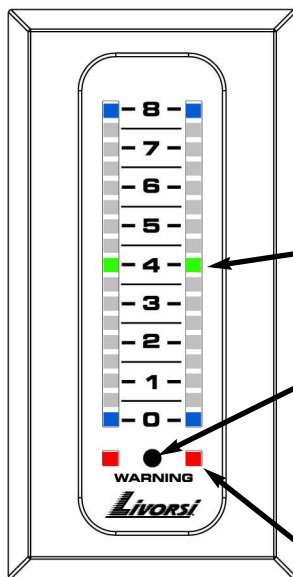


LED Position Indicator Calibration Instructions

Congratulations on the purchase of your Livorsi LED Position Indicator.

The following instructions will take you step by step throughout the calibration process. LED indicators are sold in multiple configurations: 1, 2, 3, and 4 slot assemblies. These instructions illustrate a one slot indicator but will also serve 2, 3 and 4 slot applications.

Please read the entire procedure before attempting the calibration process. Pay special attention to the set up of your Optimal Running Angle a.k.a. Sweet Spot.



General Terms to be familiar with:

Optimal Running Angle a.k.a. "Sweet Spot" - Green LED

Sensor

The sensor is used to calibrate the LED indicator.
The sensor will detect motion during the calibration process.

Cover and Sweep

A cover of the sensor with your finger and sweep motion over the sensor will be utilized to calibrate the indicator.
Note: This is a proximity sensor not a push button. The sensor detects motion not pressure.

Warning LED with optional sender - Red LED

You may set a warning for your application with an optional sender.

Entering Access Mode (all ALEDI models)

When power is applied the LED indicator will go through its start up cycle of lit LEDs. During this cycle calibration mode access will be obtained by a cover and sweep motion.

If at any time during the calibration process a mistake is made, simply turn power off and start from the beginning of the calibration process.

NOTE: Step 1 is time critical

You will have approximately **10 seconds** to access calibration mode. If calibration is not accessed the indicator will return to normal operation. Once in calibration mode the indicator is no longer time critical.

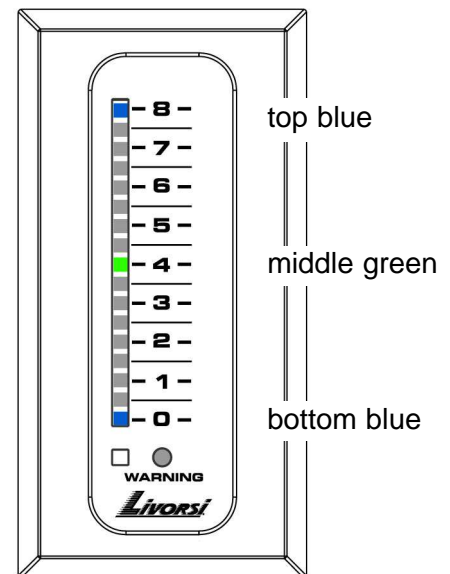
Step 1: Entering calibration mode

- A. Cover sensor with finger and hold
- B. Apply power / Turn unit on
- C. While the indicator is going through its start up cycle, slide finger off the sensor

You should see the top blue / middle green / bottom blue LED'S lit.

- D. Cover sensor with finger, the top blue / middle green / bottom blue LEDs will go bright at this point sweep away

You should see the LEDs running in a fill bar configuration.



NOTE:

If the indicator was built before 05/2013 you will see the internal preset programming. This may be numerous LEDs lit in many different configurations. **You will need to bypass this window.** To bypass cover the sensor, the LEDs will go dim, then go bright-at this point sweep away.

LED Position Indicator Calibration Instructions

You are now in calibration mode.

After entering the calibration mode you should see one of these two examples:

Figure A:
In a horizontal application the LED'S running from right to left in a ascending fill bar configuration.

Figure A

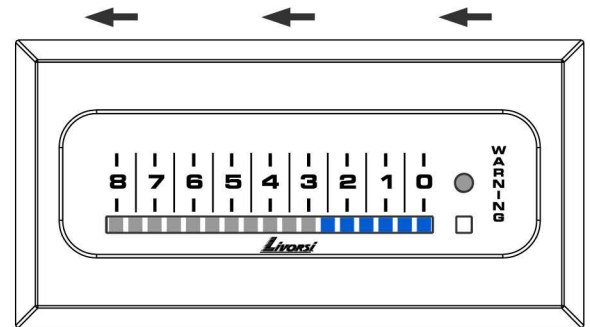
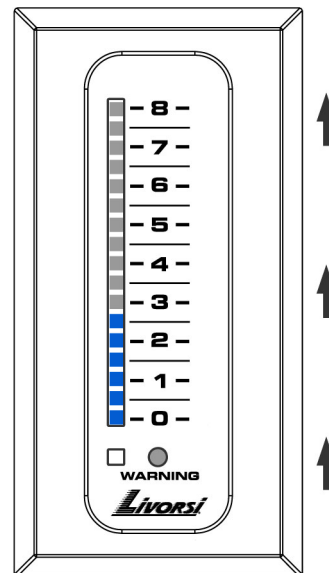


Figure B:
In a vertical application the LED'S will run in an bottom to top ascending fill bar configuration.

Figure B

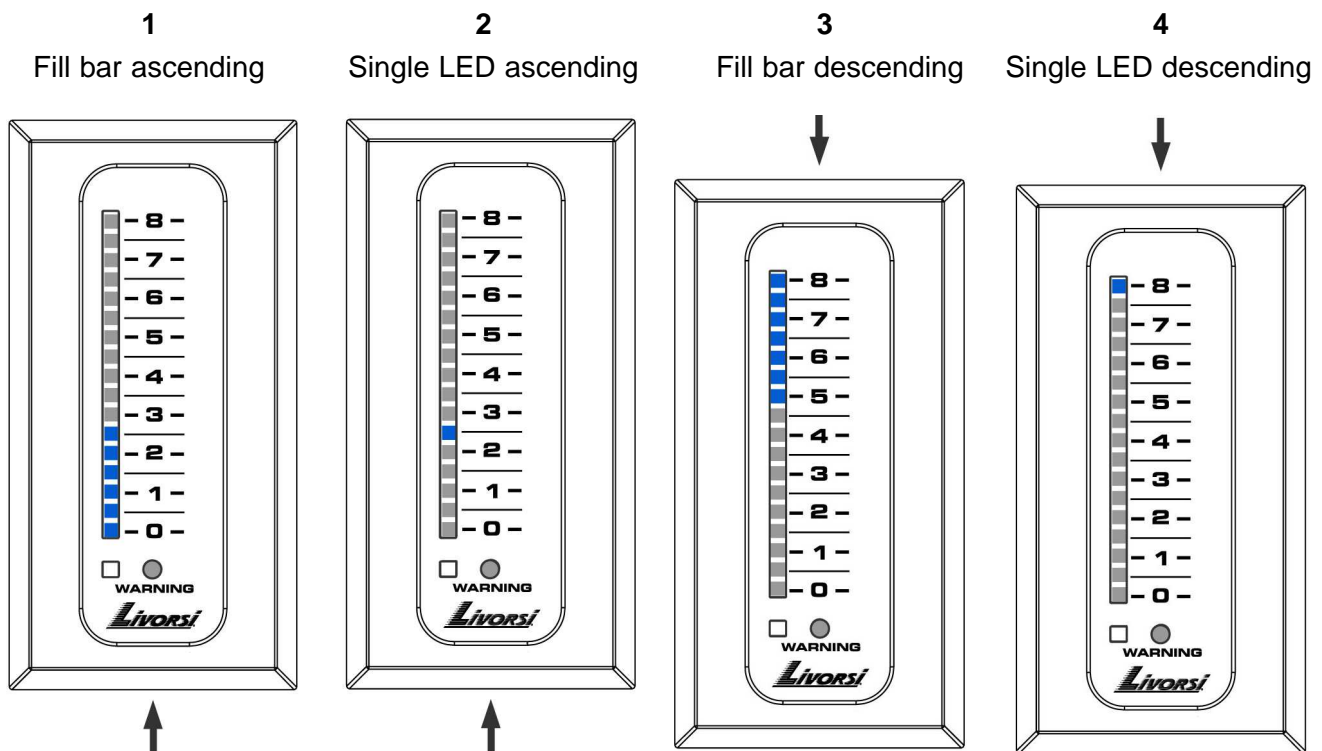


If you did not make it into calibration mode, turn power off and try again.

Step 2: Setting desired LED configuration- single LED or fill bar

- A. To change the configuration cover the sensor for **1 second** and sweep away
You will need to repeat the cover and sweep motion until you have reached the configuration of your choice

The order of configurations is as follows:



- B. Once you have reached the desired configuration cover the sensor
The LED lights will go dim then go bright- at this point sweep away

For a 1 slot indicator continue to step 3

In a 2-slot application the indicator will have transferred to the second row of LED'S.
Repeat steps 2A and 2B for desired calibration

Step 3: Setting the bottom/low side of the indicator

At this point you will have only one LED lit.
This will be the bottom / low side set point

A. At this point the item that is assigned to the indicator

I.E.... Outboard motor, Outdrive, Trim tabs, Etc...
must be moved to the bottom / low set point

I.E....Outdrives / vertical **ascending** configuration...
fully lower Outdrive (s)

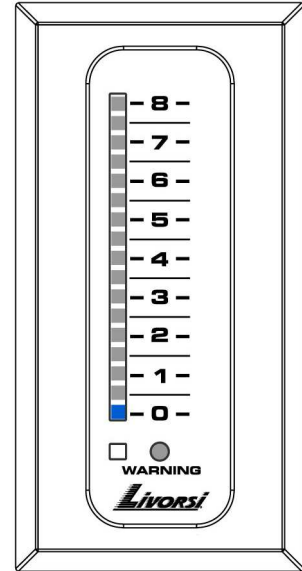
I.E....Trim tabs / Vertical **descending** configuration...
fully raise trim tabs

B. Once item is properly positioned cover the sensor
The LED lights will go dim then go bright-
at this point sweep away

For a 1-slot applications proceed step 4

For 2-slot applications the indicator will have transferred to the
second row of LED'S.

Repeat steps 3A-3B for the second row of LED'S



Example: ascending verticle/
low side

Step 4... Setting the top/high side of the indicator

At this point you will have only one LED lit.
This will be the top / high side set point

A. At this point the item that is assigned to the indicator

I.E.... Outboard motor, Outdrive, Trim tabs, Etc...
must be moved to the top/high side point

I.E.....Outdrives / vertical **ascending** configuration...
fully raise Outdrive

I.E....Trim tabs / Vertical **descending** configuration...
fully lower trim tabs

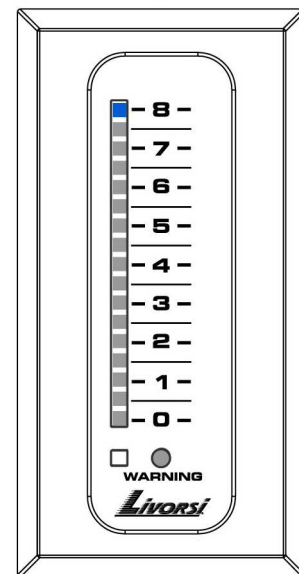
B. Once the item is properly positioned to the top/high side
set point

Cover proximity sensor
the LED lights will go dim then go bright-
at this point sweep away

1-slot applications proceed to step 5

For a 2-slot application the indicator will have transferred
to the second row of LEDS

Repeat step 4A and 4B for the second row of LED'S



**Example: ascending verticle
top/high side**

Step 5: Setting optimal running angle (sweet spot)

To properly set the optimal running angle "sweet spot" you must know where the settings are by **measurement**. In some cases this measurement will be available from your product supplier. In most cases you will have to obtain this information yourself. Due to many different factors: length of boat, weight distribution, multiple engine configurations, Etc... what works for one model may not work for a similar model.

NOTE: It may be necessary to skip this step until you operate the boat to obtain by indication the optimal running angle and note the settings for future reference.

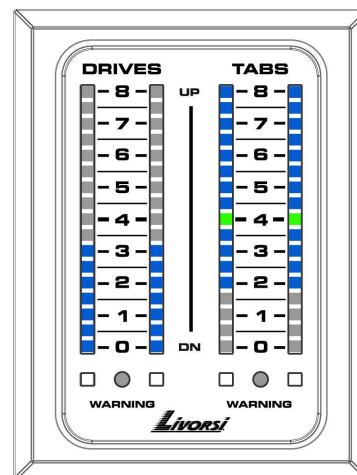
On the following pages there are some examples of how to find (measure) the sweet spot on your drive(s) and tab(s).

Finding your optimal running angle

For example a twin engine boat with two outboards:

This is your boat running both the outboards and tabs at their optimum running angles. This image of the indicator reflects these angles.

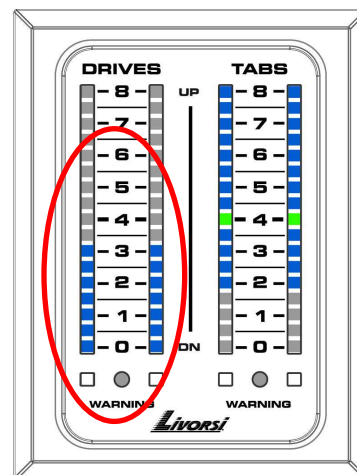
Write these numbers down.



Note: This indicator is calibrated for drives ascending and tabs descending. Drives at #3 and tabs #2.

Taking measurements of the drive(s)

While your boat is docked or out of the water, position your drive(s) at the optimal running angle you recorded earlier.



Once in the correct position use a yard stick or tape measurer to measure from a fixed point on the transom to a point on the drive and **record this measurement**.

You may use any one of these measurement examples A, B or C.

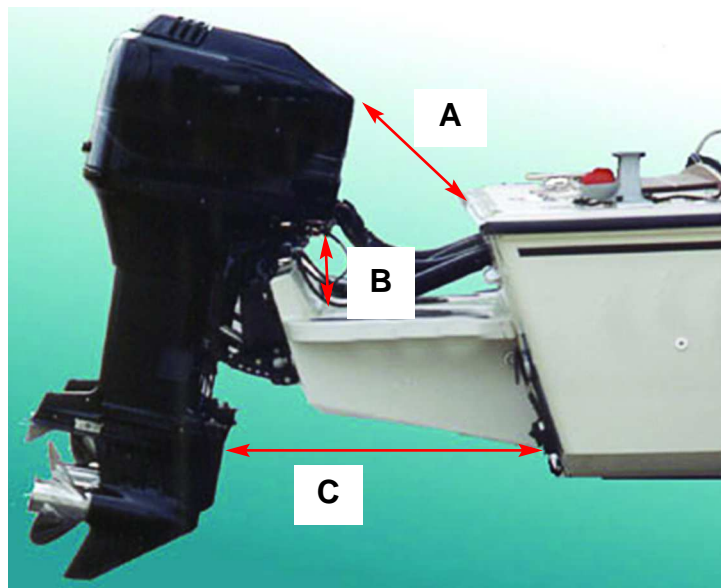
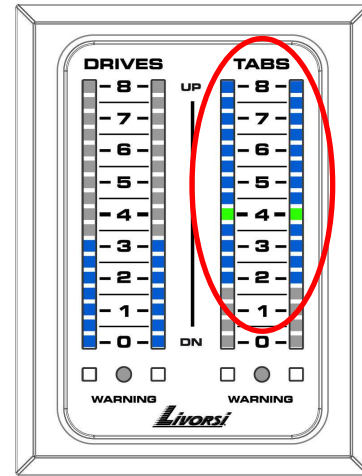


Figure C

Taking measurements of the tab(s)

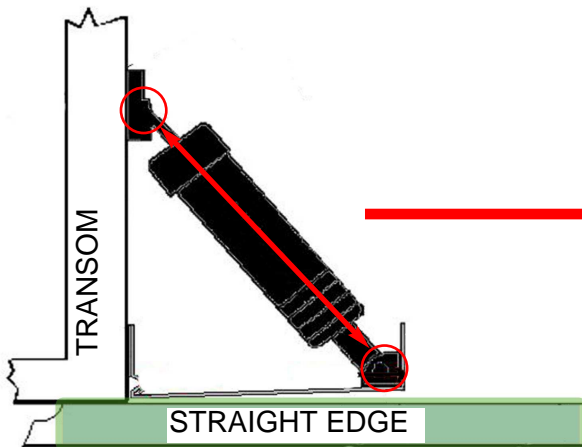
While your boat is docked or out of the water, position your tab(s) at the optimal running angle you recorded earlier.



Taking measurements for Trim Tabs

You may use one of these measurement examples to find your optimal run angle setting

Once in the correct position measure from bolt to bolt and **record this measurement.**



Or

You may use a yard stick to measure from a fixed point on the transom down to the tab.

Write down/record this measurement.



Or

You may use an angle finder as shown here,



another example of
an angle finder



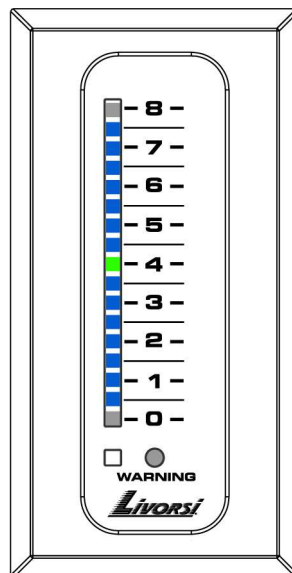
Step 5: Setting optimal running angle (sweet spot)

With the completion of step 4 all LED'S will be lit except for the top #8 and bottom #0

If you choose to skip this step, complete the following:

1. Cover sensor
2. LED's will go dim, then bright- at this point sweep away
3. Proceed to step 6

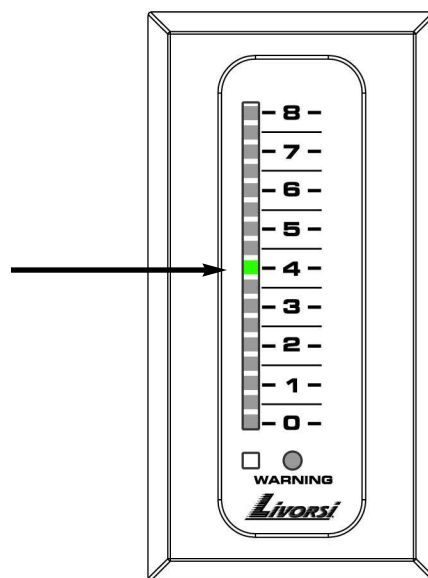
For a 2-slot application the indicator will have transferred to the second row of LEDS repeat steps 1-3.



- A. At this point the drive, tab, etc that is assigned to the indicator must be positioned to the optimal running angle.

Use the measurments you recorded earlier to move the drive, tab, etc in the correct position.
(measurements from Figure C)

- B. Once item is properly positioned, cover the sensor and sweep away
- C. The top LED will light up cover and sweep to move down the row of LEDs one by one until you reach the GREEN LED
- D. Cover the sensor
The LEDs will go dim then go bright- at this point sweep away



For a 1-slot application proceed to step 6

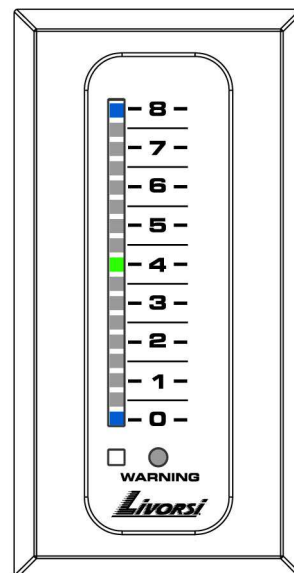
For a 2-slot application the indicator will have transferred to the second row of LED'S.

Repeat steps 5A-5D for the second row.

Step 6...Saving your calibration

With the completion of step 6 you will see the top blue, middle green and bottom blue LED'S lit. You must now save your calibration.

- A. To save the calibration, cover the sensor
The LEDs lights will go dim then go bright-
at this point sweep away.

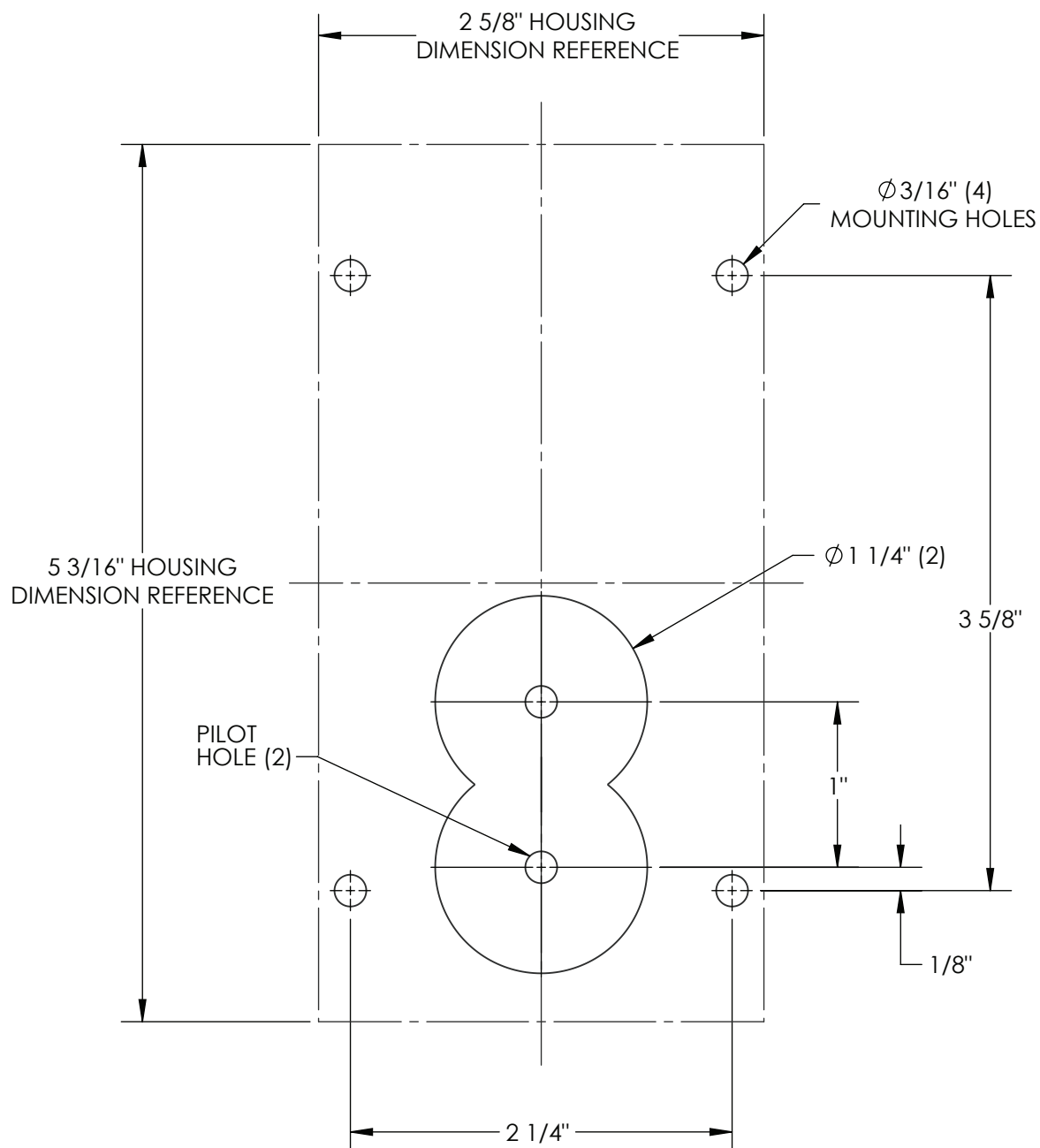


Your Livorsi LED Position Indicator is now ready to use.

blank on purpose

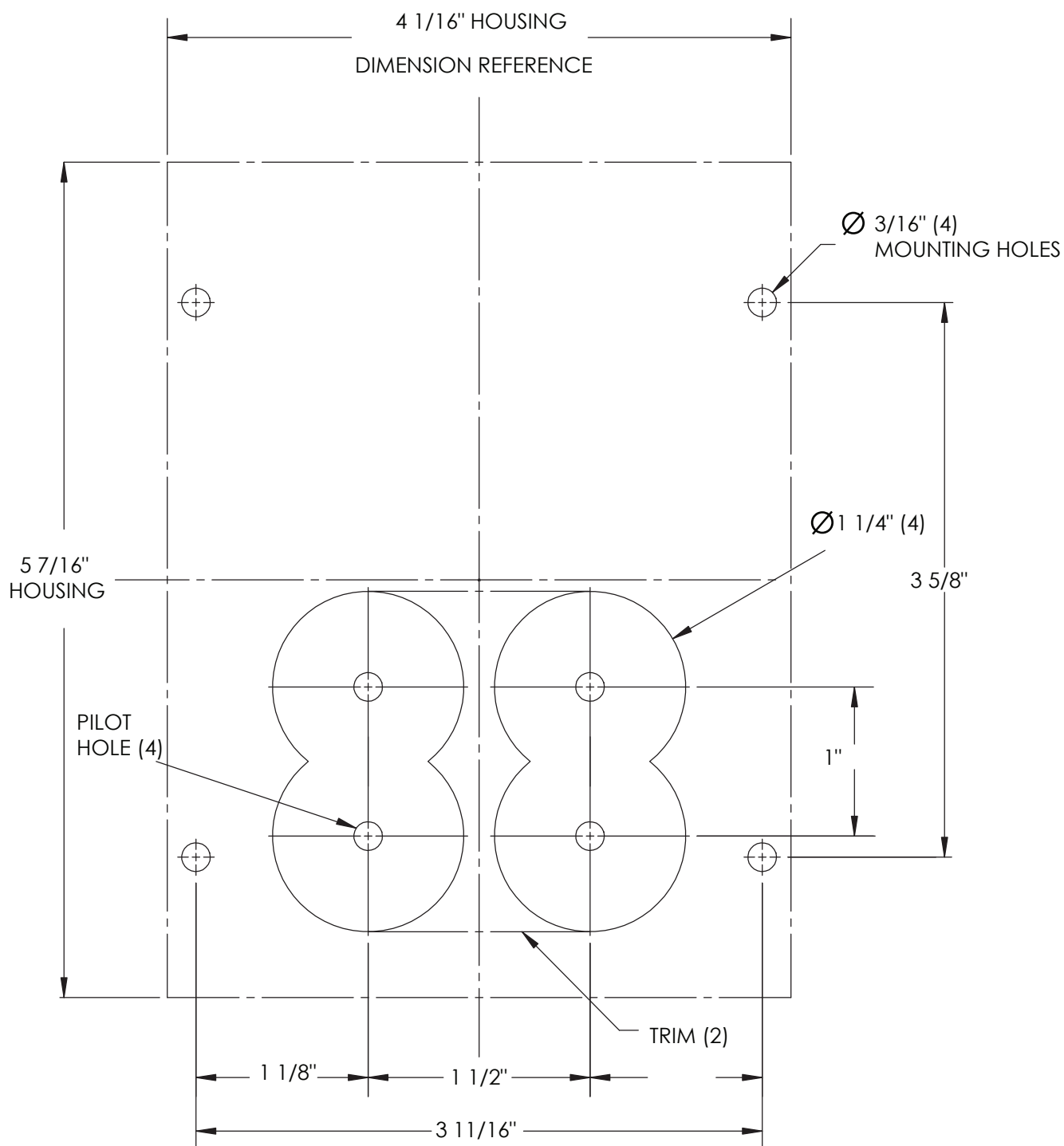
LED INDICATOR CUT OUT TEMPLATE

1-2 SLOT HOUSING CUTOUT GEN 3



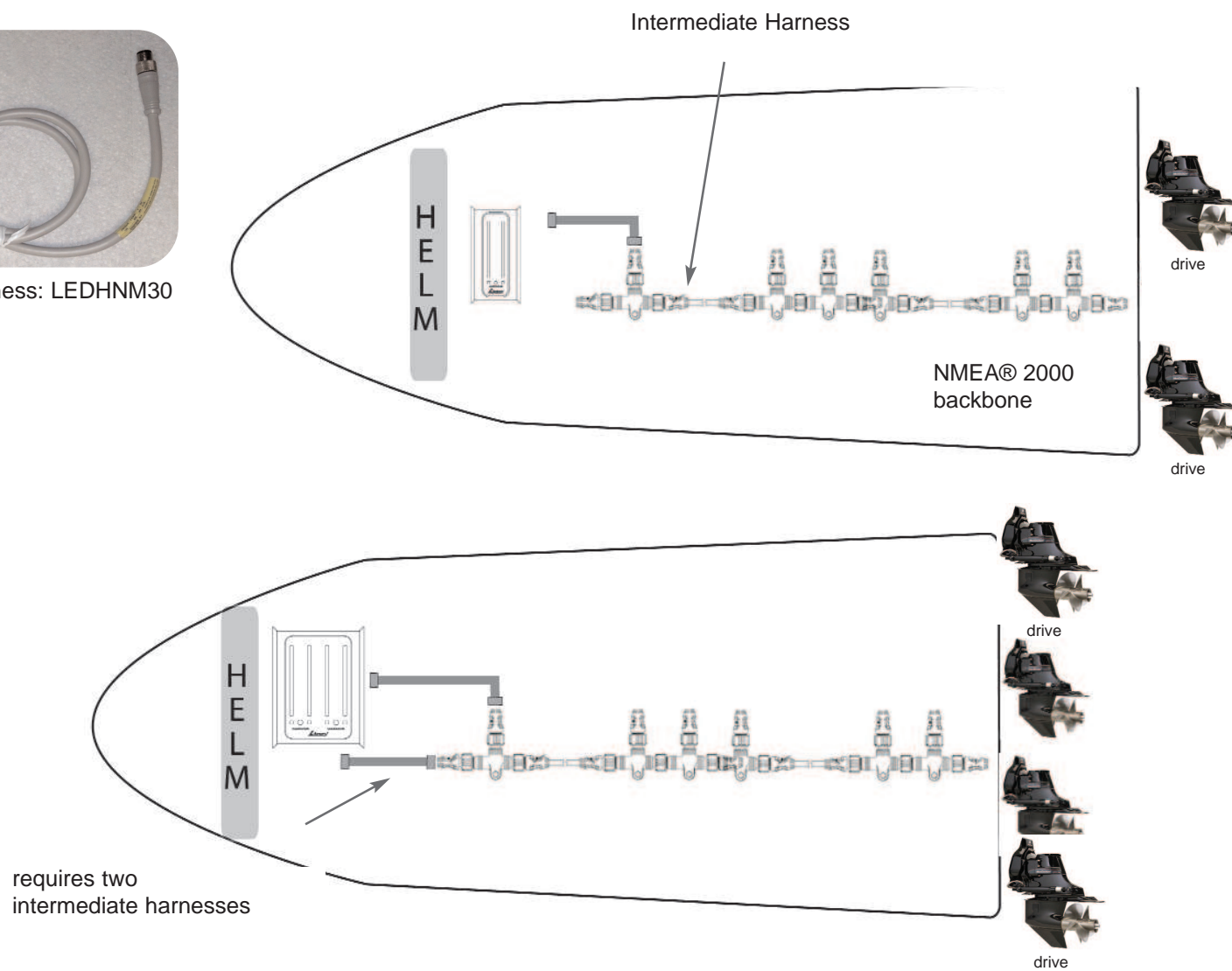
LED INDICATOR CUT OUT TEMPLATE

3 and 4 SLOT HOUSING CUTOUT GEN 3



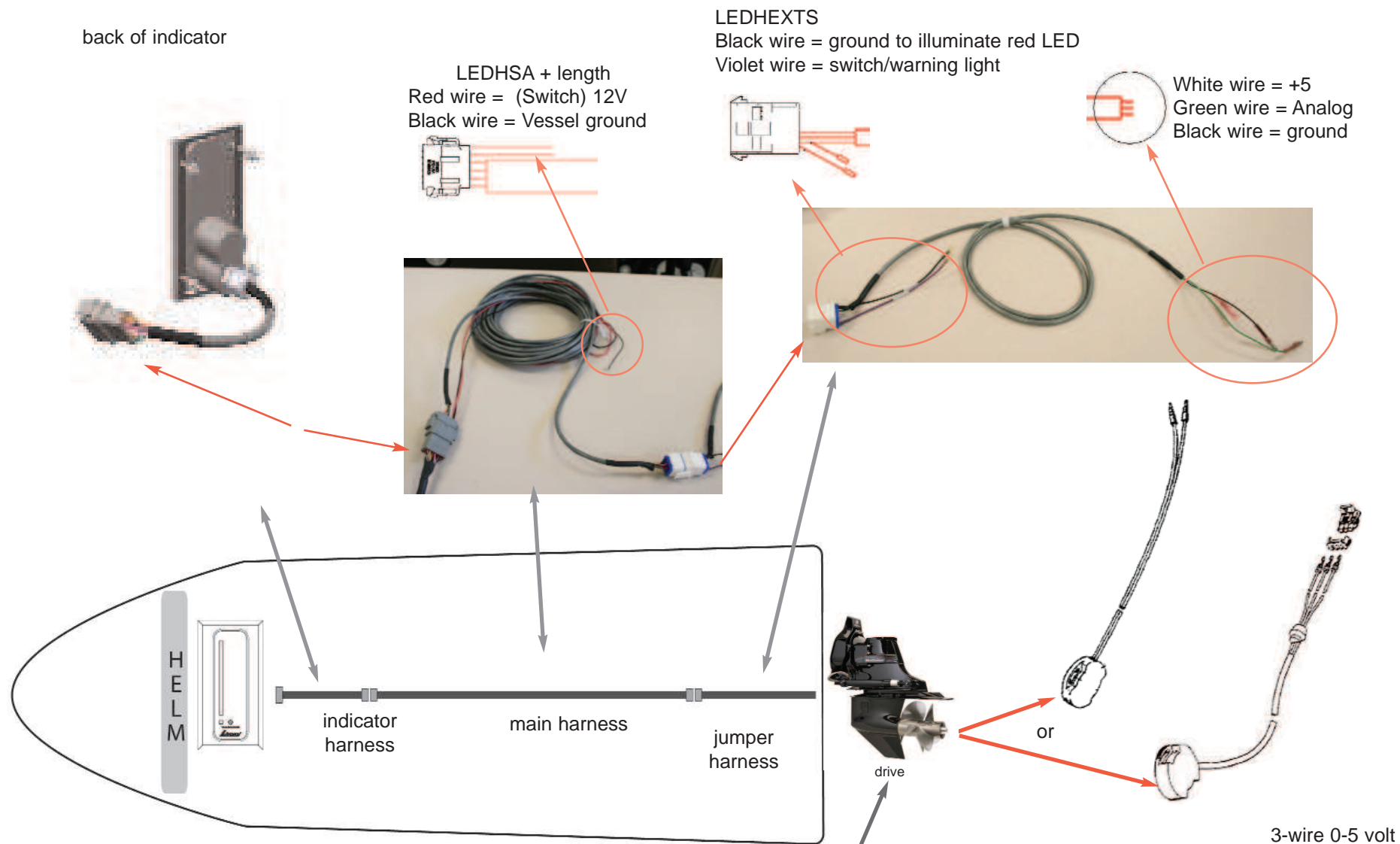


Intermediate Harness: LEDHNM30



Adjustable LED Indicator Connection to Merc Drives

Indicator Harness: LEDHSA + length (Indicator) to LEDEXTS



Adjustable LED Indicator Connection to Merc Drives

Indicator Harness: LEDHSA + length to LEDHYS

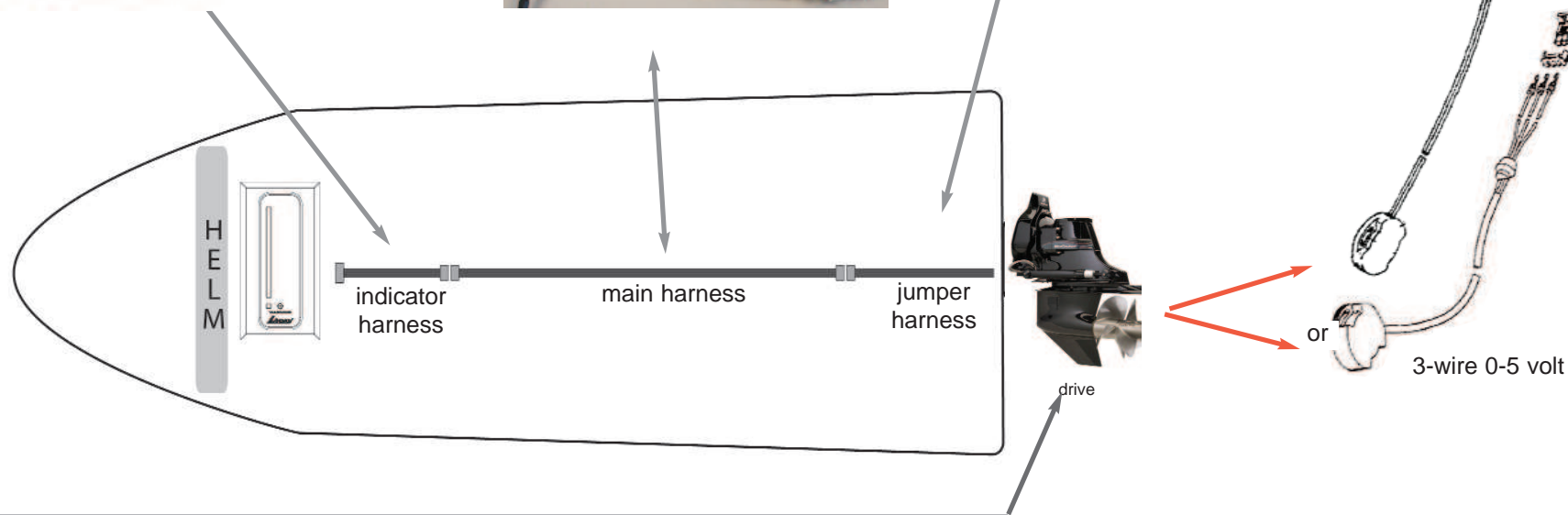
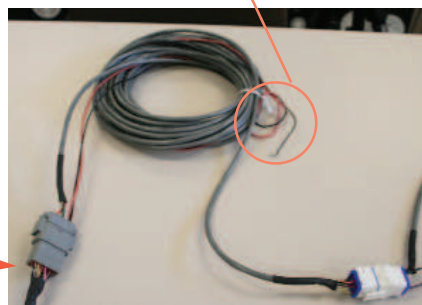
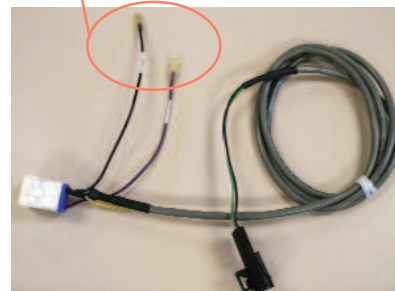
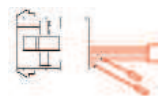
LEDHYS

Violet wire = Switch/warning light
Black wire = ground to illuminate red LED

LEDHSA + length

Red wire = (Switch) 12V
Black wire = Vessel ground

back of indicator



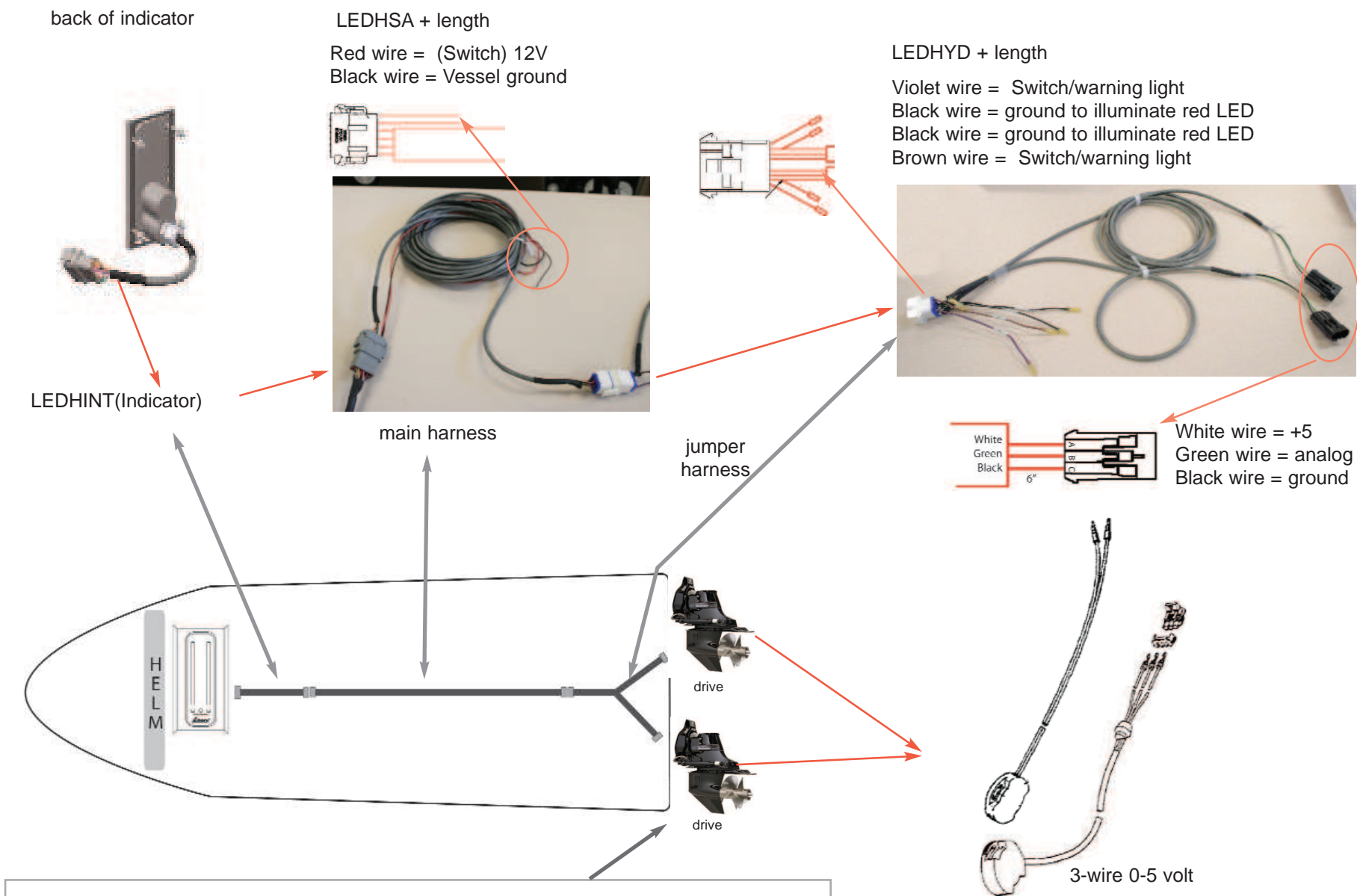
NOTE:

Verify which type of drive trim sensor you have: • resistive type (ohms) • or 0-5 volt (3 wire)
Then determine how it is terminated • bullet connectors • or 3 pin plug

Adjustable LED Indicator Connection to Merc Drives

Indicator Harness:

LEDHSA + length to LEDHYD5, LEDHYD10 or LEDHYD15

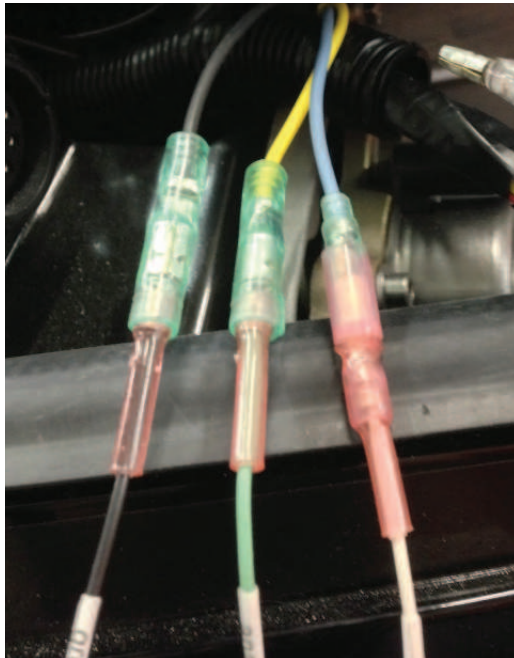


Adjustable LED Indicator Connection to Mercury OB 300XS Drives

Mercury wiring

black	to	black (Ground)
yellow	to	green (signal -analog voltage)
blue	to	white (5 volt source)

black yellow blue



black green white
(Livorsi harness wires)

Location of the sender wires (starboard side) with the Mercury sender plugged into the SmartCraft® wiring which needs to be unplugged for our crossover harness.

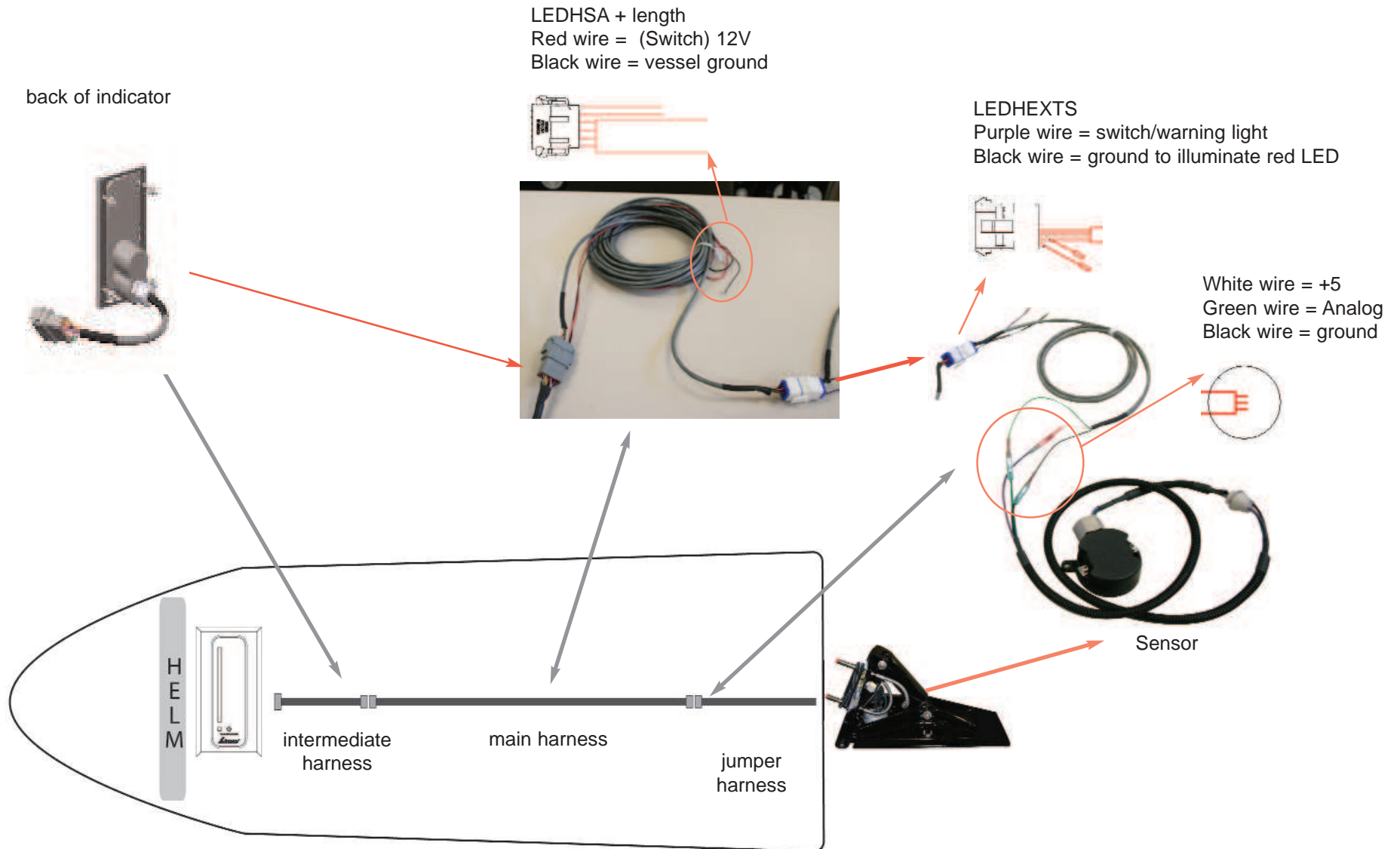


NOTE:

Verify which type of drive trim sensor you have: • resistive type (ohms) • or 0-5 volt (3 wire)
Then determine how it is terminated • bullet connectors • or 3 pin plug

Adjustable LED Indicator Connection to Trim Tabs

Indicator Harness: LEDHSA + length to LEDHEXTS



Adjustable LED Indicator Connection to Trim Tabs Harness: LEDHSA + length to LEDHEXT10 or LEDHEXT15

back of indicator

LEDHSA + length
Red wire = (Switch) 12V
Black wire = Vessel ground

LEDHEXT10 or LEDHEXT15

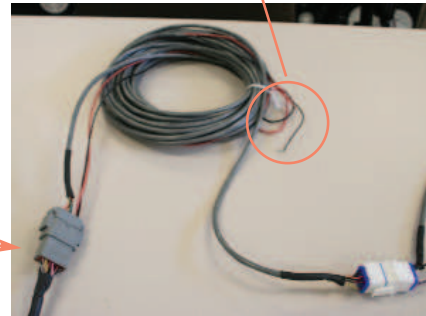
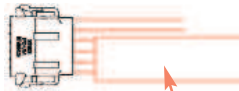
Brown wire = STBD switch

Black wire = ground to illuminate red LED

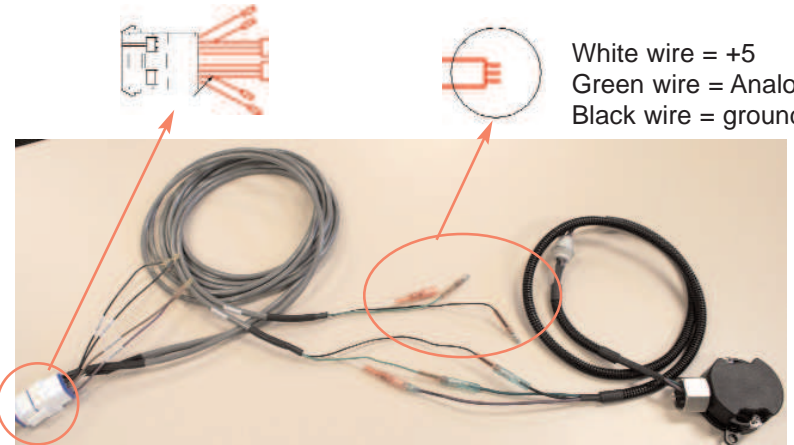
Black wire = ground to illuminate red LED

Violet wire = Port switch

White wire = +5
Green wire = Analog
Black wire = ground

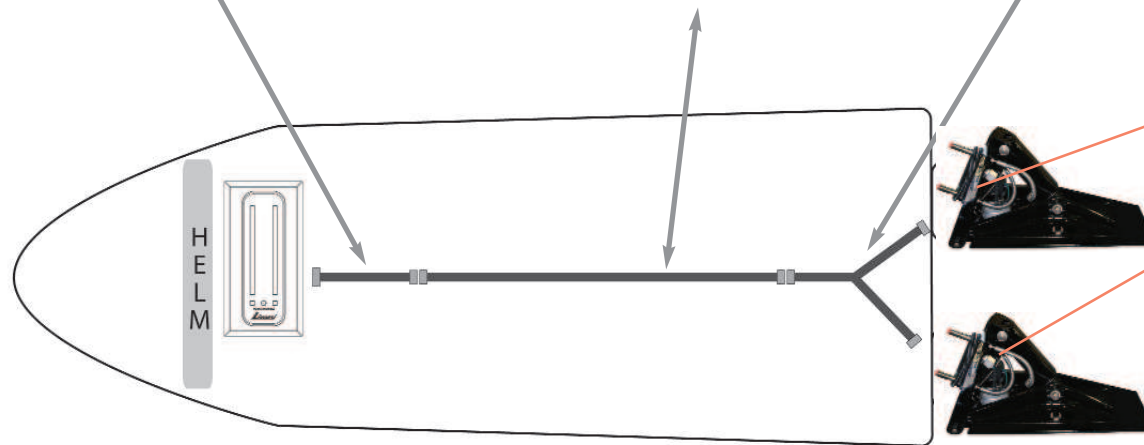


main harness



jumper harness

Sensor

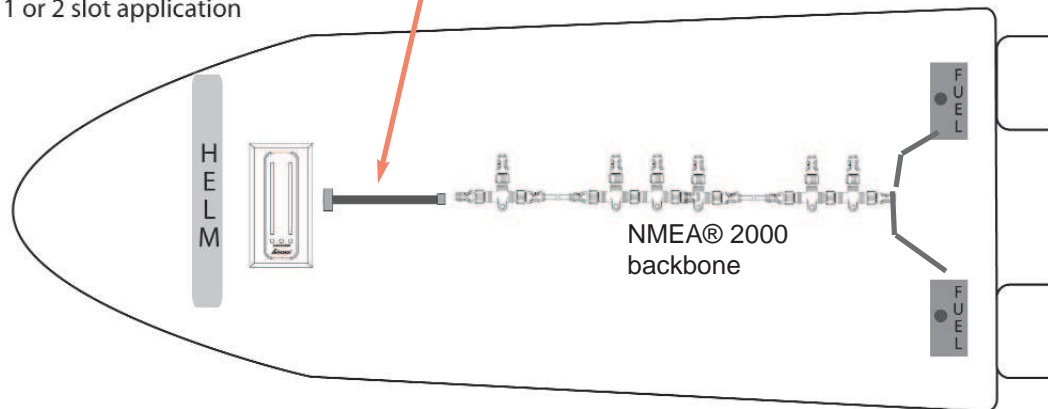


LEDHNM30

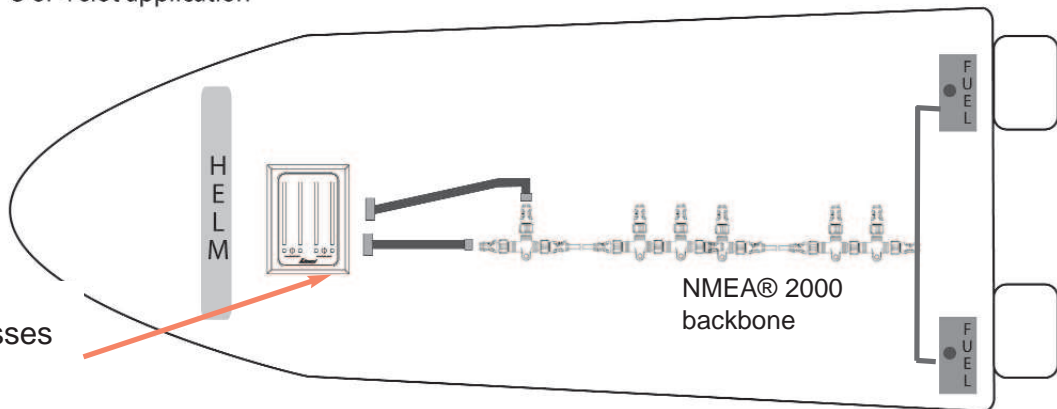


Example below assumes fluid level is already being transmitted on the N2K Bus.

1 or 2 slot application



3 or 4 slot application

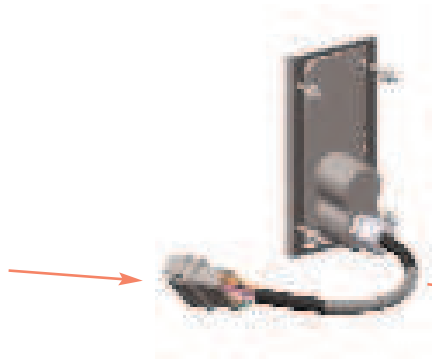


requires two intermediate harnesses

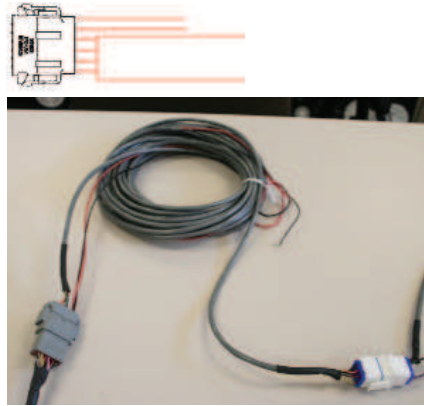
Adjustable LED Indicator Connection to Fuel Level

Indicator Harness: LEDHSA + length to LEDHEXTS

Back of indicator

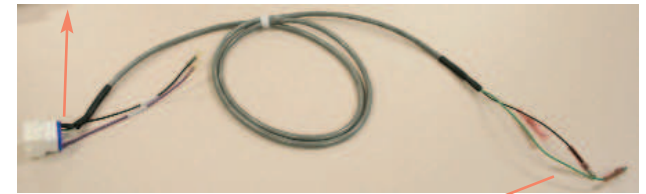
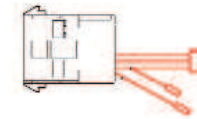


LEDHSA + length
Red wire = (Switch) 12V
Black wire = Vessel ground



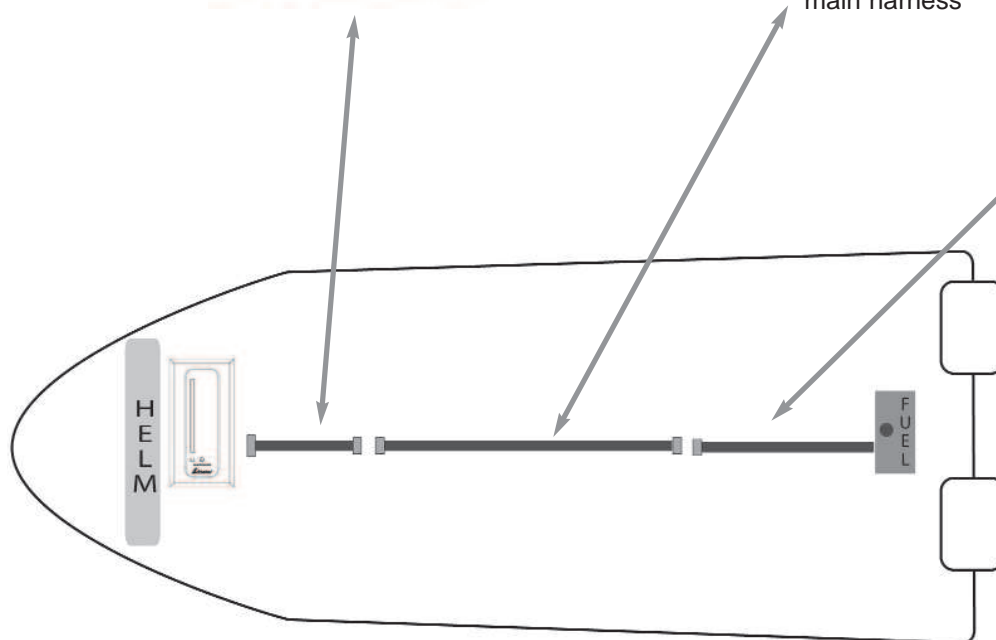
main harness

LEDHEXTS
Purple wire = switch/warning light
Black wire = ground to illuminate red LED



jumper harness

White wire = +5
Green wire = Analog
Black wire = ground



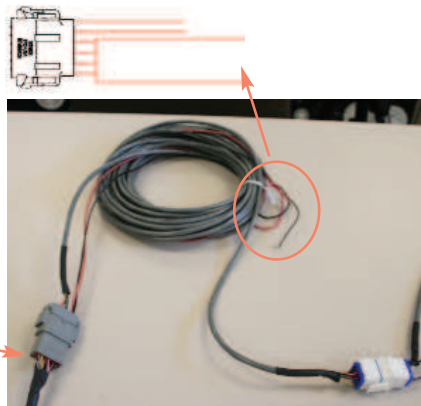
Adjustable LED Indicator Connection to Fuel Level

Indicator Harness: LEDHSA + length to LEDHEXT10 or LEDHEXT15

Back of indicator

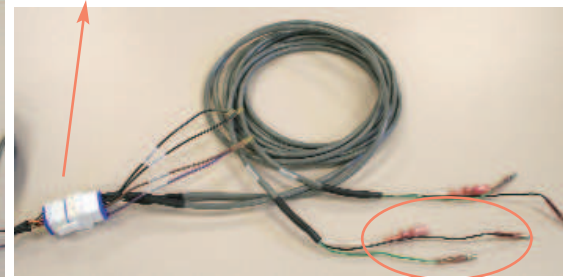
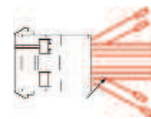


LEDHSA + length
Red wire = (Switch) 12V
Black wire = Vessel ground



main harness

LEDHEXT10 or LEDHEXT15
Brown wire = STBD switch/warning light
Black wire = ground to illuminate red LED
Black wire = ground to illuminate red LED
Violet wire = Port switch/warning light



jumper harness

White wire = +5
Green wire = Analog
Black wire = ground

