1996-2004 FORD MUSTANG V8 OIL COOLER KIT

PART NO. EFR-600-TX

MADE IN USA



Important: Read these instructions in their entirety prior to installation.

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APPLICATIONS

- 1996-2004 4.6L Ford Modular V8 Mustang GT, chassis code SN95

Prior to installing this kit, Cobra and Mach 1 trims must purchase a 1.75" to 1.50" radiator hose reducer, part number RHR-175-150.

PARTS LIST & HARDWARE

Item	Qty	Part Number	Description
1	1	EFR-100	Remote Oil Filter and Cooler Adapter, Ford 4.6 & 5.4 Modular V8 Engine
2	1	ORB-16-28	-16 SAE ORB to 1.75" Hose Barb Adapter Fitting
3	1	EFR-800	Radiator Hose, with Clamps
4	1	MHX-521	21-Row Dual Pass Oil Cooler
5	1	EFR-600-60	Top Oil Cooler Bracket & Hardware
6	1	EFR-600-61	Lower oil cooler bracket & Hardware
7	1	ENV-171-TX	Remote Oil Filter Mount with Thermostat (Temperature Specifications in Product Manual)
8	1	HSC-1039	Oil Filter Adapter Screw for ENV-171
9	8	OM-10-10	-10 SAE ORB to -10 SAE 37° Male Flare Adapter Fitting
10	1	EFR-600-62	Oil Cooler Kit Installation Hardware
11	2	EFR-600-50	Oil Lines from EFR-100 to ENV-171
12	1	EFR-600-52	Oil Line from ENV-171 to MHX-521
13	1	EFR-600-53	Oil Line from MHX-521 to ENV-171

BEFORE YOU BEGIN

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

NEVER PLUG THE FLUID PORTS ON EFR-100.

WARNING: Running the engine with plugged ports on EFR-100 will block oil flow and result in catastrophic engine damage.

NEVER use EFR-100 without a remote oil filter plumbed.

WARNING: Running an engine without an oil filter will circulate debris that can harm internal engine parts.

NEVER PLUG THE COOLER SIDE PORTS ON ENV-171.

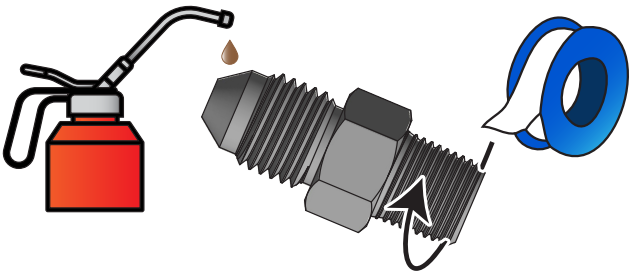
WARNING: Running the engine with cooler ports capped on ENV-171 will block oil flow and result in catastrophic engine damage.

- Loop the lines together to connect the fluid paths if removing the heat exchanger.

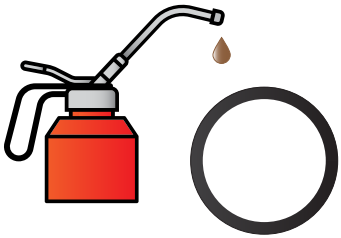
WARNING: This product should only be installed by a qualified mechanic. Improper installation could result in severe engine damage.

WARNING: Never secure hoses to moving components.

- Use zip-ties and P-clamps to ensure no hoses pinch / rub on the exhaust, engine, suspension components and chassis.
- Ensure heat exchangers are isolated from vibration.
- Pre-fill heat exchangers to prevent dry startup.
- Lubricate all 37° flares on the adapter fittings before final tightening.
- Wrap tapered pipe (NPT) threads with Teflon (PTFE) tape or apply thread sealant to seal the threads.



- Lubricate O-rings on adapter fittings prior to installation to prevent damage and ensure a leak-free seal.



- Use aluminum tools to avoid damaging the aluminum fittings.
- Properly clean all fasteners with acetone before using any thread lock.
- Use isopropyl alcohol (90%+) to activate thread lock.

REMOVING THE BUMPER & FACTORY PARTS

1. Follow the instruction manual provided with EFR-100 and remove the headlights, bumper cover and bumper bar according to the factory service manual.

INSTALLING THE OIL COOLER ADAPTER

1. Continue following the instructions provided with EFR-100 and install the adapter onto the engine block.

INSTALLING THE REMOTE OIL FILTER MOUNT

1. Familiarize yourself with ENV-171 by reading over the product manual.
2. Using the preexisting hole in the bumper bar, mock install the mounting bracket and backing plate for ENV-171 using one M8 screw from the kit, as shown in Figure 1.

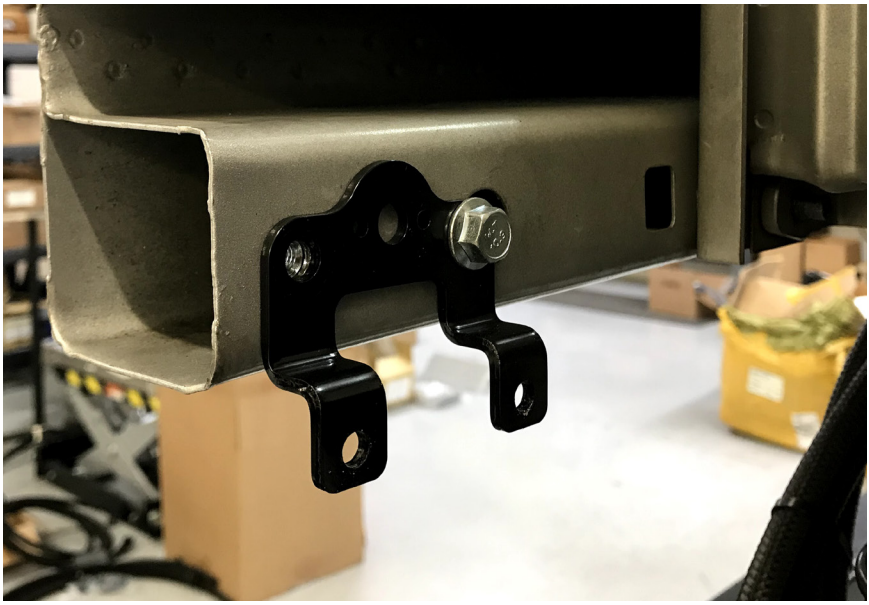


Figure 1 - Remote Filter Mount Installed on Front Bumper Bar

3. Once the bracket is level, trace the hole or mark the center point.
4. Strike the hole center with a sharp punch.

5. Remove all parts from the bumper bar for drilling.
6. Drill a $^{3}/_{8}$ inch hole into the bumper bar using a sharp, high-quality, cobalt steel drill bit.

The bumper bar is made from hardened steel; a sharp drill bit is required to cut through it.

7. Use a 10mm tool to secure the mounting bracket to ENV-171 with the provided M6 screws.
8. Use a 12mm tool to install ENV-171 onto the bumper with the backing plate using two M8 screws from the hardware kit.
9. Torque the M8 bracket screws to 20 lb-ft (27 N-m).
10. Reinstall the bumper bar onto the vehicle and use the old paint marks to get alignment correct.
11. Torque the bumper bar screws according to factory spec.

INSTALLING THE OIL COOLER & BRACKETS

1. Remove the black plastic fascia panel in the driver side wheel well by using a forked prying tool to remove three push-in fasteners.

Refer to Figure 4 if unsure what panel this is.

2. Use an 8mm tool to remove the power steering cooler from the radiator support when you car is equipped with a power steering cooler.
3. Use cable ties or string to hang the power steering cooler from the bottom of the radiator support to reduce stress on the hoses and lines.
4. Familiarize yourself with MHX-521 by reading over the product manual.
5. Locate the EFR-600-60 Bracket Kit, then install the top bracket onto MHX-521 using the supplied M8 screws and a 12 mm tool.

The ports on MHX-521 face the long arm of the bracket.

6. Torque the M8 screws to 20 lb-ft (27 N-m).
7. Use a 1 inch tool to install two OM-10-10 fittings into MHX-521.
8. Torque the adapter fittings to 25 lb-ft (34 N-m).
9. Use a 12 mm tool and the remaining screws and washers from the EFR-600-60 Bracket Kit to loosely secure the top bracket to the radiator support, as shown in Figure 2.

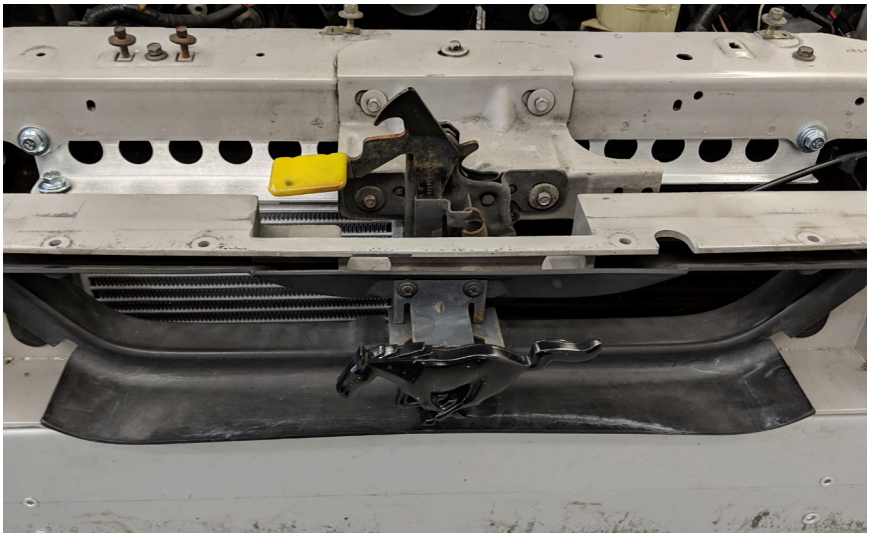


Figure 2 - Remote Filter Mount Installed on Front Bumper Bar

10. Locate the EFR-600-61 Hardware Kit, then install the bottom bracket onto MHX-521 using two M8 screws and a 12 mm tool.
11. Loosely tighten the screws to mark the bracket hole.
12. Verify the oil cooler does not interfere with any factory components and adjust the top bracket if it does.
13. Use an angle finder to align MHX-521 parallel with the AC condensor/ engine radiator.
14. Once parallel, trace the outline of the bracket hole onto the bumper bar with a permanent marker.
15. Remove the lower oil cooler bracket from MHX-521.
16. Loosen the top bracket hardware from the vehicle and carefully remove the entire cooler and bracket assembly from the vehicle.
17. Strike the hole-center on the bottom of the bumper bar with a sharp punch.
18. Use a sharp, high quality $^{7}/_{16}$ inch (11mm) drill bit to cut a hole into the bumper bar for the lower oil cooler bracket.
19. Apply anti-seize to the included $^{1}/_{4}$"-20 screw, then use a $^{7}/_{16}$ inch (11mm) tool and the included jack nut wrench to install the jack nut into the $^{7}/_{16}$ inch (11mm) hole.

Search YouTube videos for “pop jack nut installation” when unsure.

20. Remove the screw used to install the jack nut and set aside for lower bracket installation.
21. Test-fit the bottom bracket to verify alignment with the new mounting hole, then set aside.
22. Locate the EFR-600-52 and EFR-600-53 oil lines and connect them as follows:
    a. **EFR-600-52:**
        i. Straight = OUT TO COOLER port on ENV-171,
        ii. Straight = Bottom port (IN) on MHX-521.
    b. **EFR-600-53:**
        i. Straight = IN FROM COOLER port on ENV-171,
        ii. 45° = Top port (OUT) on MHX-521.

Connect the hose ends to ENV-171 after Step 23 if you did not remove the black hood latch support bar.

Verify that hose ends to do not interfere with the hood latch support bar after Step 23.

23. Torque all of the fittings to 25 lb-ft (34 N-m) EXCEPT for the fitting you plan to use for pre-filling later, when not using an engine pre-oiler.
24. Carefully reinstall the oil cooler with top bracket and lines back onto the car using the same top bracket hardware.

Leave loosened for final adjustment.

25. Reinstall the lower oil cooler bracket onto MHX-521 using the same M8 screws as before.
26. Torque the screws to 20 lb-ft (27 N-m) as done before.
27. Use a $^{7}/_{16}$ inch (11mm) tool to install the $^{1}/_{4}$"-20 screw into the jack nut.

DO NOT over-tighten!

Use anti-seize to make removal less likely to spin jack nut and prohibit fastener removal.

28. Locate the EFR-600-50 oil lines and connect each line as follows:
    a. **45° Hose-End** = OUT port on EFR-100
    b. **150° Hose-End** = IN FROM ENGINE port on ENV-171

Figure 3 shows how to orient the 150° hose-ends on ENV-171.



Figure 3 - Positioning the 150° Hose Ends on ENV-171

29. Torque all connections on EFR-100 and ENV-171 to 25 lb-ft (34 N-m).
30. Pre-fill a new oil filter with engine oil and then lubricate the oil filter seal before screwing it onto ENV-171.

⚠ **DO NOT over-tighten!**

31. Remove the hose end that was left loose, and then pre-fill MHX-521 when not using an engine pre-oiler.
32. Reconnect the hose-end to the adapter fitting.
33. Torque the fitting to 25 lb-ft (34 N-m).
34. Check that all oil line connections are torqued to 25 lb-ft (34 N-m).
35. Reinstall the factory steering cooler onto the vehicle using an 8mm tool.
36. Trim the plastic fascia panel located on the front left side of the frame rail to clear the oil lines, as shown in Figure 4.



Figure 4 - Trimming the Front Left Fascia Panel

38. Use the provided zip-tie to secure the oil lines to the existing hole in the frame rail, as shown in Figure 5.



Figure 5 - Securing the Oil Lines to the Frame Rail

39. Reinstall the trimmed fascia panel, as shown in Figure 6.

⚠ **Verify the oil lines clear the fascia panel and do not rub on the edge.**

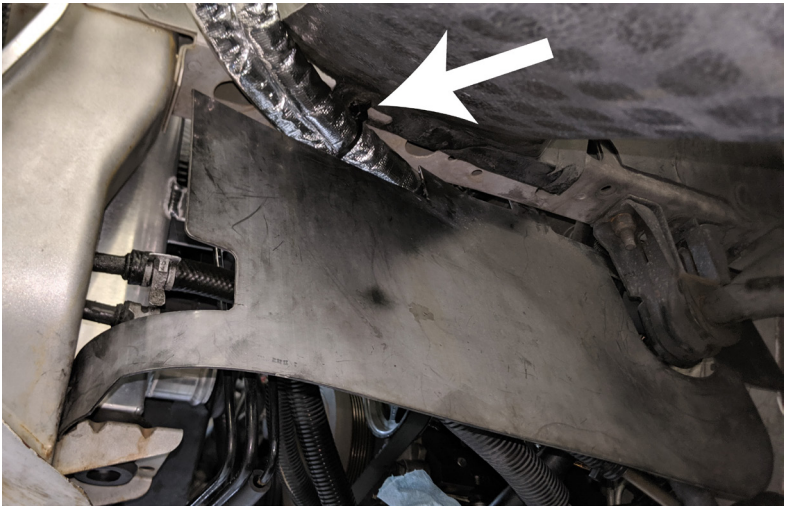


Figure 6 - Trimmed Fascia Panel Installed

40. Use a $^{3}/_{16}$ inch hex tool to install the hose separator from the EFR-600-62 Hardware Kit in the middle of the oil lines between the filter mount and the engine.

💡 Use pliers similar to Channel-Lock or Knipex pliers to hold the clamp halves together while tightening.

⚠ **Verify the hose separator allows the lines to clear any moving parts in the engine bay before starting: Adjust if needed.**

41. Use the remaining cable tie from the EFR-600-62 Hardware Kit to retain the lines where any rubbing might occur.

💡 Use more cable ties if the supplied cable tie is not enough.

COMPLETING THE INSTALLATION

1. Check that all fittings are connected and tightened.
2. Check the engine oil level and add oil if necessary.
3. Refill the engine's coolant system using the manufacturer's approved method for your Mustang.

💡 Consult the vehicle's factory service manual for the correct coolant specifications and refill procedure.

4. Remove the fuel pump and / or ignition fuse(s) so that the engine does not start when turned over.

Consult the vehicle's factory service manual for the fuse(s) location.

5. Crank the engine over for five seconds to build oil pressure, repeating this cycle three to five times.
6. Reinstall the fuse(s).
7. Start the engine to check for leaks or strange noises while the engine gets up to normal operating temperature.

Verify engine oil pressure is stable and reading the correct value.

8. Turn-off the vehicle, inspect the engine oil and coolant levels and add oil or coolant as needed.
9. Take a drive without reinstalling the bumper cover, if possible, and verify that no leaks or noises occur.

Leaving the final pieces off allows for easier fixes, if required.

Verify test driving the car does not violate local laws regarding bumpers and headlights before taking the test drive.

10. Verify the car does not overheat to prove coolant levels are properly filled again.
11. Reinstall the front bumper, headlights and all underbody panels after a successful test drive.
12. Inspect all parts for loosening or leaks after 100 miles of driving.

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