

Thank you for purchasing the Track Dog Racing Exhaust Heat Shield for the 2016 to Present Mazda MX-5. Our TDR Heat Shield is designed to help maintain lower temperatures in the engine compartment by isolating elevated header temperatures. See Section 1: Installing on Aftermarket Headers or Section 2: Installing on Factory Exhaust Headers. Section 3 is an optional modification section that relocates the heater hoses and vacuum hose and removes side section of the belly pan to improve cooling.



The TDR Heat Shield is manufactured with 4-layers. The bottom uses heavy-grade industrial aluminum to reflect radiant heat and to balance the conducted heat across the surface. The second layer is fiberglass cloth. The ½" (12 mm) insulation is 2000 degree rated ceramic wool that helps maintain its shape as you form the Heat Shield around the exhaust manifold or header. The outer surface is an aluminized fiberglass mat that not only looks good, but also adds to the efficiency of the TDR Heat Shield by dissipating heat, resulting in lower surface temperatures.

Note: Direct contact from the header can cause the inside material of the Heat Shield to burn away. As long as the outer surface is intact, the Heat Shield integrity is still efficient at holding the heat.

TOOLS REQUIRED

The following tools may be required in your installation depending on your mounting method.

- 10 mm and 14 mm socket and wrench
- Torque wrench
- Small Phillips screwdriver or pick
- Tie-wraps
- Pliers
- Single blade hack-saw
- ¼" drill socket bit
- Electric drill

SECTION 1: INSTALLING ON AFTERMARKET HEADERS

The TDR Heat Shield attaches to all factory and aftermarket headers for the Mazda MX-5. Attachment is through the use of the header studs and brackets. The Heat Shield forms easily around the header and takes very little time to install. See Section 3: Heater Hose Modification, if you would like to revise your heater hose and vacuum hose arrangement. You can do this procedure before or after the header shield install.

NOTE: When forming the Heat Shield, a loose fit is better than a snug fit as air is a good insulator and increases efficiency. The small single grommet in the middle is not used in this application.

1. Be sure the surfaces around the engine exhaust area are cool to the touch.
2. Locate the two L-brackets and M6 x 16 mm bolts included with the Heat Shield as shown in Photo 1-1.
3. Remove the two outer M8 nuts on the header using a 14 mm socket wrench.
4. Install the L-brackets face up as shown in Photos 1-2 and 1-3 and reinstall the M8 nuts. Torque the exhaust manifold nuts using a 14 mm socket to factory specification of 32-47 ft. lbs.



Photo 1-1: Aftermarket header hardware



Photo 1-2: Left side L-bracket installed

5. Slide the Heat Shield between the header and the chassis. Fold the ends as necessary below the L-bracket.
6. Use a small screwdriver or pick and align the grommet on the Heat Shield over the threaded hole in the bracket as shown in Photo 1-4.
7. Install the supplied M6 x 16 mm bolt to secure the Heat Shield in place using a 10 mm wrench as shown in Photo 1-5. DO NOT tighten completely until both sides have been started.
8. Form the Heat Shield so there will be an air gap between the Heat Shield and header as shown in Photos 1-6 and 1-7.



Photo 1-3: Right side L-bracket installed



Photo 1-4: Heat Shield aligned over mounting hole



Photo 1-5: M6 bolt installed on left L-bracket



Photo 1-6: Heat Shield formed outwards away from header

9. Header Shield will mount under the header flange as shown in Photo 1-8.
10. Use a small screwdriver or pick and align the grommet on the Heat Shield over the threaded hole in the bracket as shown in Photo 1-9. If the grommet does not match up to the bracket, loosen the bracket and move as required.
11. Install the supplied M6 x 16 mm bolt to secure the Heat Shield in place using a 10 mm wrench. Tighten both M6 bolts if no realignment is required.
12. For improved efficiency, we recommend using a long object like a breaker bar and from underneath push the heat shield upwards to add additional air space around the header.



Photo 1-7: Heat shield side area formed



Photo 1-8: Heat Shield installed under header flange



Photo 1-9: Heat Shield aligned over mounting hole



Photo 1-10: Heat shield complete

SECTION 2: INSTALLING ON FACTORY HEADER

The TDR Heat Shield attaches to the factory tube header but requires the aluminum shield to be removed. Two brackets will be used to mount the Heat Shield. See Section 3: Heater Hose Modification, if you would like to revise your heater hose and vacuum hose arrangement. You can do this procedure before or after the header shield install.

1. Using a 10 mm socket wrench, remove the factory top two M6 bolts on the shield as shown in Photos 2-1 and 2-2.
2. There is a third M6 bolt on the side as shown in Photo 2-3. Suggest a ratcheting 10 mm wrench to remove this bolt.
3. For additional clearance for installing the Heat Shield, bend outwards the coolant pipe as shown in Photo 2-4. This will not harm the integrity of the coolant pipe.



Photo 2-1: Factory header shield



Photo 2-2: Header shield bolt left and right side



Photo 2-3: Header shield lower bolt area



Photo 2-4: Coolant pipe bending

4. Locate the two brackets that have two small bends with captive M6 nuts as shown in Photo 2-5.
5. Install using the factory M6 bolts but only tight enough to allow the bracket to be moved as shown in Photos 2-6 and 2-7.
6. Measure between the two outer grommets on the Heat Shield. Should be approximately 13 3/8 inch (3.4 cm) as shown in Photo 2-8.



Photo 2-5: Stock header hardware



Photo 2-6: Mounting bracket rear installed



Photo 2-7: Mounting bracket front installed



Photo 2-8: Grommet spacing around 13 3/8 in.

7. Use this measurement to space out the two brackets as shown in Photo 2-9. Make sure the brackets are equal on both sides. Tighten down the two M6 bolts.
8. Feed the Heat Shield around the header as shown in Photo 2-10. Remember air is a good insulator so as you form the Heat Shield, form it so it does not rest on the header.

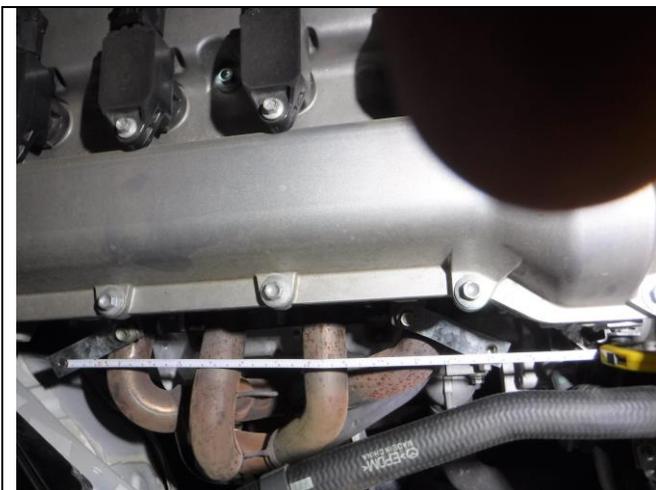


Photo 2-9: Mounting brackets spaced out

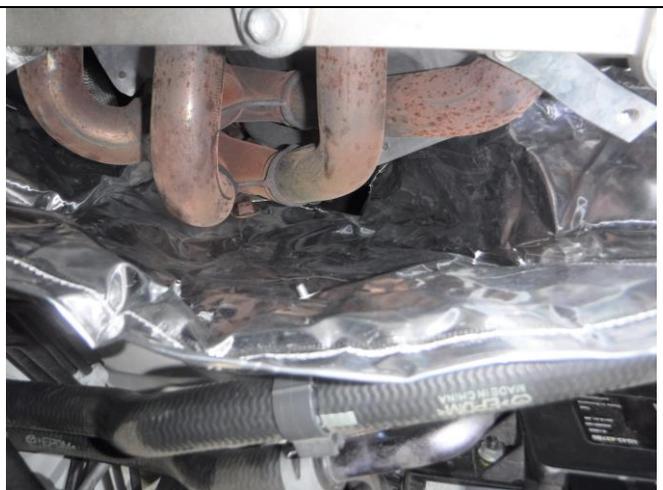


Photo 2-10: Forming heat shield around header

9. Bring in the sides under the brackets on both sides as shown in Photo 2-11.
10. Use a thin screw driver or pointer into the bracket hole and move the Heat Shield in position as shown in Photo 2-12. If you have two small screw drivers, it can be easier to adjust the corners. If the Heat Shield will not mate up, then readjust the brackets.



Photo 2-11: Sides placed under the bracket



Photo 2-12: Screw driver to position heat shield

11. Install M6 x 16 mm bolts supplied into the bracket and tighten completely when satisfied with the fit.
12. Verify there is good air between the Heat Shield and the header, if not then reform as required.
13. Heat Shield should look like Photo 2-14 when complete.

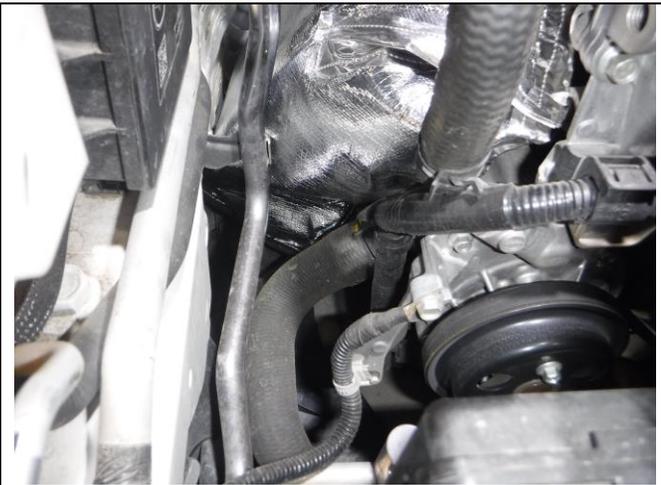


Photo 2-13: Sides brought in



Photo 2-14: Heat shield complete

SECTION 3: MODIFYING THE HEATER HOSE AND VACUUM HOSE

To clean up the header area, you can reorganize the heater hoses and vacuum hose. Also, to improve cooling the belly pan side sections can be cut out.

1. Photo 3-1 shows the heater coolant hoses and vacuum hose in the factory position. Photo 3-2 shows the heater hoses swapped at the firewall and the vacuum hose swapped on the hard line. The additional hoses in Photo 3-2 are the intercooler cooling hoses for the TDR Edelbrock Supercharger and catch can assembly.
2. Remove the vacuum hose spring clamp from the vacuum hose and vacuum cap as shown in Photo 3-3. Reinstall on to the opposite port as shown in Photo 3-4 and reattach the spring clamps.



Photo 3-1: Stock hose arrangement



Photo 3-2: Modified hose arrangement



Photo 3-3: Vacuum hose stock arrangement



Photo 3-4: Modified vacuum hose arrangement

3. Remove the outer coolant hose from the factory clip as shown in Photo 3-5.
4. Using a single blade hack-saw, cut the outer support bracket off as shown in Photo 3-6. If the spring clip is in your way, move it down the hose until the cutting is complete as shown in Photo 3-6.



Photo 3-5: Hose removed from plastic clamp

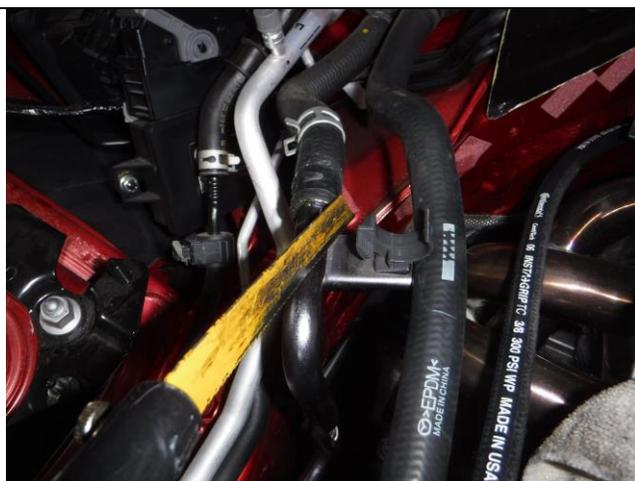


Photo 3-6: Bracket being cut off of tube

5. Reinstall the spring clip on the coolant hose as shown in Photo 3-7.
6. Pull back the spring clips on the two coolant hoses at the fire wall as shown in Photo 3-8.
7. Make sure the radiator cap is on and closed completely as this will help hold a vacuum in the cooling system. Place a cup or rag under the hose area. Wiggle the hose off the fitting. Only a small amount of coolant will come out.

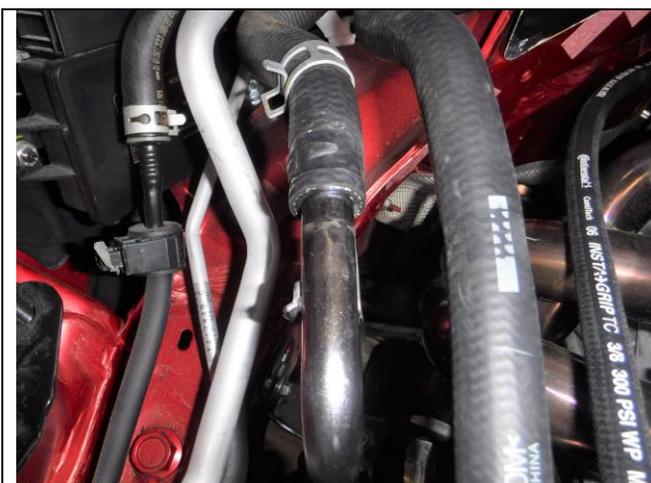


Photo 3-7: Bracket removed from tube



Photo 3-8: Heat core hose arrangement

8. Install the shorter hose that's attached to the metal tubing to the firewall fitting toward the engine side as shown in Photo 3-9.
9. Install the longer hose that's attached to the front neck to the firewall fitting toward the fender side as shown in Photo 3-9.
10. In our TDR Edelbrock Supercharger setup, we move one of the factory ECU modules to a new TDR bracket, again opening up the engine header area as shown in Photo 3-10. The additional cloth braided hose you see in the Photo 3-9 are for the supercharger intercooler water system.



Photo 3-9: Heater hoses in reversed position



Photo 3-10: ECU relocation setup

11. To improve cooling, you can modify the belly pan (the under tray) to allow more hot air to escape. However, if you live on dirty roads or poor winter conditions you may not want to remove the sides to prevent debris or other salts from coming in the engine area. The side panel can be easily cut with tin-snipes or heavy-duty scissors. As you can see in Photo 3-12 the cutout is after the radiator.
12. Remove your belly pan from the chassis. Using a marker, draw your cutline on the side panels of the belly pan as shown in Photo 3-11. Notice where the vertical cutline starts at the transition section of the top half of the belly pan.
13. Cut the side panel following your pattern and discard. The side cuts on both sides should look similar to Photo 3-12 when complete. Reinstall belly pan.



Photo 3-11: Belly pan modification



Photo 3-12: Belly pan side cutout

The TDR Heat Shield is easy to maintain using simple water and soap if necessary. If the Heat Shield is removed you will notice that it has become a little stiffer, but it will still form back around your exhaust manifold or aftermarket header. In some cases, you may see some foil has burned off from contact with the header. However, this will not affect the performance of the Heat Shield as the ceramic wool insulation will continue to perform a heat barrier.

We hope you will be pleased with our product. If at any time you need assistance, please feel free to contact us at 214-340-9797 or email us at support@trackdogracing.com. *If you have any comments or suggestions, please let us know. We also have other unique and high performance products for your Miata. Please visit us at www.trackdogracing.com.*

We appreciate your business,

The Track Dog Racing Team