

INSTALLATION INSTRUCTIONS



CORKSPORT Race Header for 2.5L SkyActiv

2014-2018 Mazda 3 MT, 2013-2017 Mazda 6 MT

PART #: AXM-6-121

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CORKSPORT Race Header for 2.5L SkyActiv

2014-2018 Mazda 3, 2013-2017 Mazda 6
(Manual Transmissions Only)

PRODUCT DESCRIPTION:

The CorkSport Race Header for 2.5L SkyActiv manual transmission takes your Mazda to the next level. Utilizing a long tube 4-2-1 design similar to OEM, but with a performance focus, the CS header offers a boost to both horsepower and torque. The larger diameter pipes offer a great boost to the exhaust note, while the unique design is sure to catch people's attention when you pop the hood. For best results, be sure to pick up an 80mm CS exhaust to match!

Please let us know your feedback by submitting a review at:
<https://corksport.com/2014-2018-mazda-3-6-2.5l-race-header.html>

PRE-INSTALLATION NOTES:



Verify that the car is on a level surface before proceeding. Use appropriate load rated jack stands to support the vehicle.



These instructions were written for reference only and the use of a factory service manual is recommended.



How our instructions work: To best cover all of our customers experience levels, we have included a table of contents/order of operations along with step-by-step instructions.



Make sure your vehicle is cooled down prior to starting installation. If you are going to work on your car within an hour of having driven it, use a fan to cool off the car.



These instructions were written using a 2018 Mazda 3 2.5L hatchback. Earlier years and Mazda 6 will be similar.



This header removes the main catalytic converter from your exhaust system. This causes a check engine light and makes it illegal to use on the street in most areas.

MATERIALS & TIME:

GENERAL INFO:



Time Est:
5hr



Difficulty:
4/5



CEL:
Yes



Warranty:
2-Year

TOOLING LIST:

- 10mm Socket
- 12mm Socket
- 14mm Socket
- 17mm Socket
- 3/8" Drive Ratchet
- 4" Extension
- Oxygen Sensor Socket
- 1/2" Drive Ratchet
- 10mm Wrench
- 12mm Wrench
- 14mm Wrench
- 17mm Wrench
- Flathead Screwdriver
- Jack Stands
- Floor Jack
- Channel Lock Plier
- A Friend

Optional:

- Exhaust Hanger Pliers
- Push Clip Removal Tool
- 14mm Flex-Head Ratcheting Wrench

PARTS LIST:

- One (1) CorkSport Race Header Upper Section
- One (1) CorkSport Race Header Lower Section
- Two (2) CorkSport V-band clamps
- One (1) CorkSport 80mm Exhaust Gasket
- Two (2) M10x1.25x35mm Bolts
- Two (2) M10 Nuts
- Two (2) M10 Lock Washers
- Four (4) M10 Flat Washers

ORDER OF OPERATIONS & TABLE OF CONTENTS:

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DETAILED INSTRUCTIONS:

1. Removing the OEM Hood and Cowl



Verify that the car is on a level surface before proceeding. Use appropriate load rated hydraulic jack and jack stands to support the vehicle.

- a) Engage the parking brake and raise the front of the vehicle with a hydraulic floor jack, then support with jack stands.



Please refer to the owners manual for proper jack stand location.



The rear of the vehicle does not need to be lifted as you will only be accessing the front half.

- b) Open the hood of the vehicle and locate the four 12mm bolts (two on each side) that attach the hood to the hood hinges in the rear corners. Two shown circled in red in Figure 1a.



The hood will come off immediately upon removal of these bolts. Support each side of the hood as the bolts are removed.

- c) With a friends help on the other side, remove the four 12mm bolts. Then remove the hood from the vehicle.
- d) Place your hood out of the way, safe from any damage.
- e) Remove the plastic covers from the windshield wipers. They pull straight off with a little effort. Shown circled in red in Figure 1b.



Figure 1a



Figure 1b

DETAILED INSTRUCTIONS:

1. Removing the OEM Hood and Cowl (continued)

- f) Remove the two 14mm nuts from the windshield wipers. **Circled in red in Figure 1c.**
- g) Remove the windshield wipers by pulling straight away from the windshield.
- h) Remove the 5 push clips from the plastic portion of the cowl. Shown **circled in red in Figure 1d.**

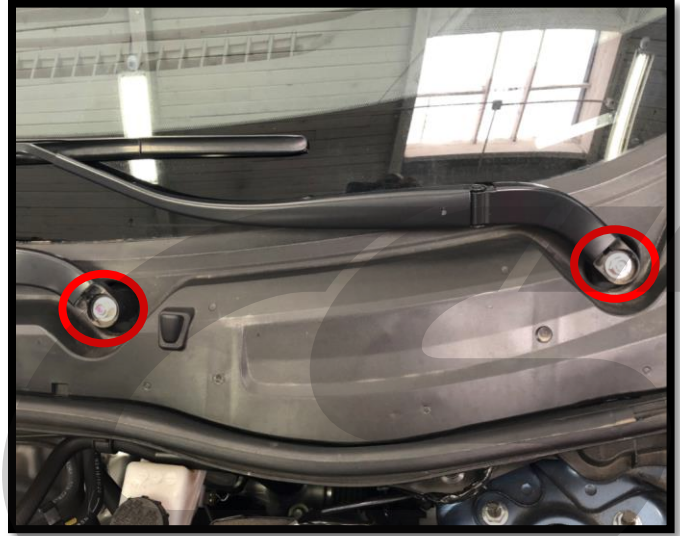


Figure 1c

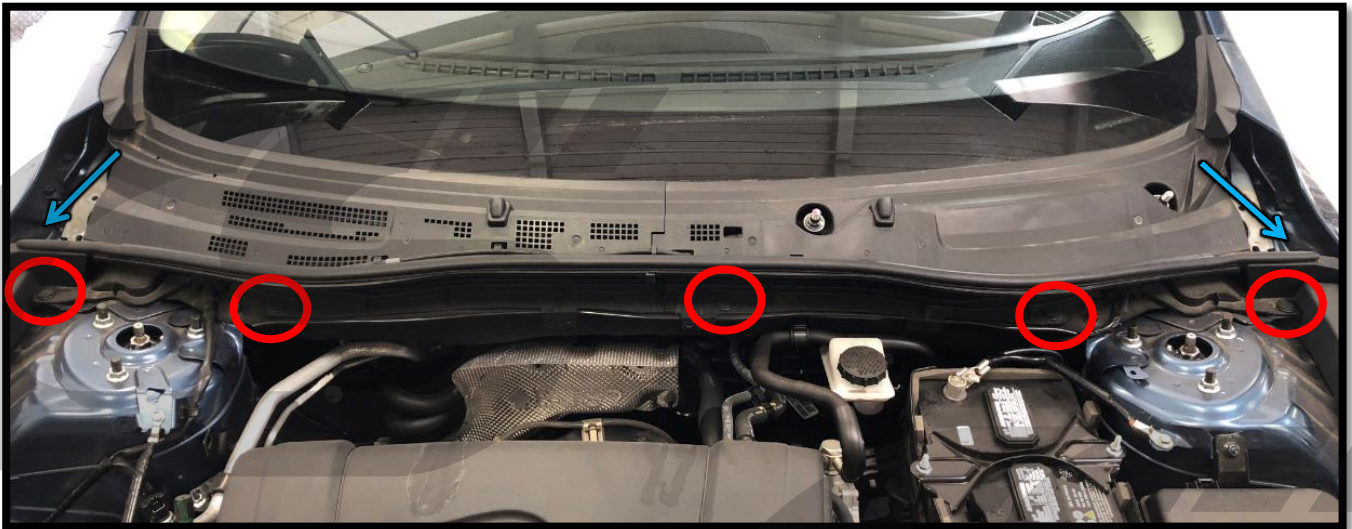


Figure 1d

- i) Look into the corners of the cowl and locate the blue retainers that keep the rubber ends of the cowl in place. Look in the areas shown with **blue arrows in Figure 1d.** Also **circled in red in Figure 1e.**

DETAILED INSTRUCTIONS:

1. Removing the OEM Hood and Cowl (continued)

j) Pull and stretch the rubber slightly to fit the blue retainer through the holes in the rubber. This will allow the rubber to come free from the retainers. There are two retainers on each side, only the outermost one needs to be removed. Shown circled in green in **Figure 1e**.

k) Disconnect the windshield washer line from the passenger side of the cowl. It is a rubber line with a connection in the center that can be pulled apart with little effort. Shown with red markings in **Figure 1f**.



Secure the line coming from the fender to prevent it from falling down into the fender.

l) Flip up the hood hinges to get them out of the way.

m) Pull down and out to unhook the cowl from the windshield and remove the plastic section of the cowl from the vehicle.

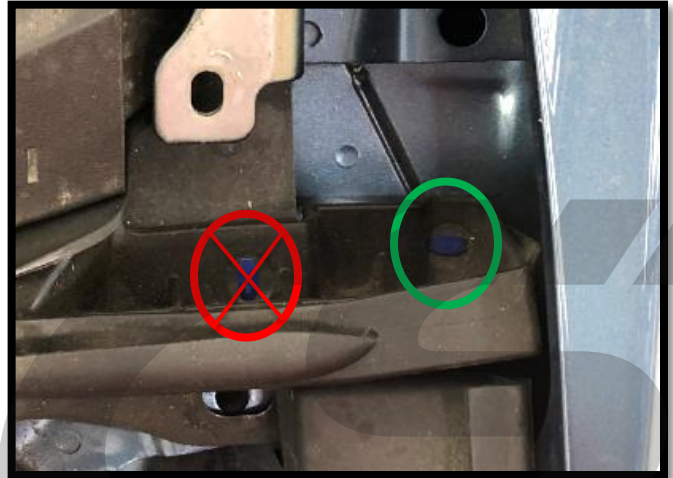


Figure 1e

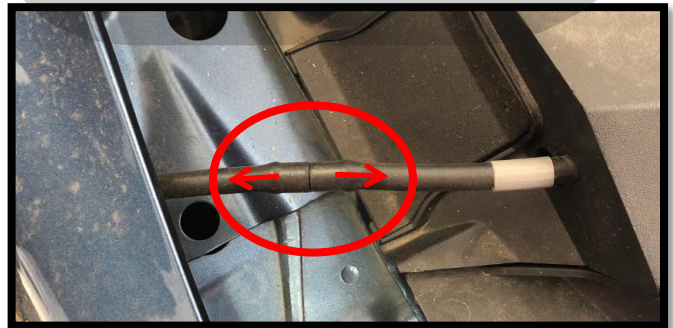


Figure 1f



Figure 1g

DETAILED INSTRUCTIONS:

1. Removing the OEM Hood and Cowl (continued)

n) Disconnect the electrical connector from the wiper motor. Push in the small tab on the underside and pull outward. Connector shown **circled in red** in **Figure 1h**.

o) Remove the two 10mm bolts that attach the wiper motor to the vehicle. Shown **circled in green** in **Figure 1h**.



Be very cautious when performing the next step as you could damage your windshield if not careful. If needed, place a towel on the edge of the windshield.

p) Remove the wiper motor from the vehicle. It is secured with a stud in rubber grommet. It must be pulled free toward the windshield before it can then be removed from the vehicle. Shown with **red markings** in **Figure 1i**.

q) Disconnect the electrical connector from the sensor located near the center of the cowl. Push in the tab on the front side and pull the connector free. Shown with **red arrows** in **Figure 1j**.

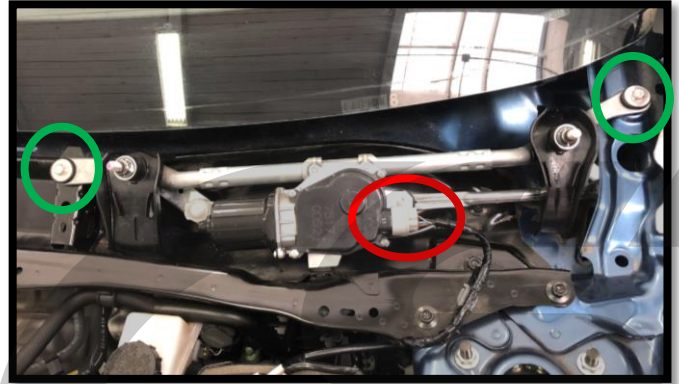


Figure 1h

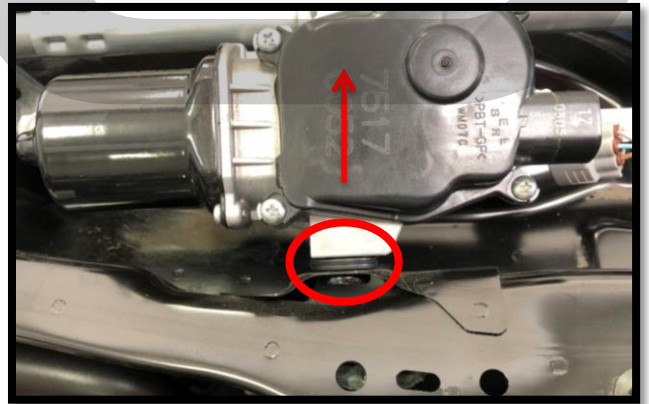


Figure 1i

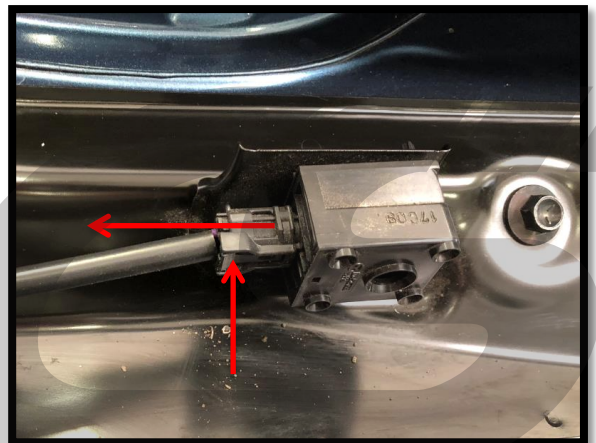


Figure 1j

DETAILED INSTRUCTIONS:

1. Removing the OEM Hood and Cowl (continued)

- r) Unclip the hose from the front edge of the cowl. Use a flathead screwdriver to pry the retaining clip open as shown in **Figure 1k**. Then move this hose out of the way.



Figure 1k

- s) Remove the ten 12mm bolts that connect the metal portion of the cowl to the vehicle. Shown **circled in red** in **Figure 1l**.

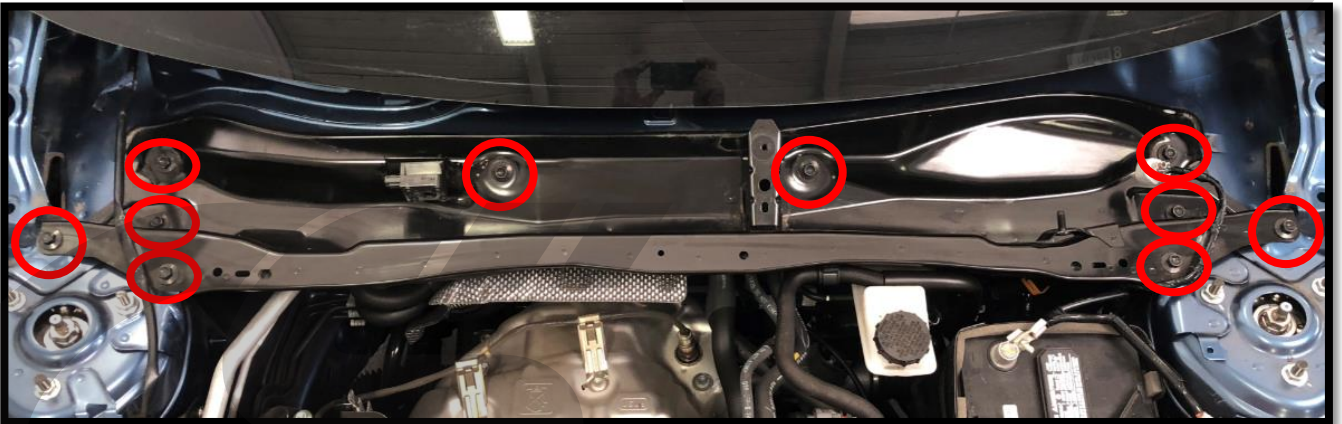


Figure 1l

- t) Lift up on the cowl to gain access to the underside as shown in **Figure 1m**.



Figure 1m

DETAILED INSTRUCTIONS:

1. Removing the OEM Hood and Cowl (continued)

- u) Unclip the wiring harnesses from cowl, there is one located on each end. Access the clips from the underside of the cowl and use pliers to squeeze the clips and free the wiring. Driver's side shown in **Figure 1n**.
- v) Remove the metal portion of the cowl from the vehicle.

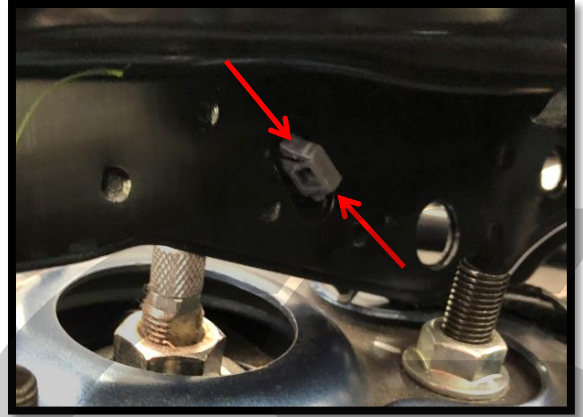


Figure 1n

2. Removing the OEM Header Heatshields

- a) Begin by removing the engine cover. Pull straight upwards and it will pop free from its rubber mounts. Shown in **Figure 2a**.
- b) Locate the Oxygen (O2) sensor on the top of the OEM header. Trace the wiring to where it meets the engine block. Shown in **Figure 2b and Figure 2c** with the red arrows.
- c) Unplug the O2 sensor wiring. Shown in **Figure 2c**.

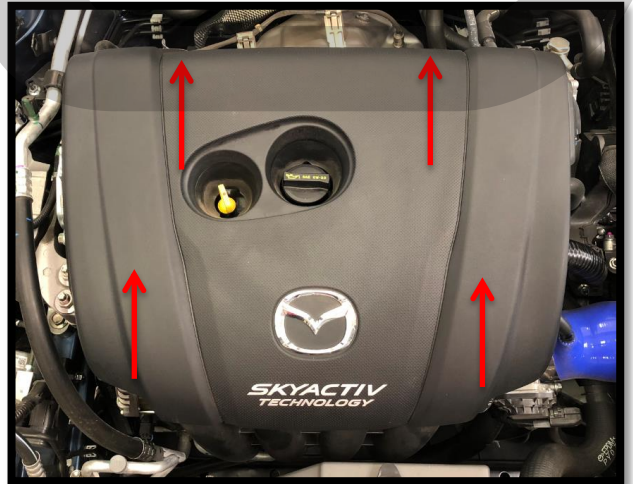


Figure 2a

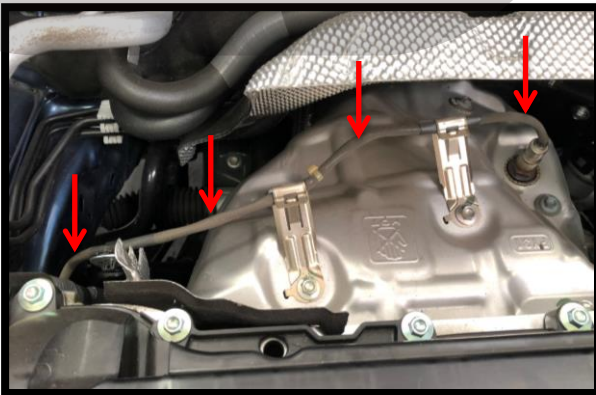


Figure 2b

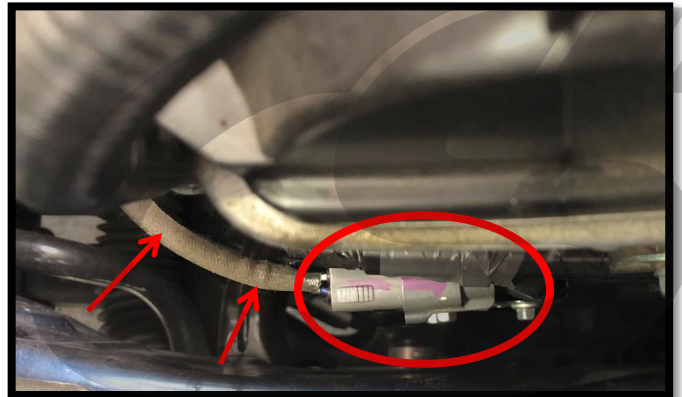


Figure 2c

DETAILED INSTRUCTIONS:

2. Removing the OEM Header Heatshields (continued)

- d) Remove the plastic wiring clip that secures the O2 sensor wiring to the engine block. Show **circled in red** in **Figure 2d**.
- e) Remove the two 10mm bolts that secure the O2 sensor wiring to the OEM header. Shown **circled in blue** in **Figure 2d**.
- f) Remove the Oxygen sensor from the OEM header using an O2 sensor socket. Shown **circled in green** in **Figure 2d**.

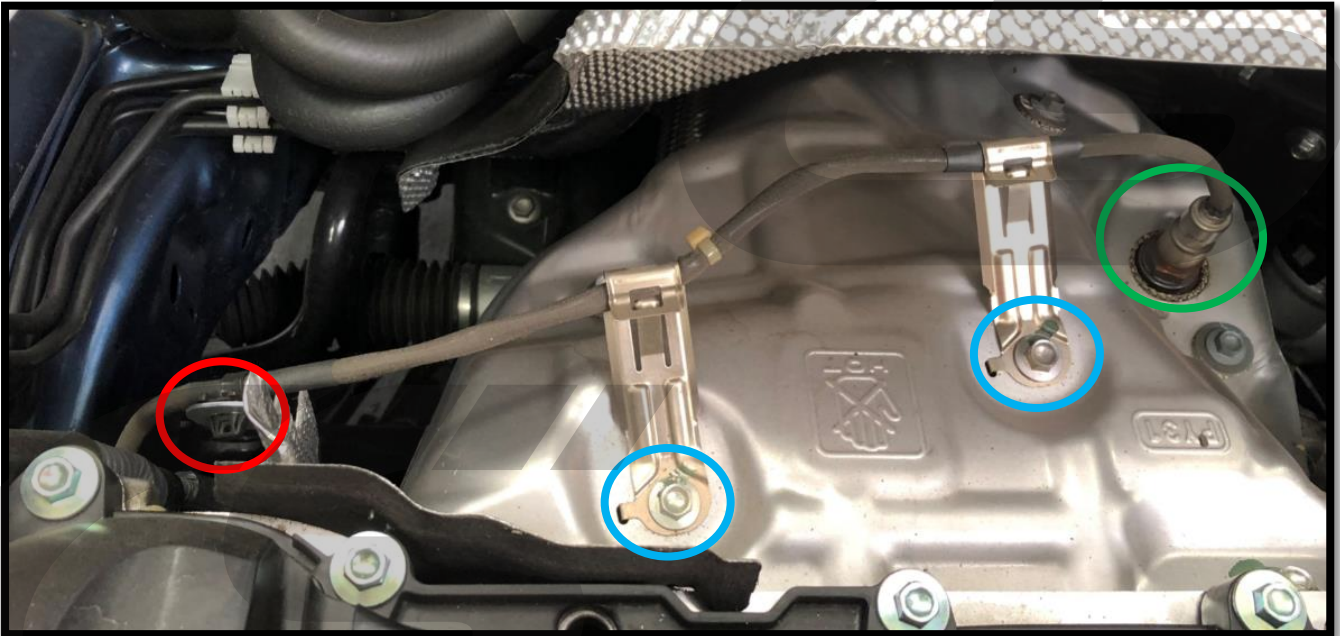


Figure 2d

- g) Remove the four 10mm nuts that attach the upper heatshield to the firewall. Then remove this heatshield. Nuts shown **circled in red** in **Figure 2e**.

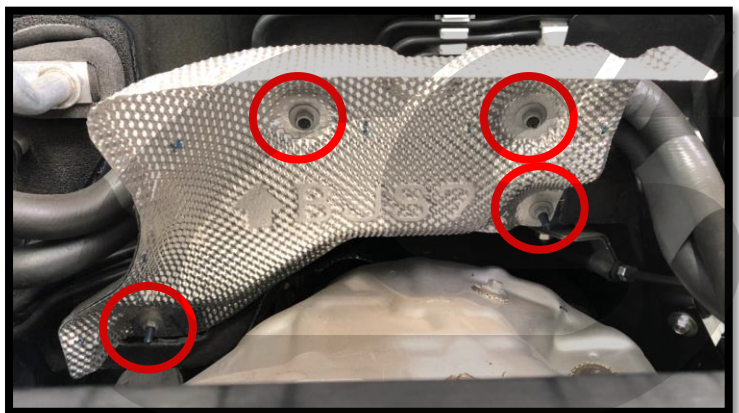


Figure 2e

DETAILED INSTRUCTIONS:

2. Removing the OEM Header Heatshields (continued)

- h) Remove the heater core hose support bracket by removing the two 10mm nuts. Shown **circled in red** in **Figure 2f**.
- i) Loosen the upper manifold heatshield by removing the five 10mm bolts. Shown **circled in red** in **Figure 2g**.
- j) Slide the heatshield toward the rear of the car to expose the OEM header and engine mounting flange. Shown in **Figure 2h**.

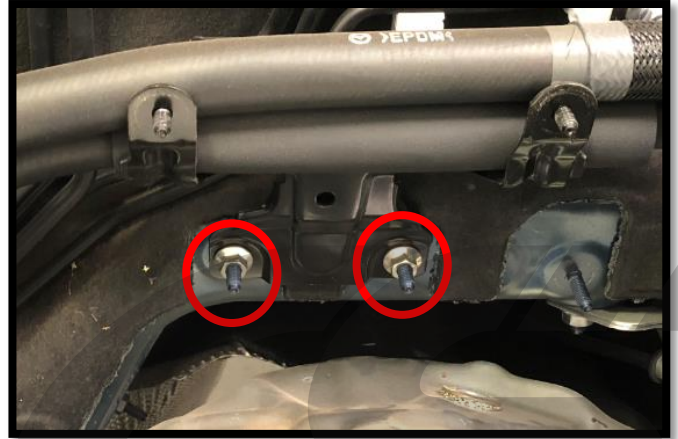


Figure 2f

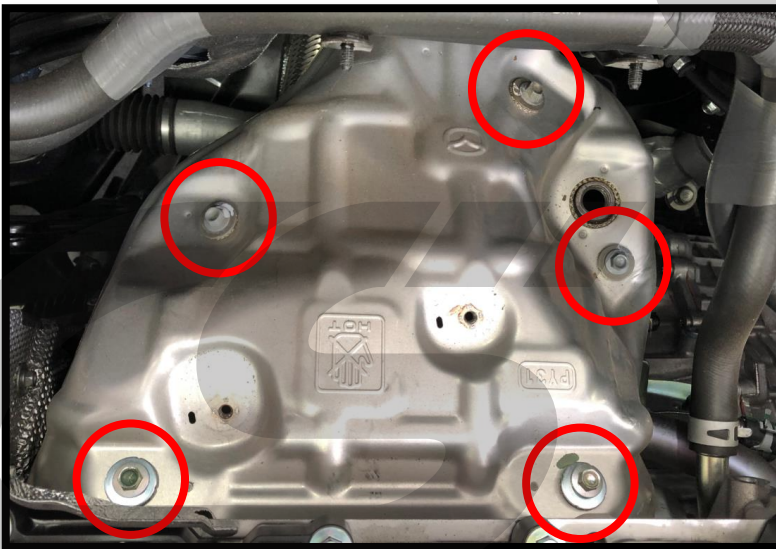


Figure 2g

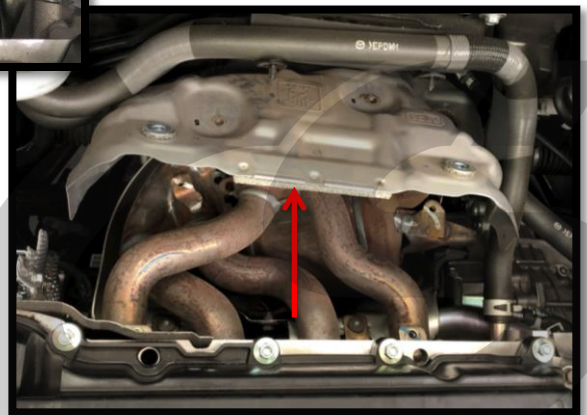


Figure 2h

DETAILED INSTRUCTIONS:

3. Removing the OEM Undertrays & Exhaust Connection

- a) Remove the four push clips from the silver shielding underneath the vehicle. Shown circled in red in Figure 3a.
- b) Remove the five 10mm bolts from the shielding underneath the vehicle. Shown circled in blue in Figure 3a. The silver shielding can then be removed.
- c) Remove the six 12mm bolts from the underbody brace. Shown circled in green in Figure 3a. Two of these bolts are hidden and are shown with the green arrows.
- d) Remove the forward chassis brace. There is a tab on each side that must slide out of a slotted hole on each frame rail. Then the brace can be removed by sliding it rearwards.
- e) Locate the end of the OEM header. Remove the two 14mm nuts that connect it to the exhaust. Shown circled in red in Figure 3b.
- f) Remove the rubber hanger from the end of the OEM header. Shown with the blue arrow in Figure 3b. Exhaust hanger pliers are the easiest tool to use for this.

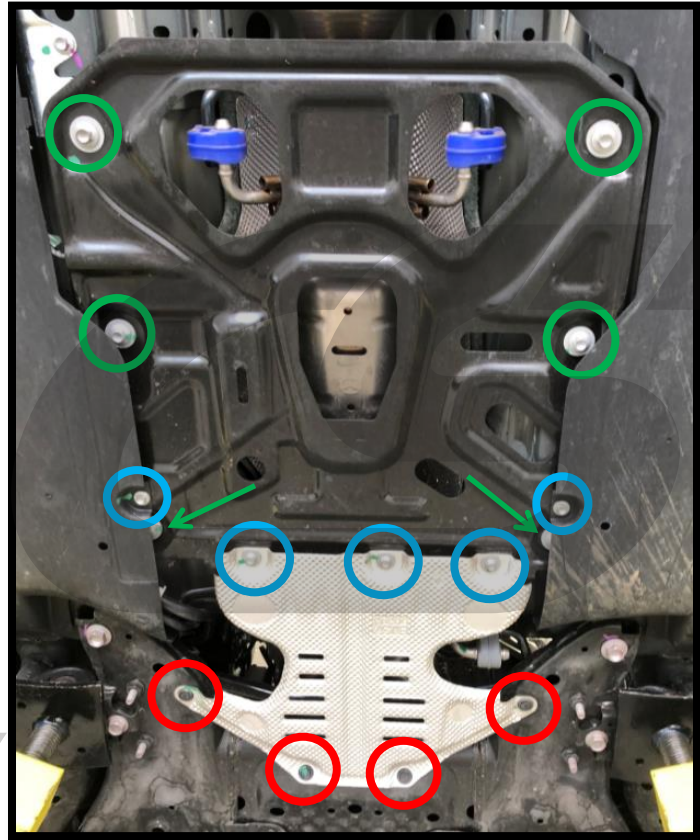


Figure 3a

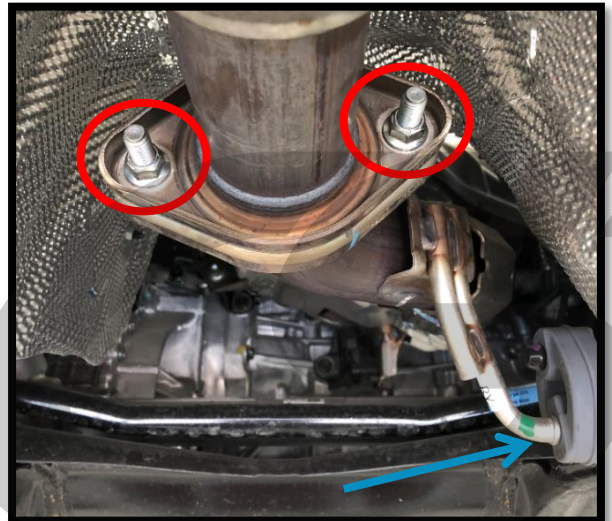


Figure 3b

DETAILED INSTRUCTIONS:

3. Removing the OEM Undertrays & Exhaust Connection

- g) Remove the six push clips from the rear portion of the engine undertray. Shown **circled in red** in **Figure 3c**.
- h) Remove the eight 10mm bolts from the engine undertray. Then remove the engine undertray from the vehicle. Bolts shown **circled in blue** in **Figure 3c**.

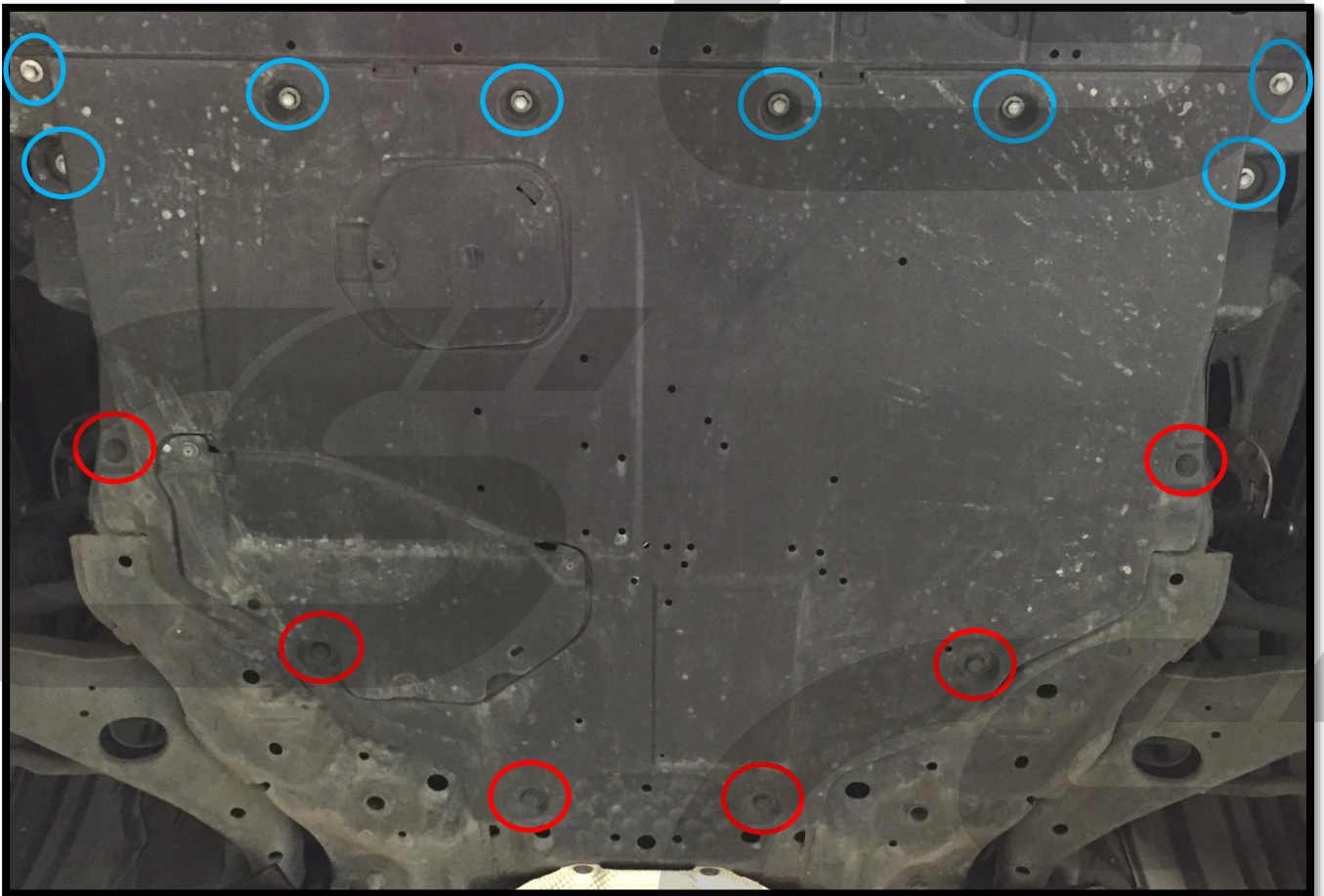


Figure 3c

DETAILED INSTRUCTIONS:

4. Removing the OEM Header

- a) While still under the car, locate the lower header mounting brackets. They are shown circled in red in Figure 4a and Figure 4b.
- b) Remove the 14mm bolt that attaches the OEM header to the bracket near the transmission. Shown circled in blue in Figure 4a.
- c) Remove the 14mm bolt that attaches the OEM header to the bracket near the engine oil pan. Shown with the blue arrow in Figure 4b.

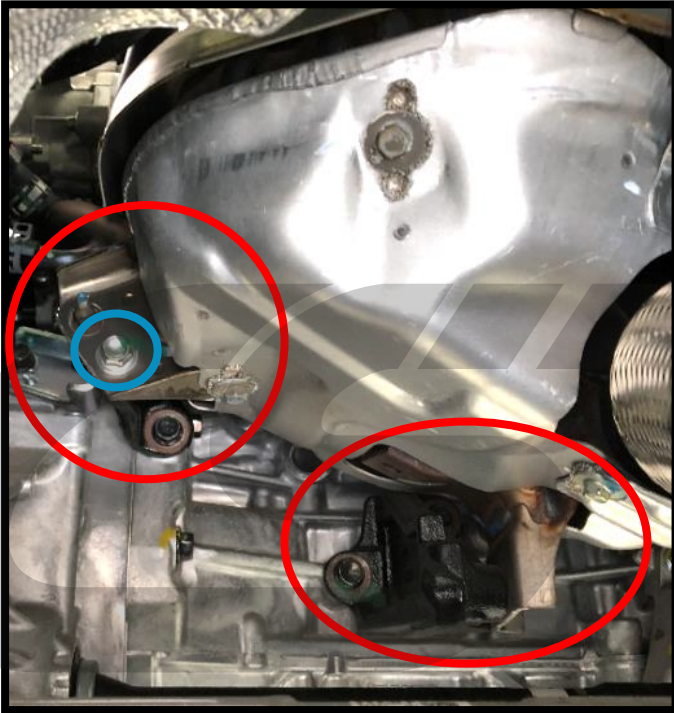


Figure 4a

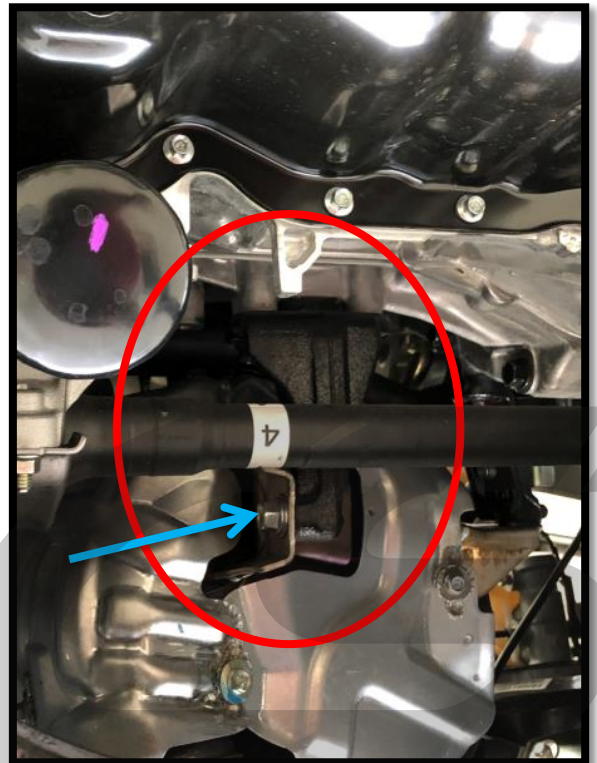


Figure 4b

DETAILED INSTRUCTIONS:

4. Removing the OEM Header (continued)

- d) Back in the engine bay, remove the five 14mm nuts that attach the OEM header to the engine. Shown **circled in red** in **Figure 4c**.

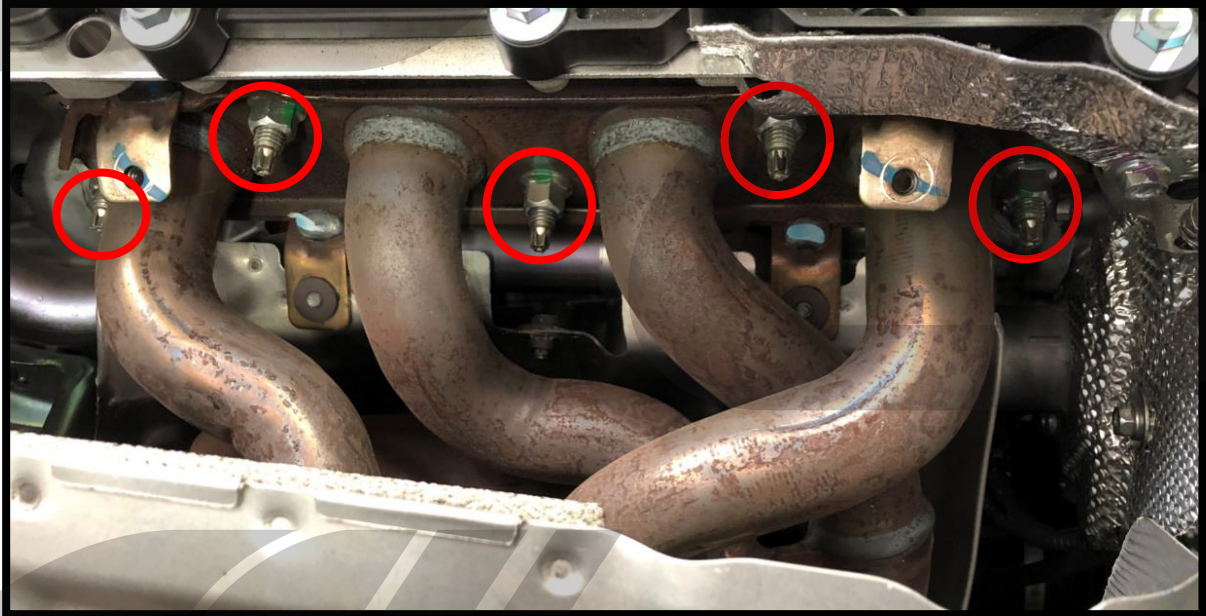


Figure 4c

- e) Slide the OEM header off its mounting studs and let it sit lower down in the engine bay. This is shown in **Figure 4d**.
- f) The heatshield disconnected in Step 2i can then be removed from the engine bay.

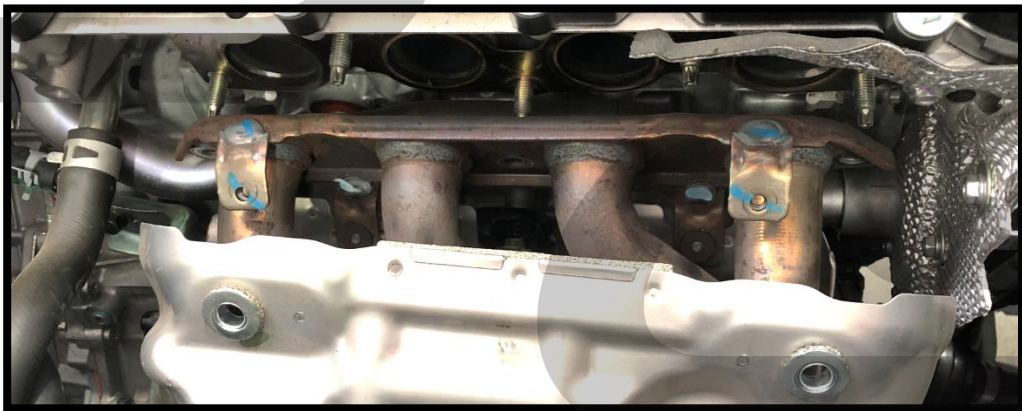



Figure 4d

DETAILED INSTRUCTIONS:

4. Removing the OEM Header (continued)

 Extracting the OEM header from the engine bay can be difficult. Take your time and be sure you do not damage any wiring, hoses, or other engine bay components during removal. A friend underneath the car can be very useful during this process as the lower exhaust hanger tends to get caught on the steering rack during header removal.

- g) After the previous step, the OEM header should be in a position similar to **Figure 4e**.
- h) Begin the removal process by lifting the header while rotating it toward the rear of the car and slightly clockwise. **Figure 4f** should be your next target position and orientation.

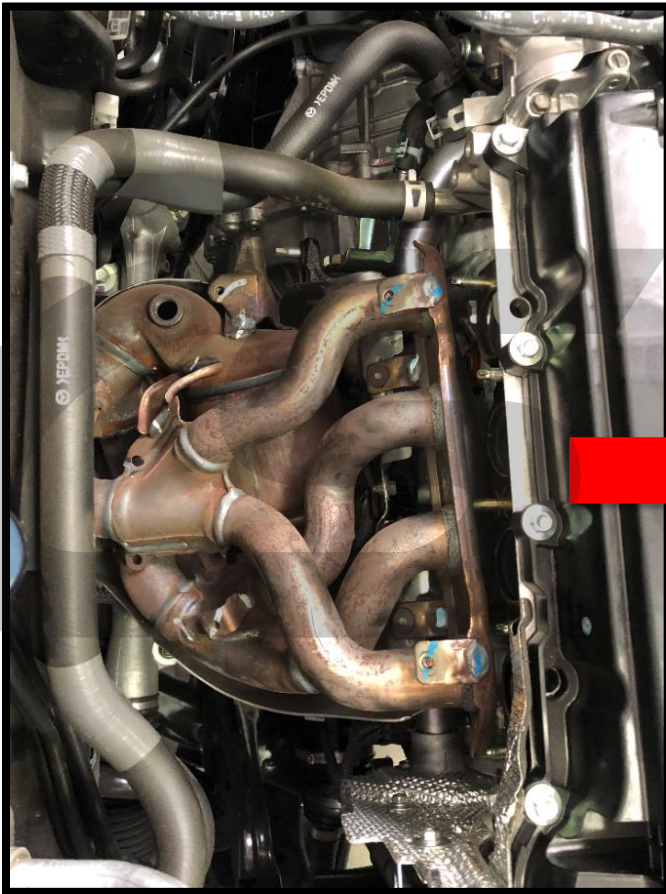


Figure 4e



Figure 4f

DETAILED INSTRUCTIONS:

4. Removing the OEM Header (continued)

- i) Next, the lower support bracket mount will need to clear the top of the engine. This is the mounting that was removed in Step 4c. You will need to rotate the OEM header until you find the orientation that works for getting this mount clear of the top of the engine. Mounting point circled in red in Figure 4f and Figure 4g.



Figure 4g

- j) The other support bracket mount will now need to clear the top of the engine. This is the mounting that was removed in Step 4b. You will need to rotate the OEM header until you find the orientation that works for getting this mount clear of the top of the engine. Mounting point circled in blue in Figure 4f and Figure 4h.

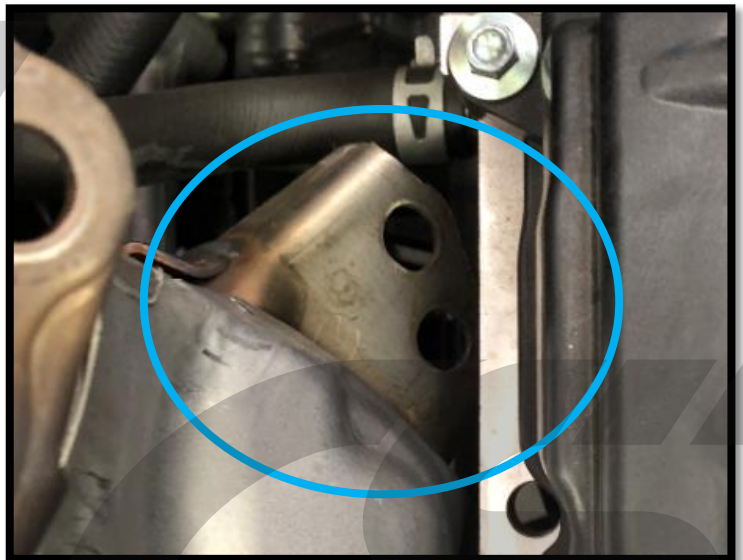


Figure 4h

- k) The OEM header can now be removed from the vehicle.

DETAILED INSTRUCTIONS:

4. Removing the OEM Header (continued)



Before installing the CS header, the OEM header support brackets must be removed.

- l) Remove the two 14mm bolts from the support bracket near the transmission. This is the same location where the OEM header was unbolted in Step 4b. Shown **circled in red** in **Figure 4i**.
- m) Remove the three 14mm bolts from the support bracket near the engine oil pan. This is the same location where the OEM header was unbolted in Step 4c. Shown **circled in red** in **Figure 4j**.

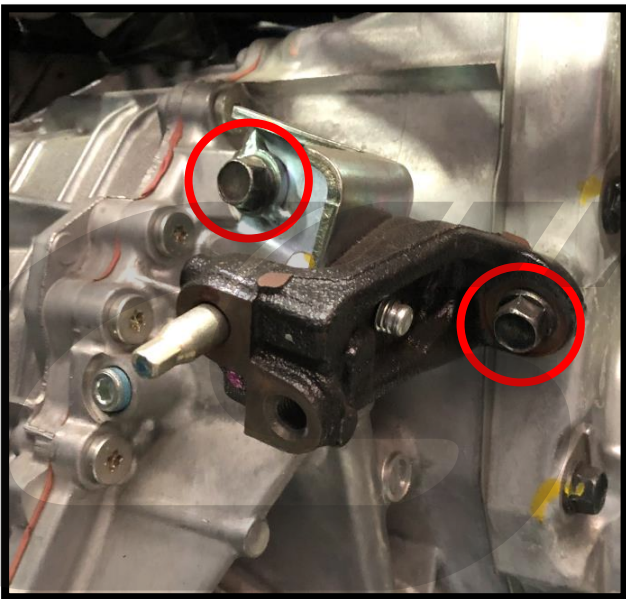


Figure 4i

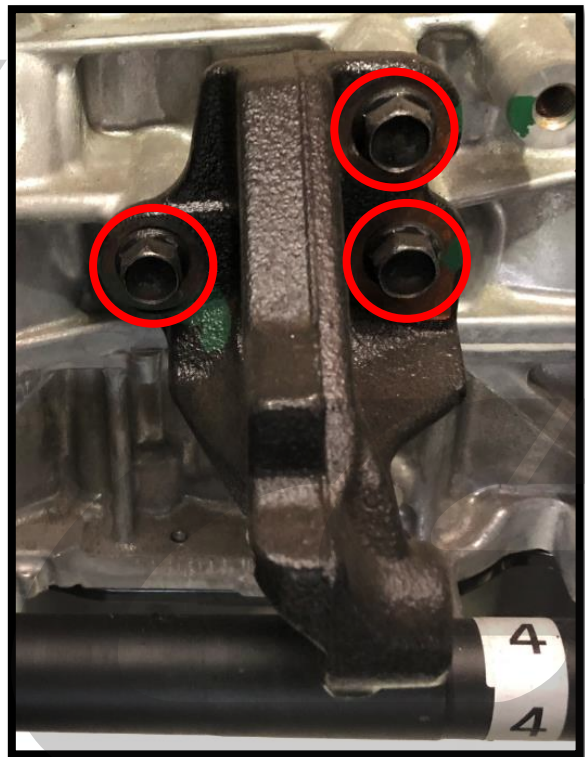


Figure 4j

DETAILED INSTRUCTIONS:

5. Installing the CorkSport Header

NOTE

Inspect the gasket that goes between the header and the engine block. It should remain attached to the studs on your engine. Replace the gasket if needed.

- a) Begin by inserting the lower section of the CS header into the engine bay. It can sit on the crossmember while the upper half is installed. See this position in **Figure 5a**.



Figure 5a

- b) Install the upper portion of the CS header into the engine bay and place it on the mounting studs of the engine block. Shown positioned correctly in **Figure 5b**.

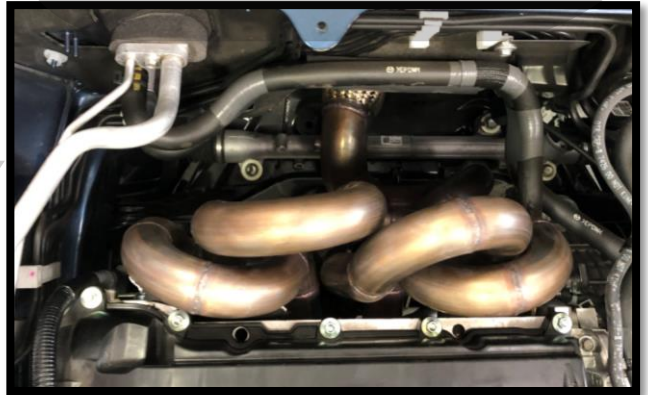


Figure 5b

NOTE

During tightening of the CS exhaust header, the bolts will be referred to using the numbers in **Figure 5c** below. Please reference this diagram as needed.

- c) Start threading on an OEM 14mm nut on stud #1. Use a magnet to position this nut on the stud as shown in **Figure 5d**.

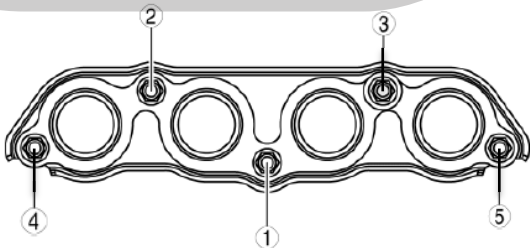


Figure 5c

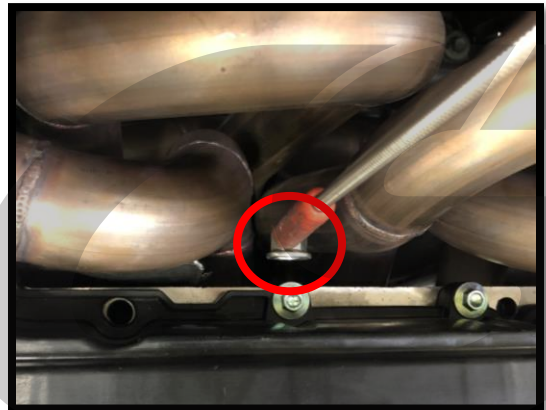


Figure 5d

DETAILED INSTRUCTIONS:

5. Installing the CorkSport Header (continued)



The tightening procedure below is directly from Mazda. Please follow as closely as you can. The steps are listed first, and the images that follow are a reference to the easiest way to access each nut. A flex-head ratcheting wrench is strongly recommended for ease of install.



You will likely not be able to get a torque wrench in all 5 of the nut locations. To get an approximate final torque spec, tighten a nut you can use a torque wrench on to the spec shown. Then use a regular wrench to feel how much force it takes to turn this nut. Use this force as an approximation for the appropriate torque on the other nuts.

- d) Thread an OEM nut onto locations 2-5. Ensure nuts 1-5 are threaded as far as you can by hand.
- e) Tighten nuts 1 and 2 to **25-39ft-lbs.**
- f) Tighten nuts 3,4, and 5 to **32-47ft-lbs.**
- g) Finally tighten nuts 1 and 2 to **32-47ft-lbs.**

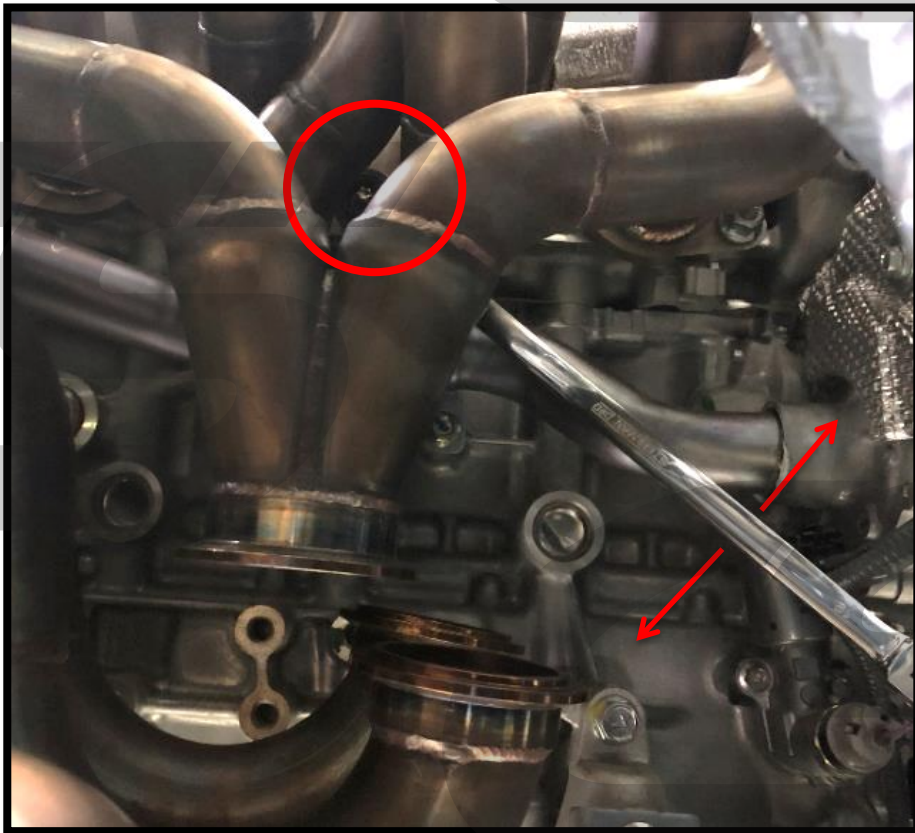


Figure 5e

Position 1: Flex-head ratcheting wrench

DETAILED INSTRUCTIONS:

5. Installing the CorkSport Header (continued)

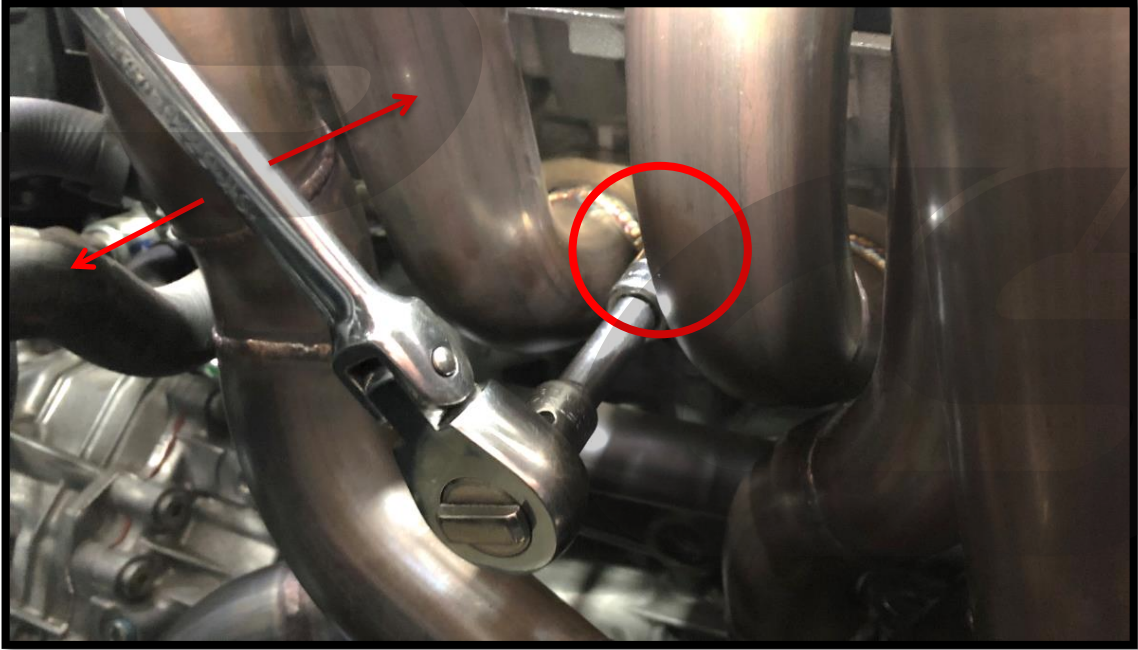


Figure 5f

Position 2: Deep socket, short extension, ratchet

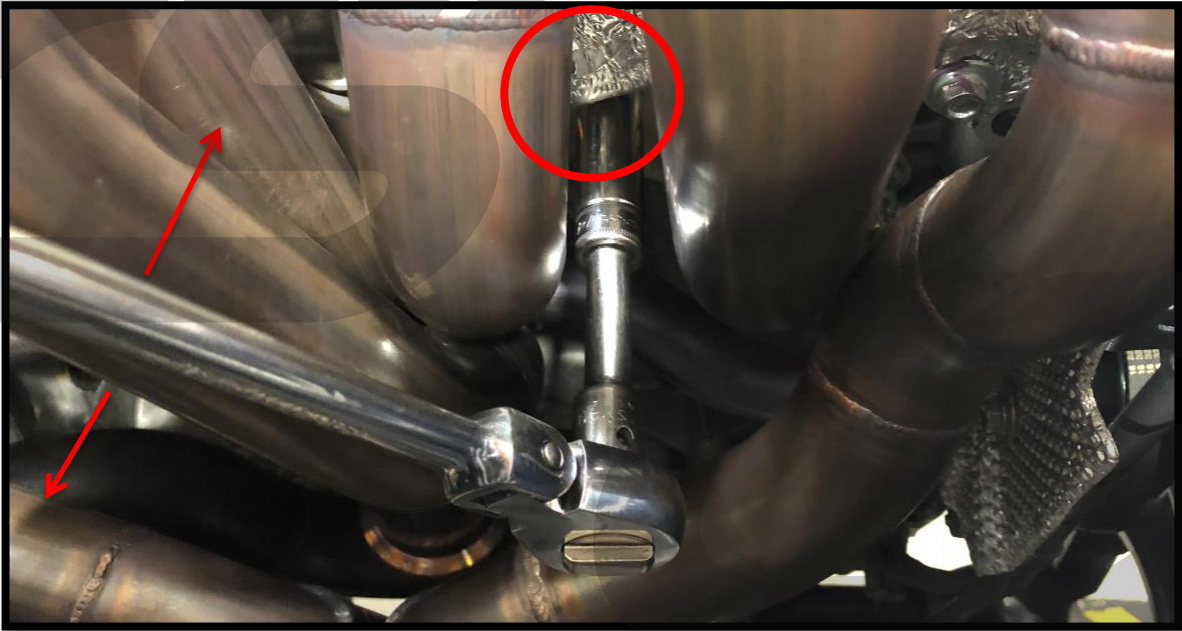


Figure 5g

Position 3: Deep socket, short extension, ratchet

DETAILED INSTRUCTIONS:

5. Installing the CorkSport Header (continued)

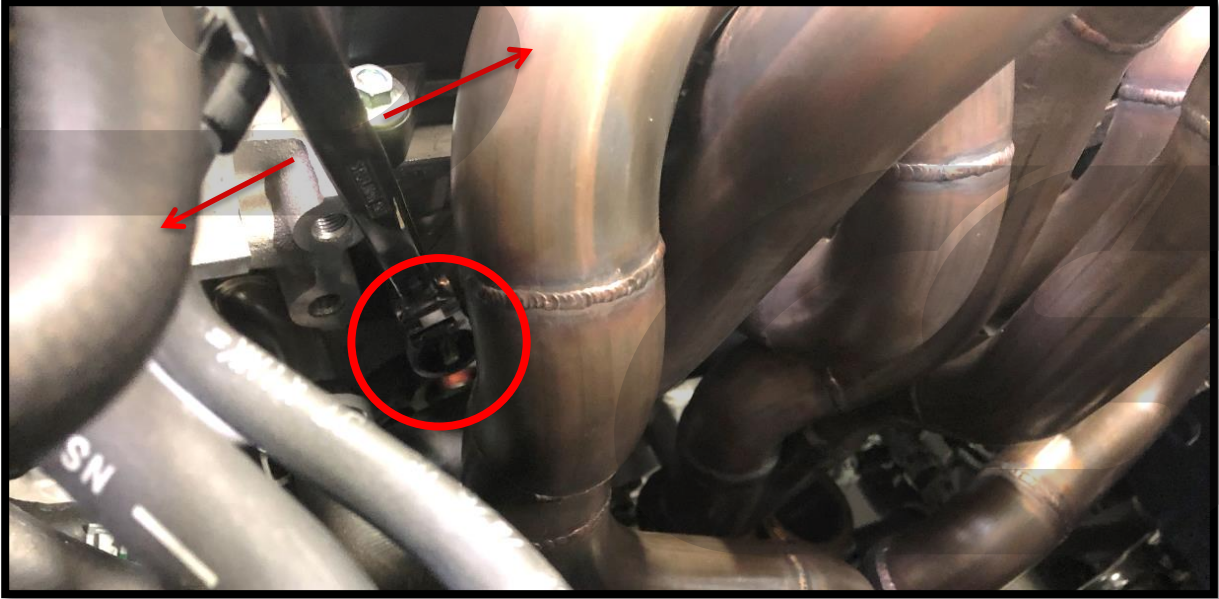


Figure 5h

Position 4: Flex-head ratcheting wrench



Figure 5i

Position 5: Flex-head ratcheting wrench

DETAILED INSTRUCTIONS:

5. Installing the CorkSport Header (continued)



The next few images were shown outside of the car as it is easier to see. Also, having a friend to help with the following steps is highly recommended.

- h) Place the two supplied v-band clamps on the upper section of the CS header as shown in **Figure 5j**.
- i) Lift the lower section of the CS header into position so that the v-band flanges fully seat. Shown in **Figure 5k**. This is most easily done from underneath the vehicle.
- j) While the lower section is held in place, secure one of the v-band clamps. Hand tighten so the clamp will hold the two sections together. Shown in **Figure 5l**.
- k) Secure the other v-band clamp, then tighten both clamps to **8-12ft-lbs**. Shown complete in **Figure 5m**.



Figure 5j

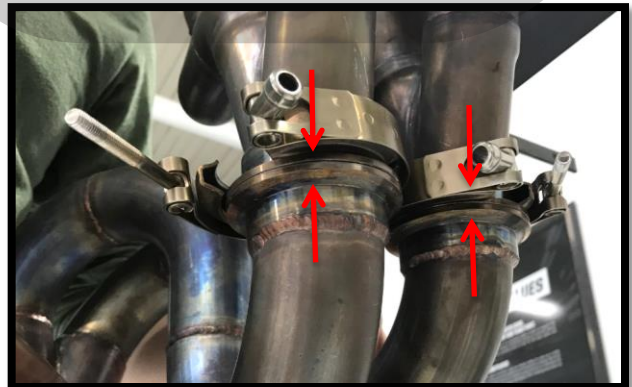


Figure 5k



Figure 5l

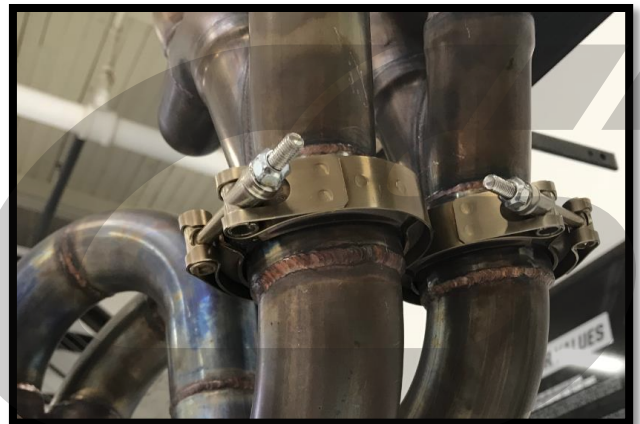


Figure 5m

DETAILED INSTRUCTIONS:

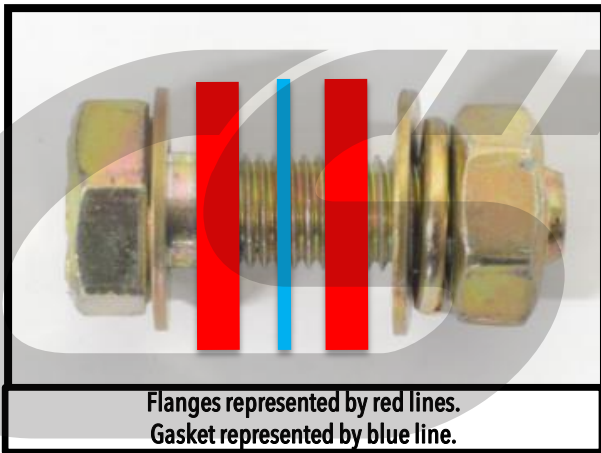
5. Installing the CorkSport Header (continued)

- l) Insert the hanger rod into the OEM rubber exhaust hanger. Shown in **Figure 5n**.

- m) Connect the CS header to your exhaust using the supplied gasket and hardware. **Figure 5o** shows the correct hardware and flange setup, while **Figure 5p** shows the header installed. Tighten the exhaust hardware to **35-40ft-lbs**.



Figure 5n



Flanges represented by red lines.
Gasket represented by blue line.

Figure 5o

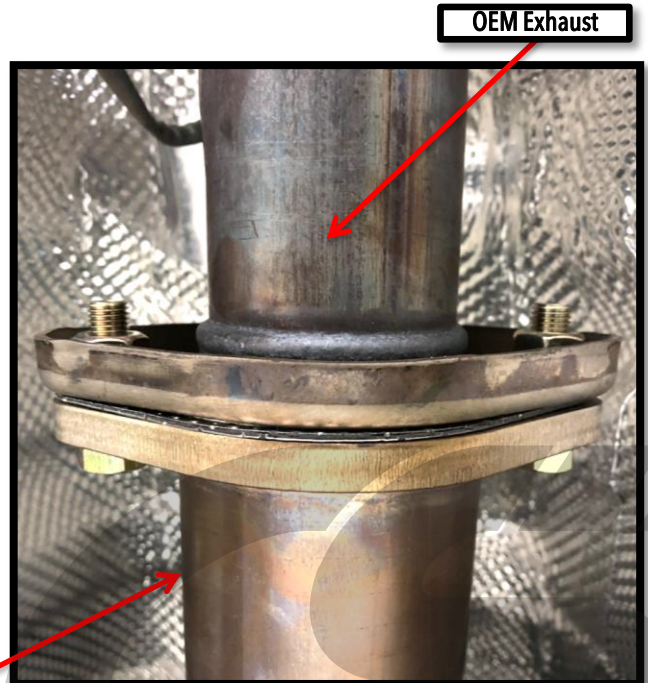


Figure 5p

DETAILED INSTRUCTIONS:

6. Reassembling the Vehicle

- a) Reinstall the OEM undertray, underbody bracing, and silver shielding removed in section 3.
 - Tighten the 12mm bolts to **15-17ft-lbs.**
 - Tighten the 10mm bolts to **10-14ft-lbs.**

- b) Install the O2 sensor into the port on the lower section of the CS header. Tighten roughly half a turn past finger tight. Shown installed and **circled in red** in **Figure 6a**.

- c) Reinstall the heater core hose support bracket and firewall heatshield removed in section 2.
 - Tighten the 10mm nuts to **10-14ft-lbs.**

- d) Secure the O2 sensor wiring using the firewall heatshield mounting stud on the lower passenger side. Use one of the OEM O2 sensor wiring brackets as shown **circled in blue** in **Figure 6a**. Ensure this keeps the wiring away from any hot surfaces or from rubbing on sharp edges.

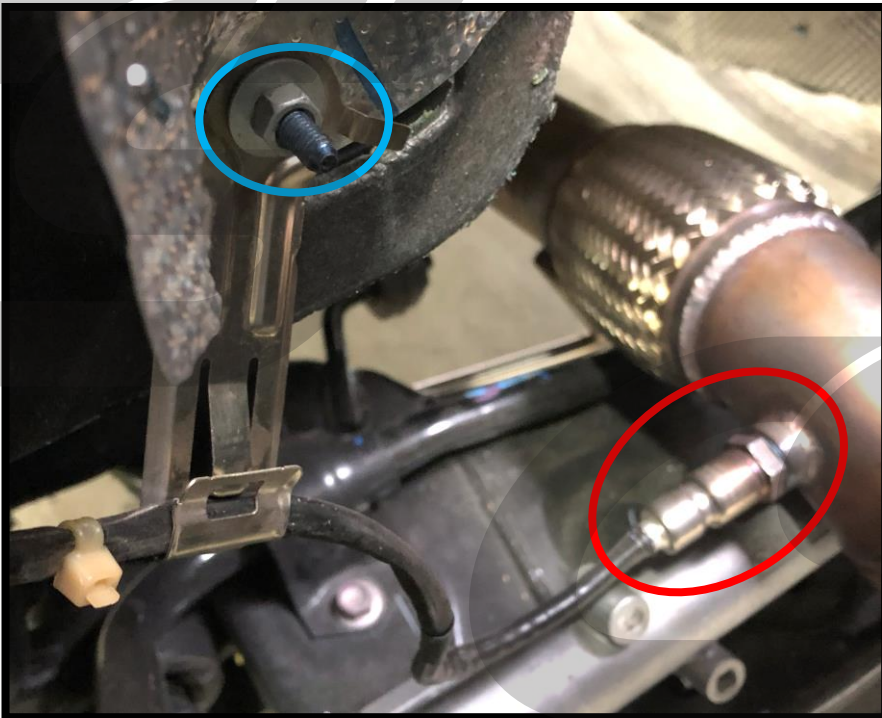


Figure 6a

DETAILED INSTRUCTIONS:

6. Reassembling the Vehicle (continued)

- e) Plug in the O2 sensor.
- f) Follow section 1 in reverse to reinstall the metal cowl, windshield wipers, plastic cowl and hood.
- Remember to reattach the windshield washer fluid.
 - Remember to reconnect all electrical connectors.
 - The plastic portion of the cowl slips over the end of the windshield and aligns using small pegs that fit inside the metal cowl.
 - Tighten all 10mm nuts/bolts to **10-14ft-lbs.**
 - Tighten all 12mm nuts/bolts to **15-17ft-lbs.**
 - Tighten the 14mm windshield wiper nuts until snug.
- g) **Bring the car down off the jack stands and start the car.** Use a flashlight to check under the car and in the back of the engine bay to ensure that you do not see any visible exhaust fumes and listen for leaks (usually a whispering or tick sound at the flange). If there are leaks, most of the time a flange has been over tightened or is misaligned. There may be a burning off smell as the header is heated for the first time. This smell will go away after some driving.

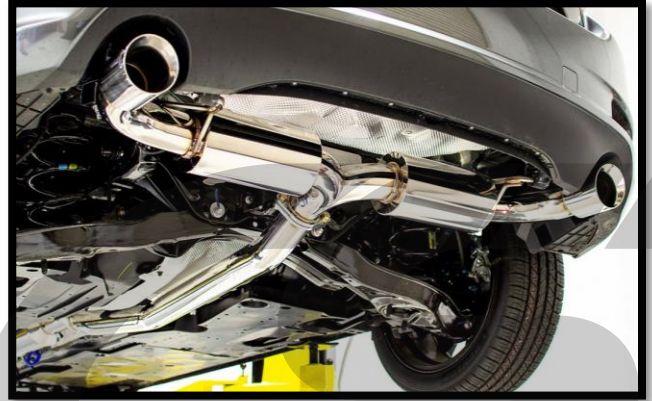


**This completes the installation of your CorkSport Race Header.
Enjoy the great sound and upgraded performance!**

WHAT'S NEXT?

CorkSport 80mm Cat Back Exhaust

Wake up your 2014-2018 Mazda 3 with the CorkSport 80mm Cat Back Exhaust. The next step up in volume from the existing 60.5mm CorkSport exhaust; the 80mm variant offers a great sounding, loud exhaust that doesn't ruin the daily drivability of the MZ3. More power, better looks, and a sound that changes a boring daily driver into a fun backroads car all come in an easy to install package. Plus, it sounds great with and maximizes the power potential of the CS Race Header!



CorkSport Big Brake Kit

At just over 7lbs, the aluminum CorkSport Mazda Big Brake Kit shaves almost 7lbs of unsprung weight off of each corner of your Mazda, all while adding more stopping power and a much better pedal feel. Crafted from lightweight billet aluminum, the CorkSport calipers use an opposed piston design that is fixed to provide greatly improved pad wear and caliper rigidity compared to the OEM design. Available in 3 anodized colors, this brake system includes everything you need to easily upgrade your stock braking system and includes high strength steel brackets, calipers, stainless steel braided front brake lines, brake pads, all necessary hardware, and one-piece 325mm rotors. Just install and go, no searching for extra parts or ordering additional items.

CorkSport Suspension Upgrade Kit

Improve the ride and handling of your 2014-2018 Mazda 3 with the CorkSport Adjustable Struts and Shocks, Lowering Springs, and Camber Plates. We've taken our performance lowering springs, rebound adjustable struts/shocks, and camber plates and combined them with quality OE pivot bearings, bump stops, and dust boots to create a complete package deal. This package deal comes to your door pre-assembled and ready to install. No need to fight with a spring compressor or risk damaging the OE components that would typically be reused. Not only is this a HUGE time saver, you also receive a package discount vs purchasing separately.

