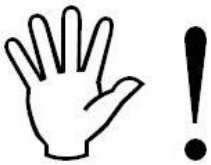
Instruction Manual

30-3903
2002-2005 VW 1.8T AWP
INFINITY 506/508*
PnP ADAPTER HARNESS



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THIS PRODUCT HAS LEGAL RESTRICTIONS.
READ THIS BEFORE INSTALLING/USING!

THIS PRODUCT MAY BE USED SOLELY ON VEHICLES USED IN SANCTIONED COMPETITION WHICH MAY NEVER BE USED UPON A PUBLIC ROAD OR HIGHWAY, UNLESS PERMITTED BY SPECIFIC REGULATORY EXEMPTION. (VISIT THE "EMISSIONS" PAGE AT HTTP://WWW.SEMASAN.COM/EMISSIONS FOR STATE BY STATE DETAILS.)

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WARNING: This installation is not for the tuning novice! Use this system with EXTREME caution! The AEM Infinity Programmable EMS allows for total flexibility in engine tuning. Misuse or improper tuning of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of engine management systems DO NOT attempt the installation. Refer the installation to an AEM-trained tuning shop or call 800-423-0046 for technical assistance.

NOTE: All supplied AEM calibrations, Wizards and other tuning information are offered as potential starting points only. IT IS THE RESPONSIBILITY OF THE ENGINE TUNER TO ULTIMATELY CONFIRM IF THE CALIBRATION IS SAFE FOR ITS INTENDED USE. AEM holds no responsibility for any engine damage that results from the misuse or mistuning of this product!

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Overview

The 30-3903 AEM Infinity Adapter kit was designed for 2002-2005 Volkswagen 1.8T Golf/Jetta/GTI cars with AWP engine code and manual transmission. This is a true standalone system that eliminates the use of the factory ECU. The kit is “plug and play” so no cutting or splicing is necessary. The base configuration files available for the Infinity ECU are starting points only and will need to be modified for your specific application. **Please read this document in its entirety before attempting to start or run an engine.**

The available AEM Infinity EMS part numbers for this adapter kit are:
- 30-7106 Infinity 506
- 30-7108 Infinity 508**

Suggested additional components:
- 30-3903-00 Boost-to-MAP Sensor Adapter Harness
- 30-2130-50 Stainless Steel 3.5Bar MAP Sensor

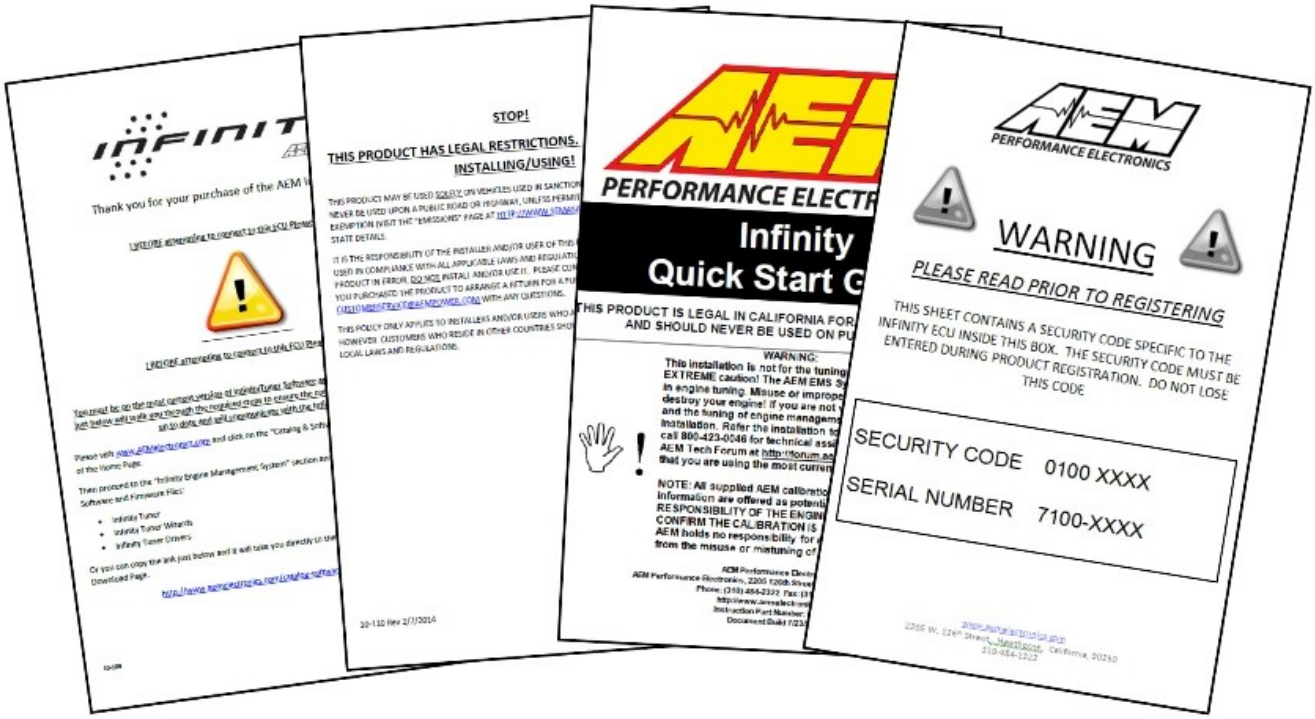
Important Application Notes

The test vehicle used for development of this app was a 2003 GTI that was mostly stock except for an AEM cold air intake and 3" cat-less downpipe. The AWP engine does have variable valve control (VVC) on the intake cam only that appears to only be utilized during cold starts when the secondary air injection pump is active. The adapter in this kit has been built to give the Infinity cam control, however the base session does not have any VVC controls configured as advancing the intake cam during dyno testing showed that power was always decreased. The stock ECU uses mass air flow (MAF) fueling control using a MAF sensor in the intake piping ahead of the turbo. The Infinity only uses Speed Density fueling control for this application and the MAF sensor is not utilized in the adapter so the sensor can be removed if desired. The stock ECU references a boost sensor that is located in the stock side-mount intercooler ahead of the throttle body. Because the Infinity only uses Speed Density fueling control, a manifold absolute pressure (MAP) sensor input is necessary that is referencing manifold pressure after the throttle blade. There is an available boost-to-MAP sensor adapter harness available (AEM part number 30-3903-00) that allows an AEM stainless steel MAP sensor (3.5Bar MAP sensor suggested, PN 30-2130-50) to be plugged into the stock boost sensor connector making for seamless integration. See MAP sensor installation instruction further in this manual.

The stock drive-by-wire (DBW) throttle body has been fully characterized and the provided base session is configured for its use. Larger throttle size DBW throttle bodies may be used however use of those throttle bodies will require full characterization and PID controls tuning. None of the stock emissions controls (secondary air injection, EGR, Evap, etc) are supported. Additionally, the N249 bypass valve activation solenoid is also not supported. The AWP uses a Bosch wideband O2 sensor from the factory which is utilized by the Infinity through the cars wiring harness thus an additional O2 sensor is not required. Note that the O2 sensor isn't powered by the car until the engine is running. Cruise control is not supported by the Infinity and the steering wheel cruise control buttons are not utilized in any way. The cars CAN datastream is supported by the Infinity and allows for the factory gauges to function correctly as well as the Infinity to reference all four wheel speeds as well as steering angle.

Getting Started

Your Infinity EMS will be packaged with four important documents: Usage Legality Disclaimer, Software Download Notice, Security Code Notice, and an Infinity Quick Start Guide.



First, read and acknowledge the Usage Legality Disclaimer. Second, refer to the Infinity Quick Start Guide (QSG). Third, follow the Software Download Notice and download the Infinity Tuner software, wizards, and drivers from the AEM Electronics web site (section 2.1 in QSG). Fourth, visit www.aeminfinity.com to register your EMS (section 3.2 in QSG). Once the registration process is complete, you'll be able to download the latest firmware for your EMS. The final setup process is to open the Infinity Tuner software and connect to your EMS to update the firmware (section 3.3 in QSG). This can be done once the EMS is installed into your vehicle - see Infinity EMS Installation.

Once the Infinity is installed into your vehicle and it has been loaded with the latest firmware, setup and tuning may commence. Refer to the QSG for additional information on getting the engine ready for tuning with the Infinity EMS. Additionally, the full Infinity User Manual can be referenced for more in-depth information pertaining to the install, setup, and usage of the Infinity EMS.

**Important Infinity 508 Information

This plug and play adapter kit has specifically been designed to be used with the 30-7106 Infinity 506. While the 30-7108 Infinity 508 can be used, it will result in the loss of Idle A/C Offset compensation and the additional digital frequency input in the Aux connector. Pins C1-31 and C1-32 **MUST** be removed from the 80 pin connector if using this adapter harness with an Infinity 508. Also, the Infinity-8h does not have Peak & Hold injector drivers to run low impedance fuel injectors. High impedance (saturated, high-z) fuel injectors **MUST** be used with the Infinity-8h.

Infinity Pin	Infinity 506 Function	Infinity 508 Function	VW 1.8T Adapter Pin/Function	Infinity 506 Notes	Infinity 508 Notes
C1-3	Low side6	Injector7	No Connect/Not Used	Available LS output	Available injector output
C1-4	Low side7	Injector8	No Connect/Not Used	Available LS output	Available injector output
C1-31	Digital6	Coil7	Aux 7/Freq Input	Spare freq input in Aux	Loss of spare freq input, **MUST** remove pin from Infinity 80 pin connector
C1-32	Digital7	Coil8	40/A/C Req Sw itch	A/C Req sw itch input	Loss of A/C idle compensation, **MUST** remove pin from Infinity 80 pin connector

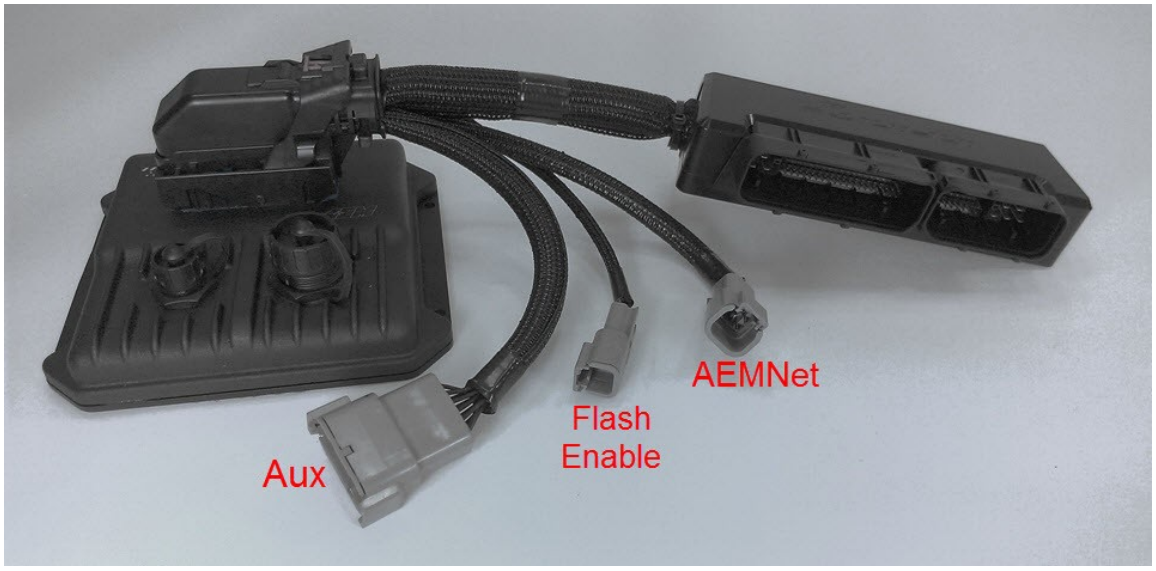
Infinity Connectors

The AEM Infinity EMS uses the MX123 Sealed Connection System from Molex. AEM strongly recommends that users become familiar with the proper tools and procedures before attempting any modifications. The entire user manual can be downloaded direct from Molex at:

http://www.molex.com/mx_upload/family//MX123UserManual.pdf

Infinity Adapter Harness

The basis of the VW 1.8T Infinity kit is the adapter harness that mates the Infinity ECU with the cars factory wiring harness. This adapter allows for seamless integration of the Infinity EMS onto your vehicle.



AEMNet is an open architecture based on CAN 2.0 which provides the ability for multiple enabled devices, such as dashboards, data loggers, etc. to easily communicate with one another through two twisted cables (CAN+/CAN-).

The 2 pin Flash Enable connector is used as a secondary hardware flashing option by jumping the two wires together using the included shunt connector. Note: Flashing will normally be performed in the software not using this connector.

Integrated in the 1.8T adapter harness is an “auxiliary” connector. This is a Deutsch DTM 12P connector and is used to adapt many common ancillary inputs and outputs easily. Included in the kit are a DTM 12P mating connector, 12 DTM terminals, and a DTM 12P wedgelock. If used, these components will need to be terminated by the installer or end user with 16-22awg wire (not included). Note: the pin numbering is based on the numbers molded into the connector.

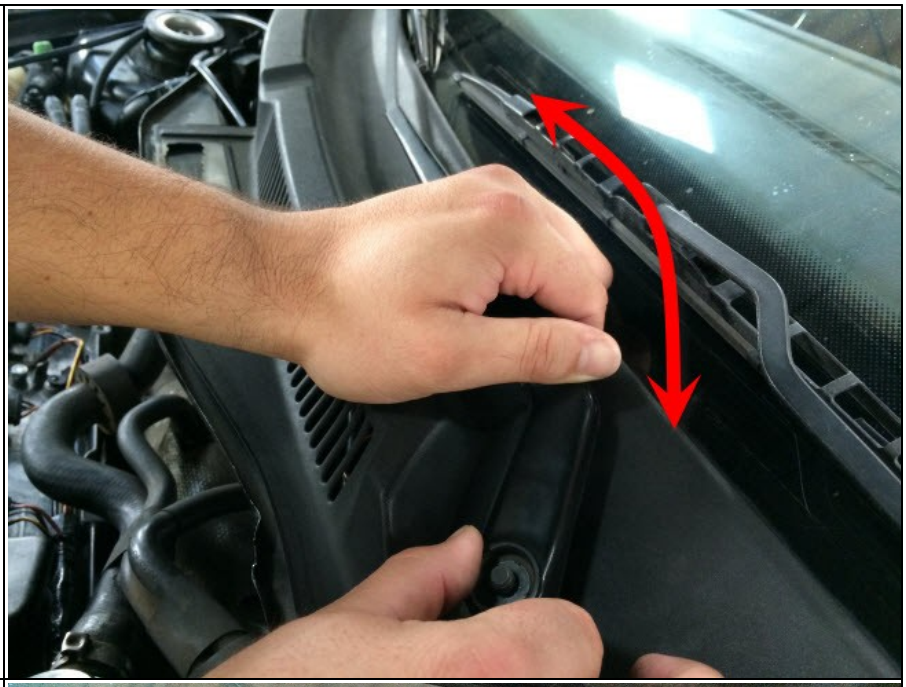
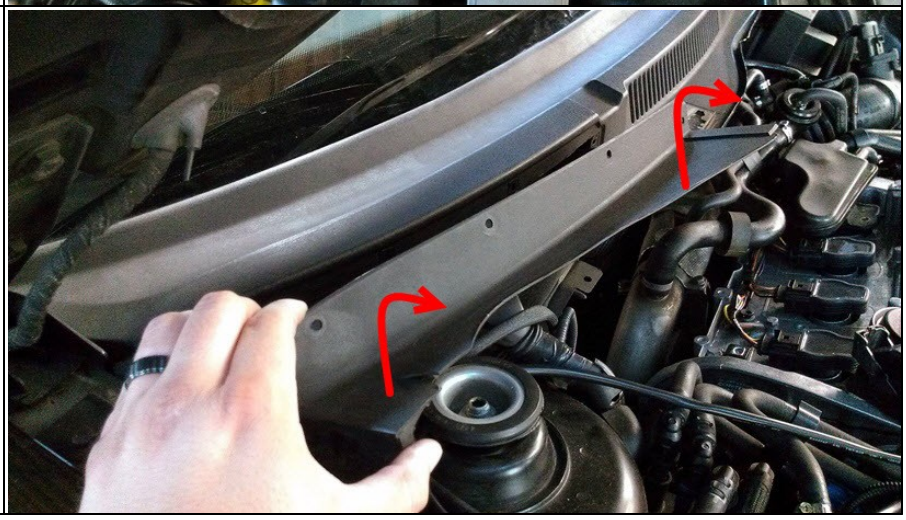
Deutsch Pin	Infinity Pin	Pin Description	Default Pin Function	Notes
1	C1-53	Analog 9	Fuel Pressure	Can be used to monitor fuel pressure for fuel delivery calculation. Use AEM stainless steel 100psig or 150psig sensor. Connect directly to signal w ire of pressure sensor. See Setup Wizard. Analog input NOT reassignable.
2	C1-75	Analog 10	Baro	Can be used to monitor barometric pressure. Use AEM stainless steel MAP sensor. Connect directly to signal w ire of MAP sensor. See Setup Wizard. Analog input is also reassignable to other functions.
3	C1-74	Analog 11	Shift Sw itch	Can be used to activate Shift Cut for 'no-lift-shifting'. See Setup Wizard. Analog input is also reassignable to other functions.
4	C1-73	Analog 13	Oil Pressure	Can be used to monitor oil pressure for Engine Protection. See Setup Wizard. Analog input is also reassignable to other functions.
5	C1-40	Temp 3	Oil Temp	Can be used to monitor oil temperature. See Setup Wizard. Can also be used to monitor other temp input.

6	C1-29	Digital 4	Spare Freq Input	Can be used to measure frequency input such as Flex Fuel Sensor or turbo speed or w heel speed, etc. See Setup Wizard.
7	C1-31	Digital 6	Spare Freq Input	Can be used to measure frequency input such as Flex Fuel Sensor or turbo speed or w heel speed, etc. See Setup Wizard.
8	C1-1	LS 4	Low Side Output	Can be used as a configurable low side output to control a variety of functions. Output is pulled up to 12v and rated to 1.7A. Do not use to PWM high current loads.
9	C1-2	LS 5	Low Side Output	Can be used as a configurable low side output to control a variety of functions. Output is pulled up to 12v and rated to 6A. Ok to PWM high current loads.
10	C1-23	Sensor Ground	Sensor Ground	Used as 0v reference for sensors. Do NOT use as pow er or chassis ground. Connect to sensor ground pins on auxiliary sensors.
11	C1-49	5v	Sensor Pow er	Used as 5v reference for sensors. Do NOT use to pow er any high current loads. Connect to sensor pow er pins on auxiliary sensor.
12	C1-63	12v	+12v Pow er	Used as 12v pow er for auxiliary devices.

Infinity EMS Installation

The following procedure describes how to remove the plastic cowl that's below the bottom of the windshield and then install the Infinity EMS using the provided adapter harness.

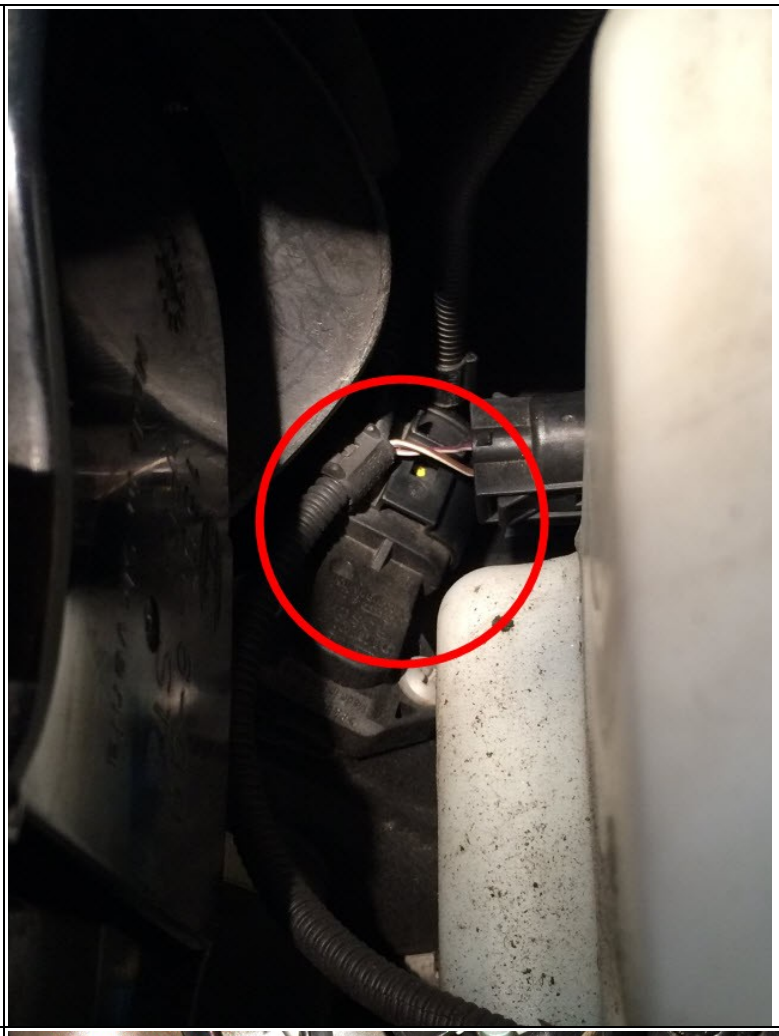
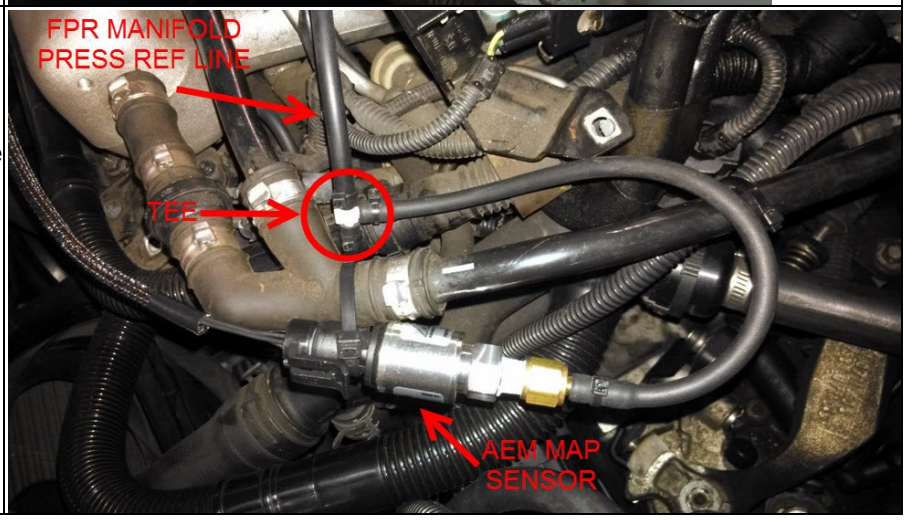
First, raise the hood and disconnect the ground cable from the battery. Remove the plastic cap from the pivot end of each wiper arm. Remove the 13mm nut that secures each wiper arm to its drive shaft.	

Remove each wiper arm from its drive shaft. Removal is usually best achieved by grasping the wiper arm immediately below the blade pivot point and working the wiper arm away and towards the windshield repeatedly until the arm comes loose. The wiper arm mounting hole is tapered and splined so removal can be difficult.	
Remove the entire rear hood seal by pulling up on it.	
Remove the cabin air filter cover by removing the four screws and lifting the cover up while pulling it towards the front of the car.	

Remove the cowl by starting at one end and pulling the end of the cowl straight out from the windshield to disengage it from its retaining clip.	
Remove the wiring harness connectors from the ECU by sliding the connector locks out to the side and then pulling the connectors out of the ECU.	
Pry up on metal tabs that are holding ECU in place using a flat tip screwdriver. Remove ECU.	

The Infinity is to be placed into the cowl cavity as shown. Thoroughly clean the area below the EMS to allow for the velcro to be applied and then install the EMS. Do not apply velcro to bottom of EMS or to the cowl sheet metal until the adapter harness has been installed and the location of the EMS has been finalized.	
Carefully install the Infinity adapter harness. This is most easily done by inserting the Infinity connector end of the harness into the cowl cavity first and then rotating the harness to the right while passing under the sheet metal tab that sticks out. Place the enclosed ECU connector into the spot where the stock ECU was originally located being mindful of metal tabs that may be sticking up.	

Connect the Infinity end of the harness to the Infinity EMS. Connect the factory wiring harness connectors to the overmolded ECU connector. Ensure that the connectors are fully seated with their locks completely pushed in. With the location of the EMS finalized, apply velcro the hold the EMS in place.	
Connect the supplied USB comms cable and USB logging cable to the Infinity and route as desired.	

If using the suggested 30-3903-00 MAP sensor adapter harness, disconnect the OEM boost sensor connector. The factory boost sensor is mounted in the top of the stock side mount intercooler and is located behind the passenger side headlight near the base of the washer fluid reservoir.	
Install AEM MAP sensor by tapping into manifold pressure reference line. The example installation has the MAP sensor tee'd into the fuel pressure regulator manifold pressure reference line. Connect the AEM MAP sensor adapter harness to the AEM MAP sensor.	

Connect the OEM boost sensor connector to the AEM MAP sensor adapter harness.	

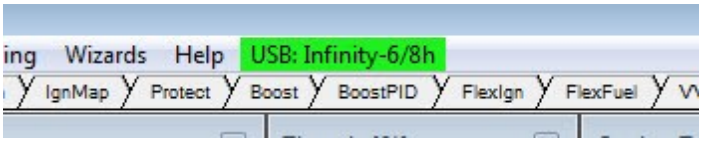
Installation complete. It is suggested to re-connect the battery ground cable and test that the Infinity turns on and is able to be comm'ed up with with a PC before replacing the plastic cowl. The software should indicate that the EMS firmware needs to be updated if this is the first time the EMS has been powered on and comm'd up with with a PC.

Re-installation of plastic cowl is the reverse of removal.

Loading Base Session

There is a provided base session that must be loaded into the Infinity EMS before attempting to start or run the engine. Before the base session can be loaded, the EMS firmware must be updated (section 3.3 in QSG). Once the process of updating the firmware and loading the base cal has been completed, the setup wizards will need to be reviewed and the ignition timing will need to be synced.

1. Connect USB comms cable between ECU and PC.
2. Turn ignition switch on.
3. Open InfinityTuner; connection status should be green and indicate ECU type.



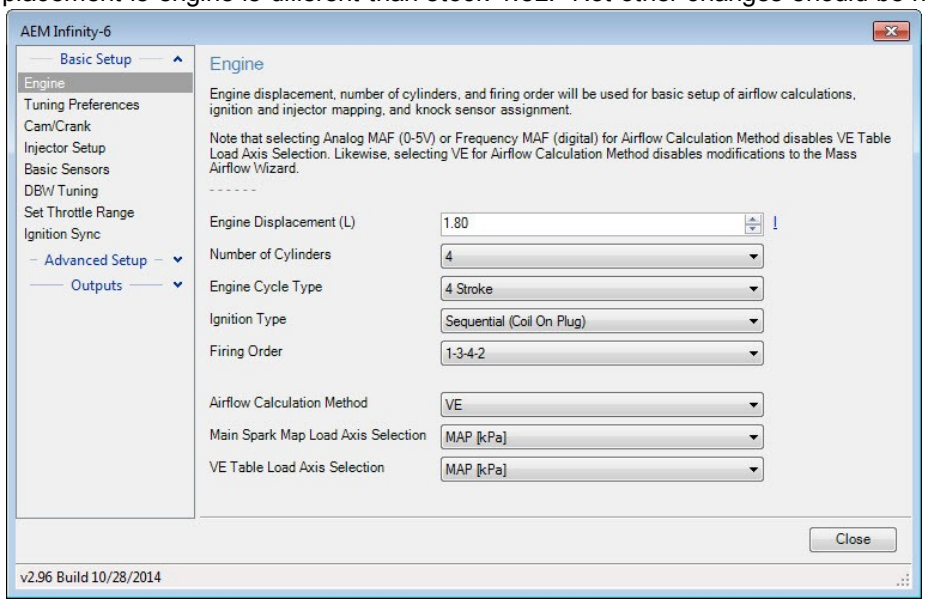
4. Open an Infinity layout: Layout>Open Layout. Layout located in My Documents>AEM>Infinity Tuner>Layouts.
5. Upload base session: File>Import Calibration Data. Base session located in My Documents>AEM>Infinity Tuner>Sessions.
6. After session has loaded, turn ignition switch off, wait for main relay to click off and then turn ignition switch back on.
7. After comms have been reestablished, review Setup Wizard: Plug-ins>Wizard>Setup Wizard.

Setup Wizard

The follow is an overview of the basic wizard settings that need to be checked before attempting to start and run an engine. Please refer to the main Infinity user guide for information about the advanced wizard settings.

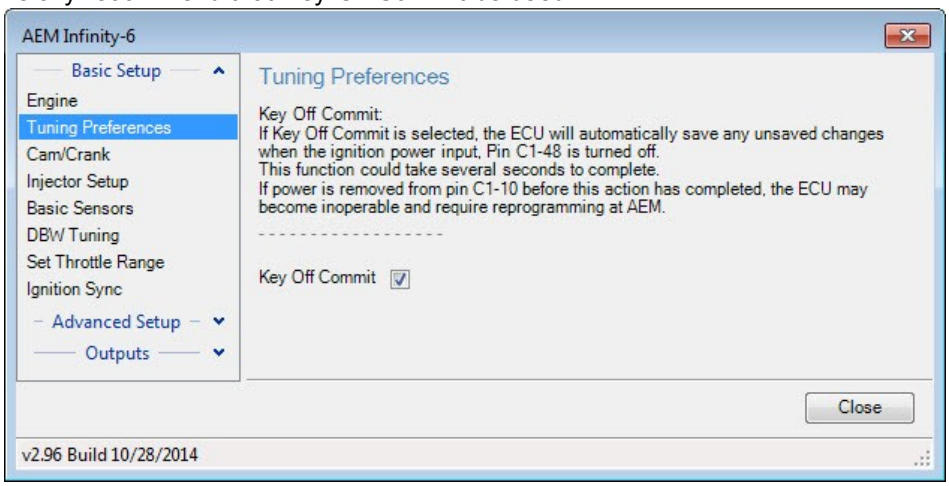
Basic

Adjust engine displacement is engine is different than stock 1.8L. Not other changes should be necessary.



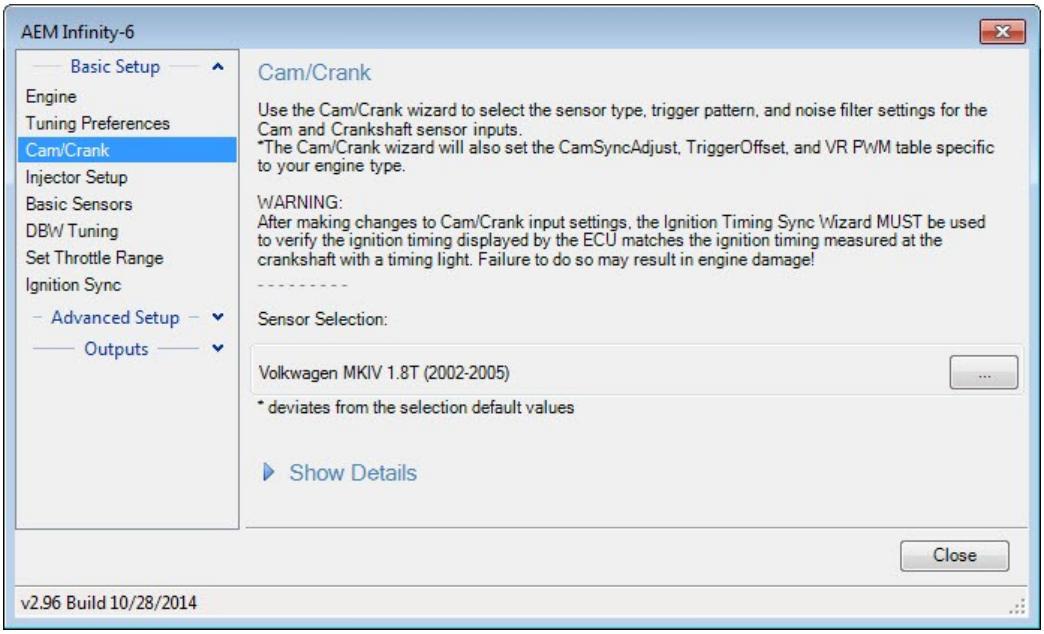
Tuning Preferences

If Key Off Commit is selected, the ECU will automatically save any unsaved changes when the ignition power input (pin C1-48) is turned off. This function could take several seconds to complete. If battery permanent power (pin C1-10) is removed before this action has completed, the ECU may become inoperable and require reprogramming at AEM. It is generally recommend that Key Off Commit be used.



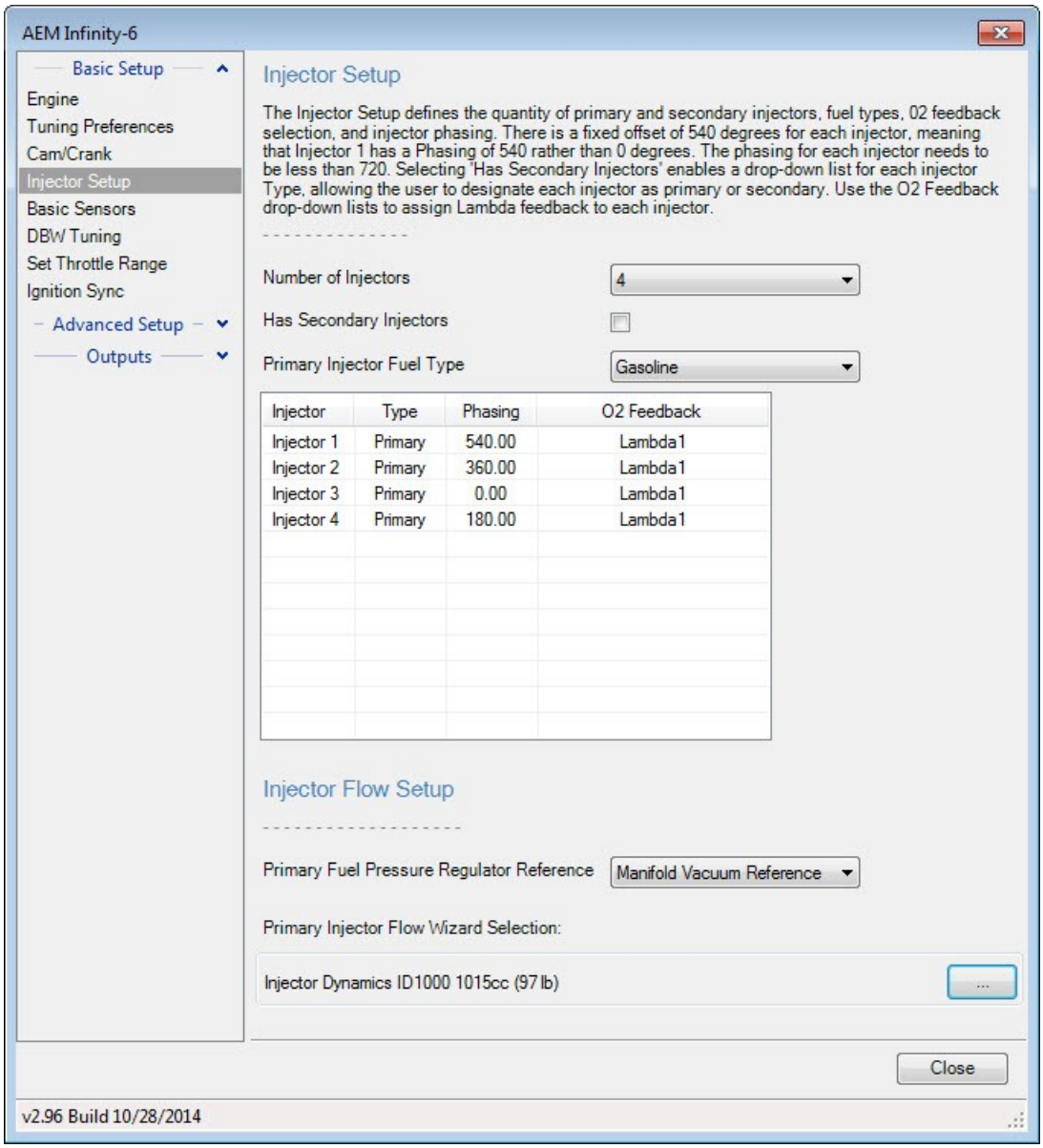
Cam/Crank

The correct cam/crank wizard selection is set for VW 1.8T in the base session.



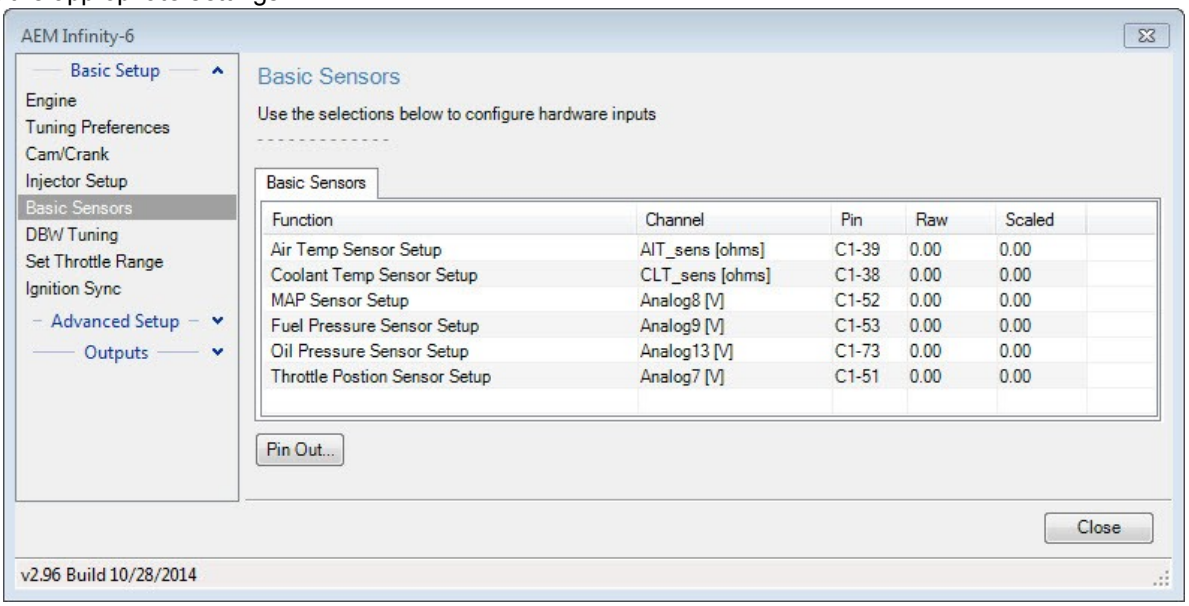
Injector Setup/Flow

Verify number of injectors (saturated secondary injectors supported with Infinity-8h) and select Primary Injector Fuel Type (gasoline, ethanol, methanol, E85, or flex fuel). Injector phasing values are automatically set based on the firing order selected in the Basic wizard and should not need adjusting. Select the primary injectors being used in the Primary Injector Flow Wizard. Primary Fuel Pressure Regulator Reference is set to manifold in the base session.



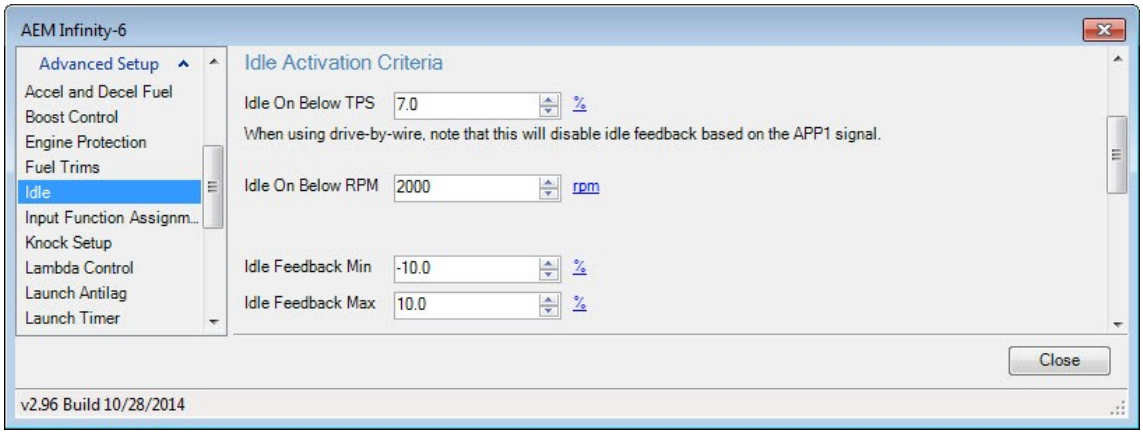
Basic Sensors

Set the basic sensors. The stock VW air and coolant temp sensor are set in the base session. The base session is configured to use an AEM 3.5Bar MAP sensor and 150psi fuel pressure sensor. If using different sensors, select the appropriate settings.

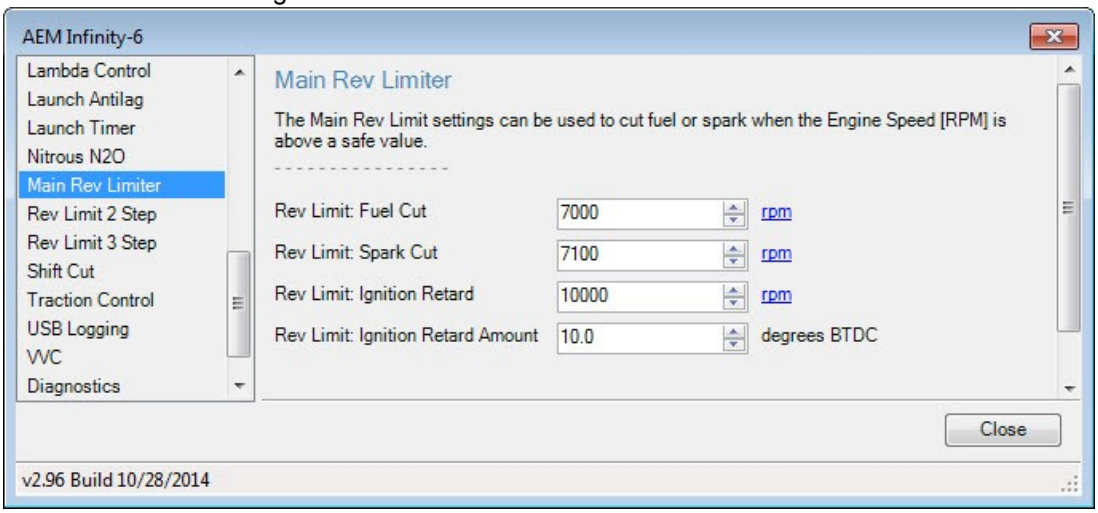


Idle

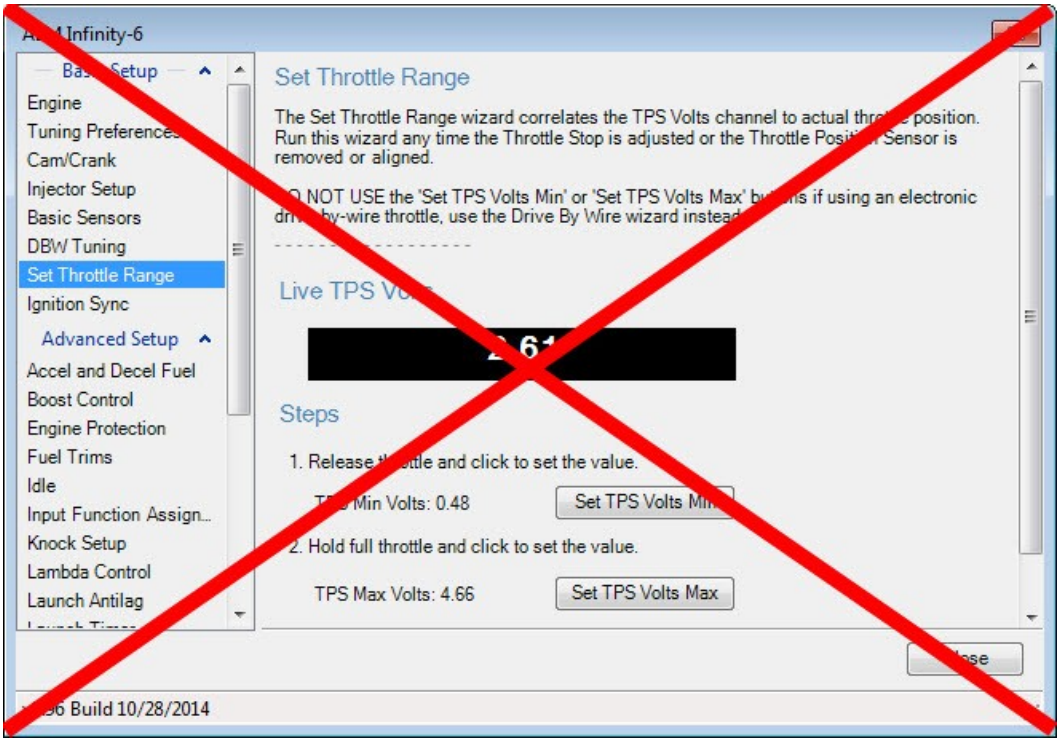
The idle activation criteria is set in the base session.



Main Rev Limiter
Set desired main rev limiter settings.

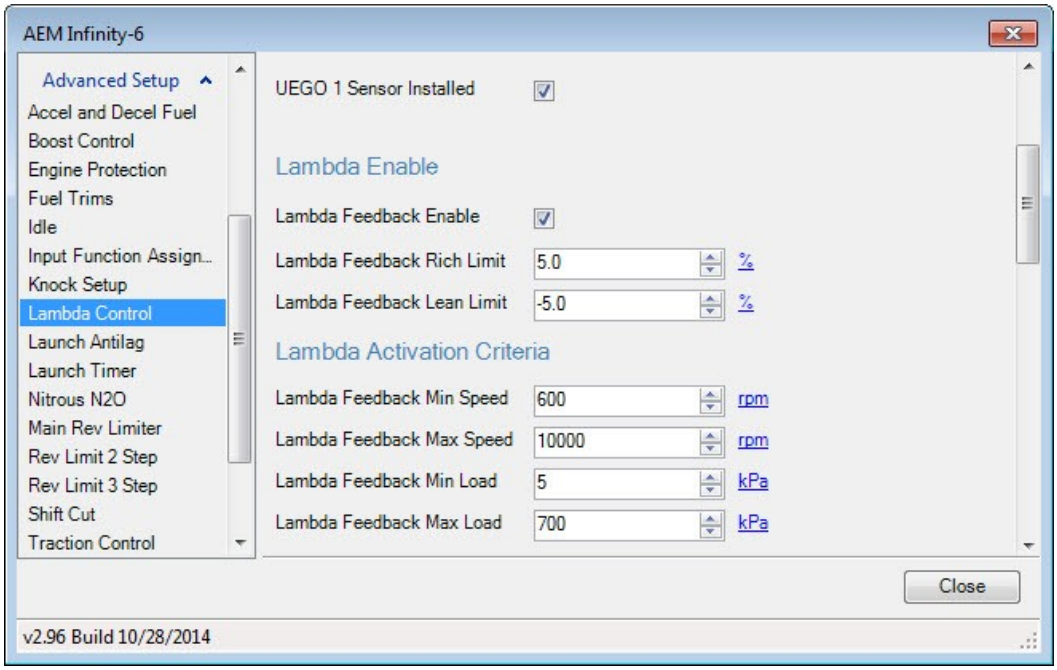


Set Throttle Range
DO NOT use the Set Throttle Range wizard! The throttle range is established when the Drive By Wire Wizard is used.



Lambda Control

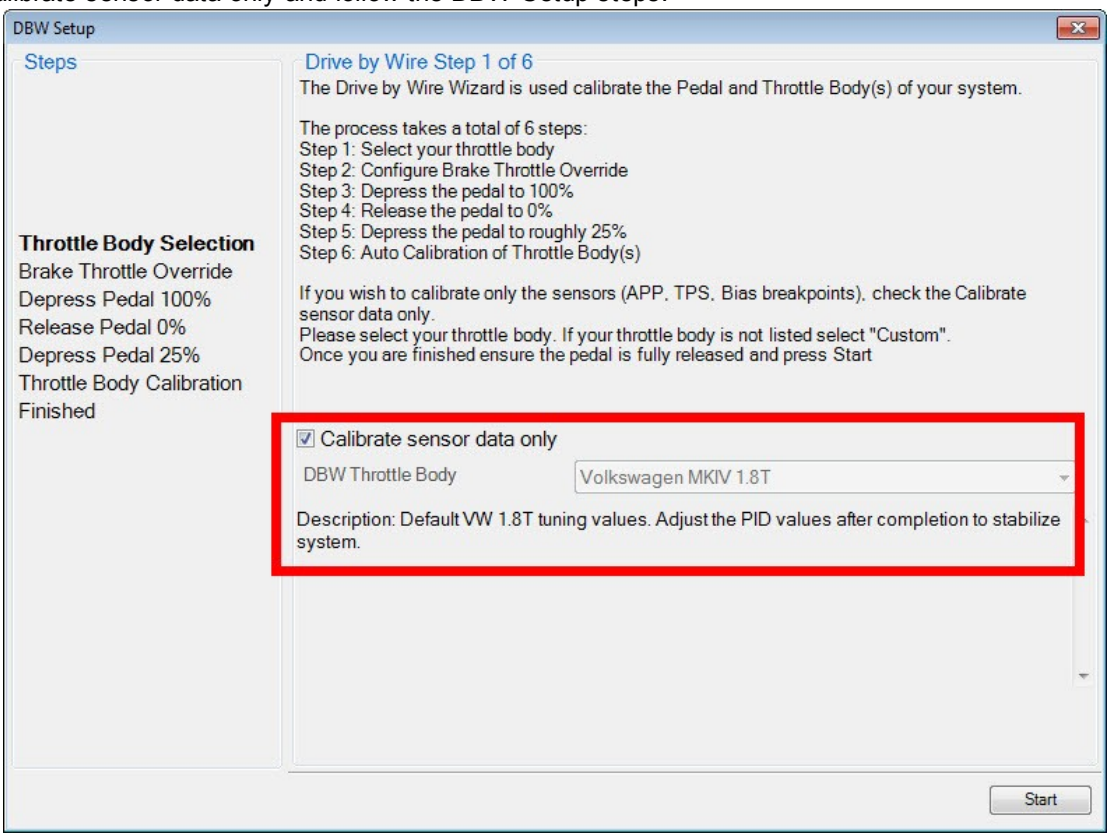
It is generally recommend that lambda feedback not be used during initial VE table tuning. Uncheck Lambda Feedback Enable.



Drive By Wire Wizard

The base calibration will set most of the Drive-By-Wire (DBW) channels for the stock VW 1.8T throttle body. If a different throttle body is used (R32, Hemi, etc) then further adjustments to the DBW channels may be required. To complete the DBW setup the Drive By Wire Wizard must be ran.

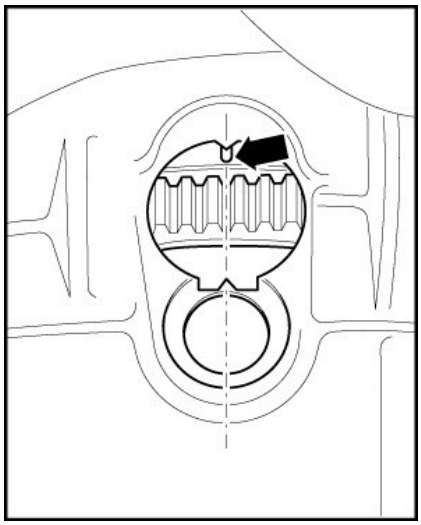
Select Calibrate sensor data only and follow the DBW Setup steps.



Note: There are a few integrated DBW fail safes incorporated into the Infinity system. For instance, if the accelerator pedal and throttle position sensors do not track each other, or if the maximum DBW current is exceeded, there will be a fatal error which will enable the DBW Error Rev Limit (the rev limit is adjustable in the DBW Tuning section of the Setup Wizard) for safety purposes. This error will reset when the ignition key is cycled or if the problem is fixed. Additionally, the 1.8T base session is setup with brake override enabled. The Brake Throttle Override kills the engine if the accelerator and brake pedals are pressed at the same time under certain conditions.

Ignition Sync

Proper ignition sync ensures that the commanded timing in the software is actually the ignition timing value delivered to the engine. For example, when commanding 10° of timing advance in the software, there should be 10° of timing advance at the engine when checked with a timing light. The ignition sync has already been set in the VW 1.8T base session and should not require adjustment, however, it is always good practice to verify proper ignition sync.



The 1.8T engine has its ignition timing checked on the flywheel instead of on the crank pulley. Locate the timing mark viewing hole in the top of the bellhousing near the back of the cylinder block and remove the access plug. The air intake tract may need to be temporarily removed in order to gain line of sight to the timing mark with a timing light.

The correct way to trigger a timing light is to put the inductive pickup on a high voltage secondary ignition wire. On a coil-on-plug arrangement, this means removing coil #1 from its well and using a spark plug wire between the coil and the spark plug. Do not attempt to trigger the timing light off of the low voltage trigger wires going into the coil. Doing so may cause incorrect readings with the timing light which may ultimately result in an incorrect ignition sync adjustment.

Once the Drive By Wire Wizard has been completed, the engine can be started and idled. In the Setup Wizard, go to the Ignition Sync Wizard. Lock the timing at a value that can be easily verified. If using a non-dial back timing light, lock the timing at 0°; if using a dial back timing light, set the timing to a value that will allow the engine to idle easily (10° or 15°, etc) and set the dial back to the same amount. Check that the timing mark on the flywheel lines up with the pointer in the bellhousing. If the indicated timing is off from the pointer, use the Advance or Retard Timing buttons in the until the ignition sync is correct. Unlock the timing once the ignition sync has been verified.

Pinout

Infinity 506/508, P/N 30-7106/7108					
Infinity Pin	**Hardware Reference**	**VW 1.8T Function**	**VW 1.8T Pin Destination**	**Hardware Specification**	**Notes**
C1-1	LowsideSwitch_4	Spare LS Out	Aux 8	Lowside switch, 1.7A max, NO internal flyback diode. 12v pullup.	See Setup Wizard LowSide Assignment Tables page for output assignment.
C1-2	LowsideSwitch_5	Spare LS Out	Aux 9	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. 12v pullup.	See Setup Wizard LowSide Assignment Tables page for output assignment.
C1-3	LowsideSwitch_6 (Infinity-6 Only)	Not used	No connect	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup.	Not used.
C1-3	Injector 7 (Infinity 508 Only)	Not used	No connect	For use with high impedance (10-15ohms) injectors only, 1.7A max.	Not used.
C1-4	LowsideSwitch_7 (Infinity-6 Only)	Not used	No connect	Lowside switch, 6A max, NO internal flyback diode. No pullup.	Not used.
C1-4	Injector 8 (Infinity 508 Only)	Not used	No connect	For use with high impedance (10-15ohms) injectors only, 1.7A max.	Not used.
C1-5	UEGO 1 Heat	UEGO 1 Heat	5	Bosch UEGO controller	For on-board wideband Bosch O2 sensor.
C1-6	UEGO 1 IA	UEGO 1 IA	71		For on-board wideband Bosch O2 sensor.
C1-7	UEGO 1 IP	UEGO 1 IP	52		For on-board wideband Bosch O2 sensor.
C1-8	UEGO 1 UN	UEGO 1 UN	70		For on-board wideband Bosch O2 sensor.
C1-9	UEGO 1 VM	UEGO 1 VM	51		For on-board wideband Bosch O2 sensor.
C1-10	Batt Perm Power	Permanent Power	62	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-48).
C1-11	Coil 4	Coil 4	94	25 mA max source current	Triggers factory "smart" coils with 5v falling edge trigger. DO NOT connect directly to coil primary.
C1-12	Coil 3	Coil 3	103	25 mA max source current	Triggers factory "smart" coils with 5v falling edge trigger. DO NOT connect directly to coil primary.
C1-13	Coil 2	Coil 2	95	25 mA max source current	Triggers factory "smart" coils with 5v falling edge trigger. DO NOT connect directly to coil primary.
C1-14	Coil 1	Coil 1	102	25 mA max source current	Triggers factory "smart" coils with 5v falling edge trigger. DO NOT connect directly to coil primary.
C1-15	Coil 6	Not used	No connect	25 mA max source current	Not used
C1-16	Coil 5	Not used	No connect	25 mA max source current	Not used
C1-17	Crank Position Sensor VR+	Crank Position Sensor VR+	82	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard Cam/Crank page for options.
C1-18	Crank Position Sensor VR-	Crank Position Sensor VR-	90		
C1-19	Cam Position Sensor 1 VR-	Cam Position Sensor 1 VR-	No connect	Differential Variable Reluctance Zero Cross Detection	Not used.
C1-20	Cam Position Sensor 1 VR+	Cam Position Sensor 1 VR+	No connect		
C1-21	LowsideSwitch_2	A/C Compressor WOT Cut	41	Lowside switch, 1.7A max, NO internal flyback diode. No pullup.	Disables A/C compressor above 80% throttle. See LS2_Duty% table to adjust.
C1-22	LowsideSwitch_3	Intake Cam VVC	115	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup.	Intake cam VVC supported however base session is not configured for activation. See full Infinity instruction manual for more information.

C1-23	AGND	Sensor Ground	33, 36	Dedicated analog ground	Sensor ground for 0-5v analog inputs.
C1-24	AGND	Sensor Ground	91, 99, 108	Dedicated analog ground	Sensor ground for 0-5v analog inputs.
C1-25	Crank Position Sensor 1 Hall	Not used	No connect	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	Not used.
C1-26	Cam Position Sensor 1 Hall	Cam Position Sensor	86	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	See Setup Wizard Cam/Crank page for options.
C1-27	Digital_In_2	Not used	No connect	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	Not used.
C1-28	Digital_In_3	Vehicle Speed Sensor	54	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	See Setup Wizard Vehicle Speed page.
C1-29	Digital_In_4	Spare Frequency Input	Aux 6	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	Can be used for Flex Fuel or Turbo Speed or other frequency input. See Setup Wizard to configure input.
C1-30	Digital_In_5	Brake Switch	55	10K pullup to 12V. Will work with ground or floating switches. Switch input only.	Brake switch input for DBW Brake Throttle Override. See Drive By Wire Wizard to configure.
C1-31	Digital_In_6	Spare Frequency Input	Aux 7	10K pullup to 12V. Will work with ground or floating switches. Frequency input only.	Can be used for Flex Fuel or Turbo Speed or other frequency input. See Setup Wizard to configure input.
C1-31	Coil 7 (Infinity 508 Only)	Not used	Not used	25 mA max source current	Not used. Spare Frequency input lost if using Infinity 508. **MUST** remove pin from Infinity 80 pin connector.
C1-32	Digital_In_7	A/C Request Switch	40	10K pullup to 12V. Will work with ground or floating switches. Switch input only.	Used to activate Idle A/C Offset. See Setup Wizard Idle page for options.
C1-32	Coil 8 (Infinity 508 Only)	Not used	Not used	25 mA max source current	Not used. Idle A/C Offset function lost if using Infinity 508. **MUST** remove pin from Infinity 80 pin connector.
C1-33	Power Ground	Ground	2	Power ground	Power ground.
C1-34	CAN A-	AEMNet CAN-	AEMNet	Dedicated high speed CAN transceiver	Four pin DTM connector in AEM adapter harness. Contact AEM for additional information.
C1-35	CAN A+	AEMNet CAN+	AEMNet	Dedicated high speed CAN transceiver	Four pin DTM connector in AEM adapter harness. Contact AEM for additional information.
C1-36	CAN B-	Chassis CAN- CAN-	58	Dedicated high speed CAN transceiver	Used for VW CAN bus.
C1-37	CAN B+	Chassis CAN+	60	Dedicated high speed CAN transceiver	Used for VW CAN bus.
C1-38	Temp 1	Coolant Temp Sensor	93	2.49k pullup to 5v	See Setup Wizard Coolant Temperature page for options.
C1-39	Temp 2	Air Temp Sensor	85	2.49k pullup to 5v	See Setup Wizard Air Temperature page for options.
C1-40	Temp 3	Spare Temp Input	Aux 5	2.49k pullup to 5v	Can be used for Oil Temperature input. See Setup Wizard Oil Temperature page.
C1-41	LowsideSwitch_0	Fuel Pump	65	Lowside switch, 4A max, NO internal flyback diode. No pullup.	Switched ground. Will prime for 2 seconds at key on and activate if RPM > 0.
C1-42	LowsideSwitch_1	Boost Control	104	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power. No pullup.	See Setup Wizard Boost Control page for options. Monitor BoostControl [%] channel for output state. Base session configured to drive stock N75 boost control solenoid.
C1-43	Power Ground	Ground	1	Power ground	Power ground.
C1-44	Knock Sensor 1	Knock Sensor 1	106	Dedicated knock signal processor	See Setup Wizard Knock Setup page for options.
C1-45	Knock Sensor 2	Knock Sensor 2	107	Dedicated knock signal processor	See Setup Wizard Knock Setup page for options.
C1-46	Power Ground	Ground	1	Power ground	Power ground.

C1-47	Main Relay Control	Ground out to main relay	21	0.7A max ground sink for external relay control	Will activate at key on and at key off according to the configuration settings.
C1-48	Ign Switch	Ignition Switch	3	10k pulldown	Full time battery power must be available at C1-10 before this input is triggered.
C1-49	+5V_Out	+5V Sensor Power	72, 73	Regulated, fused +5V supply for sensor power	Analog sensor power.
C1-50	+5V_Out	+5V Sensor Power	83, 98	Regulated, fused +5V supply for sensor power	Analog sensor power.
C1-51	Analog_In_7	DBW TPS1	84	12 bit A/D, 100K pullup to 5V	PnP for TPS1 input from DBW throttle body.
C1-52	Analog_In_8	Boost/MAP Sensor	101	12 bit A/D, 100K pullup to 5V	MAP input. Use included Boost/MAP sensor adapter harness.
C1-53	Analog_In_9	Fuel Pressure	Aux 1	12 bit A/D, 100K pullup to 5V	Can be used as a Fuel Pressure input for fuel delivery calculation. See the Setup Wizard Fuel Pressure page for setup and calibration. Monitor the FuelPressure [psig] channel.
C1-54	VR+_In_2	Not used	No connect	Differential Variable Reluctance Zero Cross Detection	Not used.
C1-55	VR-_In_2	Not used	No connect		
C1-56	VR-_In_3	Not used	No connect	Differential Variable Reluctance Zero Cross Detection	Not used.
C1-57	VR+_In_3	Not used	No connect		
C1-58	HighsideSwitch_0	Not used	No connect	2.6A max, High Side Solid State Relay	Not used.
C1-59	Stepper_1B	Not used	No connect	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Not used.
C1-60	Stepper_2B	Not used	No connect	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Not used.
C1-61	DBW1 Motor-	DBW Throttle Close	118	5.0A max Throttle Control Hbridge Drive	PnP DBW throttle control. Base session is configured for stock DBW TB. Other TB's may be used but will require setup and characterization. See Drive By Wire Wizard.
C1-62	DBW1 Motor+	DBW Throttle Open	117	5.0A max Throttle Control Hbridge Drive	PnP DBW throttle control. Base session is configured for stock DBW TB. Other TB's may be used but will require setup and characterization. See Drive By Wire Wizard.
C1-63	+12v	+12v	121	12v power from main relay	12v power from main relay.
C1-64	Injector 6	Not used	No connect	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity 508.	Not used.
C1-65	Injector 5	Not used	No connect	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity 508.	Not used.
C1-66	Injector 4	Injector 4	88	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity 508.	Injector 4.
C1-67	Power Ground	Ground	2	Power ground	Power ground.
C1-68	+12v	Not used	No connect	12v power from main relay	Not used.
C1-69	Analog_In_19	DBW APP2	34	12 bit A/D, 100K pullup to 5V	PnP for Accelerator Pedal Position Sensor 2.
C1-70	Analog_In_18	DBW APP1	35	12 bit A/D, 100K pullup to 5V	PnP for Accelerator Pedal Position Sensor 1.
C1-71	Analog_In_16	DBW TPS2	92	12 bit A/D, 100K pullup to 5V	PnP for TPS2 input from DBW throttle body.
C1-72	Flash Enable	Flash Enable	Flash Enable Connector	10k pulldown	Two pin DTM connector in AEM adapter harness. Use only to force EMS into flash mode if normal firmware update procedure does not work.
C1-73	Analog_In_13	Spare Analog Input	Aux 4	12 bit A/D, 100K pullup to 5V	Can be used as Oil Pressure, Mode Switch, 3-Step or other analog input. See Oil Pressure or Input Function Assignments in Setup Wizard.

C1-74	Analog_In_11	Spare Analog Input	Aux 3	12 bit A/D, 100K pullup to 5V	Can be used as ShiftSwitch, Mode Switch, 3-Step or other analog input. See Shift Cut or Input Function Assignments in Setup Wizard.
C1-75	Analog_In_10	Spare Analog Input	Aux 2	12 bit A/D, 100K pullup to 5V	Can be used as Barometric Pressure, Mode Switch, 3-Step or other analog input. See Barometric Pressure or Input Function Assignments in Setup Wizard.
C1-76	Injector 3	Injector 3	97	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity 508.	Injector 3.
C1-77	Injector 2	Injector 2	89	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity 508.	Injector 2.
C1-78	Injector 1	Injector 1	96	Peak and hold, 3A max for Infinity-6. Saturated injector driver for Infinity 508.	Injector 1.
C1-79	Stepper_2A	Not used	No connect	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Not used.
C1-80	Stepper_1A	Not used	No connect	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Not used.

12 MONTH LIMITED WARRANTY

Advanced Engine Management Inc. warrants to the consumer that all AEM High Performance products will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced at AEM's option, when determined by AEM that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of the AEM part. In no event shall this warranty exceed the original purchase price of the AEM part nor shall AEM be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product. Warranty claims to AEM must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12-month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty. AEM disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by AEM. Warranty returns will only be accepted by AEM when accompanied by a valid Return Merchandise Authorization (RMA) number. Product must be received by AEM within 30 days of the date the RMA is issued.

UEGO oxygen sensors are considered wear items and are not covered under warranty.

Please note that before AEM can issue an RMA for any electronic product, it is first necessary for the installer or end user to contact the EMS tech line at 1-800-423-0046 to discuss the problem. Most issues can be resolved over the phone. Under no circumstances should a system be returned or a RMA requested before the above process transpires.

AEM will not be responsible for electronic products that are installed incorrectly, installed in a non-approved application, misused, or tampered with.

Any AEM electronics product can be returned for repair if it is out of the warranty period. There is a minimum charge of $50.00 for inspection and diagnosis of AEM electronic parts. Parts used in the repair of AEM electronic components will be extra. AEM will provide an estimate of repairs and receive written or electronic authorization before repairs are made to the product.