2004-2006 Subaru Impreza 2.5T

Includes: Impreza, Impreza RS, Impreza TS, Outback Sport Wagon, WRX, WRX Limited, STi, and TR

N2MB WOT Box Installation Instructions

NOTE: If you have a CDI (capacitive discharge ignition system) please contact us at support@n2mb.com for additional instructions. Damage to your WOT Box can occur if the installation is not completed correctly! All stock ignitions are inductive, not capacitive; if you haven't installed a capacitive ignition system on your vehicle, it doesn't have one.

WARNING: Spark-based rev-limiters can damage catalytic converters. If you have catalytic converters on your car, N2MB accepts no responsibility for damage caused by the WOT Box. This being said, many successful installs have been made on Catalytic-Converter equipped vehicles. Damage usually is only caused by using the launch-control feature for more than a few seconds, but once again, USE AT YOUR OWN RISK IF YOU HAVE CATALYTIC CONVERTERS!

Please visit our website at http://www.n2mb.com for the latest version of the WOT Box software and installation instructions.

Solder all joints. The N2MB recommended soldering method is available at http://www.n2mb.com. Use a multimeter to verify all wires before they are cut or tapped into. The colors of wires from model year to model year may differ, and may be different on your car from those described in these instructions. Where discrepancies are known, they are described, but there may be more discrepancies than those listed. The best way to know that you have the right wire is to check the connectivity to the ECU and/or sensor at the pins described.

In these instructions, pictures include other aftermarket alterations in addition to the WOT Box. N2MB is not affiliated with these devices. In addition, if you see something that isn't in your vehicle, don't worry.

Route wires in the manner that you want them to lie permanently before connecting them. Cut wires to length before soldering; avoid coiling wires of excessive length as they can cause noise in the circuit, altering the operation of the WOT Box. Spending some extra time here will enhance the aesthetics of the install. Zip ties are included to secure the wires away from heat, moving parts, sharp edges, or anything else that can damage the wires.

Included in the WOT BOX kit:

- WOT Box
- Wiring harness
- USB to Serial Converter for future software upgrades
- Ground lug
- Zip ties
- Heat shrink tubing

You will need:

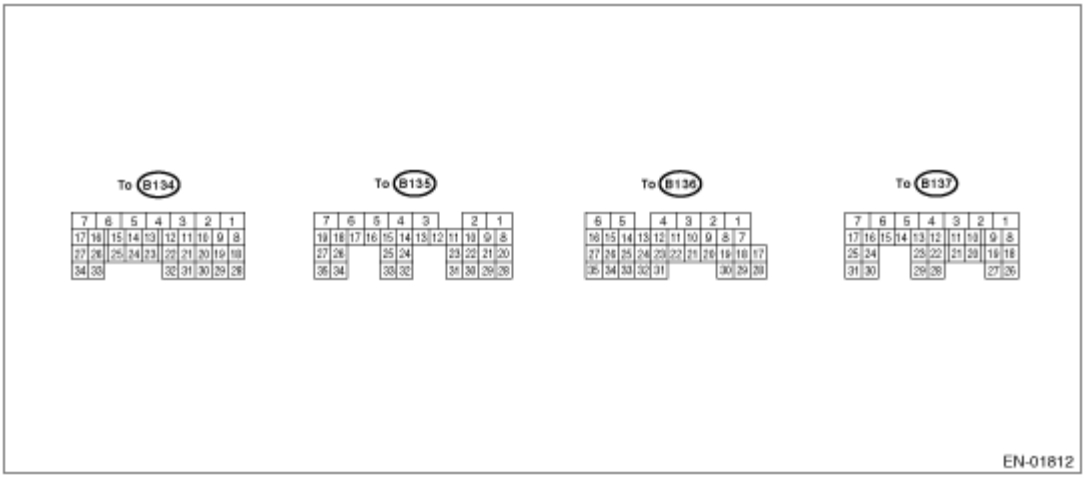
- Wire Strippers
- Soldering Iron or Station
- Metric Socket Set
- Sandpaper
- Heat Shrink (if more than is included in the kit is needed)
- Electrical tape
- Zip Ties (if more than is included in the kit is needed)
- Razor Blade or Sharp Knife
- Multimeter or Ohm Meter
- Screwdriver or other sharp object
- RTV or Hot Glue (optional)

WOT Box Wire Color	Vehicle Wire Color @ Device	Vehicle Wire Color @ PCM	Description	Pin @ Device	Pin @ PCM
Blue	Blue	Blue	Accelerator Pedal Position Sensor	2	B136-28
Yellow	Green / Yellow	Yellow	Ignition Coil #1 Signal	1	B135-18
Green	Yellow / Red	Yellow / Red	Cruise Control Clutch Switch (Clutch Deactivation Switch)	1	B134-1
Red / Black Pair	Red / Yellow	n/a	Ignition Coil Power	n/a	n/a
Black, Single		n/a	Ground	n/a	n/a

Figure I: Wiring Chart

Note: The PCM is located under the passenger's floor mat and has 4 connectors. Each of these is shaped differently; see the following diagram to identify them.

A: ELECTRICAL SPECIFICATION



Content		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Crankshaft position sensor	Signal (+)	B134	13	0	−7 — +7	Sensor output waveform
	Signal (−)	B134	14	0	0	—
	Shield	B134	24	0	0	—
Rear oxygen sensor	Signal	B135	4	0	0 — 0.9	—
	Shield	B135	1	0	0	—
	GND (sensor)	B134	29	0	0	—
Front oxygen (A/F) sensor heater	Signal 1	B136	3	10 — 13	1 — 14	Waveform
	Signal 2	B136	2	10 — 13	1 — 14	Waveform
Rear oxygen sensor heater signal		B136	4	10 — 13	1 — 14	Waveform
Engine coolant temperature sensor	Signal	B134	34	1.0 — 1.4	1.0 — 1.4	After warm-up the engine.
	GND (sensor)	B134	29	0	0	After warm-up the engine.
Vehicle speed signal		B136	12	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.
Mass air flow sensor	Signal	B135	26	—	0.3 — 4.5	—
	Shield	B135	35	0	0	—
	GND	B135	34	0	0	—
Intake air temperature sensor signal		B135	18	0.3 — 4.6	0.3 — 4.6	—
Camshaft position sensor	Signal (+)	B134	12	0	−7 — +7	Sensor output waveform
	Signal (−)	B134	22	0	0	—
	Shield	B134	24	0	0	—
Starter switch		B136	32	0	0	Cranking: 8 — 14
A/C switch		B136	23	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—
Ignition switch		B135	27	10 — 13	12 — 14	—

See the instructions for the proper installation position of the RED AND BLACK WOT Box Pair.

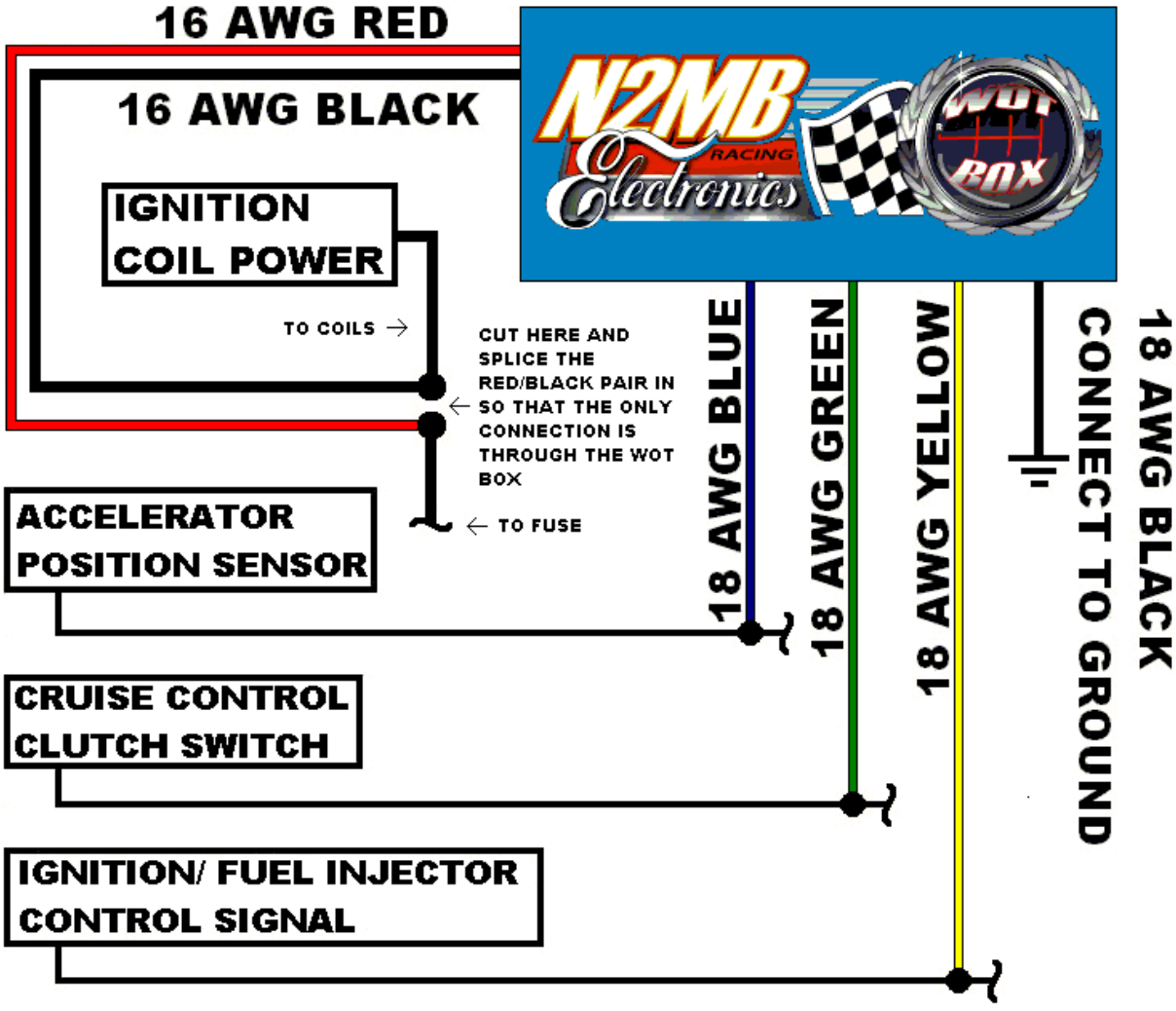


Figure II: Installation Diagram

1) Open the hood disconnect the 12V battery, and remove it.

2) In the passenger foot well, remove the plastic nuts holding down the lower passenger doorway molding.

3) Remove the lower passenger doorway molding.

2)

3)

4) Remove the plastic hold-downs securing the passenger side foot well carpet.

5)

5) Pull back the passenger foot well carpeting to expose the PCM cover.

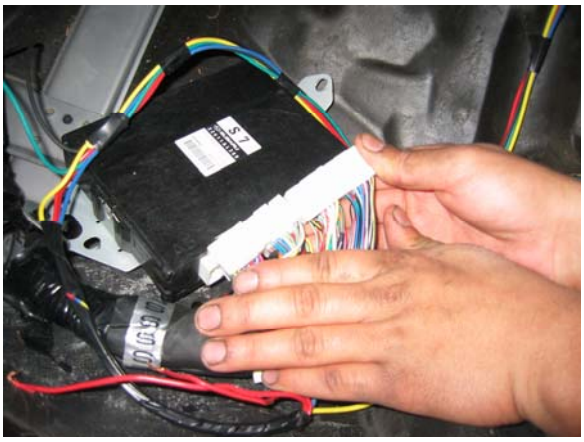
6)

6) Remove the fasteners securing the PCM cover, and remove the PCM cover.

7) Remove the fasteners securing the PCM, and pull the PCM out.

8) Pick out a location to mount the WOT Box. The WOT Box must be installed inside the passenger compartment because it is not waterproof. Additionally, you will want to make the WOT Box accessible to the driver. Unplug the WOT Box and tape the connector to the mounting location.

9)



9) Route the **YELLOW, GREEN, and BLUE WOT Box Wires** to the PCM. Unplug the 4 PCM Connectors.

10)

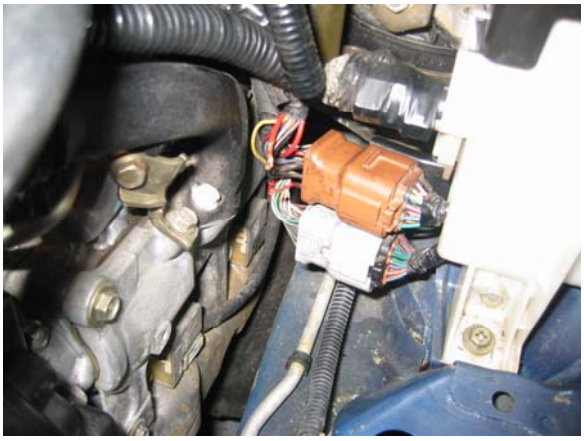
10) Splice the **YELLOW, GREEN, and BLUE WOT Box Wires** to the correct wires as seen in **Figure I**. Use the N2MB recommended soldering technique found at www.n2mb.com.

11) Locate the pass-through grommet in the firewall. Carefully poke a new hole in the pass-through grommet using a sharp object, such as a screwdriver. Be careful not to damage other wires already in the grommet, and make sure that the hole is only large enough for the WOT Box Wires to pass though. If it is too large, water can leak in. Route the **RED AND BLACK WOT Box Pair** through the grommet, leaving the WOT Box Connector in the passenger compartment. Here, the wires have been sheathed in a covering.

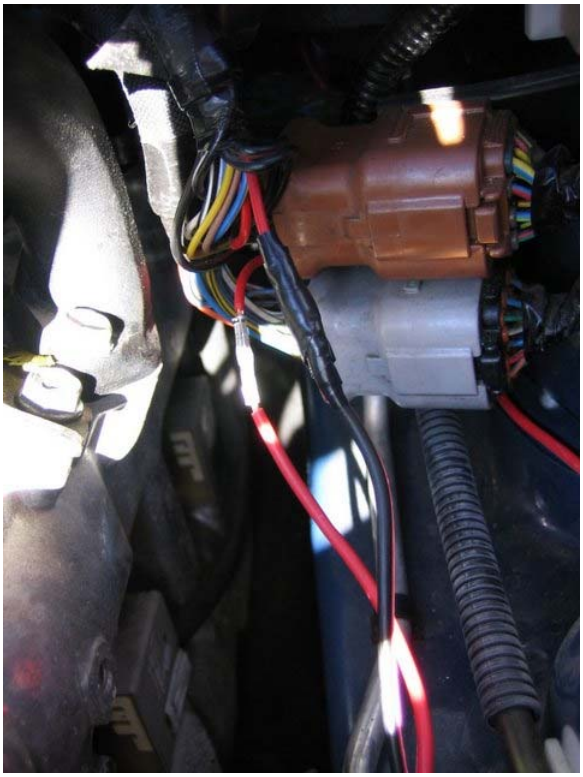
11)

12) Route the **RED AND BLACK WOT Box Pair** to the brown connector near the battery mounting location.

12)



13) Cut the **RED/YELLOW** wire on the engine side of this connector and join the **RED AND BLACK WOT Box Pair** to the ends with **RED** going to the connector side end and **BLACK** going to the harness side end. Use the N2MB recommended soldering technique found at www.n2mb.com.



13)

14) Back in the passenger foot well, locate a good grounding spot with a fastener. There are several such spots near the ECU. Route the **SINGLE BLACK WOT Box Wire** to this location, cut to length and strip the end, and crimp the supplied eyelet to the stripped end. Inspect the surface of the grounding area, and if it is dirty clean it with sandpaper. Secure the eyelet to the ground location.

14)

15) Replace the ECU Connectors. Reinstall the ECU, the ECU cover, the passenger side foot well carpet, and the lower passenger door molding. Ensure that everything that was removed for installation of the WOT Box besides the battery has been reinstalled.

16) Insert the WOT Box harness into the WOT Box and mount the WOT Box.

17) Reinstall the 12V battery and battery connectors.

18) Program and Test the WOT Box as described below.

Troubleshooting - Testing the WOT Box

1. Key on the car but do not start the engine. Press the gas pedal to the floor. You should see the LED on the WOT Box start to rapidly blink. If it does not, check your **APP sensor signal connection (WOT Box BLUE wire)**.
2. Next, with the gas pedal still depressed, press the clutch pedal to the floor. You should see the LED on the WOT Box briefly go out, and then come back on solid for one second and then finally resume blinking rapidly. If you do not see this, check your **Clutch Pedal Position Switch signal connection (WOT Box GREEN wire)**.
3. Next, start the engine. Quickly press the gas pedal to the floor and immediately step on the clutch. You should hear the engine start to rev up, stumble for a short period while the ignition is cut, then return back on and continue revving. Remove your foot from the gas before you hit the rev limiter. The 2-step will not engage if the gas is depressed before the clutch. This is normal. If the engine does not stumble or pause when the LED turns out, then check the **RED/BLACK** paired wire. Verify that the **RED and BLACK 16 AWG** wires are wired facing the proper way. If they are reversed, the ignition cut will not work.
4. Lastly, test the 2-Step. Press the clutch pedal down and then quickly press the gas pedal all the way down. The gas pedal must be floored for the 2-step to engage. The engine should rev up to the desired RPM and hold. If it does not, be sure to remove your foot from the gas before you hit the rev limiter. If the 2-step does not work, check the **WOT Box YELLOW wire**.
5. The WOT Box Graphical User Interface has some inherent troubleshooting capability. If you have access to a laptop, it may be useful for you to download the GUI at www.n2mb.com/wotboxsoftware and follow the instructions there.

Usage

To use the WOT Shift feature, keep your foot fully on the gas and shift quickly using the clutch. Keep the gas fully depressed through the shift. The WOT Box will detect the clutch switch signal and briefly cut the ignition to enable an effortless shift.

To use the 2-Step feature, fully depress the clutch. Next, fully depress the gas pedal to the floor. The engine will rev up and hold the RPM that you have set. Quickly release the clutch while leaving the gas fully depressed to launch the car.

Programming

If your WOT Box was shipped directly from N2MB Racing, it will come set up for your vehicle. If you order a WOT Box from a distributor, it may need to be set to your vehicle before it can be used by using the WOT Box User Interface available at www.n2mb.com/wotboxsoftware. Perform troubleshooting as outlined below first, and if the WOT Box doesn't work, use the WOT Box Software to check to make sure that the settings are correct for your vehicle. Instructions regarding how to do this are on the same website as the software. The user interface may also be used to set WOT Shift kill time and 2-step RPM.

The WOT Box comes preset for an automatic WOT Shift kill time. This means that the WOT Box will automatically adjust the kill time to your shift time, up to a maximum of 350 ms. The User Interface may be used to change this to a preset kill time that doesn't auto-adjust.

The WOT Box comes preset for a 2-step RPM of 4000. The User Interface may be used to change this RPM setpoint.

CONGRATULATIONS!

You have successfully installed the N2MB WOT BOX!

N2MB Racing Limited Warranty

N2MB Racing warrants that all of its products are free from defects in material and workmanship for a period of 1 year from the date of purchase. If an N2MB product is found to be defective within this period, N2MB Racing will repair or replace the product. The choice between these two methods of remedy is made at the sole discretion of N2MB Racing. This shall constitute the sole remedy of the purchaser and the sole liability of N2MB Racing to the extent permitted by law. This warranty is exclusive and in lieu of all other warranties or representations whether expressed or implied. This warranty is limited to the repair or replacement of the N2MB Racing product, and shall never exceed the purchase price of the N2MB Racing product. N2MB shall not be responsible for special or consequential damage or costs incurred as a result of the failure or use of the N2MB Racing Product except as required by law. Unauthorized alteration or repair of N2MB Racing products will void this warranty if the alteration or repair is found to have caused the N2MB Racing product to fail. In the event that a product is warranted, the purchaser shall be responsible for any and all shipping costs.

N2MB Racing reserves the right to improve its products at any time and is at no time responsible for exchange or upgrade of products that were manufactured previously.