

**DALBO®**

# CULTIMAX



**GB**  
**650/800/900/1000 cm**  
**Serie no.: 0100 – XXXX**

**MADE IN DENMARK**



# CULTIMAX

## Type 650/800/900/1000 cm

Congratulations on the purchase of your new CULTIMAX. To ensure **safe operation** and to obtain optimal use of the machine, read the rules and instructions of the following operator`s manual carefully before **operating the machine**.

©Copyright 2006. All rights reserved, DALBO A/S.

### Your CULTIMAX:

Type no.: \_\_\_\_\_ Serial no.: \_\_\_\_\_  
Month of manufacture: \_\_\_\_\_ Net weight [kg]: \_\_\_\_\_

For prompt service, always quote your machine serial number when making enquiries regarding spare parts or service. A comprehensive index of spare parts can be found in the back of this manual to give you an overview of CULTIMAX components and to facilitate ordering.

## EU DECLARATION OF CONFORMITY

**DALBO A/S**  
**DK-7183 Randbøl**

Hereby declare that the above-mentioned machine has been manufactured in compliance with the provision of the Council Directive on the approximation of the laws of the Member States relating to machinery 2006/42/EC, which replaces Council Directive 98/37/EF and amendments 91/368/EEC, 93/44/EEC and 93/68/EEC concerning the Essential Health and Safety Requirements for the design and manufacture of Machinery.

**CE**

This machine complies with the safety requirements stipulated by the European safety regulations.

DALBO A/S

Date: \_\_\_\_\_

Alessio Riulini, CEO

# Table of Contents

<b>SAFETY .....</b>	<b>5</b>
GENERAL .....	5
HYDRAULIC SYSTEM .....	5
HITCHING .....	6
MAINTENANCE AND REPAIRS .....	6
TRANSPORT .....	6
CORRECT USE .....	7
<b>TECHNICAL DATA .....</b>	<b>8</b>
DELIVERY .....	8
<b>HOW TO USE THIS MANUAL .....</b>	<b>9</b>
<b>APPLICATION.....</b>	<b>10</b>
<b>HITCHING AND UNHITCHING .....</b>	<b>11</b>
HITCHING .....	11
UNHITCHING .....	12
<b>ADJUSTMENTS AND SETTINGS .....</b>	<b>13</b>
BASIC ADJUSTMENT POSITION .....	13
DEPTH OF WORKING .....	13
ADJUSTMENT OF REAR HARROW .....	14
ADJUSTMENT OF CRACKERBOARD .....	15
<b>OPERATING AND DRIVING INSTRUCTIONS.....</b>	<b>16</b>
UNFOLDING/FOLDING .....	16
TRAVEL SPEED .....	17
TIRE PRESSURE .....	17
<b>MAINTENANCE.....</b>	<b>18</b>
LUBRICATION .....	18
DISMOUNTING/MOUNTING OF WHEELS .....	19
ADJUSTMENT AND LUBRICATION OF WHEEL BEARINGS.....	19
HYDRAULIC SYSTEM .....	19
WEARING PARTS .....	19
<b>REPLACEMENTS AND REPAIRS .....</b>	<b>20</b>
HYDRAULIC SYSTEM .....	20
REPLACING WHEEL BEARINGS .....	22
REPLACING WEARING PARTS .....	23
<b>SCRAPPING .....</b>	<b>24</b>
<b>SPARE PARTS .....</b>	<b>25</b>

## Safety



The safety alert symbol is used throughout this manual to identify important safety warning messages concerning your safety, the safety of other users or the functional safety of the implement. Observe all safety instructions and make them readily accessible to all users of the equipment.

### General

- The operator must be thoroughly familiar with all safety precautions and operations of this equipment prior to using.
- The safety signs on the CULTIMAX contain important instructions concerning your safety, the safety of those around you, and the correct operation of the machinery.
- Never allow anyone to ride on the implement during operation or transport.
- Never allow bystanders within the operating radius of the CULTIMAX, when the implement is in operation. Operate the CULTIMAX only while seated in the driver`s seat of the tractor.
- Before performing any adjustments, maintenance or repairs on the machinery, always unfold the CULTIMAX and lower the implement to the ground or secure in transport position, set the tractor brakes, turn off the engine and remove the ignition key in order to avoid unintentional ignition.
- Remember to secure the top link and the lift arms where applicable with lynch pins.
- Operate the tractor and CULTIMAX only while seated in the driver`s seat.
- Always drive according to conditions.
- Do not use the CULTIMAX unless all safety signs are installed. Replace defective safety signs immediately.

### Hydraulic System

- Never allow bystanders within the operating radius of the CULTIMAX when the hydraulic system is activated, to avoid the danger of an individual being crushed or pinched between the equipment.
- Before performing maintenance or repairs on the hydraulic system, lower the implement to the ground, relieve pressure in the system, turn off the engine and remove the ignition key.

- Clean the hydraulic fittings thoroughly before connection. Ensure that the pressure is relieved in the hydraulic system before connecting the hydraulic hoses to the tractor`s hydraulic services.
- After making repairs to the hydraulic system, thoroughly bleed air out of the system.
- Regularly check hydraulic hoses for defects such as cracks, bends, chafing or leaks. Defect hoses are to be replaced immediately.
- Avoid spilling oil on the ground. In case of spills, collect the oil and dispose of it properly.
- In case skin should come in contact with hydraulic oil or grease or in case clothing should become stained with oil, remove the stained clothes immediately and wash the affected skin areas thoroughly. Oil and grease are harmful to the skin.
- Escaping hydraulic oil under high pressure can penetrate the skin and cause severe injury. If an accident occurs, see a doctor immediately.

## Hitching

- An individual is in danger of being crushed during the hitching process. Never place yourself or anyone else between the tractor and the CULTIMAX, or between parts that must be attached or connected.

## Maintenance and Repairs

- Before servicing or making adjustments to the machine, securely block or unfold the machine, engage the tractor and machine brakes, stop the engine and remove the keys.
- Tighten all nuts, bolts hydraulic fittings or any other fastened assemblies after a few hours` use. Check often to make sure that they remain thoroughly tightened. Inspect all pins, screws and bolts for wear or damage and make sure that all are securely in place to avoid any possible damage or breakdown of the machine.
- Dispose of oil, grease and filters according to applicable environmental regulations.

## Transport

- All safety and warning signs and devices required by law must be displayed, mounted and tested for public road use. The driver is responsible for the correct use of lights and markings in compliance with the present Traffic Act and Highway Code of the local traffic legislation.

- It is the responsibility of the driver to consult with local traffic authorities in order to ensure that the size, weight and load of the machinery may be transported on public roads.
- When towing the implement, the total weight of the tractor and the maximum allowed axle load must not be exceeded. The weight on the front axle must not be less than 20 percent of the total mass of the tractor. If it is less than 20 percent, extra weight must be added to the front of the tractor.

### **Correct Use**

- Correct use of the CULTIMAX includes adherence to the instructions of the manufacturer concerning operation, maintenance and repair, as well as the use of genuine factory replacement parts.
- Do not allow anyone to operate, maintain or repair the CULTIMAX unless they are familiar with the implement and they are thoroughly aware of the possible hazards.
- The manufacturer does not accept any liability for injury or warranty if the equipment has been altered in any way without prior authorization from the manufacturer or if the injury is a result of incorrect use of the implement. The user accepts complete responsibility in these cases.
- Never load extra weight onto the CULTIMAX.

## Technical Data

CULTIMAX			
Model/Working width (cm)	650	800	900
HP (recommended)	140-200	170-250	220-300
Gross weight kg:	3600	3940	4300
Wheels	300/65-12	300/65-12	300/65-12
Tines (pcs.)	81	100	113

### Delivery

For export the machine may be partly dismantled.

If the CULTIMAX needs to be lifted, lift with straps around the middle section, raising the machine so that it hangs in balance.



## How to Use This Manual

If the order of points described under the main subject areas of the manual seems confusing or illogical, refer to the Table of Contents where all subject headings can be found.

The main points of the operator`s manual are placed into four main categories:

- Safety
- Set-up and Operation
- Maintenance
- Repairs

The following safety alert symbols are used throughout this manual to indicate:



Points that are extremely important for the function and life of the machinery.



Points that involve safety.

## Application

CULTIMAX is a towed seed-bed harrow with 7 rows of tines and with three working parts that are engaged by use of the tractor drawbar.

With 8 bogie suspended wheels CULTIMAX is designed for stable operation in the field which results in a very consistent working depth in the soil.

Fig. 1



CULTIMAX is lifted with a heavy-duty crackerboard at the front which is used for levelling the surface and crushing clods. The working depth of the crackerboard is hydraulically adjustable.

As the second operating part, seven rows of tines are working the field. The spacing between the tines is 8 cm. The seven row harrow construction ensures a good and steady passage of material.

At the rear the comb levels the earth and leaves the field with a porous and even surface. In this way evaporation from the field is kept to a minimum.

# Hitching and Unhitching

## Hitching



1. Hitch CULTIMAX on the fixed draw-bar of the tractor (A).

Remember to secure with lynch pins.

2. The support leg is raised.
3. Attach the hydraulic hoses and open the ball valve to ensure flow to the wheel chassis.

Fig. 2



### Hydraulic System

Three double acting connections are necessary for hitching the CULTIMAX.

Hose markings

Function	Colour
Wheel Chassis (ball valve)	White
Folding and unfolding of side-sections	Red
Crackerboard	Green



Check the hydraulic hoses for kinks or pinches.



When towing the implement close the ball valve for the wheel chassis.



Align the main frame to horizontal. See the section on Adjustments and Settings.

## Unhitching

CULTIMAX can be unhitched folded or unfolded.

Close the ball valve for the wheel chassis.

Remember to relieve the pressure in the hydraulic system before disconnecting the hoses.

Fig. 3



Before unhitching check that the side-sections are engaged with the safety hooks.

Position the CULTIMAX on solid, even ground. Lower the support leg and unhitch CULTIMAX.

## Adjustments and Settings

The CULTIMAX is preset in the factory, but it will always be necessary to make some fine adjustments before use. Numerous adjustment possibilities make your CULTIMAX more versatile and allow you to obtain optimum performance from the implement.

### Basic Adjustment Position

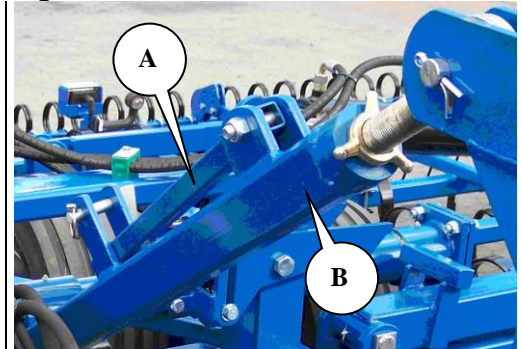


To obtain the optimum result it is very important that the main frame is horizontal during field operation.

Release the handle (A) and adjust with the spindle (B) until the main frame is horizontal, in lowered position.

Remember to tighten the wing nut in the opposite direction.

Fig. 4

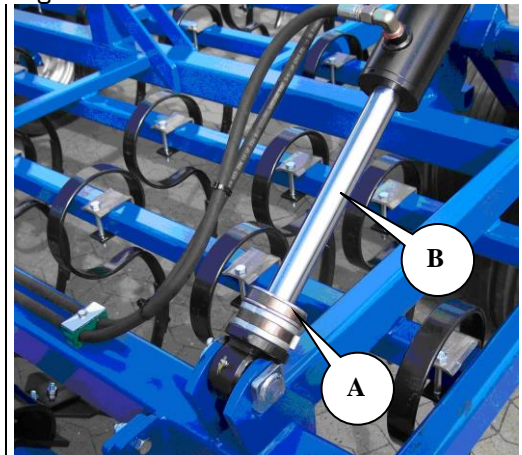


### Depth of Working

The working depth is controlled by the distance pieces (A), which are attached to the plunger shaft of the wheel cylinders.

Lift the harrow to mount and dismount the distance pieces (hydraulic connections for wheel cylinders) in order for the distance pieces to disengage.

Fig. 5



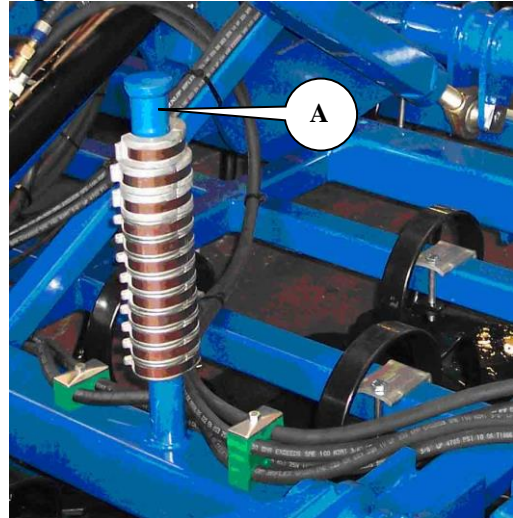
When changing the working depth it may be necessary to readjust the spindle (B) fig. 4, to make sure the main frame is horizontal.



The precautionary measures in the Safety section should be followed when mounting and dismounting the distance pieces.

When not in use place the distance pieces on the retainer (A).

Fig. 6

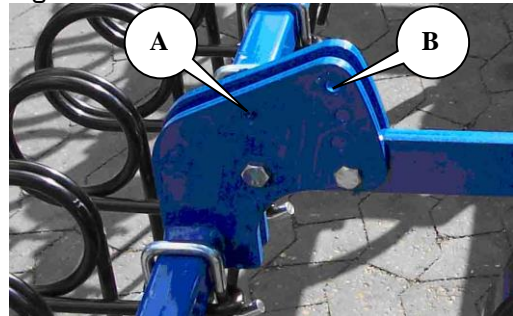


### Adjustment of Rear Harrow

Depending on the working depth and soil conditions the rear harrow should be adjusted.

The rear harrow can be adjusted vertically in the holes (A). In addition the rear harrow can be tilted in the holes (B), so it provides a more or less aggressive processing of the soil.

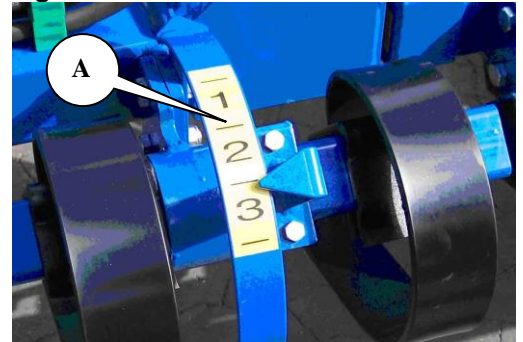
Fig. 8



## Adjustment of Crackerboard

The working part up front, the crackerboard, is completely hydraulically adjustable from the tractor. The depth is indicated on the indicating device (A).

Fig. 9



The crackerboard is not intended to function as a dozerblade since it does not serve any purpose to inadvertently trail a large earth bank. This only causes increased fuel consumption and wear on the tractor and machine.

## Operating and Driving Instructions

Proper operation is essential for optimum performance of your CULTIMAX. Proper operation concerns both the carrying out of tillage operations in the field, as well, as the following of safety precautions.

Best results will be achieved, when the last pull is driven slightly diagonally to the following sowing direction.



When changing the working depth, a readjustment of the main frame may be necessary for it to be level.

### Unfolding/Folding



CULTIMAX must be standing on an even surface when folding and unfolding. This is important for safety measures but also for the functioning ability of the automatic transport locks.

#### Unfolding

When activating the hydraulic handle (red) for folding and unfolding, the automatic transport locks are disengaged and the side sections unfold.

When the side sections are completely unfolded the hydraulic handle (red) is set in floating position.

Fig. 10



For optimum field processing the hydraulic handle for folding and unfolding must be set to floating position during field operation to enable CULTIMAX to follow the broken surface of the field.

#### Folding

When folded check that the automatic transport locks (A) are engaged with the side sections.

Fig. 11







When driving on public roads the ball valve to the wheel chassis is closed. In this way the ball valve functions as a lock and as a safeguard against unintentional operation.

### Travel Speed

To obtain optimum tillage a working speed of 6-7 mph (8-12 kph) is recommended. **However, one should always drive according to conditions.**

Please note that wear is heavily increased when speed is increased. Points and wearing parts may be lost or damaged, when driving too fast under unfavourable conditions.



When driving at high speed, especially under dry conditions, wear on the wearing parts will increase considerably.

### Tire pressure

The tables below show the load, speed and tire pressure in relation to each other at the different tire combinations.

#### 300/55-14,5 Starco

300/55-14.5 STARCO SG Flotation [56-802] FREEWHEEL 132AB																			
1.0 bar	1.2 bar	1.4 bar	1.6 bar	1.8 bar	2.0 bar	2.2 bar	2.4 bar	2.6 bar	2.8 bar	3.0 bar	3.2 bar	3.4 bar	3.6 bar	3.8 bar	4.0 bar	4.2 bar	4.4 bar	SPEED	
1175	1310	1435	1550	1660	1755	1865	1955	2060	2150	2240	2325	2410	2490	2570	2650	2725	2800	10km/h	
1120	1245	1360	1470	1575	1680	1775	1855	1955	2040	2125	2210	2290	2365	2440	2515	2590	2660	15km/h	
1060	1180	1290	1395	1495	1590	1680	1770	1855	1935	2015	2090	2170	2240	2315	2385	2455	2520	20km/h	
1000	1115	1220	1315	1410	1500	1585	1670	1750	1830	1905	1975	2045	2115	2185	2250	2315	2380	25km/h	
940	1050	1145	1240	1330	1415	1495	1570	1645	1720	1790	1860	1925	1990	2055	2120	2180	2240	30km/h	
885	985	1075	1165	1245	1325	1400	1475	1545	1615	1680	1745	1805	1870	1930	1985	2045	2100	35km/h	
840	935	1025	1105	1185	1250	1325	1405	1470	1535	1600	1660	1720	1780	1835	1890	1945	2000	40km/h	

#### 520/50-17 STARCO

#### Load/Speed/Pressure Schedule

520/50-17 159B TL STARCO SG Flotation (FREE WHEEL)												
	1.0bar	1.3bar	1.6bar	1.9bar	2.2bar	2.5bar	2.8bar	3.1bar	3.3bar	3.5bar	3.8bar	4.0bar
10km/h	2895	3375	3810	4215	4595	4950	5290	5615	5825	6030	6325	6520
15km/h	2570	2995	3380	3735	4070	4385	4685	4975	5160	5340	5605	5775
20km/h	2430	2835	3200	3540	3855	4155	4440	4715	4890	5060	5310	5470
25km/h	2315	2700	3050	3370	3670	3955	4225	4485	4650	4815	5050	5205
30km/h	2175	2535	2860	3165	3450	3720	3975	4220	4375	4530	4755	4900
35km/h	2120	2470	2790	3085	3360	3620	3870	4105	4260	4410	4630	4770
40km/h	2065	2405	2715	3000	3270	3525	3765	3995	4145	4290	4500	4640
45km/h	2005	2335	2635	2915	3175	3420	3655	3880	4025	4165	4370	4505
50km/h	1945	2265	2555	2825	3080	3320	3550	3770	3910	4045	4245	4375

## Maintenance

Proper maintenance ensures a long life and optimum performance of your CULTIMAX. To facilitate maintenance, grease nipples have been mounted on those locations where wear on the equipment is the greatest.



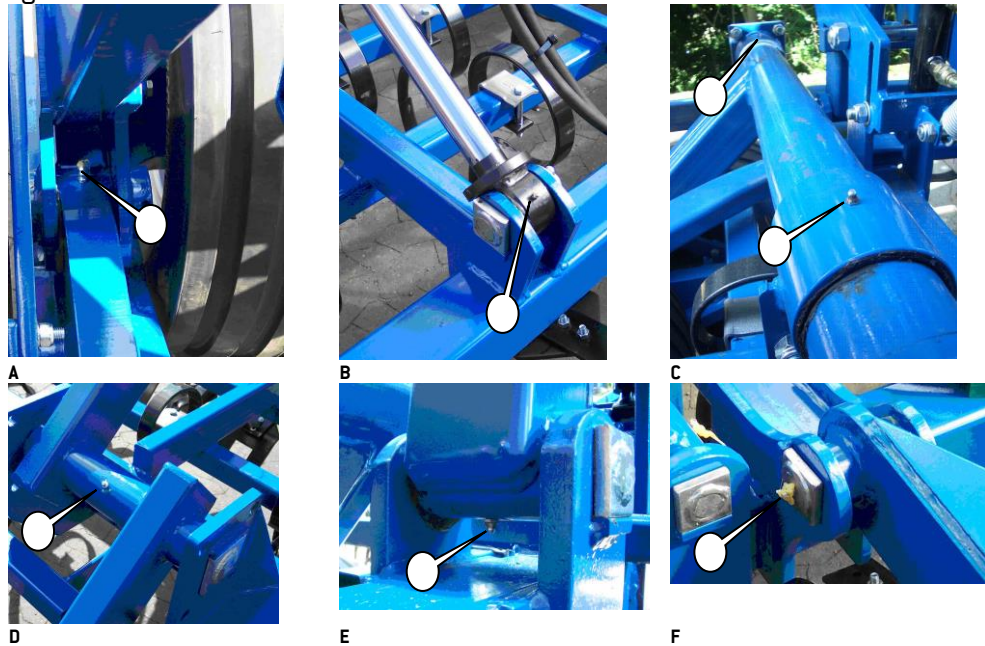
Tighten all nuts, bolts, hydraulic fittings or any other fastened assemblies after the first workday. Inspect all pins and bolts for wear or damage, and make sure that all are securely in place to avoid any possible damage or breakdown of the machine. Check for leaks in the hydraulic system.



Before servicing the machine, always lower the implement, engage the tractor brakes, stop the engine and remove the ignition key to avoid unintentional operation and personal injury.

### Lubrication

Fig. 12



Lubrication points	Lubrication interval (hours)	Nipples (pcs)	Photo
Bogie	12	4	A
Cylinder for wheel chassis	12	6	B
Wheel chassis suspension on main frame	12	4	C
Wheel chassis suspension on side section	12	2	D
Side section, pivoting	50	4	E
Drawbar, pivoting	20	2	F



Lubricate all lubrication points at least once a year.

### **Dismounting/Mounting of Wheels**

To dismount the wheels unfold and lower the CULTIMAX until the tines are resting on the surface but still supported by the wheels. You are now able to loosen the wheel nuts without the wheel rotating. Now lift the wheels completely from the surface and dismount nuts and wheels.

Tighten the nuts firmly after the wheels are mounted. Lower the wheels so they rest on the supporting surface and tighten the nuts with 200 Nm.



It is important that the wheel nuts and the surface of the rim are clean, if not the wheel nuts can loosen.

### **Adjustment and Lubrication of Wheel Bearings**

1. Dismount the wheel.
2. Remove the hub cap.
3. Remove the split pin.
4. Tighten the castle nut 1/6 turn to ensure the hole fits the shaft. Turn the hub housing so that it revolves easily without play in the hub housing when it is pulled from side to side. In case of continued play continue the process.
5. Reinsert the split pin.
6. Fill the hub cap with  $\frac{3}{4}$  grease and mount.

### **Hydraulic System**



Inspect all hydraulic hoses for chafing or leaks. Check hoses for pinching.



To avoid rust, any protection piston rods should be coated with oil or grease, if the CULTIMAX is to be parked for a long period of time. Remember to remove the oil or grease prior to operation.

### **Wearing Parts**

The tines wearing parts are reversible, and should be turned before the tine start to wear down.

## Replacements and Repairs



Safety is important in connection with **all** repair work on the CULTIMAX. The following safety precautions and the precautions listed in the beginning of this manual must be observed.



Before performing any adjustments, maintenance or repairs on the machinery, always unfold the CULTIMAX, and lower the implement to the ground or secure in transport position, engage the tractor brakes, turn off the engine and remove the ignition key, to avoid unintentional operation.



Pay careful attention to safety, when performing repair work on the hydraulic system. Remove hydraulic pressure, prior to doing any maintenance.



After replacing a cylinder, always fill up the cylinder with oil, before putting load on. It is recommended, that the cylinder is first mounted in the solid part on the frame. Then the hydraulic hoses is mounted and the cylinder is filled up with oil, after which the other part is mounted.



After making repairs to the hydraulic system, always bleed air out of the system before operating the CULTIMAX, to avoid any possible personal injury, or mechanical breakdown or damage.

### Hydraulic System

#### Changing Wing Fold Cylinders



When performing repairs, make sure the CULTIMAX is unfolded and resting on the ground.

1. Relieve the pressure in the cylinders. Disconnect the hoses.
2. Remove the split pins and the other pins. The cylinders are now free.
3. Install new and repaired cylinders. Remember to make sure, that the pin is engaged in the stop and that the pins are secured with split pins.
4. Connect the hoses. After connection, make sure that there is no danger of the hoses becoming ripped off or pinched.

Fig. 13





After mounting the cylinder, activate the wing fold cylinders until the piston rods begin to move in the cylinders. Next, activate the cylinders in the opposite direction until the cylinder is back in the starting position. Move the cylinders several times in this way.



Never allow bystanders within the operating radius of the implement.



### Replacing Cylinder for Wheel Chassis

Repair the CULTIMAX unfolded and resting on the ground.

5. Relieve the pressure in the cylinders. Disconnect the hoses.
6. Remove the split pins and the other pins. The cylinders are now free.
7. Install new and repaired cylinders. Remember to make sure, that the pin is engaged in the stop and that the pins are secured with split pins.
8. Connect the hoses. After connection, make sure that there is no danger of the hoses becoming ripped off or pinched.

Fig. 14



When mounted activate the cylinders until the piston rods begin to move in the cylinders. Then activate the cylinders in the opposite direction until they are back in starting position. Move the cylinders a few times in this way.



### Replacing Cylinder for Crackerboard

Repair the CULTIMAX unfolded and resting on the ground.

9. Relieve the pressure in the cylinders. Disconnect the hoses.
10. Remove the split pins and the other pins. The cylinders are now free.
11. Install new and repaired cylinders. Remember to make sure, that the pin is engaged in the stop and that the pins are secured with split pins.
12. Connect the hoses. After connection, make sure that there is no danger of the hoses becoming ripped off or pinched.

Fig. 15



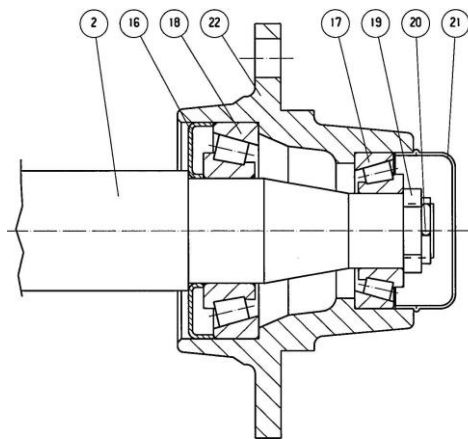
When mounted activate the cylinders a few times to outer-positions.

## Replacing Wheel Bearings

1. Remove the hub cap pos. 21.
2. Remove the split pin pos. 20.
3. Remove the castle nut pos. 19.
4. Pull off the hub housing pos. 22.
5. Remove the bearings pos 17+18.
6. Remove the seal ring pos. 16.

Fig. 16

FL55-6



### Mounting

1. Mount the outer collar from the bearings pos. 17+18 in hub housing pos. 22.
2. Mount the seal ring pos. 16.
3. Mount the inner collar from the bearing pos. 18 on the shaft pos. 2 and mount the shaft in the hub housing.
4. Mount the inner collar from the bearing pos. 17 on the shaft pos. 2
5. Mount the castle nut on the shaft pos. 2 while turning the hub cap pos 22. Tighten the castle nut until the hub housing turns slowly. Then loosen the castle nut a quarter of a round, or until the hub housing turns easily pos 22.

6. Attach the split pin pos. 20.
7. Fill up the hub cap pos. 21 with  $\frac{3}{4}$  ball bearing grease and mount the hub cap.

### Replacing Wearing Parts



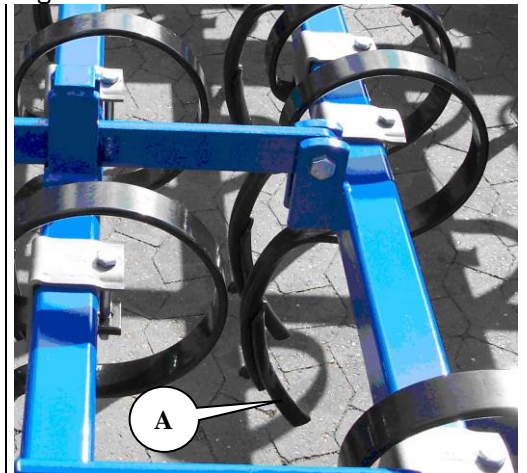
Unfold the CULTIMAX and position securely to avoid the danger of being trapped underneath, and to avoid the machine falling. Distance pieces can be mounted on the wheel cylinders so the wearing parts do not touch the ground.

The wearing parts (A) are reversible and are bolted-on with a bolt. Turn or replace the wearing parts before wear occurs on the tine.

When turning the wearing parts reuse the old bolts, but when points are replaced new bolts should be used.

If dirt or the like is present between tine and wearing part, it should be removed.

Fig. 17

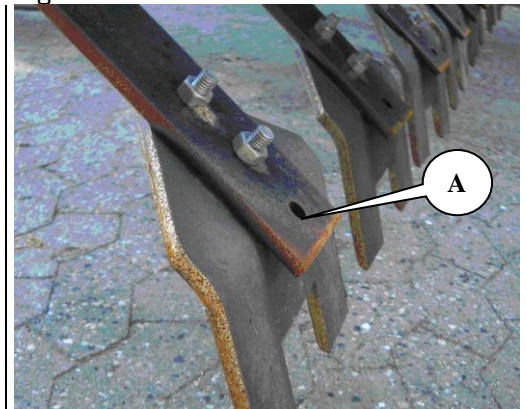


### Crackerboard

The wearing parts on the disc tines should be changed when they are worn down, to the extent that the work result is no longer satisfactory, or before the tine start to wear down.

The wearing part can be moved to hole (A), if needed.

Fig. 18



## Scrapping



Relieve the pressure in the hydraulic system.



When dismantling/mounting components, always pay attention to the weight of the part, that you are about to handle. It is **important** to support or secure the part, so that it cannot fall.

Dismount all hydraulic hoses and cylinders and empty the oil. To avoid pollution of the ground and the surrounding area, collect the oil. Dispose of the oil and the hoses properly.

All iron used in the machine is recyclable.



## Spare Parts