



# Lenco Pro Control™ Trim Tab System Installation Instructions

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## CONGRATULATIONS!

You have just purchased the finest trim tab system in the world! Welcome to the future.

Lenco trim tabs make the single most important difference in the way your boat rides and performs. They are optional on some boats but should be as standard as power trim and tilt. Lenco trim tabs make your boat ride smoother, drier, faster and with increased safety whether on a small skiff or a mega-yacht. Our ball screw design makes our tabs more reliable and twice as powerful as typical hydraulic trim tabs. Coupled with any of our trim tab switches, they also perform with instant response which makes them more precise and user-friendly.

Our goal is to manufacture products that simply make boating more enjoyable.

 All Lenco Marine LLC Trim Tab products are CE certified

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# Safety

**⚠ WARNING: THE FOLLOWING INSTRUCTIONS CONTAIN IMPORTANT SAFETY INFORMATION AND SHOULD BE FOLLOWED CAREFULLY. FAILURE TO DO SO MAY RESULT IN INJURY AND WILL VOID WARRANTY.**

Please read through the instructions in their entirety prior to beginning installation!

Note: Measurements may vary from transom to transom.

## Tools and Materials List:

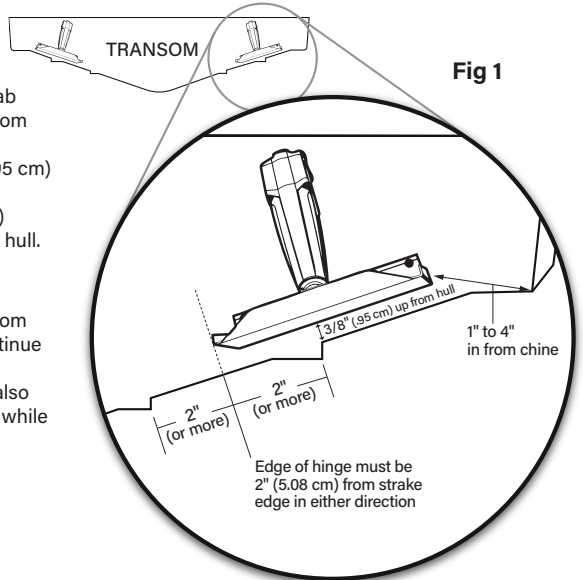
- |  |                          |
|--|--------------------------|
| Electric drill                           | #3 Phillips screwdrivers |
| Tape measure                             | Marine adhesive caulking |
| 3/16" & 7/16" drill bits (.48 & 1.11 cm) | Square                   |
| 3/16" Allen wrench                       | Pencil                   |
| 4' Straight edge or level                | Painter's tape           |
| 2 1/16" (5.24 cm) Hole saw               |                          |

## Installation of Trim Tab Blades

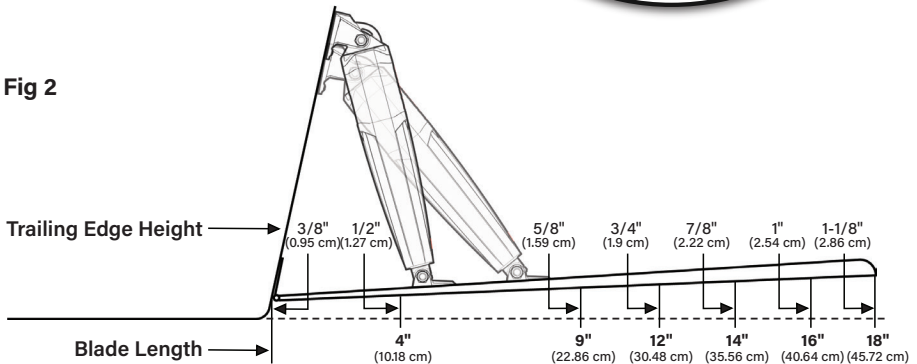
To begin, determine the location on the transom of the vessel where the Lenco Trim Tab Kit will be installed.

Note: When determining the desired tab location, hold the tab against the transom with the bottom of the hinge knuckle (the lowest point on the hinge) 3/8" (.95 cm) up from the bottom of the transom, approximately 1" to 4" (2.54 to 10.16 cm) in from the chine, and parallel with the hull. See **Fig 1** and **Fig 2**.

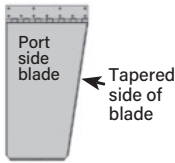
Note: The reason the hinge knuckle is mounted 3/8" (.95 cm) from the bottom of the transom is to allow water to continue to travel freely along the bottom of the boat past the transom edge. Tabs are also mounted in this manner for protection while on a boat trailer or in dry dock.



**Fig 2**

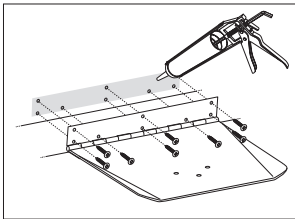
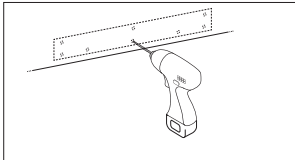
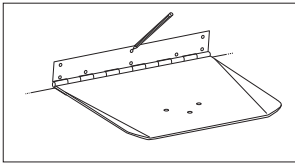


All Performance Series kits with single-tapered blades should be mounted with the tapered side facing toward the center of the transom.



When mounting the hinge to the hull make sure that the inside corner of the hinge knuckle is no closer than 2" (5.08 cm) to the left or right of any strake edge. The hinge may overlap a strake edge as long as the corner of the hinge knuckle is no closer than 2" (5.08 cm) to the left or right of the strake edge. Transfer (trace) the hinge screw hole pattern onto the transom for drilling.

Using the 3/16" (.48 cm) drill bit, drill the previously marked hole locations to a depth of 1-1/4" (3.18 cm).



**Note:** When drilling out the screw hole pattern for the trim tab hinge, use caution as a proper drill depth could drill through the transom.

Hinge screws should be installed with marine adhesive caulking, which will seal the holes. All supplied screws and fasteners are stainless steel. Do not use any other type of alloy.

Mount the trim tab hinge to the transom using provided #14 x 1-1/4" (3.18 cm) stainless steel sheet metal screws. We recommend using marine adhesive caulking to bed the hinge and screws.

**DO NOT OVERTIGHTEN.**

**⚠ WARNING:** Some boat installations contain fuel tanks and systems, water tanks, or other systems that prevent the actuator cable from entering the hull through the upper mounting bracket. Be sure to check inside the hull before drilling the cable hole to ensure no damage will occur to the other systems.

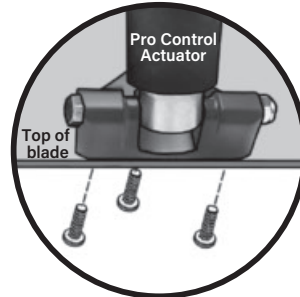
## Actuator Installation

### Lower Bracket Installation

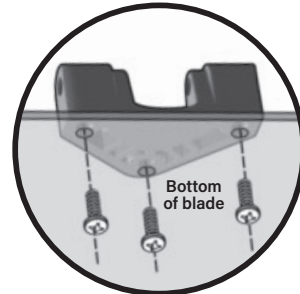
The lower bracket connects to the actuator with one supplied bolt and nut. The bracket fastens to the top of the blade with three provided machine screws. See below.

Note: You must use supplied hardware provided by Lenco Marine. The hardware provided has specific lengths and thread lock compound pre-applied to fasteners.

#### Top of Blade Diagram



#### Bottom of Blade Diagram



Ensure the actuator is fully retracted by rotating the shaft of the ball screw clockwise as the shaft faces you, as shown below.



For 2.25" stroke length actuators with a pin to pin length of 10", the ram tube will retract all the way up to the weld seam. Pin to pin lengths of 10.5", 11.5", and 12" will have the weld seam extend beyond the lower housing when fully retracted.

#### Mark a line on the transom:

1. Perpendicular to the axis of the hinge from the center point of the blade.
2. Align the center of the actuator top bracket attached to the actuator, as shown below.



**Fig 3**

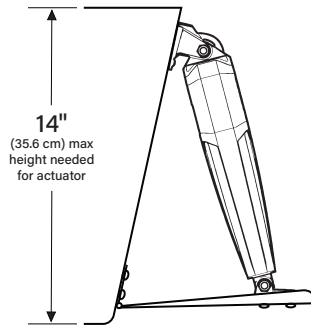
In order to properly position the upper mounting bracket against the transom, you must lift the trim tab so that the trailing edge is at the recommended height per the blade length above the straight edge when held to the hull. See **Fig 2** on page 3.

When the trim tab is at the appropriate level and the actuators are fully retracted, transfer (trace) the outer shape of the upper mounting bracket onto the transom. The upper mounting bracket should be marked where it lays naturally against the transom to prevent binding during actuator function of the trim tabs. This should line up with the mark from center point of blade. See **Fig 3**.

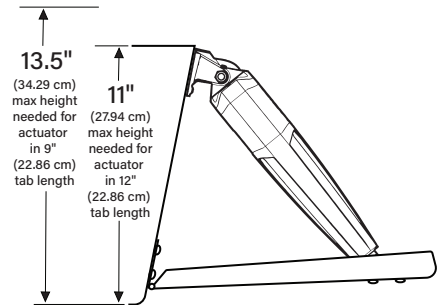
The upper mounting bracket and the trim tab blade should always be on the same flat plane when being attached to the transom. When

installing Standard Mount kits, the distance from the bottom of the transom to the top of the upper mounting bracket should or shall not exceed 14" (35.6 cm) When installing Edge Mount kits with 9" tab length, the distance from the bottom of the transom to the top of the upper mounting bracket should or shall not exceed 13.5" (34.29 cm). All other Edge Mount kits have an 11" (27.94 cm) maximum distance.

#### Standard Mount



#### Edge Mount

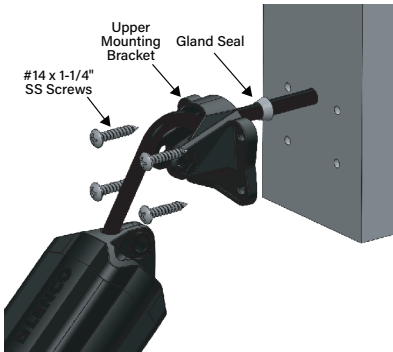


Note: Do not adjust the upper mounting bracket to the right or left of the tab center line, as this will cause binding. Allow the bracket to come to rest at its natural position. See **Fig 3**.

**⚠ WARNING: Some boat installations contain fuel tanks and systems, water tanks, or other systems that prevent the actuator cable from entering the hull through the upper mounting bracket. Be sure to check inside the hull before drilling the cable hole to ensure no damage will occur to the other systems.**

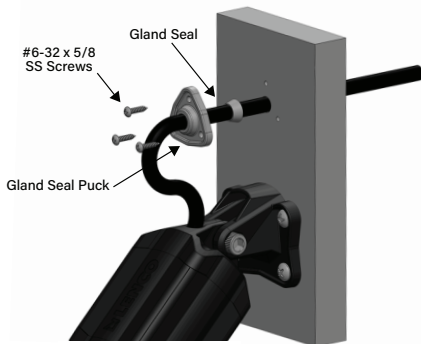
Remove the upper mounting bracket from the actuator and align to the previously marked location to mark the upper mounting bracket screw hole locations and cable hole location.

Using the 3/16" (.48 cm) drill bit, drill the four previously marked screw hole locations to a depth of 1-1/4" (3.18 cm).



The actuator installation may require a remote access point for the cable due to boat systems, like a gas tank or battery location. Avoiding critical boat systems when installing the actuators and the through hole for the cable is essential. The following step may be used to remotely locate the cable through the transom.

After properly mounting the upper bracket of the actuator as noted in the previous step, mark a location for the remote actuator cable gland puck screw hole locations and cable hole location. Using the 7/64" (2.76mm) drill bit, drill the three previously marked screw hole locations to a depth of .6" (15.25mm).

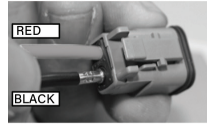


Drill the actuator cable hole with a 7/16" drill bit through the transom. Route the actuator cable through the cable hole on the upper bracket. Refasten the pivot bolt and torque to a maximum of 5 in-lbs. Apply marine adhesive to the back of the bracket and fasteners. Add cable gland seal and pass actuator cable through the transom. Using supplied hardware mount the upper bracket to the transom. Do not overtighten, some materials can be easily stripped.

**DO NOT OVERTIGHTEN.**

**⚠ WARNING: Installer must leave adequate wire loop as to not pull wire from actuator!**

Deutsch Connection Assembly Instructions, First find 2 pin connector insert 16 GA red wire into slot 1. Then insert 16 GA black wire into slot 2, be sure to fully insert the terminals until it locks in place. Once both contacts are in place, insert orange wedge as shown until you hear an audible click.

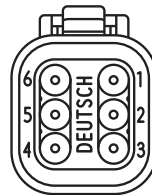


Insert orange wedge as shown until you hear an audible click

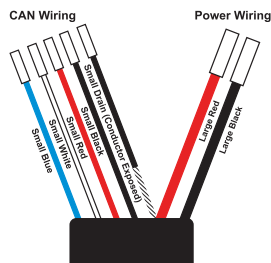
After routing the actuator cable through the transom of the vessel attach the Deutsch connector. In the installation hardware kit find the 6 pin connector, insert the terminals following the table shown and wire diagram below.

Ensure all terminals are fully seated, then insert six position locking wedge until you hear an audible click.

Note: The plug in position 4 is critical for keeping moisture and corrosion off of the electrical connections.



POSITION	DESCR
1	RED
2	WHITE
3	DRAIN
4	PLUG
5	BLUE
6	BLACK



## Keypad Installation

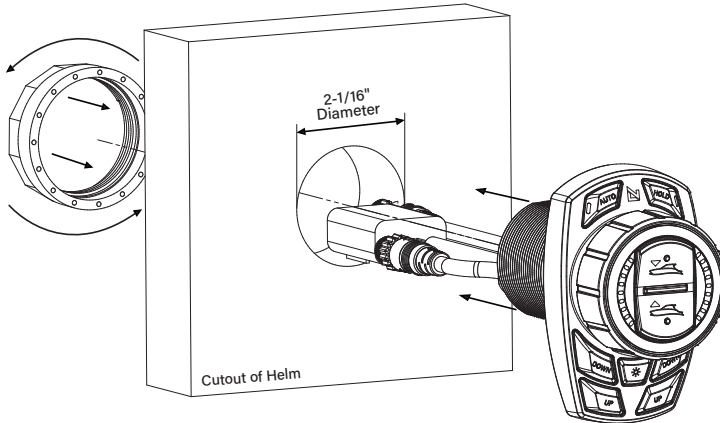
Note: When determining keypad placement, you must have 2.9" (74mm) width and 4.4" (119mm) length for mounting. Make sure there is sufficient clearance behind the helm for the keypad threaded stem. The keypad stem has a depth of 3" (75mm) and has wire leads 7.6" (193mm) beyond the threaded stem for attaching the NMEA and communications systems.

At the helm, determine where the tactile keypad will be installed (see Pro Control Keypad Cutout template on page 20) and secure to helm with tape. Cut a circular opening using a 2-1/16" (5.24 cm) hole saw (Hole must be 2-1/16"). See drawing below. Before cutting, make sure the area inside the helm is clear of wires and other equipment that could be damaged.

**⚠ WARNING:** With some installations other systems may prevent the threaded stem from entering the helm through the intended location's mounting hole. Be sure to check inside the helm before drilling the hole.

Place the keypad & wiring into the 2-1/16" hole, feed wires through bezel nut and hand tighten the keypad's bezel nut onto the backside of helm.

Fig 6



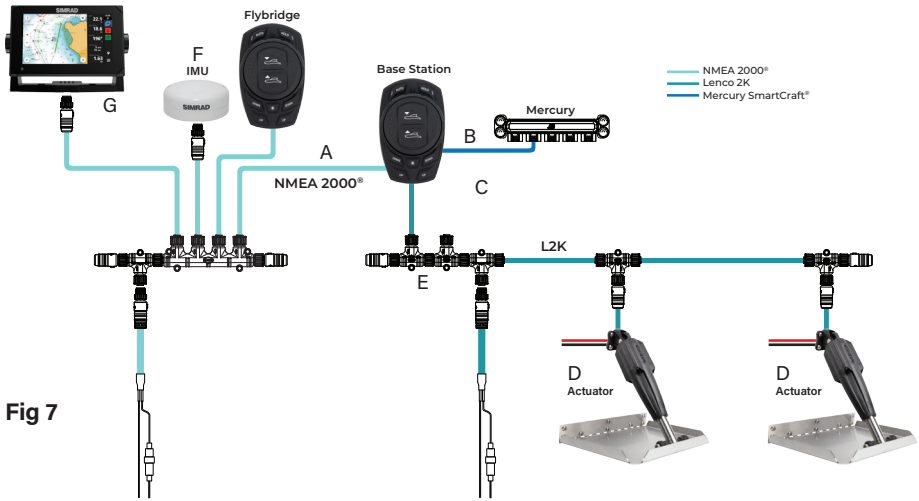


Fig 7

## Network and Power Wiring

**NOTE:** L2K CAN port is a dedicated CAN to the Lenco actuators and must not be connected to any other CAN bus (e.g. NMEA2000, J1939, NMEA0183). N2K CAN port may be connected to the NMEA2000 network within the vessel. Every network will have a Backbone (also known as a trunk), two termination resistors and a power drop tee. Tee connectors allow individual devices to connect between the backbone cables. Drop cables connect each device to the backbone (Note: Do not exceed 6 meters with drop cable). Follow the NMEA2000 protocol for installation requirements.

[National Marine Electronics Association \(nmea.org\)](http://nmea.org)

- Connect the N2K cable from keypad to the NMEA backbone already contained in boat. An additional drop cable is recommended for this connection.
- If the boat has compatible Mercury engines installed, connect 10 pin connector to Mercury JBox with an extension cable. (36" PN 15202-101, 60" PN 15203-101, or 120" PN 15204-101 not included).
- If the boat does not have the compatible Mercury SmartCraft hardware, use the supplied 10-pin to purple wire connector to connect the wake signal to the vessel's ignition or another on/off switch to power-on the system.

**⚠ WARNING: Only approved Pro Control devices shall be connected to the private L2K network!**

- Each actuator will have its own power drop and circuit protection must be supplied. 20 amp fuse or breaker must be in place within 7" of battery power+ (per ABYC). 36" power pigtails with Deutsch connectors are supplied with most kits. If power is not provided at the stern of the vessel they may need to be extended. Follow ABYC guidelines when extending power harnesses.
- Assemble the private L2K CAN network. It will require at least three CAN tees at the helm, at least two CAN tees at the transom, and two resistors.  
The private L2K network will require a 12V power tap and 3 amp circuit protection (supplied with most kits).
- Pro Control Auto requires the Pro Control Auto IMU for functionality (see following page). The Pro Control Auto IMU along with any optional flybridge keypads for Assist and Auto are installed on the vessel's global N2K network, not L2K.
- Pro Control Assist requires an external speed over ground source connected through N2K, such as on MFD, for full functionality. Both Assist and Auto systems will also interface with MFDs for expanded functionality and additional features depending on the type of MFD.

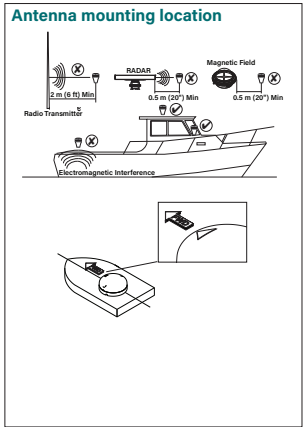
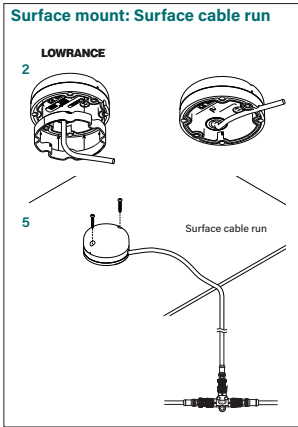
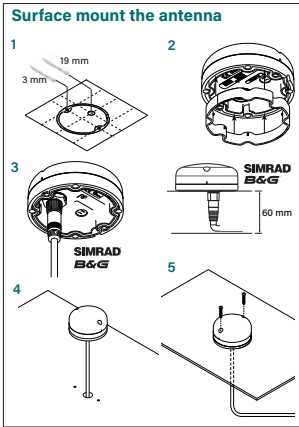
Optionally, each CAN network may include a spare CAN port to allow a service tool to be connected to the network, should it be required for commissioning, diagnostics or firmware updating purposes. Note that spare CAN ports should have blanking caps installed when not in use.



# Install IMU

Install the GPS IMU on a flat and level surface subject to as little vibration and excess movement as possible. The IMU should not be mounted to tops, poles and mounts subject to excess vibration. Mounting locations towards the bow of the vessel may cause poor system performance. The ideal mounting location will also have a clear view to the sky for GPS reception. Ensure the arrow on the top of the IMU unit is pointing towards the bow of the vessel and the unit

is firmly fastened to avoid excess vibration. Route a drop cable from the IMU to the nearest NMEA2000 port as shown below. The IMU is also subject to performance degradation as a result of electromagnetic interference, so care must be taken to ensure that the IMU is mounted sufficiently far away enough from such devices as stereo speakers, amplifiers, metal tools/ equipment, and pumps, which will degrade the quality of the heading data captured by the IMU.



# Commissioning Pro Control, Assist and Auto

## Entering Setup Menu Manually

The Pro Control system will automatically enter its commissioning menu upon the initial powerup. Should you need to access this manually, refer to the instructions below, otherwise skip ahead to: Power first time set up: Locating

### Enter Setup Menu Manually:

To enter or exit the locating menu, press all four lower up and down buttons.

AUTO and HOLD LEDs will flash in an alternating manner.



Entering the Locating Menu

## Power first time set up

### Data Verification

This function indicates which boat systems the Pro Control keypad detects.

Cycle battery switch to ON and turn key switch to ON. Ensure GPS source is energized and has adequate signal.

Note: Vessel NMEA 2000® system must be powered up and the GPS source must be set for global sourcing.

- Keypad light up sequence will commence.
- Ensure both the AUTO and HOLD buttons (Auto keypad) or FAV 1 and FAV 2 (Assist keypad) buttons are flashing.
- Verify top left side dial LED is flashing, if not, rotate dial until only one LED is lit on the left-hand side of the dial.
- Verify right hand dial lights are lit. These LEDs indicate the keypad is receiving data as listed here:
  1. **1st LED SOG speed over ground:** This input is required from a global GPS source for full auto and assisted holeshot functionality.
  2. **2nd LED shift position:** If this LED is not lit the keypad is not receiving shift position.
    - Input not required – trim tabs will function without shift position
    - Input benefits – keypad recognizes: Forward, Neutral, Reverse and applies to control logic.
  3. **3rd LED rpm:** If this LED is not lit the keypad is not receiving engine rpm input.
    - Input not required – trim tabs will function without engine rpm input benefits.
  4. **4th LED throttle demand (Mercury engine only option):** If this LED is not lit the keypad is not receiving engine throttle input.
    - Input not required – trim tabs will function without throttle position input benefits – keypad recognizes the Forward throttle % and applies throttle to control logic.
  5. **5th LED attitude (Auto only):** If this LED is not lit the keypad is not receiving data from the Pro Control IMU. Flashing light indicates data is initializing. Wait for solid light before proceeding.
  6. **6th LED attitude rate (Auto only):** If this LED is not lit the keypad is not receiving data from the Pro Control IMU. Flashing light indicates data is initializing. Wait for solid light before proceeding.

The Pro Control system will default to each menu on the first-time power up and continue through each option until all menu choices are completed.



**LED's**  
 1 = SOG (required)  
 2 = Shift Position  
 3 = Engine rpm  
 4 = Throttle  
 5 = Attitude  
 6 = Attitude Rate

**Data Verification Menu**

### Keypad Locating

This function indicates the Pro Control keypads found on the NMEA system: up to one Helm; and two fly bridge.

Right side LEDs must match the number of Pro Control keypads installed on the vessel.

Rotate dial counterclockwise till until second light is flashing on port side dial lights.

Pro Control automatically recognizes the number of keypads on the network.

Verify correct number of keypads installed on the vessel by viewing right dial LEDs.

- 1st LED = only one keypad installed on the vessel's Pro Control system.
- 2nd LED = two keypads installed on the vessel's Pro Control system.
- 3rd LED = three keypads installed on the vessel's Pro Control system.



**Keypad Locating**

## Actuator Commissioning

This function indicates the Pro Control keypad has found the Pro Control actuators on the L2K system; two; or four.

1. Rotate the dial counterclockwise until the third LED is flashing on left side dial LEDs.



**Actuator Commissioning**

2. Press the pitch UP/DOWN button to select number of actuators installed in system (two or four).



**Actuator Count Selection**

3. Long press the DIM (\* ) button to auto locate the actuators.



**Actuator Locating**

## Actuator Position Assignment

This function indicates the location of the Pro Control actuators mounted on the boat transom and connected to the L2K system. The Pro Control Auto keypad auto detects the actuators. The Pro Control Auto keypad may also be used to assign actuator location: port; or starboard.

1. Rotate dial counterclockwise until fourth light is flashing on left side LEDs.



**Assigning Actuator Position**

2. Press the DIM (\* ) button to begin positioning actuators. (During this process at least one of the actuators will move 10% of its travel. Be sure actuators and tabs are free from obstructions.)



**Actuator Positioning**

3. View actuators mounted on the transom and verify if Starboard actuator is moving.
4. Right-hand LEDs will scroll from 0% to 100% lit.
5. If Starboard actuator is moving press the DIM (\* ) button.
6. If Starboard actuator is not moving press the all up button and verify that Starboard actuator is now moving.
7. If Starboard actuator is moving press the DIM (\* ) button.
8. This will save and store.

## Power first time set up: Exiting first time power up locating

This function exits the First Time Power Up Locating routine.

1. Press and hold ALL four Up/Down lower buttons for 1 second.
2. You are now ready to Sea Trial Commission your boat and setup advanced features!

**⚠ WARNING: To save programmed settings, the system must be shut down with the vessel's ignition switch prior to powering batteries off.**



Exiting Setup

## Pro Control Auto— Sea Trial Commissioning

To enter the Pro Control Auto Commissioning menu Press "Auto" and "Hold" simultaneously until their status LEDs flash in sync.

AUTO and HOLD LEDs will flash together in sync, fast.

First time power-up after actuator locating and calibration; this is an automatic commissioning for the Pro Control Auto keypad, even if the system is powered OFF and then back ON. This process must be completed prior to normal operation.



Entering  
Commissioning  
Mode



In  
Commissioning  
Mode

### 1. Set idle Roll and Pitch target. (on-water, at dock on calm seas)

- Let the vessel sit idle for 3 minutes while the IMU settles in.
- Position vessel level to your desired target roll degree by weight distribution on the boat.
- Make sure to maintain this boat orientation and wait 10 seconds before holding DIM (\*): button to store value. Do not cause, or allow, the boat to change roll during this 10 second time.
- Press and hold DIM (\*): button at least 1 second to store target, both Left and Right-side LEDs will flash. This indicates that the roll position has been stored.
- If the boat rolls during this 10 second window wait another 10 seconds while the boat is stationary and press the DIM (\*): button again.
- Rotate dial counterclockwise to next menu: The second LED on the left side is lit.



Setting Idle Roll &  
Pitch

## 2. Set Pitch Control to ON or OFF.

- When the Pitch Control is set to OFF the Commissioning process is exited, and all the LEDs will be off in the next two menus (3 and 4).
- Pressing the ALL UP button on the dial face will turn OFF pitch control. No right LED will be lit.
- Pressing the ALL DOWN button on the dial face will turn ON pitch control and a single right hand LED will illuminate.
- Rotate dial counterclockwise to next menu for third LED on the left side of the dial.

The following two settings setup your boat's on-plane pitch control.



Set Pitch Control  
On or Off

**⚠ WARNING: On power up actuator will attempt to home and retract fully, ensure trim tabs are clear from any obstructions or personnel to prevent injury:**

**To prepare for first launch with new system, plan an on-water location to commission the system with enough area to complete circles and high speed runs, with relatively smooth water (1 foot or less of water chop is preferred). Note: On first time power up Pro Control Auto will be in a commissioning mode with lights flashing fast in sync!**

The following two steps must be completed on open water with less than 1' of wave chop. Running the boat in a straight line over a reasonable distance, 3/4 mile or more. The sea state should be consistent throughout this commissioning, e.g. the boat must not porpoise.

Boat should be loaded and weighted in the same manner as expected normal use for best outcome: fuel; number of people; gear; etc....

## 3. Low speed Pitch Control.

This step in the commissioning process captures the lowest speed at which the vessel is expected to plane. The objective of this step is to gradually ramp up speed by applying throttle until the bow rises to its peak and begins to fall. This will be indicated by blinking LED's on the keypad and captured by pressing the DIM (\*<sup>\*</sup>) button.

- Prior to getting underway use the ALL UP/DOWN buttons on the dial face to set the actuator extension to 50%, represented by five LEDs on the right side of the dial lit.
  - Only the LEDs on the right hand side of the dial will light up and represent actuator extension of both actuators.
  - The two lower DOWN and two lower UP buttons below the dial are locked out.
  - Keep in mind, if you return the throttle speed control back to neutral, the TABS will auto retract.
- Slowly increase vessel speed until all LEDs blink.
- If the LEDs stop blinking you can slow back down gradually to reengage the pitch control. The LEDs will begin to blink again.
- Maintain your boat's speed so that the dial LEDs consistently blink.
- Wait 5-10 seconds with consistent blinking, if possible, before pressing the DIM (\*<sup>\*</sup>) button, storing the target (best practice).



Low Speed Pitch  
Control Setup

*Low speed pitch control continued on next page.*

- f. Press and hold DIM (⊛) button 1 second to store the slow pitch control target, both Left and Right-side LEDs will flash three times. The left side LEDs will return to steady state lit. This indicates that the slow pitch control has been stored.
- g. Manually retract the actuators to 0% using the ALL UP button on the dial. No right hand LEDs lit.
- h. Rotate dial counterclockwise to next menu with four LEDs lit on the left hand side of the dial.

#### 4. High speed Pitch Control set up.

This step in the commissioning process captures the high speed pitch angle of the vessel. The objective of this step is capture the pitch angle at Wide Open Throttle (WOT) using the DIM (⊛) button.

- a. Bring the vessel back to idle speed to automatically fully retract the tabs or use the All Up button on the dial face to bring both tabs to 0%.
- b. Increase vessel speed up to maximum WOT.
- c. At WOT the vessel must run smoothly, without porpoising. If the vessel is bobbing across the water use the engine trim to smooth the ride.
- d. If engine trim will not smooth the ride then deploy tabs a minimal amount by pressing the ALL DOWN button on the dial face until the porpoising is gone.
- e. Maintain WOT speed for 3 to 5 seconds in a straight line if possible (best practice).
- f. Press and hold the DIM (⊛) button for 1 second to store target. All LEDs, left and right, will flash three times. This indicates that the high speed pitch control target has been stored.
- g. Slow vessel down to idle.



High Speed Pitch Control Setup

#### 5. Exit Commissioning process

- a. Simultaneously hold the AUTO and HOLD button for 4 seconds. The keypad controls are now in the manual mode. In order to enter Auto Mode press the AUTO button.

**⚠ WARNING: To save programmed settings, the system must be shut down with the vessel's ignition switch prior to powering batteries off.**

#### Options for other outcomes:

1. Change Delta drop detection to a high degree value, (menu 5 in calibration).
  - a. Changing the LEDs in menu 5 of (Calibration Menu) will increase the amount the vessel bow has to fall in order to be declared on plane. The outcome will be more TAB used at lower speeds for better BOW control with each increase of LED.

**Caution: Over application of tabs is possible which results in poor vessel handling and bow steering.**

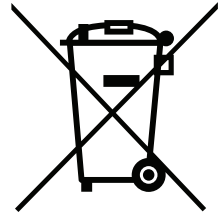
## Disposal

### Environmental Compliance Statement

All Pro Control products that are subject to the Directive 2012/19/EU are compliant with the WEEE marking requirement. Such products are marked with the "crossed-out wheelee bin" WEEE symbol (shown below) in accordance with European Standard EN 50419.

The Symbol on the product or its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment.

The separate collection and recycling of your waste equipment at the time of disposal helps conserve natural resources and ensure it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste for recycling, please contact your local authority.



## Technical Data

Part Number	15187-001	15188-001	15189-001	15190-001
Pin to Pin	10"	10.5"	11.5"	12"
Overall Length	10.8"	11.3"	12.3"	12.8"
Stroke Length	2.25"	2.25"	2.25"	4.25"
Operating Speed @ 125 lbf	≥ 0.7 ips	≥ 0.7 ips	≥ 0.7 ips	≥ 0.7 ips
Operating Speed @ 250 lbf	≥ 0.5 ips	≥ 0.5 ips	≥ 0.5 ips	≥ 0.5 ips
Position Precision (% of Stroke Length)	1	1	1	1
Size Envelope - Width x Depth	2.6" x 2.6"	2.6" x 2.6"	2.6" x 2.6"	2.6" x 2.6"
Amp. Draw @ 50 lbf Load	< 5 A	< 5 A	< 5 A	< 5 A
Amp. Draw @ 500 lbf Load	< 14 A	< 14 A	< 14 A	< 14 A
NMEA 2000 Integration Control & Position Output	Yes	Yes	Yes	Yes
Max. Load Capability - Push/Operating/Pull (lbf)	1,000/750/400	1,000/750/400	1,000/750/400	1,000/750/400
Operating Temperature	-13°F to 140°F (-25°C to 60°C)			
Storage Temperature	-40°F to 185°F (-40°C to 85°C)			
Operative Voltage	9–16 V DC	9–16 V DC	9–16 V DC	9–16 V DC
Sound Level (Unloaded)	67 dB	67 dB	67 dB	67 dB
Water Ingress Protection	IP68	IP68	IP68	IP68
Weight	3.2 lbs (1.45 kg)	3.2 lbs (1.45 kg)	3.3 lbs (1.5 kg)	3.7 lbs (1.68 kg)
Certifications	CE (2006/42/EC – Machinery Directive; 2014/30/EU – EMC Directive; 2011/65/EU – RoHS Directive), NMEA, BS EN 60945:2002, BS EN ISO 8846:2017, RCM, CAN ICES-3(B)/NMB-3(B)			

# Troubleshooting

## Troubleshooting Pro Control Assist

Symptom	Status	Cause	Resolution
Keypad does not respond to inputs	Condition: keypad NOT lit	Keypad not powered by L2K bus, as required	Secure all NMEA® and L2K cabling connections: ensure Purple wire is connected on 10 pin or SmartCraft® is connected to Mercury Junction Box on SmartCraft® equipped vessels.  Contact Navico Group™ or Mercury service
		Wake wire not receiving power	
	Condition: keypad lit	Actuators not powered over L2K bus	
		Actuators not receiving commands over L2K CAN	
Holeshot mode is not operational when throttle moved from low speed to full open		The FAV tab positions have not been set	Set and store a FAV1 position
		GPS not installed	Approved GPS to the N2K CAN Enter Commissioning mode on keypad and confirm GPS connection. Set GPS to global, if applicable. Set and Save FAV tab position greater than 0.
		GPS not set to global in MFD	
Keypad back light not visible	Back light setting on 'night' setting during bright sun light.	Excessively bright sunlight makes the back light difficult to see	Adjust DAY/NIGHT mode Adjust brightness
Press of FAV button causes FAV LED to double flash		FAV position not saved	Save FAV trim tab position
Port or Starboard actuator does not respond to command	Keypad and one actuator operating properly	Faulty actuator	Secure all NMEA® and L2K cabling connections: check power to non-functioning actuator  Contact Navico Group™ or Mercury service



## Troubleshooting Pro Control Auto

Symptom	Status	Cause	Resolution
Keypad does not respond to inputs	Condition: keypad NOT lit	Keypad not powered by L2K bus, as required	Secure all NMEA® and L2K cabling connections: ensure Purple wire is connected on 10 pin or SmartCraft® is connected to Mercury Junction Box on SmartCraft® equipped vessels.  Contact Navico Group™ or Mercury service
		Wake wire not receiving power	
	Condition: keypad lit	Actuators not powered over L2K bus	
		Actuators not receiving commands over L2K CAN	
Right LEDs flashing	Right LEDs flashing to let the customer know the keypad is not receiving the necessary input.	No IMU, Engine, or Lever input received by the keypad.	Install approved GS25 IMU to the N2K CAN  Enter Commissioning mode on keypad and confirm IMU connection.  Confirm engine and lever data input.  Contact Navico Group™ or Mercury service
Keypad back light not visible	Back light setting on 'night' setting during bright sun light.	Excessively bright sunlight makes the back light difficult to see	Adjust DAY/NIGHT mode Adjust brightness
Port or Starboard actuator does not respond to command	Keypad and one actuator operating properly	Faulty actuator	Secure all NMEA® cabling connections: check power to non-functioning actuator  Contact Navico Group™ or Mercury service
HOLD or AUTO function does not maintain boat attitude	Boat does not maintain proper attitude	IMU needs to be calibrated  The vessel was not properly commissioned  Pro Control Auto system not properly calibrated	Calibrate IMU  Recommission the vessel  Recalibrate the Pro Control Auto system  Contact Navico Group™ or Mercury service
Auto function turns off while boat is in motion	Pro Control Auto function turns off	Excessive IMU vibration / poor installation	Check IMU installation guidance on secure mounting

## Notice



All Lenco Marine LLC Trim Tab products are CE & RCM certified.

ISO8846 MARINE

CAN ICES3(B)/NMB3(B)

USA: Lenco, 4700 SE Municipal Ct, FL34997, USA

EU: Laan Van Europa 450, 3317 DB Dordrecht, NL

The contents of this manual are subject to change without notice and do not constitute a commitment on the part of Lenco Marine LLC. Every effort has been made to ensure the accuracy of this document. However, due to ongoing product improvement and revision, Lenco Marine LLC cannot guarantee the accuracy of printed material after date of publication, nor can it accept the responsibility for errors or omissions. Lenco Marine LLC will update and revise this document as needed. Reproduction or duplication of the manual, or any part thereof is prohibited without the expressed written permission of Lenco Marine LLC, Inc. All rights reserved. © 2024 Lenco Marine LLC.

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## Compliance

### FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## Warranty Policy

Lenco Marine LLC warrants its new products to be free from defects in material and workmanship for the following periods:

- **Lenco Pro Control Systems:** 5 years from the original date of purchase. (Limited)

Lenco Marine LLC will, at our sole discretion, repair or replace any product that has proven to meet warranty eligibility in accordance with this policy. Any replacement or refurbished product will be warranted in accordance with this policy for the unexpired balance of the warranty period on the original product. Policies regarding freight and other charges are as follows:

- Freight charges associated with warranty products required to be returned to Lenco Marine LLC will be the responsibility of the customer.
- Charges associated with warranty product that is damaged during its return to Lenco Marine LLC due to improper packaging will be the responsibility of the customer.
- Once the product is proven to meet warranty eligibility, Lenco Marine LLC will be responsible for standard return freight within the continental United States.
- All freight charges from warranty claims submitted from outside the continental United States are the sole responsibility of the customer.
- Lenco Marine LLC is not responsible for charges related to the removal of such product including haul out, labor or any other miscellaneous charge(s).
- This warranty is not transferable.

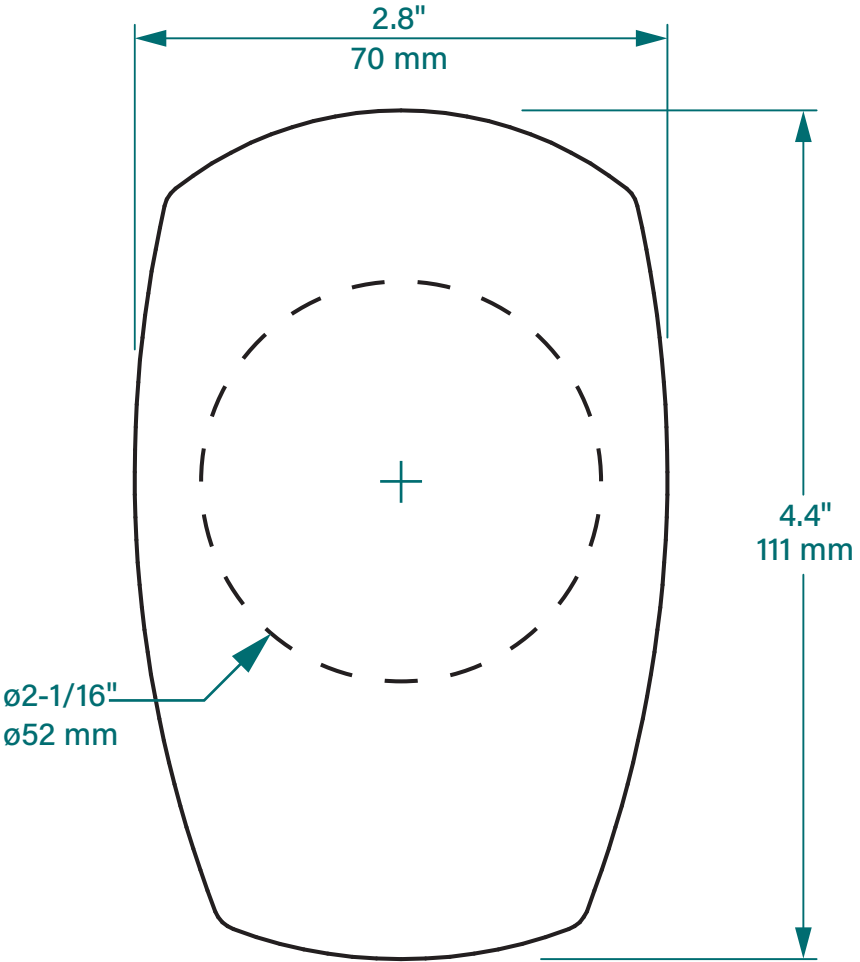
**This policy does not apply to product that has been:**

- Damaged due to improper installation or operation.
- Damaged due to abuse or neglect.
- Modified from its original state without the express written consent from Lenco Marine LLC.
- Used on a vessel where the engine horsepower exceeds the recommendation of the boat manufacturer.
- Damage due to Electrolysis.

**The warranty period for products used commercially or in any rental or other income producing activity will be 90 days from the original date of purchase.**

The foregoing is in lieu of any and all other warranties, expressed or implied, including any warranty of merchantability or fitness for a particular purpose. There are no other warranties which extend beyond that set forth above. Lenco Marine LLC., reserves the right to void any warranty claim if the part is opened or repair was attempted, without the express written consent from Lenco Marine LLC.

# Pro Control Keypad Cutout Template







Precision. Confidence. Adventure.