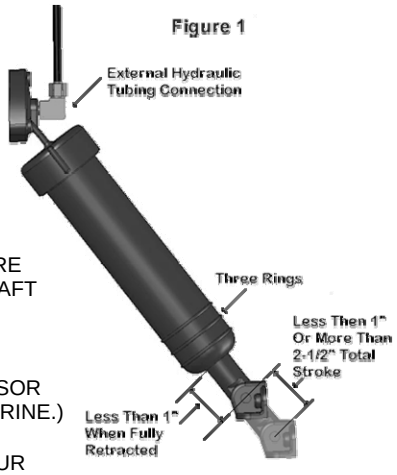
EIC5000 Electronic Indicator Control
INSTALLATION AND OPERATION INSTRUCTIONS

READ INSTRUCTIONS COMPLETELY BEFORE BEGINNING INSTALLATION

Please Keep This Manual With Boat



NOTE:

- SYSTEM IS VOLTAGE SPECIFIC, PLEASE MAKE SURE YOU HAVE A 12 OR 24 VOLT EIC5000 DEPENDING ON YOUR REQUIREMENTS.
- IF ACTUATOR STROKE IS LESS THAN 1" OR MORE THAN 2-1/2", OR IF LESS THAN 1" OF PISTON SHAFT IS EXPOSED WHEN THE ACTUATOR IS FULLY RETRACTED, HAS EXTERNAL HYDRAULIC CONNECTION, OR THREE RINGS MOLDED ON CYLINDER BODY (SEE FIGURE 1), SPECIAL SENSOR COILS ARE REQUIRED. (CONTACT BENNETT MARINE.)
- **Note:** IF INSTALLING IN AN M80 OR M120 KIT YOUR ACTUATOR
  WILL HAVE THREE MOLDED RINGS, CUT THE METAL ROD TO 6-11/16” AS INDICATED BY SCORE MARK.

MAKE ALL ELECTRICAL CONNECTIONS WITH POWER OFF.

Required Tools

1/2", 7/16” & 9/16” Wrench	Teflon Tape	Marine Grade Sealant
1/8”,3/16" & 5/16” Drill Bit	Wire Stripper	Vise Grips
2-1/8” Hole Saw	Electric Drill	Wire Cutter

TEST SYSTEM BEFORE PUTTING THE BOAT BACK IN THE WATER

Bennett Marine
550 Jim Moran Blvd. Deerfield Beach, FL 33442 USA
Phone 954-427-1400 Fax 954-480-2897
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BENNETT Marine

Installing New Upper Hinge with Sensor

Step 1 Inside transom, with tabs in full up position, locate trim tab hydraulic line and detach tubing from brass elbow (some fluid will drip out). While holding pipe nipple with vise grips, unscrew brass elbow using 9/16" wrench. Do this procedure for port and starboard cylinders (see figure 2). If there is no pipe nipple visible inside the transom, you have a short fitting connection (see figure 3), skip to step 2.

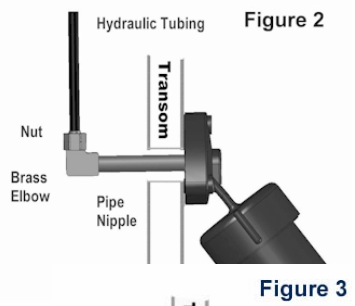


Figure 2

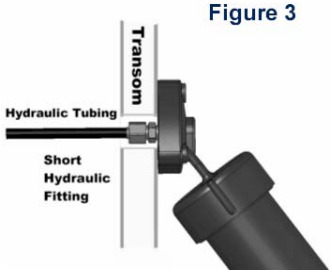


Figure 3

Step 2 Outside transom, snap white plastic clip on shaft protruding from bottom of cylinder. Grasp cylinder body with both hands and unscrew counterclockwise from cylinder upper hinge (a small amount of fluid will spill).

Step 3 IMPORTANT: Use care when handling sensor coils during assembly to avoid damaging wires. Insert metal rod into piston, POINTED END DOWN. Make sure that the O-ring is in place in new upper hinge with sensor coil. Screw new upper hinge onto cylinder while keeping metal rod inserted into center of sensor coil (see figure 4). Red cable for port side and green cable for starboard side. Tighten upper hinge hand tight.

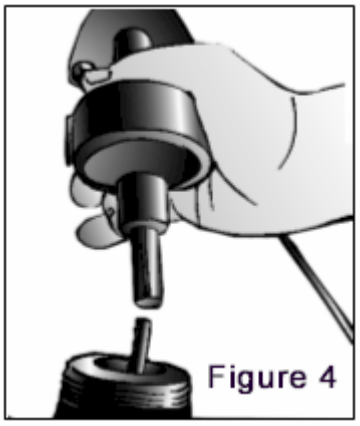


Figure 4

Step 4 Remove upper hinge from transom and remove pipe nipple. If you have a short fitting use a 7/16" wrench to remove it from the upper hinge.

Step 5 Remove plastic clip from piston and repeat steps 2 - 4 for the starboard cylinder.

Step 6 Using template on the last page, drill 5/16" hole in transom for the Sensor Wire. Screw pipe nipple into new actuator upper hinge. Tighten nipple hand tight. Then, with vise grips, tighten two full turns. . . NO MORE. If you have the short fitting, using a 7/16" wrench screw it in until the fitting is snug, the shoulder of the fitting will just touch the plastic of the upper hinge.

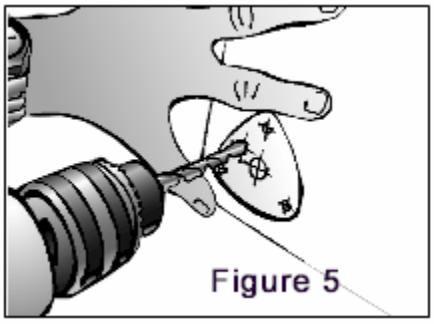


Figure 5

Step 7 Cover end of pipe nipple with masking tape. Apply sealant to actuator upper hinge surface around pipe nipple, screw holes, and cable. Feed Sensor Wire through 5/16" hole.

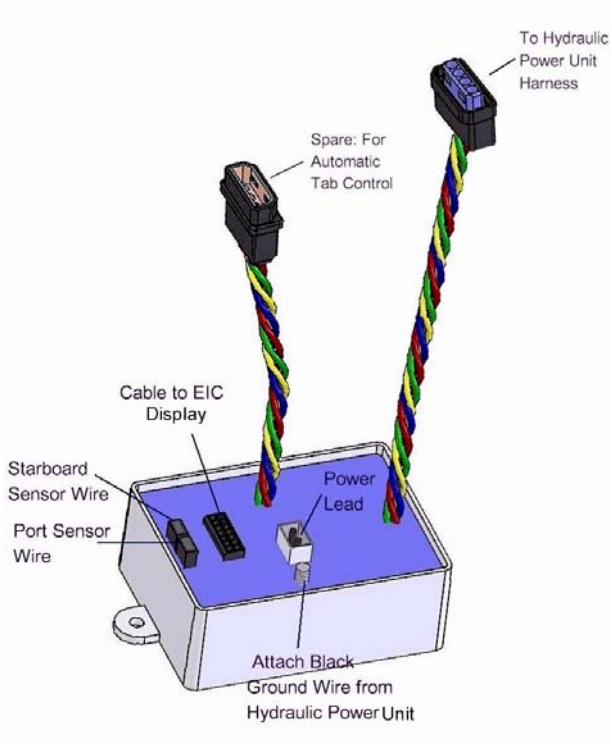
Step 8 Inside transom, remove masking tape from pipe nipples. Carefully wrap Teflon tape around male threads of pipe nipples. Holding pipe nipples with vise grips (to prevent them from turning) re-secure 90 degree elbows. Re-attach hydraulic tubing, tightening nut finger tight. Snug nut with 1/2" wrench. Do not over-tighten. Note: If you have the short fittings, omit this step and secure actuator upper hinge to transom with mounting screws. Grasp cylinder body with both hands and tighten (clockwise) securely. Repeat for other side. Run Red and Green Sensor Wires to where you plan to mount the EIC Module.

Step 9 Mounting the EIC

Using the template on the last page, mark the location for your EIC Display and locate the centers of the holes. Use a 2-1/8" hole-saw to cut the center hole and 3/16" drill for the four mounting stud holes. Use a small bead of sealant around the perimeter of the display to seal. Using the 4 nylon thumb nuts secure the display (use care to avoid over-tightening).

Step 10 Mounting the Module

The Module is best located in a dry location close to the Hydraulic Power Unit.



Step 11 Running the EIC Harness from the Display to the Module

Plug the EIC Harness into the back of the EIC Display and run to the location you have selected for the EIC Module.

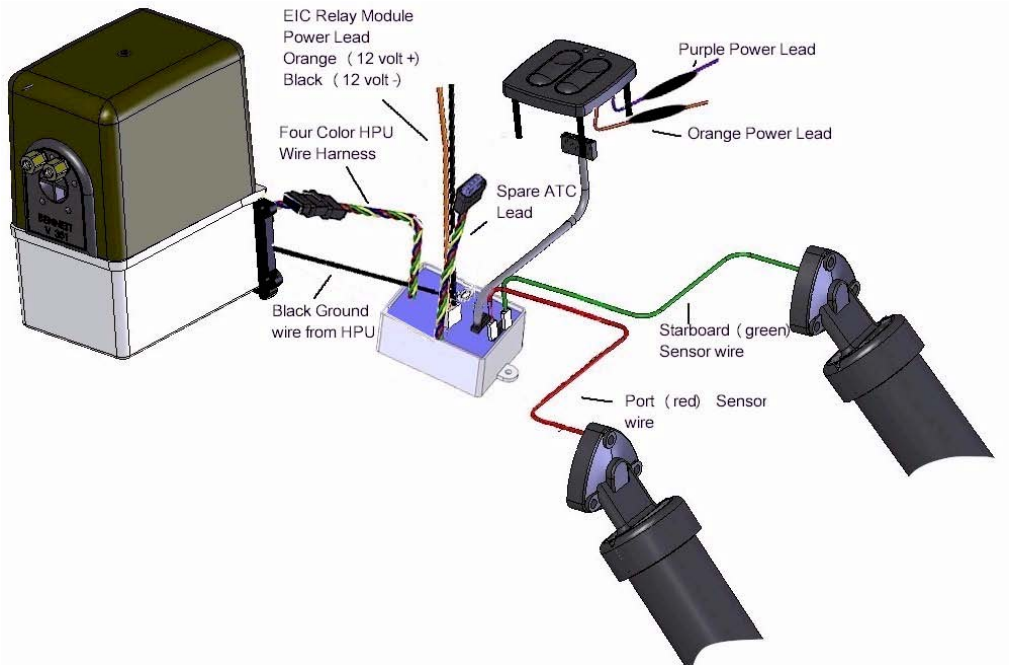
Step 12 Connecting the Wiring for the EIC

Purple wire with inline 1.5 amp fuse: Connect to ignition switch or any 12 volt circuit that turns on with ignition. This wire is used to initiate Auto Tab Retraction when the ignition is switched to the off position. If Auto Tab Retraction is not desired this connection may be omitted.
Orange wire with inline 1.5 amp fuse: To source that supplies power to boat's electronics and or gauges. This wire supplies power to the display system and must be installed.

Making Electrical Connections

Ground wire from pump: Run the black ground wire from the back of the hydraulic power unit to the grounding stud on the Relay Module. Crimp ring terminal on wire and secure with 10-32 hex nut.

EIC Harness: Plug the EIC Harness into the Relay Module. Make sure that the cable is properly supported and does not put strain on the connectors.



HPU Connection: Plug the 4-color wire harness from the Hydraulic Power Unit into the Hydraulic Power Unit Wire Harness (longer of the two harnesses) on the Relay Module.

Sensor Wires: Plug Green Sensor wire into the Starboard Sensor Wire Connector (also colored green) on the EIC Module. Plug Red Sensor Wire into the Port Sensor Wire Connector (also colored red) on the EIC Module.

Power Lead: Attach the black wire to 12 volt negative ground and the orange wire with inline 20 amp fuse to 12 volt positive source and plug into EIC Relay Module.

Spare for Automatic Trim Tab Control: (Shorter of two harnesses) This plug is used to interface a Bennett Auto Tab Control into the EIC System. Please refer to Auto Tab Installation Instructions. If no Auto Tab Control is installed this lead is not used.

Calibration

Check trim tab system to ensure it is operational, then put both trim tabs in the full up position.

When you power up the EIC the port and starboard displays will begin to flash alternately, indicating that the system is not calibrated. Press and hold the sun and moon buttons on the EIC simultaneously for about 3 seconds. Both the port and starboard lower yellow LEDs will begin to blink. Using the trim tab controls run both trim tabs to the full down position (Bow Down on the control). Hold the control longer than necessary to assure that both tabs go fully down (this will not harm the system). A few moments after the Tabs are all the way down the upper port and starboard yellow LEDs will begin blinking. Again, using the Trim Tab Controls, run both tabs to the full up position. Make sure the tabs come all the way up.

The upper and lower yellow LEDs will then light up solidly indicating that the EIC is calibrated and ready to operate. If you wish to recalibrate the EIC at any time simply bring the tabs to the full up position, hold both buttons down and repeat the calibration instructions.

Operation

The intensity of the display may be adjusted by pressing the right button to brighten and the left button to dim the display.

Display Diagnostic Information

Port and starboard display alternately flash: EIC requires calibration. Refer to calibration information above.

Upper yellow LED flashes on port or starboard display: Indicates the display is not receiving a sensor signal. If the port upper yellow LED flashes the fault is in the port sensor or wires. A flashing yellow LED on the starboard display would indicate a fault on the starboard sensor or wiring. Check for a broken wire to sensor, faulty connection or corrosion at EIC Display. Switching the sensor connections on the module will confirm the diagnostic code if the flashing LEDs switch sides. Alternatively, you may check the twisted pair of wires inside the shielded red and green cables with an Ohm meter set to the 10X scale. They should produce a reading in the 220 -260 Ohm range when disconnected from the EIC Module.

Electro-Hydraulic System Information

EIC Relay Module Fuse: 12 volt system uses 20 amp in-line fuse on positive, 24 volt uses 10 amp. EIC Display Fuses: Both Purple and Orange wire fused at 1.5 amp for both 12 and 24 volts.

Hydraulic Power Unit and EIC Module Wiring
Red = Port Valve
Green = Starboard Valve
Yellow = Motor Reverse (pump retract)
Blue = Motor Forward (pump pressure)
Black on HPU = Connects to Ground Stud on EIC Module
Orange on EIC Module = Positive
Black on EIC Module = Ground (boat's electrical system)

Troubleshooting (This general information is not intended to be complete. Please feel free to contact Bennett Marine or visit our website for additional information).

If Trim Tabs do nothing, no movement, no sound from HPU:

Inspect 20 amp fuse on Orange wire at Relay Module and 1.5 amp fuse on Orange wire at display. Inspect all wiring for disconnected or corroded connections.

HPU running but Trim Tabs do not move, or will go down but not retract:

Is the unit receiving a solid 12 volts to the EIC Module? Low voltage will sometimes cause the solenoids to not open preventing the tabs from moving even though the pump motor is running. Inspect all wiring for disconnected or corroded connections.

Conduct the following test using the Spare for Automatic Trim Tab Control connector at the EIC Module:
Operation = Reaction
Apply 12 volts (+)to blue, red = Port trim tab down
Apply 12 volts (+)to blue, green = Starboard trim tab down
Apply 12 volts (+)to blue, red, green = Both trim tabs down
Apply 12 volts (+)to yellow, red = Port trim tab up
Apply 12 volts (+)to yellow, green = Starboard trim tab up
Apply 12 volts (+)to yellow, red, green = Both trim tabs up

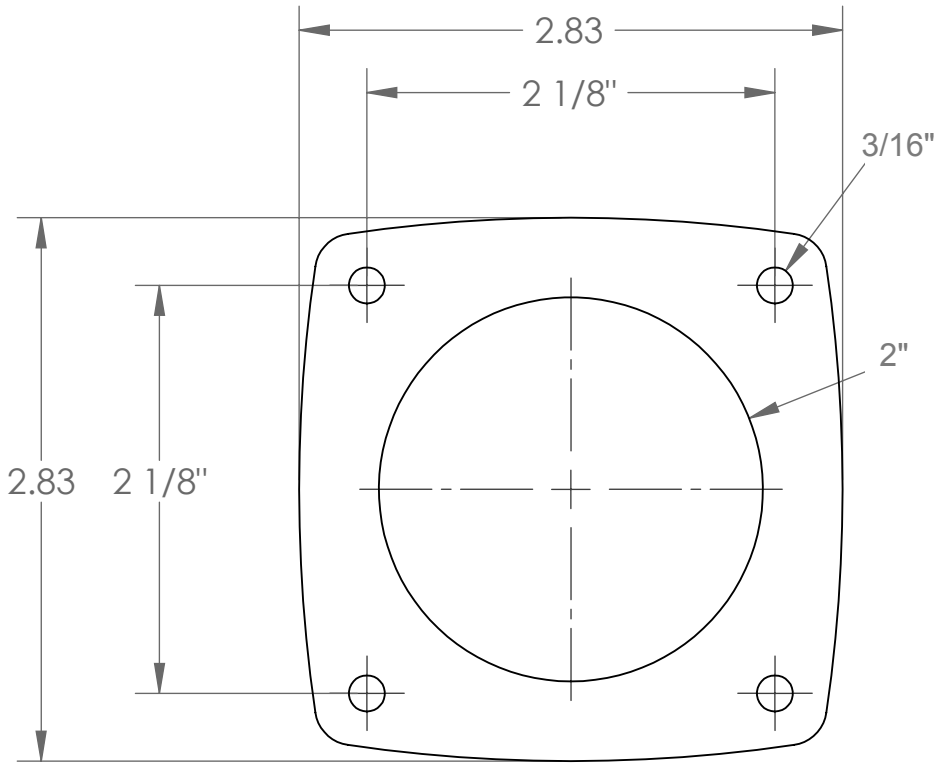
If the trim tabs function correctly for each wire grouping, then the Display or EIC Harness is at fault.

If the system does not function properly, then conduct the same test using the wire harness connected to the HPU. If the trim tabs function correctly then the Module is faulty. If the trim tabs do not function correctly HPU is at fault.

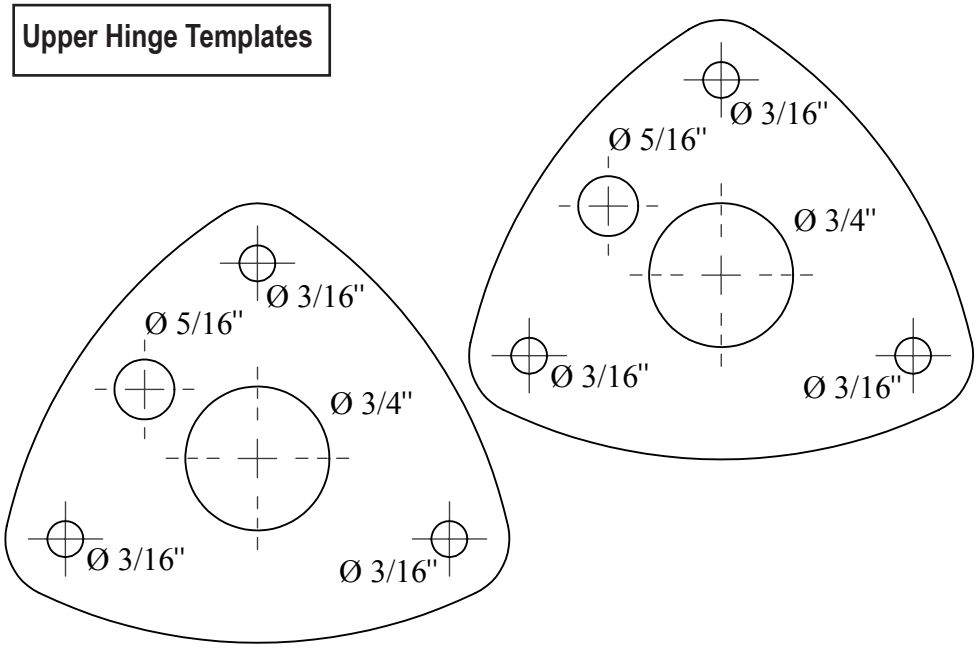
If one side is not operating:

Reverse hydraulic lines on the front of the Hydraulic Power Unit to determine if the malfunction is in HPU or actuator / hydraulic lines. If after reversing the lines symptom shifts to the other side the malfunction may exist in HPU. If the symptom remains on the same side, malfunction may exist with the actuator / hydraulic lines.

EIC Display Template



Upper Hinge Templates



EIC5000 Electronic Indicator Control – Upper Helm
INSTALLATION AND OPERATION INSTRUCTIONS
READ INSTRUCTIONS COMPLETELY BEFORE BEGINNING INSTALLATION

Step 1 Follow EIC5000 Installation Instructions to install system and Lower Helm EIC Display.

Step 2 Mounting the Upper Helm EIC Display
Using the template, mark the location for your Upper Helm EIC Display and locate the centers of the holes. Use a 2-1/8" holesaw to cut the center hole and 3/16" drill for the four mounting stud holes. Use a small bead of sealant around the perimeter of the display to seal. Using the 4 nylon thumb nuts secure the display (use care to avoid overtightening).

Step 3 Mounting the Bridge Box
Mount the Bridge Box within 4 feet of the Lower Helm EIC Display.

Step 4 Running the EIC Wire Harness from Bridge Box to the EIC Relay Module
If you already have a Lower Helm EIC Display installed, simply unplug the blue EIC Wire Harness from the back of that Lower Helm EIC Display and plug it into ANY of the three connectors on the Bridge Box.

If this is a new installation, plug the blue EIC Wire Harness directly, connecting the EIC Relay Module to any of the three connectors on the Bridge Box.

Step 5 Running the EIC Bridge Wire Harness to the Bridge Box
Plug the EIC Bridge Wire Harness into the back of the Upper Helm EIC Display, run it down to the Bridge Box and plug it into ANY of the three connectors.

Step 6 Running the EIC 4-foot Wire Harness from the Lower Helm EIC Display to the Bridge Box
Plug the 4-foot Wire Harness into the back of the Lower Helm EIC Display and plug into the remaining connector on the Bridge Box.

Step 7 Connecting the EIC Display Wiring
The orange and purple wires at the Upper Helm EIC Display are NOT connected to any power source. (They are connected at the Lower Helm EIC Display.)

Calibration
Refer to the EIC5000 Installation Instructions and calibrate system ONLY at the Lower Helm EIC Display.

EIC5000 Electronic Indicator Control – Upper Helm
INSTALLATION DIAGRAM