

## 2010.75/2011/2012 Power Wedge TSB

*These steps assume that the System wiring is correct and in place. It also assumes that you have CAN communication and that the red LED is blinking in the Power Module, and battery voltage is above 11.9V, therefore all other loads should operate as normal.*

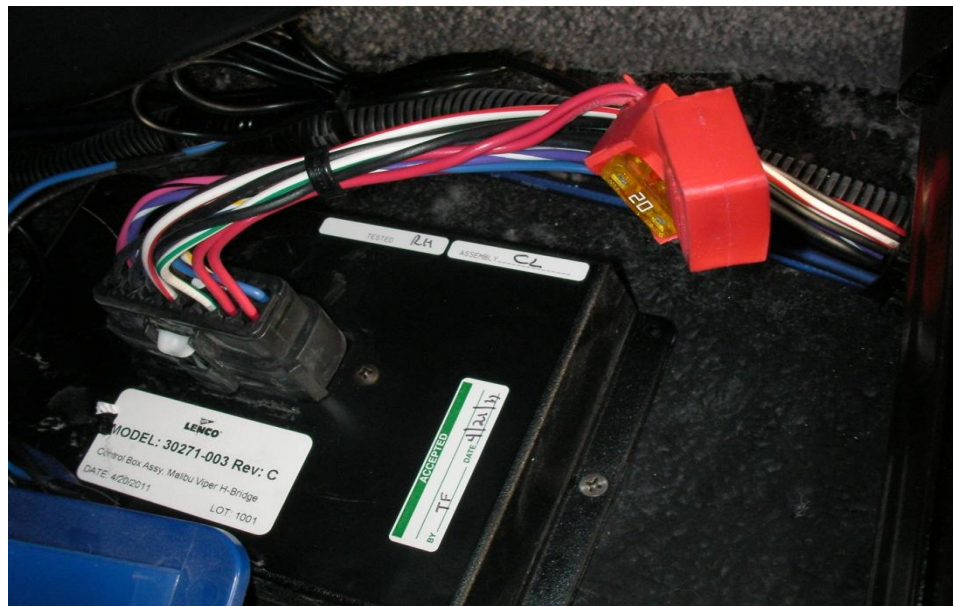
### Verify Proper Setup

- On Mali-view equipped 2010.75 boats, (with Rockford Stereo) make sure the Viper module has software **version: my10.75v22**
- On Mali-view equipped 2011 boats, make sure the Viper module has software **version MY2011v10** and that the touch screen has software version v01290-24 (Available on dealer service site).
- FYI, we will start the 2012 MY with the same software on both Viper & touch.
- Make sure “Wedge Enable” is turned **on** in the Wedge set up screen for both Std. Mux and Mali-view
- Make sure “Auto Wedge” is turned **off** when diagnosing Wedge issues.
- **First you must check the physical adjustment of the wing in the all the way up position.** Adjust the Power Wedge until the tips of the foil are level with the top of the transom bracket as shown with the red line in the photo below. Loosen the bolts that attach the actuator bracket to the transom bracket to adjust the wing height. *The rams must free spin at the end of the throw each direction, not hit a hard stop.*



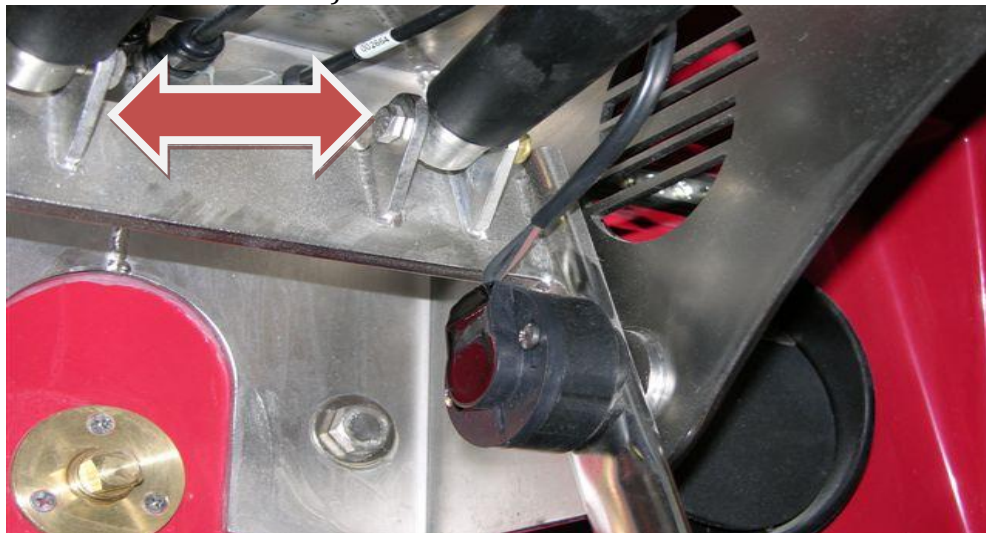
### Popping Wedge Fuse

- All 2011-12 MY boats should have a 20 Amp fuse in the main power supply circuit @ the Lenco control box; *Except Rides.*



- **If the 20A fuse is blowing, there is a Problem with the Rams or a wiring problem.** The boat must be removed from the water to properly diagnose this issue.
- Due to a miscommunication, some direct drive boats may still have a 15 amp fuse in them and they need to be replaced with a 20 amp fuse. This issue is resolved for 2012. The Ride boats have a 30 amp fuse in them. This is not an issue.

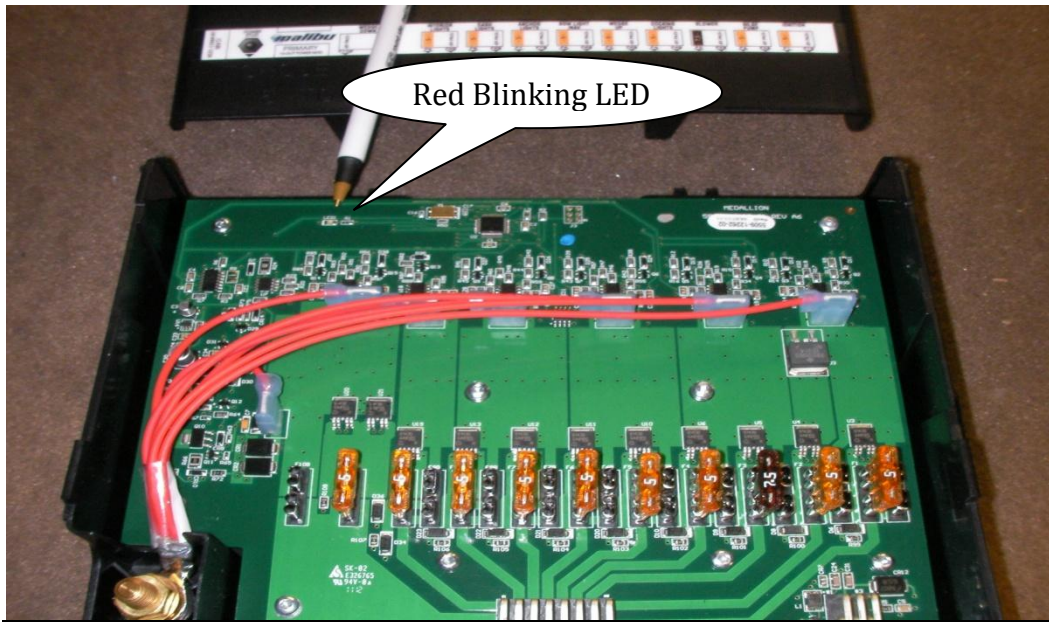
- As we have been made aware, some v-drive boats have made it into the field with 15 amp fuses in them. We strongly suggest all 2011 boats except Rides, should be checked and verify that a 20 amp fuse is in the P.W. Lenco control box power circuit. (See photo above)
- If the 20A Fuse pops at end of ram throw, up or down, look for rams in bind or out of sync, in a bind they pull 25-42 amps and will pop the fuse right now at the end of the throw.
- If the Rams are out of Sync and binding up, you will need to remove the bolts that attach the rams to the wing (see Photo below red arrow).



- Once the bolts are removed you will need to simulate boat speed "1-9.9 MPH" (spin paddle wheel), then cycle rams all the way up & down. (don't let the end of the rams spin) Then re-connect the rams with them in the down Position. Check to see that current draw is now in the normal range under 15 amps at both ends of the throw.
- Verify that the rams run at the same speed when disconnected from the wing. If one ram is fast and the other slow, they will fight each other and cause over current alarms and can pop the fuse. Both rams should end the stroke with in 1 second of each other.
- Verify that the rams extend to the same length. The max acceptable tolerance is 1/8", if you have one ram that 1/4" longer, it will bind at the end of the throw.
- You could have a water logged ram that will pull over 15 amps by it's self. Or you could have a short in the wiring between the Power Module and the Rams.

**Wedge will not move at all**

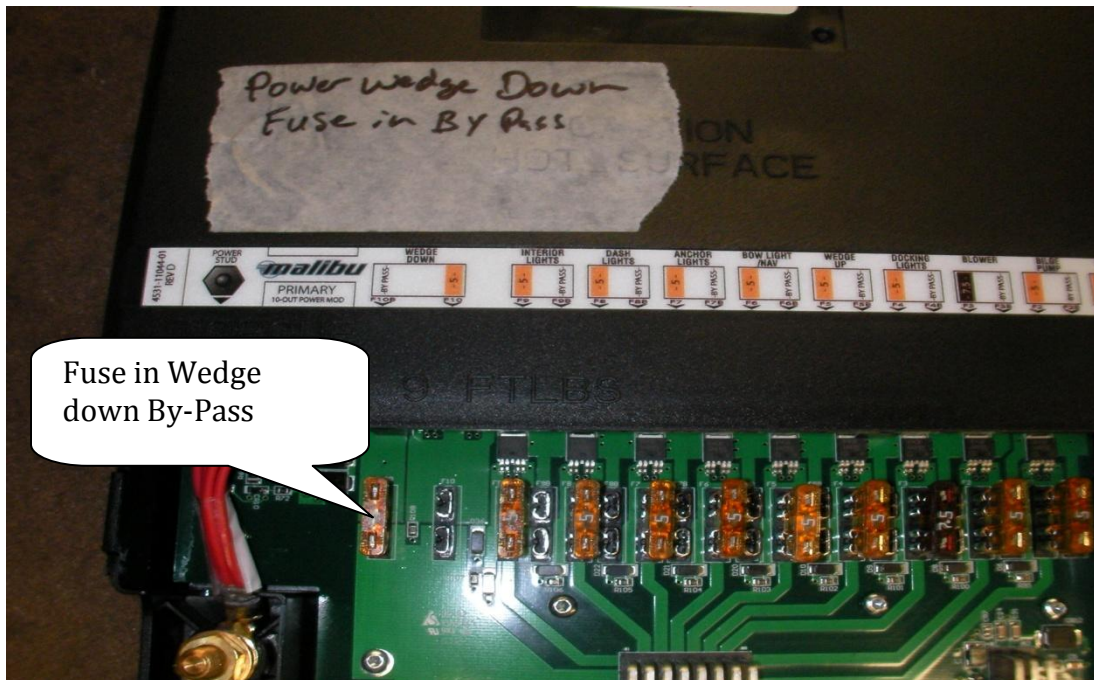
- Verify that the 20 amp fuse @ the Lenco control box is good.
- Verify that the correct Lenco Control box is in the System; we have 3, Viper, Mini & Ride.
- Verify that the MTC is communicating with the power modules. Will all the other switch functions on the touch switch operate correctly? If no, you have a CAN communication problem that must be solved first.
- Verify that the red LED is blinking in the power module (remove lid). "If it's blinking, it's thinking". If you have everything connected, power on and no red LED blinking, you may have a CAN communication issue.
- If you have a bad power module, none of the functions from that module will operate. Power Wedge functions are on the primary power module. If none of the primary functions work and the LED is not blinking, yet the secondary module is blinking, the problem would appear to be a defective primary power module.
- Always verify proper battery cable connections and voltages before condemning a Power Module. The connections must be tight at the battery, the circuit breaker panel, the ground buss bar and the jumpers to the Power Modules.



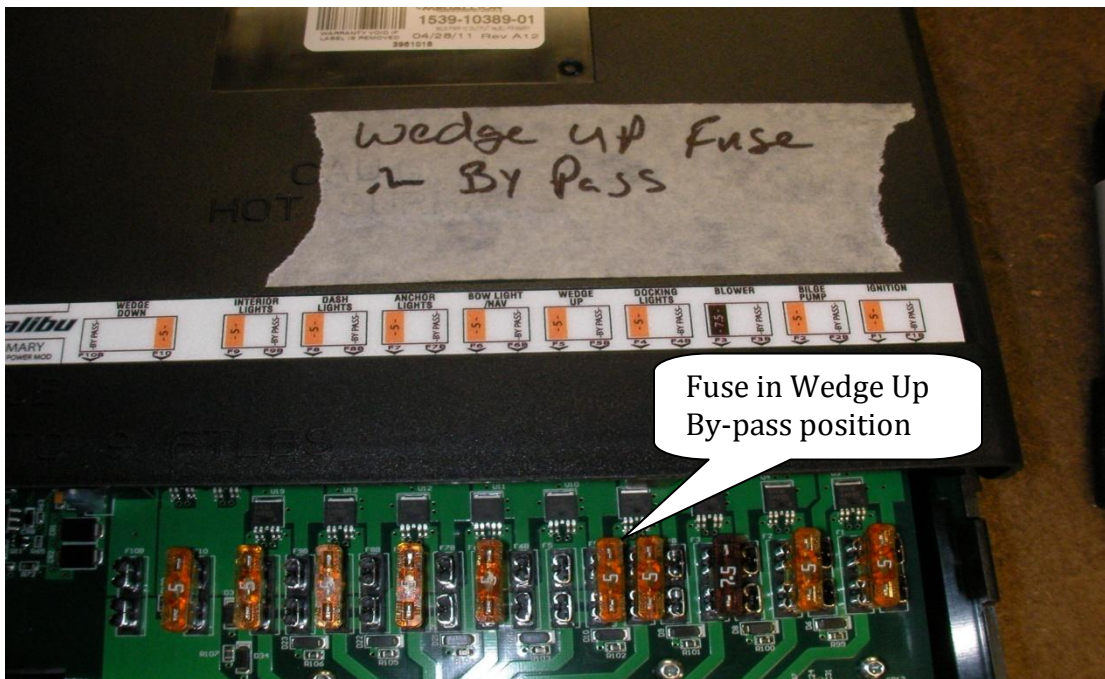
*Primary power module-fuses in normal position.*

### **By-Passing the Touch Command Switches**

- The power modules have by-pass positions for all loads. These by-pass positions can be very helpful in diagnosing switch function issues. If the Lenco box is powered and working correctly, you can move the Wedge up & Down by moving the appropriate fuse to the by-pass position.



*Primary Power Module-Wedge Down fuse in By-pass position.*



*Primary Power Module-Wedge Up Fuse in By-pass position.*

### **Rams can Fail, Break & fill with Water**

- If you have a system that's popping fuses continually, you may have a ram that has taken on water. If you find a ram squirting water out as you cycle the Wedge up & down, you have found the problem. Replace the water logged ram.

### **Normal Operational Parameters**

- Presets will not deploy the Wedge unless the engine is running.
- The Wedge can move to the down position with just the power on, yet the system must see between 1-9.9 MPH to allow the Wedge to move up.
- The Wedge will not come up past the normal operational zone unless the boat speed is below 10 MPH.
- The system will allow adjustment of the wake size shape in the normal operational zone between 1 & 22 MPH.
- An alarm will sound if the wedge is not in the all the way up position when above 25 MPH.

### **Auto-Wedge Operation**

- The Auto Wedge is a great feature that will save gas and improve the low end performance when pulling up an advanced rider who likes to ride with the Wedge in the Max up or advanced positions. The Auto Wedge can also be a bit intimidating if the operator is not clear on what to expect from the Auto Wedge feature.
- The Auto Wedge feature will operate in both the Manual operation of the Wedge and with the Pre-sets. The way it operates is; once the system knows where you want to wedge positioned "at the target speed", the system will drop the Wedge all the way down for less resistance or drag once you're below 75% of the target speed. This allows for better steering performance in a turn and places the Wedge in the least resistive position for the next pull up.
- Example: If you set the cruise for a target speed 20 mph with the Auto Wedge feature On, then you drop the Wedge and position it at the Max wake position, the Wedge will stay in this position until the boat speed increases above 2 MPH, at this point the Auto Wedge will put the Wedge all the way down "for less resistance during take off" and then as you hit 15 mph, the Auto Wedge will move the wedge back to your original Max wake position. As you reduce speed below 15 mph, the Wedge will drop again.

## Power Wedge Over-Current Alarms

- On the 2011/2012 MY systems, we are using a control box from Lenco that is constantly monitoring the Amperage draw from each Ram as well as insuring each ram is properly connected and operational.
- There are 5 different alarm banners that can pop up to alert the operator of a problem between the Lenco control box and the rams.
  1. 0.5V - Port Actuator – Max Current Draw Failure
  2. 1.0V - Stbd Actuator - Max Current Draw Failure
  3. 1.5V - Port Actuator - Average Current Failure (Tends to catch binding actuators or reverse polarity failure)
  4. 2.0V - Stbd Actuator – Average Current Failure – (Tends to catch binding actuator or reverse polarity failure)
  5. 2.5V - Unbalanced Current Failure (Tends to catch open or poor connections)
- These alarms can be triggered for several different reasons.
  1. Foil out of Adjustment.
  2. One ram longer then the other.
  3. One or both rams filled with water.
  4. One ram is faster than the other.
  5. Foil hinge bolts to tight.
  6. Ram attachment bolts to tight
  7. One ram pulling 4 times the amperage of the other.
- The system is designed to watch for problems with regards to the Amperage load being pulled by each ram. If one ram is pulling 4 times the current of the other, an Average current draw failure alarm banner will be displayed. The system is trying to prevent a good ram from pulling itself apart due to a problem with the other.
- The 0.5V-2.5V values next to the Actuator Alarms are the voltages sent to the Viper from the Lenco control box on the pink/white alarm circuit to signal the Viper to display a particular Alarm.

### New 5 Lobe Rams for 2012

- The motors in the rams have changed for the 2012 MY. The lobes on the motor use for tracking the location of the ram have changed from a 3 lobe motor to a 5 lobe motor. This was a change at the manufacture level; we had no choice but to make the switch.
- Due to the “tracking” lobe change on the ram motor, the Lenco control box had to change as well to use the new 5 lobe data.
- **It’s very important that you use the correct 5 lobe control box with 5 lobe rams and that you use the correct 3 lobe control box with the older 3 lobe rams.**
- **All 2012 Product will use 5 lobe Rams and 5 lobe control boxes.**

### How to tell the difference between 3 lobe and 5 lobe components

- 3-lobe rams-part# 20791-001 and 20791-0013. These rams have a number etched into the body of the ram. The first number on a 3 lobe ram will be a 1, 2, 3 or 4.
- 5-lobe rams-part# 20791-0015. The first number on a 5 lobe ram will be a 5, 6, 7, or 8.
- The 5 lobe control box will say “5 lobe” on the tag. Part numbers #30271-0015, -0025 and -0035.
- 3 lobe control boxes are still available for warranty and non-warranty replacements. The 3 lobe part numbers are #30271-001, -002 and -003.
- **If 3 lobe and 5 lobe components are used on the same system, the gauge will never work right.**