

THUNDER MAX

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Exhaust Systems and Oxygen Sensor Fitment for All Throttle-by-Wire H-D® Touring Models Using TMax Wide Band Sensors

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Knowing how to properly identify heated and non-heated narrow band sensors on your motorcycle will assist you with fitting and installing the ThunderMax wide-band oxygen sensors. ThunderMax wide band oxygen sensors can be used without exhaust system modifications in many available stock and aftermarket exhaust systems. These sensors are included with every ThunderMax purchase.

In addition to the oxygen sensors, this document will address the differences between Original Equipment pipes (some with or without catalyst converters) based on year, model, US production Vs international models and aftermarket exhaust systems.



This document specifically references **Step 3** in the **ThunderMax Throttle-by-Wire Quick Start Guide**. When installing any ThunderMax system, always follow the quick start instructions provided with your ThunderMax purchase. If you do not have these instructions, they can be downloaded from: <http://www.ZippersPerformance.com/Downloads>

When removing or installing oxygen sensors, we recommend purchasing an oxygen sensor removal tool, you can obtain this from any auto parts store. This tool is inexpensive (around \$10.00) and makes the job easy.

2008 - 2009 H-D Touring Models

2008-2009 H-D® Touring motorcycles are equipped from the factory with unheated, 2-wire, narrow band 18mm sensors located in the head pipe.

If you are using an aftermarket head pipe or a complete aftermarket exhaust system, the ThunderMax wide band sensors should bolt in without any issue. If you are retaining the 2008 factory head pipe, you may encounter a clearance problem on the 2008 model when installing the wide band sensor in the rear head pipe. This clearance problem can usually be corrected by removing the head pipe and adding a small crease in the pipe near the rear sensor bung. Some

rear head pipes may require the addition of a second bung to obtain clearance, depending on the location and angle of the factory sensor bung.



Video instructions are available for locating and welding new bungs on the ThunderMax You Tube page called "Welding Oxygen Sensor Bungs". View the video here:
<http://www.youtube.com/watch?v=QfvPV8fawio>

California and international H-D® Touring models produced in 2008 include catalytic converters in the O.E mufflers. 49-state models do not have a catalyst in the muffler or the head pipe. If your system is equipped with catalytic converters, pick the best target ThunderMax base map marked "With Cats" for your application.

2009 H-D® Touring Models are equipped with unheated, 2-wire, narrow band, 18mm sensors located in the head pipe. All 2009 original equipment head pipes will easily fit the 18mm, wide band ThunderMax sensors in the stock location. Simply replace the stock oxygen sensors with the ThunderMax wide band sensors.

In 2009, all California, International and 49 State CVO® Touring models were manufactured with catalysts in the head pipe. When picking a ThunderMax base map for a model equipped with the factory head pipe, select the appropriate map listed "With Cats" for your application.

2010- 2011 H-D Touring Models

2010-2011 H-D® Touring models are equipped with 12mm, heated, narrow band oxygen sensors. The sensors are located in the factory head pipe just in front of the catalyst near the transmission. If you are retaining the factory head pipe with catalyst, you will need to add (2) 18 mm bungs to the pipes in the 2009 location before you can install a ThunderMax system.

Video instructions are available for locating and welding new bungs on the ThunderMax You Tube page called "Welding Oxygen Sensor Bungs". View the video here:
<http://www.youtube.com/watch?v=QfvPV8fawio>

If you are ordering a catalyst-equipped aftermarket exhaust system, order a 2009-model system, which will be equipped with 18 mm bungs in the right location.

If you are adding a racing aftermarket exhaust system without catalysts, order a system to fit 2009 models. These exhausts are compatible with all 2010-2011 H-D® Touring models but will be provided with the proper location and fitment for ThunderMax 18mm wide band oxygen sensors. Some aftermarket exhausts are manufactured with dual sensor bungs to accommodate both narrow-band and wide-band oxygen sensors. In this case, it is necessary to use caps and plug the unused sensor bungs.