawbar to the ground.
- Switch off the tractor.
- Disconnect hydraulic lines from the tractor.

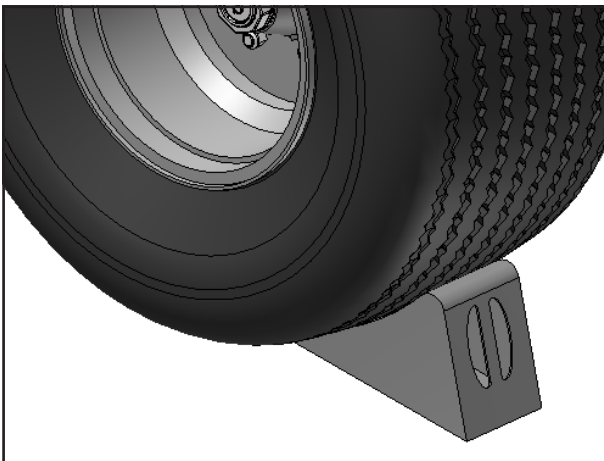


Fig. 2.01. Wheel chocks

### 3. Technical Data Simba SLD

	SLD420	SLD460	SLD540	SLD600
<b>Working Width</b>	4100mm	4400mm	5500mm	6000mm
<b>Transport Width</b>	2990mm	2990mm	2990mm	2990mm
<b>Transport Height</b>	2850mm	2850mm	3560mm	3990mm
<b>Transport Length</b>	10000mm	10000mm	10000mm	10000mm
<b>Weight</b>	9700Kg	9900Kg	11100Kg	11600Kg
<b>Power Requirement*</b>	300-650	300-650	350-650	400-650
<b>Drawbar Load Max**</b>	850Kg	865Kg	970Kg	1050Kg
<b>Centre of Gravity***</b>	6165mm	6165mm	6165mm	6165mm

\* It is important to correctly match your implement to your tractor for optimum performance.

\*\* Varies with lift, tilt and options.

\*\*\* Dimension from hitch in road transport.

## 4. Adjustment/Operation

### 4.1 Description

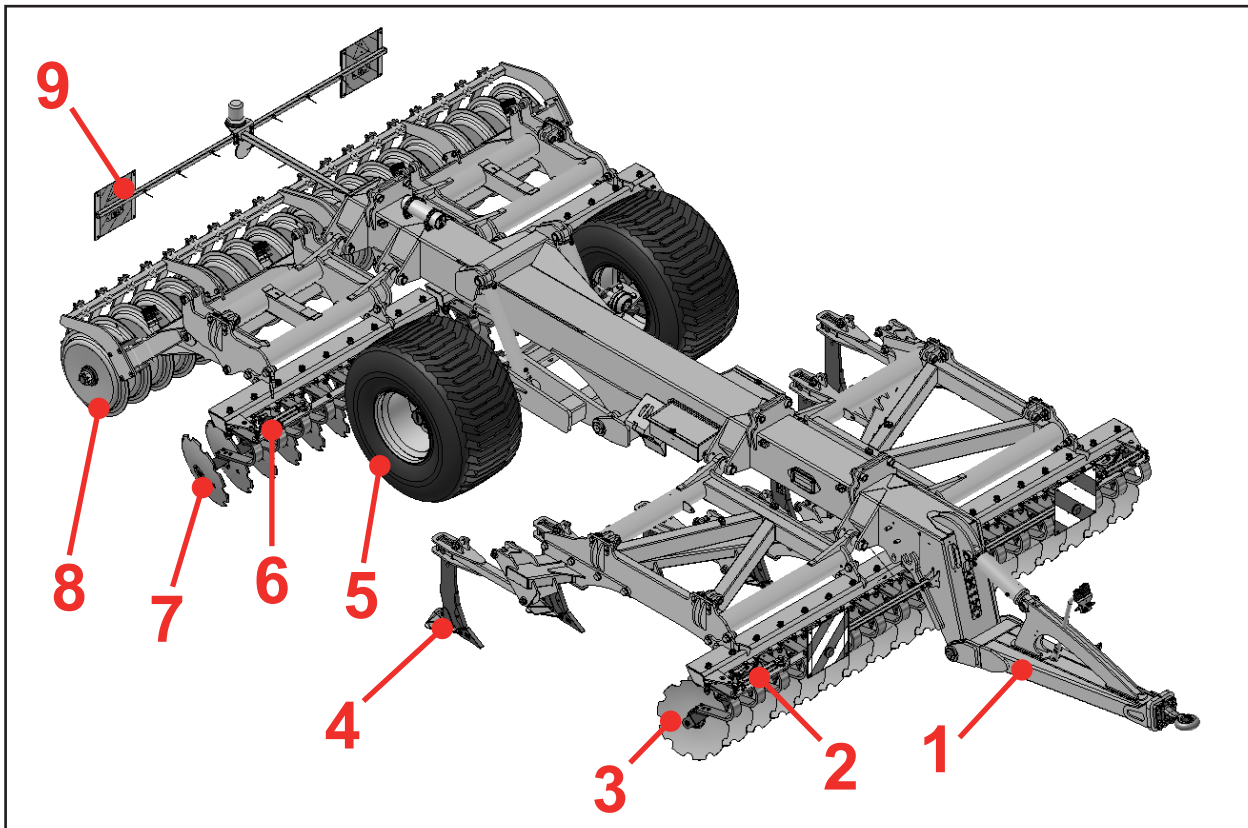


Fig. 4.01: Great Plains Simba SLD

1. Drawbar
2. Front Discs
3. Front Disc Angling Jack
4. Tines
5. Transport Wheels
6. Rear Discs
7. Rear Disc Angling Jack
8. DD 700 Roll
9. Lights

The **Great Plains Simba SLD** is an amalgamation of time proven, successful Great Plains design components brought together to form this important development. The Simba SLD has been designed to provide a one pass mix with a fissured layer at disc depth for through drainage and root access to lower horizons. This enables rapid drainage and access after rain, creating a greater effective capacity for moisture compared to ploughing for the same effective total depth of cultivation.

In principle, the machine is a tandem disc with trip reset Pro-Lift tines, designed for low draft, high speed operations. The addition of a rear mounted roll enables more effective cultivation in one pass. The leading set of disc blades cultivate the top horizon, minimising clod formation and reducing tine loadings and blockage. This starts the 'top down' cultivation process, retaining weathered tilth in the surface level for stale seedbed purposes. The trip reset tines follow the disc blades to shatter at depth retaining the surface intact to work as a stale seedbed. This eliminates the problem of 'wet years' in non-plough based terms. The key to the Simba SLD's success is the lower draft tine point and wing which maintain shatter across the full width of cultivation. The rear roll or trailing press then consolidates the surface, cracks any clods and firms the soil profile before/after the rear gang completes mixing to depth. The corrugated top and shattered lower horizons are left fully weatherproof to any conditions between cultivation and drilling whilst retaining moisture below the surface for rapid straw breakdown and optimum establishment of the next crop.

## 4.2 Disc Units

The Simba SLD features two rows of discs which chop and mix the crop residue. A disc spacing of 250mm ensures a fine tilth and being arranged in a symmetrical format around the centre line of the machine, crabbing is eliminated, leaving the machine to pull straight making the most efficient use of the power available.

The discs fitted to the Simba SLD are 610mm in diameter (24"). They are manufactured from heat treated chrome boron steel which ensures excellent wear resistance and enhanced working life.

Each disc is mounted on a Pro-Active sprung leaf linked to a track rod system. Gang angles can be varied with ease and accuracy using a graduated adjuster.

Adjustable angling of the discs (between 10°-25°) ensures penetration and stubble mixing are achieved in one pass. Working depth can be varied simply via shimmed adjusters. All this is achieved without compromise to consolidation.

A level, evenly cultivated finish is maintained by adjusting the balance of soil throw between the front and rear disc.

Sprung leaves offer protection against damage as well as offering a degree of contour following as they flex up and down in work.

The centre disc unit can be adjusted independently of all other disc units to ensure a level finish across the machine width.

## 4.4 Pro-Lift Tines

The arrangement of the toolbars in a 'V' frame gives lower draught requirements and maximises the loosening effect of each tine.

The depth of the subsurface tines can be altered by moving the tines vertically relative to disc depth in their respective clamps using the 4 holes in the leg. Altering the drawbar and lift circuit depth will also affect subsoiling depth as well as discing depth.

Different wings are available to suit the soil conditions and optimise the performance of the machine.

It is important to set the machine up correctly in order to achieve an efficient and worthwhile operation. Although the Simba SLD can work down to around 350mm (14") this does not mean that running at this depth is always worthwhile, taking time to identify where there is a problem in the soil profile and working to the minimum depth required will save a lot of otherwise wasted fuel and time. It is also very important not to operate below the 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.

If the tines are operating below their critical depth, this is indicated by a reduced (minimal) heave/shattering effect coupled with an extremely high draft requirement. Under these circumstances either reduce tine depth, increase the front disc depth to alleviate the problem or change the type of wings.

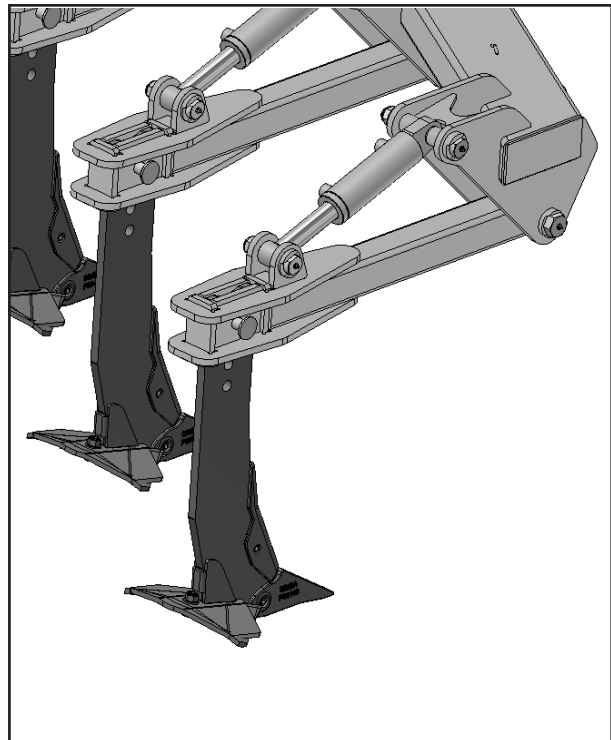
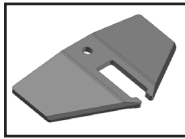


Fig. 4.02: Pro-Lift Tines

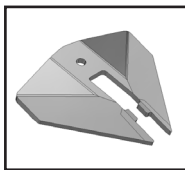
## 4.5 Pro-Lift Wings



**Standard Wing**

**P09060**

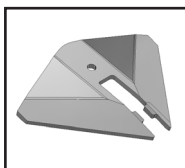
- Maximum soil disturbance with minimum draft requirement under normal circumstances.
- Wing angle reduces wear rates on leg.



**Extra Lift Wing**

**P10392**

- Increased lift height and rake angle creates greater soil disturbance on all soil types especially in moister conditions.
- Lower relative distance between edge of wing and point reduces draft requirement.
- Has ability to work at lower depths with no decrease in soil disturbance or risk of smear.



**Extra Wide Wing**

**P10411**

- Improved lateral shatter in moist/wet soils, or non-cohesive soils.
- Ideal for deep vegetable applications under light/medium soils.

## 4.6 Double Disc Roller

The standard DD700 roller is made up of individual Double Disc (patented) Ring segments.

The DD rings are designed to consolidate the soil whilst cutting and crushing any clods.

Even in heavy, wet soils it can easily be operated with minimal blockages occurring.

The rear DD roller carries a proportion of the machine's weight to ensure consolidation. It also regulates the depth of the machine. The corrugated surface left by the roller is weatherproof both for wet or dry situations.

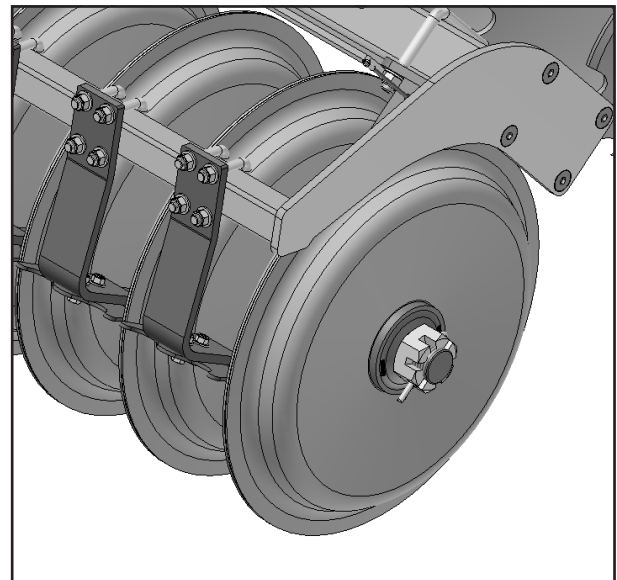


Fig. 4.03: DD700 Roll



## 4.7 Work Settings

In work the wing cylinders should be fully extended. A simple pressurised hydraulic circuit automatically sets itself as the wings are unfolded.

Optimum performance has been found to be achieved when the press roll rings have worn away the painted finish leaving a smooth shiny surface. When the press roll rings are new or rusty, soil may tend to pick up on the surface and blockage may occur, this will reduce when the rings are shiny again.

The Simba SLD should be run with the chassis level by extending the drawbar cylinder to the necessary position and adding shims as appropriate. In practice it is possible to use the Simba SLD on ground conditions that are unsuitable to achieve the desired effect, and it is usually possible to operate without regular blockage under such unsuitable conditions, assuming that the axles are tight and rings smooth. As such, especially under wet conditions, it is advisable to check on the cultivation effect of the Simba SLD.

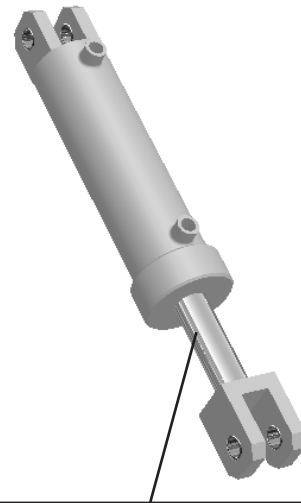
Generally a forward speed of 5-7 mph (8-11 kph) will achieve optimum results, maximising inversion and burial. Speeds in excess of those stated above will tend to give a deterioration in the quality of the work. This may be seen as a ridge and trough effect across the work surface due to soil being thrown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

## 4.8 Starting Settings

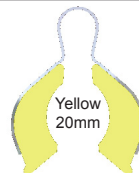
This section details the recommended starting settings for the Simba SLD. These settings can then be used as a base for further adjustment in order to get the optimum performance from your machine.

Ensure all settings from the left and right hand sides of the machine mirror each other.

### Drawbar Cylinder



1x

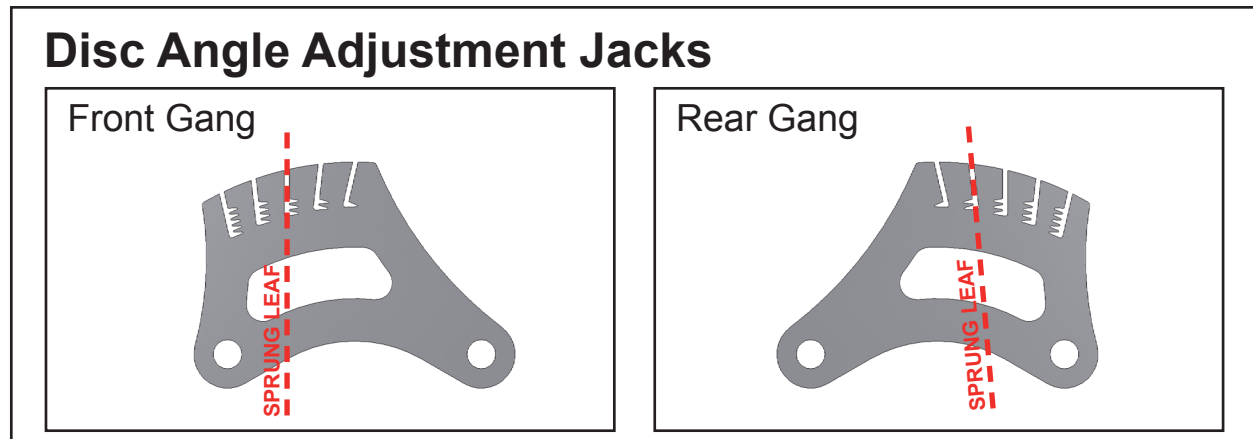


1x



The drawbar cylinder shim settings are subject to the tractor drawbar height. As such, the shim settings shown above are intended as a suggestion only. The machine should be set to run with the chassis level.



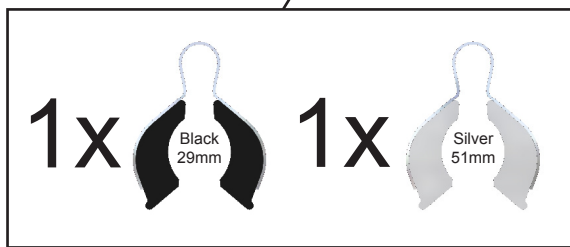
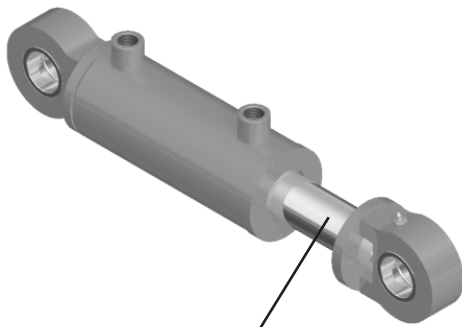


#### 4.8.1 Variation of Settings

If working conditions change (for example, from dry to wet conditions) then the following table should be consulted as a rough guide.

VARIATION IN CONDITION	SETTING REVISION
FROM HARD/DRY TO LOOSE/WET	REDUCE DISC ANGLE
	INCREASE DISC FRAME PITCH & DRAWBAR SHIM LENGTH (RATIO 2 DRAWBAR : 1 DISC PITCH)
FROM STUBBLES TO HIGHER TRASH (TO INCREASE INCORPORATION)	INCREASE DISC ANGLE
	REDUCE SPEED
	INCREASE DRAWBAR SHIMS
FROM SHALLOW TO DEEP (NOTE 75- 100mm MAX WORKING DEPTH)	DECREASE DISC FRAME PITCH & DRAWBAR SHIM LENGTH (RATIO 2 DRAWBAR : 1 DISC PITCH)
	INCREASE DISC ANGLE
	REDUCE SPEED

### Roll Depth



### Pro-Lift Tines



## 4.9 Using Shims

Before using shims to alter machine settings ensure the machine is stationary and the tractor is turned off with the keys out. Ensure that all operators are clear of the machine and that no load is being held on any existing shims in the cylinder / depth control rod.

To fit the shims hold them by the handle and, using a firm action, clip them onto the rod as shown in *Fig. 4.04*. They are removed by using a finger to pull firmly on the handle.



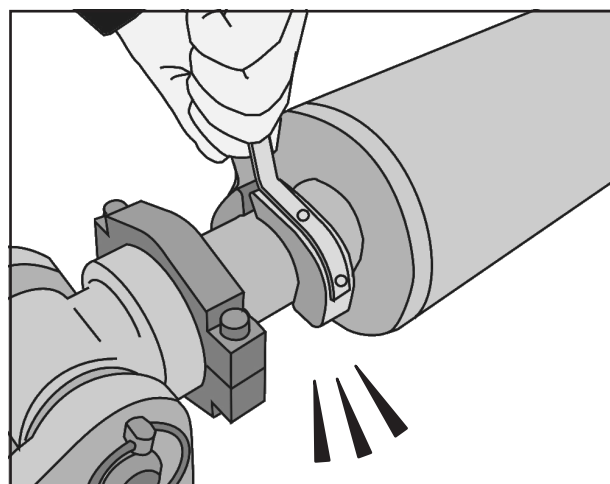
Check the cylinder / depth control rod for damage and debris before fitting shims.



Only attempt to add or remove shims using the handle. Trying to manipulate shims using the jaws could result in injury.



When changing machine settings ensure both sides of the machine mirror each other. The left hand cylinder should contain the same amount of shims as the right, for example. Failure to do this could result in damage to the machine.



*Fig. 4.04: Shims*

## 4.10 Depth Control

Working depth can be set by mid or rear roll and/or by transport wheels. Under normal conditions the weight of the machine will be carried on the roll and the drawbar of the tractor, with the main lift wheels fully raised. Depth is set using the depth control cylinders situated on the roll unit with shims added and removed as appropriate. The front to rear pitch of the machine should be adjusted as appropriate to compensate for changes in working depth by adjusting the amount of shims on the drawbar cylinder.

Some conditions or finished effects may dictate that depth control is carried out using both the roll and the lift wheels.

### Rear Roll

Use roll depth cylinder to set machine working depth - ensure wheels are lifted clear of ground. Use shims in the drawbar cylinders to set chassis pitch level.

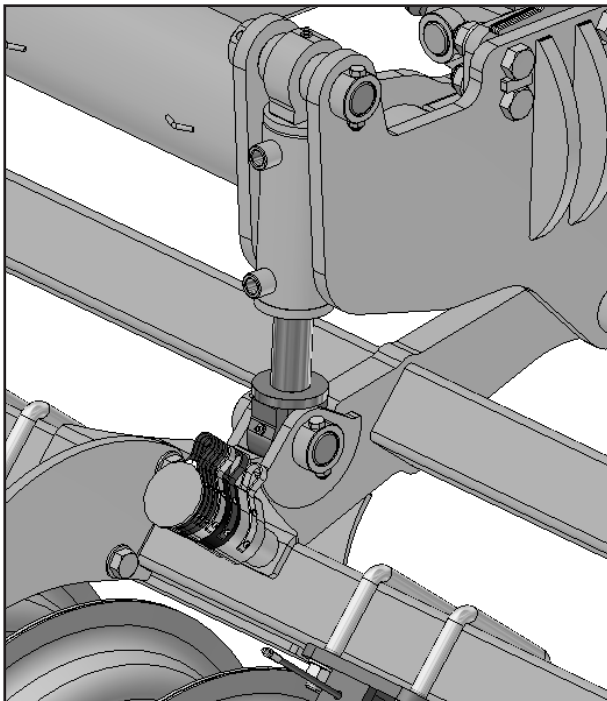


Fig. 4.05: Depth Control

## 4.11 Work Instructions

### Driving speed

The Simba SLD can be driven at speeds of up to 12 km/h.

This depends on the field conditions (type of soil, surface trash, etc.).

Drive more slowly if the conditions are difficult or a firmer finish is required.

Turning:



Before turning, the machine should be eased out of work onto the transport wheels while driving. Likewise, it should be eased back into work once the turn has been completed.

## 4.12 Parking the machine

In order to avoid damage as a result of moisture, the machine should be parked, if possible, indoors or under cover.



When manoeuvring the machine, pay attention to your surroundings. Ensure that nobody is in the manoeuvring area (watch for children!).

- Park the machine on level and solid ground.
- Fit chocks under the wheels
- Raise the machine and remove shims from the lift axle cylinders.
- Lower the machine to the ground, ensuring that it is stable.
- Remove the drawbar pin and drive forward slowly until hitch is clear of tractor drawbar.
- Lower the drawbar to the ground.
- Switch off the tractor.
- Disconnect hydraulic lines from the tractor.

### **4.13 Checks**

The working quality depends on the adjustments and checks made prior to and during work, as well as on regular servicing and maintenance of the machine.

Before beginning work it is therefore important to carry out any necessary servicing and to lubricate the machine as required.

#### **Checks prior to, and during work:**

- Is the machine correctly hitched up and the coupling device locked?
- Have the hydraulic lines been connected according to the colour coding?
- Is the machine in a level operating position and the working depth set correctly?

#### **Working Elements**

- Are the discs and other cultivation tools in a serviceable condition?
- Are the scrapers still operable, so that the rolls do not jam?

## 5. Servicing and Maintenance



Follow the safety instructions for servicing and maintenance.

### 5.1 Servicing

Your machine has been designed and constructed for maximum performance, operational efficiency and operator friendliness under a wide variety of operating conditions.

Prior to delivery, your machine has been checked at the factory and by your authorised dealer to ensure that you receive a machine in optimum condition.



To ensure trouble-free operation, it is important that servicing and maintenance work is performed at the recommended intervals.

### 5.2 Cleaning

In order to ensure that the machine is always in operating condition and to achieve optimum performance, perform the cleaning and servicing work at regular intervals.

Avoid cleaning the roll / disc bearings with a high-pressure hose or a direct water jet. The housing, screwed connections and ball bearings are not watertight.

### 5.3 Disc Hub Maintenance

Grease every disc hub until grease shows from the seals according to the lubricating intervals outlined on page 35.

Check disc hubs regularly for tightness.



Regularly examine hub caps, seals and pivot bolts and all tracking bolts for tightness and effectiveness twice weekly or every 50 working hours (whichever is more frequent).

#### 5.3.1 Tightening Disc Hubs

- 1 Ensure that the bearing seal is in the correct orientation when replacing / assembling components.
- 2 Ensure that the stub axle is free from dirt and the nut and outer bearing can easily slide on it.
- 3 Tighten the crown nut with a hand spanner (a torque wrench is not required) while turning the hub clockwise until the bearing drags slightly (you feel the hub turning heavily). Some resistance will be due to friction from the seal.
- 4 Turn back the crown nut to the next locking position. Even if the tightening of the nut has reached an exact fixing position, turn it back.
- 5 Insert the retaining pin.
- 6 Try to shake/rock the outer edge of the hub/spindle: play of 0.1 / 0.2mm will not reduce the bearings' life and, in addition, prevents overheating. If the adjustment is correct the hub should turn freely with the only friction being from the seal.

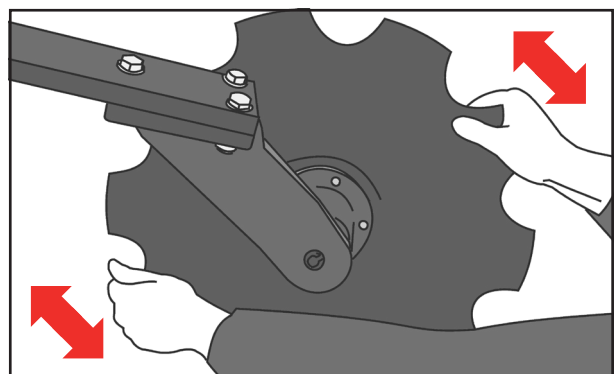


Fig. 5.01: Checking Disc Bearing Adjustment

### 5.3.2 Bearing Seals

It is important when replacing the labyrinth type bearing seals in disc hubs that the seal is fitted the right way round. The chamfered lip side should be at the outside of the bearing housing, nearest the disc arm (see Fig. 5.02). This chamfered lip prevents dirt ingress into the housing and also allows grease to be flushed through when greasing.

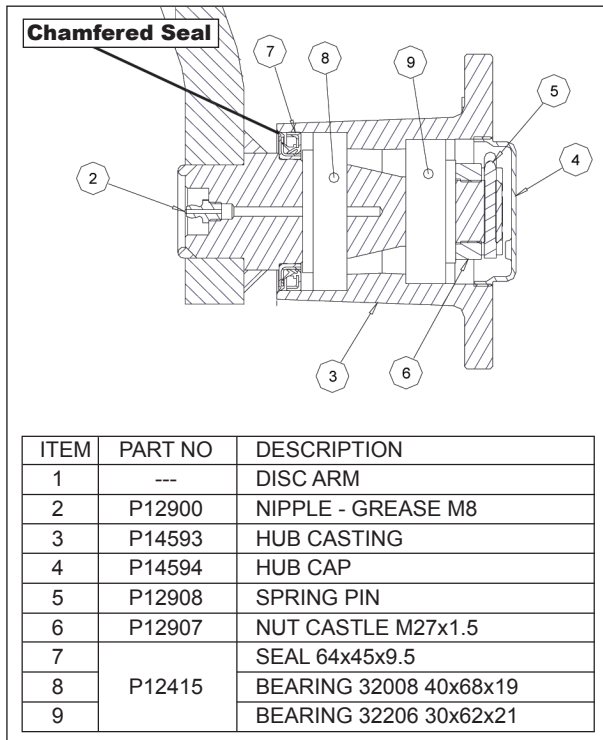





Fig. 5.02: Correct Seal Orientation

### 5.4 Brakes & Wheel Hubs

The brakes should be tested before using for the first time and after the first laden journey.

-  Check that the road and parking brakes operate and release correctly before using the machine.
-  Check for hydraulic fluid and air leaks.
-  Brake and hub maintenance and servicing should be carried out by an authorised Great Plains dealer.

### 5.5 Tines



When performing maintenance work on tines extreme care should be taken. Wear goggles and gloves at all times when maintaining tines.



Ensure the machine is safely supported before attempting maintenance work on tines. With the machine attached to the tractor it can be lowered onto the parking stands for tine maintenance.



Do not attempt to assist fitting tine points with a steel headed hammer, this can lead to splintering of the metal due to its hardness, which can cause injury. If tine fitting requires assistance, a copper/hide or plastic mallet should be used.



Ensure the tine leg is supported when removing pins to ensure it doesn't fall.

When fitting new tine points to Pro-Lift tines, ensure all rough or square edges on the mating faces of the legs are removed prior to fitting the new tips (if necessary).

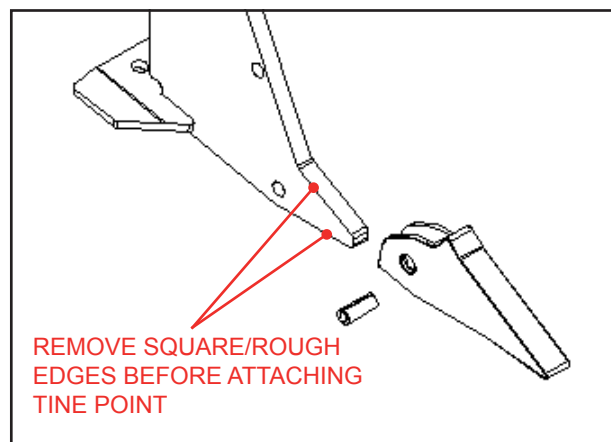


Fig. 5.03: Fitting Pro-Lift Tine Points

## 5.6 Double Disc Axles

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



Specialist equipment is required for the disassembly of Double Disc axles. Please consult your dealer under any circumstances that require disassembly of these axles.

Maintenance of these rollers is limited to 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.

## 5.7 Wing Pitch

The pitch of the wings can be altered by adding or removing shims in the adjustable cylinder pivot. Removing shims will raise the outer tips of the wings and adding shims will lower the outer tips.

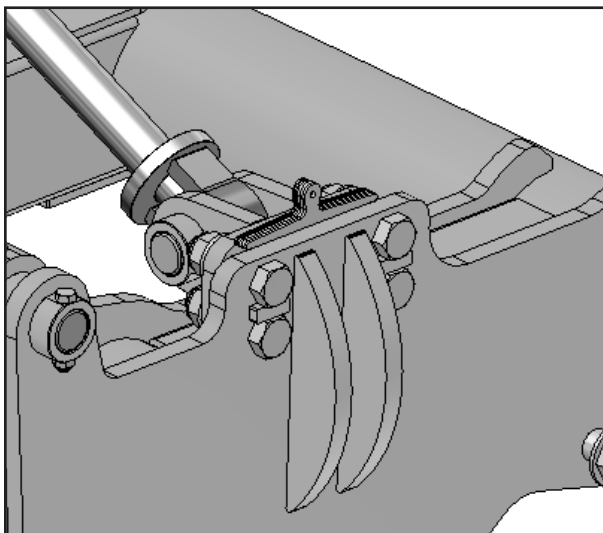


Fig. 5.04: Wing Pitch Adjustment - Simba SLD 600

## 5.8 Hydraulics



A low oil flow should be used, i.e., tractor tickover or low flow selected.



The wing circuit is controlled by an overcentre valve contained within the manifold block which positively locks oil flow until pressurised by the tractor. System pressure can be retained in the circuit **even after depressurisation** of the tractor quick release couplings.



Exercise extreme care when checking the valve or circuits, and *under no circumstances* attempt to adjust or loosen fittings without prior reference to your authorised Great Plains dealer, and detailed maintenance instructions.



## 5.9 Pro-Lift Trip-Reset Tine Hydraulics

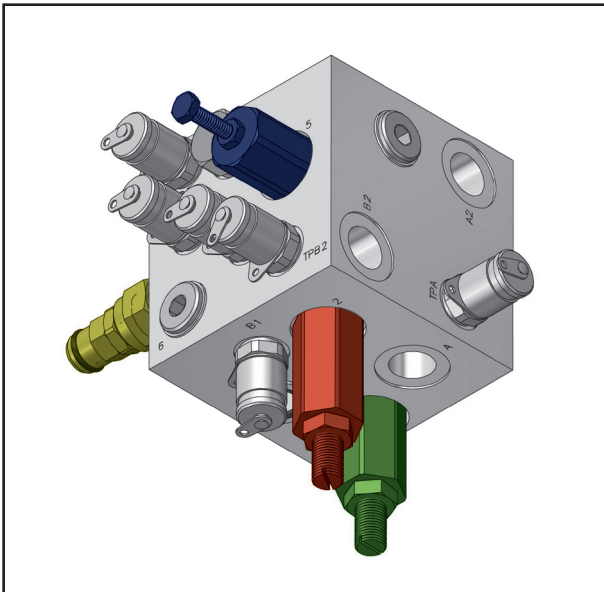


Fig. 5.05: Pro-Lift Tine Hydraulic Manifold

The circuit allows for the tines to be pressurised down into work, whereupon a relief valve 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 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 and 0-20 bar rod side. 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 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.

If the tine circuit should need setting the following procedure should be followed (an assistant will be required):

1. Raise machine, to ensure tines are fully clear of the ground at depth.
2. Adjust relief valve (**marked 1 / coloured green**) clockwise fully. Turn anticlockwise one full turn.
3. Adjust flow control (**marked 5 / coloured blue**) fully clockwise, then anti-clockwise 4 turns.
4. Adjust accumulator relief valve (**marked 2 / coloured red**) anticlockwise fully. Turning clockwise now will increase the pressure on the top gauge.
5. Remove cap from sequence valve and remove the anti-tamper pin. Loosen anticlockwise fully and then tighten clockwise until slight resistance is felt.
6. Pressure tines down and further adjust sequence valve (**marked 3 / coloured yellow**) until bottom gauge reads 10-20 bar. Lock with lock nut and refit anti-tamper pin and cap.
7. Continue to hold pressure in tine circuit and set accumulator relief (**2**) to between 90 and 150 bar (see section 5.9.1) as tines are lowered.



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

8. Put main circuit in float, check that pressure is maintained.



### 5.9.1 Valve Adjustment - To Suit Field Conditions

**Normal / Stony conditions** - To avoid damage to tines and chassis in severe stone conditions reduce accumulator relief (**2 / red**) as tines are held in 'lower' to read 90 bar.

**Hard, stone free conditions** - It is permissible to increase gauge pressure for accumulator relief (**2 / red**) as tines are held in 'lower' to read up to 150 bar.

### 5.10 Preparation for Storage

If you need to store the machine for a longer period, observe the following points:

- Fit the winter storage strap between the wings.
- Park the machine undercover if possible.
- Protect the roll / discs against rust. If you need to spray the implements with oil, use light biologically degradable oils, e.g. rape oil.



Cover any rubber sections before using oil sprays. These sections must not be oiled. Remove any traces of oil with a suitable cleaning agent.

### 5.11 Operator Support

If you have a problem, please contact your dealer. They will endeavour to solve any problems which may occur and provide you with support at all times.

In order to enable your dealer to deal with problems as quickly as possible, it helps if you can provide them with the following data. Always state the:

- Customer Number
- Name and Address
- Machine Model
- Serial Number of Machine
- Date of Purchase and Operating Hours
- Type of Problem

### 5.12 Maintenance Intervals

Apart from daily maintenance, the maintenance intervals are based on the number of operating hours and time data.

Keep a record of your operating hours to ensure that the specified maintenance intervals are adhered to as closely as possible.

Never use a machine that is due for maintenance. Ensure that all deficiencies found during regular checks are remedied immediately.



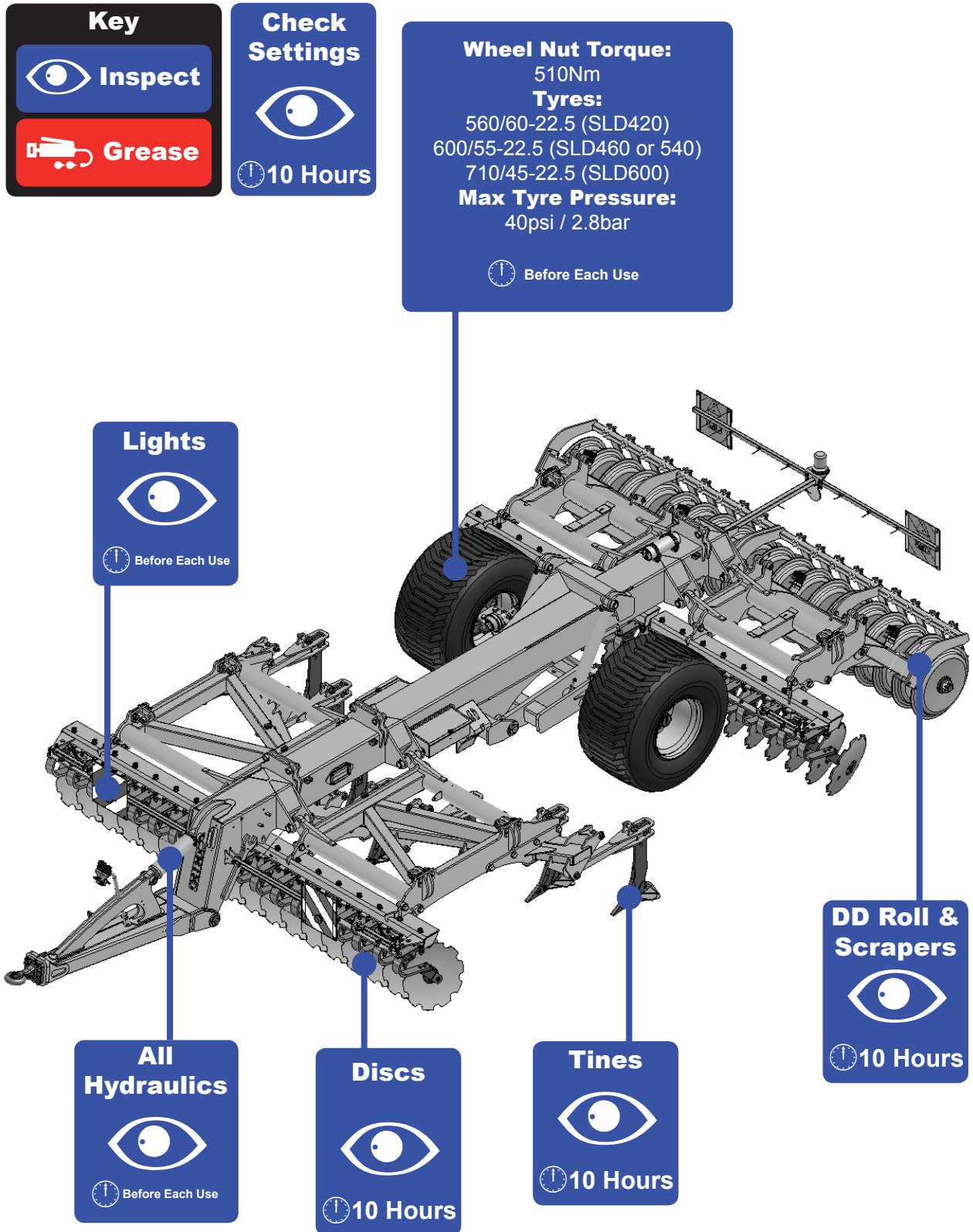
Avoid sharp-edged and pointed parts (disc blades, etc.) when working on the machine.

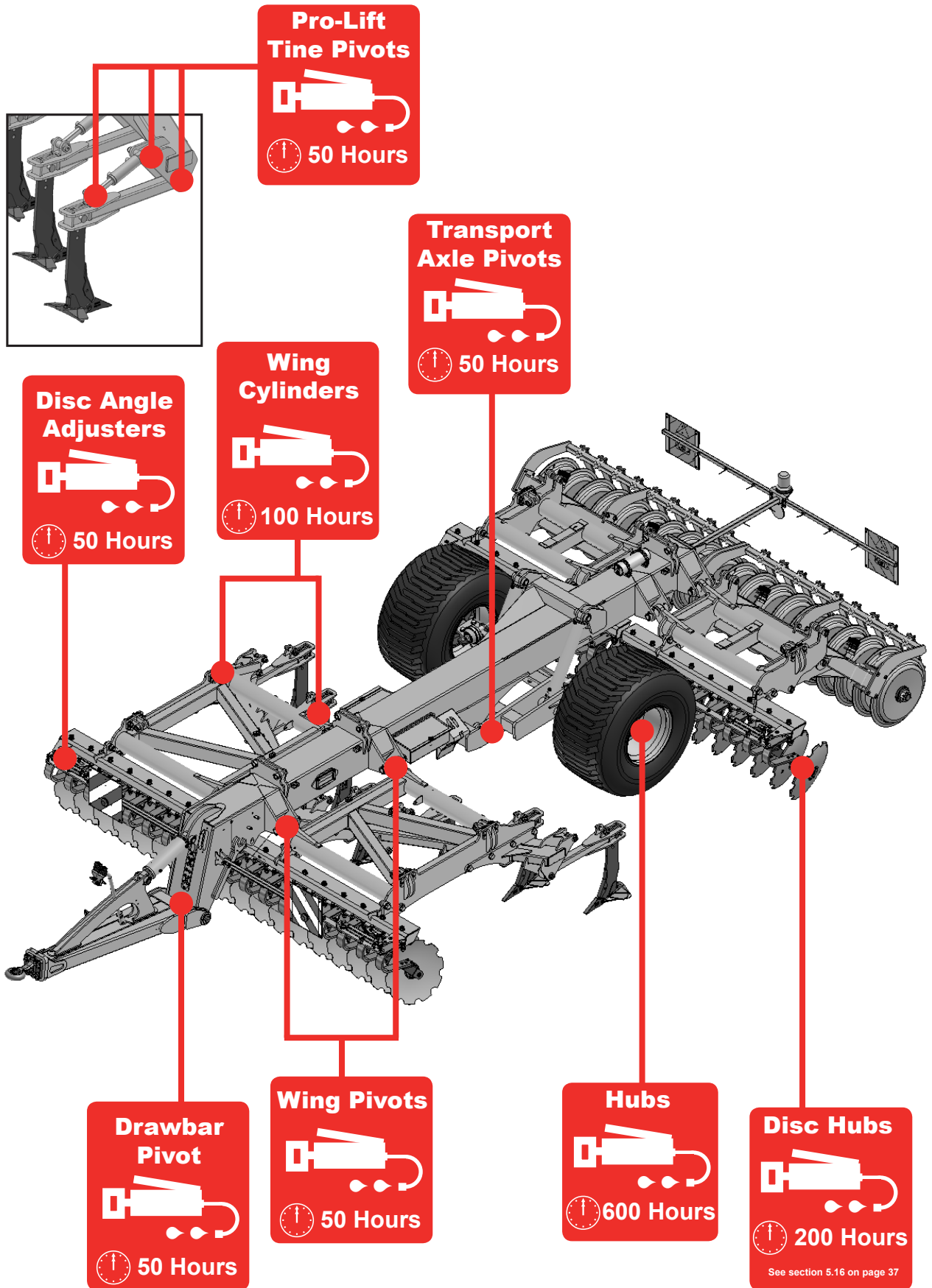


Place the machine on suitable supports when working underneath! Do not work under a machine which is not supported!

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 should be sufficient depending on daily work rates.

### 5.13 Maintenance Overview





## 5.14 Lubricating the Machine

Please read the section entitled "Handling of Lubricants" carefully before lubricating the machine.

The machine must be lubricated regularly in order for it to remain serviceable. Regular lubrication also contributes towards extending the service life of your machine.

After it has been washed using a high-pressure hose or steam cleaned, the machine should always be lubricated using a grease gun.

## 5.15 Handling of Lubricants

Please ensure that you read the following instructions as well as the relevant information. This also applies to any of your employees who handle lubricants.

### Hygiene

Lubricants do not present a health hazard provided they are used for their specified purpose.

In the case of prolonged skin contact, lubricants - especially low-viscosity oils - may remove the natural layer of fat contained in the skin, resulting in dryness and possible irritation .

It is important to take extreme care when handling waste oil as it may contain other irritants.

Vapours given off by cleaning agents and oils are also a potential health hazard. You should therefore not carry any oily cloths around. Change soiled work clothing as soon as possible.

Always exercise extreme care and observe the recommended hygiene rules when handling mineral oil products. Details of these handling regulations can be found in information provided by the health authorities.

### Storage and Handling

- Always store lubricants where they cannot be accessed by children.
- Never store lubricants in open or unlabelled containers.

### Fresh Oil

- Apart from taking the usual care and observing hygiene rules, there is no need to take any special precautions when handling fresh oil.

### Waste Oil

- Waste oil can contain harmful contaminants which may cause skin cancer, allergies and other illnesses.

### Attention!

Oil is a toxic substance. Should you swallow any oil, do not try to vomit. Contact a doctor immediately.

Protect your hands with barrier cream or wear gloves to avoid contact with the skin. Wash off any traces of oil thoroughly with soap and hot water.

- Wash your skin thoroughly with soap and water.
- Use special cleaning agents to clean any dirt off your hands.
- Never wash oil residue from your skin with petrol, diesel fuel or paraffin.
- Avoid skin contact with any oily clothing.
- Do not keep any oily rags in your pockets.
- Wash soiled clothing before wearing it again.
- Ensure that any oily footwear is disposed of in the proper manner.

## Measures in case of injury through oil

### Eyes:

Should any oil be splashed into your eyes, rinse with water for 15 minutes. If the eye is still irritated, contact a doctor immediately.

### If oil is swallowed

If oil is swallowed, it is important not to induce vomiting. Contact a doctor immediately.

### Skin irritation caused by oil

In case of prolonged skin contact, wash off the oil with soap and water.

### Oil Spills

Use either sand or a suitable granular absorbent to soak up any spilled oil. Dispose of the oil-contaminated absorbent in the proper manner.

### Oil Fires

Never use water to extinguish an oil fire. The oil will float on the water causing the fire to spread.

Burning oil/lubricant must be extinguished using a carbon dioxide powder or foam extinguisher. Always wear respiratory equipment when dealing with fires of this type.

### Waste Oil Disposal

Oil-contaminated waste and used oil must be disposed of in accordance with current legislation.

Waste oil must be collected and disposed of in accordance with local regulations. Never pour used oil into unsealed sewage systems or drains or onto the ground.

## 5.16 Lubricants & Hydraulic Oil

### Hydraulic System

The hydraulic fluid from the tractor is mixed with the hydraulic fluid from the machine.

The supplied machine hydraulic system contains Total AZOLLA ZS 32 oil.

### Lubricants

Great Plains strongly recommend the use of **Lithium Complex EP2 Grease** in the disc and wheel hubs of your Simba SLD. This grease is a Lithium Complex soap dispersed in a mineral oil and is interpreted by IARC as being non-carcinogenic. Grease cartridges are available from Great Plains (P12710). Using this grease in combination with the labyrinth type seal it is permissible to lengthen the greasing interval on the disc hubs to 200 hours. If using a standard agricultural grease the disc hubs should be lubricated every 50 hours.

#### Advantages of Lithium Complex EP2 Grease

- Excellent mechanical stability.
- Excellent load carrying properties.
- Wide temperature range.
- Excellent oxidation stability.
- Excellent water resistance.
- Compatibility with other greases.

All other lubricating points on the machine can be lubricated with multigrade lubricating grease as specified in DIN 51825 KP/2K - 40.

## **5.17 End of Season Service/Storage**

The machine should be left parked in the unfolded position

Wheel bearings should be inspected and re-packed with grease if required

All greased pins/pivots should be lubricated.

Check for worn or damaged components and hardware, replace where required.

If fitted, check and where required adjust DD roller tension

Where hydraulic cylinder rods are exposed, re-coat chrome with oil/grease.

If the machine has been washed before storage it is good practice to function all hydraulic cylinders and services before storage.

Remove all fertiliser and seed from all metering units and hoppers.

Remove all metering cassette elements.



## 6. Faults and Remedies

Troubleshooting		
Fault	Possible cause	Remedy
Machine pulls to one side	Discs set unevenly	Adjust each pair of disc gangs
	Tines set unevenly	Adjust tine depth
	Roll blocked	Unblock roll
Machine not running level front to rear (if not deliberate)	Machine set incorrectly	Adjust drawbar shims to compensate or if nose diving decrease mid/rear roll pressure.
Transport wheels fail to lift machine	Tractor relief valve operating tractor hydraulics worn	Decrease flow rate
Discs fail to penetrate	More depth needed	Adjust depth control
	Gang angle too little	Check gang settings and increase gang angle if appropriate
	Blades worn	Replace blades
Disc gang uneven working depth side to side		Adjust depth control unit on roll / shims in drawbar cylinder
Machine pulling up clods	Chassis running nose down	Add shims to drawbar cylinder
Rear disc dragging up wet soil	Chassis running tail low	Remove shims from drawbar cylinder
Ridge is formed between gangs in work	Gang angle too severe	Adjust gang angle and / or operating depth
	Speed too high	Adjust forward speed
Trough is formed between gangs in work	Gang angle too little	Adjust gang angle and / or operating depth
	Speed too low	Adjust forward speed



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