



Installation Instructions for:
EMS P/N 30-1311
1991-97 Mitsubishi 3000GT VR4
1991-1997 Dodge Stealth TT

WARNING:



This installation is not for the tuning novice nor the PC illiterate! Use this system with EXTREME caution! The AEM EMS System allows for total flexibility in engine tuning. Misuse of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of management systems or are not PC literate, please do not attempt the installation. Refer the installation to a AEM trained tuning shop or call 800-423-0046 for technical assistance. You should also visit the AEM EMS Tech Forum at <http://www.aempower.com>

NOTE: AEM holds no responsibility for any engine damage that results from the misuse of this product!

This product is legal in California for racing vehicles only and should never be used on public highways.

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Instruction Part Number: 10-1311
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Congratulations! You have just purchased the finest Engine Management system for your car at any price!

The AEM Engine Management System (EMS) is the result of extensive development on a wide variety of cars. Each system is engineered for the particular application. The AEM EMS differs from all others in several ways. The EMS is an all new stand alone system, which completely replaces the factory ECU and features unique Plug and Play Technology, which means that each system is configured especially for your make and model of car. There is no need to modify your factory wiring harness and in most cases your car may be returned to stock in a matter of minutes. The AEMPro software is configured to work with the factory sensors and equipment, so that there is no need for expensive or hard to find sensors, making replacement and repairs as simple as with an unmodified car. For stock and some slightly modified cars, the AEMPro software will be preprogrammed with a set of base parameters, providing a starting point for individual tuning. For more heavily modified cars, the EMS has many spare inputs and outputs allowing the elimination of separate rev-limiters, boost controllers, nitrous controllers, and fuel computers. It also includes a configurable onboard data logger capable of recording 512kb of information. Every EMS comes with all functions installed and activated, and there are no expensive options or upgrades to be performed.

The installation of the AEM ECU on the 1993-1997 3000GT/Stealth uses the stock sensors and actuators. The base maps are automatically installed in the base calibrations directory in the AEMPro directory on your computer. The 91-93 and 94-97 installations use a different base map due to wiring / model feature changes. The EMS hardware is the same. We have supplied 2 different base calibrations on the CD, one for each application. You MUST upload the correct calibration to the EMS before you attempt to start the engine.

1991-1993: 1311-91-93-MAF.v1.11.cal

1994-1997: 1311-94-97-MAF.v1.11.cal

Full details of the test vehicle used to generate this map can be found in the files notes section. However, while the base map is a good starting point and may save you considerable time and money, it will not replace the need to tune your specific application. It is not intended to be driven aggressively. Ignoring this can and will damage your engine.

The EMS does not support the Active Exhaust found on the 91-93 models. If you still have this, it must be disconnected from the ECU (pin 102). If not disconnected, a whirring noise will be heard from the AE drive motor located in the left rear quarter panel on the car. While this causes no damage, it is quite annoying.

The base maps have knock control enabled and can display or log the stock O2 sensors but lambda closed loop A/F control is not activated.

The check engine light is configured as a shift light at 7000 but this value can be changed.

The stock "boost" gauge is not used.

Please visit the AEM EMS Tech Forum at <http://www.aempower.com/bbs> and register your EMS before you start to use it. Make sure you enter your EMS serial number when you register as doing this grants access to the calibration files. We always post the most current strategy release, PC Software and base calibrations online. On the forum, you will find many helpful hints/tips to make your EMS perform it's best. Also, we may make available EMS maps for engines running speed density, larger turbo, etc...

Read and understand these instructions BEFORE attempting to install this product.

1) Removing the Stock Engine Control Unit

- a) Access the stock Engine Control Unit (ECU). The location of the ECU on the 3000GT/Stealth is in the center console, behind the radio.
- b) Carefully disconnect the wiring harness from the ECU. Avoid excessive stress or pulling on the wires, as this may damage the wiring harness. Some factory ECU's use a bolt to retain the factory connectors, and it must be removed before the harness can be disconnected. There may be more than one connector, and they must all be removed without damage to work properly with the AEM ECU. Do not cut any of the wires in the factory wiring harness to remove them.
- c) Remove the fasteners securing the ECU to the car body, and set it aside. Do not destroy or discard the factory ECU, as it can be reinstalled easily for street use and troubleshooting.

2) Install the AEM Engine Management System.

- a) Plug the factory wiring harness into the AEM ECU, and position it so that the wires are not pulled tight or stressed. Secure it with the provided Velcro fasteners.
- b) Plug the comms cable into the EMS and into your PC.
- c) Turn your ignition on but do not attempt to start the engine.
- d) Upload the base calibration file (.cal) that most closely matches your vehicle's configuration. (These files can be found in the AEMPro/Base Calibrations/Mitsubishi folder on your computer's hard drive)
- e) Set the throttle range: Select the *Configure* drop down menu, then *ECU Setup | Set Throttle Range* and then follow the direction given on the screen.
- f) Verify the ignition timing by selecting the *Configure* drop down menu, then *ECU Setup | Set Ignition*. Use a timing light and compare the physical timing numbers to the Parameter *Ignition Timing* displayed. Use the *Advance/Retard* buttons to make the timing number match.

3) You are now ready to begin tuning your vehicle.

- a) Note: This calibration needs to be properly tuned and is not recommended for street use. **NEVER TUNE YOUR VEHICLE WHILE DRIVING.**

Application Notes for EMS P/N 30-1311

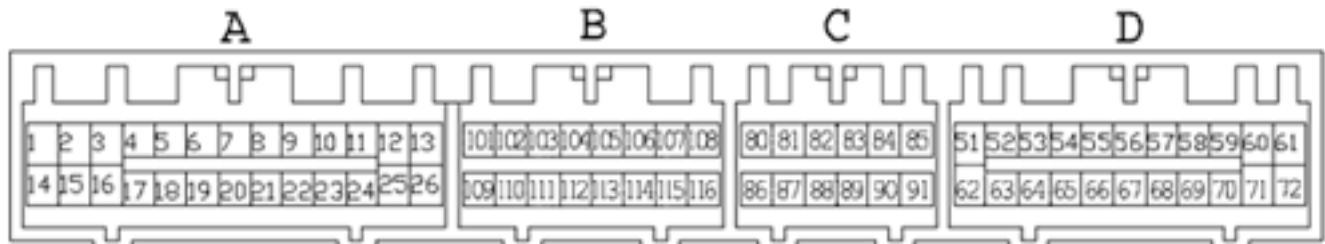
1991-1997 3000GT VR4 / Stealth TT

Make:	Mitsubishi/Dodge
Model:	3000GT VR4 / Stealth TT
Years Covered:	1991 – 1997
Engine Displacement:	3.0L
Engine Configuration:	V6
Firing Order:	1-2-3-4-5-6
N/A, S/C or T/C:	T/C
Load Sensor Type:	Karman Vortex MAF
Map Min:	N/A
Map Max:	N/A
# Coils:	3
Ignition driver type:	0-5V Logic
How to hook up a CDI:	Wire before igniter
# Injectors:	6 (Inj 1-6)
Injector Flow Rate:	370 cc/min
Injector Resistance:	2.3 Ω
Injection Mode:	Sequential
Knock Sensors used:	1
Lambda Sensors used:	1 & 2
Idle Motor Type:	Stepper
Main Relay Control:	Yes
Crank Pickup Type:	Hall
Crank Teeth/Cycle:	6
Cam Pickup Type:	Hall
Cam Teeth/Cycle:	2
Transmissions Offered:	M/T
Trans Supported:	M/T Only
Drive Options:	AWD

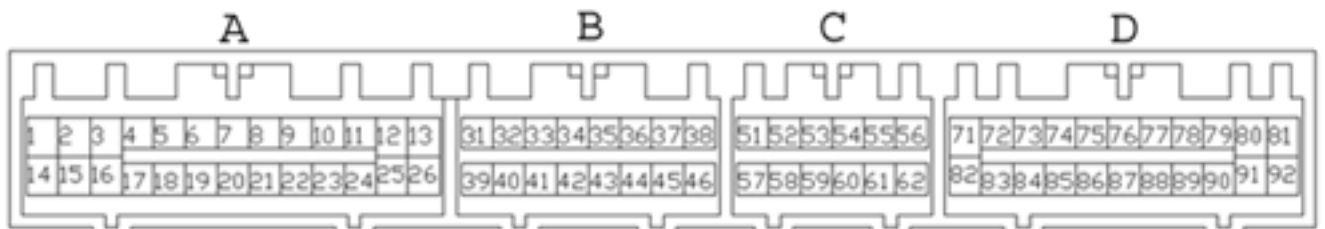
Supplied Connectors:	Connector B
Spare Injector Drivers:	Inj #7, Pin 116
Spare Injector Drivers:	Inj #8, Pin 6
Spare Injector Drivers:	Inj #9, Pin 83
Spare Injector Drivers:	Inj #10, Pin 106
Spare Injector Drivers:	---
Spare Injector Drivers:	---
Spare Coil Drivers:	Coil #4, Pin 86
Spare Coil Drivers:	---
Spare Coil Drivers:	---
Spare Coil Drivers:	---
Boost Solenoid:	PW #2, Pin 105
EGT #1 Location:	Pin 54
EGT #2 Location:	Pin 114
EGT #3 Location:	---
EGT #4 Location:	---
Spare 0-5V Channels:	ADR15, Pin 112
Spare 0-5V Channels:	ADR16, Pin 111
Spare 0-5V Channels:	ADR11, Pin 90
Spare Low Side Driver:	Low Side #1, Pin 109
Spare Low Side Driver:	Low Side #2, Pin 21
Spare Low Side Driver:	Low Side #4, Pin 9
Spare Low Side Driver:	Low Side #9, Pin 22
Check Engine Light:	Low Side #10, Pin 106
Spare Switch Input:	Switch #6, Pin 82
Spare Switch Input:	Switch #4, Pin 7
A/C Switch Input:	Switch #3
Clutch Switch Input:	---

Notes:

The connector numbering for the 91-93 and the 94-97 are different. The numbers listed above are for the 91-94 only. See the connector face diagram below to determine the proper connector number for your year. In all questions, use the pictures below as a reference.



30-1311 (91-93) AS VIEWED FROM END OF EMS



30-1311 (94-97) AS VIEWED FROM END OF EMS

Connection Diagram for EMS P/N 30-1311

1991-97 Mitsubishi 3000GT VR4 / Dodge Stealth TT

PnP Means the Plug and Play system comes with this configured for proper operation of this device. Is still available for reassignment by the end user.

Avail Means the function is not currently allocated and is available for use

Dedicated Means the location is fixed and cant be changed

91-93	94-97						
Pin #	Pin #	91-93 3000 GT	94-97 3000 GT	EMS P/N 30-1311	I/O	91-93 Notes	94-95 Notes
1	1	Injector 1	<---	Injector #1	Output	PnP for Injector 1	<--
2	2	Injector 3	<---	Injector #3	Output	PnP for Injector 3	<--
3	3	Injector 5	<---	Injector #5	Output	PnP for Injector 5	<--
4	4	Idle Air Control Motor	<---	Idle 1	Output	PnP for Idle Motor	<--
5	5	Idle Air Control Motor	<---	Idle 3	Output	PnP for Idle Motor	<--
6	6	EGR Solenoid Valve	<---	Injector #8	Output	Avail, Switched Ground driver	<--
7	7	Fuel Pressure Solenoid	<---	Switch #4	Input	Avail, Switch input	<--
8	8	MFI Relay (fuel pump)	<---	Low Side #11	Output	Dedicated - Fuel Pump	<--
9	9	EVAP Purge Solenoid Valve	<---	Low Side #4	Output	Avail, Switched Ground driver	<--
10	10	Ignition Power Transistor (1-4)	<---	Coil #1	Output	PnP for Coil 1	<--
11	11	Ignition Power Transistor (3-6)	<---	Coil #3	Output	PnP for Coil 3	<--
12	12	MFI Relay Power IN (main)	<---	Inj Pwr	Input	Dedicated	<--
13	13	Ground (cam/crank)	<---	Ground	Input	Dedicated	<--
14	14	Injector 2	<---	Injector #2	Output	PnP for Injector 2	<--
15	15	Injector 4	<---	Injector #4	Output	PnP for Injector 4	<--
16	16	Injector 6	<---	Injector #6	Output	PnP for Injector 6	<--
17	17	Idle Air Control Motor	<---	Idle 2	Output	PnP for Idle Motor	<--
18	18	Idle Air Control Motor	<---	Idle 4	Output	PnP for Idle Motor	<--
19	19	Maf reset switch	<---	Low Side #8	Output	PnP for Maf Reset	<--
20	20	A/C clutch slip input	Rad Fan High	Low Side #9	Output	Avail, Switched Ground driver	Rad Fan High
21	21	Fuel Pump Relay (low speed)	Rad Fan Low	Low Side #2	Output	Avail, Switched Ground driver	Rad Fan Low
22	22	Magnetic Clutch Relay	<---	Low Side #6	Output	PnP for A/C Compressor	<--
23	23	Ignition Power Transistor (2-5)	<---	Coil #2	Output	PnP for Coil 2	<--
24	24	Electrical Load (input)	<---	Switch #3	Input	Avail, Switch input	<--
25	25	MFI Relay Power IN (main)	<---	Inj Pwr	Input	Dedicated	<--
26	26	Ground (in)	<---	Ground	Input	Dedicated	<--
101	31	Ignition OK input	Fuel Pump Relay (Low)	Not Used	---	Dedicated	<--
102	32	Active Exhaust	Wastegate Solenoid	PW #2	Output	PnP for Boost Solenoid	<--
103	33	Active Exhaust Switch	---	PW #1	Output	Avail	<--
104	34	Timing Adjust Connector	Active Exh / LF O2 Heater	Injector #10	Output	Avail, Switched Ground driver	<--
105	35	Wastegate Solenoid	RF O2 Heater	PW #2	Output	PnP for Boost Solenoid	<--
106	36	Check Engine	<---	Low Side #10	Output	PnP for 7,000 RPM Shift Light	<--
107	37	PS Press. Switch	<---	Switch #5	Input	PnP for PS Press	<--
108	38	MFI Relay (Main)	<---	MAIN Relay	Output	Dedicated	<--
109	39	---	Boost Gauge (96-97)	Low Side #1	Output	Avail, Switched Ground driver	<--
110	40	---	Fuel Pressure Sol (96-97)	Idle 6	Output	Avail	<--
111	41	Boost Gauge	Boost Gauge (94-95)	ADR16	Input	Avail, 0-5 Volt Input, 100K pull up	<--

112	42	Data Link Connector	LR O2 Heater (96-97)	ADR15	Input	Avail, 0-5 Volt Input, 100K pull up	<--
113	43	Data Link Connector	RR O2 Heater (96-97)	High Side #4	Output	Avail, Switched 12v, 1.5A max	<--
114	44	ABS Control	<---	EGT #2	Input	Avail, RTD Temp	<--
115	45	Magnetic Clutch	<---	Switch #3	Input	PnP for AC On Request	<--
116	46	---	---	Injector #7	Output	Avail, Switched Ground driver	<--
80	51	---	---	Not Used	---	Dedicated	<--
81	52	---	Ign. Timing Adj	PW #1i	Output	Avail	<--
82	53	---	---	Switch #6	Input	Avail, Switch input	<--
83	54	---	---	Injector #9	Output	Avail, Switched Ground driver	<--
84	55	---	---	Low Side #5	Output	Avail, Switched Ground driver	<--
85	56	---	Data Link Connector	High Side #3	Output	Avail, Switched 12v, 1.5A max	<--
86	57	---	---	Coil #4	Output	Avail	<--
87	58	---	Ignition OK input	Not Used	---	Dedicated	<--
88	59	---	A/C clutch slip input	Low Side #12	Output	Avail, Switched Ground driver	<--
89	60	---	Right O2 Sensor Rear (Cal)	Injector #9	Output	Avail, Switched Ground driver	<--
90	61	---	---	ADR11	Input	Avail, 0-5 Volt Input, 100K pull up	<--
91	62	---	Data Link Connector	FM	Output	Avail, Switched Ground driver	<--
51	71	Starter Signal	<---	SW	Input	Dedicated	<--
52	72	Intake Air Temp Sensor	<---	AIT	Input	Dedicated	<--
53	73	EGR Temp Sensor	Right O2 Rear (96-97)	MAP	Input	Avail, default 0-5v MAP sensor in	<--
54	74	---	Manifold Diff Press (96-97)	EGT #1	Input	Avail, RTD Temp	<--
55	75	Right Bank O2 Sensor	<---	Lambda #2	Input	PnP for Lambda 2	<--
56	76	Left Bank O2 Sensor	<---	Lambda #1	Input	PnP for Lambda 1	<--
57	77	---	---	Knock #2	Input	Avail, Knock sensor input	<--
58	78	Knock Sensor	<---	Knock #1	Input	PnP for Knock Sensor	<--
59	79	---	Left O2 Sensor Rear (Cal)	MAF	Input	Avail, default 0-5v MAF sensor in	<--
60	80	Battery Back Up	<---	Perm 12V	Input	Dedicated	<--
61	81	5v ref	<---	5 Volt Reference	Output	Dedicated	<--
62	82	Ignition Switch	<---	Ignition Switch	Input	Dedicated	<--
63	83	Engine Coolant Temp. Sensor	<---	Coolant	Input	Dedicated	<--
64	84	Throttle Position Sensor	<---	TPS	Input	Dedicated	<--
65	85	Atmospheric Press. Sensor	<---	AbPress	Input	Dedicated	<--
66	86	Vehicle Speed Sensor	<---	Vehicle Speed	Input	Dedicated	<--
67	87	Throttle Position Switch	<---	ADR11	Input	Avail, 0-5 Volt Input, 100K pull up	<--
68	88	Camshaft Position Sensor	<---	Cam	Input	Dedicated	<--
69	89	Crankshaft Position Sensor	<---	Crank	Input	Dedicated	<--
70	90	Volume Air Flow Sensor	<---	Spare Speed	Input	PnP for Karman MAF	<--
71	91	Ground	<---	Ground	Input	Dedicated	<--
72	92	Sensor Ground	<---	Sensor Ground	Output	Dedicated	<--