Quick Start

903126
20170313 - 5

Spirit

Series
ST 600–900C
S/N ST0001025 -

VÄDERSTAD

This QuickStart does NOT replace the instruction manual that contains much more detailed information!

General safety rules

Control Station must always be kept closed during transit on the public highway.

The safety valve on the front row of the seed drill must always be closed when using the public highway (refer to image 1).

Ensure that people who are near to the seed drill when the tractor's engine is in operation maintain an adequate safety distance to the seed drill in case an uncontrolled operation sequence is performed.

Switch off the main switch on ControlStation or shut down the tractor if a seed drill sequence needs to be stopped quickly. The seed drill is hydraulically pressurised when the tractor is connected and running.
- The safety valve on the front frame of the seed drill must always be closed when calibrating, when setting the sowing depth and when travelling on the public highway (see image). 1).

- Always switch off the tractor, remove the ignition key, close down Control Station and disconnect the electric cables when the seed drill is being serviced and maintained.

Contents

Positioning of hydraulic safety valve

Image 1

1. Electrical installation in tractors

- Place the ControlStation (monitor) in the cab, the monitor should be placed within the direct field of vision of the driver, also preferable within comfortable and easy reach.

- Power supply for seed drill:
  - If the tractor is equipped with an ISO bus, connect the seed drill power cable to the tractor's power outlet.

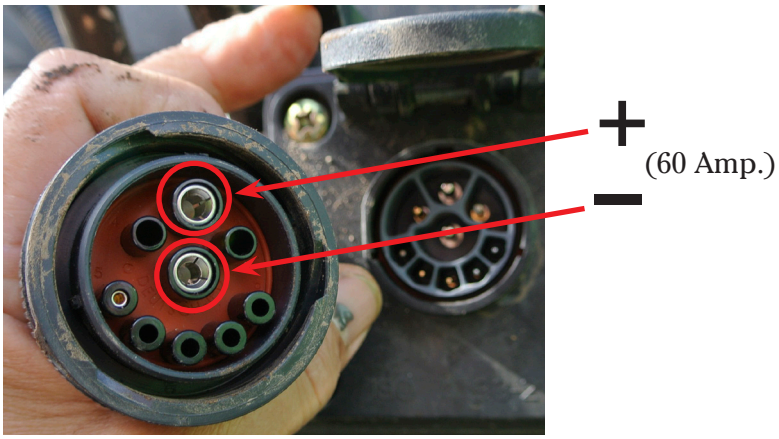


Image 2

Image 3

- If the tractor does not have an ISO Bus terminal, a separate cable will be required *no. 172447), which is connected in via the main power switch to the battery.

Note! If the tractor is equipped with a main power switch, connect its separate power cable to the main power switch (refer to image 4).

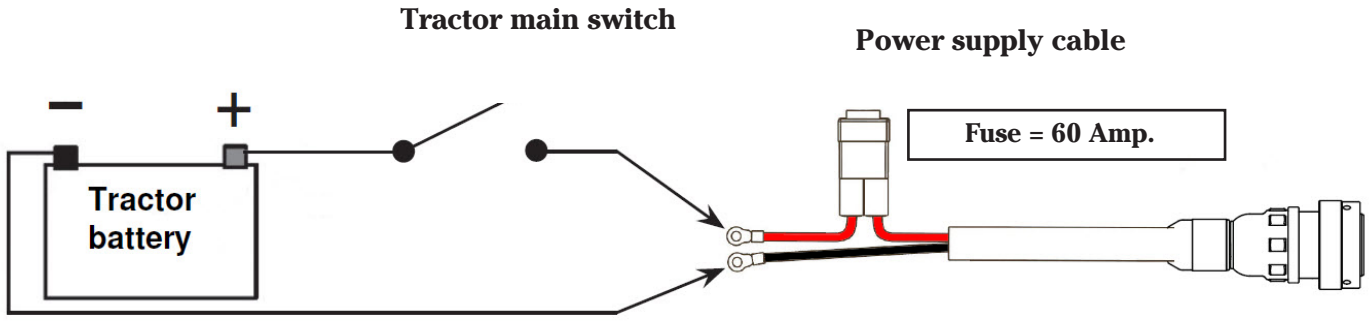


Image 4

2. Hydraulic installation in tractors

- NOTE: The tractor must be switched off when the hydraulic hoses are connected!
- NOTE: Always connect the return first, then the pressure and finally LS.
- The pump flow must be at least 100 l/min. at 200 Bar pressure in order for the machine to operate satisfactorily. The counterpressure on the return line must not exceed 8 Bar.

- In order to get the correct pressure into the LS system it is important to have the correct hydraulic connectors and hydraulic hoses on the tractor. We recommend that as a minimum the connectors and hoses should be:

• Return line	1"	to tank.
• Pressure line	3/4"	from pump.
• LS signal	1/4"	signal

The LS system works with Delta pressure (ΔP) the difference in pressure between pressure and LS signal, it is therefore important that the Delta pressure is between 20 and 45 Bar.

Depending on the tractor, the pump will often need 1200 - 1900 RPM from the motor in order to maintain the correct oil flow.
Refer to page 12 to see how to conduct a quick test to ensure that the machine is operating satisfactorily.

ControlStation

3. Basic settings

To access the basic settings, press and hold down **?** - the button at the same time as ControlStation turns on.
To change values, press Enter to “open”, change value with the selection dial and press Enter to confirm.
The settings are:

Symbol	Function	Comments: (preselected)	
	Language	Selected language	
	Machine type	ST600 C or ST 8-900C	
	Function of the fertiliser screw		*2
	Front tool		*3
GPS	GPS	Yes/No	*4
No	Machine number	Enter number and move forward at	
	Working width	6, 8 or 9 metres	
	Manual start-up.	5 - 10 km/h	
	Radar pulses/metres	99/m (preselected)	
	Calibrate the radar	Auto	*5
	Low-lift position		6
	Alarm delay 2.0s (10km/h) (preselected)		
	Time that the fertiliser screw passes when SS is selected.	20 secs. (preselected)	
	Fan speed too	2500 (preselected)	
	Alarm signal on/off	YES (preselected)	
	Scribe marking	YES/NO.	
	Extend both of the bout markers after tramlining	YES/NO.	
	Tramlining equipment FLEX	or FLEX/LINAK	
	BioDrill	YES/NO.	
	Reducing the seed amount during tramlining. 8.0%,	6.2 % or 5.5%	
ID	Machine ID		
	Display contrast 50 %	(preselected)	
	Estimated target speed for the headland	10 km/h (preselected)	
	Following harrow - “Heavy” model	YES/NO.	
	Linear sensor - Wing extending/retracting	YES/NO.	*7
	PWM Minimum		*8
OK	Press Enter to exit general settings		

Clarification to previous page

***2** Select SF (Seed & Fertiliser), as both seed and fertiliser are to be used.
Select SS (Seed & Seed) if the whole seed hopper volume is to be used for seed.
If only the rear space on the seed hooper will be used for seed and the front fertiliser space is empty, select SF and set the fertiliser amount to 0 kg/ha in the calibration menu for fertiliser (refer to 3B Calibration - Fertiliser page 9).

***3** To change the front tool, press and hold down the A button at the same time as turning the selection dial slightly.
NOTE: It is important that the correct front tool is specified as this determines the positions of the front tool upon extending/retracting!

***4** ControlStation is compatible with Trimble GPS. Contact Väderstad AB for instructions.

***5** Refer to the instruction manual to see how rows are calibrated.

***6** To set the low-lift position, go to the service menu (Press button B in menu row 2).

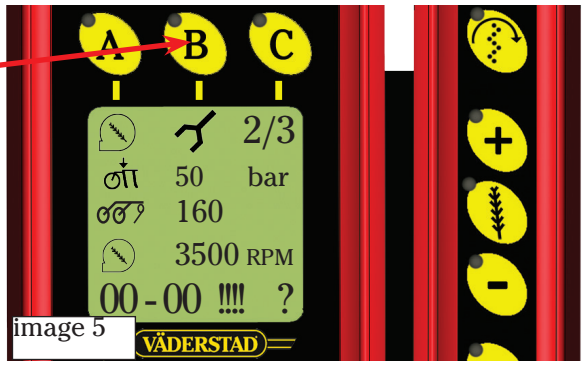


image 5

- The first line is the lifting height of the front took in the low-lift position, set the lifting height by pressing B and/or C.
- Scroll down to the second line and set the height to which the coulter arms are to be lifted in the low-lift position.

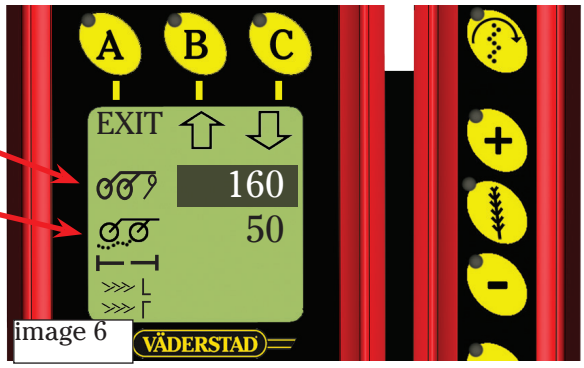
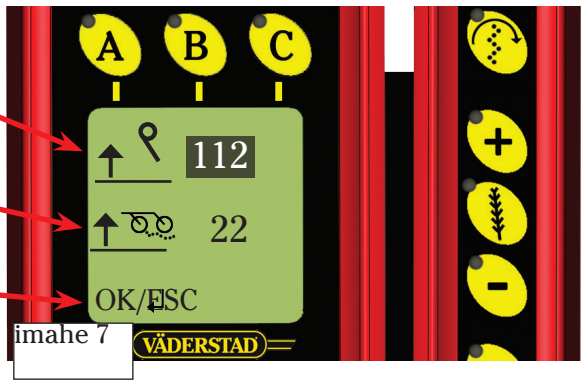


image 6

- Select basic setting and select Low-lift..
- The first line is the lifting height of the front tool in the low-lift position, press Enter and the value will be changed to the current position.
Press Enter again to confirm.
- Scroll down to the next line (seed coulters) and do the same as above.
- Scroll down to the third line, select Enter to save or ESC to exit.



imahe 7

***7** If the seed drill has a wing extending sensor on the rear wing leads, set this parameter to NO.

*8 Calibration menu for fertiliser screw valve.
In this menu you set the min. level for the fertiliser screw valve.
- Start the tractor and open the menu.
- Scroll down to Automatic search and press Enter.
- The system will now automatically search for the lowest level that the screw starts at.
- It is also possible to do this manually by highlighting Drive and slowly scrolling up until Feedback begins to appear - Enter this new value for Minimum and press Enter and the value will be saved.

ControlStation - overview

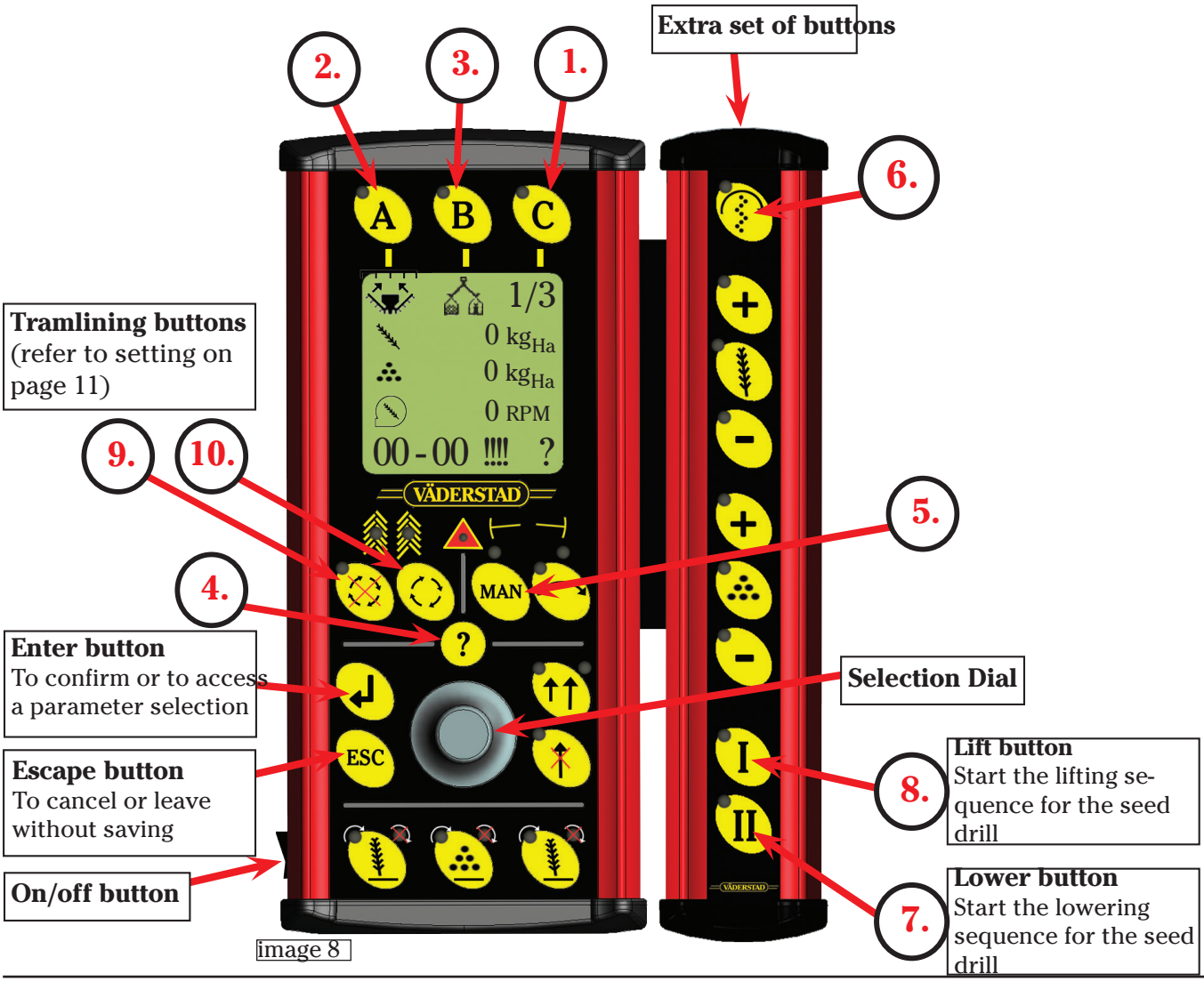
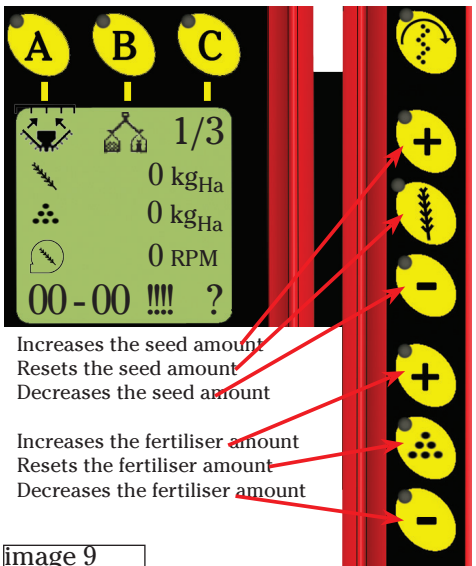


image 8

1. Selection of menu row - Function of the C button

- ControlStation has two menu rows because of the large number of functions that this seed drill requires from the monitor. If Spirit is equipped with BioDrill, there will also be a third menu row to turn BioDrill on and off.
- The buttons of the extra button set will have different functions depending on which menu row is diaplayed.

A = Wing extending/retracting
B = Calibration
C = Menu row selection

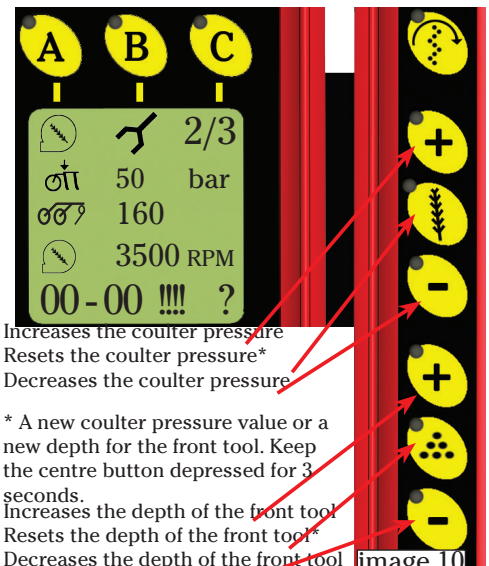


Increases the seed amount
Resets the seed amount
Decreases the seed amount

Increases the fertiliser amount
Resets the fertiliser amount
Decreases the fertiliser amount

image 9

A = Fan Off/On
B = Manual menu
C = Menu row selection



Increases the coulter pressure
Resets the coulter pressure*
Decreases the coulter pressure

* A new coulter pressure value or a new depth for the front tool. Keep the centre button depressed for 3 seconds.

Increases the depth of the front tool
Resets the depth of the front tool*
Decreases the depth of the front tool

image 10

B = BioDrill Off/on
C = Menu row selection

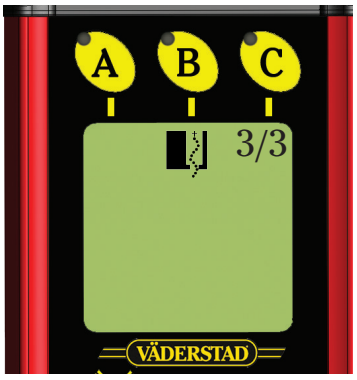


image 11

Menu row 1

2a. Wing extending - Extend for working position.

NOTE: The safety tap on the frame of the seed drill must be opened in order to be able to extend the seed drill (refer to image 1, page 2)
When extending the seed drill, all hydraulic lifting function will be automatically raised to the top at the end of the sequence.

- Press the A button in menu row 1 to arrive at the wing extending/retracting menu.
- Press the C button to extend the machine and keep it depressed until the wing extending symbol disappears and a double beep is heard.
- If the C button is released too early the extending will be stopped and the symbol will begin to flash. Press and hold in the C button again and the extending will be resumed.

- When everything is completed, press the A button, EXIT, to exit the menu.

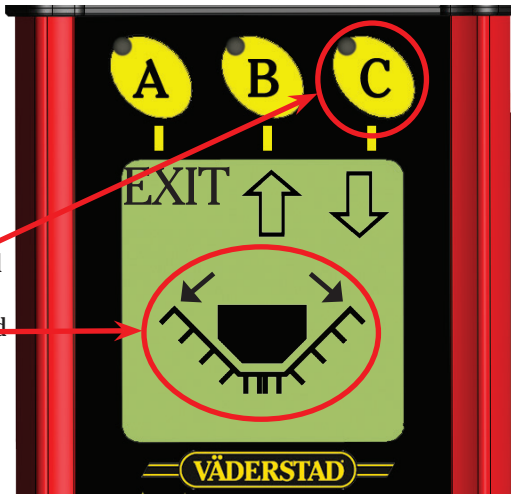


image 12

2b. Wing extending/retracting - Transport position.

- Press the A button in menu row 1 to arrive at the wing extending/retracting menu.
- To retract the machine press the B button and keep it depressed until the wing extending/retracting symbol in the display disappears and a double beep is heard.

- If the B button is released too early the retracting will be stopped and the symbol in the display will begin to flash.
Begin the retraction again.

- Press the A button to exit the wing extending/retracting menu.

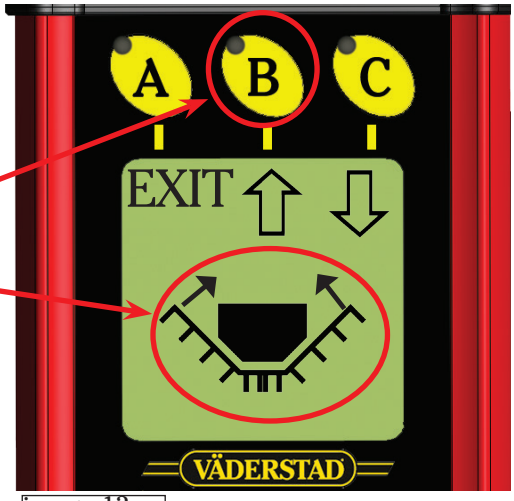


image 13

3. Calibration

NOTE: For all calibrations the safety tap must always be closed! (Refer to page 2, image 1)
A number of things need to be considered before commencing the calibration:

- Only seed or seed and fertiliser (combi.)?

  Refer to Basic settings on page 4 and Fan speed - Air balance on page 17.

- Which seed box roller is suitable for the crop that is to be sown?
  Spirit is supplied with three different rollers for the seed feed housing as standard:
  Grain roller (large seed), oil plant roller (small seed) and grass seed roller.
  Two different rings are also supplied with the machine for lower feed amounts - A rubber ring for, for exam ple, maize and hybrids of rye.
  One for rapeseed below approx. 1.5 kg/ha. Refer to the overview of rollers on page 17.

Refer to Attachment 1 for an overview of roller options.

- Which gear in the seed feed housing is appropriate?
  Generally it is always best to try the low gear in the seed feed housing to begin with.
  If the low gear does not provide sufficient seed amount when sowing, there will be an alarm. “60 max. speedt”.
  - Change to the high gear and re-calibrate!

- Are the low level sensors in the correct position?
- Is the ratio between the front and rear seed hoppers correct?
  (2500 l fertiliser/2500 l seed, or 3000 l fertiliser/ 2000 l seed).

3a. Calibration - Seed

- Press the B button in menu row 1 to arrive at the calibration menu.

- Specify the seed amount in the first row, press Enter.
  Use the selection dial to go to the next row.
- Specify the increase/decrease percentage in order to adjust the seed amount on the second row, press Enter to confirm.
- Go down to row 3 to select Calibrate, press Enter to confirm.

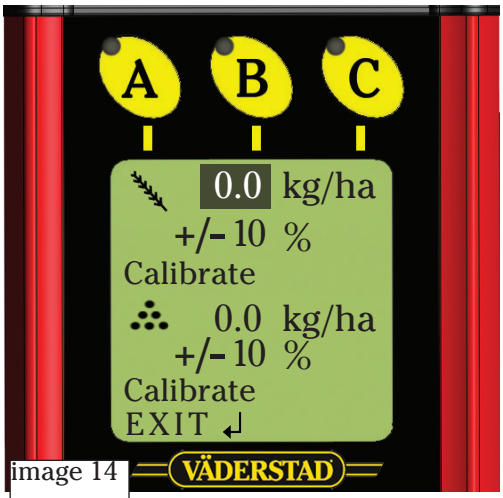


image 14

- Place the calibration bag under the left seed feed housing.

1. Press + in the extra button set or in the Minire-mote on the seed drill for a few seconds to fill up the seed feed housing. The system will then automatically jump down to the next row when the + button is released.

- Empty the calibration bag and zero the scales.

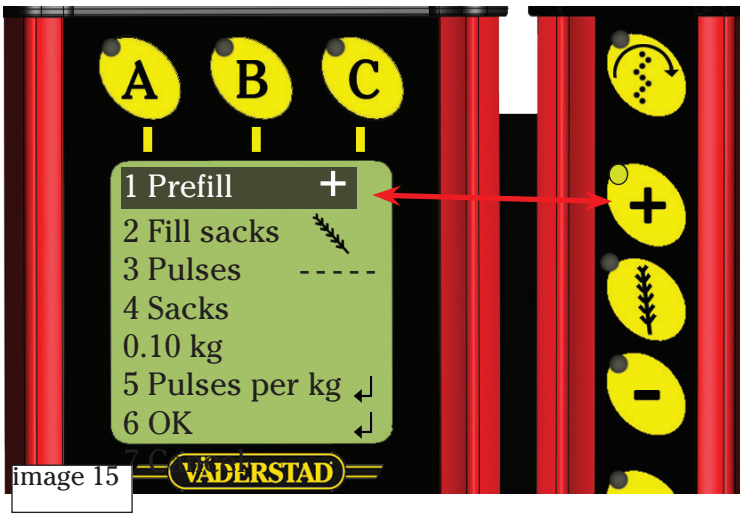


image 15

- Place the calibration bag under the left seed feed housing again.

1. Press in the extra button set or on the Minire-mote on the seed drill to fill up the calibration bag as much as you wish.
2. Weigh the calibration bag.
3. Scroll down to row 4 Bag, press Enter and use the selection dial to specify the weight.

Advice Press and hold down simultaneously to increase the speed of the feed.

The system will then automatically calculate a calibration value in pulses per kg.

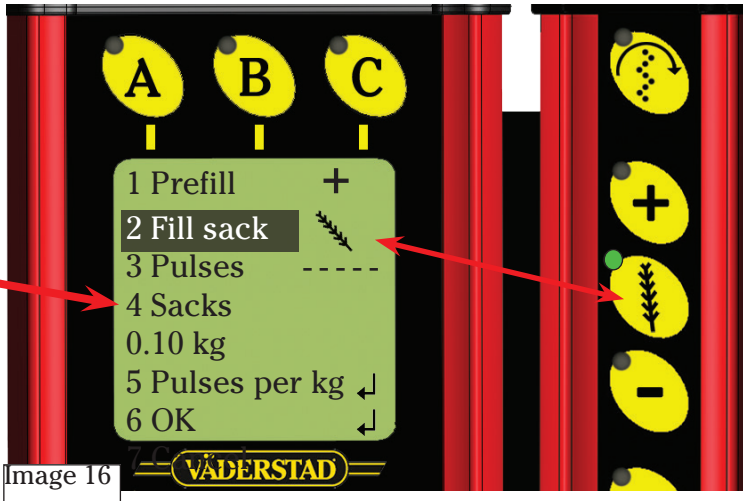


Image 16

4. Scroll down to row 6, OK, press ENTER and the system will go directly to the calibration menu for the right seed feed housing.
5. Scroll down to row 7 Cancel if you wish to cancel the calibration settings.

- Do exactly the same for the right seed feed housing. The calibration value between the seed feed housings may differ slightly.

3b. Calibration - Fertiliser

The tractor needs to be running when the calibration for fertiliser is conducted, as the fertiliser screw is hydraulically-driven.
NOTE: Close the safety tap for the hydraulics before conducting the calibration!

- Place the calibration bag under the fertiliser screw in the hatch opening.

1. Press + in the extra button set or in the Minire-mote on the seed drill for a few seconds to fill up the fertiliser screw.
- Empty the calibration bag and zero the scales.
- Place the calibration bag again.

2. Press in the extra button set or on the Minire-mote on the seed drill until the calibration bag is full.
3. Weigh the calibration bag.
4. Scroll down to row 4 Bag, press Enter and use the selection dial to specify the weight.

Press and hold down simultaneously to increase the speed of the effect of the selection dial.

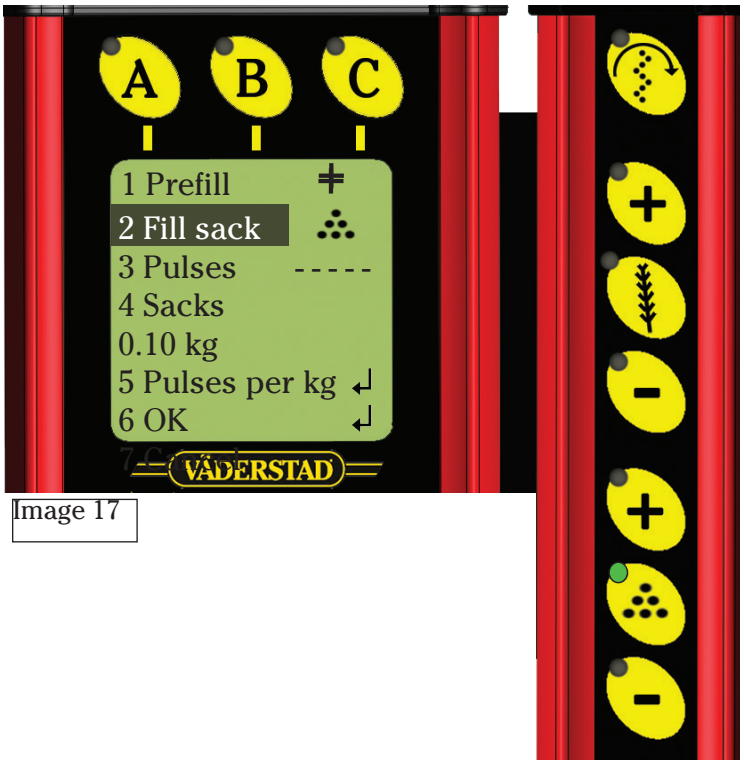


Image 17

The system will then automatically calculate a calibration value in pulses per kg.

5. Scroll down to row 6, OK, press Enter to accept the calibration.
6. Scroll down to row 7 Cancel if you wish to cancel the calibration settings.

Do not forget to open the safety valve when you are finished!

3c. Calibration - BioDrill

If a BioDrill (BDA) is fitted to the seed drill and activated in the basic settings menu, the calibration menu for BioDrill will appear after EXIT is pressed at the first calibration menu. Perform the calibration for BioDrill exactly as the calibrations were performed previously for seed.

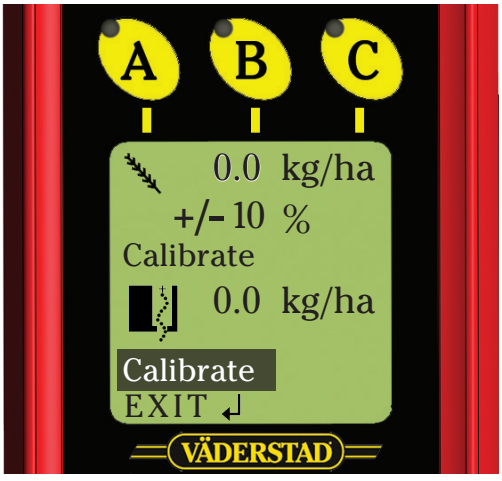


image 18

Menu row 2

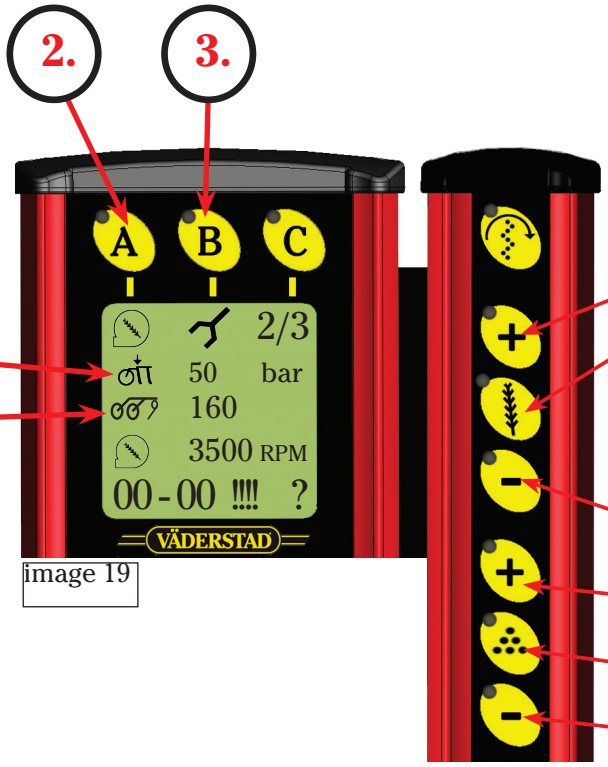


image 19

Coulter pressure

Front tool depth

Increases the coulter pressure

Preselected value of the coulter pressure*

*If you wish to have the new coulter pressure value as the preselected value, hold down the button for three seconds.

Decreases the coulter pressure

Decreases the depth of the front tool

Resets the depth of the front tool

Increases the depth of the front tool

2. Fan - On/Off

- Press the A button in menu row 2 to turn on the fan. Use the same button to turn off the fan.
- If you wish to change the fan speed, press and hold down the A button at the same time as you increase or decrease the fan speed using the selection dial. (It is also possible to adjust the fan speed in the basic setting (paragraph 3 on page 4)).

3. Manual operation of the tools

- Press the B button in menu row 2 to arrive at the Manual menu.
- In this menu you can affect each hydraulic function manually and individually.
- The shaded row shows which hydraulic function has been selected.
- Use the selection dial to change row and therefore hydraulic function.
- Use the B or C button to raise or lower the selected hydraulic function.
- Use the A button to exit this menu.

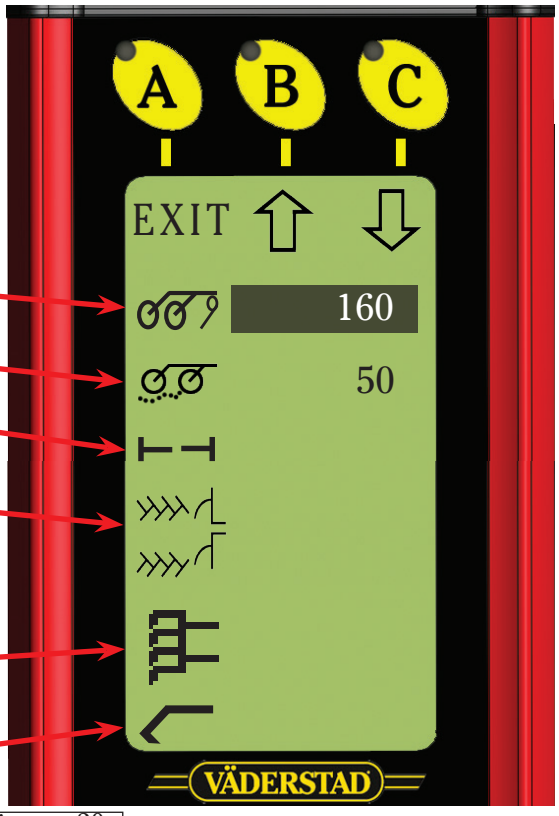


image 20

- Front tool
- Seed drill unit(s)
- Bout marker arms Use the Man button (no. 5 on page 6) to select left and/or right bout marker arms.
- Pre-emergence bout marker
- Following harrow. Only if the machine is equipped with following harrow model “Heavy”.
- If the seed drill is equipped with Strip Drill, this is to raise/lower the Strip Drill pins.

Tramlining settings

- The density of the tramlinings is displayed in the bottom left hand corner of the display (here 4) and current furrow (here 2) to the right.

- To change the settings for tramlining, press and hold down button 9 until the number becomes shaded.
- Use the selection dial to change the value and press Enter to save.
- Use button 10 to increase the current furrow.
- Refer to the instruction manual for all of the different types pf combinations of tramlining programs that can be set.

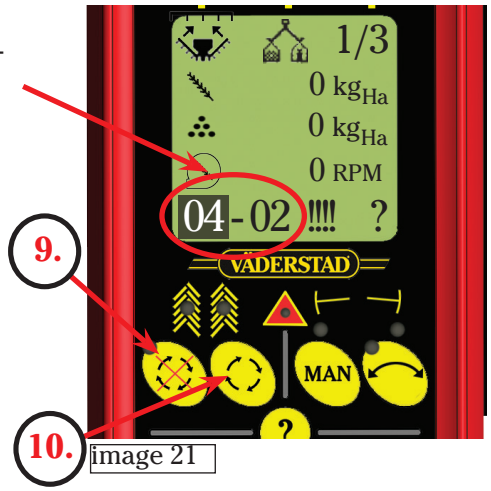


image 21

- If the working width of the plant protection product sprayer is not evenly divisible by the working width of the seed drill, it is possible to create more specialised tramlining programs (Tramlining program 31)>
- In the majority of cases this often requires modifications to the seed drill.
- Contact Väderstad AB ffor more detailed information about this should it be relevant.

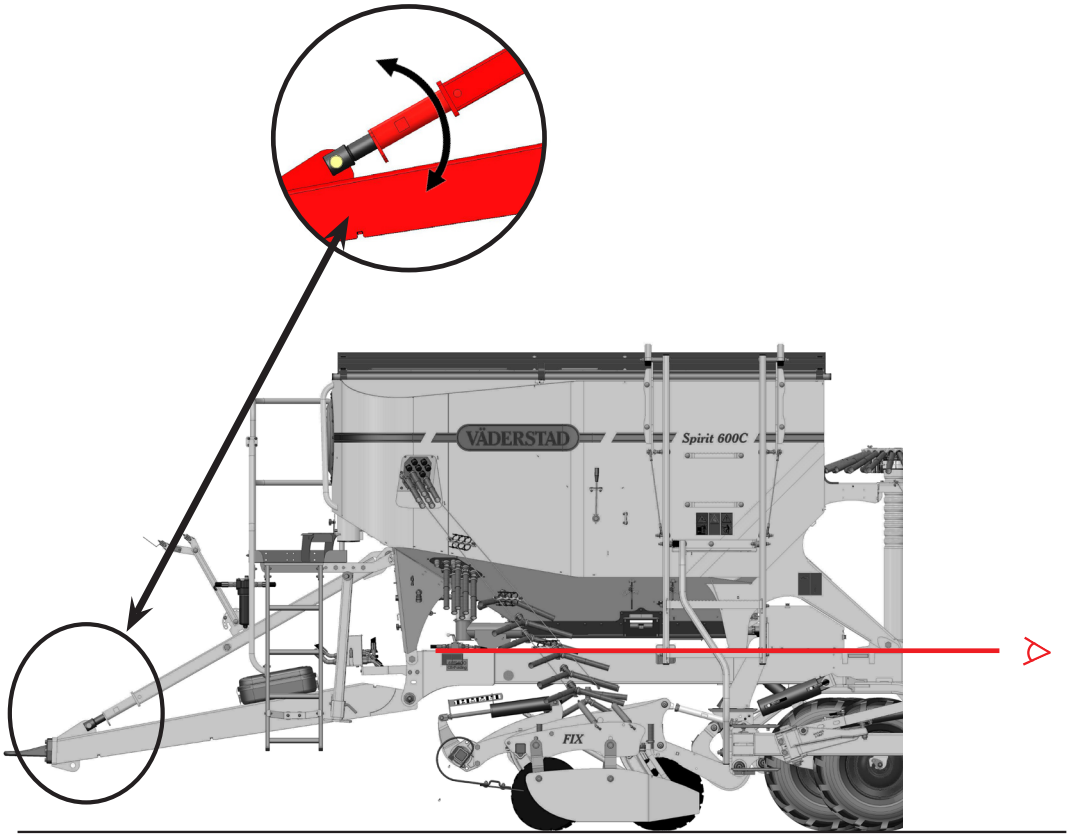
Settings

NOTE: It is possible to perform all settings on a hard, even surface, but it is important to check all of these settings in the field with normal sowing and normal sowing speed!

1. Set the frame to the horizontal

With the tractor connected, the seed drill frame must be absolutely horizontal with the ground.

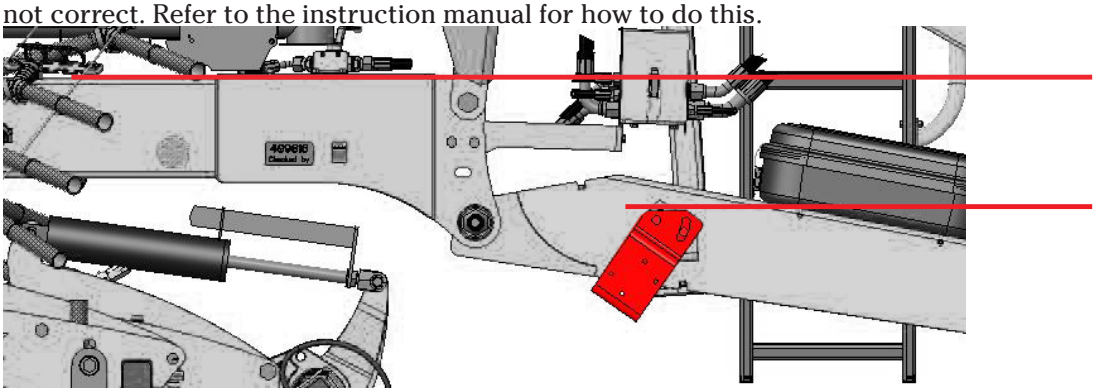
- If this is not the case, adjust the top rod of the draw bar to bring the machine parallel with the ground.



Frame parallel with the ground

2. Radar

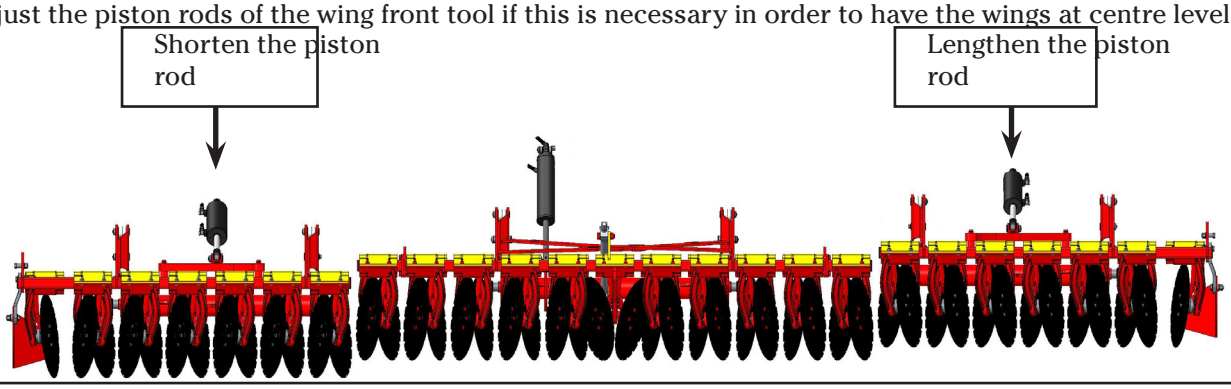
The upper edge of the radar securing must be parallel with the ground and therefore parallel with the frame.
The radar can be re-calibrated if you believe that the speed or area measurement are not correct. Refer to the instruction manual for how to do this.



Upper edge of the securing is parallel with the frame.

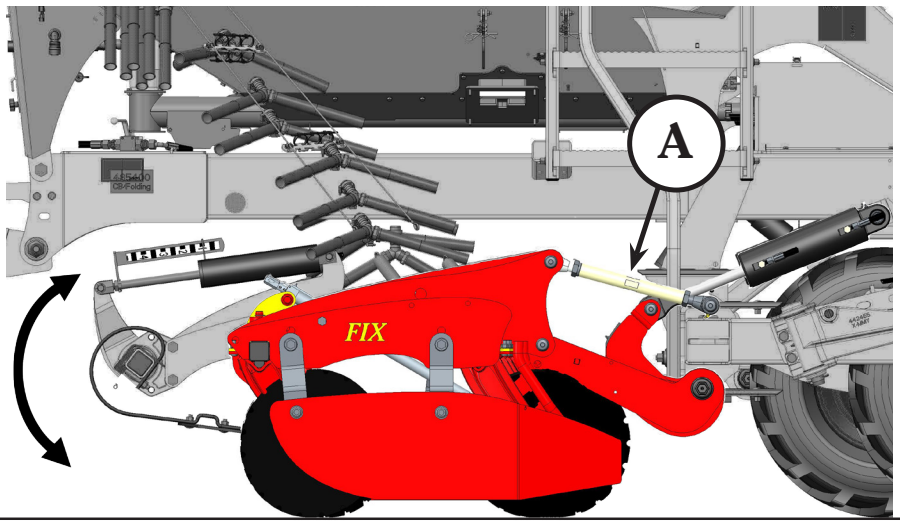
3. Set SystemDisc/Nordic

- It is important to vent all hydraulic cylinders prior to making any adjustment. Refer to the manual menu on page 10.
- In order to set the centre and wing sections, lower the front tool to approx. 1 cm above the ground.
- Adjust the piston rods of the wing front tool if this is necessary in order to have the wings at centre level.



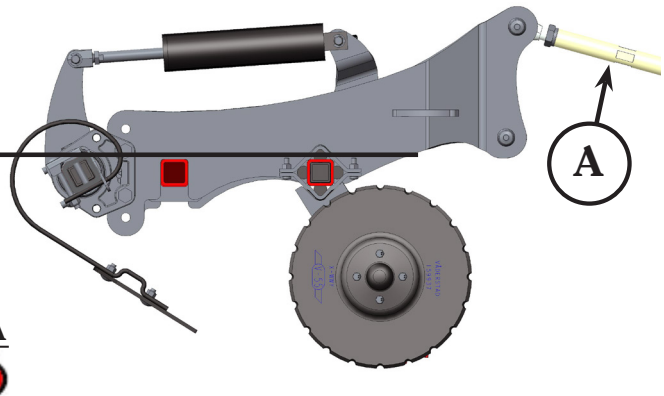
Front tool System Disc

- If the front and rear discs have different distances to the ground, adjust the push rods (**A**) in order to bring the front and rear discs to the same distance to the ground.



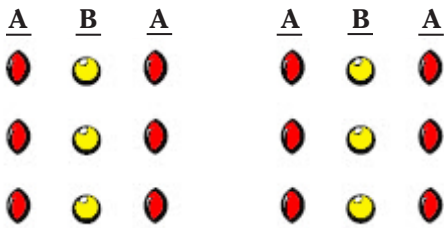
Front tool Nordic

- Ensure that the front tool is parallel to the ground with a spirit level or measure the distance to the ground.
- Adjust the pressure rods.



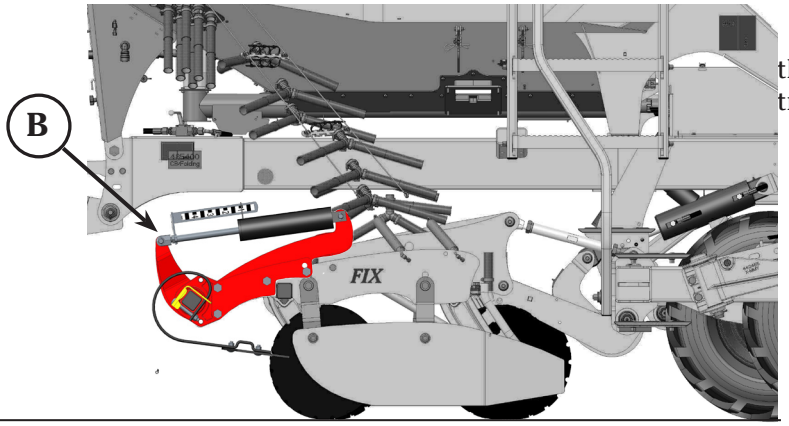
NOTE: It is of the utmost importance to check to ensure that the fertiliser lies between every other sowing row!
Check both wings and centre!

A = Seed
B = Fertiliser



4. CrossBoard

- Adjust the length of the piston rods (**B**) if CrossBoard does not line up with the cen- and wing sections.



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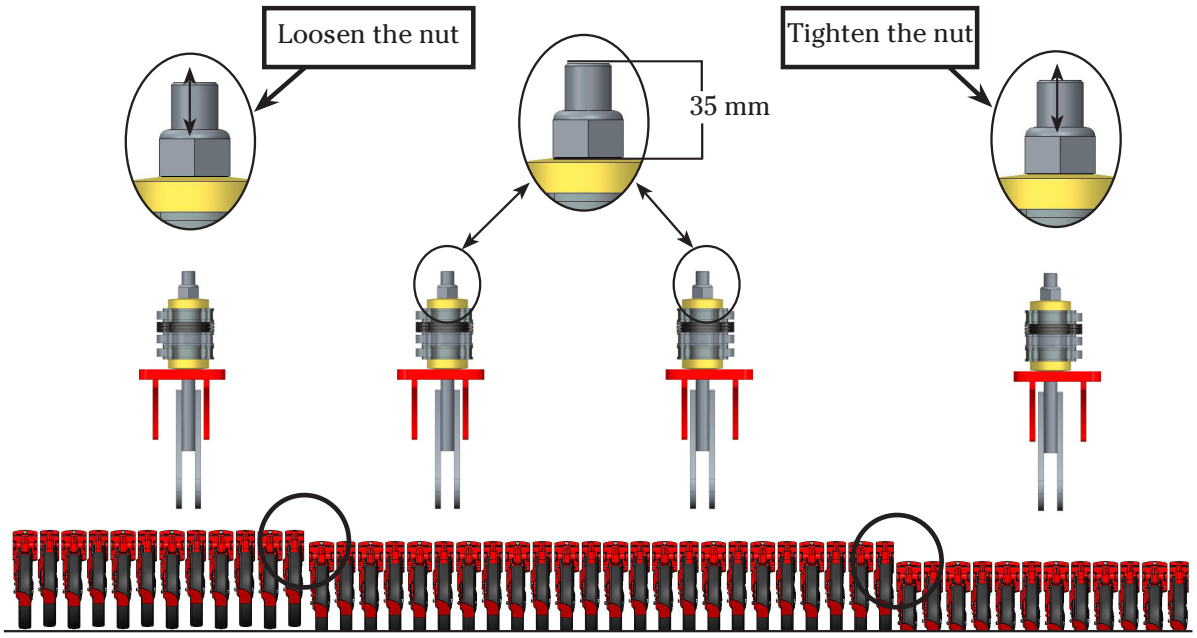
5. Line up the coulters

- **NOTE:** Ensure that both of the bout marker arms are not activated before performing this operation!!!
- Lift the seed coulters to the top position and here place 3 thick and 3 thin clips on the clips holder axle.
- Ensure that the nut and thread are 35 mm at the centre section (refer to image below).

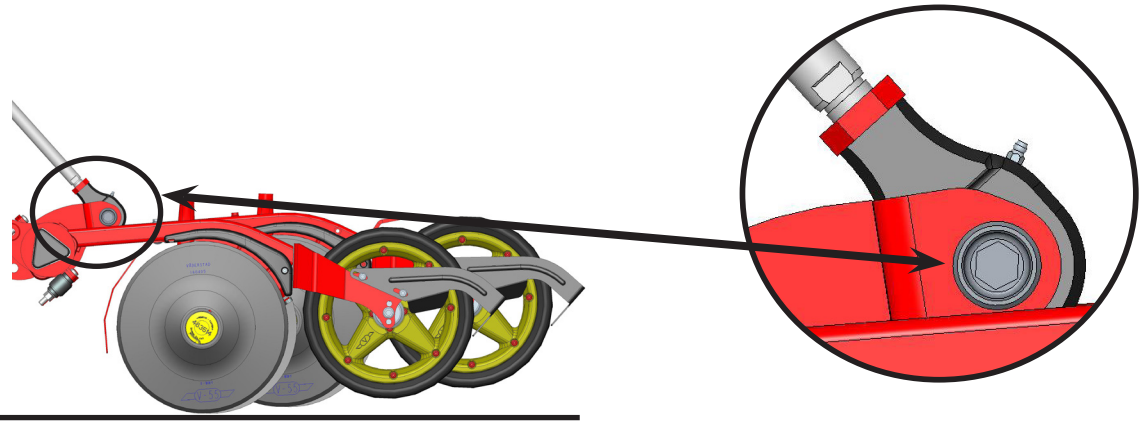
- Press Manual start ( ) to simulate the sowing speed.
- Start the lowering sequence (**II**). Check that the coulter pressure is at least 50 Bar.
- Compare the wing sections with the centre section.
- If adjustment is required, raise the seed coulter in order to relieve the load on the adjustment nut.



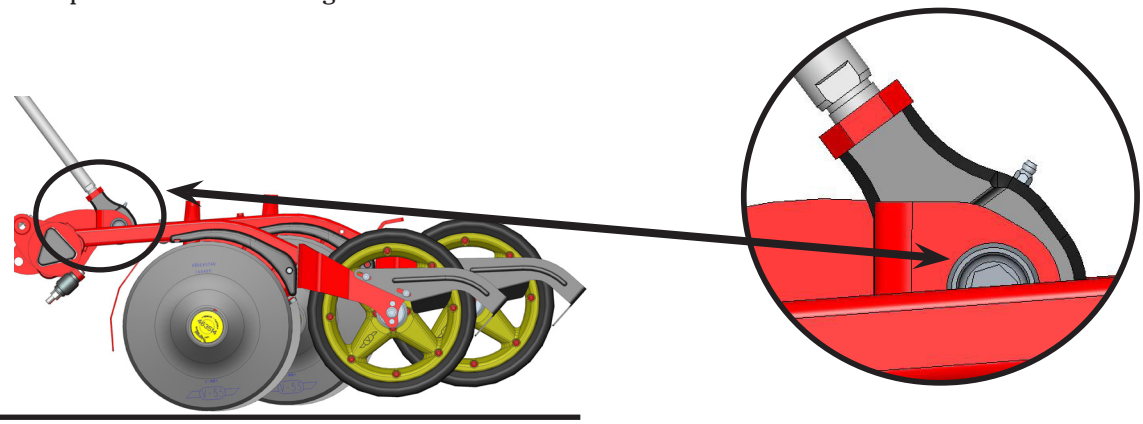
6. Coulter pressure

- In order to have the same coulter pressure in the centre and wing sections the piston rods of the seed coulters must be lined up.
- The intermediate section is used as a reference in this adjustment. If adjustment is required, this is done on the piston rods of the wing sections.
- Do the same as on page 16 in order to pressurise the seed coulters.
- **NOTE:** Ensure that the bout markers are switched off before doing this!!!
- Compare the cylinder mounting hole between the centre and wing sections.

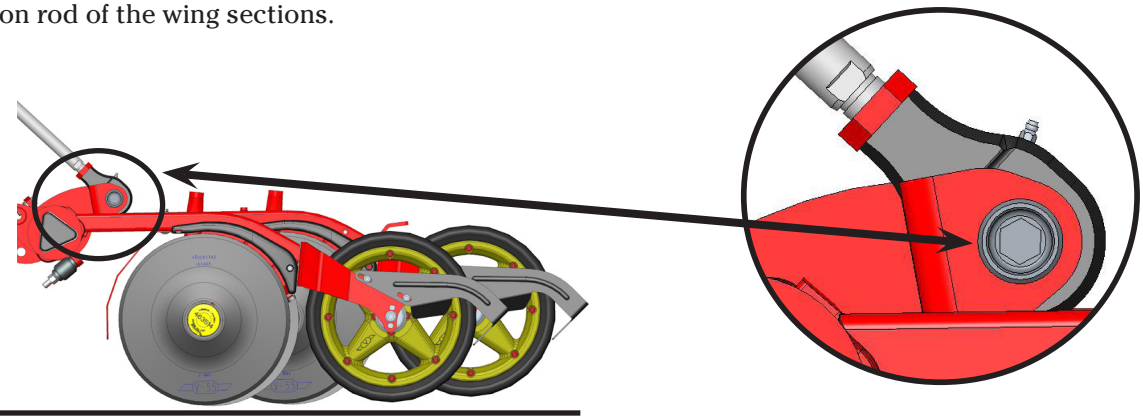
Centre section



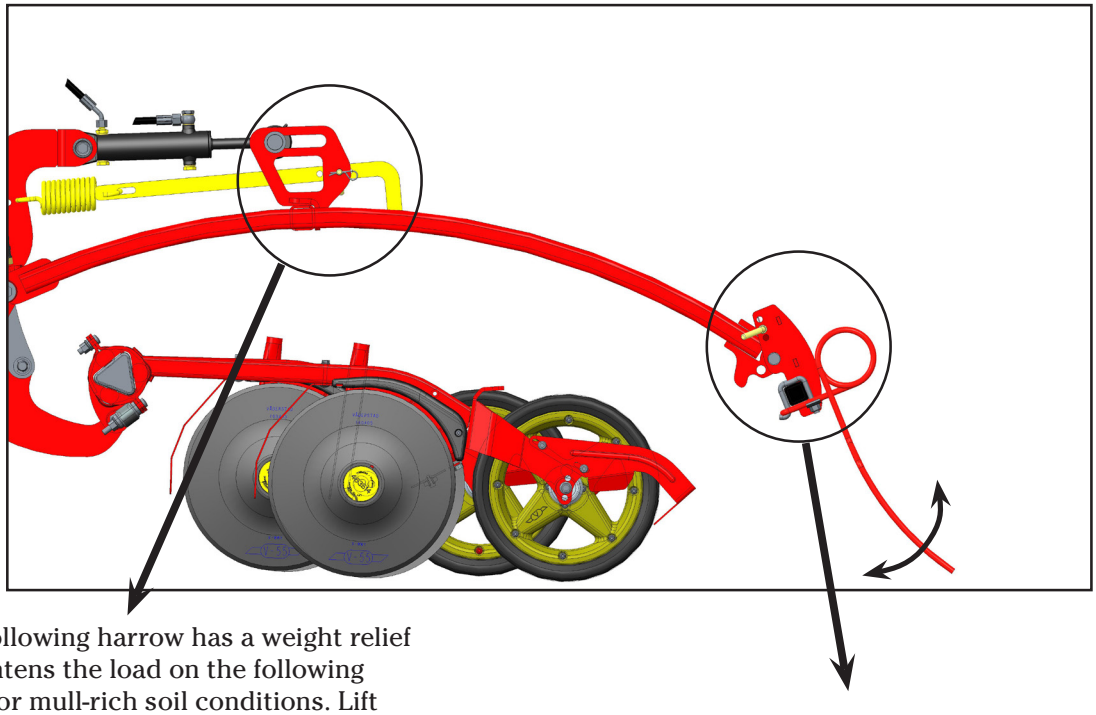
If the piston rod mounting holes of the wing sections are lower than the centre section, shorten the piston rod of the wing sections.



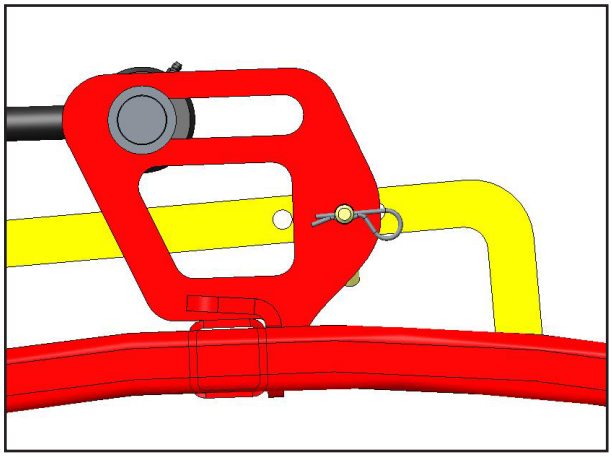
If the piston rod mounting holes of the wing sections are higher than the centre section, extend the piston rod of the wing sections.



7. Following harrow - “Heavy” model

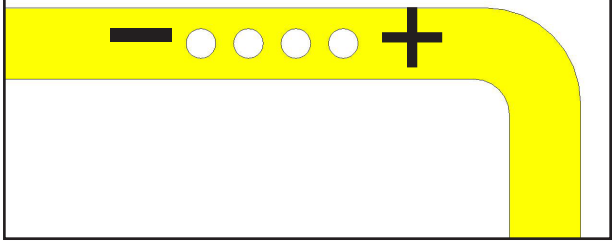


The “Heavy” following harrow has a weight relief system that lightens the load on the following harrow in light or mull-rich soil conditions. Lift the following harrow to the high-lift position by changing the position of the cotter pin.



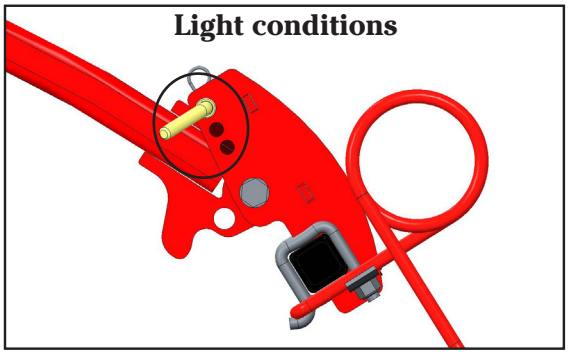
Low load on the following harrow.

High load on the following harrow.

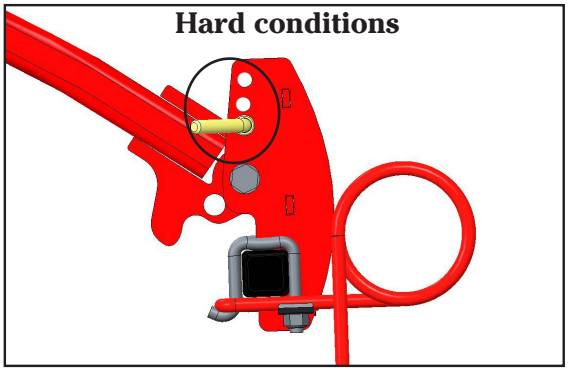


Normal position

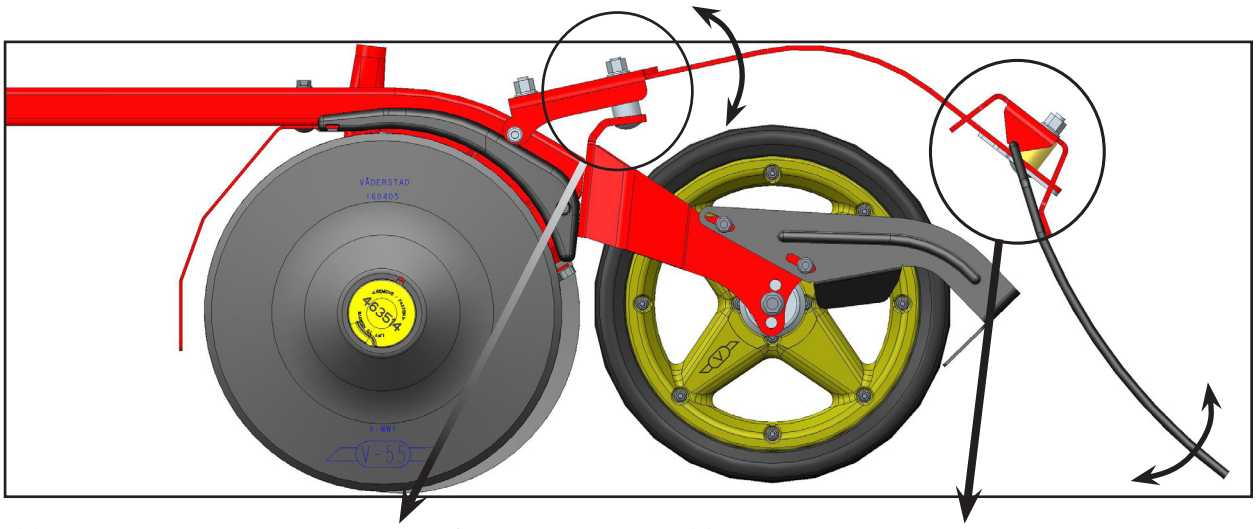
Light conditions



Hard conditions

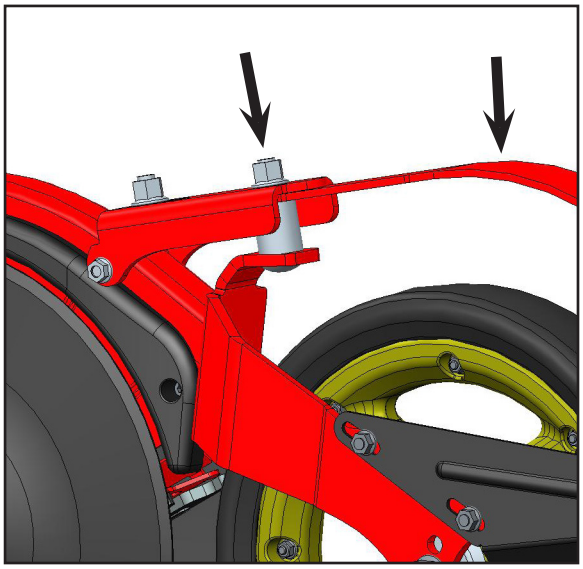


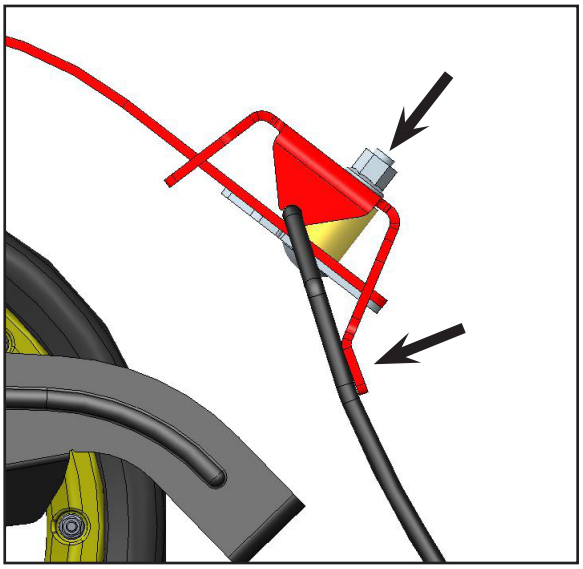
7. Following harrow - “Light” model



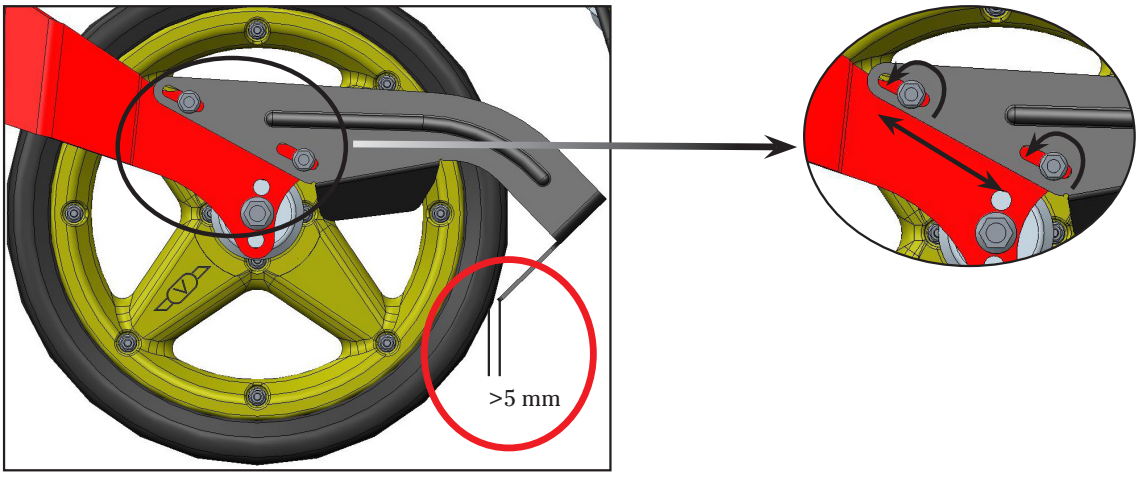
Tighten the nut in order to give the following harrow more weight.

Tighten the nut to achieve a more aggressive angle for the following harrow.





9. Scraper



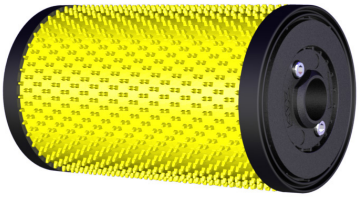
Attachment 1.

7. Rotors

Grain rotor

Adapted to all normal feed rates of grains such as cereals and peas, (fertiliser).

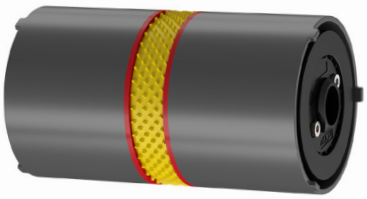
approx 80-100 kg/ha and upwards



Grass seed rotor

Specific for various types of grass seed blends.

Approx 10-60 kg/ha.



Rapeseed rotor

Specific for low feed rates of small seed products.

Approx 2-12 kg/ha.

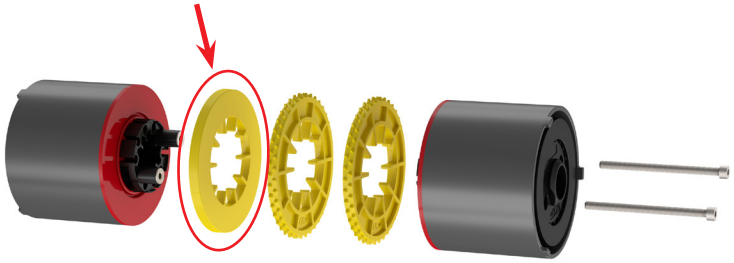
Special rotors

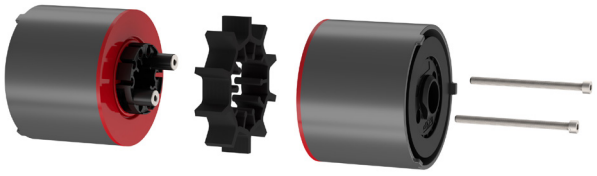
For rapeseed feed amount below approx. 2 kg/ha.

Note the positioning of the flat ring, with the flat side opposite the other rings!

For low feed rates of large seed sowing (hybrids of rye, maize, catch-crop mixtures that contain large seeds).

up to approx 80-100 kg/ha.





- **Fan rotational speed and air balance**

The selection of fan speed and air balance depends on the following:

Seed? Small seed or large seed?
Is fertiliser being used? How heavy is it? How round is it?
Amount of seed and fertiliser sown, large or small?
Is air needed for BioDrill?

- The seed and/or fertiliser that is the most difficult to transport to the coulters will determine the fan speed that will be used.

- There are two ways of setting the fan speed:

1. Go to General settings, scroll down to the fan symbol and specify the desired fan speed.
2. Press the A button in menu row 2 to start the fan, then keep the A button depressed and select the fan speed by turning the selection dial.

- **The diagram below is only a recommendation! Something to BEGIN with!**
- **Sowing MUST be studied and decided in the field! Ascertain the seed and measure the depth of sowing!**
- **Too high a fan speed will result in uneven sowing depth.**
- **Too low a fan speed will increase the risk of seed, or primarily fertiliser, blocking the sowing hoses.**

Fan speed (RPM)			
Seed drill	**ST 600C**	**ST 800C**	**ST 900C**
Småll size seeds	2800	2900	3000
Grain and/or fertiliser	3300	3400	3500
BioDrill	+200	+200	+200

- The air balance is set for the seed/fertiliser that requires the lesser air flow.
- The fan speed is set for the seed/fertiliser that requires the higher value.

BioDrill **Seed** **Seed** **Fertiliser**

Example: Oil plants (small seed sowing) are sown with the usual fertiliser ST600C:
Set the fan speed tot 3300 RPM and reduce the air balance for the left and right air outlets for the seed to approx. 25 - 40%. Allow the fertiliser to receive the most air.

Seed sowing

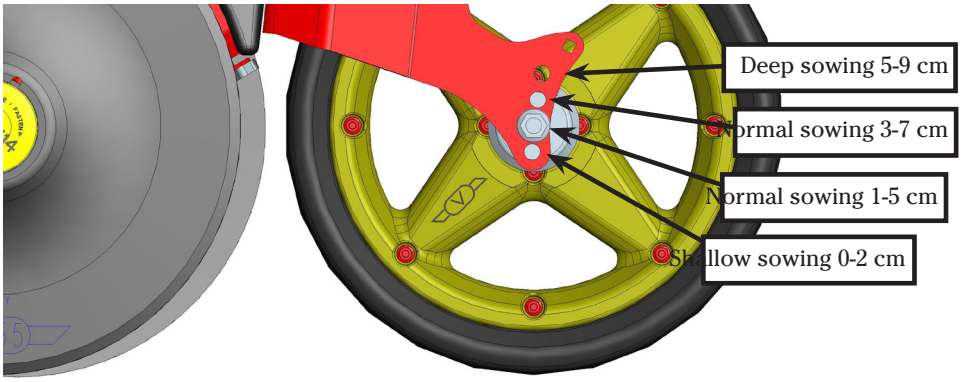
The following should be considered when seting the depth:
- Soil type?
- Moisture?
- Plant residues that could offer resistance?
- Quality of the seedbed?

There are three setting that together influence the sowing depth:

1. Clips. The clips is the first and most important setting.

2. Coulter pressure. Do not use more coulter pressure than is required by the soil conditions. Usually 50 Bar is sufficient to ensure good sowing/ In dry and difficult conditions and/or where deep sowing is desirable it may be appropriate to increase the coulter pressure.

3. **Positioning of wheels.** The coulter arm wheel can be set at four (4) different positions. For normal depth of sowing (~1 - 5 cm) no adjustment needs to be made. If peas or beans are being sown, or if deeper sowing is desired, the results may be better if all of the coulter arm wheels are changed. Refer to image.



Attachment 2 Oil flow test

- **Ensure that there is sufficient space around the seed drill for this test. The seed drill is extended and one of the bout marker arms will be used.**
- **Ensure than nobody can come to the vicinity of the seed drill whilst this test is being conducted!**

- Both of the containers of the seed hoppers must be completely empty in order to conduct this test.
- Set the air balance as shown in the image below. Image 22.

image 22

- Start the tractor and ControlStation.
- Go to the calibration menu *Refer to paragraph 3. Calibration on page 7).
- Set 0 kg/ha for seed.
- Set 500 kg/ha for fertiliser.
- Access the Calibration menu for fertiliser.
- Scroll down to row 5. Pulses/kg and press Enter (Refer to paragraph 3b. Calibr
- Use the selection dial to set 140 Pulses/kg and press Enter.
- Go to Basic settings *refer to page 4) and scroll down to Manual sowing a
- Set Simulated sowing speed to 10 km/h.

image 23

- Select the bout marker arm using the MAN button (Place the bout marker in the example in the image. Does not matter which side. Select a side that is suitable).
- If the seed drill has scribe markers (and is set to YES in the Basic settings (refer to page 10)) set the tramlining frequency to 1 (tramlining in every furrow) (refer to page 11)).
- Set the machine to the high-lift position by pressing the high/low lift button (the lamp to the right of the button should be green).
- Start the fan by pressing button A and set the fan speed to 3500 RPM (refer to page 10 - Fan On/Off).
- Set the motor speed of the tractor ro 1200 RPM.
- Press Manual sowing (button 6) and keep it depressed during the test.
- Start the seed drill insertion with II (button 7).
- During the seed drill insertion sequence the speed of the fan must be stable. The front tool must be lowered smoothly so that no vibrations are noticed. A double beep will be heard when the seed drill insertion sequence is complete.
- Now press I (button 8) to raise the seed drill. The speed of the fan must also be stable now and the front tool raised smoothly without any jerking or vibrations.
- If the speed of the fan is not stable or if there are vibrations in raising/lowering the front tool, the speed of the tractor engine will increase to 1400 RPM and the test will have to be completely redone.
- If the vibrations in the front tool or instability in the speed of the fan remain, even though the engine speed of the tractor is increased to 1900 RPM, contact Väderstad AB to have a service engineer investigate the hydraulic system.

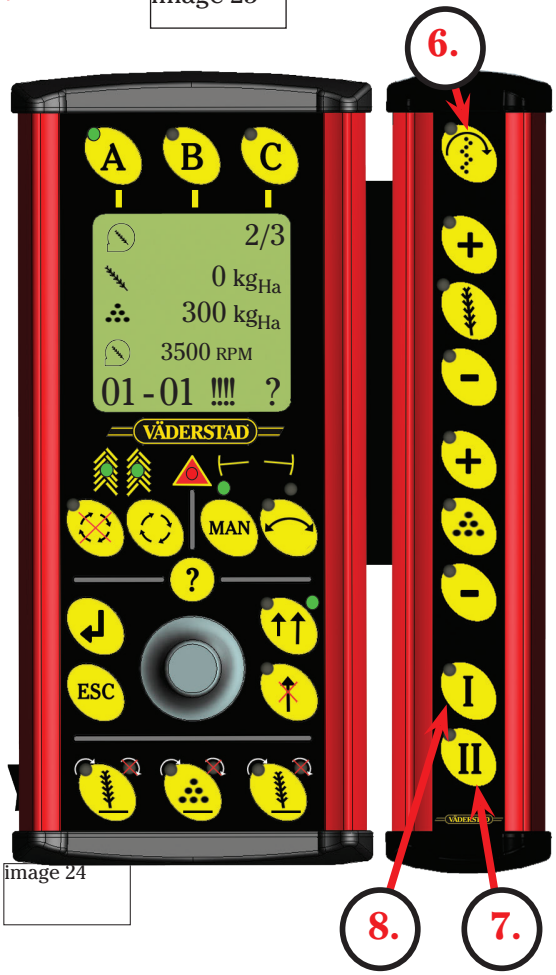


image 24

Refer to document (VAB no. 903003) as to how to measure the hydraulic pressure in all three of the LS hoses.

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