

VERUS

ENGINEERING

ND MX5 Miata Air Oil Separator (AOS)

Install Manual



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Document Revisions

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01	2018/10/02	E. Hazen	Initial release of install manual
02	2018/10/17	E. Hazen	Additional information added

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1. Introduction

1.1. Overview: Detailed instructions on installing the AOS for the ND Miata.

1.2. Difficulty: Beginner

1.3. Time Required: 1-2 hours

1.4. Tools Needed:

- 1.4.1. Ratchet
- 1.4.2. 10mm (Socket or wrench)
- 1.4.3. Scissors/Shears for cutting rubber hose
- 1.4.4. Needle nose pliers
- 1.4.5. 4mm Allen wrench

**1.5. AOS Kit**

- 1.5.1. Full assembled and pressure checked AOS
- 1.5.2. 7 Feet of 3/8" hose
- 1.5.3. Aluminum Bracket
- 1.5.4. Hardware Bag
 - 1.5.4.1. (3) M6x1.0 x 16mm Stainless BHCS (Button Head Cap Screws)
 - 1.5.4.2. (1) M6 Stainless Fender Washer
 - 1.5.4.3. (2) M6 Stainless Washer
 - 1.5.4.4. (8) Hose Clamps
 - 1.5.4.5. (8) Zip Ties

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2. Air Oil Separator Install

- 2.1. We are not responsible for damage to you or your vehicle by following this manual and/or installing Verus Engineering products.
- 2.2. Pop the hood of the vehicle.
- 2.3. If you feel more comfortable disconnecting the battery since we are working around this area; do so now. We personally did not but it is safer to disconnect the battery.

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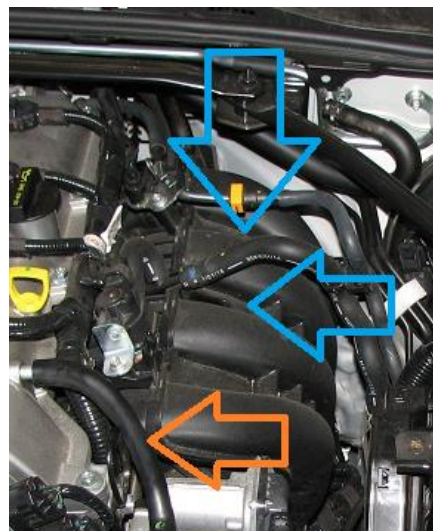
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2.4. The install assumes you have removed or do not have, the sound tube; as we use one of these locations for mounting the AOS. The sound tube delete we offer is a good idea from a longevity stand point as well as not introducing odd noises into the cabin.

2.5. With the hood up; we can get a look at what we are working on.



2.6. With the Verus Engineering AOS, we filter the airflow from both the PCV vent as well as the valve cover vent. We will leave the easy hose connections (valve cover to intake, orange arrow) till the end and work on the hardest part first; the intake manifold to block PCV valve connection (blue arrow). This is located under the intake manifold and towards the firewall of the engine bay.



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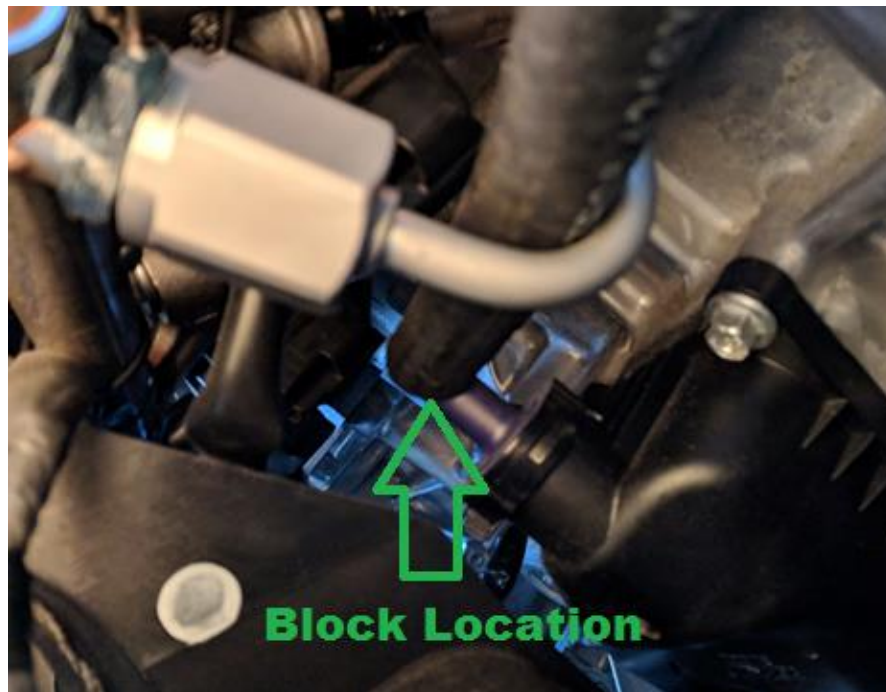
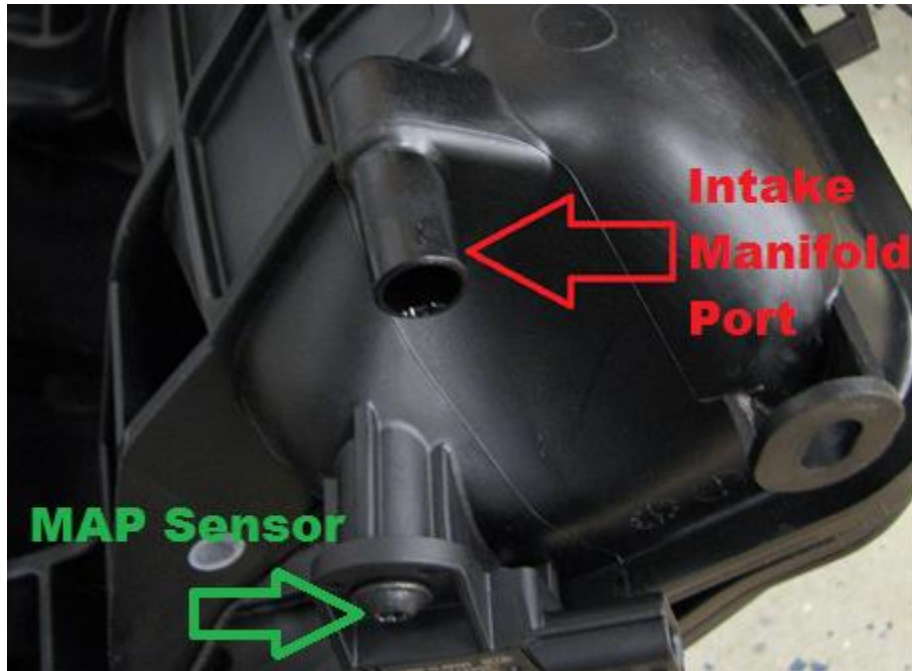
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- 2.7. We unfortunately cannot help with many images of the intake manifold to block PCV valve hose location because it is nestled nicely below the intake manifold and towards the firewall. Below are some photos to help you locate where this hose is. It is below the hose shown in this photo, near the sensor located on the rear of the intake manifold.



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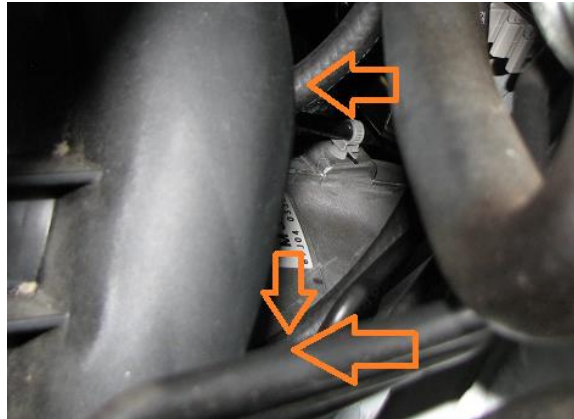
- 2.8. We do **not** recommend removing the intake manifold; as it is a chore to do so. We did on our install to inspect how much blow by we were getting but it was a lot of work to get it fully out. You will have to use your hands and reach below in this area to find a “U-Shaped” hose which connects the intake manifold and the block. **Remove this hose.** The block hose

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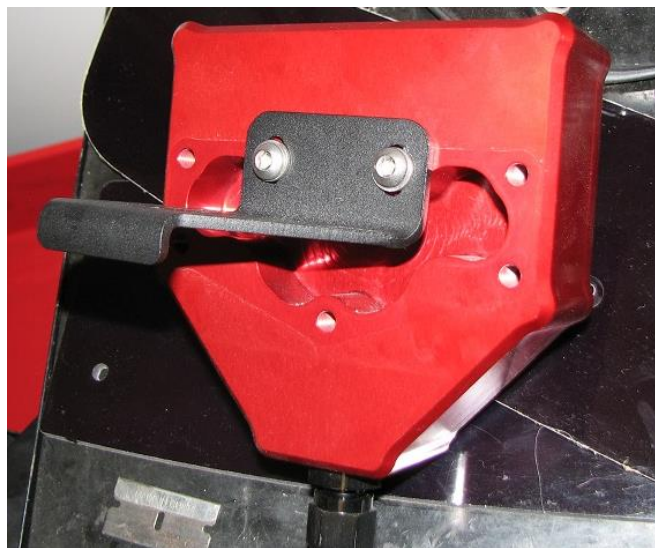
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location can rotate, so feel around for this and if the hose location rotates, you found the block PCV hose location.

- 2.9. This is the most difficult part of the install as you are working blind for the most part while installing the hoses.
- 2.10. With this hose removed, we need to push the supplied 3/8" hose onto the intake manifold and the engine block nipples. ***It is recommended to add a drop of motor oil as lubricant to ease install of the hose***



- 2.11. You can install the hose clamps provided in the kit to ensure no vacuum leaks. This is very difficult; **but necessary for forced induction applications**. For NA applications, it is okay to run without hose clamps; as we have done for multiple years on our shop ND.
- 2.12. With the AOS on the bench, we can loosely install the bracket on the AOS as shown below. Utilize the small diameter washers and BHCS.



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- 2.13.** We can now install the AOS onto the bracket shown below. Utilize the fender washer and a 16mm long BHCS to fasten this to the car.



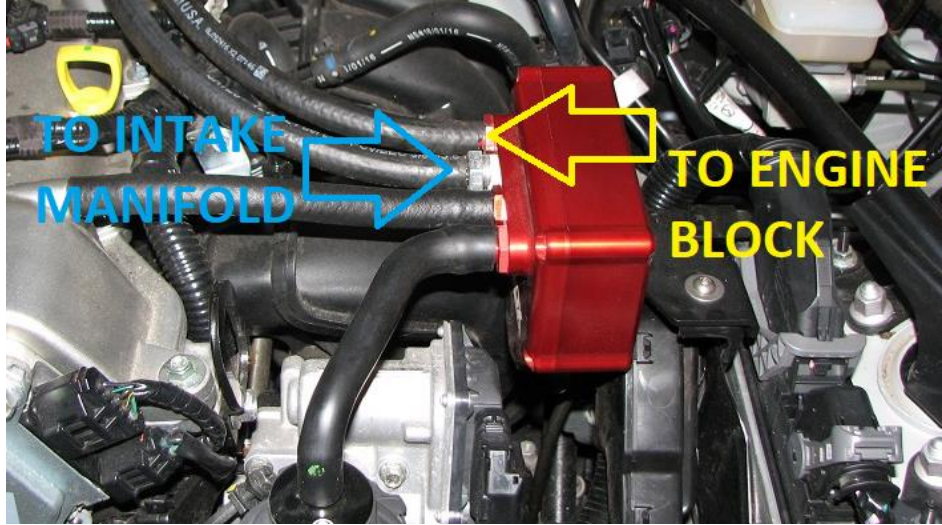
- 2.14.** Utilizing the supplied hose, we can install all of the hoses as shown below.



- 2.15.** The single most important hose location is the hose going to the PCV valve on the AOS. This *needs* to go to the hose that attaches to the intake manifold for proper operation.

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- 2.16. At this point; the install is finalized. Congratulations on installing the Verus Engineering AOS. Please send any questions/comments/concerns via e-mail to sales@verus-engineering.com
- 2.17. We recommend checking the AOS for fluid every thousand miles initially. Our shop ND did not experience a large amount of blow-by but it is better to check it more often than not.
- 2.18. The drain plug is unscrewed with your fingers on the bottom thumb screw, not the hex portion of the drain plug. You may have to raise the AOS by unscrewing the bracket from the vehicle due to space constraints.



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