

VERUS

ENGINEERING

ND MX5 Miata Air Oil Separator (AOS)

Install Manual



Author: Eric Hazen

Release Date: 2018/10/02

Approvals: E. Hazen, P. Lucas

Document Revisions

Rev	Date	Author	Description
01	2018/10/02	E. Hazen	Initial release of install manual

Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.

CONTENTS

1. Introduction	<3>
1.1. Overview	<3>
1.2. Difficult.....	<3>
1.3. Time Required.....	<3>
1.4. Tools Needed	<3>
1.5. AOS Kit Components.....	<3-4>
2. AOS Install	<4-10>

ND MX5 Miata AOS – Install Manual

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

ND MX5 Miata AOS – Install Manual



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.

Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.

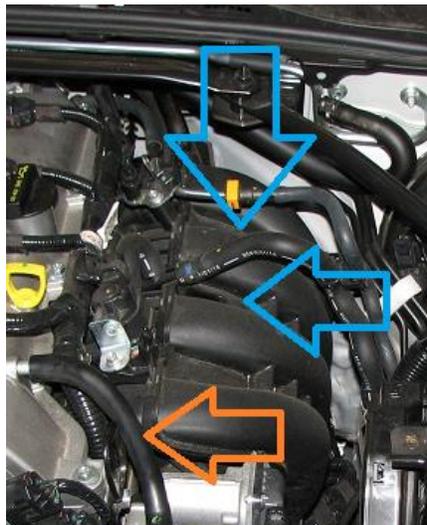
ND MX5 Miata AOS – Install Manual

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.



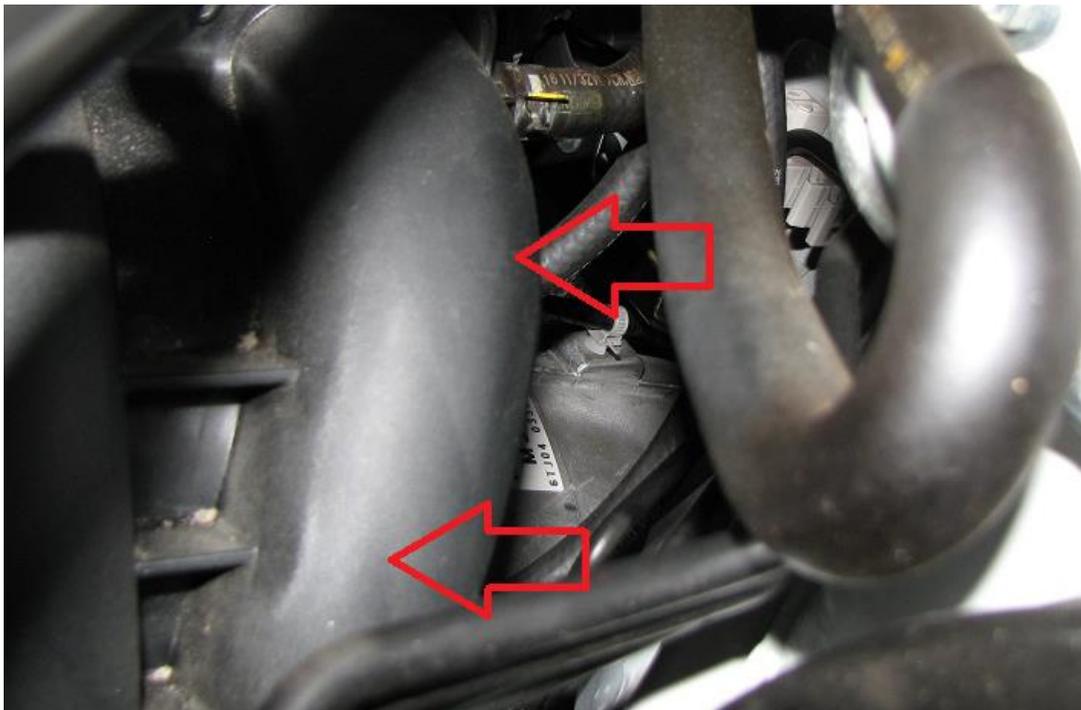
2.6. With the Verus Engineering AOS, we filter the airflow from both the PCV vent as well as the valve cover vent. We will leave the easy hose connections (valve cover to intake, orange arrow) till the end and work on the hardest part first; the intake manifold to block PCV valve connection (blue arrow).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



Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.

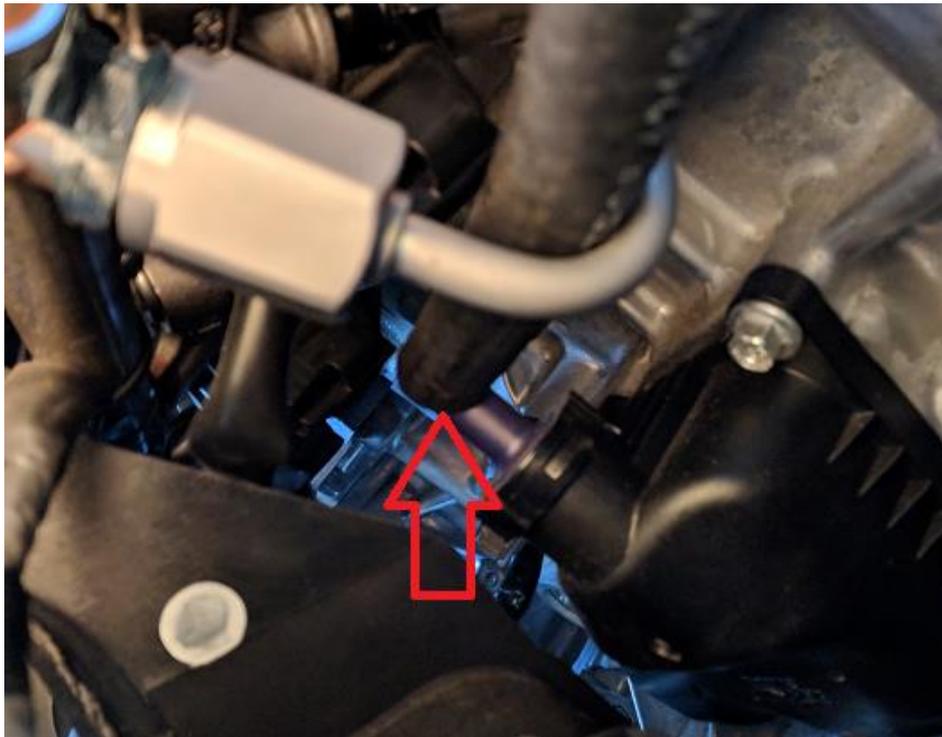
ND MX5 Miata AOS – Install Manual

- 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.



Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.

ND MX5 Miata AOS – Install Manual



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

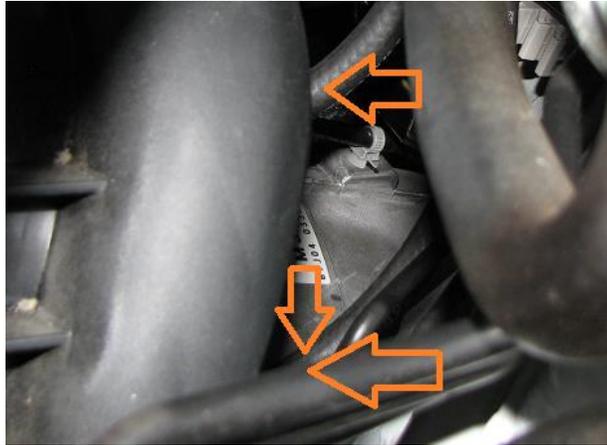
Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.

ND MX5 Miata AOS – Install Manual

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.**

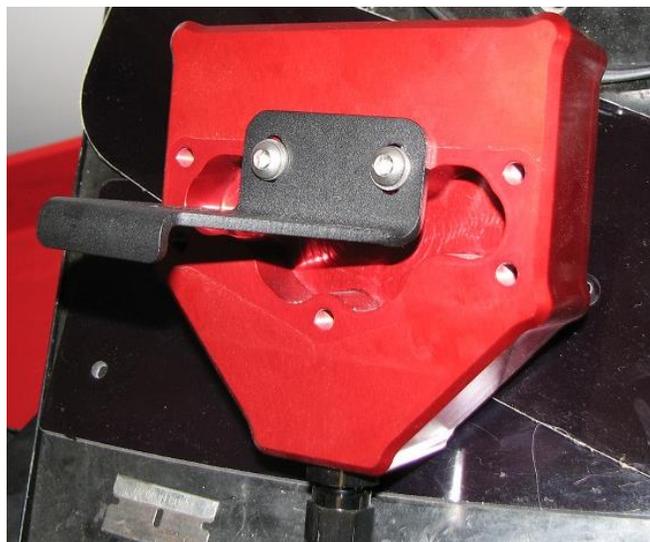
2.9. This is the most difficult part of the install as you are working blind for the most part.

2.10. With this hose removed, we need to push the supplied 3/8” hose onto the intake manifold and the engine block nipples.



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.



Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.

ND MX5 Miata AOS – Install Manual

- 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.



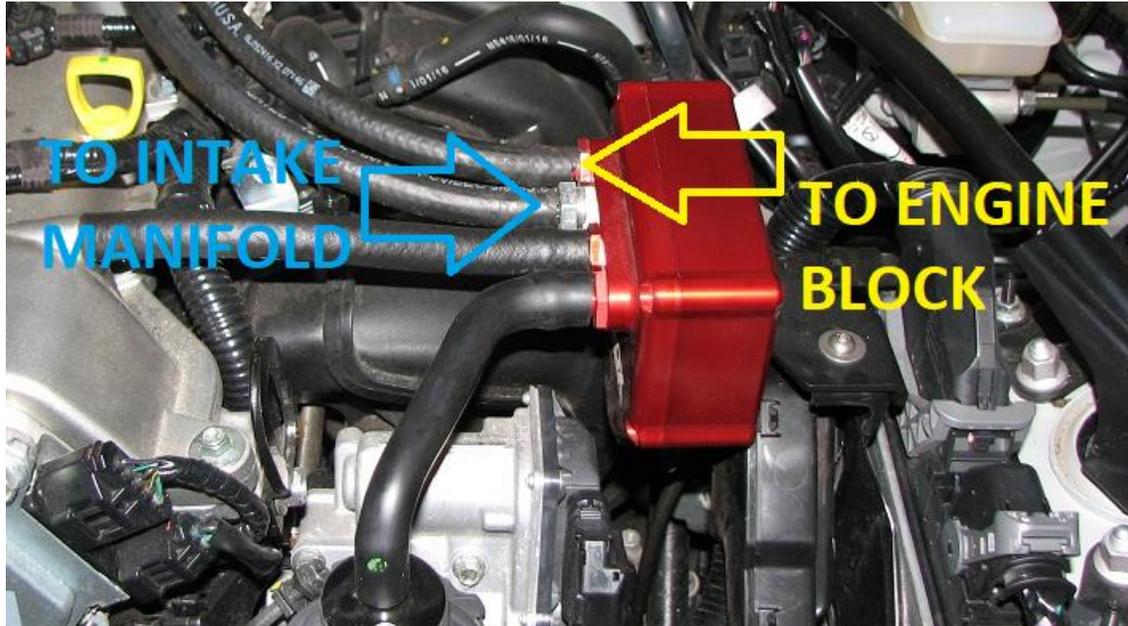
- 2.14.** Utilizing the supplied hose, we can install all of the hoses as shown below.



- 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.

Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.

ND MX5 Miata AOS – Install Manual



- 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.



Confidential: Property of Verus Engineering. Not for Distribution outside intended recipient list.