

Moomba® Boats
PV480 Color Display

2020 Owner's Manual



We continually strive to bring you the highest quality, full-featured products. As a result, you may find that your actual display screens may be slightly different than what was represented in this manual at the time of printing.



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.

Trademarks & Patents

Moomba® is a U.S and Canadian registered trademark owned by Skier's Choice, Inc. and AutoWake® is a U.S. registered trademark owned by Skier's Choice, Inc. Skier's Choice™, the Skier's Choice logo, the Moomba logo, Mondo™, Mojo™, Makai™, Craz™, Helix™ and SmartPlate™ are trademarks owned by Skier's Choice, Inc. All other trademarks are the property of their respective owners.

The AutoWake® patented technology is covered by 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/

Skier's Choice, Inc. reserves the right to change product specifications at any time without incurring obligation.
© 2019 Skier's Choice, Inc. All rights reserved.

Table of Contents

Product Information	5
Care and Maintenance.....	5
Basic Navigation Features	6
Display Keys and Menu Bar.....	6
Screen Features	12
Main.....	12
AutoWake®	14
Ballast.....	18
Maps (Optional)	20
Settings	25
User Settings	26
Vessel Settings	27
Map Settings (If Enabled)	31
Engine Diagnostic.....	37
System Information.....	38
General Troubleshooting Guide	39

THIS PAGE INTENTIONALLY LEFT BLANK

Product Information

The Moomba PV480 Color Display integrates instrumentation and control from electronically controlled engines communicating via SAE J1939 and NMEA 2000. The display is a multi-functional tool that enables the boat operator to view many different display settings, engine parameters and service codes.

Care and Maintenance

General maintenance is not required; however, a soft cloth can be used for cleaning the unit. 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

Display Keys and Menu Bar

Navigate by pressing the display keys. The Menu Bar changes according to the screen displayed. To navigate to a feature, press the display key under your desired feature or action.

The display provides the following features and actions:

Screen	Features	
Main	<ul style="list-style-type: none"> • Fuel Level • MPH • Battery Voltage (optional) • Coolant Temperature (optional) • Oil Pressure (optional) • Water Temperature (optional) • Zero Off® Cruise System On/Off and Cruise Speed • Ballast Settings for Port, Center and Starboard • Water Depth (optional) • Engine Hours • Engine RPM • Left and Right Surf Indicators • SmartPlate™ position (optional) 	
Screen	Features	Display



Maps

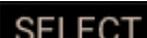
- Pan
- Center
- Drop Waypoint
- Zoom In (+)
- Zoom Out (-)
- Create Track
- Clear Track



Screen	Features	Display
Settings / Users	<ul style="list-style-type: none"> • Brightness • Paddlewheel Offset • Units • Digital Gauges 1-3 	
Settings / Vessel	<ul style="list-style-type: none"> • Ballast Fill/Drain Times • Reset Ballast Levels • Edit AutoWake Set Points • Roll Set Point • Pitch Set Points • Reset Set Points • Calibrate Inclinometer 	
Settings / Map	<ul style="list-style-type: none"> • Track Manager • Waypoint Manager • Chart Settings • Depth Settings • Satellite Status 	

Screen	Features	Display															
System Information	<ul style="list-style-type: none"> Application, OS, Bootloader, Software Information and Patent Information. 	 <table border="1" data-bbox="808 290 1268 556"> <thead> <tr> <th></th> <th>VERSION</th> <th>PART NO.</th> </tr> </thead> <tbody> <tr> <td>App</td> <td>2 8 10505</td> <td>78333157</td> </tr> <tr> <td>OS</td> <td>2 8 10016</td> <td>78333166</td> </tr> <tr> <td>Bootloader</td> <td>2 3 20059</td> <td>78333156</td> </tr> <tr> <td>Software</td> <td colspan="2">2810553_20190213</td> </tr> </tbody> </table>		VERSION	PART NO.	App	2 8 10505	78333157	OS	2 8 10016	78333166	Bootloader	2 3 20059	78333156	Software	2810553_20190213	
	VERSION	PART NO.															
App	2 8 10505	78333157															
OS	2 8 10016	78333166															
Bootloader	2 3 20059	78333156															
Software	2810553_20190213																

The following icons/actions are utilized within the display:

Icon	Action
	Arrow – opens the next or previous page
	Down – highlights the next setting down
	Up – highlights the next setting up
	Plus – (1) increases the value or setting (2) Map zoom-in function
	Minus – (1) decreases the value or setting (2) Map zoom-out function
	Select – opens the highlighted feature
	Menu – displays the menu list pop-up
	Zero Off – turns On/Off the Cruise System
	Ballast – displays the Ballast screen
	Displays the AutoWake screen.

Icon	Action
	Close – closes the opened pop-up screen
	Pan – opens Menu Bar to move cross hairs on maps
	More – opens additional Map options
	Back – returns to the previous screen
	Center – centers the Map on display
	Drop Waypoint – saves a location on the Maps screen
	Create Track – displays keyboard to name a route on the Maps screen
	Hide – Hides the secondary Maps menu bar
	Home – returns to the Home screen

Screen Features

Main



The Main screen is your home screen by default. This may be accessed by pressing the button below the  icon seen on screens within the system.

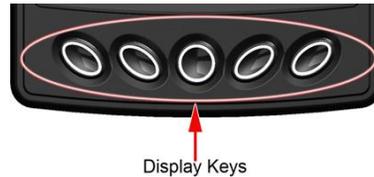
NOTE: The display in this document is set to US Standard Units. You may change it to Metric on the display screen. See User Settings.

The Main screen displays the following features:

- Fuel
- MPH
- Ballast Settings
- Zero Off Cruise Settings / AutoWake Settings

In addition to these four features, three of the following can be chosen for display:

- Fuel Level
- Battery Voltage
- SmartPlate™ Position
- Water Temperature
- Coolant Temperature
- Engine Hours
- Water Depth
- Oil Pressure



Display Button	Home Screen Function
First	Turns on and off the Zero Off Cruise system and activates the AutoWake Pitch and Roll screen
Second	Increases the cruise speed
Third (Middle)	Displays the Settings menu
Fourth	Decreases the cruise speed
Fifth	Displays the Ballast screen, the Home screen or the AutoWake Pitch and Roll screen

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, press the first display button twice on the unit. This will toggle between Cruise Off (seen above in the Main screen) to Cruise On (No AutoWake, shown upper right) and then AutoWake mode, seen on the lower right.

To display the AutoWake Environment screen, touch the button below the  symbol on the lower right.



*The AutoWake® patented technology is covered by 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/

The text above the Potential / Actual bar will show the current state of the system:

AutoWake Inactive: This will occur when:

- AutoWake is turned off
- Cruise setpoint is below 7mph or above 26mph, or
- When actual speed is between 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.

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.

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.

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).

Static AutoWake Active: This state will occur when:

- AutoWake is turned on
- Actual speed is less than 3mph
- Boat is turned on.

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).

Static AutoWake Achieved: This will occur when:

- AutoWake is turned on
- Actual speed is less than 3mph
- Boat is turned on
- 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.

Ballast

When the AutoWake is turned off, the Ballast portion of the main screen appears as shown on the right. To view the Ballast settings,



press the fifth (last) display button on the unit when on the Home screen. The following screen will appear:



This screen retrieves information from the PDM regarding the amount of fluid in each ballast, along with the position of the Port and Starboard plates and the SmartPlate™.

Display key 1 turns On/Off the ZeroOff Cruise System and activates the AutoWake system.

Display key 3 displays the Settings Menu.

Display key 5 displays the Map facility (when an active Maps card is installed) or the Home screen (when an active Maps card is NOT installed).

Maps (Optional)

From the Ballast screen, press the fifth (last) display button below the  icon and the Maps screen will appear as shown on the right.

NOTE: The Maps feature is optional. Please contact your dealer for details.

The Maps screen shows your position with a red square. Navigate by pressing the display key under the Menu Bar options, which change according to the screen displayed and actions chosen.



For example, the Menu Bar has the following features:



Minus (-) – zooms out from the map

Plus (+) – zooms in closer to the map



– Displays the Menu screen

Choose MORE for the following features:



Drop Waypoint – opens screen to save a specific location

Center – moves the map back to center



– Hides this secondary menu

Pan – allows moving across the map via the controls below:



Create Track – opens screen to save a specific route taken by the vessel.

Drop Waypoint

On the Maps screen, you can drop a marker or Waypoint on the map to mark a favorite location by latitude and longitude. Once the location is saved, an icon is placed on the map to represent the waypoint.

To Drop a Waypoint:

From the Menu Bar on the Maps screen, zoom the cross hairs in to the desired location. Choose MORE to open a new Menu Bar. Choose DROP WAYPOINT.

Highlight each letter and choose Select. Repeat to type the waypoint name. Highlight DONE, and choose Select to save it. In this example, the icon is an anchor.



You may change the Waypoint icon and make edits from the Waypoint Manager screen. See Waypoint Manager.

You may choose to hide the Waypoint icon or name from the maps screen on the Chart Settings screen. See Chart Settings.

Create Track

On the Maps screen, you can track a specific route taken by the vessel. The track can be saved and viewed on the Maps screen.

To navigate, press the display key under a chosen action.

From the Menu Bar on the Maps screen, choose MORE to open a new Menu Bar and choose CREATE TRACK.

Highlight each letter and choose SELECT, repeat to type the Track name. Highlight DONE and choose Select to save it.

You may change the Track name, hide the Track, and make edits and deletions from the Track Manager screen. See Track Manager.



Settings

Press the middle display key to access the Settings pop-up.

The Settings pop-up provides access to:

- User Settings
 - Vessel Settings
 - Map Settings
 - Engine Diagnostic Information
 - System Information
 - Dealer Settings (Dealer Access Only)

Press the display key under the Up and Down pointers to scroll the list and highlight a function. Press the display key under Select to open that function.

Press the display key under Close when finished.



User Settings

From the Menu pop-up, highlight User Settings and press the middle display key under Select.

Brightness:

Use buttons below the arrows to highlight Brightness and press Select. The arrow keys then become – and + to adjust the percentage. Each press will decrease or increase the brightness by 10%. Press the button below Done when finished.

Units:

Use the buttons below the arrows to highlight Units and press Select. The arrow keys then become – and + to adjust the choices. Choose Metric or US STD. Press the button below Done when finished.

Paddlewheel Offset:

Use the buttons below the arrows to highlight



Paddlewheel Offset and press Select. The arrow keys then become – and + to adjust the offset. Press the button below Done when finished.

Digital Gauges 1, 2 and 3:

These areas control the gauge presentation on the Main screen. Use the buttons below the arrows to highlight the specific gauge to be altered and press Select. The arrow keys then become – and + to adjust the selection. Choose Water Temp, Water Depth, Battery Voltage, Coolant Temp, Oil Pressure, SmartPlate™ Position, Engine Hours, Engine RPM or Fuel Level. Press the button below Done when finished.

Vessel Settings

From the Menu pop-up, highlight Vessel Settings and press the middle display key under Select.



Ballast Fill / Drain:

Use the Up and Down arrow keys to highlight Ballast Fill / Drain and press Select.

Highlight the particular ballast to be filled or drained and press Select. Utilize the + and – keys to adjust the fill/drain times, then press the display key under Done.



Reset Ballast Levels:

Use the arrow keys to highlight Reset Ballast Levels and press Select.

Use the arrow keys to highlight All, Port, Center or Starboard and press Select. Utilize the – (Minus) key to move the highlighting to the left (Empty) or the + (Plus) key to move the highlighting to the right (Full). Press the display key under Done when finished.



AutoWake Settings:

Use the arrow keys to highlight the area to edit and press the display key under Toggle or Select.

Edit AutoWake Set Points:

Use the arrow keys to highlight this selection and press the Toggle button to choose Surf Starboard, Surf Port or Wake.

Pitch Set Point:

This is the angle of pitch that the boat is trying to achieve in the specified mode. The factory default settings are colored gray. The user-edited set points are colored orange. Use the arrow keys to highlight this selection and press Select. Use the – and + keys to adjust, then press Done.



Roll Set Point:

This is the angle of roll that the boat is trying to achieve in the specified mode. Factory default settings are colored gray. User-edited set points are colored orange. Use the arrow keys to highlight this selection and press Select. Use the – and + keys to adjust, then press Done.

Reset Set Points:

Selecting this will change the user set points (orange) to match the default set points in the current mode.

Calibrate Inclinometer:

This selection will display the options to calibrate the pitch and roll (separately) to 0°. Use the arrow keys to highlight Calibrate Inclinometer and press Select. Then arrow to Calibrate Pitch or Calibrate Roll and press Select. The screen to the right will appear:

Cancel:

Cancels the calibration. AutoWake will continue to use the previous calibration. This returns the screen to the AutoWake Settings page.



Clear:

The AutoWake will use the inclinometer defaults for 0 degrees pitch and roll. This will usually be off by a few degrees due to the mounting of the inclinometer. This returns the screen to the AutoWake Settings page.

Confirm:

This changes the current values of the selection (pitch or roll) to be 0 degrees.

Close:

This closes the menu and returns the screen to the Home page.

Map Settings (If Enabled)

Track Manager

Highlight the desired track and press the display key under Select. The following Track Editor screen will appear:



Edit Name will display a keyboard to revise the existing Track name.

Show Track will have an illuminated asterisk (*) if the Track will be displayed. To make the Track invisible, press Select when Show Track is highlighted, and the asterisk will dim (signifies turning it off).

Selecting Delete will display the following pop-up screen:



Press the appropriate display key under the desired action to perform.

Selecting Delete All will display a pop-up similar to the one shown above, but for all tracks. Press the appropriate display key under the desired action to perform.

Waypoint Manager

Highlight the desired waypoint and press the display key under Select. The Waypoint Editor screen will appear.

Edit Name will display a keyboard to revise the existing Waypoint name.

Icon allows you to choose between an anchor, a marina, a flag or a fish to classify the waypoint.

Go To will display that highlighted waypoint on the map.

Selecting Delete will display the following pop-up screen to confirm the deletion. Press the appropriate display key under the desired action to perform.

Selecting Delete All will display a pop-up screen to confirm the deletion of all waypoints. Press the appropriate display key under the desired action to perform.





Chart Settings

To show or hide grids, tracks, text, navigation aids, waypoints or waypoint names, highlight the desired setting and press Toggle. The asterisk will illuminate (show) or dim (hide).

Depth Settings

Set the Depth Contour value to display the following water depths on the Maps screen:

- 6 feet (1.8 meters)
- 16 feet (5 meters)
- 33 feet (10 meters)
- 66 feet (20 meters)
- All
- Off



Set the Safety Contour value to a water depth above what the vessel can safely navigate:

- 6 feet (1.8 meters)
- 16 feet (5 meters)
- 33 feet (10 meters)
- 66 feet (20 meters)
- All
- Off

When a Safety Contour value is set, the Maps screen displays the areas with depths up to that value in shades going from darker blue (for lower depths) to lighter blue (for higher depths). The areas where depths are over the selected value (navigable) will be displayed in white.

As an example, your vessel needs a water depth of 8 feet or greater to safely navigate. Set the Safety Contour value at 16 feet. The Maps screen displays your safe navigating zones as white areas. The shallow waters, less than 15 feet, display as shaded areas.



Satellite Status

The Satellite Status screen displays the detectable satellites in the area of the craft. Press the display key under Back to return to the previous screen or Close to return to the main screen.



Engine Diagnostic



The Diagnostic Message area will provide a description of an existing fault and a corrective action, if necessary. Also present will be the source, SPN, FMI and count information.

Display keys 2 and 4 serve to call the previous and next fault, respectively. Display key 3 returns to the previous screen, and Display key 5 queries the PDM to obtain new faults, if any exist.

System Information



The System Information screen provides the version and part number for the Application, Operating System, Bootloader and Software. This information will be useful should the unit require troubleshooting.

To obtain Patent information, press the middle (third) button and the following screen will appear:



Access the QR code to view all Skier's Choice Patent Information.

General Troubleshooting Guide

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

1. Display could be in sleep mode. Select 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 six volts.

Display resets or goes OFF when starting engine.

1. Check that 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 -
