



Farmer Disc



GB
300, 350, 400 cm

Farmer Disc

Type 300, 350, 400 cm

Congratulations on the purchase of your new Farmer Disc. 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**.

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Your Farmer Disc:

Type no.: _____ Serial no.: _____
Month of manufacture: _____ Net weight (kg): _____
re: _____

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 Farmer Disc components and to facilitate ordering.

EU DECLARATION OF CONFORMITY

Dal-Bo 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 98/37/EC, which replaces Council Directive 89/392/EØF 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.

DAL-BO A/S

Date: _____

Director Kaj Pedersen

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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 Farmer Disc 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 Farmer Disc, when the implement is in operation. Operate the Farmer Disc only while seated in the driver's seat of the tractor.
- Before performing any adjustments, maintenance or repairs on the machinery, always unfold the Farmer Disc 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 support legs and the lift arms where applicable with lynch pins.
- Operate the tractor and Farmer Disc only while seated in the driver's seat.
- Always drive according to conditions.
- Do not use the Farmer Disc unless all safety signs are installed. Replace defective safety signs immediately.

Hydraulic System

- Never allow bystanders within the operating radius of the Farmer Disc 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 hydraulic services of the tractor
- 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 Farmer Disc, 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 Farmer Disc 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 Farmer Disc 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 Farmer Disc.

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 five 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.

Delivery

For export the machine may be partly dismantled.

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

Application

The Farmer Disc is an entirely new generation of very compact and simple mounted disc harrows.

The Farmer Disc is particularly suitable for working in the topsoil where the majority of plant transformation takes place. With only one drive the Farmer Disc is able to provide a complete cutting of the field and a homogeneous mixing of crop residues and micro-organisms in the soil. To keep the soil moist and thereby optimise the microclimate for the organisms, the working of the soil is completed by a packing.

Fig. 1



Hitching and Unhitching

Hitching

Attach the lift arms first and then the top link. Adjust the top link so that the frame is horizontal.

Fig. 2



- Remember to secure with lynch pins

Hydraulic System

Farmer Disc requires 1 double acting hydraulic output.
(only applies when transport chassis is mounted (extra equipment))

Table 1. Hose markings

Cylinder names	Colour	Output	Function
Wheel chassis	Yellow	Double acting	Lifts and lowers Farmer Disc



- Check the hydraulic hoses for kinks or pinches.

Unhitching

Position the Farmer Disc on solid, even ground.
Unhitch the top link and lift arms.



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

Adjustments and Settings

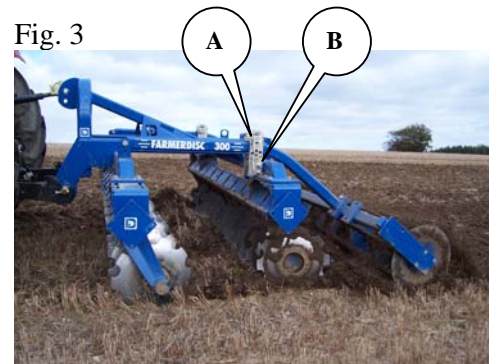
The Farmer Disc is preset in the factory, but it will always be necessary to make some fine adjustments before use.

Numerous adjustment possibilities make your Farmer Disc more versatile and allow you to obtain optimum performance from the implement.

Depth

The operating depth is controlled by the rear T-ring roller or the Tube-packer.

The working depth of the discs is adjusted with pins in the hole plate. The upper pin (A) determines the working depth. The lower pin (B) is a supporting pin, which carries the rear roller when the Farmer Disc is lifted.



When changing the working depth it may be necessary to readjust the top link as the frame should always be level during operation.

Deeper tillage

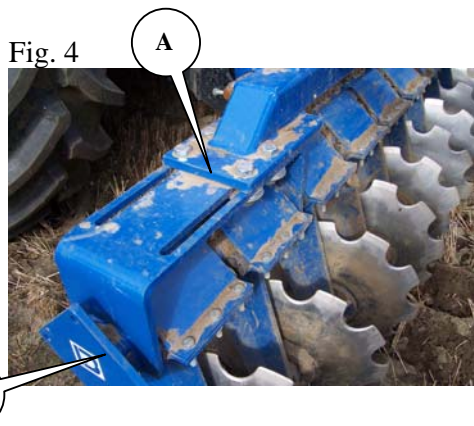
Deeper tillage can be obtained by lifting the implement from the ground. In that way the pin (A) can be removed from the hole plate and be placed in a higher hole. Lower the Farmer Disc and similarly move up the lower pin (B), so that the support is as close to the lift arm as possible.

When the Farmer Disc has been adjusted to deeper tillage it may be necessary to drive the discs in the soil (or support the rear roller) in order to add pressure to the rear roller. After this the lower pin (B) can easily be fitted in to the hole closest to the lift arm.

Disc setting

The discs can be mechanically adjusted sideways. The adjustment applies to the most optimal cutting.

The distance is measured from the outermost edge of the frame (A) to the outermost edge of the disc bar (B). Always make the measurement on the left side of the machine. (when standing behind the machine and looking ahead in the direction of travel.)



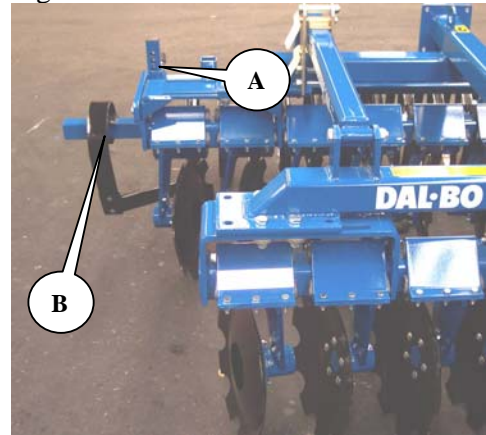
Basic settings of discs

Type	Front (mm)	Rear (mm)
Farmer Disc 300, 350, 400cm	280	40

Side Reducer

On the right side of the Farmer Disc an arm is mounted to reduce soil droppings from the front disc. Adjust the arm vertically with the pin (A) according to the working depth of the Farmer Disc. The arm can also be moved horizontally by loosening the bolt fitting (B).

Fig. 5



Operating and Driving Instructions

Proper operation is essential for optimum performance of your Farmer Disc. Proper operation concerns both the carrying out of tillage operations in the field, as well, as the following of safety precautions. Make sure that you have a thorough understanding of all safety precautions.

Position the Farmer Disc so it is supported by the rear roller. Lower the lift of the tractor completely when driving in the field, so the lift is floating and is moving in accordance with the terrain.

Travel Speed

The recommended driving speed is 8-12 km/h. However, one should always drive according to conditions.

Please note that wear is heavily increased when speed is increased, especially under dry traffic conditions. Points and wearing parts (e.g. plates and rear roller) may be lost or damaged, when driving too fast under unfavourable conditions.

Effect

The need for effect is depending on soil type, terrain and speed.

Table 2, Guiding need for effect in HP

Working width	300 cm	350 cm	400 cm
Effect hp	90 - 110	125 - 135	140 - 170

Fault Detection

Fault	Cause	Repair
The soil is thrown too far to the side causing an earth bank.	<ul style="list-style-type: none"> The side reducer is not operating correctly. 	<ul style="list-style-type: none"> Adjust the side reducer.
	<ul style="list-style-type: none"> Farmer Disc is not level. 	<ul style="list-style-type: none"> Adjust the toplink causing the headframe to be level.
	<ul style="list-style-type: none"> Speeding. 	<ul style="list-style-type: none"> Reduce speed.
	<ul style="list-style-type: none"> Side setting of discs. 	<ul style="list-style-type: none"> Alter the distance.
	<ul style="list-style-type: none"> One drives too close or too far from the last pull. 	<ul style="list-style-type: none"> Drive more accurately up the last pull.
There is a hollow between pulls.	<ul style="list-style-type: none"> The side reducer is not operating correctly. 	<ul style="list-style-type: none"> Adjust the side reducer.
	<ul style="list-style-type: none"> One drives too close or too far from the last pull. 	<ul style="list-style-type: none"> Drive more accurately up the last pull.
	<ul style="list-style-type: none"> The rear row of discs is too aggressive or passive. 	<ul style="list-style-type: none"> Adjust the rear row of disc more or less aggressive.

Maintenance

Proper maintenance ensures a long life for the Farmer Disc, and optimum performance from the implement. To facilitate maintenance, grease fittings have been mounted on those locations, where wear on the equipment is the greatest.



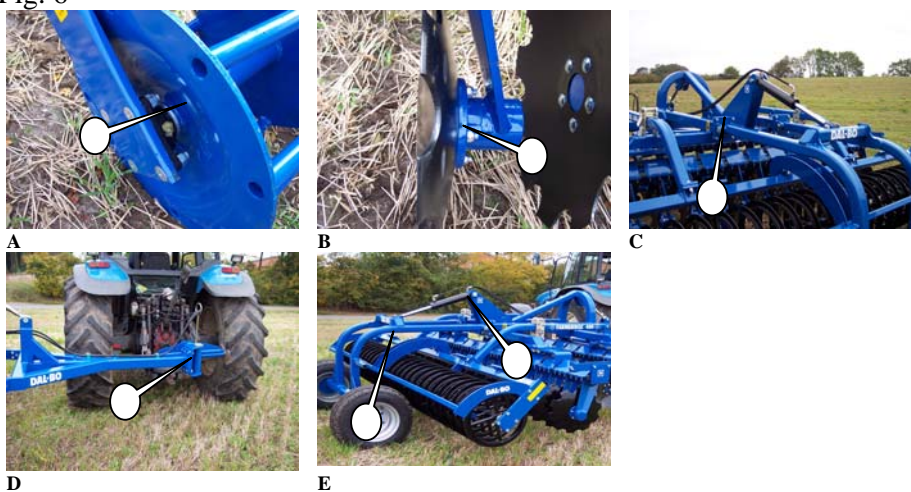
Tighten all nuts, bolts, hydraulic fittings or any other fastened assemblies after the first workday. Inspect all pins and bolts for wear or damage, and make sure, that all are securely in place, to avoid any possible damage or breakdown of the machine. Check for leaks in the hydraulic system.



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

Lubrication

Fig. 6



Lubrication Points	Number of Nipples	Lubrication interval (hours)	Photo
Bearings for Tube-packer or T-rings	2/3	8	A
Nub	22/26/30	8	B
Wheel chassis	2	8	C
Pull	2	8	D
Cylinder for wheel chassis	2	8	E



Lubricate all lubrication points at least once a year.

Hydraulic System



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



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

Disc Hubs

Tighten the disc hubs once a year or as needed.

1. Unscrew the nub cap.
2. Release the castle nut in the nub housing. Only pound outwards by the milled tracks.
3. Tighten the nut $\frac{1}{4}$ turn or until there is no play in the hub.
4. Reengage the castle nut in the milled tracks.

Fig. 7



Replacements and Repairs



Safety is important in connection with **all** repair work on the Farmer Disc. 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 Farmer Disc, 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 making repairs to the hydraulic system, always bleed air out of the system before operating the Farmer Disc, to avoid any possible personal injury, or mechanical breakdown or damage.

Hydraulic System

Replacing cylinder for wheel chassis

Securely block or unfold the Farmer Disc to avoid the danger of an individual being crushed or pinched between the equipment and release the pressure from the hydraulic system.

- 1 Disconnect the hoses.
- 2 Remove the split cutter pins and the other pins.
- 3 The cylinder is now free and can be replaced. Mount in reverse order.

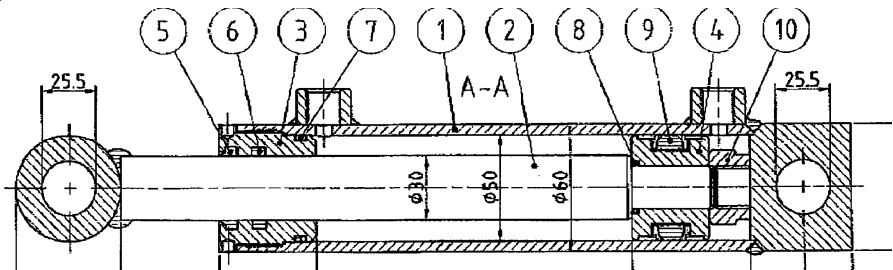
Fig. 8



After mounting the cylinders ventilate the hydraulic system and check for leaks.

Replacing seals for wheel chassis

Fig. 9


Cylinder 80/40-350

- 1 Empty the cylinder of oil by moving the piston gently back and forth.
- 2 Move the piston to the middle position, unscrew the end cap (pos. 3) of the cylinder tube (pos. 1). Special tools are required for removing the end cap. If the end cap is very tight, try heating up the front part of the socket. When the end cap has been removed from the cylinder tube, pull out the piston towards the end cap whereupon the piston rod can be pulled from the cylinder tube (pos. 1).
- 3 Remove the bolt (pos. 10) that fastens the piston (pos. 4).
- 4 Pull the piston (pos. 4) from the piston rod (pos. 2).
- 5 Pull the end cap (pos. 3) from the piston rod (pos. 2).
- 6 Remove the seals in the end cap (pos. 5+6+7+8+9) and the piston.
- 7 Clean all parts and check for chips, burrs etc. Check for corrosion around the scraper ring (pos. 5) in the end cap. If corrosion is found it should be removed.

Mounting

- 1 Mount new seals (pos. 5+6+7+8+9) in the end cap and the piston.
- 2 Lubricate the thread on the end cap (pos. 3) and the cylinder tube (pos. 1) with fat or oil.
- 3 Mount the end cap (pos. 3) on the piston rod.
- 4 Mount the piston (pos. 4) and remount the bolt. **Secure it with Loctite.** Please take care that the thread is completely clean and free of oil and other impurities. **Oil should not be used until 12 hours after using Loctite.**
- 5 Lubricate the outermost seal on the piston touching the cylinder tube and the inside of the cylinder tube with oil and push the piston rod into middle position.
- 6 Mount the end cap on the cylinder tube and tighten..

Replacing shaft, bearings and T-rings

Lower the Farmer Disc to the ground. Securely support and block the roller if necessary.



Watch out for unintentional rolling movement, when bolts in the bearings have been removed.

- 1 Remove bolts in the bearings.
- 2 Roll the shaft with the T-rings away from the frame.
- 3 Loosen the set screws in the bearings and slide the bearings off the shaft.
- 4 Remove the T-rings and square tubes off the shaft.
- 5 Mount in reverse order.
- 6 Apply Loctite to the set screws in the bearings.

Fig. 10



When mounting the shaft with bearings, make sure to position the bearings with the grease fittings facing towards the back, enabling easier access for lubrication and protecting them from stones.

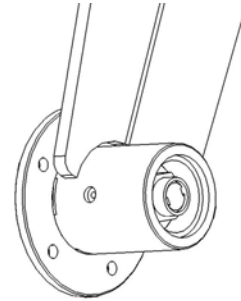
Replacing bearings in disc hubs



Securely place the Farmer Disc on blocks so the disc arm does not touch the ground.

Fig. 11

- 1 Remove the disc.
- 2 Unscrew the nub cap.
- 3 Remove the nut.
- 4 Unfold the shaft.
- 5 Remove the outermost bearing.
- 6 Remove the innermost bearing.
- 7 Remove the bearings on the shaft.
- 8 Remove the seal.



Clean the shaft and nub housing.

- 1 Mount in reverse order.
- 2 **Remember** to place the seal so the grease can come out.
- 3 Mount the castle nut on the shaft while turning the hub cap. Tighten the nut until the hub housing turns slowly. Then loosen the castle nut 10degrees and lock the nut by knocking the edge into the milled tracks.
- 4 Fill the housing with grease until grease comes out at the nub and mount the disc.

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 on 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