



2016 Service School - LINC

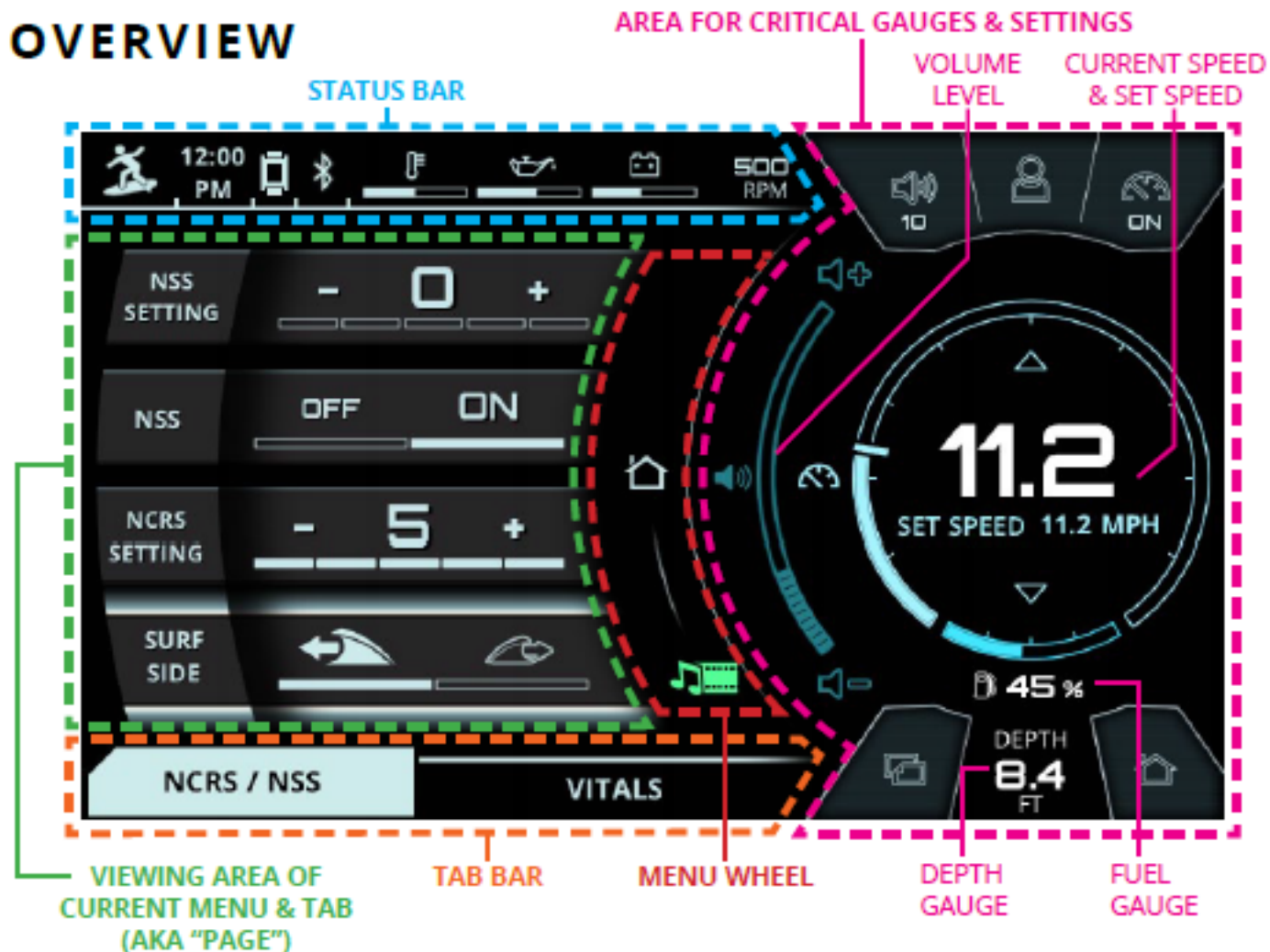


# LINC Basics

- ▶ Powered by the accessory circuit (PDM1)
  - ▶ Accessory circuit powers LINC, the GPS antenna, Helm Command, stereo relay, paddle wheel, and 3 Event Dongle.
  - ▶ On boats 2015 and older, accessory circuit also powers the ballast senders.
- ▶ On the CAN network
  - ▶ LINC is on the boat's CAN1 network along with the GPS antenna, biducer, ECM, both PDMs, keypad, Helm Command, and the 3 Event Dongle.
  - ▶ There is a secondary CAN2 network that exists between LINC and Surf Select.
- ▶ Keypad is in control of PDMs until LINC boots up
  - ▶ After LINC boots up, LINC continually sends commands to the keypad to disable the keypad's control of the PDMs.
  - ▶ If LINC loses CAN or powers off for any reason, the keypad will reassume control of the PDMs.

# LINC Touch – Brief Introduction

## OVERVIEW

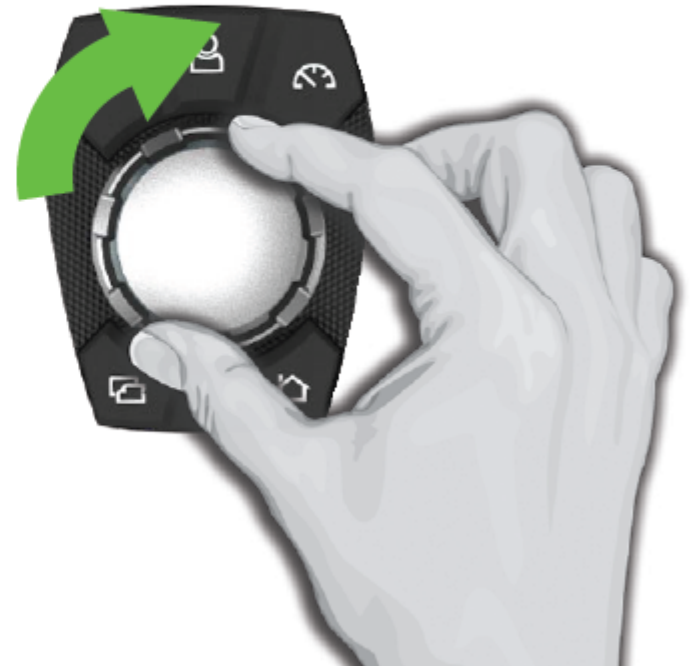




# LINC Touch – Brief Introduction



# LINC Touch – Brief Introduction

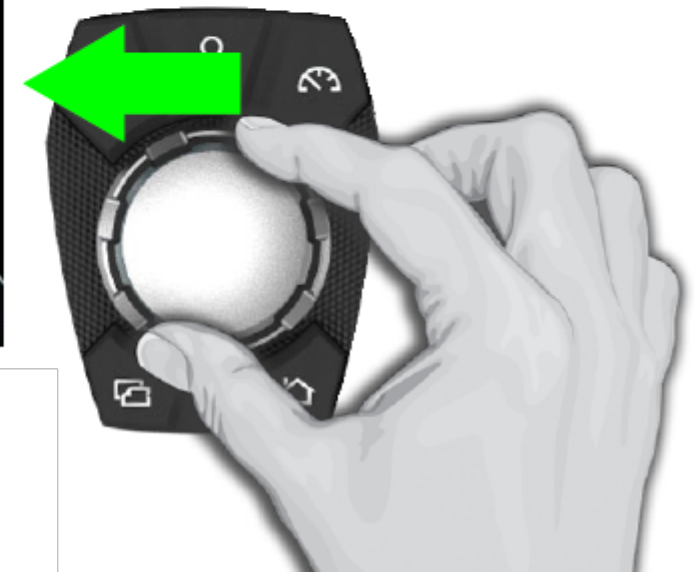




# LINC Touch – Brief Introduction



— OR —



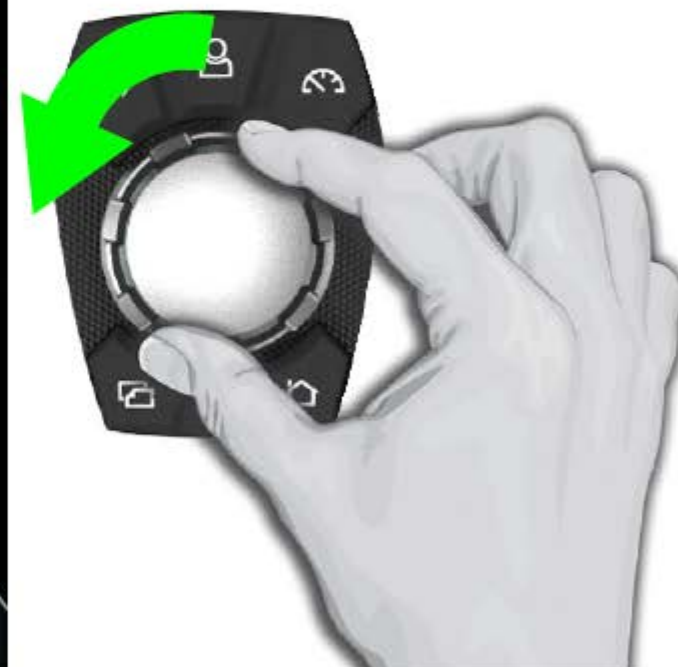




# LINC Touch – Brief Introduction



# LINC Touch – Brief Introduction





# LINC Touch – Brief Introduction



# LINC Touch – Brief Introduction



HELM COMMAND

TAB

HOME

# LINC Touch – Brief Introduction

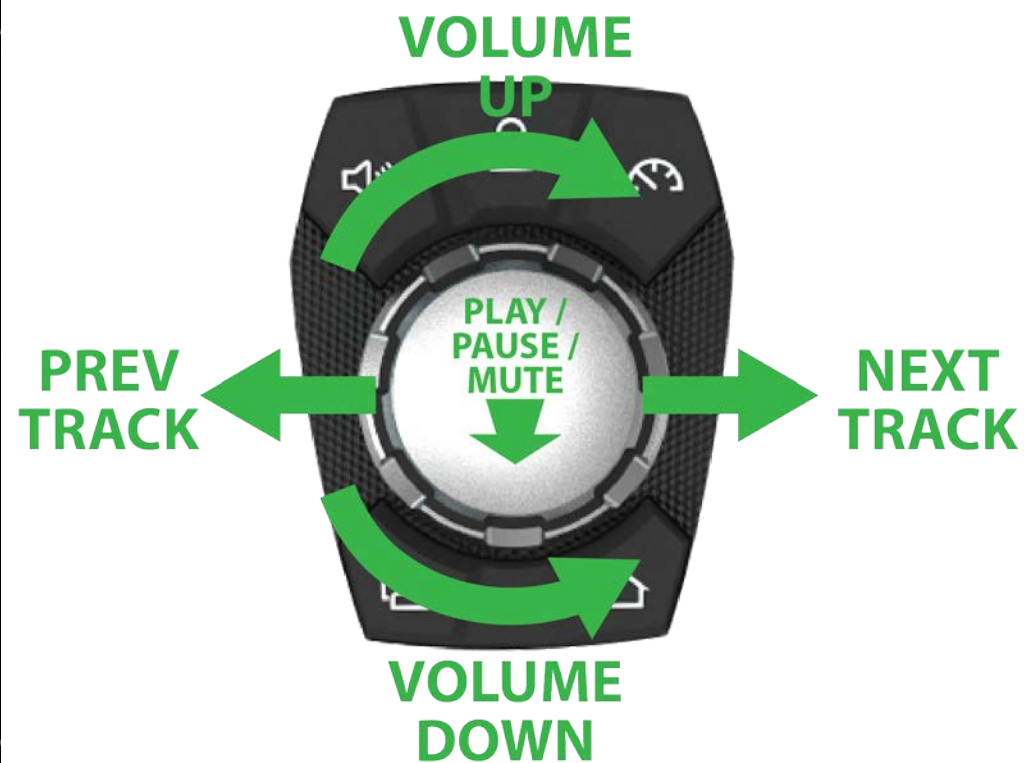




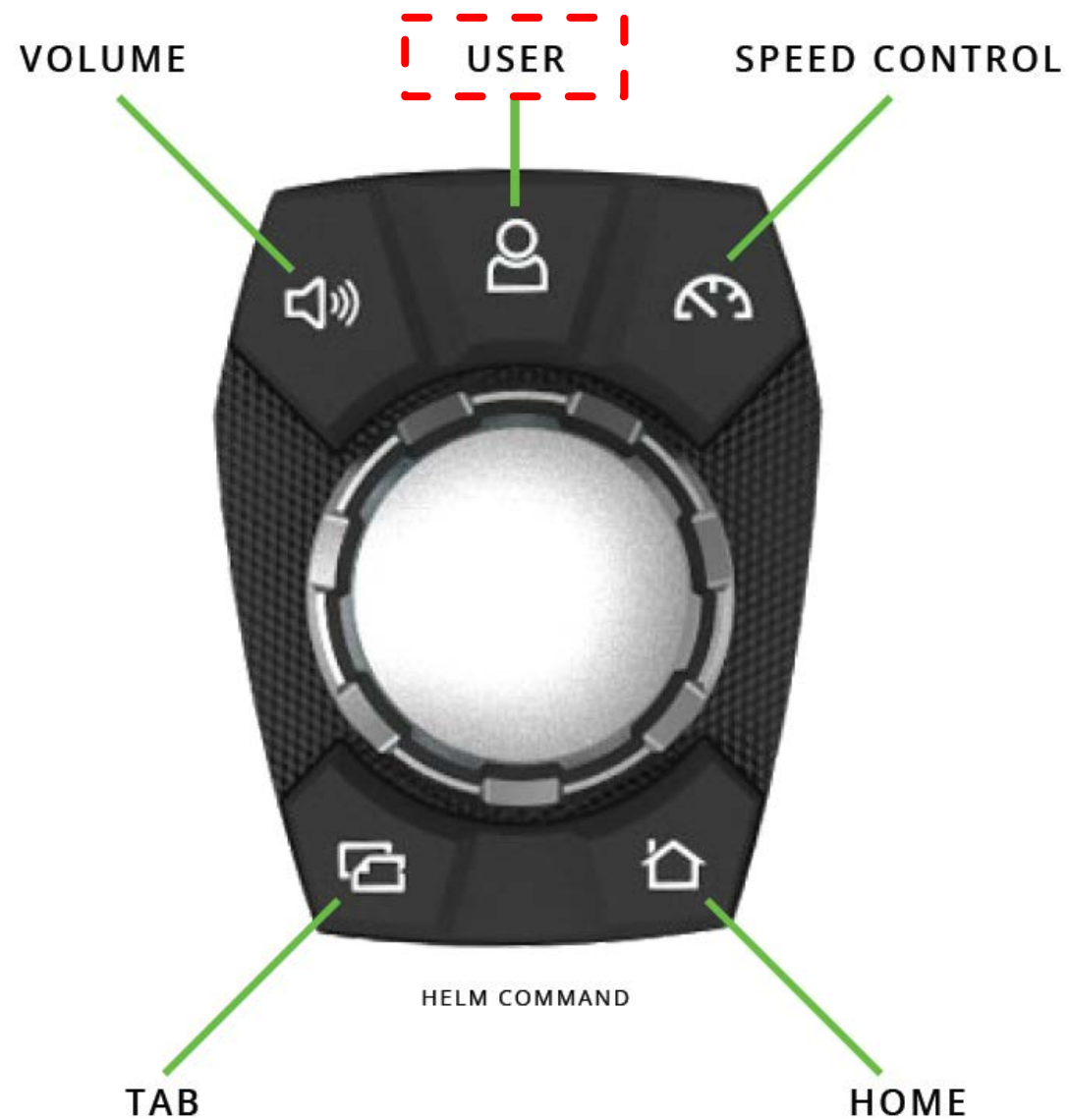


# LINC Touch – Brief Introduction

## ► Volume Popup



# LINC Touch – Brief Introduction



# LINC Touch – Brief Introduction

## ► User Hotkey Menu

Drop down menu shows altered settings





# LINC Touch – Brief Introduction



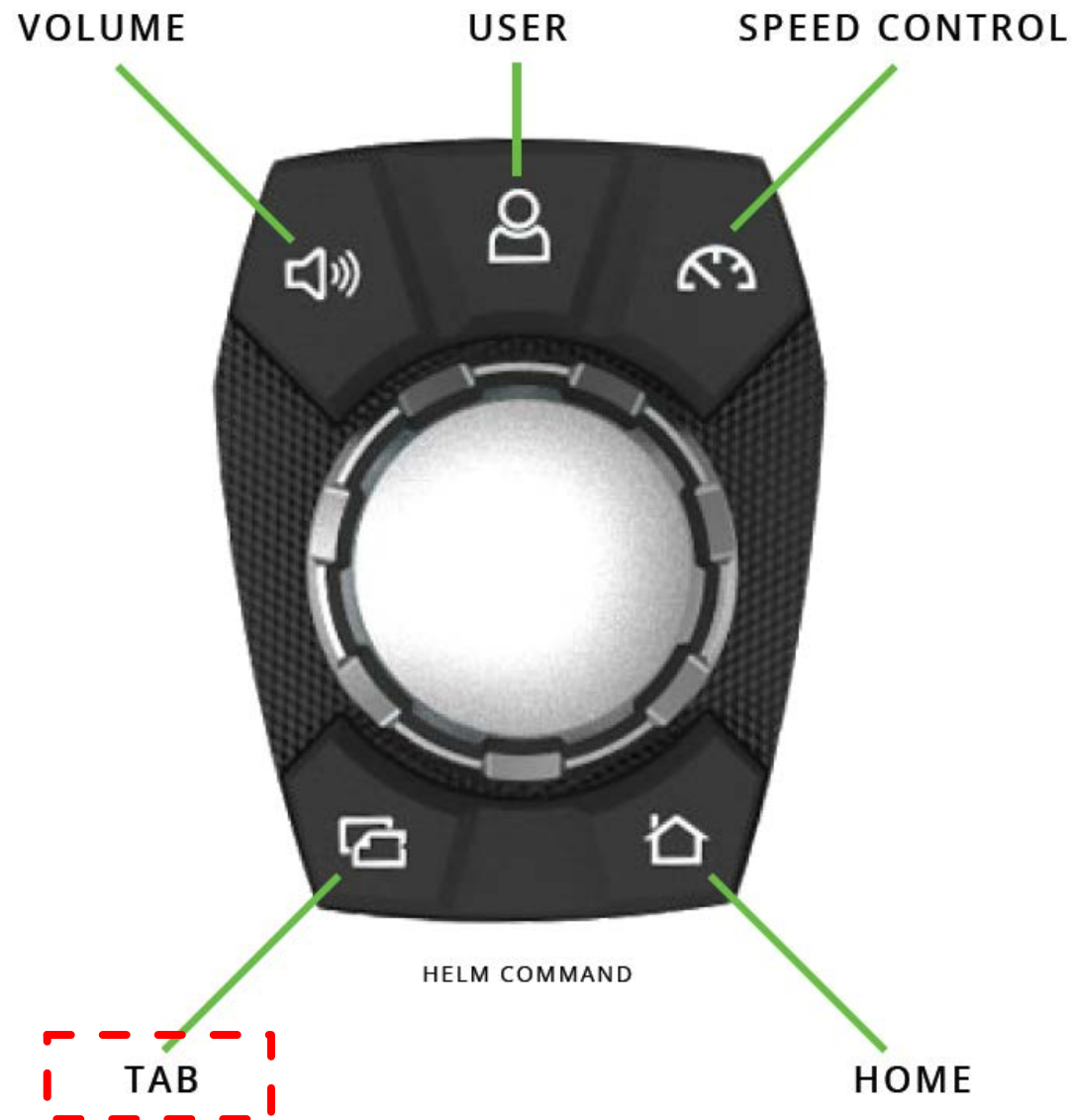


# LINC Touch – Brief Introduction

## ► Set Speed Popup



# LINC Touch – Brief Introduction





# LINC Touch – Brief Introduction



# LINC Touch – Brief Introduction

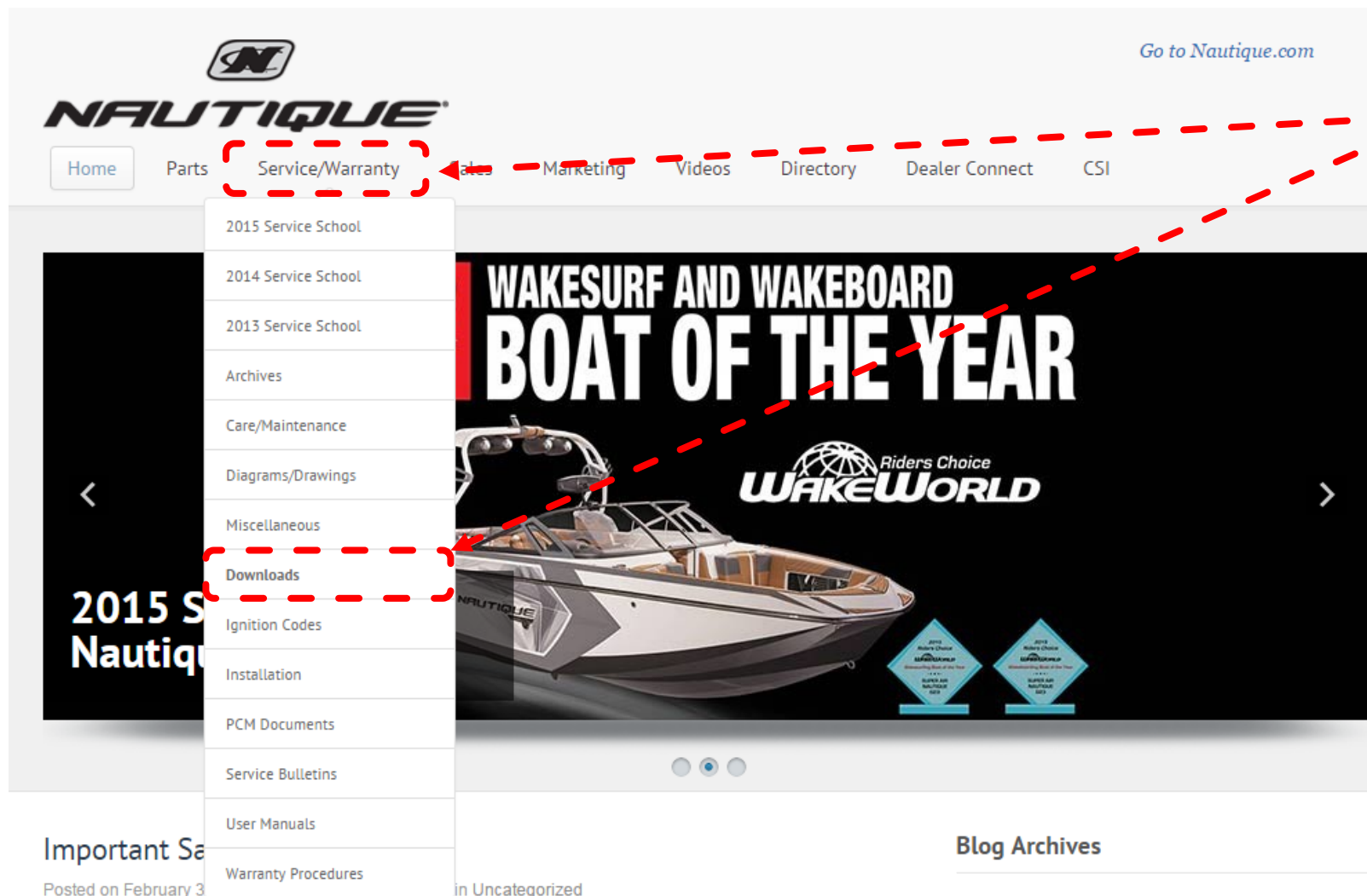




# LINC Touch – Brief Introduction



# LINC Basics – Updating Software



To download the latest LINC updates, go to <http://dealer.nautique.com> and click the “Service/Warranty” drop down followed by “Downloads”.

## Important Safety Notice

Posted on February 3, 2016 in Uncategorized

**IMPORTANT SAFETY NOTICE UPDATE** The PCM and Nautique engineering teams have been working continuously to comprehensively investigate and resolve concerns in the engine management software. These efforts have revealed that only the PCM H5DI and H6DI engines installed in MY2016 boats will require immediate ECM Calibration updates. PCM is in the process of preparing documentation and [...]

## Blog Archives

- February 2016
- January 2016
- December 2015
- November 2015
- June 2015





# LINC Basics – Updating Software

## 2016 LINC Software

[How to update 2016 LINC Touch Software](#)

### G21, G23, & G25

File Name (click to download)	Models Affected	Version	Date	Description
<a href="#">update-full_CC_2016_G5T_20160104_2810308.pv1</a>	G21, G23, G25	G5T	1/4/2016	- Updates DI Engine DTC codes - Fixes Maps glitch where some lakes are drawn the same color as land - Fixes the spacing between the vitals text gauges when the screen is in metric - Adds Pebble and RF remote pairing menu for Surf Select - Adds Demo Mode - Changes the underwater lights breaker to 15 amps - Includes previous update(s)
<a href="#">update-full_CC_2016_G5T_20150826_2810245.pv1</a>	G21, G23, G25	G5T	8/26/2015	- Maps Page updates - Fixes glitch with seat heater and boat heater switching - Moves Surf Select to CAN port 2 - This LINC update must be paired with PDM software REV 40 - Bug squashes

### 200V, 210 & 230

File Name (click to download)	Models Affected	Version	Date	Description
<a href="#">update-full_CC_2016_V5_20160104_2810308.tar.gz</a>	200V, 210, 230	V5	1/4/2016	- Updates DI Engine DTC codes - Adds Pebble and RF remote pairing menu for Surf Select - Changes the underwater lights breaker to 15 amps - Includes the previous update(s)
<a href="#">update-full_CC_2016_V5_20150826_2810245.tar.gz</a>	200V, 210, 230	V5	8/26/2015	- Updates 200V ballast timers - Fixes glitch with seat heater and boat heater switching - Moves Surf Select to CAN port 2 - This LINC update must be paired with PDM software REV 40 - Bug squashes

LINC Software is grouped 1<sup>st</sup> by model year and 2<sup>nd</sup> by boat type.

Nautique has 3 different versions of software:

- “G Software” is used on the G21, G23, and G25.
- “V Software” is used on the 200V Sport, 210, and 230.
- “3E Software” is used on the Ski 200.



# LINC Basics – Software Identification

update-full\_CC\_2015\_G4\_20141010\_2710462.tar.gz

Revision  
Number

Model  
Year

Model

Release  
Date



# LINC Basics – Updating Software

## 2016 LINC Software

How to update 2016 LINC Touch Software

G21, G23, & G25

File Name (click to download)	Models Affected	Version	Date	Description
<a href="#">update-full_CC_2016_G5T_20160104_2810308.pv1</a>	G21, G23, G25	G5T	1/4/2016	<ul style="list-style-type: none"><li>- Updates DI Engine DTC codes</li><li>- Fixes Maps glitch where some lakes are drawn the same color as land</li><li>- Fixes the spacing between the vitals text gauges when the screen is in metric</li><li>- Adds Pebble and RF remote pairing menu for Surf Select</li><li>- Adds Demo Mode</li><li>- Changes the underwater lights breaker to 15 amps</li><li>- Includes previous update(s)</li></ul>
<a href="#">update-full_CC_2016_G5T_20150826_2810245.pv1</a>	G21, G23, G25	G5T	8/26/2015	<ul style="list-style-type: none"><li>- Maps Page updates</li><li>- Fixes glitch with seat heater and boat heater switching</li><li>- Moves Surf Select to CAN port 2</li><li>- This LINC update must be paired with PDM software REV 40</li><li>- Bug squashes</li></ul>

Description will show what fixes have been done in each update. Newer software will also include older fixes.

200V, 210 & 230

File Name (click to download)	Models Affected	Version	Date	Description
<a href="#">update-full_CC_2016_V5_20160104_2810308.tar.gz</a>	200V, 210, 230	V5	1/4/2016	<ul style="list-style-type: none"><li>- Updates DI Engine DTC codes</li><li>- Adds Pebble and RF remote pairing menu for Surf Select</li><li>- Changes the underwater lights breaker to 15 amps</li><li>- Includes the previous update(s)</li></ul>
<a href="#">update-full_CC_2016_V5_20150826_2810245.tar.gz</a>	200V, 210, 230	V5	8/26/2015	<ul style="list-style-type: none"><li>- Updates 200V ballast timers</li><li>- Fixes glitch with seat heater and boat heater switching</li><li>- Moves Surf Select to CAN port 2</li><li>- This LINC update must be paired with PDM software REV 40</li><li>- Bug squashes</li></ul>

LINC software release date.



# LINC Basics – Updating Software

- ▶ Thumb drive must be formatted as FAT32.
- ▶ LINC software files you are trying to load onto a LINC screen cannot be in a sub-folder on the thumb drive, they must be in the main directory.
- ▶ If a thumb drive is formatted as FAT32, works on your computer, and is not recognized by LINC, most likely the USB extension cable has failed.
  - ▶ To bypass the extension cable, plug into the short USB jumper coming directly out of the back of the LINC display.
  - ▶ If this still does not work, replace the gray LINC connector.

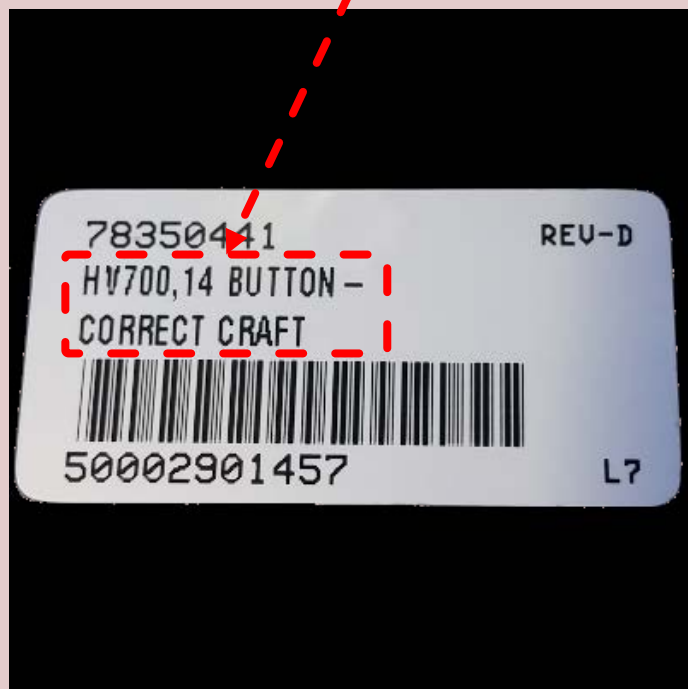




# LINC – Identifying LINC Hardware

MY2012/MY2013  
LINC Hardware

HV700 with no mention of JDAB



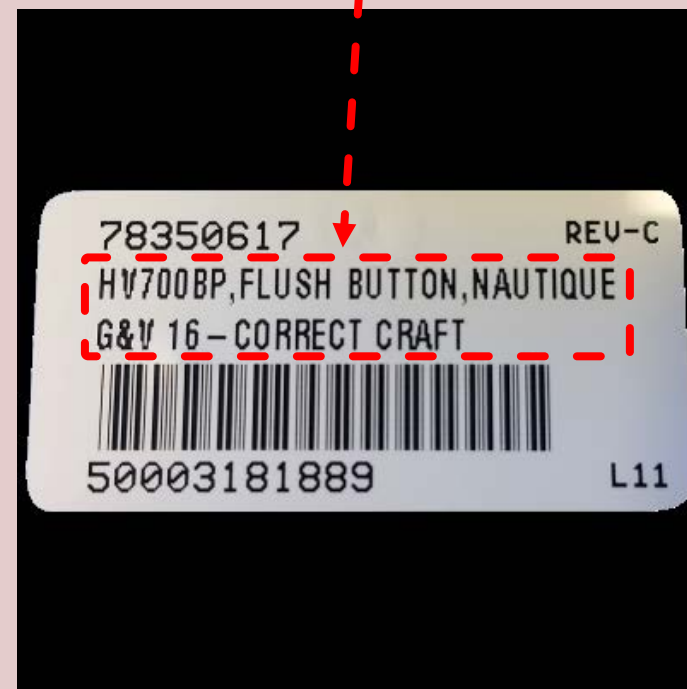
MY2014/MY2015/MY2016  
LINC Hardware

HV700/HV700HB with JDAB called out



MY2016  
LINC Touch Hardware  
For G Series ONLY!

HV700BP Flush Button



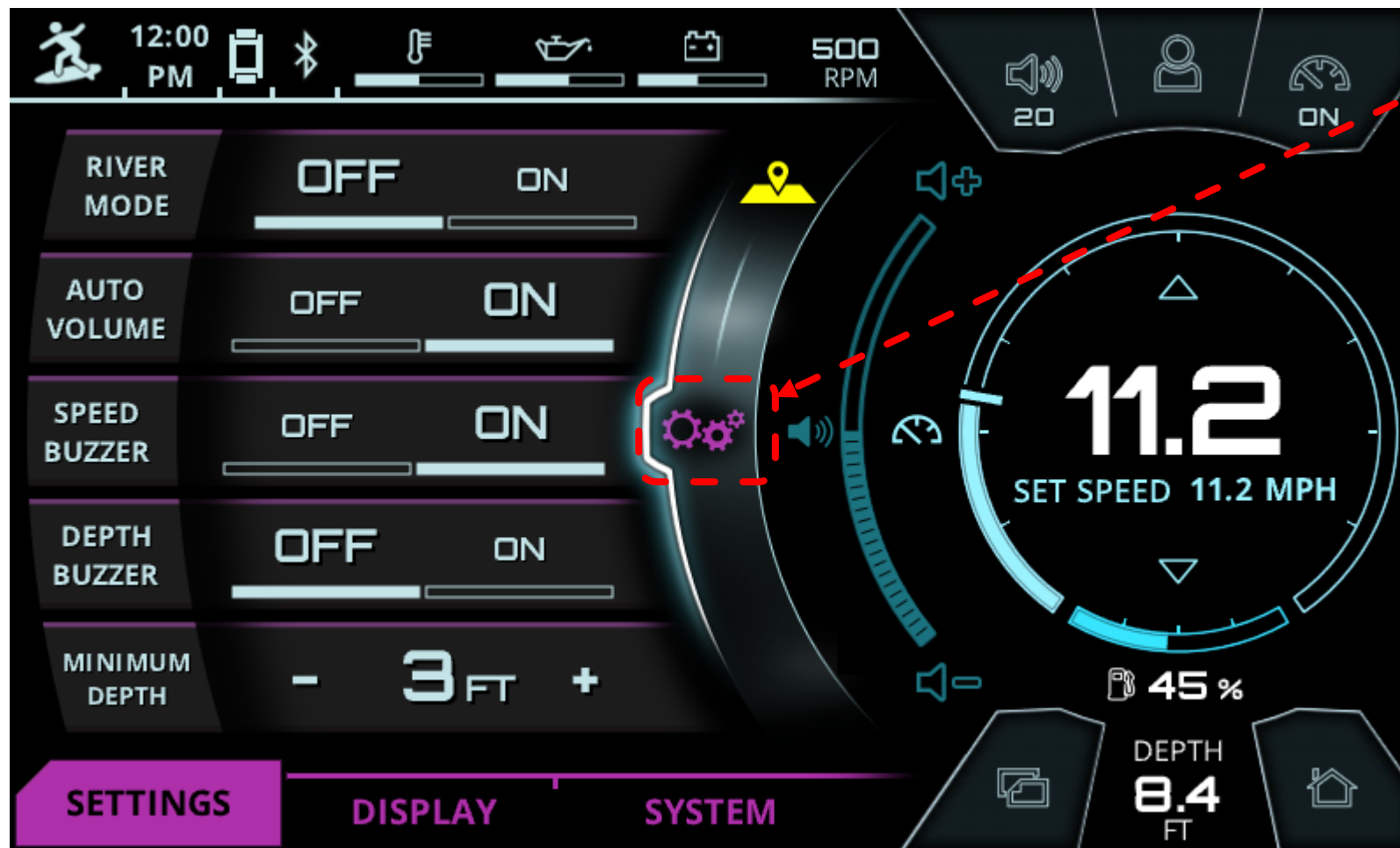
\*LINC for Ski boats will have a  graphic instead of a  graphic on the button second from the bottom on the front of the screen\*



# LINC – Boat/Hardware/Software Compatibility

G-Series (G21, G23, G25)		MY2012/MY2013 G-Series Boat	MY2014/MY2015 G-Series Boat	MY2016 G-Series Boat
MY2012/MY2013 LINC Hardware	MY13 G Software	Yes	Yes, but no stereo controls and different ballast timers.	No
	MY15 G Software	Yes, but no stereo controls and different ballast timers.	Yes, but no stereo controls.	No
	MY16 G Software	No	No	No
MY2014/MY2015 LINC hardware	MY13 G Software	No	No	No
	MY15 G Software	Yes, but no stereo controls and different ballast timers.	Yes	No
	MY16 G Software	No	No	No
MY2016 LINC Touch hardware	MY13 G Software	No	No	No
	MY15 G Software	No	No	No
	MY16 G Software	No	No	Yes

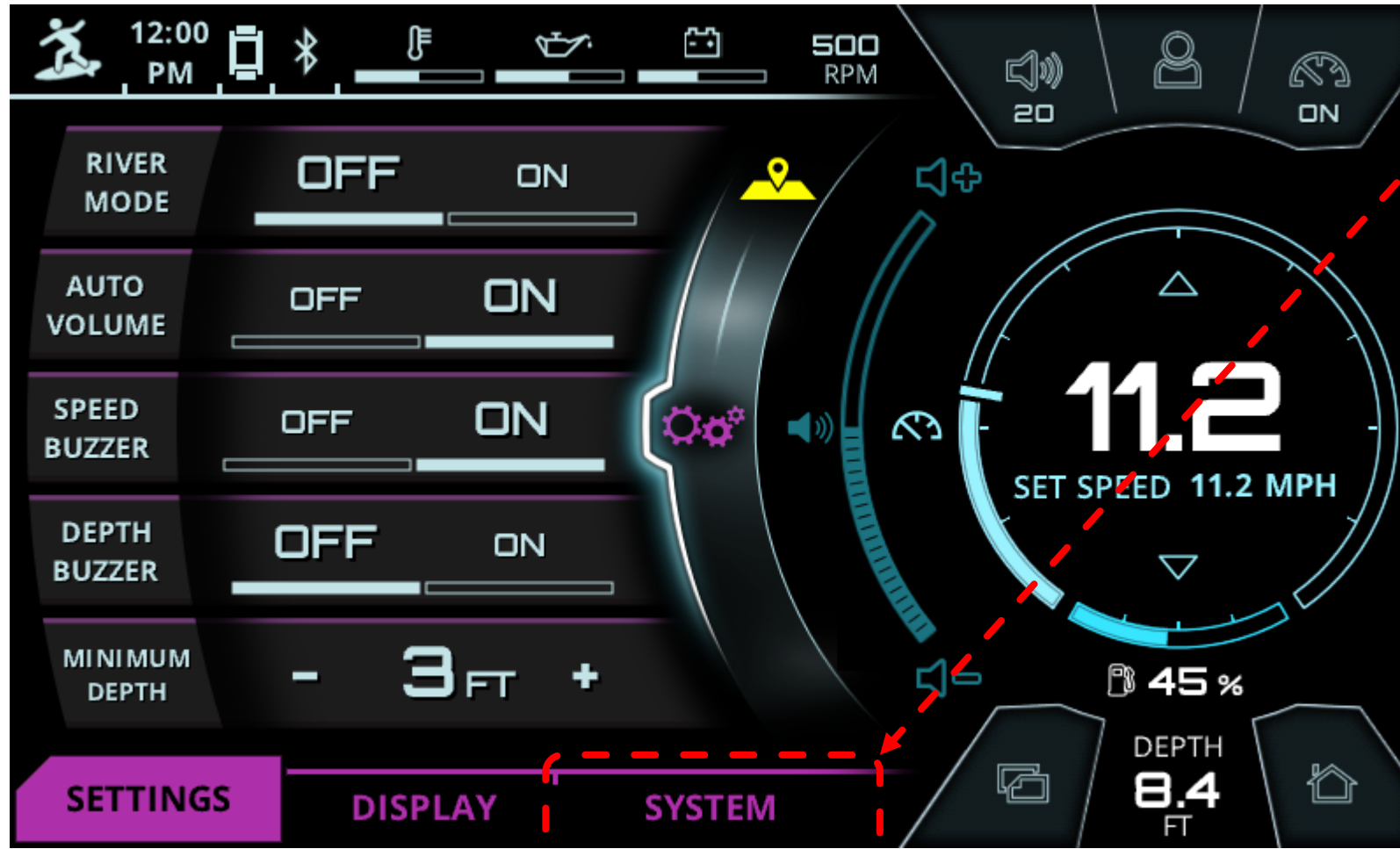
# LINC Touch – How to update software version



Move the highlight to the 'Page Selection' menu and rotate the 'Helm Command' clockwise until you see the Preferences Page.



# LINC Touch – How to update software version

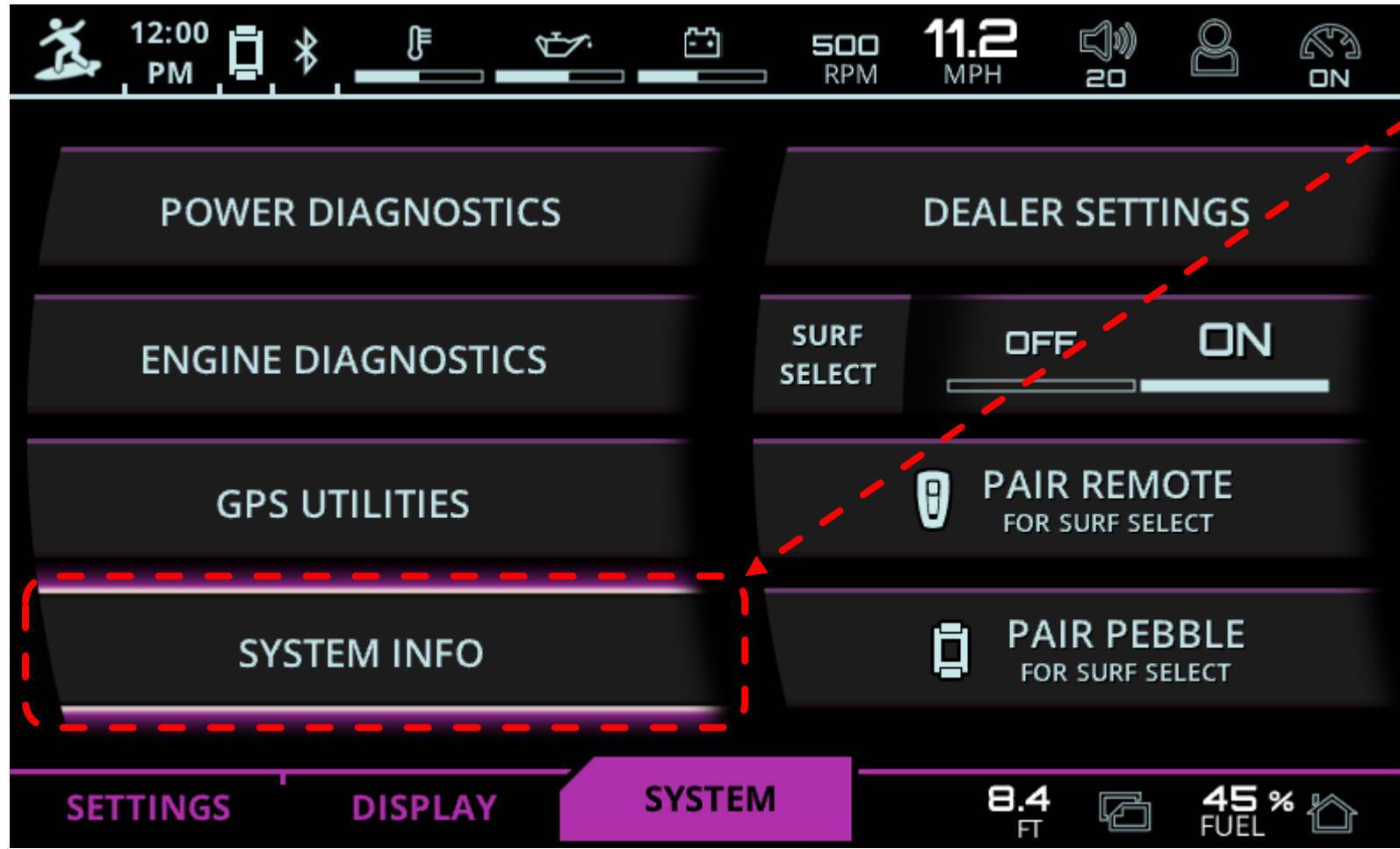


Go to the "System" tab.





# LINC Touch – How to update software version



Select "System Info".



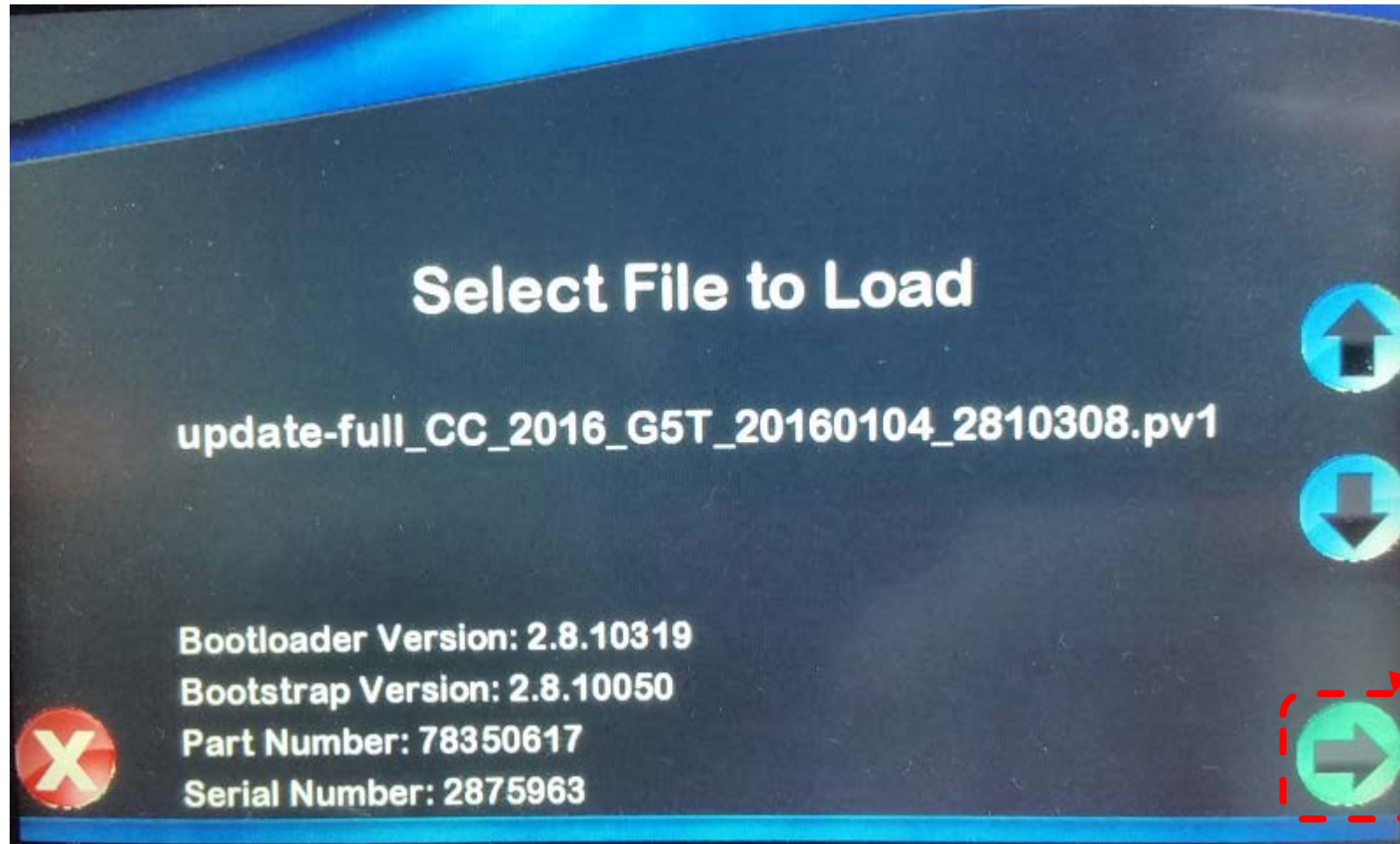
# LINC Touch – How to update software version



If "LINC Version" matches the newest version shown on the Nautique Dealer site, then the software is up to date.

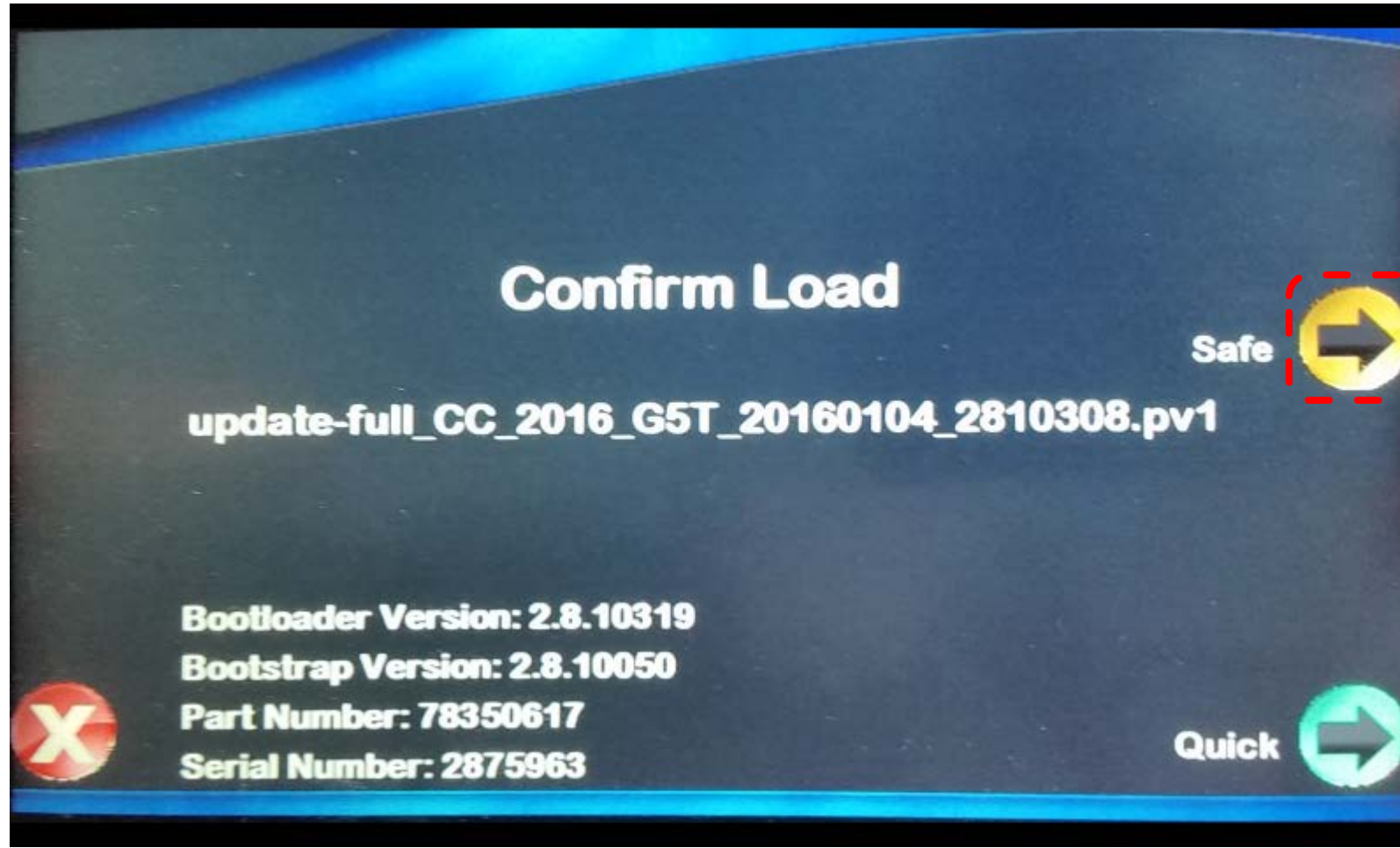
If an update is needed, insert a thumb drive containing the LINC software update into the USB port under the helm and touch "Reboot To Bootloader".

# LINC Touch – How to update software version



Choose the file name with the up and down arrows and then touch the arrow facing to the right to select it.

# LINC Touch – How to update software version



Now touch “Safe” and the update will begin.

At first you will not see movement on the progress bar but you should see the bar start moving after a minute or two. Once the update is complete, the screen will reboot and return to the home screen.

After the screen reboots it is important to fully shut down LINC and restart it.





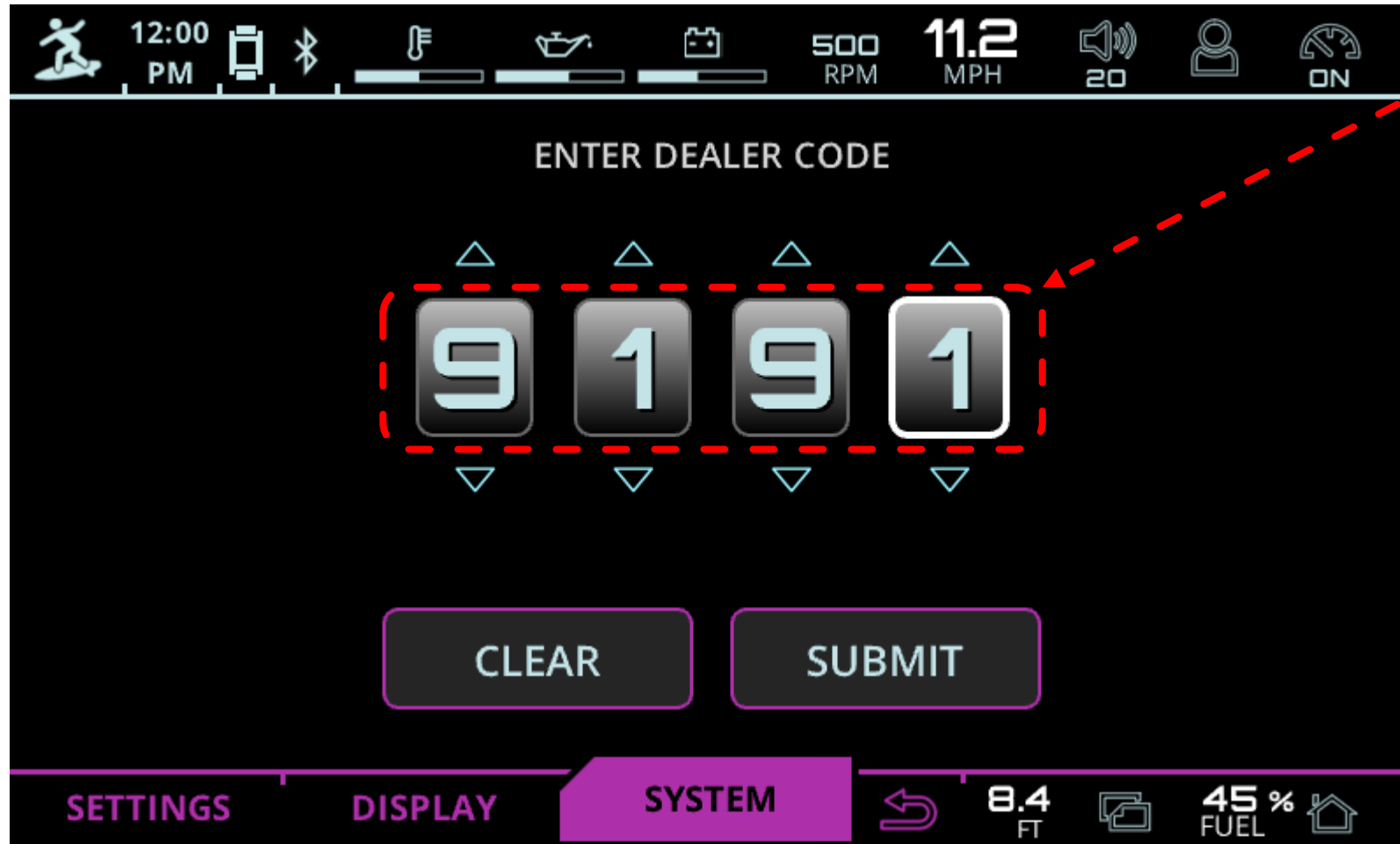
# LINC Touch – How to update software version



After LINC is finished rebooting, navigate back to the “System” tab on the Preferences page and select “Dealer Settings”



# LINC Touch – How to update software version



Enter the password 9191 to reconfigure the dealer options as they will have reset from the software update.



# LINC Touch – How to update software version

Once options have been configured, the update process is complete.





# LINC 2.0 – Brief Introduction







# LINC – Boat/Hardware/Software Compatibility

<b>V-Series</b> (200 Sport, 210, 230)		<b>MY2012/MY2013 V-Series Boat</b>	<b>MY2014/MY2015 V-Series Boat</b>	<b>MY2016 V-Series Boat</b>
<b>MY2012/MY2013 LINC Hardware</b>	<b>MY13 V Software</b>	Yes	Yes, but no stereo controls and different ballast timers.	No
	<b>MY15 V Software</b>	Yes, but no stereo controls and different ballast timers.	Yes, but no stereo controls.	No
	<b>MY16 V Software</b>	No	No	No
<b>MY2014/MY2015/MY2016 LINC hardware</b>	<b>MY13 V Software</b>	No	No	No
	<b>MY15 V Software</b>	Yes, but no stereo controls and different ballast timers.	Yes	No
	<b>MY16 V Software</b>	No	No	Yes



# LINC – Boat/Hardware/Software Compatibility

Ski 200		MY2012/MY2013 Ski Boat	MY2014/MY2015/MY2016 Ski Boat
MY2012/MY2013 LINC Hardware	MY13 3E Software	Yes	Yes, but no stereo controls.
	MY15 3E Software	Yes, but no stereo controls.	Yes, but no stereo controls.
MY2014/MY2015/MY2016 LINC hardware	MY13 3E Software	No	No
	MY15 3E Software	Yes, but no stereo controls.	Yes



# LINC 2.0 – How to find software version



# LINC 2.0 – How to find software version





# LINC 2.0 – How to find software version



System Info



# LINC 2.0 – How to find software version





# LINC – Stereo Control Files

- ▶ For all boats equipped with Clarion head units (MY2012-MY2013) the file: **update-fpga-10-hwecc.tar.gz** is the newest update available.
  - ▶ This file will only work on MY2012-MY2013 LINC hardware and can be downloaded from the Nautique Dealer site under '2012-2013 LINC Software'.
- ▶ For all boats equipped with Polk head units running MY2014 software use: **update-pic24-Jensen-HV700\_ECC\_07102013.tar.gz**
  - ▶ It is HIGHLY recommended that all MY2014 boats run MY2015 software since MY2015 software is backwards compatible and fixes several issues in MY2014 software.
  - ▶ For MY2015 G-Series LINC software, make sure to select PA450 or UM1 depending on what model Polk head unit is installed in the boat.
- ▶ For all boats equipped with Polk head units running MY2015 and MY2016 software (excluding MY2016 G-Series) use: **update-pic24-Polk-HV700\_2014.tar.gz**
  - ▶ MY2016 G-Series LINC Touch software includes stereo control files in the main file.



# LINC – Common reasons for loss of stereo control

- ▶ The wrong FPGA or PIC file has been loaded.
- ▶ The display was not rebooted after loading a FPGA or PIC file.
- ▶ The proper stereo has not been selected on MY2015 G-Series software.
- ▶ A damaged or disconnected Y-cable.
- ▶ A damaged or disconnected main control cable (gray LINC connector).
- ▶ A stereo failure.
- ▶ The wrong display is being used.



# LINC – Loss of stereo control problem solving

- ▶ Confirm the correct software has been loaded and the correct display is being used.
  - ▶ It never hurts to re-load the correct PIC file if you are not sure which one has been loaded on the screen.
- ▶ Disconnect the transom remote (if equipped) and the Polk 'commander' in the glove box. Then plug the cable coming from the LINC screen directly into the Polk black box.
  - ▶ If this fixes the issue you may have a loose or failed Y-cable.
- ▶ If this doesn't resolve the issue, try a new main cable from LINC to the Polk black box. If connectivity is still not fixed then you may have either a faulty LINC screen, or a faulty stereo, or both.
- ▶ The same process outlined above can be used for boats equipped with Clarion head units.

# LINC Touch – Electrical Faults

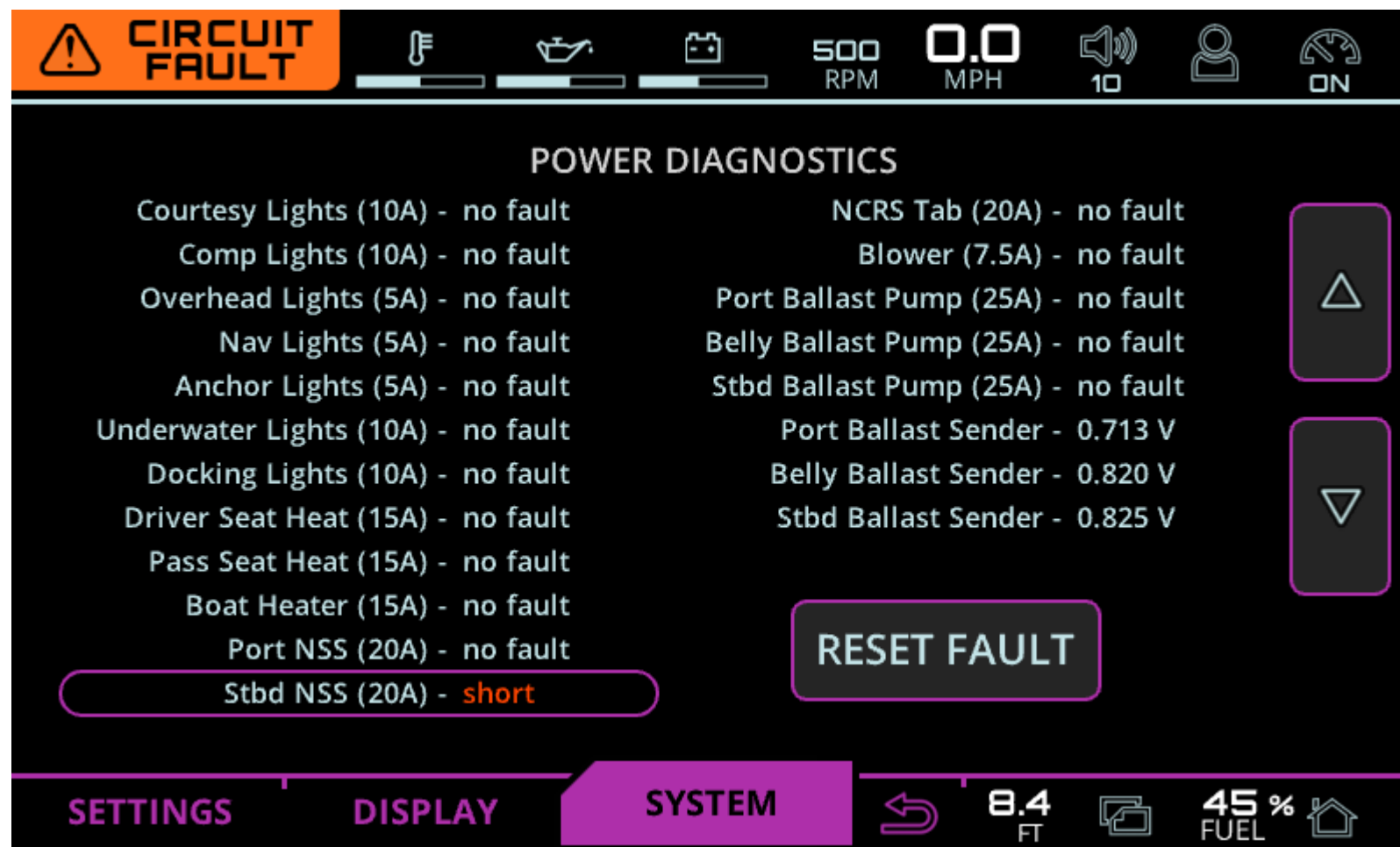


This is what a circuit fault will look like on 2016 LINC Touch software.

'IGNORE' will not take any action and close the popup. 'DETAILS' will take you to the 'Power Diagnostics' page to see the faulty circuit.



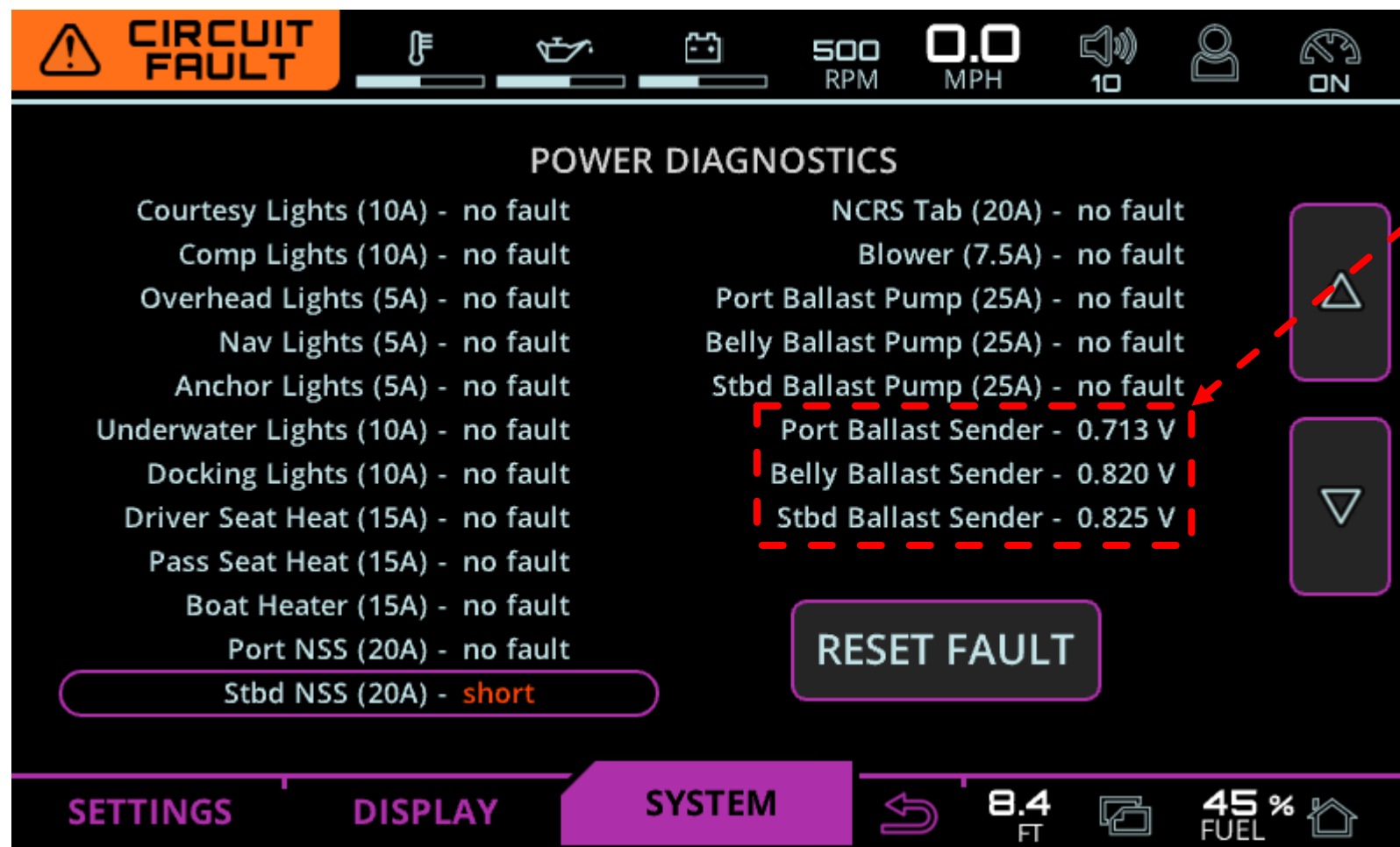
# LINC Touch – Electrical Faults



The power diagnostics page has changed on 2016 V and G software.

Circuits will act like a mechanical circuit breaker and will remain in the 'Fault' state until they are reset. Power cycling the screen will NOT clear any circuit faults. Also, circuits are now reset individually.

# LINC Touch – Electrical Faults



Displaying ballast sender voltages was added to 2016 V and G software.

When a ballast sender is disconnected or out of range, the text displaying the voltage will turn red.

An empty ballast tank on a MY2016 boat will typically read between 0.7V and 0.8V. A full ballast tank will typically read between 2V and 3V.



# LINC – Ballast Calibration

- ▶ All ballast equipped boats have the ability to recalibrate master ballast timers based on the time required to completely fill or completely drain the ballast if the proper conditions are met.
- ▶ The boat must be “at rest” and the boat must be running. LINC will then monitor the time it takes for the ballast to reach completely empty or completely full and update the master timer accordingly.
- ▶ LINC will also store the ballast level on shutdown. On the next boot up of LINC, if there is a significant difference between the pressure sender reported level and the level LINC recalls, the ballast tank will update to the level the pressure sender is reporting.
- ▶ To reset all ballast timers, select ‘Reset To Factory Defaults’ from either the ‘Preferences Page’ in MY2016 V-Series LINC software or the ‘System Info’ page in MY2016 G-Series LINC Touch software or simply change the boat model under the ‘Dealer Settings’ menu and change the model back.
  - ▶ Keep in mind that if a factory reset is done all saved user profiles will be reset as well



# LINC – Ballast Calibration

- ▶ Some common issues that cause the ballast levels to reset even though there is no actual change:
  - ▶ A ballast sender has failed but is outputting a voltage that is in range of normal operation.
  - ▶ The sensor hoses on a 210 or 230 dip below the outlet.
  - ▶ The belly check valve has not been removed on MY2012/MY2013 G-Series boats.
  - ▶ LINC was booted up while the boat was on an incline with water in the tanks.
  - ▶ The wrong boat model was selected in LINC's dealer options.



# LINC – Ballast Set Level vs Manual Fill/Drain

## ▶ Set Levels:

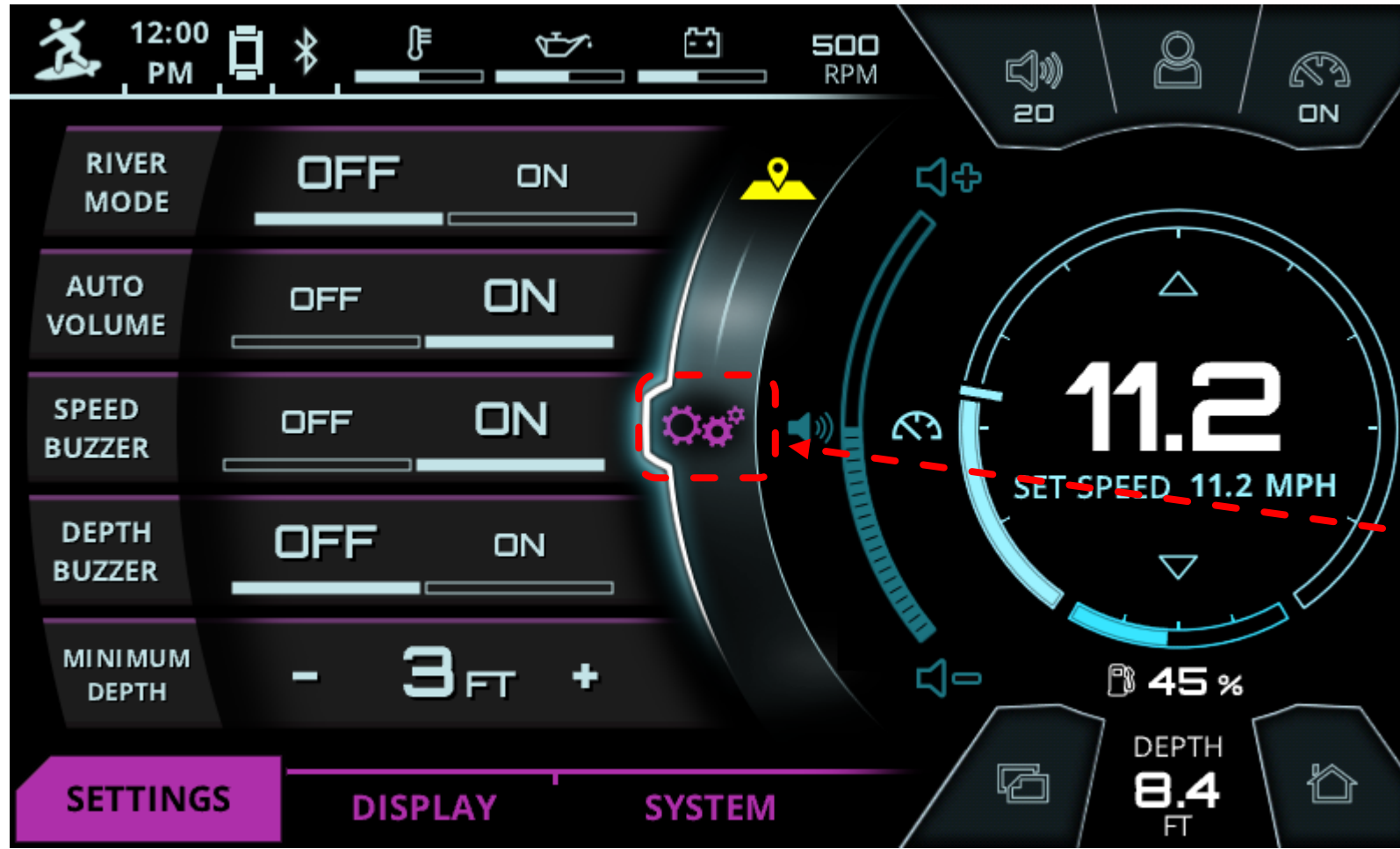
- ▶ Targeting a set level will fill or drain the ballast for a calculated amount of time based on the master timer, the starting level, and the level targeted.
- ▶ Using set levels will cause the ballast pumps to turn off after the desired level is reached.
- ▶ Activating a user profile's ballast setting, such as 'WAKE PRO', will use a 'set level' command.

## ▶ Manual Fill/Drain:

- ▶ Similar to a traditional rocker switch used to control filling and draining of ballast tanks.
- ▶ Simply runs the ballast pump until the user turns off the pump.
- ▶ All boats have a programmed overrun protection timer that will turn off a ballast pump if it is left on for too long.



# LINC – Troubleshoot NSS/NCRS with Demo Mode



The latest MY2016 G-Series LINC Touch has an added feature called 'Dealer Demo Mode' that can be helpful when trying to troubleshoot NSS or NCRS actuators.

To access this feature first navigate to the Preferences Page.

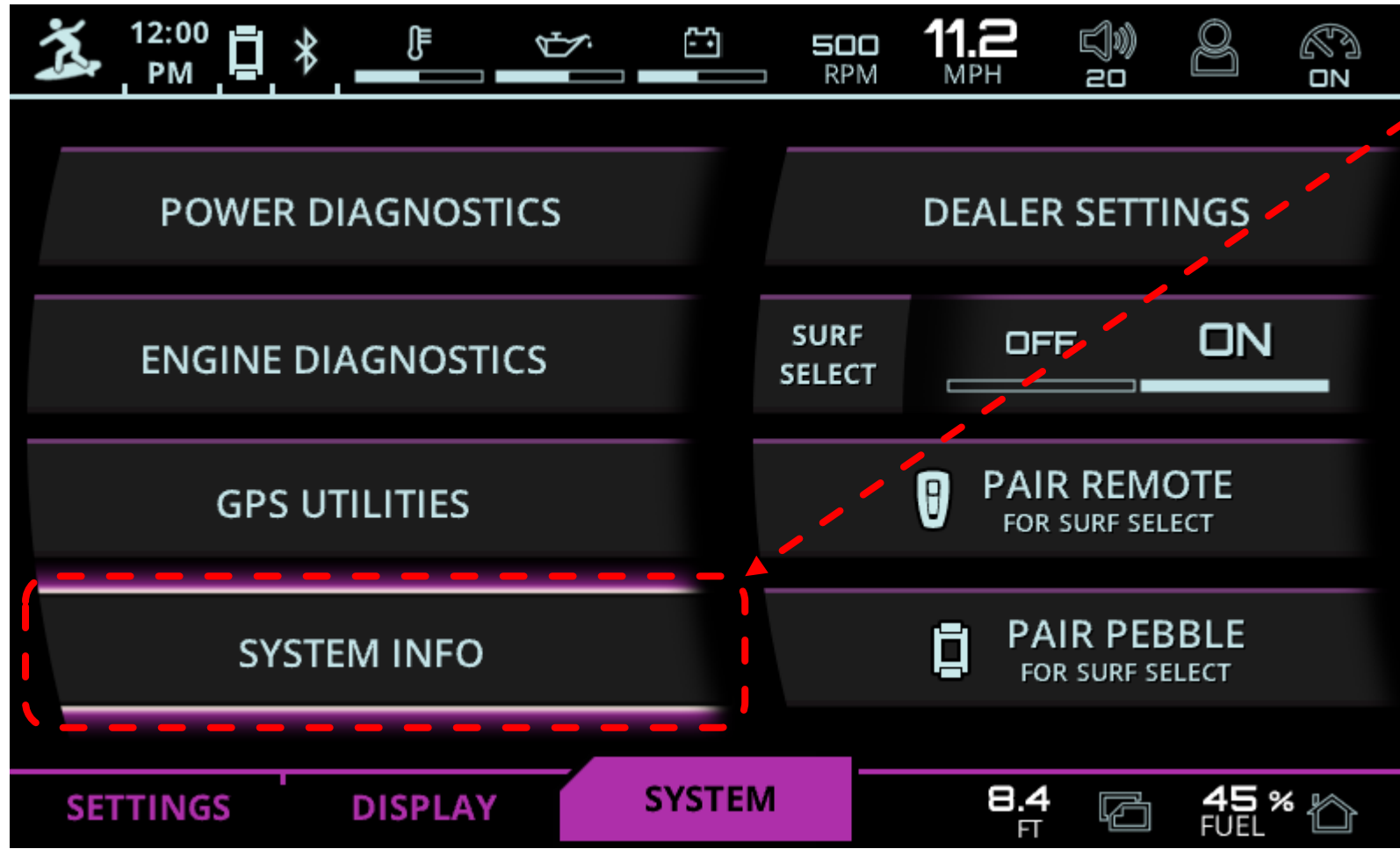
# LINC – Troubleshoot NSS/NCRS with Demo Mode



Go to the System Tab.



# LINC – Troubleshoot NSS/NCRS with Demo Mode



First we need to make sure the LINC software is up to date so we select "System Info" to see the software version.

# LINC – Troubleshoot NSS/NCRS with Demo Mode



LINC software dated 01/04/2016 (20160104) and newer will have the "Demo Mode" feature.

Push the back arrow to return to the "System" menu.



# LINC – Troubleshoot NSS/NCRS with Demo Mode

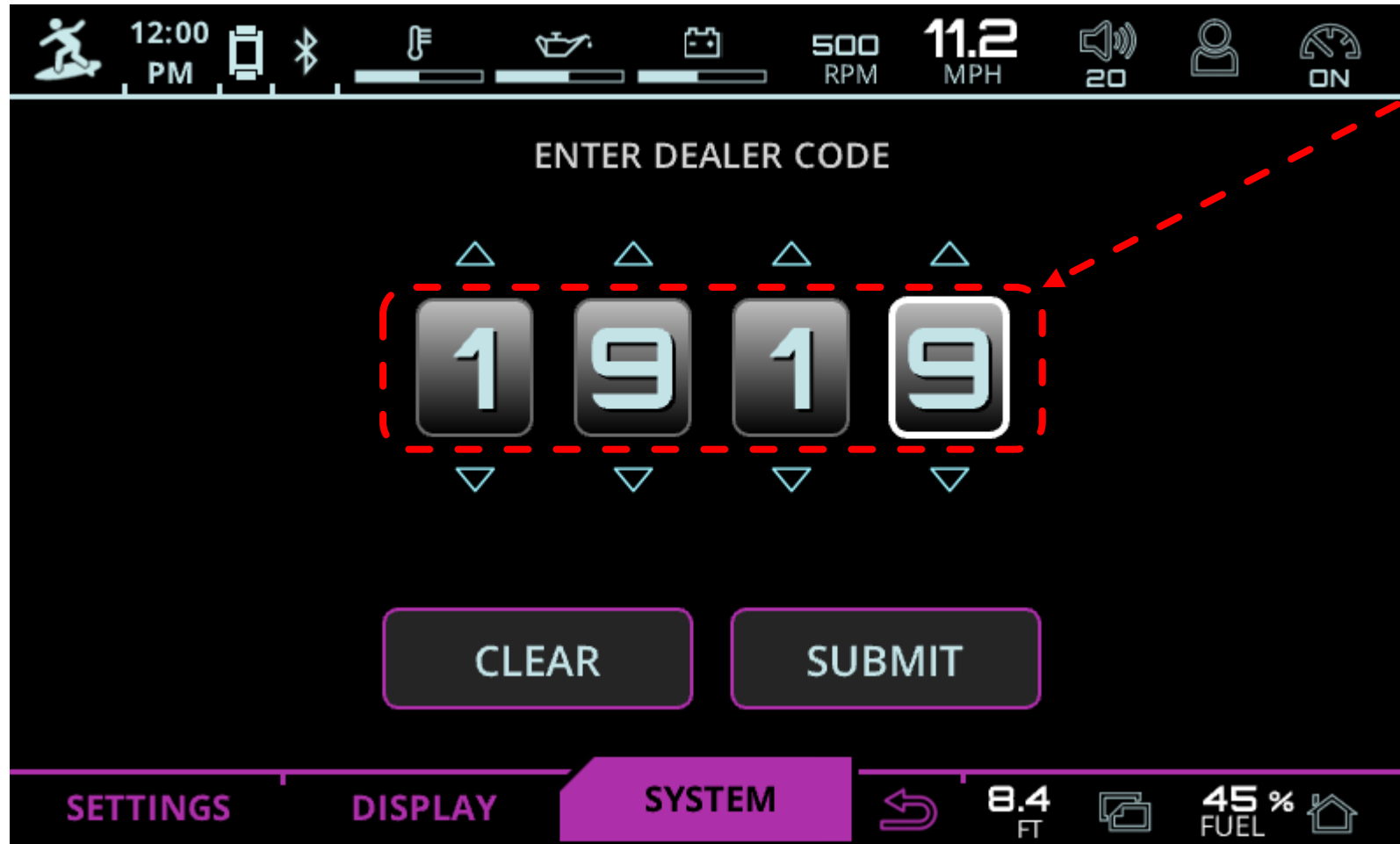


Select Dealer Settings.





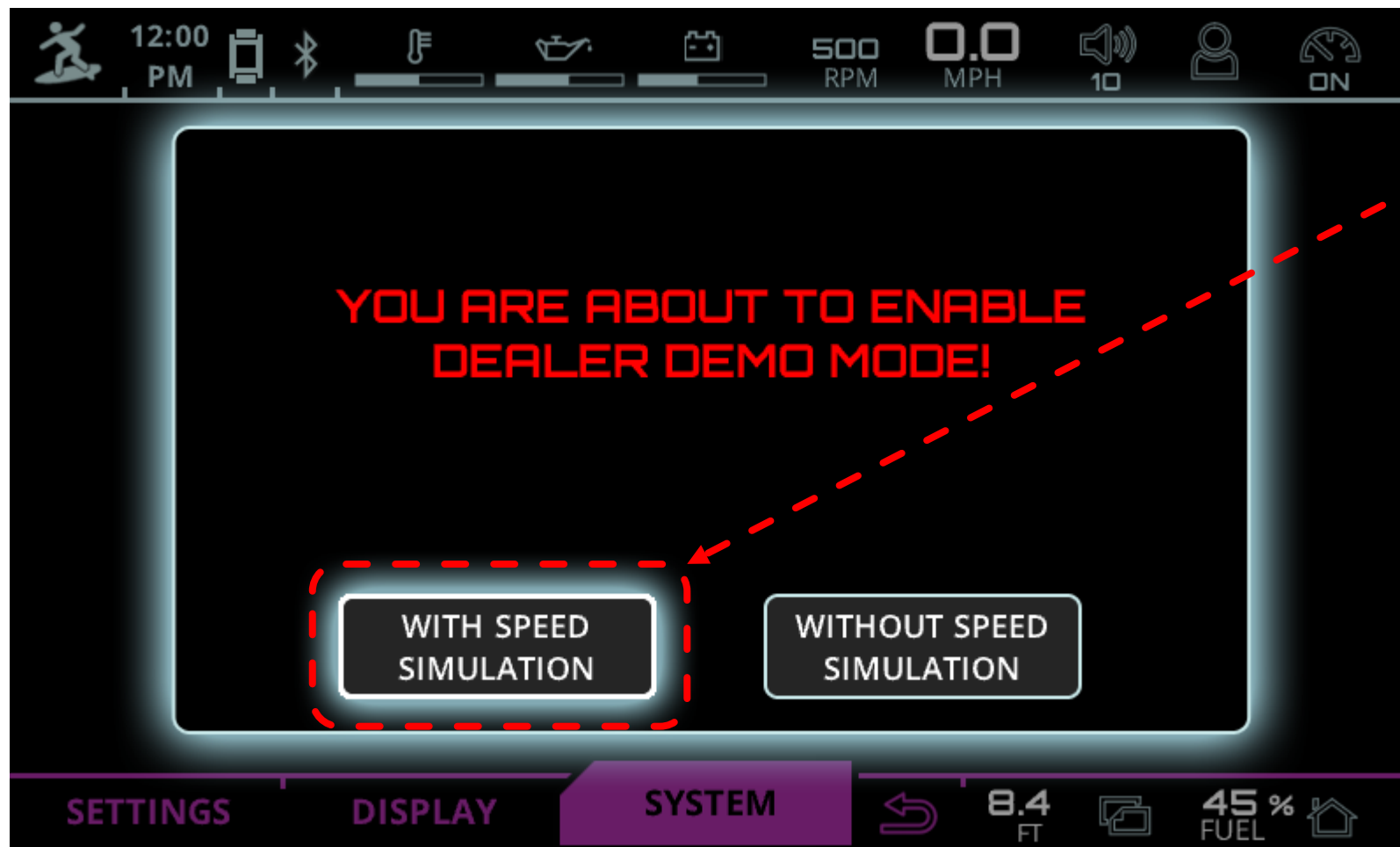
# LINC – Troubleshoot NSS/NCRS with Demo Mode



Enter dealer password  
of 1919.



# LINC – Troubleshoot NSS/NCRS with Demo Mode



Select 'With Speed Simulation'.

\*\* Demo Mode cannot be enabled while the boat is running and will be disabled automatically if the boat is started. \*\*

# LINC – Troubleshoot NSS/NCRS with Demo Mode



When Demo Mode is enabled, every page will show "Demo Mode Enabled".

# LINC – Troubleshoot NSS/NCRS with Demo Mode



When “Speed Simulation” is enabled, two new buttons will show on any page that has a speedometer.

# LINC – Troubleshoot NSS/NCRS with Demo Mode



Make sure a surf profile is selected or that the set speed is set below 13.0 mph so NSS settings are shown on the 'Home Page'.

Pressing "Go To Set Speed" will simulate the boat accelerating and reaching it's set speed. The NSS and NCRS plates will move and behave just as if the boat is actually running.



# LINC – Troubleshoot NSS/NCRS with Demo Mode



Once the set speed has been achieved, changing the settings on the LINC screen will also cause the NSS and NCRS plates to move like they would under normal boat operation.

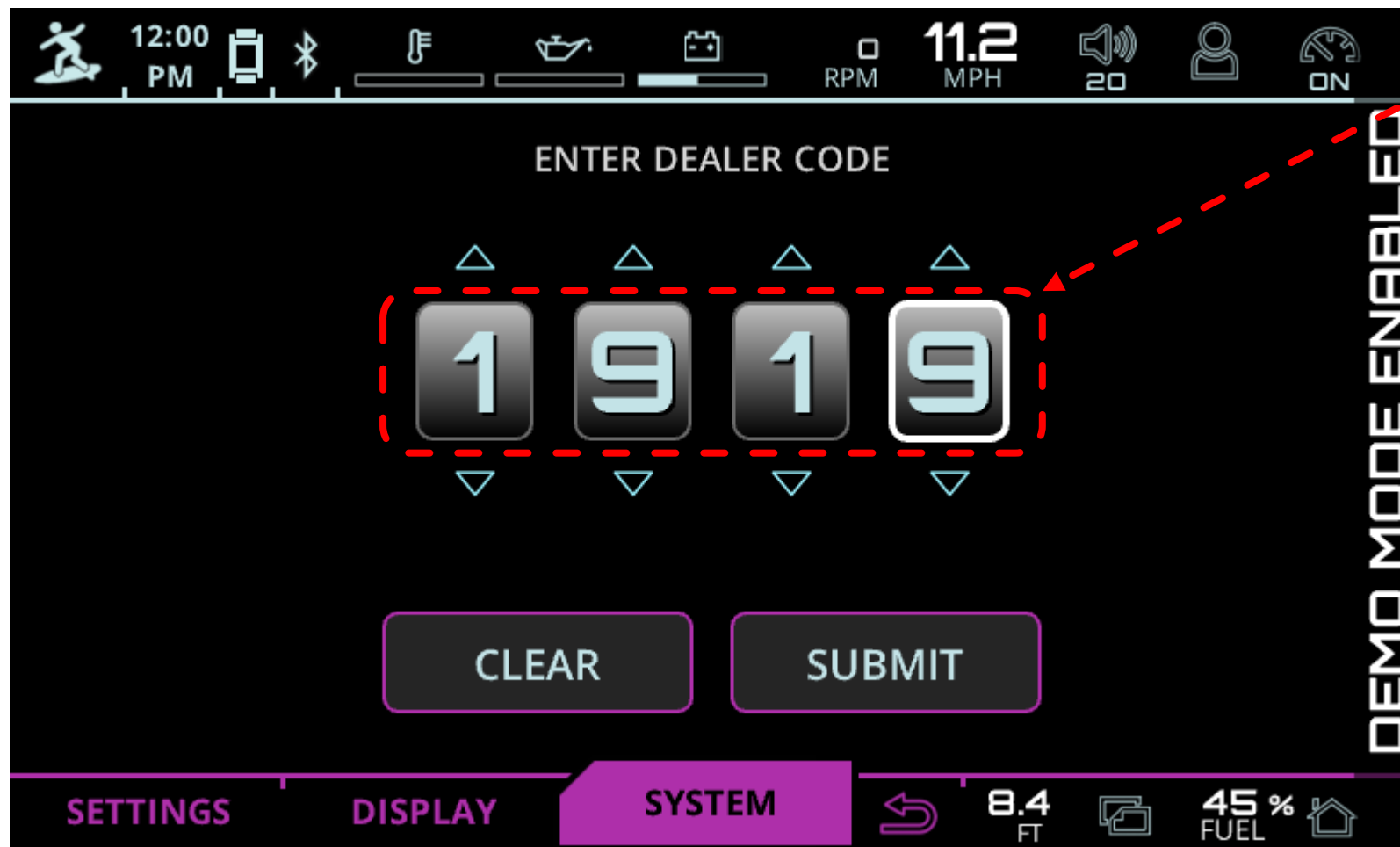
# LINC – Troubleshoot NSS/NCRS with Demo Mode



Pressing "Go To Idle" will simulate the boat decelerating down to zero. The NSS and NCRS plates will move and behave just as if the boat is actually slowing down.



# LINC – Troubleshoot NSS/NCRS with Demo Mode



To disable “Demo Mode” simply navigate back to the “Dealer Settings” page and re-enter the code 1919.

Starting the boat or power cycling the LINC screen will also disable “Demo Mode”.



# LINC – Troubleshoot NSS/NCRS with Demo Mode



Select "YES" to disable "Demo Mode".



Questions?