



MINIMAX



GB
930cm
Seriennummer: 51832-XXXX

DALBO COMPACT 930 cm

Congratulations with your new COMPACT. For **safety reasons** and to obtain optimal use of the machine you should read through the following instructions **before** putting the machine into operation.

© Copyright 1995. All rights reserved DALBO A/S

Points, which are essential as regards to safety, are marked by V.

- V Re-tighten all bolted connections after a few hours use.
- V Do not operate the hydraulics without the machine being securely attached to a tractor.
- V Operation must only be carried out from a sitting position in the tractor, and no persons must be on or in the close proximity of the machine.
- V Must not be operated by children.
- V The driver is responsible for correct use of lights and markings according to the Road Traffic Act/ the Highway Code.
- V It is the driver's responsibility to ensure that the capacity of the tractor used is sufficient to handle the roller properly. It must be at least 100 HP

Your Compact has:

Serial number: _____ . Type description: _____
Manufacturing month: _____ . Net weight kg: _____

Please always quote the serial number in connection with any enquiries regarding spare parts.
An index of spare parts, which facilitates the overview of single parts, can be found at the very back.

EU-COMPLAINE DECLARATION

DALBO A/S
DK-7183 Randbøl

declares herewith that the above machine is manufactured in accordance with the provisions of directive 2006/42/EC, which replaced directive 98/373/EC 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.



_____ hine corresponds to the safety requirements in the European Safety Guidelines.

This mac


DAL-BO A/S

Date: _____

Alessio Riulini, CEO

Application: The Compact is used before and after sowing to break up clods and press down stones; it also improves germination. The Compact can be equipped with a hydraulically controlled levelling bar, as an optional extra. It makes the machine very effective on rough-ploughed land.

It is also used with advantage after stubble cultivation, to expedite the rotting of straw and stubble remains and also the germination of waste- and weed- seeds. For rolling very loose soil, it must be fitted with at least 50 cm rings.

The Compact is also used for rolling grasslands in the spring. This should be done as soon as the land can be driven over. Rolling eliminates stones and lumps of earth from the surface, so that they do not cause obstruction later when the grass is mowed. At the same time, the Compact breaks up the surface of the soil, allowing air to reach the roots.

V The Compact must **not** be used as a transport vehicle, pile driver, hydraulic press or the like. If you are in any doubt, ask your dealer or DALBO.

V The Compact must **not** be used to roll areas of road or similar hard surfaces.

V When using the roller the operator must sit in the driver's seat on the tractor, and there must be **no** other people either on or in the immediate vicinity of the roller.

Noise: The roller may make some noise when rolling with worn Cambridge rings, but this will be far below the <langerlimit for tractor drivers.

Dust: V A lot of dust can be raised during rolling under very dry conditions. It is recommended that either the tractor doors and windows be closed or a dust mask worn.

For transport purposes, the roller is supplied in the following separate parts:

Handling:

	830cm	930cm
Middel section, cpl.	1230 kg	1230 kg
Right side section, cpl.	1110 kg	1310 kg
Lefl side section, cpl.	1110 kg	1310 kg
Drawbar incl. rams	450kg	550 kg
2 wheels	62kg	62kg

V The parts will be handled with a crane. Hook onto the side sections in the middle of the square pipe. It must be fitted so that it tightens around the pipe during lifting.

V On the central section and drawbar yellow stickers showing a lifting hook indicate where to hook onto for effective lifting.

Fitting: Should be carried out in a workshop. See Fig. 7 and 8

A level floor, an approved crane capable of lifting a minimum of 1000 kg and a hydraulic pump with a single-acting and a double-acting take-off is required. It must be able to exert a pressure of at least 170 bar.

Install the central section vertically on the roller rings and wheel hubs. Fit the drawbar with the pin in position 15, remember the split pin.

Fit the tilting ram, position 59.

Fit and adjust the support so that the height of the drawbar is approx. 40 cm.

Connect the tilting ram to a single-acting hydraulic take-off; the hose is marked white.

Lift one of the wheel hubs with the crane whilst carefully allowing the oil to drain out of the ram

This will cause the central section to assume a horizontal position.

Lift each side section into position with the crane hooking onto it as described under "handling". Secure the side sections with the pins, pos. 35, which are in turn secured with the screws, pos. 36.

Connect the hoses to the folding ram to a double-acting take-off.

Push the folding ram out almost to their full extent and fit, making sure that the hoses do not cross.

Fit the wheels.

Apply pressure in order to push the folding ram all the way out.

Carefully rock the roller upwards by applying pressure on the single-acting ram, making sure that all the hoses are able to move freely.

Carefully retract the roller with the double-acting valve, keeping an eye on the hoses.

Ease the pressure on the single-acting ram so that the side sections drop down into their transport bearing.

Secure the hoses to the folding ram with the hose clips and self-tapping screws.

Fold the roller in and out a couple of times. Keep an eye on the hoses. The folding rams are throttled to prevent too fast a movement. This is not of crucial importance but it may give rise to a whistling sound in the pressure valve on the hydraulic pump.

Tighten all screws securely, including hub nuts.

V The roller sections are swivelled back to the transport position in the reverse order to extension.

Start-up: No adjustments or similar action is necessary before starting to use the Compact. The roller is drawn by the pickup-hitch of the tractor; which should be about 40 cm above the ground.

V Remember to secure the draw bolt with a split pin or similar device. Connect the hydraulic hose (marked white) to a single-acting valve. Connect the other two hoses (marked red) to a double-acting valve.

All the hoses are fitted with 1/2" connectors. If the tractor is not equipped for these, your dealer can help. A maximum pump pressure of 160 bar is required.

V Defective hoses must be repaired or replaced immediately. A broken hose can in bad cases cause personal injury or mechanical damage to the roller.

Operation: All operation must take place from the driver's seat and there must be no-one else in the vicinity of the machine. The change from transport to operational mode, and vice versa, must be made while stationary on more or less level ground, with the tractor almost idling. To unfold, operate first the single-acting valve, so that the side sections are lifted clear of their transport bearings; use the double-acting valve to unfold the side sections completely. Then lower the pressure from the single-acting valve, so that the roller tilts down to the ground. It is advantageous to allow the valves to float freely during rolling, if possible.

To raise the roller, apply the pressure first with the double-acting valve, so that the long cylinder across the roller is completely compressed. Then lift the roller completely vertical with the single-acting valve. Fold the side sections in by means of the double-acting valve. Lastly, lower them into their transport bearings using the single-acting valve.

The roller must be raised only for transport. It is not necessary to raise it when turning. It can also run backwards in the operating position.

Recommended speed of travel: 4-5 mph. Move slowly over stony ground. Tighten all the screws, and also the nuts, after the first working day.

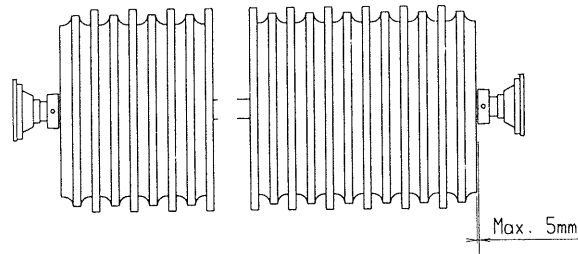
Maintenance:

Chassis - 3 lubrication points - lubricate daily.
Roller bearings - 6 units - lubricate every 50 operating hours. Lubricate the wheel bearings once per season.

Adjust the wheel bearings once a year, following the instructions for replacement of bearings, points 1, 2, 11, 12 and 13.

After the first season the surface of the rings will have worn smooth and they will therefore take up slightly less space. Adjust the resulting clearance down to max. 5 mm by moving the stop rings (see fig. 1). Remember to tighten the stop ring screws well. It is advisable to slacken and retighten the screws a couple of times so that they grip better.

Fig. 1



Check the **air pressure in the tyres** before the season. It should be 5.2 bar.

For prolonged indoor parking in the transport position, the piston rod should be lubricated with oil or grease.

REPAIRS:

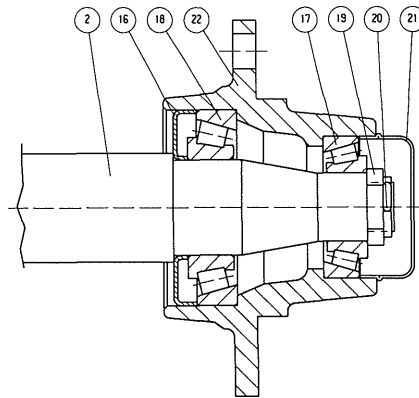
Wheels:

For changing wheels owing to punctures, etc., set the machine in the operating position. This enables the wheel to be removed without using a jack.

Changing the wheel bearings, see fig. 2.

1. Unscrew the hub cap, pos. 21.
2. Remove split pin pos. 20.
3. Remove lock nut, pos. 19.
4. The axle, pos. 2, can now be knocked out.
5. The bearings, pos. 17 and 18, can now be removed.
6. The sealing ring, pos. 16, can now be removed.
7. Install the outer races of the bearings, pos. 17 and 18, in the hub housing, item 22.
8. Fit the sealing ring, pos. 16.
9. Mount the inner ring for the bearing, pos. 17, on the axle, pos. 2, and insert the axle in the hub housing.
10. Mount the inner ring for the bearing, pos. 17, on the axle, pos. 2.
11. Screw the lock nut onto the axle, pos. 2, whilst rotating the hub housing, pos. 22. Tighten the lock nut so that it is difficult to rotate the hub housing, pos. 22. Then slacken the lock nut until the hub housing can again be rotated without resistance.
12. Fit the split pin, pos. 20.
13. Fit the hub cap, pos. 21.
14. Lubricate the hub with ball bearing grease.

Fig. 2: FLSS-6



Bearings, rings and shafts:

V

Dismounting roller shaft with rings for replacement of bearings, rings or shaft. This should be done in the workshop.

Side section - DISMOUNTING:

For this, an approved crane capable of lifting at least 1000 kg is required. The roller should be positioned with the appropriate section beneath the crane - preferably coupled to a tractor, otherwise, a hydraulic pump with a single- acting and a double-acting valve is needed. It must be able to deliver a pressure of at least 170 bar. Connect the opposite section to the guide over the transport bearing so that it can still be moved up and down. Using the single- acting valve, lift the side sections clear of the transport bearing. Use the double-acting valve to swing the side section concerned about 1 m out from the side.

Start carefully with two chains/slings around the rings about 1 m apart. Lift until the chains/slings are taut. Thoroughly loosen the bearing nuts. Lift with the crane until the screws are loose. Remove them and the whole shaft can be manoeuvred out.

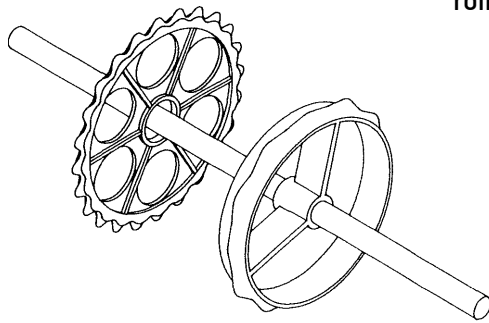
Clear all grease from the bearing housings. Remove any burrs on the protruding shaft end with a file. Loosen the pointed screws in the bearings; the bearings can then be pulled out.

When the stop ring with the two pointed screws has been removed, the roller rings can be pulled off the shaft.

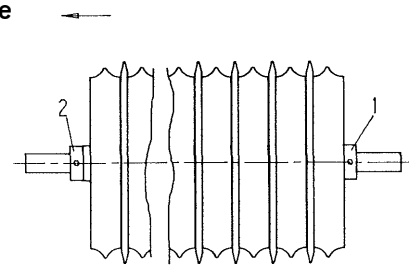
MOUNTING:

Cambridge rings. Start with a smooth ring with the "nose" pointing inwards (see fig. 3). This is followed by a serrated ring with the smooth side facing outwards. This must be pushed right over the boss ("nose") of the smooth ring. Fill the shaft up in this way until a space of about 12cm remains. Omit the last serrated ring. Ensure that the rings are packed tight together.

Fig. 3:



roller middle

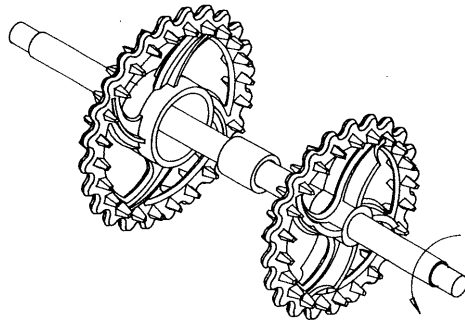


Crosskill rings. Note the direction of rotation of the shaft.

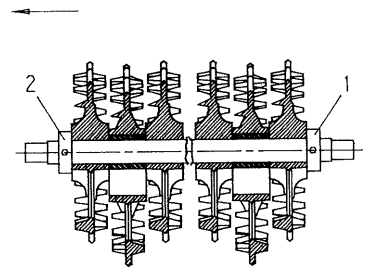
Start with a small ring, which must face the direction shown in fig. 4.

Then fit a bush, and a large ring above this, facing the direction shown in fig. 4. Finish with a small ring. Ensure that the rings fit tightly together. Fig.

4:

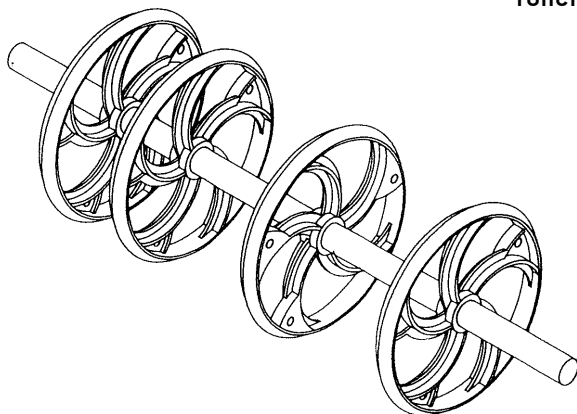


roller middle

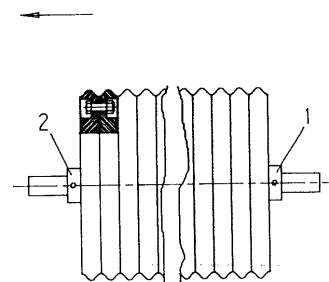


Welled rings. Start with two rings, screwed together as shown in fig. 5. Fill the shaft until a gap of about 22 cm is left. Close off the shaft with two rings bolted together. Ensure that the rings are packed tightly together.

Fig. 5:



roller middle



Insert the stop ring, fig. 3-5, pos.2, and tighten well. It is recommended that the screws be tightened and loosened a few times to ensure that they grip better.

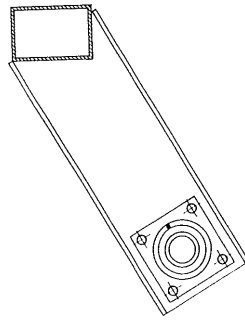
Then insert the bearings on the shaft.

V

Unfold the roller frame as described above. Attach two slings/chains to the frame. Lift the complete shaft with rings, using an approved crane (min. lifting capacity 800 kg) and lower it into the roller frame. The end with the last mounted stop ring (fig. 3-5, pos. 2) must point inwards on the roller.

Fit the bearings and tighten. Remember to turn the lubrication nipples to allow for lubrication (fig. 6). Use Loctite no. 270 on the pointed screws and tighten well. Close up the roller as described under "Operation".

Fig. 6:



Center section - DISMANTLING:

If possible, attach the roller to a tractor; if not, a hydraulic pump with a single-acting and a double-acting valve will be required. The pump must be able to deliver a pressure of at least 170 bar.

Use the single-acting valve to lift the side sections clear of the transport bearings and use the double-acting valve to swing them right out.

V

If the roller is not attached to a tractor, **it must be opened up gently to ensure that it does not tip over backwards.**

Use the single-acting valve to lower the roller until the roller rings are resting on the ground.

V

The double-acting valve **MUST NOT BE OPERATED** in this situation.

V

Secure the roller mechanically in this position, as a safeguard against the possibility of hose rupture.

V

The bolts holding the ball bearings can now be removed. Take care not to injure your fingers.

Next, using the single-acting valve carefully tilt the roller upwards, ensure that

the roller shaft stays down on the ground.

ASSEMBLY:

Cambridge rings. Fit a stop ring about 12cm in along the shaft (see fig. 3). Then start with a smooth ring with the "nose" pointing outwards (see fig. 3), and follow with a serrated ring with the smooth side facing inwards. This must be pushed right in on the boss ("nose") of the smooth ring. Fill the shaft up in this way until a space of about 12cm is left. Omit the last serrated ring and finish with a stop ring.

Crosskill rings. Fit a stop ring about 12 cm in along the shaft (see fig. 4). Start with a small ring, then fit a bush, and a large ring above this, the spokes of which run the same way as on the first And so on, finishing with a small ring and a stop ring.

Welled rings. Fit a stop ring about 12cm into the shaft. Start with two rings, screwed together as shown in fig. 5. Fill the shaft until a space of about 22 cm is left. Close off the shaft with two rings bolted together and a stop ring.

Loosen the stop ring screws. The projecting shaft ends must be of equal length. This is achieved by striking the shaft. Make sure that the rings are very tightly packed. Tighten the stop rings well. It is recommended that the screws be tightened and loosened a few times to ensure that they grip well. Then push the bearings in along the shaft ends.

Open up the roller frame as described above under 'Dismantling'. Push the whole shaft into the frame. If it is a crosskill roller, ensure that the direction of rotation is the same as shown in fig. 4. Mount the bearings and tighten securely. Remember to turn the grease nipples so as to allow for lubrication (fig. 6).

V

Raise the roller to the vertical position, using the single-acting valve. The **DOUBLE-ACTING VALVE MUST NOT OPERATED** until the single-acting valve is fully extended.

Rams:

Folding ram:

This can be done with the roller in either the transport or the operating position, where the ram is in both instances pressureless; but the operating position is recommended.

Remove the hoses. It is recommended that a bucket be placed underneath to catch any oil. Remove split pins and washers. The ram, weighing 21 kg, can be dismantled also.

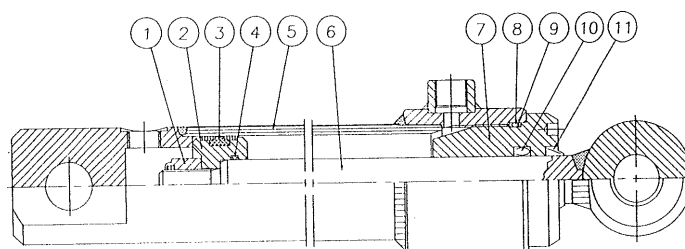
Assembly is done in reverse order. After assembly, carefully swing the side sections out and in a couple of times (see under operation) to force out unwanted air.

Check that the hoses can move sufficiently not to get jammed, and that the connections are tight.

Replacing the hydraulic sealings:

REMOVAL:

1. Empty the oil from the ram, compressed air can be used to move the piston rod back and forth, to press the oil out.
2. Place the piston rod in the middle position. Unscrew the gland (pos. 7) 30mm out. If the gland can't be unscrewed, it may be necessary to warm it up to 300 °c. Let it cool off slowly. With the gland screwed out, pull the piston rod out towards the gland. Screw the gland all the way off, and the piston rod can now be removed.
3. Remove the self-locking nut (pos. 1).
4. Remove the sleeve (pos. 2).
5. Pull the gland off the piston rod (pos. 7).
6. The sealings above the sleeve are now removed, (pos. 3,4,8,9,10,11), use either a awl or a screwdriver.
7. Clean all the parts. Check for filings and shavings, make sure that there is no rust in the gland. If this is the case, it must be removed.



ASSEMBLING:

1. Assemble the new sealings in the gland and sleeve. The scraper ring pos. 11 is mounted with the help of a pipe, that fits around the outside of the lip. The sleeve (pos. 3) is mounted with a round iron bar or screwdriver
2. The threads on the gland and ram housing should be greased before assembling, (rust protection).
3. The gland pos. 7 is now mounted over the piston rod.
4. The sleeve pos. 2 is mounted and the self-locking nut pos. 1 is screwed on with "loctite". Make sure that the threads are clean, no oil or grease.
With use of loctite, you must not fill the ram with oil the first 12 hours.
5. Oil the sleeve and the top end of the ram housing, and press the piston rod into the middle position.
6. Screw the gland down tight

Tilting ram:

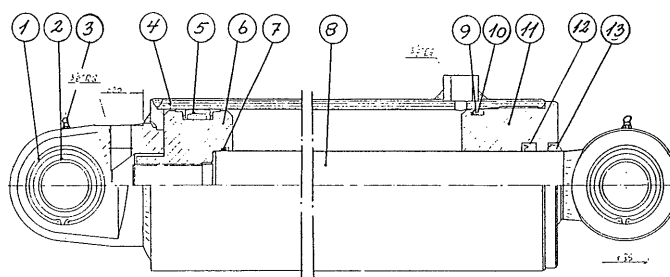
This is done with the roller in the transport position. Remove the hose. It is recommended that a bucket be placed underneath to catch any oil. Remove split rings and pins, and the ram, weighing 41 kg, can be removed.

Assembly is done in the reverse order.

There **must** be an air plug in the top connection. After assembly, lift the side sections clear of the transport bearings a couple of times (see under operation). Check that the oil connections are tight.

Replacing the hydraulic sealings:**REMOVAL:**

1. Empty the oil from the ram, compressed air can be used to move the piston rod back and forth, to press the oil out.
2. Place the piston rod in the middle position. Unscrew the gland (pos. 11) 30mm out. If the gland can't be unscrewed, it may be necessary to warm it up to 300 °c. Let it cool off slowly. With the gland screwed out, pull the piston rod out towards the gland. Screw the gland all the way off, and the piston rod can now be removed.
3. Remove the sleeve (pos. 6).
4. Pull the gland off the piston rod (pos. 11).
5. The sealings above the sleeve are now removed, (pos. 5,7,9,10,12,13), use either a awl or a screwdriver.
6. Clean all the parts. Check for filings and shavings, make sure that there is no rust in the gland. If this is the case, it must be removed.

**ASSEMBLING:**

1. Assemble the new sealings in the gland and sleeve. The scraper ring pos. 10 is mounted with the help of a pipe, that fits around the outside of the lip. The sleeve (pos. 3) is mounted with a round iron bar or screwdriver
2. The threads on the gland and ram housing should be greased before assembling, (rust protection).
3. The gland pos. 11 is now mounted over the piston rod.

4. The sleeve pos. 6 is mounted and locked in place with "loctite". Make sure that the threads are clean, no oil or grease.
With use of loctitte, you must not fill the ram with oil the first 12 hours.
5. Oil the sleeve and the top end of the ram housing, and press the piston rod into the middel position.
6. Screw the gland down tight.

Side sections:

Removal of side sections should be done in the workshop.

First dismount the shaft with roller rings as described on page 5. Then support the side section with slings on a crane (max. weight: 200 kg). Unscrew the two locking screws, position 36 in fig. 7, and pull out the pin, using a crowbar or similar tool.

V

Take care, when the pin has been removed, as the frame can then rotate.

Assemble in the reverse arder.

Drawbar:

Changing the drawbar. This must be done in a workshop with a crane available. Max. weight 300 kg.

Place the roller on a level surface in the operating position without the tractor. Lift the front end and remove the support leg. Lift just in front of the roller main frame until the main pin is loose. Remove the ram; this can be done without detaching the hose.

V

Knock out or pull out the main pin. Take care and ensure that the drawbar does not rotate.

Assemble in the reverse arder.

Scrapping:

Dismantle the roller in the following sequence:

1. Side shaft with races, see page 6.
2. Middle shaft with races see page 8.
3. Side sections, see page 12.
4. Wheels, see page 5.
5. Drawbar, see page 12.

Send hydraulic hoses, oil and tyres to be destroyed.

Use the roller rings as recycled metal for casting and the rest for recycled metal.