

INSTALLATION INSTRUCTIONS



CORKSPORT 3.5" Turbo Back Exhaust

2010-2013 Mazdaspeed 3

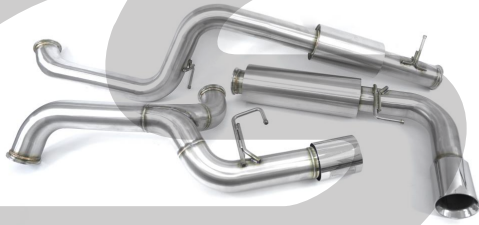
PART #: AXL-6-104-1X

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deliver - every time.*

CORKSPORT.COM



CORKSPORT 3.5" **Turbo Back Exhaust** 2010-2013 Mazdaspeed 3

PRODUCT DESCRIPTION:

Thank you for purchasing a CorkSport 3.5" Turbo Back Exhaust for your Mazdaspeed3. Featuring a cast stainless bellmouth that feeds mandrel bent stainless piping with v-band connections; the CS 3.5" TBE is the BEST in high-flowing exhaust for your speed. Enjoy decreased spool times and efficient flow all the way up to ~850WHP. All of this in an exhaust that is surprisingly tame while cruising yet rowdy when you want it!

Please let us know your feedback of the by submitting a review at: <https://corksport.com/2010-2013-mazdaspeed-3-turbo-back-3.5-exhaust-system.html>

MATERIALS & TIME:

GENERAL INFO:



Time Est:
6-8hr



Difficulty:
4/5



CEL:
Yes



Warranty:
2-Year

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.



High Pressure Fuel Pump (HPFP) Internals are required to safely operate the CS 3.5" TBE. A re-tune is also strongly recommended to safely operate the CorkSport 3.5" TBE. We recommend contacting a professional tuner.



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 2013 Mazdaspeed 3. Other years will be similar



PARTS LIST:


- One (1) CorkSport 3.5" Downpipe Bellmouth
- One(1) CorkSport 3.5" Catless Downpipe
- One(1) CorkSport 3.5" Exhaust Passenger Side Tip Section
- One(1) CorkSport 3.5" Exhaust Driver's Side Tip Section
- One(1) CorkSport 3.5" Exhaust Midpipe Section
- One(1) CorkSport 3.5" Downpipe Turbocharger Gasket
- Four(4) CorkSport 4" V-band Clamp
- Five(5) CorkSport Downpipe Mounting Studs
- Five(5) CorkSport Downpipe Lock Nuts
- One (1) CorkSport Twist Lock Exhaust Hanger
- One (1) CorkSport 10mm Exhaust Hanger
- Two (2) CorkSport 12mm Exhaust Hangers

TOOLING LIST:

- Channel Lock Pliers
- Needle Nose Pliers
- 8mm Socket & Wrench
- 10mm Socket & Wrench
- 12mm Socket & Wrench
- 13mm Socket & Wrench
- 14mm Socket & Wrench
- 17mm Socket & Wrench
- Ratchet Wrench (3/8" & 1/2")
- 4" Extension (3/8" & 1/2")
- 12" Extension (3/8" & 1/2")
- Oxygen Sensor Socket
- Torque Wrench
- High Temperature Anti-Seize
- Hydraulic Jack
- Jack Stands

ORDER OF OPERATIONS & TABLE OF CONTENTS:

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	Section 3: Removing the Downpipe	Pg. 6-8
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-  Professional tuning is required for operation. Some Internal Wastegate Turbos and External Wastegate Setups with poor flow may experience Boost Spiking and/or Boost Creep due to the increased exhaust flow.
- OEM K04 = Mild Boost Spike
 - CST4 IWG = Boost Creep to ~24psi (auxiliary fueling PI or methanol required)
 - CST4 EWG = Good (no spike or creep) (CS Manifold and EWG Turbine Housing Tested)
 - CST5 IWG/EWG = Good (no spike or creep) (CS Manifold and EWG Turbine Housing Tested)
 - CST6 EWG = Good (no spike or creep) (CS Manifold and EWG Turbine Housing Tested)
 - ATP Turbo = Not Tested
 - BNR Turbo = Not Tested

DETAILED INSTRUCTIONS:

1. Removing the TMIC



These instructions show a vehicle with a top mount intercooler. Your setup will likely be slightly different and you can skip this section if you have a FMIC installed.



We strongly recommend a sharpie and plastic bags to label all hardware throughout install.

- a) Remove the top mount intercooler (TMIC) cover by removing the two 10mm bolts (red circles in Figure 1a).
- b) Remove the clamps for the throttle body and turbo boost tubes from the intercooler. Use a 10mm socket to loosen the clamps (red circles in Figure 1b).
- c) Detach the bypass valve (BPV) signal hose from the BPV. Release the spring clamp and then remove the signal hose from the BPV (blue arrow in Figure 1b). Leave the bypass valve attached to the intercooler pipe.

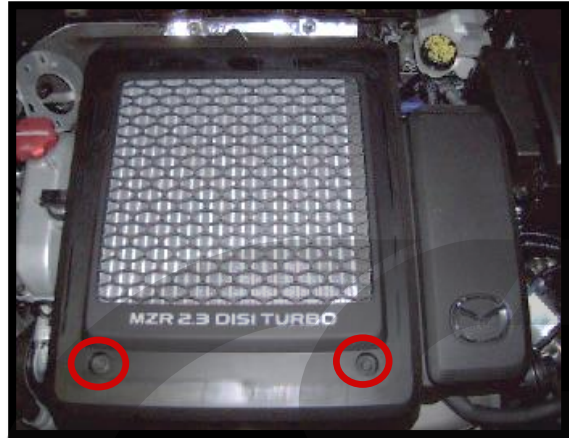


Figure 1a

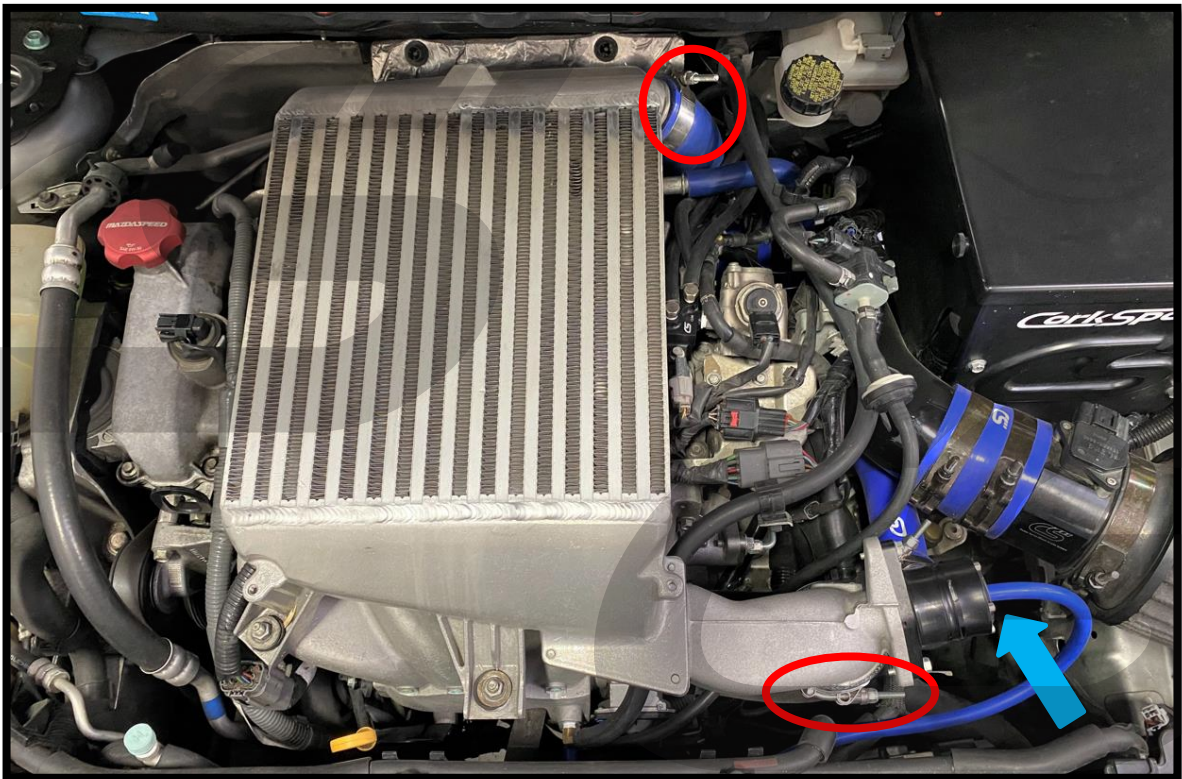


Figure 1b

DETAILED INSTRUCTIONS:

1. Removing the TMIC (cont.)

- d) Remove the three (3) 12mm nuts fastening the intercooler to the top of the engine (red circles in Figure 1c).
- e) Remove the intercooler from the vehicle by pulling upwards to release it from the boost tubes & mounting studs.



Figure 4b

2. Removing the OEM Heatshields

- a) Remove thin silver firewall heat shield shown with the green arrow in Figure 2a. There are three plastic clips that unscrew.
- b) Remove the six 8mm bolts circled in red in Figure 5a, then remove the heat shield.

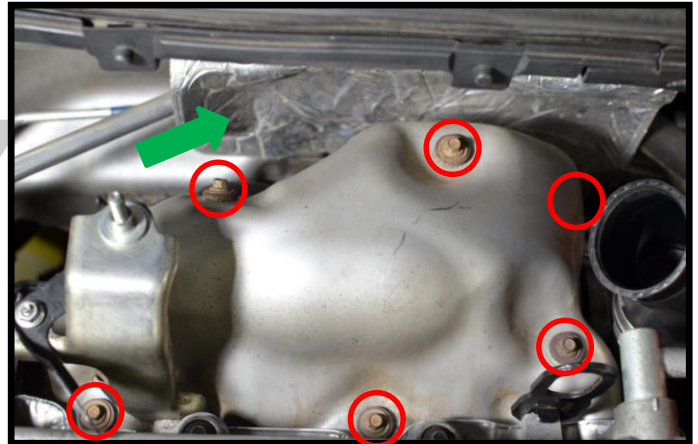


Figure 2a

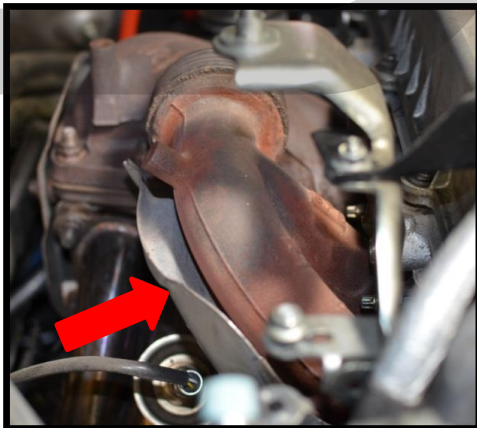


Figure 2b

NOTE Step 2c is optional for downpipe install/removal. However, we strongly recommend doing so for ease of access to downpipe bolts.

- c) Remove the three 8mm bolts holding the lower heat shield shown with the red arrow in Figure 2b and the red circles in Figure 2c on the next page. Then remove the heatshield.

DETAILED INSTRUCTIONS:

3. Removing the Downpipe



Vehicle shown had a CorkSport downpipe installed. Disassembly of OEM or other downpipe will be similar.

- Using a 13mm wrench or socket and ratchet, remove the rear TMIC mounting bracket. Remove the two bolts shown with **red arrows** in **Figure 3a**. Remove the two wiring clips attached to the bracket, then remove the bracket.
- Remove the upper oxygen sensor using an oxygen sensor socket and 1/2" drive ratchet. **Circled in red** in **Figure 3b**.
- Remove the three 14mm nuts **circled in red** and shown with the **red arrow** in **Figure 3c**.

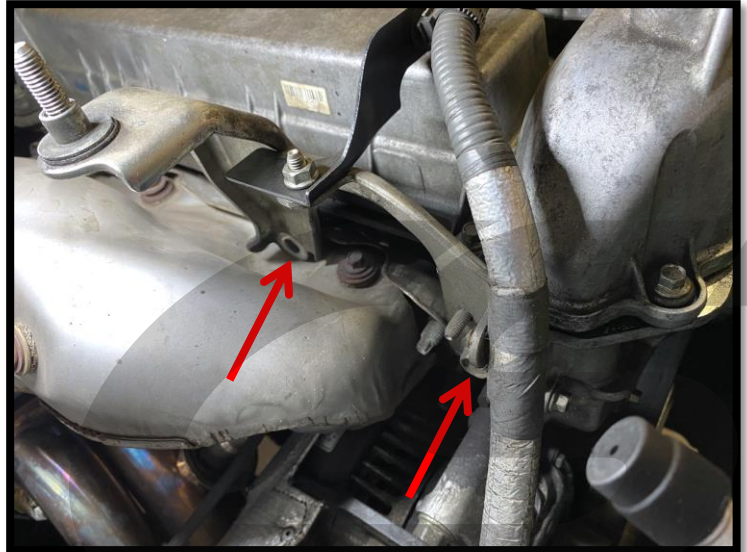


Figure 3a



Figure 3b

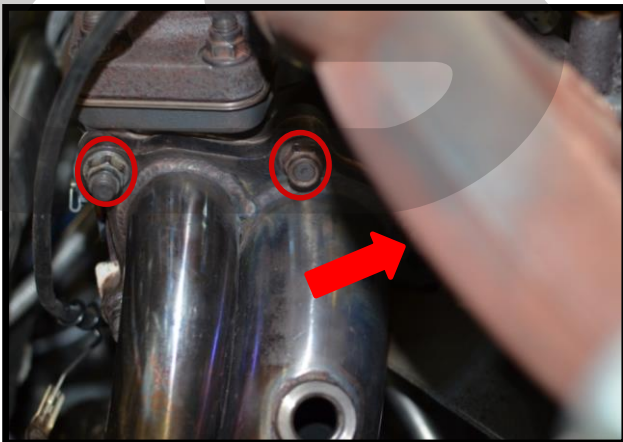
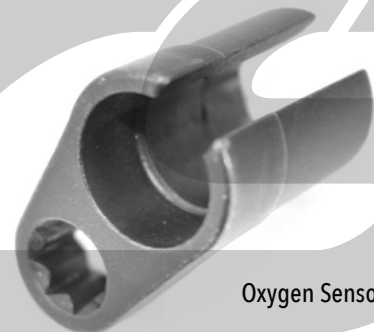


Figure 3c



Oxygen Sensor Socket

DETAILED INSTRUCTIONS:

3. Removing the Downpipe (cont.)

- d) Lift your vehicle using a hydraulic jack & jack stands. Follow lifting recommendations & jack stand locations located in your owners manual.
- e) Remove the center chassis brace by removing the eight 12mm bolts circled in red in Figure 3d.
- f) Remove the forward chassis brace by removing the six 17mm bolts/nuts and one 10mm bolt circled in red in Figure 3e.

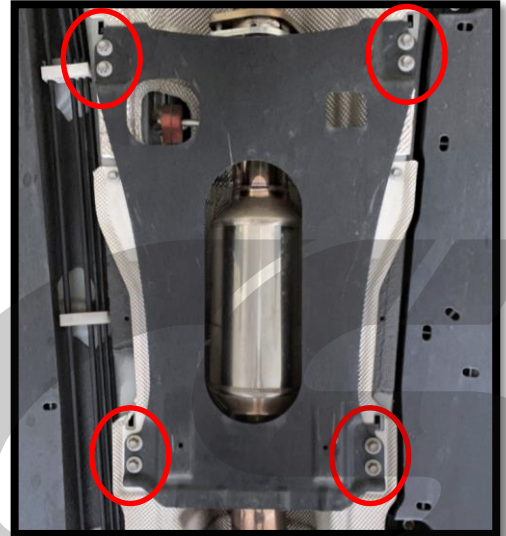


Figure 3d

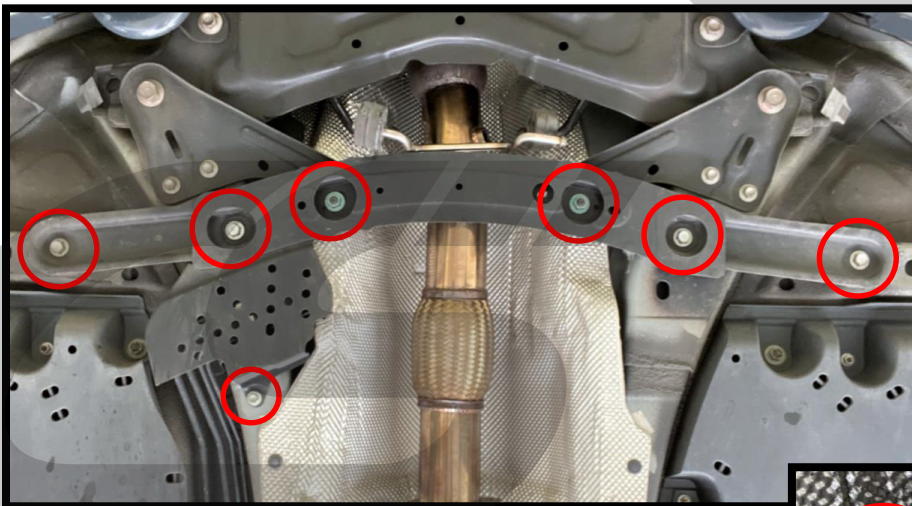


Figure 3e

- g) Remove the two 17mm (14mm for OEM) bolts between the downpipe and the catback exhaust (CBE), circled in red in Figure 3f. (If applicable) Remove the 17mm (14mm for OEM) bolts between the race pipe and upper downpipe.

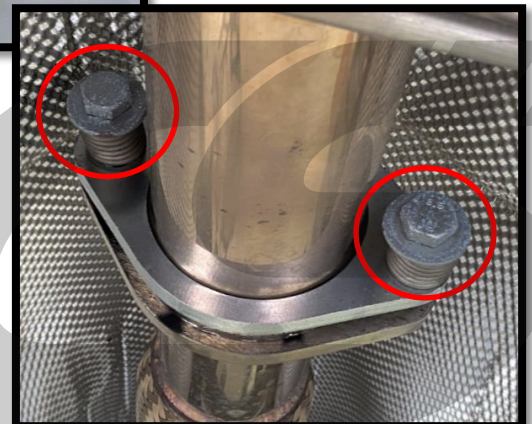


Figure 3f

DETAILED INSTRUCTIONS:

3. Removing the Downpipe (cont.)

h) Remove the lower oxygen sensor with an oxygen sensor socket and ½" ratchet, **circled in red** in **Figure 3g**.

i) Remove the exhaust hangers from the downpipe, shown with the **red arrows** in **Figure 3g**.



If removing an OEM downpipe, you will have additional bolts supporting the downpipe & a downpipe support bracket. Remove both of these items before continuing.



Also when removing an OEM downpipe, double check that no O2 sensor wiring is connected to the downpipe before continuing.

j) Remove the lower remaining two 14mm nuts from the downpipe, **circled in red** in **Figure 3h**.

k) The downpipe can now be removed from the vehicle.

l) Finally, remove the downpipe gasket from the turbo.

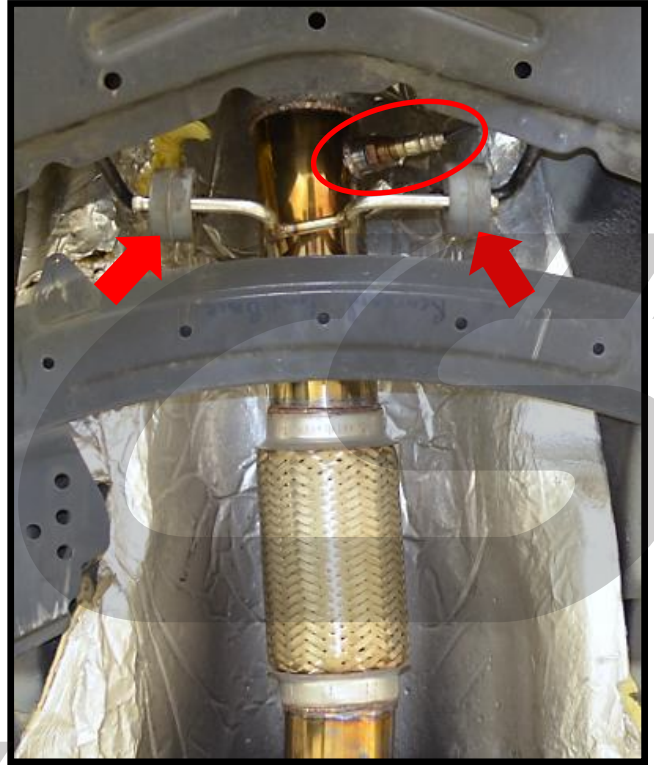


Figure 3g

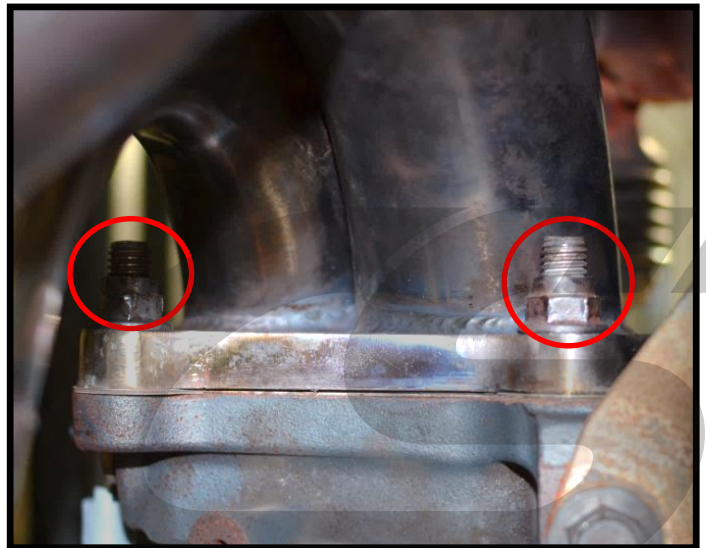


Figure 3h

DETAILED INSTRUCTIONS:

4. Removing the Exhaust



The vehicle used for installation images had a CorkSport 80mm exhaust installed. Removal of OEM or other aftermarket exhausts will be similar.



We recommend getting a friend to help with exhaust removal and installation.

- a) Using a 17mm, or 14mm for OEM, socket and wrench, remove the bolts connecting the front midpipe section from the rear midpipe section. Location circled in red in **Figure 4a**.
- b) Remove the forward exhaust hanger using channel lock pliers or exhaust hanger pliers. Have a friend support the exhaust after removal and during the next step. Hanger shown circled in blue in **Figure 4a**.
- c) Remove the rearward exhaust hanger using channel lock pliers or exhaust hanger pliers. The forward midpipe section can then be removed from the vehicle. Hanger shown circled in green in **Figure 4a**.
- d) Remove the rubber exhaust hangers from these two locations. They will be replaced later.

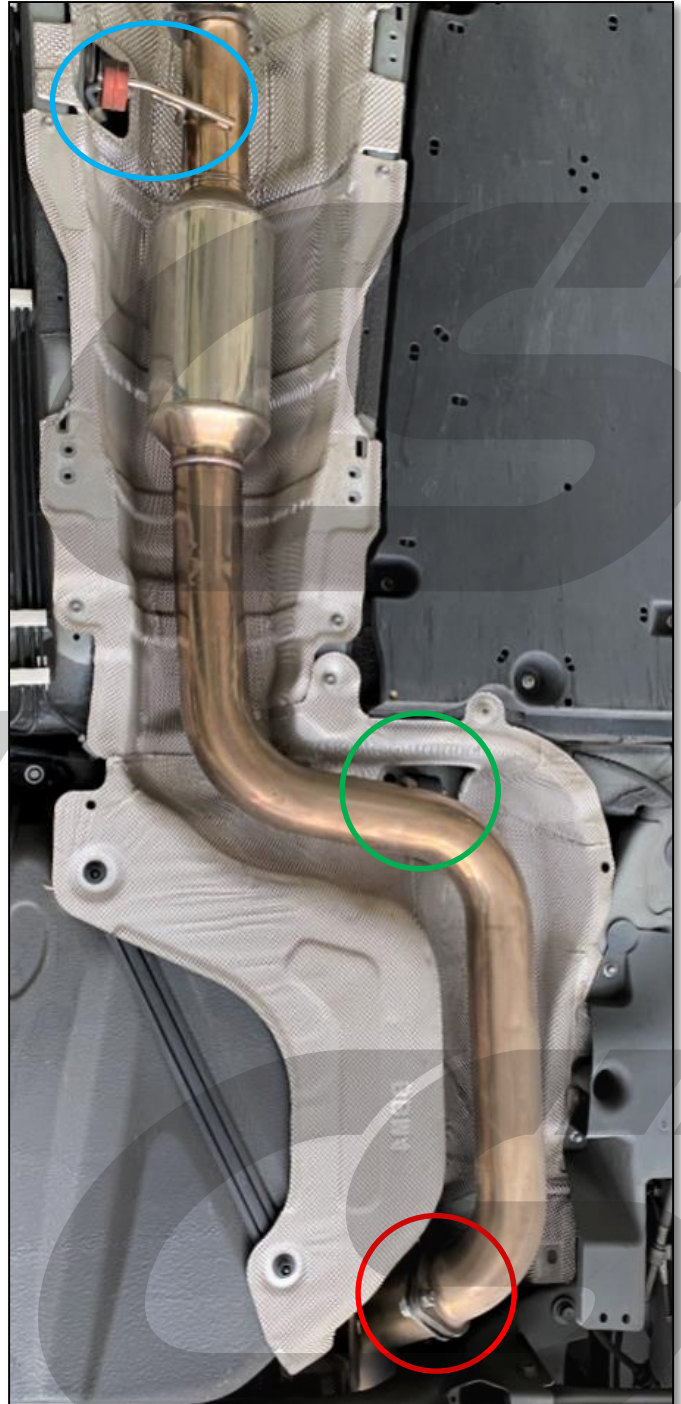


Figure 4a

DETAILED INSTRUCTIONS:**4. Removing the Exhaust (cont.)**

If you have an OEM exhaust, you can skip step 4e. Your left and right tips are one section of exhaust piping.

- e) Using a 17mm, socket and wrench, remove the bolts connecting the passenger side tip section from the driver's side tip section. Location circled in red in Figure 4b.
- f) Remove the exhaust hanger on the passenger side tip section using channel lock pliers or exhaust hanger pliers. Have a friend support the exhaust during removal. The passenger side tip section can then be removed from the vehicle. Hanger shown circled in blue in Figure 4b. OEM and some aftermarket exhausts will also use hangers shown in Figure 4b with yellow arrows.
- g) Remove the two exhaust hangers holding the driver side tip section using channel lock pliers or exhaust hanger pliers. The driver side tip section can then be removed from the vehicle. Hangers shown circled in green in Figure 4b.
- h) Remove the rubber exhaust hangers from these three locations. Hangers will be replaced later.

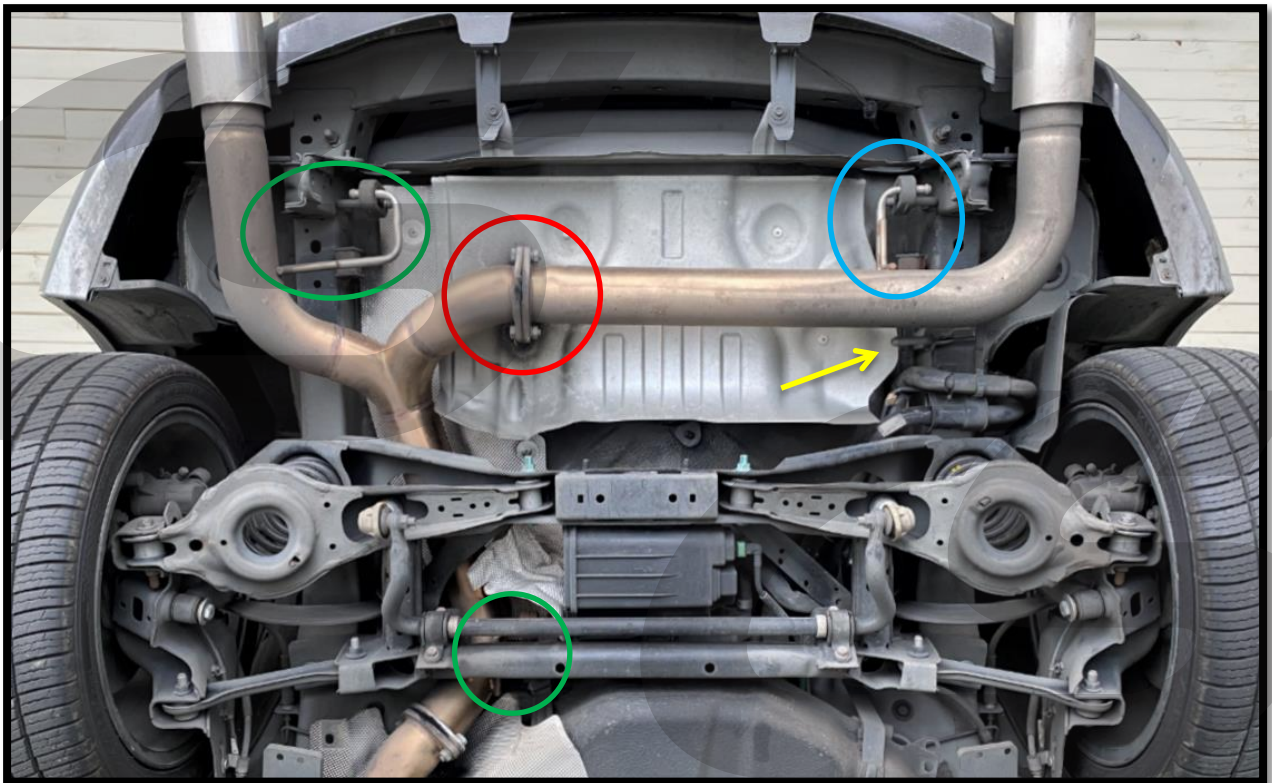


Figure 4b

DETAILED INSTRUCTIONS:

5. Installing the CorkSport 3.5" Downpipe

NOTE Included in your downpipe kit are replacement downpipe mounting studs and nuts. We recommend replacing all old studs/nuts with the included ones, however, if in good condition, the old hardware can be reused.

NOTE If you are using an external wastegate (EWG) on a CorkSport turbo with EWG housing, remove the EWG and the EWG mounting elbow. For proper fitment with the 3.5" downpipe, the EWG should be mounted directly to the CS EWG housing (no mounting elbow). We offer an EWG dump tube for this setup specifically.

- a) Install the supplied turbocharger gasket onto the studs of your turbocharger. Gasket shown in **Figure 5a**. It will only install in one orientation.
- b) Install the CS 3.5" downpipe bellmouth. Slide it over the turbocharger studs and secure with the five nuts. Shown with red markings in **Figure 5b**.
- c) Tighten all downpipe bellmouth mounting nuts to **39-46ft-lbs**.



Figure 5a

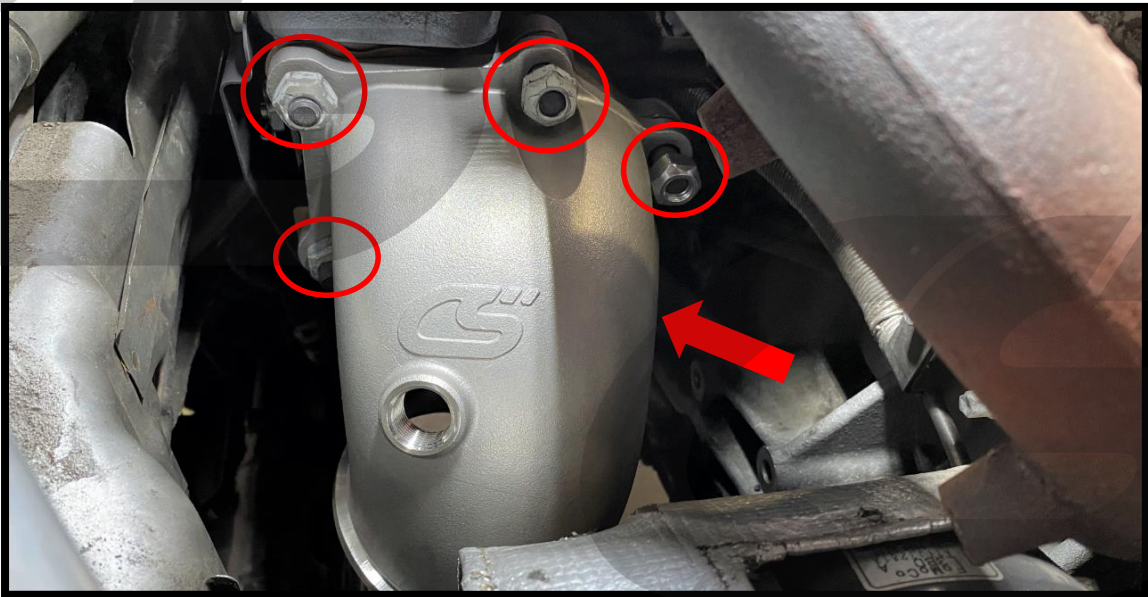


Figure 5b

DETAILED INSTRUCTIONS:

5. Installing the CorkSport 3.5" Downpipe (cont.)

- d) Lift the CS downpipe into position and install it on the exhaust hangers. Shown disconnected and circled in red in Figure 5c.



Typically, it is easier to install the rubber hangers onto the downpipe first and then install the hangers and downpipe on the vehicle at the same time as shown.

- e) Place a supplied V-band clamp over the end of the downpipe, near the bellmouth. Shown with red arrow in Figure 5d. The orientation shown will have the most clearance and will be the easiest to tighten.

- f) Line up the CS downpipe with the bellmouth. Use the clamp installed previously to secure the downpipe. Only tighten enough to keep the downpipe in place, the clamp will be fully tightened later. Shown complete in Figure 5e. The downpipe should still be able to rotate.

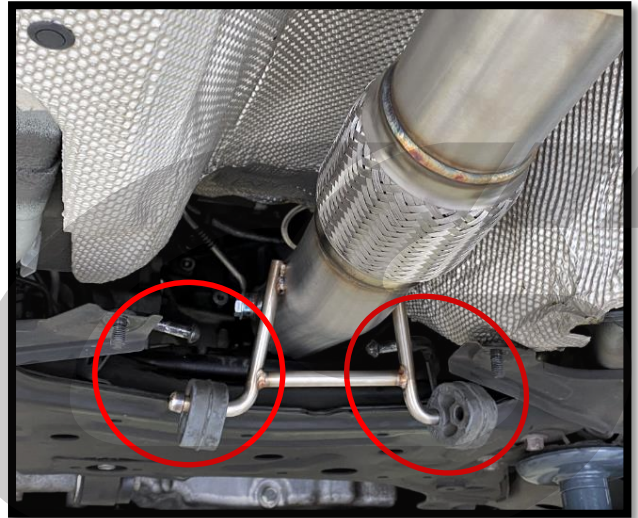


Figure 5c



Failure to properly line up the V-band flanges will result in exhaust leaks.



Figure 5d

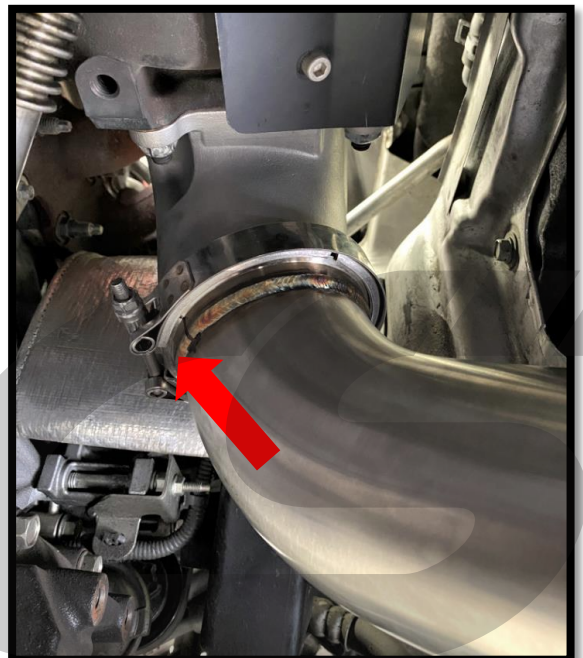


Figure 5e

DETAILED INSTRUCTIONS:

5. Installing the CorkSport 3.5" Downpipe (cont.)

- h) **Install the lower O2 sensor into the lower port of the CS 3.5" downpipe.** Use a small amount of anti-seize on the threads and tighten using an O2 sensor socket. Do not over tighten the sensor, approximately ¼-½ turn past hand tight is plenty.
- i) **Plug in the lower O2 sensor into the OEM wiring harness or the CS O2 extension harness (catted DP only).** Ensure the wires are secured away from heat and so they will not drag on the ground.
- j) **Install the upper O2 sensor into the port on the CS 3.5" downpipe bellmouth.** Use a small amount of anti-seize on the threads and tighten using an O2 sensor socket. Do not over tighten the sensor, approximately ¼-½ turn past hand tight is plenty.
- k) **Plug in the upper O2 sensor into the OEM wiring harness (if removed).** Ensure the wires are secured away from heat.

6. Installing the CorkSport 3.5" Exhaust

- a) **Install the supplied exhaust hanger with smallest holes on the front-most location on the vehicle.** Shown in **Figure 6a**. The exhaust was removed from this hanger location in Step 4b.

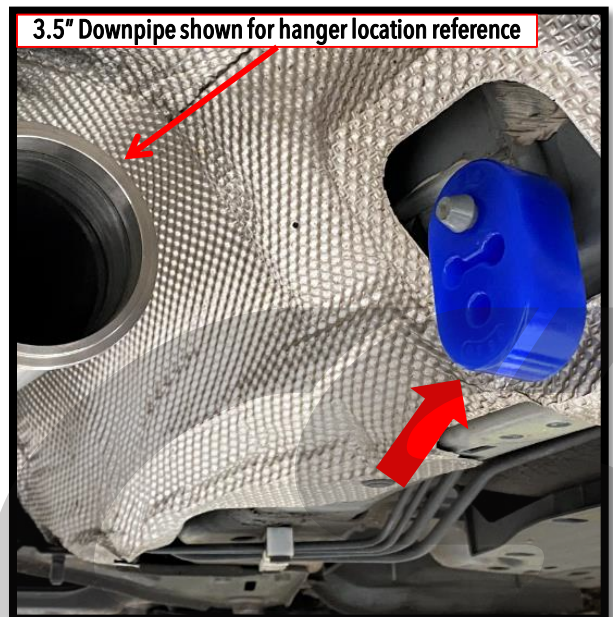
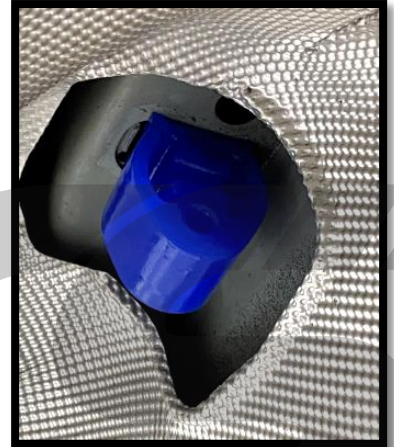


Figure 6a

DETAILED INSTRUCTIONS:**6. Installing the CorkSport 3.5" Exhaust(cont.)**

- b) Install the supplied twist style exhaust hanger in the only twist location on the vehicle. Shown in **Figure 6b**. The exhaust was removed from this hanger location in Step 4c.

**Figure 6b**

The hanger location above the rear subframe shown in **Figure 6c** is not used for the CS 3.5" exhaust. This allows for extra clearance for the large piping.

- c) Install the remaining two supplied hangers on the rearmost hanger locations on the vehicle. The exhaust was removed from these locations in Steps 4f and 4g. These hangers locations are shown with **red circles** in **Figure 6d** and in **Figure 6e** on the next page.

- d) Lift the Y-shaped CorkSport 3.5" driver side tip section into position and insert the hanger rod through the supplied hanger installed earlier. Shown completed in **Figure 6d**. Fitment will be tight when feeding the pipe over the subframe.

**Figure 6c****Figure 6d**

DETAILED INSTRUCTIONS:

6. Installing the CorkSport 3.5" Exhaust(cont.)

- e) Lift the L-shaped CorkSport 3.5" passenger side tip section into position and insert the hanger rod through the supplied hanger installed earlier. Shown completed in **Figure 6e**. The exhaust should hold itself in position as shown, however, we recommend having a friend help or using a jack stand to ensure it does not fall.

- f) Place a supplied V-band clamp over the end of the passenger side tip section, near the flange. Shown with **blue arrow** in **Figure 6e**.

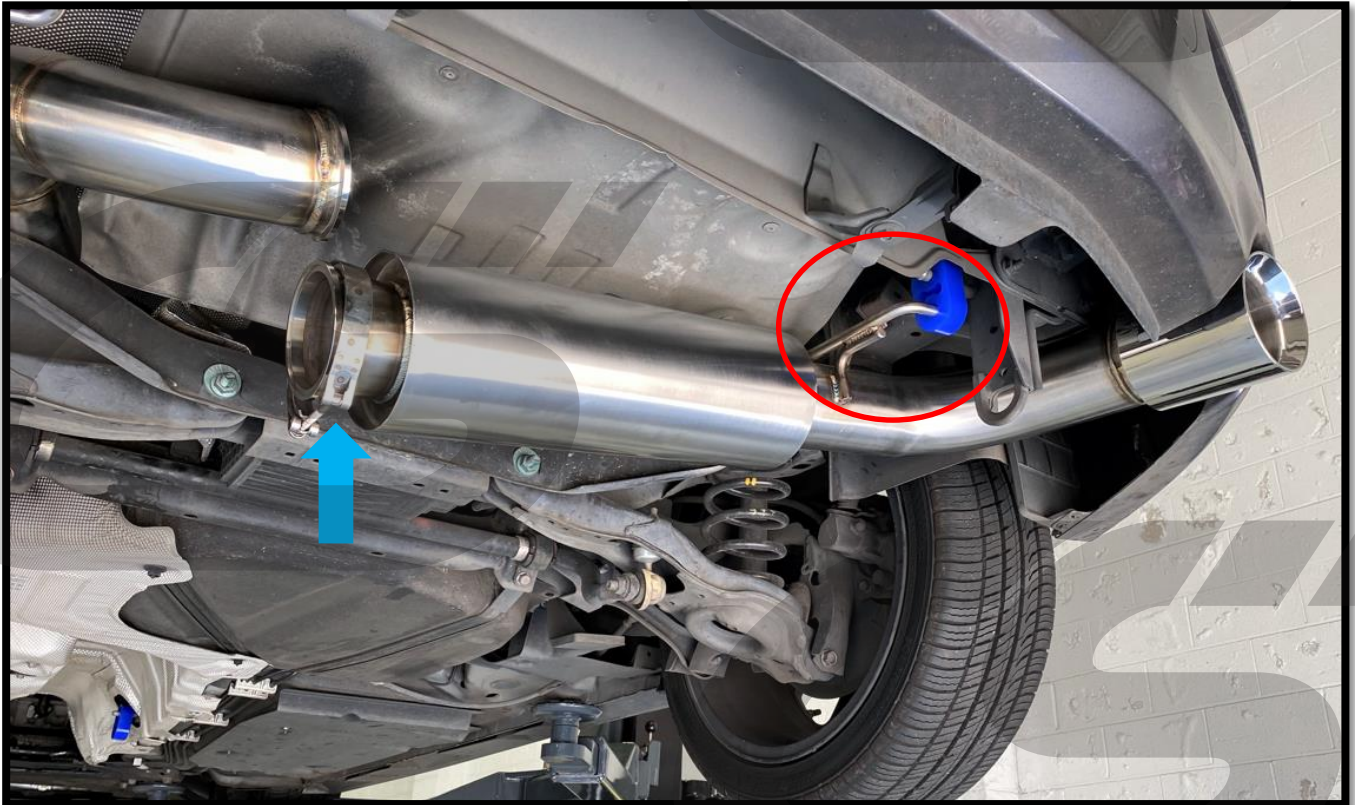


Figure 6e

DETAILED INSTRUCTIONS:

6. Installing the CorkSport 3.5" Exhaust(cont.)

- g) Line up the two tips sections with one another at the v-band flanges. Use the clamp installed previously to secure the two sections together. Only tighten enough to keep the pipes in place, the clamp will be fully tightened later. Shown complete in **Figure 6f**. The pipes should still be able to rotate.

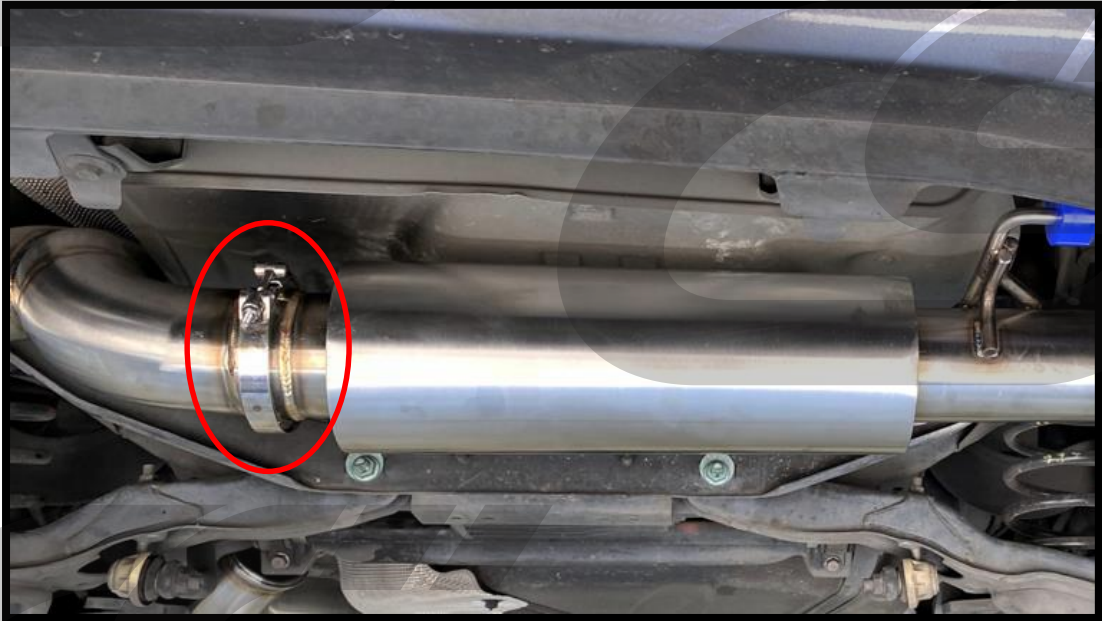


Figure 6f

- h) Inspect the OEM heat shielding located near the "Y" section of the driver side tip section. It will likely need to be bent slightly to offer proper clearance for the large pipe. 1/2" or so of gap is plenty. Shown completed in **Figure 6g**.

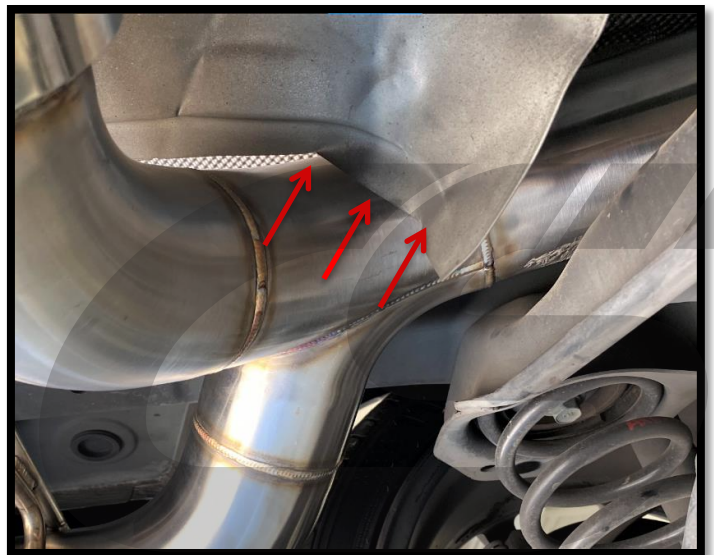


Figure 6g

DETAILED INSTRUCTIONS:

6. Installing the CorkSport 3.5" Exhaust(cont.)

- i) Lift the CorkSport 3.5" midpipe section into position and insert the hanger rods through the supplied hangers installed earlier. Shown completed in **Figure 6h** with hanger locations **circled in red**.
- j) Place a supplied V-band clamp over the each end of the midpipe section. Locations shown with **blue arrows** in **Figure 6h**.
- k) Line up the midpipe section with the Y-shaped driver side tip section at the v-band flanges. Use the clamp installed previously to secure the two sections together. Only tighten enough to keep the pipes in place, the clamp will be fully tightened later. Shown in progress in **Figure 6i**. The pipes should still be able to rotate.



Figure 6i



Figure 6h

DETAILED INSTRUCTIONS:

6. Installing the CorkSport 3.5" Exhaust(cont.)

- l) **Line up the midpipe section with the downpipe section at the v-band flanges.** Use the clamp installed previously to secure the two sections together. **Only tighten enough to keep the pipes in place,** the clamp will be fully tightened later. Shown completed in **Figure 6j.** The pipes should still be able to rotate.



Figure 6j

- m) **Attempt to wiggle/rotate each section of piping near the v-band flanges to help each v-band connection settle into position.**

- n) **Shift the exhaust around as needed until the exhaust tips are centered in the bumper cutouts and have approximately 1/2" of gap all around.** Correct alignment and gap shown in **Figure 6k.**




Figure 6k

- o) **Once happy with alignment, tighten the four v-band clamps to 8-12ft-lbs using a 10mm deep socket and ratchet.** The exhaust may shift during tightening. You may need to loosen the clamps in order to re-position it.

DETAILED INSTRUCTIONS:

7. Vehicle Reassembly & First Start Up

- a) Follow the instructions in reverse order to complete the vehicle assembly. Refer to torque specs below.
1. Reinstall the chassis braces & TMIC mount removed in Section 3.
 2. Reinstall the heat shields removed in Section 2.
 3. Reinstall the intercooler & shroud removed in Section 1.
 4. If present, install your EWG on your CS EWG turbine housing and install your new dump tube following the dump tube instructions.
- b) **Torque Specs:**
- | | | | |
|-----------------|--------------|------------------------------|-----------------------------|
| • 8mm Nut/Bolt | 8-10 ft-lbs | • 12mm Nut/Bolt 19-21 ft-lbs | • 17mm Nut/Bolt 27-39ft-lbs |
| • 10mm Nut/Bolt | 15-17 ft-lbs | • 14mm Nut/Bolt 30-32 ft-lbs | |
- c) Flash your tune for the new downpipe & exhaust setup.
- d) Start the vehicle. During first startup, check for exhaust leaks at the turbocharger and all v-band connections. Loosen and re-tighten components as necessary. On rare occasions, the bellmouth will need to be loosened from the turbocharger & shifted slightly to ensure a good seal at the v-band connection.

-  **Professional tuning is required for operation. Some Internal Wastegate Turbos and External Wastegate Setups with poor flow may experience Boost Spiking and/or Boost Creep due to the increased exhaust flow.**
- OEM K04 = Mild Boost Spike
 - CST4 IWG = Boost Creep to ~24psi (auxiliary fueling PI or methanol required)
 - CST4 EWG = Good (no spike or creep) (CS Manifold and EWG Turbine Housing Tested)
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 - CST6 EWG = Good (no spike or creep) (CS Manifold and EWG Turbine Housing Tested)
 - ATP Turbo = Not Tested
 - BNR Turbo = Not Tested



This completes the installation of your CorkSport 3.5" exhaust. We recommend checking bolt & v-band clamp tightness after a week of driving. Enjoy the upgraded horsepower, added flow, and new sound!

WHAT'S NEXT?

CorkSport Camshafts

The CorkSport Mazdaspeed Performance Camshafts are developed with the latest design, manufacturing, and casting technologies and ground to CNC precision for the best performance for your Mazdaspeed. Near factory idling cams for the daily driver and even the aggressive track driver bringing improvement in throttle response, horsepower, and torque to your Mazdaspeed.



CorkSport 13" Big Brake Kit

The Stage 2 CorkSport 13" Big Brake Kit for Mazdaspeed 3 provides a drastic improvement to braking by offering improvements to each component in the system. Larger rotors, 4-piston calipers, stainless steel brake lines, upgraded pads, and everything you need to install on your Speed 3 is included in this kit. If the CorkSport Big Brake Caliper Kit was not enough for you and your MS3, look no further than the CorkSport 13" BBK.

Also available for Mazdaspeed 6!



CorkSport Front Mount Intercooler Kit

Cool down your boost air temperatures without compromise with the CorkSport Front Mount Intercooler Kit with a small or large intercooler. Featuring all new piping for better fitment and performance, the CorkSport Front Mount Intercooler Kit comes standard with the high flow small core or the optional big core with crash bar. Whether you are sporting a few bolt-ons or a ground breaking big turbo build, this FMIC Kit has the performance to support your goals.

