Tige 2006

Troubleshooting
(Electronic Throttle Engines)

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 Tige DBW Harness

Deutsch Connector Pin #	Color	Function	To Master Module 14 Pin Amp Seal Connector Pin #
1	Red	+12V	4
2	Black	Ground	13
5	Brown	RQST	12
6	Orange	STAT	1
8	Blue	VGOV	10
9	Green	Paddle Wheel	8
10	White	Tach RPM	9

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.
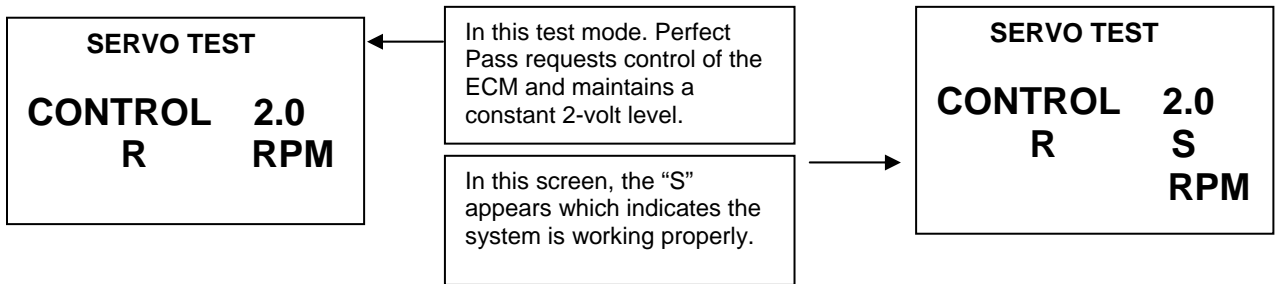
Problem #2 VGOV Line Open (RQST Line OK) – With the PerfectPass system control ON, the engine will not go above idle no matter how far the manual throttle is pushed. With PerfectPass control OFF, the engine is controlled as normal by manual throttle handle.

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.

(Boat must be on water and running with a paddle signal for this test to work on a Marine Power Engine).

TESTING

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.

SERVO TEST **CONTROL 2.0** **R RPM**	←	In this test mode. Perfect Pass requests control of the ECM and maintains a constant 2-volt level.		SERVO TEST **CONTROL 2.0** **R S** **RPM**
		In this screen, the "S" appears which indicates the system is working properly.	→	

TEST
(Use UP Key and set control voltage to 2.0)
With engine ON, drive boat and advance the throttle handle to 2800 RPM <u>or more</u>. When all is working correctly an "S" will appear next to the "R" and the engine will hold at approximately 2800 RPM. If the RPM is holding at 2800 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 2800 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 2800, 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 <u>less</u> than 1 volt. (0 to 1 volt)
- Measure voltage on VGOV (vgov line) which should measure about 2 volt. (1.8 to 2.2 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.

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.*

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* <u>lower</u> *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 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.