OIL COOLER KIT FOR MAZDA MIATA (ND CHASSIS)

PART NO. EMA-600 & EMA-601

MADE IN USA



Important: Please read these instructions in their entirety prior to installation.

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Rev 260424

PARTS CHECK

- Visit the website product page for technical data and to confirm all parts have arrived by checking the images.

INSTALLATION INSTRUCTIONS

BEFORE YOU BEGIN

- Read the manuals included with the sandwich plate and oil cooler.

WARNING: NEVER work under a vehicle supported only by a jack.

WARNING: NEVER cap / plug the oil ports on the sandwich plate.

WARNING: Capped / plugged oil ports block oil flow in the engine and may result in catastrophic engine damage.

Use a union to loop the lines or create a new line to join the ports if servicing or removing the oil cooler from the vehicle.

WARNING: Only qualified mechanics should install this part.

WARNING: Improper installation may result in severe engine damage.

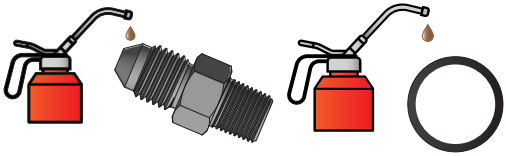
Lubricate threads and flares on fittings for a reliable seal.

Lubricate every O-ring to prevent damage and ensure a leak-free seal.

Never secure lines to moving components.

Use zip-ties and P-clamps to stop oil lines from rubbing against the exhaust, engine, suspension components and chassis.

Use aluminum tools to avoid damaging fittings.



REMOVE THE FACTORY OIL COOLER

⚠ **WARNING: Confirm the car is not hot prior to installation.**

1. Raise the vehicle and support with automotive-use approved frame stands, lift, or ramps.
2. Open the hood.
3. Remove the underside panels shown in Figure 1.

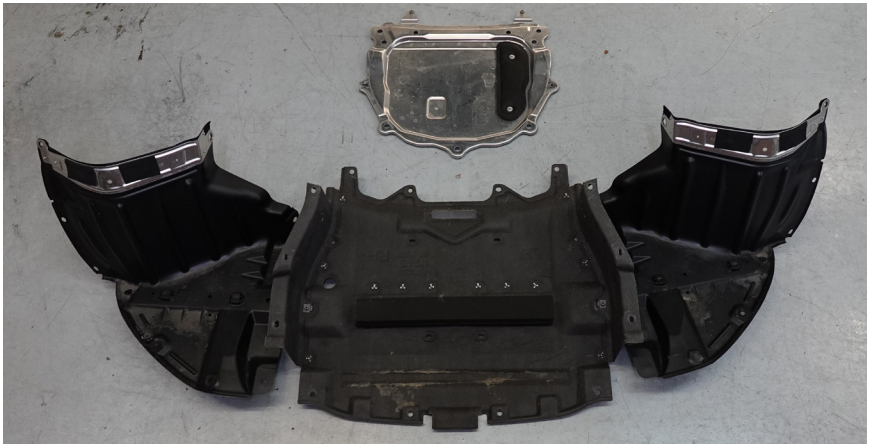


Figure 1 - Underside Panels Removed

4. Remove the oil filter and allow oil to drain.
5. Release and slide the indicated hose clamps off of their barbs:
   a. Figure 2 shows the oil cooler hose clamp.
   b. Figure 3 shows the engine block hose clamp.

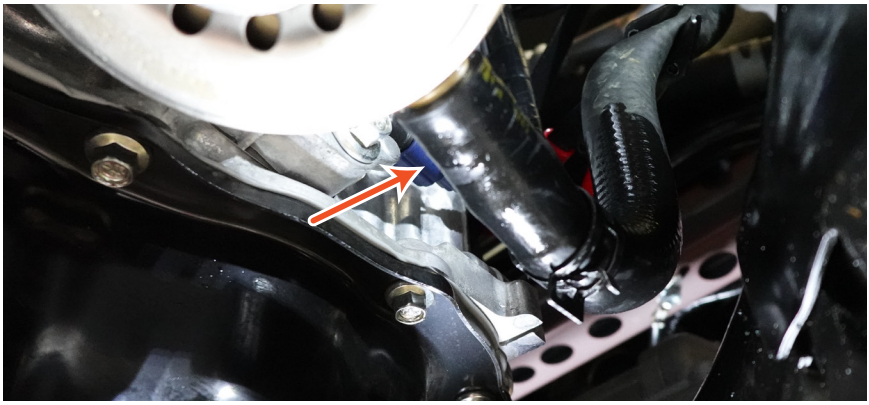


Figure 2 - Hose Clamp to Remove on Oil Cooler



Figure 3 - Hose Clamp to Remove on Block

6. Twist each hose using hose pliers to break the stiction.
7. Use a 12mm hex tool to remove the oil filter screw, shown in Figure 4.



Figure 4 - Removing the Factory Oil Filter Screw

8. Remove the hose on the front of the oil cooler, allow coolant to drain, then remove the factory hose clamp from the hose.
9. Remove the engine block hose and allow coolant to drain.
10. Install the included worm-drive hose clamp onto the hose that is left on the engine thermostat housing.

11. Connect that hose to the engine block barb to loop the system, and tighten the hose clamp to no more than 25 lb-in, shown in Figure 5.

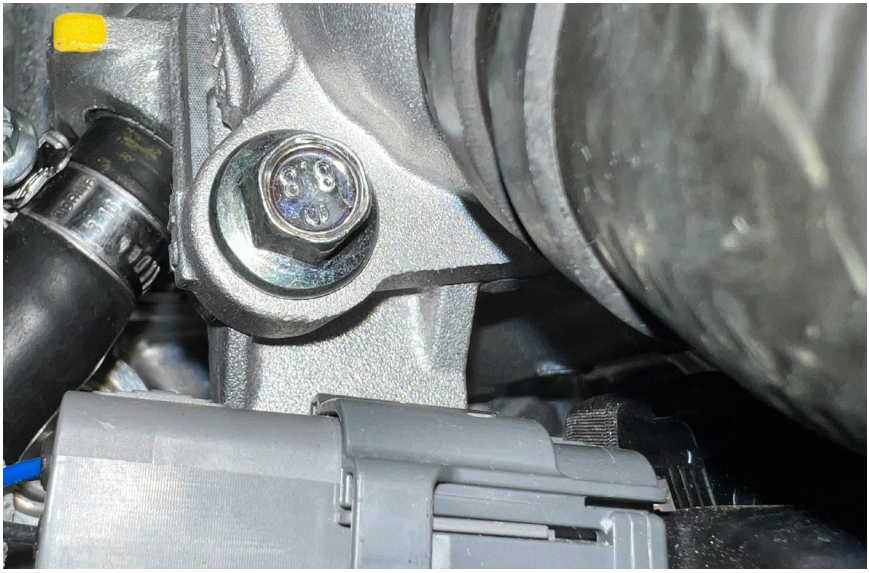


Figure 5 - Worm-Drive Hose Clamp Installed on Engine

12. Pull the hose to confirm the hose won't slide off; readjust if needed.
13. Install the new oil filter screw included with the kit, shown in Figure 6.

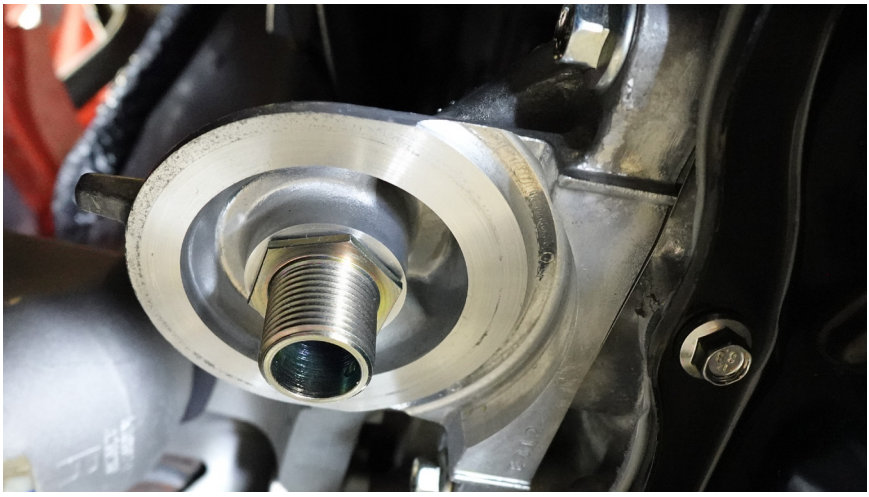


Figure 6 - New Oil Filter Screw Installed

14. Torque the screw to 25 lb-ft (34 N-m).

INSTALL THE SANDWICH PLATE & LINES

1. Leave the tags on the hoses until the hoses are connected to the cooler.
2. Connect the 90° fitting on the shorter hose to the OUT port of ENV-135.
3. Connect the 90° fitting of the other hose to the IN port on ENV-135.
4. Torque the fittings between 20 lb-ft (27 N-m) to 25 lb-ft (33 N-m).
5. Angle the fittings as shown in Figure 7.



Figure 7 - Hose End Angles on Sandwich Plate

6. Route the lines from the oil filter area toward the front of the car, confirming the hoses are placed over the steering rack, shown in Figure 8.

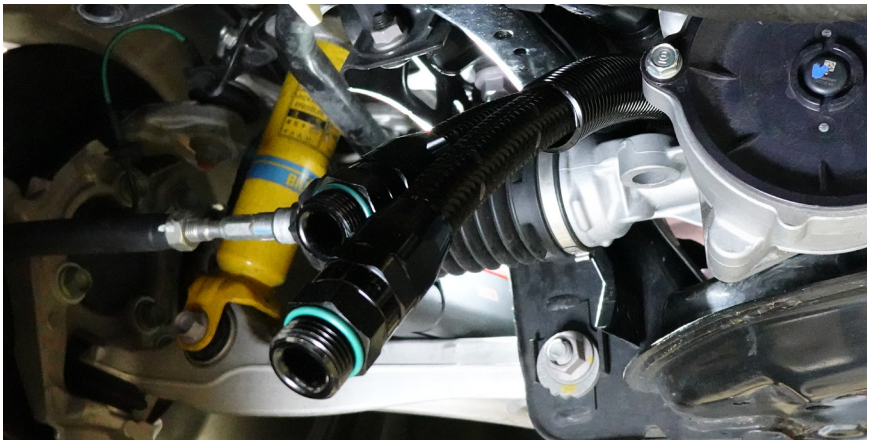


Figure 8 - Hoses Routed Over Steering Rack

7. Install the spacer ring and sandwich plate onto the engine.
8. Confirm the orientation closely matches Figure 9 and does not interfere anywhere on the chassis or engine.

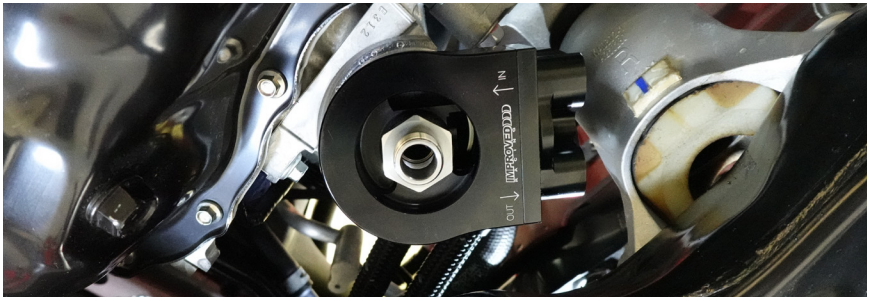


Figure 9 - Hose End Angles on Sandwich Plate

9. Torque the sandwich plate to 25 lb-ft (34 N-m).

INSTALL THE OIL COOLER & BRACKETS

1. Refer to Figure 10 or Figure 11 to attach the top bracket to the cooler according to your selected cooler size.

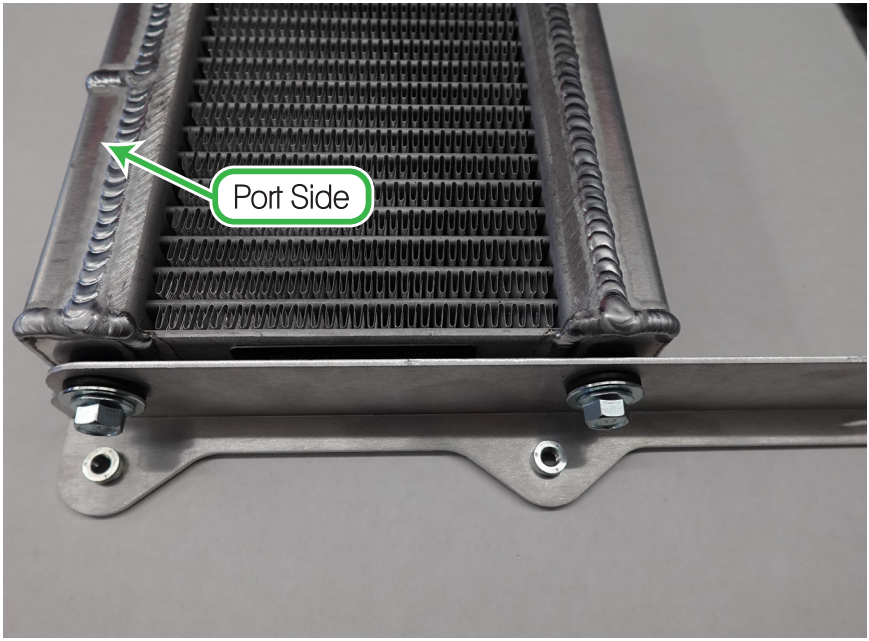


Figure 10 - MHX-215 Installed into Bracket

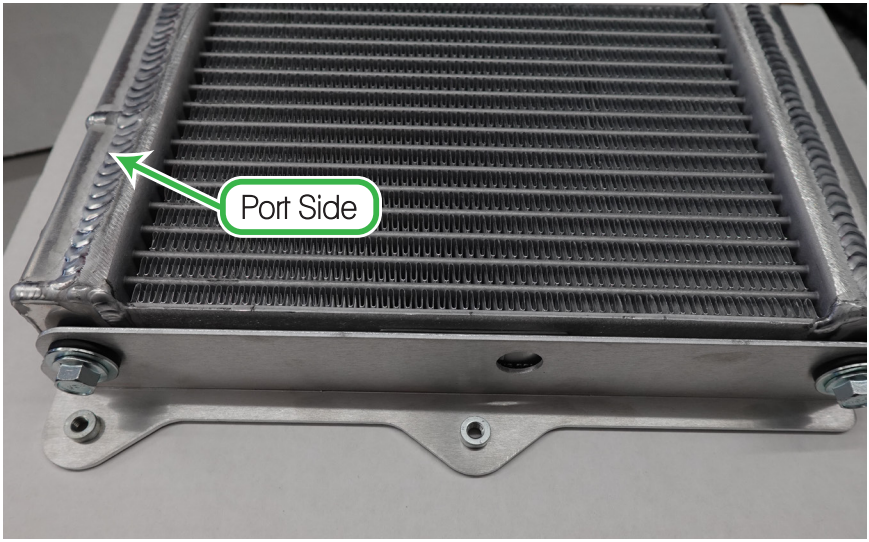


Figure 11 - MHX-515 Installed into Bracket

2. Torque the mounting screws to 15 lb-ft (20 N-m).
3. Connect the hose tagged with EMA-600-50 to the bottom oil cooler port, shown in Figure 12.
4. Connect the hose tagged with EMA-600-51 to the top oil cooler port, shown in Figure 12.

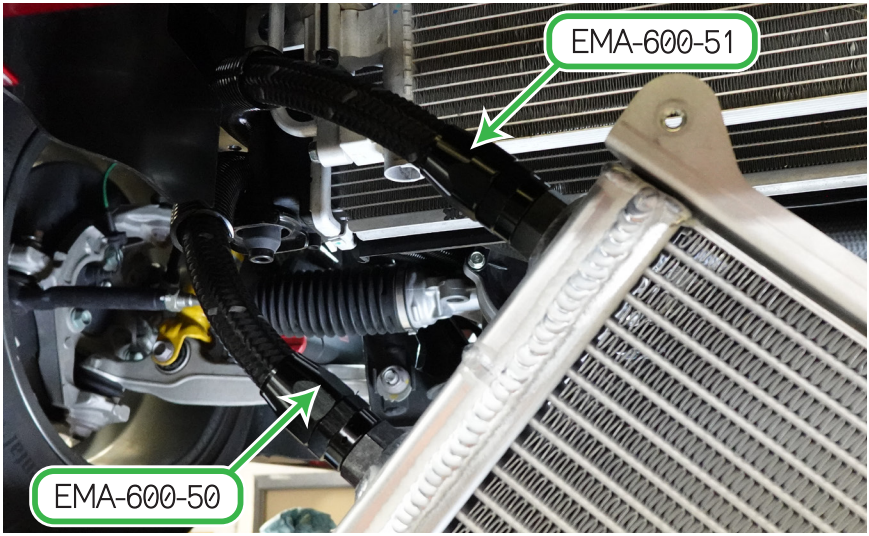


Figure 12 - Hoses Connected to Cooler

5. Torque the fittings between 20 lb-ft (27 N-m) to 25 lb-ft (33 N-m).
6. Use the included screws from the top bracket kit to install the cooler and bracket onto the car, shown in Figure 13.

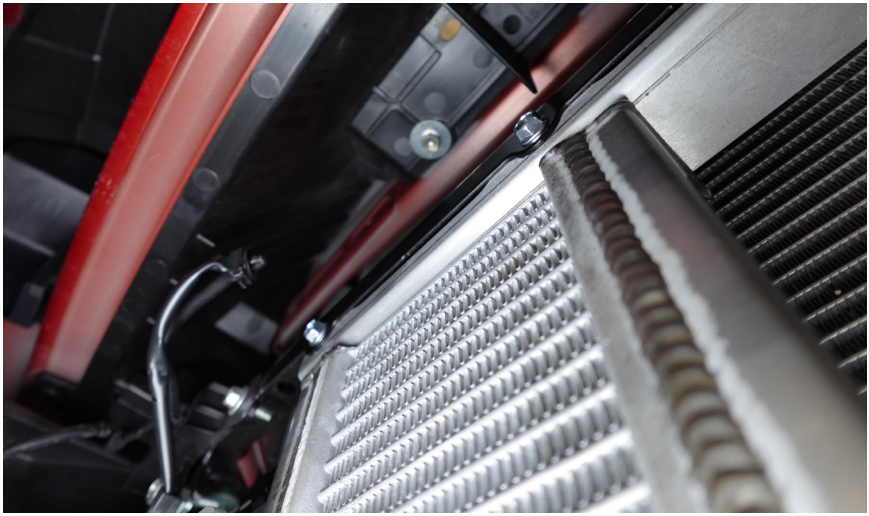


Figure 13 - Top Cooler Bracket Secured to Car

7. Use a 10mm tool to torque to 80 lb-in (9 N-m).
8. Assemble the bottom bracket as shown in Figure 14.

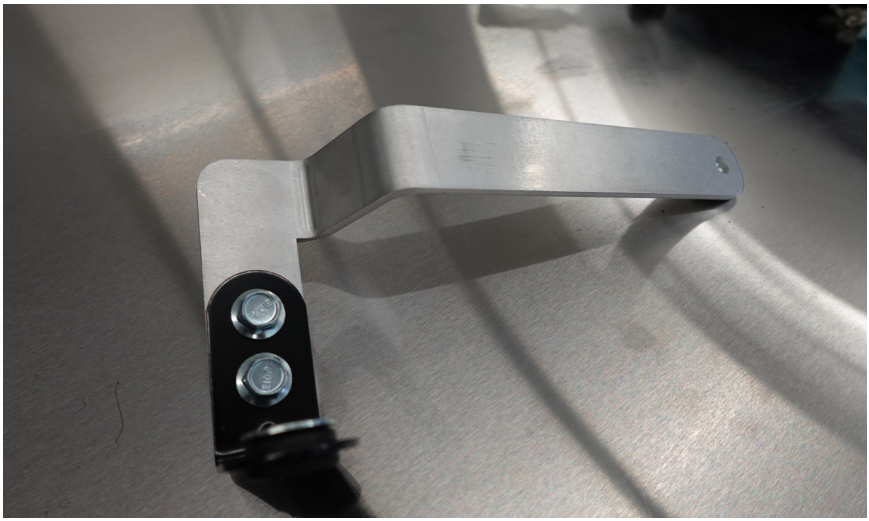


Figure 14 - Assembled Bottom Bracket

9. Use a 12mm tool to torque the L-bracket to 110 lb-in (12.5 N-m).

10. Use the included hardware in the bottom bracket kit to install the bracket to the car and cooler, shown in Figure 15 and Figure 16.

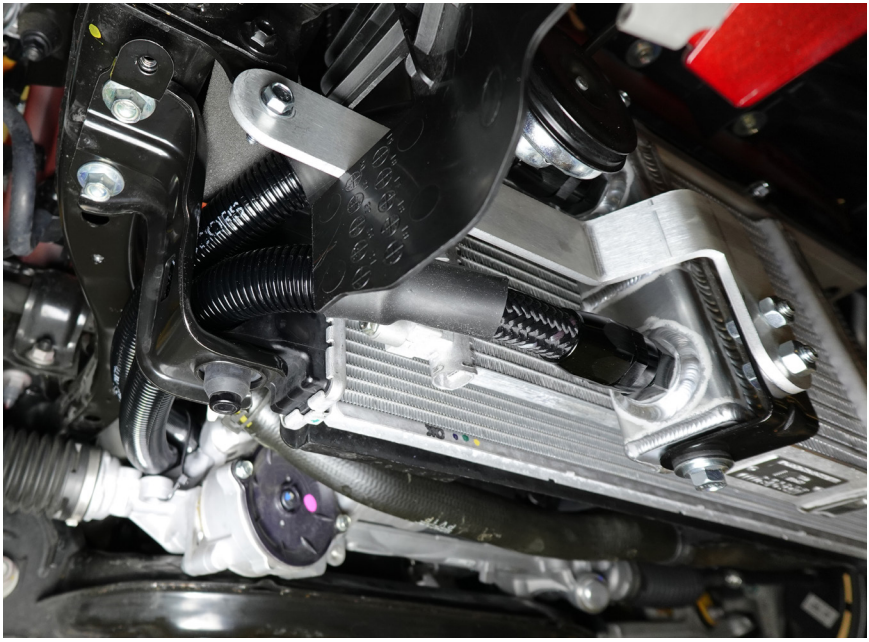


Figure 15 - Bottom Cooler Bracket Secured to Car & Cooler

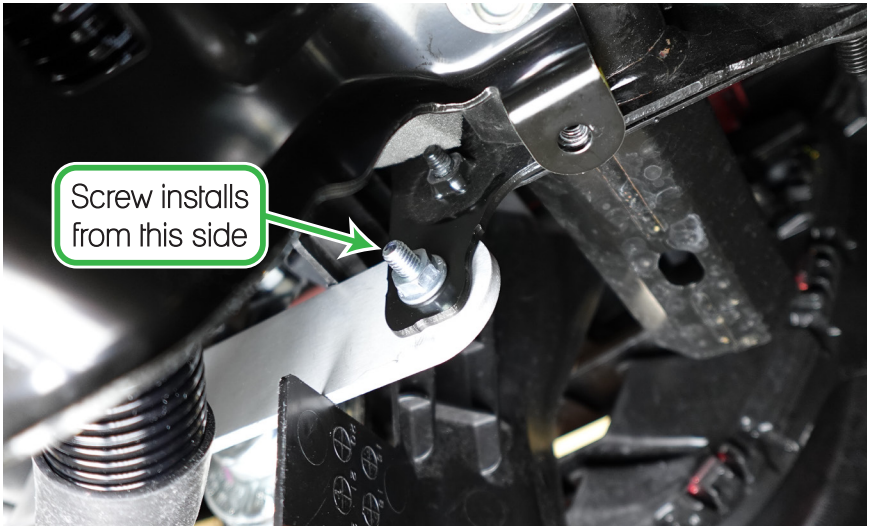


Figure 16 - Bottom Cooler Bracket Secured to Car

11. Use a 10mm tool to torque to 80 lb-in (9 N-m).

COMPLETING THE INSTALLATION

1. Secure the hoses to the steering rack with a zip tie, shown in Figure 17.

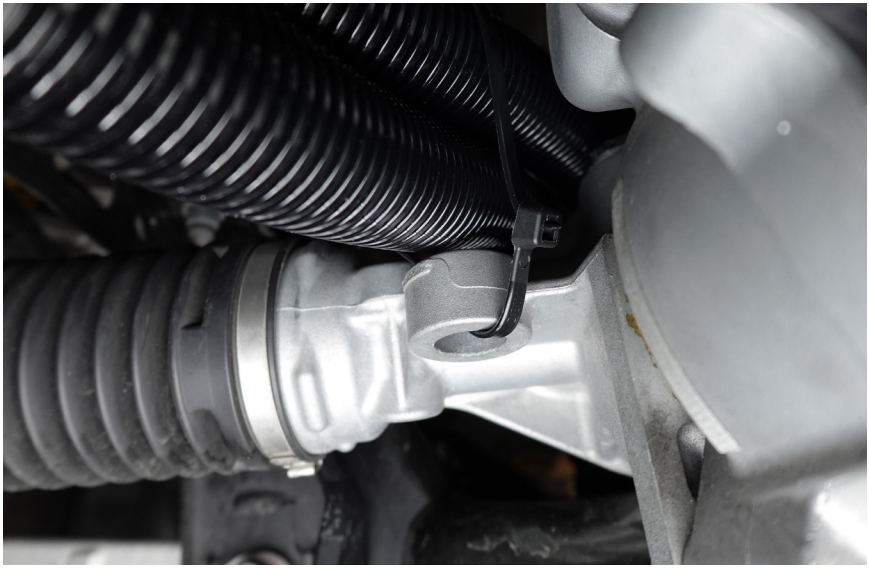


Figure 17 - Bottom Cooler Bracket Secured to Car

2. Pre-fill and install a new oil filter.
3. Check the engine oil level and add extra oil based on your cooler size:
   a. MHX-215 requires 0.60 QT (0.57 L) extra oil.
   b. MHX-515 requires 0.75 QT (0.71 L) extra oil.
4. Check the engine coolant level and add coolant if necessary.

Refer to the factory service manual.

5. Confirm all spilled fluids are wiped up, especially if coolant got on the serpentine belt.
6. Start the engine and inspect for leaks.

Confirm oil pressure is stable and reading the correct value.

7. Turn off the engine.
8. Confirm oil and coolant levels are within spec.
9. Reinstall the underside panels shown in Figure 1.
10. Safely lower the car back onto the ground.

Installation is now complete. Thank you for purchasing an Improved Racing product!