O-Zone-Tech II™

INSTALLATION MANUAL
Ford Crown Victoria

CONTENTS

1. INTRODUCTION

1.1. Scope

These non-binding installation instructions are intended to support authorized Webasto trained distributors, dealers and personnel in the installation of the O-Zone-Tech II™ System.

1.2. Applicability of Manual

These non-binding installation instructions apply to the vehicles listed on the front cover of this installation manual unless technical modifications on the vehicle influence the installation, excluding all liability claims. Depending on the version and equipment in the vehicle, changes may be required to the installation work set out in these installation instructions. In any event, the directives in the "Installation Manual" of the O-Zone-Tech II™ system must be followed. Acknowledged engineering conventions must be observed for the installation work.

CAUTION
Location of the O-Zone-Tech II™ module, wiring and control devices are important for proper operation. Failure to comply with the installation instructions provided may result in poor operation or damage to the module and/or to the vehicle or vehicle components.

1.3. Meaning of Warnings, Cautions and Notes

WARNING
This heading is used to highlight that non-compliance with instructions or procedures may cause injuries or lethal accidents to personnel.

CAUTION
This heading is used to highlight that non-compliance with instructions or procedures may cause damage to equipment.

NOTE
This heading is used to highlight and draw specific attention to information.

CAUTION
Non-compliance with the installation instructions and information contained therein will void the warranty. The same applies for repairs performed by unskilled personnel and repairs using not original spare parts.

1.4. Safety

All relevant state and provincial regulations if any, governing the installation and use of non idling devices must be observed! The general safety regulations for the prevention of accidents and the relevant operating safety instructions must be observed at all times.

1.5. Legal Provisions for Installation

Vehicle operation must not be impaired due to any O-Zone–Tech II™ components. All power circuits must be fused with appropriate fuse or circuit breaker.

2. PARTS LIST

Vehicle

Make	Model	Year	Webasto Kit Number
Ford	Crown Victoria	2005 - 2011	5010293A

Included in box

Item	O-Zone-Tech-II™ P/N	Description	Qty
1	OZWB-00-1000-B	Fuel saver & CO2 reducer O-Zone-Tech-II module & bracket	1
		Kit includes:	
		- OZWB-00-1000 (O-Zone-Tech II module)	1
		Bracket kit include:	
		-ZM-SUP-OZTC-ALU (Aluminum one piece bracket)	1
		-VIS08-91772A194 (Phillips Screw Pan, #8-32x1/2", Stainless)	2
		-VIS08-91831A009 (Hex Locknut, Nylon, #8-32, Stainless)	2
2	ASY-KITOZWB-HARCV	O-Zone-Tech-II C1, C2 & C3 harnesses for Crown Victoria with housing for C6 and C11.	1
		Kit includes:	
		-C1 Harness (ASY-CBLOZTC-C1-CV)	1
		-C2 Harness (ASY-CBLOZWB-C2-CV)	1
		-C3 Harness (ASY-CBLOZWB-C3-CV)	1
		-CON-WPF2C (Housing for C6 and C11)	2
3	ASY-KITOZWB-ICV	O-Zone-Tech-II installation kit for Crown Victoria	1
		Kit includes:	
		-LCN-350-2000Y (High temperature loom 3/8'')	2'
		- 315-709 (Grommet ½'')	1
		- 315-733 (Grommet 11/16")	1
		-S-2154FY (Tie rap)	30
		-PWMS-H25-MO (Tie-rap holder, push mount)	2
		-11612 (Push pin retainer)	1
		-CON-BUTSTR14-16 (Butt splice gage 14 - 16)	2
		-CON-BUTSTR18-22 (Butt splice gage 18 - 22)	4
		-CON-BUTSTR12-10 (Butt splice gage 10 - 12)	1
		-CON-BUT16-14A12-10 (Butt splice gage 14/16 to 10/12)	2
		-766245C (Mini Fuse ATO 10A)	1
		-CDR-1 (Heat shrink)	2'
		-RLY-60A14DCSD28-1C (Relay)	1
		-VCF4-1002 (Relay support)	1
		-CT-REL1210 (Crimp for relay contact gage 10-12)	2
		-CT-REL1614 (Crimp for relay contact gage 14-16)	3
4	LCN-250-3200Y	(High temperature loom 1/4''	20'

Item	O-Zone-Tech II™ P/N	Description	Qty
5	ASY-SWIHS	Hood switch for O-Zone-Tech-II (Switch with connector & magnet)	1
6	ASY-KITVIS-HSCV	Hood switch hardware kit for Crown Victoria	1
		Kit includes:	
		-VIS25-658-067 (FLAT WASHER STAINLESS 1/4'', 1'' 1/4)	1
		-VIS25-HN-2037 (Hex lock nut, 1/4-20, Stainless HN-2037)	1
		-VIS25-92240A540 (Hex Screw, 1/4-20 x 3/4, Stainless)	1
		-VIS04-91772A110 (Phillips screw, #4-40x1/2", Stainless)	2
		-VIS04-92470A110 (Phillips screw, self tap, #4x1/2", Stainless)	2
		-VIS04 -91831A005 (Hex Nylon-insert locknut #4-40, Stainless, 1/4"x9/64")	2
7	ZM-SUP-OZTC-HS	Hood switch bracket	1
8	ASY-CBL335-01	External temperature sensor with connector and 12" of cable	1
9	SWI-PBMOMSPDT-LEDR	Keyless mode switch	1
10	CD-INSTALL OZWB	O-Zone-Tech-II configuration program Installation CD, Firmware V 2.4.72	1
11	LBL-OZTC-W-ENG	Label for sun guard.	1
12	LBL-OZTC-W-HS-ENG	Label for hood.	1
13	MANUAL-OZWB USER	User manual for O-Zone-Tech-II	1
14	MANUAL-OZWB INST	Installation manual for O-Zone-Tech-II	1
15	MANUAL-OZWB CHK	Checklist for O-Zone-Tech-II installation verification	1

3. SYSTEM OVERVIEW

The O-Zone-Tech II™ idle reduction module together with the Webasto heater is an eco-friendly automotive fuel saving and CO2 reduction system. This system will keep the vehicles inside temperature at a comfortable level while reducing unnecessary idling and will monitor the battery voltage.

Whenever battery voltage drops below pre set value it will start the vehicle (maximum two attempts). Before starting the vehicle the module will apply ignition to the vehicle for a 2 second period. If during the start engine doesn't start within 5 seconds, the module will wait 10 seconds before repeating startup for the second time. If the vehicle doesn't start after the second attempt the module resets and waits for user input.

3.1. System Modes

System consists of the three modes:

3.1.1. Idle Reduction Mode

To put module in this mode the vehicle key must be in the RUN position and vehicle engine running, emergency lights OFF, vehicle transmission in the PARK position, and the vehicle hood closed.

If the module detects RPM<900 for 5 minutes (default setting) it will shut down vehicle engine. The LED on the keyless switch will flash 200ms every second during forced engine shut down. During forced engine shut down, module will provide power to the computer and/or radio, wipers and windows and if battery voltage drops below the pre set value 12.1V (default setting), the module will start vehicle engine for programmed charge time of 15 minutes (default setting) to keep battery at the charged level. The module will monitor inside and outside temperatures and based on programmed values in sections of **Conditions** and **Air Conditioner** (programmable parameters) it will activate the Webasto heater or vehicle A/C to keep user at a comfortable level.

Moving transmission from PARK position, opening the hood, turning on the emergency lights, or turning the vehicle key to the START position will turn off this mode and vehicle will resume normal operation.

3.1.2. Keyless Mode

To activate this mode the vehicle key must be removed from the cylinder, emergency lights OFF, vehicle transmission in the PARK position, the vehicle hood closed and keyless switch must be pressed for 2 seconds.

The LED in the keyless switch will illuminate during keyless mode operation. The module will monitor inside and outside temperatures and based on programmed values in sections of **Conditions** and **Air Conditioner** (programmable parameters) it will activate the Webasto heater or vehicle A/C to keep user at a comfortable level. If battery voltage drops below the pre set value 12.1V (default setting), the module will start vehicle engine for programmed charge time of 15 minutes (default setting) to keep the battery at the charged level.

Pushing the Keyless Switch for 2 seconds, pressing the brake pedal, moving the transmission from the PARK position, opening the hood, turning the vehicles key to the START / RUN position, or turning the emergency lights on will turn this mode off.

3.1.3. Anti-theft Mode (Optional)

To activate this mode, connectors C9 and C10 must be connected on the O-Zone-Tech II harness.
Before this mode is activated the vehicle engine must be running, emergency lights turned ON, transmission in the PARK position and the vehicle hood closed. Moving the vehicle key from RUN position (key removed from the cylinder) will activate this mode.
The LED in the keyless switch will illuminate during anti-theft mode operation.
In this mode all systems are powered and engine is running.
Turning OFF the emergency lights, pressing the brake pedal, opening the hood, or the vehicle key in the START/RUN position will turn off this mode.
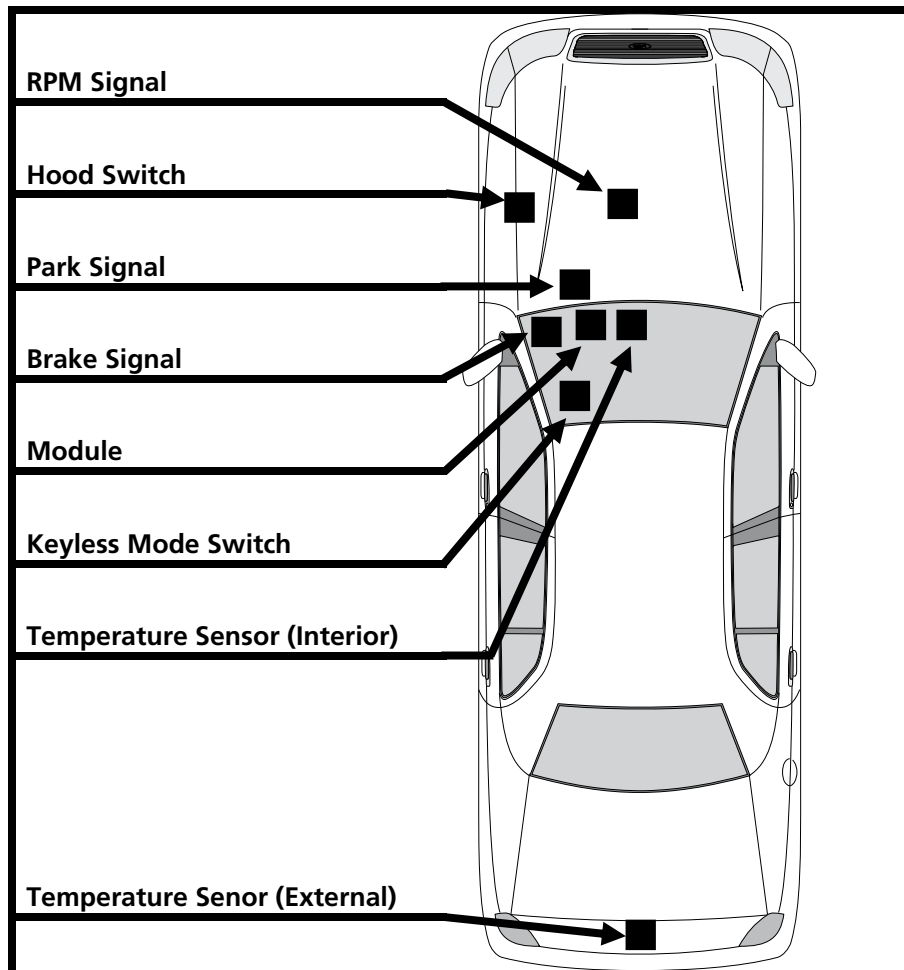
3.2.   Software

The O-Zone-Tech II™ software supplied with the module is required to program the operating parameters of the module. This includes the following:

> ➢ Keyless Mode Duration
> ➢ Idling Time
> ➢ Outside temperature for Webasto Heater activation
> ➢ Outside temperature for engine off
> ➢ Inside temperature for air conditioning
> ➢ Outside temperature for air conditioning
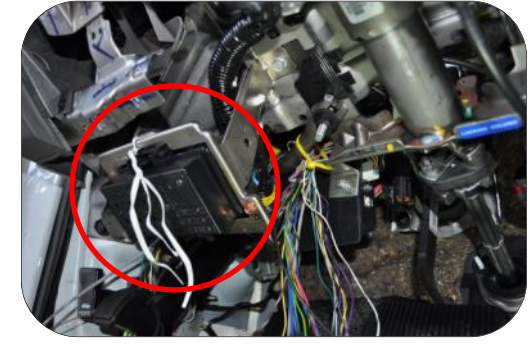> ➢ Battery voltage level for engine startup
> ➢ Battery charging duration

The software also provides the ability to visualize, in real time, the status of the signals that are connected to the module such as: Battery voltage, inside temperature, outside temperature and RPM. The configuration file created by the software can be saved on a computer for future usage or consultation. As an added feature, an integrated data (idling time) upload function can be used to export stored information from the module to an EXCEL file format, providing easier visualization of fuel saved (calculated by the software) per vehicle. For procedure refer to the SOFTWARE section under Analyze IDLE in this manual.

4. HARDWARE INSTALLATION

4.1. Layout

RPM Signal

Hood Switch

Park Signal

Brake Signal

Module

Keyless Mode Switch

Temperature Sensor (Interior)

Temperature Senor (External)

4.2. Preliminary Information

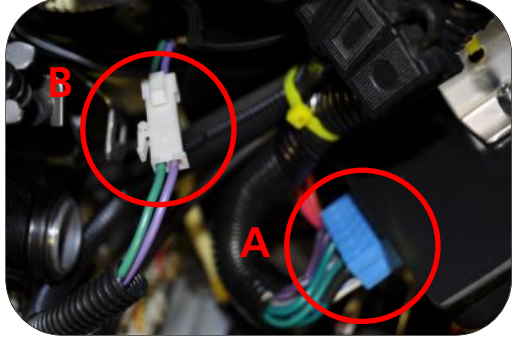|	
- Disconnect the vehicle battery.	
- Remove the lower dash panel (remove the left screw under park release handle with a 7mm nut driver; on the right side, remove push pin).	
- Remove the metal bracket located under the lower dash panel (five, 8mm screws). - Remove steering wheel lower panel (3 bolts, 5.5mm socket).	
- Remove the fuse panel with bracket (2 bolts, 11mm).	
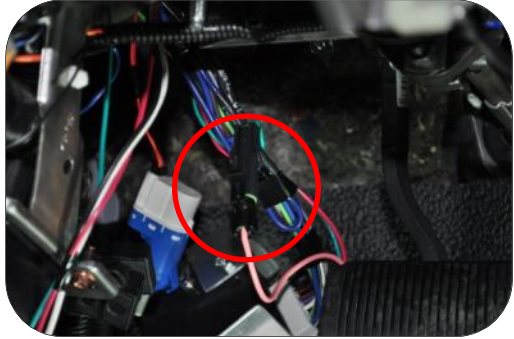
- Remove the skid plate on the driver door.	
- Remove the black clip around the hood opening handle and the kick panel from the driver side (panel on the bottom by the emergency brake).	
- Remove the skid plate on the bottom rear driver side door.	
- Remove dash board panel as shown.	

- Remove dash board panel located to the left side of the steering wheel as shown.	
- Remove the vehicle HVAC control panel.	
- Remove bottom seat. Push seat toward back of the vehicle and lift to remove. - Remove back seat; for seat back you must remove two 18mm nuts (left and right) used to secure seat belts.	
- Remove the left panel inside the trunk (one turn pin and three push pins)	
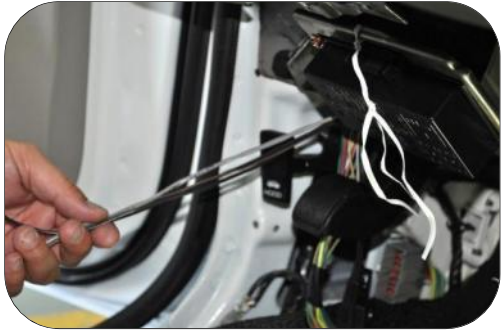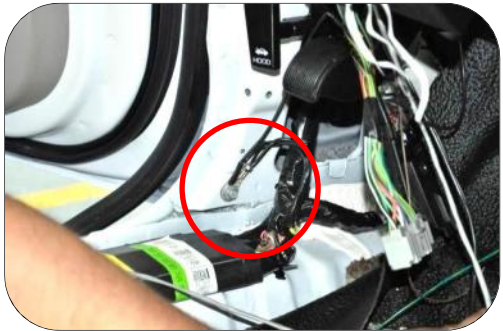
4.3. Ignition Switch Connection

- Disconnect connector from the vehicle ignition switch.	
- Use "T" harness provided in the kit and connect in line between ignition switch and vehicle harness.	
- The twelve position blue connector of the "T" harness connect to the module (shown as A on the picture). - Connect the 2 pin connector from the "T" harness to the 2 pin mate on the harness from connector C2 (shown as B on the picture). **NOTE** "T" harness for model year 2005-2006 will have different color and gauge wires but this will not affect the installation.	
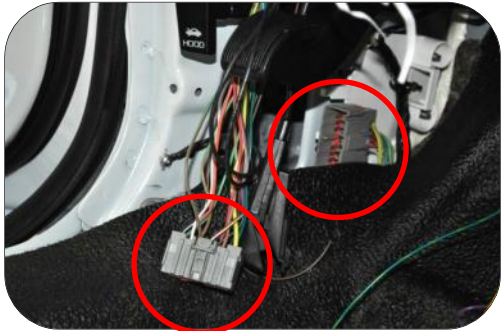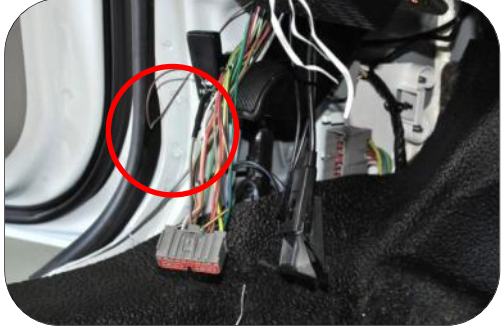
4.4. Module Mounting

- Remove the blue / white connector by the brake pedal (to access the bolt used to secure module bracket). - Remove the 10mm black bolt and re-use later to secure the bracket.	
- If using anti-theft, connect C9 and C10 connectors at this time.	
- Before securing module with the bracket to the vehicle, connect C2 and C3 connector harnesses to the module. - Secure the module with the 10mm black screw removed earlier. - Re-install blue/white connector back to its original location. - Use zip tie to secure bracket to the second point.	 **BRACKET MAY BE DIFFERENT THAN SHOWN**
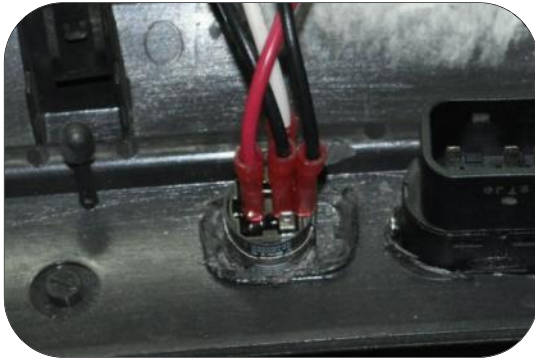
4.5. Ground Connection

- Route module ground wire (C2-11, black), brake signal input (C2-16, light green/red) and gray cable (for external temperature sensor) behind the fuse box to the bottom of the kick panel (by the emergency brake pedal).	
- Remove ground connection (8mm bolt) from vehicle (as shown in picture). - Connect O-Zone-Tech II ground wire with O-ring terminal to the vehicle ground and re-secure the bolt (make sure the bolt is well secured).	

4.6. Brake Signal Connection

- Disconnect the grey 13 position connector (under kick panel). - Locate light green/red wire from pin 5 (vehicle brake signal). - Cut the wire.	
- Connect light green / red wire from the harness (C2-16) to the brake wire from pin 5 using provided butt splice and shrink tubing. - Reconnect connector to its original location.	
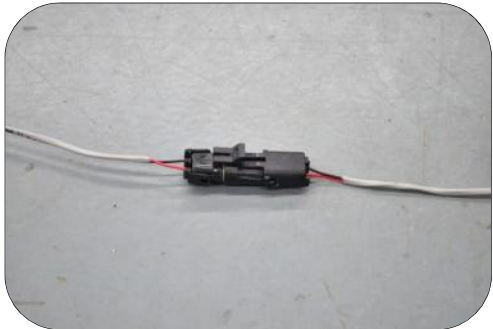
4.7. Keyless Switch Wiring

- Route wire behind the junction box and through the hole behind the dash panel that was previously removed.	
- Drill a 16 mm hole in the panel to install keyless switch as shown in picture. - Snap the switch into the dash panel.	
- Connect the O-Zone-Tech II™ harness to the switch. - Reconnect Gas/brake pedal position switch before replacing. ➢ L(+)1 = red ➢ L(-)1 = black ➢ C = black ➢ NO = white	

4.8. Temperature Sensor (Outside Temperature)

- Route temperature sensor cable towards the trunk under the original plastic used for wiring harness protection.	
- Loom the wire as it comes outside original plastic wiring protector.	
- Pass loomed wire through original hole behind back seat. (driver's side)	
- Secure cable to the existing vehicle harness in the trunk.	

- Make a small hole on the insulation to feed cable outside the vehicle.
- Push cable harness through the hole.
- Seal hole using silicone.

WARNING
Whenever drilling any hole, make sure to inspect the back side of the location to prevent any unnecessary damage to components.

CAUTION
Always use safety goggles when using power tools!

- Push cable terminals, provided in the kit, into the connector housing.
- Terminal Positions:
  - ➢ A=red
  - ➢ B=black

- Connect the external temperature sensor provided in the kit to the cable harness.

- Route the cable towards the center of the rear bumper. Secure cable using cable zip ties.	

4.9. Webasto Heater Connection

- Remove green wire from K3 relay pin 86 (Webasto heater harness) **-** Remove brown wire from K3 relay pin 85 (Webasto heater harness) **-** Remove green wire from K2 relay pin 87a and place terminal into relay K3 pin 86. **-** Remove brown wire from relay K2 pin 85	
- Cut and discard the small brown wire that was connecting relays K2 and K3 (close to terminal of the relay K2) **-** Place brown wire terminal from relay K2 into relay K3 pin 85. **-** Discard the relay K2 **-** Remove 2A fuse from the fuse holder (Webasto heater harness) **-** Remove 25A fuse from the fuse holder (Webasto heater harness) and replace with 10A fuse (provided in the O-Zone-Tech II kit) **NOTE** Relays K1 and K2 are not used.	
- Secure fuse holder and relay to the vehicle using push pins provided in the kit.	
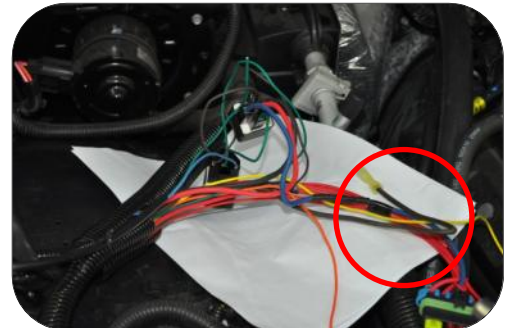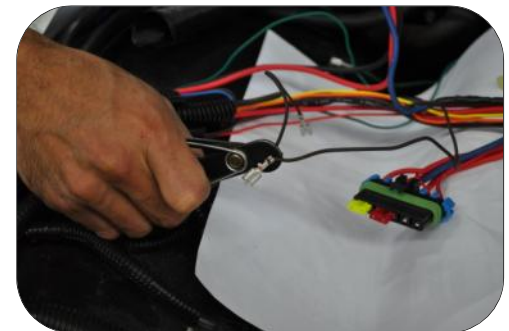
- Drill the hole in the bulkhead (passenger side) - Use grommet 11/16" through bulkhead for heater wire harness (on signal and HVAC control).	
- Route and secure Webasto heater harness toward the vehicle HVAC control.	
- Locate brown / white wire coming from the pin 1 on HVAC connector. - Cut the wire - Connect Webasto heater harness (black and red wires) to brown/white wire as shown on the picture.	
- Route black connector from the Webasto heater harness (on signal) toward the O-Zone-Tech II Module and connect to the mating C8 connector. - Secure wiring harness.	
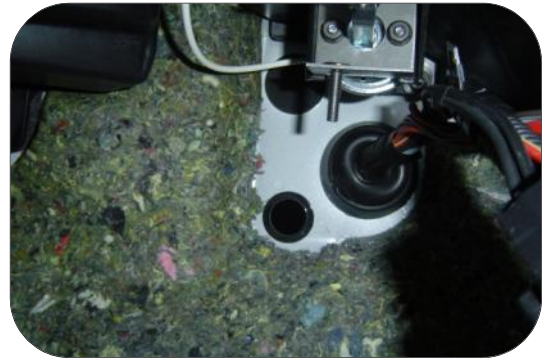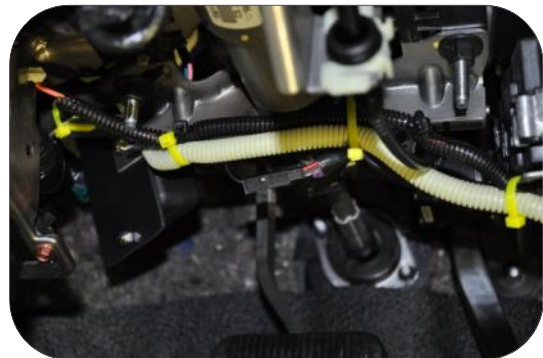
4.10. Temperature Sensor (Inside Temperature)

- Drill two holes on the panel as shown in the picture (make sure the holes pass through the second wall). **WARNING** Whenever drilling any hole, make sure to inspect the back side of the location to prevent any unnecessary damage to components. **CAUTION** Always use safety goggles when using power tools!	
- Secure temperature sensor to the dash panel using the two inner holes and zip ties.	
- Place the dash panel back to its original location.	

4.11. Wiring Feed to Engine Compartment

- Drill a hole and use grommet to protect wire harness. - Feed harness through the grommet to the engine compartment and protect with looming. **WARNING** Whenever drilling any hole, make sure to inspect the back side of the location to prevent any unnecessary damage to components. **CAUTION** Always use safety goggles when using power tools!	

4.12. Park Signal Connection

- Disconnect connector from location as shown. - Pull back the loom from the vehicle wiring harness coming from the vehicle to the connector.	
- Identify brown / pink wire from pin 1 - Cut the wire.	
- Connect blue wire from the O-Zone-Tech II™ harness to the brown / pink wire (Pin 1) connector side using butt splice then use heat shrink tube to insulate. - Connect blue / black wire from the O-Zone-Tech II™ harness to the brown / pink wire vehicle side using butt splice then insulate using heat shrink tube. **Caution** The vehicle will not start if wires are reversed!	

- Re-install the harness loom back over the harness. Use electrical tape to secure loom at the all ends. - Re-install connector to its original location.	

4.13. Hood Switch

- Mount the hood sensor with bracket using the hole shown in the picture.	

- Put connector housing to hood switch terminals.
    ➢ A=light green/violet
    ➢ B=gray/black
- Connect hood sensor harness to the O-Zone-Tech II™ wire harness connector.	

- Apply a small amount of grease to the top of the hood sensor. - Close the hood so the grease will mark sensor location beneath the hood as seen in the picture.	

- Position the magnet center to the left of the spot left by the grease. - Adjust magnet position so it will not touch hood switch when hood is closed	

4.14. RPM Signal

- Locate injector #5 used to obtain the RPM signal.	 **Use thermostat housing as a reference**
- Disconnect the injector connector. - Identify brown / black wire on the connector.	
- Remove tape from harness and cut the brown / black wire.	

- Route the tan / black wire from the O-Zone-Tech II™ harness to this location. - Connect the tan / black wire to the brown / black wire using butt splice then use heat shrink tubing to insulate.	
- Re-install loom back over the wiring harness and secure end with electrical tape. - Re-install connector.	
- Secure O-Zone-Tech II™ harness using zip ties to the vehicle harness. Make sure to leave harness loose between frame and engine connection for engine movement.	

4.15. Anti-theft Mode

- Connect connectors C9 and C10 in the O-Zone-Tech II™ harness C2.	

4.16. Radio / Computer Connection

Depending on the aftermarket equipment installed onboard the vehicle, the power source must be identified and a relay installed to ensure it is properly powered during all O-Zone-Tech-II system modes. Refer to the standard relay pin out chart below for proper connections.
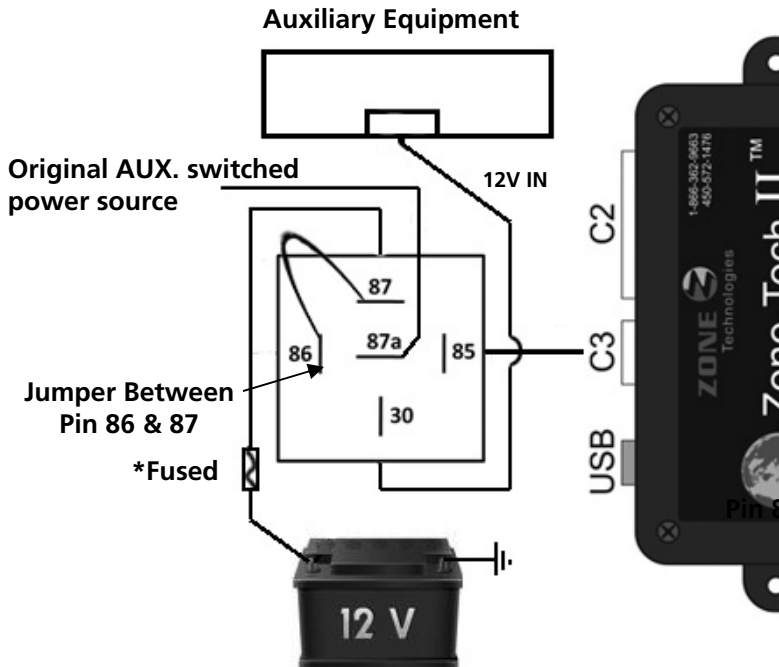
NOTE
This relay connection is only necessary if the auxiliary equipment is powered through the ignition side of the vehicles electrical system. If connected directly to the B+, this step is NOT necessary.

*Actual fuse rating will vary depending on the auxiliary equipment being connected. Please refer to the manufacturers recommended fuse rating prior to powering the circuit.

4.17. Emergency Lights Connection

Connect the pink wire gauge C2-18 of the O-Zone-Tech II™ to a 12V signal (when activated) from emergency lights system.

5. SOFTWARE

IMPORTANT NOTICE:
Proceed with software installation before connecting the module to a USB port.

5.1. *Software Compatibility*

- Windows 2000 SP4
- Windows XP Pro 32 or 64 bits
- Windows Vista Pro 32 or 64 bits
- Windows 7 32 or 64 bits
- Windows 8 32 or 64 bits

Insert the CD into the CD-ROM drive of the computer. The CD should start automatically; choose "execute Ozonetech II.exe". If the installation menu does not start, go on the CD drive and click on "Ozonetech.exe", follow installation procedure in both cases.

When the software installation is completed, connect the module to the computer using a USB cable (the module must be powered and supplied with an IGNITION signal). Once the module has been detected (green LED should flash 1 time every second), allow a few seconds for windows drivers to configure.

- Once « DRIVERS » are installed, start the O-Zone-Tech II™ configuration program and make sure the module is properly powered (battery power and ignition signal).
- Press the « Connect » tab to establish communication with the module. The connection status (bottom left) of the program should change to « Connected » (see Fig. 1, down left window). Signal values like RPM (If engine is running), battery voltage or any activated inputs should be displayed in the software.
- If it doesn't work, go to the menu bar; select the « Ports » drop down menu (see fig. 2) under the « Configuration » tab to set the communication port required. If you can't see port highlighted try to disconnect and reconnect the USB cable using a different USB port; verify computer port settings and USB cable integrity.
- Once connected, the program will ask to upload module data onto the computer. Click « OK » to synchronize the module with the software. You are now able to set all the required working parameters for your vehicle.

5.2. Software Installation

O-Zone-Tech II™ Software Main Programming Window (Webasto Version)

Fig. 1

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5.3. Navigation Menu

5.3.1. Configuration

The « Configuration » menu is used to select which USB port you want to use for communication.
To choose your USB port:

- Be sure that the O-Zone-Tech II module is connected via USB cable.
- You can directly choose the port in the "Ports" menu or, if you have more than one choice, click on "Search port" menu to let the software find it automatically.
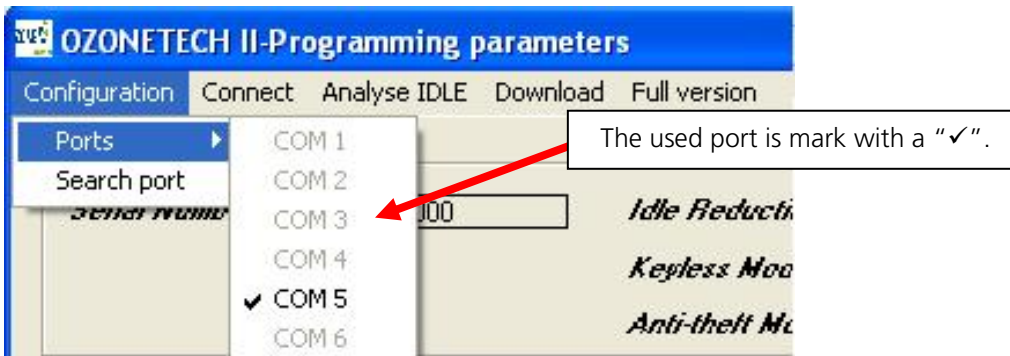
The used port is mark with a "✓".

Fig. 2

5.3.2. Connect

The « Connect » tab from the top menu is used to initiate communication with the module. When you connect, this window will appear:

Click "OK" if you want to download parameter from the O-Zone-Tech™ module to your computer.

Click "CANCEL" if you want to cancel the download operation and keep the settings that you already have downloaded.
Annuler = cancel

Fig. 3

5.3.3. Analyze IDLE

The « Analyze IDLE » selection tab is used to access the files generated by the modules internal timers. Click this tab will open the following window:
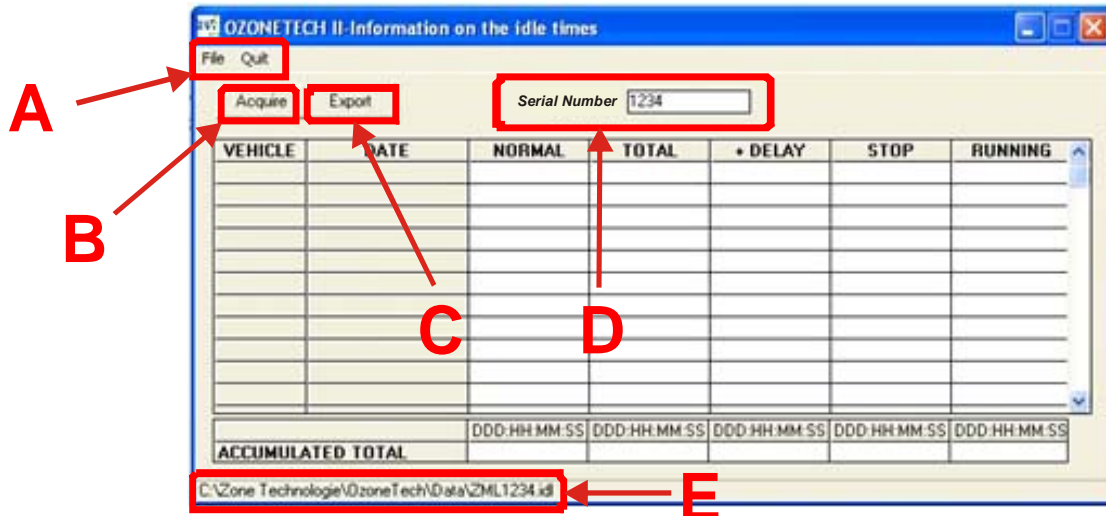
Fig. 4

A. The "File" menu is used to open an "idl" file, which is specialized file used by this software to keep counter information.
    The "Quit" menu is used to close the acquire windows and go back in the main menu.
B. The "Acquire" button is used to read all counter information in the O-Zone-Tech II™ module.

NOTE
Click on "Acquire" create an "idl" file in the folder showed on "E". The file name follows the vehicle serial number if not previously created.

IMPORTANT
Pressing this button will also reset the module counters in the module (Normal, total, stop and running counters).

C. The "Export" button will allow user to export the counter values to an excel file.
D. Serial number should correspond to the serial number of the O-Zone-Tech-II™ module installed in the vehicle. There is a unique number for each module.
E. This is the file location of the file being viewed.

Fig. 5

> **VEHICLE:**   Vehicle number corresponding to the serial number of the O-Zone-Tech™ module.
> **DATE:**   Date of the acquisition (data downloaded) from the module.
> **NORMAL:**   Counts the idling time programmed in the firmware. This is the time required to idle when all requirements are met before the engine is shut down.
> **TOTAL:**   Counts the vehicles total idling time. This is the total time that engine will idle below 900 RPM.
> **+DELAY:**   (**Not Applicable)**
> **STOP:**   Counts the time as soon as the engine is shut down by the module after all requirements have been met. Any engine RPM will stop this counter. This is the timer that's considered "true idling savings time".
> **RUNNING:**   Counts the engine run time as soon as any engine RPM is recognized. This is the total run time of the vehicles engine by the user module.

5.3.4. Download

The « Download » tab is used to download or upload parameters to or from the O-Zone-Tech-II™ module.
- If you choose "Download to PC" all information in your O-Zone-Tech II™ module will be sent to the computer and the main screen will be refreshed.
- If you choose "Upload to module" all information in your "O-Zone-Tech-II™ programming parameter" software will be transmitted to the O-Zone-Tech II™ module.

5.3.5. Full Version

The « Full version » tab is for manufacturer use only. No additional user functionality is available.

5.4.   Window Explanation

For the following window explanations refer to Fig.1 on page 28.

5.4.1. Vehicle information

Serial Number:	Module serial number. This number is unique for each module.
Mode:	Idle Reduction mode, Keyless Mode and Anti-theft Mode are 3 possible operation modes for the O-Zone-Tech-II™ module. The LED will turn green when the corresponding mode is activated.
Reset:	Reset module to Idle reduction mode where ever you are within the control stage.

5.4.2. Error Status

Error Status:
The virtual « Error status » LED will change from grey to red when the module fails to start the engine two consecutive times (programmable parameter by manufacturer).

5.4.3. Version

Hardware (Firmware) : 2.4.72

Software : 2.4.72

Version:
Used to identify hardware (module firmware) and software revision level.

Hardware: Indicates the firmware version programmed in the module.
Software: Indicates O-Zone-Tech II™ computer software version.

5.4.4. Reading All

Reading All:

-	**Idle times:**	Real time display in days, hours, minutes, and seconds of the four times counters.
		➢ « E » button (top right corner) will reset all times counters (Normal, Total, Stop and Running).
		➢ « R » button will reset the associated times counter.
-	**RPM:**	Real time RPM engine displayed.
		Note: Estimated from the tachometer signal pulses.
-	**Outside Temp. (°F):**	Real time display of outside temperature (F°).
-	**Inside Temp. (°F):**	Real time display of inside temperature (F°).
-	**Battery (V):**	Display voltage of the vehicle battery (V).

5.4.5. Status Tray Fields

USB	Port	Configuration	Stage	Total time	File name
connected	4	57600,n,8,1	IDLE CONTROL	000:00:00:00	New configuration

USB:	USB port status (connected or disconnected).
Port:	Virtual communication port number identification.
Configuration:	Virtual communication port configuration.
Stage:	Current system operating status.
- *Idle Control:*	The system is in engine idling control mode.
- *Charging:*	Following a low battery voltage detection, the system will restart the engine for the charging time period.
- *Monitoring:*	Following engine shutdown by the module, the system monitors the battery voltage.
- *Start*	The system is restarting engine.
- **High Temp Mode**	Start engine as soon as the passenger compartment temperature exceeds programmed range set (if programmed).
- **Anti-theft**	Let engine run when emergency lights are activated and key is removed from the barrel.
Total time:	Idling time counter displaying.
File name:	Name of the configuration file being used (idl extension file).

5.4.6. Keyless Mode Duration

(HH:MM):
Used to program the duration of the keyless mode in hour (HH) and minutes (MM). Maximum value is 96:59.
Elapsed time:
Displays the elapsed time from the beginning of the keyless mode (HH:MM:SS).
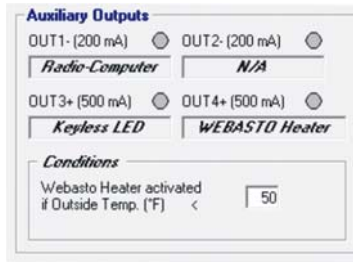
5.4.7. Main Outputs

RELAY:	Relay output number
Display:	Virtual LED will turn green if the corresponding output is activated
Connector C1:	Pin number of the corresponding output on the harness, connector C1

5.4.8. Auxiliary Outputs

OUT1-:	Negative (GND) Output #1 (200mA) powered Radio-Computer through relay.
OUT2-:	Negative (GND) Output #2, not used.
OUT3+:	Positive (+12V) Output #3 (500mA) that controls the LED in the Keyless mode switch.
OUT4+:	Positive (+12V) Output #4 (500mA) that controls the Webasto heater ON signal.
Conditions:	If outside temperature is below this programmed value, the Webasto heater will be activated. (Max = 50°F, min = -148°F)
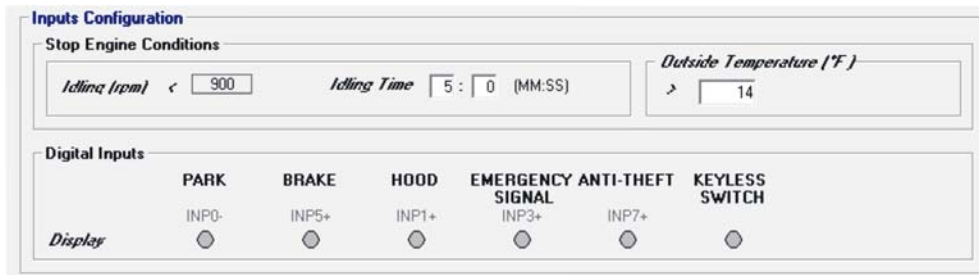
NOTE
- *All auxiliary outputs are on C3 harness.*
- *Virtual LED will turn from grey to green when the output is "ON".*

5.4.9. Inputs Configuration

Stop Engine Conditions

Idling (RPM): Under this value, module considers that the engine is idling (default is programmed at 900 RPM). Any higher RPM value will deactivate the idle reduction mode from the O-Zone-Tech II™ module and will reset the Idling time counter.

Idling Time: Maximum duration in minutes and seconds that the vehicle will idle before stopping. RPM and outside temperature conditions must be considered. Maximum = 59 minutes and 59 seconds (59:59).

Outside Temperature: If outside temperature is below this value (programmable, min = 14°F), the idle reduction mode is canceled and the Idling time counter is reset.

Digital Inputs

Display: Virtual LED of the corresponding input will turn green if it is activated.

NOTE
- For "HOOD" input (INP1+), the virtual LED will be green if the vehicle hood is open.
- For ANTI-THEFT input (INP7+), the virtual LED will be green if the vehicle emergency lights are activated and if connector C9 and C10 are connected together ANTI-THEFT mode is activated.

5.4.10. Start Engine Conditions

Air Conditioner

Enable: The "Enable" checkbox is to allow the O-Zone-Tech II™ module to start and stop the vehicle to control the vehicle air conditioner.

Start: The O-Zone-Tech II™ module will start the engine if the vehicle inside temperature is over 81°F (programmable value) AND if the outside temperature is over 63°F (programmable value).

Stop: When the module have started engine due to high inside temperature, it will stop the engine if temperature goes back down below 67°F (programmable value).

Cooling ON: Virtual LED will turn green if conditions are met to control the air conditioner and engine has been started by the module. The HVAC knobs must be manually preset to cooling car when the module will start engine.

Battery

Battery Voltage (V): Low battery voltage limit value where module will start engine for battery charging time (programmable value). Maximum programmable voltage value = 13.2V and minimum = 0.0V, do not exceed 12,3V and do not program under 11,7V can cause no starting engine.

Charging time (min.): Period of engine running to recharge the battery after low voltage detected. Maximum = 255 minutes, minimum = 1 minute.

Charging: Virtual LED will turn green if conditions are met to recharge the battery.

6. LED SCENARIOS

6.1. *Module*

6.1.1. *Green LED:*

Status	Description
Steady on for 2 seconds	The module was in reset
Flashing 200mS every 2 seconds	The module is in the idling control mode with key at ignition position but engine never started.
Flashing 200mS every 1 second	The module is in the idling control mode and has shut off engine to reduce idling.
Flashing 200mS every 500 milliseconds	The module is in keyless or anti-theft mode.
Flashing 200mS every 4 seconds	Module off (no mode activated) with computer connected.
Flashing 200mS every 5 seconds	The module is in sleep mode (lowest current consummation).

6.1.2. *Red LED:*

Status	Description
Steady on	Downloading new main software, if error occurs: stays in steady on (illuminated) and waiting for new download.

6.2. *Switch*

Status	Description
Flashing 200mS every 1 seconds	In idle mode, module has shut off engine after idling time delay lapsed.
Steady on (illuminated)	Anti-theft or Keyless mode activated.

7. FINAL INSPECTION (CHECKLIST)

Use the following check list to complete final inspection.

Hood
- ☐ Injector wire connection crimped, soldered and heat shrink tube used.
- ☐ Injector wire covered in loom and re-secured.
- ☐ Injector connector re-connected.
- ☐ Hood switch and magnet installed (hood magnet properly aligned).
- ☐ Hood switch wire harness covered in loom and secured.
- ☐ Connector on the hood switch connected to the harness.
- ☐ Park / Neutral signal wires connected; blue to brown / pink connector side and blue / black to brown / pink vehicle side, crimped, soldered and heat shrink tube used.
- ☐ Park / Neutral wires covered in loom and secured.
- ☐ Connector C139 back in its original place.
- ☐ Hole in bulkhead sealed with silicone (O-Zone-Tech II harness).
- ☐ Webasto heater harness modified, 2A fuse removed and 25A replaced with 10A.
- ☐ Webasto heater harness connected to the vehicle battery, fuse holder, relay and harness secured.
- ☐ Hole in bulkhead sealed with silicone (Webasto harness).
- ☐ Battery connected and post is tightened.
- ☐ Label (O-Zone-Tech II hood label) adhered in visible place under the hood.

Interior
- ☐ O-Zone-Tech II™ module with bracket installed and secured.
- ☐ Inside temperature sensor mounted, wire loomed and secured.
- ☐ Brake position switch re-installed.
- ☐ T harness locked to the ignition switch and vehicle ignition switch harness.
- ☐ O-Zone-Tech II™ wiring harness connectors C1, C2, C3 connected to the module.
- ☐ Connector C9 and C10 connected on harness if Anti-theft Mode used.
- ☐ Brake signal wire connected, connection crimped, soldered and heat shrink tube used.
- ☐ Connector C211 in place.
- ☐ Ground wire connected.
- ☐ External temperature sensor wire routed to the trunk.
- ☐ Radio – Computer, emergency lights signal connected.
- ☐ Keyless switch wiring harness covered in loom and secured.
- ☐ Keyless switch installed and connected.
- ☐ Webasto heater harness (on/off signal and vehicle HVAC power) secured.
- ☐ Webasto heater harness connected to the vehicle HVAC.
- ☐ Webasto heater harness (on / off signal) connected to the O-Zone-Tech II harness, connector C8.
- ☐ Label (O-Zone-Tech II user label) adhered in visible place on the sun visor.
- ☐ Verify all moving parts can move freely after all harnesses have been secured. Correct if needed.

Trunk
- ☐ External temperature wire harness covered in loom and secured.
- ☐ External temperature sensor routed through the original grommet in the left side of the body.
- ☐ Grommet sealed.

Rear Bumper
- ☐ Temperature sensor connected and mounted, wire harness is secure.

Software and Programming Parameters
- ☐ All parameters entered and saved in the module programming.

Vehicle
- ☐ Reinstall carpet, trim, bezels removed during installation.

8. INITIAL START-UP

8.1. *Start-up:*

- Computer connected to the module and Webasto program is open (press connect button on the top tool bar, status should read "connected" in lower left corner. May have to configure the port number in the tool bar (refer to the SOFTWARE section in this manual).
- Close the hood.
- Turn the key to the ON position and verify the LED on the module flashes once every 2 seconds.
- Once connected with the module, you should see the ***Inside Temperature, Outside Temperature, Battery voltage*** and ***RPM*** displayed on the software screen.
- The green light should be ON of the ***Radio-Computer,* PARK,** *RELAY* **1 and** *Idle Reduction* and the ***RPM*** should display 0.
- Before starting the vehicle, make sure the digital inputs of the software are responding correctly. You should see the green light of:

  ➢ **PARK** when the vehicle is in the PARK or NEUTRAL.
  ➢ **BRAKE** when the brakes are applied.
  ➢ **HOOD** when the hood is open.
  ➢ **EMERGENCY SIGNAL** when the emergency system is activated.
  ➢ **ANTI-THEFT** if C9 and C10 connectors are connected and the emergency system is activated.
  ➢ **KEYLESS SWITCH** when switch is pressed and hold for 2 seconds.

8.1.1. *Idle Reduction Mode*

How to activate this mode you should refer to FUNCTIONAL DESCRIPTION section in this manual.

Within 5 minute of engine idling the green indicator light will be on for the ***Idle Reduction, RELAY* 1**, ***Radio-Computer*** and **PARK**

After 5 minute delay the engine will stop and additional green indication lights will be on for the ***RELAY 3***, ***RELAY 4***, ***WEBASTO Heater*** (only if outside temperature is below set value in **Auxiliary Outputs** under ***Conditions***) and ***Keyless LED*** should blink.

If battery voltage is below the set value in **Start Engine Conditions** section under **Battery**, the green indication light will turn off for ***Keyless LED, WEBASTO Heater*** (only if was on after 5 min delay) and ***RELAY 1***, ***RELAY 2***, ***RELAY 3***, ***RELAY 4***. The green indication light should turn on for ***Charging***.

If ***Enable*** under **Air Conditioner** section was checked and inside temperature is above set value in **Air Conditioner** section the green indication light will turn off for ***Keyless LED, WEBASTO Heater, RELAY 1***, ***RELAY 2***, ***RELAY 3*** and ***RELAY 4***. The green indication light should turn on for ***Cooling ON***.

8.1.2. *Keyless Mode*

How to activate this mode you should refer to FUNCTIONAL DESCRIPTION section in this manual.

After pressing the switch for 2 seconds the green indicator light will turn on for the ***Keyless Mode*, KEYLESS SWITCH** (only when pressed), ***Radio-Computer,* PARK**, ***Keyless LED*** (steady), ***WEBASTO Heater*** (only if outside temperature is below set value in **Auxiliary Outputs** under ***Conditions***).

If battery voltage is below the set value in **Start Engine Conditions** section under **Battery**, the green indicator light will turn on for ***RELAY 1, RELAY 2, RELAY 3, and RELAY 4***. The green indicator light will turn off for **Keyless LED, WEBASTO Heater** (only if it was activated).

If *Enable* under **Air Conditioner** section was checked and inside temperature is above set value in **Air Conditioner** section the green indication light will turn on for *RELAY 1*, *RELAY 2*, *RELAY 3* and *RELAY 4*. The green indication light should turn on for *Cooling ON*. The green indication light will turn off for **Keyless *LED***.

8.1.3. Anti-theft Mode (Optional)

How to activate this mode you should refer to FUNCTIONAL DESCRIPTION section in this manual.

After activating emergency lights and removing key from the barrel, the green indicator light will be on for the ***Anti-theft Mode***, *RELAY 1*, *RELAY 2*, *RELAY 3*, *RELAY 4, Radio-Computer, Keyless LED* (steady), **PARK**, **EMERGENCY SIGNAL** and **ANTI-THEFT**

NOTE
Make sure to set vehicle HVAC controls to on position for the fan speed and AC (summer time) any time vehicle is shut down, otherwise heating and cooling of the interior vehicle will not work properly. Vehicle air blow direction could be set to desired position.

9. TECHNICAL DATA

9.1. Technical:

Voltage input:		10 to 18Vdc
		(optional: 10 to 28Vdc)
Operating temperature:		-40°F to 167°F (-40°C to 75°C)
Electrical consumption:	Before engine stop:	15mA
	After engine stop:	175mA
	Without Ignition signal:	4mA
Constant power per output:	4 Relays (N.C.):	25A maximum
	(N.O.):	25A maximum
	2 positive outputs:	500mA
	2 negative outputs:	200mA

9.2. Mechanical:

Dimensions:	5.625″ X 3.25″ X 1.15″ (142.9mm X 82.6mm X 29.2mm)
Weight:	0.6 lbs (0.268 Kg)

10. O-ZONE-TECH II™CONNECTIONS OVERVIEW
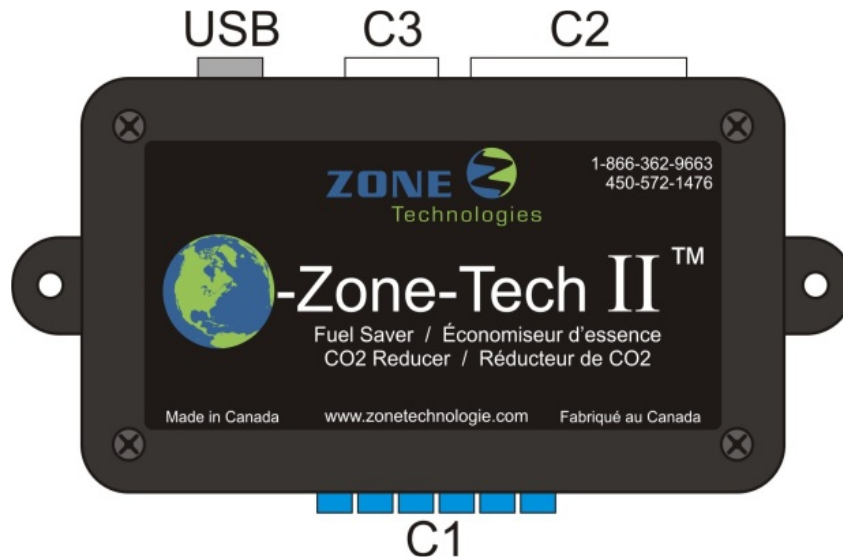
Function	Connection	Signal Identification	Description
Power source	C1.1, C1.7	Bypass relays power source	Ignition switch battery and accessory signals. (C1.1 = Battery input #2, C1.7 = Battery input #1)
	C2.1, C2.2	OZTII power inputs	O-Zone-Tech II™ module power inputs. (C2.1 = Negative (GND) signal, C2.2 = 12Vdc)
Module communication	USB	USB 2.0 connector	O-Zone-Tech II™ to PC communication port
	C2.14	N/C	N/C (reserved)
Inputs	C2.3 to C2.6	Temperature sensors	Temperature sensor input signals. Internal temperature sensor = Optional External temperature sensor = Standard
	C2.7, C2.8	Park and Neutral	Analog inputs for Park and Neutral transmission signals. If no valid signal is available, a limit switch must be installed to detect transmission lever position. Both inputs can be used to monitor auxiliary battery voltage.
	C2.9	Tachometer	Tachometer input signal (Must be connected to a fuel injector or an ignition coil signal)
	C2.10	Ignition	Ignition input signal (1A fuse protection required).
	C2.13	Keyless mode	Keyless mode activation input. A negative signal generated by a momentary switch is required to activate this mode.
	C2.15 to C2.20, C3.2, C3.4	Programmable inputs (0 to 7)	These inputs are normally used to prevent engine deactivation. Can be programmed to start the engine. Programmable signal activation (positive or negative signal).
Outputs	C3.3, C3.5	Positive outputs	500mA positive outputs
	C3.6, C3.8	Negative outputs	200mA negative outputs
	C2.11, C2.12	Negative outputs	200mA negative outputs
	C3.7	N/C	N/C (reserved output)

10.1. Connection Description

Connector	Pin	Wire Color	Description		
USB	-	-	USB comm. link between O-Zone-Tech II™ and Computer		
C1	1	lt. green / violet	Battery input#2	On ignition connector	
	2	white / lt. blue	Relay #4 (N.C.)	Ignition or Accessory	(Key Side)
	3	dark green	Starter (N.O.)	On start signal	
	4	white / lt. blue	Relay #4 (COM)	Ignition or Accessory	(Away from Key)
	5	not used			
	6	gray / yellow	Relay #3 (N.C.)	Ignition or Accessory	(Key Side)
	7	lt. green / violet	Battery input #1	On ignition connector	
	8	gray/yellow	Relay #3 (COM)	Ignition or Accessory	(Away from Key)
	9	violet / orange	Relay #1 (COM)	Ignition or Accessory	(Away from Key)
	10	white / violet	Relay #2 (N.C.)	Ignition or Accessory	(Key Side)
	11	violet / orange	Relay #1 (N.C.)	Ignition or Accessory	(Key Side)
	12	white / violet	Relay #2 (COM)	Ignition or Accessory	(Away from Key)
C2	1	black	System Ground		
	2	lt. green / violet	System 12Vdc battery feed		
	3	black	Temperature sensor #2 (Internal), ground signal		
	4	red	Temperature sensor #2 (Internal), positive signal		
	5	black	Temperature sensor #1 (External), ground signal		
	6	red	Temperature sensor #1 (External), positive signal		
	7	not used			
	8	not used			
	9	tan / black	Tachometer signal input (RPM)		
	10	violet / orange	Ignition signal		
	11	not used			
	12	not used			
	13	white	Keyless mode switch input		
	14	not used			
	15	not used			
	16	lt. green / red	INP5 – Brake signal input		
	17	not used			
	18	pink	INP3 – Emergency signal input		
	19	blue	INP0 – Park/Neutral signal input		
	20	gray / black	INP1 – Hood switch signal input		
C3	1	not used			
	2	not used			
	3	black	Output #4 – Heater activation (positive output)		
	4	pink	INP7 – Anti-theft signal input, emergency light's signal		
	5	red	Output #3 – Keyless switch LED (positive output)		
	6	not used			
	7	not used			
	8	green	Output #1 – Relay control for Laptop, radio or other (negative output)		

11. WIRING DIAGRAMS

11.1. Complete
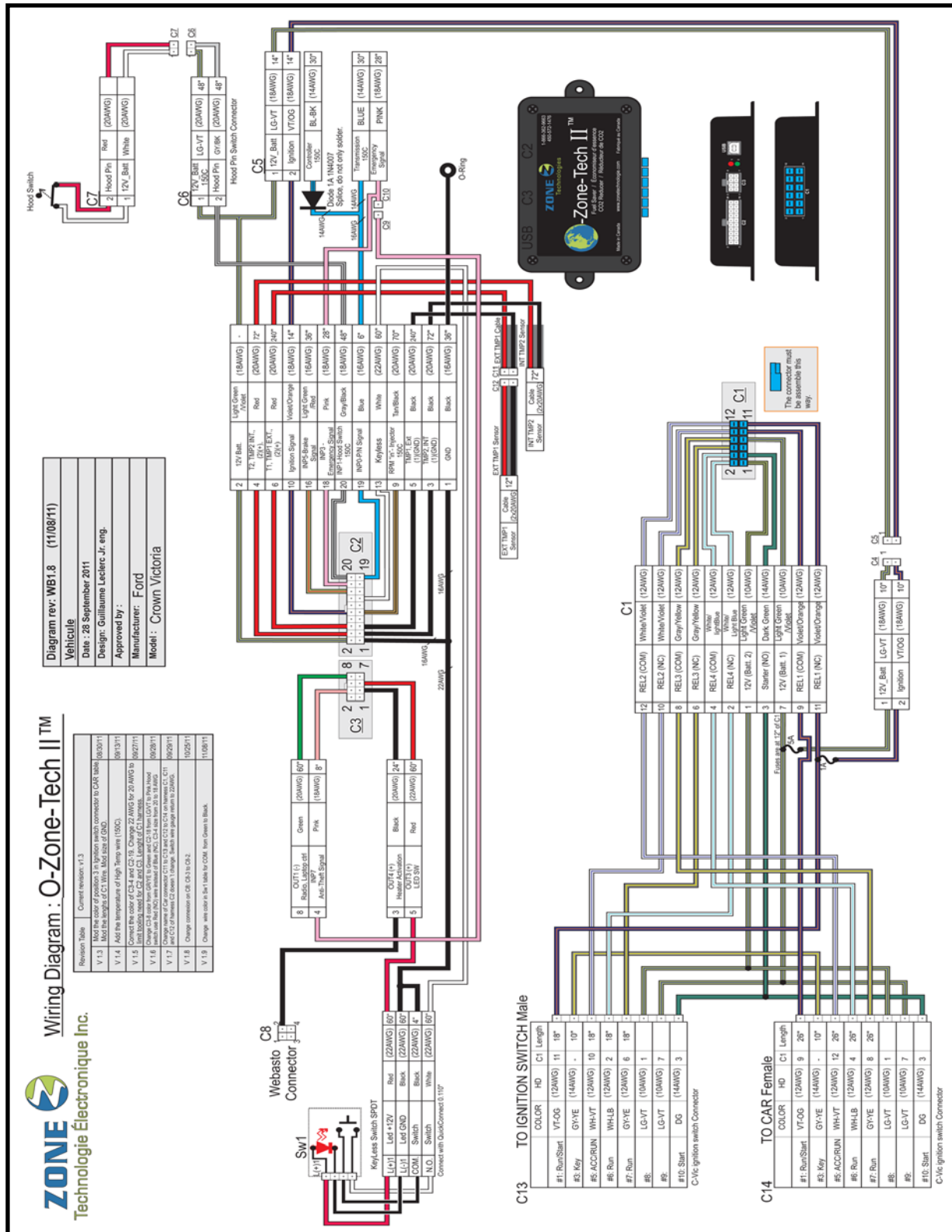
11.2. Ignition Signal
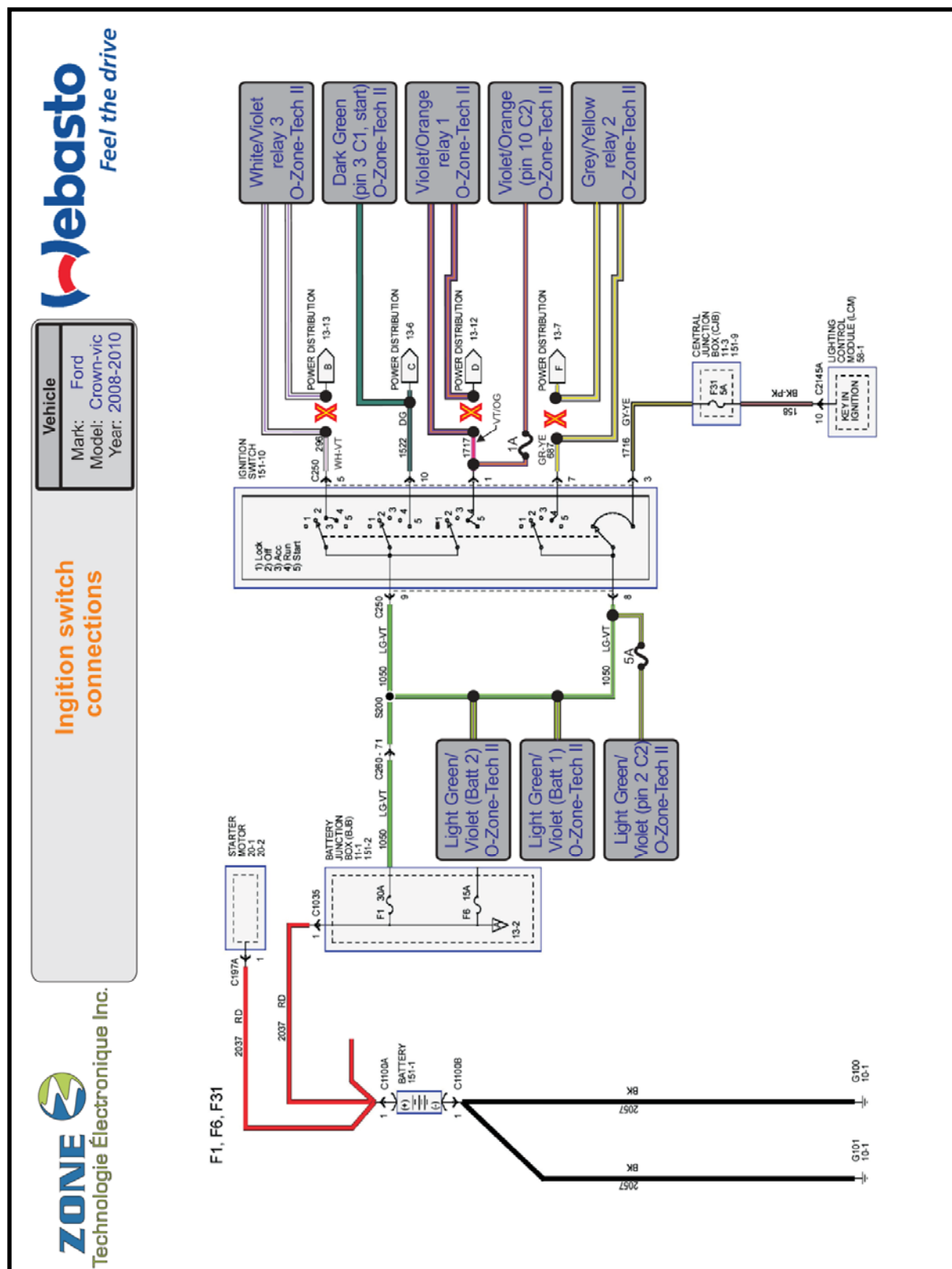
11.3. Park / Neutral Signal

11.4. RPM Signal

11.5. Brake Signal
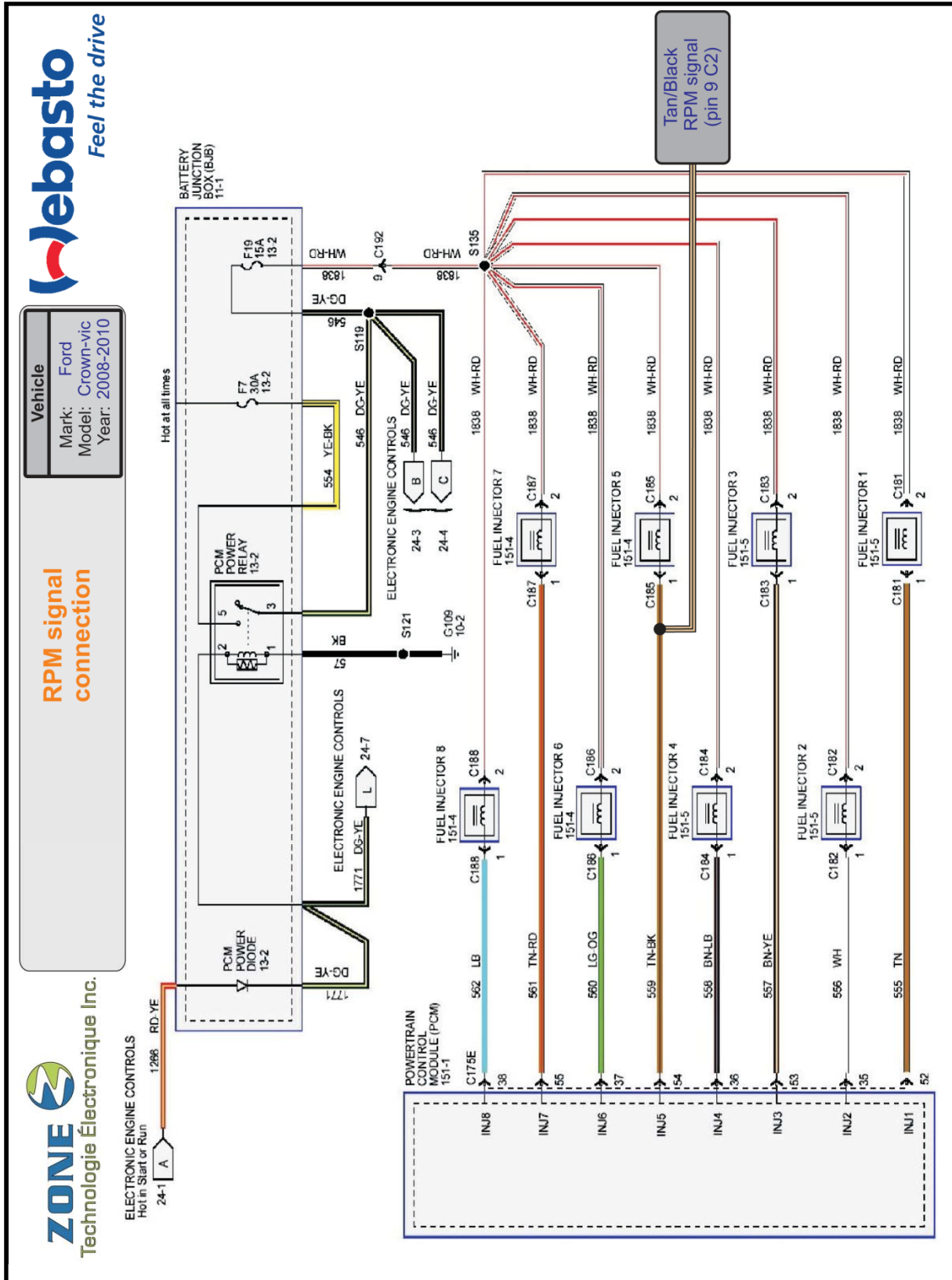
11.6. Heater Connections
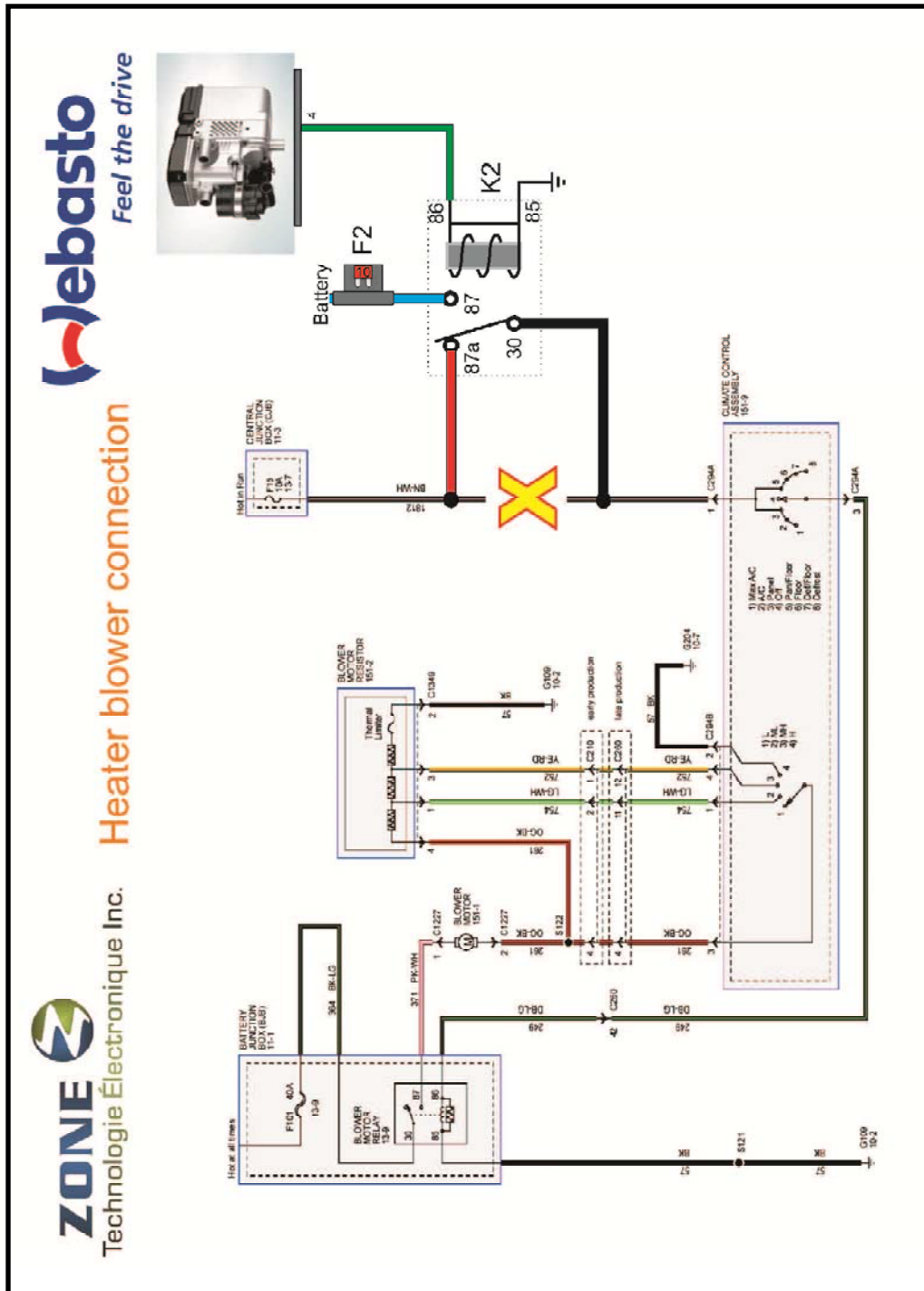
12. TROUBLESHOOTING

Before proceeding through the troubleshooting steps, please verify the following C2 connector statements are true:

➢ Constant +12V at connector C2 between pins 1 and 2.
➢ With ignition on +12V at connector C2 between pins 1 and 10.

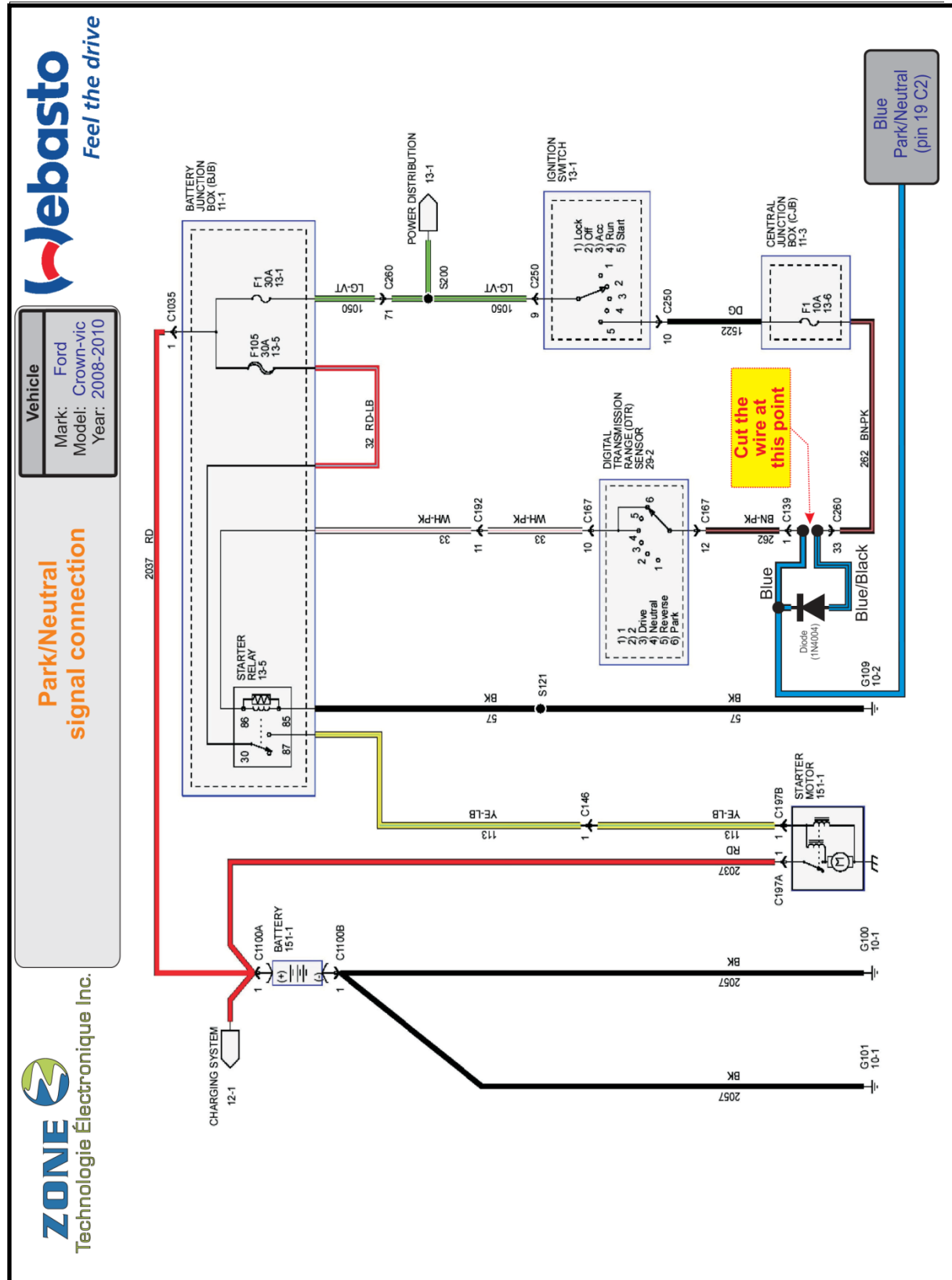| COMPUTER		
Problem	**Possible Cause**	**Possible Solution**
- ***Unable to connect to the computer***	- No ignition signal, power or ground.	- Put key at ignition position. (The green LED output from the module must flash once every second) if not, check if +12V ignition signal is present on C2 position 10 and check the wiring. Verify power and ground on connector C2 between pin 1 and 2. Check and correct wiring. If it doesn't resolve issue go to the next step.
	- Wrong communication port selection.	- Check port number selection in configuration command bar menu, click under "search port" and read port you are connected to. Go back in configuration command and select the corresponding port. If it doesn't resolve issue go to the next step.
	- Faulty FTDI driver installation.	- Check if the FTDI drivers are installed properly (In Windows, click Start menu, configuration panel, system, device manager, COM port→must be displayed « USB serial port (COMx), If not installed properly check with qualified IT person. If it doesn't resolve issue go to the next step.
	- Software compatibility	- Make sure to review the software compatibility section 5.1prior to installing software.

IDLE REDUCTION MODE		
Problem	**Possible Cause**	**Possible Solution**
- ***Module doesn't stop engine.***	- Idling time not elapsed	- Be sure idling time counter is elapsed (default value = 5 minutes)
	- Emergency lights ON	- Emergency lights must be off and 0V on connector C2 pin 18.
	- No RPM signal.	- Verify injector #5 (Tan/Black wire) connections. (See section 4.14), If it doesn't resolve issue go to the next step.
	- RPM signal too high	- Run engine five minutes to be sure engine idling under 900RPM, if not check vehicle engine.
	- No PARK signal detected.	- Verify in park position you should have zero volt on connector C2 pin 19, if not verify the

IDLE REDUCTION MODE

Problem	Possible Cause	Possible Solution
		connection with the vehicle.
		- Verify in drive position you should have +12 volts on connector C2 pin 19, if not, replace the module. If you have +12V go to the next step.
	- External temperature sensor settings	- Make sure you have correct reading, if not, check wiring and if necessary repair. If didn't resolved issue replace the external temperature sensor.
		- If you have good reading, verify if external temperature is higher at least 4°F then outside temperature setting. If it doesn't resolve issue go to the next step.
	- Hood switch	- Verify if hood is closed.
		- Check +12V on the hood connector if not present, check 5A fuse located in T harness and replace if necessary.
		- Check if +12V present on connector C2 pin 20 when hood is closed. If not present, check wiring connection and hood switch, repair or replace if necessary. If doesn't resolve issue go to the next step.
	- Inside temperature setup	- If enable box under air conditioning setup is checked make sure inside temperature is higher than inside temperature setup for vehicle/air conditioner start. If it doesn't resolve issue go to the next step.
	- Battery voltage setup higher than vehicle voltage	- Programmed value has to be lower than vehicle battery voltage displaying, fix accordingly. If it doesn't resolve issue go to the next step.
	- Vehicle alternator faulty	- Check alternator and replace if necessary. If this doesn't resolve issue replace the module.
- *Engine does not restart after forced engine stop.*	- Battery voltage set to low level	- Program battery voltage in setup to higher value (ex: Vehicle 13.6V, set value 13.2V). If this doesn't resolve issue go to the next step.
	- Hood open	- Close the hood. If doesn't resolve issue start car manually and repeat idle reduction test. If still not working properly replace the module.
- *Engine does not restart after forced engine stop when inside temperature is too high*	- External or internal temperature sensor	- Make sure you have correct reading, if not, check wiring and if necessary repair. If didn't resolved issue replace the corresponding sensor.
		- If you have good reading, verify if external and internal temperature is higher than outside and

IDLE REDUCTION MODE		
Problem	**Possible Cause**	**Possible Solution**
		- inside temperature setting (make sure outside temperature is higher than 63°F, below this temperature it will not work). If it doesn't resolve issue replace the module.
- ***Vehicle doesn't start manually***	- Wiring	- Bad connection on start wire, check T harness and repair if necessary. If doesn't resolve issue replace the module.
- ***Vehicle is not cooling***	- Vehicle HVAC knobs not set properly	- Make sure knobs temperature setting is at low setting, fan is ON and the AC selector is ON.
- ***Engine stops even if emergency lights are ON***	- Wiring	- Verify if there is +12V on connector C2 pin 18, if not, repair as necessary. If doesn't resolve issue replace the module.
- ***Webasto Heater not activating in forced engine shut down mode.***	- External temperature sensor	- Make sure you have correct reading, if not, check wiring and connector if necessary repair. If didn't resolved issue replace the corresponding sensor. - If you have good reading, verify if external temperature is lower than set value (ex: outside temperature 40°F, set value has to be higher than 40°F for the heater to come on, it will never start if outside temperature is greater than 50°F). If doesn't resolve issue go to the next step.
	- Connector C8	- Check connector C8 and make sure wire colors match at the connecting point, repair if necessary. If +12V present go to the heater trouble shooting provided in the heater kit. - Check if +12V on connector C8 (black wire coming from the module). If no +12V, check on connector C3 pin 3. If +12V present correct the wiring and if not replace the module.
	- Heater malfunction	- Reference heater troubleshooting provided in the kit.
- ***Engine stops even if vehicle transmission is engaged.***	- Park signal	- Verify in park position you should have zero volt on connector C2 pin 19, if not verify the connection with the vehicle. - Verify in drive position you should have +12 volts on connector C2 pin 19, if not, replace the module.
- ***Engine stops even if hood is open.***	- Hood open	- Verify if hood is closed. - Check +12V on the hood connector if not present, check 5A fuse located in T harness and replace if necessary. - Check if +12V present on connector C2 pin 20 when hood is closed. If not present, check wiring connection and hood switch, repair or replace if

IDLE REDUCTION MODE		
Problem	**Possible Cause**	**Possible Solution**
		necessary. If doesn't resolve issue replace the module.
- *Windows not working running in idle mode*	- Wiring	- Check the T harness and repair.
- *Wipers are not working running in idle mode*	- Wiring	- Check the T harness and repair.
- *Radio/computer is not working*	- Connector or wiring	- Check on connector C3 pin 8 if there is a ground signal, if present check radio/computer relay circuit. If no ground on pin 8 replace the module.

KEYLESS MODE		
Problem	**Possible Cause**	**Possible Solution**
- *Keyless mode does not activate.*	- Hood open	- Verify if hood is closed. - Check +12V on the hood connector if not present, check 5A fuse located in T harness and replace if necessary. - Check if +12V present on connector C2 pin 20 when hood is closed. If not present, check wiring connection and hood switch, repair or replace if necessary. If doesn't resolve issue go to the next step.
	- Key press period too short	- Press the key for a minimum of 2 seconds. If doesn't resolve go to the next step.
	- Ignition key present	- Remove key from the barrel. If doesn't resolve go to the next step.
	- Software settings to zero - Keyless switch	- Verify time settings of Keyless mode duration, must not be zero. If doesn't resolve go to the next step - Refer to general section "*Keyless switch not functional".* If doesn't resolve go to the next step
	- Brake signal	- Verify brake switch installation and/or confirm there is nothing interfering with brake pedal switch, brake pedal can't be pressed during this test (at this time, no +12V signal on connector C2 pin 16). If it doesn't resolve issue replace module.
- *Keyless mode deactivating to soon.*	- Program setting, keyless mode duration time is set to low.	- Change setting to a longer duration of time.
- *Keyless mode not deactivate when*	- Brake signal	- Verify brake switch installation and/or confirm there is nothing interfering with brake pedal

KEYLESS MODE		
Problem	**Possible Cause**	**Possible Solution**
pressing the brake pedal.		switch. - Press the brake pedal and check if +12V signal is on connector C2 pin 16. If signal is not present verify car wiring, fuse etc. If signal is present change the module.
- *Keyless mode not deactivate when opening the hood.*	- Hood switch	- Verify if hood is closed. - Check +12V on the hood connector if not present, check 5A fuse located in T harness and replace if necessary. - Check if +12V present on connector C2 pin 20 when hood is closed. If not present, check wiring connection and hood switch, repair or replace if necessary. If this doesn't resolve issue, replace the module.
- *Engine will not start when inside temperature is too high.*	- External or internal temperature sensor	- Make sure you have correct reading, if not, check wiring and if necessary repair. If didn't resolved issue replace the corresponding sensor. - If you have good reading, verify if external and internal temperature is higher than outside and inside temperature setting (make sure outside temperature is higher than 63°F, below this temperature it will not work). If it doesn't resolve issue replace the module.
- *Vehicle is not cooling*	- Vehicle HVAC knobs not set properly	- Make sure knobs temperature setting is at low setting, fan is ON and the AC selector is ON.
- *Vehicle is not heating.*	- External temperature sensor - Connector C8	- Make sure you have correct reading, if not, check wiring and connector if necessary repair. If didn't resolved issue replace the corresponding sensor. - If you have good reading, verify if external temperature is lower than set value (ex: outside temperature 40°F, set value has to be higher than 40°F for the heater to come on, it will never start if outside temperature is greater than 50°F). If doesn't resolve issue go to the next step. - Check connector C8 and make sure wire colors match at the connecting point, repair if necessary. If +12V present go to the heater trouble shooting provided in the heater kit. - Check if +12V on connector C8 (black wire coming from the module). If no +12V, check on connector C3 pin 3. If +12V present correct the wiring and if not replace the module.

KEYLESS MODE		
Problem	**Possible Cause**	**Possible Solution**
	- Heater malfunction	- Refer to heater trouble shooting provided in the kit.
- *Keyless switch not illuminated*	- Wiring	- Check for +12V between pin L (and) 1 (red wire) and L (-) 1 (black wire), if you have +12V change Switch. If there is no +12V go to the next step. - Check if you have +12V on connector C3 pin 5 if you don't, replace the module otherwise repair wiring.
- *Module start engine as soon as keyless switch is pressed*	- Battery voltage	- Program Voltage level at appropriate level (recommended 12.1V) and charge the battery if necessary.
- *Keyless mode does not deactivate when I press on the brake pedal.*	- Brake signal.	- Verify brake switch installation and/or confirm there is nothing interfering with brake pedal switch. - Press the brake pedal and check if +12V signal is on connector C2 pin 16. If signal is not present verify car wiring, fuse etc. If signal is present change the module.
- *Radio/computer is not working.*	- Connector or wiring	- Check on connector C3 pin 8 if there is a ground signal, if present check radio/computer relay circuit. If no ground on pin 8 replace the module.

ANTI-THEFT MODE

Problem	Possible Cause	Possible Solution
- **Engine can't keep idling when key is removed from barrel**	- Wiring harnesses	- Verify complete harness (connectors, connection pins and correct if necessary)
	- No Anti-Theft signal	- Verify if the pink terminal connectors C9 and C10, connector C3 pin 4 and connector C2 pin 18 are connected. If it doesn't resolve issue go to the next step.
	- No activated emergency signal present (emergency lights must be ON)	- Verify if there is +12V on connector C3 pin 4 and connector C2 pin 18. If it doesn't resolve issue go to the next step.
	- Hood open	- Verify if hood is properly closed and/or hood switch integrity. Check hood switch fuse. +12V signal must be present on connector C2 pin 20 when hood is closed. If it doesn't resolve issue go to the next step.
	- Brake pedal	- Verify brake switch installation and/or confirm there is nothing interfering with brake pedal switch, brake pedal can't be pressed during this test (at this time, no +12V signal on connector C2 pin 16). If it doesn't resolve issue replace the module.
- **The engine will not shut down when brake pedal is pressed.**	- Brake pedal	- Verify brake switch installation and/or confirm there is nothing interfering with brake pedal switch.
		- Press the brake pedal and check if +12V signal is on connector C2 pin 16. If signal is present change the module.
		- If signal is not present verify car wiring, fuse etc.

GENERAL

Problem	Possible Cause	Possible Solution
- **Can't start vehicle.**	- Wiring harness	- Verify complete harness, connectors, connection pins and correct if necessary.
	- Diode in the harness	- Check diode connections and correct if necessary.
		- Check the diode integrity and replace if necessary.
- **Vehicle inside temperature always high (no cooling)**	- Vehicle HVAC knobs not set properly	- Make sure knobs temperature setting is at low setting, fan is ON and the AC selector is ON.
- **Vehicle inside temperature always cold when forced shut down (no heating)**	- Vehicle HVAC knobs not set properly	- Make sure knobs temperature setting is at high setting, fan is ON and the AC selector is OFF. If doesn't resolve issue refer to problem section named: "**Webasto Heater not activating in forced engine shut down mode"** for further troubleshooting.

GENERAL		
Problem	**Possible Cause**	**Possible Solution**
- ***Battery voltage always low***	- Vehicle battery	- Test the battery and replace if necessary. If doesn't resolve issue go to the next step.
	- Vehicle alternator	- Test the alternator and replace if necessary. If doesn't resolve issue go to the next step.
	- Battery voltage setting too low	- Change the battery setting. If doesn't resolve issue go to the next step.
	- Charging time too short	- Change the charging time setting (minimum 15 minutes). If doesn't resolve issue change the module.
- ***Keyless switch not illuminated***	- Wiring	- Check for +12V between pin L (and) 1 (red wire) and L (-) 1 (black wire), if you have +12V change Switch. If there is no +12V go to the next step.
		- Check if you have +12V on connector C3 pin 5 if you don't, replace the module otherwise repair wiring.
- ***Keyless switch not functional***	- Keyless switch stuck	- Disconnect the switch and check continuity between pin 1 and 3, then press the key without release do continuity test between 1 and 2. If switch not working properly during continuity check replace the switch. If the switch is ok go to the next step.
	- Wiring	- Put manually ground on connector C2 pin 13 and check if keyless function is activated if yes repair the wiring else go to problem ***"Keyless mode does not activate"*** for further troubleshooting.

13. LIMITED WARRANTY

Webasto Product North America, Inc. (hereinafter referred to as Webasto) warrants the O-Zone-Tech-II™ system against defects in material and workmanship for two (2) years effective at the time of installation.

The intent of the Webasto <u>Non-Transferrable</u> warranty is to protect the original end-user from such defects and provide free repair and replacement of defective parts in the manner provided herein. During the warranty period the exclusive remedy will be for Webasto, at their discretion, to repair or replace those parts which are demonstrated to be defective in material or workmanship.

While warranty is provided to the "original end-user", it is to be administered and serviced by Webasto Product personnel or through an authorized Webasto distributor in accordance with the Webasto warranty policy or contractual agreement between Webasto and a second party.

Information concerning all warranties may be obtained by calling (800) 860-7866.

Limitations:

Webasto specifically excludes and limits warranty from the following:
- Damage to product in transit. All claims must be filed with carrier.
- Improper installation, which is not in accordance with valid, supplied installation instructions.
- Deterioration due to normal wear, corrosion, abuse, damage, accident, improper storage or operation.
- Modification of product by alteration, use of non-genuine parts or repair by unauthorized personnel.
- Economic loss for expenses related to travel, vehicle disability, personal injury or other incidental or consequential damages arising from any breach of this expressed warranty.

Owner's Responsibilities:

- Improper or incorrectly performed maintenance or repair voids this warranty.
- A Warranty Registration Card is included with the sale of each system. It is the owner's responsibility to complete this card and return it to Webasto for registration.

THIS WARRANTY IS NON-TRANSFERABLE.

IMPLIED WARRANTIES INCLUDING THAT OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WARRANTY. WEBASTO DISCLAIMS ANY LIABILITY FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

THE LIMITATION AND EXCLUSIONS VARY AMONG STATES AND CANADIAN PROVINCES AND MAY NOT APPLY TO YOU. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY AMONG STATES AND CANADIAN PROVINCES.

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