KRM

Headland Section Control

Taking the guesswork out of Headland Spreading

SC Standard

SC Dynamic

TempoTracker

Auto Switch

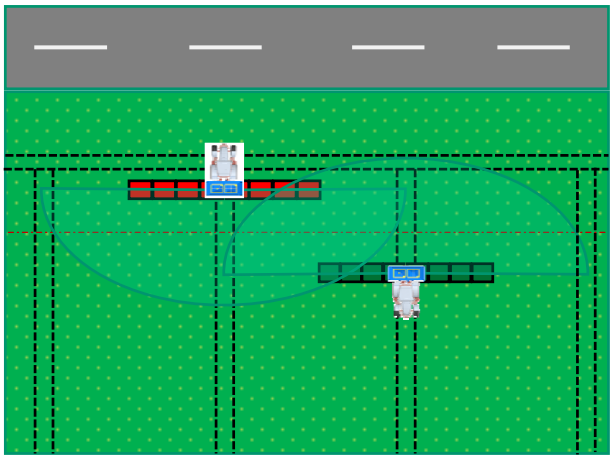
Higher fertiliser costs mean that farmers must ensure accurate spreading over the total field area, including irregular shaped fields and at angled headlands. Headland Management is now a major factor as growers seek to further increase accuracy and reduce waste over the total field area, particularly at wider widths.

To achieve this, KRM offer two Section Control methods . . . . the field proven Standard Section Control and Dynamic Section Control for wider spread widths. Both systems are enhanced by KRM's exclusive TempoTracker and can be fully automated using GPS Autoswitch to prevent overspreading with risk of laid crop , or underspreading with missed areas at the headland.

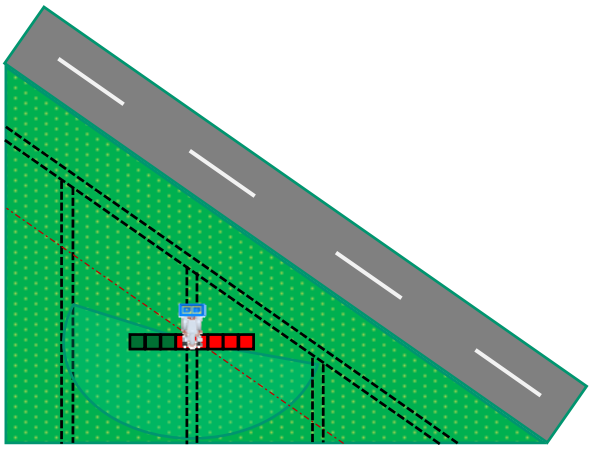
How does Section Control work ?

Faster work rates, more accurate fertiliser distribution and reduced wastage are some of the advantages offered by Section Control technology. Based on the same principles as a boom sprayer, Section Control on a KRM spreader divides the spread into 8 sections. When the headland is spread, a virtual “reference line” is established for the optimum point to open or close the shutters when spreading the body of the field coming into or when leaving the headland.

The diagrams below show a “reference line” established (shown dotted red) when spreading the headland. At a square headland, all the sections are closed or opened simultaneously when entering or leaving the border. At an angled headland, as each section of the spread crosses the “reference line”, the spread is adjusted proportionately in 8 sections to the remaining area to prevent over or under spreading.



Entering headland straight – all 8 sections switched off simultaneously



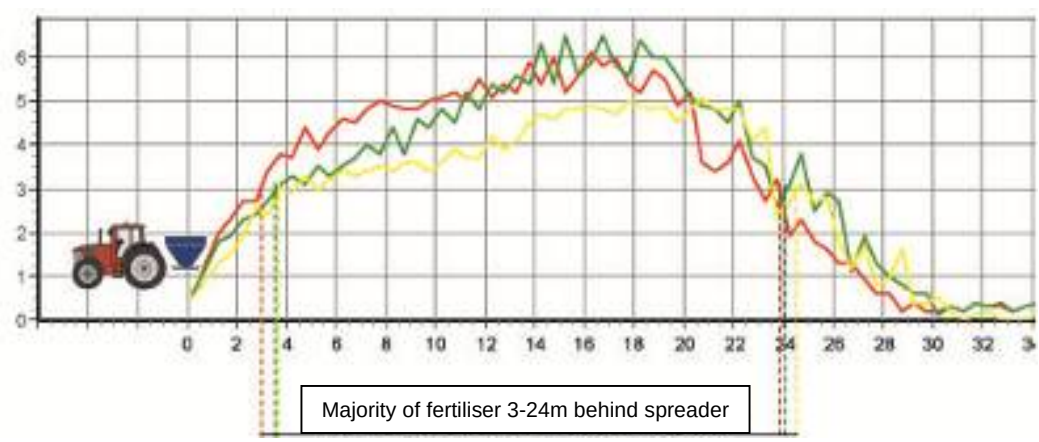
Entering headland at an angle – each of the 8 sections switched off sequentially

Simple Setting with KRM Spread Pattern

This principle is easy to understand with a boom sprayer or spreader, but with a broadcaster the “spread” is a distance behind the machine and this can result in the operator needing to enter settings for spread width, rate, type of fertiliser etc before use. However, these factors are automatically taken into account by the Section Control software in the KRM Calibrator controller for the spreader, with no input required by the operator.

This is because KRM’s double, double overlap spread using the discs spinning in towards the centre, produces a pattern as shown in the diagram below. The test results for below 24m, 36m and 42m are overlaid and demonstrate that the spread pattern “shape” is almost identical at each width. Therefore the “delay” required for opening or closing the shutters is always the same, independent of spread width or material.

The Calibrator controller therefore requires no setting by the operator for headland or Section Control as it automatically selects the correct point to open or close the shutters . . whatever the spread width or material!

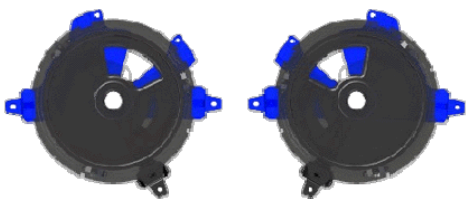


Working width Red curve: 24 m Green curve: 36 m Yellow curve: 42 m

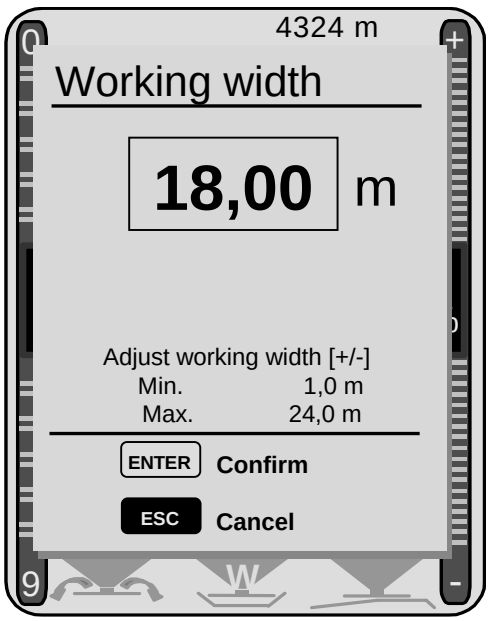
KRM Section Control . . .

Increasingly, UK farmers are looking to Headland Section Control to give the most accurate spread over the total field area and KRM is unique in offering two solutions . Standard section control is for width's up to 24 metres and reduces the rate in 8 sections to match the area remaining. Dynamic Section Control is for 24metres and wider where the spread is also adapted to left or right in angled headlands.

SC Standard

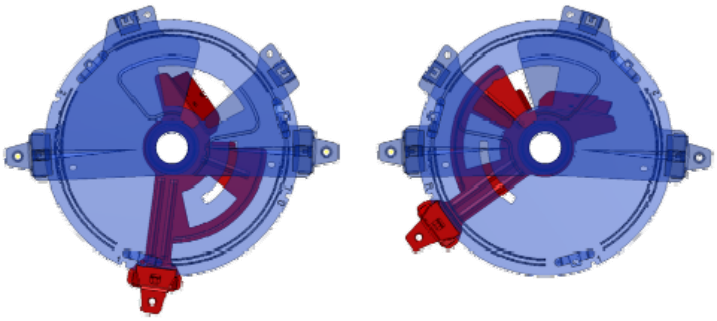


Standard Section Control allows the spread to be adjusted symmetrically in 8 sections for use in narrow tramlines and short work in odd shaped fields.
SC Standard is a standard feature on all Calibrator ZURF equipped models. This field proven technique has been used for several years and is recommended for use with tramline widths up to 24m. Standard Section Control can be used manually from the Calibrator Zurf or linked to AutoSwitch for fully automatic GPS operation.



for Precise Headland Spreading !

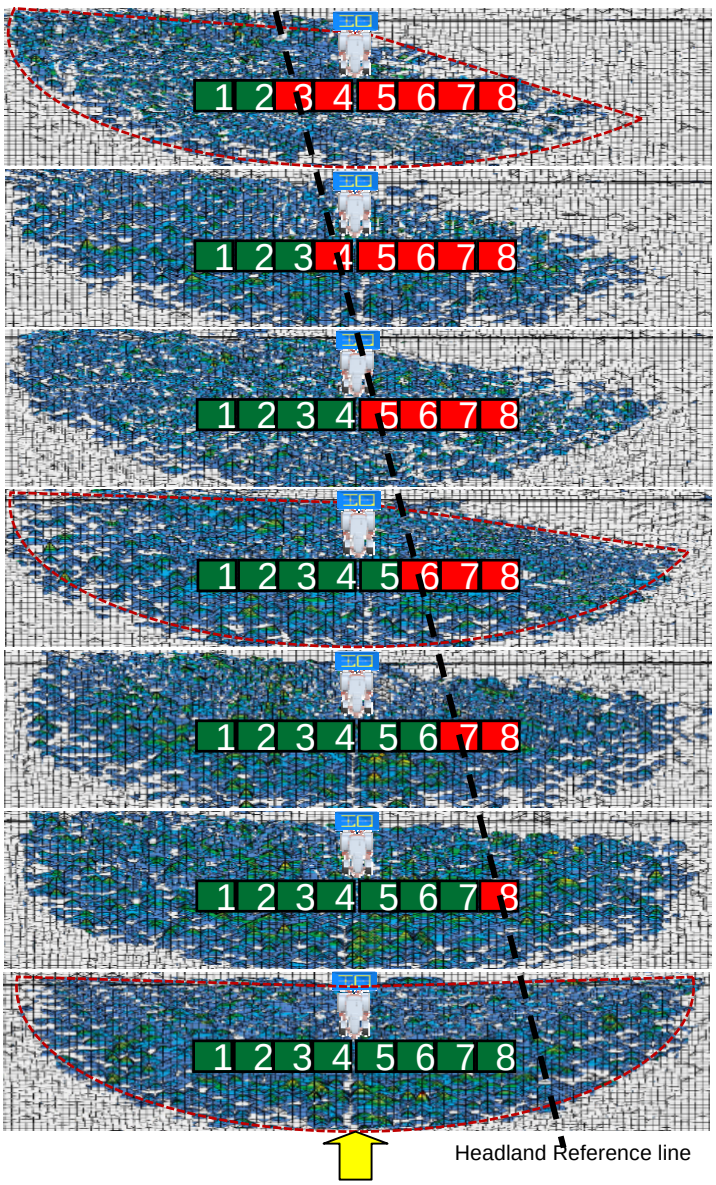
SC Dynamic

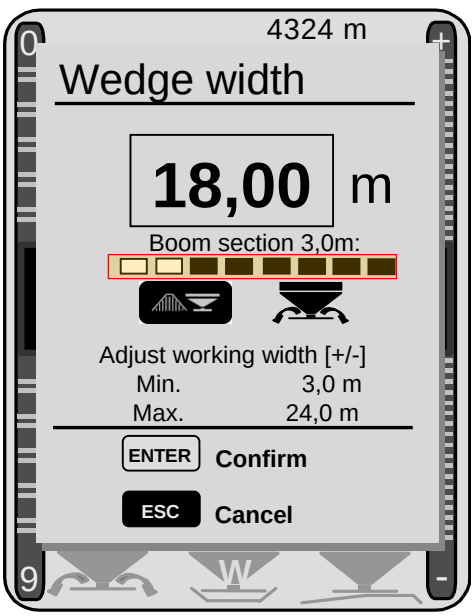


Dynamic Section Control shutters (shown in red) allow the spread pattern to be adapted to left or right to match irregular fields or angled headlands when working at wider tramline widths from 24m to 42m. The Dynamic shutters operate in 8 linear steps to optimise the spread to the left and right sides adjusting for spread width, application rate and forward speed, giving the ultimate spread pattern.

In the example shown on the right, when approaching a tapered headland on the right, as each section crosses the dotted headland reference line, the Dynamic Section Control will reduce the density of spread to the right while simultaneously the spread to the left is maintained for an even application over the total field area.

Available as an option for all Calibrator Zurf controlled KRM M-line spreaders, Dynamic Section Control can be operated manually or automatically with KRM's AutoSwitch, with other GPS controllers or with the tractor's IOSbus system.





"Headlands are typically where you will see the lowest yields so technology that can help maintain applications rates at the correct levels in these areas is very important from a production point of view".

Allison Grundy, Senior Agronomist Growhow UK

TempoTracker . . speed independent !

TempoTracker is exclusive to KRM spreaders offering headland spreading accuracy considerably higher than competitor headland systems with fixed point on/off GPS control.

Electronic control and weigh cells are increasingly being used to improve the accuracy of fertiliser spreading as a result of the rising cost of fertilisers but now headland management is a major factor as growers seek to further increase accuracy and reduce waste over the total field area, particularly at wider widths.

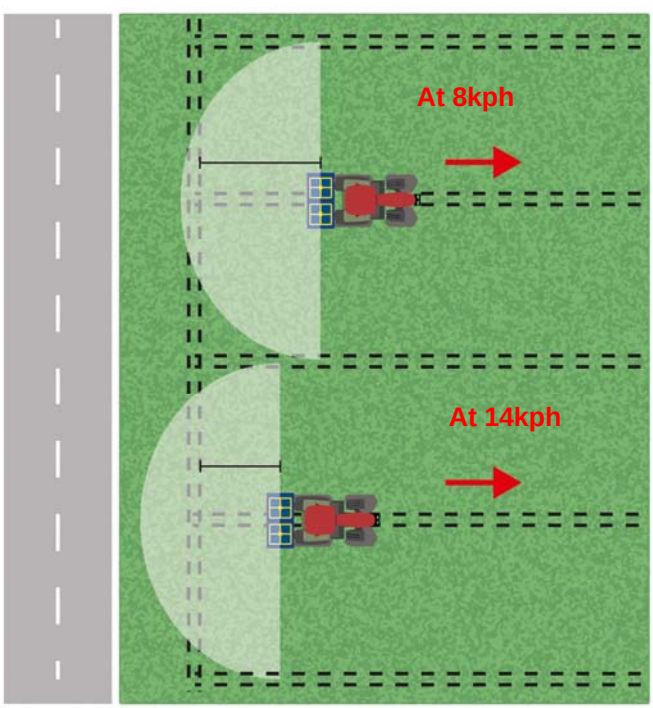
To further enhance headland management accuracy, KRM has introduced **TempoTracker**, an integrated intelligent software which monitors the forward speed and shutter position 10 times a second and calculates the most optimised position to activate the Section Control.

TempoTracker takes the guesswork out of headland spreading

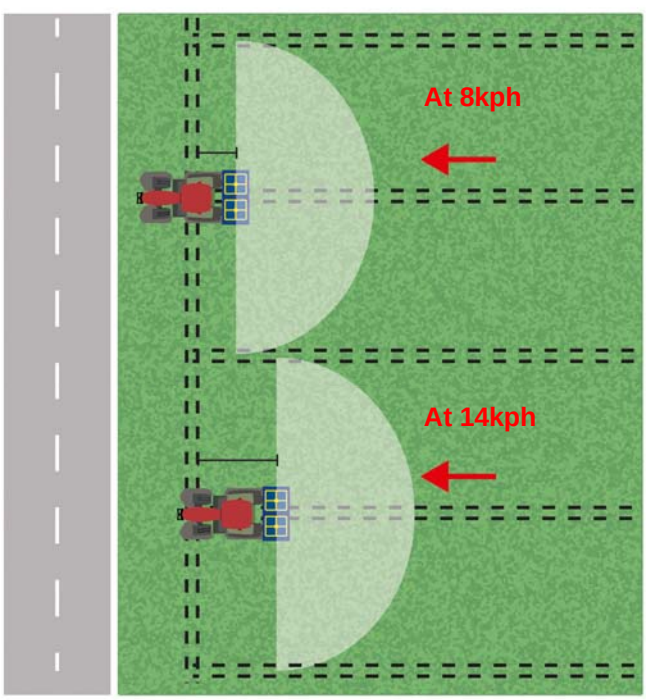
TempoTracker links the three main variables when spreading of application rate, forward speed and shutter position, to calculate exactly when and where the shutters should operate to minimise potential overlap and avoid missed areas.

When working at higher speed or with higher application rates, TempoTracker automatically calculates and activates Section Control so that the shutters are in exactly the correct position as each section crosses the headland “reference line” when entering straight at the headland or at an angle and then later as the tractor re-enters the main field. The reverse happens at slower speeds or with lower rates. The result is a more even distribution of fertiliser over the total field area so preventing wasteful overlap and avoiding missed areas.

And all this is controlled fully automatically by the TempoTracker, with no need for the operator to enter the initial factors of forward speed, fertiliser type or application rate required by fixed point GPS systems.



At Start spreading, **TempoTracker** automatically selects the optimum point to open the shutters relative to forward speed and rate.



At Stop spreading, **TempoTracker** automatically selects the optimum point to close the shutters relative to forward speed and rate.

Auto-Switch . . automatic spreading !

More and more farmers are looking to increase spread widths to improve work rates, efficiency and to reduce costs. However, particularly at wider widths, the judgement of when to switch on or off spreading at headlands – even for an experienced operator – can be difficult and inconsistent.

Auto-Switch takes the guesswork out of spreading by providing a fully automated start and stop at the optimum point for precise spreading consistently throughout the day . . even into the night !

How does it work ?

Auto-Switch uses GPS to determine the correct point to switch on or off the spread, using an easy to set control programme. When starting the field, the operator first spreads the headland as usual. Auto-Switch records this information and draws an “reference line” around the field. By simply entering the spread width and distance from the GPS antenna to the centre of the spreader, Auto-Switch then selects the optimum point to switch on or off the spread as the “reference line” is passed. This instruction is then fed to the Calibrator controller of the KRM Spreader, which has built-in software to automatically compensate for spread width, material spread, forward speed etc. The KRM Spreader is then switched on or off at the correct point . . . every time!

When working at angled headlands or irregular borders, instead of using a single point on or off, Auto-Switch uses the simply set control programme to divide the spread width into 8 sections. When spreading toward or away from an angled border, Auto-Switch then step by step adjusts the spread as each section crosses the “reference line” to prevent overspreading or underspreading.

This instruction is fed to the KRM Spreader Calibrator controller which then reduces or increases the spread as each section is switched on or off.

iZURF : GPS Tablet Control

Available for any Android Tablet v4.00 or above, the iZURF package offers an independent and economic alternative to operate either **SC**Standard or **SC**Dynamic and GPS AutoSwitching; to save time, save fertiliser and save cost. In addition, iZurf will provide guidance with either straight or curved A-B lines to allow precise spreading when no tramlines are available. The facility to override the automatic on/off of the Section Control is also included.

Download the free APP and once connected, the user's Tablet gives a split screen display for both cable free WiFi control of the fertiliser spreader and the Headland Section Control system. Tablets with an internet connection benefit further with access to spread charts, weather forecasts, instruction manuals and video, and the ability to email work records directly from the field.

iZURF can be added to any existing Calibrator ZURF – updated to V1.14 or higher and requires a GPS antenna.The iZurf module also allows the connection of non GPS variable rate devices such as the Yara N-sensor or the Claas Isaria Crop Sensor and external GPS VRT only units including Soyl Opti and iSoyl.

ISObus Control

All KRM weigh cell spreaders can be supplied ISObus compatible in lieu of the Zurf Control box. All Zurf functionality and features are retained, including both Standard Section Control and Dynamic Section Control when fitted.

Keith Rennie Machinery Ltd. Roecliffe. Boroughbridge. N.Yorkshire YO51 9LS
Tel: 01423-324221 Fax: 01423-324355 E-mail: info@krm-ltd.co.uk www.krm-ltd.co.uk