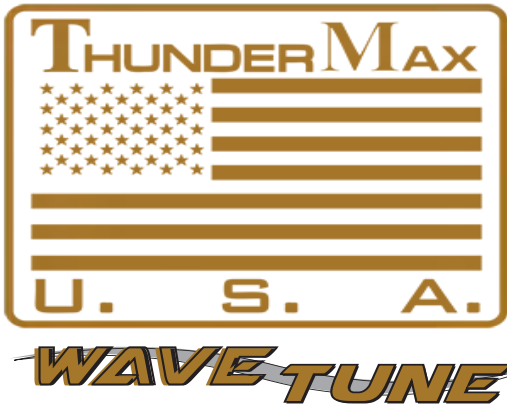


Part 1: Module Installation



309-604 2024 Helix® Touring Models
(non VVT models)

309-605 2023 1/2 up Center Cooled® VVT FL's®

Knock control is active in the ECM

****Allow fuel pump to shut off prior to starting engine!**
this will allow enough time for the bikes HD LAN® system to
completely power up and properly sync all linked
components.**

**Thank you for purchasing a ThunderMax ECM! Please
read through the following instructions before
beginning the installation procedure. Following these
instructions will ensure that the ECM is installed and
setup properly for optimal results. If you have any
problems or questions, please refer to the TMax
Tuner.pdf Manual. The manual can be found in the
software (see part 2), under the Help button in the
menu.**



*****The 309-604 is not interchangeable with a
309-591, 309-592 or a 309-605.*****

Some bikes drop Navigation out most don't, this is usually
due to the lack of a strong wifi signal.. When you start the
install, remove the ECM and radio fuse. When required,
install only the ECM fuse to finish the electronic setup
(part 2 of the instructions).

After the install is finished, install the radio fuse with a
strong steady wifi signal.

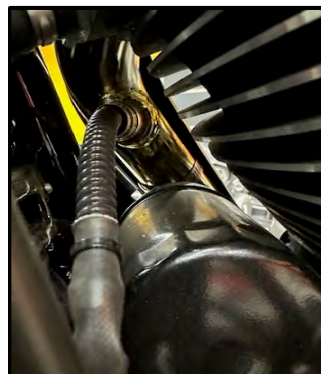
**"DISCLAIMER: NOT LEGAL FOR SALE OR USE IN
CALIFORNIA ON ANY POLLUTION CONTROLLED
MOTOR VEHICLES"** The user shall determine suitability
of the product for his or her use. Installation and use on a
pollution-controlled vehicle constitutes tampering under the
U.S. EPA guidelines and can lead to substantial fines. Review
your application and check your local laws before installing.
* CA Proposition 65 "known to the state of CA to cause [cancer]
[birth defects or other reproductive harm]" see
www.p65warnings.ca.gov for details

Module Installation

FL-A: Remove seat and both
side covers. Remove the
**Battery fuse/ECM and radio
fuse** (as shown to the right,
both located under the left side
cover). On bikes with security,
consult manual so not to
activate alarm.



FL-B: Remove the stock 12mm narrow band sensors from
the exhaust pipe and plug ports. If you wish to cap off the
bike side of the harness connector, protective caps are
provided. See Tips and General Information section on
page 3 for further detail. **Special Note- If you have
previously installed another tuning device such as a
Power Commander, be sure to remove the device and any
"O₂ Sensor Eliminators" that may have been installed
at the sensor harness plugs at that time!** If replacing the
factory exhaust system, ensure the system you purchase
has 18mm exhaust oxygen sensor bungs. Most aftermarket
pipe manufacturers now install both size ports (18mm & 12
mm) in their original factory locations. The correct size for
use with ThunderMax is 18mm for the wide-band sensors. If
retaining factory catalyst-equipped headpipes, 18mm bungs
will need to be added to the headpipes.



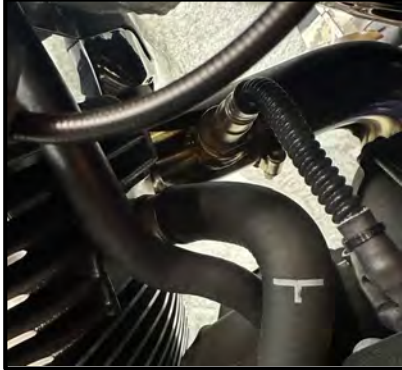
Bungs should be located no
more than 3 - 4" from the
head pipe connection (for
ideal location, refer to the
factory location on 2009 FL
models). Weld- in bungs are
available from many sources
in straight or angled designs.

See Video on adding new bungs on the web at Youtube.com (search ThunderMax bung).

Stock 12mm O₂ sensors are located downstream on the factory header pipes, between the engine and transmission; unplug and remove them as they will affect your ThunderMax system performance if left plugged in. Stock sensor connectors are located under the bike's right side cover (black and gray plugs). 12 mm pipe bung O₂ caps are available from many sources.

FL-C: Install supplied wide-band sensors into the pipes; route the front sensor along the cross brace on the frame in front of the engine and down the lower frame rail on the right side of the motorcycle.(see **FL-M**) below

FL-D: Route the rear sensor lead between transmission top cover and the starter, then towards the ABS caddy located under the right side cover. Place the sensor connector under the ABS caddy.



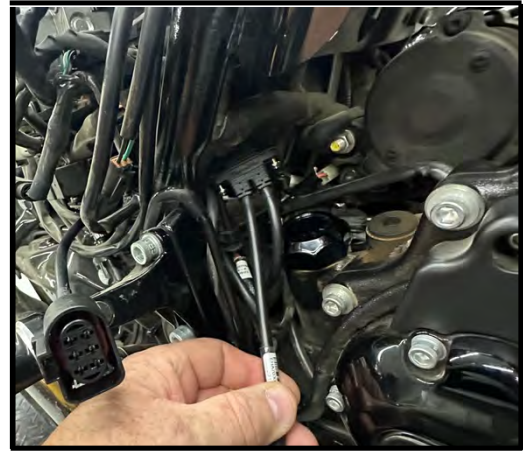
FL-E: Remove factory ECM located under the right hand side cover from the caddy by spreading the plastic caddy latches, at the bottom of the ECM. Pull the ECM outward and slightly downward to release it from the caddy.



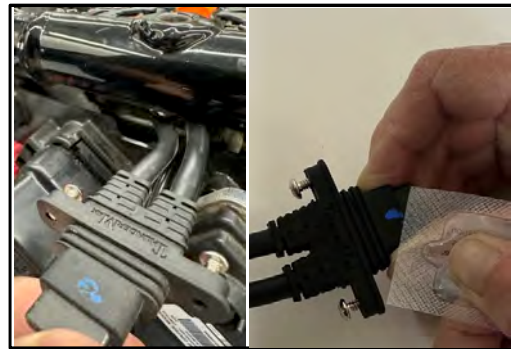
FL-F: Disconnect the ECM from the harness connector by depressing the harness cover inward slightly. While pressing inward, gently raise the latching arm and slide it to the left to fully unlatch the connector.



FL-G: Route rear O₂ sensor plug through the opening at the right side of the frame below the branch of harness going to the left side of the bike into the area just below the ABS module. Then feed the ECM harness plug through the same opening upward towards the left side in front on the battery.



FL-H: Take the AutoTune harness plug over in front of the battery and exit the battery area above the ECM caddy on the left side of the bike just above the ECM. Locate the package of dielectric grease included with communication cable. Spread a small amount of grease on the AutoTune harness plug end and inboard of the mounting flange to allow the plug to easily slide into the ThunderMax ECM. Install in case with the ThunderMax logo up and attach with the provided screws.



FL-I: Install main harness connectors to ThunderMax ECM. Before installing the connectors, lightly spread some dielectric grease on the harness connector terminals.



FL-J: Once the harness is are connected, place the ThunderMax ECM into the ECM caddy.



FL-K: Connect the oxygen sensor harnesses to the AutoTune harness, you will hear a click when they are connected properly. Carefully wire tie the leads to the motorcycle. Take extra care to ensure harness and sensor leads are safe from rubbing or chaffing on the motorcycle. Use all supplied wire ties; add extra ties if needed to properly secure wiring on your installation.

FL-L: Position the rear connector under the ABS caddy and attach with wire ties provided as shown.



FL-M: Position front connector above lower frame rail between engine and transmission. Attach to existing harness with provided wire ties. Inspect all wiring to make sure it is clear of moving parts and excessive heat.



FL-N: Re-install the battery/ECM fuse, leave the radio fuse out for now.

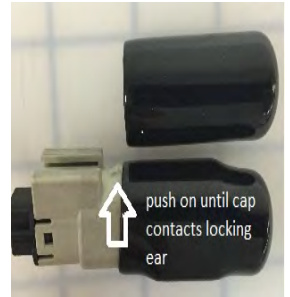
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You are now ready to begin Part 2 setup of your system.

TIPS AND GENERAL INFORMATION

Special Note for International Model Bikes with Active Exhaust Enabled: *If your bike is equipped with a working Active Exhaust Valve, you must unplug the active exhaust harness before linking to the module, as the AEV circuitry conflicts with the communication stream. You can re-connect the harness after unlinking. If the stock exhaust has been changed, disregard this step. ThunderMax does not support active exhaust.*

Find the enclosed caps to block off the bike side of the stock oxygen sensor connector. There are 2 large caps for all motorcycles that come stock with the smaller 12mm oxygen sensors. Install per the picture to the left.



H-D® released a Tech Tip (#418) regarding improving conductivity at the throttle body wire connector (TCA). Carefully remove the harness plug from the throttle body, clean the male TCA pins with a swab and alcohol, apply dielectric grease to the female terminals and reassemble.



Nitrous - When adding a Nitrous system, plan to use a relay to control the activation of the system. This will keep from overloading the circuit and causing damage to the ECM.

In-Tank Fuel Filters should be inspected as a part of routine maintenance. The filter is small and one bad load of fuel can clog it. The factory recommended service interval is 25K miles.

Fuel pressure should be checked during periodic service; this is also the first thing to check should you experience sudden or gradual decreasing performance.

For any EFI system to operate properly, your fuel system should build and maintain 55-62 PSI of fuel pressure; your service provider can quickly perform this simple test.

Oxygen Sensors: Included Bosch wide-band sensors are very robust and durable; under normal conditions should last 50K miles or more. Circumstances that can damage or shorten the life of your sensors include:

- Leaded fuel – Race fuel
 - Excessive (extreme) heat
 - Oil deposits from oil consumption
 - Excessive moisture exposure
- There is no warranty on sensors. Replacement P/N is 309-355.

Heat Management Strategy

ThunderMax ECM's do not support the EITMS® (rear cylinder shutdown) feature like the stock ecm on HD® Throttle by Wire motorcycles. The ThunderMax heat management strategy which is just as affective, benefits from using the wide band oxygen sensors that are used in our auto tuning system. For more details please visit our website or email tech support.

iRIDE Part Number System

How To Order:

Create the part number of the Suspension that you need by selecting the desired options in the boxes below and insert their code number into the part number.

Example:

IA1123-B is rear only 2014-2020 iRIDE with a standard exhaust mounted Compressor, a 23nm spring and a black Command Center.



IA X X X X - X - X

“A” Style	“B” Compressor Bracket	“C” Coil Spring	“D” Finish	“E” Year
1 = Rear Only 2 = Front & Rear	1= Standard 2= Short	20 = 20nm 23 = 23nm	B = Black C = Chrome	Blank = 14 - 20 1 = 2021 - Up 4 = 2023.5up Center Cooled® platform

“A” Style

- Rear only comes with everything that you need to install iRIDE rear suspension. Controls rear leveling and rear ride height.
- Front & Rear comes will all components for the rear suspension and supplies control to a customer selected front suspension. This system monitors the front suspension and constantly maintains front air pressure. (Customer will supply front suspension components)

“B” Compressor Mounting Bracket

- Standard bracket is used on applications with standard exhaust that exits behind saddle bag.
- Short bracket is used on exhaust that exits before the saddle bag.

“C” Coil Spring

- 20nm Springs are used for riders that ride mostly 1-up and have a rider weight below 180 pounds.
- 23nm Springs are used for riders that ride 2-up or are above 180 pounds.

“D” Finish

- Black inish Command Center
- Chrome inish Command Center

“E” Year

- No designation is for 2014-2020 Touring
- A “1” designation is for 2021-Up Touring
- A “4” designation is for 2023 1/2 up Center Cooled® platform models