



***Installation Instructions for:
EMS P/N 30-1042
1991-94 Acura NSX***

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: 10-1042

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The AEM Engine Management System (EMS) is the result of extensive development on a wide variety of vehicles. Each system is engineered for a particular application. The AEM EMS differs from all others in several ways. The EMS features unique plug and play technology. There is no need to modify the factory wiring harness and in most cases the vehicle may be returned to stock in a matter of minutes. The AEMPro software is configured to work with the factory sensors and equipment, so there is no need for expensive or hard to find sensors, making replacements and repairs as simple as with any stock vehicle. For stock and slightly modified vehicles, the AEMPro software can be programmed with base parameters, providing a solid starting point for beginner tuning. For more heavily modified cars, the EMS has many spare inputs and outputs allowing the elimination of add-on rev-limiters, boost controllers, nitrous controllers, fuel computers, etc. 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.

Please visit the AEM EMS Forum at <http://www.aempower.com> before beginning. AEM always posts the most current software and base maps online. The forum also has many helpful hints/tips to make the EMS perform its best.

While the base map may be a good starting point and will save considerable time and money, it will not replace the need to tune the specific application. AEM base maps are tuned conservatively and are not intended to be driven aggressively. Ignoring this can and will damage your engine.

IMPORTANT information for customers already using the 30-1002 AEM EMS in their vehicle. The 30-1042 for the 91-94 NSX is a second generation design from AEM and incorporates knowledge gained from our earlier NSX EMS (30-1002). However, the 30-1002 and 30-1042 boxes are NOT interchangeable. They are NOT pin to pin compatible nor can the calibrations be freely swapped between the two. While both boxes are pin compatible with a stock NSX, the extra functions added to the 30-1042 necessitated a different pin out for the added features. If you have modified your wiring specifically for the 30-1002 and are now installing a 30-1042 then you MUST confirm that the extra wiring is still valid. Additionally, as this EMS is now a dedicated unit to the NSX, many internal allocations have been changed to yield a more logical operation. A 30-1002 generated calibration WILL NOT work properly in a 30-1042 without substantial modification.

The installation of the AEM ECU on the 1991-1994 Acura NSX uses the stock sensors and actuators. The base map is automatically installed in the base calibrations directory in the AEMPro directory on your computer. It is named 1042.V#.##.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 factory NSX traction control is not supported with the AEM EMS. Removal of components or other any other action is not required from the end user. The ignition control is converted to "wasted spark" with 3 drivers controlling the six factory coils. The

30-1042 EMS pin out and connector diagram is at the end of this document and can also be found in the Wiring Guides directory in AEMPro. It is named 30-1042 CONNECTION DIAGRAM.PDF.

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 Acura NSX is behind the passenger seat, under the carpet.
- 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/Honda-Acura 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 30-1002

1991-94 Acura NSX

Make:	Acura
Model:	NSX
Years Covered:	* 1991 – 1994
Engine Displacement:	3.0L
Engine Configuration:	V6
Firing Order:	1-4-2-5-3-6
N/A, S/C or T/C:	N/A
Load Sensor Type:	MAP
Map Min:	0.32V @ -13.9 PSI
Map Max:	4.84V @ 10.94 PSI
# Coils:	** 6
Ignition driver type:	0-5V High Switch Low
How to hook up a CDI:	Wire after igniter
# Injectors:	6 (Inj 1-6)
Injector Flow Rate:	245 cc/min
Injector Resistance:	2.3 Ω
Injection Mode:	Sequential
Knock Sensors used:	1 & 2
Lambda Sensors used:	1 & 2
Idle Motor Type:	PW
Main Relay Control:	Yes
Crank Pickup Type:	Mag
Crank Teeth/Cycle:	24
Cam Pickup Type:	Mag
Cam Teeth/Cycle:	1
Transmissions Offered:	M/T, A/T
Trans Supported:	M/T Only
Drive Options:	RWD

Supplied Connectors:	None
Spare Injector Drivers:	Inj #7, Pin A16
Spare Injector Drivers:	Inj #8, Pin A17
Spare Injector Drivers:	Inj #9, Pin B51
Spare Injector Drivers:	Inj #10, Pin C5
Spare Injector Drivers:	---
Spare Injector Drivers:	---
Spare Coil Drivers:	---
Spare Coil Drivers:	---
Spare Coil Drivers:	---
Spare Coil Drivers:	---
Boost Solenoid:	PW #2, Pin D7
EGT #1 Location:	Pin F1
EGT #2 Location:	Pin F2
EGT #3 Location:	Pin F3
EGT #4 Location:	Pin F4
Spare 0-5V Channels:	ADR11, Pin D12
Spare 0-5V Channels:	ADR13, Pin D6
Spare 0-5V Channels:	ADR14, Pin A19
Spare Low Side Driver:	Low Side #8, Pin A18
Spare Low Side Driver:	Low Side #4, Pin A20
Spare Low Side Driver:	Low Side #7, Pin C4
Check Engine Light:	Low Side #10, Pin A13
Spare Switch Input:	Switch #3, Pin C9 gnd=on
Neutral Switch Input:	Switch #4, Pin B7
A/C Switch Input:	Switch #6, Pin C3
Clutch Switch Input:	Switch #5, Pin C7

Notes:

The factory Acura Traction control does not function with the EMS.

* The 95+ NSX's have drive by wire so no swapping is really possible nor will an ECU for those cars be forthcoming anytime soon.

** Has coil on plug ignition setup. Coil 1 drives cylinders 1 & 5. Coil 2 drives cylinders 3 & 4. Coil 3 drives cylinders 2 & 6.

Connection Diagram for 30-1042, 91-94 Acura NSX

Pin #	91-94 Acura NSX (M/T Only)	30-1042	Availability
A1	Injector 1	Injector 1	PnP for Injector 1
A2	Injector 4	Injector 4	PnP for Injector 4
A3	Injector 2	Injector 2	PnP for Injector 2
A4	Injector 5	Injector 5	PnP for Injector 5
A5	Injector 3	Injector 3	PnP for Injector 3
A6	Injector 6	Injector 6	PnP for Injector 6
A7	Main Relay	LS9	Fuel Pump Low Speed Activation
A8	FLR2 (Fuel Pump Relay 2)	LS11	Fuel Pump High Speed Activation
A9	IACV (Idle Air Control Valve)	PW1	PnP for Idle Air Control Valve
A10	HTCNTF (Front O2 Sensor Ground)	LS2	PnP for Front O2 Sensor Heater
A11	ES (EGR Control Solenoid Valve) (-)	LS3	EGR is Active when LS3 is ON
A12	HTCNTR (Rear O2 Sensor Ground)	LS12	PnP for Front O2 Sensor Heater
A13	WARN (Check Engine Light)	LS10	Chk Engine Light ON when LS10 is ON
A14	BPS (Chamber Volume Control Solenoid)	LS5	PnP for BPS
A15	ACC (A/C Clutch Realy)	LS6	PnP for A/C Clutch Relay
A16	---	Injector 7	Avail, Saturated Injector, 1.5A max
A17	---	Injector 8	Avail, Saturated Injector, 1.5A max
A18	FANCNTR (Fan Control)	LS8	Avail, Switched Gnd, 1.5A max
A19	---	ADR14	Avail, 0-5 Volt Input, 100k pull up
A20	PGS (Purge Cut-off Colenoid Valve)	LS4	Avail, Switched Gnd, 1.5A max
A21	IG NO.1 (Ignition Coil No. 1)	Coil 1	PnP for Coil 1
A22	IG NO.2 (Ignition Coil No. 2)	Coil 3	PnP for Coil 3
A23	PG1 (Power Ground)	Ground	Dedicated
A24	PG2 (Power Ground)	Ground	Dedicated
A25	IGP1 (Power Source)	INJPWR	Dedicated
A26	LG1 (Sensor Ground)	Sensor Ground	Dedicated
B1	---	INJPWR	Dedicated
B2	LG2 (Chassis Ground)	PGND	Dedicated
B3	IG NO.6 (Ignition Coil No. 6)	Coil 3	PnP for Coil 3
B4	IG NO.5 (Ignition Coil No. 5)	Coil 1	PnP for Coil 1
B5	---	Injector 9	Avail, Saturated Injector, 1.5A max
B6	IG NO.4 (Ignition Coil No. 4)	Coil 2	PnP for Coil 2
B7	NT SW(M/T) NP SW(A/T)	SW4	Switch 4 "ON" When Trans is in Neutral
B8	IG NO.3 (Ignition Coil No. 3)	Coil 2	PnP for Coil 2
B9	CYL 2P	---	Not Used
B10	CYL 2M	---	Not Used
B11	CYL 1P	Cam Sensor	Dedicated
B12	CYL 1M	AGND	Dedicated
B13	CRNK 2P	TDC Sensor	Dedicated
B14	CRNK 2M	AGND	Dedicated
B15	CRNK 1P	Crank Sensor	Dedicated

B16	CRNK 2M	AGND	Dedicated
C1	IGP2 (Power Source)	INJPWR	Dedicated
C2	VSS (Vehicle Speed Sensor)	Speedo	PnP for Vehicle Speed Sensor
C3	ACS (A/C Control Unit)	SW6	PnP for A/C Switch Signal
C4	NEP (Tachometer)	LS7	Avail, Switched Gnd, 1.5A max
C5	PDSW (A/C Pressure Switch Signal)	Injector 10	Avail, Saturated Injector, 1.5A max
C6	Traction Control (not supported)	---	Not Used
C7	MTCLS (M/T Clutch Switch)	SW5	Switch 5 "ON" When Clutch is Pressed
C8	Traction Control (not supported)	---	Not Used
C9	SCS (Service Check Connector)	SW3	Switch 3 "ON" when Pin C9 Grounded
C10	Traction Control (not supported)	---	Not Used
C11	STS (Starter Switch Signal)	IGNSWT	Dedicated
C12	Traction Control (not supported)	---	Not Used
D1	Voltage Back Up	PERM	Dedicated
D2	VTEC Pressure	---	Not Used
D3	Knock Rear	Knock 1	PnP for Knock Sensor Rear
D4	Knock Front	Knock 2	PnP for Knock Sensor Rear
D5	Traction Control (not supported)	---	Not Used
D6	VFP On	ADR13	Avail, 0-5 Volt Input, 100k pull up
D7	---	PW2	Boost Solenoid Out
D8	Timing Adjust	ADR03	Avail, 0-5 Volt Input, 100k pull up
D9	Alternator FR Signal	---	Not Used
D10	VTEC pressure input	---	Not Used
D11	Throttle Position Sensor	TPS	Dedicated
D12	EGRL (EGR Lift Sensor)	ADR11	Avail, 0-5 Volt Input, 100k pull up
D13	Engine Coolant Sensor	Coolant	Dedicated
D14	Primary O2 Sensor	Lambda 1	PnP for O2 Sensor
D15	Inlet Air Temp Sensor	AIT	Dedicated
D16	Secondary O2 Sensor	Lambda 2	PnP for O2 Sensor
D17	Map Sensor	MAP	Dedicated
D18	Sensor 5v	Vcc	Dedicated
D19	Sensor 5v	Vcc	Dedicated
D20	Sensor 5v	Vcc	Dedicated
D21	Sensor Ground	Sensor Ground	Dedicated
D22	Sensor Ground	Sensor Ground	Dedicated
F1	---	EGT #1	Avail, RTD Temp
F2	Front VTEC Pressure Switch	EGT #2	Avail, RTD Temp
F3	---	EGT #3	Avail, RTD Temp
F4	Rear VTEC Pressure Switch	EGT #4	Avail, RTD Temp
F5	Front VTEC Solenoid Valve	HS1	PnP for Front VTEC Control Valve
F6	TH ACP	---	Not Used
F7	Rear VTEC Solenoid Valve	HS2	PnP for Rear VTEC Control Valve
F8	---	---	Not Used

A1	A3	A5	A7	A9	A11	A13	A15	A17	A19	A21	A23	A25	B1	B3	B5	B7	B9	B11	B13	B15	C1	C3	C5	C7	C9	C11	D1	D3	D5	D7	D9	D11	D13	D15	D17	D19	D21
A2	A4	A6	A8	A10	A12	A14	A16	A18	A20	A22	A24	A26	B2	B4	B6	B8	B10	B12	B14	B16	C2	C4	C6	C8	C10	C12	D2	D4	D6	D8	D10	D12	D14	D16	D18	D20	D22

Connector A

Connector B Connector C

Connector D

AEM Electronics Warranty

Advanced Engine Management Inc. warrants to the consumer that all AEM Electronics products will be free from defects in material and workmanship for a period of twelve months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced 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.

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 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.