

SHORT RAM SYSTEM

Installation Instructions for:
Part Number 22-489
2004 Mazdaspeed Miata

ADVANCED ENGINE MANAGEMENT INC.
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Instructions Part Number: 10-7051
2004 Mazdaspeed Miata MX-5 1.8L Turbo C.A.R.B. E.O. pending
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Congratulations! You have just purchased the finest Air Induction & Filtration system for your car at any price!

The **AEM** Short Ram Air Intake System is the result of extensive development on a wide variety of cars. It is the most advanced short pipe air intake system on the market. Each system is specifically engineered for its application. All **AEM** Short Ram Air Intake Systems deliver maximum performance gains through lightweight, all-aluminum, mandrel-bent tubing that is tuned in both length and diameter. The aluminum will not crack in extended use like plastic. The tube length and diameter are matched for each specific engine to give power over a broad RPM range. Unlike plastic systems that use a continually diverging cross-section, we take advantage of the acoustical energy in the inlet duct to promote cylinder filling during the intake valve-opening event. Every intake is coated with a high-gloss, heat-reducing Zirconia based powder coating. This special blend of powder coating helps reduce heat penetration, which in turn reduces the temperature of the inlet air charge. The cooler inlet air temperature translates to more power during the combustion process because cool air is denser than warm air. The filter element has also been extensively developed. An integral part of all our filter elements is a built-in velocity stack. This velocity stack is specifically engineered to improve the aerodynamic efficiency of the intake system. We have seen airflow gains on a flow bench of 12-15% by using this velocity stack. The *air mass* flow to the engine is increased because of the increased airflow and reduced inlet temperature, which translates to more power.

Bill of Materials for: 22-489

1	2-4891	Inlet pipe
1	32-3032	MAF bracket
1	32-3033	Relay bracket
1	5-172	Custom 2.25 to 1.75 elbow
1	2-4892	Hot Pipe
1	20-489	MSM HEAT SHIELD
1	21-202-H	2.25 Filter w/7/16" hole in top
2	5-227	2.25 to 2.75 reducer coupler
2	103-BLO-3620	2.25" HOSE CLAMP
1	103-BLO-4820	3" HOSE CLAMP
1	103-BLO-2820	1.75" HOSE CLAMP
3	4093-8	HOSE CLAMP, 1.25"
2	4093-5	HOSE CLAMP, .75"
3.5"	8-133	1/4" HI-TEMP CONVOLUTED SLIT LOOM
13"	8-111	RUBBER EDGE TRIM
11.5"	8-119	GASKET, SPONGE RUBBER
3.5"	8-119	GASKET, SPONGE RUBBER
1	1-113	ZIP TIE, 6 LONG
1	1228599	1 x 6mm rubber mount
1	559999	Washer, Flat M6x25x1
2	444.460.04	6mm Nylok nut
10.5"	65002	HOSE, 3/4ID
6"	65002	HOSE, 3/4ID
2.5"	65002	HOSE, 3/4ID
12.75"	516-006	HOSE, 5/16ID
1	8-134	CONNECTOR, PLASTIC 3/4" STRAIGHT
1	8-139	CONNECTOR, PLASTIC 3/4" 90DEG
4	8-701	1 1/16 SPRING CLAMP
1	10-7051	Instructions
1	10-503	Box, CAS 24x12x8
1	10-922EV	EMBLEM, CAS/SRS VINYL

For technical inquiries e-mail us at tech@aempower.com

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

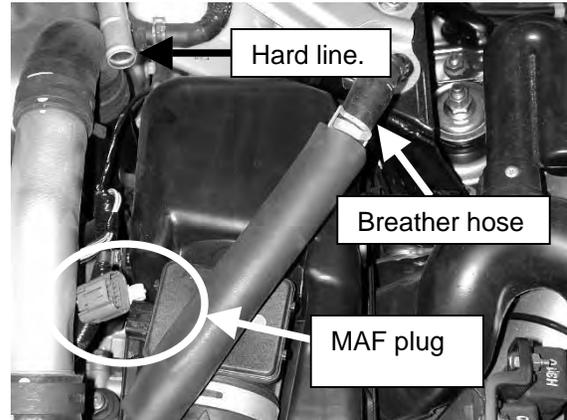
1) Getting Started

- a) Make sure vehicle is parked on a level surface.
- b) Set parking brake.
- c) Disconnect negative battery terminal.
- d) If engine has run with in the past two hours let it cool down.

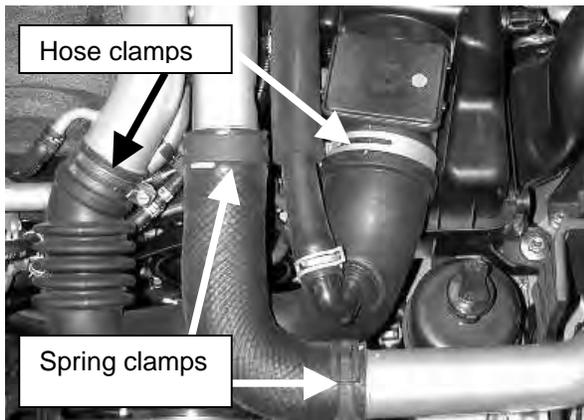
2) Removal of the stock intake system.



a. Stock system installed in vehicle.



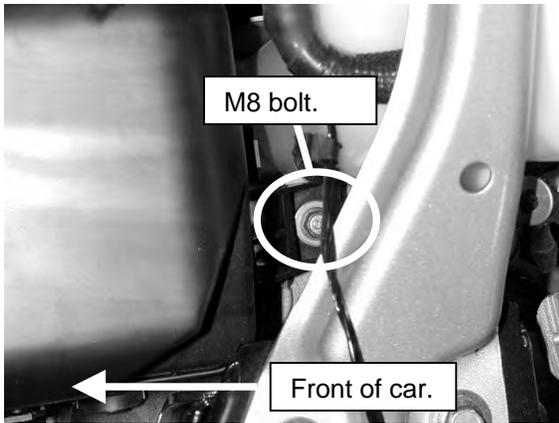
b. Unplug the MAF sensor. Disconnect the breather hose from the hard line.



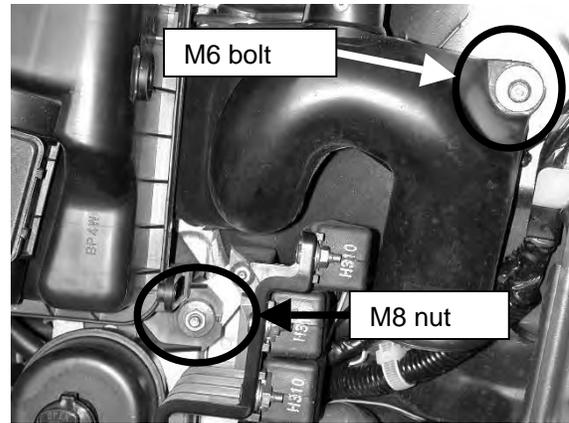
c. Squeeze spring clamps on the elbow of the boost pipe and move them off. Slide them towards the elbow and leave them on it. Loosen the hose clamps on the inlet tube at the MAF and the hard pipe.



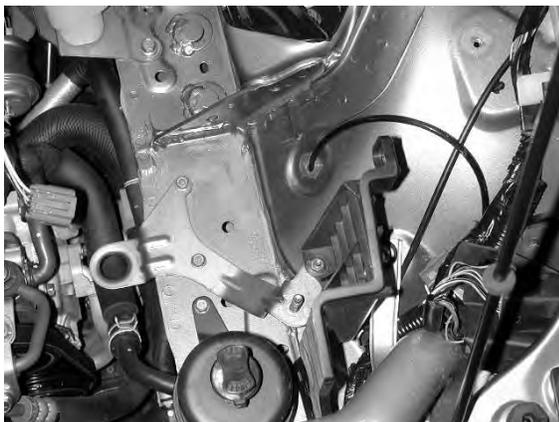
d. Remove the boost pipe elbow and the inlet tube. You will reuse the boost side elbow during the **AEM** intake install.



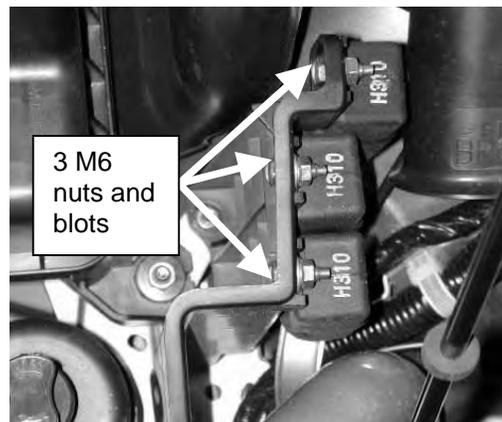
e. Remove the rear M8 bolt from the back of the air box.



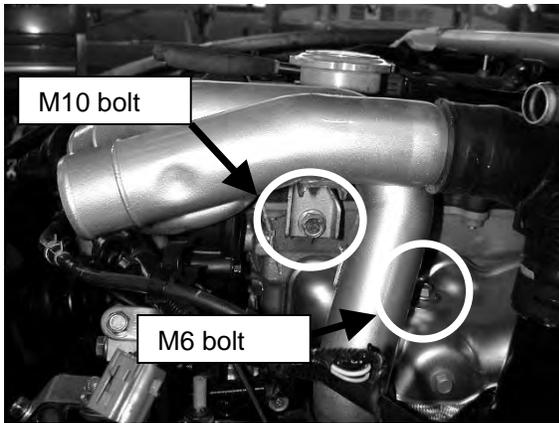
f. Remove M8 nut and M6 bolt from right side of air box. Remove IAT sensor from side of air box.



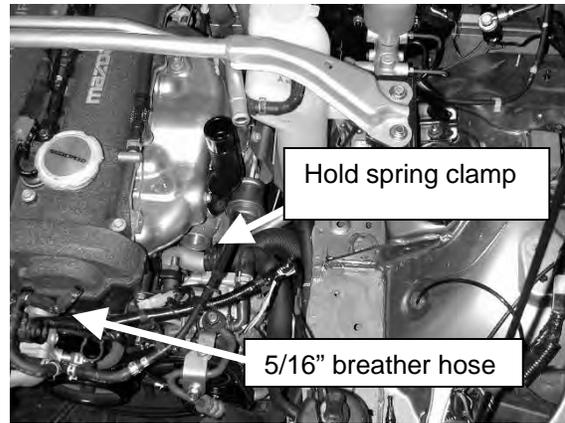
g. Pull up and remove air box from car.



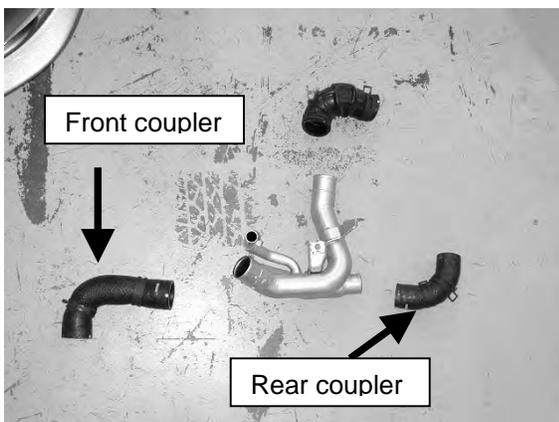
h. Unbolt the 3 relays from the stand. Keep the M6 nuts and bolts on the relays for later installation onto **AEM** relay bracket.



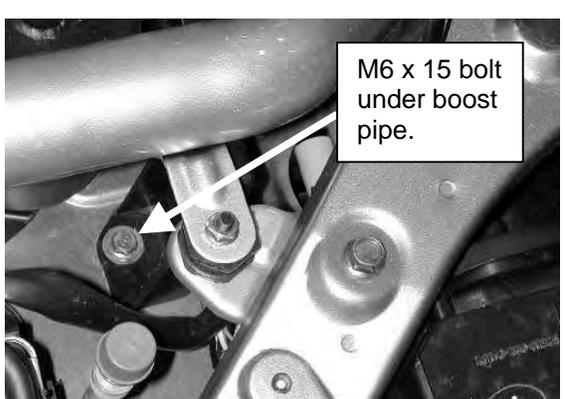
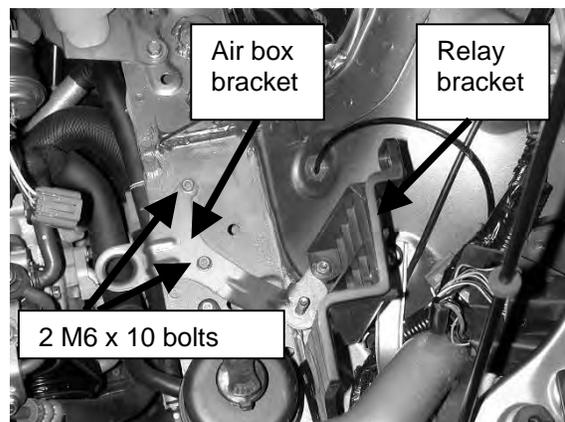
i. Remove the M10 bolt from the bracket holding the inlet tube to the cylinder head. Remove the M6 bolt from the bracket holding the inlet tube to the exhaust manifold. Replace this bolt in its original location after the assembly is removed.



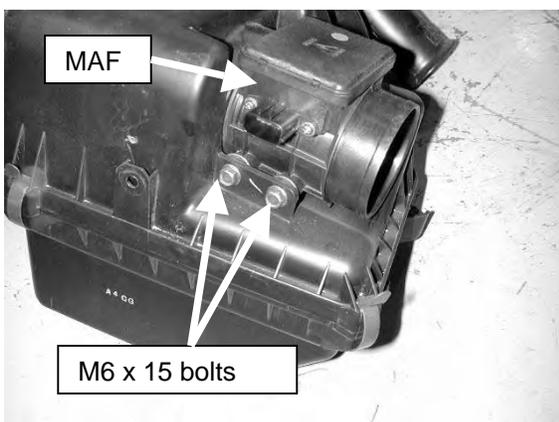
j. While holding the spring clamp open at the turbo coupler, pull inlet and boost pipe assembly from the car. Remove the 5/16" x 3.5" breather hose from the VSV. It will not be reused.



k. This is the inlet and boost pipe with all stock couplers removed from vehicle. The front and rear couplers will be used on **AEM** intake installation.



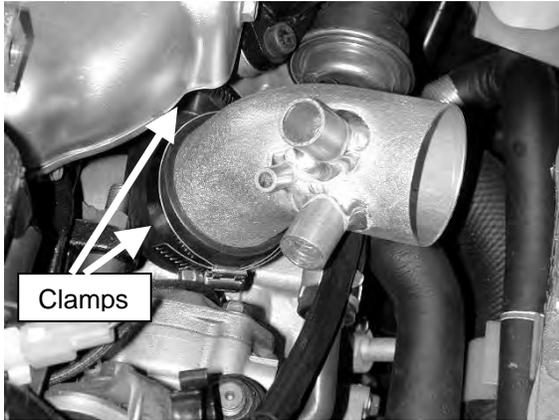
l. Remove the 3 M6 bolts holding the air box and relay bracket assembly. Save the M6 bolts for use in step 3C.



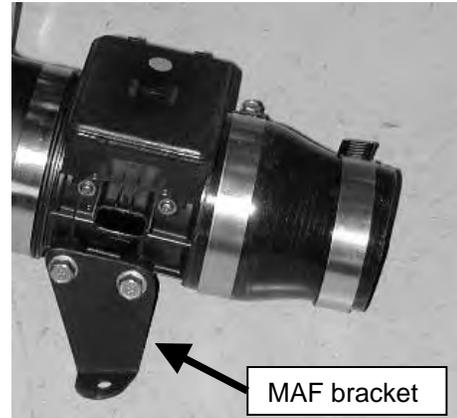
m) Remove the 2 10mm bolts holding the MAF sensor into the air box. Save the 10mm bolts for later use. Carefully slide the MAF out of the air box.

3) Installation of the AEM Short Ram Intake System.

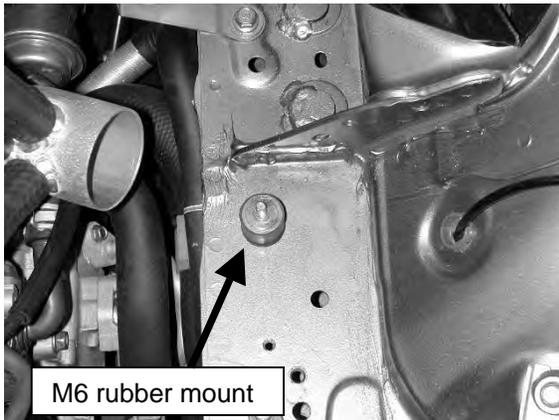
- a) When installing the Short Ram Intake System, DO NOT completely tighten the hose clamps or mounting tab hardware until instructed to do so later in these instructions.



b. Install the supplied 1.75" to 2.25" reducing elbow coupler onto turbo inlet with pipe and clamps as shown.



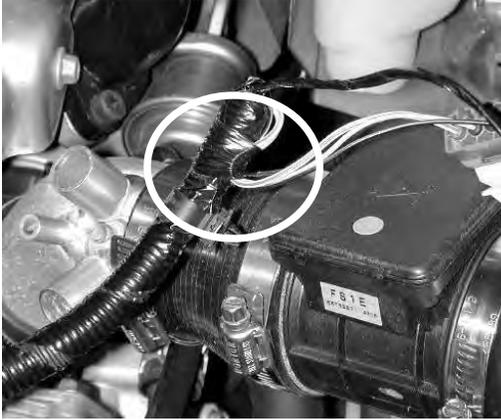
c. Assemble the supplied MAF bracket onto the MAF sensor as shown with the 2 M6 x 10 bolts removed in step 2L of disassembly. Install supplied 2.25" to 2.75" reducing coupler with clamps onto MAF sensor as shown. **Note:** Direction of MAF sensor!



d. Install the supplied M6 rubber mount into the threaded hole shown.



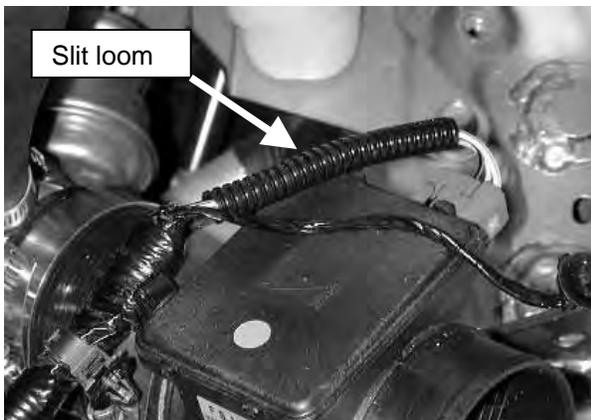
e. Install the MAF assembly from step 3C onto inlet pipe. The MAF bracket will install on to the rubber mount using the supplied M6 Nylok nut.



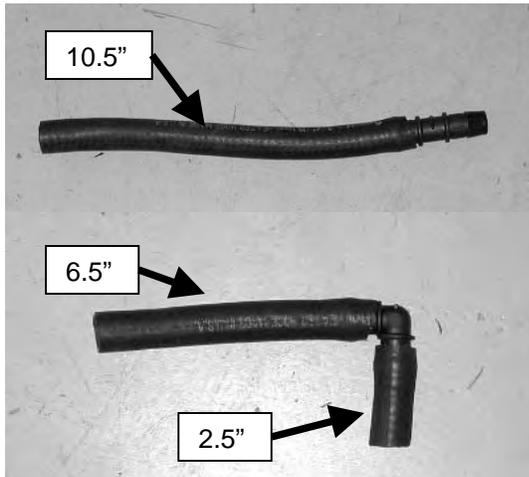
f. Cut electrical tape holding MAF wires to harness to give it extra length. Take care not to cut the wires.



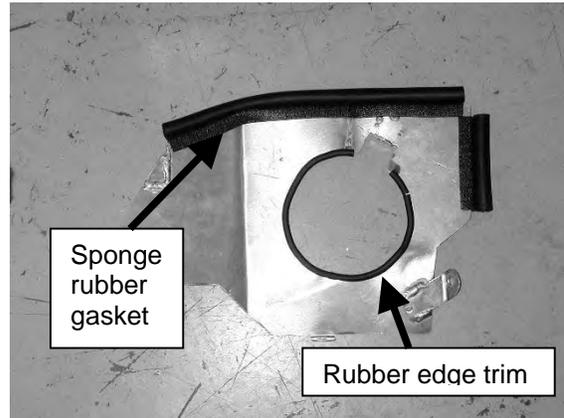
g. Remove the electrical tape as shown.



h. Install supplied slit loom to MAF wires as shown.



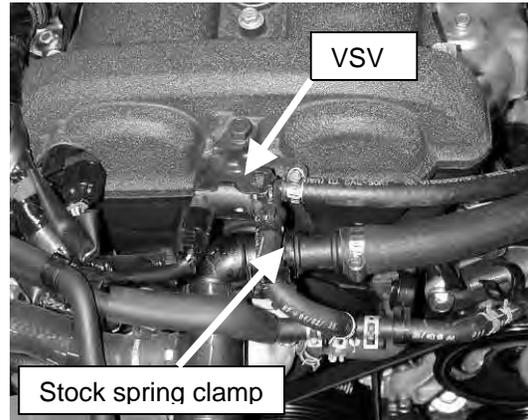
i. Prepare supplied 3/4" hoses for installation as shown. Attach 6" and 2.5" lengths to 90° elbow barbed fitting. Attach 10.5" length to straight barbed fitting.



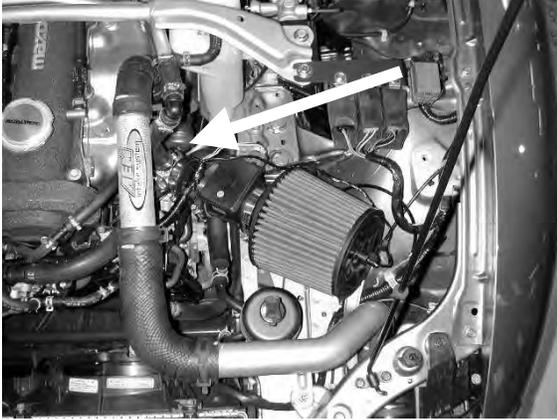
j. Install supplied rubber edge trim to inlet opening as shown. Install supplied sponge rubber gasket to top and right side of heat shield.



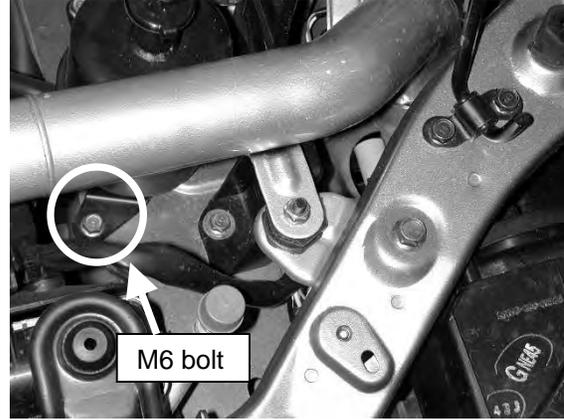
k. Install supplied 3/4" and 5/16" hoses onto inlet pipe as shown. Use supplied spring clamps and screw clamps as shown.



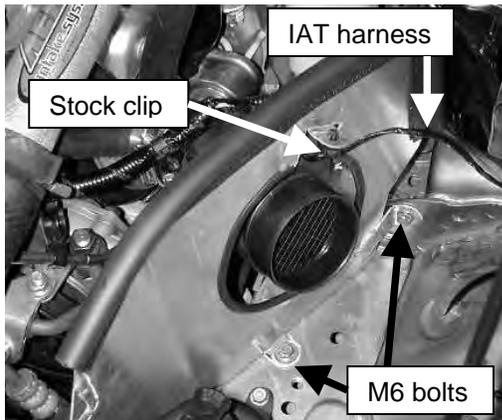
l. Attach 3/4" hose from inlet pipe to bypass valve using the stock spring clamp. Attach 5/16" hose from inlet pipe to VSV using supplied screw clamp as shown.



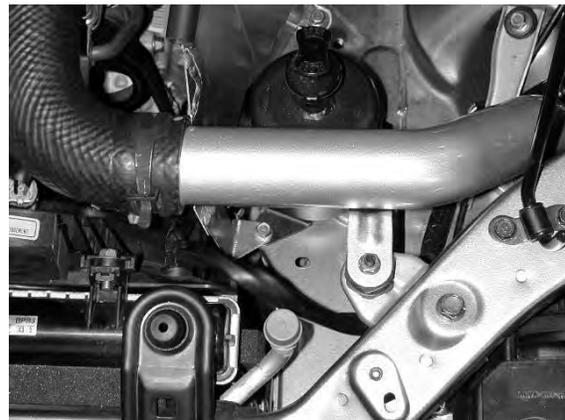
m. Install supplied **AEM** hot pipe using the front and rear stock elbow couplers removed in step 2J. Temporarily install the filter at this time. Check for clearance around filter and tighten all hose clamps.



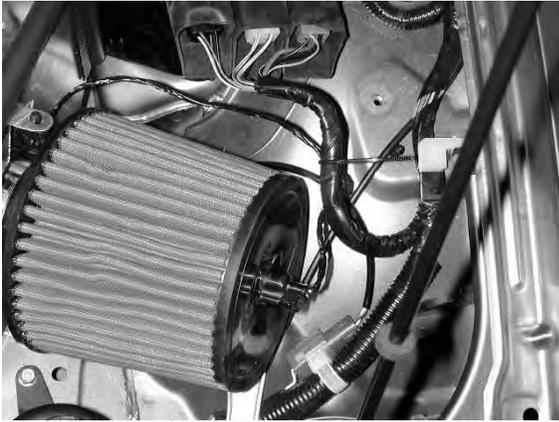
n. Remove the M6 bolt of the power steering reservoir bracket in preparation to install the **AEM** heat shield. The M6 bolt will be reused upon installation.



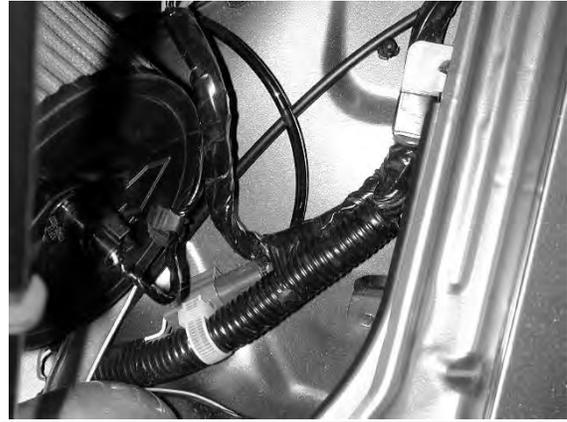
o. Remove filter. Install supplied heat shield using the 2 M6 x 15 bolts that were removed in step 2M. Do not fully tighten bolts yet. Route IAT sensor harness through inlet opening as shown. Using stock clip on harness attach it to the tab on the heat shield as shown. Adjust clip as needed so the harness is not in tension.



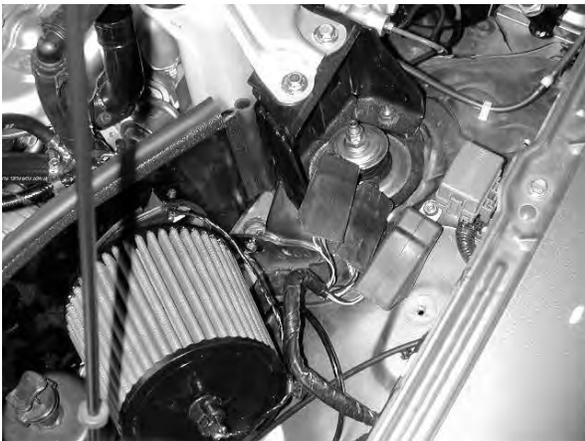
p. Align heat shield over hole on the power steering bracket. Install M6 bolt removed in step 3N as shown. Check heat shield for clearance and tighten all 3 M6 bolts.



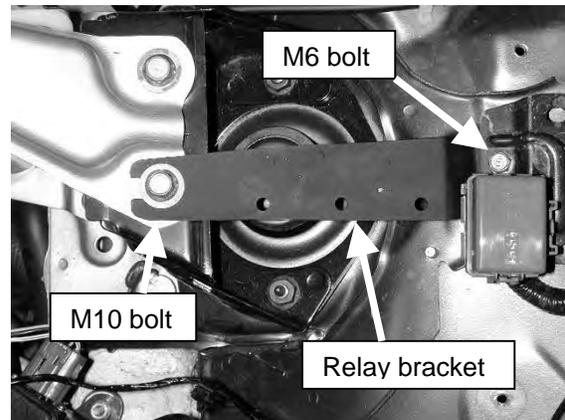
q. Install filter and tighten clamp. Insert IAT sensor into hole in the end of the filter. Attach supplied 6" zip-tie to IAT and relay harnesses as shown. Adjust so the IAT harness is not in contact with the filter.



r. Cut and remove electrical tape on relay harness to give more length.



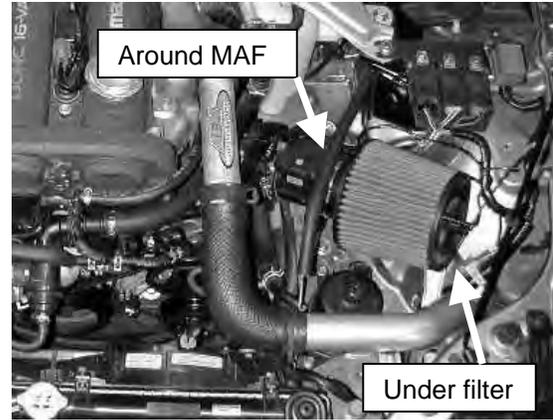
s. Pull relays up towards strut tower.



t. Remove M10 bolt on strut tower and loosen but do not remove M6 bolt on diagnostics bracket. Install supplied relay bracket by sliding it under the diagnostics bracket. Install M10 bolt through relay bracket into strut tower.



U) Attach relays to relay bracket using the stock M6 nuts and bolts from removal in step 2H as shown.



V) Check inlet system for clearance in the areas shown. Check for proper hood clearance. Re-adjust inlet pipe and clamps if necessary.



W) Stock intake system.



X) **AEM** Short Ram System installed.

3) Final Inspection.

- a) Inspect the engine bay for any loose tools and check that all fasteners that were moved or removed are properly tight.
- b) Start the engine and perform a final inspection before driving the vehicle.

For Technical Inquiries
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