Syvecs LTD

V1.2

Mitsubishi Evo X

This document is intended for use by a technical audience and describes a number of procedures that are potentially hazardous. Installations should be carried out by competent persons only.

Syvecs and the author accept no liability for any damage caused by the incorrect installation or configuration of the equipment.

Please Note that due to frequent firmware changes certain windows might not be the same as the manual illustrates. If so please contact the Syvecs Tech Team for Assistance.

Support@Syvecs.com

Contents

Designed for the Manual Transmission and SST Version.

The kit comes with the following:

1 x Syvecs S7Plus

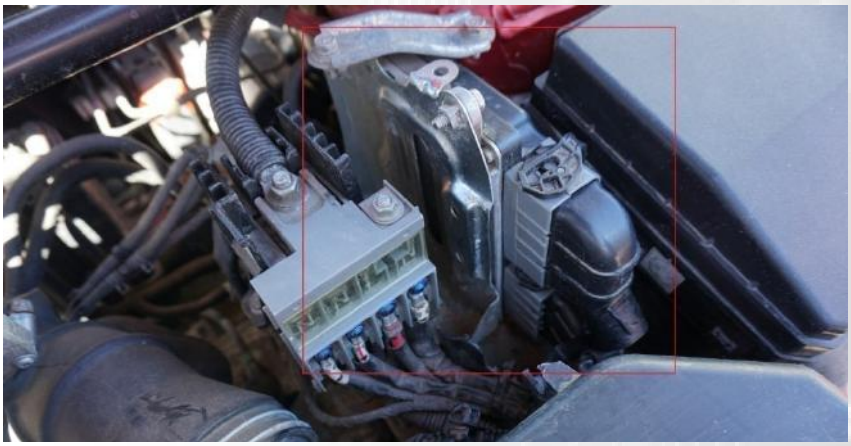
1 x Evo X Loom adaptor

1 x NTK Lambda Sensor (Optional, extra cost)

Installation

1.) Remove the Negative Terminal from the battery on the Vehicle

2.) Unplug the OEM Engine control module which is found on the right hand side in the engine bay and highlighted below in Red



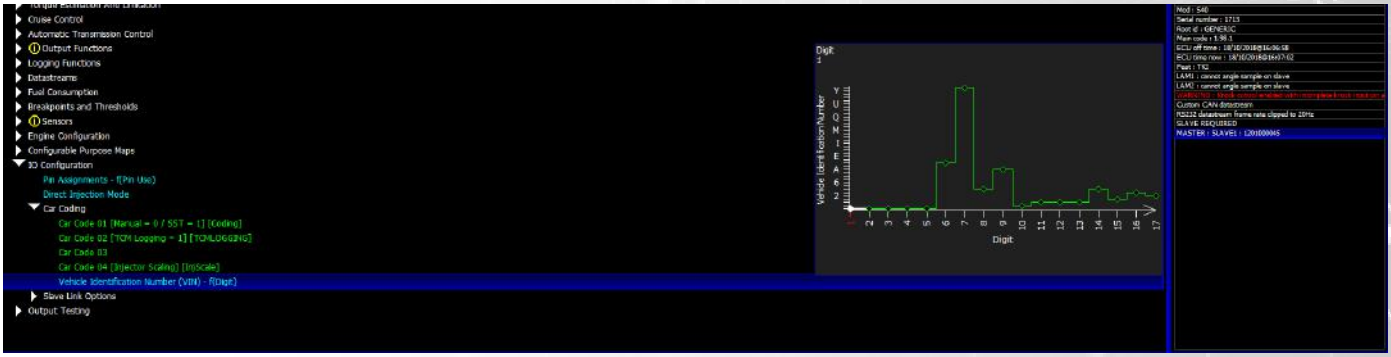
3.) Remove the OEM Ecu from the holder by removing the 2 x M6 Bolts found at top and bottom

4.) Carefully Fit the S7Plus ECU in the same orientation as the OEM Ecu was fitted and secure

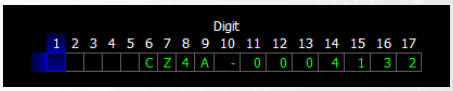
5.) Next plug the Syvecs Evo X loom adaptor into the OEM connectors and into the S7Plus

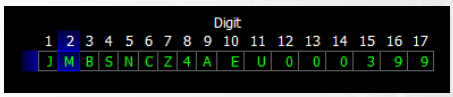
6.) Contact Support@Syvecs.com for a Base Calibration. Mention the Spec of the Car… Injectors, Map Sensor Etc

7.) Open Base calibration in Scal Software and type the Vin Number of the Car found inside the Driver Door into the Vin Area found under IO Configuration – Car Coding – VIN



Must make sure any Spaces or – are included in the Vin Number, Examples below where some plates only have 12 Values and others 17 values





Evo X Software Options

Transmission Type

Depending on the Transmission fitted, users need to set the Trans type in the Scal Software. This is done in I/O Config – Car Code 1

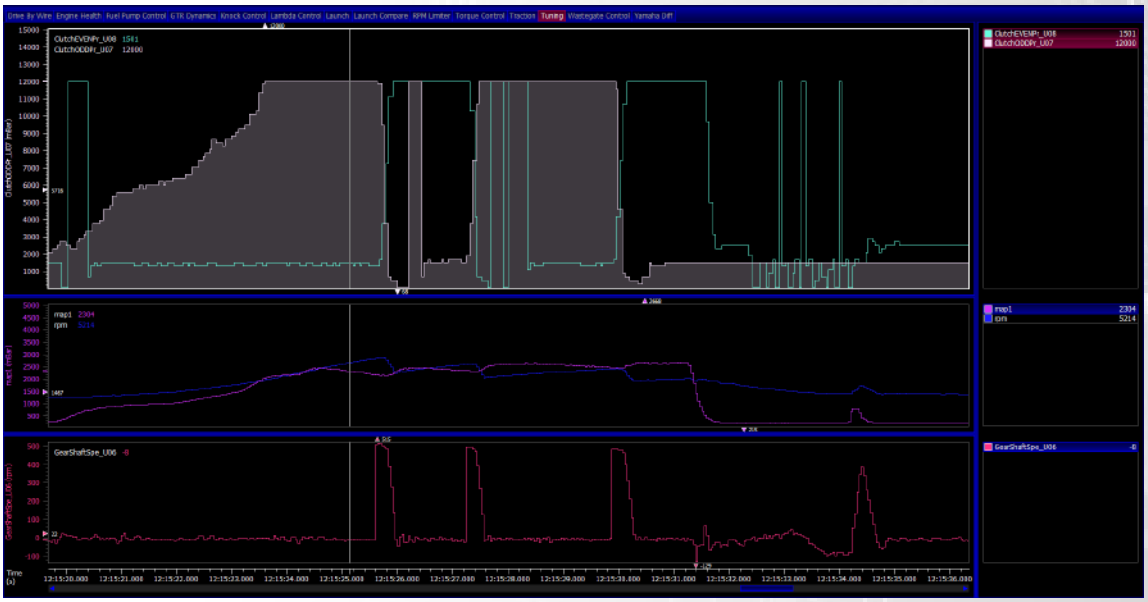
Manaul = 0
SST = 1

SST Clutch Pressure and Temp

If an SST Transmission is used then users can log the Clutch Odd, Clutch Even, Input/Output Shaft Speed Difference and Gearbox Temp. This is Enabled in I/O Config – Car Code 2

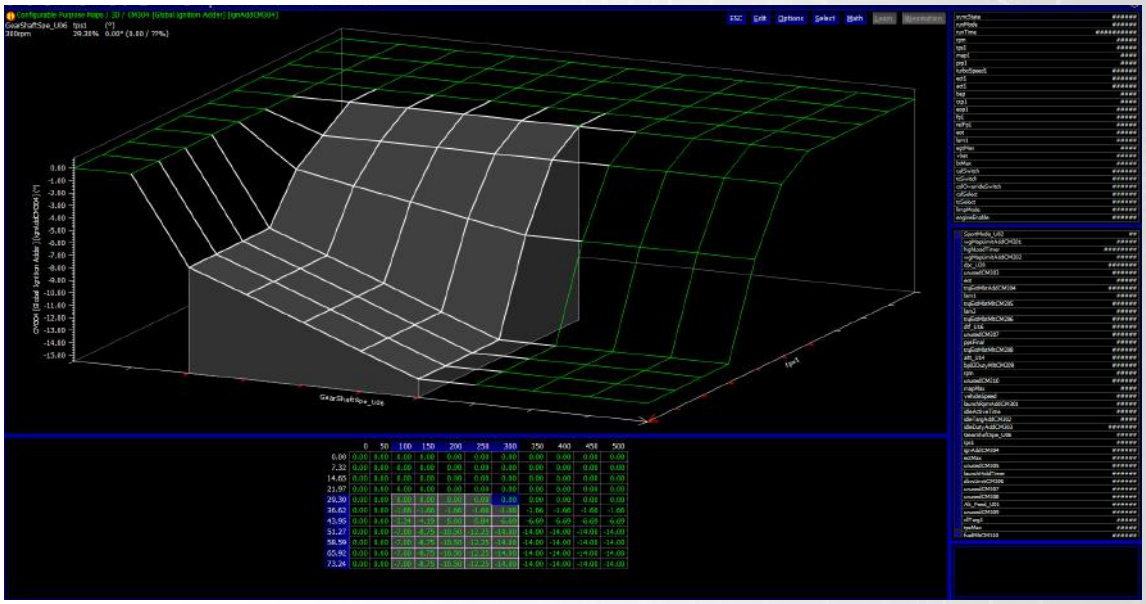
When connecting any Scan tools you need to ensure this feature is turned off.

Logging Off= 0
Logging On = 1



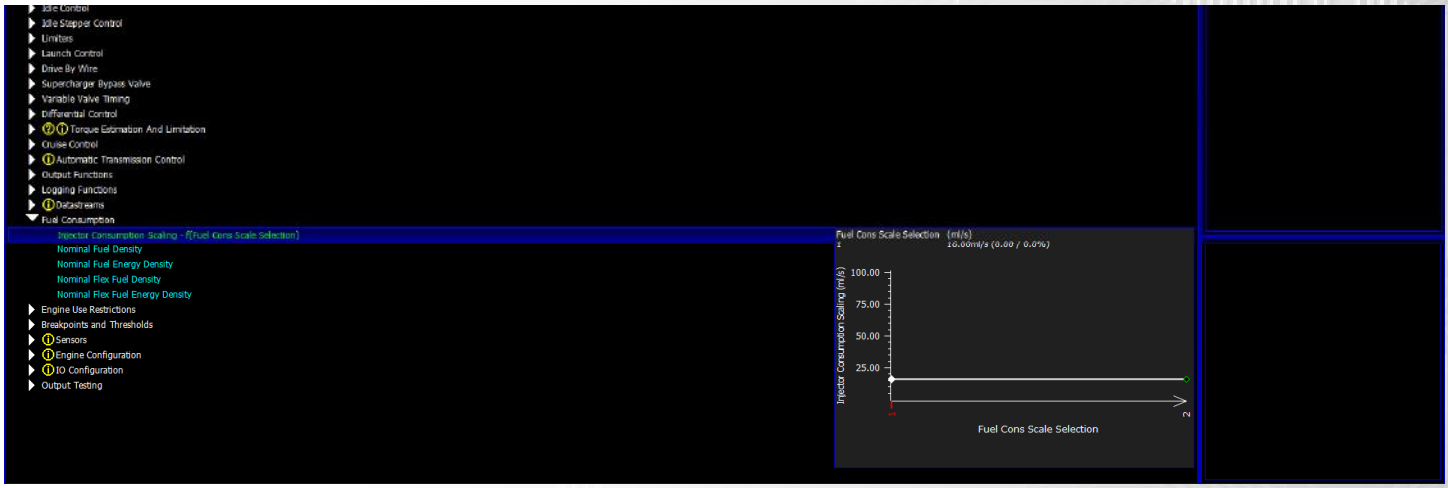
Clutch Slip Table

Custom Maps table CM304 is torque reduction table which constantly monitors Throttle opening vs the differences in Input Shaft and Output Shaft to detect if any clutch slip is present. This table can be Zero'd out but its useful to limit torque if the clutch fitted is not able to hold.



SST DCT – Torque Control

The Torque Calculation for the SST Gearbox are done using a Fuel flow torque model, In order for this strategy to work accurately a user needs to input a Fuel Consumption amount in the map below.



This map is set in ml/s

Generally a good calculation for this is Injector Size in CC / 60 but base fuel pressure has a large effect also so ask you injector manufacture for Torque Control Flow Values if not below.

OEM Injectors are set at 9 ml/s = 540cc Injectors

Some Values already calculated at a Base pressure of 3.5bar Fuel Pressure

ID2000 @ 3.5bar = 35
ID1300 @ 3.5bar = 21
Ansu 1100cc @ 3.5bar = 17
Ansu 1650 @ 3.5bar = 25

MPG Scaling on Dash

Injector Size is set in Pin Assignments – Car Code 4 (Injector Scaling)

Stock 600cc Injector = 60
1000cc = 100

Map Switching

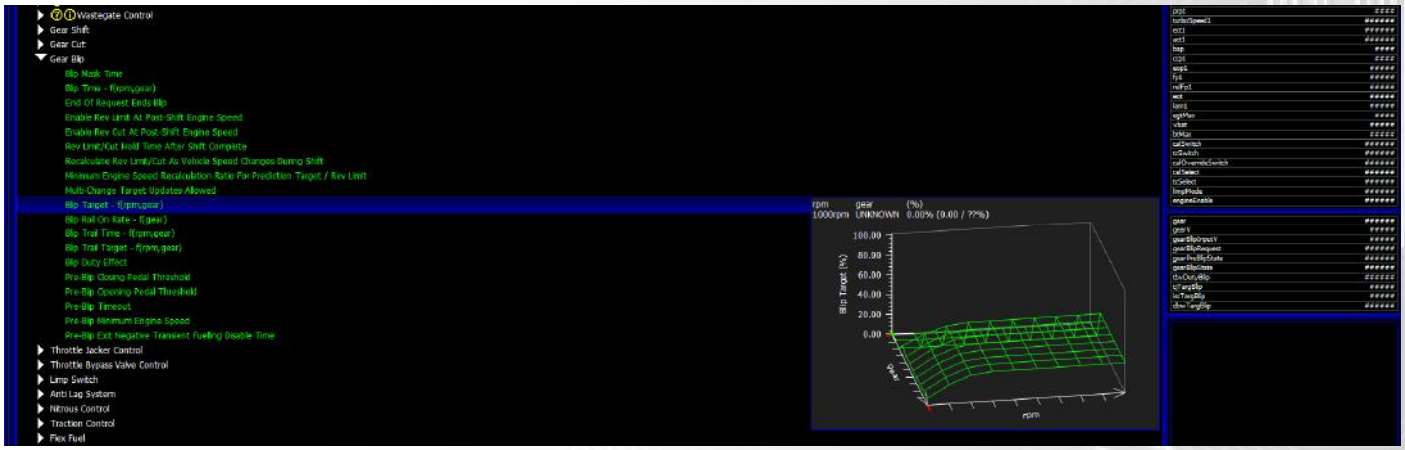
Adjusting the Calibration Switch position via the OEM Control is available if cruise control is fitted on the car. If not on the SST Model calibrators can use the SST Sport Mode for a Cal Switch having 3 modes. This is found on Slave AN26.

Manual Transmission without Cruise will require a Calibration Switch which can be purchased from your Syvecs Dealer.

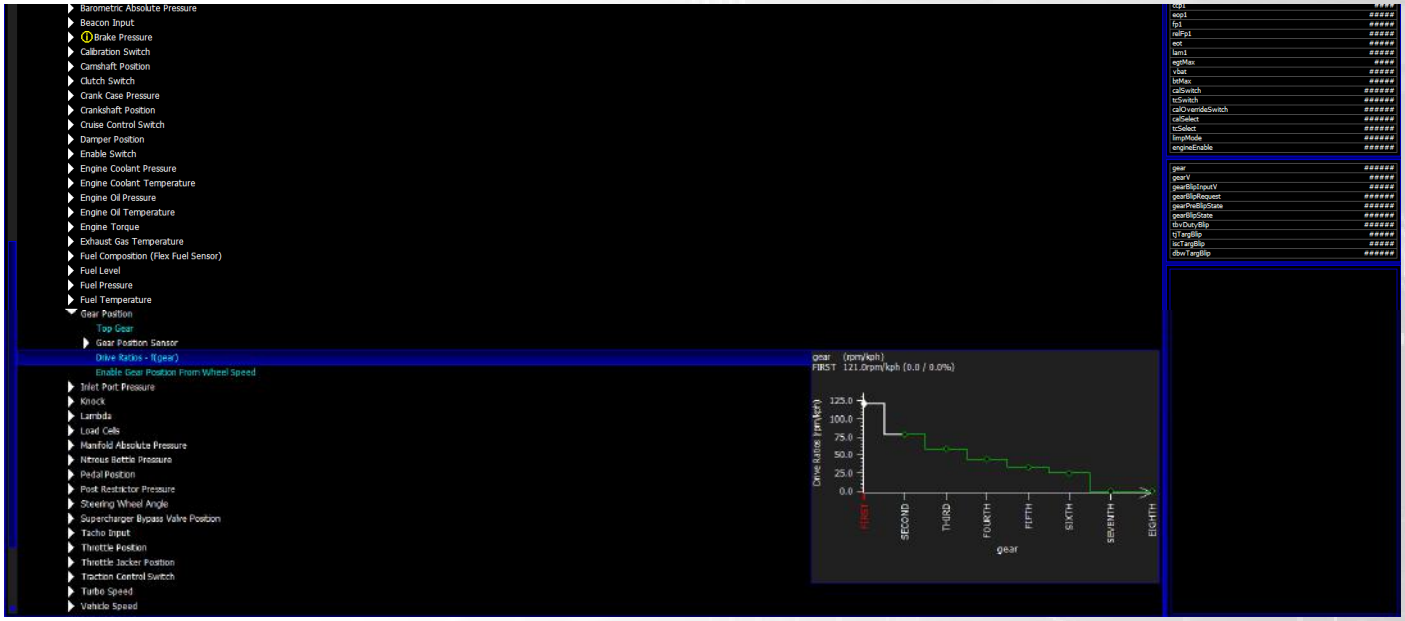
Cruise Up = Cal Up
Cruise Down = Cal Down
Cancel = Cal Overide

Rev Matching and Flat Shift on Manual Transmission

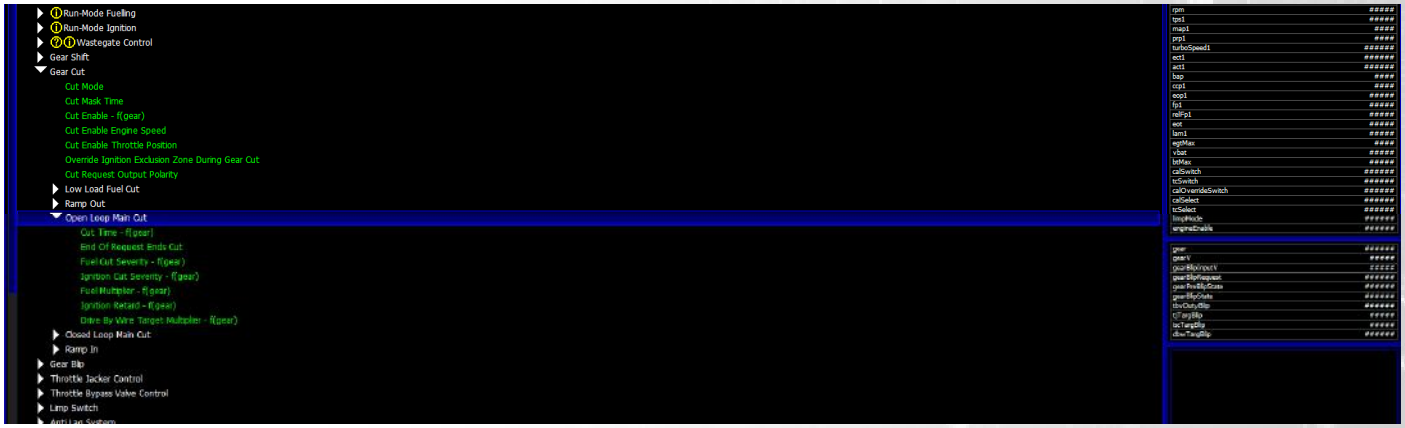
When the Clutch and Brake pedal are pressed as well as the RPM being above 2000rpm a GearBlip Request will be sent into the Ecu to enable Rev Matching, the amount of Blip can be adjusted here.



The Ecu calculates the correct rev matching Rpm based on the Drive Ratios. If you are using a different Ratio to Factory you can adjust these Drive Ratios here



Flat Shifting - When the Clutch is pressed on it will send a GearCut Request into the ECU for Flat Shifting. This is Setup in Gearcut – Open Loop



EVO X FAQ and Help

Q) Do you control the OEM VVT

A) Yes, this is adjustable via Variable Valve timing calibrations, Can Change Intake and Exhaust Cam Targets

Q) Can we Flat Foot Shift

A) Yes, The gearcut strategy takes full care of the Torque Reductions on shifts and allows you to change gear while fully on throttle

Q) Can you make the Manual Cars Rev Match on Downshifts

A) Yes, this is enabled when the RPM is above 2000rpm and the Brake-Clutch are pressed together, Its fully closed loop

Q) Can you Adjust the Launch

A) Yes, its fully adjustable in stage and after also where a Limiter can be set based on Time or Speed

Q) Can you alter the Clutch pressures

A) Yes, by adjusting the torque values sent to the SST Ecu we can change the amount of applied pressure

Q) Do you Supply a Base map for the Kit

A) Yes as with all our kits we supply a very good base calibration to get everything working for you

Q) How do we change calibrations

A) This is done via the OEM Steering wheel Cruise buttons, Up is Cal Up, Down is Cal Down, Pulling back is Cal Overide for rolling antilag.

Q) What of the original features will now not work?

A) None, even cruise control works but it doesn't allow you to adjust speed on the stalk, only clamp a speed

Q) Can we use the OBD port still to Log, Read Codes and Clear them on other ecus on the car like ABS?

A) Yes via OEM Tools or EvoScan

Q) Is the OEM Water Spray bar supported

A) Yes this is done via the Water Injection strategy in output functions

Email Support@syvecs.co.uk for a base map to suit your setup.

A	**DESCRIPTION**	CONNECTOR A	
	PART NUMBER	4-1437290-0	
	NOTES:	34 Way - Key1	

Syvecs Description	***Syvecs Pinout***	***Function***	***Notes***
PWR CTR OUT	A1	MAIN RELAY OUTPUT	Main Relay
H-Bridge1 / SlaveOut1	A2	H-Bridge1	DBW+
H-Bridge2 / SlaveOut2	A3	H-Bridge2	DBW-
H-Bridge3 / SlaveOut3	A4	H-Bridge3	
H-Bridge4 / SlaveOut4	A5	H-Bridge4	
H-Bridge5 / SlaveOut5	A6	H-Bridge5	Evap Solenoid
H-Bridge6 / SlaveOut6	A7	H-Bridge6	Evap Emission Solenoid
H-Bridge7 / SlaveOut7	A8	H-Bridge7	Spray Bars
H-Bridge8 / SlaveOut8	A9	H-Bridge8	
FUEL1	A10	INJECTOR or PWM OUTPUT	Primary Injector 1
FUEL2	A11	INJECTOR or PWM OUTPUT	Primary Injector 2
FUEL3	A12	INJECTOR or PWM OUTPUT	Primary Injector 3
FUEL4	A13	INJECTOR or PWM OUTPUT	Primary Injector 4
FUEL5	A14	INJECTOR or PWM OUTPUT	Wastegate Solenoid

FUEL6	A15	INJECTOR or PWM OUTPUT	Wastegate Solenoid 2
FUEL7	A16	INJECTOR or PWM OUTPUT	AirCon Comp Relay
FUEL8	A17	INJECTOR or PWM OUTPUT	Throttle Relay
PWM1 /*FUEL9	A18	PWM OUTPUT	Fuel Pump Relay
PWM2 / *FUEL10	A19	PWM OUTPUT	Alternator Control
PWM3 / *FUEL11	A20	PWM OUTPUT	Fuel Pump Relay 2
PWM4 / *FUEL12	A21	PWM OUTPUT	
PWM5	A22	PWM OUTPUT	
PWM6	A23	PWM OUTPUT	
PWM7	A24	PWM OUTPUT	VVT Intake
PWM8	A25	PWM OUTPUT	VVT Exhaust
IGN1	A26	CYL 1 IGNITION OUTPUT	Ignition 1
IGN2	A27	CYL 2 IGNITION OUTPUT	Ignition 2
IGN3	A28	CYL 3 IGNITION OUTPUT	Ignition 3
IGN4	A29	CYL 4 IGNITION OUTPUT	Ignition 4
IGN5	A30	CYL 5 IGNITION OUTPUT	
IGN6	A31	CYL 6 IGNITION OUTPUT	
PWRGND	A32	POWER GROUND	Throttle Ground and Cruise Ground
PWRGND	A33	POWER GROUND	Throttle Ground
PWRGND	A34	POWER GROUND	ECM Ground

B	**DESCRIPTION**	CONNECTOR B	
	PART NUMBER	3-1437290-7	
	NOTES:	26 Way - Key1	

PWRGND	B1	POWER GROUND	Ground
CAN2L	B2		
CAN2H	B3		
KNOCK	B4	KNOCK	
KNOCK2	B5	KNOCK2	
PVBAT	B6	CONSTANT 12V	
IVBAT	B7	12v	
LAM1A	B8	Lamv / LamD1+/ LamLun1	Grey NTK
LAM1B	B9	Lami / LamD1- /LamIP1	White NTK
LAM1C	B10	LamLIA1	
LAM1D	B11	LamGND / LamLVM1	Black NTK
LAM1HEATER	B12	LAMBDA HEATER	Blue NTK
IVBAT	B13	12V	Yellow NTK
LAM2A	B14	Lamv / LamD1+/ LamLun1	
LAM2B	B15	Lami / LamD1- /LamIP1	
LAM2C	B16	LamLIA1	
LAM2D	B17	LamGND / LamLVM1	
LAM2HEATER	B18	LAMBDA HEATER	
IVBAT	B19	12V	Power Supply
KLINE	B20	Kline	
RS232RX	B21	RS232RX	

RS232TX	B22	RS232TX	
LANRX-	B23	Cat5 Pin2	
LANRX+	B24	Cat5 Pin1	
LANTX-	B25	Cat5 Pin6	
LANTX+	B26	Cat5 Pin3	
C	**DESCRIPTION**	CONNECTOR C	
	PART NUMBER	4-1437290-1	
	NOTES:	34 Way - Key2	
KNOCK GROUND	C1	KNOCK GROUND	
ANGND	C2	SENSOR GND	TPS,
ANGND	C3	SENSOR GND	
ANGND	C4	SENSOR GND	
5V OUT	C5	5V OUT	Exhaust Cam Sensor, TPS
5V OUT	C6	5V OUT	
5V OUT	C7	5V OUT	
CAN L	C8	Can Low	
CAN H	C9	Can High	
AN01	C10	BI-POLAR INPUTS	Crank Sensor
AN02	C11	BI-POLAR INPUTS	Exhaust Cam Sensor
AN03	C12	BI-POLAR INPUTS	Intake Cam Sensor
AN04	C13	BI-POLAR INPUTS	
AN05	C14	UNI-POLAR INPUTS	
AN06	C15	UNI-POLAR INPUTS	
AN07	C16	UNI-POLAR INPUTS	TPS1A
AN08	C17	UNI-POLAR INPUTS	TPS1B
AN09	C18	VOLT-INPUTS	MAP Absolute Sensor
AN10	C19	VOLT-INPUTS	PPS1
AN11	C20	VOLT-INPUTS	PPS2
AN12	C21	VOLT-INPUTS	MAF
AN13	C22	RESISTIVE INPUTS	Air Charge Temp 2
AN14	C23	RESISTIVE INPUTS	Air Charge Temp
AN15	C24	RESISTIVE INPUTS	ECT1
AN16	C25	RESISTIVE INPUTS	Cruise Switch
EGT1-	C26	EGT1 -	
EGT1+	C27	EGT1 +	
PWR CTR IN	C28	MAIN RELAY INPUT SW	Ignition Switch
AN S1 / Slave An01	C29	UNI-POLAR INPUTS	Alternator Feed
AN S2 / Slave An02	C30	UNI-POLAR INPUTS	Oil Pressure Sw
AN S3 / Slave An03	C31	UNI-POLAR INPUTS	Clutch Sw
AN S4 / Slave An04	C32	UNI-POLAR INPUTS	Fuel temp
AN S5 / Slave An05	C33	UNI-POLAR INPUTS	Spray Bar Request
AN S6 / Slave An06	C34	UNI-POLAR INPUTS	Brake Switch