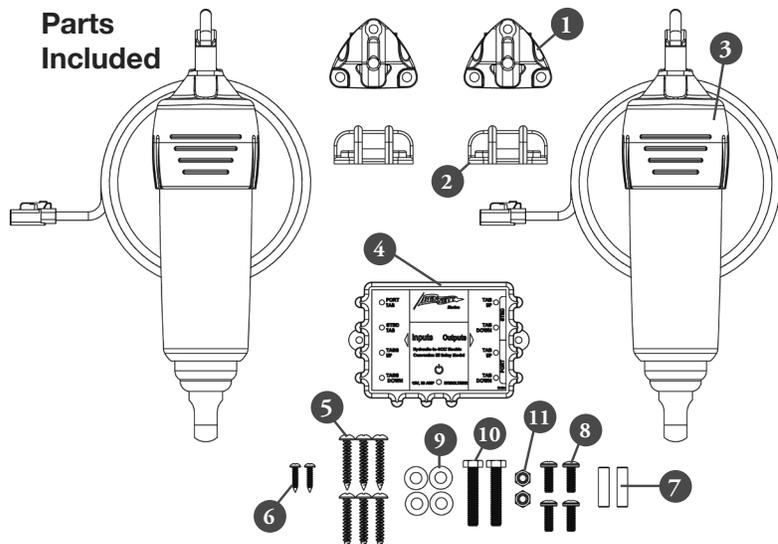




# Hydraulic-to-BOLT Electric Conversion Kit Instructions

## Parts Included



## Kit Part Number: HYDBOLTCON

PART	PART NO.	QTY.
1 Adjustable Upper Hinge Mount	BQE82	2
2 Lower Hinge Mount	ACT1	2
3 BOLT Actuator Assembly	BEA3000	2
4 Hydraulic To BOLT Conversion Relay Module	RMCON	1
5 #14 X 1-1/2" Stainless Steel Screw	HP2	6
6 #8 X 3/4" Stainless Steel Screw	ML63	2
7 5/16 X 1-3/16 Stainless Steel Dowel Pin	BXA47-2	2
8 1/4-20 x 3/4" Stainless Steel Screw	HP3	4
9 5/16 Flat Washers	ML328	4
10 Hex Head BOLT 5/16-18 x 1-3/4 Lg. 18-8 SS	ML432	2
11 5/16-18 Nylock Hex Nut	ML326	2

For warranty details, or general trim tab operation information, visit [BennettTrimTabs.com](http://BennettTrimTabs.com).

## Before Installation

Before performing installation, read the entire instructions and make sure battery power is disconnected.

- The actuator replacement must be done when the vessel is out of the water. Do not attempt to replace the actuators while the vessel is in the water as the actuators are mounted below the water line.
- Before performing any electrical work on a vessel, disconnect the battery by removing the positive (+) cable or if equipped, turning the battery disconnect switch to the OFF position.
- The existing Bennett hydraulic actuators should be fully retracted. If the cylinders have not been fully retracted, hydraulic fluid will leak out of the actuators as they are disconnected (since the actuators are spring loaded).

## Compatibility

This conversion kit is only for standard 12V Bennett Marine hydraulic trim tab systems with a standard rocker switch. Before you begin the conversion verify the following items:

- Positioning Systems:** BOLT actuators do not require sensor rods for trim tab position indication. If the system was previously equipped with a Trimdicator, TPI, EIC, or a NEMA2000 indication system, the indication system will not function after the conversion to electric actuators. For indication with electric actuators a BCI8000 helm control needs to be purchased.
- Actuator Size:** The Bennett hydraulic actuators have four bands around the bottom of the actuator. The four band actuators are standard Bennett actuators. Three band actuators are about 2" shorter and the electric actuators will not fit in this system.
- Non-standard Bennett Actuators:** With the Bennett actuators fully retracted, the lower hinge will be about 1" from the bottom of the cylinder. If the distance is longer or shorter than 1", the actuators are non-standard OEM-specific Bennett actuators which are incompatible with this conversion kit.

- Verify that the rocker switch on the helm is a genuine Bennett rocker switch. A genuine Bennett rocker switch will have a Bennett burgee (flag) logo on the face of the switch.



Bennett embossed burgee (flag) logo



## Planning the Installation

- The new BOLT electric system will replace the hydraulic pump with an electric relay module which is plug n' play, and will eliminate any need for switch rewiring.
- Verify that the motor extension cables supplied will reach from the relay module (pump) location to the actuators.
- Verify that the wire harness connector at the pump is a four position Mate-n-Lock type connector. If your pump uses a Deutsch waterproof type connector, contact Bennett Marine for an adapter.
- If your vessel does not meet any of the above requirements, please contact Bennett Marine directly at (954) 427-1400. We can provide you with assistance on converting to electric, or we can assist you with a simple repair of your hydraulic system.



## Removing the Pump

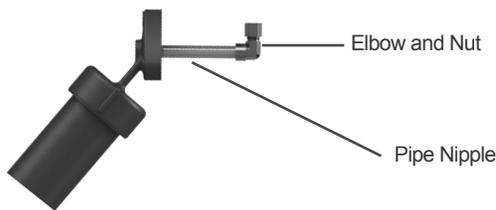
- To remove the pump follow these steps:
- Disconnect the four position wire harness cable from the pump. This cable has red, green, yellow and blue wires twisted together to form the cable. Inspect the connector on the wire harness cable. If there are any signs of corrosion, contact Bennett Marine for a replacement.

**Need Installation Help?** We're here to assist. Call Bennett Marine at (954) 427-1400.

- Disconnect the black ground wire from the pump. This wire can be cut close to the pump. The ground wire may be reused with the new electric actuators.
- Disconnect the hydraulic lines from the pump. Use a 1/2" wrench to loosen and remove the fittings from the pump. Put tape over the fitting ends to minimize any fluid loss from the lines.
- Loosen the four screws in the pump mounting bracket.
- Carefully lift the pump straight up out of the mounting bracket. Do not tip the pump over as hydraulic fluid may leak out of a pump that is laid on its side.

## Removing the Hydraulic Actuators

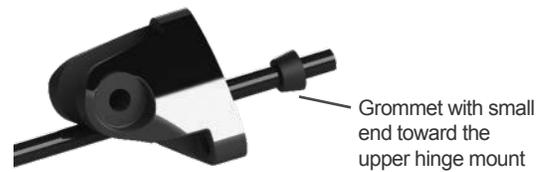
- Bennett Marine supplies actuators with two types of hydraulic connections. One will have pipe nipples that protrude through the transom, and one will have the tubing going straight into the transom with no fitting visible from the inside.



- If your vessel has pipe nipples:
  - » Remove the hydraulic tubing from the fitting on the pipe nipple by loosening the nut on the hydraulic tubing. The nut must be twisted until the tubing comes free.
  - » Using an adjustable wrench, remove fittings from the pipe nipple. If the pipe nipple unscrews from the actuator at this time that is acceptable.
  - » Remove the fittings and tubing from the vessel. Tubing may be useful to pull wires through the hull.
- If your vessel does not have pipe nipples, the tubing will be removed from the outside of the vessel.
- On the outside of the boat, use a #2 Phillips screwdriver to disconnect the trim tabs from the hydraulic actuators by removing the two 1/4-20 pan head screws. The tabs should drop slightly away from the actuator.
- Remove the actuators from the hull by unscrewing the three screws in the upper hinge using a #3 Phillip's screwdriver.
- Pull the actuator away from the hull to break the seal. If the actuators have pipe nipples, pull the actuators until the pipe nipples are completely out of the hull. If the vessel did not have pipe nipples, as the actuator is pulled the tubing will come with the actuator. When the actuator is far enough away from the hull to see the fitting, loosen the fitting with a 1/2" wrench. After the actuators are free, go back into the vessel and remove the tubing.
- The actuators and tubing are full of hydraulic fluid. Do not lay the actuators down or fluid will leak out of them. Take the actuators to a recycling center and dispose of the hydraulic fluid there. Once the fluid has been drained from the actuators, the plastic can be recycled. The actuators and the tubing are made from Nylon material.

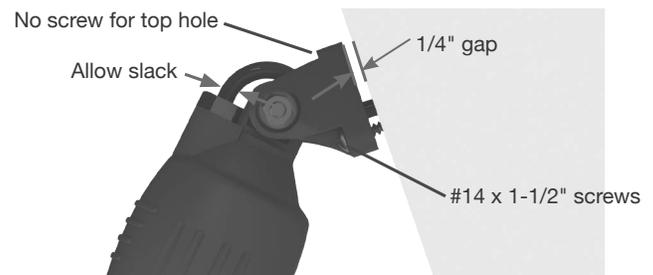
## To Install the New BOLT Actuators

- Carefully insert the end of the electrical cable through the adjustable upper hinge mount and install the sealing grommet onto the cable.



- Pull the cable through the mount until the mount is about 8" from the actuator.
- Insert the end of the cable through the transom hole.
- Temporarily mount the actuator to the adjustable upper hinge using the supplied 5/16-18 bolt and lock nut (using a 1/2" wrench) to set the cable length.

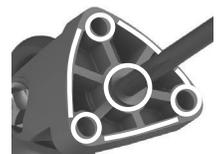
- Temporarily mount the upper hinge of the new actuator to the transom using (2) of the supplied #14 x 1-1/2" screws in the lower mounting positions, leaving a gap of 1/4" between the upper hinge and the transom. Pull the excess cable through the transom leaving enough cable to prevent the actuator from binding during its normal movement.



- Ensure that the cable sealing grommet is moved down the cable to its seat on the upper hinge.
- Swing the actuator through its maximum range of motion to ensure there is the proper amount of cable to allow movement without binding.



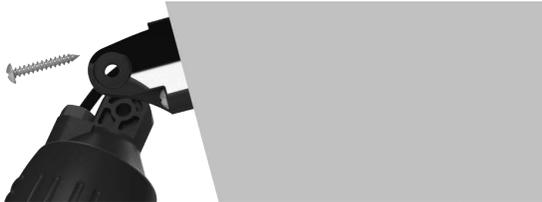
- Unscrew the two #14 x 1-1/2" screws holding the adjustable upper hinge and pull back from the transom making sure the cable length does not change.
- Apply 3M 5200 waterproof sealant on the mounting surface and around the wiring of the new actuator.



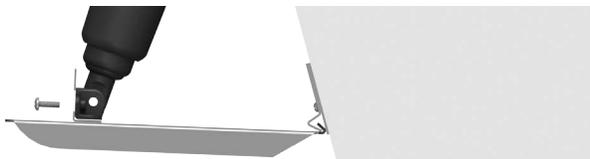
- Screw the adjustable upper hinge to the transom using (2) of the supplied #14 x 1-1/2" screws in the lower 2 mounting positions.



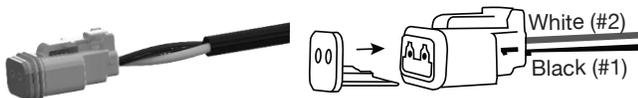
- Remove the BOLT actuator from the upper hinge and allow the actuator hang. Install the remaining (1) #14 x 1-1/2" screw into the top position of the hinge.



- Install the BOLT actuator to the upper hinge using the supplied 5/16-18 bolt and nut. Make sure not to over-tighten as the actuator needs to rotate within the hinge. Over-tightening will cause the actuator to bind. Do not collapse the upper hinge mount uprights.
- Tighten until the bolt and nut contact the flanges of the upper hinge. There should be a gap between the uprights of the upper hinge mount and the flanges on the actuator.
- Install the lower hinge mount to the trim tab using the (2) supplied 1/4-20 x 3/4" screws and nuts using a 1/2" wrench and a #2 Phillips head screwdriver.



- Install the wiring connector onto the wires:
  - » Insert the black wire into location pin #1, insert the white wire into location pin #2 into the back of the connector until the pin locks into place.
  - » Ensure the proper wire color is on the correct side of the connector by comparing the old connector that was cut off.
  - » Install the orange plastic wedge retainer into the front of the connector.



- Connect the male wiring connector to female wiring connector coming from the relay module. For help with connectors visit [BennettTrimTabs.com/ConnectorHelp](http://BennettTrimTabs.com/ConnectorHelp).
- Reconnect the positive (+) battery cable or turn battery disconnect switch to the ON position and check the system for functionality.
- If the actuators are working backwards, the wires are reversed. Refer to the troubleshooting section on the reverse page.

## Installing the Relay Module

- The Bennett Marine Conversion Kit relay module has been designed to simplify all the wiring required on your new electric actuator system.



- Locate the ideal mounting location for the relay module—ideally in a dry location that is easily reached by the wire harness from the original hydraulic system, as well as by both of the electric actuator cables.
- Mount the relay module using the two #8 x 3/4" screws provided.
- Plug the wire harness connector from the existing harness into the mating input cable on the relay module.
- Plug the port actuator cable into the port cable on the relay module. The port cable on the relay module will have a red band next to the connector.
- Plug the starboard actuator cable into the port cable on the relay module. The starboard cable on the relay module will have a green band next to the connector.
- Connect the purple wire to the ignition. This wire is used to signal the system that the ignition is on or off. This wire needs to receive 12V anytime that the ignition is turned ON, and 0V when the ignition is turned off. With this wire connected, the tabs will automatically retract anytime the ignition is turned off to prevent damage to the tabs.
- Connect the black ground wire from the relay module to the black ground wire that was connected to the back of the pump. Run an orange wire from the switch power to the orange wire of the relay module or use a suitable alternate 20A power source. The power source should be disconnected when the batteries are turned off.

## Testing the system

- Reconnect the battery to the electrical system or turn "On" the disconnect switch.
- Press the helm rocker switch on the stbd. side in the BOW DOWN Direction.
  - » The port tab should extend.
- Press the helm rocker switch on the port side in the BOW DOWN Direction.
  - » The starboard tab should extend.
- Press the helm rocker switch on the stbd. side in the BOW UP Direction.
  - » The port tab should retract.
- Press the helm rocker switch on the stbd. side in the BOW UP Direction.
  - » The starboard tab should retract.
- Press the port and starboard rocker switches in the BOW DOWN direction.
  - » Both tabs should fully deploy
- Turn the ignition off (after being power up for at least 15 seconds).
  - » Both tabs should fully retract.

## Troubleshooting

- If the system is working properly the following LEDs will illuminate on the Relay Module:
- If power is ON to the system:
  - » Red LED at the top of the unit will be illuminated.
  - » If no red LED, check the fuse, check circuit breakers, and check ground wire.
  - » No other LEDs will work until the red LED is illuminated.
- Press the helm rocker switch on the starboard side in the “Bow Down” direction.
  - » On the relay module the red and blue input LEDs should illuminate, and the blue LED on the port actuator output should illuminate.
  - » If the red and blue LEDs do not both illuminate, check the connector, check the switch wiring, insure that all of the screws are on the back of the rocker switch.
  - » If the port actuator blue LED comes on, but the port actuator does not deploy, check the actuator connector pins to insure that the pins did not push back.
- Press the helm rocker switch on the port side in the “Bow Down” Direction.
  - » On the relay module the green and blue input LEDs should illuminate, and the blue LED on the stbd. actuator output should illuminate.
  - » If the green and blue LEDs do not both illuminate, check the connector, check the switch wiring, insure that all of the screws are on the back of the rocker switch.
  - » If the Stbd. actuator blue LED comes on, but the stbd. actuator does not deploy, check the actuator connector pins to insure that the pins did not push back.
  - » If the actuator extends, the wires at the actuator are revealed. Remove from waterproof connector and switch. For help with connectors visit [BennettTrimTabs.com/ConnectorHelp](http://BennettTrimTabs.com/ConnectorHelp)
- Press the helm rocker switch on the starboard side in the BOW UP direction.
  - » On the relay module the red and yellow input LEDs should illuminate, and the yellow LED on the port actuator output should illuminate.
  - » If the green and blue LEDs do not both illuminate, check the connector, check the switch wiring, insure that all of the screws are on the back of the rocker switch.
  - » If the port actuator yellow LED comes on, but the port actuator does not retract, check the actuator connector pins to insure that the pins did not push back.
- Press the helm rocker switch on the stbd. side in the BOW UP Direction.
  - » On the relay module the green and yellow input LEDs should illuminate, and the yellow LED on the Stbd actuator output should illuminate.
  - » If the green and yellow LEDs do not both illuminate, check the connector, check the switch wiring, insure that all of the screws are on the back of the rocker switch.
  - » If the Stbd actuator yellow LED comes on, but the Stbd actuator does not retract, check the actuator connector pins to insure that the pins did not push back.
- Press the port and stbd. rocker switches in the BOW DOWN direction.
  - » The red, green, and blue input LEDs should come on during this operation. The blue output LEDs for both actuators should come on.
- Turn the ignition on for about 15 seconds.
- Turn the ignition off.
  - » Both yellow output LEDs should come on as the tabs retract.
  - » If the auto tab retraction is not working, check the voltage of the purple wire. Insure that there is 12V while the ignition is on, and zero when the ignition is turned off.



[BennettTrimTabs.com](http://BennettTrimTabs.com)

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