

Tempest 4 (T4) Installation Instructions Sea-Doo 1-coil engine

For use with the following Sea-Doo models;

1997 GSX 1998 GTX-L
1997 XP 1998 XP-L
1998 GSX-L Or as stand alone engine installed in another hull

The Tempest 4 (T4) Model 2406 Ignition is designed for use on all Sea-Doo personal watercraft for years 1996 through 1998 single-coil 785 and 951 engines.

Your T4 Ignition is the first of a new breed of fully integrated user-programmable engine controllers.

Tools Required:

- 8" lip joint pliers
- Diagonal cutters
- Black electrical tape

First Things First, For Safety...

 **Disconnect the battery positive cable (red) before proceeding.**

Installation Overview

This ignition is designed to give you trouble-free service if installed according to these instructions. Read the entire instruction procedure before beginning the installation. If you do not understand any portion of these instructions, refer installation to a qualified technician.

1. With the help of the "Wiring Guide" in Figure 1, locate the model of your boat from the chart.
2. Having located your model from the guide, you now know how the connectors (P1, P2, & P3) are arranged on your MPEM.
3. The picture of your MPEM points to a chart of numbers in the center of Figure 1. The chart indicates where each wire from the T4 Ignition attaches to your MPEM. Example: For a 98XP-L, the Violet wire attaches to Connector P2, pin # 2.
4. The wire colors used on the T4 Ignition match the wire colors of the corresponding wire on the Sea-Doo® connectors

Mount the T4 Ignition

Locate a suitable position near the MPEM and mount the Ignition. The T4 Ignition is water resistant, however attempt to locate a place where it is somewhat protected from excess water exposure.

Wiring the T4 Ignition to the Sea-Doo Wiring Harness

The Blue T-splices (supplied) used in the installation of the T4 Ignition are water-tight and marine grade. These splices have been specially modified by Advent to connect the 20 gauge wires used by the T4 ignition to the 18 gauge wire in your Sea-Doo. Use only these T-Splices or erratic performance and ignition failure is possible.

Sea-Doo Connector P1 Wiring (98 XP-L does not have connector P1)

1. Locate connector P1 on the MPEM (see fig 2). Unlatch and remove it.
2. Fold back the rubber boot (if present) exposing the wires attached to the connector.

- Referring to the Example Wiring Chart in Figure 1, determine which wires from the T4 Ignition attach to this connector.

Continued...

Example: '97XP has 3 wires that connect or P1

| Connector Location | Signal: | Color: |
|--------------------|----------------|---------|
| P1-23 | Start/Stop Sw. | Yel/Red |
| P1-14 | +12V Power | Violet |
| P1-15 | Tether | Bk\Yel |

Figure 1

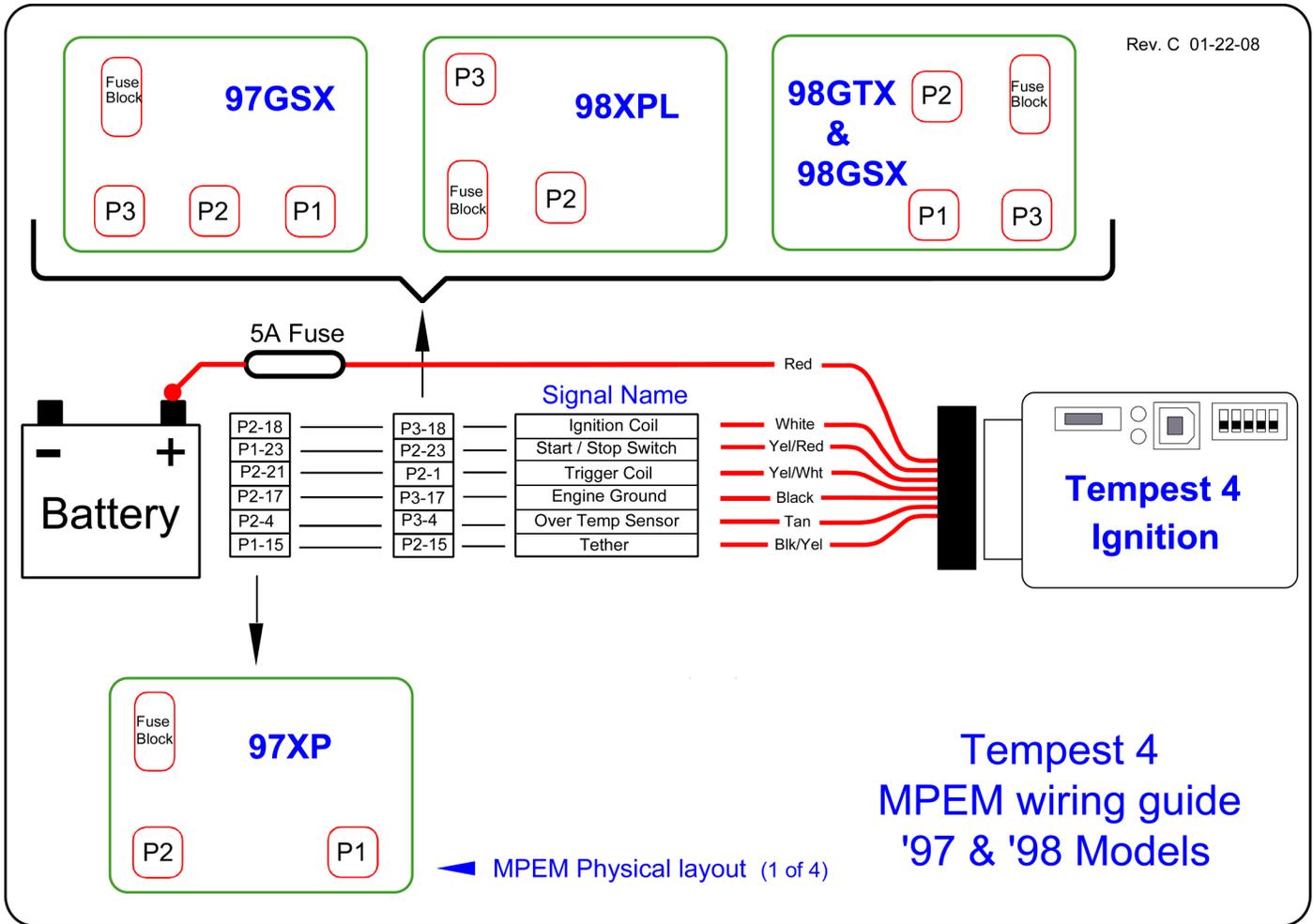


Figure 2

- Thread these wires through the cable entry opening of the rubber boot (if present).
- Locate one of the matching colored wires in the wiring harness. Confirm the wire is installed in the correct pin location of the connector P1 (see connector detail in Figure 3). Unsnap the flap on a blue T-splice exposing the side wire slot. Position the blue T-splice 2" or 3" from the Sea-Doo connector with side of the splice with the two holes facing away from the Sea-Doo connector (see Figure 3). Slide the Sea-Doo wire into the side slot then snap the flap over this wire slot side only, to hold the wire in place. Do not close the larger flap over the metal contact on the top.
- Insert the free end of the matching color wire from the T4 Ignition completely into the round opening on the edge of the blue T-splice.
- Next, using a pair of pliers, grasp the splice and press the metal contact completely into the body of the splice.

8. Close and latch the top flap over the metal contact.
9. Repeat step #4 through #8 for each of the remaining wires that attach to the Sea-Doo connectors.
10. After all wires have been attached to their connector, replace the rubber hoods (if present) over the connector and re-install the connector into the MPEM.

Connector P2 and P3 Wiring

For wires attached to connectors P2 and P3, follow the procedure for P1. **Do not connect the white wire from the T4 ignition.**

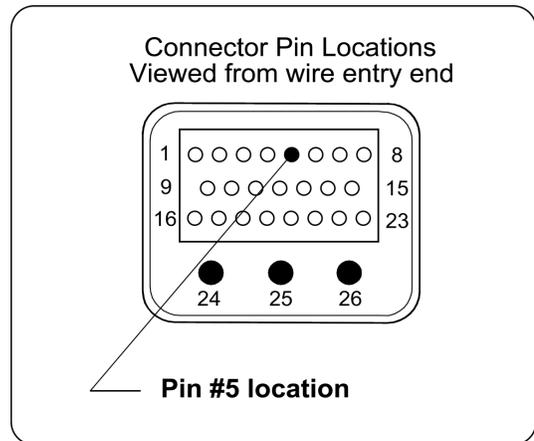


Figure 3



T4 White wire attachment must be performed as follows or damage to the Sea-Doo MPEM or T4 Ignition may result.

Connect the Remaining T4 Wires, Except the White

1. Following the procedure described for Sea-Doo connector PI, steps 1 through 10...
2. Connect each of the remaining wires to P2 & P3, but not the white wire.

Connect the T4 White Wire

3. Now connect the White wire from the T4 Ignition to the White wire of the Sea-Doo® in the same manner as the other wires, Then follow steps 4 and 5 that follow, be sure to locate the correct white wire in the Sea-Doo connector using Figure 3 as a guide.
4. Using a pair of wire cutters, cut the White wire that runs between the T-splice and the Sea-Doo® connector (see Figure 4). Cut the wire midway between the T-splice and the Sea-Doo connector. This will leave a pig tail on the Sea-Doo connector to reconnect the stock ignition if it becomes necessary.
5. Wrap black electrical tape over the cut ends of the wire to protect them from shorting to any conductive surface.

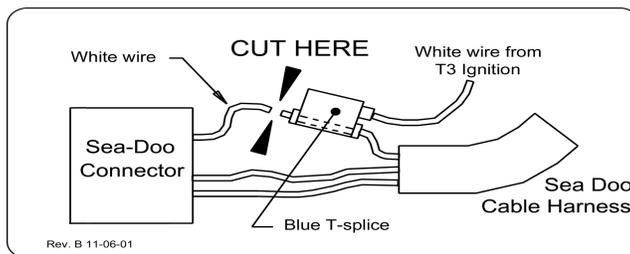


Figure 4

Sea-Doo Engine Flywheel

The T4 Ignition requires the engine to be set up in a single-coil configuration. If your engine has dual coils, it will be necessary to replace the magneto rotor with a single coil magneto rotor. These magneto rotors are used on the 1997-98 947cc engines. See Figure 5 and 6 for the proper magneto rotor alignment on the flywheel installation. Apply Loctite 648 to the mating surfaces of the flywheel and magneto rotor. Use Blue loctite 242 on all 6 mounting bolts.

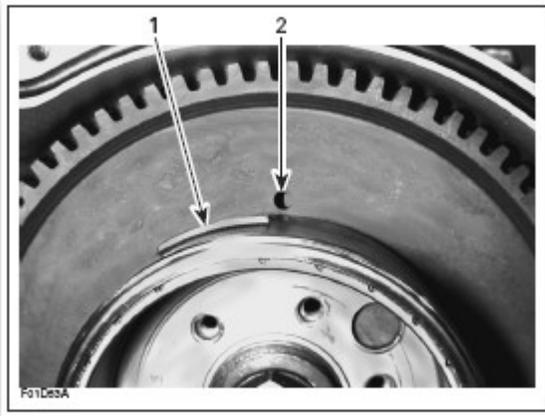


Figure 5

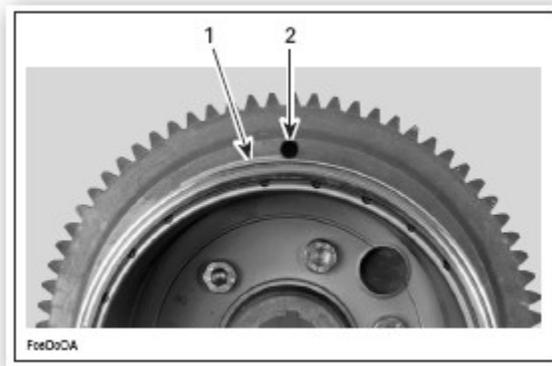


Figure 6

Last Things Next

1. Reconnect the battery cable removed at the beginning of this installation procedure.
2. Perform the TDC timing calibration described in the Curve Devil® User Manual.
3. Use the Curve Devil to design your timing curves, rev limiters and other operating parameters of your T4 Ignition.

ⓘ Attention! Severe engine damage may occur.

Do not attempt to start the engine until you have performed the TDC calibration procedure and properly programmed the ignition with a project via the Curve Devil®.

If you have any questions or comments, please contact us by phone, FAX or e-mail.
Be sure to reference the year and model of your watercraft.

The installation is now complete!

ⓘ Be sure to perform TDC Calibration Procedure found in Curve Devil® Instruction manual.

**Continue to sections –
"Installing auxiliary electrical devices and switches"**

Installing auxiliary electrical devices and switches

The Relay control feature of the T4 Ignition provides the user with the ability to control up to 2 auxiliary electrical engine devices. These may include water control, fuel pumps, bilge pumps, power valves (RAVE valves) etc. Each relay control circuit is capable of handling up to 1.0A of current.

Tools Required:

- 8" Slip joint pliers
- Diagonal cutters
- Black electrical tape

First Things First, For Safety...

ⓘ Disconnect the battery positive cable (red) before proceeding.

Installation Overview

Three wires are provided to connect to three electrically operated relays, values auxiliary fuel pumps, etc.

The gray cable attached to the T4 connector

- ◆ 4 conductor cable with water tight bulk head fitting
- ◆ 4 discrete wires for installations in engine compartments

Adding Wires to the T4 Connector

If your T4 does not have relay control wires installed in the connector you can order a wire kit that is easily installed.

If your T4 ignition does not have a 15" relay cable attached Figure 1 shows the connector locations for the relay control wires.

1. Remove the light blue water seals from the wire holes indicated in Figure 1.
2. Again referring to Figure 1 insert each wire into its respective hole. Note that the metal connector end will enter the hole in only one orientation. If the metal connector does not insert and click into place easily, remove it and try another orientation.

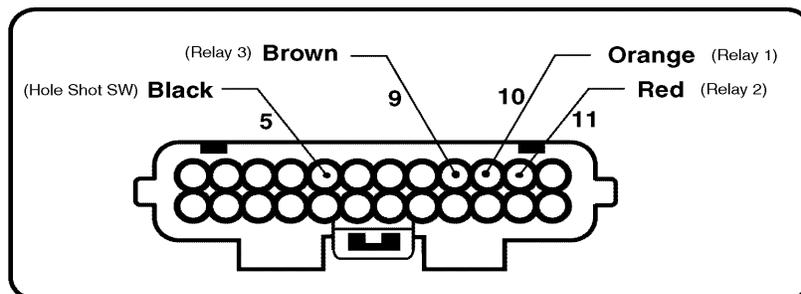


Figure 1

Gray cable for 3 relay outputs & Hole Shot SW

Electrical Devices that Can be Connected to the T4

- ◆ Relays used to control high current type electrical devices or motors such as bulge pumps.
- ◆ Electrically operated solenoids
- ◆ Devices designed to operate at 12 to 16Vdc
- ◆ Devices that draw 1.0 amps or less on a 12Vdc circuit

Electrical Devices that Cannot be Connected to the T4

- ◆ Devices such as incandescent lamps over .5 Amp or motors
- ◆ Devices that require more than 1.0 amp of current.
- ◆ Devices that are designed to operate on voltage less than 12Vdc
- ◆ Devices that are designed to operate on AC voltage

ⓘ If any of these types of devices are connected there will be damage to the T4.

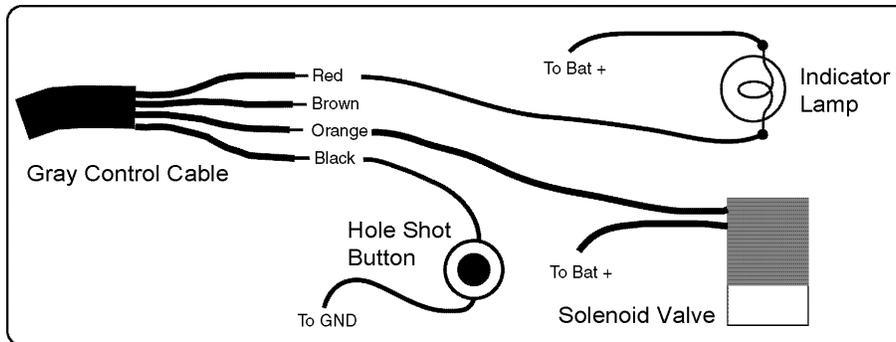


Figure 2

Wiring Devices to the T4 Gray Control Circuit

NOTE: Devices such as relays, solenoids and lamps do not have an electrical polarity. This is to say that it does not matter how their wires are connected to the T4 circuits and power.

1. Figure 2 shows how to hook up electrical control devices and indicator lamps to T4 relay channels 1 and 2.
2. Figure 2 shows connection of a handle bar mounted Hole Shot switch.

Last Things Next

1. Re-attach the battery terminal.
2. Use the Curve Devil to design your Relay control On/Off profiles and other operating parameters of your T4 ignition.

**If you have any questions or comments, please contact us by phone, FAX or e-mail.
Be sure to reference the year and model of your watercraft.**

This sections installation is now complete!

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