

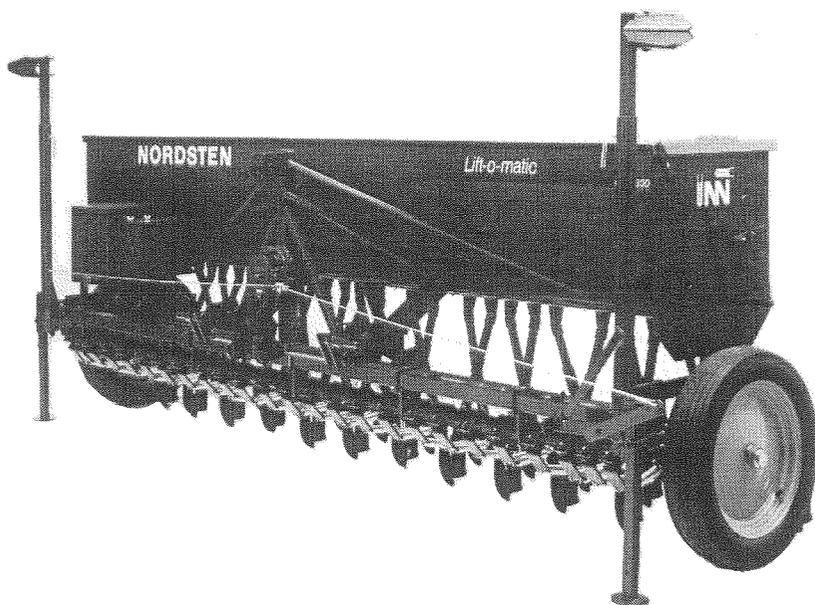
NORDSTEN

Instruction manual
for

Lift-o-matic

SEED DRILLS

Type CLG and CLG MK II



FOREWORD

May we congratulate you on your new drill which we feel will surely play an important role in your work.

If you want the machine to work at its best, we would recommend that you study this manual which will give you all the details about your new "farm hand", before you start work in the field. It is imperative that the person working with the machine and taking care of it is quite familiar with its construction, adjustment and daily care. By giving the machine appropriate attention and care you can give it a longer life and save a lot of unnecessary extra expense.

Thrige Agro

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TECHNICAL SPECIFICATIONS FOR LIFT-O-MATIC, TYPE CLG

Machine size	3.00 m	2.50 m	2.00 m
Working width	3.00 m	2.50 m	2.00 m
Overall height	1.15 m	1.15 m	1.15 m
Overall width	3.14 m	2.64 m	2.14 m
Overall length	0.94 m	0.94 m	0.94 m
Filling height	1.10 m	1.10 m	1.10 m
Normal number of coulters	25	21	17
Normal distance between rows	12 cm	11.9 cm	11.77 cm
Normal distance between front and back coulters row	27 cm	27 cm	27 cm
Weight, empty, approx.	390 kg	343 kg	300 kg
Hopper capacity, litres	385	320	250
Hopper capacity, kg wheat	300	250	200
Tractor's lift capacity, approx.	900 kg	775 kg	660 kg
Minimum drilling rate, barley	20.5 kg/ha	20.5 kg/ha	20.5 kg/ha
Maximum drilling rate, barley	265 kg/ha	265 kg/ha	265 kg/ha
Tyres	125 - 15"	125 - 15"	125 - 15"
Tyre pressure	0.24 MPa = 2.4 kg/cm ² = 34 psi.		
Sowing system	Peg type nylon precision seed wheel		
Gearbox	40 settings		
Transmission	Chain drive from right hand drive wheel to gearbox		
The total weight of the machine with optional equipment and filled hopper MUST NOT EXCEED kg	1000	850	750

When the machine is fitted with single disc coulters, double disc coulters, straight coulters and wing coulters, the number of coulters is reduced by 2 and the working width by 20 cms.

Any modification on the drill/accessories made by others than THRIGE AGRO — IS NOT THE RESPONSIBILITY OF THRIGE AGRO — unless the permission in writing has been obtained from THRIGE AGRO prior to the execution of the modification.

THRIGE AGRO reserve the right to make modification.

TECHNICAL SPECIFICATIONS FOR LIFT-O-MATIC, TYPE CLG MK II

Machine size	3.00 m	2.50 m	2.00 m
Working width	3.00 m	2.50 m	2.00 m
Overall height	1.15 m	1.15 m	1.15 m
Overall width	3.14 m	2.64 m	2.14 m
Overall length	0.94 m	0.94 m	0.94 m
Filling height	1.10 m	1.10 m	1.10 m
Normal number of coulters	25	21	17
Normal distance between rows	12 cm	11.9 cm	11.77 cm
Normal distance between front and back coulters row	27 cm	27 cm	27 cm
Weight, empty, approx.	390 kg	343 kg	300 kg
Hopper capacity, litres	385	320	250
Hopper capacity, kg wheat	300	250	200
Tractor's lift capacity, approx.	900 kg	775 kg	660 kg
Minimum drilling rate, barley	12.4 kg/ha	12.4 kg/ha	12.4 kg/ha
Maximum drilling rate, barley	575 kg/ha	575 kg/ha	575 kg/ha
Tyres	125 - 15"	125 - 15"	125 - 15"
Tyre pressure	0.24 MPa = 2.4 kg/cm ² = 34 psi.		
Sowing system	Peg type nylon precision seed wheel		
Gearbox	60 settings		
Transmission	Chain drive from right hand drive wheel to gearbox		
The total weight of the machine with optional equipment and filled hopper MUST NOT EXCEED kg	1000	850	750

When the machine is fitted with single disc coulters, double disc coulters, straight coulters and wing coulters, the number of coulters is reduced by 2 and the working width by 20 cms.

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OPERATOR'S MANUAL FOR LIFT-O-MATIC,
Type CLG

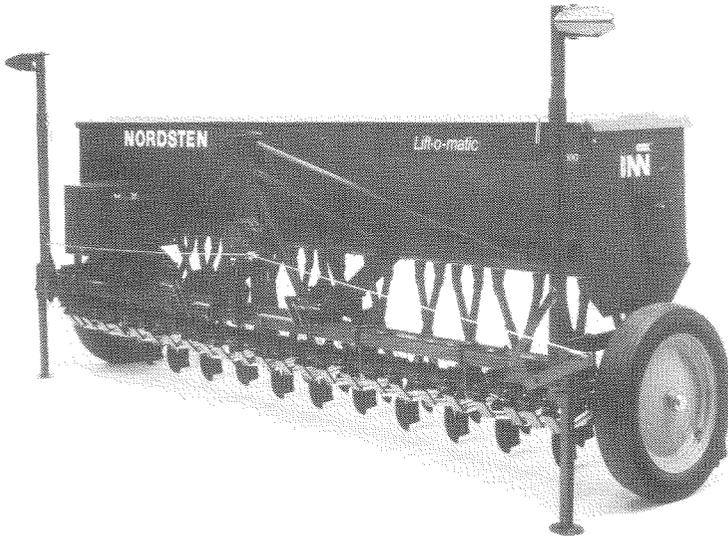


Fig. 1

The right and left side of the machine are always as viewed in the direction of travel.

UPON RECEIPT

- During transport the coulter spacing may have changed — therefore check the distance between the coulters (see technical specifications). When tightening the bolt which is eccentric, you should turn it counter-clockwise until the bolt is pressing hard against the coulter bar, then tighten the nut. If the two outer coulters have been placed in the seed hopper during transport, these should be fitted.
- If necessary, a tightening-up should be made during the season.
- Check the air-pressure of the drive wheels = $2.4 \text{ kg/cm}^2 = 0.24 \text{ MPa} = 34 \text{ psi}$. Incorrect pressure may affect the sowing rate.
- Check that transmission and chain tighteners between drive wheel, gearbox, agitator shaft, and sowing shaft are adjusted correctly. — Lubricate with oil. (Description fig. 36 - 40).

WARNINGS!

As the centre of gravity of the machine is rather high we warn against placing the machine on a sloping or unstable surface when it is disconnected from the tractor.

Check that the support legs are on a firm surface and secured with the lock pins.

When transporting on public roads the rules concerning lights, marking and safety should be followed. Draw bolts, 3-point linkage pins and link pins for the transport carriage and marker arms should be secured correctly so that accidents are avoided.

Tyre fitting requires special knowledge and special tools — lack of knowledge may cause serious accidents.

Guards for chains, cog wheels and rotating shaft ends must be fitted to fulfill the security regulations of the inspection authorities.

Be aware of the agitator shaft in the bottom of the seed hopper. If you try to spread the sowing material with your hands during work, it may injure both fingers and hands.

The result from your drill depends on the following:

- the condition of the seedbed.
- the seed.
- the adjustment of the seed drill.
- the driving speed.
- the weather — the climate.

WING COULTERS

Important!

Before starting sowing with wing coulters the following should be observed:

When adjusting the markers, remember that the working width has been reduced by 20 cm, and that the number of revolutions for the test sowing has been changed, see fig. 41.

The sowing work always requires full attention for the tractor driver. Wing coulters require frequent control of the placement of the seeds in the soil.

The sowing bed ought to have a good structure without uncleannesses and stones, and it should be harrowed to the required sowing depth.

Adjust the position of the machine by means of the top link of the tractor so that it is in horizontal position during driving.

Adjust the spring pressure of the coulters to the required sowing depth. Check the depth by scraping away the soil until seeds are visible after having sown some metres.

Clean the coulters of pasted soil or the like if necessary.

The wear on the wing coulters is dependent on the ground structure, and as it has great influence on the placement of the seed, the coulters should be checked frequently for wear and tear.

The wing coulters are not suitable for sowing of seeds which are to be placed deeper than 4 - 5 cm.

AS MANY DIFFERENT FACTORS HAVE AN INFLUENCE ON THE DEVELOPMENT OF THE SEED AND LATER YIELD, WE CANNOT GUARANTEE INCREASED YIELD WITH WING COULTERS EVEN THOUGH THE ABOVE MENTIONED IS OBSERVED.

Safety regulations!

During transport:

Turn the marker points inwards.

Mark the adjustable marker arms so that they can quickly be put back into working position.

BEFORE STARTING TO DRILL:

Check the following:

- that lock for funnel tubes is locked properly.
- that the bottom flaps can be moved — press each of them with a finger or with a thin wooden handle.
- that the bottom flaps are correctly adjusted. Fine adjustment of each of the bottom flaps is made by turning the 6 mm screw on the back side of the bottom flap so that the distance to the seed roller is 0.5 - 1 mm when the handle is in position No. 1.
- that seed rollers and bottom flaps are intact (wear or vermin attack in storage) some fine seeds are very abrasive (particularly carrot).
- that the seed tubes telescope easily.
- that the seed coulters points are not too worn — the wear is greatest in the tractor wheel track.
- that the coulters arm can be moved freely and have a suitable spring pressure.
- that the marker adjustment is correct.
- that the selflubricating bearings are o.k. — you may apply some drops of oil.
- that the gearbox is in good condition — gearwheels and bearings.
- that chain drive and tighteners are o.k.
- that the clutch ratchet and ratchet wheel are o.k. and not worn.

THE LIFTING ROCKER, Fig. 2

The lifting rocker is suitable for tractors with 3-point-linkage Cat. I and II. Spare the pegs which are not to be fitted for later use.

Cat. I:

Fit the pegs A – fit the draw eyes of the tractor between the flanges of the lifting rocker.

Cat. II:

Fit the pegs B as shown with distance bush C between the flanges. Tighten thoroughly by means of spring washers and nuts on the inside.

Cat. I and II:

The pegs can be placed in both holes of the lifting rocker, but the position must be the same in both sides. Normal position is in the hole closest to the frame where the lifting capacity of the tractor is the smallest.

If maximum pressure on the seed coulters is required: – fit the pegs in the outer holes.

The peg A is shown in normal position. The peg B is shown in outer position.

REMEMBER! Correct length of the top link – the machine must be in horizontal position during driving in the field – and to secure by means of split pins after connection.

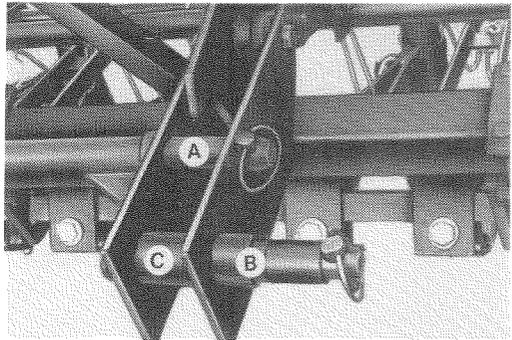


Fig. 2

HOW TO START

Hitching to the tractor.

Ensure that the tractor linkage is in "position control" and check that the lower links can move freely through the complete lifting range. (Refer to tractor instruction manual for full detail).

Check this in the following way:

- Lower the tractor lower links.
- Let the engine run at normal speed.
- Lift by hand the lower links as high as possible – and lower them. They should now bottom completely.

Hitch the drill in the following way:

- Tractor linkage check chains or sway blocks must be in position if fitted.
- If the pins connecting lift rods to lower links have slotted holes, these should be used.
- Check that the lower link ball ends can be lowered approx. 10 cm (4") below the pins of the lifting rocker.
- The top link should be fitted to run as parallel as possible with the lower links.
- Lift the drill.
- Raise the support legs.
- Disengage the hook A (fig. 3) for the coulters lifter.
- Check that the rocker cross shaft touches the upper stop.
- Lower the drill and adjust the length of the top link so that the drill is level when driving.
- Drive the tractor a little forward and check that the rocker cross shaft touches the lower stop.

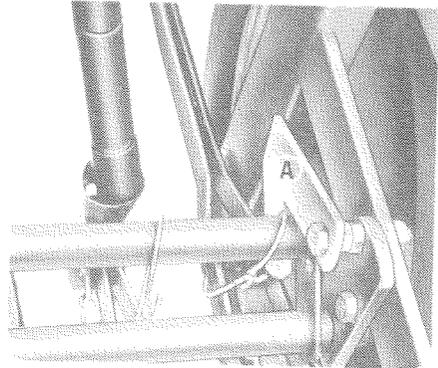


Fig. 3

FORWARD SPEED

should be adjusted according to conditions so that the drill does not bounce. It is important that the air pressure in the tyres is correct – $0.24 \text{ MPa} = 2.4 \text{ kg/cm}^2 = 34 \text{ lbs.}$

Fig. 4

The spring tension to the seed coulters can be adjusted individually for each coulter by means of the chain A on the spring. In order to obtain an even pressure on both short and long coulters the long ones are fitted with double springs.

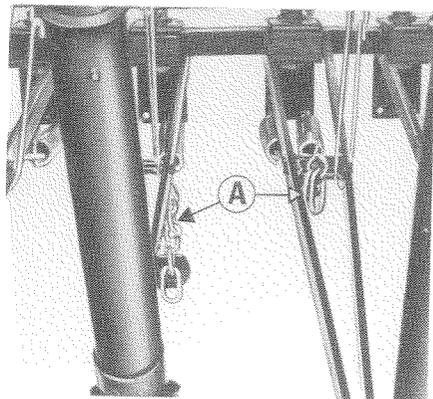


Fig. 4

**THE AUTOMATIC
MARKER SHIFTER (Fig. 5 - 6 - 7)**
is pre-set by means of the spring A.

Fig. 5
When the spring A is resting on the curved guide plate B, the right and left markers work alternately after each lift of the drill.

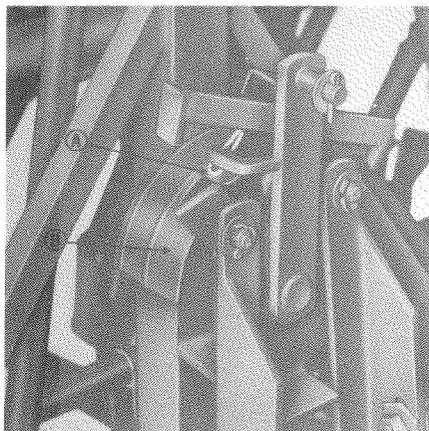


Fig. 5

Fig. 6
When the spring A is lifted on to the left suspension arm C, the right marker only works after each lift.

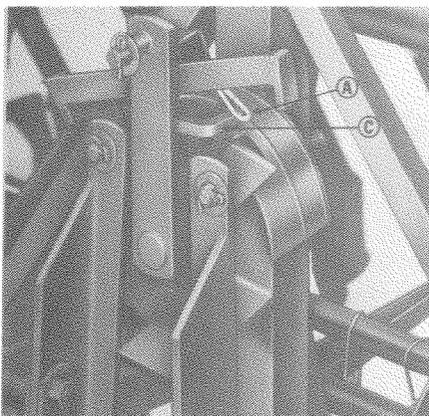


Fig. 6

Fig. 7
When the spring A is lifted on to the right suspension arm D, the left marker only works after each lift.

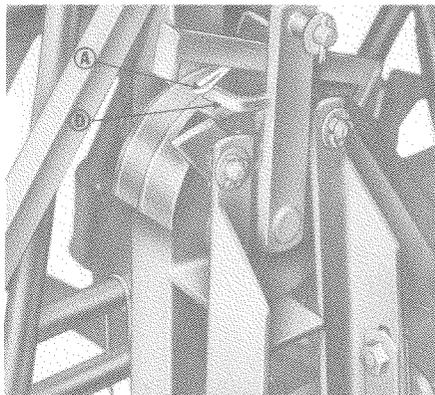


Fig. 7

ADJUSTMENT OF MARKERS (Fig. 8)

As the machine has mid-marking the distance from the outer edge of the sowing bed width to the marker track should always be half the sowing bed width.

This can be checked easily by driving a few yards with the markers and coulters lowered in their working position and the necessary measurements taken.

Remember adjustment of the lock nut.

The outer edge of the sowing bed width is half a row width ($1/2 A$) from the outer coulter. From this mark to the marker track should be half a sowing bed width.

For machines with standard number of coulters the distance from the marker to the edge of the sowing bed width will be as follows:

1.80 m 13 rows and	
15 rows =	90 cm
2.00 m 17 rows =	100 cm
2.05 m 15 rows and	
17 rows =	102.5 cm
2.25 m 19 rows =	112.5 cm
2.30 m 17 rows and	
19 rows =	115 cm
2.50 m 21 rows =	125 cm
2.80 m 21 rows and	
23 rows =	140 cm
3.00 m 25 rows =	150 cm

To avoid stripes it is recommended that the above marker settings are shortened by approx. 5 cm (2").

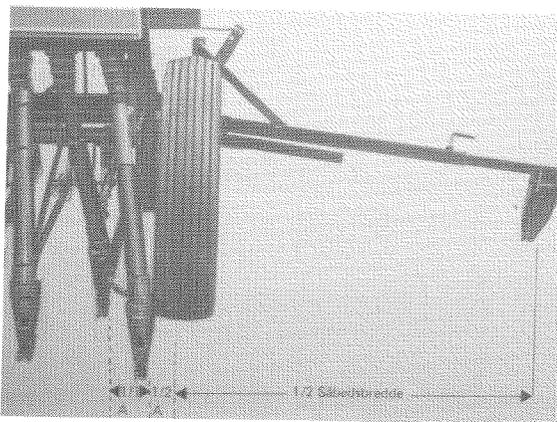


Fig. 8

Fig. 9

By means of the locking pawl A the markers may be locked in vertical position so that you may drive freely close to hedges, etc.

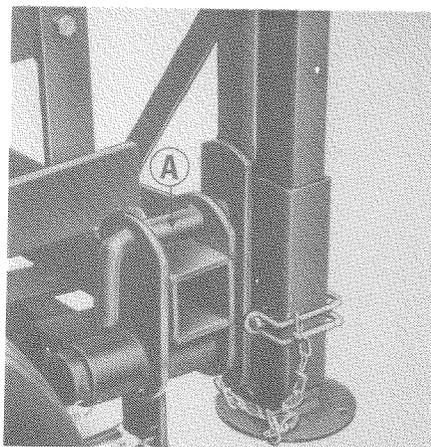


Fig. 9

Safety regulations!

During transport:

Turn the marker points inwards.

Mark the adjustable marker arms so that they can quickly be put back into working position.

THE MARKER LOCKS (Fig. 10)

When the markers have been placed in working position, the marker locks should be put into the locked position. This will prevent the markers from bouncing while drilling.

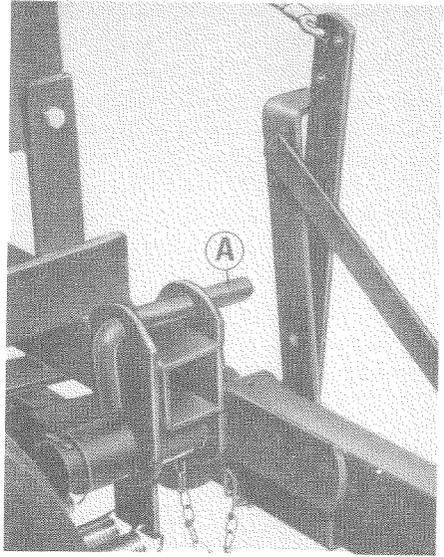


Fig. 10

TEST SOWING (Only CLG)

(Fig. 11 and 12)

The sprocket with 12 and 16 teeth on the gearbox shaft in the right side of the seed drill is reversible.

In the section "Examples of gear setting for grain and seed", page 36 - 37, the 12 teeth sprocket has been used. (Fig. 11 A). If the 16

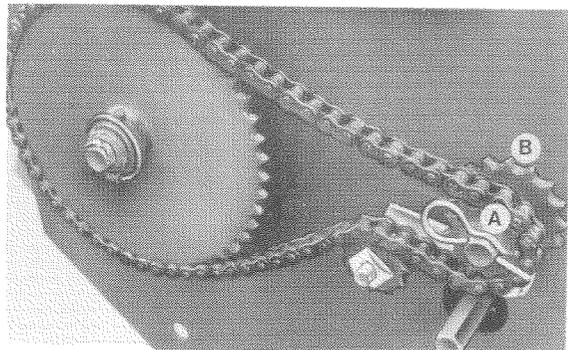


Fig. 11

teeth sprocket (Fig. 12 B) is used, the sowing rates with the corresponding gear settings are increased by 33 1/3%. The sprocket is reversible on the gearbox shaft and the chain should be extended by means of 1 extension link and 1 joint link.

The 16 teeth sprocket is only used when larger sowing rates are required.

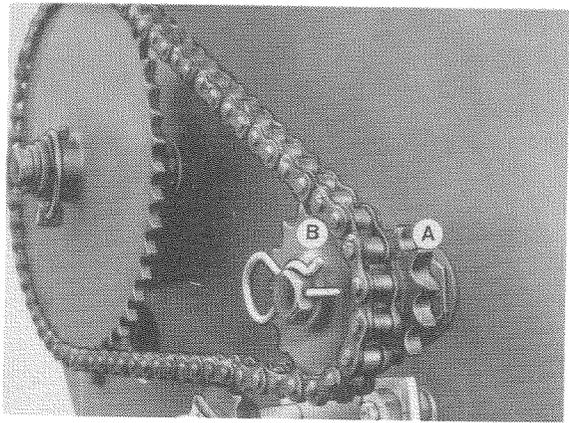


Fig. 12

Follow the instructions on the sowing table and read the following:

- Engage or disengage the agitator shaft, whichever is recommended for the seed used.

Only when sowing some special crops and fertilizers (see page 21 and 22) the agitator shaft should be disengaged.

- Remove the spring pin A (fig. 13) in the sprocket outside the end plate of the hopper to free the agitator shaft.

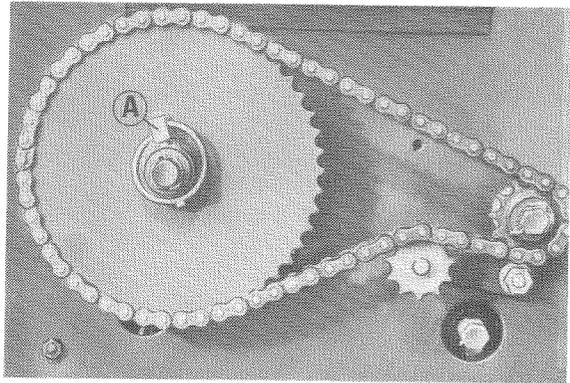


Fig. 13

- Disengage the coulters tubes by means of the handles A and B, and push forward (Fig. 14).

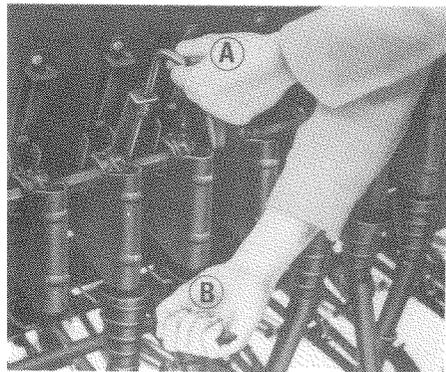


Fig. 14

- Insert the calibration tray A under the seed housings (Fig. 15).

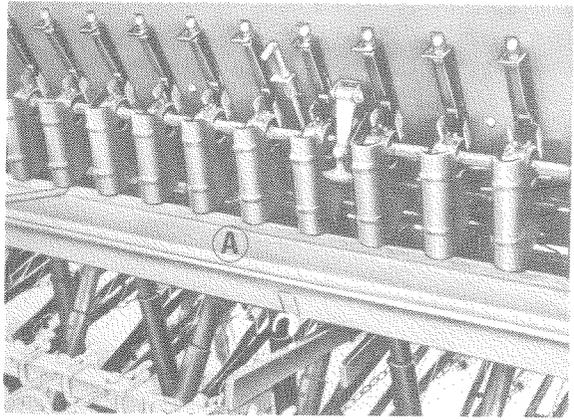


Fig. 15

- Adjust the bottom flaps by means of the handle A (Fig. 16). Bottom flap positions for certain common seeds are indicated on the sowing table, but the rule is that the bottom flaps should be adjusted to a position as close as possible to the sowing wheel without damaging or squeezing the seed.

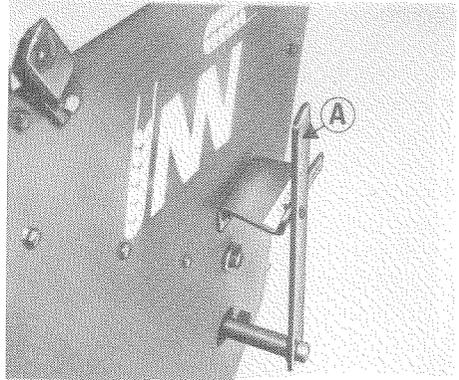


Fig. 16

- Adjust shutters for seed housings A (Fig. 17). They should be set equally open to such an extent that the seed does not run over the top of the sowing wheels while working.
- Fill the hopper with at least enough seed to cover the agitator shaft after test sowing.

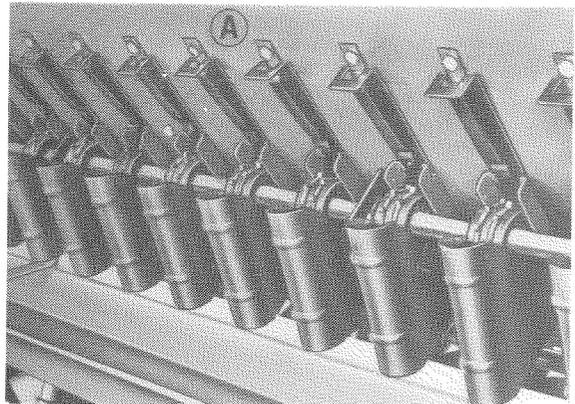


Fig. 17

- Put the test sowing handle A (Fig. 18) — which is located on the side of the gearbox under the guard — on the drive shaft at the right side.
- Choose a suitable gear so that the test sowing sample almost fills the calibration tray.
For example:
Grain: 15 HIGH.

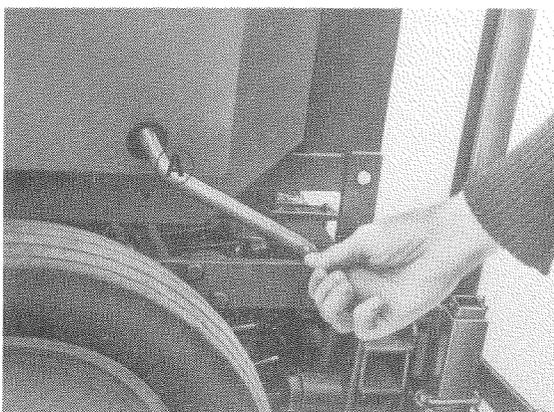


Fig. 18

**CLG:
GEARBOX SETTING**

(Fig. 19 - 22)

The gearbox has 40 settings without overlappings. The various settings may be obtained by the handle A of the cone gearbox and by replacement of the big spring pin in the sprockets in the side gearbox B.

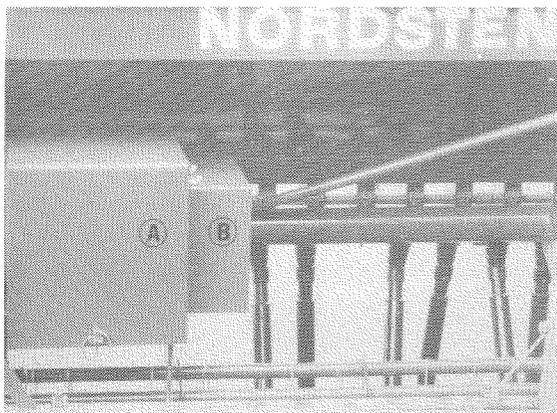


Fig. 19

The cone gearbox, fig. 20, has 20 settings in two rows of holes marked 1 ... 20. The sowing rate increases from 1 to 20. The hole A just between the hole rows is the neutral position. After selecting the gear, check that the locking pawl B is completely locked in the setting hole.

When selecting a gear the test sowing handle should be turned to help the gear wheels engage completely.

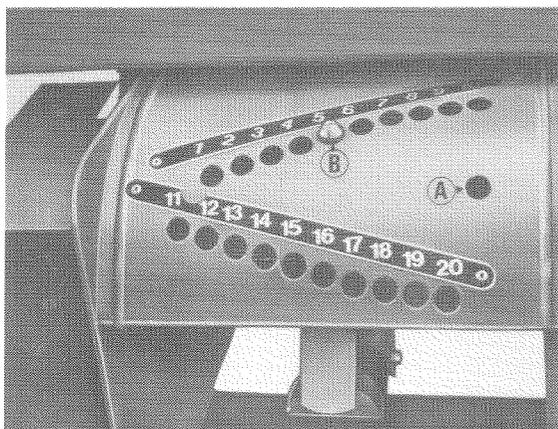


Fig. 20

The side gearbox (Fig. 21 - 22) has two settings – HIGH and LOW.

Fig. 21

HIGH – place the spring pin A in the upper chain wheel.

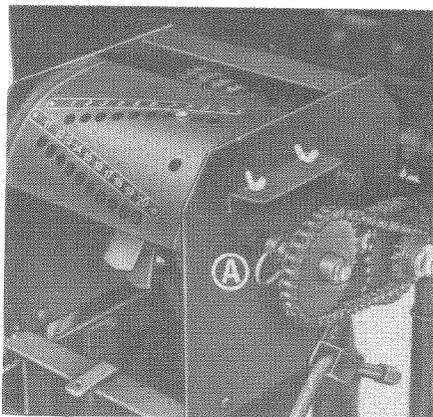


Fig. 21

Fig. 22

LOW – place the spring pin A in the lower chain wheel.

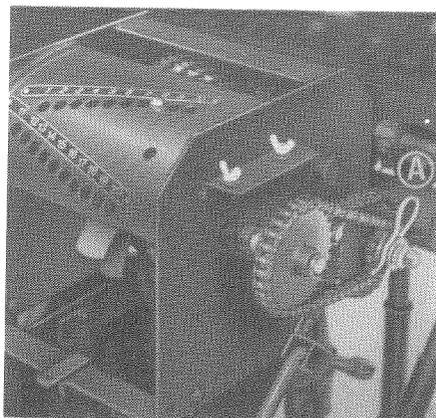


Fig. 22

Remember when selecting a gear to move the test sowing handle to and fro to enable the gear teeth to engage.

- Choose a suitable gear for the test sowing, e.g. Grain 15 HIGH. Also see the typical examples on pages 36 and 37.
- Turn the test sowing handle until the seed flows from all outlets.
- Empty the tray into the hopper and replace it under the seed outlets.
- Turn the test sowing handle for the sowing of:

	1/20 hectare	1/10 acre
2.00 m	111 revolutions	90 revolutions
2.50 m	89 –	72 –
3.00 m	74 –	60 –

- Weigh the test sown material on an accurate pair of scales and multiply by 20 (for hectare) or by 10 (for acres). You then get the weight corresponding to what the machine sows on 1 ha or 1 acre.
- If the sowing rate is not as required, the front of the sowing table should be used.

INSTRUCTIONS IN THE USE OF THE SOWING TABLE

Check with the below figures 23 - 24 that the sowing table corresponds with the machine to be used.

SOWING TABLE
NORDSTEN
Lift-o-matic

TYPE C.L.G.

1. Correct setting of the seed distribution is obtained by following the table. 4000 plants per ha. per 1000 g. seed.

2. Probe the straw carrying the seed tubes by pulling the lever and backing up forwards.

3. Insert the collecting tray under the seed housings.

4. Adjust initial traps according to size of sowing material:
Fine seed: 10 cm - 10 cm - 10 cm
Grain: 10 cm - 10 cm - 10 cm

5. See the section on test sowing in the instruction manual.

6. Open shutters for seed housings as much as possible. The seed must not pass over the sowing wheels. See the section on test sowing in the instruction manual.

7. Choose a suitable gear so that the test sowing sample almost has the collecting tray 1/2 g. (1/2000) 1500 g.

8. Fill the hopper with seed.

9. Turn with the handle until the sowing material runs evenly from all seed housings. Empty the tray and insert it under the seed housings again.

10. Turn the handle for sowing ...

100 m	110 acres	170 hectares
150 m	90 revolutions	143 revolutions
150 m	120 revolutions	89 revolutions
130 m	80 revolutions	124 revolutions

11. Weigh the test sowing material on an accurate pair of scales and multiply by 10 - 1000
 a) by 10 - hectares
 b) by 20 - hectares
 c) by 100 - hectares
 e.g. 15.50 g. in the collecting tray multiplied by 10 = 1550 g. per ha.
 6.5 kg. in the collecting tray multiplied by 20 = 1300 g. per ha.

Turn the sowing table and go on from point 11.

NORDSTEN
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INN

Fig. 23

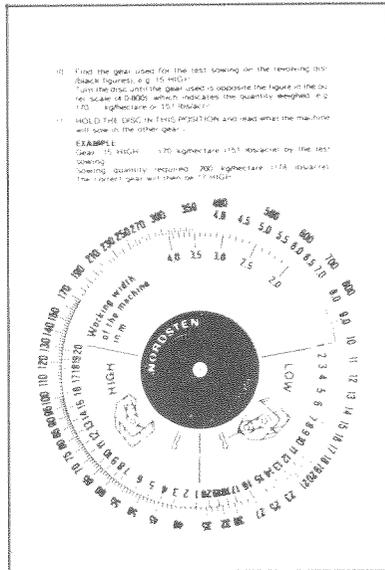


Fig. 24

Fig. 25

Instructions in test sowing are printed on the sowing table, and on the back of the table there is a revolving disc. The revolving disc is divided into three sections — one to be used for calculation of the test sowing handle for different sowing bed widths — and two sections provided with setting marks for the 40 gear settings of the machine. The speed variations in the side gearbox are marked in two areas. HIGH and LOW.

Within each of these areas you will find marks for the settings of the cone gearbox: 1 - 20.

The lowest gear is: 1 LOW.

The highest gear is: 20 HIGH.

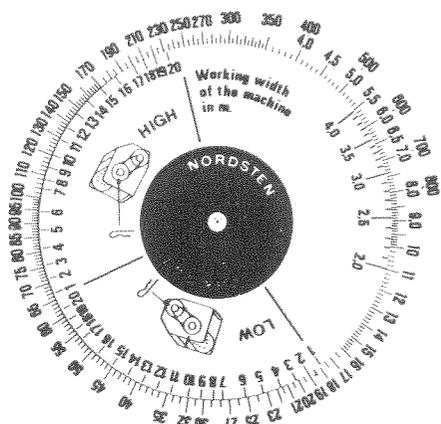


Fig. 25

The outer fixed scale forms a series of numbers 4.0 - 800 stating proportional quantities of seed in the various gear settings. The figures are independent of calculations in lbs., kilos or grammes, and other series of numbers in the scale can be obtained by moving the decimal point, e.g.: 0,4 - 80 or 0.04 - 8.0.

EXAMPLE (Fig. 25)

From the test sowing it is for instance ascertained that in gear 15 HIGH you sow 170 kgs/ha. The revolving disc of the sowing table has been set accordingly, as 15 HIGH has been placed below the number 170. If you want to sow 200 kgs/ha the gear setting 17 HIGH is found below the number 200, and this will then be the correct setting for the rate required. If you want to sow 220 kgs/ha the gear setting 19 HIGH is found below 220.

REMEMBER! AFTER TEST SOWING THE COULTER TUBES MUST BE PULLED BACK UNDER THE SEED HOUSINGS AND LOCKED IN WORKING POSITION.

When emptying the hopper the bottom flap handle should be pulled back completely.

CALCULATIONS OF REVOLUTIONS FOR TEST SOWING (Fig. 26)

is necessary if the width of the machine is not equal to the complete sowing bed width. On the sowing table, point 8 indicates the test sowing revolutions for the various machine sizes 2.0 - 2.5 - 3.0 m, e.g. 89 revolutions for 2.50 m corresponding to 1/20 ha or 72 revolutions corresponding to 1/10 acre.

By turning the sowing bed sector of the revolving disc so that the machine width is opposite the figure for test sowing revolutions in the outer scale, e.g. 2.5 (machine width) opposite 89 (number of revolutions for 1/20 ha) you may read above the figure for any other sowing bed width how many times you have to turn the test sowing handle for the corresponding acreage.

On fig. 26 the sowing table is set so that the figure 2.5 m is below the figure 89 — above the figure 2.2 you will find the figure 100 and above 2.6 you find the figure 85 in the outer scale. This means that you will have to make 100 revolutions with the test sowing handle for 1/20 ha instead of 89 if the working width has been altered to 2.2 m, and 85 revolutions when the working width has been altered to 2.6 m.

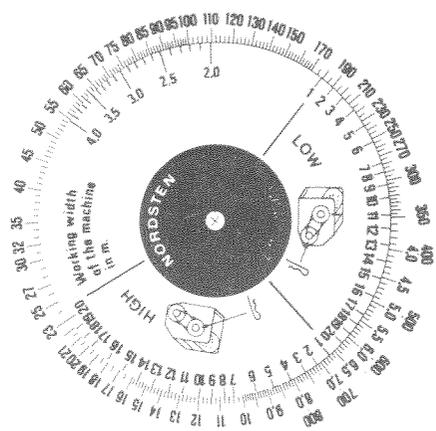


Fig. 26

CLG MK II:

(Fig. 27 - 35)

GEARBOX SETTING (Fig. 27)

The gearboxes have 60 settings obtained by 3 handles, marked with arrows.

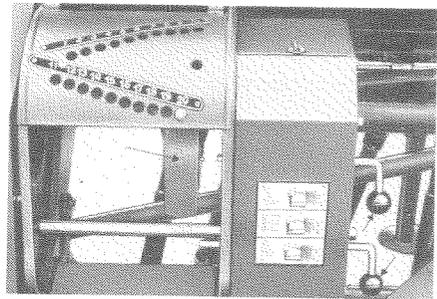


Fig. 27

Fig. 28

The cone gearbox has one handle which can be adjusted in two rows of holes named 1 ... 10 and 11 ... 20, 20 settings in all. The sowing rate increases from 1 to 20. The hole N just between the hole rows is the neutral position.

After selecting the gear, check that the locking pawl is completely locked in the setting hole.

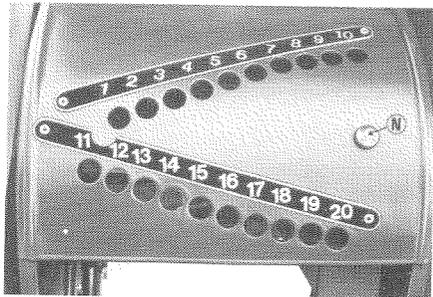


Fig. 28

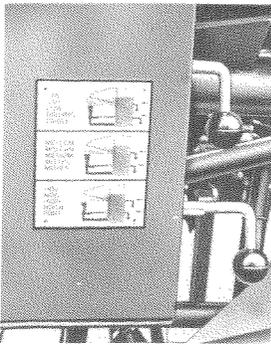


Fig. 29

LOW

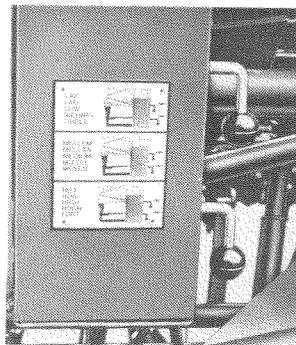


Fig. 30

MEDIUM

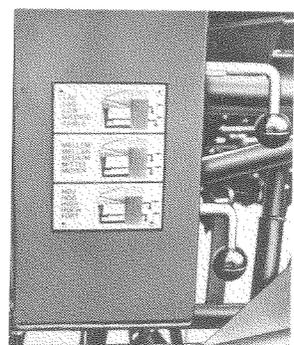


Fig. 31

HIGH

Fig. 29 - 30 - 31

Type CLG MK II

The side gearbox has 2 handles with 3 settings as shown in fig. 29 - 30 - 31. When the handles in the side gearbox are turned so that the ball points upwards they can be pushed in or pulled out.

The three settings are low, medium, and high.

Remember when selecting a gear to move the test sowing handle to and fro to enable the gear teeth to engage.

- Choose a suitable gear for the test sowing, e.g.

Grain: 20 Medium.

Also see the typical examples at the end of these instructions.

- Turn the test sowing handle until the seed flows from all outlets.
- Empty the tray into the hopper and replace it under the seed outlets.
- Turn the test sowing handle for the sowing of:

	1/20 ha	1/10 acre
2.00 m	111 revolutions	90 revolutions
2.50 m	89 –	72 –
3.00 m	74 –	60 –

- Weigh the test sown material on an accurate pair of scales and multiply by 20 (for hectare) or by 10 (for acre). You then get the weight corresponding to what the machine sows on 1 ha or 1 acre.

If the sowing rate is not as required the back of the sowing table should be used.

INSTRUCTIONS IN THE USE OF THE SOWING TABLE

Check with the below figures 32 - 33 that the sowing table corresponds with the machine to be used.

SOWING TABLE • SASCHBEIT • TABLE DE SEMIS

NORDSTEN

Lift-O-matic Type CLG MK II

Correct setting of the machine may only be achieved by following the below instructions, given by type:

1. Check the operation and adjust bearings. Insert five (5) bolts for when the sowing starts.
2. Adjust the correct flow rate (table 1) (table 1) (table 1) (table 1) (table 1).
3. Open the seed chamber, if possible, the seed flow rate over the sowing wheel.
4. Check a rotation rate so that the seed is not too close to the sowing wheel.
5. Pre-rotation: Gear 20 MIDDLE.
6. Filled and the sowing wheel, so that the sowing wheel does not have too much pressure.
7. Empty the tray (table 1) under the sowing wheel.

Turn the handle for sowing:

200 m	100 kg/ha	120 kg/ha
250 m	80 kg/ha	100 kg/ha
300 m	67 kg/ha	80 kg/ha
350 m	60 kg/ha	70 kg/ha

Check if the seed is not too close to the sowing wheel (table 1) (table 1) (table 1) (table 1) (table 1).

1. Check the operation and adjust bearings. Insert five (5) bolts for when the sowing starts.

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2. Adjust the correct flow rate (table 1) (table 1) (table 1) (table 1) (table 1).
3. Open the seed chamber, if possible, the seed flow rate over the sowing wheel.
4. Check a rotation rate so that the seed is not too close to the sowing wheel.
5. Pre-rotation: Gear 20 MIDDLE.
6. Filled and the sowing wheel, so that the sowing wheel does not have too much pressure.
7. Empty the tray (table 1) under the sowing wheel.

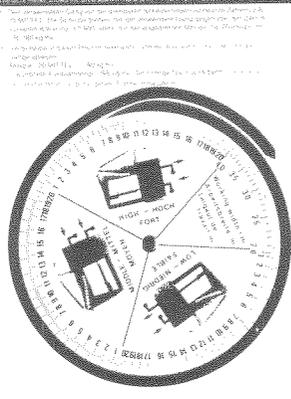
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4. Check a rotation rate so that the seed is not too close to the sowing wheel.
5. Pre-rotation: Gear 20 MIDDLE.
6. Filled and the sowing wheel, so that the sowing wheel does not have too much pressure.
7. Empty the tray (table 1) under the sowing wheel.

THRIGE AGRO
Nordstøenvej 1-7
DK-3400 Hillerød, Denmark

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4. Check a rotation rate so that the seed is not too close to the sowing wheel.
5. Pre-rotation: Gear 20 MIDDLE.
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2. Adjust the correct flow rate (table 1) (table 1) (table 1) (table 1) (table 1).
3. Open the seed chamber, if possible, the seed flow rate over the sowing wheel.
4. Check a rotation rate so that the seed is not too close to the sowing wheel.
5. Pre-rotation: Gear 20 MIDDLE.
6. Filled and the sowing wheel, so that the sowing wheel does not have too much pressure.
7. Empty the tray (table 1) under the sowing wheel.

Fig. 32

Fig. 33

Fig. 34 shows the sowing table, by means of which the test sowing result is used to find the gear setting for the required sowing rate. The revolving disc has adjustment marks for the 60 different settings.

The speed variations in the side gearbox are marked in three areas: low, medium, and high and within each of these areas you will find marks for the settings of the cone gearbox 1 - 20. The lowest gear is LOW 1. The highest gear is HIGH 20. The outer fixed scale forms a series of numbers 4.0 - 350, stating proportional quantities of seed in the various gear settings. The figures are independent of calculations in lbs, kilos or grammes and other series of numbers in the scale can be obtained by moving the decimal point, e.g. 0.4 - 35 or 0.04 - 3.5.

On the sowing table are instructions in test sowing procedure. It is recommended to follow the directions of the sowing table point.

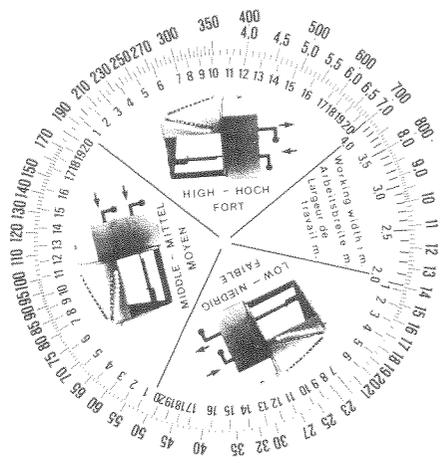


Fig. 34

EXAMPLE (Fig. 34)

From the test sowing it is ascertained that in gear 20 Medium you sow 180 kgs/ha (160 lbs/acre).

The revolving disc of the sowing table has been set accordingly, as 20 Medium has been placed below the figure 180. If you want to sow 195 kgs/ha (174 lbs/acre), the gear setting 1 HIGH is found below the figure 195, and this will then be the correct setting for the rate required. If you want to sow 220 kgs/ha (196/acre) the gear setting 3 HIGH is found.

- AFTER TEST SOWING THE SEED TUBES MUST BE PULLED BACK UNDER THE SEED HOUSINGS AND LOCKED.
- When emptying the hopper the bottom flap handle should be pulled backwards completely.
- In order to obtain maximum accuracy the test sowing should be made with all outlets in the total working width of the machine.

CALCULATIONS OF TURNS FOR TEST CALIBRATION WHEN CHANGING WORKING WIDTH

On the reverse side of the sowing table point 6 indicates test calibration turns for various machine widths, for instance 74 turns for 3.00 m corresponding to 1/20 ha. The correct number of turns can be found by multiplying the test calibration turns with the working width and dividing by the new working width.

For instance: Number of revolutions for a working width of 2.80 m.

$$2.80 \text{ m} = \frac{74 \times 300}{280} = 79 \frac{1}{2} \text{ revolution}$$

READING OF SOWN AREA

(fig. 35)

The figure on the acre meter indicates the sown area in ha and m² (1 ha = 2.471 acre).

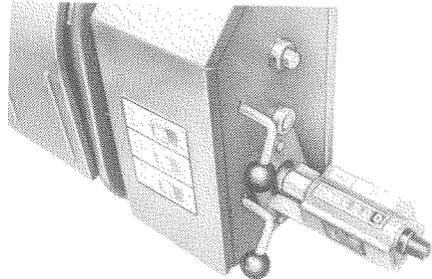


Fig. 35

DURING DRILLING

- It is important that the lift system of the tractor works correctly so that the rocker shaft bottoms completely during work as otherwise the automatic functions of the seed drill will not work. (See "How to start").
- If the markers shift at the wrong moment it may be due to a wrong length of the top link or a fault in the tractor lift. The drill must be horizontal when it is working.

- When filling the seed hopper you should at the same time relate the seed used with the area sown so that possible faults in the sowing work can be detected as early as possible.
- Check frequently whether the marker length setting has changed – measure the distance between the outer seed row from one passage and the outer seed row from the next passage. It should be the same as the distance between the other coulters.
- Only lift and lower the coulters when the machine is moving forward – thereby you avoid the risk of blocking or damaging the coulters.

MAINTENANCE AND PRACTICAL INFORMATION

- Adjustment of chain tensioners should be carried out before starting to drill and before each season.
- Any scratches in the paint should be repaired. The drive wheels should be placed on dry surface or put on chocks when the drill is not being used.
- Remember to empty the hopper after use and clean the drill in order to avoid vermin being attracted to the sowing mechanism which is of nylon.

LUBRICATION:

Drive wheels: Before each season with grease.

All other bearings work without lubrication.

All chains have plastic bushings in the links. These need no lubrication.

After each season they should be cleaned and brushed with oil. Before each season it is recommended to lubricate all chain links and shafts in the gearboxes with oil.

Fig. 36

The ratchet wheel A of the overrun clutch should be lubricated with oil or grease.

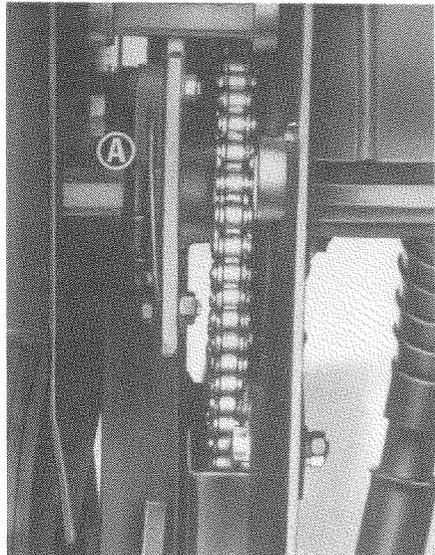


Fig. 36

ADJUSTMENT OF CHAIN TENSIONERS

(Fig. 37)

The chain from the gearbox to the sowing and agitator shafts should always be tightened sufficiently. Loosen the arm A and tighten the chain. After adjustment, retighten the arm.

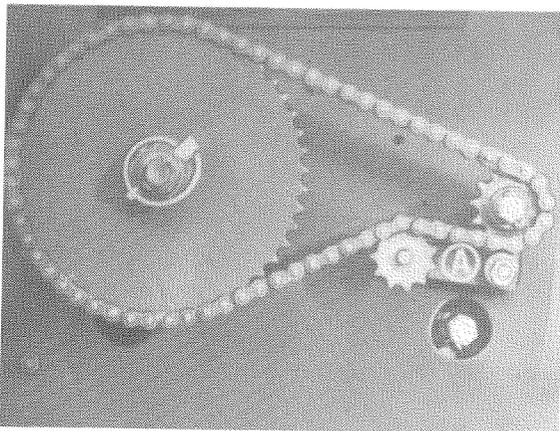


Fig. 37

Fig. 38

Take off the upper half of the guard at the right drive wheel and check the tensioner A for wear and possible adjustment of the arm B.

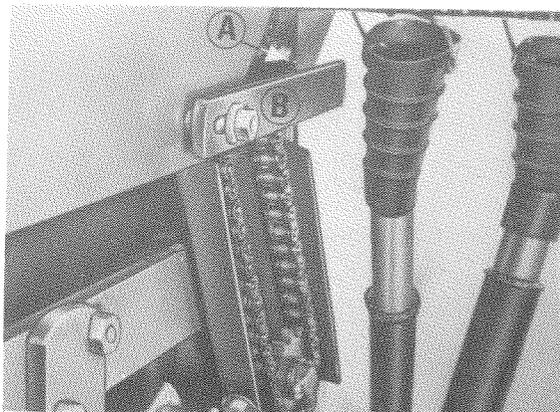


Fig. 38

ADJUSTMENT OF MARKER SHIFTER (Fig. 39)

When the automatic marker shifter has been correctly adjusted, the crank K is locked in its middle position (vertical) when the rocker shaft moving the push rods S is in upper position. Make sure that the rocker shaft is in upper position by lifting the machine with the tractor.

If the push rods are too short the crank will not reach the middle position and, therefore, the double pawl D will not engage and the markers will not shift. Adjustment is done by lifting the machine with the tractor, loosening the nuts R and lifting the push rods S in the slotted holes. Do not forget to tighten the nuts after adjustment.

If the push rods are too long excessive stress will occur in the push rods S which must then carry the total weight of the machine. It is, therefore, important that the push rods are neither too short nor too long. They must be adjusted to a length that enables them to just lock the crank K in middle position when the machine is lifted with the tractor.

Please also note that there should be adequate space between the head of the bolt and the two lower nuts R, so that the bolt does not crush in the hole when the push rods are moving up and down.

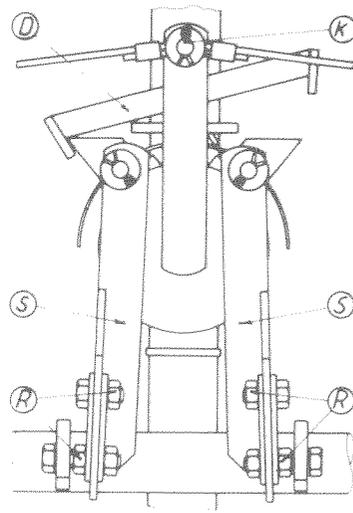


Fig. 39

THE SOWING SHAFTS (Fig. 40)

can be taken out in order to facilitate cleaning of the seed outlets or if you want to use another type of sowing wheel.

Push aside the double sliding socket A.

Disengage the sowing shaft bearing by lifting the locking plate B and turning it backwards. Lock the sowing shaft bearings by pushing the shaft downwards and pressing the locking plate down. Check that the shaft is securely locked by trying to pull it upwards.

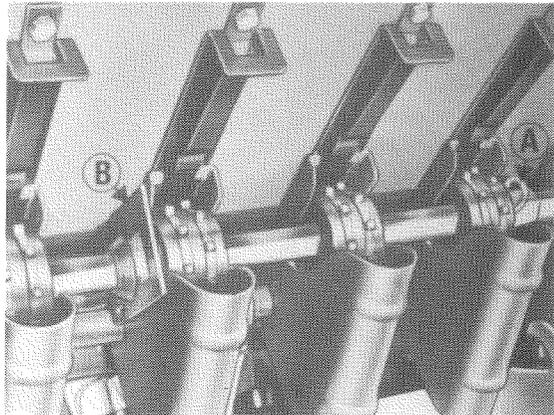


Fig. 40

SPECIAL CROPS

Sowing of Grass Seed

needs special attention, as grass seed may pack if the machine with filled hopper is exposed to vibrations, and therefore be sown in a quantity different from that found by the test sowing.

Therefore, only fill the hopper with the quantity just needed for the test sowing and wait till you are in the field before completely filling the hopper. From time to time during drilling, between each filling of the hopper you should stir the hopper contents by hand in order to ensure uniform sowing (the drill must be stationary when you do so).

If you want clover and timothy seed to be sown in very small quantities you may use fine seed wheel No. 30416 (Fig. 41) or fine seed finger A No. 32072 (Fig. 42) which in the lowest gear will sow approx. 2.3 kg/ha (Fig.41) and 5.5 kg/ha (Fig. 42) respectively for a row width of approx. 12 cms. However, these cannot be used for ordinary grass seed which should be sown with the standard sowing wheel.

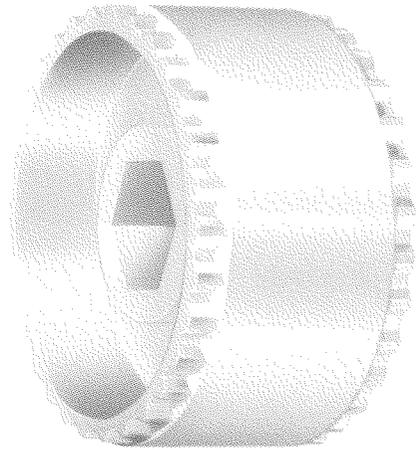


Fig. 41

Fig. 42

Place the fine seed finger insert No. 32072 like A on the standard sowing wheel. Press the seed housing shutters C to the bottom and turn the fine seed finger insert like B. The seed housings must be opened completely and then pushed downwards 1-2 notches. Set the bottom flap handle D in notch No. 1.

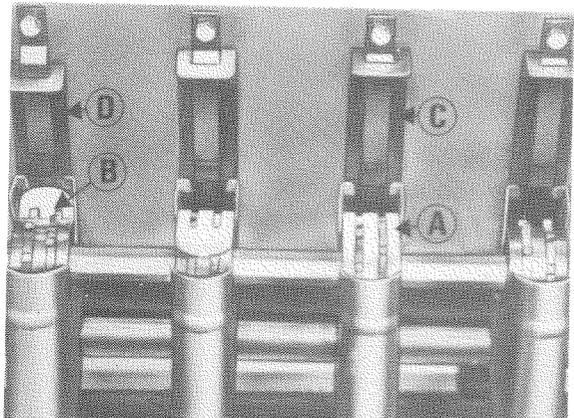


Fig. 42

Rape, white mustard, turnip, swede and similar seeds may be sown in small quantities by using fine seed finger insert No. 32072 (Fig. 42). For these types of seed fine seed wheel No. 30416 (Fig. 41) must NOT be used.

Rape seeds treated with fungicide may cause that the seeds do not run easily from the sowing wheels when these have been fitted with fine seed fingers No. 32072. Therefore check frequently that the seeds are not damaged.

Carrot seed and similar fine seeds may be sown in very small quantities by using fine seed wheel No. 30416 (Fig. 41).

Note: Carrot seed is very abrasive for which reason the fine seed wheels must be regularly checked for wear.

Sowing of beans, maize, peas, and similar large-sized seed may cause problems as the agitator pins may damage the seed, and the gearbox may at the same time be exposed to heavy loads.

If the large-sized seed is smooth-running the agitator shaft need not be used.

For large-sized seed types it is recommended to use the soft seed wheel No. 30447 (Fig. 43) which does not cause damage to the seed and also ensures more uniform sowing.

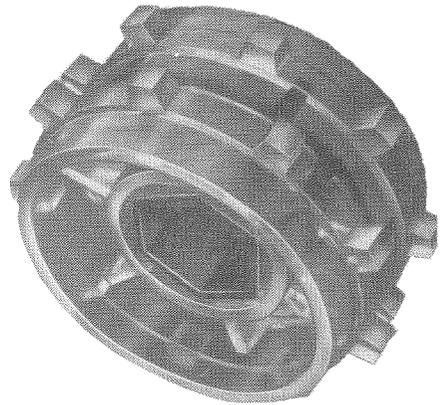


Fig. 43

Fig. 44

Fine seed hopper inserts are used for the sowing of seeds with bigger row distance and should be positioned around the agitator shaft over the outlets to be used.

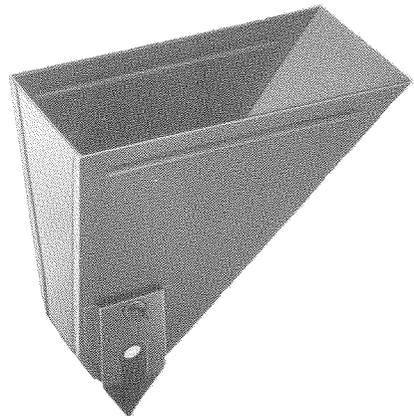


Fig. 44

GRANULAR FERTILIZER

can be sown successfully with this coulter drill.

In order to ensure that the machine is kept in the best possible working order, the following instructions should be followed:

- The drill should be cleaned often and carefully.
- Any scratches in the paint should be repaired.
- The agitator shaft must always be disengaged when sowing fertilizer. (See Fig. 13).
- Seed housing shutters should be pushed 1 notch downwards.
- Adjust the bottom flaps with sufficient clearance to avoid squeezing the fertilizer.

Example:

Urea:	Notch 1
Prilled NPK:	Notch 2 - 3
Calcium salpetre, calcium ammonium salpetre and granular NPK:	Notch 3 - 4
Granular PK:	Notch 3 - 5

- Do not transport the drill with the hopper full.
- Before the sowing is started turn the test sowing handle to check that the fertilizer is not jammed under the sowing wheels. In that case the bottom flap handle should be pushed backwards 2 - 3 notches and the test sowing handle turned again, until there is no resistance, and then the bottom flap handle should be re-set in its correct position.
- Avoid lumps and blockages at the seed outlets.
- The lid of the hopper must be closed.

OPTIONAL EQUIPMENT

TRACK LOOSENERS (Fig. 45)

Kit No. 38891

Mount the track looseners opposite the tractor wheels. Attach the track looseners in a suitable depth — not too deep — between the frame and the fittings A by means of 1 U-bolt with spring washers and nuts.

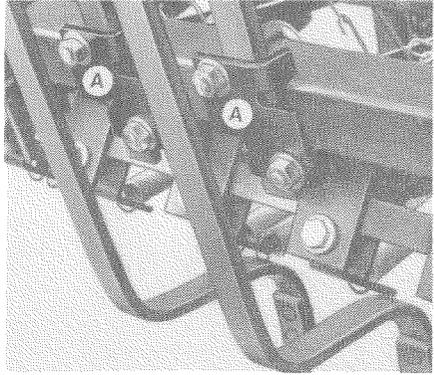


Fig. 45

Fig. 46 - 47

The spring tension of the seed coulters may be individually adjusted for each coulters by means of the chain A on the spring. In order to obtain even pressure on both short and long coulters the long ones are fitted with double springs. (See Fig. 4).

Fig. 46

Central adjustment of spring tension on seed coulters.

Mounting:

Grease the brass disc and guide it over the hexagon of the spindle. Guide the spindle A into the hole B on the frame of the machine and assemble it with the arm C on the coulters bar by means of an 8 mm bolt and a lock nut without jamming.

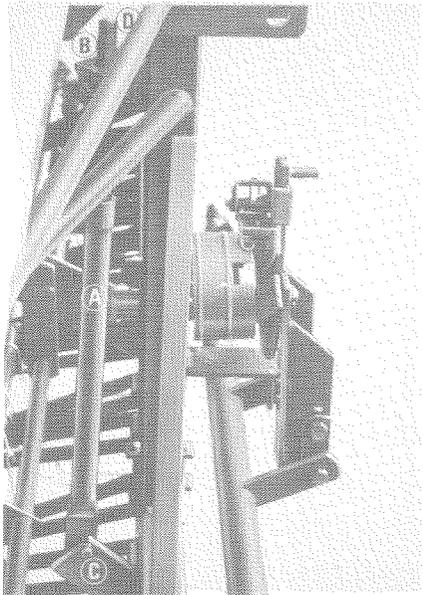


Fig. 46

Fig. 47

The test sowing handle may be placed on the hexagon of the spindle D and be used when adjusting the coulter pressure.

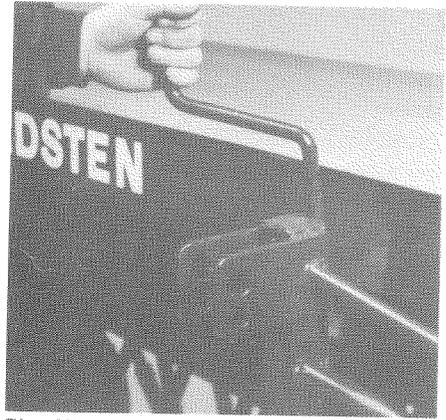


Fig. 47

ACRE METER

CLG MK II 2.00 m, Kit No. 41933

CLG MK II 2.50 m, Kit No. 41932

CLG MK II 3.00 m, Kit No. 41931

Fig. 48

The acre meter shows the sown area in ha and m².

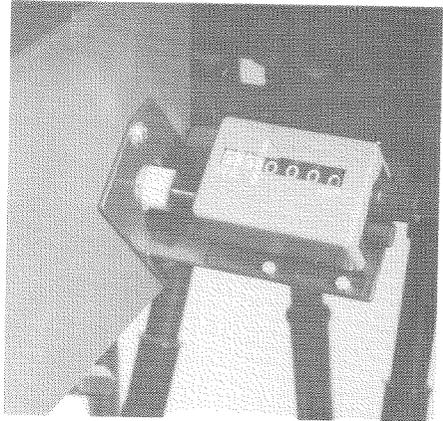


Fig. 48

ELECTRONIC CALCULATOR PX50

Fig. 49

Kit No. 44457

PX50 can be programmed to show the area sown in all required measuring units – i.e. hectares etc. PX50 can also be used as mileometer, tripcounter, bale counter and rotation counter. PX50 is placed in the tractor cab.



Fig. 49

FOLLOWING HARROW

CLG MK II 2.00 m, Kit No. 41716

CLG MK II 2.50 m, Kit No. 41717

CLG MK II special 3.00 m,

Kit No. 41718

CLG MK II 3.00 m, Kit No. 41719

Fig. 50 - 52

is mounted as per the following instructions:

Fig. 50

Mount 3 – draw bars A into B to the middle and at each side of the seed drill.

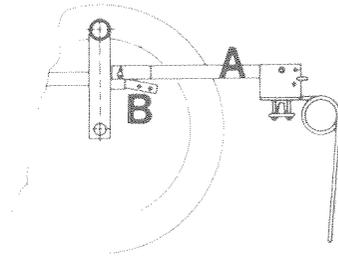


Fig. 50

Fig. 51

Assemble the harrow sections by means of bolts M12 x 45 and lock nuts A M12, so that the U-sections are in line and the links A are easy to move. Place the harrow behind the machine with equal distance to either side.

Place the suspension C in the outer hole of the draw bar and fasten the suspension C on the U-section between the harrow teeth by means of the plates and nuts M12.

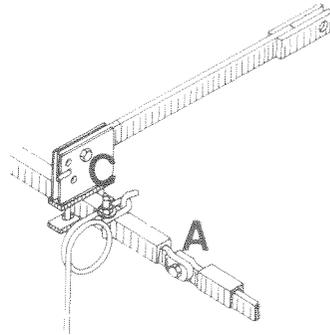


Fig. 51

ADJUSTMENT OF THE FOLLOWING HARROW

Fig. 52

A: Transport position

B: Light harrowing

C: Maximum harrowing

Remember: The pin D should **always** be placed under the draw bar when the following harrow is working.

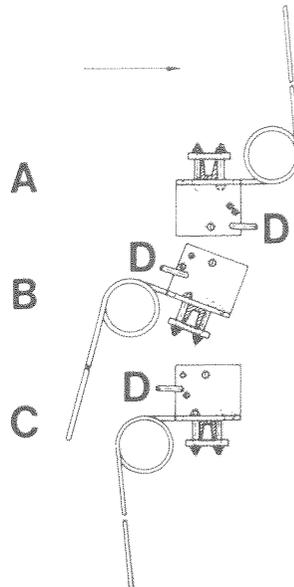


Fig. 52

INDICATOR

Kit No. 41927

Fig. 53

Inside ball float with outside indication of hopper contents.

Mounting:

- Remove the stopper in the bearing.
- Remove the nut and indicator from the swimmer arm.
- Loosen the bearing in the seed hopper — the nut is placed on the inside.
- Place the disc against stop on the swimmer arm and guide this from the inside through the bearing so that the ball turns to the end plate of the seed hopper.
- Turn the indicator to a suitable tolerance and fasten it with the nut when the ball is at the bottom of the seed hopper and the indicator points towards the end of the transfer.
- Fasten the bearing by means of the inside nut.

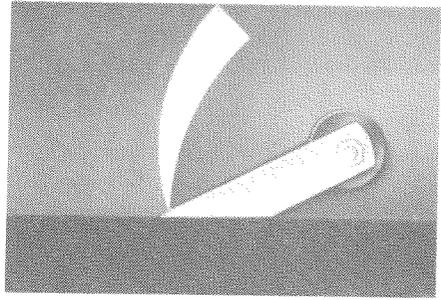


Fig. 53

WHEEL SCRAPERS

Kit No. 41899

Fig. 54

The machine can be fitted with wheel scrapers.

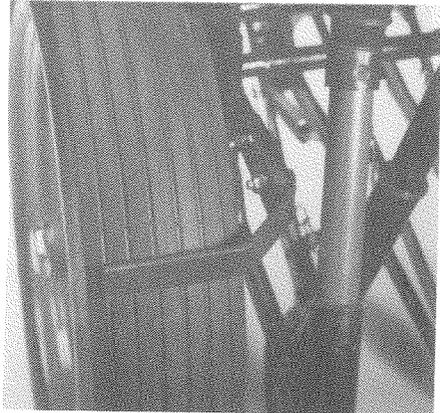


Fig. 54

TRAMLINES

Kit No. 38382

Fig. 55 - 59

Tramlining ensures that the spraying of chemicals can be done with great accuracy, that the crop is not damaged and that the operation is simplified and facilitated considerably as you only have to follow the tramlines.

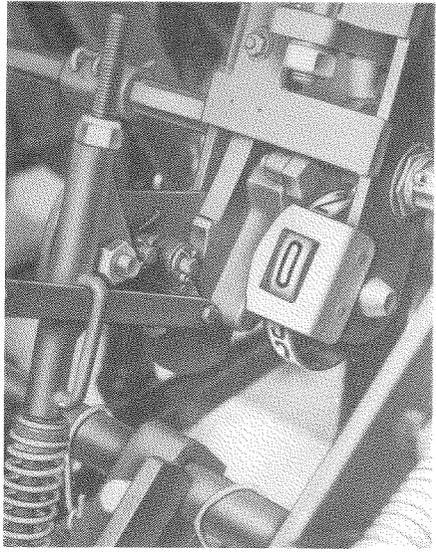


Fig. 55

An automatic tramlining device which can be preset to close at every third or fourth turn, or two times open/two times closed, can be fitted for closing of one or two shutters on each side. (Fig. 56).

Separate fitting instructions are sent with this kit.

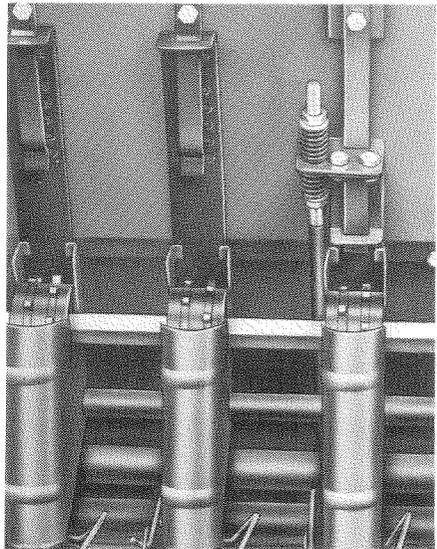


Fig. 56

PRE-EMERGENCE TRAMLINING KIT

Kit No. 41322

Fig. 57

In connection with the automatic tramlining device a pre-emergence tramlining kit (physical marker) can be fitted to mark the position of the tramlines for spraying or fertilizing before the crop emerges.



Fig. 57

ELECTRONIC TRAMLINING KIT AGRO TRAM 2000

Kit No. 900.09.53

Fig. 58

To make tramlines this kit can be fitted to all Lift-O-Matic seed drills regardless of serial No.

The AGRO TRAM 2000 can be set for tramlines up to 9 times the working width of the seed drill.

REMEMBER when test calibrating position the control switch on "OFF". Sowing shaft revolution indicator is in conjunction with the AGRO TRAM 2000.

As an option electronic seed level indicator is available.



Fig. 58

PRE-EMERGENCE TRAMLINING KIT

Kit. No. 44676

Fig. 59

In conjunction with the electronic tramlining kit AGRO TRAM 2000 a pre-emergence tramlining kit (physical marker) can be fitted to mark the position of the tramlines before the emergence of the seed.

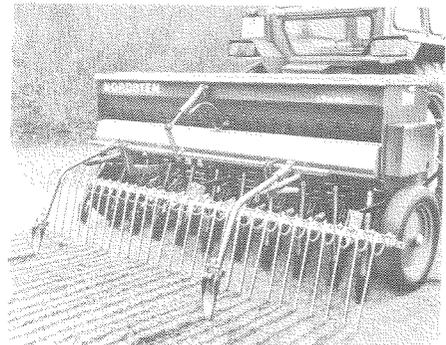


Fig. 59

MACHINES SUPPLIED WITH DISC COULTERS

In order to prevent the machine from tilting backwards when filling the hopper when the machine is not suspended by the tractor the support leg, Fig. 60 - 61, SHOULD ALWAYS be mounted BEFORE USE.

Mount 1 support leg on sizes 2.00 - 3.00 m.

Place the support leg A at the centre of the seed hopper.

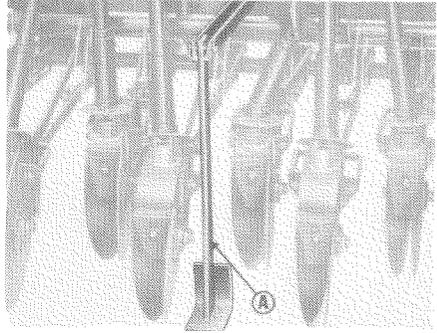


Fig. 60

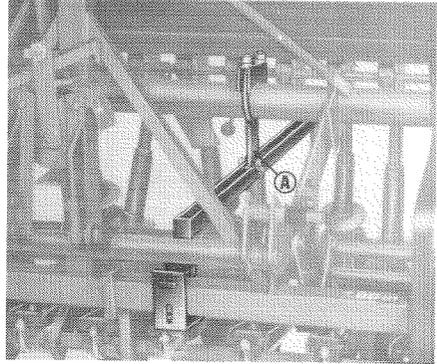


Fig. 61

**Examples of sowing rates for grain in LOWEST gear setting
when using NORDSTEN LIFT-O-MATIC Drills, type CLG
with normal row distance**

Correct setting is only obtained by test sowing
and use of NORDSTEN sowing table for LIFT-O-MATIC, type CLG

Sowing material	Bottom flap notch No (Notch No. 1 is closest to the sowing wheel)			Row distance in cms	Kg/ha			Lbs/acre		
	Shutter notch No (Notch No. 1 is completely open)	Gear Setting	Row distance in cms		Standard sowing wheel	Spec. sowing wheel 30416	Fine seed finger 32072	Standard sowing wheel	Special sowing wheel 30416	Fine seed finger 32072
Barley	2	1	LOW 1	12	20.5			18		
Oates	2	1	LOW 1	12	17.4			15.5		
Wheat	2	1	LOW 1	12	23.0			20.5		
Rye	2	1	LOW 1	12	21.5			19		
Fescue grass	1	1	LOW 1	12	6.2			5.5		
Compound 411 Grass seed	1	1	LOW 1	12	11.0			9.8		
Orchard grass	1	1	LOW 1	12	5.6			5		
Rye grass ord.	1	1	LOW 1	12	7.4			6.6		
Rye grass Italian	1	1	LOW 1	12	5.2			4.6		
Meadow grass ordinary	1	1	LOW 1	12	6.0			5.3		
Smooth meadow grass	1	1	LOW 1	12	6.2			5.5		
Timothy	1	2	LOW 1	12	12.0	1.5	4.5	10.7	1.35	4.0
Alsike clover	1	2	LOW 1	12	15.5	2.0	5.6	13.8	1.8	5
White clover	1	2	LOW 1	12	17.2	2.5	5.8	15.3	2.2	5.2
Red clover	1	2	LOW 1	12	17.2	2.5	5.8	15.3	2.2	5.2
Lucerne	1	2	LOW 1	12	13.5	2.1	5.6	12	1.9	5
Rape	1	2	LOW 1	12	16.0		4.5	14.2		4
Mustard	1	2	LOW 1	12	16.2		4.6	14.5		4.1
Poppy	1	2	LOW 1	12	12.0		3.0	11.6		2.7
Beet	2	1	LOW 1	50	3.2			2.8		
Swede	1	2	LOW 1	50	3.7		1.2	3.3		1.1
Sugar beet stand.poly	2	1	LOW 1	50	2.8			2.5		
Carrot	1	2	LOW 1	50	3.9	0.15	0.9	2.7	0.13	0.8
Parsley, chives	1	2	LOW 1	50	3.3	0.4	1.1	2.9	0.36	1.0
Peas, yellow	3-4	1	LOW 1	12	40.0			35.6		

If you want the sowing rate for another row distance you divide by the distance wanted and multiply by the one stated on the table, e.g. the sowing rate of Sugar beet, stand. poly. gear LOW 1 is 2.8 kgs/ha with standard sowing wheel for row distance 50 cms, and will be

$$\frac{2.8 \times 50}{50} = 2.55 \text{ kgs/ha for 55 cms between rows.}$$

The sowing rate refers to a certain gear setting. The sowing rate of the other gear settings can be found by means of the sowing table.

**Examples of gear settings for grain
when using NORDSTEN LIFT-O-MATIC Drills, type CLG
with normal row distance**

Correct setting is only obtained by test sowing
and use of NORDSTEN sowing table for LIFT-O-MATIC, type CLG

Sowing material	Kg/ha	Lbs/acre	Notch No. 1 is closest to the sowing wheel		
			Bottom flap Notch No.	Notch No. 1 is completely open. Shutter notch No.	
				Gear setting	
BARLEY	100	89	2	1	HIGH 5
	108	96	—	—	HIGH 6
	118	105	—	—	HIGH 7
	123	110	—	—	HIGH 8
	130	115	—	—	HIGH 9
	136	121	—	—	HIGH 10
	146	131	—	—	HIGH 11
	156	139	—	—	HIGH 12
	167	148	—	—	HIGH 13
	178	158	—	—	HIGH 14
	192	170	—	—	HIGH 15
	207	184	—	—	HIGH 16
	225	200	—	—	HIGH 17
	238	210	—	—	HIGH 18
250	221	—	—	HIGH 19	
260	232	—	—	HIGH 20	
WHEAT	150	133	2	1	HIGH 10
	162	143	—	—	HIGH 11
	172	152	—	—	HIGH 12
	183	163	—	—	HIGH 13
	197	174	—	—	HIGH 14
	210	187	—	—	HIGH 15
	228	202	—	—	HIGH 16
	250	220	—	—	HIGH 17
	260	231	—	—	HIGH 18
	275	243	—	—	HIGH 19
290	258	—	—	HIGH 20	
OATES	115	102	2	1	HIGH 10
	124	110	—	—	HIGH 11
	132	117	—	—	HIGH 12
	140	125	—	—	HIGH 13
	150	133	—	—	HIGH 14
	162	143	—	—	HIGH 15
	175	155	—	—	HIGH 16
	190	169	—	—	HIGH 17
	200	177	—	—	HIGH 18
	210	186	—	—	HIGH 19
220	195	—	—	HIGH 20	
RYE	136	121	2	1	HIGH 10
	146	130	—	—	HIGH 11
	155	138	—	—	HIGH 12
	165	147	—	—	HIGH 13
	177	158	—	—	HIGH 14
	190	169	—	—	HIGH 15
	205	183	—	—	HIGH 16
	225	200	—	—	HIGH 17
	235	210	—	—	HIGH 18
	247	220	—	—	HIGH 19
260	231	—	—	HIGH 20	

**Examples of sowing rates for grain in LOWEST gear setting
when using NORDSTEN LIFT-O-MATIC Drills, type CLG MK II
with normal row distance**

Correct setting is only obtained by test sowing
and use of NORDSTEN sowing table for LIFT-O-MATIC, type CLG MK II

Sowing material	Bottom flap notch No (Notch No. 1 is closest to the sowing wheel)		Gear Setting	Row distance in cms	Kg/ha			Lbs/acre			
	2	1			LOW 1	Standard sowing wheel	Spec. sowing wheel 30416	Fine seed finger 32072	Standard sowing wheel	Special sowing wheel 30416	Fine seed finger 32072
Barley	2	1	LOW 1	12	12.4			11.0			
Oates	2	1	LOW 1	12	10.5			9.3			
Wheat	2	1	LOW 1	12	13.9			12.4			
Rye	2	1	LOW 1	12	13.0			11.6			
Fescue grass	1	1	LOW 1	12	3.9			3.5			
Compound 411 Grass seed	1	1	LOW 1	12	6.7			6.0			
Orchard grass	1	1	LOW 1	12	3.4			3.0			
Rye grass ord.	1	1	LOW 1	12	4.5			4.0			
Rye grass Itaiian	1	1	LOW 1	12	3.1			2.8			
Meadow grass ordinary	1	1	LOW 1	12	3.7			3.3			
Smooth meadow grass	1	1	LOW 1	12	3.8			3.4			
Timothy	1	2	LOW 1	12	7.1	0.9	2.7	6.3	0.8	2.4	
Alsike clover	1	2	LOW 1	12	9.4	1.2	3.3	8.4	1.1	2.9	
White clover	1	2	LOW 1	12	10.5	1.4	3.5	9.3	1.2	3.1	
Red clover	1	2	LOW 1	12	10.5	1.4	3.5	9.3	1.2	3.1	
Lucerne	1	2	LOW 1	12	8.1	1.3	3.3	7.2	1.2	2.9	
Rape	1	2	LOW 1	12	9.6		2.8	8.5		2.5	
Mustard	1	2	LOW 1	12	9.7		2.8	8.6		2.5	
Poppy	1	2	LOW 1	12	7.4		1.9	6.6		1.7	
Beet	2	1	LOW 1	50	1.9			1.7			
Swede	1	2	LOW 1	50	2.2		0.75	2.0		0.67	
Sugar beet stand.poly	2	1	LOW 1	50	1.7			1.5			
Carrot	1	2	LOW 1	50	1.8	0.16	0.6	1.6	0.14	0.53	
Parsley, chives	1	2	LOW 1	50	2.0	0.25	0.65	1.8	0.22	0.58	
Peas, yellow	3-4	1	LOW 1	12	24.0			21.4			

If you want the sowing rate for another row distance you divide by the distance wanted and multiply by the one stated on the table, e.g. the sowing rate of Sugar beet, stand. poly, gear LOW 1 is 1.7 kgs/ha with standard sowing wheel for row distance 50 cms, and will be

$$\frac{1.7 \times 50}{50} = 1.55 \text{ kgs/ha for 55 cms between rows.}$$

The sowing rate refers to a certain gear setting. The sowing rate of the other gear settings can be found by means of the sowing table.

**Examples of gear settings for grain
when using NORDSTEN LIFT-O-MATIC Drills, type CLG MK II
with normal row distance**

Correct setting is only obtained by test sowing
and use of NORDSTEN sowing table for LIFT-O-MATIC, type CLG MK II

Sowing material	Kg/ha	Lbs/acre	Notch No. 1 is closest to the sowing wheel		
			Bottom flap Notch No.	Notch No. 1 is completely open. Shutter notch No.	
				Gear setting	
BARLEY	100	89	2	1	MEDIUM 13
	125	111	—	—	MEDIUM 16
	150	134	—	—	MEDIUM 19
	170	151	—	—	HIGH 1
	180	160	—	—	HIGH 2
	192	171	—	—	HIGH 3
	205	182	—	—	HIGH 4
	220	196	—	—	HIGH 5
	240	214	—	—	HIGH 6
	260	231	—	—	HIGH 7
	275	245	—	—	HIGH 8
	300	267	—	—	HIGH 10
	350	312	—	—	HIGH 12
	400	356	—	—	HIGH 14
	500	445	—	—	HIGH 17
575	512	—	—	HIGH 20	
WHEAT	160	142	2	1	MEDIUM 18
	168	150	—	—	MEDIUM 19
	176	157	—	—	MEDIUM 20
	190	169	—	—	HIGH 1
	200	178	—	—	HIGH 2
	215	191	—	—	HIGH 3
	230	205	—	—	HIGH 4
	247	220	—	—	HIGH 5
	265	236	—	—	HIGH 6
	290	258	—	—	HIGH 7
650	579	—	—	HIGH 20	
OATES	144	128	2	1	HIGH 1
	175	156	—	—	HIGH 4
	190	169	—	—	HIGH 5
	200	178	—	—	HIGH 6
	220	196	—	—	HIGH 7
	230	205	—	—	HIGH 8
	245	218	—	—	HIGH 9
	255	227	—	—	HIGH 10
	275	245	—	—	HIGH 11
	290	258	—	—	HIGH 12
490	436	—	—	HIGH 20	
RYE	150	134	2	1	MEDIUM 18
	165	147	—	—	MEDIUM 20
	180	160	—	—	HIGH 1
	190	169	—	—	HIGH 2
	200	178	—	—	HIGH 3
	215	191	—	—	HIGH 4
	230	205	—	—	HIGH 5
	250	223	—	—	HIGH 6
	270	240	—	—	HIGH 7
	285	254	—	—	HIGH 8
	600	534	—	—	HIGH 20

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