

PerfectPass Digital Pro

Installation Instructions

Step 1. Installation of Servo Motor

Using the two provided hose clamps, loosely mount the servo motor on top of cooling water hose leading to drivers side exhaust manifold (starboard side on standard inboard engines). See Figure A. Tighten later after final positioning.

Remove ball joint connector from throttle control lever and remove from end of Morse control / Teleflex cable. (See Figure B).

Position servo motor throttle cable to throttle control lever. Ensure 10/32 nut is in place on Morse control / Teleflex throttle cable. Screw threaded brass hex connector on PerfectPass cable to the end of the Morse control throttle cable. Install L shaped brass throttle adapter to throttle control lever using identical hole as ball joint. (L adapter must be able to swivel). Using an Allen key, tighten L shaped adapter mounting bolt. (See Figure C). You may find it helps to move the Morse control lever into gear during installation to allow more clearance.

Check and adjust position of servo motor ensuring the motor box cover closes properly and servo throttle cable is not in contact with any moving parts. Make sure servo motor cable has 2 or 3 inches of free travel. Securely tighten hose clamps on servo motor.

With the throttle in neutral position, adjust brass hex connector if necessary to ensure there is **no gap** between it and the end of the servo motor cable (any gap may cause engine to surge up and down in neutral). Adjust and snugly tighten all parts. (See photo's, **DO NOT OVER TIGHTEN**).

Turn the black servo motor knob in a clockwise position until **snug**. With throttle in neutral, the linkage should appear as in Figure C.

The last step is to make sure the black servo motor knob is turned clockwise until cable is snug. You may wish to lubricate the brass L adapter.

IMPORTANT: Make sure all wires are tied away and there is adequate clearance.

- The throttle stops used in previous systems is no longer required.
- The manual throttle on your boat should operate and feel the same as before the PerfectPass was installed.

Step 2. Installation of Master Module

Mount Master Module under the dash normally on the bulkhead accessible behind and right of the passenger seat in a dry location. It can also be installed on the left side of driver's bulkhead. The wires from under the dash pod can be easily fed across.

Route servo motor power cable from Master Module to servo motor and connect. (Use tie wraps to keep cable away from moving parts). Make sure the **tips on the plug are facing up** towards the top of the Master Module box. A wire snake will be helpful.

Step 3. Mount Dash Display

Remove the right speedometer and install the **In Dash PerfectPass Display** and connect into Master Module. (If there is a speedo tube on back, it can be plugged using a golf tee).

If you have the standard **External Display**, install using supplied mounting post to the right of dash next to wind screen. In the event you have 5" gauges, generally the PerfectPass 5" display replaces the tachometer.

Step 4. Connect Power Wire

The purple wire with ring terminal is to be connected to the ignition terminal post on the tachometer. The black ground wire can be connected to the ground post on the tachometer. Make sure they are securely connected. Plug into Master Module. (Plastic tips facing up).

Step 5. RPM Cable Installation

The grey connector must be connected to the back of tachometer on post marked "**SEND**". The black connector to any suitable "**GROUND**" post. Securely tighten. Plug into Master Module.

[In the event your boat has medallion (Borg Warner) gauges, see Addendum for details].

If you have a MasterCraft with LT-R or LT-1 engine, only connect the black wire to tachometer. The grey wire is not required and can be taped off.

Step 6. If you have a **Smart Timer** connect into Timer 1 plug. If you do not have magnets in your course, connect the hand timer into “Timer 1” port so you can time manually. Only connect Smart Timer when you have magnets.

Step 7. Install **Paddle Wheel** speed sensor and connect to Master Module. (See attached detailed instructions).

Test system power by turning on key. Following a short delay the black servo knob should be difficult to turn indicating system is powered. The system requires a full 12 volts to start, so if your battery is down it may not start up without engine running.

Following a short delay the Dash Display will become active.

For assistance call (902) 468-2150.

TIP: It is vital that PerfectPass has adequate voltage, so a solid connection and good ground is required.

(If your system starts up and just blocks appear on screen, this would indicate low voltage at the system).

Boats with Medallion gauges

1999, 2000, 2001 MasterCraft

1998 – 20001 Malibu

2000, 2001 Supra & Infinity & MB

The installation on the MasterCrafts with Kysor Medallion instruments is amended from the standard instructions as follows:

RPM Sensor – The RPM Signal from the engine is located in the “**Grey**” wire in the wiring harness leading to the main Kysor Medallion control box under the dash. Press a supplied “Blue Tee Tap Connector” on the gray wire, then connect the PerfectPass RPM Sensor to the tee connector. On the standard EFI engine, connect the gray wire on the RPM sensor to the tee connector. The black end on the RPM sensor should connect to the grounding bar or a suitable ground wire using the “tee tap” method.

(If you have a MasterCraft with an **LT-R or LT-1** engine, you will connect only the black end of the RPM Sensor to the in-line connector. The gray end is not connected and should be taped off).

Power Cable - The purple end of the PerfectPass power cable should be connected to the ring terminal on the ignition that contains the “Purple” wire. (The switched 12 volt supply on the boat is purple). The ground can be easily connected to the grounding bar or other suitable ground. (Ensure all connections are secure).

Alternatively - A Blue Tee Tap Connector can be installed on a black ground wire and a purple power wire under the dash, the supplied pink spade connectors can be installed on the ends of the power cable and each plugged into a Blue Tee Tap Connector.

Note: Ensure the spade connectors slip inside the end of the Blue Tee Tap Connectors for it is possible to have the spade slide beside the Tee Tap Connector and fail to make a connection, ensure the spade end is well centered inside its pink/red insulation housing before plugging it into the Tee Tap.

2000 – 2001 Ski Nautiques

When installing the **rpm sensor** on the **2000, 2001 Ski Nautique** only install the black wire from the rpm sensor to the gray tachometer signal wire on boat. The gray wire on rpm sensor is not required and can be taped off.

Paddle Wheel Installation (DigitalPro Only)

Tools and Material Required

- * **1.75 - inch holesaw**
- * **Sealant eg. GE silicone sealer**

Installation

The 1.75 - inch hole is placed approximately 7 inches (18 cm) perpendicular to the centerline of the boat beside the drain plug under the engine. Normally this is on the passenger side away from the bilge pump and other cables etc. Ensure there is sufficient room to pull the inner paddlewheel assembly from the housing when it is mounted under the engine. In this area of the bottom of the hull there is a normally flat surface away from the turbulence of the tracking fins and lifting strakes. The holesaw is used to cut the hole for the paddlewheel working from the bottom of the boat.

Before disassembling the paddlewheel unit take note of the arrow on the bottom of the housing and on the top of the inner paddlewheel assembly near the cable exit, these arrows both point forward when the unit is installed. Also note the locating tab at the top and back of the unit which helps lock the inner assembly in the housing. Disassemble the paddlewheel unit by removing one of the rings on the locking pin and then removing the pin. The inner assembly can be pushed out of the housing, taking care not to lose the paddlewheel itself and its stainless steel shaft which may be free when the unit is disassembled.

The sealant must be placed on the surface of the sealing flange on the housing and also on some of the lower threads of the housing to help lock the sealing nut in place. The bottom of the hull in the area of installation must be clean and dry for the sealant to seal properly; inside the bilge should also be clean to allow the seal nut to be properly tightened. The arrow on the bottom surface of the housing must be pointed toward the forward direction of travel of the boat, parallel to the keel of the boat. The seal nut should be tightened snugly by hand so that the sealant is forced out of the sealing surface and the paddlewheel is as close as possible to the hull surface. The excess sealant must be wiped away from the housing to give the water flow a clear path. A final check of the location of this directional arrow should be made before the sealant is allowed to setup. Reassemble the paddlewheel unit by sliding the inner unit into the housing with the arrow on the inner housing pointing toward the front and the back locating tab aligning with the notch in the back of the housing. When the inner paddlewheel assembly is in place the locking pin will slide into place and is then secured with the ring.

The output cable should be run under the floor with the servo power cable so that it can be plugged into the master module.

(Included with this unit is a "Plug" and extra paddle and axle kit.)

User Tips:

Towing - If towing your boat and trailer for long periods (Over two hours) you may wish to unclip the pin and pull the paddle wheel assembly up out of the wind stream to prevent needless wear on the paddle wheel bearing. (You may combine this procedure with your normal removal and replacement of drain plug while towing. (Make sure you properly reinstall before launching)

The Plug - The plug is designed as a fully sealing substitute for the paddle wheel assembly.

Cleaning & Changing Paddle Wheel - The life of the paddle wheel axle and bearing is designed for years of trouble free operation. In the event of damage to the rotating paddle or axle, ideally the boat should be removed from the water for inspection. (Clean debris if necessary.) If the paddle requires replacement, remove the clip and locking pin and pull paddle assembly out using the pulling ring. (Note the direction of rotation so flat surfaces are toward bow as per arrow on assembly) Press the axle out of position and install new one. You may wish to install new "O rings" at this time as well. Reinsert paddle wheel assembly ensuring arrow point towards bow. Lock securely in place with locking pin & ring.

(If your digital speed readout is suddenly reading extremely low or not at all, check paddle assembly. You may also wish to back up to clear any possible debris)

Lake Water Temperature - Your DigitalPro can instantly and accurately display the water temperature. Simply press the Menu and Up key at the same time. Press menu again and battery voltage is shown. Press menu again to return to last mode used.

Tip: Lake temperature is most accurate if boat is moving.