

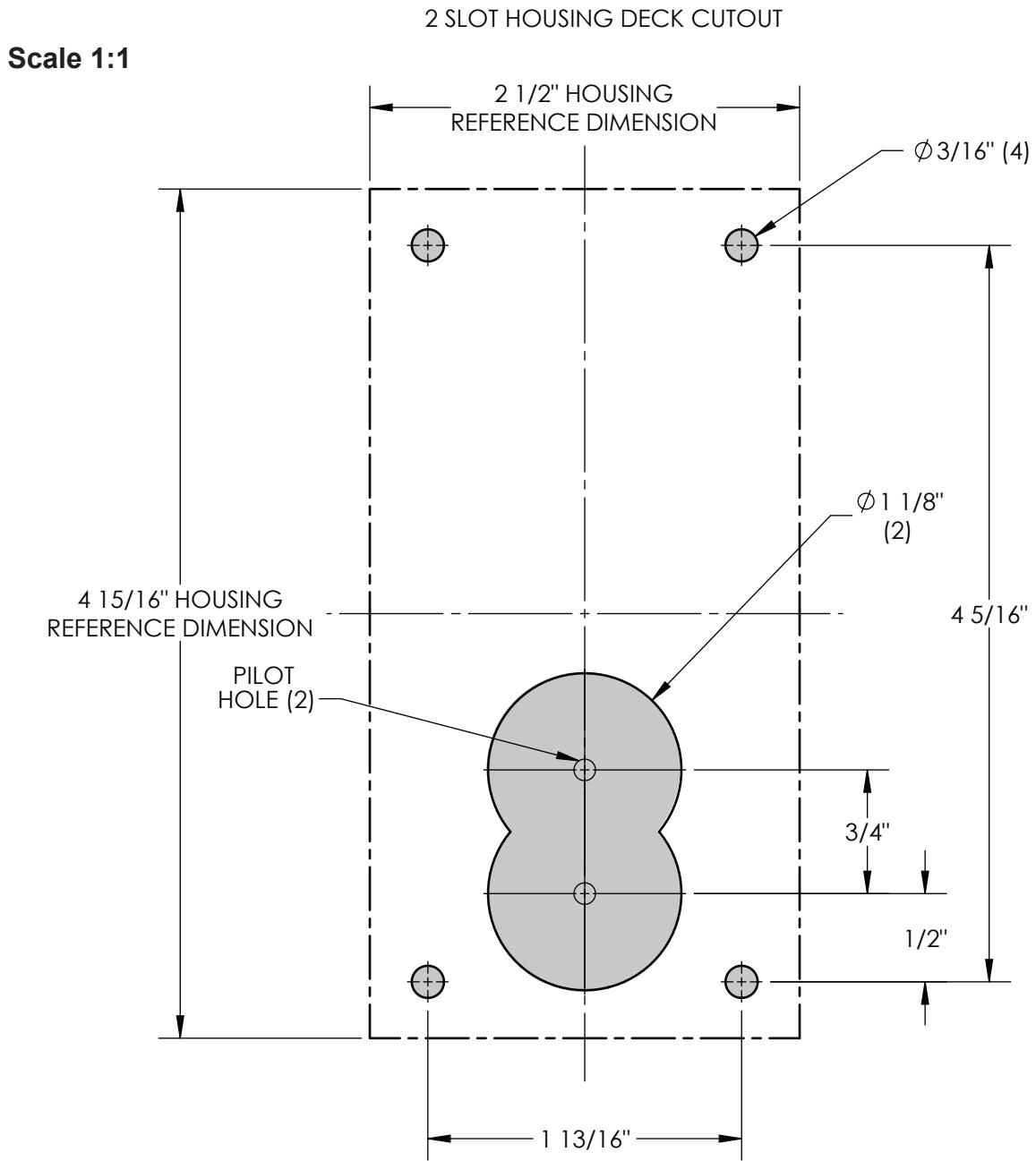


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Adjustable LED Indicator Mounting Template - 1 or 2 slot

IMPORTANT:

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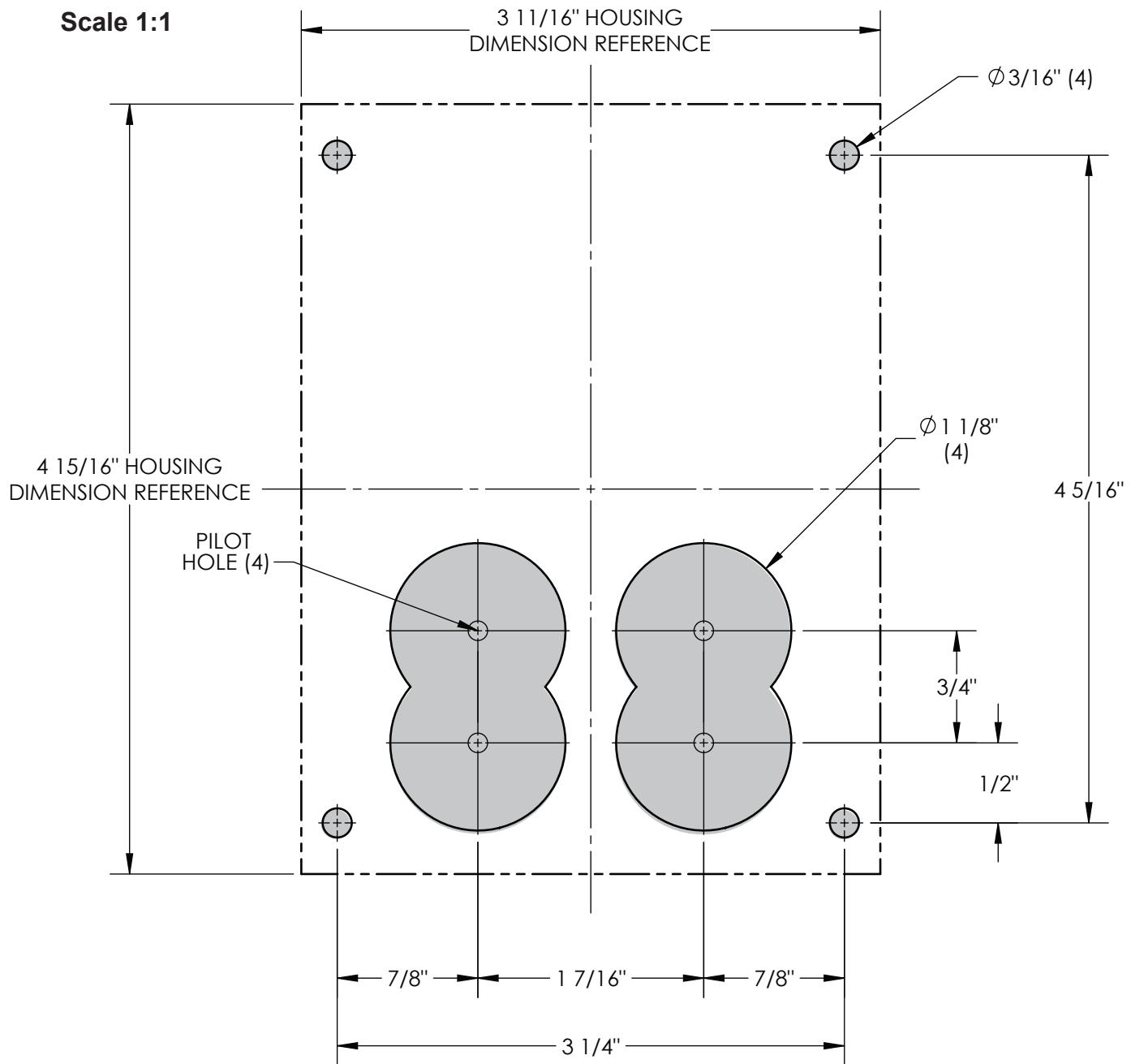
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LED INDICATOR OVERVIEW

The small circle between the warning light(s) on the front of the indicator is a hole to the combination proximity sensor AND photo sensor. The proximity sensor works by sliding a finger across it, not actually pressing on the lens. It is used to calibrate and interact with the indicator. The photo sensor portion detects the available light and automatically adjusts for the condition; low light = low intensity, and bright sun = bright intensity.

NOTE: Best results are obtained by covering the proximity sensor and sliding a finger across to one side or the other. A button press or 'cover and lift' will not work as well for this setup. A "*Cover and Slide to the Side*" movement is recommended, and will be referred to throughout these instructions as:

CSS = Cover (wait the time limit), then Slide to the Side.

Button CSS Types:

1. Short CSS – cover, wait 1 second and slide finger to side

- Used to select options of bar direction and type
- Use to advance running point LED selection

2. Normal CSS – cover, wait 2 seconds and slide finger to side

- Used to advance through setup steps
- Used to save setup
- LED BRIGHTNESS will dim and then spike to maximum intensity to indicate that the normal button press time is reached. Sliding finger to the side will accept the Normal CSS. There is a 2 second tolerance to slide finger to the side after the LED brightness spikes before the Indicator will reject the button press and dim the LED intensity.

3. Extended CSS – 4 seconds (or more)

- Used to continuously step through the running point LED selection

Calibration for 3- or 4-Slot Indicators

Please note that this setup procedure is for 1 and 2 slot indicator cards. If a 3- or 4-slot indicator is what is being worked on, this setup will have to be performed twice. There are two separate boards on a 3- and 4- slot indicator and therefore requires 2 separate calibration procedures.

Electronic Senders

In order for these new indicators to function, there must be either an electronic sender to transmit the signal, or a mechanical to electrical device to convert the mechanical orientation into a voltage or resistance, which will 'feed' the signal up to the indicator (coming soon). Many of today's tabs, drives, jackplates, fuel tanks, or rudders already have a sender on it. These versatile indicators can be used with a wide variety of senders such as voltage, resistance, or CAN BUS NMEA2000 or SAEJ1939 protocols. We have many ideas to adapt senders for these devices, so let us know your application and we will determine the best solution for your application.

The type of sender used whether voltage, resistance or CAN BUS must be known at the time of order, with respect as to how the indicator will be programmed to read what type of connection used.

LED Indicator Setup Procedure

In order to enter setup, the finger must *cover* the sensor while power is turned on and it must be *slid to the side* after the startup pattern is complete. If the finger is not slid to the side within 4 seconds after the startup pattern is complete, the unit will not go into setup. The indicator will identify that it is ready to enter setup mode by turning on to maximum brightness the TOP (blue), MIDDLE (green), and BOTTOM (blue) LEDs of each bar. The button must then be *covered* again within 10 seconds using a Normal CSS to confirm that setup mode should be entered or the Indicator will drop out of setup.

1. Set direction and bar display Type for Bar 1

The indicator will start the setup procedure by illuminating a series of LEDs from the bottom to the top and repeat to indicate a (Fill Type) bar from the bottom up. If you are satisfied with this option a **Normal CSS** (2 sec) will save it and will move to the next bar. The LED array will illuminate to maximum intensity to confirm the selection.

A **Short CSS** (1 sec) will cycle through the four different display bar type options:

- Fill type bar from the bottom to top
- Pointer type bar from the bottom to top
- Fill type bar from the top to bottom
- Pointer type bar from the top to bottom

2. Set direction and bar type for Bar 2 (If Available)

If LED indicator has a Bar 2 fitted, the indicator will begin illuminating a series of LEDs from the bottom to top of this bar to indicate a Fill Type bar is to be used from the bottom to top of the bar. Use the same procedure from Step 1 to select and accept the desired bar type for Bar 2. Use the **Normal CSS** (2 sec) to advance to the next step. The LED array will illuminate to maximum intensity to confirm the selection.

3. Set voltage for Bar 1 *bar minimum position*

The indicator will light up the LED on Bar 1 configured for the minimum end of the bar. Adjust your tab, drive, or device which is connected to the Indicator for this bar to the desired position for when the bar is at the minimum of the LED bar. Use the **Normal CSS** (2 sec) to accept it. The single LED will illuminate to maximum intensity to confirm the selection. The indicator will record the voltage from the device in this position.

4. Set voltage for Bar 2 *bar minimum position* (If Available)

The indicator will light up the LED on Bar 2 configured for the minimum end of the bar. Adjust your tab, drive, or device which is connected to the Indicator for this bar to the desired position for when the bar is at the minimum of the LED bar. Use the **Normal CSS** (2 sec) to accept it. The single LED will illuminate to maximum intensity to confirm the selection. The indicator will record the voltage from the device in this position.

5. Set voltage for Bar 1 *bar maximum position*

The indicator will light up the LED on Bar 1 configured for the maximum end of the bar. Adjust your tab, drive, or device which is connected to the Indicator for this bar to the desired position for when the bar is at the maximum of the LED bar. *Note* the adjustment for a drive does not have to be adjusted all the way up; moving only a small amount will provide more resolution on the indicator. Use the **Normal CSS** (2 sec) to accept it. The single LED will illuminate to maximum intensity to confirm the selection.

6. Set voltage for Bar 2 *bar maximum position* (If Available)

The indicator will light up the LED on Bar 2 configured for the maximum end of the bar. Adjust your tab, drive, or device which is connected to the Indicator for this bar to the desired position for when the bar is at the maximum of the LED bar. *Note* the

adjustment for a drive does not have to be adjusted all the way up; moving only a small amount will provide more resolution on the indicator. Use the **Normal CSS** (2 sec) to accept it. The single LED will illuminate to maximum intensity to confirm the selection.

7. Set running point (sweet spot) angle position for Bar 1 GREEN LED (if desired)

The indicator will light all but the top and bottom LEDs of Bar 1 to indicate that no running point is set.

If **NO** running point angle position is required, use a **Normal CSS** (2 seconds) to enable this feature. The LED Indicator will scale the bar in a linear fashion between the minimum and maximum settings that were entered in previous steps of the procedure. The green LED will be illuminated at $\frac{1}{2}$ the range of the sensor input.

If the running point angle position **IS** desired, make certain the tab, drive, or other device which is connected to the Indicator for this bar is set to the desired running point position. This adjustment is helpful in determining the optimal position to keep during normal cruising for the best overall performance. It is especially critical in fuel level applications, where it does not have to be linear to give you greater accuracy in non-linear tanks.

Use the **Extended CSS** (4 seconds or more) to continuously 'step' the running point LED position setting 1 LED every $\frac{1}{2}$ second. Slide to the side as soon as the LED is at the desired running point angle position (GREEN LED). If the desired location is not achieved, use the Extended CSS (4 seconds or more) again or use the Short CSS (1 second) to correct the setting.

Use the **Short CSS** (1 second) to advance to the LED position to be used for the running point. Note that the Short CSS advances in the opposite direction to the Extended CSS, so if the LED position advances too far with the Extended CSS, a Short CSS can be used to back up the LED position.

The running point selection will cycle through each LED position and then return back to all but the top and bottom LEDs being lit to select no running point.

Once the desired running point angle position GREEN LED is turned on, use a **Normal CSS** (2 sec) to accept the desired running point LED position and voltage.

8. Set running point (sweet spot) angle position for Bar 2 GREEN LED (if available and if desired)

Repeat step 7 for bar 2

9. Save Setup

The top, middle, and bottom LED of each bar on the indicator will be turned on to indicate that the unit is ready to save the setup. Use a **Normal CSS** (2 seconds) to ACCEPT and SAVE the new configuration to non-volatile memory. If something was done improperly, just turn off power to reject the new configuration and revert back to the previous configuration. If power is turned off at any point during the setup procedure prior to completing this step, the setup will revert to the previous setup.

For 3 and 4 slot indicators repeat steps above. Note that there are 2 separate boards and require 2 separate procedures.


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For additional technical assistance calibrating the adjustable LED indicator, please call the Livorsi Marine office at 847.752.2700.