

Moomba®
7" Touch Screen
2020



Owner's Manual

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This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov.

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AutoWake® : U.S. Patent Nos. 8,798,825; 9,689,395; 9,828,075; 9,873,491; 10,093,398 and other patents pending.

Amplitude Display: U.S. Patent No. 9,950,771 and other patents pending.

Flow 3.0: U.S. Patent No. 10,040,522 and other patents pending.

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Table of Contents

Product Information	4
Care and Maintenance	4
Basic Navigation Features	5
Quick Access Buttons	5
Touch Point Commands	5
Features	6
Home Screen	6
Autowake®	11
Surf System	17
Maps	22
Ballast	24
Settings Menu	25
User Settings	26
Vessel Settings	27
Maps Settings	32
General Troubleshooting Guide	40



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Product Information

The Moomba® 7" Touch Screen 2020 display is designed for instrumentation and control on electronically controlled engines communicating via SAE J1939 and NMEA 2000. The display enables boat operators to view many different engine, ballast, transmission parameters and service codes and is a multi-functional tool that provides GPS tracking, AutoWake/Surf controls and cruise control. 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.

Features

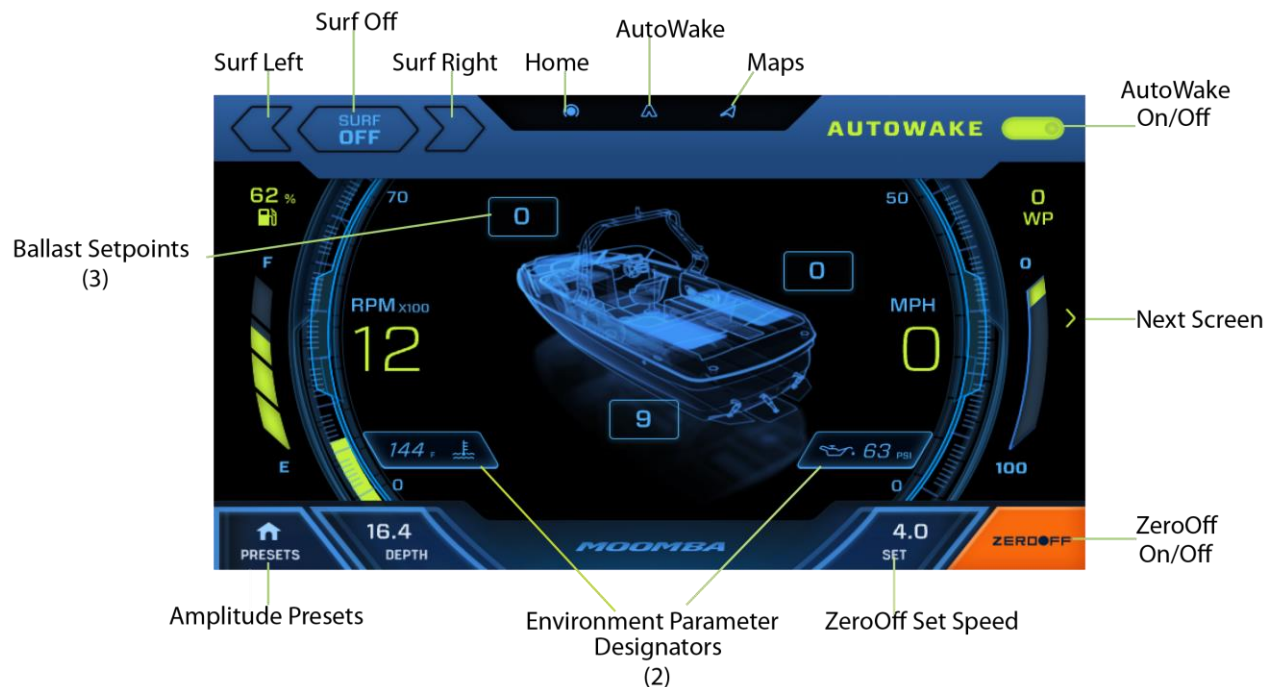
Home Screen

The Home screen will appear after the Acknowledgement screen. This screen displays the:

- Water Depth
- Water Temperature
- Coolant Temperature
- Engine Hours
- Battery Voltage
- Speedometer/Setspeed
- Fuel Gauge and Percentage
- Oil Pressure
- Ballast Levels
- Tabs/SmartPlate Position
- Surf Controls
- AutoWake On/Off Switch
- Amplitude Presets
- ZeroOff®/GPS Speed Control



Home Screen Touch Points



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 Off	Turns off the Surf system*
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	Returns the screen to the Home screen.
AutoWake	When AutoWake is turned off, pressing this area displays the ballast in the boat along with the representation of the Surf tab system. Touching the tabs allows the adjustment of the smart plate, port tab (while in Surf Right) and the starboard tab (while in Surf Left).
Maps	Displays the Maps portion of the display.

*Flow 3.0: U.S. Patent No. 10,040,522 and other patents pending. See www.skierschoice.com/patents-trademarks/ for virtual patent marking.

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.
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.
Environment Parameter Designators (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 and engine hours.

Touch Point	Description
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 Setpoints	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.

Autowake®


AutoWake* is 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.

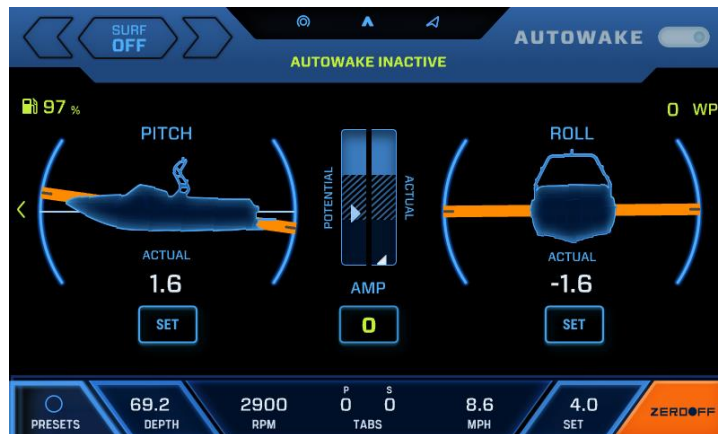


To activate AutoWake, touch the AutoWake slider bar and slide to the right:



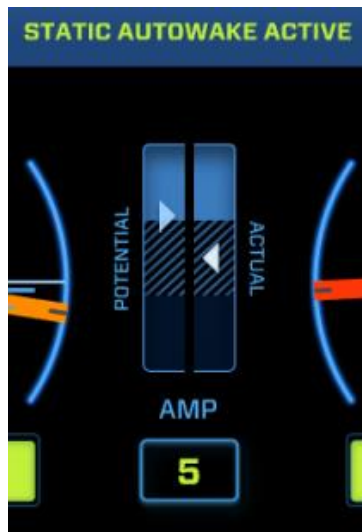
To display the AutoWake screen, touch the AutoWake symbol  at the top

of the screen or touch the next screen symbol  and slide your finger to the left:



* AutoWake®: U.S. Patent Nos. 8,798,825; 9,689,395; 9,828,075; 9,873,491; 10,093,398 and other patents pending. See www.skierschoice.com/patents-trademarks/ for virtual patent marking.

Amplitude Display*



The Amplitude (AMP) Display is patented technology that allows the user to see exactly how much water the boat is displacing at any time. The higher the displacement, the larger the wave or wake will be as the boat moves through the water.

The bar is broken into 3 sections to give the user an expectation of how big the wake or wave will be for the discipline they choose. To keep the wakes in the small range for disciplines such as slalom skiing or general boating, then an Actual displacement in the lower third of the bar would be considered optimal.

For intermediate to advanced wakeboarding where a larger wake would be required, then an Actual displacement in the middle third of the bar would be considered optimal.

For advanced wake surfing where the largest wave possible is desired, then an Actual displacement in the upper third of the bar would be considered optimal.

*Amplitude Display: U.S. Patent No. 9,950,771 and other patents pending. See www.skierschoice.com/patents-trademarks/ for virtual patent marking.

The right side of the bar shows the “Actual” displacement at any given time. The left side of the bar shows “Potential” displacement which is how much the system expects once the ballast is completely filled up. 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.

The text above the Amplitude (AMP) bar will show one of six current states of the system:

(1) AutoWake Inactive: This will occur when:

- 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.

Below 3mph, AutoWake will use static functionality. Within 0.1mph, AutoWake will use dynamic functionality. The 10 second countdown timer will activate when actual speed is within 0.1 of set speed AND when the boat slows down to less than 3mph. During this state, AutoWake will do nothing.

Once the button is pressed to turn on AutoWake, the system will try to first fill to establish the correct roll, then it will fill all the rear ballast until rear “Amplitude” is achieved. It does this in Static mode when the boat is traveling less than 3 mph and in Dynamic mode when the speed is within .1 of set

speed. If AutoWake is active, achieved or in countdown, it will return to inactive if a ballast switch is used, speed is not between 7 mph and 26 mph, or cruise set speed is not within 7 mph and 26 mph. If the display is powered down, it will come back with AutoWake off.

(2) AutoWake Countdown: Once all conditions are met in the AutoWake Inactive state, a countdown of 10 seconds will begin. This countdown will remain as long as conditions continue to be met. Once the countdown is finished, AutoWake will become active. 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.

(3) AutoWake Active: This will occur once:

- 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 ballasts in order to reach the desired pitch and roll values. The system will always fill before it starts to drain. Therefore 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 cannot move, the color of the set points will turn red.

(4) AutoWake Achieved: This will occur:

- 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).

(5) Static AutoWake Active: This state will occur when:

- 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 amplitude setpoint. If pitch or roll setpoints cannot be achieved, a pop-up will occur indicating this to the driver (AutoWake will remain in this state).

(6) Static AutoWake Achieved: This will occur when:

- 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 in the Vessel Settings menu.



Surf System

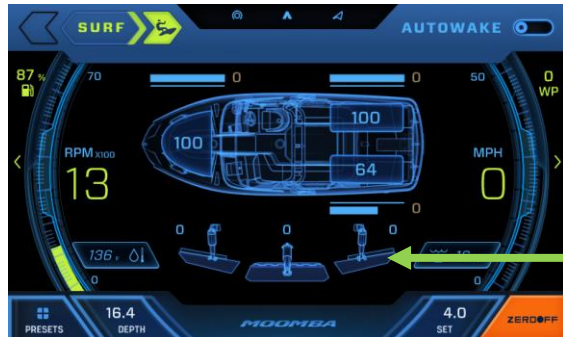
Moomba provides a way to create the optimal surf wave with their Surf System tabs. AutoWake must be turned off to access the Surf tabs.



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

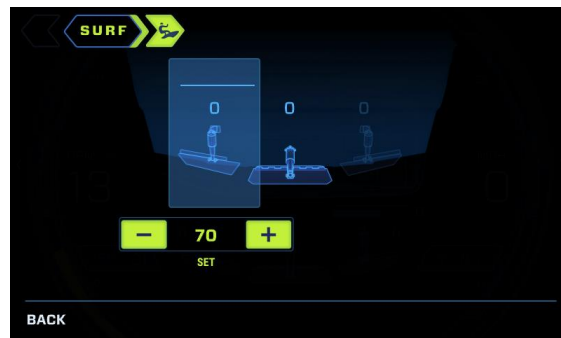


When Surf Right is chosen, the left tab will deploy to its surf setting. To adjust that setting, touch the AutoWake symbol  at the top of the screen or touch the next screen symbol  and slide your finger to the left. The following screen will appear:



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

Flow 3.0: U.S. Patent No. 10,040,522 and other patents pending. 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:



Changing the Amplitude Set Points

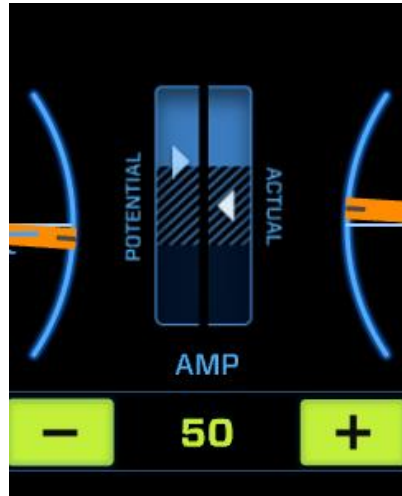
The Amplitude Set Points can be changed via two different methods:

- (1) Touch Presets in the lower left corner and the following will appear:



Select 0% AMP, 50% AMP or 100% AMP. If Go Home is selected, it doesn't change the amp setpoint but will cause AutoWake to go inactive.

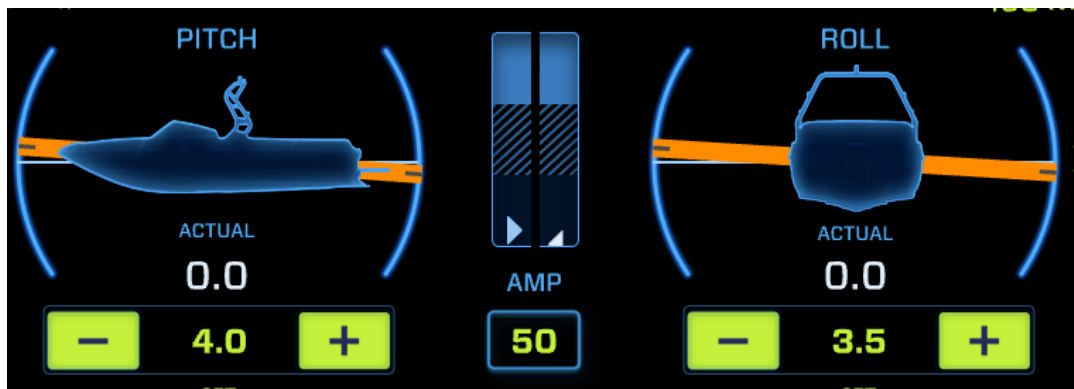
- (2) From the AutoWake screen, touch the Amp Setting and the following will appear. Adjust the settings via the – or + buttons:



Changing the Pitch and Roll Set Points



The Pitch and Roll Set Points may also be changed via two different methods:

- (1) On the AutoWake screen, touch the Pitch or Roll values and then adjust via the – or + buttons:



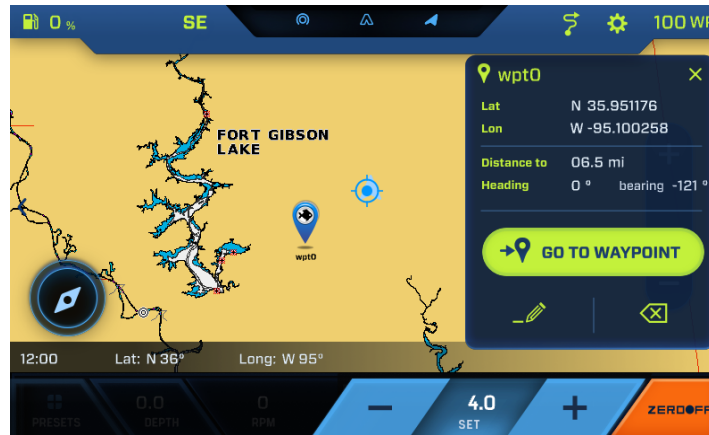
- (2) On the Vessel/AutoWake settings page within the Settings menu, described on page 29.

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:




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

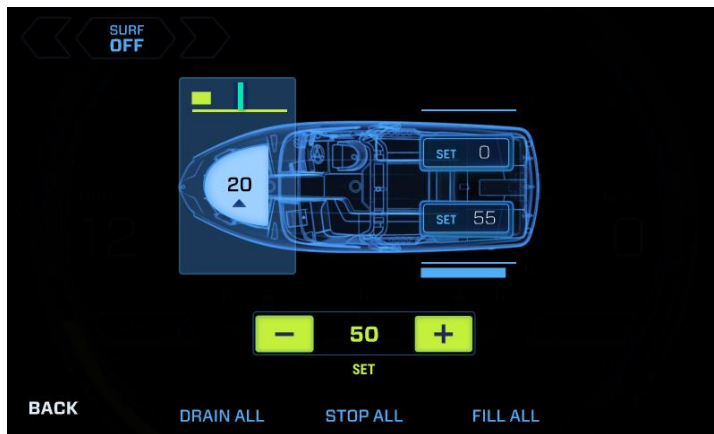


To access the Maps Settings, touch the  icon. That section will be described in detail within the System Settings section on page 32.

Ballast

Ballast is used to add displacement to the craft in order 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 bags on the main screen, and this screen will appear:

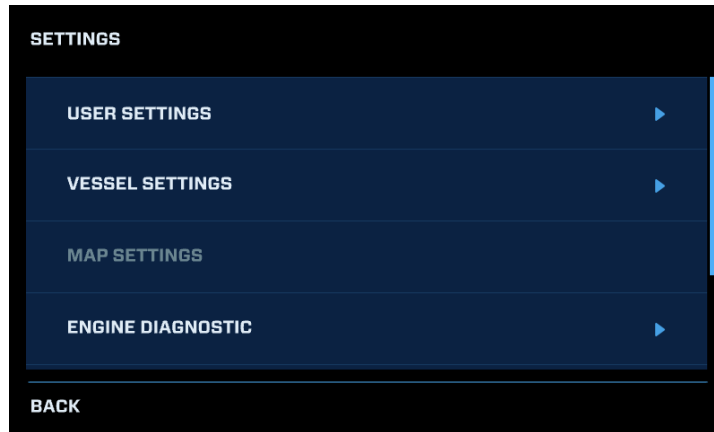
The highlighted ballast bag will display controls at the bottom of the screen to



increase or decrease the ballast percentage. Use the – and + buttons to achieve the desired level. Touch an alternate ballast to adjust if necessary.

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

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.

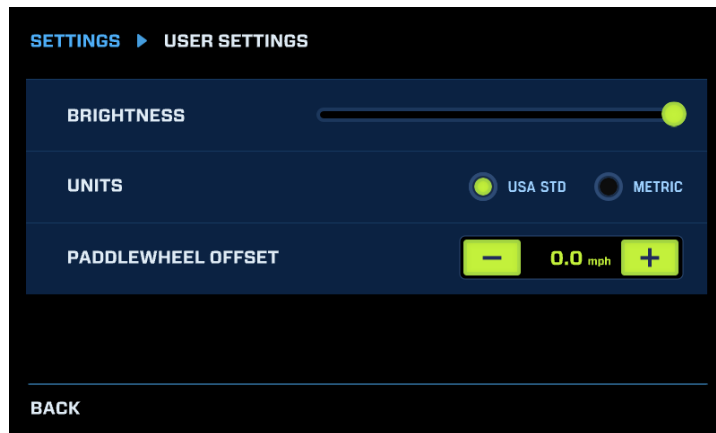


User Settings

Brightness: Adjust the Brightness of the screen by touching the dot and sliding your finger left (dimmer) or right (brighter). You may also tap the desired location along the line.

Units: Select USA Standard or Metric units to be displayed.

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



Vessel Settings

Ballast Fill/Drain

SETTINGS ► VESSEL SETTINGS ► BALLAST FILL / DRAIN

PORT FILL	5:30	RESET
CENTER FILL	5:30	RESET
STARBOARD FILL	5:30	RESET
DRAIN TIME ADDER	0:30	SET

BACK

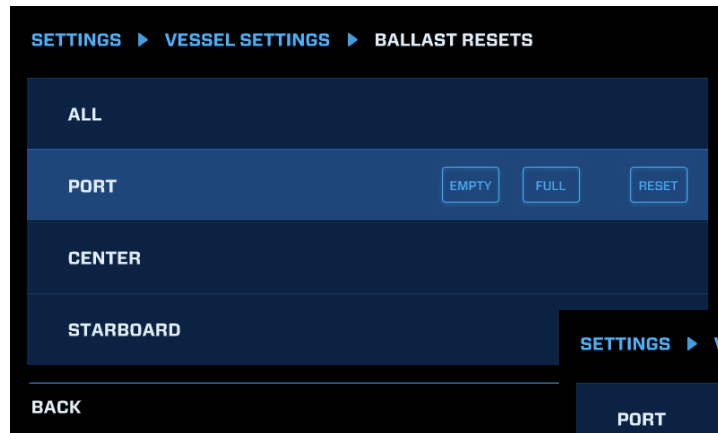
This screen establishes how long it will take for each of the ballast bags to fill or drain. Touch Reset to adjust a Fill time and the following will appear:

SETTINGS ► VESSEL SETTINGS ► BALLAST FILL / DRAIN 4:41 PM

PORT FILL	– 5:30 +	CANCEL	SAVE
CENTER FILL	5:30	RESET	

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.

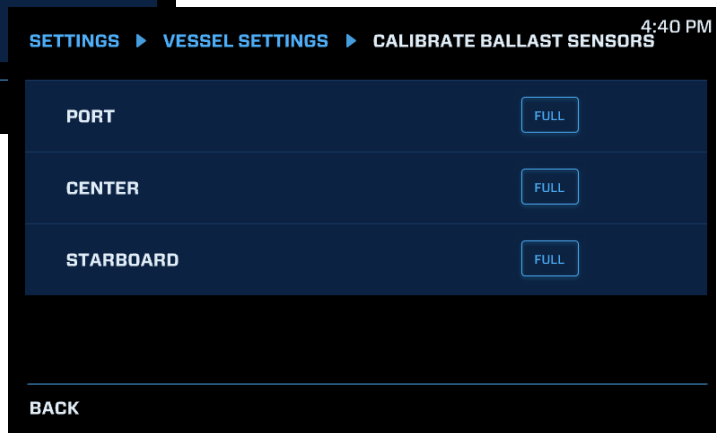


Reset Ballast Levels

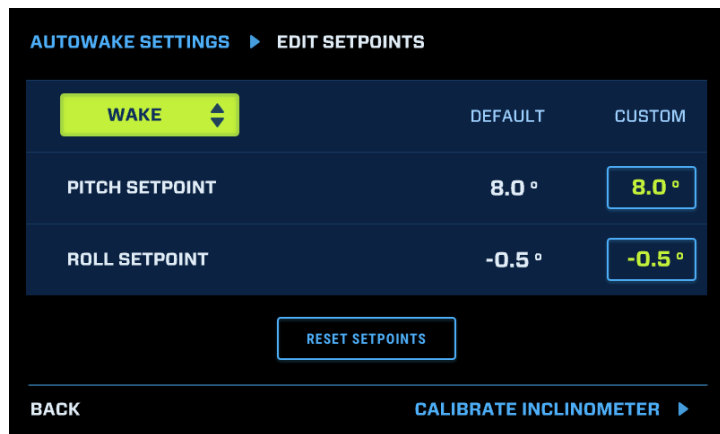
The ballasts can be reset individually or all at the same time. Touch the desired selection and choose Empty, Full or Reset.

Calibrate Ballast Sensors

If the ballast sensors incorrectly report the ballast levels, recalibrate them. When the ballast is full, touch Full and answer Yes to “Set Ballast Sensor Calibration to Full?”



AutoWake Settings / Edit Setpoints

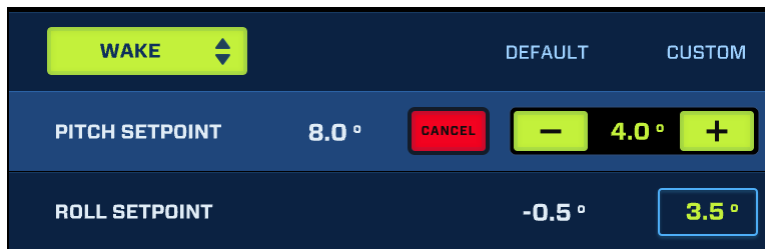


Custom AutoWake settings may be established for Wake, Surf Starboard and Surf Port. Touch the green box to alternate between these choices.

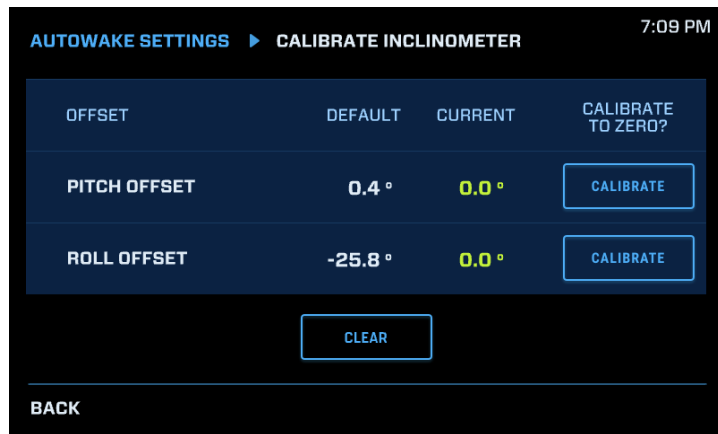
Touch the Custom Setting box for either Pitch or Roll, and the screen will change to be similar to the following:

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

Touching Reset Setpoints will return any custom setting back to the default setting.



AutoWake Settings / Calibrate Inclinometer



AUTOWAKE SETTINGS ► CALIBRATE INCLINOMETER 7:09 PM

OFFSET	DEFAULT	CURRENT	CALIBRATE TO ZERO?
PITCH OFFSET	0.4 °	0.0 °	CALIBRATE
ROLL OFFSET	-25.8 °	0.0 °	CALIBRATE

CLEAR

BACK

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 offset 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, then you need to recalibrate roll.

To confirm that pitch offset 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, then you need to recalibrate pitch.

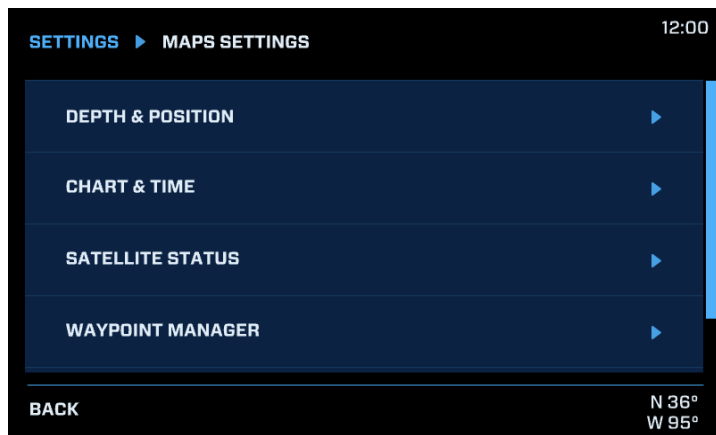
If the “current” number shows 0.0, then the inclinometer calibration has been cleared and needs to be calibrated.

To calibrate the inclinometer, touch the Calibrate 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.



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

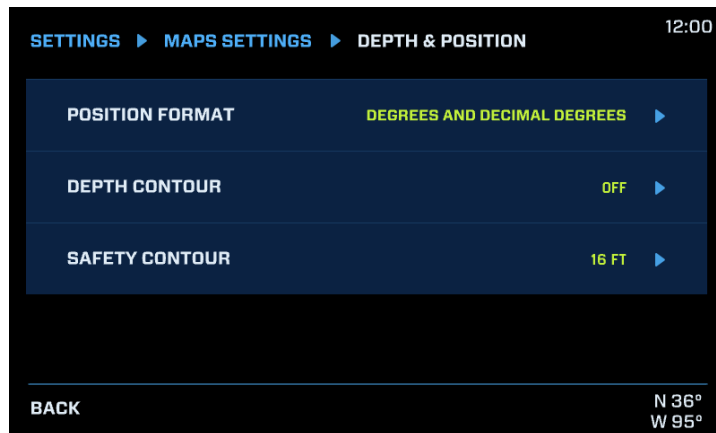
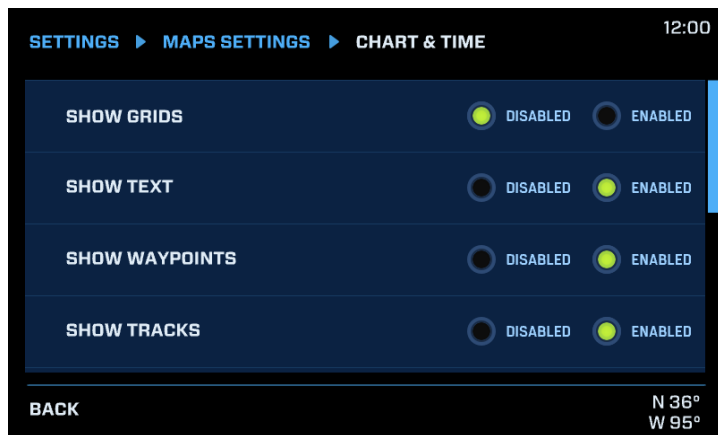


Chart & Time

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:

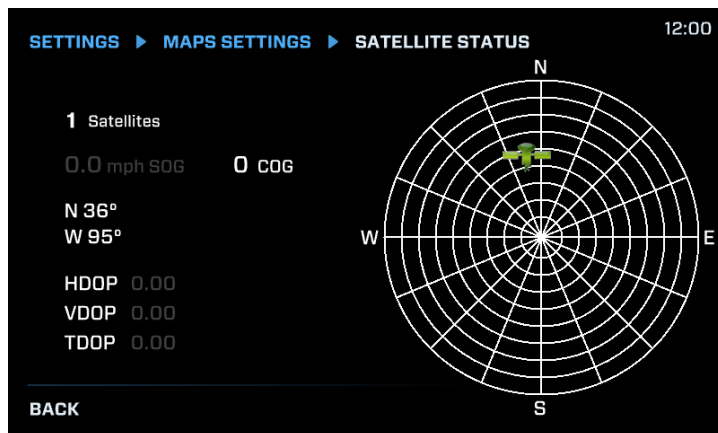
- Grids
- Text
- Waypoints
- Tracks
- Navigation Aids
- Waypoint Names
- Daylight Saving Time

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

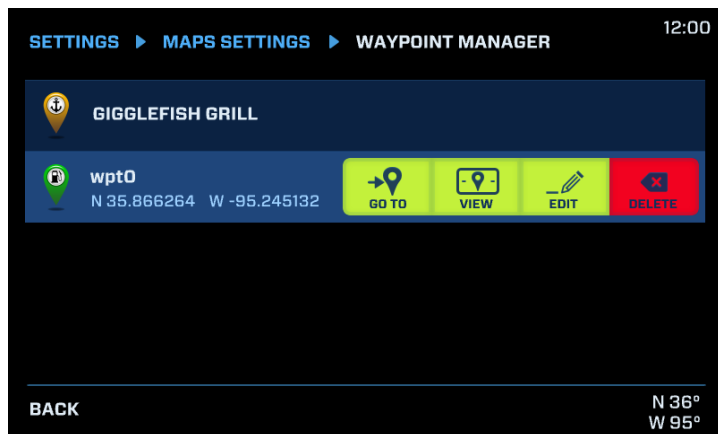
- GMT Offset: use the – and + buttons to set the hours of offset from GMT for your location.
- Time Display Format: select 12 or 24 hour.

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:** This option will ask if you want to go to the current waypoint. If you select Yes, the map will display 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 it changes to the next available icon:



Fuel



Interest Point



Fish



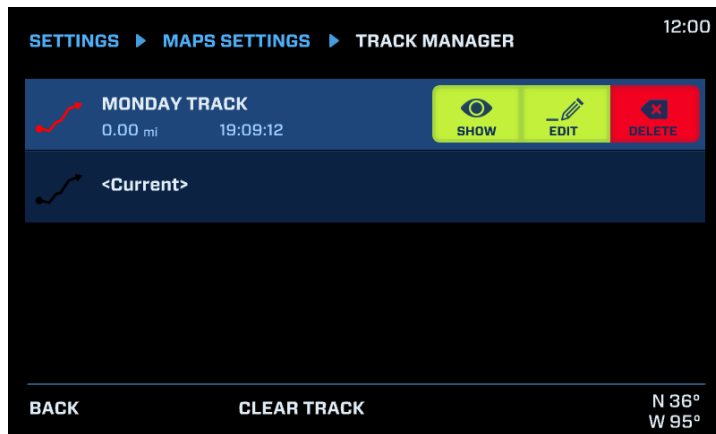
Anchor Point

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

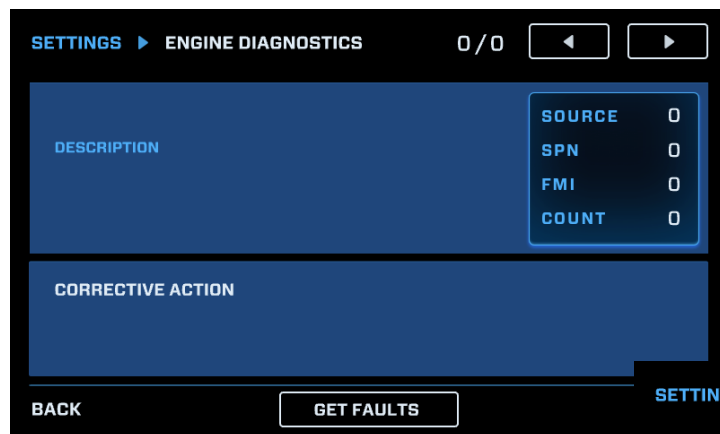
Track Manager

Track Manager allows the editing of the existing tracks within memory.

Touch the desired track, and choose one of the following:



- Show: selecting this option will alternate between Showing or Hiding the track on the map.
- Edit: selecting this option displays the keyboard to edit the track name. Also on this option is the track color. Hold your finger down on the track color to the left of the track name, and it will change to one of many colors from which to choose for that track. Press Enter when done editing.
- Delete: selecting this option asks if you wish to delete the track, and if Yes is chosen, that track will no longer display on the map.
- Clear Track: choosing this option at the bottom of the screen will ask if you wish to delete the current track. Choosing Yes will delete the current track from the map.



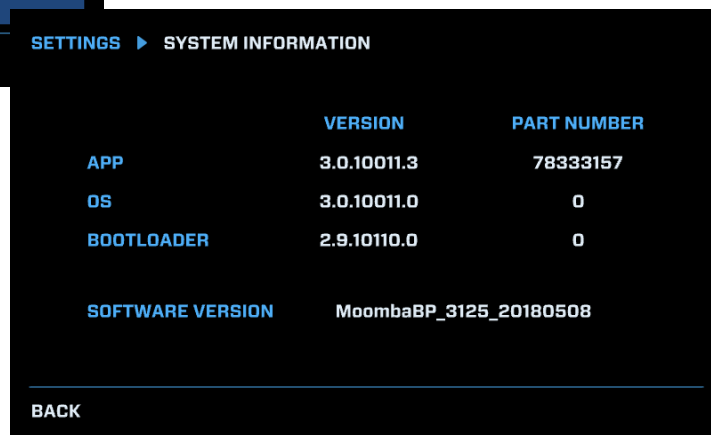
Engine Diagnostics

When choosing this selection, the display queries the engine's ECU and displays feedback on any diagnostic codes that have been activated and stored in the ECU for service needs.

Touch Get Faults to retrieve stored faults.

System Information

This screen contains the version and part numbers for the application, OS and Bootloader, and software version.



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.