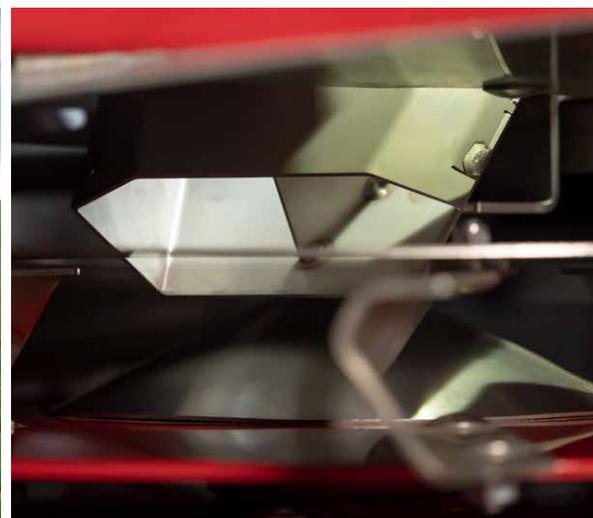
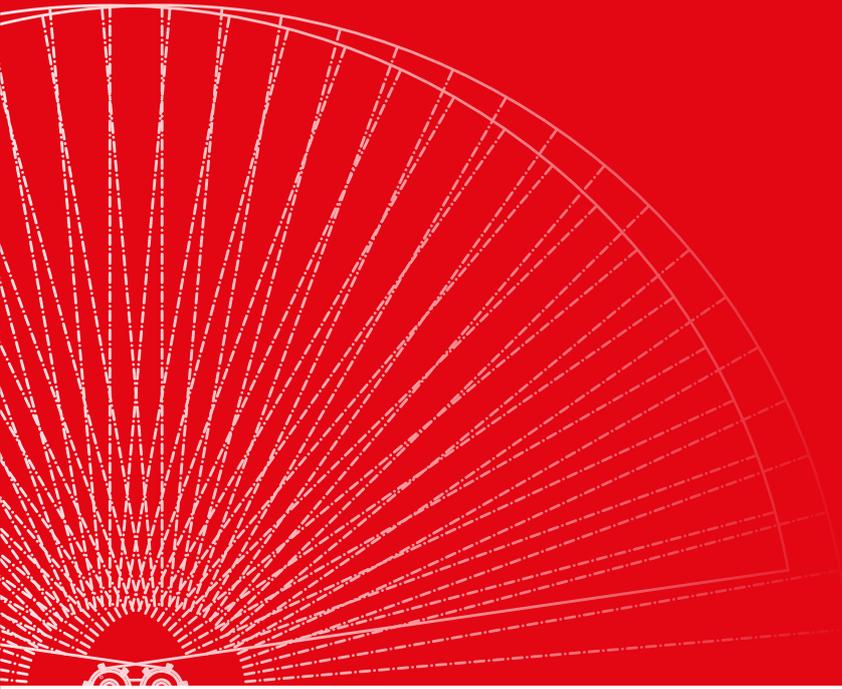




EN

F4







CONTENTS

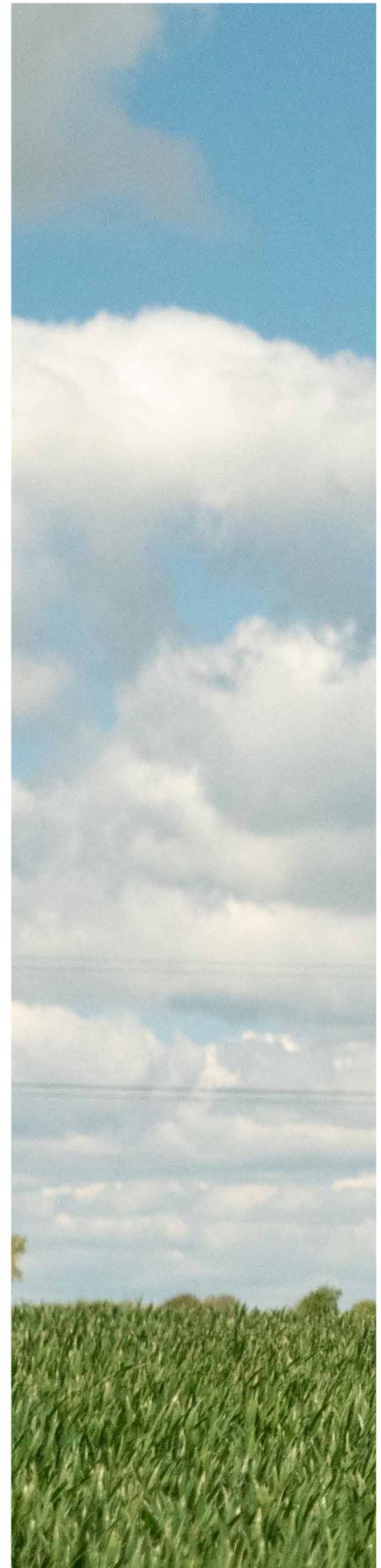
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THE F4 IS A FERTILISER SPREADER FOR WORKING WIDTHS STARTING AT 24 METRES, AND IT ADEPTLY MANAGES DISCIPLINES FROM WEDGE SPREADING TO SPREADING ON LEFTOVER SECTIONS.

The F4 is a fertiliser spreader for professional use where efficiency and profitability are vital. The spreader is designed to meet various requirements for graduated fertilising, border spreading, headland spreading and spreading in wedges and leftover areas.

The spreader is computer controlled via ISOBUS with newly-developed software.

F4 is built as a mounted spreader with a hopper capacity of 1500-4000 litres.





CONSTRUCTION

Bredal spreaders have a robust construction and are designed for professional use. Every single component is sturdily constructed to maximise reliability, strength and service life.

> CONSTRUCTION

F4 is designed to withstand the very heavy loads that can occur in the field.

Bredal always tests modifications and new designs meticulously before sending the products to market because, as experience shows, the machines are exposed to heavy loads under practical conditions. F4 is equipped with a heavy-duty undercarriage.

Minimising daily maintenance is a high priority in the structural design of each spreader.

The spreader frame is made up of two parts, upper and lower, between which the 8-tonne-capacity weight cells are mounted. Both the upper and lower frame are sturdily constructed. When coupling to the tractor, category 3 pegs are used.

The frame is built of thick sectional-steel tubing and is reinforced in all heavily loaded areas. The hopper is made of 3 mm steel plate. The spreader's sturdy construction gives it a very long service life.

The belt drives are built up as cassettes. The rear roller has a stainless steel axle and the bearings are completely maintenance free. The front roller is also made of synthetic material and also has maintenance-free bearings. Each floor belt is powered by an oil motor which regulates the floor-belt speed via a gearbox.

A foldable ladder is mounted on the rear of the spreader to provide easy access to the hopper. It is also possible to have a platform mounted on the rear of the spreader that provides even easier and safer loading access and general inspection of the spreader's hopper.

The vanes on the fertiliser discs are made of stainless steel and coated with a metal carbide wear layer to maximise service life.

> POWDER COATING

All painted components on Bredal spreaders are sprayed with two layers of powder coating, which gives a resilient surface, good anti-corrosive protection and a beautiful finish.

The spreaders are designed for a maximum service life, which is why high-quality surface treatment is essential.

As a result of BREDAL heavily investing in this process, Bredal now has one of the biggest, most highly modernised powder-coating facilities in Denmark, where spreaders are first cleansed in a shot-blaster with steel balls and then sprayed with two layers of powder coating.

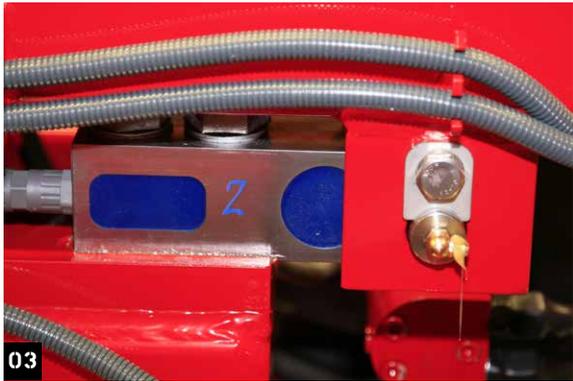
The powder-coating system was specifically developed for harsh environments to provide an anti-corrosive, highly wear-resistant and uniform surface.



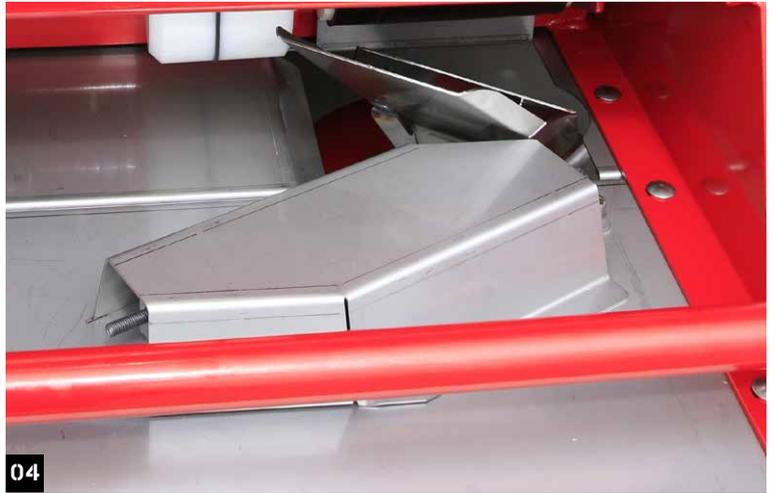
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02



03



04

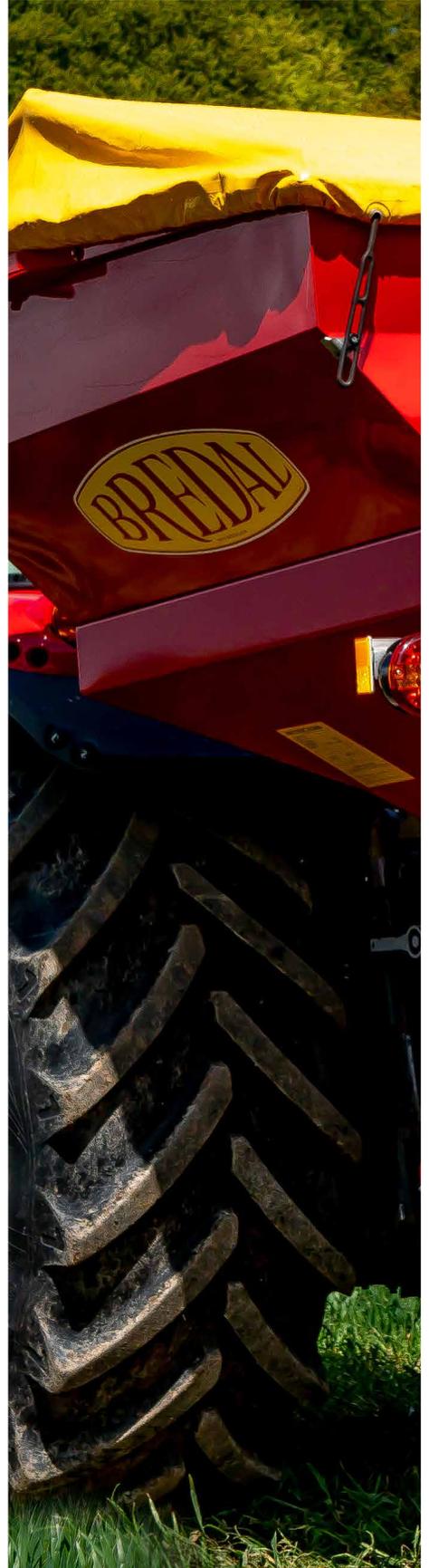


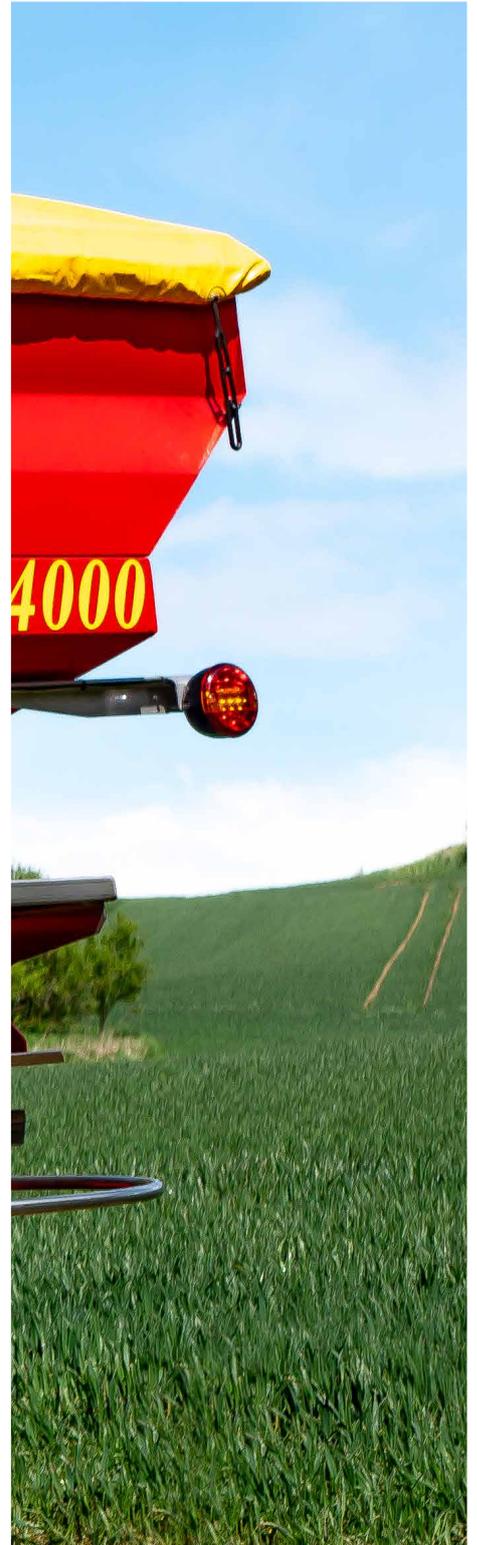
05



06

1 > **BELT DRIVE** shows the belt drive on the right-hand side 2 > **STAINLESS STEEL REAR DOOR** 3 > **WEIGHT CELLS** two weight cells are mounted on the spreader 4 > **ELECTRICALLY REGULATED DOWNSHUTE** 5 > **LADDER** foldable 6 > **BREDAL F4 4000** the F4 4000-litre red spreader is depicted here





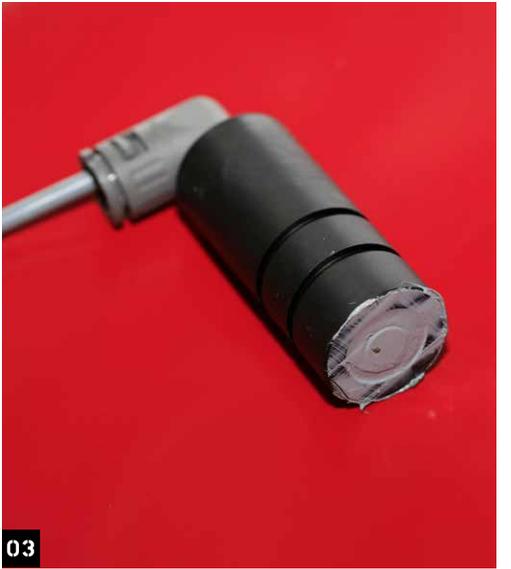
The spreader and all components are sprayed with two layers of powder coating, which gives a resilient surface and a beautiful finish.



02



03



04



05



1 > BREDAL F4 2 > SCALE for rear door 3 > SENSOR cast in plastic 4 > STAINLESS STEEL HOPPER AND HOPPER EXTENSION 5 > F4, 4000 LITRES

BREDAL F4

All hydraulic hoses are led towards the tractor on a fixed bracket with a crossbar for the hoses. This relieves the strain on the hydraulic hoses when the spreader is disconnected from the tractor.

The spreader is constructed with two separately controlled floor belts so it is possible to apply different amounts on the right and left sides. The floor belts are driven by an oil motor regulated by a proportional valve.

The downshute positions are controlled by two electrical motors and are automatically operated by the spreader's computer. When a working width is selected, the downshutes automatically adjust to this. The downshute position on F4 is individually controlled on the right and left side, which is used for functions such as headland spreading.

Automatic flow correction is incorporated into the downshute control software so the downshute position automatically adapts to the actual application rate. In practice, this means that the spreading pattern will not change, regardless of whether a small or large volume is being spread.

The downshutes' electrical motors are made of plastic and stainless steel and are additionally well protected by shielding.

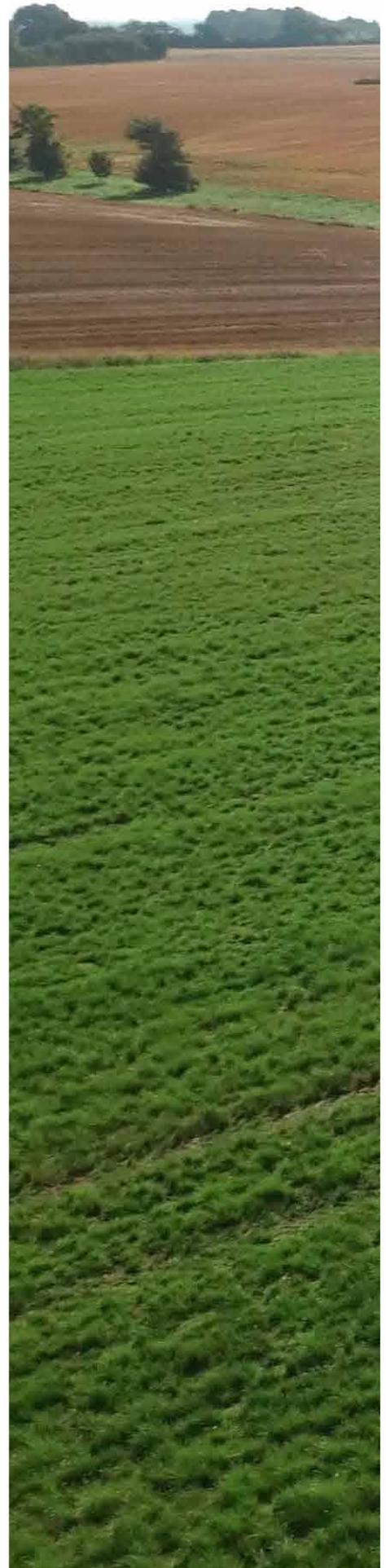
All moving parts of the rear door are made of plastic or stainless steel which minimises maintenance in practice.

The spreader controls have an integrated tilt sensor which is used to correct the weighing signal so the correct weight is shown at all times, even when driving in hilly terrain. In addition, the application rate is adapted by means of the tilt sensor so the spreader's application rate is correct, regardless of whether it is driving up or down a hill.

If the spreader is equipped with weight cells, the application rate is constantly monitored and adjusted automatically during operation.

Sensors used for tracking data such as disc rpm, belt speed, etc., have stainless steel housing. To further protect the sensors, they are cast in a plastic housing that is sealed with silicone. All cables to sensors, weight cells, etc., are fed in a protective flexible conduit to maximise operational reliability.

**F4 IS BREDAL'S NEW LIFT-MOUNTED
FERTILISER SPREADER WITH A
CAPACITY OF 1.5-4 M³.**





SPREADING OF FERTILISER

The F4 spreaders are designed to spread with high precision across wide working widths.

F4 spreaders spread according to the quadruple overlap principle where each disc spreads across a double working width. This maximises the probability of achieving good spreading results at all times.

The Bredal spreaders are designed to fling fertiliser particles at a high exit speed. The high speed, combined with a low exit angle (7 degrees), minimises sensitivity to wind in field conditions.

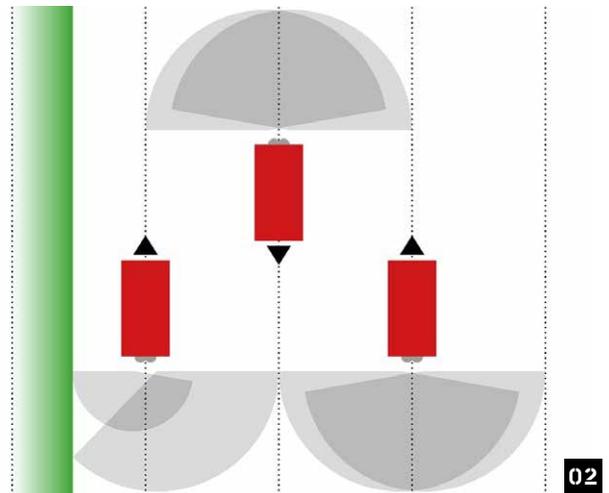
Fertiliser is fed to the centre of each disc without being hit by the vane, so the fertiliser particles start to accelerate even before they make contact with the vane. This reduces the risk of damaging the fertiliser during spreading.

The six vanes mounted on each disc ensure that the fertiliser is dispensed in small quantities, providing greater reliability in the spreading process.

The large diameter of the spread discs ensures that the fertiliser particles accelerate to a very high speed before leaving the spreading disc. At a speed of 1000 rpm, the fertiliser particles accelerate up to 250 km/h, which considerably reduces sensitivity to wind.

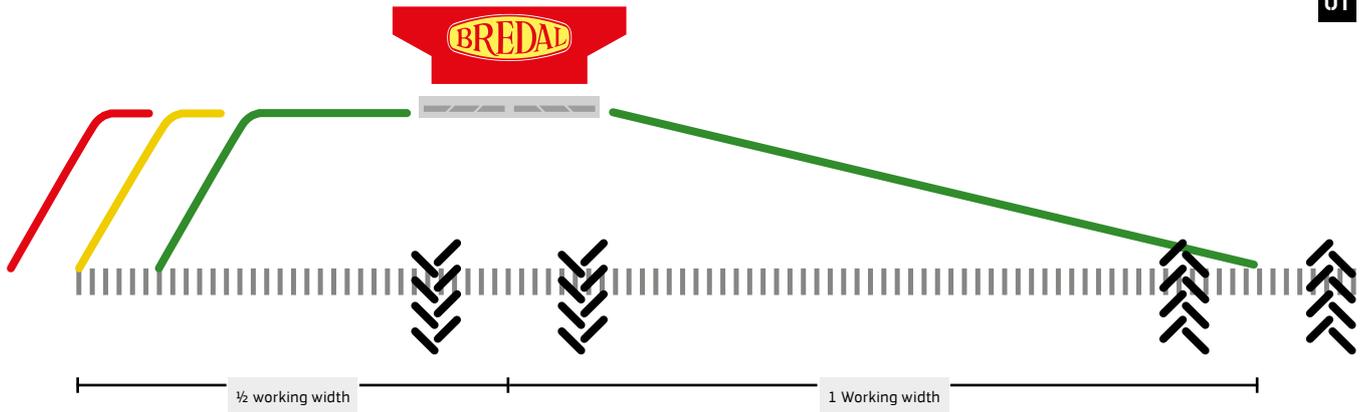
> H DISCS

Bredal also offers specialised spreading discs for spreading fertilisers such as granular urea, potash and ammonium sulphate across working widths from 24 to 36 metres.



HEADLAND SPREADING

01



02



Bredal's headland spreading system works by changing the rpm speed of only one disc, to reduce the working width towards a field boundary. The disc spreading into the field continues to run at high speed, thereby ensuring double overlap into the field.

The Bredal headland spreading system sharply delimits the spreading towards the boundary, while maintaining the spreading pattern on the side facing the field. The headland gear is easy to operate.

When headland spreading is connected, the downshute position changes automatically to achieve the best possible spreading result.

03



On hydraulic spread units, headland spreading is possible on both sides, and this is operated via ISOBUS computerised control.

04



1 > HEADLAND SPREADING schematic drawing 2 > BREDAL F4 3 > SPC4500-1 HEADLAND GEAR, close-up of the gearing itself 4 > HYDRAULIC SHIFTING OF THE HEADLAND GEAR

SPREADING TESTS

> TESTED SPREADERS

All Bredal spreaders are tested using countless types of fertiliser at Bredal's ultra-modern testing centre. The spreading tests are full scale, which means complete spreading. This makes the tests as realistic as possible. Many tests are performed every day in a very realistic setting. The test results are based on weight-cell technology, i.e. on the amounts actually dispensed (collected in trays), not theoretical calculations.

> BREDAL SPREADING PRINCIPLE

Bredal spreaders operate according to the quadruple overlap system. This means that both discs cover a double working width, i.e. when spreading with a working width of 24 metres, the left disc covers 24 metres on the left-hand side and 24 metres on the right. This enables four-portion spreading to ensure high precision and minimises the risk of spreading errors.

Bredal spreaders are designed to spread fertiliser particles at a high exit speed. The high speed, combined with a very low exit angle (7 degrees), minimises sensitivity to wind in conditions in practice.

> BREDAL TEST KIT

The Bredal Test Kit is used to perform practical spreading tests to optimise spreading patterns. The Bredal Test Kit contains plastic collector trays (with dividers), a calibrated cylinder with holder, a funnel, a crushing strength tester and a sieve shaker.

> SETTING

The advisable settings for ideal spreading of the various types of fertiliser can be downloaded from Bredal's website.

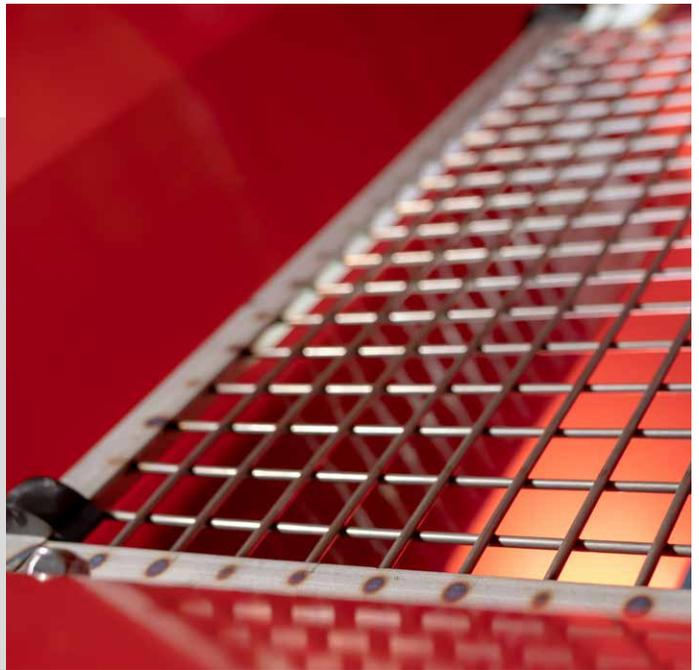


1 > A SIEVE SHAKER to determine particle distribution **2 > CALIBRATION KIT** **3 > GRADUATED CYLINDER** **4 > BREDAL TEST KIT** The test kit includes collector trays (with dividers), a calibrated cylinder, a funnel, crushing-strength tester and a sieve shaker **5 > SPREADING TEST IN THE FIELD** with Bredal Test Kit (trays laid out on the field)

STANDARD EQUIPMENT

HEAVY-DUTY STAINLESS STEEL HOPPER SCREEN >

When spreading fertiliser, it is necessary to have a screen inside the hopper to prevent lumps of fertiliser falling down and blocking the opening to the rear door.



< CROSSBAR FOR HYDRAULIC HOSES AND OVERVIEW

All hydraulic hoses are led towards the tractor where there is a crossbar to hold the hydraulic hoses. This relieves the strain on the tractor's hydraulic connections when the spreader is connected and it is also used to hang the hydraulic hoses when the spreader is disconnected.

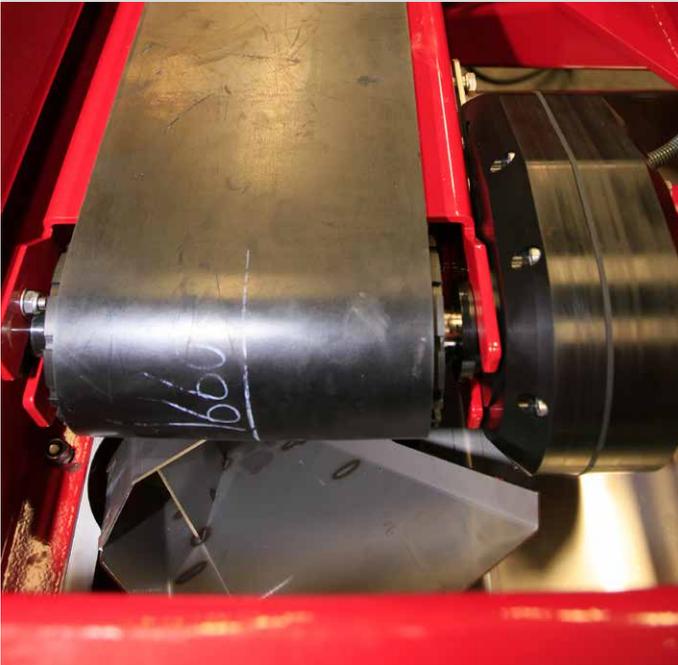
LADDER >

A ladder is mounted on the rear of the spreader to provide easy access to the hopper.



WINDOWS >

There is a window in the front of the hopper which makes it possible to monitor the hopper contents.

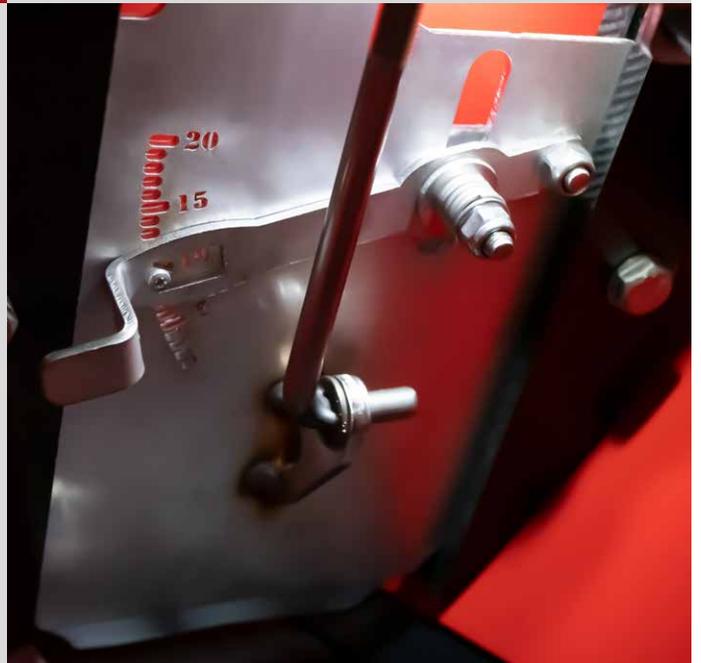


< BELT DRIVE

Each belt is powered by an oil motor via a gear. The oil motor's rpm are regulated via a proportional valve.

STAINLESS STEEL REAR DOORS >

The rear doors are made of stainless steel, with nylon guidance runners to maximise service life and minimise maintenance.



STANDARD EQUIPMENT

PTO >

All spreaders come with a wide-angle 6z PTO shaft with free wheel. Alternatively, 8z, 20z and 21z PTOs are available.



< LED LIGHTS

Bredal spreaders are equipped with LED lights and side marker lamps.

DOWNSHUTES AND APPLICATION BELTS >

Electrically controlled downshutes with flow correction that automatically adjusts to the selected working width. The spreader is equipped with two floor belts, enabling the right and left-sided application rates to be independently controlled.



SPRING LOADED TENSIONER >

Spring loaded V-belt tensioning ensures that these are correctly tensioned at all times.



< SPREAD UNIT

F4 is supplied with a SPC4500-1 belt transmission, spreading discs for 12–36 m working widths and headland gear for 24–36 m working widths. (Hydraulically operated spread units are available as an optional accessory.)



ISOBUS, COMPUTERISED CONTROL >

F4 is only available with ISOBUS computerised control





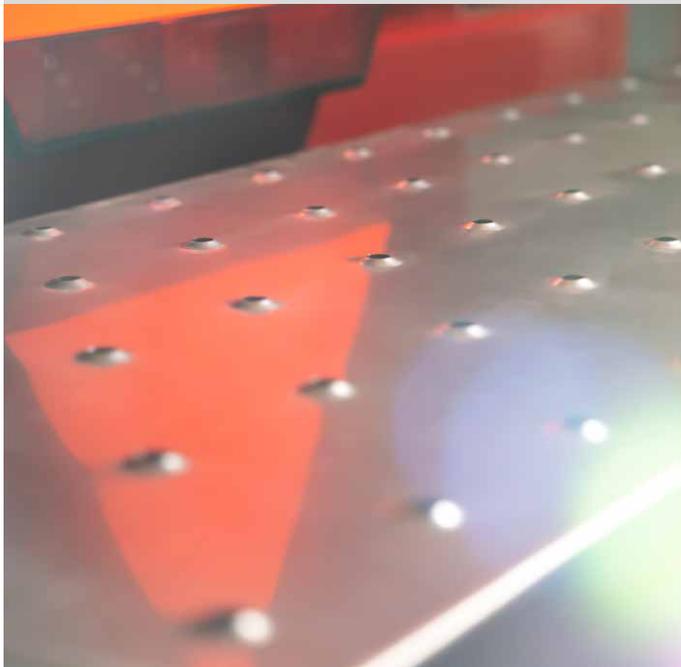


OPTIONAL ACCESSORIES

HOPPER EXTENSION >

Hopper extensions are available to increase the F4's hopper capacity from 1500 litres to: 2500, 3000, 3200 or 4000 litres.

The hopper extensions are also available in stainless steel.



< PLATFORM

The platform mounted on the rear of the spreader makes it even easier to pour in contents from large sacks and to inspect the hopper.

HYDRAULICALLY OPERATED HEADLAND GEAR >

Hydraulic operation of the headland gear is available for easy changeover between headland and field spreading on the belt-driven spread unit from the tractor cab.



WEIGHT CELLS >

Weight cells keep the application rate under complete control at all times. F4 automatically adjusts the application rate by means of weight cells during operation.



< CALIBRATION KIT

The calibration kit determines the fertiliser's bulk density simply and precisely. To ensure that the spreader's application rate is correct, it is important to know the correct bulk density of the fertiliser being spread.

H DISCS KIT >

Specially designed fertiliser equipment for spreading fertilisers such as granular urea, potash and ammonium sulphate across working widths of 24–36 metres.



OPTIONAL ACCESSORIES

HOPPER, STAINLESS STEEL >

The spreader is available with a stainless steel hopper to make cleaning and maintenance easier.



< COVER, MANUAL

A cover is available to protect hopper contents during road transport and spreading.

HYDRAULICALLY OPERATED HOPPER EXTENSION >

Convenient operation of the cover from the tractor cab when filling the spreader.



HYDRAULIC SPREAD UNIT >

A hydraulically operated spread unit makes it possible to individually adjust the rpms on each disc. This makes it possible to select headland spreading for the right or left side. Headland spreading is activated via the ISOBUS computerised controls.

The spread unit is driven via two oil outlets on the tractor and requires an oil volume of 130 l/min.

If the tractor does not have the requisite oil capacity, an alternative PTO-driven hybrid power unit is available.

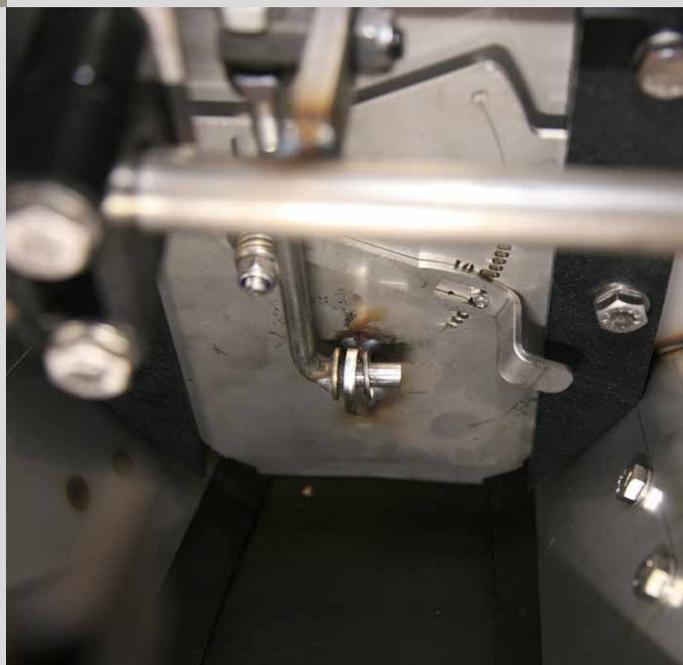


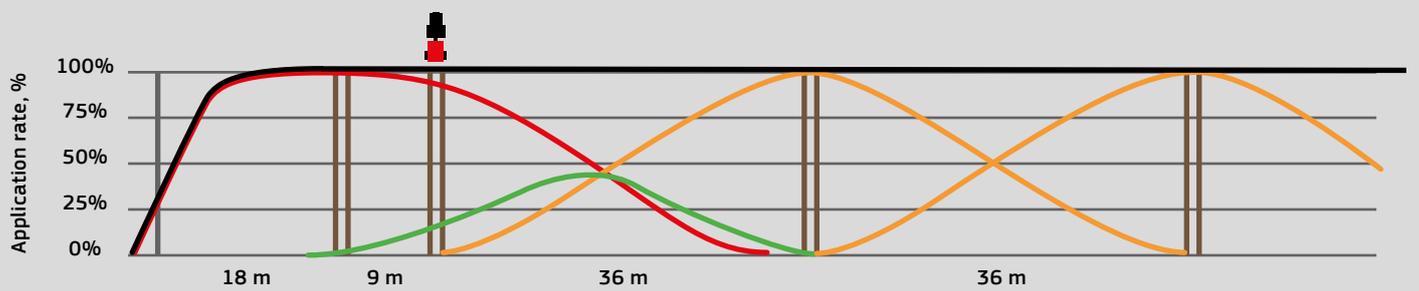
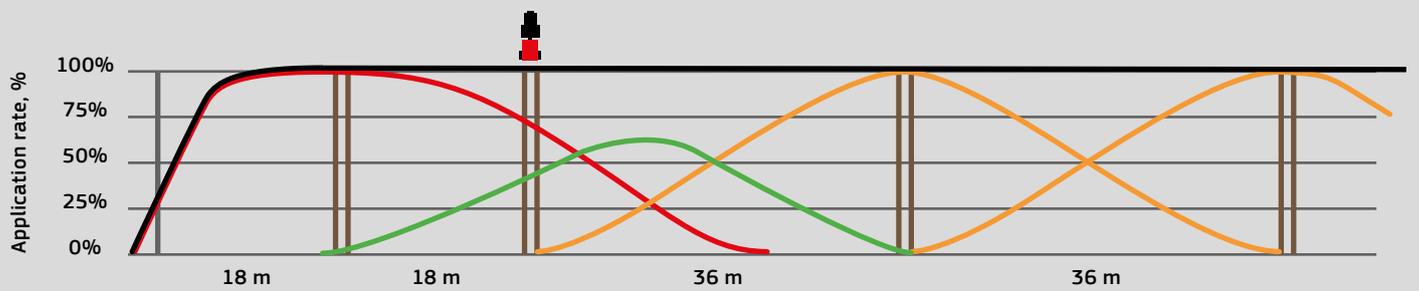
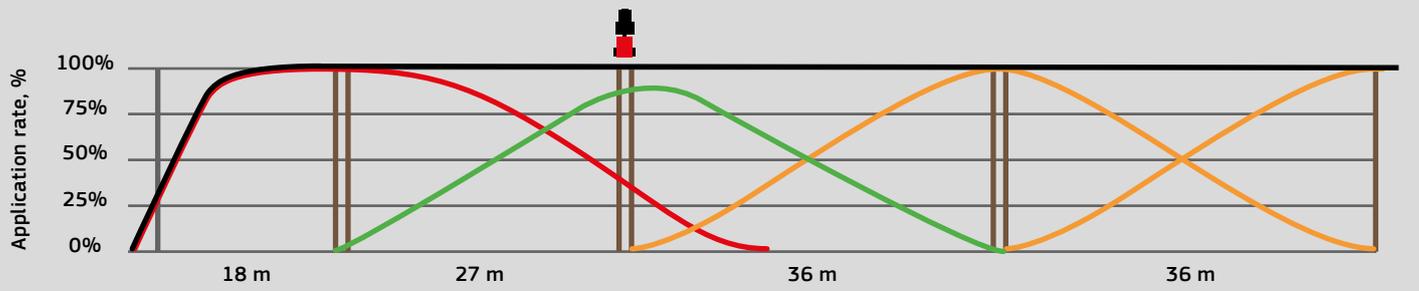
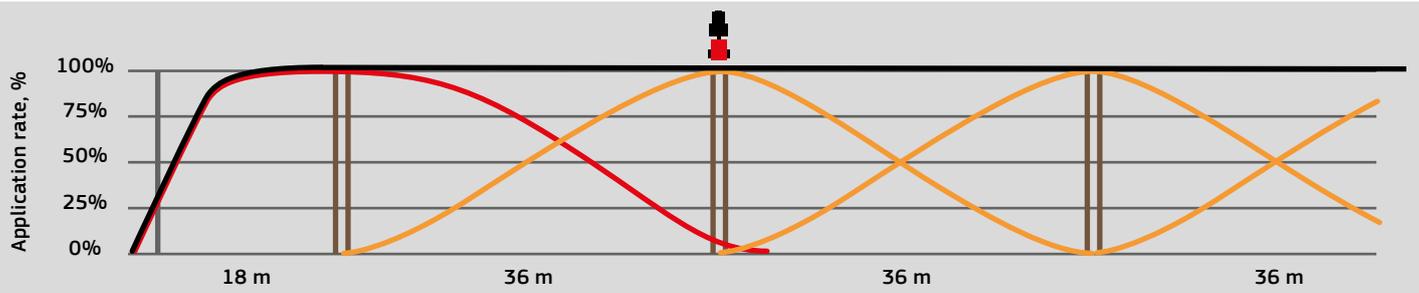
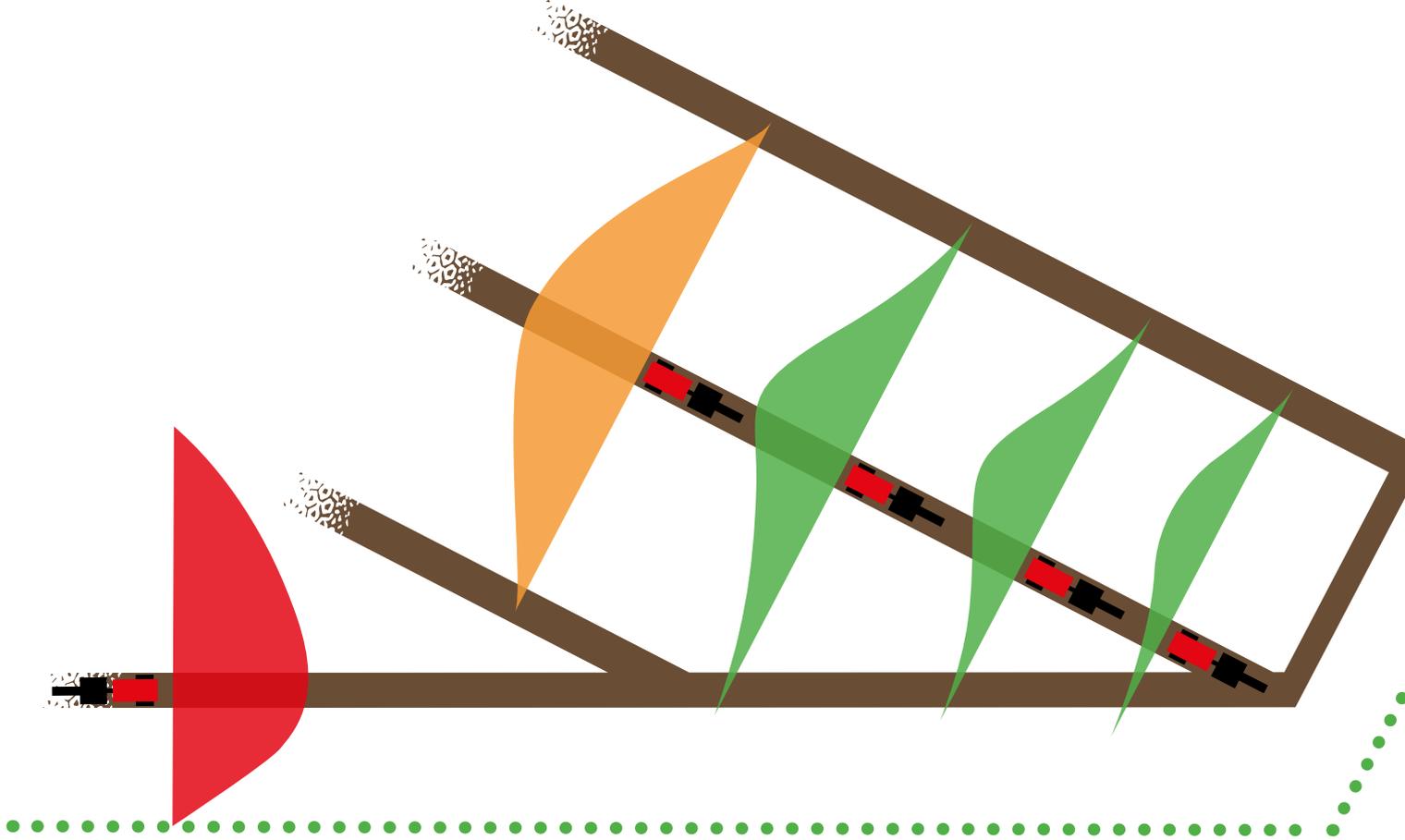
< LATE APPLICATION EQUIPMENT

For spreading fertiliser late in the season, an impact plate is provided to lift the spreading pattern, making it possible to spread in taller crops.

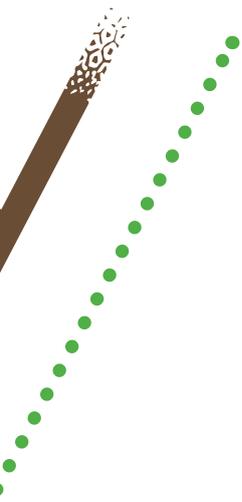
MICRO-DOSING EQUIPMENT >

Used for spreading slug pellets or catch crops. Micro-dosing equipment makes it possible to spread at rates as low as a few kg/ha.





SPREADING PRINCIPLE



36-metre working width in the field shown together with headland spreading.

An ordinary spreading pattern without leftover sections.

36-metre working width with a leftover width of 27 metres.

The centre of the spreading pattern (highlighted in green) is shifted about 3 metres to the right of the wheel tracks and the application volume is reduced.

36-metre working width with a leftover width of 18 metres.

The centre of the spreading pattern (highlighted in green) is shifted about 10 metres to the right of the wheel tracks and the application volume is reduced even more.

36-metre working width with a leftover width of 9 metres.

The centre of the spreading pattern (highlighted in green) is shifted about 12 metres to the right of the wheel tracks and the application volume is substantially reduced.

F4 is designed with two floor belts with separately controlled application rates, enabling the volume to be adapted continuously when operating in a field wedge. As the tractor drives forward into the wedge, the volume is gradually reduced on the side towards the wedge to ensure a correct application rate. The same procedure is used for driving in an uncovered field section. The application rate facing the leftover section is reduced so the correct volume is spread at all times, neither too little or too much.

The picture on the left shows how the spreading pattern gradually changes as the spreader moves forward into a wedge in the field and the volume is reduced (highlighted in green).

The spreading pattern principle at different leftover widths between the headland and wheel tracks in the field is shown below. As the leftover width lessens, the application rate is reduced on the side in question so the total volume spread in the field always corresponds to the value entered.

ISOBUS section control is used to adjust the quantity being spread. The section control program is installed in most ISOBUS terminals and is required to enable the spreader to adjust the quantity while spreading in wedges and leftover widths. One benefit of using the software installed in the terminal is that it can be used not only for the fertiliser spreader, but also for the sprayer, planter, etc., which is the basic concept of the ISOBUS system.

Every year, Bredal conducts many spreading tests using the different types of fertiliser available on the market. The settings for the different types of fertiliser can be downloaded from our website to make it possible to always use the optimised setting for each individual type of fertiliser.

We verify and optimise the settings on an ongoing basis and we give high priority to continuously furthering the development and improvement of headland spreading, etc., where, as a new feature, it is possible to use different downshute settings on the right and left sides. Another new feature is the automatic reduction of the application rate on the headland side when the headland gear is activated to notably optimise the spreading pattern for headland spreading.

COMPUTERISED CONTROL/ISOBUS



> ISOBUS

The ISOBUS solution was jointly developed with TeeJet and, as always, high priority was given to ensuring a simple user interface to ease the entering of daily settings. F4 is solely developed as an ISOBUS solution.

> SECTION CONTROL (UP TO 12 SECTIONS)

For section control, Bredal uses the same software as a field sprayer, and this software is installed in most ISOBUS terminals. This means that the same procedure is used for both the field sprayer and the fertiliser spreader.

> MÜLLER TRACK GUIDE III

If the tractor is not equipped with an ISOBUS terminal, Bredal provides a colour touchscreen from Müller, along with a complete installation set, including a GPS aerial, and the requisite software. The Müller terminal can also be used along with other ISOBUS-controlled implements, of course, and includes a tracking program.



The Bredal controls for F4 are developed solely for ISOBUS. High priority has been given to designing a user interface that is simple to operate and includes all the required functions at the same time.

The software was developed in collaboration with TeeJet, which has long-standing experience of developing solutions for the agricultural sector and has been Bredal's supplier for more than 25 years.

F4 has several new functions not previously available from Bredal. The most important are spreading in wedges and leftover sections, as well as automatic application activation/deactivation when turning in the headland.

Other useful functions are also built in, however, such as a tilt sensor which adjusts the application rate when driving in hilly terrain to ensure highly uniform application at all times. The tilt sensor is also used to adjust the weighing signal so the correct weight is shown at all times, even when driving in hilly terrain.

The downshute position adjusts automatically when a working width is entered. Not only that, the setting continually adjusts during operation to the volume being spread to ensure the best possible spreading pattern at all times, no matter if the forward speed is fast or slow. Both the downshute setting for spreading in the field and the headland can easily be changed if the spreading pattern needs to be optimised.

All functions are monitored during spreader operation and the various data are viewable by the driver at all times.

These are just some of the functions available on Bredal's newly developed F4 fertiliser spreader, and which each in their own way helps optimise the distribution of fertiliser in the field.



F4 TECHNICAL SPECIFICATIONS

> F4 1500 TECHNICAL SPECIFICATIONS

Capacity:	1.50 m ³
Net weight:	950 kg
Spread unit:	SPC4500-1

Hopper length:	1520 mm
Hopper width:	2400 mm
Loading height (standing on the ground):	1500 mm

> F4 2500 TECHNICAL SPECIFICATIONS

Capacity:	2.50 m ³
Spread unit:	SPC4500-1

Hopper length:	1520 mm
Hopper width:	2400 mm
Loading height (standing on the ground):	1765 mm

> F4 3000 TECHNICAL SPECIFICATIONS

Capacity:	3.00 m ³
Spread unit:	SPC4500-1

Hopper length:	1520 mm
Hopper width:	2400 mm
Loading height (standing on the ground):	1890 mm

> F4 3200 TECHNICAL SPECIFICATIONS

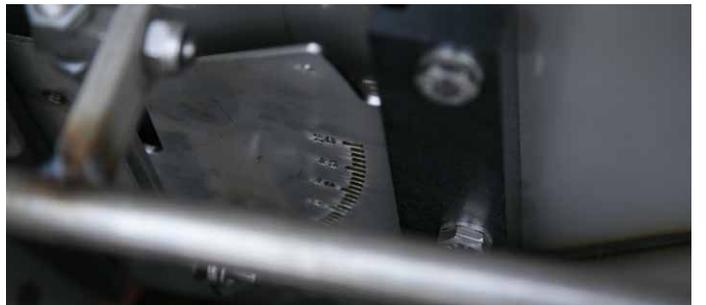
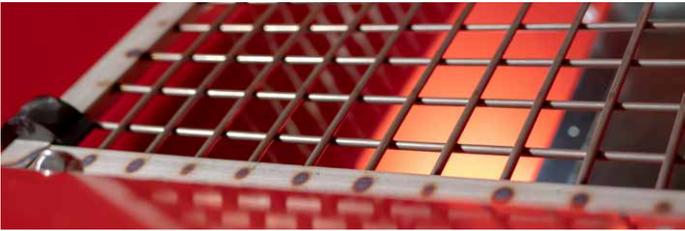
Capacity:	3.20 m ³
Spread unit:	SPC4500-1

Hopper length:	1520 mm
Hopper width:	3000 mm
Loading height (standing on the ground):	1970 mm

> F4 4000 TECHNICAL SPECIFICATIONS

Capacity:	4.00 m ³
Spread unit:	SPC4500-1

Hopper length:	1520 mm
Hopper width:	3000 mm
Loading height (standing on the ground):	2100 mm

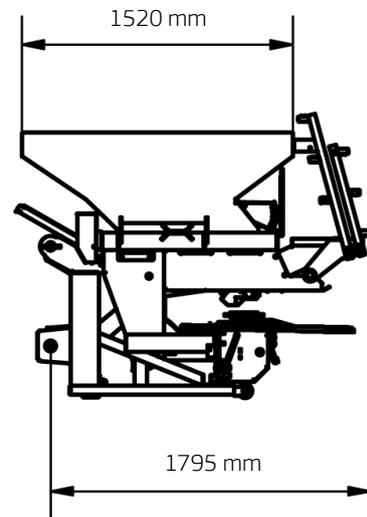
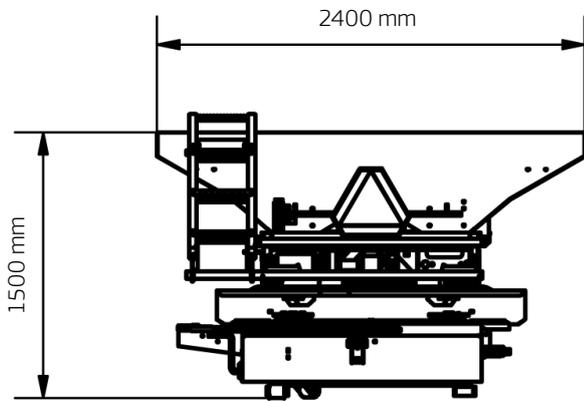


EQUIPMENT OVERVIEW

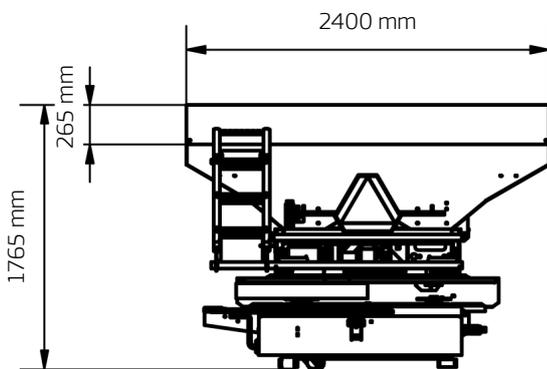
	F4		
	Standard	Optional accessories	Not possible
EQUIPMENT			
Spreading discs, 12–36 m	o		
24-36 m spreading discs, type: 'H'		o	
Rear doors, stainless steel	o		
ISOBUS, computerised control	o		
Headland gear for headland spreading	o		
Hopper, stainless steel		o	
Hopper extension (up to 4000 litres)		o	
Power transfer, 6z PTO shaft with wide angle	o		
LED light kit	o		
Calibration kit		o	
Micro-dosing equipment		o	
Platform		o	
Cover, hydraulic		o	
Cover, manual		o	
Late application equipment		o	
Screen, stainless steel	o		
Spread unit, hydraulic		o	
Spread unit, SPC4500-1	o		
Ladder, foldable	o		
Test kit		o	
Steps, inside hopper	o		
Weight cells		o	
Inspection window in front plate	o		

F4 DIMENSIONAL SKETCHES

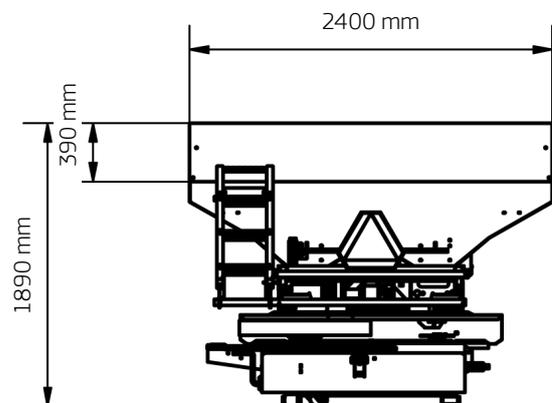
F4 1500



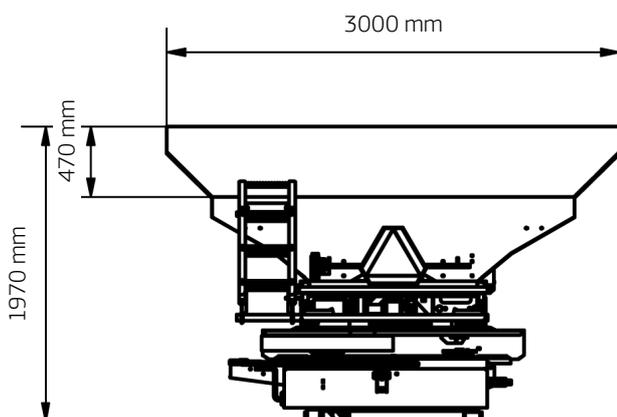
F4 2500



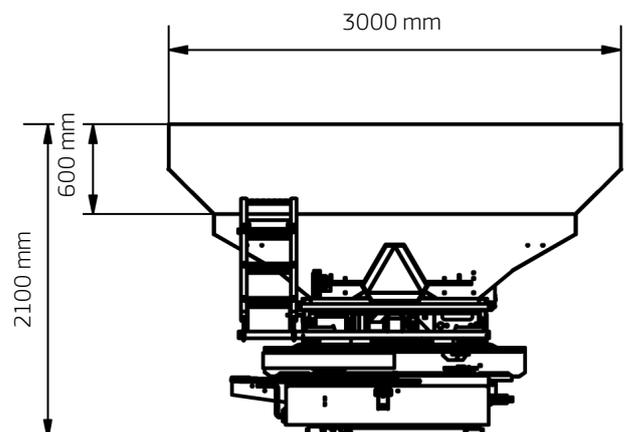
F4 3000



F4 3200



F4 4000





Throughout a lifetime, Bredal has specialized in the development and manufacture of high-quality lime and fertilizer spreaders for easy operation and a robust construction. In recent years, however, the products also include winter equipment such as sand and salt spreaders.

In the export markets, the interests of the company are taken care of by local importers, who also assist in the sale, service and support of Bredal's products.

Bredal has state-of-the-art production and testing facilities using the latest technologies to ensure that the quality of the products is top notch.

SIMPLE
PRECISE
RELIABLE