

## M.B. / Gekko 2006

### 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 three main parts:

1. DBW Master Control Module
2. DBW Plug & Play Engine Wiring Harness (PCM)
3. In-Dash Display



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.

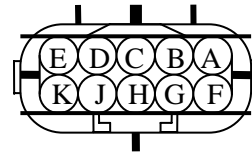
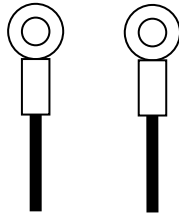
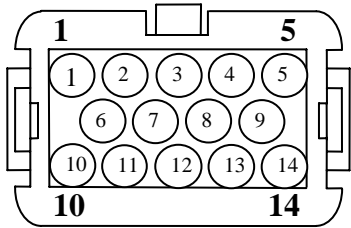
Just three individual wires in the PerfectPass DBW wiring harness connect the speed control to the engine ECM.

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 troubleshooting will simply involve voltage/continuity testing on the PerfectPass engine harness.

## Wiring Identification

### 2006 PCM DBW Install



14-Pin AMPSEAL  
(Black)  
Back View  
Connected to  
PerfectPass Module

Ring Connectors  
Side View  
Green Wire (Speed)  
Purple Wire (12v)

10-Pin DELPHI  
(Black)  
Back View  
Connect to  
Matching Engine  
Harness

Signal	Color	14-Pin AMP Seal	10-Pin DELPHI	Ring Connectors
STAT	Red	1	C	
VGOV	Blue	10	B	
RQST	Brown	12	D	
Ground	Black	13	K	
RPM	White	9	A	
Speed	Green			SIG Post on Speedometer
12 Volts	Purple			12v Switched Power Source

1. Connect Delphi connector to matching connector on engine.
2. Connect Green Wire (speed) to SIG post on speedometer.
3. Connect Purple Wire to back of tach on 12v post, or any other suitable 12v switched power source.
4. Connect Dash Display firmly into Master Module, until you hear the click.

## **Problems with PerfectPass Controlling/Not Controlling**

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

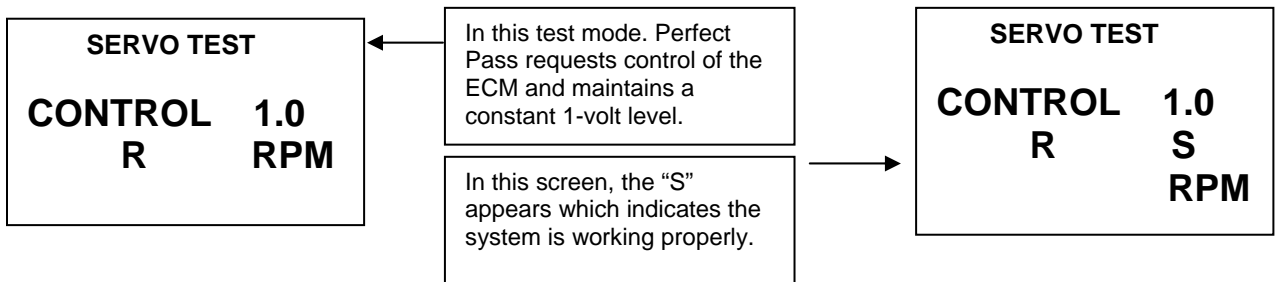
**Problem #1 RQST Line Open** – PerfectPass never takes control in any mode, the engine is controlled only by the manual throttle handle.

**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.

## 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

**With engine ON, lock the gearshift in neutral and advance the throttle handle to 1700 RPM. When all is working correctly an “S” will appear next to the “R” and the engine will hold at approximately 1400 RPM. If the RPM is holding at 1400 but the “S” is not on the display, there is a problem with the “STAT” line. Pressing the UP Key will change the output voltage by 0.1 volt as shown on the display and the RPM will increase by 140 RPM for each 0.1 volt increase.**

If the RPM does not hold at 1400 the “RQST” line may not be connected. Either the Request Line or the VGOV Line has lost continuity.

If the engine holds RPM at approximately 1400, but the S does not appear on screen, then check continuity of the Status Line.

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)
- Measure voltage on VGOV (vgov line) which should measure about 1 volt. (.8 to 1.2 volts)
- Measure voltage on STAT (stat line) which should be 10 + volts.
- 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.

## 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.

**Problem – No speed reading on PerfectPass Display / Very Low Reading**

**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.

**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.

## 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 your 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.

