Moomba® Boats

HV700
Color Displays

2023 Owner's Manual

2022-09-07 **2200700**

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AutoWake™ : U.S. Patent Nos. 8,798,825; 9,499,242; 9,689,395; 9,828,075; 9,873,491; 10,093,398; 10,414,470; 10,640,182; 10,717,502; 10,759,507; 10,858,080; 10,926,848, 10,676,166, 11,130,551, 11,358,68 and other patents pending.

Flow 3: U.S. Patent Nos. 10,040,522; 10,112,688; 10,202,177; 10,239,591; 10,370,071; 10,479,461.

Amplitude Display: U.S. Patent No. 9,950,771; 10,577,054.

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HV700 Product Information

The Moomba® 7” Touch Screen 2023 display is designed for instrumentation and control on electronically controlled engines communicating via SAE J1939 and NMEA 2000. The display is a multi-functional tool that provides GPS tracking, AutoWake/Surf controls and ZeroOff®GPS Cruise control settings while enabling boat operators to view vital engine, ballast settings and service codes. Included with this solution is the HV700 Touch unit.

Care and Maintenance

General maintenance is not required; however, a soft cloth can be used for cleaning the units. Window cleaner or alcohol can also be used to clean the glass portion of the display. Do not use harsh or abrasive cleaners on the unit.

Basic Navigation Features

All product features are easily accessed through two Quick Access Keys, Touch Point commands and Menus.

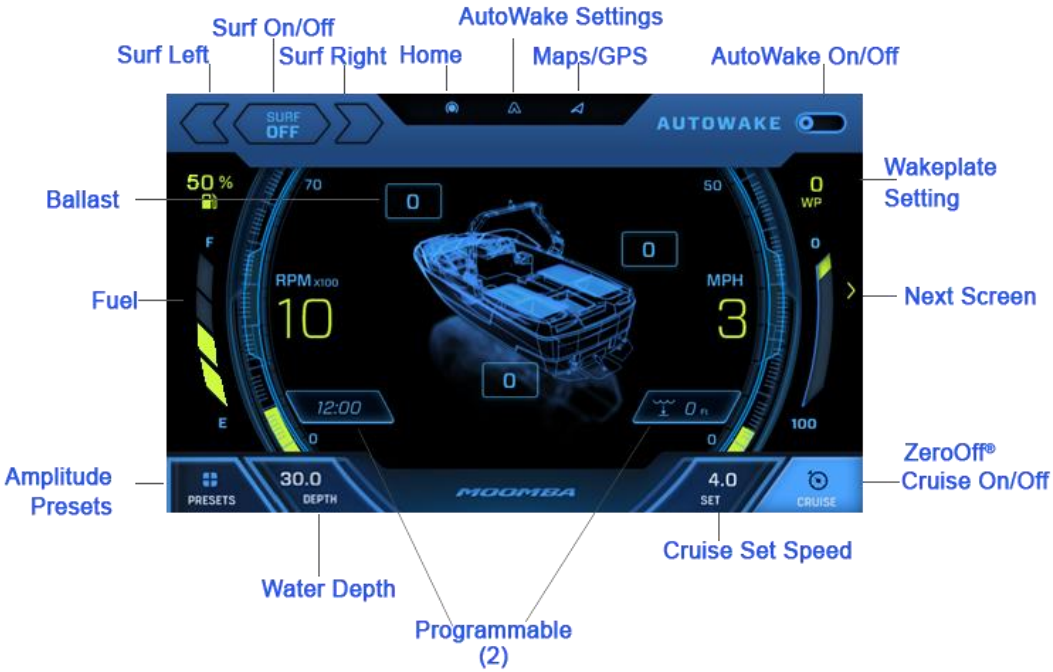
Quick Access Buttons

A new screen can be accessed quickly by pressing one of the following Quick Access Buttons:

Touch Point Commands

Navigation within the screens is controlled by touching the screen's active areas. These areas are illustrated within the following sections.

Home Screen



Surf On/Off
AutoWake Settings
Surf Left
Surf Right
Home
Maps/GPS
AutoWake On/Off
SURF OFF
AUTOWAKE
Ballast
50 %
70
0
50
0
WP
Wakeplate Setting
F
0
0
RPM x100
10
MPH
3
Fuel
Next Screen
0
12:00
0 ft
E
0
0
100
Amplitude Presets
PRESETS
30.0
DEPTH
MOOMBA
4.0
SET
CRUISE
ZeroOff® Cruise On/Off
Cruise Set Speed
Water Depth
Programmable (2)

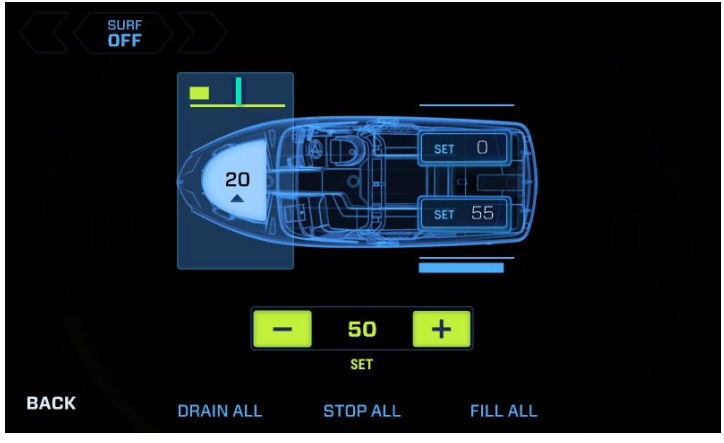
Touch Point	Description
Surf Left	When Surf Left is selected, and the speed is below 15 mph, then the starboard tab is active and deployed to its surf setting. At this point, the surf setting can be adjusted for the starboard tab on the AutoWake screen (when AutoWake is turned off).
Surf On/Off	Turns off the Surf system* Flow 3: U.S. Patent Nos. 10,040,522; 10,112,688; 10,202,177; 10,239,591; 10,370,071; 10,479,461. See www.skierschoice.com/patents-trademarks/ for virtual patent marking.
Surf Right	When Surf Right is selected, and the speed is below 15 mph, then the port tab is active and deployed to its surf setting. At this point, the surf setting can be adjusted for the port tab on the AutoWake screen (when AutoWake is turned off).
Home	Displays the Home screen.
AutoWake Settings	Pressing this area provides three levels of AutoWake settings: Beginner, Intermediate and Advanced.
Maps/GPS	Displays the Maps function.

Touch Point	Description
AutoWake On/Off	Turns on and off AutoWake, a patented system that will manipulate the ballast levels in order to achieve and maintain the best possible wake for surfing and wakeboarding. Using an inclinometer (a device that measures angle of pitch and roll) the boat will orient itself for the best boating experience.
Wakeplate Setting	Displays the current position of the Wakeplate.
Next Screen	Touching this right arrow (or sliding your finger on it from right to left) will display one of three screens: Home, Ballast/Tabs (when AutoWake is off), AutoWake (when AutoWake is on), and Maps.
ZeroOff On/Off	Turns on and off the ZeroOff® GPS Speed Control system.
ZeroOff Set Speed	Adjusts the set speed for the ZeroOff® GPS Speed Control system.

Touch Point	Description
Programmable (2)	Touching these two areas repeatedly will allow you to display two of your desired display parameters from these choices: coolant temperature, water depth, battery voltage, water temperature, oil pressure, clock and engine hours.
Water Depth	Displays the depth from the bottom of the boat's hull to the floor of the water source.
Amplitude Presets	The Amplitude Presets are used in conjunction with the AutoWake system to achieve the optimal surf number and wave size. Select between 0%, 50% or 100% Amplitude.
Ballast	When AutoWake is turned off, touching this area will display the ballast screen where you can adjust each ballast individually or drain/stop/fill all ballasts at the same time.

Ballast

Ballast is used to add displacement to the craft to make the waves or wakes larger for specific watersports. This Moomba model is outfitted with one ballast bag located in the front, and two ballast bags located in the port and starboard sides of the rear. Touch the graphical level representation of one of the ballast settings on the main screen, and this screen will appear:

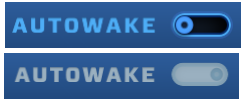


The highlighted ballast bag will display controls at the bottom of the screen to increase or decrease the ballast percentage. Use the – and + buttons to achieve the desired level. Touch an alternate ballast to adjust if necessary.

Touch Drain All, Stop All or Fill All when it is desirable to have all ballasts with the same levels.

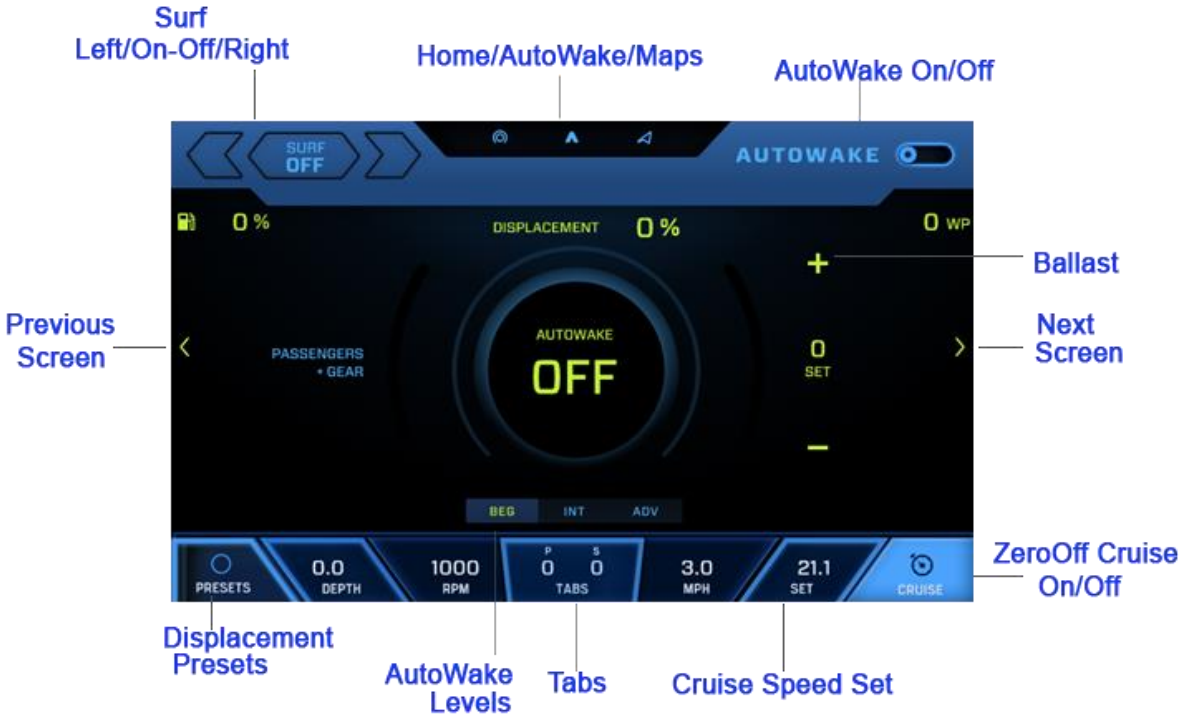
AutoWake®

AutoWake* is a patented system that will manipulate the ballast levels to achieve and maintain the best possible wake for surfing and wakeboarding. Using an inclinometer (a device that measures angle of pitch and roll) the boat will orient itself for the ultimate boating experience.

To activate AutoWake, touch the AutoWake slider bar and slide to the right: 

To view the AutoWake screen, touch the Next Screen arrow and slide to the left, or the symbol at the top middle of the screen. The following **Beginning** AutoWake page will appear:

*AutoWake™ : U.S. Patent Nos. 8,798,825; 9,499,242; 9,689,395; 9,828,075; 9,873,491; 10,093,398; 10,414,470; 10,640,182; 10,717,502; 10,759,507; 10,858,080; 10,926,848, 10,676,166, 11,130,551, 11,358,68 and other patents pending.


Surf
Left/On-Off/Right
Home/AutoWake/Maps
AutoWake On/Off
SURF
OFF
AUTOWAKE
0 %
DISPLACEMENT
0 %
0 WP
Ballast
Previous
Screen
PASSENGERS
+ GEAR
AUTOWAKE
OFF
0
SET
Next
Screen
BEG
INT
ADV
PRESETS
0.0
DEPTH
1000
RPM
P S
0 0
TABS
3.0
MPH
21.1
SET
CRUISE
ZeroOff Cruise
On/Off
Displacement
Presets
AutoWake
Levels
Tabs
Cruise Speed Set

Adjust the Ballast in increments of 5 by touching the + or – button.

Displacement

Displacement represents the amount of water displaced by the boat when manipulating ballast and passenger weight for the optimal waves. At 100% displacement, the total capacity of the boat has been reached.

Changing the Displacement Set Points

The Displacement Set Points can be changed via three different methods:

(1) Touch

in the lower left corner and the following will appear:

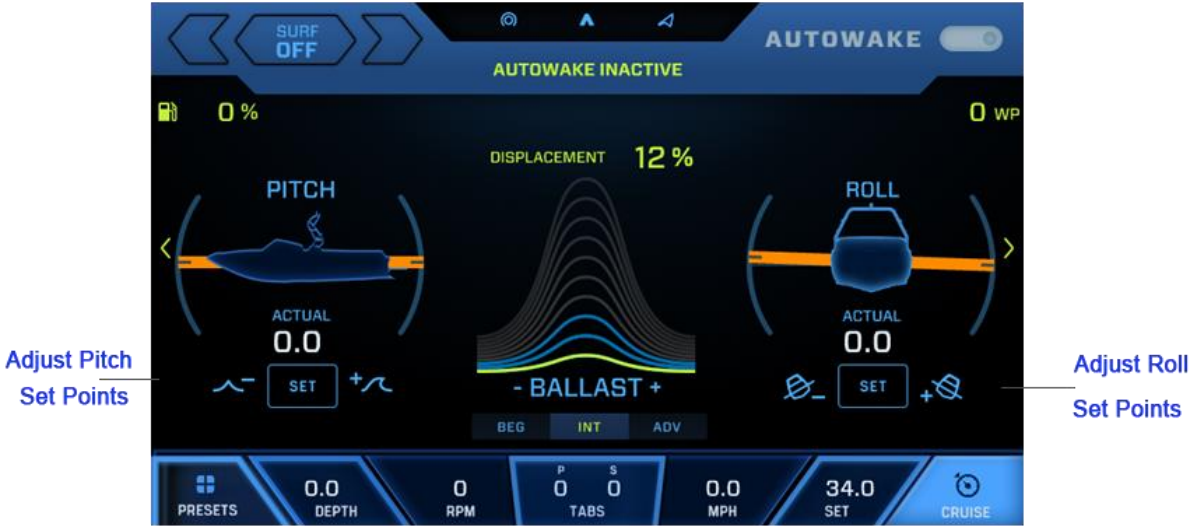
If Go Home Leveling is selected, autoleveling will be activated (if AutoWake is turned on). It doesn't change the setpoint but will cause AutoWake to go inactive.

Select 0% AMP, 50% AMP or 100% AMP.

(2) On the Vessel/AutoWake settings page within the Settings menu, choose Edit Setpoints.

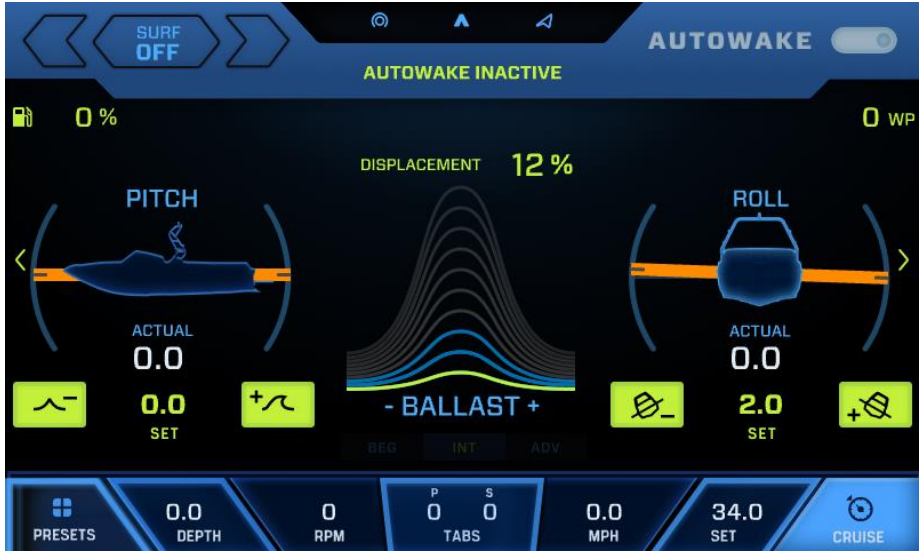
(3) On the Intermediate AutoWake page (shown on the next page), adjust the Pitch and Roll values manually.

Touch **INT** to view the Intermediate Autowake page:



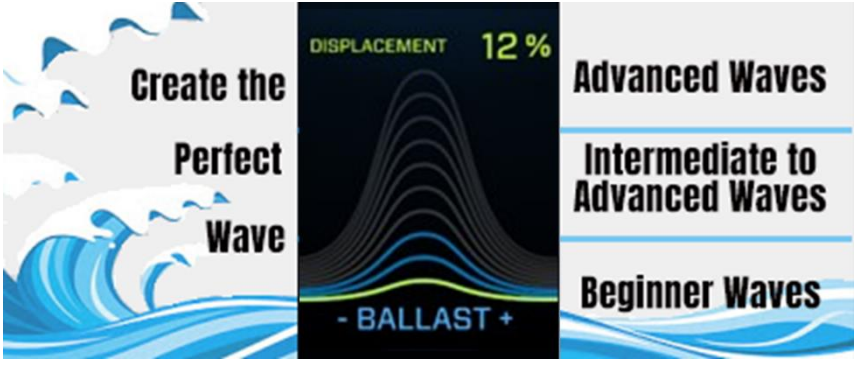
This page allows the manipulation of the pitch and roll values. Touch

and adjust via the + and – buttons:



Touch off the Set field and watch as the Actual Pitch number changes to your desired number.

In the middle of the screen shown is a visual indication of your displacement values. The yellow line is the actual displacement. The blue lines are what the potential displacement could be after manipulation of the ballast.



For advanced wake surfing, aim for a displacement in the upper third of the scale.

For intermediate to advanced wakeboarding, aim for a displacement in the middle third.

For slalom skiing or general boating, aim for a displacement in the lower third.

If the ballast is at 100% capacity, the Potential will be same as Actual. Once ballast is full, the only way to add displacement is to add passengers or additional ballast.

Touch **ADV** to view the Advanced AutoWake page:

This page displays a graphical representation of where to move or place passengers or ballast to optimize the weight to pitch and roll ratio.

Adjust the Ballast level with the + and – buttons.

Touch Set to adjust the Pitch and Roll values.

As the values change, the green highlighting will move to show the optimal placement of additional weight to achieve the desired pitch and roll without the system moving ballast.

AutoWake States

The text above Displacement will show one of six current states of the system:

This State…	Occurs when…	Notes
AutoWake Inactive	• AutoWake is turned off • Cruise setpoint is below 7mph or above 26mph, or • When actual speed is below 3mph and within 0.1mph of setpoint.	
AutoWake Countdown	• All conditions are met in the AutoWake Inactive state	A countdown of 10 seconds will begin and remain if conditions continue to be met ushering in the AutoWake Active stage. If any of the conditions change to be outside of the Active limits, the countdown will stop and the state will go back to AutoWake Inactive. The countdown will start over once conditions are met.

Continued

This State…	Occurs when…	Notes
AutoWake Active When Active, the AutoWake switch will turn a green color: 	• Set speed is between 7mph and 26mph • Actual speed is within 0.1mph of set speed • The 10 second countdown has finished.	After the countdown, the AutoWake system will begin to fill and drain ballast to reach the desired pitch and roll values. The side that needs to lower will always fill to 100% before the opposite side begins to drain (to raise that side). For roll, if one side has reached the maximum and the other side has reached the minimum (rear ballasts only), there will be a pop-up that prompts the user to adjust weight in the boat to achieve the desired roll values. The pitch value will have a similar pop-up but will only occur once the roll is finished moving (either achieved or maxed out). When the roll or pitch are maxed out due to ballast, the color of the set points will turn red.
AutoWake Achieved	• Once the current pitch and roll values (average value over 5 seconds) are within 0.25 degrees • AutoWake becomes Active	The colors of the set points will be green. The achieved status will remain until the pitch or roll is outside of 0.75 degrees of the set point (in which case it will go back to the AutoWake Active state).

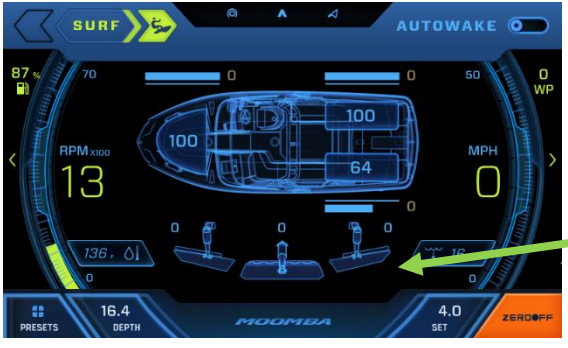
This State…	Occurs when…	Notes
Static AutoWake Active	• Boat is turned on • AutoWake is turned on • Actual speed is less than 3mph.	The system will attempt to fill and/or drain ballasts to reach a static pitch, roll and displacement setpoint. If pitch or roll setpoints cannot be achieved, a pop-up will occur indicating this to the driver (AutoWake will remain in the Active state).
Static AutoWake Achieved	• Boat is turned on • AutoWake is turned on • Actual speed is less than 3mph • Pitch, roll and amplitude values match their respective setpoints.	If pitch or roll setpoints cannot be achieved, a pop-up will occur indicating this to the driver and AutoWake will remain in Static AutoWake Active state. If pitch and roll are achieved and amplitude is as close as possible to setpoint, the AutoWake system will go to this state. AutoWake settings can be found and edited in the Vessel Settings menu.

Surf System

Moomba provides a way to create the optimal surf wave with their Surf System tabs. AutoWake must be turned off to access the Surf tabs.

When the Surf system is off, nothing will be illuminated. Touch the right arrow to turn on Surf Right.

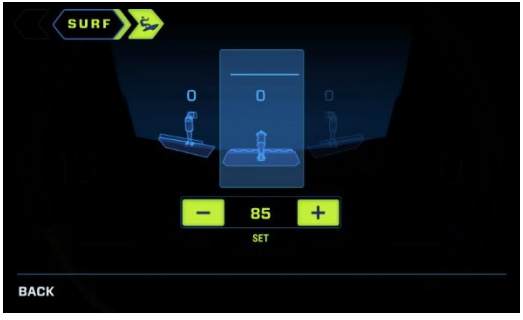
When Surf Right is chosen, the left tab will deploy to its surf setting. To adjust that setting, touch the AutoWake symbol at the top of the screen or touch the next screen symbol and slide your finger to the left. The following screen will appear:

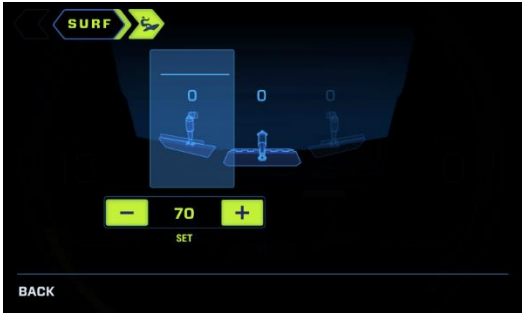


Surf System Settings – touch these and the following screens will appear:

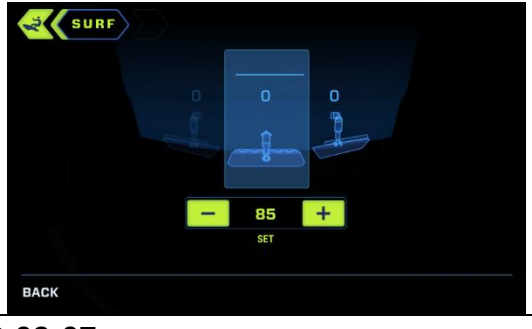
Flow 3: U.S. Patent Nos. 10,040,522; 10,112,688; 10,202,177; 10,239,591; 10,370,071; 10,479,461.

See www.skierschoice.com/patents-trademarks/ for virtual patent marking.





Because Surf Right is selected, the right tab is grayed out. Only the Center and Left tabs can be adjusted by touching the + or – buttons. The same procedure is reversed when surfing Left:

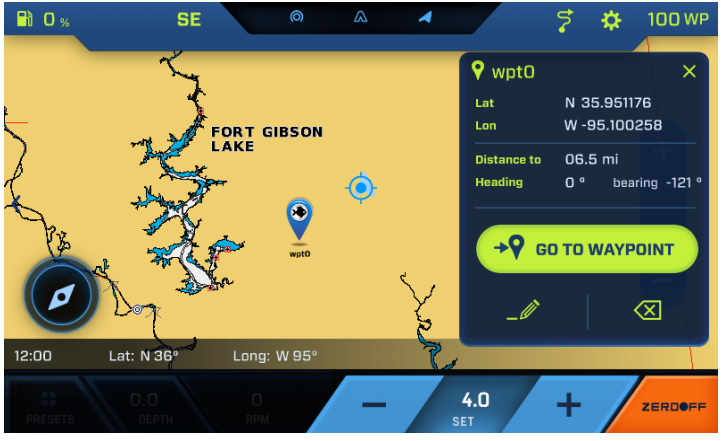


Maps

The Maps screen can be accessed by touching the Maps icon at the top of the screen or by touching the next screen symbol and sliding your finger to the left twice. The functions on the GPS are handled through touch points on the screen:

Notice the ZeroOff button turns Orange when the GPS Puck is installed.

To drop a Waypoint, zoom in to your present or desired location on the map and hold your finger on that spot. The following Waypoint Designation will appear:



Touch to name the Waypoint.

Touch to delete the Waypoint.

Touch

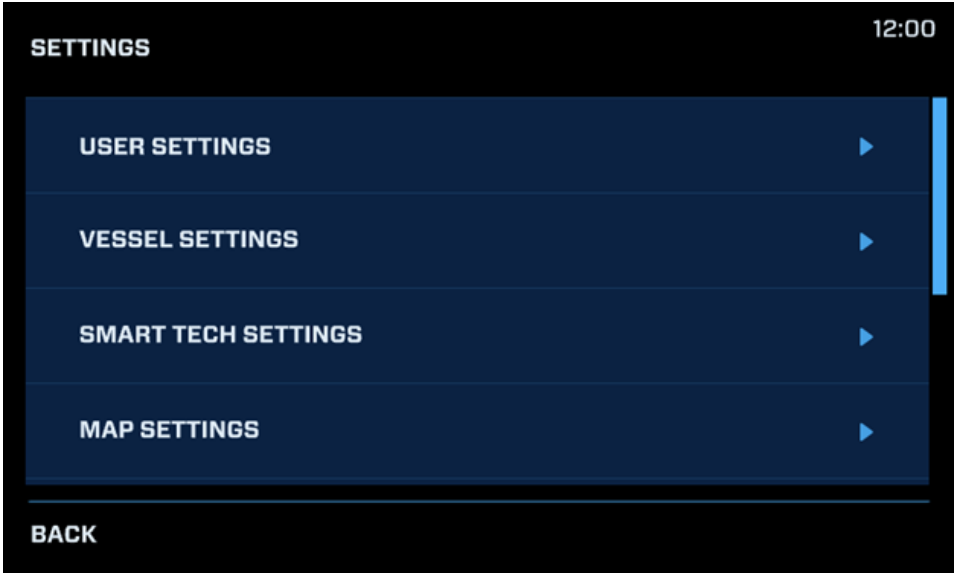
to establish a path to that Waypoint.

To save a Track, touch and the keyboard will appear to establish a name for the Track. Touch Enter when complete.

Maps Settings

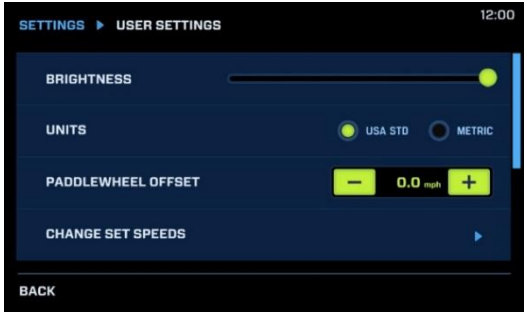
To access the Maps Settings, touch the icon. That section will be described in detail within the System Settings section here.

Settings Menu



The Settings Menu screen can be accessed by pressing the Main Menu Quick Access Button. The contents of this screen are described on the following pages.

User Settings

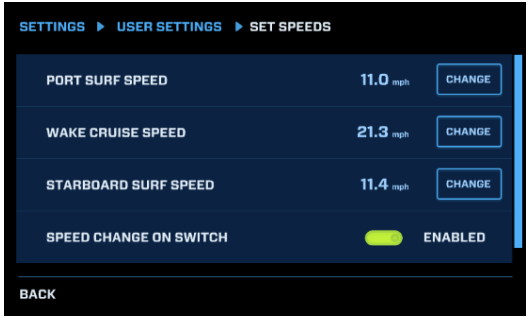


Brightness: Adjust the Brightness of the screen by touching the dot and sliding your finger or tapping the desired location along the line.

Units: Select USA Standard or Metric units.

Paddlewheel Offset: offset the speedometer by adjusting the MPH here with the – and + buttons.

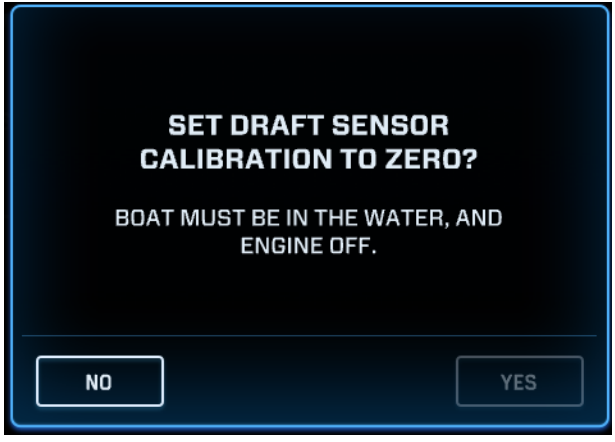
Change Set Speeds: Specific speeds can be set to Port and Starboard Surf activities and Wake Cruise activities. Touch Change to adjust the appropriate speeds:



Enabling Speed Change on Switch will automatically change to the established Speed when surf sides are changed or when initializing Wake Cruise (after a brief delay).

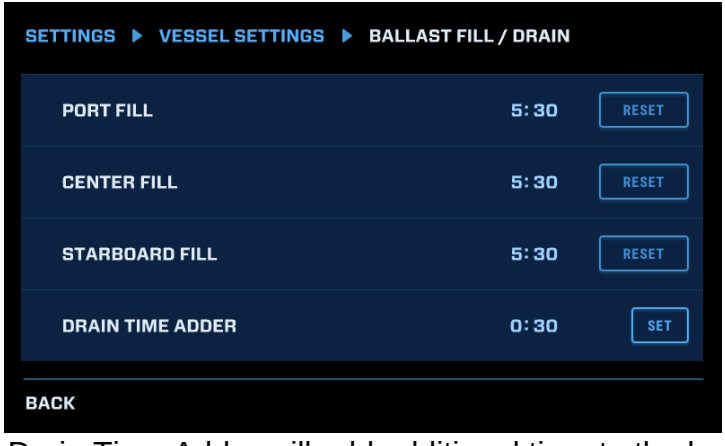
Calibrate Draft Sensor: If the Draft Sensor needs to be reset to zero, select this option and touch Yes.

Note: The boat must be in the water, engine off with no more than one person aboard.

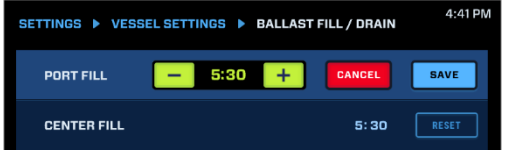


Vessel Settings

Ballast Fill/Drain

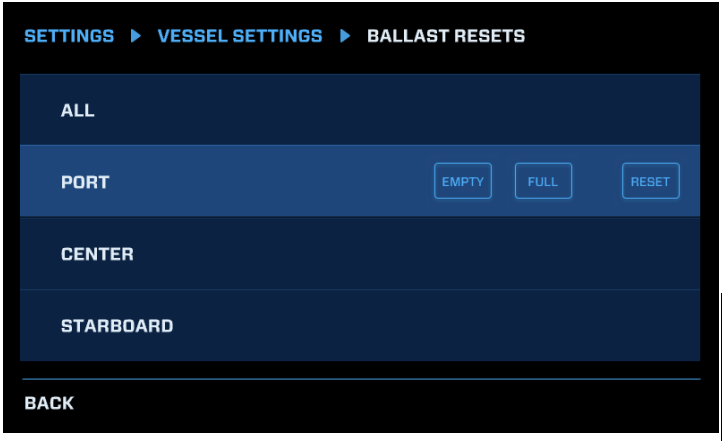


This screen establishes how long it will take for each of the ballast bags to fill or drain. Touch Reset to adjust a Fill time and the following will appear:



Use the – and + keys to adjust the time and touch Save.

Drain Time Adder will add additional time to the length it takes to fill the ballast, then designate that as the Drain Time. In the example above, the Port Drain Time would be 6:00 (5:30 plus :30). The range for this field is 0:00 to 3:00. Touch Set to save the setting.

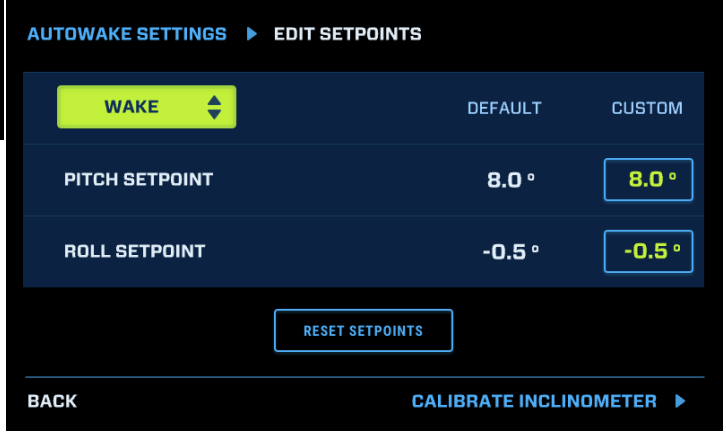


Reset Ballast Levels

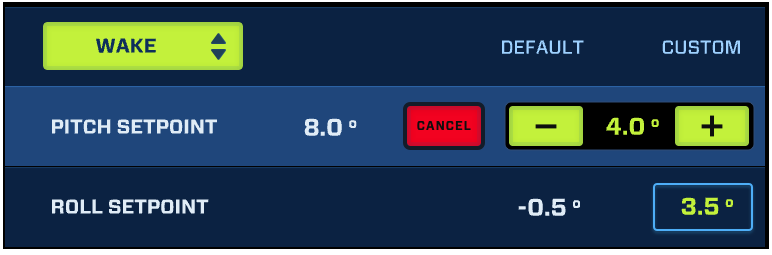
The ballasts can be reset individually or all at the same time. Touch the desired selection and choose Empty, Full or Reset.

AutoWake Settings / Edit Setpoints

Touch the green box to alternate between Wake, Surf Starboard and Surf Port. Touching Reset Setpoints will return any custom setting back to the default setting



Touch the Custom Setting box for either Pitch or Roll, and the screen will change to be like the following:



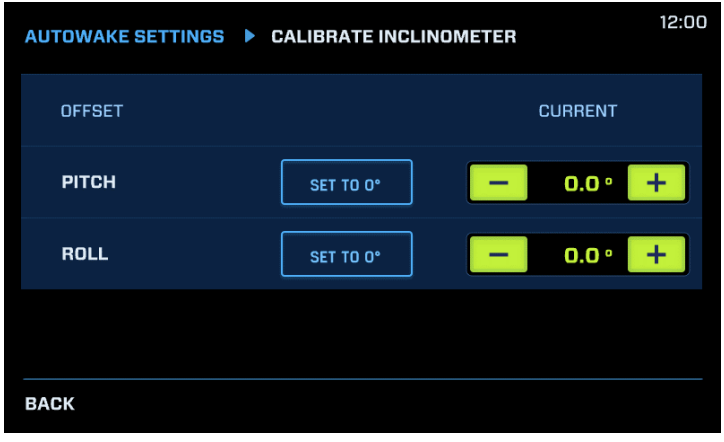
Make adjustments via the – and + buttons, or touch Cancel.

AutoWake Settings / Calibrate Inclinometer

Each Moomba model comes calibrated from the factory after the inclinometer has been installed. However, at some point if the calibration is cleared, then you may have to recalibrate. The inclinometer should only be calibrated when the boat is sitting completely level on the water or on the trailer.

To confirm that roll is correct, at wakeboarding speeds when the wake is symmetric on both sides, the roll should be between 0 and -0.5 degrees. If roll is off more than that, it needs to be recalibrated.

To confirm that pitch is correct, when boat is sitting in the water with only 1 passenger at the driver's helm, the pitch should be between 0 and 0.5 degrees. If pitch is off more than that, it needs to be recalibrated.



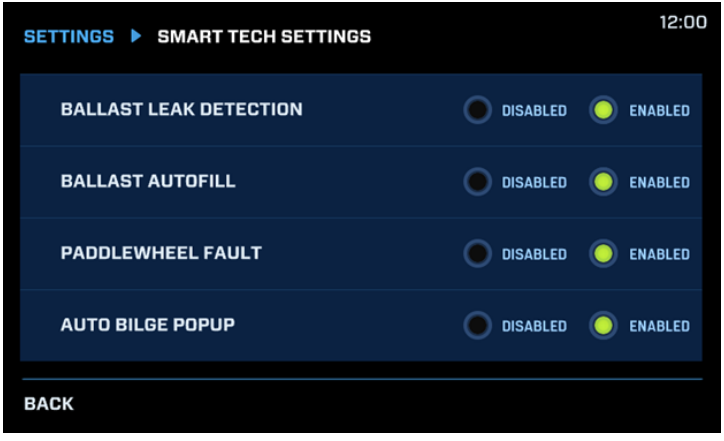
If the “current” number shows 0.0, then the inclinometer calibration has been cleared and needs to calibrated.

To calibrate the inclinometer, touch the Set to 0° button for Pitch and/or Roll. A Confirmation message will appear similar to the screen shown at right. When Yes is touched, the system will be recalibrated to 0 degrees for the setting currently being read by the inclinometer.

Retract Flow Plates and **Retract Yaw Plates**

Touching one of these options and then Confirm will retract the Flow or Yaw plates to 0%. This is beneficial when storing the boat or if the actuators need further adjustment.

Smart Tech Settings



Choose to Disable or Enable the following settings:

Ballast Leak Detection uses the sensors in the ballast to detect if the ballast level might have a leak during the filling process. If the system does not see the correct amount of water in the system after a fixed time, then it will send a prompt letting the driver know that there might be a

leak in the system. Your local dealer can help you adjust this setting if you continue to have popups but you have confirmed you do not have a leak.

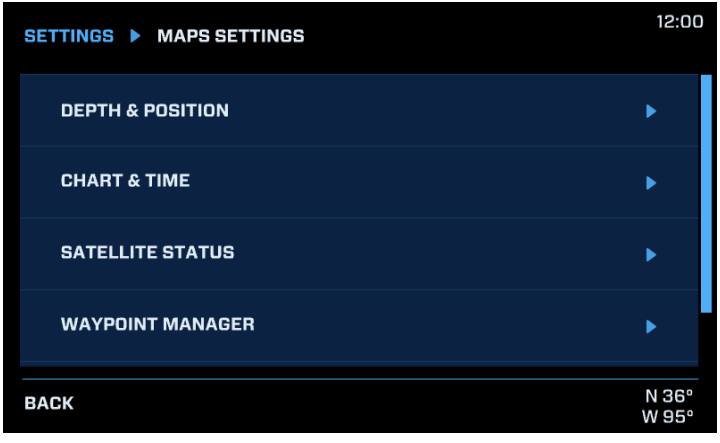
Ballast Autofill happens when the ballast turns on the Autofill feature after the sensor determines the current ballast level is below a trigger margin. The system will give a popup every time Autofill comes on. If the driver does not like Autofill, then you can disable this feature here.

Paddlewheel Fault will take the current J1939 Engine Speed at the time of a fault detection, find 80% of current engine speed, and then swap from MPH Vessel speed cruise to RPM based cruise. If a puck is not present and the paddlewheel is used instead, this feature can detect a fault with the paddlewheel, then switch from MPH cruise (which uses Paddlewheel) to RPM Cruise, so that the boat doesn't change speeds (or increase speed) unpredictably.

Auto Bilge Popup notifies that the auto bilge has turned on. The ability to turn this off exists to reduce the number of times it appears.

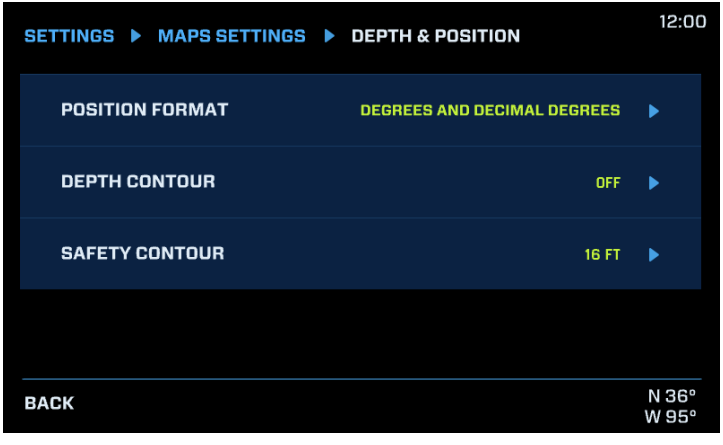
Maps Settings

To access the Maps Settings, touch the icon within the Maps area, or select Maps Settings on the Settings menu page.



Depth & Position

The Depth & Position menu allows the designation of the format displayed for the craft's position, and the display of the depth and safety contour formats.



Touch Position Format to choose between the following, then touch OK:

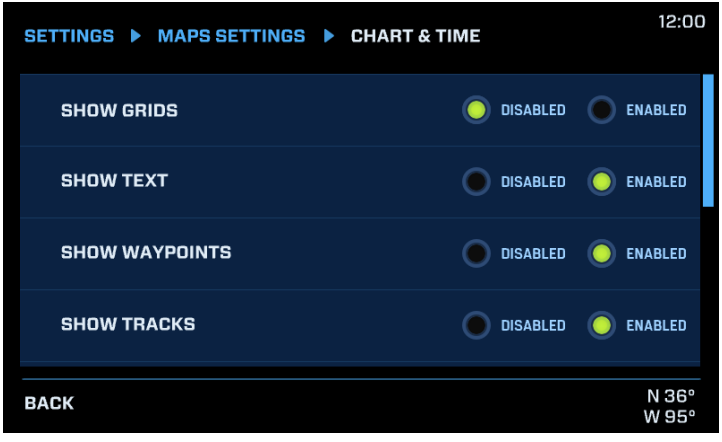
- Degrees and Decimal Degrees
- Degrees, Minutes and Decimal Minutes
- Degrees, Minutes, Seconds and Decimal Seconds.

Touch Depth Contour and/or Safety Contour to choose between the following, then touch OK:

- All
- 66 FT
- 33 FT
- 16 FT
- 6 FT
- Off

Chart & Time

The Chart & Time menu allows you to change the appearance of the Maps feature.



Choosing Disabled will hide the selected feature, while choosing Enabled will reveal these selected features:

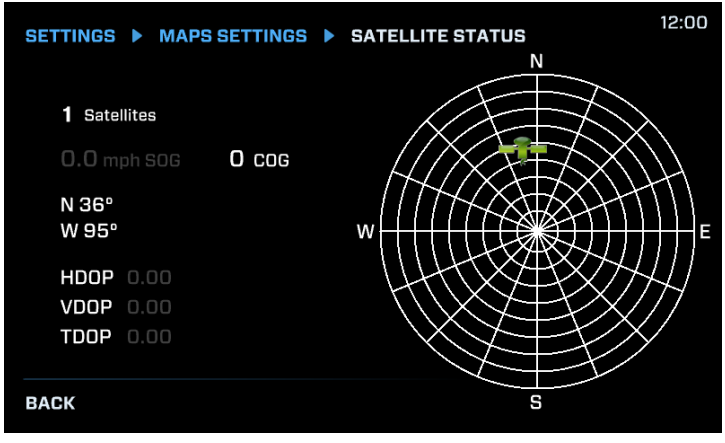
- Grids
- Text
- Waypoints
- Tracks
- Navigation Aids
- Waypoint Names
- Daylight Saving Time

As you scroll down the screen, two additional options are present:

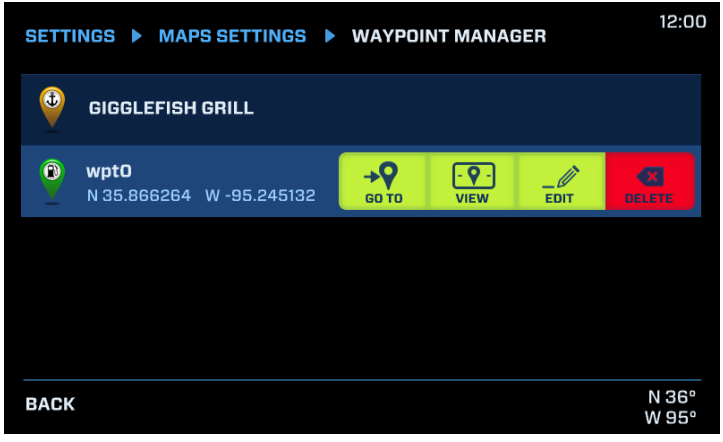
- GMT Offset: use the – and + buttons to set the hours of offset from GMT for your location.
- Time Display Format: select 12 or 24 hour.

Satellite Status

Satellite Status will display the number of detectable satellites available:



Waypoint Manager



Waypoint Manager allows the editing of existing Waypoints. Touch the desired Waypoint, and select one of the following:

- Go To: Touch and select Yes to go to the current waypoint and be shown the distance and bearing toward that waypoint.
- View: This option will ask if you want to view the waypoint on the map. If you select Yes, the map will display the chosen waypoint highlighted with the distance and bearing.
- Edit: This option displays the keyboard to rename the waypoint. Beside the name is a designator icon that has been assigned to this waypoint. To change the icon, hold your finger on it until the next available icon appears:

Fuel

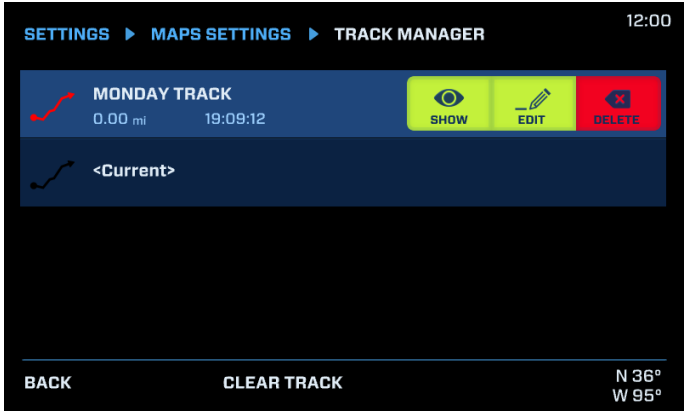
Interest Point

Fish

Anchor Point

- Delete: This option asks if you wish to delete the current waypoint. If you select Yes, it will no longer appear on the map.

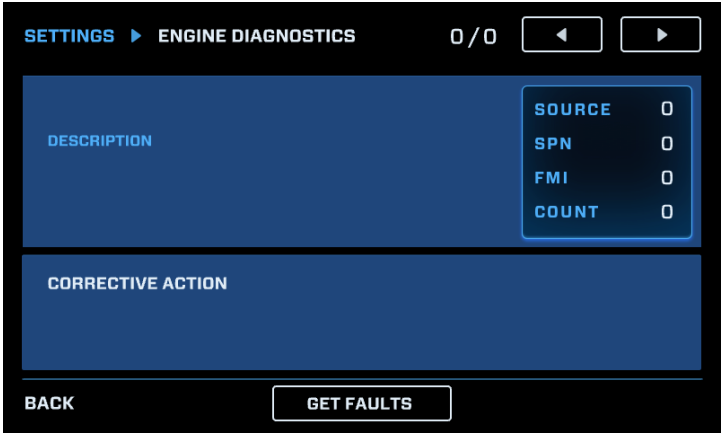
Track Manager



Track Manager allows the editing of the existing tracks within memory. Touch the desired track, and choose one of the following:

- Show: alternates between Showing or Hiding the track on the map.
- Edit: displays the keyboard to edit the track name. Track color may be edited by holding your finger down on the track color to the left of the track name. Choose one of many colors for that track. Press Enter when done editing.
- Delete: asks if you wish to delete the track.
- Clear Track: asks if you wish to delete the current track.

Engine Diagnostics



The engine's ECU is queried and displays feedback on any diagnostic codes that have been activated and stored in the ECU for service needs.

Touch Get Faults to retrieve any stored faults. If more than one is present, the arrow buttons will scroll through additional faults.

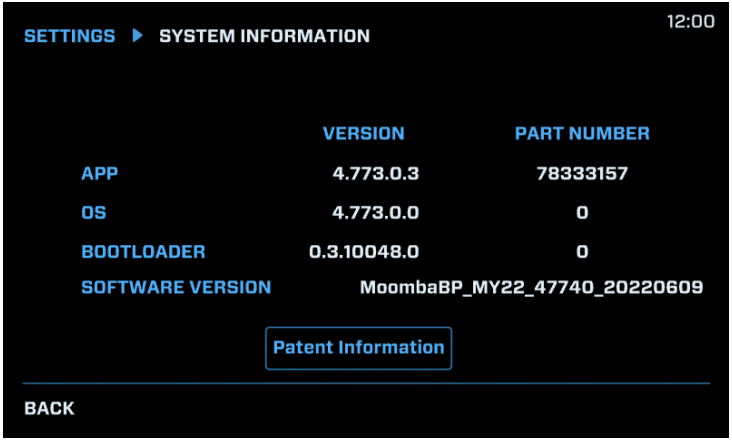
RGB Lights

RGB Lights will set the mood by allowing the selection of colored lights for your two boat zones.

Select either Zone 1 or 2 and the following color selection screen will appear:

Touch the desired color and adjust the brightness by touching the dimmer side (left) or the brighter side (right) of the line.

System Information



This screen contains the version and part numbers for the application, OS, Bootloader, and software version, and patent/trademark access.

Patent Information

Touch this button and scan the QR code to view the Skier's Choice patent and trademark information.

General Troubleshooting Guide

Display appears not to work or doesn't come ON.

1. Display could be in *sleep* mode. Touch a key on the keypad to activate the display.
2. Check for loose connections at battery and display unit.
3. Check for reversed polarity on the power connections.
4. Verify battery has a minimum voltage of 6 Volts.

Display resets or goes OFF when starting engine.

1. Check display supply wires are connected properly to battery.
2. Verify battery is charged properly.
3. Check battery for efficient starter current.

Display has no backlight.

Contact your Moomba service center.

Display has no keypad backlight.

Contact your Moomba service center.

- NOTES -