

# EcoLine



 Instruction manual

# Contents

## 1. Generally

Foreword . . . . .	3
Technical data . . . . .	4
Equipment . . . . .	5
Safety precautions . . . . .	6

## 2. Mounting and adjustment

On receipt . . . . .	7
Commissioning the seed drill . . . . .	7
Tyre pressures . . . . .	7
Tractor engagement . . . . .	8
Coupling to the tractor . . . . .	8
Supporting shaft (cat I or II) . . . . .	8
Quick coupling cat II . . . . .	8
Row distance . . . . .	9
Row distance . . . . .	9
Marker shifter . . . . .	10
Automatic marker shifter . . . . .	10

## 3. Adjustment

Calibration . . . . .	11
Generally . . . . .	11
Agitator shaft . . . . .	11
Bottomflaps . . . . .	11
Seed housing shutters . . . . .	12
Lowering the seed funnels . . . . .	12
Calibration tray(s) to horizontal . . . . .	13
Calibration I . . . . .	13
Filling of sowing material . . . . .	13
Scale setting . . . . .	13
Starting the seed flow . . . . .	13
Turning the test sowing handle . . . . .	13
Weighing . . . . .	14
Calculation of the sowing rate . . . . .	14
Adjusting the sowing rate . . . . .	14
Sowing tray(s) closed . . . . .	14
Raising the seed funnels . . . . .	14
Discrepancies in the sowing rate . . . . .	14

Special crops . . . . .	15
Sowing of grass seed . . . . .	15
Sowing of peas, beans, maize etc. . . . .	15
Sowing of fine seeds . . . . .	15
Coulter pressure/sowing depth . . . . .	16
Coulter pressure/sowing depth . . . . .	16
Coulter tightening . . . . .	16
Wheel track eradicators . . . . .	17
Markers . . . . .	18
Adjustment of markers . . . . .	18
Centre marking . . . . .	18
Front wheel marking . . . . .	18
Marking track . . . . .	18
Adjustment of following harrow . . . . .	19

## 4. Attendance

Generally . . . . .	20
Driving speed . . . . .	20
Emptying of seed hopper . . . . .	20

## 5. Maintenance and lubricating

Fine adjustment of bottom flaps . . . . .	21
Cleaning of seed outlets and sowing rollers . . . . .	21
Lubrication . . . . .	22
Winter storage . . . . .	22

## 6. Sowing table

Sowing table - Barley . . . . .	23
Sowing table - Wheat . . . . .	24
Sowing table - Peas . . . . .	25
Sowing table - Rape . . . . .	26

## 7. Notes . . . . . 27

# 1. Generally

## Foreword

**KONGSKILDE** would like to congratulate you on your new EcoLine seed drill which we are convinced will serve you well in your work.

In order to use the machine correctly and safely, we recommend that you familiarise yourself with it by studying this instruction manual.

The correct use of the machine, along with careful maintenance, lubrication and storage, will help to keep it in good working order.

## Technical data

Machine type	EcoLine 250	EcoLine 300
Working width	2,50 m	3,00 m
Overall height	1,39 m	1,39 m
Overall width	2,47 m	2,97 m
Overall length	1,13 m	1,13 m
Overall length with following harrow	1,57 m	1,57 m
Filling height	1,28 m.	1,28 m.
Hopper capacity	446 liter	556 liter
Hopper capacity, wheat	334 kg	417kg
Total weight	465 kg	508kg
Total weight with wheat	789 kg	927 kg
Number of Euro coulters	17/19/21	19/21/23/25/29
Distance between rows, Euro coulters	13/12/10 cm	14/12/10 cm
Number of disc coulters	17/19	19/21/23
Distance between rows,disc coulters	14/13 cm	14/13 cm
Distance between coulter rows	33 cm	33 cm
Tyres	7.00 x 12	7.00 x 12
Hitch category	I and II	I and II
Tractor's lift requirements	880 kg	1080 kg

## Equipment

The seed drill can be fitted with the following equipment:

Following harrow type Max-Flow.

The following harrow has rearward-facing tines which ensure that plant residue, such as straw and similar materials, is less likely to drag.

Following harrow type Wing-Flow. The following harrow has rearward-curving tines which ensure that plant residue is less likely to drag. In addition the stress on the disc coulters is reduced.

A set of pressure springs for the Max-Flow and Wing-Flow following harrows.

Following harrow type Twin-Flow. A double following harrow can be mounted instead of the traditional following harrow by fitting a double following harrow tine on the hindmost set of Euro coulters.

Electronic tramlining device AGRO TRAM 2100. This can be mounted on the seed drill in order to make plant-treatment tracks of up to nine times the seed drill's width. AGRO TRAM 2100 is equipped with seed shaft control and acremeter for measuring both part and total area and monitoring the electronic clutches and rotations.

Pre-emergence disc markers which make tracks in the seedbed when tramlining shut off is activated. This eases field treatments before seeds have germinated.

Electronic level control indicator for hopper capacity, can be used in connection with AGRO TRAM 2100. Optional equipment.

Extension cable for AGRO TRAM 2100.

Mechanical directly readable areameter.

Mechanical remote-adjustment of sowing rate during work. The adjustment is made from the tractor's cab.

Set of wheel track eradicators for tractor wheels.

Wheel eradicators for seed-drill wheels.

Fine seed fingers for reducing the sowing rate.

Set of 2 sieves for screening seeds when filling the hopper.

Soft seed rollers to reduce the damage to large seed.

Fine seed rollers for sowing of small seeds.

Depth limiters for Suffolk (= „Euro” ) coulters.

Depth limiters for disc coulters.

Hydraulical coulters pressure adjustment.

Coulter foot for mounting on the outer coulter behind the driving wheels of the seed drill. The coulter foot loosens the compacted soil surface in the seed drill's wheel tracks, such that the seed line is correctly placed.

Grass seed coulter foot for mounting on the Euro coulters. Enables sowing of grass seed in 80 mm band widths when the soil is suitably dry and free of residues.

Seed hopper for sowing of grass and slug pellets.

# Safety Precautions

This instructions and safety notes in this instruction manual must be followed.

## Safety distances

The safety distance to the seed drill while in operation is 4 metres. Persons must under no circumstances be on the seed drill while it is running.

## Safety when lifting the seed drill

The marked cutted out eyes should be used when lifting the seed drill and when carrying out repair of the seed drill's main frame.

## Safety precautions concerning guards

Guards for chains, gear wheels and rotating shaft ends etc. must be fitted to comply with the required safety regulations.

Loose guards, which include calibration trays and seed hopper lid, should be fitted and closed when the machine is running.

The agitator shaft in the hopper is not shielded. Therefore, to avoid injury, manual stirring of the sowing material whilst the machine is running must be avoided.

Fixed guards should be removed and fitted using tools.

## Safety precautions whilst driving

When driving on public roads, road traffic laws concerning lights, safety, etc. should be followed. Lift arm pins and top link pins should be properly secured in order to avoid accidents.

For safety reasons, marker arms should always be locked in position when driving on public roads. Locking is carried out using lock fittings which are mounted on the locking pin and secured with the ring pin. See figure 2G.

## Safety precautions when parking

Always place the seed drill on firm, horizontal ground when it is removed from the tractor. Ensure that the support legs are mounted and secured by the locking pin.

## Safety when cleaning

Cleaning and maintenance of the seed drill should only be carried out when the machine is not running.

## Safety precautions concerning hydraulics

Hydraulic systems with a working pressure of up to 200 bar must be treated with care. When carrying out repairs, the hydraulic system must be without pressure. Air in the hydraulic system can lead to incorrect functioning of the machine, and thus should be expelled before the machine is used.

## Safety when mounting tyres

Tyre mounting without sufficient expertise or the necessary special tools may lead to serious accidents.

## Safety precautions concerning tightening

Tighten all bolts after the first 25 hours of operation. All bolts should be subsequently tightened before the start of each season.

## Product liability

Manufacturer's product liability covers machines which are defective on delivery. Product liability no longer applies if modifications are made to the seed drill or its accessories without manufacturer's explicit written permission.

It is also a condition of the product liability that the seed drill is only used for purposes described in this instruction manual or for purposes which have manufacturer's permission.

Finally, it is also a condition that the seed drill is used with all fixed guards fitted.

## 2. Mounting and adjustment

### On receipt

#### Commissioning the seed drill

Immediately after receiving the drill, it and any extra equipment should be checked to ensure that the items received are in accordance with the order and that there are no defects or missing parts. Any claims should be immediately forwarded to the dealer.

In the case of damage occurring during transport, claims should be forwarded to the transport firm used.

Otherwise reference is made to manufacturer's usual terms of sale and delivery.

The coulter settings - and thus their mutual spacing - may have changed during transport. The coulter settings should therefore be checked (see this section under coulter spacing) and any necessary adjustments carried out as described.

Check that the chains between the driving wheel, gearbox, agitator shaft and sowing shaft are correctly adjusted. This is particularly important if extra equipment with chain drive has been fitted. Any necessary adjustments should be carried out as described in section 5.

Chains and linkages should be lubricated with oil.

#### Tyre pressures

The correct tyre pressure for the driving wheels is 1,2 kg/cm<sub>2</sub> (bar) = 0,12 MPa = 17 lb. The tyre pressures should be checked regularly.

Since the tyre pressures influence the sowing rate, using the tyre pressures specified above is recommended.

# Tractor engagement

## Coupling to the tractor

The position handle is placed in a neutral position such that the lift arms can move freely for the whole lifting area.

The check chains or rods for the lift arms should be fitted.

If the lift arms' lifting rods have slotted holes, then these should be used. The seed drill can then follow the surface of the earth more effectively.

## Supporting shaft ( cat I or II )

The seed drill is supplied with supporting shaft for both cat. I and II.

The supporting shaft should be placed in the eyes of the lift arms and locked in position with ring pins on both sides.

When changing the supporting shaft the lifting rocker and the spacing bush are turned in both ends. See figure 2A.

Mount the the top link as parallel with the lift arms as possible.

Lift the seed drill.

## Quick coupling cat II

Place supporting shaft into eyes / hooks of lift arms. Maneuver the tractor's lift arms und the quick-coupling device of the drill. Then lift the lift arms. The machine is automatically hooked and lifted now. See figure 2B.

Adjust the top link length so that the lid of the seed hopper is horizontal with the appliance in working position. See figure 2C.

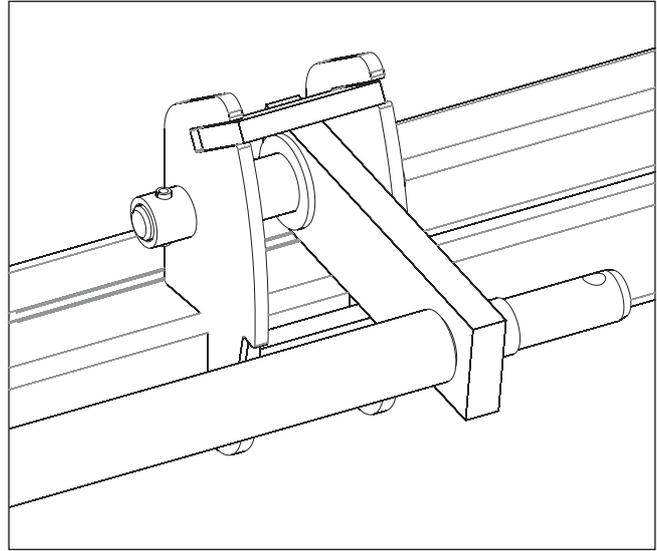


Figure 2A. Supporting shaft with rocker and spacing bush .

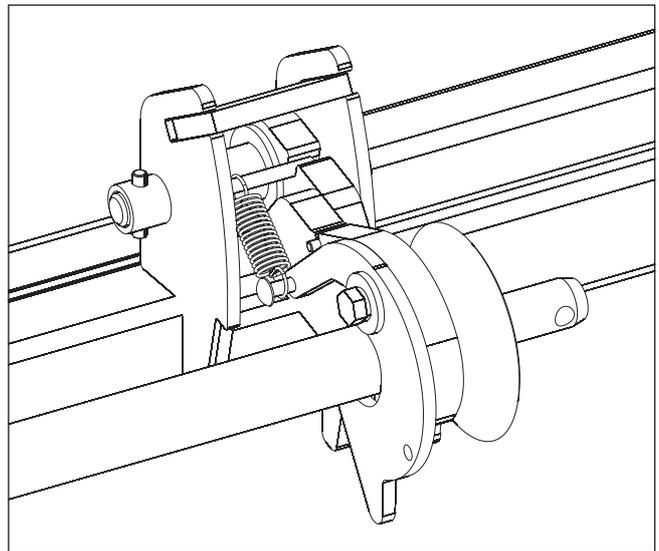


Figure 2B. Quick coupling shaft

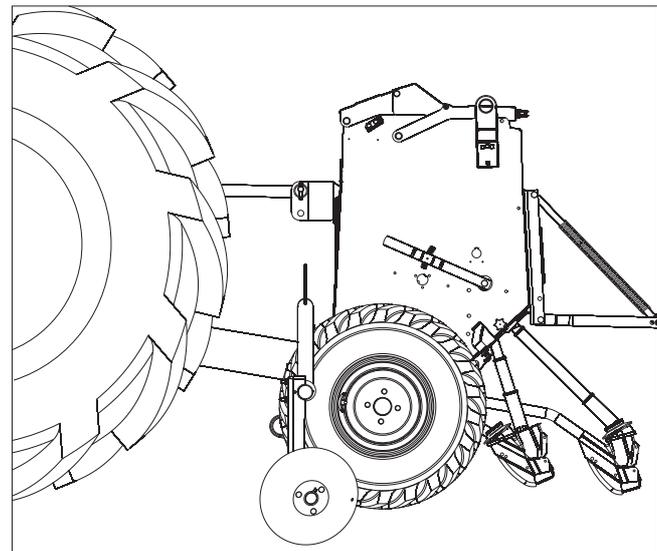


Figure 2C. The top link is adjusted so that the hopper is horizontal.

## Row distance

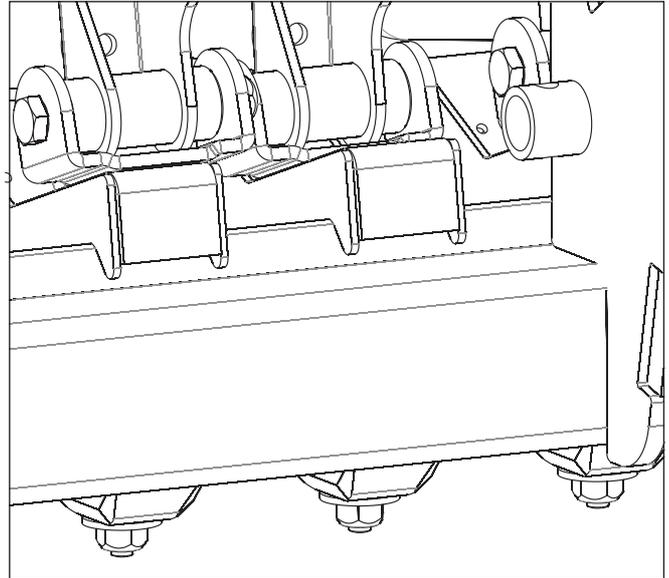
### Row distance

Changing and adjusting the row spacing can be carried out by moving the suspension arms and clamp for each coulter sideways on the coulter bar. This can be done after the bolts under the clamps have been loosened. See figure 2D.

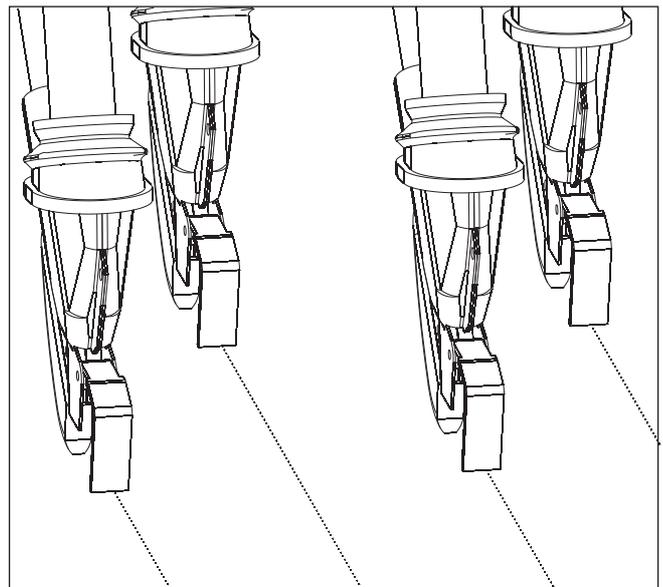
The distance between the coulters is measured directly on the coulters themselves - and thus not on the suspension arms. The use of a measuring implement with the actual row spacing marked is recommended.

When changing the row spacing, measurement should be made from the central coulter, which should be placed in the exact centre of the seed drill. Each coulter can then be adjusted to the desired distance from the centre coulter. See figure 2E.

Remember to tighten all bolts after adjustment.



*Figure 2D. Clamp with bolt.*



*Figure 2E. The row distance is measured from the center coulter.*

# Marker shifter

## Automatic marker shifter

The automatic marker shifter is activated each time the drill is lifted by the tractor.

In order to ensure the correct functions of the marker shifter it is essential that it is correctly adjusted. See figure 2F.

When the automatic marker shifter is correctly adjusted the marker (A) will be locked in its central position (vertically) when the lifting rocker moving the push rods (B) is in the uppermost position.

Ensure that the lifting rocker is in the uppermost position by lifting the seed drill by the tractor.

If the push rods are too short the marker shifter will not enter its central position, the double pawl (C) will not engage and the markers do not shift.

If the push rods are too long a large stress will arise upon the push rods (B) which then carries the whole weight of the machine.

The push rods must, therefore, neither be too short nor too long.

The adjustment of the push rods are made by lifting the machine by the tractor, loosening the nuts (D) and pushing the marker shifter down in the slotted holes. If the push rods are too long the back plate is pushed up in the slotted holes. Remember to retighten the nuts after adjustments.

The wire length to the marker arm is adjusted by changing the fixing point on the flange at the bending of the marker arm.

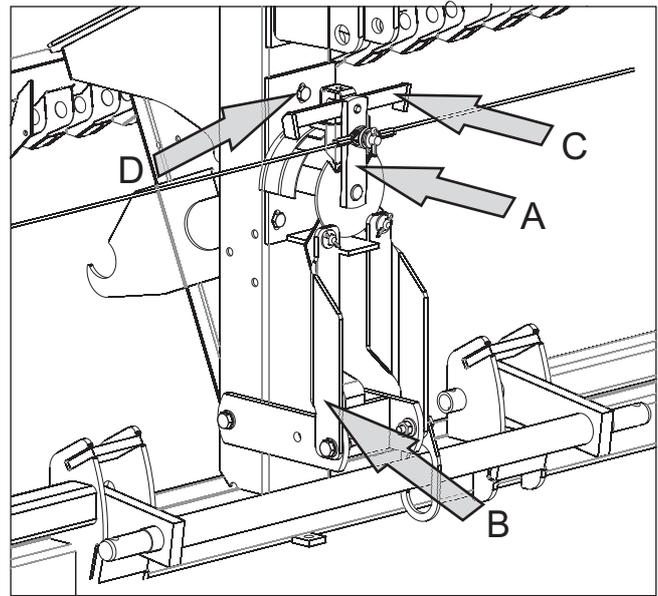


Figure 2F. Marker shifter.

### 3. Adjustment

#### Calibration

##### Generally

Before sowing begins, the following should be carried out:

- Calibration of the drill
- Adjustment of coulter pressure/sowing depth
- Adjustment of the markers.

##### Calibration of the drill

Please follow the instructions below for accurate calibration of the seed drill.

##### Agitator shaft

When sowing large seeds such as peas and beans, disengagement of the agitator shaft in the bottom of the seed hopper is recommended. Further information can be found in the section on special crops on page 14.

Disengagement of the agitator shaft is carried out by taking off the ring pin in the chain wheel at the end of the shaft. See figure 3A.

Note that the seed drill is delivered with the agitator shaft disengaged. The ring pin can be found in a plastic bag in the toolbox.

##### Bottom flaps

The bottom flaps should be as close as possible to the seed wheels without damaging or squeezing the seed.

The bottom flaps can be adjusted using the handle at the end of the hopper. See figure 3B.

The scale setting for different seed sizes should be as follows:

Fine seed	:	1
Cereals	:	2-3
Peas, etc.	:	3-6

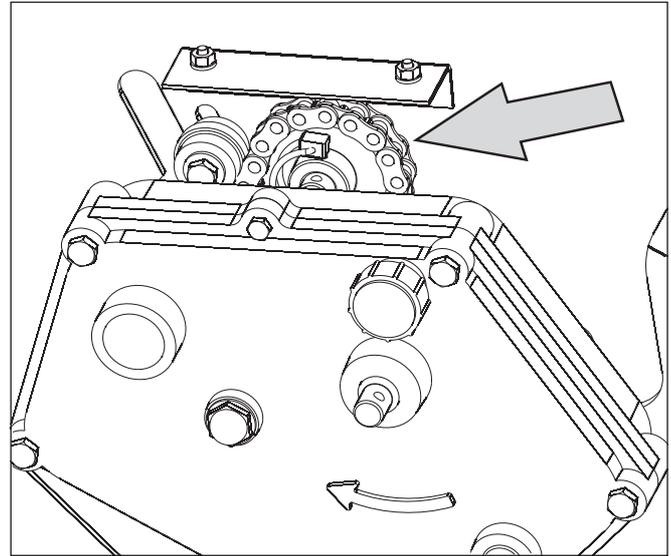


Figure 3A. Disengagement of agitator shaft.

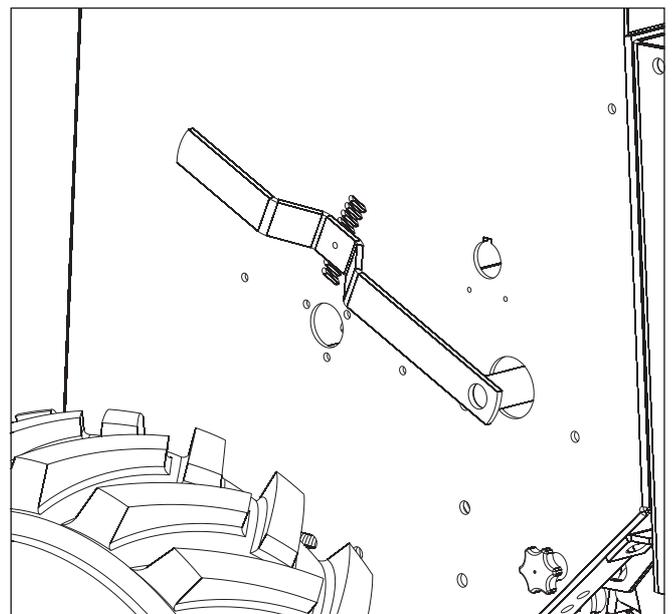


Figure 3B. Handle for bottom flaps.

# Calibration

## Seed housing shutters

The seed housing shutters should all be opened as high as possible, but without the seed running out over the sowing wheels.

The seed housing shutters have four positions and can be adjusted individually by moving them up and down.

In the top position (position 1), the shutters are completely open. (See figure 3C).

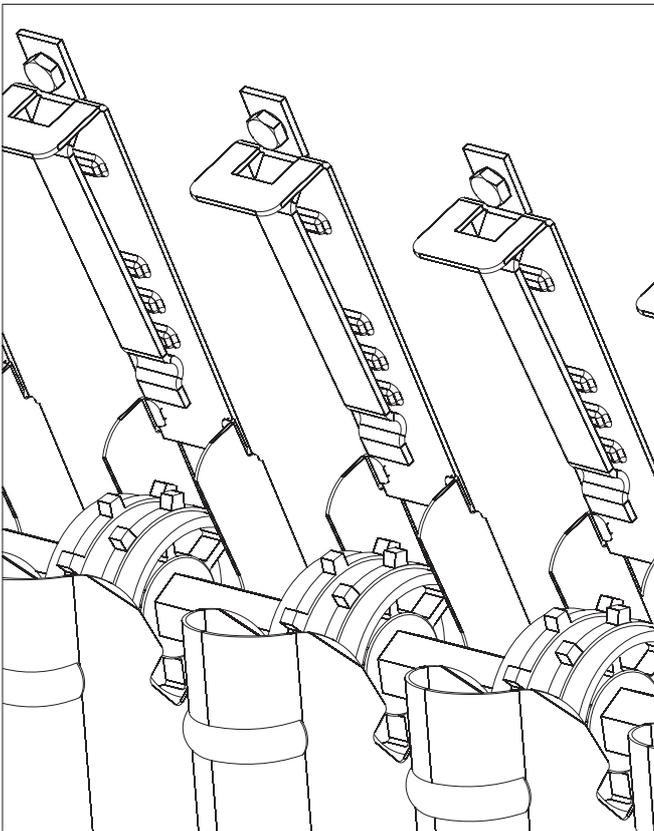


Figure 3C. Seed housing shutters.

## Lowering the seed funnels

The row of funnels on the suspension rail is lowered. See figure 3E.

In order to free the suspension rail from its normal position under the seed housings, the spring-loaded release catch at each end of the rail should be pulled outwards. See figure 3D.

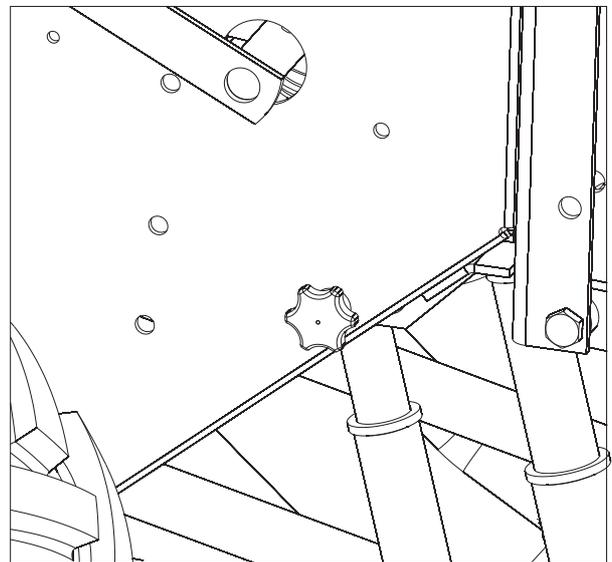


Figure 3D. Release catch for suspension rail.

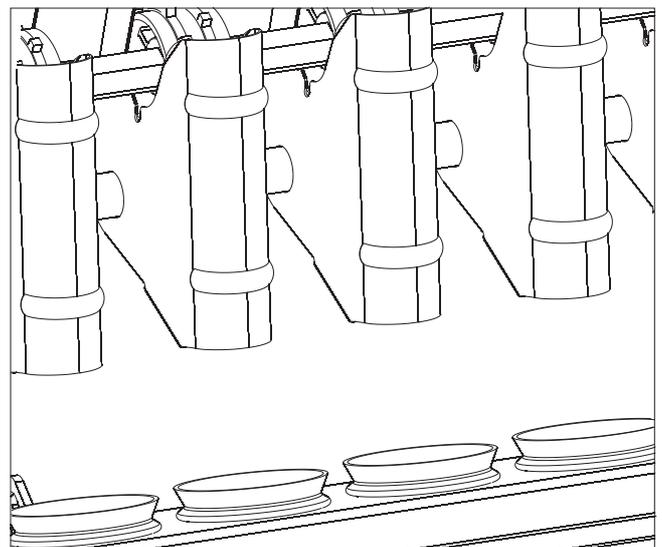


Figure 3E. Seed funnels with suspension rail lowered.

### Calibration tray(s) to horizontal

The calibration tray(s) is released and rotated to a horizontal position under the seed funnels. See figure 3F.

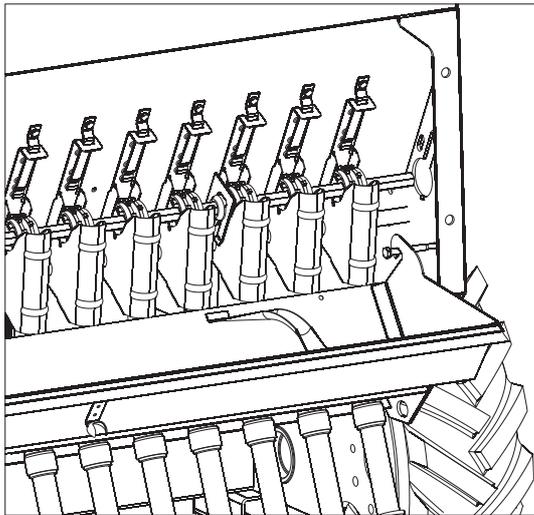


Figure 3F. Calibration tray is rotated to a horizontal position.

### Calibration

The calibration is carried out to ensure the correct sowing rate, and is carried out as follows:

The correct sowing rate can be adjusted using the formula:

$$\frac{\text{NO. OF PLANTS PER M}^2 \times \text{TCW}}{\text{SPROUTING PERCENT IN THE FIELD}} = \text{KG / HECTARE}$$

TCW = weight of 1000 kernels

### Filling of sowing material

Fill sufficient seed in the hopper such that the agitator shaft is still covered after test sowing has been carried out.

### Scale setting

Initially, the scale should be set to the correct sowing rate according to previous records or to the sowing table on page 23-26 in this instruction manual. See figure 3J.

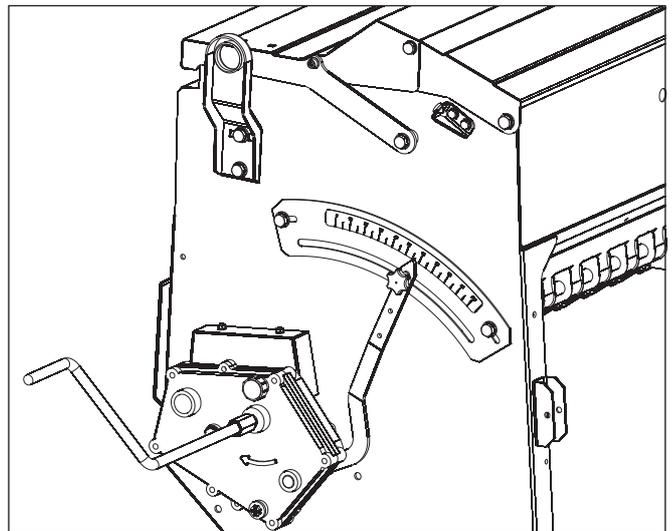


Figure 3J. Scale setting

### Starting the seed flow

Attach the test sowing handle and turn it clockwise until the seed flows from all of the outlets. Empty the calibration tray(s) into the hopper.

### Turning the test sowing handle

Turn the test sowing handle according to the table below:

	EcoLine 250	EcoLine 300
1/20 ha	196	164
1/40 ha	98	82

Figure 3K. Table number of revolutions.

# Calibration

## Weighing

Weigh the test sown seed from the sowing tray(s) on an accurate pair of scales.

## Calculation of the sowing rate

By multiplying the weight by respectively 20 for 1/20 ha, 40 for 1/40 ha the actual sowing rate is obtained for respectively a hectare and an acre.

## Adjusting the sowing rate

If the calculated sowing rate corresponds to the required rate, then the machine is correctly adjusted.

If the sowing rate is not correct, subsequent adjustment can be made by changing the scale setting.

If a higher sowing rate is required, the regulating handle's indicator should be adjusted to correspond to a higher value on the scale. If a smaller sowing rate is required the regulating handle's indicator should be adjusted to correspond to a smaller value on the scale.

After adjustment of the scale setting, a new test sowing should be carried out.

## Sowing tray(s) closed.

Sowing tray(s) should be closed and rotated to a vertical position as shield for the seed housings etc.

## Raising the seed funnels

After the test sowing has been carried out, the seed funnels should be raised again and locked into position under the seed housings.

## Discrepancies in the sowing rate

If the test sowing has been carried out carefully, the actual and calculated sowing rates should correspond exactly. If this is not the case in practice, then the cause could be other mechanical factors, such as the wrong air pressure in the seed drill's tyres or use of an inaccurate pair of scales.

However, another potential cause of discrepancies is special soil conditions. Very damp or very loose soil can cause inaccurate rolling of the seed drill wheel.

If problems are caused by the soil conditions, then a supplementary calibration test in the field is recommended.

Test sowing in the field follows essentially the same procedure as the standard test sowing.

However, instead of turning the test sowing handle through a specified number of revolutions, the seed drill is driven in normal working position a specified distance in the field. These distances are given in the table below.

	EcoLine 250	EcoLine 300
1/20 ha	200m	166,7m
1/40 ha	100m	83,3m

Figure 3L. Table number of meters.

## Special crops

When sowing special crops, certain precautions may have to be taken.

### Sowing of grass seed

Sowing of grass seed requires special attention since the seeds can „bridge“ in the hopper, thus affecting the actual sowing rate. This problem will be particularly acute if the hopper is exposed to vibration.

It is therefore advisable to carry out test sowing with a limited amount of seeds in the hopper, and to avoid filling the hopper completely until in the field where sowing is due to take place.

In addition, regular stops to manually stir the hopper contents are recommended in order to achieve uniform sowing.

Safety note! Owing to the agitator shaft, stirring of the hopper contents should only be carried out when the machine is not moving.

### Sowing of peas, beans, maize etc.

When sowing large seeds as peas, beans and maize, the use of soft seed rollers (optional equipment) is recommended since these cause less damage to the seeds and a more uniform seeding is obtained. Further, large seeds can be damaged by the pins on the agitator shaft. If the seed can flow easily, then it is advisable to shut-off the agitator shaft.

### Sowing of fine seeds

When sowing small, round seeds, such as turnip, white mustard and oilseed-rape fitting of fine seed fingers (optional equipment) to the standard seed rollers is recommended. Reduces the sowing amount by 1/3. See figure 3M.

Fit fine seed fingers by sliding them around the standard sowing wheels. Turning the sowing shaft will drag the fingers into the correct sowing position. When fine seed fingers are used the seed housing shutters are placed in position 2.

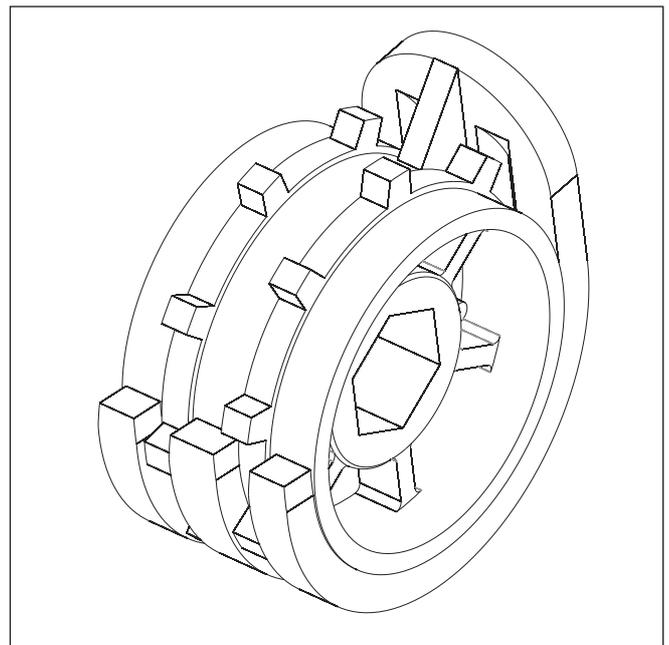


Figure 3M. Fine seed finger.

# Coulter pressure/sowing depth

## Coulter pressure/sowing depth

In order to obtain the desired sowing depth for all coulters it may be necessary to adjust the tightness of the coulters springs. The wheel track eradicators may also require adjustment.

## Coulter tightening

The tension of the spring determines the sowing coulters working depth in the soil. Note also that a too-high forward driving speed can also result in non-uniform sowing depth.

The tension of the coulters can be adjusted centrally (except for the outer coulters). This is done by turning the adjusting spindle for the spring bar with the test sowing handle. See figure 3N.

Since the two outer coulters follow the seed drill's wheel tracks, the spring tension of these coulters can be adjusted separately to a tension of up to 17 kg. This can be done by turning the spindle on the coulters spring using the test sowing handle. See figure 3P.

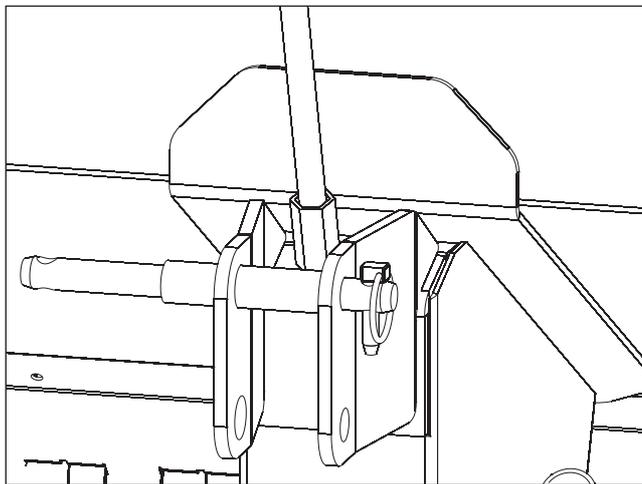


Figure 3N. Central coulters tightening.

In addition, the spring tension can be adjusted individually for all sowing coulters. This is done by altering the position of the springs in the coulters arm.

The greatest tension is obtained by setting the spring in the top position. This ability to individually adjust the tension in each coulters means that it is possible to increase the pressure of the coulters working in the compacted tracks left by the tractor wheel. See figure 3Q.

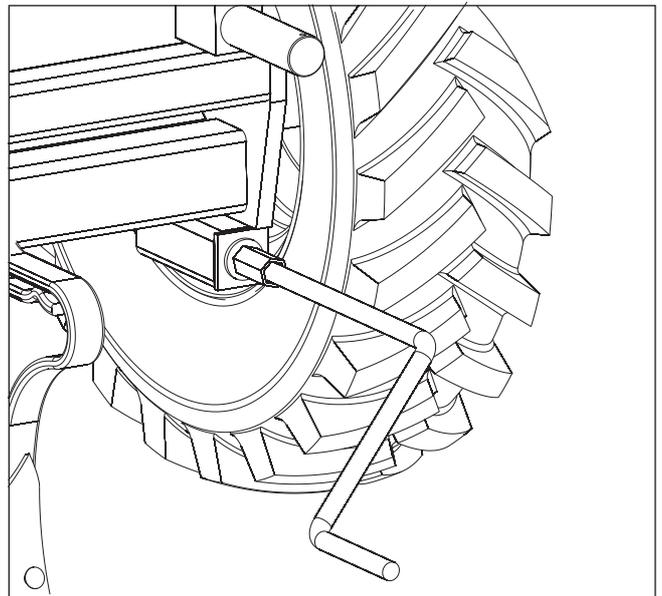


Figure 3P. Coulter tension, outer coulters.

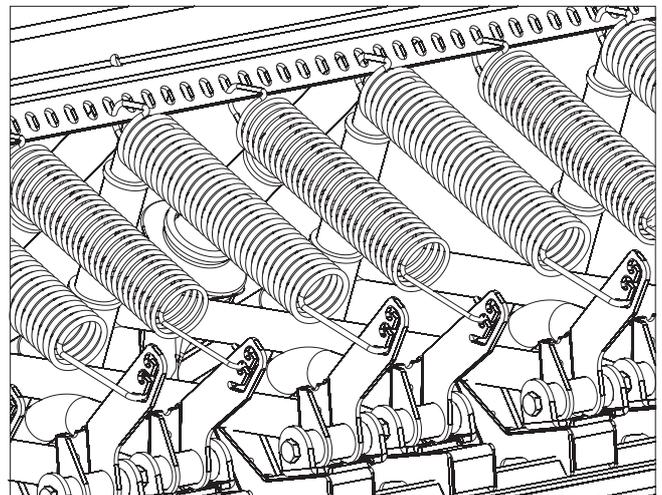


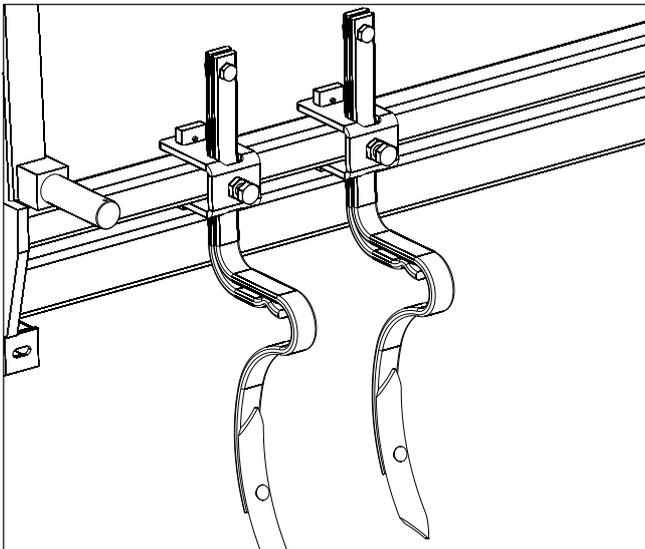
Figure 3Q. Individual coulters tension.

## Wheel track eradicators

In order to loosen the soil in the tractor's wheel tracks, two eradicators are placed in each wheel track. See figure 3R.

The eradicators are fixed to the cross beam and can be adjusted laterally. If necessary, an extra set can be used (optional equipment).

The eradicators should be set in such a way that they do not cut too deeply, and preferably located between two coulter rows.



*Figure 3R. Wheel eradicators.*

## Markers

### Adjustment of markers

The markers are used to make a marker track. The track ensures that the outer coulter in one row is both parallel to and correctly spaced with respect to the previous row.

### Centre marking

The seed drill has centre marking. Thus the distance from the outer coulter track to the marker track should be half the width of the seed bed plus half a row spacing.

This adjustment can be carried out most easily by driving forward a few metres with the markers and the sowing coulters lowered into their working positions, such that the tracks can be clearly seen in the soil. See figure 3S.

### Front wheel marking

When front wheel marking is required it is possible to shorten the marker arm and have the marker disc pushed closer to the seed drill.

### Marking track

The marking track's width can be regulated by turning the „skew“ marker shaft. See figure 3T.

The narrowest track is obtained by turning the shaft downwards such that the marker is parallel to the direction of travel.

The widest track is obtained by turning the shaft such that the marker is angled backwards with respect to the direction of travel.

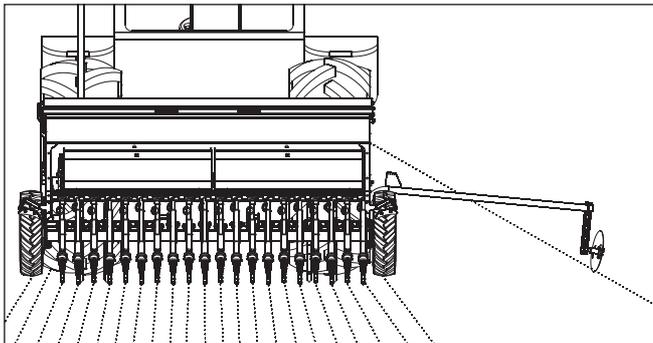


Figure 3S. Centre marking.

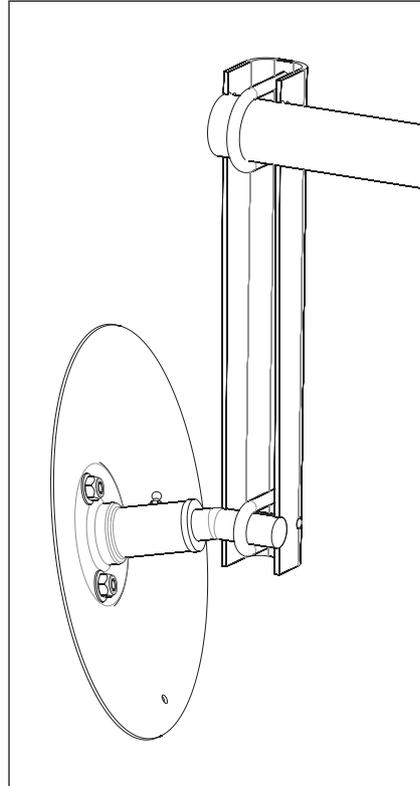


Figure 3T. Marker shaft.

The shaft should not be directed forwards or upwards as this can damage the shaft and depreciate the track.

The markers arms can be locked in a vertical position when driving on public roads or when driving close to fences, etc.

## Adjustment of following harrow (Optional)

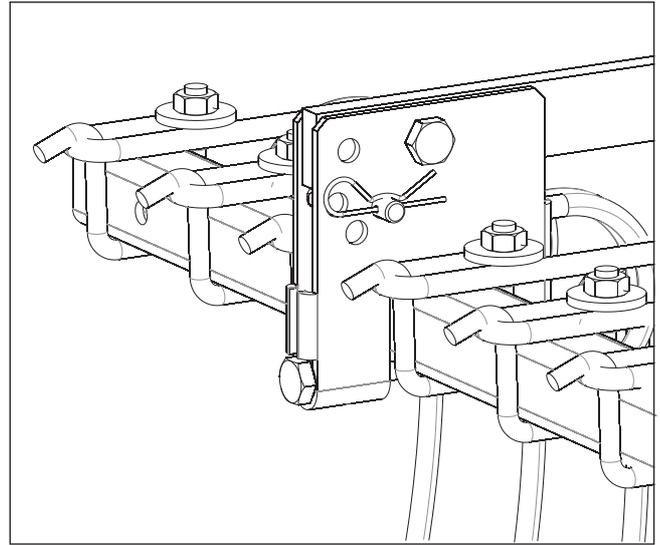
The following harrow is mounted by fixing the arms into the brackets fitted on each side of the seed drill.

The following harrow can be set to light or heavy harrowing, or placed in transport position. See figure 3U.

Adjustment is carried out by turning the entire harrow on the draw bars. The required position can be secured by putting pins through the draw bars and flanges in the suspension.

The pins should always be retained by the „R“ clips.

The following harrow can be equipped with pressure tension springs such that it can be forced into the ground even in wet and difficult conditions.



*Figure 3U. Following harrow adjusted for heavy harrowing.*

## 4. Attendance

### Generally

During operation check continuously that no sowing coulters are blocked.

In order to avoid blockage of the coulters, it is advisable to only raise and lower the seed drill when driving forwards.

Regularly check the level indicator in the hopper to ensure that there is sufficient sowing material present.

Regularly check whether the actual sowing rate corresponds to the calculated rate.

Both before and during sowing work, attention should be paid to the following.:

- that the lift arms of the tractor are in position control.
- that the tyre pressures on the seed drill are correct.
- that the seed drill's lid is horizontal when the machine is lowered to its working position - if not the seed depth will vary.
- that the gearbox is in a good condition - gear wheels gear bearings.
- that the oil level in the gearbox is visible in the sight glass.
- that the chain drive is correctly adjusted.
- that seed rollers and bottom flaps are intact.
- that bottom flaps are able to move freely - this can be checked using a finger or a thin shaft.
- that locks for seed funnels are secured properly.
- that coulters are intact (not worn out).
- that the coulter arms are able to move freely and have the correct spring tension.
- that the marker position is correct - check frequently.

### Driving speed

During the sowing work the speed should be 5-8 km/h. In general speed should depend on the prevailing conditions and, in particular, oscillation of the machine should be avoided.

### Emptying of seed hopper

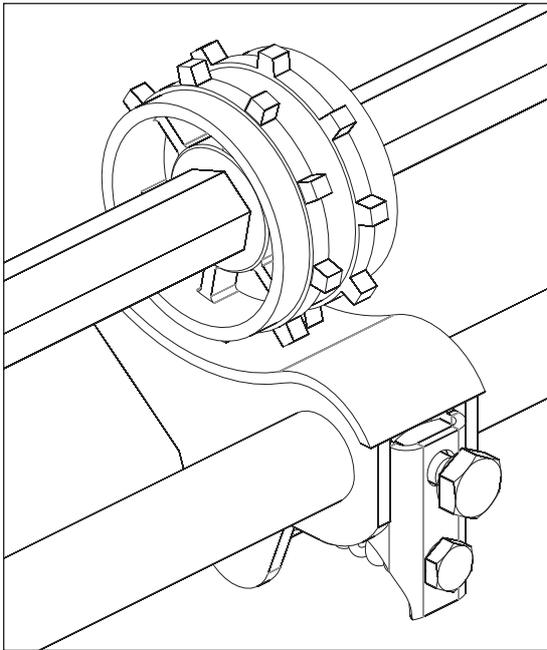
The seed hopper is emptied by opening the calibration flaps as if carrying out a test sowing. The handle for the bottom flaps should then be pulled back completely such that any excess sowing material is emptied into the tray(s).

## **5. Maintenance and lubricating**

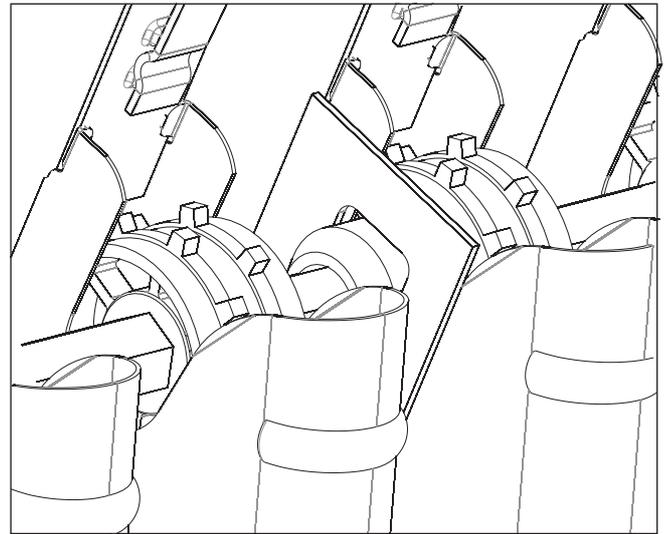
### **Fine adjustment of bottom flaps**

The bottom flaps should be set to the highest position (position 1).

Adjustment can then be carried out by turning the screw on the rear face of each bottom flap until the distance between the flap and the seed roller is 1 mm. See figure 5A.



*Figure 5A. Screw for adjustment of the bottom flaps.*



*Figure 5B. Locking plates to sowing shaft.*

### **Cleaning of seed outlets and sowing rollers**

Cleaning the seed outlets and seed rollers can be facilitated by removing the sowing shaft. The sowing shaft can be disengaged by lifting the locking plates and turning it backwards. See figure 5B.

The sowing shaft can be locked again by pushing the shaft down and turning the locking plates forward and fastening them in place.

The shaft can then be lifted to check that the locking plates are locked in place.

## Lubrication

The gearbox oil must be visible in the sight glass, otherwise it must be refilled with one of the following type of oil:

HYDROL L-HL 60

All chains should be lubricated regularly. After each season, the chains should be cleaned in petroleum and thereafter lubricated with oil.

Prior to each new season all linkages and chain tighteners should also be lubricated.

Marker arms should be regularly greased.

All bearings are self-sealed and do not require any lubrication.

## Winter storage

Careful cleaning of the seed drill after each season is recommended.

The machine should also be prepared without any hurry before the start of the new season.

The seed drill should be kept weatherproof during storage.

## 6. Sowing table

The sowing table is a guide to the calibration of the drill, and to the scale setting for the desired amount of sowing per hectare. Note that the sowing table is only a guide; a test sowing should always be carried out to check the scale setting.

Sowing table						
Tyres	7.00x12 6 PLY	Seed <b>Barley</b>				
		Pos. of bottom flaps <b>2</b>				
		Seed housing shutters <b>1</b>				
		Seed rollers <b>standard</b>				
		Row distance (cm)				
		<b>16</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>10</b>
Scale setting	<b>5</b>					
	<b>10</b>					
	<b>15</b>					
	<b>20</b>					
	<b>25</b>					
	<b>30</b>					
	<b>35</b>					
	<b>40</b>	65,0	74,2	79,8	86,7	104,0
	<b>45</b>	74,0	84,5	90,8	98,7	118,4
	<b>50</b>	84,2	96,1	103,3	112,3	134,8
	<b>55</b>	94,7	108,1	116,2	126,3	151,6
	<b>60</b>	105,9	120,9	129,9	141,2	169,4
	<b>65</b>	117,2	133,8	143,8	156,3	187,6
	<b>70</b>	129,7	148,0	159,1	172,9	207,5
	<b>75</b>	142,1	162,2	174,3	189,5	227,4
	<b>80</b>	156,2	178,3	191,6	208,3	250,0
	<b>85</b>	171,2	195,4	210,0	228,3	274,0
	<b>90</b>	185,9	212,1	228,0	247,8	297,4
<b>95</b>	202,2	230,8	248,0	269,6	323,5	
<b>100</b>	220,0	251,1	269,8	293,3	352,0	

## Sowing table

Sowing table						
Tyres	7.00x12 6 PLY	Seed <b>Wheat</b>				
		Pos. of bottom flaps <b>2</b>				
		Seed housing shutters <b>1</b>				
		Seed rollers <b>standard</b>				
		Row distance (cm)				
		<b>16</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>10</b>
Scale setting	<b>5</b>					
	<b>10</b>					
	<b>15</b>					
	<b>20</b>					
	<b>25</b>					
	<b>30</b>					
	<b>35</b>	66,0	75,3	81,0	88,0	105,6
	<b>40</b>	76,5	87,3	93,8	102,0	122,4
	<b>45</b>	87,0	99,3	106,7	116,0	139,2
	<b>50</b>	99,0	113,0	121,4	132,0	158,4
	<b>55</b>	111,0	126,7	136,2	148,0	177,6
	<b>60</b>	121,5	138,7	149,0	162,0	194,4
	<b>65</b>	135,0	154,1	165,6	180,0	216,0
	<b>70</b>	147,0	167,8	180,3	196,0	235,2
	<b>75</b>	163,5	186,6	200,6	218,0	261,6
	<b>80</b>	180,0	205,4	220,8	240,0	288,0
<b>85</b>	195,0	222,6	239,2	260,0	312,0	
<b>90</b>	213,8	244,0	262,2	285,0	342,0	
<b>95</b>	232,5	265,4	285,2	310,0	372,0	
<b>100</b>	247,5	282,5	303,6	330,0	396,0	

## Sowing table

Sowing table						
Tyres	7.00x12 6 PLY	Seed <span style="float: right;">Peas</span>				
		Pos. of bottom flaps <span style="float: right;">4-6</span>				
		Seed housing shutters <span style="float: right;">3</span>				
		Seed rollers <span style="float: right;">soft seed wheels</span>				
		Row distance (cm)				
		<b>16</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>10</b>
Scale setting	<b>5</b>					
	<b>10</b>					
	<b>15</b>					
	<b>20</b>					
	<b>25</b>					
	<b>30</b>					
	<b>35</b>	119,1	135,9	146,1	158,8	190,6
	<b>40</b>	138,6	158,2	170,0	184,8	221,8
	<b>45</b>	159,8	182,3	196,0	213,0	255,6
	<b>50</b>	182,5	208,3	223,8	243,3	292,0
	<b>55</b>	204,8	233,7	251,2	273,0	327,6
	<b>60</b>	226,6	258,6	277,9	302,1	362,5
	<b>65</b>	251,6	287,2	308,7	335,5	402,6
	<b>70</b>	276,8	315,9	339,6	369,1	442,9
	<b>75</b>	302,3	345,0	370,8	403,0	483,6
<b>80</b>						
<b>85</b>						
<b>90</b>						
<b>95</b>						
<b>100</b>						

## Sowing table

Sowing table						
Tyres	7.00x12 6 PLY	Seed			Rape	
		Pos. of bottom flaps			1	
		Seed housing shutters			2	
		Seed rollers			Fine seed fingers	
		Row distance (cm)				
		16	14	13	12	10
Scale setting	3	0,9	1,0	1,1	1,2	1,4
	4	1,3	1,5	1,6	1,7	2,0
	5	1,7	1,9	2,0	2,2	2,6
	6	2,0	2,3	2,5	2,7	3,2
	7	2,4	2,7	2,9	3,2	3,8
	8	2,8	3,2	3,4	3,7	4,4
	9	3,2	3,6	3,9	4,2	5,0
	10	3,5	4,0	4,3	4,7	5,6
	11	3,9	4,5	4,8	5,2	6,2
	12	4,3	4,9	5,2	5,7	6,8
	13	4,7	5,3	5,7	6,2	7,4
	14	5,0	5,7	6,2	6,7	8,0
	15	5,4	6,2	6,6	7,2	8,6
	16	5,8	6,6	7,1	7,7	9,2
	17	6,2	7,0	7,5	8,2	9,8
	18	6,5	7,4	8,0	8,7	10,4
	19	6,9	7,4	8,5	9,2	11,0
	20	7,3	8,3	8,9	9,7	11,6
	21	7,7	8,7	9,4	10,2	12,2
	22	8,0	9,2	9,8	10,7	12,8
	23	8,4	9,6	10,3	11,2	13,4
	24	8,8	10,0	10,8	11,7	14,0
	25	9,2	10,4	11,2	12,2	14,6
	26	9,5	10,9	11,7	12,7	15,2
	27	9,9	11,3	12,1	13,2	15,8
	28	10,3	11,7	12,6	13,7	16,4
	29	10,7	12,2	13,1	14,2	17,0
	30	11,0	12,6	13,5	14,7	17,6



