Malibu 2007

Troubleshooting
(Electronic Throttle Engines)

System Not Controlling/Surging in both RPM & Speed Mode

You can quickly perform a **"Control Test"** to confirm whether PerfectPass has proper control of the ECM. This test is on Page 3 and can be done on a "fake lake" or in the water.

The **PerfectPass "Drive by Wire" (DBW)** system for new electronic throttle engines results in a simplified and enhanced version of PerfectPass. From the drivers seat, PerfectPass operation is virtually identical to the present mechanical systems. PerfectPass is now comprised of just four main parts:

1. DBW Master Control Module
2. DBW Plug & Play Engine Wiring Harness (Supplied by Malibu)
3. In-Dash Display
4. An "ALDL" Ground Plug

Engine Harness

Display Harness

How it Operates:

The ECM of an electronic throttle engine allows an external device such as PerfectPass to control the engine rpm using the throttle servo motor when all control signals are valid and manual throttle lever position exceeds the rpm level request of PerfectPass.

Just three individual wires in the PerfectPass DBW wiring harness connect the speed control to the engine ECM.

1. The **Request Line** from PerfectPass requests the ECM to allow PerfectPass to take control.
2. The **Status Line** from the ECM indicates PerfectPass now has control of the engine. The Status Line is the signal that confirms engagement (beeper) and system control.
3. The **VGOV Line** establishes the engine RPM level as set by PerfectPass.

Problems with PerfectPass should be rare given the few components that now make up the system. Most trouble shooting will simply involve voltage/continuity testing on the PerfectPass engine harness.

Wiring Identification

2007 DBW Engine Harness

Malibu and PerfectPass Harness Assembly

14-Pin *Pin #*	**Ampseal** *Function*	**Wire Color (Factory Installed Harness) Malibu**
1	STAT	Green / Black
4	+12 v	Purple
8	Paddlewheel	Green
9	Tach	Grey
10	VGOV	Green / White
12	RQST	Green
14	GND	Black

4-Pin	**Malibu Packard Electric Connector**	
A	Paddlewheel	Green
B	RPM	Grey
C	+12v	Purple
D	GND	Black

Engine Pins

C	RQST	Dark Green
D	STAT	Green / Black
E	VGOV	Green / White

Problems with PerfectPass Controlling/Not Controlling

Open connection/broken wire) symptoms of a PerfectPass DBW system

Problem #1 RQST Line Open – PerfectPass never takes control in any mode, the engine is controlled only by the manual throttle handle.

Problem #2 VGOV Line Open (RQST Line OK) – With the PerfectPass system control ON, the engine will not go above idle no matter how far the manual

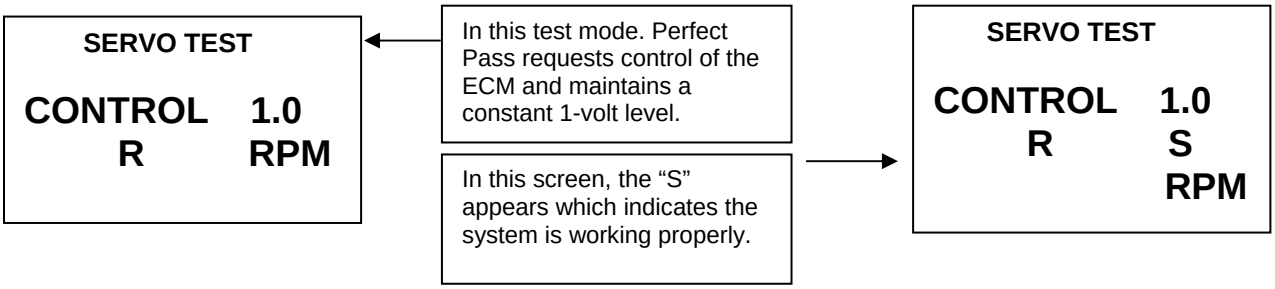
throttle is pushed. With PerfectPass control OFF, the engine is controlled as normal by manual throttle handle.

Problem #3 STAT Line Open (RQST Line and VGOV Lines OK) – Engine operates normally with PerfectPass control ON, the engine RPM's become limited at speed slightly above system set point, but there is no proper control and speed remains one or two mph above setpoint. The PerfectPass does not beep to acknowledge engagement and the underline characters never appear.

Problem #4 PerfectPass Does Not Engage The "S" (Status Line) never appears during control test. Check "ALDL" ground plug. If not connected properly, ECM will never give PerfectPass control. (Connects where "Diacom" plugs into harness).

TESTING (CONTROL TEST)

To enter the Test Mode, press the Menu & UP Keys together and scroll down to **"Device Test"**. Rope Test will first appear, press menu to enter Servo/Control Test.



TEST

Make sure system is in ON Mode prior to starting test. You must have an RPM reading on PerfectPass display or it will never work properly.

With engine ON, lock the gearshift in neutral and advance the throttle handle to 1800 RPM. When all is working correctly an "S" will appear next to the "R" and the engine will hold at approximately 1730 RPM (it may surge up and down by about 100 rpm). If the RPM is holding at 1730 but the "S" is not on the display, there is a problem with the "STAT" line.

If you lower the 1.0 volt setting by pressing Down Key to .7 volts, the engine rpm will drop to about 1420 and hold reasonably steady.

(If you perform this test on the water on the fly, it should hold very steady at about 1730).

The control wires from PerfectPass that are connected to the ECM are the following:

Function		PerfectPass Connector PIN #	Malibu Factory Harness	Engine Connector PIN	
RQST	Control Request	12	Dark Green	C	
STAT	Control Status	1	Green / Black	D	(Ensure these wires are in
VGOV	Control Voltage	10	Green / White	E	correct position)

Locate the 14-pin engine connector on the PerfectPass Module. You will need to apply test tee connectors or insert small test pins beside the wires as they exit the connector to be able to measure the voltage present on each wire.

- Measure the voltage on the RQST (request line) which should measure less than 1 volt. (0 to 1 volt). Engine running or off.
- Measure voltage on VGOV (vgov line) which should measure about 1 volt. (.8 to 1.2 volts). Engine running or off.
- Measure voltage on STAT (stat line) which should be 10 + volts with engine idling, and 0 when "S" is on screen and controlling properly.
- Press the OFF key and the "R" will disappear. Now measure voltage on RQST wire again which should now measure more than 4.5 volts, this confirms proper operation of PerfectPass Request driver and ECM connection.

Other Measurements:

With control OFF and R not on Screen:
RQST Line – 4.5 – 5.0 V
VGOV Line – 4 V +
STAT Line – 10 V +

PerfectPass®
WORLD LEADER IN SPEED CONTROL

Trouble Shooting DBW

Problem – System shows rpm & speed on Display, but does not engage & take control.
Check*- Perform Open Circuit tests as described on previous page. If system is new, confirm you have the "ALDL" plug installed.*

Problem – No speed reading on PerfectPass Display
Check *– Paddle wheel signal on green wire coming into the Master Module on Amp Seal Connector. If paddle is spun slowly, you should see 0 volts / 12 volts as wheel slowly turns. As wheel is spun quickly, you will see an average of 6 volts. (If voltage is good, perform a "System Reset").*

Problem – No rpm reading on PerfectPass display
Check *– The RPM signal wire at the Amp Seal connector coming into Master Module. With engine off you should see about 9 volts. (With engine running, you should see a normal tach pulse signal) If no signal, check the pin at ECM.*

Problem – PerfectPass in Wakeboard mode is set at 22 mph and digital speedometer shows 22, but actual speed is 24.
Check *– Use Menu Key to highlight Menu Arrow Icon and press Down Key to reach "SPEEDOMETER ADJUST", quickly press down key several times and lower speed by 2 mph. All Wakeboard speeds now calibrated.*

Problem – Key is on, but PerfectPass screen does not become active and show data.
Check *– PerfectPass requires 12+ volts for start up. Check voltage on red wire (12 v) power source to Master Module.*

Check screen contrast *– Press Menu & UP Keys together, then press UP Key a couple of times. Does data re-appear?*

Problem – Button on PerfectPass Display does not work.
Check - *If system was just installed, unplug Display from harness and inspect all brass pins on connector to ensure they are inline. If problem occurs after much use, the Display will require repairs by PerfectPass.*

Problem - System not smooth in RPM Mode.
Check *– Confirm whether the correct engine selection was made on initial set up. Press Menu & Up keys together. Menu through until "System Info" appears. It will show either [5.7 / MPI] or [6.0 / 8.1] If it was selected incorrectly, do a System Reset and select properly.*

Problem – In Wakeboard/Trick mode, system sluggish or exhibits some surging.

Check *– Inspect paddle wheel. If paddle appears OK, go into adjustable parameters by highlighting menu arrow icon, press UP and Wakeboard will appear. Press DOWN for settings.*

KDW *will appear. This value represents how firm the system will control. Heavily loaded boats may need higher settings. (Typical values 60 – 200)Press Menu to proceed.*

NNW *will appear. This is the filter factor of paddle. The higher the value, the more filtering is done prior to making a speed change.(Typical values 80 – 180)*

Problem – The boat accelerates past set speed too far in Wakeboard Mode before settling in.
Check *– Go to "Control Settings" and lower the "CS" value.*

Control Settings CR / CS)

These are engagement values which are adjustable to allow a customer to fine tune engagement performance if necessary. This may be required due to a prop change, unusual ballast loads or operating at extreme elevations.

These are found under "CTRL SETTNGS" in sub menu by pressing Menu & Up Keys together.

CS – Control the engagement in paddle wheel speed based modes including wakeboard.
If it is set too low, the system may not go fast enough to engage, or it will engage & then disengage. If it is set too high, it may overshoot the set speed by several mph before beeping and taking over. Factory setting is **750**. (Range is 735 – 900)

CR – Is the same as CS except it controls engagement of the RPM Based Modes such as slalom. Factory setting is 1940. (Range is 1900 – 2100) It would be rare to see this value require adjustment.

Software Adjustments

System Reset – To reset the entire system back to original factory values, press & hold ON/OFF & MENU Keys together as you turn key on to power PerfectPass. Continue holding for a few seconds until [System Reset ^ = Yes] appears. Then simply answer questions as they appear.

Switching WakeboardPro <> DigitalPro – If you system was selected incorrectly, perform a system reset. As you proceed through this process, you will be asked [Wakeboard Only ^ = YES]. Answer YES for WakeboardPro, and NO for DigitalPro

Engine Selection – On initial start up or during a system reset, PerfectPass will ask if you have a standard 5.7 litre engine. This will appear as [5.7 / MPI ^ = Yes] This means press UP for 5.7 and DOWN for Big Block 6L or 8.1L.
To confirm if correct engine was selected, press Menu & Up Keys together to get into back ground screen and go to system settings. Following battery voltage, etc you will see which engine was selected. If incorrect, perform a system reset.
(An incorrectly selected engine can cause unsettled control in rpm mode only)

WakeboardPro to/ DigitalPro – The Master Module for both systems are identical. The only difference is in the way they were initialized, i.e. as a DigitalPro or WakeboardPro. You can change the way it was set by performing a system reset.