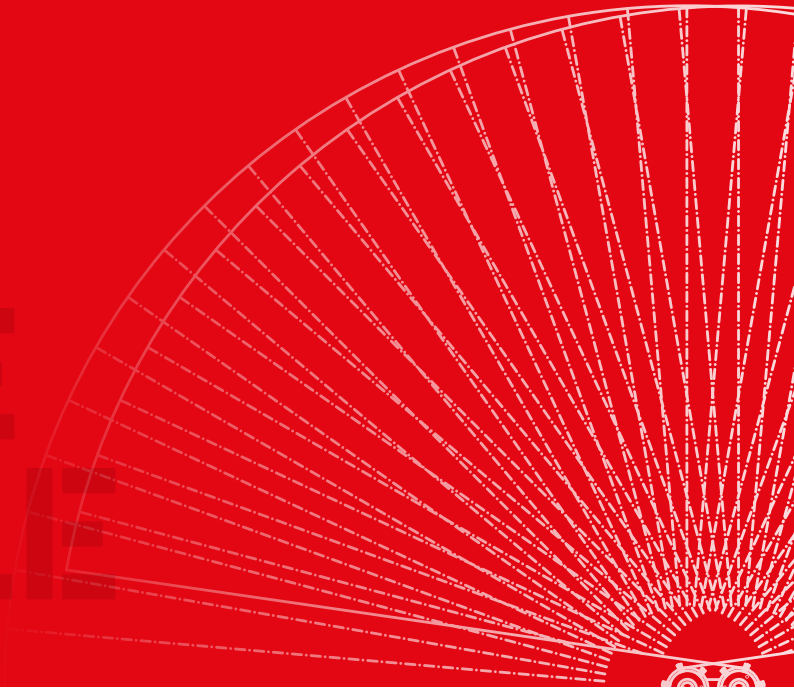




F8/F10 OPERATING INSTRUCTIONS



SIMPLE
PRECISE
RELIABLE



> EU DECLARATION OF CONFORMITY

(Machinery Directive 2006/42/EF, Annex II, supplement A)

Manufacturer: BREDAL A/S
Nimvej 1
DK-7120 Vejle Ø


hereby declares that

BREDAL Type F8/F10 serial number

is manufactured in conformity with the Machinery Directive (Directive 2006/42/EC), as amended, and with national provisions.

Bredal DK-7120 Vejle Ø

August 2016



Anders Buhl

> THE SPREADER'S MASTER DATA

The spreader's rating plate specifies the model designation, year of manufacture, net weight, serial number and total weight.



A series of values are entered in the computer of each individual spreader. If a value is mistakenly deleted from the computer, it is possible to re-enter the original value.

The following values must be entered in the computer in order for all functions to work properly:

Weighing:

Calibration figures

Zero load value

Application rate:

Volume per impulse

Speed sensor:

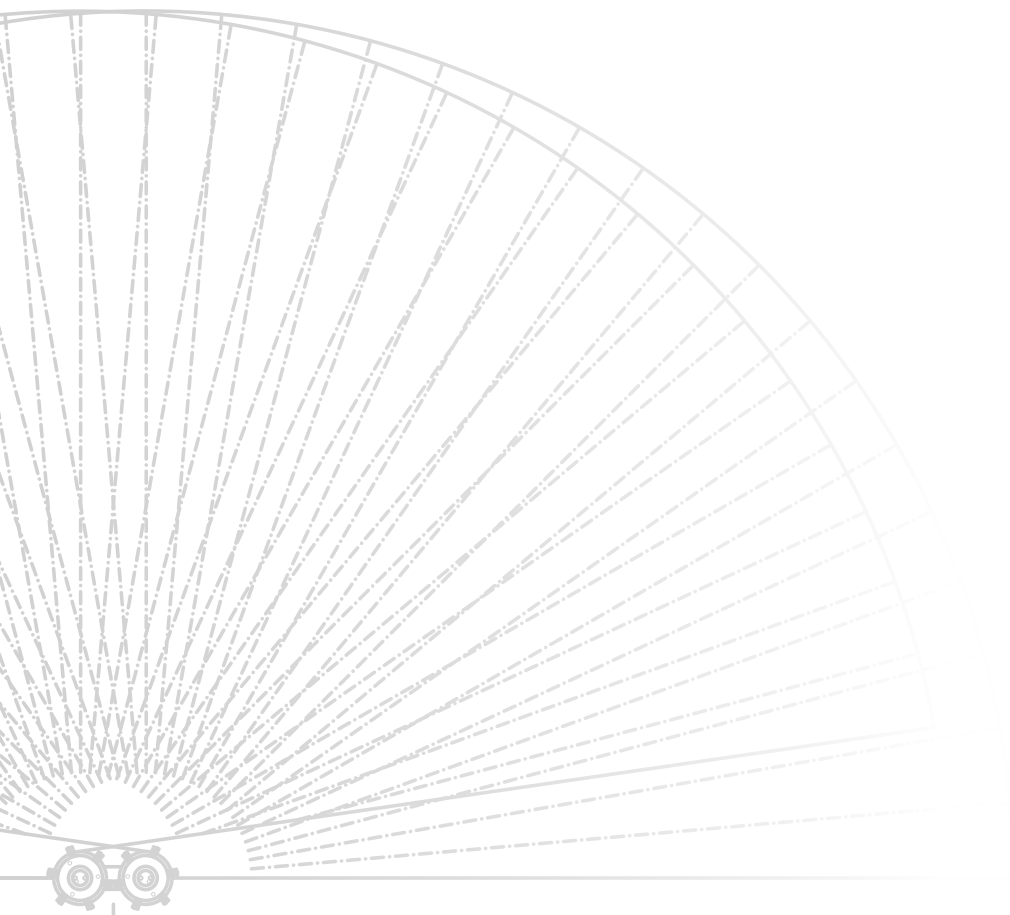
Pulses/100 metres

Errors and omissions excepted.

The terms and conditions of sale and delivery can be found on www.bredal.com/en/betingelser

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Bredal F8/F10 is designed to spread chemical fertilisers and similarly structured materials on farmland. The operator is responsible for ensuring that the machine is solely used for the intended purpose to avoid property damage and personal injury.

The machine is equipped with a rating plate on which the serial number and year of production are specified. The maximum gross weight and net weight are also specified on the rating plate. The difference between the two is the maximum permissible load. If other wheels are mounted, the user is responsible for ensuring that these can bear the load of the spreader's gross weight.

This instruction manual contains instructions for operating the machine and setting it to spread generally available commercial fertilisers. As fertiliser quality can fluctuate greatly from one year to the next and from consignment to consignment, it is advisable to always perform a spreading test if there is any doubt whether the type of fertiliser can be spread on the preferred working width with reasonable results. The latest settings for the most common types of available fertiliser can be downloaded at any time from Bredal's website. It is advisable to always do a spreading test using the type of fertiliser to be spread to test the settings recommended by Bredal. The user is solely responsible for ensuring that the machine is correctly set and that it works correctly to achieve acceptable spreading. Bredal accepts no liability for spreading errors.

The ISOBUS terminal in the tractor and its software:

The appearance of the user interface varies slightly from one ISOBUS terminal to another. This is because the terminals have different resolutions. Some spreader functions require specific software to be installed in the terminal. Wedge spreading is only possible if the terminal has a section-control program and a tracking program. If fertiliser is applied according to field and crop maps, the terminal must also contain software that can process these maps. When the spreader is connected to the tractor, the spreader's job computer exchanges data with the tractor's terminal and only those functions which are supported by the tractor's terminal will be active. If the terminal does not contain software for wedge spreading, the function cannot be used.

SAFETY

The safety distance from the spreading discs is at least 30 metres when these are rotating. If people or animals are within this distance, the tractor's PTO must be disengaged.

Never operate the headland gear or adjust the spreader while the spreading discs are rotating.

When loading the spreader, keep foreign objects, such as stones, etc., from getting in the machine's hopper, as they can cause damage and be very hazardous for the surroundings.

Sitting/standing on the machine while it is operating or during road transport is not permitted.

Before working on the machine, make sure to disengage the tractor's PTO and depressurise the hydraulic system.

Shields on PTO shafts and the implement must be intact and correctly attached.

> TRAFFIC SAFETY

As traffic safety is important when driving on public roads, the following must be checked:

- The light system must be connected to the tractor's light socket, the lamps must be cleaned, and turning signals and brake lights must work correctly.
- Reflective warning triangles must be intact and clean.
- All hitch and wheel bolts must be tightened to the correct torque.
- The tyre pressure must be correct.
- Make sure there are no cracks in tyres, axles or rims.
- The hitch peg must be properly dimensioned and locked so that it cannot be ejected.

CONNECTING THE SPREADER

When connecting the spreader to the tractor, it is important that it stands horizontally or slightly forward to obtain the best possible spreading results. It is possible to slightly adjust the height by moving the hitch in its bolt holes on the spreader's undercarriage.

The hydraulic hoses for operating the application process must be connected to a dual-action outlet on the tractor; 50–60 litres/min. are needed.

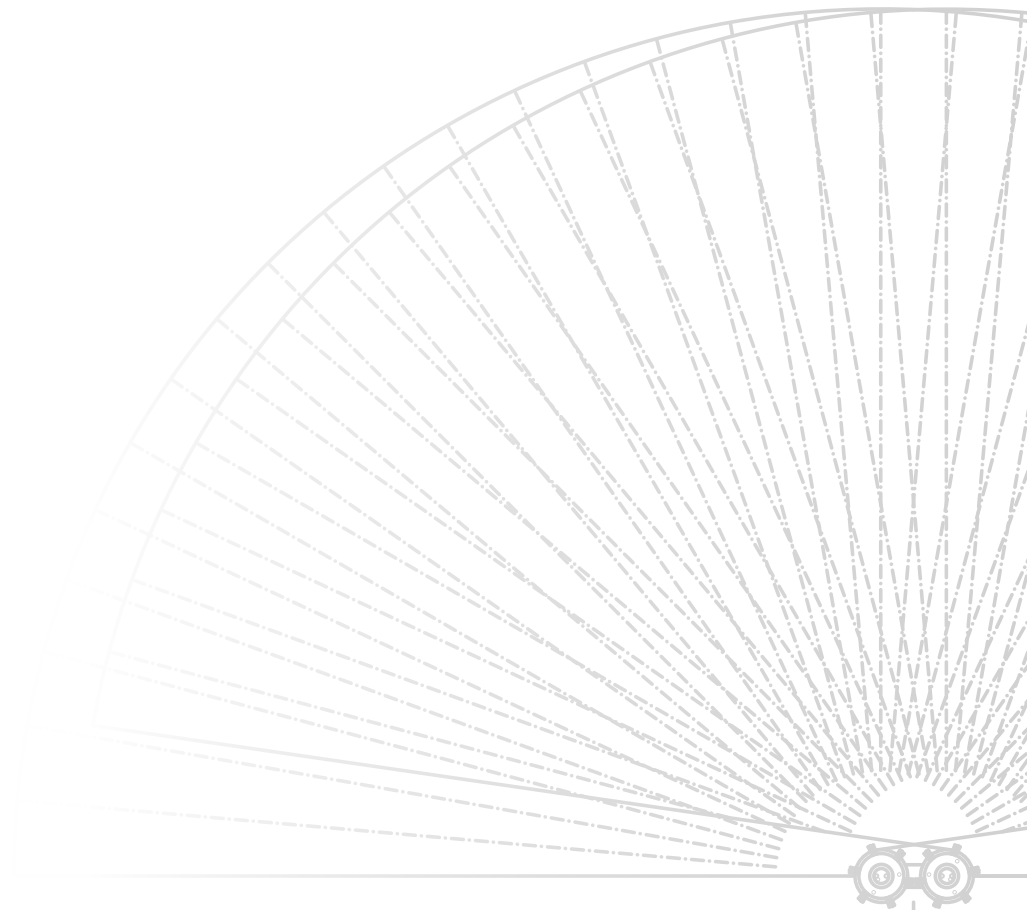
The hydraulic hoses for operating headland gear are connected to a dual-action outlet.

The hydraulic hoses for operating a hydraulic hopper ring are connected to a dual-action outlet.

The light plug is inserted in the tractor's light outlet.

The ISOBUS plug is inserted in the tractor's ISOBUS socket.

Connect the PTO shaft to the tractor's PTO.





INITIAL INSTALLATION/SET-UP OF A MÜLLER TERMINAL

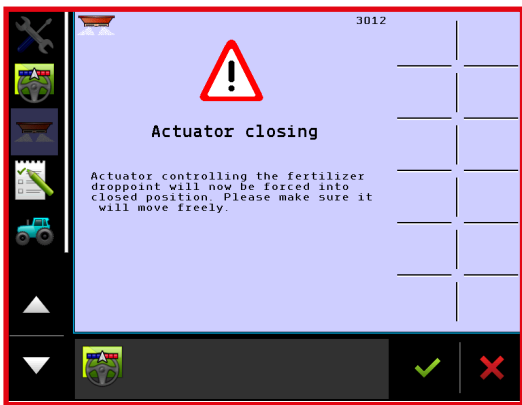
If an ISOBUS terminal from Müller is included with the machine, some basic set-up needs to be done before the spreader's section control can be used.



For installing the tractor mounting set and a GPS aerial, refer to the enclosed instructions from Müller. Also, please refer to Müller's instructions for operating programs that do not concern spreader operation, such as Track-leader, Field-nav, Farmpilot, or other software that can be connected to the Müller terminal.

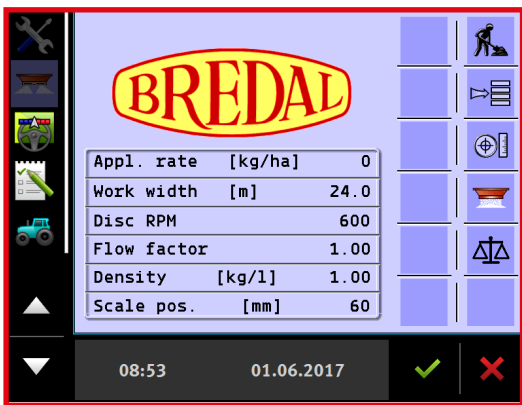
The basic GPS receiver set-up, its activation, and the basic encoding of the GPS's aerial's location can also be found in Müller's installation and operating instructions.


The spreader can be operated once the terminal, tractor-attachment set and GPS aerial have been installed, and the plug from the spreader's ISOBUS socket is connected, and basic encoding is completed. Press the  button for about 3 seconds. It can take up to two minutes after switching on the terminal for the spreader icon to appear on the screen.

If the screen display does not appear, press  on the left side of the screen.



After start-up, the warning "Actuator closing" will appear; press  to accept. If "Simulated speed" is activated, an alert about this will also appear, and this must be accepted by pressing .

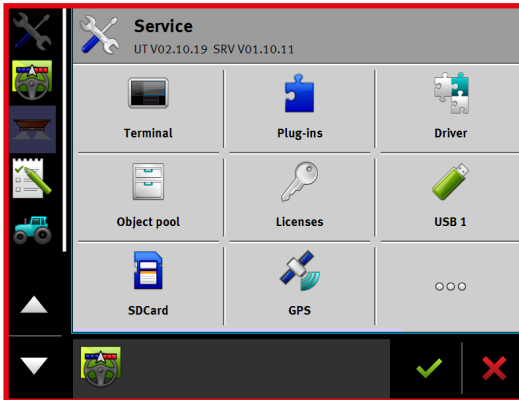


It is now possible to choose from among the various applications on the left side of the screen. The spreader's application is selected on the screen display shown here. It is always possible to return to this page by pressing the "Home" icon , except when an input field is active.

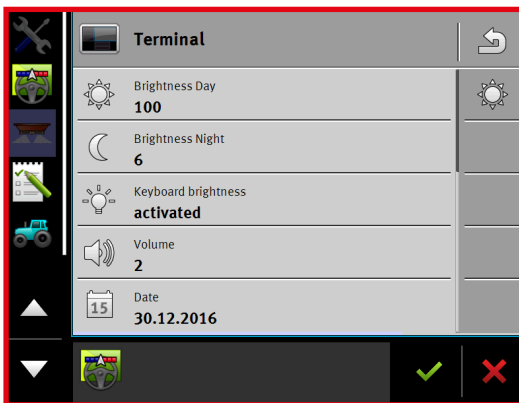
The "Home" start-up screen shows the input application rate, working width, etc.

LANGUAGE, CONTRAST, BRIGHTNESS AND UNITS OF MEASUREMENT

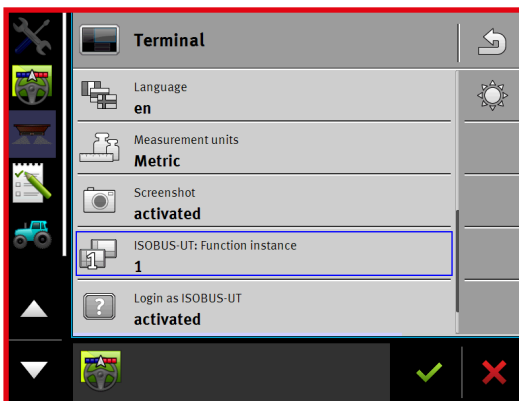
Press  to modify the settings:



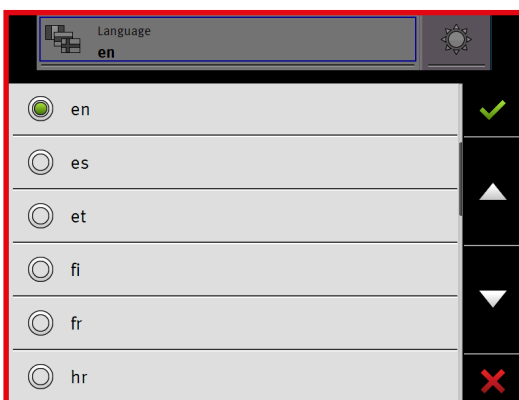
Press "Terminal".



Select "Language" by scrolling down.



Click the "Language" tab.



Select from the list

Press 

INITIAL SET-UP OF EXISTING TERMINAL IN THE TRACTOR

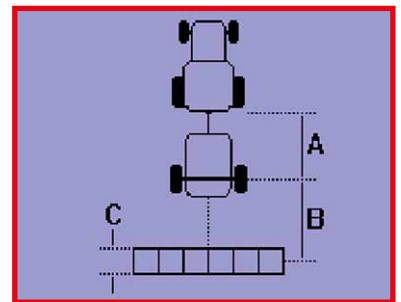
If the spreader is connected to a tractor with an ISOBUS terminal, it may be necessary to enter the sections' location and length and indicate that a tractor mounted spreader is used. The input data is used to ensure that the spreader starts and stops applying fertiliser at the right time when turning in headland. The Bredal program already contains this information, but not all tractor terminals upload the information from the spreader when it is connected. Some terminals use the input data correctly. In some instances, the tractor's terminal uses only one of the two input distances. Sometimes, the tractor's terminal does not upload the distances at all; in these cases, the distances must be entered in the tractor terminal's section control program. Follow the instructions from the manufacturer of the tractor's terminal.

In order for the spreader to start and stop applying fertiliser at the right time, the following distances need to be entered:

- A = distance from the tractor hitch to the spreader axle
- B = distance from the spreader axle to the centre of the swath
- C = length of the swath

If a GPS aerial is mounted on the tractor, the following distances are recommended. On most terminals, "Tractor drawbar" must also be selected.

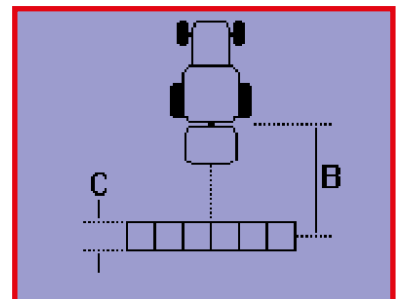
- A = 4.0 metres
- B = 8.0 metres
- C = 5.0 metres



If a GPS aerial is mounted on the front of the tractor, select "three-point hitch" and the following distances instead.

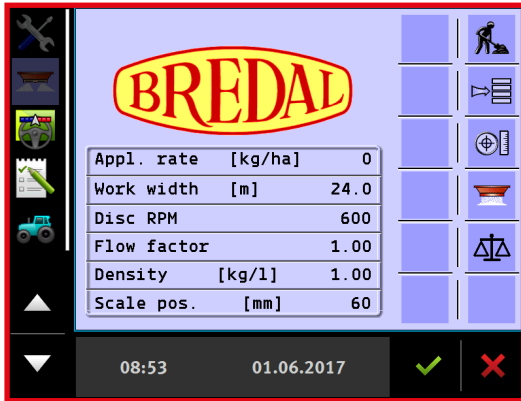
In this case, B = the distance from the tractor hitch to the middle of the swath.

- B = 12.0 metres
- C = 5.0 metres

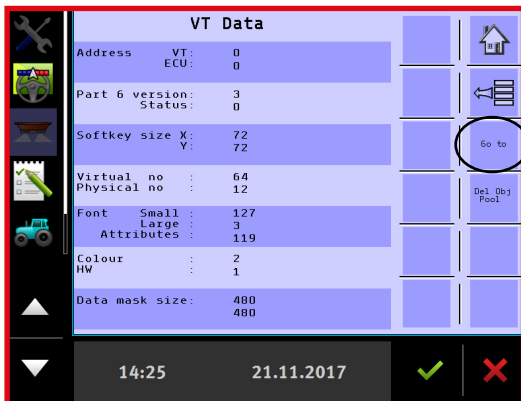


MOVING A SCREEN DISPLAY TO ANOTHER TERMINAL

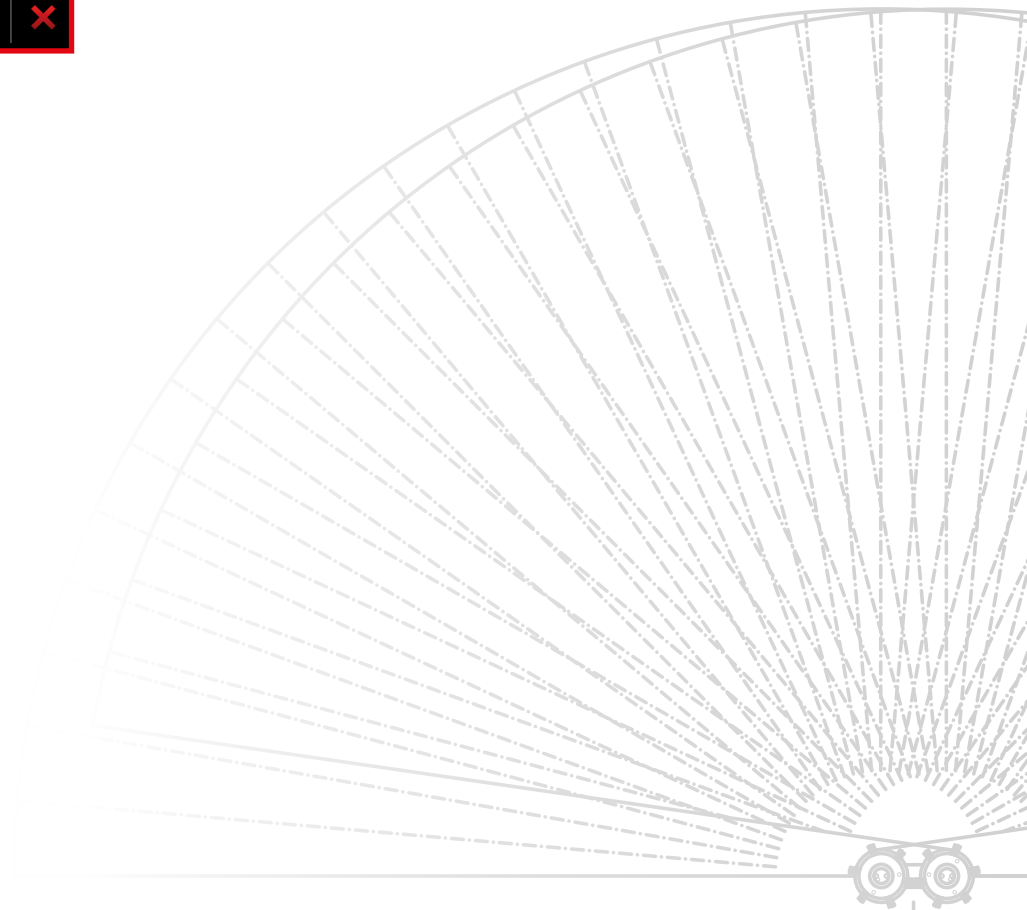
If more than one terminal is connected to the tractor's ISOBUS system, the Bredal program display can be moved from one terminal to the other.



Press "Menu" , then select "Help", followed by "Diagnostic" and then "VT".



Press "Go to" on the right side.



DESCRIPTION OF THE BREDAL PROGRAM ICONS

The following sections describe the Bredal program icons; their location on the screen can vary from one terminal to another.
Icon meaning/function:



Home: return to start page.



Work: go to operating page.



Start/stop button: starts and stops the application process.



Menu: go to the menu selected.



Return: go back to the previous menu.



Line down: moves the marking one line down.



Line up: moves the marking one line up.



Emptying: starts the floor belt, emptying the hopper.



Enter application data: goes to the menu where application rate, working width, etc., are entered.



Weighing control: goes to the menu for checking the application rate.



Accept: accepts the input data, or acknowledges an alarm.



Delete: cancels input data.



Toggles between different displays.



Manual closing of a section on the right side.



Manual opening of a section on the right side.



Manual closing of a section on the left side.



Manual opening of a section on the left side.



Increase the spreading volume by 5%.



Reduce the spreading volume by 5%.



Return to the originally entered spreading volume.



Warning/Alarm



Next page: goes to the next page.



Delete: deletes entered data.



ESC: returns without changing a value.



Calibrate:



Start new calculation



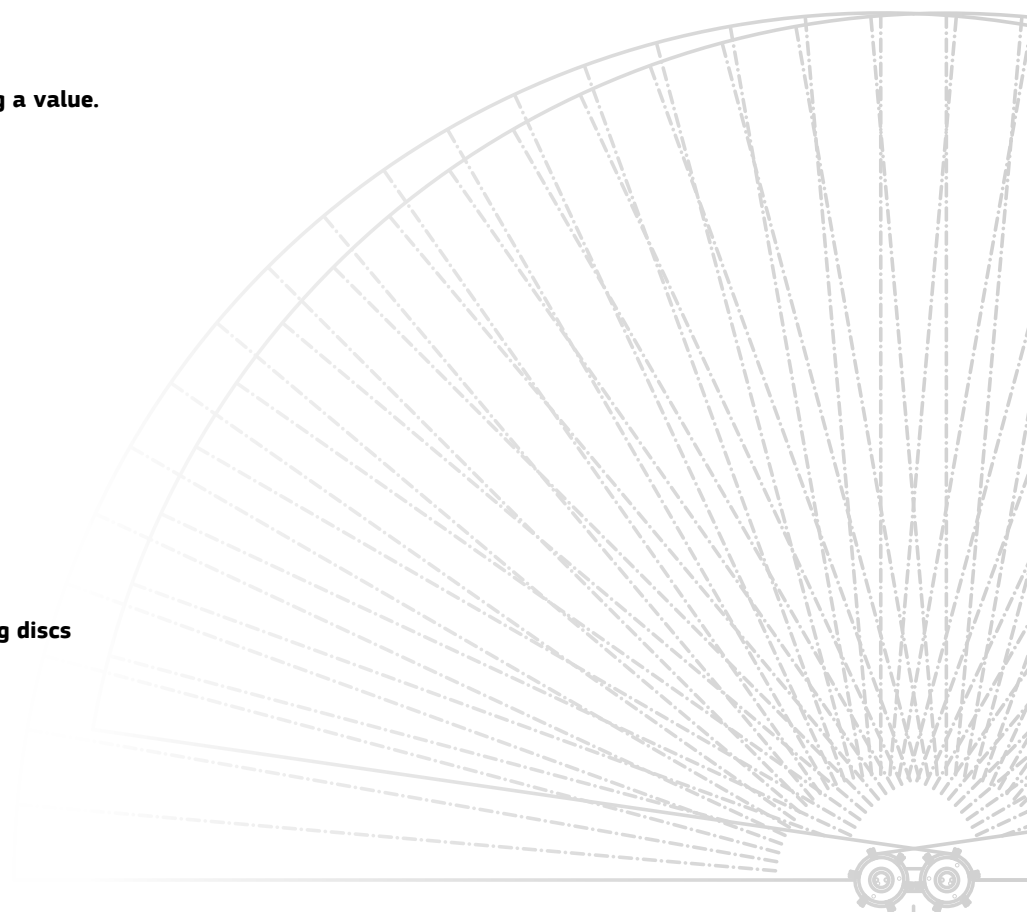
Pre-start function



Operate the hydraulic system




Start/stop hydraulic spreading discs



CONFIGURABLE ALARMS

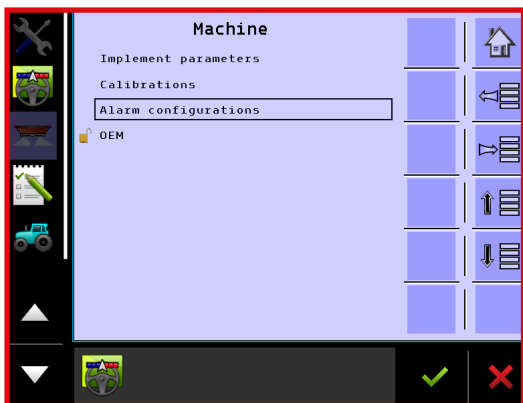
It is possible to set up individual alarms to issue a warning, such as when the hopper is almost empty. The following alarms are configurable:

- Kg/residual in the hopper
- PTO speed
- CAN speed timeout time

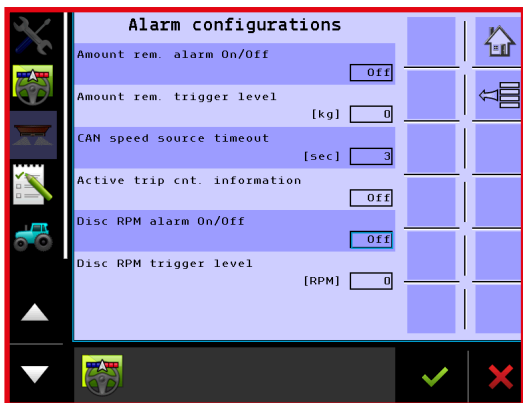
Press the  button on the Home screen display.



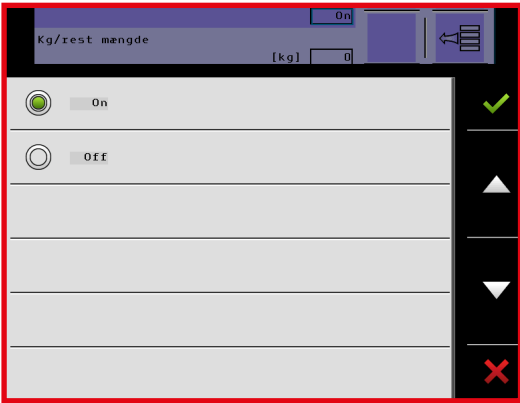
Select "Machine"




Select "Alarm configurations"

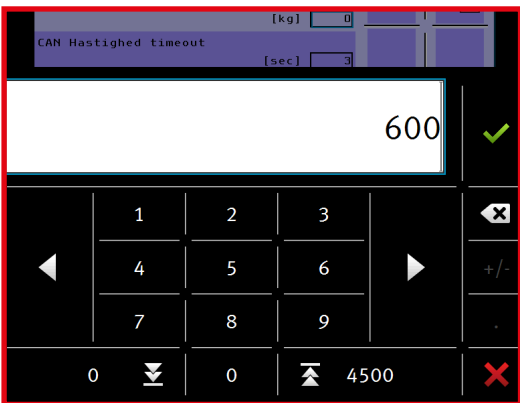


Select the alarm to be activated



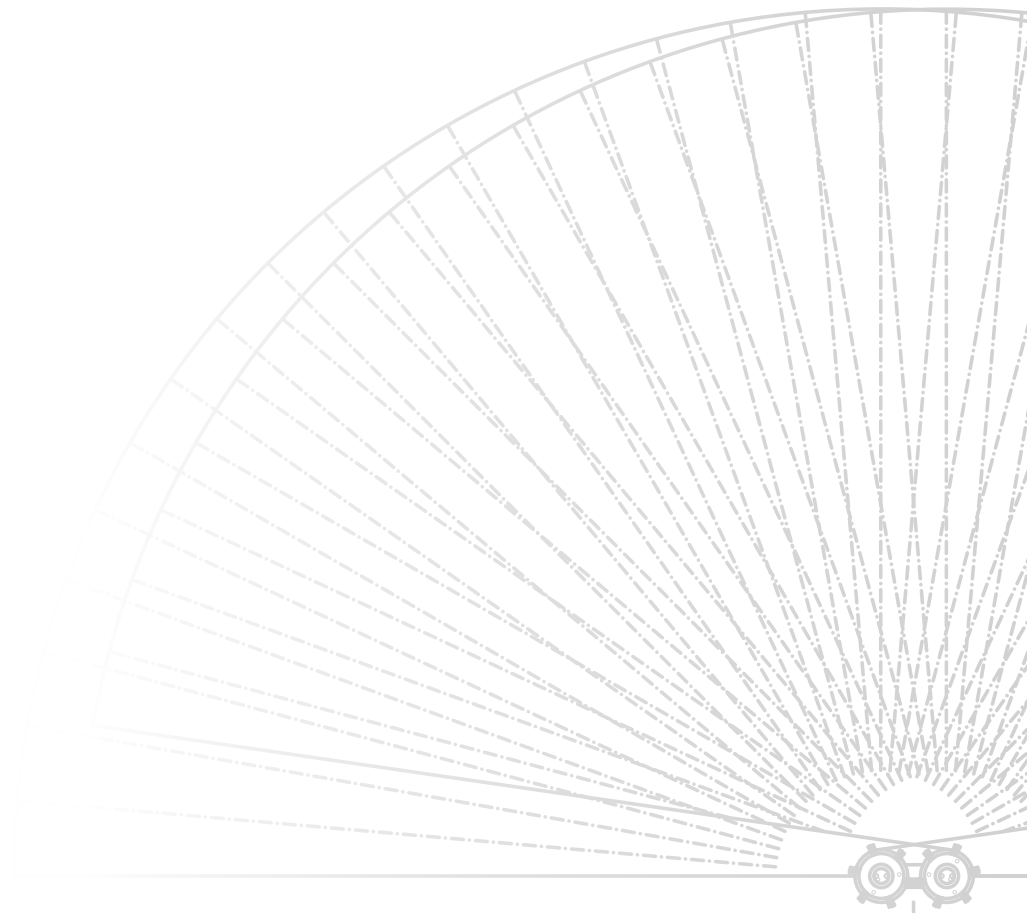
In this example, the alarm is set for kg/residual to be on.

Press  to accept.



In the field below, enter the residual volume (kg/residual) that will trigger the alarm.

Press  to accept.



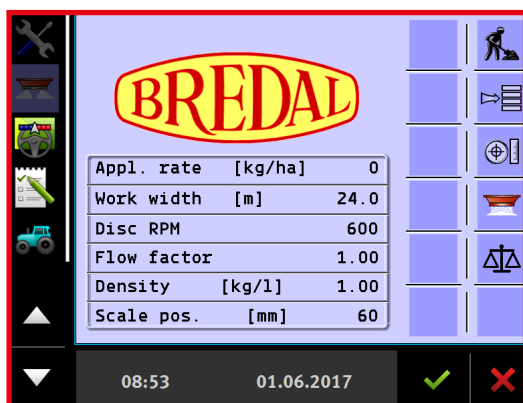
MENU FOR ENTERING THE APPLICATION RATE, WORKING WIDTH, DENSITY, ETC.

The following parameters must be encoded before application begins:

- Kg/ha
- Working width
- Scale position, rear doors
- Downshute position
- Density
- Flow factor

> ENTERING THE APPLICATION RATE


Press  to access the task menu.

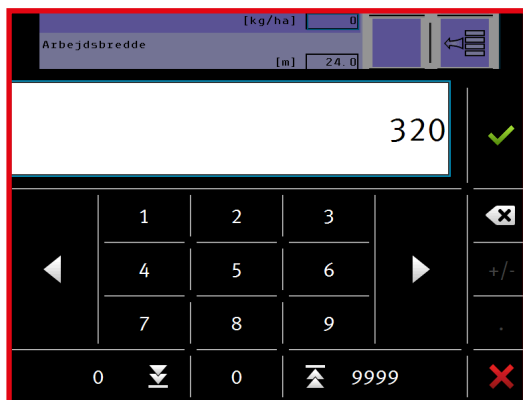


Press the input field "kg/ha" to change the value.



Enter the preferred application rate.

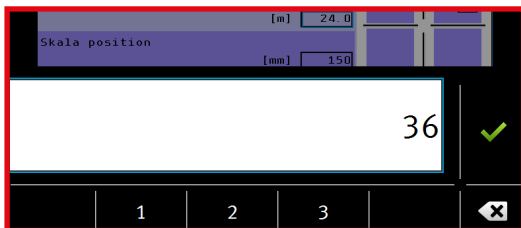
Finish with 






> ENTERING THE WORKING WIDTH

Press the input field "Working width" to change the value.



Enter the preferred working width.

Finish with 

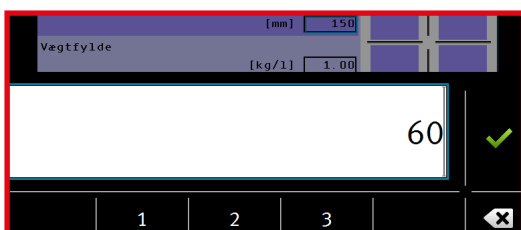
> ENTERING SCALE POSITION

The setting for the opening of the rear door is entered under scale position. A scale setting of 60 is advisable. If a very large volume is to be spread, the setting can be increased to 80 or 100. If a very small volume is to be spread, the setting can be reduced to 40.

NB: it is important to enter the value of the actual rear-door setting, as otherwise the spreader will spread incorrectly.



Press the input field "Scale position" to change the value.



Enter the position of the rear door.

Finish with 

> ENTERING THE DOWNSHUTE POSITION

The following different setting options are found under downshute control:

- Automatic: the downshutes automatically adjust to the input working width.
- Manual: the preferred downshute position has to be entered.
- Automatic without flow control: the downshute position is not changed by different flows

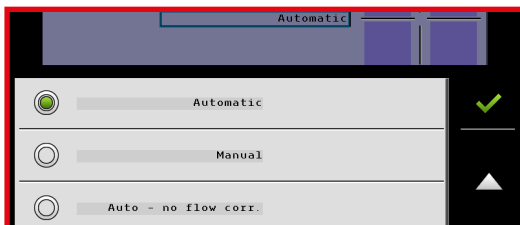


When the working width is changed, downshute control always returns to automatic!


Optimised spreading settings for most fertiliser types can be downloaded from the Bredal website. It is advisable to use manual downshute control and enter the downshute position that matches the type of fertiliser to be spread.



Press the input field "Downshute control" to select.



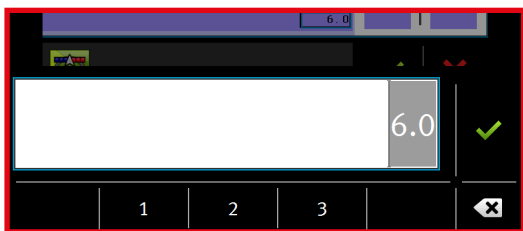
Select the desired setting.

Finish with 





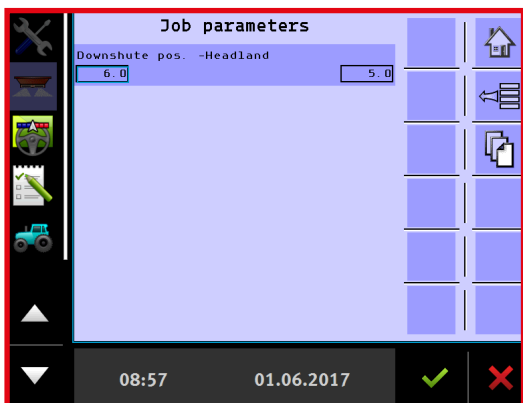
When "Manual" is selected, the downshute position for field and headland spreading can be changed.

Press the field "Downshute pos. field" to change the setting.

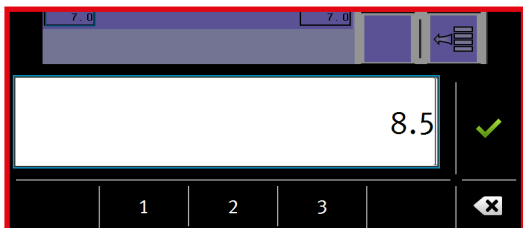


Enter the preferred downshute position for field spreading.


Finish with  or press  to go to the next page where it is possible to enter the downshute position for headland spreading.



Press the field "Left" or "Right" to change the downshute position for headland spreading.



Enter the preferred downshute position for headland spreading.

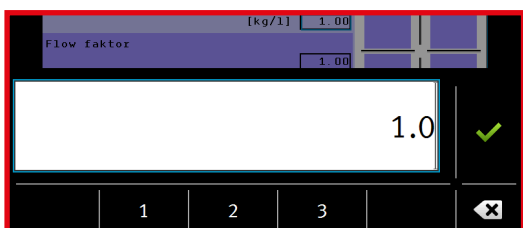
Finish with .

Remember to enter the downshute position for both left and right sides, if both sides have to be changed.


> ENTERING DENSITY



Press the input field "Density" to change the value.

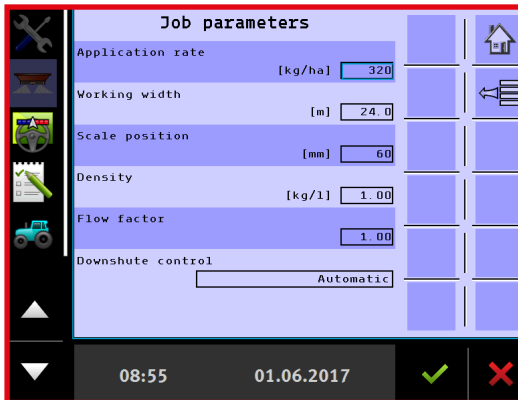


Enter the fertiliser's bulk density.

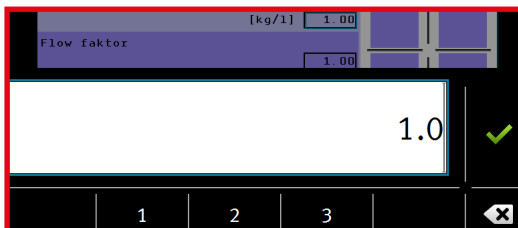
Finish with .

> ENTERING THE FLOW FACTOR


As a rule of thumb, always start out with a flow factor of 1.0. If the spreader is equipped with weight cells, the flow factor will be continuously calculated during spreading; the most recently calculated flow factor is shown in the input field under flow factor.

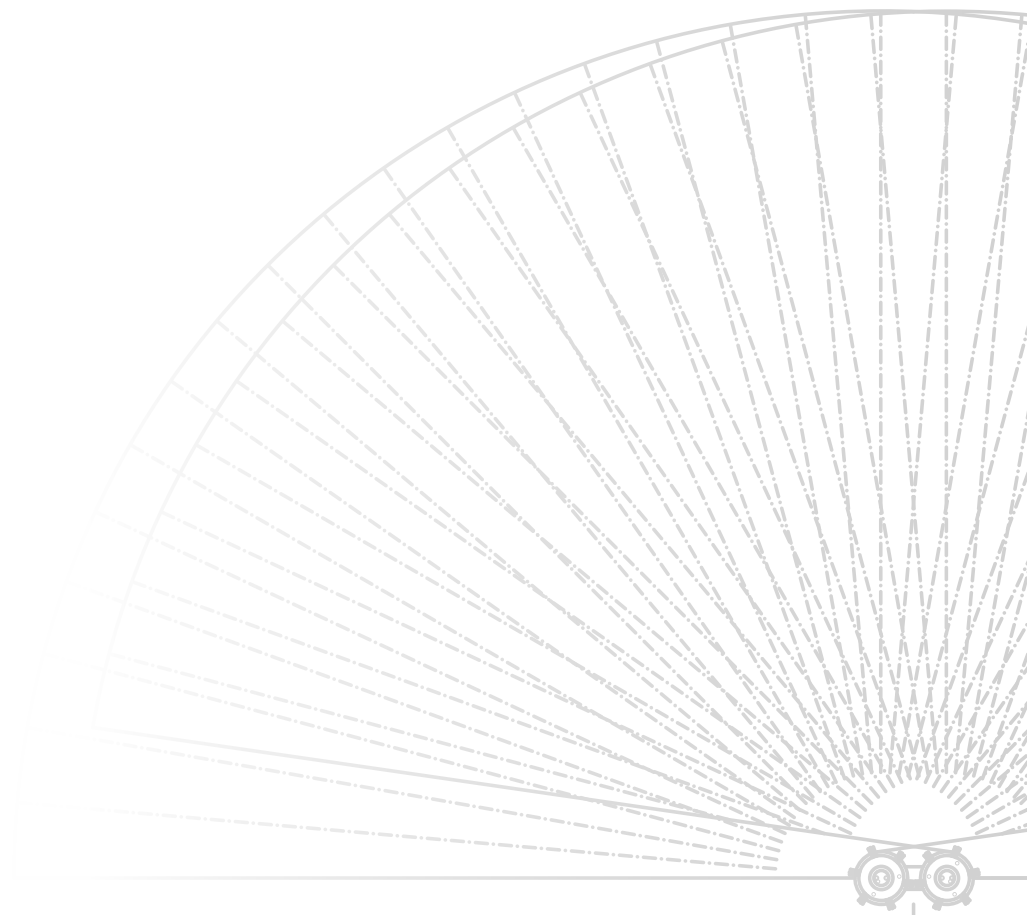


Press the input field "Flow factor" to change the value.



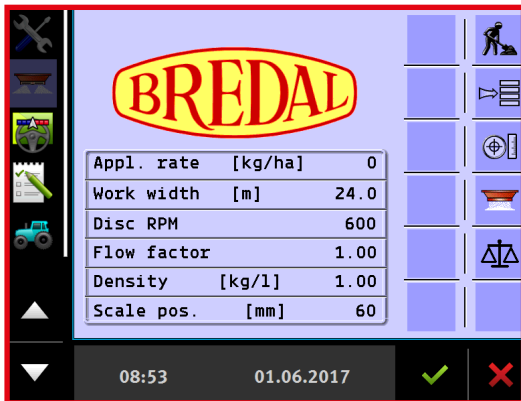
Enter the preferred flow factor.


Finish with 

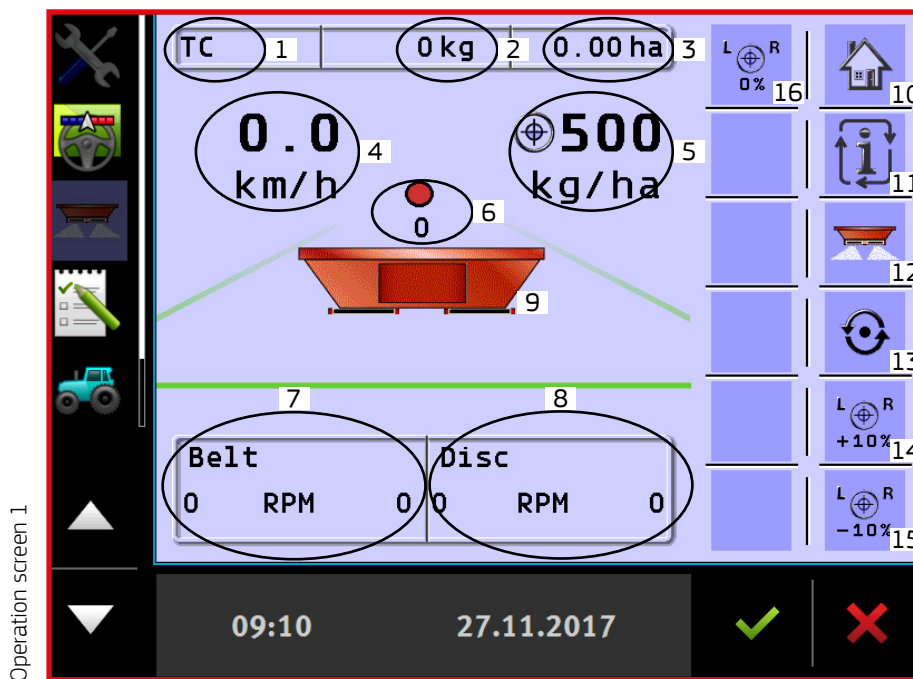


OPERATION SCREEN

The operation screen is the screen display shown during spreading. It is also where application can be started and stopped and where different messages are given to the driver.



Press  to access the operation screen.



1. Task controller: when TC is displayed, the task controller program is active
2. Indicates the number of kg spread as counted by the active counter.
3. Shows the number of ha processed as counted by the active counter.
4. Shows km/h – kg/min – kg/ha and floor belt speed; it is possible to toggle the views by pressing key no. 11.
5. Shows the currently preferred application rate
6. Shows the actual weight in the hopper. The red dot indicates whether the weighing signal is sufficiently stable for dynamic weighing to be able use the signal for calculation: green = the signal is stable; red = the signal is insufficiently stable for dynamic weighing to use the calculation.
7. Shows the current floor belt speed for left and right sides.
8. Shows the current PTO rpm; the dot indicates whether the spreader is operating at the correct PTO rpm:

For field spreading:

Green = operating at the correct PTO rpm

Yellow = PTO rpm is close to being correct

Red = operating at an incorrect PTO rpm

When headland spreading is activated:

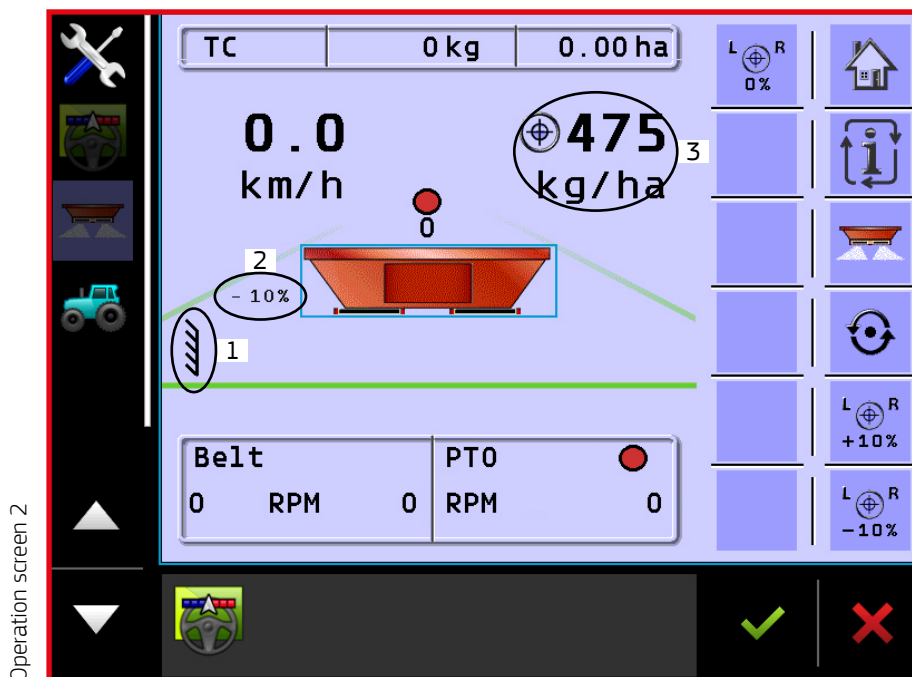
Green = Environment: no or very little fertiliser is being spread beyond the field boundary.

Yellow = Medium: 40–50% being spread in the field boundary; fertiliser is also being spread beyond the field boundary.

Red = Maximum: full application rate all the way out to the field boundary, and a good deal of fertiliser is being thrown beyond the field boundary.

NB: if, as recommended, settings have been downloaded from Bredal's website, use the PTO rpm setting from here and not the above colour markings.

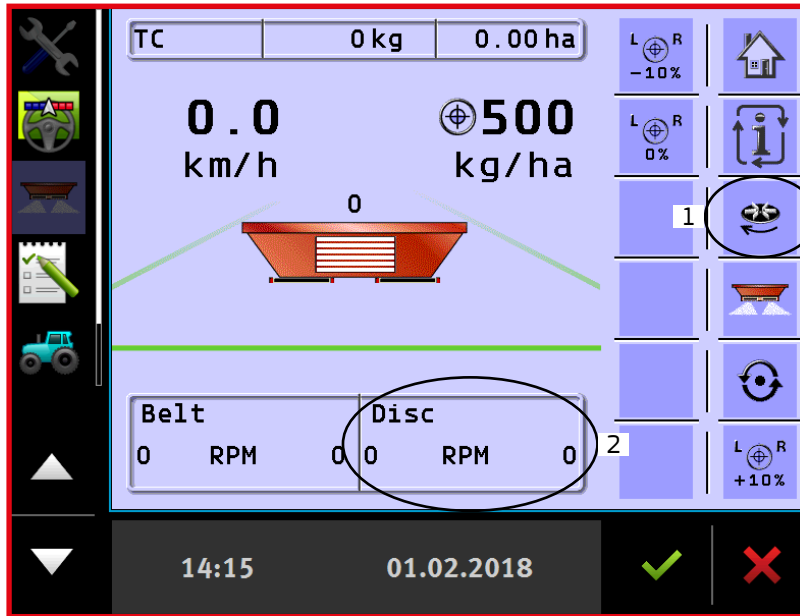
9. Starts and stops the application. Floor-belt oil must be circulating before application starts. Key no. 12 has the same function.
10. Home key
11. Toggles different views on the screen (see also point 4).
12. Starts and stops the application. Floor-belt oil must be circulating before application starts.
13. Starts manual application until it is pressed again or until forward movement is detected and the application becomes driving dependent.
14. Increases the spreading volume by 10%
15. Reduces the spreading volume by 10%
16. Return to the input application volume.



1. Symbol for headland spreading; the symbol appears when headland spreading is activated
2. Automatic volume reduction: when headland spreading is connected, the volume spread towards a boundary is automatically reduced by 10%. This reduction can be changed to 0% if it is not wanted; it is also possible to enter an automatic reduction on both sides (see p. 33).
3. Shows the current application rate in kg/ha (the total application rate will be lower when the application rate towards a boundary is reduced by 10%)

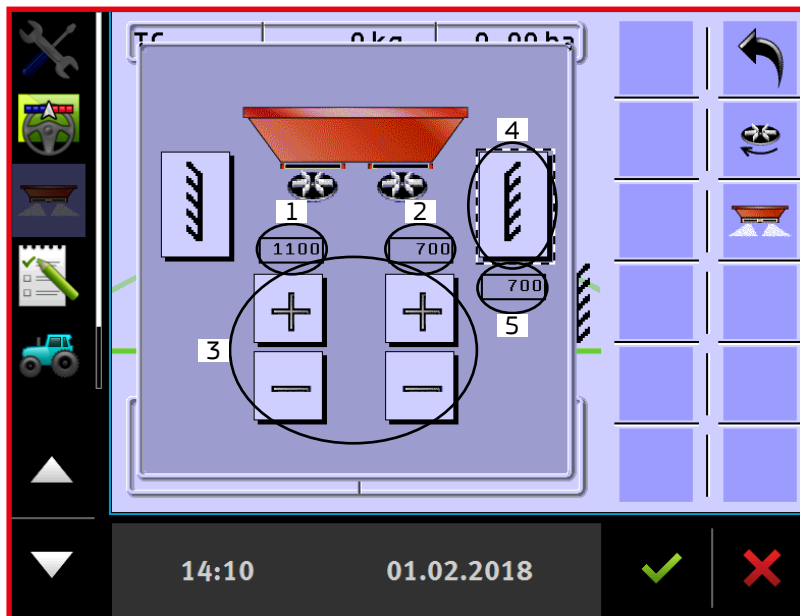
OPERATION SCREEN (HYDRAULIC SPREADING DISCS)

In addition to the functions described on the preceding pages, the following functions for hydraulic spreading discs are found:



1. Starts and stops the spreading discs.
2. Shows the current disc speed for the right and left side.

By pressing field "2", the following picture appears:



1. Shows the current speed set for the left disc.
2. Shows the current speed set for the right disc.
3. The speed of each disc can be changed using the "+" or "-" key. Alternatively, the preferred speed can be entered by pressing "1" or "2".
4. Toggles between field spreading and headland spreading on the side concerned.
5. Shows the headland spreading speed when headland spreading is activated.

> ENTERING THE DESIRED SPEEDS FOR FIELD AND HEADLAND SPREADING

Field spreading: Enter the preferred speed in "1" when field spreading is selected here.

Headland spreading: Enter the preferred speed in "1" or "2" when headland spreading is activated on the side in question.

Alternatively, the speeds can be entered under "Implement parameters" (see p. 31).

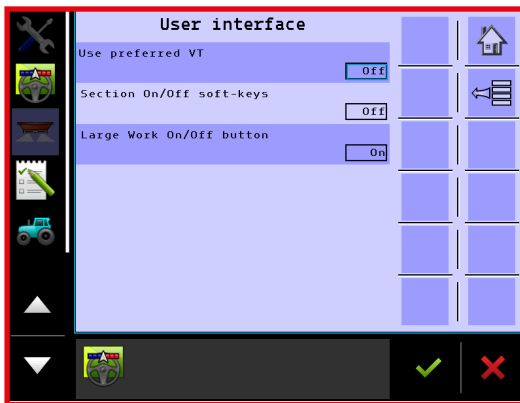
USER SET-UP OF THE OPERATION SCREEN

This menu makes it possible to adapt the operation screen to each user. The following can be changed:


- Preferred screen (if the tractor has more than one terminal)
- Manual operation of sections (icons for the operating of sections will become visible on the operation screen)
- Option of using the large spreader symbol in the operation screen for starting/stopping.

Press the  key on the Home screen display.

Select "User interface".

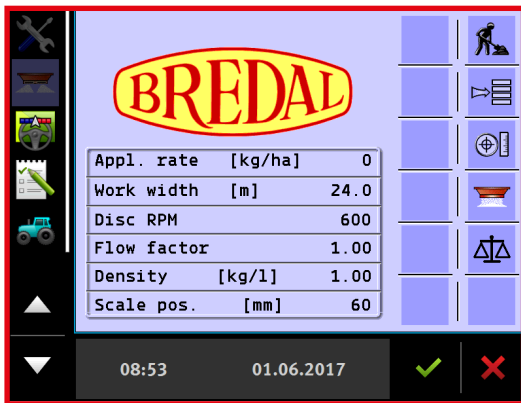


Press the "On/Off" field to connect or disconnect the preferred function.

Finish with 


The changes will not be implemented until the terminal has been restarted.

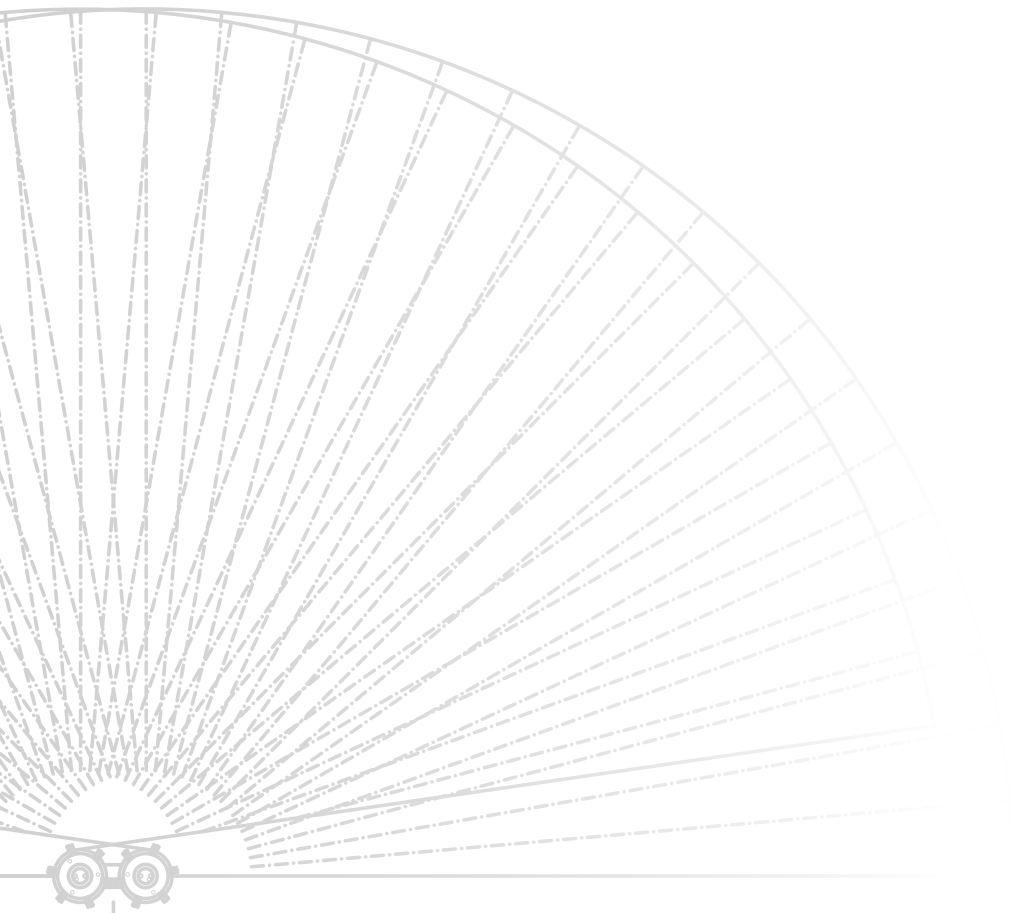
FAST EMPTYING




Press  on the Home menu.

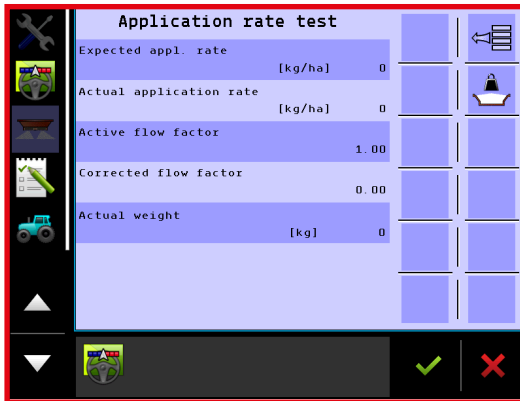


Press  to start emptying. It is possible to change the floor belts' speed by pressing the rpm and entering a different value.




Press the  symbol on the Home menu.


On this menu, it is possible to compare the application rate entered with the actual application rate, if the spreader has weight cells. When dynamic weighing has been activated, a new flow factor is continuously and automatically calculated. Dynamic weighing is activated when the implement is delivered from the factory, but it can be deactivated if preferred. If dynamic weighing has been deactivated, weighing can still be used, but the flow factor will not be automatically calculated or changed.



The active flow factor appears, and the next adjustment of the flow factor (adjusted flow factor) can be read.

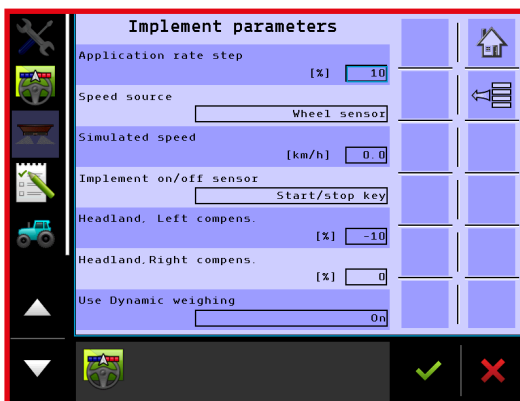
When the spreader is filled, this is automatically registered and a new calculation begins. By pressing , it is also possible to start a new calculation. This is used, for instance, when starting on a new task with a different application rate.

Activating/deactivating dynamic weighing:

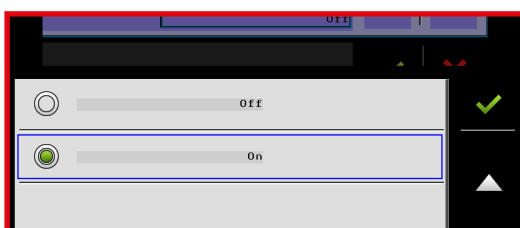
Press the  key on the Home screen display.

Press "Machine"


Press "Implement parameters"



Press the field "Use dynamic weighing" to activate or deactivate the function.




Select whether dynamic weighing should be activated or deactivated.

Finish with 

COUNTERS

This Bredal program component has 10 trip counters and these can be used to count a task's area, distance, volume and time. If the tractor's terminal has an active task controller, this will be used to count area, volume, etc. The 10 trip counters in the Bredal program component will be deactivated and only the trip counter TC will appear on the menu under counters. The active counter will also appear at the top of the operation screen.

Press the  key from the Home screen display.

Press "Counters"

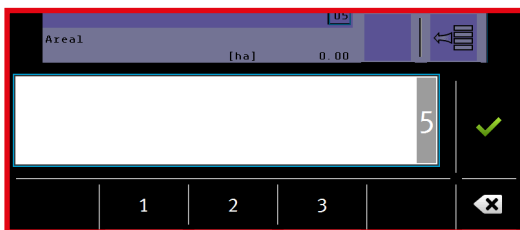
Select "Trip"




It is possible to choose from among 10 different trip counters on the trip counter menu.

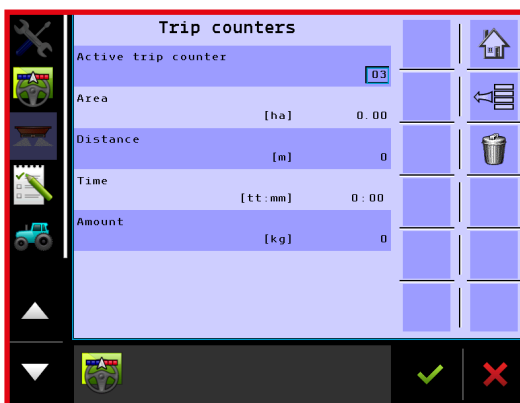
Press "Active trip counter" to select a different counter.

Press  to delete the values counted by the active trip counter.

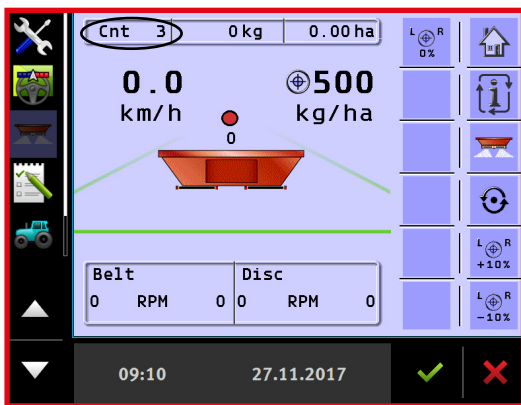


Enter which counter should be activated; it is possible to select counters 1 to 10.

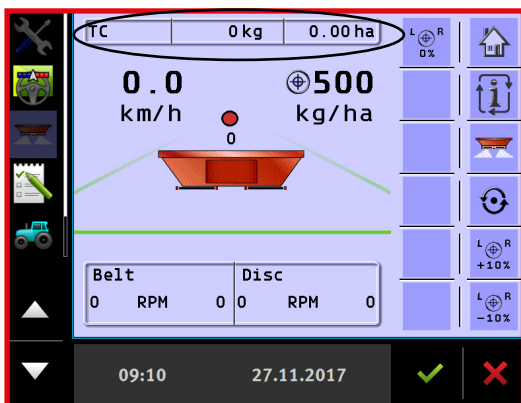
Finish with 



If counter TC is shown, the task controller on the tractor's terminal is active and it is not possible to select other counters. The values counted from TC are shown in the counter, and these values can only be saved or deleted via the TC program.



The active trip counter is shown at the top of the operation screen, and the counted kg and the counted area are shown.



If "TC" appears, the tractor's task controller is active, and the counted values that appear come from here.




It is also possible to choose between Subtotal and Total on the counter menu.

SETTING UP IMPLEMENT PARAMETERS

On the implement parameter menu, it is possible to change the following parameters:

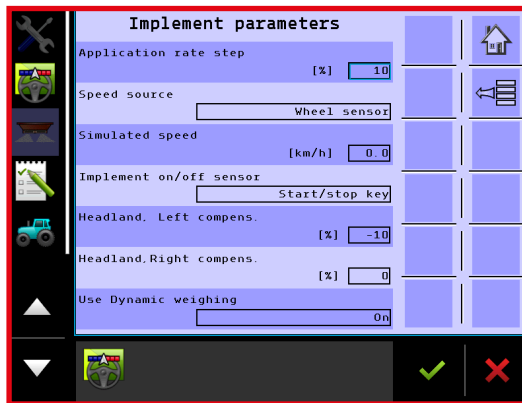
- Application rate step: Step size%
- Speed source
- Simulated speed
- Implement on/off sensor: Choose between the on-screen start/stop button or an external button.
- Headland left/right complete : Automatic volume reduction for activating headland spreading
- Use dynamic weighing: Activating and deactivating dynamic weighing

Press the  key from the Home screen display.

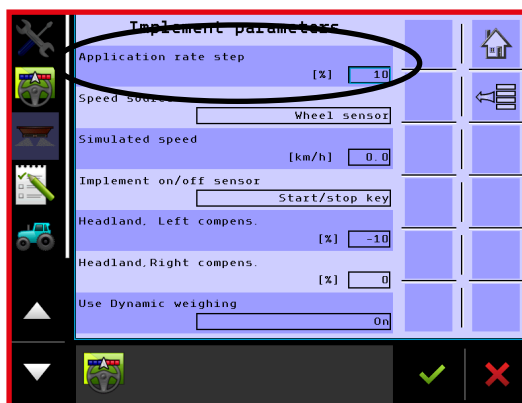
Select “Machine”

Select “Implement parameters”

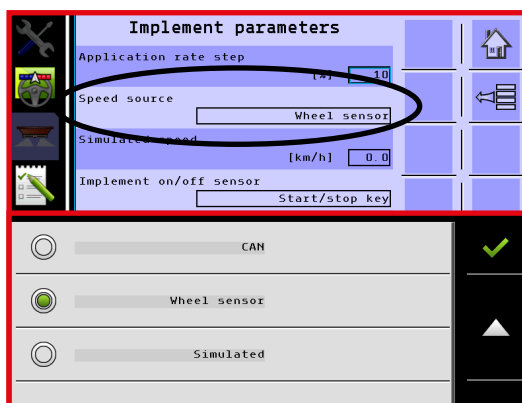
”



Implement parameter menu: On this menu, it is possible to change the various parameters (see an explanation of each individual parameter below).



Application rate step: It is possible to enter the preferred step size for each keystroke on the operation screen here.

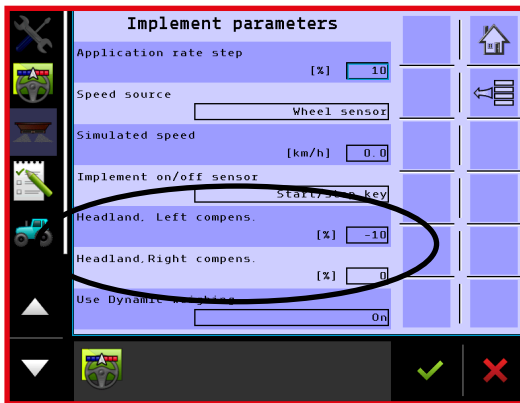


Speed source: It is possible to choose from among Wheel sensor, CAN or Simulated.

Wheel sensor: The forward speed is provided by a sensor mounted on the spreader's wheel.

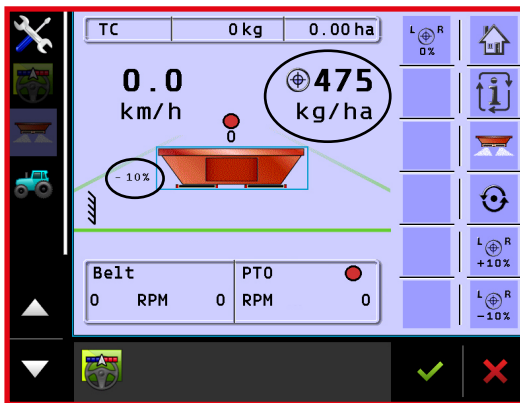
CAN: The forward speed is provided by the tractor's terminal (GPS speed, tractor wheel sensor, etc.). Must be selected and calibrated in the terminal's basic set-up.

If “Simulated” is selected, the simulated speed must be entered in the “Simulated speed” field.

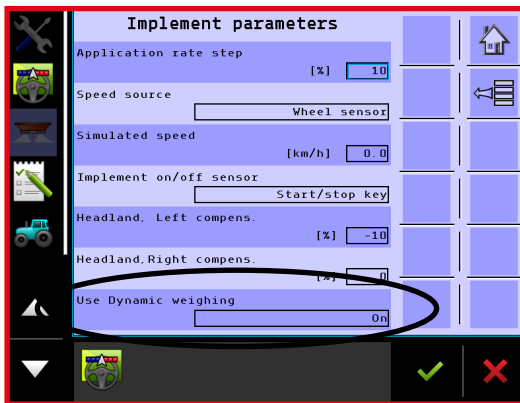


Headland left/right: Here it is possible to enter a reduction of spreading volume when headland spreading is activated. If no reduction is wanted, "0" must appear in both fields. Remember a minus sign is required to reduce the volume; if this is omitted, the spreading volume will be increased when headland spreading is activated.

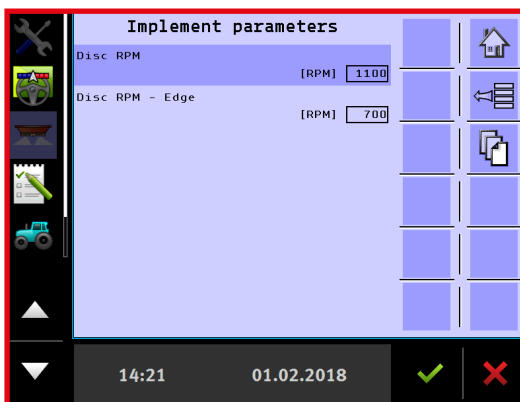
The default factory setting is -10% for the headland side, which experience shows provides the best spreading results.



When a reduction is entered, this will appear in the operation screen when headland spreading is activated.



Use dynamic weighing: Here, it is possible to activate and deactivate dynamic weighing (see also p. 29).



Spreading disc rpm:

When the implement has hydraulic spreading discs, the preferred rpm for field and headland spreading can be entered on page 2.

CALIBRATIONS

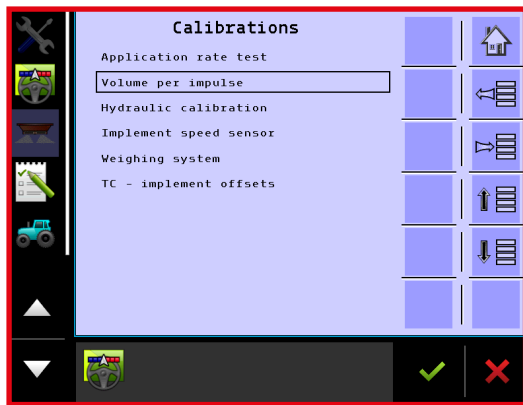
A few basic settings must be entered on the calibrations menu in order for the spreader to function correctly. All figures have already been entered from the factory, but it may be necessary in a few instances to change some of the entered settings slightly. The following data/calibrations can be entered on the menu:

- Volume per impulse
- Hydraulic calibration
- Calibration of speed sensor
- Calibrating/Zeroing weight cells
- TC offsets

Press the  key on the Home screen display.

Select "Machine"

Select "Calibrations"




Select the setting on the menu that needs to be changed (an explanation of each individual menu point is found below).

> VOLUME PER IMPULSE

This is where the basic calibration figures for the application rate are entered. If the spreader is not spreading correctly, the entered figures can be changed. The entered figure represents the volume being spread by the spreader in cm^3 for each impulse coming from the gearbox's sensor. Entering a figure that is higher than the figure already set will decrease the application rate and, conversely, entering a lower figure will increase the application rate. Ordinarily, it is not necessary to change the application rate setting, but if it turns out that the spreader spreads slightly incorrectly in practice, the $\text{cm}^3/\text{impulse}$ setting can be changed.



Press $\text{cm}^3/\text{impulse}$ to change the setting.

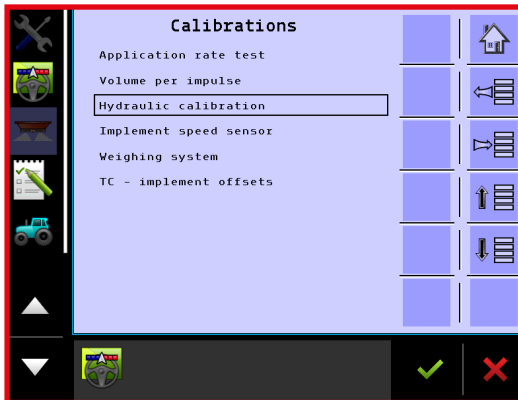
Finish with 

> HYDRAULIC CALIBRATION

In order for the adjustment of floor belts to work in the best possible way, it is advisable to calibrate the hydraulic system for the tractor that will be operating the spreader. The spreader can work even if it is not calibrated, but it will take longer to find the correct application rate once the spreading begins, as well as when changes to spreading volume are made.

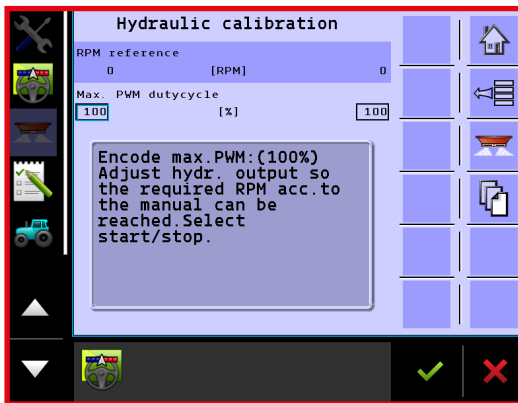


Make sure that no one is near the spreader when the calibration begins!



Select "Hydraulic calibration" to go to the calibration menu.

To determine the correct flow of oil from the tractor, a flow test of the tractor's oil volume can be done during the hydraulic calibration to prevent excess oil being sent to the spreader.



Enter 100% in the "Max. PWM dutycycle".

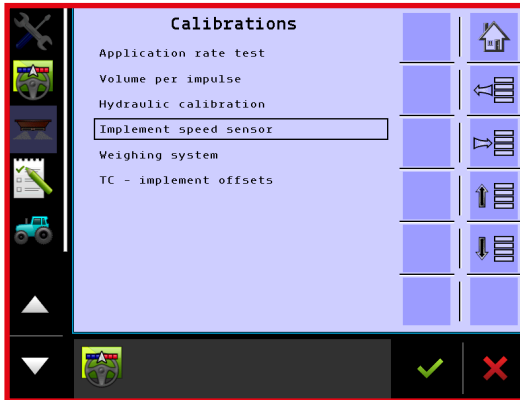
Press the start key

The tractor's engine must be running at operating rpm.

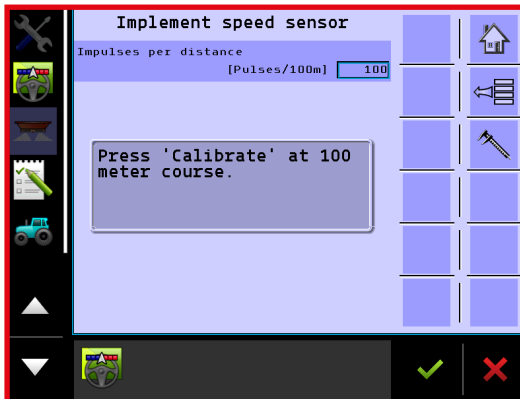
When the tractor's oil outlet is opened, the floor belts will start running; set the tractor's oil flow volume so the floor belts can run at 600 rpm. Do not set a higher oil flow volume than necessary.

> IMPLEMENT SPEED SENSOR

A value has already been entered at the factory, but it is advisable to check whether the spreader's forward speed is correctly indicated, because otherwise the spreader will not apply correctly. Try comparing the spreader's forward speed to the tractor's forward speed. If the spreader's forward speed is incorrect, it needs to be recalibrated. It is also possible to choose a different speed source than the spreader (such as GPS speed, if the tractor terminal is connected to a GPS aerial). Changing the speed source (see p. 32).

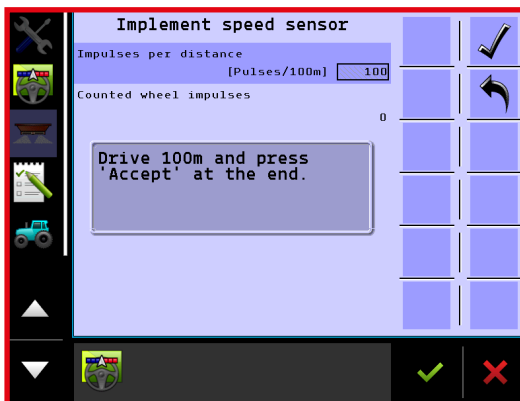


Select "Implement speed sensor" to go to the menu.




Press  to calibrate.

The number of pulses can also be entered directly in the input field, if you know the number.




Drive 100 metres forward. Count the number of pulses.

Press  to save the number of pulses counted.

> ZEROING THE WEIGHT CELLS

If weight cells display does not read 0 kg when the spreader is empty, it is possible to zero the weight cells.

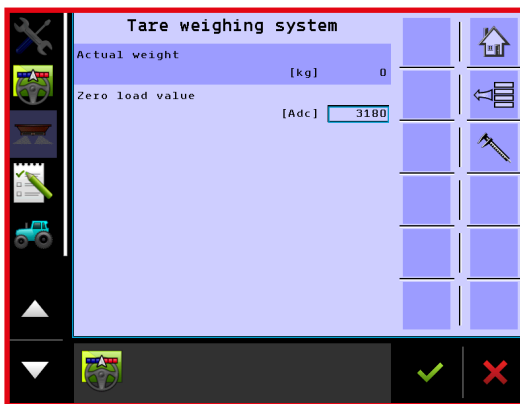
Press the  key on the Home screen display.


Select "Machine"

Select "Calibrations"

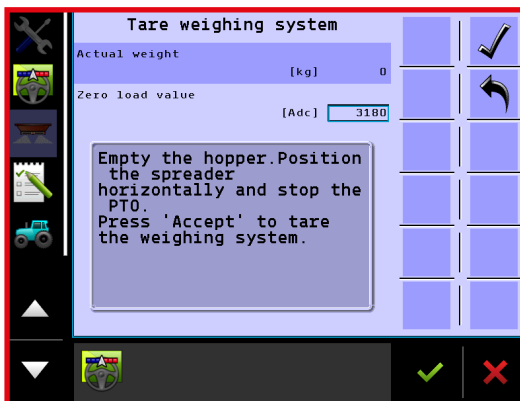
Select "Weighing system"


Select "Tare weighing system"



Press  to begin zeroing the weight cells.


The spreader must be kept in a horizontal position when setting the tare weight.



Press  to accept the tare weight.

> CALIBRATING THE WEIGHT CELLS

The weight cells are calibrated at the factory, but it is possible to recalibrate if the weight cells do not display the correct weight. Instead of making a brand new calibration, it is also possible to change the weighing slightly by correcting the weight shown. This method is recommended if the weighing works correctly, but the weight is slightly incorrect.

Press the  from the Home screen display.

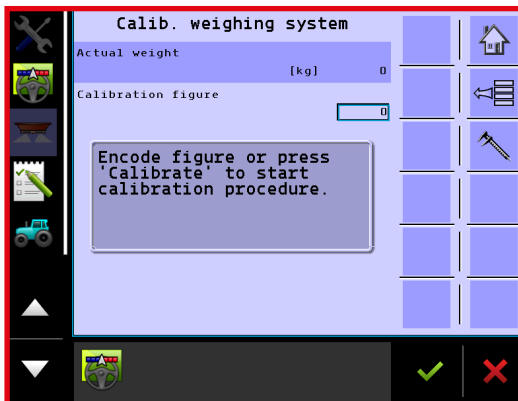
Select "Machine"

Select "Calibrations"

Select "Weighing system"

Select "Calibrate weighing system"

If the weight shown on the weight cells is slightly incorrect, the calibration figure can be changed until the correct weight is displayed. If the calibration figure has been mistakenly deleted or changed to an incorrect figure, it is easy to re-enter the correct calibration figure.



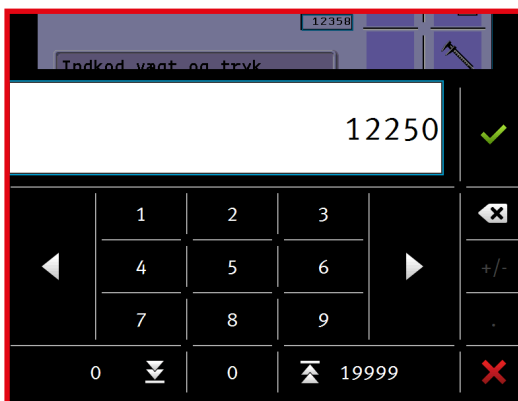
How to adjust the calibration figure:


Start by zeroing the weight cells.

Pour a known weight into the spreader.

The filled weight can be seen under "Actual weight". If the weight cells display a figure that is too high, adjust the calibration figure downwards to a lower figure.

Press "Calibration figure" to modify this.

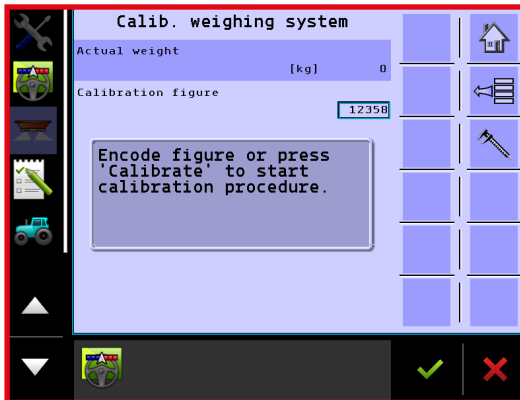



Enter a new calibration figure which is slightly less, and finish with 

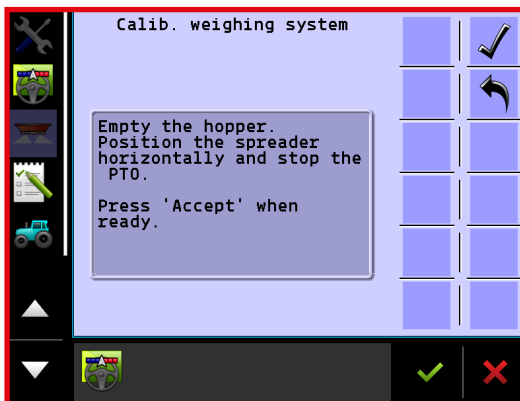
After correcting the calibration figure, the actual weight will change; continue correcting the calibration figure until the correct weight is displayed.

If the calibration figure has been mistakenly deleted or changed, re-enter the original calibration figure. Subsequently, the weight cells should be zeroed.

> NEW CALIBRATION

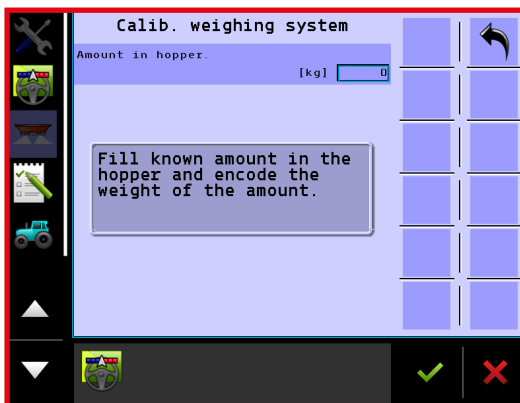


Press  to re-calibrate the weight cells.



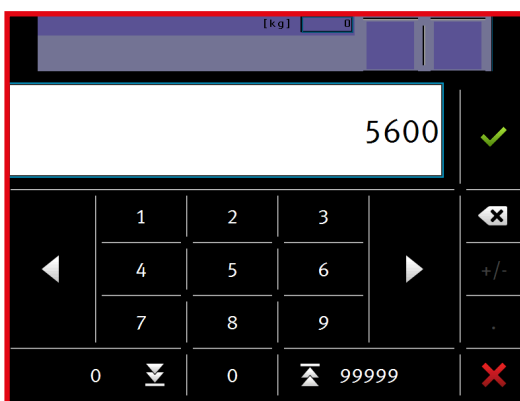
The spreader must be empty and be on a horizontal area.

Press  to start the calibration.




Pour a known weight into the spreader.

Press the input field "kg".



Enter the weight that has been poured into the spreader.

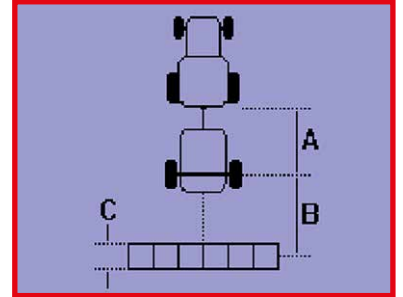
Finish with 

A new calibration figure will be calculated and the calibration is finished.

> TC-IMPLEMENT OFFSETS

When operating with section control, and the spreader must automatically start and stop spreading when turning in the headland, the following distances must be entered to ensure that the spreader starts and stops spreading at the right time:

- A = distance from the tractor hitch to the spreader axle
- B = distance from the spreader axle to the centre of the swath
- C = length of the swath



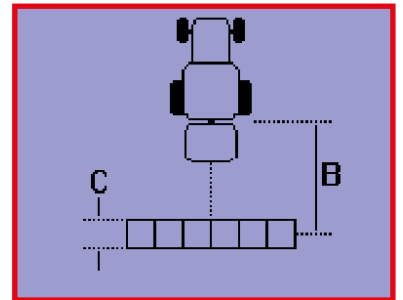
Based on Bredal's experience, Bredal has worked out some distances that usually work but there may be slight differences depending on whether the spreader is operating at 24 or 36 metres, and there can also be differences depending on the type of fertiliser used. The distances recommended by Bredal are entered from the factory:


- A = 4.0 metres
- B = 8.0 metres
- C = 5.0 metres

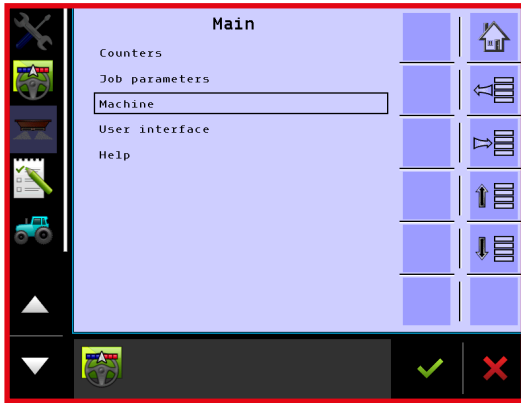
If a GPS aerial is mounted on the front of the tractor, select "three-point hitch" and the following distances instead.

In this case, B = the distance from the tractor hitch to the middle of the swath.

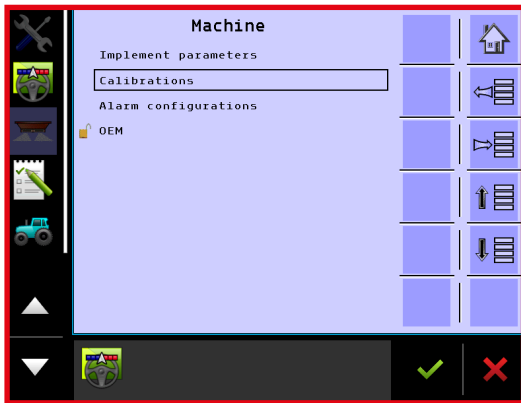
- B = 12.0 metres
- C = 5.0 metres



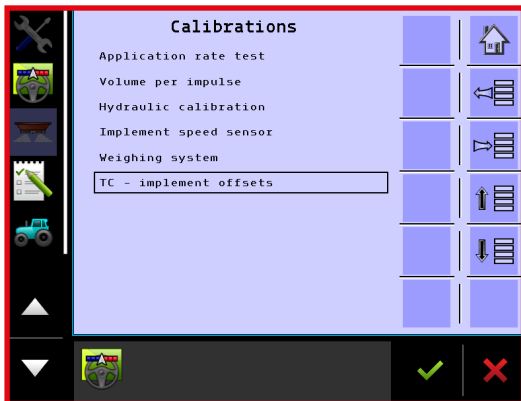
Press the  key on the Home screen display.



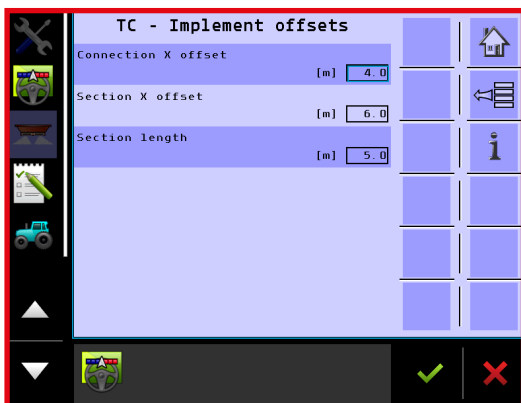
Select "Machine"



Select "Calibrations"



Select "TC-impliment offsets"




Press one of the input fields "(m)", to change the entered value.

TESTING INPUT AND OUTPUT

It is possible to test the spreader's input and output on the testing menu.

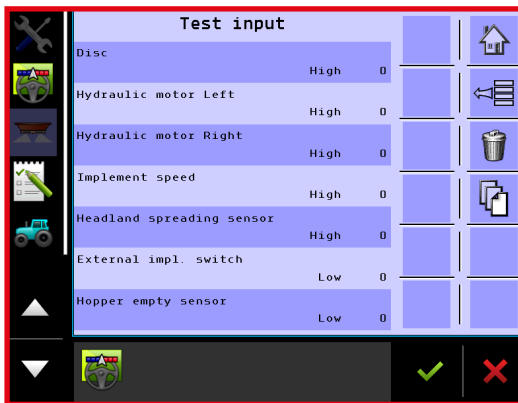
> TESTING INPUT

Press the  key on the Home screen display.

Select "Help"

Select "Diagnostic"


Select "Test input"



All the inputs from the spreader are listed on the test input menu. For instance, when an inductive sensor is affected, its status changes between high and low, and all impulses coming from the sensor are added up.



In this case, 29 impulses have been counted from the inductive sensor on the left spreading disc.

After exiting test input, all impulses counted will be deleted. It is also possible to delete the counted impulses by pressing .

Press  to view input from the weight cells.



Weight cell input can be viewed on this page. Impulses are continuously being transmitted from the weight cells when they function properly, i.e. they count from 0 up to 9999, after which the counting resets and starts over. If one of the weight cells has failed to show a value, it has a problem. Perhaps the load cell is not working properly, i.e. the cable is ruptured or improperly attached to the terminal box.

> TESTING OUTPUT

Press the  key on the Home screen display.

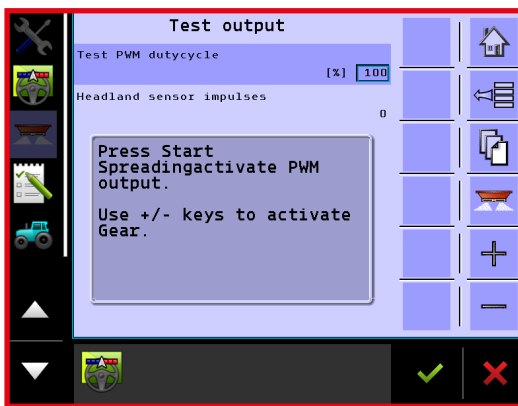
Select "Help"

Select "Diagnostic"


Select "Test output"




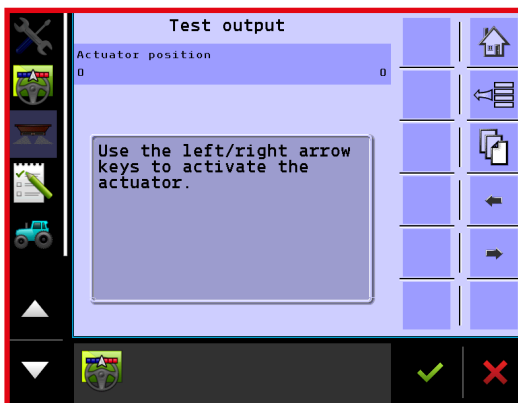
Make sure that no one is near the spreader when functions are being tested!



Here it is possible to test the proportional valves that regulate floor belt speed. Enter a % value in the text box. If 100% is entered, the valves will fully open, and the belts will operate at maximum speed.

Press  to start the floor belts. Oil must be flowing from the tractor in order for the floor belts to run.

Press  to go to the next.



Here the actuators' function can be tested by pressing the arrow buttons. Impulses are counted from the right and left actuators when these are activated. If an actuator is not operating, a alarm will be emitted and computer must be subsequently restarted.

RELOAD FACTORY SETTINGS

If any values in the basic settings are mistakenly deleted or changed, the original factory settings can be reloaded. Note that any values that have possibly been changed since the implement was delivered from the factory will be reloaded to the original values when the factory settings are reloaded.

The values reloaded with this function are as follows:

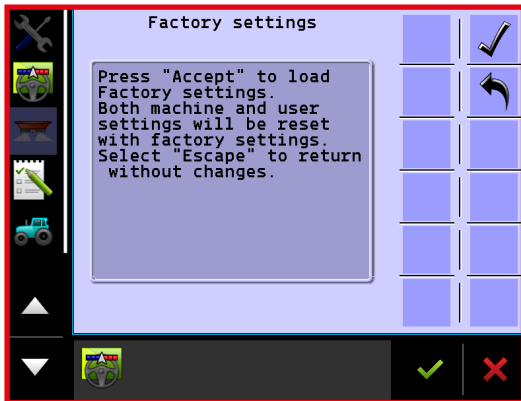
- Application rate (cm³/impulse)
- Speed sensor for forward speed
- Weight cells' calibration figures
- TC-implement offsets
- No. of pulses per disc revolution
- No. of pulses per oil-motor revolution
- Gear factor for headland gear (headland-gear downshifting as a percentage)
- The proportional valves' PID parameters


After reloading the factory settings, the spreader's application rate and weighing should both be checked and monitored, as there is a risk of making application errors if a reloaded figure is incorrect.

Press the  key on the Home screen display.

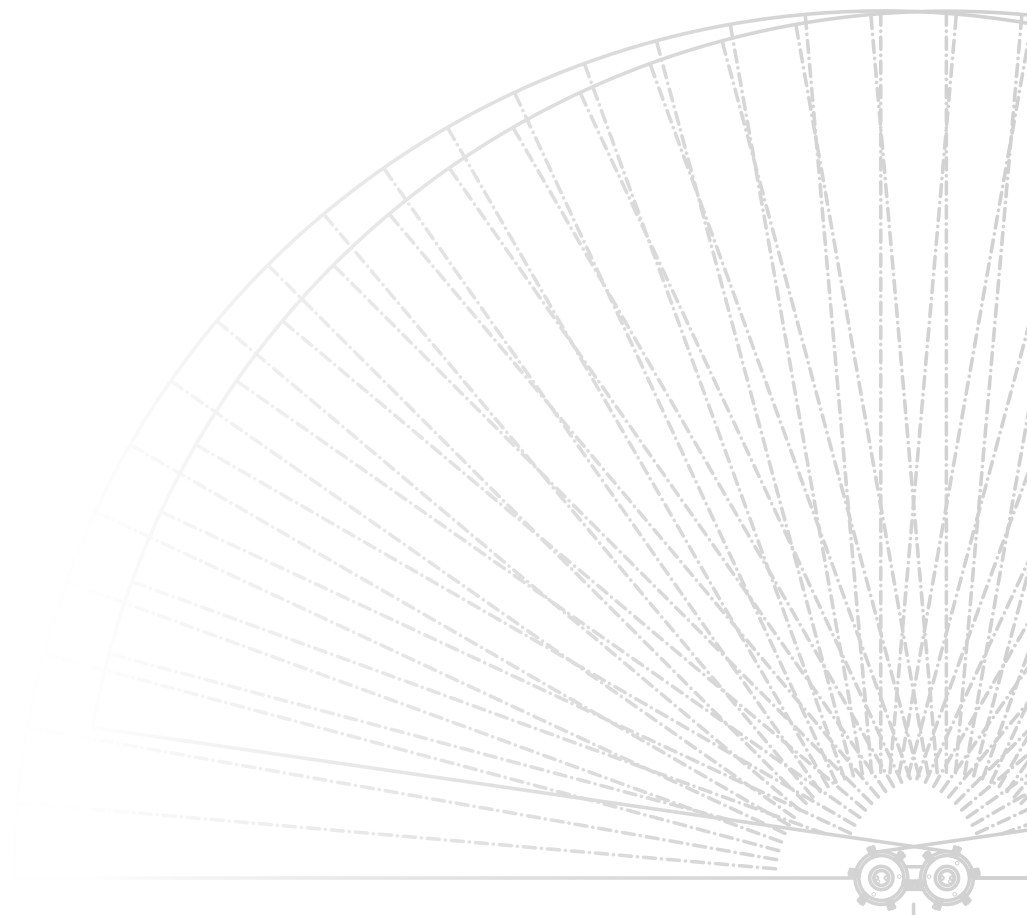
Select "Help"

Select "Load factory settings"



Press  to reload the factory settings.

Press  to return without making any changes.



FERTILISER QUALITY

Fertiliser quality is crucial for spreading quality. In order to check fertiliser quality and get an idea of the spreading power, the following values are the most important to know:

- Particle strength
- Grain size
- Dust content
- Bulk density
- Particle shape

Particle strength can be measured using the crushing strength tester included in the supply. Press the granule with the crushing strength tester until the granule ruptures and then read the crushing strength. Repeat this with several granules, big and small, and then calculate the mean crushing strength.

Grain size can be measured using Bredal's sieve shaker. Fill the space above the biggest-meshed sieve, attach the lid and shake until the distribution of granules remains constant. Turn the sieve shaker so the lid is facing up again. Now it is possible to determine the distribution of grain size.

The dust content appears after finding the distribution of grain size, as relative percentage of the fertiliser below the smallest sieve. In many cases the dust content can also be estimated visually.

Bulk density is usually specified by the fertiliser manufacturer; otherwise it can be determined by using a Bredal calibration kit (extra accessory).

Particle shape can be assessed visually. The smoother and rounder the particle, the further it can be flung through the air. A very angular granule or a granule with many surface nodules is less aerodynamic, impeding its ability to cover the entire swath of wide working widths.



> EFFECT OF FERTILISER QUALITY ON SPREADING PROPERTIES

Low crushing strength means that the fertiliser tends to get crushed, both during transportation and spreading. Low crushing strength is often related to dust content, as fertiliser with a low crushing strength is easily crushed during transportation and reloading. The crushing strength is usually up to par when the fertiliser leaves the factory, but if the fertiliser has been subjected to moisture or water, it loses its original crushing strength and never regains it, even if the fertiliser consignment is dried. Certain types of fertiliser always have a low crushing strength, such as prilled urea. In order to be able to spread a fertiliser over wider working widths (24 metres or more), the crushing strength should at least be 3–4 kg. If it is below this, the discs' revolutions need to be reduced to avoid crushing the fertiliser, thereby narrowing the working width, eliminating the option of wide working widths.

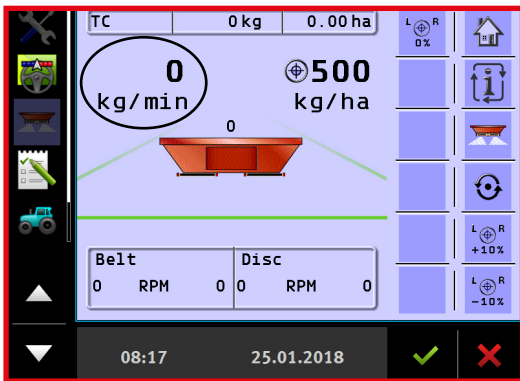
The grain size affects how far the fertiliser can be flung. Large fertiliser granules can be flung further than small ones, which means that a certain grain size is required to cover the entire swath of wide working widths. The average grain size should be more than 3 mm to make it possible to spread up to 36 metres. In other words, more than 50% of the particles should be in the section above the 3 mm sieve in Bredal's sieve shaker.

The dust content increases with the number of treatments (reloading, transportation, etc.) to which the fertiliser is subjected. If much of the fertiliser has been crushed into dust, this will be deposited as a layer behind the spreader, usually 4–5 metres wide across the tracks, and it will usually make it difficult to obtain satisfying spreading results.

Heavy fertiliser particles can be flung further than light ones, which is why fertiliser density is crucial for swath range. Most types of fertiliser have a density of around 1.0 kg/litre or slightly more. A few have a lower density (0.7–0.75 kg/litre), but it is difficult for these types to fully cover 36-metre swath widths.

Rectangular or irregular fertiliser has poor aerodynamic characteristics, which is why it cannot be flung as far. Wide working widths require aerodynamic fertiliser granules. These characteristics are difficult to measure in practice, but a visual assessment is sufficient and not difficult to make, as round and especially smooth granules can be thrown the furthest.

MAXIMUM CAPACITY PER MINUTE

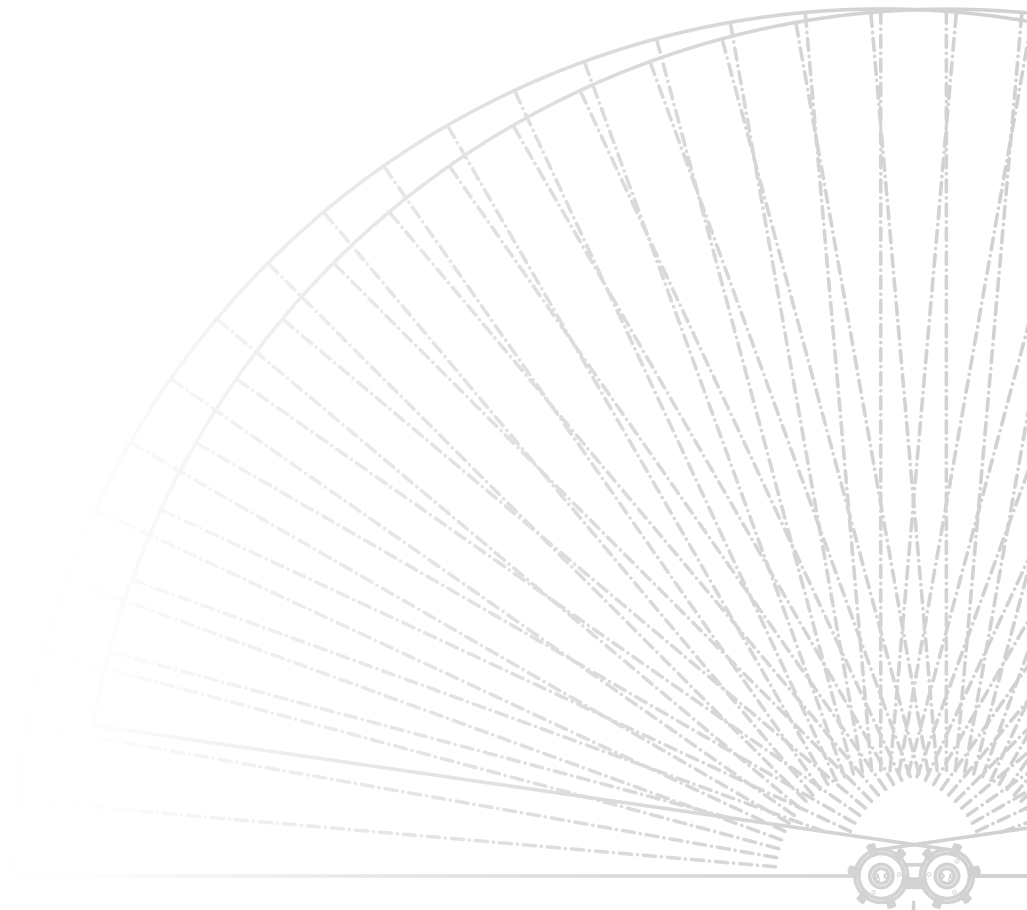


It is advisable not to spread more than 350 kg/min.

The spreader can spread large volumes but the spreading pattern of certain types of fertiliser will be impaired if the application rate exceeds 350 kg/min.

If a larger volume needs to be spread, a spreading test should always be done in the field at the given volume to ensure that satisfactory spreading results can be achieved.

The current application rate can be seen on the operation screen when the indicator "kg/min." is selected.



SETTINGS FOR VARIOUS TYPES OF FERTILISER

Settings for various fertiliser types can be downloaded from Bredal's website. The settings are determined by testing the various fertilisers in practice. Update the settings on an ongoing basis to make sure they are up to date. It is advisable to use these settings. It is also advisable to carry out a fertiliser spreading test in the field to make sure that a satisfactory spreading pattern is achieved (see p. 49).

Go to Bredal's website www.bredal.com

At the website, select "Spread Chart" on the right side of the screen.

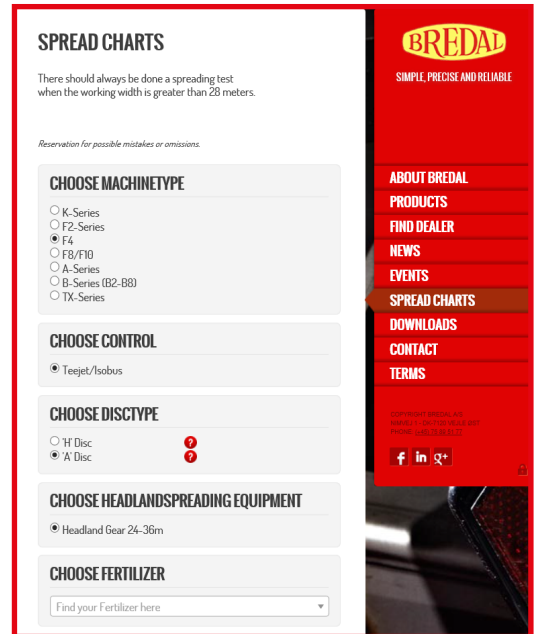
Under "Machine type", select "F8/F10"

It is possible to choose between an A or H disc (the default setting for F8/F10 is A discs)

Select the type of fertiliser to be spread

Select the working width to be used

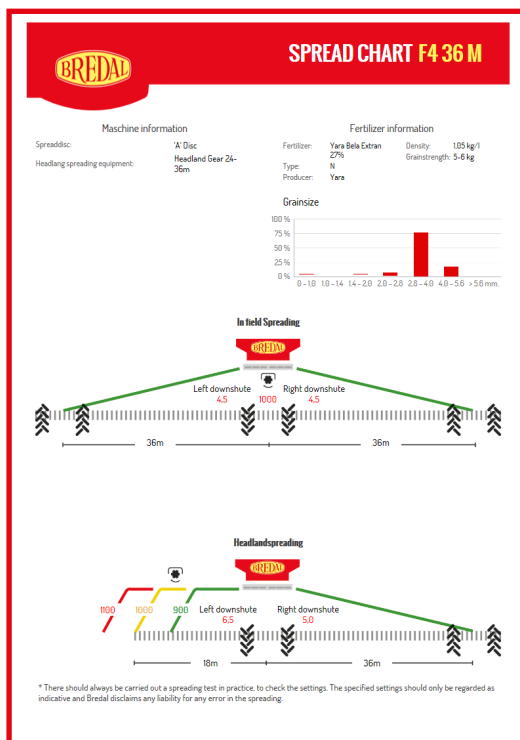
Click "Show results"



This will take you to the results page with the settings that fit the type of fertiliser selected.

Enter the recommended downshute settings for field and headland spreading in the computer.

Also, the spreader should be set to run at the recommended PTO rpm.



The fertiliser, name, manufacturer, density, crushing strength and granule distribution selected appear in the spread chart at the top of the results page.

The recommended downshute settings and PTO rpm for field spreading are shown in the centre of the chart.

The recommended downshute settings and PTO rpm for headland spreading are shown at the bottom of the chart (scroll down).

Red = complete spreading to boundary

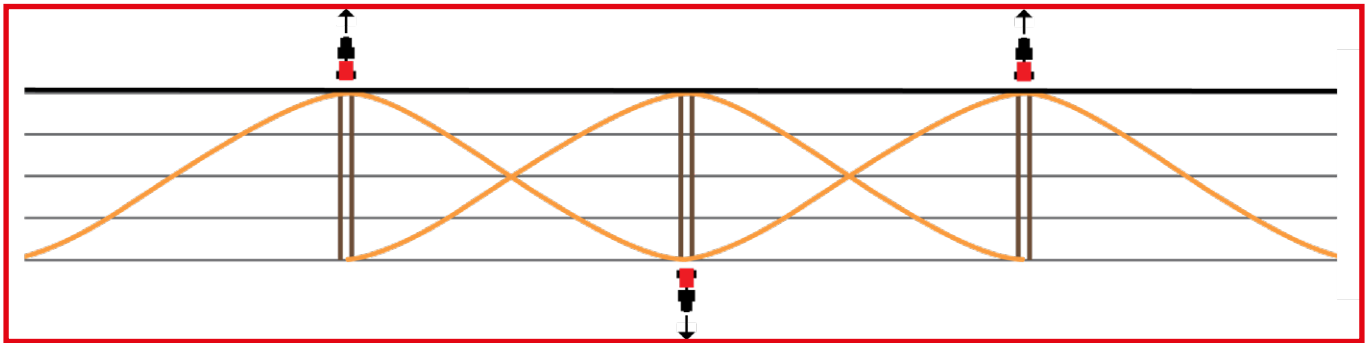
Yellow = medium spreading along boundary

Green = very little fertiliser beyond boundary

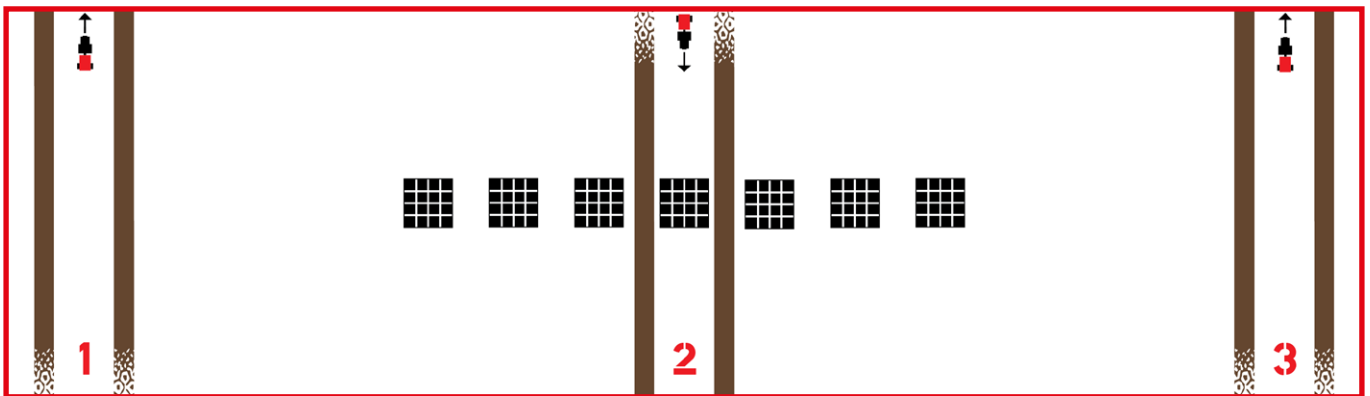
FERTILISER SPREADING TEST AND ADJUSTMENT OF THE APPLICATION RATE

A spreading test should always be done in the field to ensure satisfactory spreading patterns. Consider the following factors when conducting a fertiliser spreading test:

- Perform the test in dry conditions (field/implement)
- Perform the test in a field covered with a healthy crop: approx. 10 cm of thick plant growth, to avoid ricocheting granules.
- Conduct the test on a flat section of the field and, when setting out trays, make sure that all of them are level wherever possible.
- Conduct the test at the forward speed normally used for spreading (ideal: 14–15 km/h, if the field allows).
- Let 100–200 kg of fertiliser run through the spreader before conducting the test. There may be deposits of old fertiliser, verdigris or rust on the spreading discs and vanes. These deposits must be worn off before the spreader can produce a constant spreading pattern.
- Set up the trays at one-half of the working width on both sides of the centremost of the three wheel tracks. Drive forward in the first, back in the second and forward again in the third track. To get sufficient volumes in the trays so that they can be used for an assessment, it is necessary to spread at least 200 kg/ha.
- Make sure to drive far ahead of the trays before disengaging the application, as the spreader flings the fertiliser far to the rear.



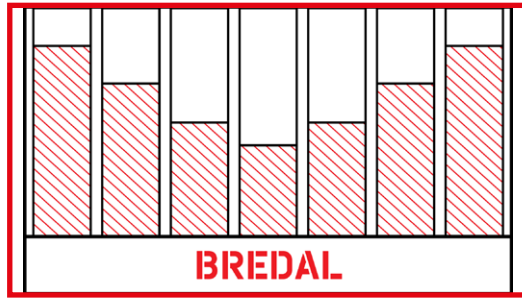
Ideal distribution of fertiliser using overlapping.



Setting up testing trays in the field.

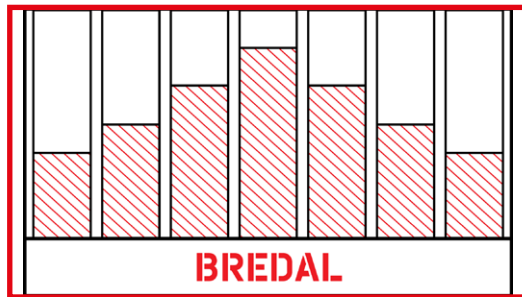
After pouring the fertiliser into the measuring cups, assess the spreading results. A correction of the spreading picture is shown on the next page.

> IF EXCESS FERTILISER IS DEPOSITED BETWEEN THE TRACKS



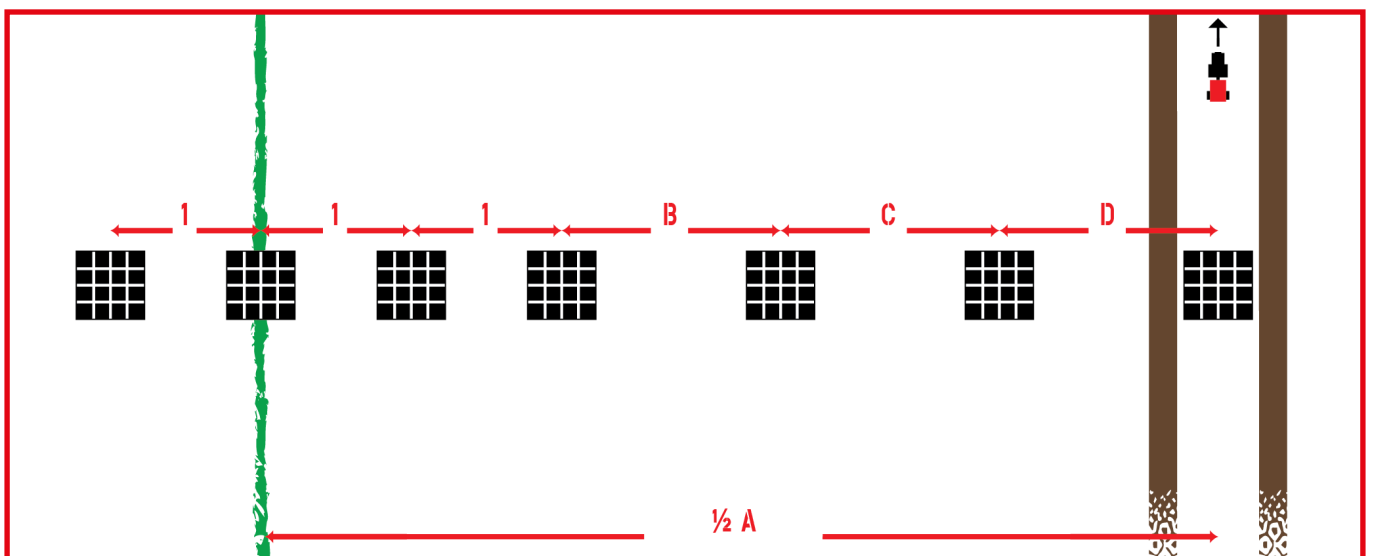
Enter a lower value under "downshute position". Preferably enter 2 steps less. If a subsequent test shows that two steps was too much, the difference between the two tests will indicate how much the scale needs to be moved back.

> IF EXCESS FERTILISER IS DEPOSITED BEHIND THE SPREADER



Enter a higher value under "downshute position". Preferably enter 2 steps more. If a subsequent test shows that two steps was too much, the difference between the two tests will indicate how much the scale needs to be moved back.

> SPREADING SAMPLE: HEADLAND SPREADING



Position the trays as shown below. If the spreader deposits too much fertilizer beyond the boundary in relation to the preferred amount, lower the rpm by 50–100 rpm per test until the spreading result is acceptable. Conversely, the rpm setting should be increased by 50–100 rpm if spreading to the boundary is insufficient.

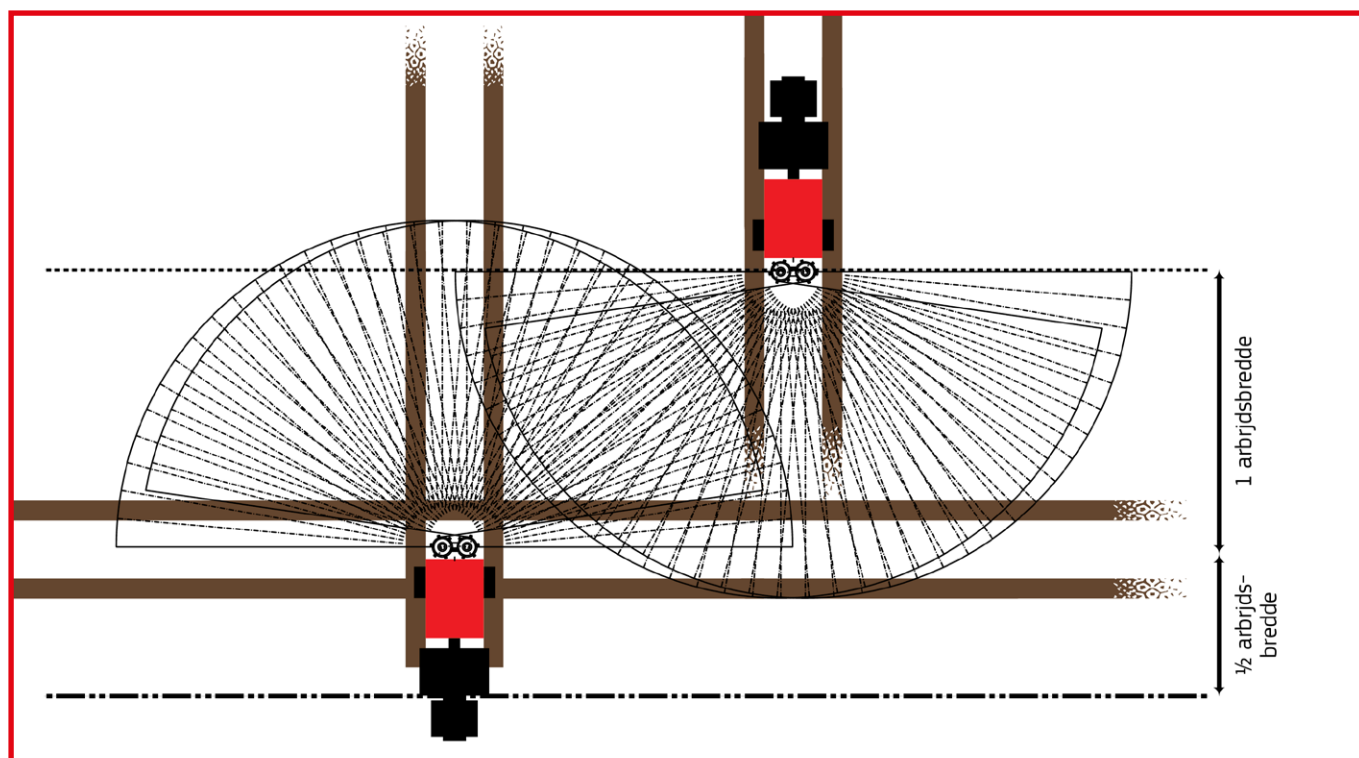
ENGAGING/DISENGAGING IN HEADLAND (MANUALLY)

If the spreader is operated without using section control, the application must be disengaged and engaged at the right time.

General rule:

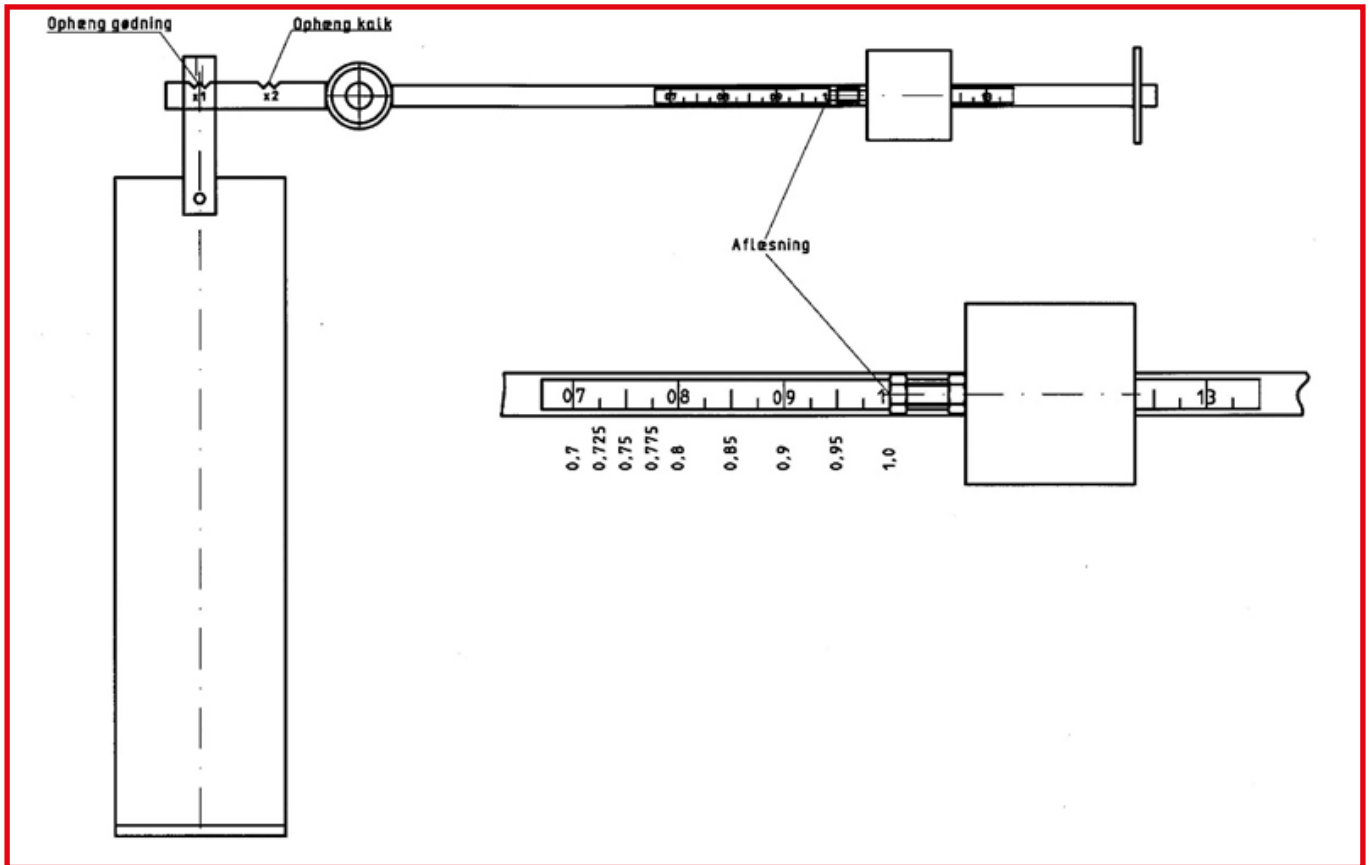
Disengage when the discs pass the headland's tracks.

Re-engage when the discs are one working width from the headland's tracks.



CALIBRATION KIT

Fill the bucket with fertiliser, hit it against the floor a few times and replenish. Smooth off the top. Then hang the bucket on the scale in the notch (X1). Set the counterweight so the bracket balances. Read the fertiliser's density on the scale next to the end of the bolt. (The calibration kit is an extra accessory.)



If the scale needs adjustment or verification, do this by filling the bucket with water. When the weighing bracket is in balance, the bolt end must be at 1.0 on the scale. If this is not the case, adjust the bolt until the setting is correct.

LATE APPLICATION WITH LATE APPLICATION EQUIPMENT

Late application equipment can be used to spread in tall crops when parts of the crops are at a height up to the top edge of the spread discs. (Late application equipment is extra equipment.)

Bolt the late application equipment to the brackets holding the safety bars on both sides, and in the middle it will rest on the centre bracket.

It is crucial to mount this equipment in a level position on the spreader, as otherwise the spreading will be laterally distorted.

Note that the late application equipment lifts the fertiliser, which means that the spreading will be more sensitive to wind than usual, so do not use this equipment in windy conditions.

The PTO setting must be slightly lower and the downshute setting should be slightly lower than normal when late application equipment is attached. The table below shows how much needs to be subtracted compared to the settings for normal operation.



Working width	Field spreading		Headland spreading	
	rpm	Downshute	rpm	Downshute
24	-200	-2.0	-150	-2.0
28	-200	-1.0	-100	-1.0
30	-150	-0.5	-100	-0.5
32	-150	0	-50	0
36	-150	0	-50	0

Example:

A 30-metre working width is used. According to the settings on Bredal's website, the PTO rpm should be set at 1000 rpm and the downshute position at 5.0.

According to the table under 30 metres, subtract 150 rpm from 1000 rpm, so that the spreader operates at 850 rpm.

Normally the downshute position is 5.0, but according to the table, 0.5 should be subtracted so the downshute position is 4.5.

TROUBLESHOOTING

This section describes the most common faults that can occur as well as the possible cause of the various error messages. It also provides some help for troubleshooting the spreader's electrical components.

> RATE OFF TARGET

The most commonly occurring error message appears when the spreader's floor belts do not run at the right speed or do not run at all. The alarm can often be emitted very briefly and it will automatically stop as soon as the fault stops. If this is the case, it does not mean that there is a fault in the spreader, but that the application rate has briefly been outside the application range. If the error message does not stop, it is because the fault prompting the message has not been resolved. There may be several reasons for this:



If the floor belts are running, the error message might be caused by the following:

- The forward speed is too high, preventing the spreader from applying the preferred amount.
- The oil-flow setting on the tractor's oil outlet is too low.
- The spreader is set to spread a large volume and the rear doors are set at a small opening.
- The spreader is set to spread a small volume and the rear doors are set to open too wide.

If one floor belt appears to be running correctly and the other belt is running too fast:

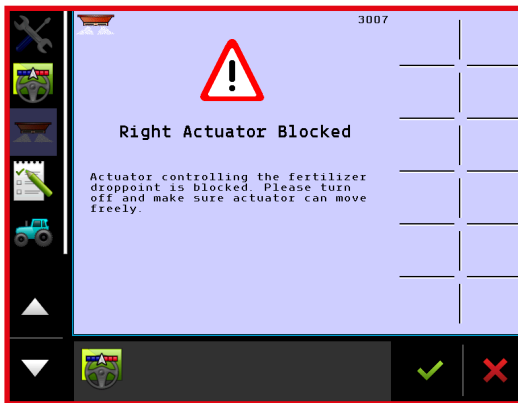
- No impulses are being sent from the gearbox's inductive sensor on the side where the belt is running too fast.

> FLOOR BELTS WHICH STOP RUNNING COULD BE CAUSED BY THE FOLLOWING

- The flow of oil through the tractor's oil outlet has not been opened.
- The tractor has blocked the return flow of oil. Try to briefly reverse the direction of oil pressure against the normal circulation direction, and then re-open the oil circulation in the correct flow direction.
- Poor connection in the ISOBUS outlet: try pulling out and re-inserting the plug.
- A loose connection or damaged electrical cable connected to oil-motor activation.
- The floor belts need to be tightened: tighten both nuts one revolution at a time until the belts keep pace.

If the problem is due to a fault in the control or electrical system, the belts can be manually operated by screwing in the thumb screws on the oil motor/gear valves, while oil flow from the tractor is open (see photo p. 70). If the floor belts still do not run, the fault is in the hydraulic system.

> RIGHT (LEFT) ACTUATOR BLOCKED



Make sure the downshute can move freely and that no fertiliser deposits or anything else is jammed against the motor regulating the downshute position.

Restart the computer to reset the alarm.

If the error message continues and the downshutes' working areas are unobstructed, and nothing is jammed, the actuator could be defective and need to be replaced.



> CHECKING THE GEARBOX SENSOR

It is possible to check a sensor's function. If a sensor does not count or if it counts incorrectly, it is often the pick-up distance, i.e. the distance between the sensor and the tooth being scanned, that is too great. The pick-up distance of the gearboxes' sensors is 1–1.5 mm, so if the sensor is not close enough to the gearbox cogwheel, it cannot detect the teeth and therefore will not send a signal to the computer.

Press the sensor on the gearbox as far as possible into its installation hole. It is held in place by an 8 mm screw. Loosen the screw and make sure the sensor is pressed in as far as possible. It may be necessary to rotate the sensor slightly as it will otherwise tend to return to the same position when the screw holding it in place is retightened.



Check whether the sensor is working by holding it against a piece of metal. In the terminal, select "Test input" (Home – Menu – Help – Diagnostic – Test input). Now all inputs from the implement's sensors will be viewable.

By holding the gearbox sensor against a piece of metal, the input in the terminal's test menu will change and an impulse will be counted. If the input does not switch between high and low and if impulses are not counted, the sensor is either defective or is not being supplied with power (12 V). If there is no power, the implement's other sensors will not work either.

If the gearbox sensor is defective, it must be replaced by the same type of new sensor (Bredal order no.: 01023137).



BASIC SETTINGS, ADJUSTMENT OF DOWNSHUTE POSITION

To get the best possible spreading pattern, it is important that the downshutes' basic setting is correct. Both downshutes' pivot points must be centred over the middle of the discs; also, the downshute position must be correctly adjusted.

Do not make this check and adjustment unless parts of the spread unit or downshute have been taken apart.

> CHECKING DOWNSHUTES' CENTRING

Remove the downshutes' spring cotter pins and lift the tow bars from the peg:



Disassemble the downshutes. Lifting them can be difficult due to the funnel on top of them, but it can be done!



Disassemble the cones over the centre of the discs





Disassemble the downshutes, as the baseplates must be used for the adjustment. Loosen the M8 bolt on the inside and then unscrew the countersunk socket screw. Make sure that the guide disc centring the downshute in the hole is put back in place when the downshutes are reassembled. It is also important to keep the right and left sides separate so these are not interchanged.



Reattach the downshutes' baseplates to the shield.

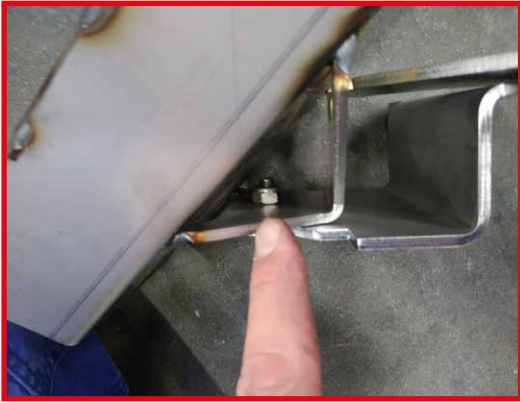


Screw a long M16 screw into the threaded holes in the centre of the discs so these penetrate the centre hole of the baseplate.

Now, it is possible to check whether the downshutes are centred over the centre of the discs. If they are not centred, shift the rearmost shield to which the downshutes are attached.



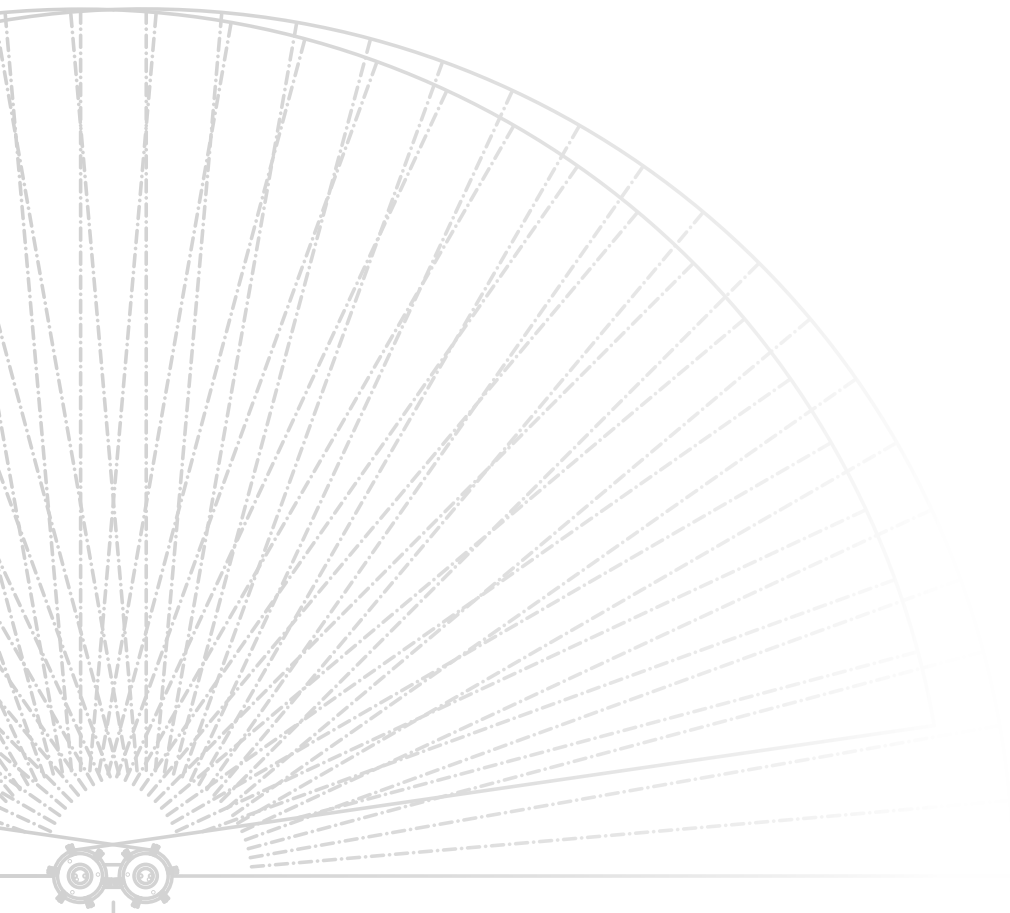
Loosen all four of the screws holding the rearmost section of the shield in place, and loosen the five screws holding the rearmost and front part of the shield together. Now the rearmost shield section can be shifted both sideways and lengthwise. Move the shield until the centre of the downshutes is precisely centred over the centre of the discs. Be meticulous: the better the downshutes are adjusted, the better the spreading pattern that can be subsequently achieved. When the shield is adjusted, tighten the screws holding the shield attached to the frame first and then retighten the front and rear shield sections together.



After the adjustment, reassemble the downshutes. These should rotate easily when the centre screw is tightened. Once they rotate with proper ease, tighten the lock nut. Remember to correctly position both the centring disc and the large washer.

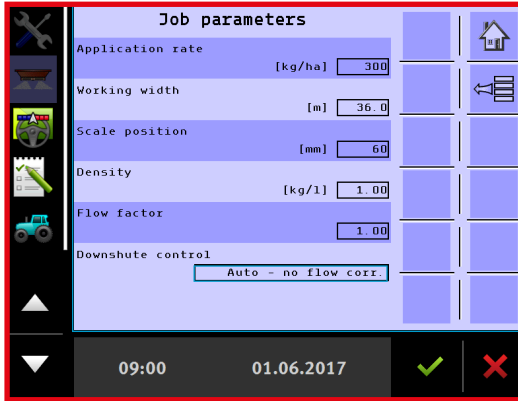


Reattach the downshutes and the tow bar. Now check/adjust the basic setting of downshute scale.




> CHECK/ADJUSTMENT OF DOWNSHUTE SCALE

Follow this procedure to make sure that the downshutes are correctly positioned.



Enter "36" metres working width in the computer.
Select "Auto – no flow corr." under downshute control.

Return to the operation screen and click "start spreading" . NB: headland spreading must not be activated, as otherwise the downshutes will not move out into the correct position. Also all sections must be turned on.



After clicking "start spreading", the downshutes must move out and align with the small arrow cut into the downshutes' baseplate. If the arrows do not align, they must be adjusted until the basic setting is correct.



Adjust the tow bar's threading until the downshute's arrow aligns with the baseplate arrow.

After completing the adjustment:

Remember to re-enter the following settings in the computer: the working width for spreading and the downshute position to be used for spreading.

FLOOR BELT ADJUSTMENT

The belts must run on the centre of the rollers. If a belt runs out to one side, it must be adjusted.



Normally, the belts do not need to be tightened, unless they are sliding on the rollers and cannot keep up.

If a floor belt needs to be tightened, tighten the bolts on both sides of the belt one revolution at a time until the belt is tight enough.

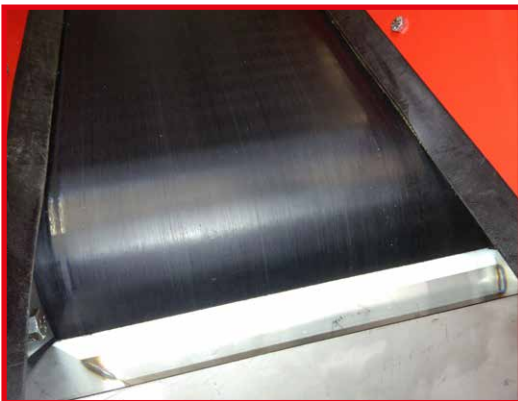
If the belt runs out to one side, tighten the nut on the side to which the belt is running out. Tightening the nut with one revolution is usually sufficient.



Adjust the belt rollers so they run perpendicular to the frame. Ordinarily, they do not need to be adjusted, unless the belt drive has been disassembled.

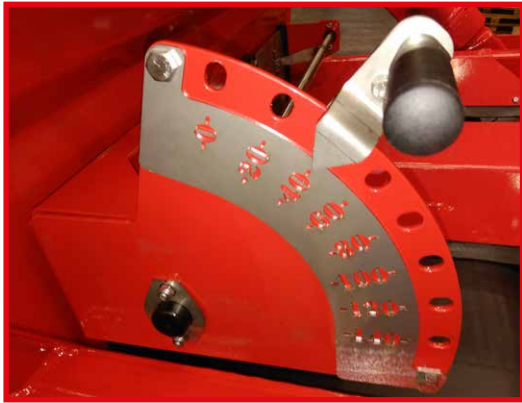
> NYLON SCRAPER

A nylon scraper – for scraping off the belts – is mounted on the rear of the funnels feeding the fertiliser to the downshutes. The scraper must fit snugly against the belts so that no fertiliser can run between the nylon strip and the belt. The nylon strip is a wearing part and must be replaced occasionally. The typical service life is 2 or 3 seasons.



CHECKING THE REAR DOORS AND THEIR BASIC SETTING

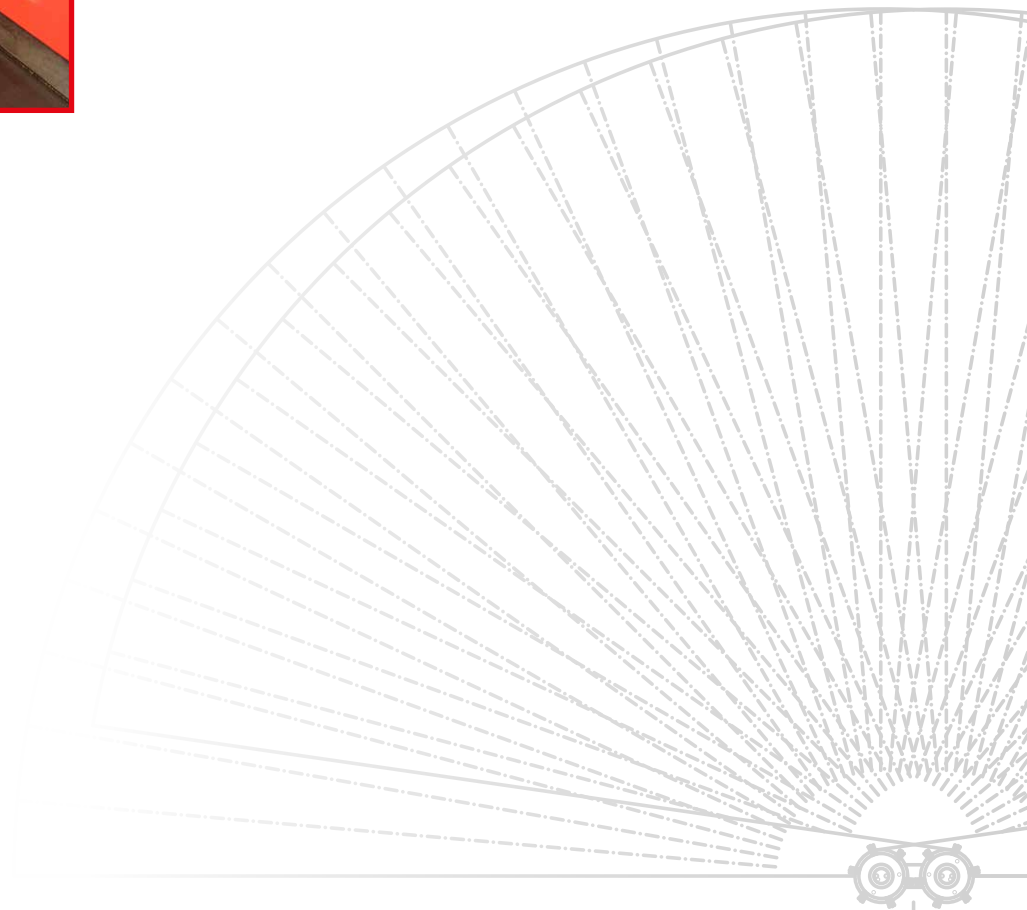
The basic setting of the rear doors must be correct in order for the spreader to apply correctly. It is possible to check the setting by setting the scale at 40 and placing two 40 mm square pipes on the belt underneath the door. If the setting is incorrect, adjust the door on its tension rod.



Set the rear doors' scale at 40



Place two square pipes underneath the door on each side. The pipes should be able to move freely under the door with almost no clearance. Adjust the door's drawbar if this setting is not correct.



LUBRICATION POINTS

The different lubrication points on the implement are shown below. The number of operating hours for each lubricating interval is specified at each lubricating point.

> EVERY 50 HOURS



Flange bearing and 6-grooved axle towards the tractor. Disassemble the PTO shaft towards the tractor so that the 6-grooved axle can be lubricated.



Cardan shaft under the spreader (remove the stainless steel shield so lubrication is possible).



Flange bearing in the middle under the spreader.



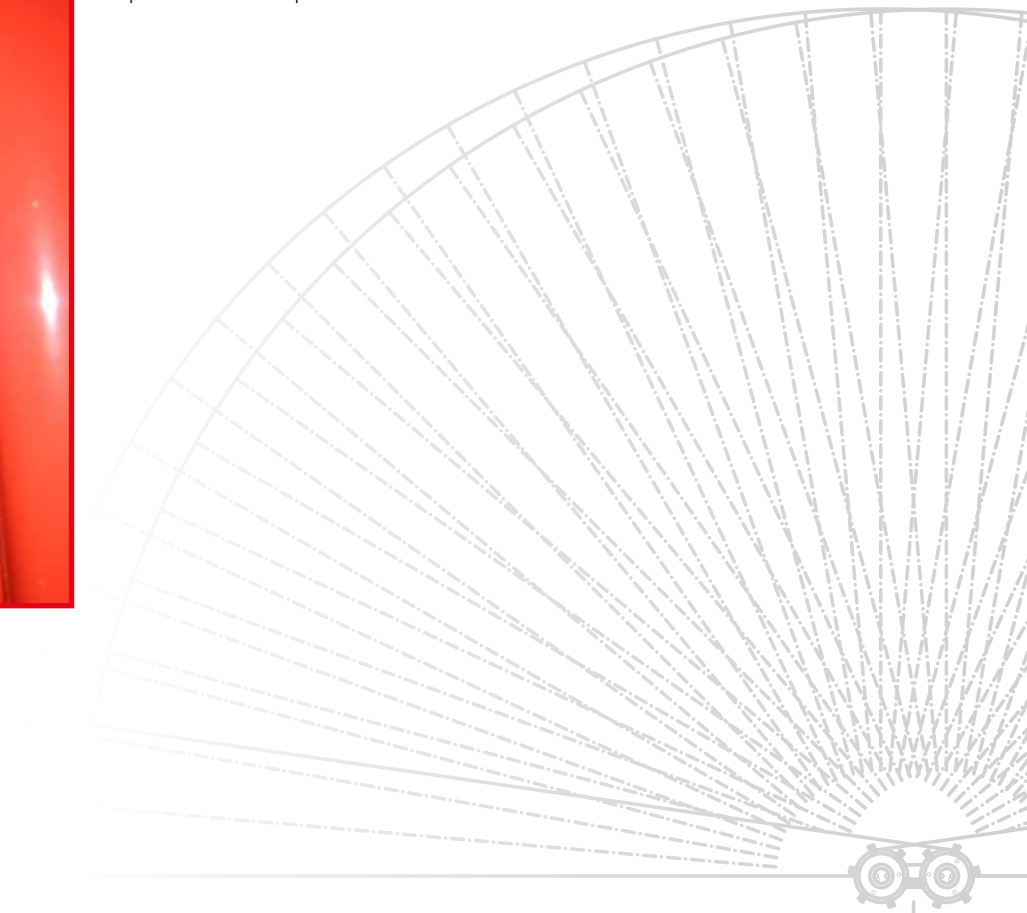
Flange bearing at the rear axle.



PTO shaft under the spreader: disassemble the PTO shaft and lubricate the 6-grooved ends with grease.



Input shaft on the spread unit.



LUBRICATION POINTS

> EVERY 100 HOURS

Front roller bearings (2 on each front roller): it can be necessary to run the belt to access the grease nipple.



Floor belt guide rollers (2 for each belt)

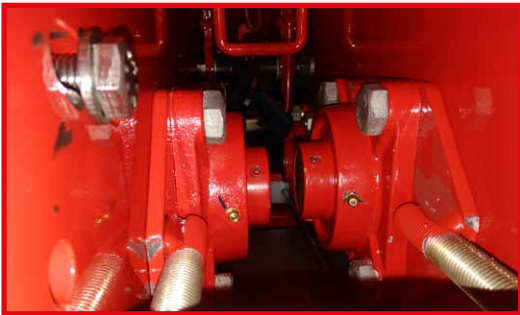


Floor belt snap rollers (2 lubrication points for each belt)

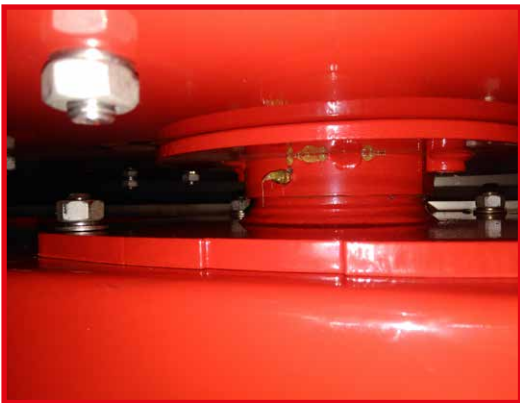


Sealing the outside of the gearbox.

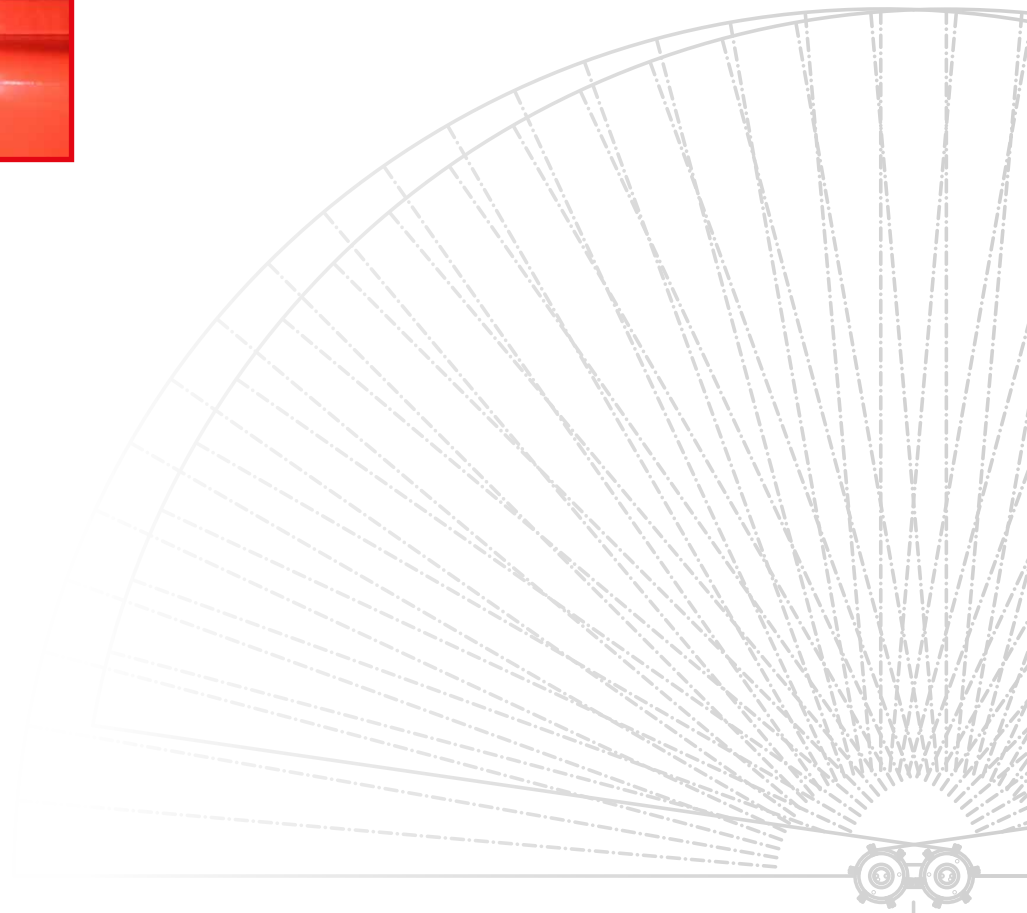




Flange bearings at floor-belt's powered rollers: both in the middle and between gearbox and frame.



Right and left top, just below the discs.



LUBRICATION POINTS

> EVERY 200 HOURS

Tightening device on the spread unit.



Tow bar/ball hitch

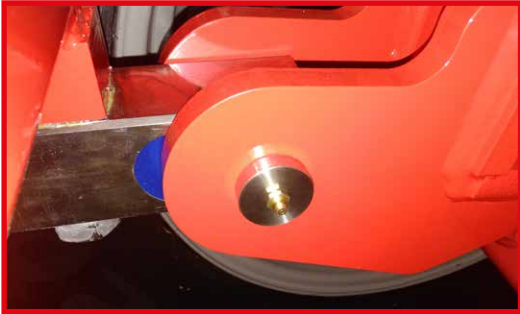


Sealings by the rear axle's brake toggles and drums.

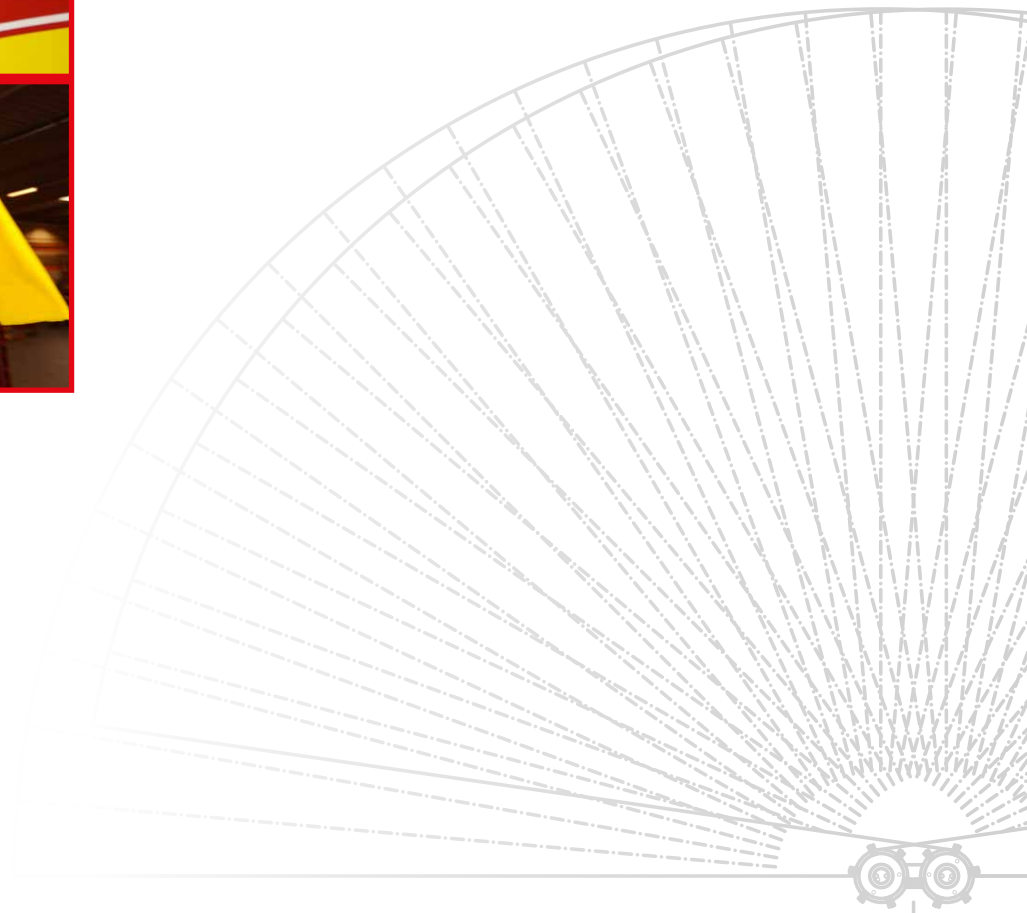




Weight cells front and rear.



Hinges and ends of cylinder for hydraulic hopper extension.



MAINTENANCE AND LUBRICATION OF SPREAD UNIT

It is important to keep the spread unit properly maintained/lubricated. There is a general time interval for how often the spread unit should be lubricated. Otherwise, it is important to lubricate the headland gear, etc., especially after washing the spreader and before putting the spreader into storage for winter. Also, it is important to test the headland gear's function when the spreader is attached to the tractor and after a long idle period. Check the tightness of the V-belts at regular intervals. The procedures for inspecting and maintaining the spread unit are shown below.

> V-BELT TIGHTNESS

A spring to tension the V-belts is attached to the right side of the spread unit. Tension the spring to 93–95 mm when the spread unit is cold. Check the tightness after every 20 hours of operation. Re-tighten if the spring is measures more than 95 mm.



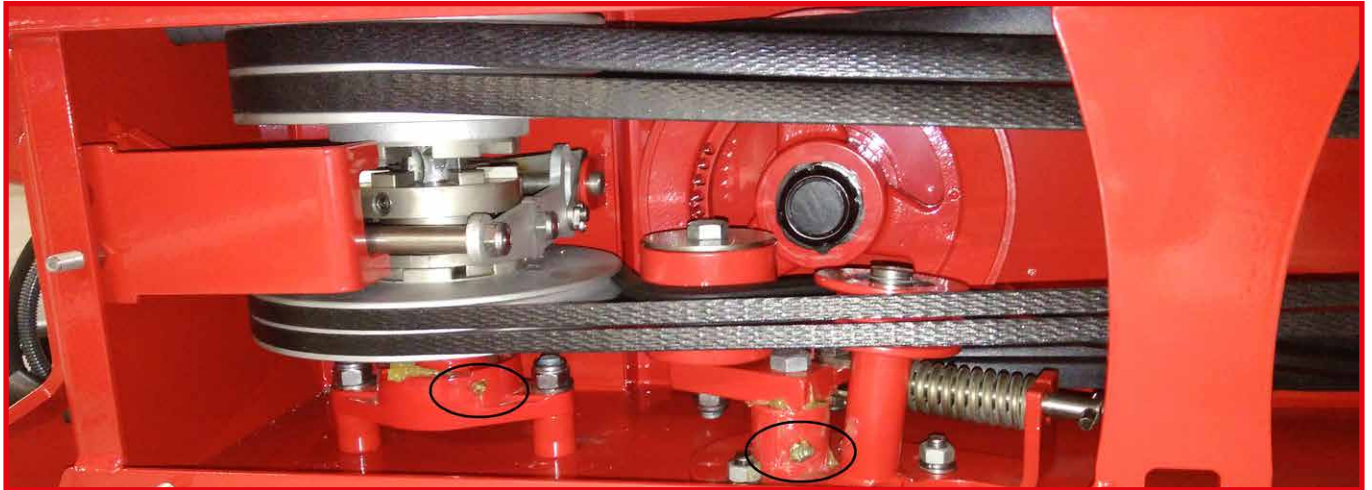
> HEADLAND GEAR FUNCTION

Check the headland gear by rotating the left disc after switching between field and headland spreading. If the headland gear is activated, the left disc must rotate more slowly than the right disc. If field spreading is active, the discs must rotate at the same speed. After switching, a distinct “clunk” sound will be heard when rotating the disc to indicate that the claw clutch is engaged.



> LUBRICATION

There are two lubrication points on the inside of the spread unit. These must be lubricated every 200 operating hours. Always lubricate the spread unit after every washing of its insides and thoroughly spray the headland gear with oil.



Spray the headland gear with oil on the shaft where the claw clutch slides up and down.



Make sure that the shaft is lubricated both above and underneath the claw clutch.

GEAR FOR FLOOR BELT OPERATION



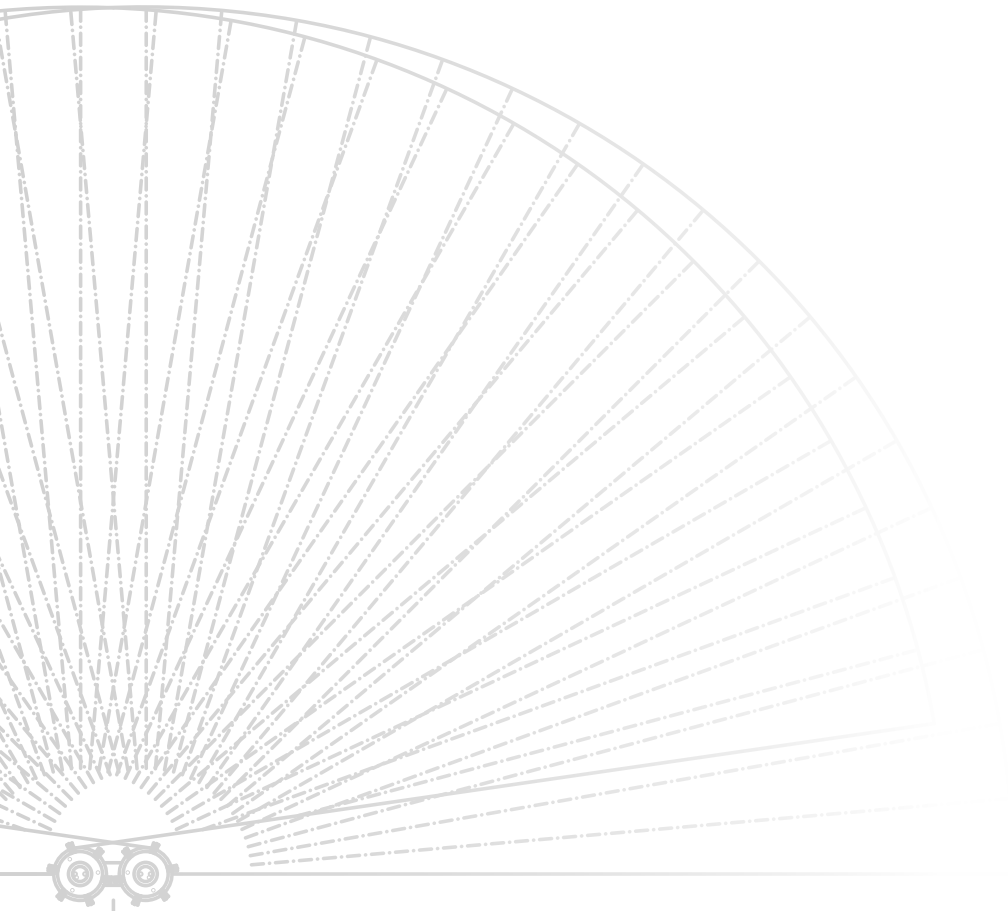
Each floor belt has its own gearbox. Each gearbox holds 3.5 litres of gear oil. The oil must be visible in the sight glass.

For ordinary operation, it is not necessary to replace or replenish the gear oil.



A small wing screw is attached to the top of the gearboxes for manual floor belt operation. When there is oil flow from the tractor, each belt can be started by screwing in the thumb screw.

NB: screw out the screws as far as possible for normal operation.



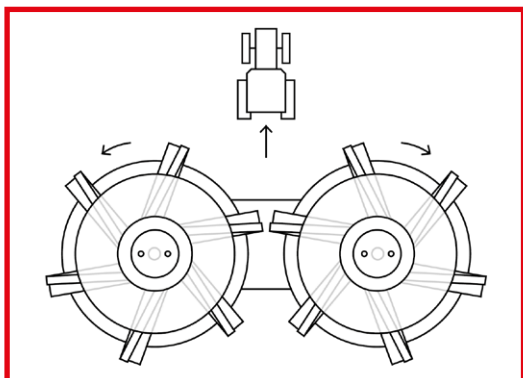
OTHER MAINTENANCE AND CLEANING



> OIL FILTER

The spreader's hydraulic system for operating the belts is fitted with an oil filter. The filter's replacement interval largely depends on the operating conditions, and the meticulousness with which the tractor's hydraulic system is kept clean, but it is advisable to replace the filter every two to four years.

< The oil filter is placed inside the control box



> SPREADING SYSTEM

Check that the spreading system is clean and in working order every day. Insufficient cleaning or worn-out spreading vanes can result in poor spreading patterns.

Certain types of fertiliser and humid weather can create coatings on downshutes and spreading vanes, so these should be inspected and cleaned regularly during operation.

Replace the spreading vanes if holes are worn into them. **It is very important that the spreading vanes are correctly mounted on the spreading discs, as shown in the picture.**

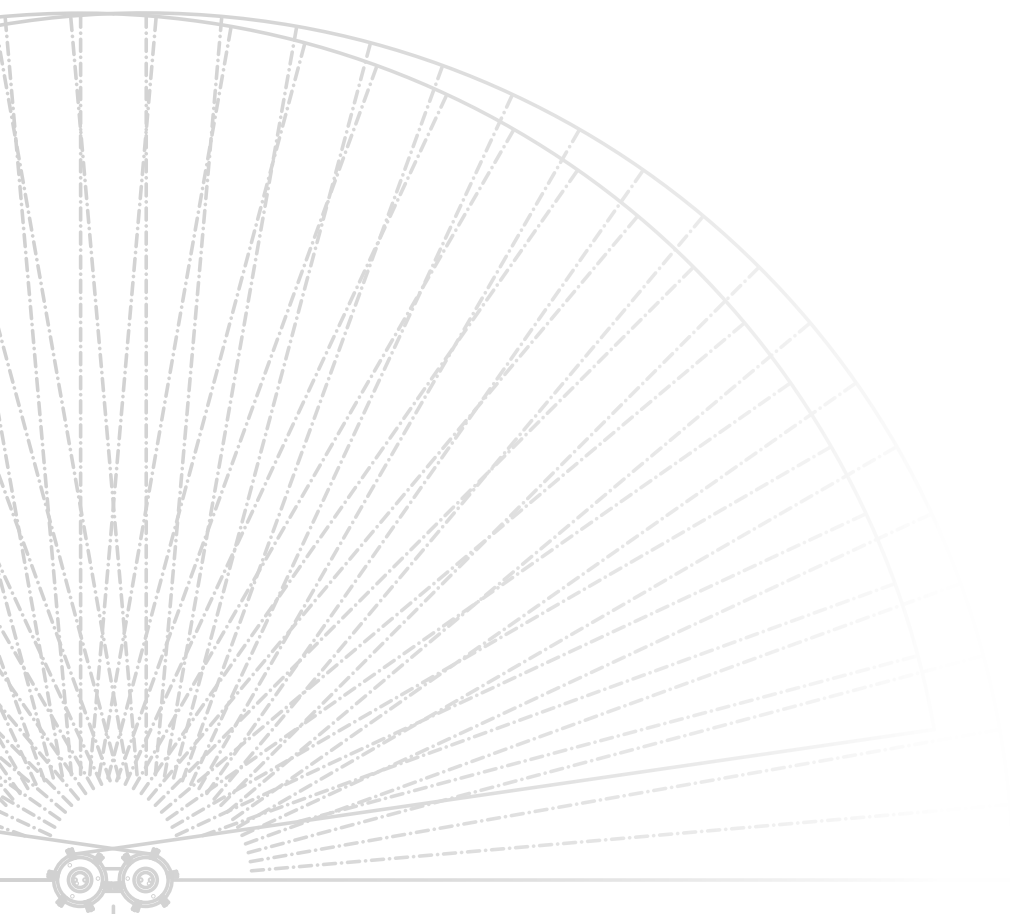
> WASHING AND STORAGE

Always be careful when washing with a high-pressure washer and never spray directly on bearings, sensors, etc.

Before winter storage, clean the spreader carefully and apply a layer of rust-protective oil to the implement. **Be careful not to apply oil on the rubber belt as this will dissolve the rubber.** It is advisable to first spread a layer of cat litter or sawdust on the belt to absorb excess oil. Remember to remove the material after four or five days once all the oil has been absorbed.

TYRE-PRESSURE TABLE

TYRE SIZE	TYRE BRAND/TYPE	RECOMMENDED TYRE PRESSURE
520/85 R38	ALLIANCE FARM PRO 169 A8/169 B	3.6 BAR
520/85 R42	ALLIANCE FARM PRO 157 A8/157 B	1.6 BAR
710/75 R32	TRELLEBORG TM 2000	3.2 BAR
650/85 R38	TRELLEBORG TM 900 HP / ALLIANCE 385 AGRISTAR	2.4 BAR
650/65 R38	MICHELIN MULTIBIB	1.6 BAR
800/65 R32	ALLIANCE 360	3.1 BAR





SIMPLE
PRECISE
RELIABLE

For more than 50 years, Bredal has specialised in the development and production of high-quality lime and fertiliser spreaders for agricultural purposes. The company's goal is to build reliable machinery, precise in use, and simple to operate and maintain. In recent years, the Bredal product line has been expanded to include winter equipment in the form of sand and salt spreaders.

The company's interests in most of the countries importing Bredal machinery are represented by local importers who sell Bredal spreaders and provide technical support and service.

Bredal is located in Vejle, Denmark, where it has state-of-the-art production facilities with the latest equipment for producing high-quality machines.

