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Simply improving your position.



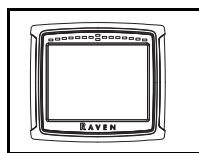
Operator's Manual

Cruizer

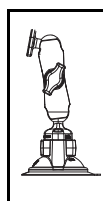
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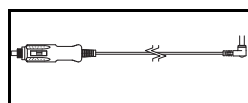
Kit Contents



Cruizer Console



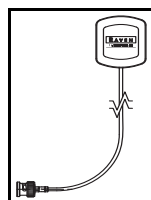
RAM Mount Arm



Power Cable

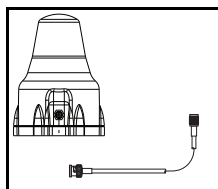
AND EITHER:

Patch
Antenna



OR

Helix Antenna
and Cable



Overview

The Cruiser guidance system offers advanced guidance with an easy-to-use touch screen. The Cruiser simulates RADAR for speed-compensated applications and supplies GPS data to other computers or electronic systems. The Cruiser works with:

- Raven SmarTrax or QuickTrax automatic steering control systems
- Raven TM-1 Tilt Module for tilt-corrected guidance
- Raven SmartBoom for automatic section control

Installation

1. Mount the antenna on the centerline of the tallest point of the vehicle (usually the on top of the cab) using the magnetic mount. Make sure that the antenna has a clear, 360° view of the sky.
2. Route the antenna cable to the back of the Cruiser console and connect it to the antenna port.
3. Connect the power cable to the power port on the Cruiser and plug the adaptor into the vehicle's accessory port or cigarette lighter.
4. Using the RAM mount arm, mount the Cruiser inside the cab to a clean surface.




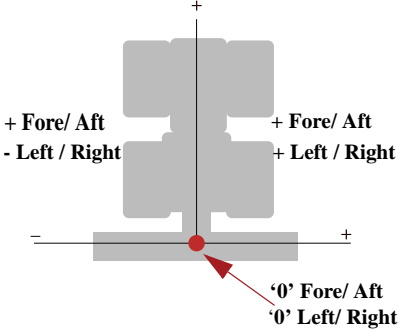
Note: Clean the surface with alcohol or a similar cleaner prior to attaching the suction mount.



Refer to pages 16 and 17 for system cable diagrams. Additional diagrams are available on the Raven Precision Solutions website <http://www.ravenprecision.com/us/Support/ApplicationDrawings>.

Note: Throughout the manual certain words are either in **blue** or **bolded**. The **blue** words are section headings. Refer to those sections for more information. The **bolded** words are names of Cruiser icons.


Initial Startup

The first time you power up the Cruiser, a Configuration Wizard guides you through the initial setup and calibration. The Configuration Wizard helps you with the setup process and is only required the first time the Cruiser is powered. However, you can adjust calibrations at anytime. See **Configuration Menu** for detailed instructions.

1. On the first screen, select the language and display units. Select either English (inches) or Metric (meters). Touch  to accept your selection and to advance to Width Setup Screen.
2. Use the displayed keypad to enter the overall implement, equipment, or boom width in selected units. Touch  to accept your selection and to advance to Left/Right Offset screen.
3. Enter your antenna's left or right offset from the center of the implement or boom. Enter a left offset by double tapping the decimal place button before entering an offset value. Touch  to accept your selection and to advance to Fore/Aft Offset screen. **Use the drawing to the right to determine whether your antenna position requires entering positive or negative values in order to properly calibrate. For front mounted booms, the Fore/Aft will be negative.**

The diagram shows a top-down view of a boom with a central antenna. A vertical line with a '+' sign at the top and a '-' sign at the bottom passes through the center. The antenna is represented by a red dot. A horizontal line with '-' on the left and '+' on the right passes through the antenna. Labels include '+ Fore/ Aft' and '- Left / Right' on both sides of the vertical line, and ''0' Fore/ Aft' and ''0' Left/ Right' at the bottom right, with a red arrow pointing to the antenna dot.
4. Use the keypad to enter your antenna's fore or aft position with respect to the center of the implement or boom. If your antenna is behind your implement or boom, double tap the decimal button to enter a negative value for the fore/aft offset. Touch  to accept your selection and to advance to the Antenna Height screen.
5. Use the keypad to enter the GPS antenna height above ground. Touch  to complete the Configuration Wizard and go to the Home screen.

Home Screen

Touch  to go to the **Home Screen**.



Start Guidance - Begins a new Guidance session or continues a session already in progress.



Configuration Icon - Accesses the **Configuration Menu**. The **Configuration Menu** is only available from the **Home Screen**.



Shutdown Icon - Powers down the Cruiser console and appears when you first power the console on or when Guidance is not active. Shutdown the console before toggling the power switch off.



End Guidance - Ends the open Guidance session. If Guidance is running, the End Guidance icon appears on the **Home Screen**.

GPS Status Icon - When the following icon appears:



DGPS is O.K.



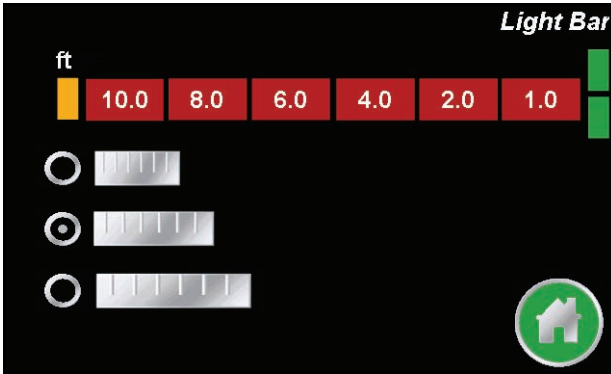
Cruizer has encountered a DGPS warning condition.





No DGPS position is available.


Built-In Light Bar


The built-in light bar displays the distance and direction to the current guidance path during a guidance session.



1. From the **Configuration Menu**, touch  to setup the built-in light bar display.
2. Select the desired operation by selecting either:

- Fine 

| | | | | | |
|----|----|----|----|----|---|
| 36 | 30 | 24 | 18 | 12 | 3 |
|----|----|----|----|----|---|
- Medium 

| | | | | | |
|------|-----|-----|-----|-----|-----|
| 10.0 | 8.0 | 6.0 | 4.0 | 2.0 | 1.0 |
|------|-----|-----|-----|-----|-----|
- Coarse 

| | | | | | |
|------|------|------|------|-----|-----|
| 30.0 | 24.0 | 18.0 | 12.0 | 6.0 | 4.0 |
|------|------|------|------|-----|-----|

The lower-center **green** LED illuminates when receiving a DGPS signal.


The upper-center **green** LED illuminates when guidance is in progress and the vehicle is on the currently displayed guidance path (see the **Starting Guidance** section to begin guidance).



If an optional SmarTrax system has been installed, the outside **orange** LEDs will illuminate when the SmarTrax system is engaged.

Starting Guidance

After completing the initial setup, Cruiser is ready to start Guidance.

Note: You may need to adjust settings within the **Configuration Menu** before proceeding with an actual guidance application. See the **Configuration Menu** section for more information.

At any time, touch  to cancel.

1. From the **Home Screen**, touch .
2. To begin a guidance session with a clear coverage map, select **Clear History**. Select **Resume** to begin the guidance session with the coverage information from the previous Guidance session. Touch  to continue.
3. When you select **Clear History**, you will then choose a Guidance Pattern. The following patterns are available:



Last Pass - Uses previously applied or covered areas to provide guidance. Last Pass provides guidance around curves and within irregular field areas.



Straight (A-B) Mode - Allows the operator to set a starting point (A) and an ending point (B) through which Cruiser draws a straight line guidance path parallel to the A-B Line.



Pivot - Allows the operator to set an A and B point through which Cruiser draws a circular guidance path. While in Pivot mode, Cruiser provides guidance paths from the outside of the pattern toward the center in increments of the programmed Width.

Note: An applied area must be present from a previous path before Cruiser will display the next guidance path.

4. After selecting a guidance pattern, you are now ready to begin Guidance.

Guidance Screen

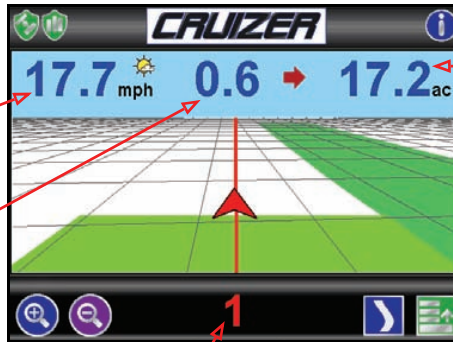
After Selecting the desired Guidance Pattern, the Guidance Screen appears which will look similar to the screen shown. See below for a detailed description of the icons from this screen

Touching icons or areas of the screen will access different information available through the Cruiser interface.



Speed or CoG

(Course over Ground) area toggles the information displayed between these two options.

Distance to Line Display shows the distance and direction from the vehicle to the current guidance path.



Area Covered tally displays the total field area covered by active boom sections (painted area on the Cruiser display).

Swath Number, Set A-B icons or Last Pass (LAST) are displayed in this area. Touch  once to set a point at the vehicle's current location. Touch  again to set the second point and to start A-B Guidance. Cruiser will draw a line using either a Straight or Pivot pattern to create a guidance path.




GPS Status - Use this screen to view DGPS receiver settings or help diagnose GPS problems.



or  **History** - Toggles History recording On or Off.



or  **Day or Night** - Switches between Day or Night display mode.



Information - Displays a help page containing a brief explanation of Cruiser icons.



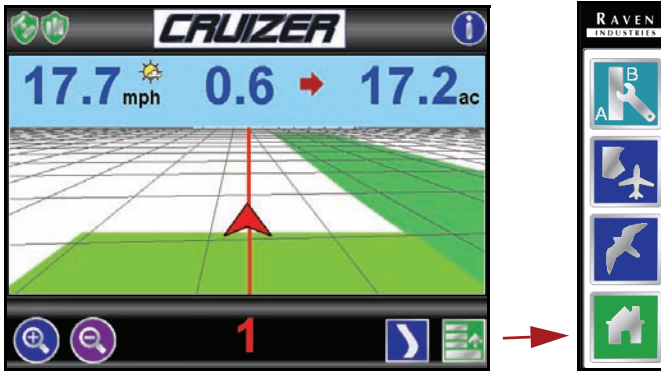
Zoom - zoom in or out on any of Cruiser's Guidance screens.




Menu - icon opens the Menu screen.




or  **Alternate Guidance** - Switches the guidance Pattern.






Touch the  to display the available options for the current Guidance screen.





Note: Some options are only available while a particular guidance view or pattern is displayed. Be sure to verify the appropriate information is displayed on-screen to access related features and tools.

 takes you to the **Home Screen**.

Guidance Screen Modes

-  **Field Review Mode** - Displays Field Boundary options. See the **Recording a Field Boundary** section for more information.
-  **Down Field (3-D) View**
-  **Bird's Eye View**

A-B Tools:

-  **A-B Line Menu** - Accesses the A-B Line tools and features (only appears after an A-B Line has been set).
-  **A-B Line Reset** - Resets the A-B line and allows you to create a new Guidance path.
-  **A-B Line Recalibration** - Recalibrates your A-B Line to the vehicle's current location.
-  **A-B Line Adjustment** - shifts the A-B Line in 1 inch (2 cm) increments in order to adjust the guidance path.

Recording a Field Boundary






The following procedure guides you through recording a boundary of your field. Recording a field boundary allows you to define the shape of the field and calculate the total acreage.






Note: You will see small arrows (→) used in the text. They indicate that you should select a series of items in order to complete the steps.

1. Begin with the vehicle stopped and positioned at the start of the field boundary.
2. From the **Home Screen**, touch .
3. Select **Clear History** to start a new map (Select **Resume** to add to an existing map). Touch to continue.
4. Select a Guidance pattern. See **Starting Guidance** for a detail description of patterns.
5. Touch:
Menu → **Field Review Mode** → **Menu** .
6. Touch **Record** .

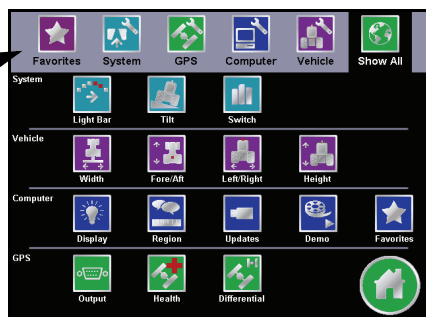
7. Start driving. Cruiser will begin drawing the field boundary according to the vehicle's reported position. This path appears as a gray line behind the vehicle icon.
8. At anytime you can press **Pause**  to pause the recording of a field boundary. This feature is useful when refilling tanks or when the vehicle's path is not part of the boundary. Touch **Record**  to resume recording the field boundary.
9. Touch **Stop**  to complete the field boundary.

Note: The Cruiser will automatically stop and complete the recording when the vehicle comes within one boom width of the starting point.

Other Important Field Boundary Icons:

-  clears the boundary.
- When zoomed in, the Pan Lock feature automatically follows the vehicle indicator as it moves off of the screen. To enable the Pan Lock feature, touch  until the lock  symbol appears. With this feature disabled, the operator can pan the screen by touching the area to bring to the center of the current view.

Configuration Menu



Quick Access Bar



While working in the [Configuration Menu](#), the [Quick Access Bar](#) remains at the top of the screen and allows you to access the **Favorites**, **System**, **GPS**, **Computer**, and **Vehicle** menus.

At anytime touch the **Show All** icon to view the entire [Configuration Menu](#).

See below for detailed descriptions of the Menus and icons located within the [Configuration Menu](#).




Favorites Icon - Once you have selected your favorite configuration screens, the [Favorites Menu](#) automatically displays every time you enter the [Configuration Menu](#). See the [Favorites Menu](#) section on page 13 for more information.

System



Light Bar - Select the units and offsets for the built-in light bar. See the Built-In Light Bar section for more information.



Tilt - Setup and calibrate the optional TM-1 Tilt Module. Touch the **Information** icon  for detailed information for this feature.



Switch - Select the source for toggling history on or off. Install and connect the optional hardware switch to the Cruiser console to utilize the hardware setting.

Vehicle



Width - Set the guidance width (width of boom or implement). Cruiser will use this setting along with the selected guidance pattern to determine the displayed guidance path.



Fore/Aft - Offset of the antenna in front of or behind the boom or implement. See the **Initial Startup** section for more information.



Left/Right - Offset of the antenna from the center line of the vehicle. See the **Initial Startup** section for more information.



Height - Distance of the antenna above ground. If using a TM-1 Tilt Module with the Cruiser system, this setting must be accurately programmed to provide accurate tilt compensated guidance.

Computer



Display - Select the mode (Day or Night) for operation and the brightness of the Cruiser touch screen and light bar LED's.



Region - Select the language and units displayed by the Cruiser during operation.



Updates - In the updates page you can:

- Select a software program from the USB drive to load on the Cruiser.
- Enter an authorization code for the e-Dif or L-Dif correction signal.
- Enable or disable Coverage Map Outputs. See the **Coverage Map** section for more information.
- Identify your authorized operating region.



Demo - While in Demo Mode, Cruiser displays the Guidance screen and menus without being connected to a DGPS source. Make sure the Demo Mode is Off before starting an actual Guidance session.



Favorites - Select frequently viewed configuration screens for quick and easy access.

GPS



Output - The Output screen displays the available DGPS output messages, the currently selected output rates for each message, and the baud rate for the A and B ports. Output messages should all be turned **OFF** if connecting the Cruiser to a SmarTrax/QuickTrax or TM-1 system using the recommended cables shown in the Cruiser system application drawings on pages 17 and 18.



Health - Displays signal information and status. Touch the **green** dots to show individual satellite information.



Differential - Select the differential source for GPS guidance. This is only applicable if unit is e-Dif or L-Dif enabled.

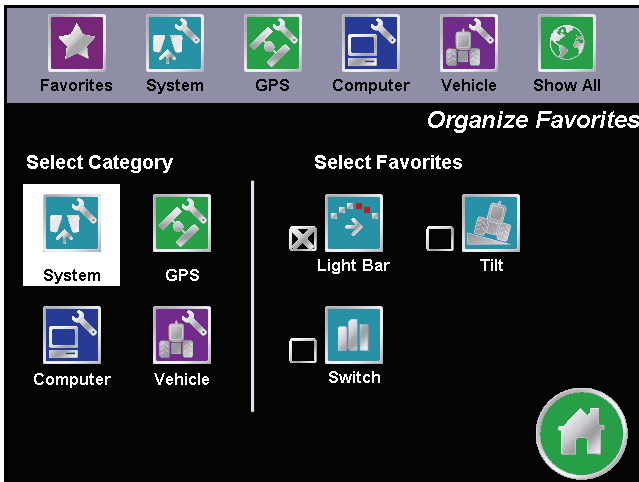
Favorites Menu

1. From the **Home Screen**, select:

Configuration Menu  → **Favorites** .

2. Select a Category and then check the desired configuration screen from the favorites column.

Once you have selected your favorite configuration screens, the **Favorites Menu** automatically displays every time you enter the **Configuration Menu**.






Coverage Maps

Cruizer can output the coverage map for the Guidance session currently stored on the console. Coverage maps are saved to a flash drive inserted in the USB port on the back of the Cruizer console when enabled.

Enabling Coverage Map Output


To setup the Coverage Map file formats, complete the following steps:

1. From the **Home Screen**, select:
Configuration Menu  → **Computer**  → **Updates**  .
2. Select the desired “Coverage” output format (SHP, BMP, or KML) from the list on the left.
3. After selecting the desired output format, touch ‘**On**’ to the right. When the Guidance Session ends, Cruizer outputs the coverage map in the selected file format.

Coverage Map Output

There are two opportunities to save a coverage map to a flash drive connected to the back of the Cruizer console:

1. At the end of a guidance session on the **Home Screen**.
2. When the **Clear History** option is selected while setting up a new Guidance session.

To save the coverage map files, insert a USB drive when prompted and select  . If a USB drive is inserted prior to ending or clearing a guidance session, the Coverage Map data automatically saves to the USB drive

To cancel a Coverage Map, select  (Cruizer will continue, but the Coverage Map files will not be transferred to the USB flash drive).

Powering Down the Cruiser

Use the following steps to power down and shut off the Cruiser.

Note: Make sure to always power down the Cruiser before turning it off.

1. From the **Home Screen**, select:




Shut Down  → .

2. It is now safe to toggle the power switch off.

Updates




Software updates for your Cruiser console are available periodically on the Raven website <http://www.ravenprecision.com/us/Support/Software>. To download the latest version of Cruiser software, unzip or extract the download to your flash drive.

Note: Cruiser will not be able to locate the update files if the files are moved on the flash drive. Un-zip the files to the root directory (X:\ where X represents the letter of your flash drive), making sure to preserve the directory structure of the zipped archive.

1. With the console powered on, insert your flash drive into the USB port on the back of your Cruiser console.
2. From the **Home Screen**, select:
Configuration Menu  → **Computer**  → **Updates** .
3. Select the desired update by touching on it in the listing.
4. Once the update is complete, you will need to restart the console to finish the update procedure.

Troubleshooting

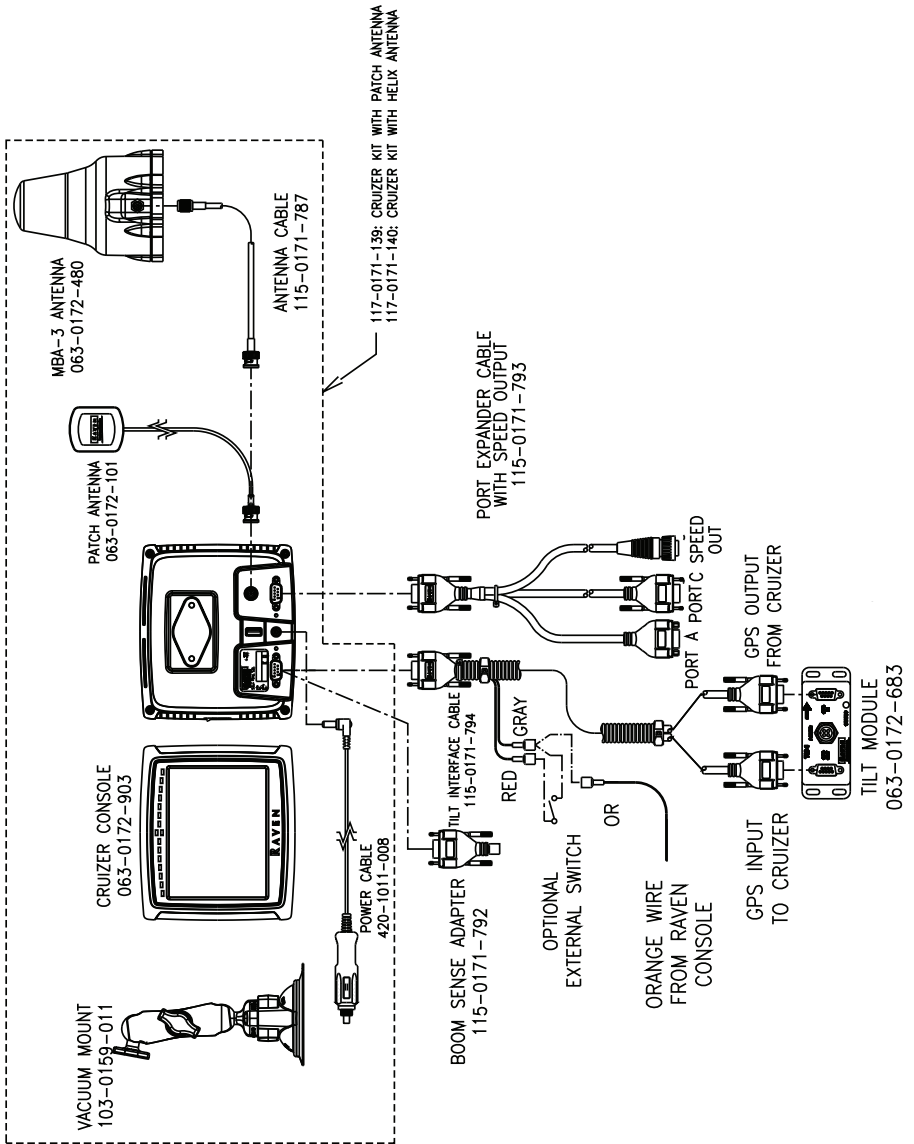
The following information addresses some potential issues you may encounter with the Cruiser guidance system..

| | |
|---|--|
| <p>Touch screen is not responding to touch.</p> | <ul style="list-style-type: none"> • Turn the Cruiser console power off, wait a few seconds and turn the power back on. When the Cruiser logo appears, touch the screen to start the recalibration process. Follow the instructions on the screen and touch the calibration mark everywhere it appears. After the last mark appears, double tap the screen to accept the touch screen configuration. When the system is finished with the re-calibration, the Home screen displays and the system is ready for operation. |
| <p>Cruizer does not start up when powered on.</p> | <ul style="list-style-type: none"> • Ensure that you have +12V DC to the Cruiser console. If the Cruiser turns on, but does not start-up properly or has a partially blank screen, you will need to ensure that voltage to the Cruiser system is at least +9.5V DC and no greater than +15V DC. • The LED on the Accessory Power Adaptor Plug should be lit green when inserted. If the LED is not lit, check that the plug is fully inserted in the machine's accessory port or cigarette lighter. Check the fuse in the Adaptor Plug and replace if necessary. |
| <p>No GPS (yellow or red status)</p> | <ul style="list-style-type: none"> • Check the antenna cable connection on the Cruiser console and antenna. Tighten any loose connections. • Ensure that the antenna has a clear 360° view of the sky. The machine should not be inside or near buildings, trees, and other objects that may interfere with reception. |
| <p>Unauthorized Region error.</p> | <ul style="list-style-type: none"> • Cruiser consoles must be authorized for your region (North/South Americas, Europe, Asia, Africa or Australia). Contact your Raven dealer if your console is not authorized for the correct region. |
| <p>Screen does not record path history</p> | <ul style="list-style-type: none"> • When a boom toggle switch is being used, verify that Hardware is checked, by selecting: Configuration Menu  → System  → Switch  . |
| <p>Field boundary recording never finishes or when finished, is not the shape of the field.</p> | <ul style="list-style-type: none"> • After beginning the recording of a field boundary, you must press stop to complete the boundary or drive back to your starting point. • If stop is pressed beyond one boom length from the end of the boundary, the field boundary will auto complete in a straight line from the boundary start to the Current location. |

Additional diagrams are available on the Raven Precision Solutions website

<http://www.ravenprecision.com/us/Support/ApplicationDrawings>.

CRUIZER SYSTEM DRAWING, KITS AND CABLE OPTIONS



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