BREDAL

K-SERIES
OPERATING MANUAL FOR ISOBUS

SIMPLE
PRECISE
RELIABLE

CONTENTS

This operating manual contains instructions and guidance for operating the ISOBUS control on Bredals K-spreaders.

Operation can be done from a Müller ISOBUS terminal delivered together with the machine or from the tractors ISOBUS terminal.

Isobus terminal in the tractor and its software:
The user surface looks different every time the machine gets connected to another ISOBUS terminal. The reason for this is that terminals have different solutions. Some functions of the spreader depend on the type of software the terminal has. The functions are dependant on that the terminal shall contain the necessary software. In order to perform headland spreading it is necessary to make sure that the terminal contains section control program along with track following program. If the application rating shall be based on the field map, the terminal must also include the software which is able to operate field maps. When the spreader gets connected to the tractor, the spreader's jobcomputer starts to exchange data with the tractor's terminal, and only the functions supported by the tractor's terminal would be active. In case the terminal doesn't contain the software necessary for spreading in wedges, the function can not be applied.

FIRST TIME INSTALLATION / SET-UP OF MÜLLER TERMINAL

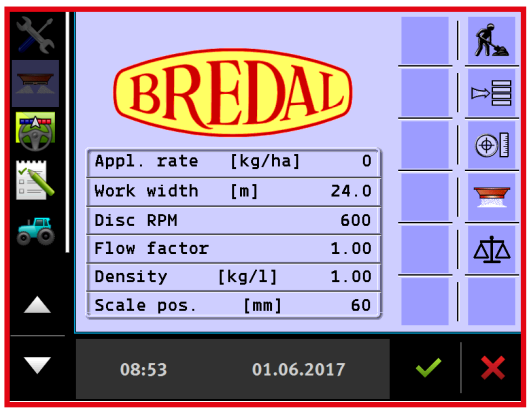
In case an ISOBUS terminal from Müller is delivered together with the machine, some basic set-up shall be done before applying the function of section control.

For montaging the tractor assembly kit with GPS antenna, you get directed over to instructions provided by Müller, where it is possible to refer to Müller instructions for operating the programs not relating to spreader's operation, such as Track-leader, Field-nav, Farmpilot, or other software that can be bought additionally for Müller terminal.

The basic set-up of GPS receiver, its activation and the basic encoding for GPS antenna location can be equally found in montage and operating instructions from Müller.

When the terminal, tractor assembly kit and GPS antenna are mounted, the socket from the spreader's ISOBUS is connected, the basic set-up encoding is finished and the spreader can be set into action, press the button for about 3 seconds. When the terminal starts, the spreaders program is loaded automatically. It can take up to 2 minutes from the moment the terminal is switched on until the spreader icon appeares on the screen.

In case the start-up screen (homescreen) can not be seen, click on the left side of the screen.

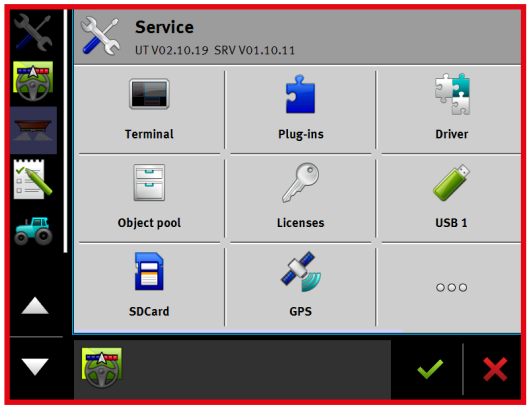


Now it is possible to choose between different parametres on the left side of the screen, e.g. on the given screen picture the spreader´s application rate is chosen. You can at any moment go back to this page by clicking home icon , except when the entry field is active.

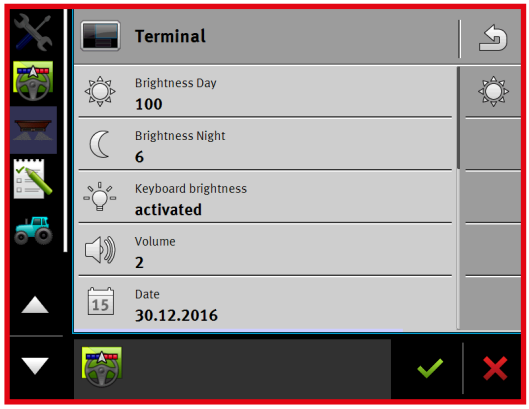
On the start-up screen (Homescreen) you can see the entered application rate, working width etc.

LANGUAGE, CONTRAST, LIGHT AND MEASURING UNITS

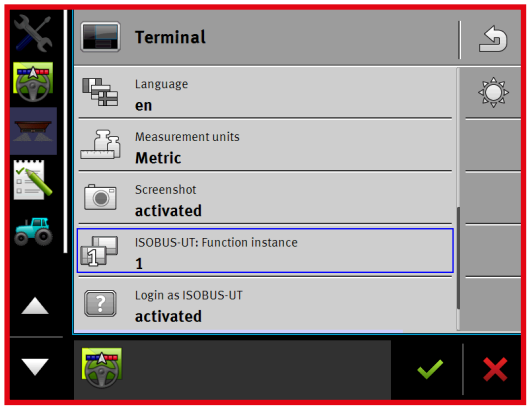
Click to change the settings:



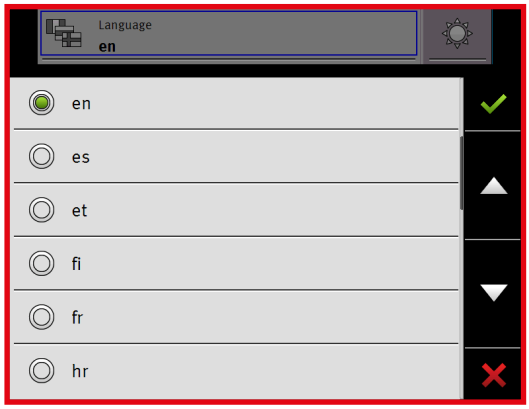
Click “Terminal”.



Select e.g. “Language” by scrolling down.



Click at the tab page “Language”.



Choose from the list

Click

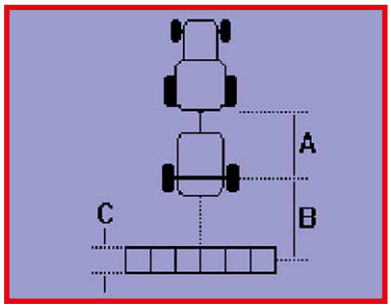
FIRST TIME SET-UP ONTO EXISTING TERMINAL IN THE TRACTOR

In case the spreader is connected to the tractor that has ISOBUS terminal, it could be necessary to encode the sections´ location and length, during the movement with a trailed spreader. The encodings shall be used for the spreader to start and stop the dosing at the right time, when turning at headland. Bredal program already contains this information, but not every tractor terminal uploads this data from the spreader when connected. Some terminals apply the encodings correctly. In some cases the tractor´s terminal applies only one or two of the encoded distances. Sometimes the terminal can not at all recognize the distances, in such cases they shall be encoded into section control program of the tractor terminal, follow the instructions of the manufacturer of the terminal.

To ensure that the dosing starts and stops at right moments, the following distances shall be encoded:

- A = The distance from the tractor´s pull to the spreader´s axle.
- B = The distance from the spreader's axle to the middle of the spreading pattern.
- C = The length of the spreading pattern.

Distance figures recommended by Bredal:



FERTILIZER :

- A = 4,0 meter
- B = 8,0 meter
- C = 5,0 meter

LIME :

- A = 4,0 meter
- B = 5,0 meter
- C = 4,0 meter

On most terminals it is necessary to further choose a tractor drawbar.

DESCRIPTION OF BREDAL PROGRAM ICONS

In the following passage you can find a description of Bredal program icons, the positioning of icons can variate on different terminals. The icon´s meaning/function:

Home, go back to starting page.

Work, go to operating page.

Start / stop button, starts and stops the dosing.

Menu, go to the chosen menu.

Return, go back to the previous menu.

Go to the line below, the marked line moves one line down.

Go to the line above, the marked line moves one line up.

Emptying, starts the conveyor belt so that the hopper empties.

Encoding application rate, go to the menu where application rate parametres, working width etc. is enlisted.

Weighing control, go to the menu for application rate control.

Accept the entered data or confirm the alarm.

Delete, cancel the entry.

Scroll between different views.

Increase output amount by 10 %.

Reduce output amount by 10 %.

Return to the original encoded output amount.

Warning / Alarm

Go to the next page.

Delete the entry.

ESC, go back without changes.

Calibrate.

Save and use new flow factor

Enter current amount when filled

Enter current amount left in the spreader

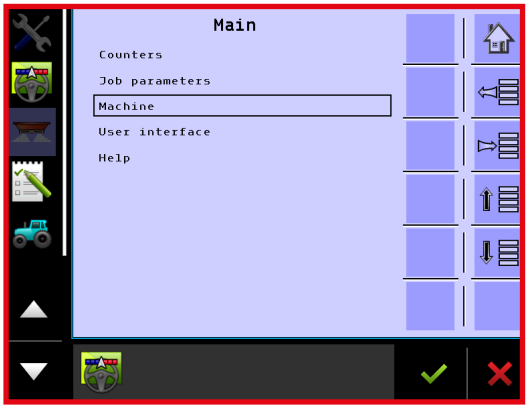
Start new calibration

CONFIGURABLE ALARMS

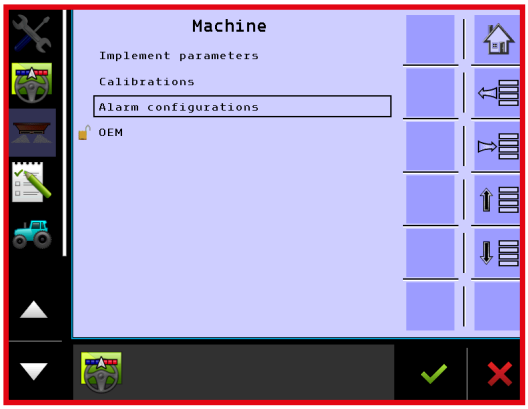
It is possible to set some individual alarms, so that there comes a warning e.g when the hopper is almost empty. The following alarms can be configurated:

- Kg/left in the hopper
- PTO speed
- CAN speed timeout point

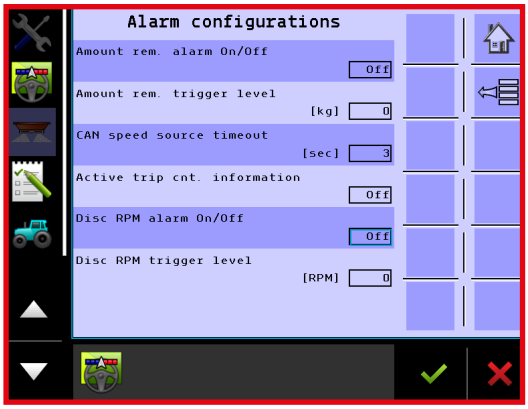
Click  button at Home screen picture.



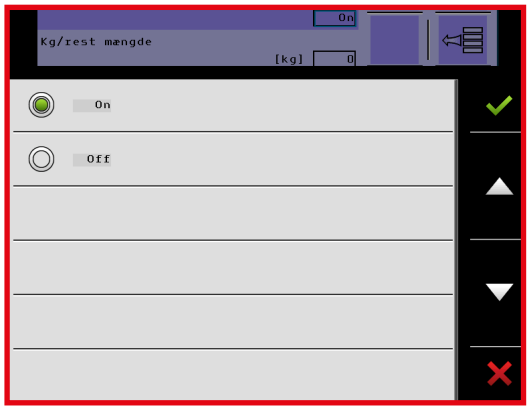
Select “Machine”



Select “Alarm configurations”

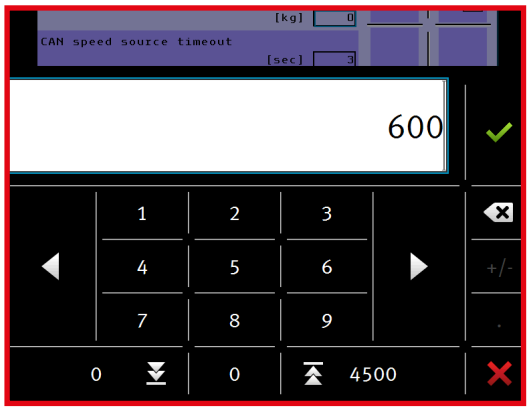


Select the alarm that shall be activated



In this example alarm is set for kg/left at "On".

Click ✓ to accept.



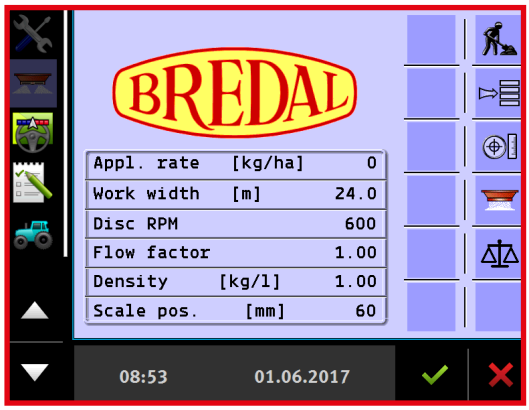
The entry field below is meant for introducing the residual quantity kg/left at which the alarm shall go off.

Click ✓ to accept.

ENCODING MENU FOR APPLICATION RATE, WORKING WIDTH, DENSITY ETC.

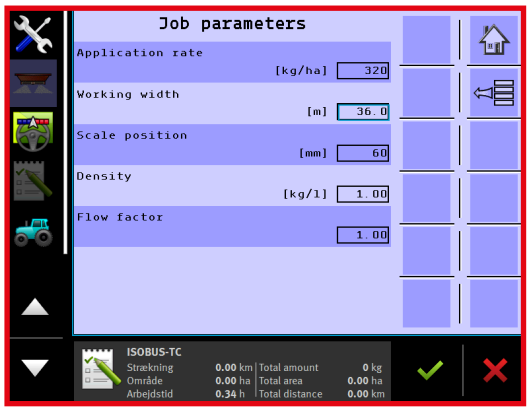
The parametres that shall be encoded before the start of spreading are the following:

- Kg/ha.
- Working width
- Rear door scale position
- Density
- Flow factor

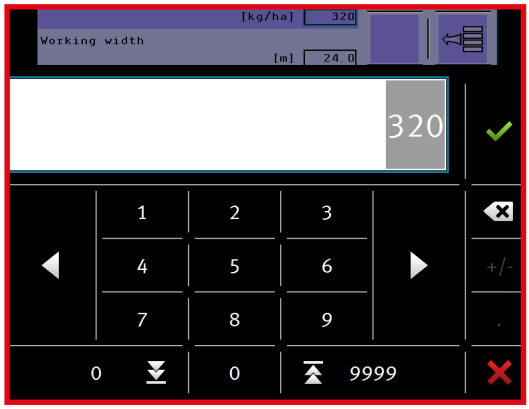


> ENCODING APPLICATION RATE

Click to go to the task menu.



Click “kg/ha” in the entry line to change the value.

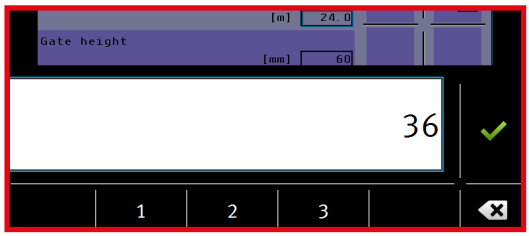


Encode the required application rate.

Complete by clicking

> ENCODING WORKING WIDTH

Click the entry space “Working width” to change the value.



Encode the required working width.

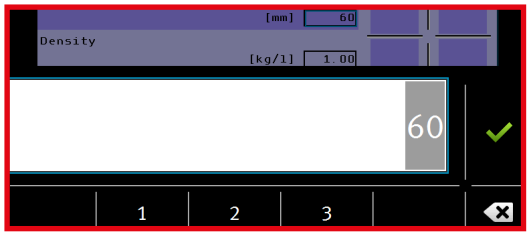
Complete by clicking ✓

> ENCODING SCALE POSITION

Under the line Scale Position the settings for the rear door opening shall be encoded. It is recommended to drive with a scale setting on 40-70 for fertilizer and 150-300 for lime, depending on the amount to be dosed.

NOTE, it is important to encode that value that the rear door is set for, or else the spreader will dose incorrectly.

Click the entry space by “Scale position” to change the value.

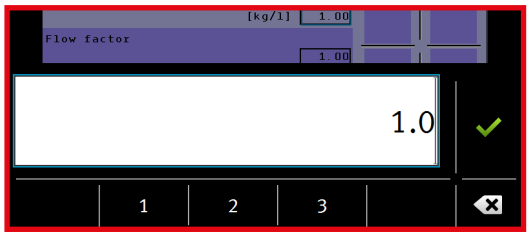


Encode the rear door position.

Complete by clicking ✓

> ENCODING DENSITY

Click the entry space “Density”, to change the value.



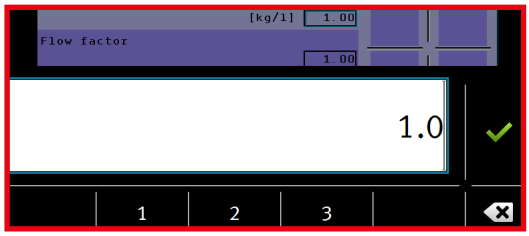
Encode fertilizer density.

Complete by clicking ✓

> ENCODING FLOW FACTOR

Basically you shall always start with flow factor at 1,0. If the spreader is equipped with weighing cells, the flow factor is calculated continuously under spreading, the last calculated flow factor is displayed in the entry space under flow factor.

Click the entry space by “Flow factor” to change the value.

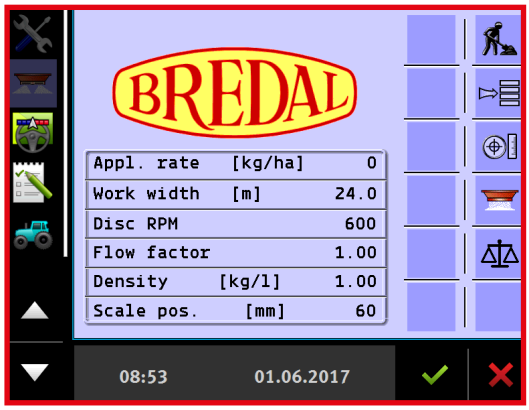


Encode the required flow factor.

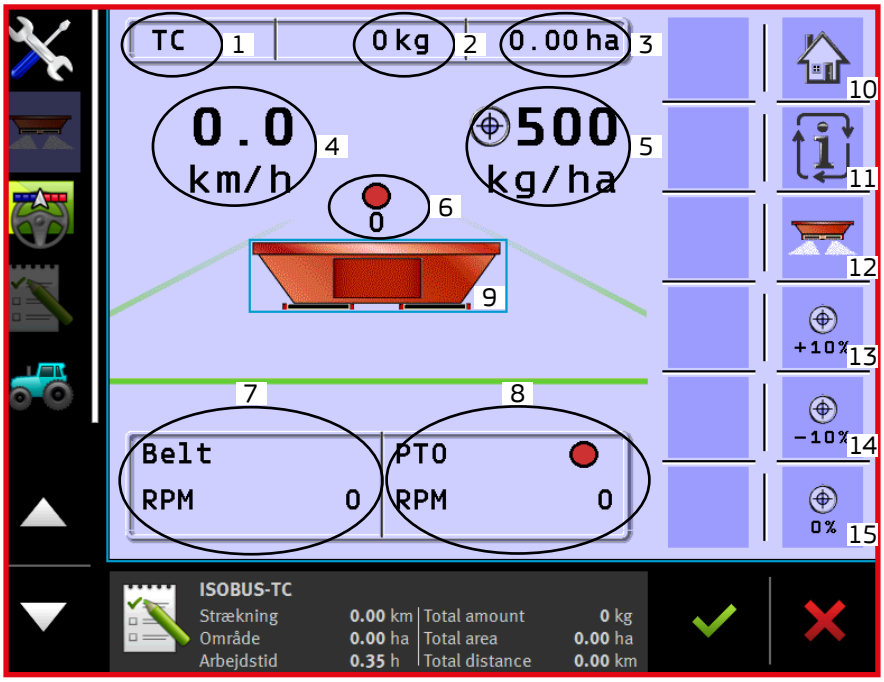
Complete by clicking ✓

OPERATING PICTURE

Operating picture is the screen picture shown during spreading, where application rate can be started and stopped, and different data is handed on to the operator.



Click  to go to operating picture.



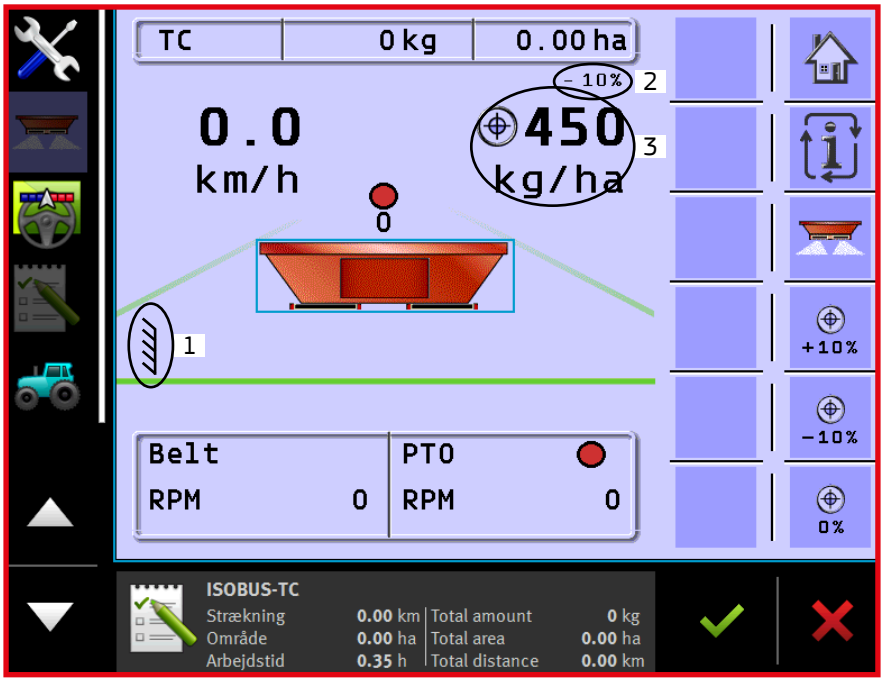
Operating picture 1

1. Task Controler, when TC is shown, the Task Controler program is activated.
2. Shows how many kg there has been spread taking the data from the active counter.
3. Shows how many ha. there has been processed taking the data from the active counter.
4. Shows km/h – kg/min – kg/ha and conveyor belt speed, that can be switched between views by clicking the button nr. 11
5. Shows the actual required application rate.
6. Shows the actual weight in the hopper. The red dot indicates if weighing signal is stable enough for dynamic weighing to apply the signal for calculation, green = the signal is stable, red = the signal is not stable enough for dynamic weighing to use the signal for calculations.
7. Shows the actual belt speed of conveyor belt.

8. Shows the actual PTO revolutions, the dot indicates if the quantity of PTO revolutions under driving is correct:
   When spreading in the field:
   Green = the quantity of PTO revolutions is correct
   Yellow = the quantiy of PTO revolutions is close to correct
   Red = the quantityof PTO revolutions is incorrect
   When headland spreading is activated:
   Green = minimum (environmental), none or very little fertilizer is spread over the edge of the field.
   Yellow = medium, 40-50% application rate at headland, some fertilizer is spread over the edge of the field.
   Red = maximum, full application rate all the way out to headland, a considerable amount of fertilizer is spread over the edge of the field.

CAUTION! If settings from Bredal homepage are downloaded like recommended, PTO revolutions from there shall be applied, and not the abovestanding colour markings.

9. Starts and stops the application rate, there shall be circulation of oil for the belts before the dosing process starts. Button nr. 12 has the same function.
10. Home button.
11. Shifts among various views on the screen, see also item 4.
12. Starts and stops application rate, there shall be circulation of oil for the belts before the dosing process starts.
13. Increases output amount by 10%
14. Reduces output amount by 10%
15. Returns to the encoded application rate.



Operating picture 2

1. The indicator for headland spreading shows when headland spreading is activated.
2. Application rate has been reduced by 10% using button 14.
3. Shows the actual application rate in kg/ha (here the application rate is reduced by 10% compared to the encoded rate)

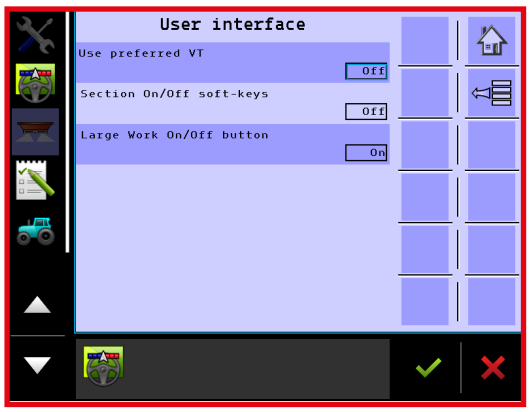
USER SETUP OF OPREATING PICTURE

Here it is possible to adjust operating picture to user needs. The following can be changed:

- Preferred screen (In case there are several terminals in the tractor)
- Manual operation of sections (icons for operating sections are visible at operating picture)
- Possibility for applying the big spreading symbol right at operating picture as start/stop.

Click the button  at Home screen picture

Select "Use interface"..

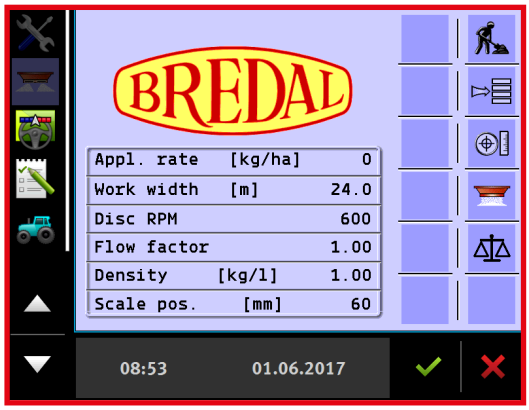


Click the entry "On / Off" to switch on/off the required function.

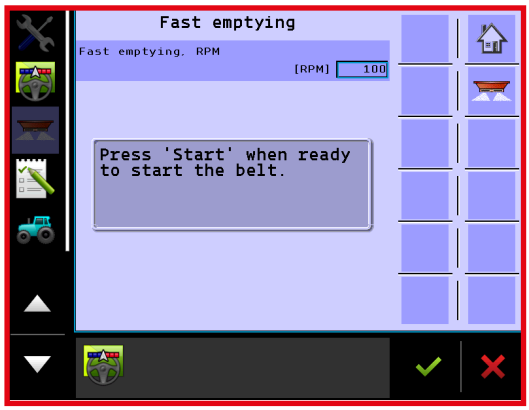
Complete by clicking 

The terminal shall be restarted before changes come into effect.

EXPRESS UNLOADING



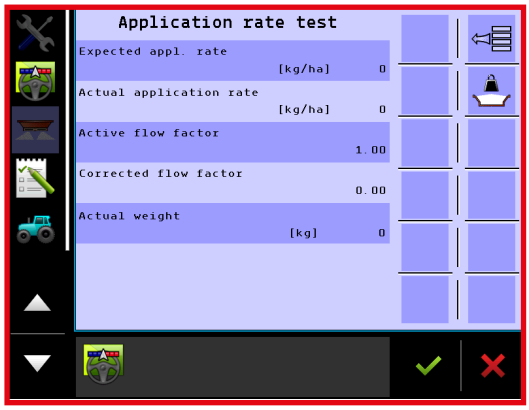
Click in Home menu.



Click to start emptying. It is possible to change the conveyor belt speed by pressing onto revolutions and encoding another value.

> SPREDER WITH WEIGHING CELLS :

Click symbol in Home menu.
In this menu the encoded dosing is compared with the actual dosing. When dynamic weighing is activated, new flow factor is calculated automatically all the time. Dynamic weighing is activated when the machine is delivered from the factory, but can be disconnected if required. If the dynamic weighing is disconnected, weighing can still be done, but flow factor is no longer calculated and changed automatically.



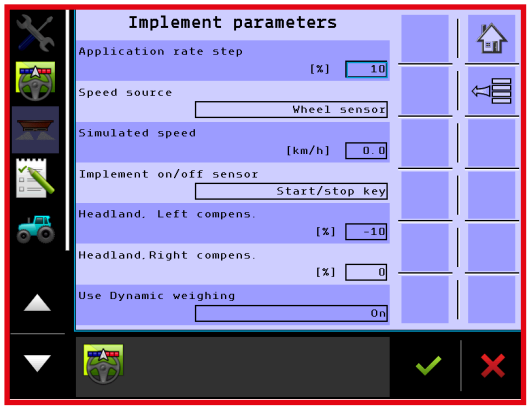
The active flow factor is shown, and the next oncomiing correction of flow factor (corrected flow factor) can be read off.
When the spreader is being filled it is registered automatically, and a new calculation is started.
A new calibration can be launched by clicking . It is used when e.g. a new task with another application rate must be started.

Connecting and disconnecting dynamic weighing:

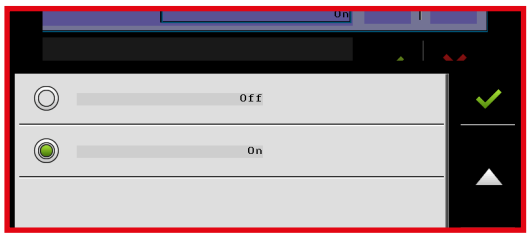
Click the button at Home screen picture.

Click “Machine”.

Click “Implement parametres”

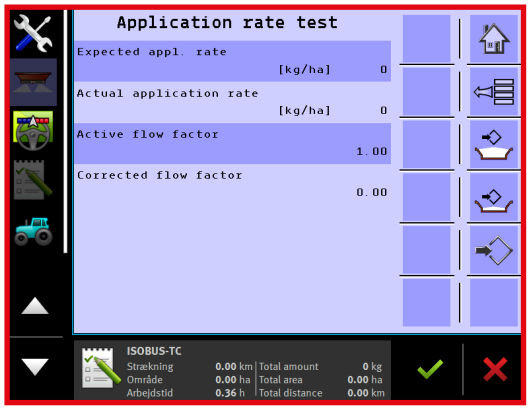


Click the entry line “Use dynamic weighing” to connect or disconnect the function.



Choose if dynamic weighing shall be connected or disconnected.

Complete by clicking



> SPREADER WITHOUT WEIGHING CELLS :

Click on the symbol in on the HOME menu.

Refill the spreader with an known amount.

Click on , enter the amount filled and click

When you want to calculate the application rate, click on the symbol in the HOME menu.

Click on , enter the current quantity left in the spreader and accept with

Click on , to save and use the new flow factor.

When you click in the HOME menu, the current weight in the hopper can be entered by each refilling.
Now the actual theoretical weight in the hopper is shown in the operating picture during spreading.

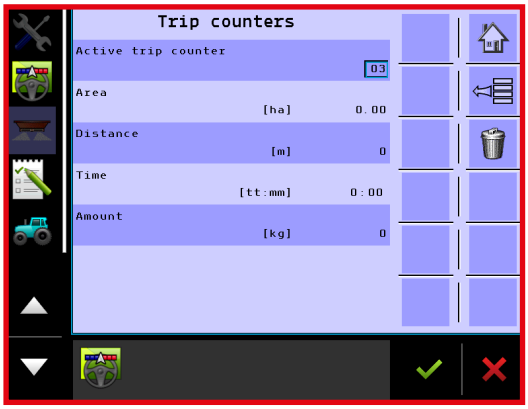
COUNTERS

There are 10 trip counters in Bredal program part, that can be used to count area, distance, amount and time for one task. If the tractor`s terminal has an active task controller, it is the one that counts area, amount etc. The 10 trip counters in Bredal program part are deactivated, and in the menu under counters there can only be seen trip counter 11. The active trip counter is shown further at the top of the operation screen.

Click button  at Home screen picture.

Click “Counters”

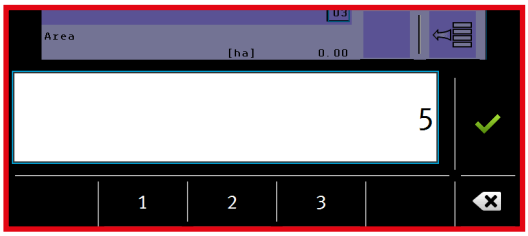
Select “Trip”



In trip counters there can be chosen among 10 different types of counters.

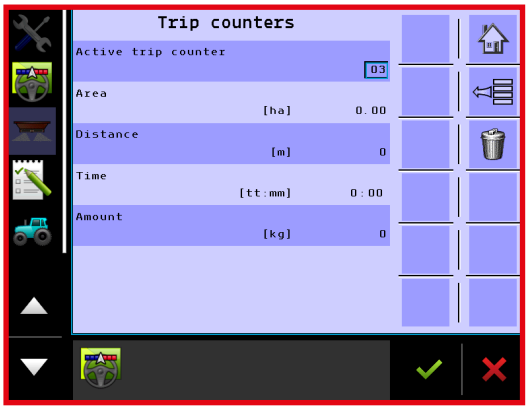
Press “Active counters” to select another counter.

Click  to delete the counted values in the active trip counter.

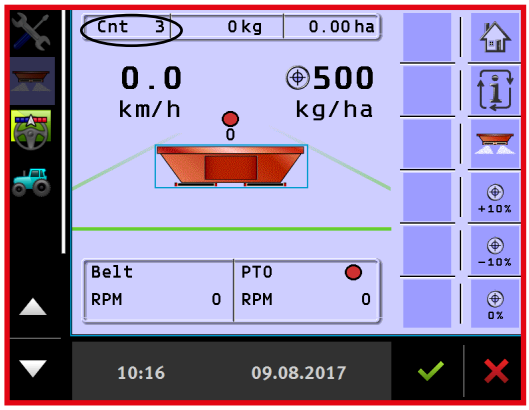


Encode which counter shall be activated, there can be chosen among counters 1-10.

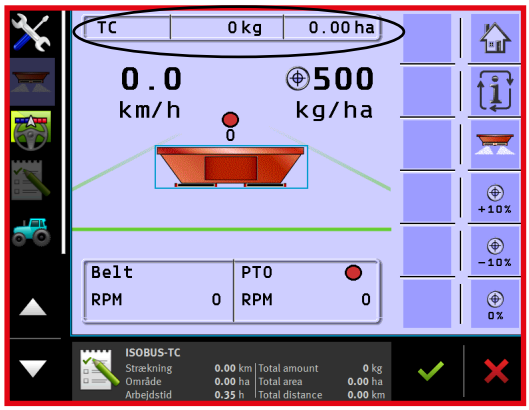
Complete by clicking 



If counter nr. 11 is shown, the task controller (TC) on the tractor’s terminal is active, and it is not possible to select any other counters. The counted values from TC are shown in counter 11, and can be saved or deleted via TC-program.

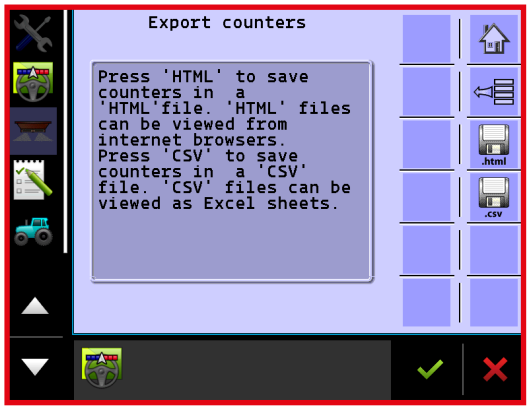


The active trip counter is shown at the top of the operating screen, the counted kg and calculated area are shown as well.



If TC is indicated on the screen, the tractor`s terminal task controller is active, and the counted values shown are taken from there.

In counters menu there can be further chosen among Partial, Total and Export trip counters.



Under export counters it is possible to save counters either as an HTML file or as a CSV file.

HTML files can be demonstrated in an internetbrowser.

CSV files can be demonstrated in Excel.

Choose between .html and .csv to save the counters.

SETTING UP MACHINE PARAMETRES

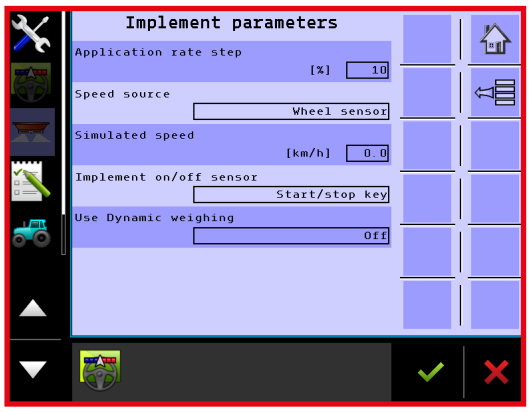
In machine parametre menu it is possible to change the following parametres.

- Application rate step : Step size in %
- Speed source
- Simulated speed
- Mashine on/off sensor : Choose between start/stop button on the screen or external contact.
- Use dynamic weighing : Connecting and disconnecting dynamic weighing.

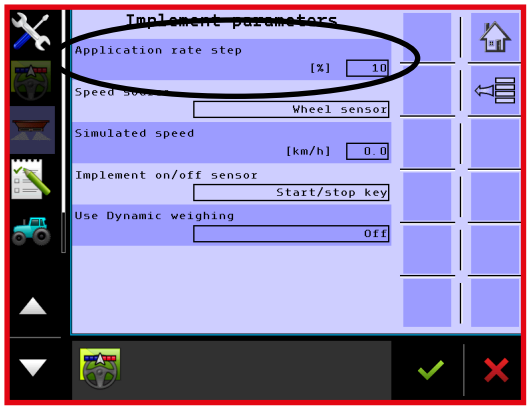
Click the button  at Home screen picture.

Select “Machine encoding”

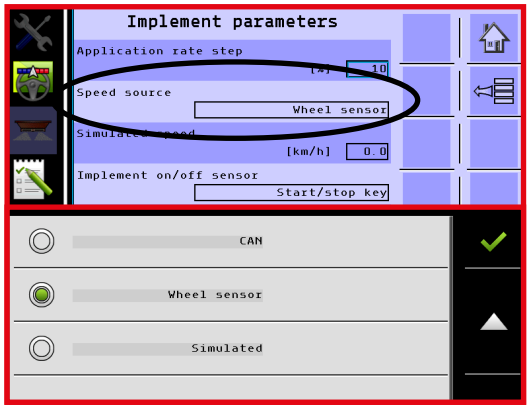
Select “Encoding”



Machine parametres menu: Here different parametres can be changed, see explanation for each parametre below.



Dosing step: The required step size for each button click in operating picture can be encoded here.

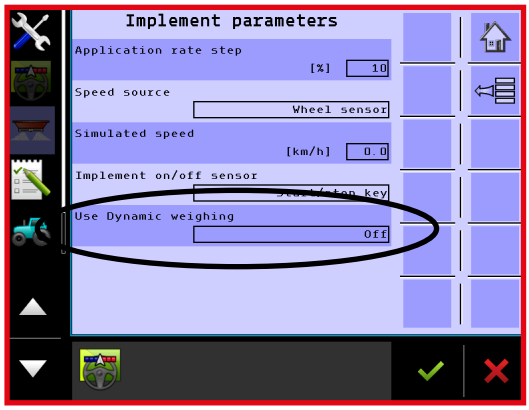


Speed source: the choice can be made among Wheel sensor, CAN or Simulated.

Wheel sensor: Forward speed comes from a sensor, mounted onto the spreader’s wheel.

CAN: Forward speed comes from tractor’s terminal (GPS speed, tractor wheel sensor etc.). It shall be chosen and calibrated during the terminal’s initial set-up.

In case simulated speed is chosen, simulated speed shall be encoded into the field ”Simulated speed”.



Use dynamic weighing: Here you can connect and disconnect dynamic weighing (see also page 23)

MACHINE CALIBRATION

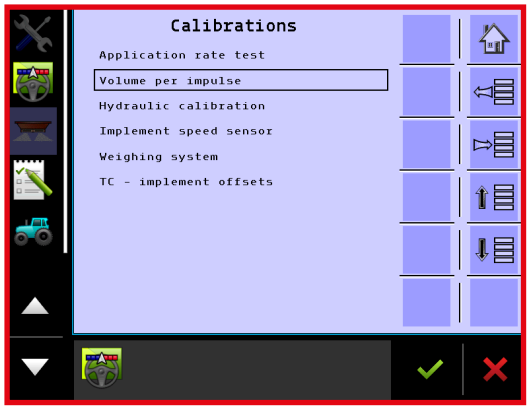
In machine calibration menu there shall be undertaken some basic encodings to ensure that the spreader operates in the correct way. All values are introduced at the plant, though in some cases it might be necessary to introduce some changes to several parametres. The following encodings/calibrations can be performed in the menu:

- Volume / impulse
- Hydraulic calibrating
- Calibrating of speed sensor
- Calibrating / Taring of weighing cells
- TC - offsets

Click the button  at Home screen picture.

Select “Machine encoding”

Select “Calibrations”



In the menu choose the encoding that shall be adjusted, description for each single menu option can be found below.

> VOLUME / IMPULSE

The basic calibration for application rate is encoded here. If the spreader is not dosing in the correct way, the encoding can be changed. The number encoded represents the amount that the spreader doses in cm^3, for each impulse coming from gearbox sensor. In case a bigger number than this is encoded, the spreader will dose less and the other way around, if a smaller number is encoded, the dosing will be increased. Normally it is not necessary to change the encoding for the dosing, but if it still appears in practice that the machine doses in the wrong way, the number cm^3/impulse can be adjusted.

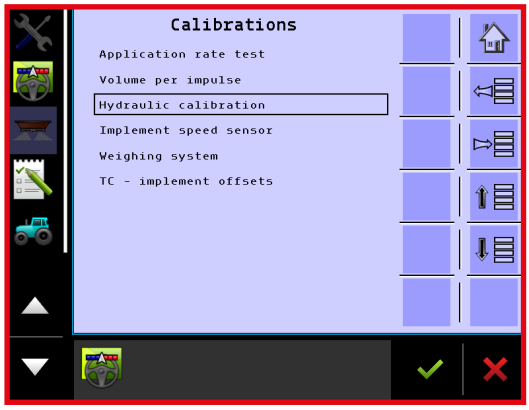
Click onto cm^3 / impulse to change the encoding.

Complete by clicking 

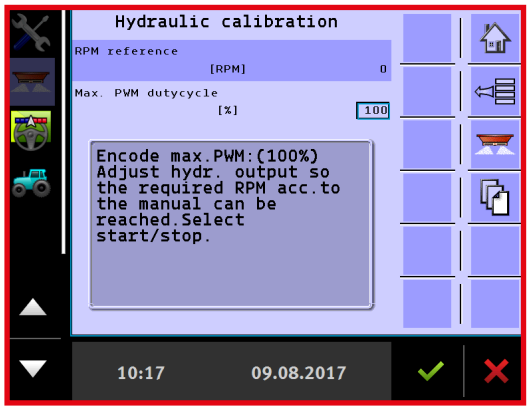
> HYDRAULIC SYSTEM

To ensure that the conveyor belts are regulated in the best possible way it is important to perform a calibration of hydraulic system, by using the tractor that shall be pulling the spreader. The spreader can be functioning even though it has not been calibrated, but it will take longer time to achieve the correct application rate when the spreader gets started, as well as on introduction of changes into the output amount.

Make sure there is nobody near the spreader when the calibration process starts!



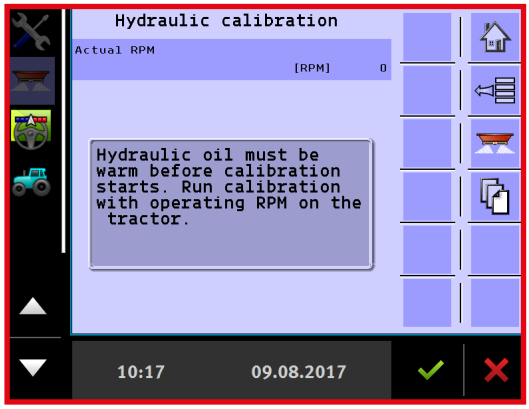
Select “Hydraulic calibration” to go to calibration menu.



In the entry “Max. PWM duty cycle” 100% is encoded.
The tractor’s engine shall be running at operating speed
Click start button

When the tractor oil outlet is opened and the belts start moving, set the tractor´s oil amount, so the belts can reach 600 rev/min. Don’t encode a bigger oil amount than necessary.

Click to go to page 2 under hydraulic calibration.

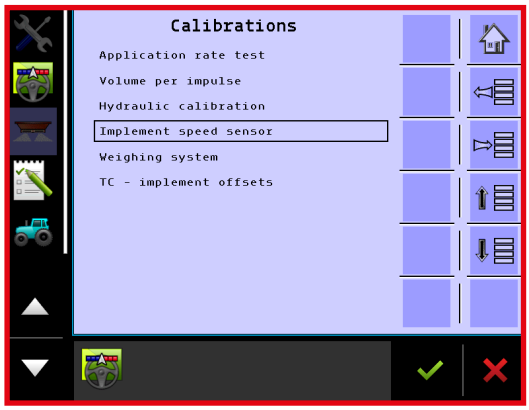


When calibration starts there shall be circulation on the tractor’s hydraulic oil and the oil shall be of operating temperature, while **the tractor’s engine shall be running at operating speed.**

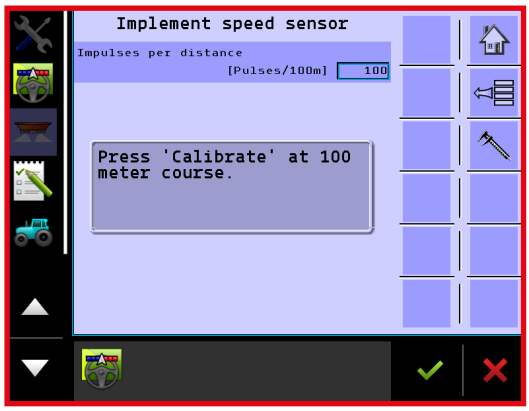
Click the button to start calibration: Spreader´s conveyor belt starts at highest speed, conveyor belt speed reduces slowly until the calibration is over.

> ENCODING SPEED SENSOR

A certain value is already encoded at the plant, but it is recommended to control that the spreader´s forward speed is shown correctly, combine if possible the forward speed of the spreader with the tractor's forward speed. If the spreader's forward speed is not correct, calibration shall be performed. It is also possible to choose another speed source than the spreader´s, e.g. GPS speed, in case tractor terminal is connected to a GPS antenna. For changing the speed source see page 26.

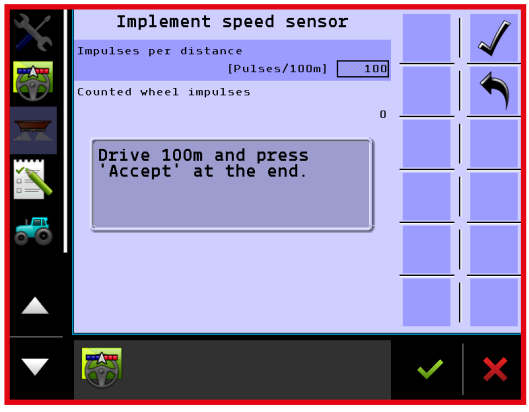


Select "Implement speed sensor" to get into the menu.



Click to perform calibration.

The amount of impulses can also be encoded directly into the entry space, if the amount is known.



Drive 100 meter forward, the amount of impulses is calculalated.

Click to save the calculated amount of impulses.

> TARING OF WEIGHING CELLS

If Weight number is not standing on 0 kg, when the spreader is empty, weighing cells shall be tared.

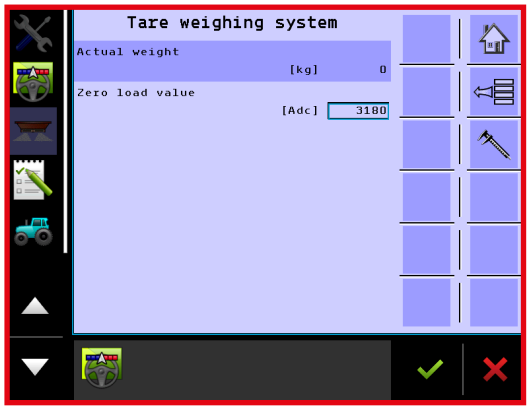
Click  at Home screen picture.

Select "Machine"

Select "Calibrations"

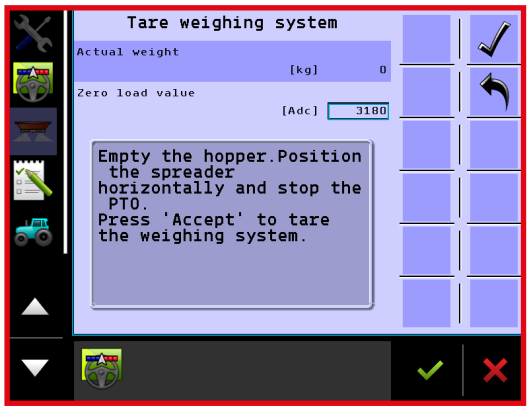
Select "Weighing system"

Select "Tare weighing system"



Click  to tare weighing cells.

The spreader shall be positioned horizontally during taring process.



Click  to accept the taring.

> CALIBRATING OF WEIGHING CELLS

Weighing cells are calibrated at the factory, but it is possible to undertake a new calibration if weighing cells don't show the correct weight. Instead of performig a totally new calibration it is also possble to change a bit on weighing by adjusting the weighing number, this method is recommended in case weighing function is fine, but the displayed weight is a bit wrong,

Click  at Home screen picture.

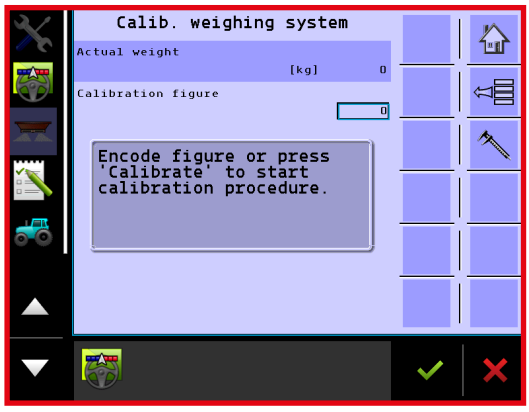
Select "Machine"

Select "Calibration"

Select "Weighing system"

Select "Calib. weighing system"

If weighing cells show incorrect weight, calibration number can be adjusted, until the correct weight is shown. If calibration number has been deleted by mistake, or changed to a wrong number, the right calibration number can easily be encoded again.



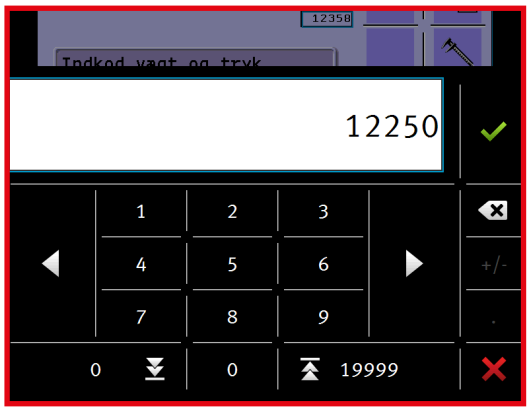
Calibration can be adjusted in the following way:

Start by taring weighing cells.

Fill in the known weight into the spreader.

Under actual weight the loaded amount can be seen. If weighing cells show e.g. too much, the calibration number shall be changed to a smaller number.

Click "Calibration figure" to change it.

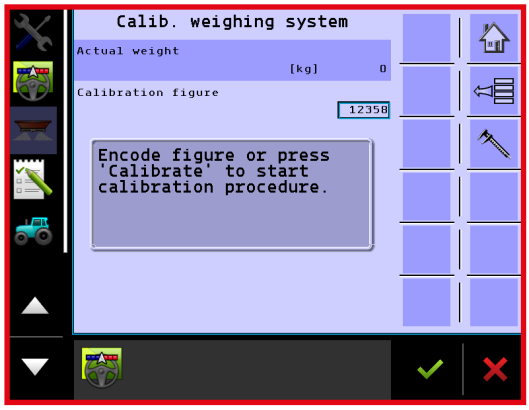


Encode a new calibration number, which is a bit smaller, complete the task by pressing 

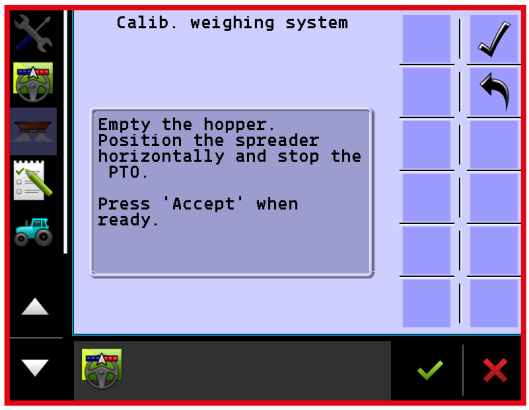
After calibration number has been adjusted, the actual weight is getting changed, continue to adjust calibration number until the correct weight is shown.

If calibration number has been deleted or changed by mistake, the original calibration number is encoded again. Ater that the weighing cells shall be tared.

> NEW CALIBRATION

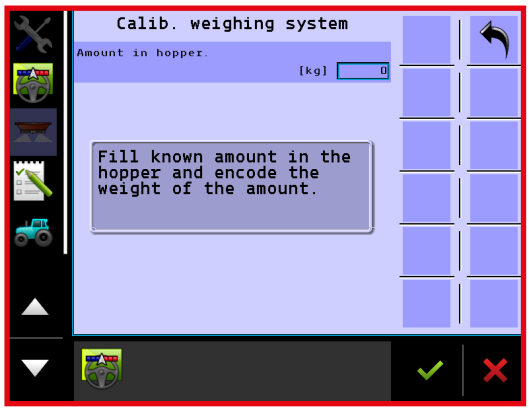


Click to perform a new calibration of weighing cells.



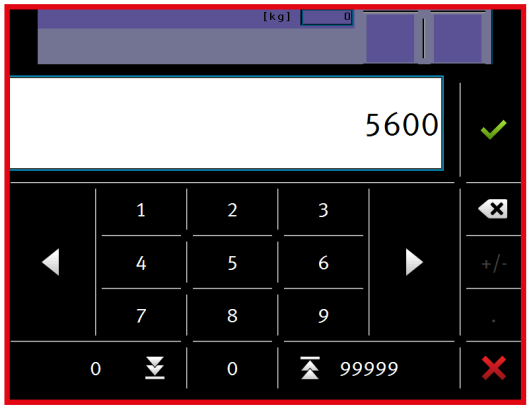
The spreader shall be empty, and it shall be placed horizontally.

Click to start calibration.



Fill a known weight into the spreader.

Click onto the entry space “(kg)”



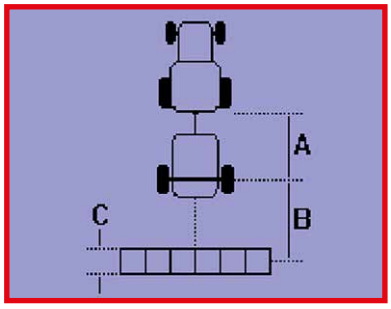
Encode the weight that has been filled into the spreader.

Complete by clicking

A new calibration number is calculated and calibration is completed.

> TC-IMPLEMENT OFFSETS

When section control is applied, and the spreader automatically starts and stops the dosing when turning at headland, the following distances shall be encoded to make sure that the dosing starts and stops at the right moments:



- A = The distance from the tractor´s drawbar to the spreader´s axle.
- B = The distance from the spreader´s axle to the middle of spreading pattern.
- C = The length of spreading pattern.

Bredal has by way of testing determined some distances that most often prove to be fitting best, but there still might be some difference depending on the working width, there might also be difference on various fertilizer types. The distances encoded at the plant and recommended by Bredal:

FERTILIZER :

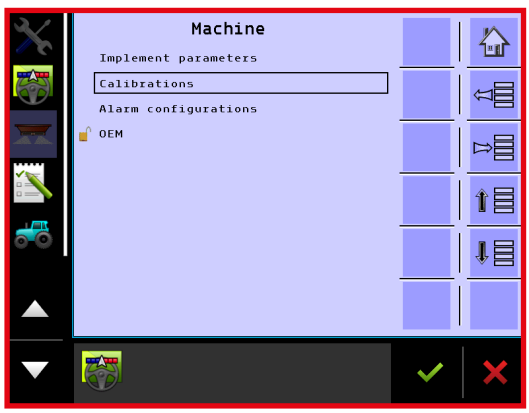
- A = 4,0 meter
- B = 8,0 meter
- C = 5,0 meter

LIME :

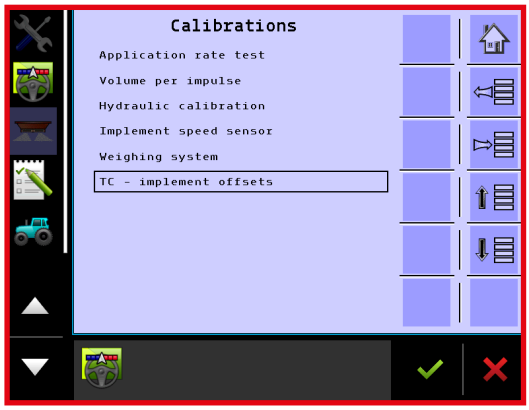
- A = 4,0 meter
- B = 5,0 meter
- C = 4,0 meter

Click the button  at Home screen picture.

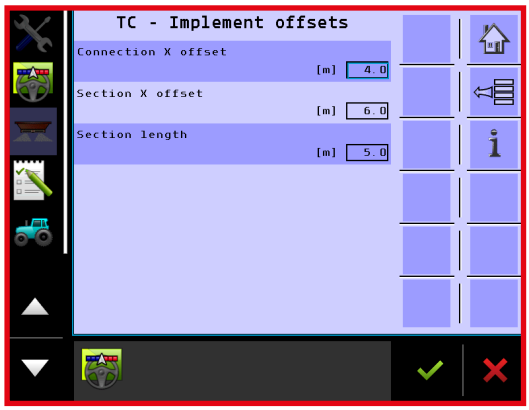
Select "Machine" to get into machine encoding menu



Select "Calibrations"



Select "TC - implement offsets"



Click onto one of entry spaces (m)" to change the encoded value.

TEST OF INPUTS AND OUTPUTS

It is possible in the test menu to test the spreader´s inputs and outputs.

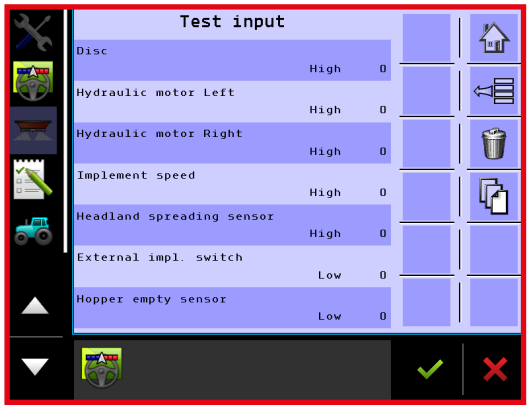
> TEST INPUT

Click the button  at Home screen picture.

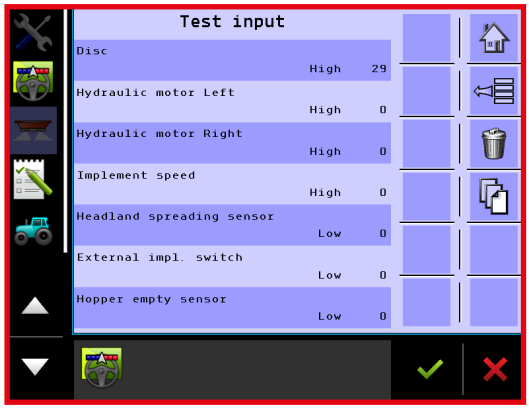
Select "Help /test"

Select "Diagnose"

Select "Test input"



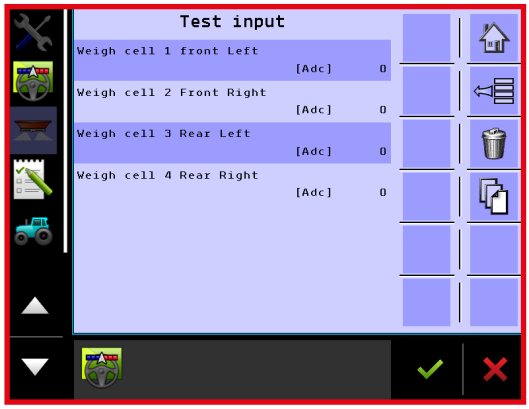
In test input menu all inputs from the spreader can be seen. When e.g. an inductive sensor is influenced and is changing status between high and low, and all impulses coming from the sensor are added up.



In this case 29 impulses are counted from the inductive sensor on the left spreading disc.

When the test input is exited, the counted impulses are deleted again. It is also possible to delete the counted impulses by clicking 

Click  to see input from weighing cells.



At this page the input from weighing cells can be seen, there are coming impulses from weighing cells all the time when these function as they should, that is when the counting goes from 0 and up to 9999, after which the counting is reset and reset again. In case there is not read any value from one of the weighing cells, there is a problem with it. It can be weighing cells that don´t function, broken cable or a cable not mounted properly in the junction box.

> TEST OUTPUT

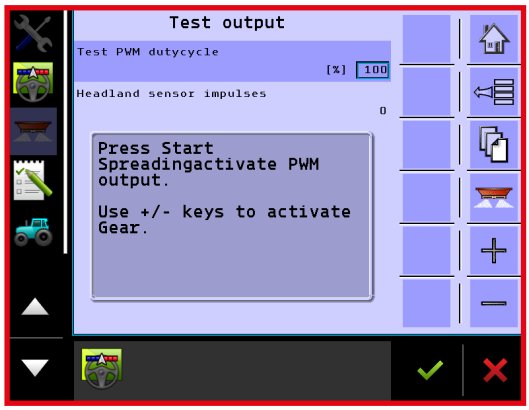
Click the button  at Home screen picture.

"Help / test"

Select "Diagnose"

Select "Test output"

Make sure there is nobody near the spreader when the functions must be tested!



Here it is possible to test P-valves that regulate conveyor belt speed. Encode a % value in the text box. If 100 % is encoded, the valves open fully, and conveyor belt move at maximal speed.

Click  to start the belt, there shall be oil flow from the tractor to ensure the movement of the belt.

GO BACK TO FACTORY SETTINGS

If any values in the basic encoding have been deleted or changed, the original factory settings can be restored, pay attention to all values that could have been eventually changed since the machine was delivered from the factory will be changed back to original values as soon as factory settings are restored.

The values that can be reset with this function:

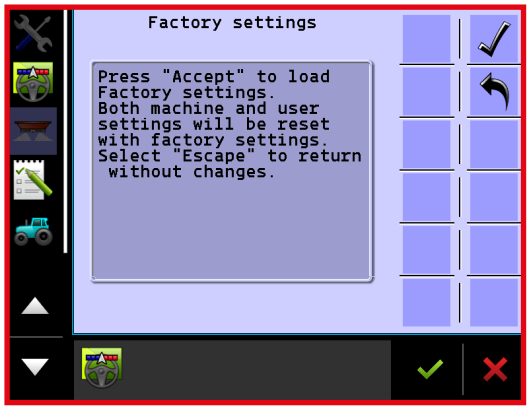
- Dosing (cm^3/impulse)
- Speed of forward movement
- Calibration number for weighing cells
- TC-implement offsets
- Amount of impulses per disc revolution
- Amount of impulses per oil motor revolution
- Headland gear factor ℅-showing downshifting via headland gear)
- P-valves P I D parametre

After coming back to factory settings both dosing and weighing shall be controlled and weighed, as there might be a risk to make a dosing mistake, if one of the programmed numbers is not correct.

Click the button  at Home screen picture.

Select "Help /test"

Select "Use factory settings"



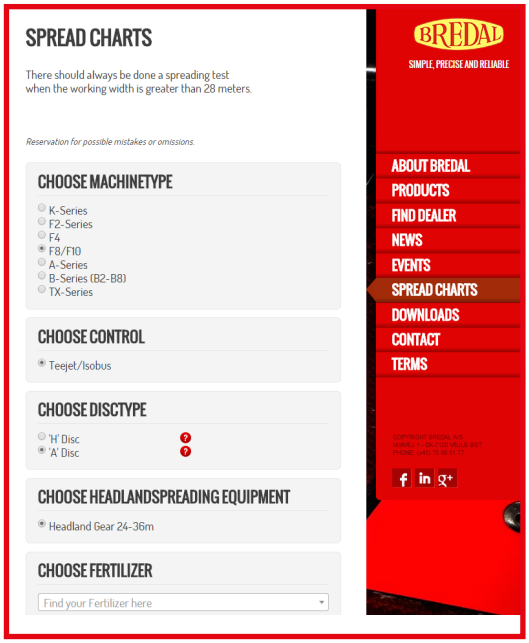
Click  to go back to factory settings.

Click  to go back without making any changes.

SETTINGS FOR DIFFERENT TYPES OF FERTILIZER

At Bredal homepage there can be downloaded settings for most fertilizer types. Settings are found by testing different fertilizer types in practice. Settings are regularly updated, so they always stay relevant. It is recommended to apply these settings. It is further recommended to make spreading test in the field, to ensure that a satisfying spreading is achieved.

Go to Bredal homepage www.bredal.com



Spreading table on the right of the screen shall be chosen.

Choose K-series under machine type.

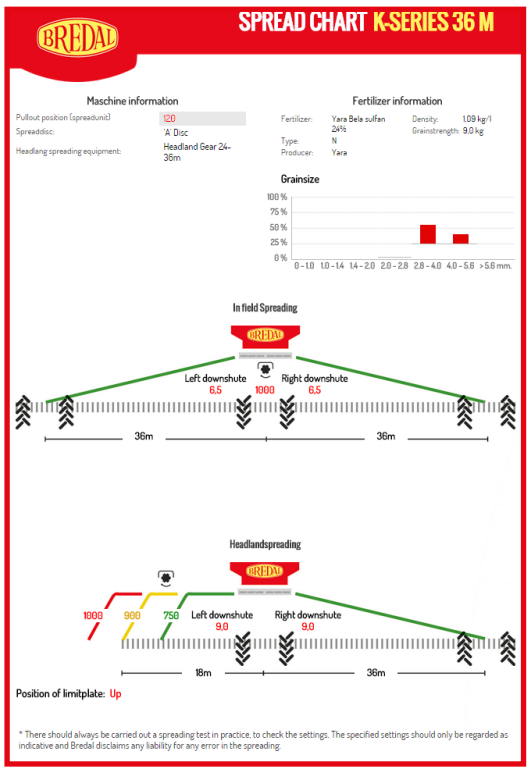
Either A or H discs can be chosen (as standard K-series are equipped with A discs)

Choose the fertilizer type that is to be spread

Choose the working width the spreader will spread on

Press to see the result

Now the result page appeares, along with the settings that fit for the chosen fertilizer type.
The recommended downchute settings for spreading in the field and headland spreading are encoded into the computer. Further on the spreading has to be performed with the recommended PTO revolutions.



On the top of the result page the chosen fertilizer name, producer, density, breaking point and granule size distribution are shown.

In the middle of the page you can find the recommended downchute settings and PTO revolutions for spreading in the field.

At the bottom there are recommended downchute settings and PTO revolutions for headland spreading.

Red = full dosing at headland

Yellow = medium dosing at headland

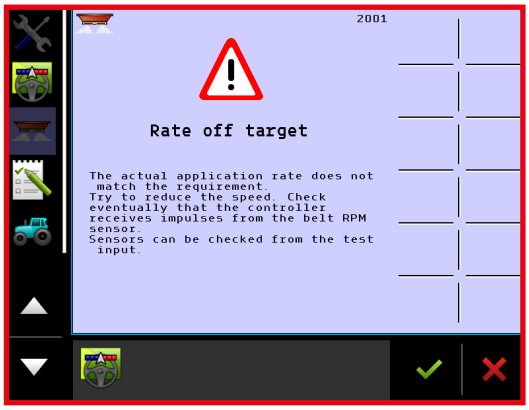
Green = very small dosing at headland

TROUBLESHOOTING

In this section there can be found description of the most common mistakes that might appear, along with causes to different error messages, and some help on searching for errors among the spreader´s electronic components.

> ERROR IN APPLICATION RATE

The most common error appears when the spreader's conveyor belt is not moving with the correct speed, or isn´t moving at all. The alarm can often go off quite briefly and disappear automatically again as soon as the mistake has disappeared, this case is not a sign of any mistake on the spreader, but is conditioned by the fact that application rate has been shortly out of application rate area. If the error message doesn´t disappear, it is because the cause is still there. Reasons can be several:



In case the conveyor belt is not moving at all, the following might be the reason:

- It is not opened for oil supply from the tractor´s oil outlet.

If the conveyor belt is moving, the following might be the reason:

- Forward speed is too high, the spreader can not dose the required amount.
- The tractor´s oil outlet is installed for dosing an insufficient amount of oil.
- There shall be spread a very big amount, and the spreader's rear door is installed for a small opening.
- There shall be spread a small amount, and the spreader´s rear door is installed for a big opening.

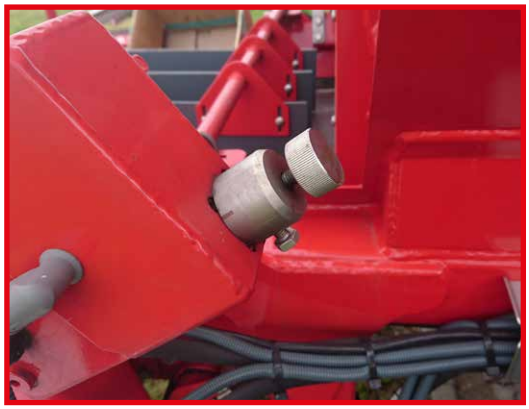
If it looks like one of the belts is moving correctly, while the other one is moving too quickly:

- There is not coming any impulses from the gear box inductive sensors on the side where the conveyor belt is moving too quickly.

> IF THE BELT IS NOT MOVING AT ALL, THE FOLLOWING MIGHT BE THE REASON:

- There is no free flow of oil from the tractor's oil outlet.
- The tractor has blocked the oil return run, try shortly to send oil pressure opposite the normal circulation direction, after which there shall be again opened for the correct circulation direction.
- Bad connection in ISOBUS socket; Try to take the socket away and set it in again.
- Loose connection or damage of electronic wiring leading to activation of oil motor.

If the problem is caused by an error in electronic system, the belts can be driven manually by turning the thumbscrew on the oil engine / gear valve, while it is open for oil circulation from the tractor (see picture). In case the belt is still not running, the error is in the hydraulic system.



> CONTROL OF SENSOR ON THE GEAR BOX

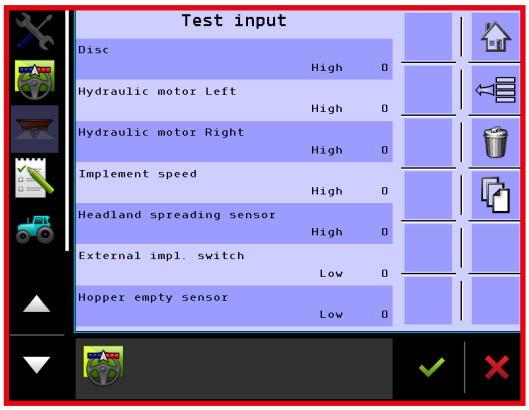
It is possible to control a sensor´s function. If a sensor is not counting, or is not counting correctly, it is often sense range, i.e the distance from the sensor to that part it should be sampled on, that is too big. Gear box sensors have sensing range on 1-1,5mm, so if the sensor is not sitting tight enough to the gear box sprocket, it can not catch the teeth and therefore sends no signal to the computer.

On the gear box the sensor shall be pressed as deeply into the montage gap as possible. It shall be hold at place by an 8mm screw, loosen the screw and make sure that the sensor is pressed as far in as it can be. It might be necessary to turn the sensor a little bit, as else it would tend to stay fixed in the same position as before, when the screw holding it at place will be tightened again.

It is possible to control if the adjustment worked by holding the sensor against a piece of metal. In the terminal test input is chosen (Home - Menu - Help/Test – Diagnose - Test input), here all input can be seen from the machine's sensors.

When the gear box sensor is hold against a piece of metal , the input in the terminal test menu is changed and the impulse starts to be counted. If the input is not changing between high and low, and the impulses are not counted or a sensor is either defected or it has not been supplied with voltage (12V). In case there is no voltage, the other sensors on the machine are not functioning either.

In case the gear box sensor is defected, it shall be changed with a new one of the same type (Bredal order nr.: 01023137)



K-SERIES
OPERATING MANUAL FOR ISOBUS

SIMPLE
PRECISE
RELIABLE

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For more than 50 years Bredal has been specializing in production of high-quality lime and fertilizer spreaders for agricultural purposes. The company´s goal is to build reliable machinery, precise in exploitation, simple in operation and maintenance. In recent years 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 top modern production facilities with latest equipment used for producing the high-quality machines.

Bredal A/S . Nimvej 1 . 7120 Vejle . Denmark . Tel.: (+45) 75 89 51 77 . info@bredal.com . www.bredal.com