



FrontGrubber



**Front-mounted grubber
EN
300/400 cm**

FrontGrubber

Type 300/400 cm

Congratulations on the purchase of your new front grubber. For **safety reasons** and to achieve optimum service from the product, please read the User Guide **before use**.

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This product has:

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

If contacting the manufacturer regarding spare parts or service, please state type and serial number. A spare parts list is included at the back of this manual.

EU DECLARATION OF COMPLIANCE

DAL-BO A/S
DK-7183 Randbøl

declares herewith that the above machine is manufactured in accordance with the provisions of directive 98/37/EC, which replaced directive 89/392/ECC and change directives 91/368/ECC, 93/44/ECC and 93/68/ECC on harmonisation of member state legislation concerning health and safety requirements related to the construction and manufacture of machines.

CE

This machine corresponds to the safety requirements in the European Safety Guidelines.

DAL-BO A/S

Date: _____

Managing Director Kaj Pedersen

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Safety



This symbol appears in the instruction manual each time there is a safety warning concerning your safety, the safety of others or functionality of the machine. All safety instructions must be observed and made available to all users of the machine.

General

- Ensure you are familiar with all aspects of the machine before use
- There are safety stickers on the machine containing important instructions for the safety of yourself and others, and correct use of the machine.
- Do not carry passengers during operation or transport.
- Ensure there are no personnel within the machine's working radius before operating. Operate machine only from inside the tractor.
- Before leaving the tractor or making adjustments, performing maintenance or repairs on the grubber, fully lower to ground, or maintain in transport position, apply tractor handbrake, switch engine off and remove ignition key to secure the machine against accidental operation.
- Remember to secure the lift arm with a split pin.
- Never leave driver's seat whilst machine is moving.
- Always adapt speed to conditions.
- Do not use machine unless all safety devices are in place. Defective safety devices must be replaced immediately.

Hydraulics

- Ensure there are no personnel within the machine's working radius when activating the hydraulic system to avoid danger of crushing.
- Lower machine fully for any repair work on the hydraulic system. Relieve hydraulic pressure, switch engine off and remove ignition key.
- Clean hydraulic connections thoroughly before reconnecting. When connecting hydraulic hoses to tractor hydraulics, ensure they are not under pressure.
- Bleed the hydraulic system thoroughly after any repairs.
- Check hydraulic hoses regularly for defects such as cracks, splits, crimps, wear or breaks. Defective hoses must be replaced immediately.
- Avoid spilling oil on the ground. If oil is spilt, collect and deliver to a destruction point.
- Clean hands thoroughly after contact with oil and grease. Change oil-stained clothing immediately. Hydraulic oil can be harmful to the skin.
- Hydraulic oil released under high pressure can penetrate the skin and cause severe injury. In the event of injury, seek medical help immediately.

Mounting

- Danger of crushing! Ensure no personnel are between implement and tractor, or between the parts to be connected.

Maintenance and repair

- Ensure machine is adequately supported for all repair and maintenance work. Ensure tractor and machine are properly braked, engine stopped and ignition key removed.
- Tighten all screw connections after a few hours use. Check all screw connections regularly and tighten as required. Check all split pins and bolts to avoid mechanical failure.
- Dispose of oil, grease and filters in accordance with local environmental protection rules.

Road transport

- All safety and warning precautions mandatory by law must be fitted and tested before transporting the machine on public roads. The driver is responsible for correct lighting and warning signs in accordance with traffic regulations.
- Check with local traffic authorities whether transport on public roads is allowed given the machine's dimensions.
- When transporting machine, ensure tractor total weight and axle pressure are not exceeded.

Correct use

- Correct use of the machine includes observing the manufacturer's operating, maintenance and repair instructions, and that original spare parts are always used.
- The grubber may only be used, maintained or repaired by personnel familiar with it and who are aware of the risks that can be involved.
- The manufacturer cannot be held liable for injury or damage arising from modifications made to the machine performed without prior permission from the manufacturer. Neither can the manufacturer be held liable for injury or damage arising from incorrect use. Such liability rests solely with the user.
- Do not add extra weight to the grubber.

Technical data

Front Grubber

Size (cm)	300	400
HP (recommended)	80-100	100-125
Gross weight kg:	1350	1610
Wheels (2 pcs.)	10.0/75 x 15.3	10.0/75 x 15.3
Working width (m)	3	4
Number of teeth	9	13

How to use this manual

The sequence of subject matter in this manual can seem illogical. Please refer to the table of contents for page numbers for individual items.

The manual is divided into 4 main sections:

- Safety
- Operation (*Settings, Running and Operation*)
- Maintenance
- Repairs

The following symbols represent:



Points which are important to functionality and service life.



Points relevant to safety.

Uses

The Front Grubber is a front-mounted universal implement which can be used for a range of field tasks. In combination with e.g. a Maxi Disc on the back of the tractor, two operations can be performed with one pass. Ideal applications are on grass or where there are large quantities of plant residue.

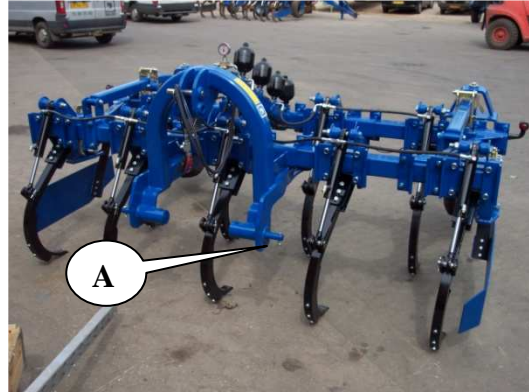
When sowing with various special sowing machines such as a rotary harrow sowing set and towed disc cutting machines, the Front Grubber is particularly effective at breaking up the soil before sowing, and loosening a plough sole down to a depth of 30 cm.

Connecting and disconnecting

Connecting

Fit lift arms first using lift pins (A). Attach chain (supplied) to top mount.

Fig. 1



Remember to secure attachment using split pins and check lift arm hook lock mechanism is engaged.

Lift arm angle

Ensure that tractor lift arms achieve an angle a couple of degrees over- or at least horizontal when implement is lowered to the ground. This will enable the implement to roll over obstructions as the tractor will force it up at an angle and still retain control. Chain on top mount should be loose when implement is fully lowered.

Hydraulics

A single-acting hydraulic outlet is required on front of tractor to adjust the hydraulic stone guard system.

Disconnection

Lower FrontGrubber to ground before disconnecting. Disconnect hydraulic hoses and lift arms. Disconnect light if relevant.



Remember to depressurise hoses before disconnecting them. Ball cock must be closed before disconnection. Failure to do so will cause pressure loss. Machine will drop to ground.

Setting up

The FrontGrubber is supplied with factory settings, but fine adjustment will always be required before use. Numerous adjustment options make the machine more flexible and ensure maximum use.



Basic setting will ensure the Front Grubber will run horizontally. **This basic setting is important to achieve an even field surface and uniform working depth.**

Adjusting depth

Set depth using the drilled plates (A) on wheels and using tractor lift arms. Both sections of frame must be horizontal. A driver-operated electronic depth control mounted on the tractor is recommended. Contact Dalbo for details.

Fig. 2



Adjusting chain

Chain on top mount (A) should be loose when implement is fully lowered. This will ensure uniform depth, control over the machine and optimum weight equalisation on tractor front wheels.

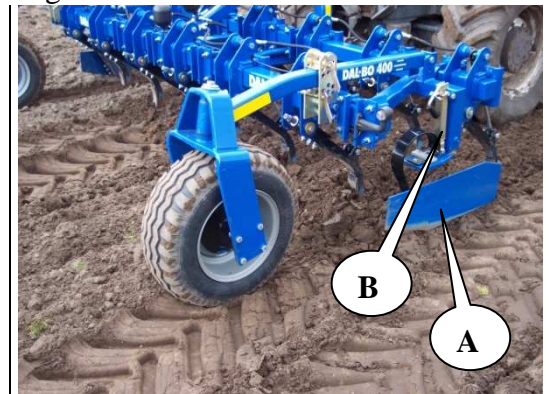
Fig. 3



Adjusting sideboard

To ensure an even surface at the outside of the operating width, the grubber is fitted with a sideboard (A), which can be height-adjusted using a spindle (B).

Fig. 4



Adjusting pressure of hydraulic stone guard

Hydraulic system pressure must be adjusted according to soil type. Very hard soil will require much higher pressure than sandy soils.

A pressure of max. 120 bar is recommended for most conditions. 120 bar. Remember to close ball cock on feeder hose when pressure has been adjusted.

Fig. 5



Operation

Correct operation is vital for optimum use. This applies to working in the field and for safety. Always ensure you are fully familiar with all safety aspects of the machine.

Working depth

The Front Grubber can be set for a very light effect. Depth can be controlled very precisely by the wheels and tractor lift arms. As such, it can be set for very light effect at a depth of only 5 cm approx. Working at this depth will only lightly break up the soil. Never set depth at more than 30 cm. Exceeding this setting can damage the machine.

Ensure grubber works parallel to ground when in operation.

Fig. 6



Operating speed

An operating speed of 4-10 km/h is recommended, but always operate according to conditions.

Increased speed will increase wear, particularly in dry conditions. The harrowing teeth can also be damaged if operating at excessive speeds in unfavourable conditions.

Power

Power requirement will depend on soil type, terrain and speed.

Troubleshooting

Fault	Cause	Remedy
Uneven working depth	<ul style="list-style-type: none"> • Wheels not set evenly 	<ul style="list-style-type: none"> • Adjust wheels
	<ul style="list-style-type: none"> • Front Grubber tips backwards or forwards 	<ul style="list-style-type: none"> • Adjust lift arm height • Adjust wheels
Difficult to control	<ul style="list-style-type: none"> • Top mount chain tight 	<ul style="list-style-type: none"> • Loosen chain
	<ul style="list-style-type: none"> • Working depth too deep 	<ul style="list-style-type: none"> • Raise machine

Maintenance

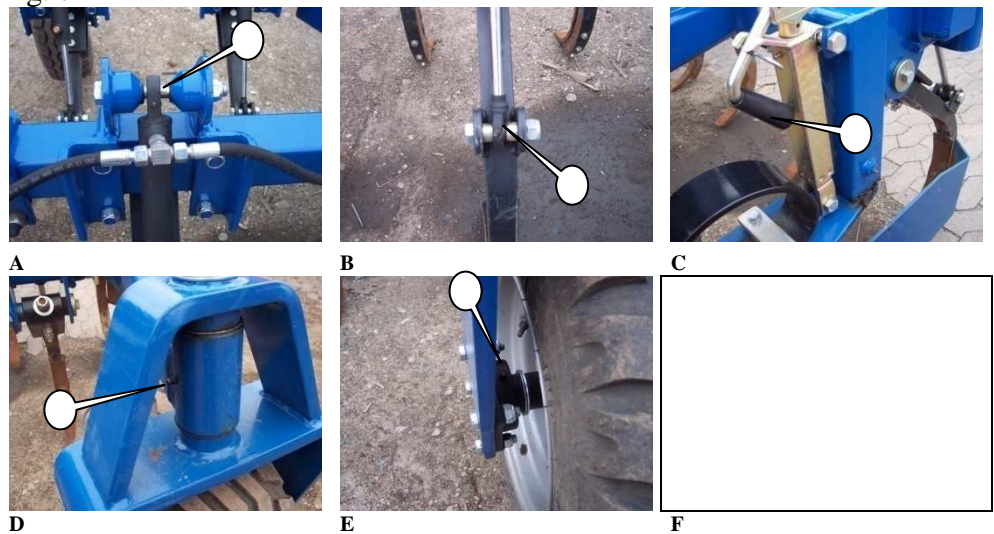
Good maintenance ensures long service life and optimum use. Grease nipples are fitted where wear is heaviest.



Tighten all screw connections after first working day. Check all split pins and bolts to avoid mechanical failure. Check hydraulic system for leaks.

Lubrication

Fig. 7



Lubrication points	Number of nipples	Lubrication intervals, hours	Illustration
Stone guard cylinder, upper	13/9	8	A
Stone guard cylinder, lower	13/9	8	B
Sideboard	6	50	C
Wheel bushing	2	8	D
Wheel bearings	4	50	E



Lubricate all lubrication points at least once annually.

Hydraulics



Check all hydraulic hoses for wear or cracks. Check all hoses for crimping.



Replace defective hydraulic hoses immediately. Broken hoses can cause injury or damage to the implement.



Lubricate exposed rams with oil or pressure-resistant grease to avoid rust forming when storing for long periods. Remember to remove before use.

Replacement and repairs



Safety is vital for **all** repair work. Always observe the following points, plus those under Safety First in the instruction manual.



All maintenance and repair work can only be performed when the machine is lowered to the ground or locked in transport position, tractor is braked, engine stopped and ignition key removed to prevent accidental start.



Particular attention must be paid to safety when repairing hydraulics. Before commencing work, depressurise hydraulic system and support part being worked on.



Always ensure hydraulic system is bled after repairs and before use to prevent mechanical breakdown and injury to person.

Replacing stone guard cylinder

Support main frame securely. Depressurise hydraulic system.

1. Disconnect hydraulic hoses
2. Remove pins. Cylinders will now be free
3. Reverse procedure for assembly

Fig. 8



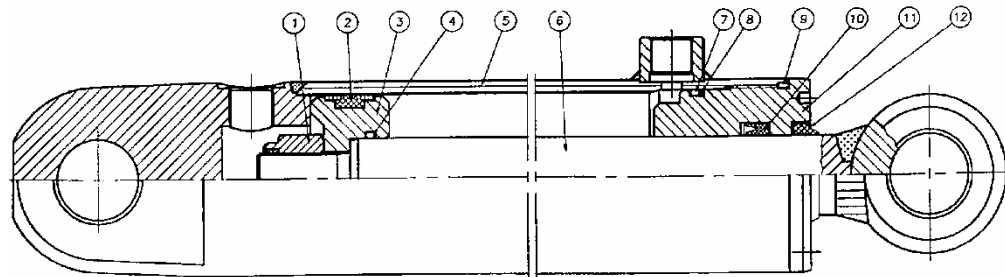
Once hydraulic stone guard is fully assembled, bleed system by activating cylinder to its outer positions.



Ensure no personnel are within working radius of the implement when hydraulic system is activated.

Replacing gaskets on stone guard cylinder

Fig. 9



Cylinder 40/20-200

1. Drain oil from cylinder by moving ram carefully backwards and forwards.
2. Extend ram to centre position. Unscrew upper part (pos. 11) from cylinder tube (pos. 5). Use special tool to remove upper part. If upper part is stuck, heat front of sleeve. When upper part is detached from cylinder tube (pos. 5), pull ram up towards upper part and remove completely from cylinder tube (pos. 6)
3. Remove lock nut (pos. 1) retaining collar shoe (pos. 3).
4. Remove collar shoe (pos. 3) from ram, (pos. 6).
5. Remove upper part (pos. 11) from ram, (pos. 7).
6. Remove gaskets in upper part and collar shoe, (pos. 2+4+7+8+9+10+12).
7. Clean all parts and check for particles etc. Check for rust around scraper ring (pos. 12) in upper part. If detected, remove thoroughly.

Mounting

1. Fit new gaskets (pos. 2+4+7+8+9+10+12) in upper part and collar shoe.
2. Lubricate thread in upper part (pos. 11) and cylinder tube (pos. 5) with grease or oil.
3. Fit upper part (pos. 11) on ram shaft (pos. 6).
4. Fit collar shoe (pos. 3) and screw on lock nut, **secure with Loctite**. Ensure that thread is absolutely clean and free of oil or other impurities before applying Loctite. **Do not fill with oil for 12 hours after use of Loctite.**
5. Lubricate outer collar shoe gasket in contact with cylinder tube and inside of cylinder tube with oil, push ram into centre position.
6. Fit upper part onto cylinder tube and tighten.
7. For fitting see "Replacing stone guard".

Replacing wear parts

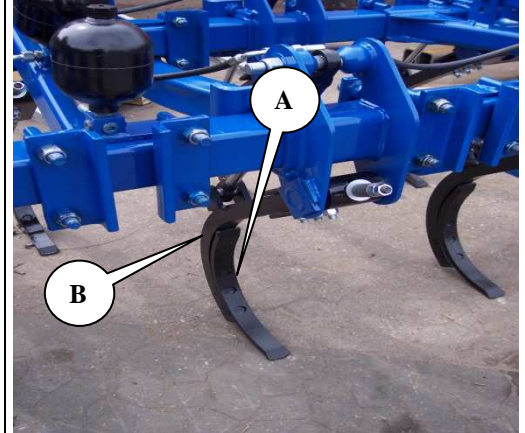


Support implement securely to avoid danger of crushing or falling

Teeth tips (A) are reversible and secured by three bolts. Turn or replace tips before stalk becomes worn, whereupon retain tip and wings (B).

When turning tips, old bolts can be reused, but when replacing them, use new bolts. Remove any accumulated soil between stalk and tip.

Fig. 10



- 12 x 70 mm plough bolt, size 10.9 for securing tip



Scrapping



Depressurise hydraulic system



Beware of the weight of any given part when removing or disassembling. All parts **must** be supported or lifted to avoid danger of falling.

Disconnect hydraulic hoses and cylinders and drain oil. Collect oil in container to avoid pollution. Send oil and hoses for destruction.

All iron used in the machine can be recycled.

Spare parts