

RAVEN

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Operation Guide



**AccuBoom™ or AccuRow™
for Cruizer II Consoles**

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This manual provides instructions for using the Raven AccuBoom or AccuRow systems with the Cruiser II console.

Note: The Cruiser II console is capable of providing AccuBoom, automated section shutoff, for the following Raven rate control consoles:

- SCS 4x0 (e.g. SCS 440/460, etc.)
- SCS 6x0 (e.g. SCS 660/661, etc.)
- SCS 4400
- SCS 4600

When used with the SCS 4400 or SCS 4600, the Cruiser II must have software version 2.3 or later. The Cruiser II console must be capable of CANbus communication in order to control an optional AccuBoom or AccuRow system. Cruiser II consoles with part numbers other than listed above are not capable of CANbus communication.

Updates for Raven manuals are available at the Applied Technology Division website:

www.ravenprecision.com

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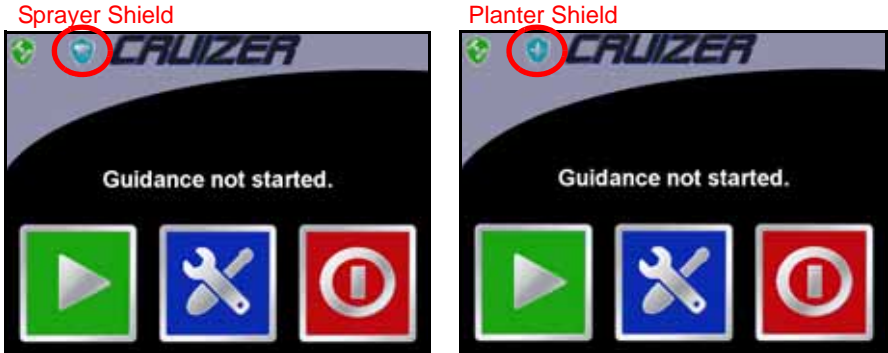
Introduction

The Raven AccuBoom and AccuRow systems may be used with the Cruiser II guidance console to provide automatic boom or planter section control features.

Note: Prior to using the AccuBoom or AccuRow feature with the Cruiser II console, the supporting machine specific hardware components must be purchased and installed. Contact a local Raven dealer for more information.

The AccuBoom feature automatically controls boom sections by referencing the as-applied or coverage map displayed by Cruiser II. When AccuBoom detects a section entering an area where product has previously been applied, AccuBoom will automatically turn that section Off. When the section leaves the previously applied area, AccuBoom automatically turns the section back On. The AccuRow system provides the same functionality to automatically shut off or turn on planter rows.

When the Cruiser II console detects the AccuBoom or AccuRow system on the CANbus, the sprayer or planter shield will be displayed at the top of the home screen.



This document provides instructions for setting up and operating the AccuBoom and AccuRow systems with the Cruiser II console. Refer to the *AccuBoom Setup* section on page 3 or the *AccuRow Setup* section on page 6 for information on the system operating with the Cruiser II system.

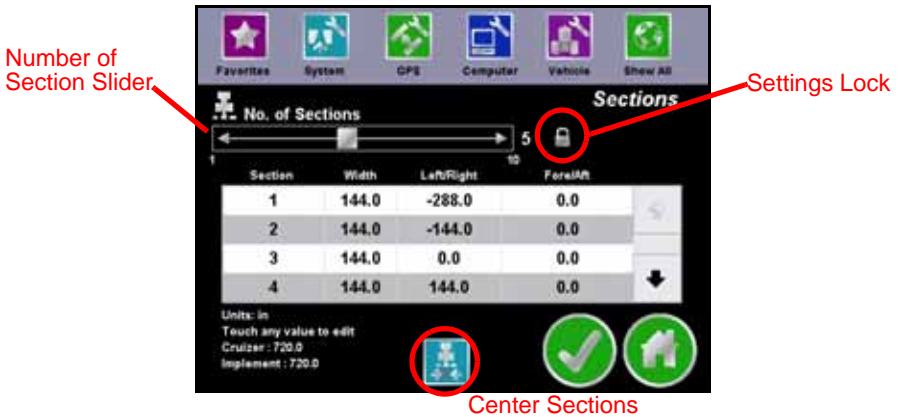
AccuBoom Setup

Sprayer Section Setup

Note: The **Sections** icon is only displayed in the **Tools Menu** if an AccuBoom or AccuRow node is connected to the Cruiser II CANbus.

The **Section** configuration uses the programmed antenna **Fore/Aft** and **Left/Right** values to determine the relative location of each section with respect to the GPS antenna. If the antenna position settings are modified, verify that the section settings are correct before starting or resuming an application.

1. From the home screen, touch **Tools** and select the **Sections** icon in the **Vehicle** menu to display the sections setup screen.



2. Touch the lock icon to the right of the sections slider to unlock the Sections screen and allow values to be entered or modified.

Note: The keypad icon must be displayed before any values may be entered or recalibrated.

3. Use the number of sections slider to set the number of boom sections (max. of 10) on the implement. Cruiser II automatically divides the implement width (displayed in the lower, left information area) by the number of sections entered.

Note: Touch the implement value in the lower, left information area to enter a different implement width.

4. Below the sections slider, the width and offset of each section is displayed. Section 1 corresponds to the left most boom section in a standard boom configuration. Use the up or down arrows if necessary to view the settings for each section.

Touch the width or offset values to display the on-screen keypad and enter a new value.

5. If the sections are set end-to-end, centered on the swath midpoint, touch the **Center Sections** icon to automatically align and center the boom sections.
6. Touch the **Check Mark** to return to the tools screen or touch the **Home Icon** to return to the home screen.

Sprayer Setup

From the home screen, touch **Tools**, and select the **Sprayer** icon in the **Vehicle** menu to access the Sprayer Screen.

This screen allows the operator to customize the response of the AccuBoom system for the specific flow control hardware installed on the sprayer.

Note: Touch the **Home** icon at any time to return to the home screen.



Look Ahead

AccuBoom monitors the GPS position and as-applied map while considering the look ahead times to begin turning sections on or off before they cross spray or no spray boundaries. Look ahead times may be used to compensate for delays in the sprayer system including the time it takes for boom or control valves to open or close. The specific look ahead time is a function of the valve timing and the speed at which the operator is driving the machine.

Percent Coverage

AccuBoom automatic section control allows the operator to define the amount of coverage tolerated during an application. For applications which will require complete coverage, the percent coverage setting should be set to 100 percent. When applying products that do not tolerate overlaps, the percent coverage should be set to a lower value. AccuBoom allows a percent coverage value anywhere from 5 to 100 percent.

AccuBoom Override

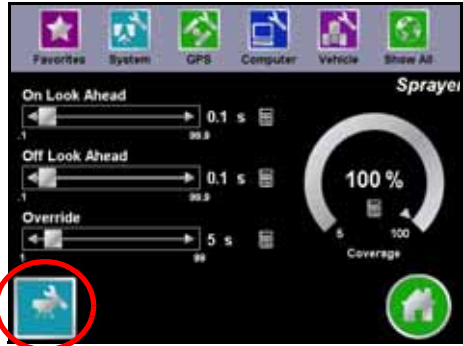
The AccuBoom override allows the operator to momentarily override the automatic section control feature and force all boom sections on. This may be useful to re-apply product to a heavily infested area in a field or when accelerating from a complete stop. Enable the AccuBoom override feature and allow the boom valves to open and tips to develop a proper spray pattern before driving ahead. The amount of time for the override may be modified to match specific application needs. The AccuBoom override icon is located on the lower left side of the Guidance screen.

Controller Setup Screen

Touch the **Spray Control Setup** icon in the lower, left corner of the Sprayer setup screen to view the Controller Setup screen.

The Controller Setup screen allows the operator to select the AccuBoom control parameters for product application. Under most conditions, these settings will be set and not changed.

Note: Touch the **Check Mark** to return to the Sprayer setup screen or touch the **Home** icon to return to the home screen.



Sections Controlled

Select which sections the AccuBoom feature will automatically control. AccuBoom will only provide automatic section control for the selected sections.

Note: Deselect sections such as fence row nozzles to allow the operator to manually control these sections at all times.



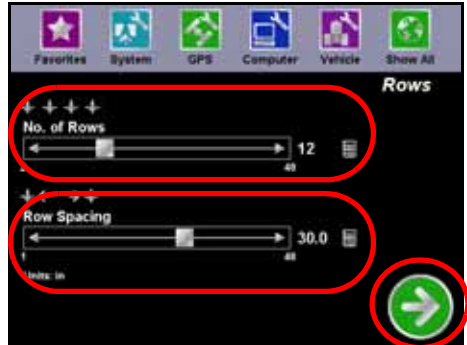
AccuRow Setup

Planter Row & Section Setup

Note: The **Sections** icon is only displayed in the **Tools Menu** if an AccuBoom or AccuRow node is connected to the Cruiser II CANbus.

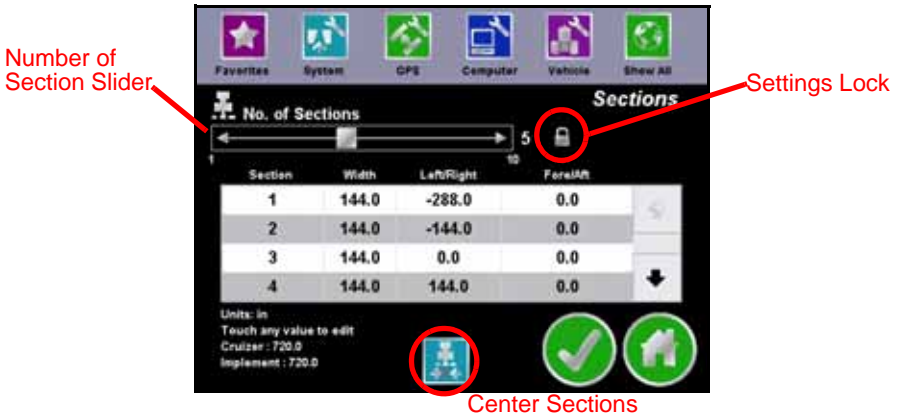
The **Section** configuration uses the programmed antenna **Fore/Aft** and **Left/Right** values to determine the relative location of each section with respect to the GPS antenna. If the antenna position settings are modified, verify that the section settings are correct before starting or resuming an application.

1. From the home screen, touch **Tools** and select the **Sections** icon in the **Vehicle** menu. The Rows setup screen will be displayed.
2. Use the number of rows slider or touch the keypad icon to the right to set the number of rows on the implement (maximum of 48).
3. Use the row spacing slider or touch the keypad icon to the right to set the spacing between the rows.



Note: The currently selected units are displayed below the row spacing slider. Be sure to enter the measured row spacing in the units displayed.

4. Touch the **Green Arrow** icon to advance to the Sections setup screen.



5. Touch the lock icon to the right of the sections slider to unlock the Sections screen and allow values to be entered or modified.

Note: The keypad icon must be displayed before any values may be entered or recalibrated.

- Use the number of sections slider to set the number of planter sections (max. of 16) on the implement. Cruiser II automatically divides the implement width (displayed in the lower, left information area) by the number of sections entered.

Note: Touch the implement value in the lower, left information area to enter a different implement width.

- Below the sections slider, the width and offset of each section is displayed. Section 1 corresponds to the left most planter section. Use the up or down arrows if necessary to view the settings for each section.

Touch the width or offset values to display the on-screen keypad and enter a new value.

- If the sections are set end-to-end, centered on the swath midpoint, touch the **Center Sections** icon to automatically align and center the boom sections.
- Touch the **Check Mark** to return to the tools screen or touch the **Home Icon** to return to the home screen.

Planter Setup Screen

From the home screen, touch **Tools**, and select the **Planter** icon in the **Vehicle** menu to access the Planter Screen.

This screen allows the operator to customize the response of the AccuRow system for the specific control hardware installed on the implement.

Note: Touch the **Home** icon at any time to return to the home screen.



Look Ahead

AccuRow monitors the GPS position and as-applied map while considering the look ahead times to begin turning sections on or off before they cross plant or no plant boundaries. Look ahead times may be used to compensate for delays in the planter system including the time it takes for seed to travel to the knives. The specific look ahead time is a function of the clutch timing and the speed at which the operator is driving the machine.

Percent Coverage

AccuRow automatic planter section control allows the operator to define the amount of coverage tolerated during an application. For applications which will require complete coverage, the percent coverage setting should be set to 100 percent. When planting crops that have little tolerance for overlaps, the percent coverage should be set to a lower value. AccuRow allows a percent coverage value anywhere from 5 to 100 percent.

AccuRow Override

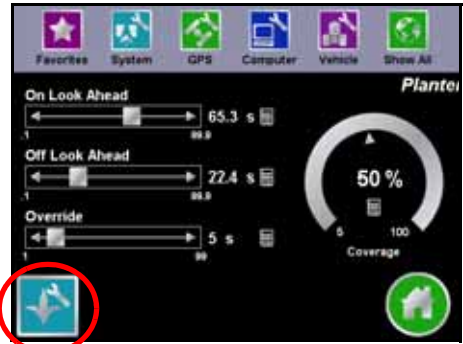
The AccuRow override allows the operator to momentarily override the automatic planter section control feature and force all sections on. This may be useful to ensure complete seed coverage in point rows or when accelerating from a complete stop. Enable the AccuRow override feature and allow seed to travel to the knives before driving ahead. The amount of time for the override may be modified to match specific application needs. The AccuRow override icon is located on the lower left side of the Guidance screen.

Controller Setup Screen

Touch the **Planter Control Setup** icon in the lower, left corner of the Planter setup screen to view the Controller Setup screen.

The Controller Setup screen allows the operator to select the AccuRow control parameters for product application. Under most conditions, these settings will be set and not changed.

Note: Touch the **Check Mark** to return to the Sprayer setup screen or touch the **Home** icon to return to the home screen.



Sections Controlled

Select which sections the AccuRow feature will automatically control. AccuRow will only provide automatic planter section control for the selected sections.

Note: Deselect sections to allow the operator to manually control these sections at all times.



Guidance Screen

Once the AccuBoom or AccuRow feature is configured, the Cruiser II console may be used to display boom or planter sections status during an active guidance session.

Note: Refer to the *Cruizer II Operation Guide* for instructions on starting a guidance session.



Section Status:

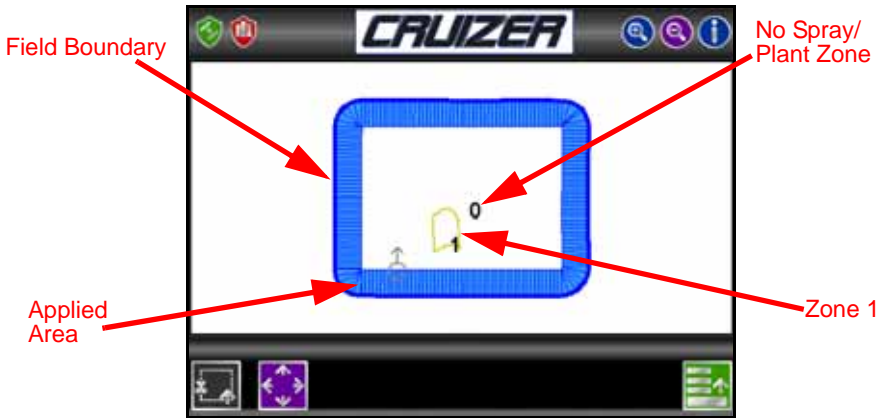
- **Green** - the section is currently On
- **Red** - the section is currently Off
- **Black** - the section is not controlled by the AccuBoom or AccuRow section control features. The operator must control this section manually.



Override Icon

Touch this icon to enable the AccuBoom or AccuRow override feature. Review the *AccuBoom Override* section on page 4 or *AccuRow Override* section on page 8 for more information on using the override feature.

Field Review Mode

Zones or boundaries recorded with the AccuBoom or AccuRow features may be displayed on the field review screen.



From the Cruiser II guidance screen, touch **Menu**  and **Field Review**  to switch to field review mode from the guidance display.

Modes of Operation

When used with the Cruiser II console, the AccuBoom and AccuRow features may be operated in one of the following modes:

- Standard Mode
- Zone Mapping Mode

Standard Mode

Standard operation of the AccuBoom or AccuRow system uses the coverage map displayed on the Cruiser II Guidance screen to perform automatic section control features. As sections cross into previously applied or covered areas, the AccuBoom or AccuRow feature automatically turns that section **OFF**. When the section returns to unapplied area, the system automatically turns the section back **ON**.

This mode does not require zone or field boundaries. The standard field boundary Tools are used while operating in Standard AccuBoom Mode.

Zone Mapping Mode

AccuBoom or AccuRow zones may be created around areas inside which product application should be avoided. Areas such as waterways, well heads, tree lines, etc may be marked as no spray zones for automatic section shutoff features.

With a no spray/plant boundary completed, the AccuBoom or AccuRow systems will automatically turn off any section that cross into the no application area without requiring the operator to toggle switches on or off. When the section crosses out of the area, the system toggles the section back on.

Field Boundaries

When a field boundary is created within an AccuBoom or AccuRow enabled guidance session, the system will automatically create a no spray/plant zone outside of the completed field boundary. A minimum of three boom or implement widths outside of the completed field boundary will be assigned to a no spray/plant zone.

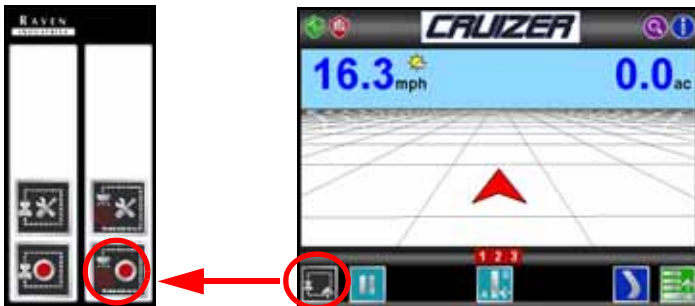
Note: When creating a field boundary, the Cruiser II does not display the field boundary while driving and the completed boundary only appears in the Field Review Screen.

Recording a Zone Boundary

Note: If a field boundary is recorded with the AccuBoom or AccuRow feature enabled, Cruiser II will automatically create a no spray/plant zone of at least three guidance widths outside of the finished field boundary.

The following procedure illustrates the process to record an AccuBoom no spray zone.

1. To begin recording the boundary, touch **Boundary Mapping Menu** and then **Record No Spray Zone**.




2. The operator will be prompted to set the marker location for the boundary to be created.

The marker location is the point on the guidance width which the Cruiser II will map as the boundary of the feature.

3. Select the center, left end, or right end of the configured guidance width and touch the **Green Check** to begin recording the boundary.




4. Begin driving along the boundary keeping the selected reference point at or near the desired zone boundary.

Note: While recording a zone boundary, select the **Pause**  boundary icon in the boundary mapping menu to pause recording of the feature boundary. This is useful if the vehicle must drive away from a zone boundary to refill a tank, etc.

Select the **Record No Spray Zone**  icon to resume recording.


Note: Cruiser II will automatically end boundary recording if the vehicle comes within one guidance width of the starting point.

5. To finish recording the boundary, touch **Stop**  from the Mapping Tools Menu.

Cruizer II will close the feature boundary by connecting the starting point and the current vehicle location with a straight line.






While a guidance session may only contain a single field boundary, any number of no spray zones or no plant zones may be recorded.

Reference of Mapping Icons




	<p>Touch the Boundary Mapping Menu icon in the lower, left corner of the Guidance screen to display the available field, no spray, or no plant boundary tools.</p>
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The icons in the following sections will be displayed within the Boundary Mapping Menu. Some tools or features used with boundaries on the Cruiser II console are only available while a boundary is recorded or after recording of a feature boundary is completed.

Field Boundary







	<p>Use the Record Field Boundary icon to begin recording a field boundary. Note: The AccuBoom and AccuRow features will automatically create no spray/plant zones outside of a completed field boundary.</p>
	<p>Touch the Pause icon to temporarily interrupt recording of the field boundary. To resume recording the boundary, select the record field boundary icon from the boundary mapping menu.</p>
	<p>Select the Stop icon to close the boundary. Cruiser II will draw a straight line between the current vehicle location and the boundary starting point to close the boundary.</p>
	<p>Select the Reset Field Boundary icon to clear the completed field boundary from the current guidance session.</p>
	<p>Touch the Field Boundary Tools icon to display the Set Marker Location screen. Select the desired point on the boom or implement to track as the boundary location.</p>

AccuBoom

	<p>Use the Record No Spray icon to begin recording a no spray zone boundary.</p>
	<p>Touch the Pause button to temporarily interrupt recording of the no spray zone. To resume recording the boundary, select the record no spray zone boundary icon from the boundary mapping menu.</p>
	<p>Select the Stop icon to close the boundary. Cruiser II will draw a straight line between the current vehicle location and the boundary starting point to close the boundary.</p>

	<p>Select the Reset No Spray Zone icon to clear the current boundary path being recorded.</p>
	<p>Select the Delete No Spray Zone boundary icon to erase a completed no spray zone boundary from the current guidance session.</p>
	<p>Touch the No Spray Boundary Tools icon to display the Set Marker Location screen. Select the desired point on the boom or implement to track as the boundary location.</p>

AccuRow

	<p>Use the Record No Plant icon to begin recording a no plant zone boundary.</p>
	<p>Touch the Pause button to temporarily interrupt recording of the no plant zone. To resume recording the boundary, select the record no plant zone boundary icon from the boundary mapping menu.</p>
	<p>Select the Stop icon to close the boundary. Cruiser II will draw a straight line between the current vehicle location and the boundary starting point to close the boundary.</p>
	<p>Select the Reset No Plant Zone icon to clear the current boundary path being recorded.</p>
	<p>Select the Delete No Plant Zone boundary icon to erase a completed no plant zone boundary from the current guidance session.</p>
	<p>Touch the No Spray Boundary Tools icon to display the Set Marker Location screen. Select the desired point on the boom or implement to track as the boundary location.</p>

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(P/N 016-0171-421 Rev D 6/11 E17869)

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