

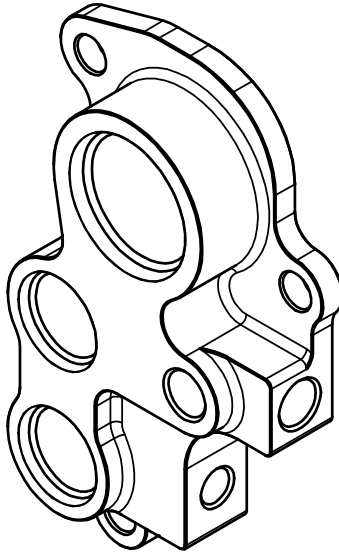
IMPROVED

R A C I N G[®]

**REMOTE OIL FILTER & COOLER
ADAPTER, 4.6L & 5.4L FORD
MODULAR V8**

PART NO. EFR-100

MADE IN USA



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

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APPLICATIONS

- All vehicles with 4.6L & 5.4L Ford Modular V8 engines including:
 - 1996-2010 Ford Mustang GT
 - 1995-2010 Ford F-Series trucks
 - 1992-2012 Ford Crown Victoria
 - 1990-2011 Lincoln Towncar
 - 1996-2014 Ford E-Series vans
 - Other vehicles with modular engines swapped-in
- EFR-100 is designed for **remote oil filter systems only**.
 - Improved Racing recommends locating the remote oil filter mount on a sturdy part of the vehicle such as the chassis, firewall or bumper.
- EFR-100 can be used with or without an oil cooler.
 - The recommended oil filter mount is Part # ENV-140 (non-thermostatic, oil cooler optional).
 - The recommended thermostatic oil filter mount is Part # ENV-171 (thermostatic, must use oil cooler).
- EFR-100 has two $\frac{1}{4}$ "-18 NPT sensor ports for the factory oil pressure sensor and one for an aftermarket sensor or feed line (See Figure 2).
- EFR-100 has one $\frac{1}{8}$ "-27 NPT sensor port for an aftermarket sensor (See Figure 2).

INSTALLATION NOTES

- Vehicles listed below require a 1.75" radiator barb fitting (Part # OB-16-28) and EFR-800 silicone radiator hose because the factory lower radiator hose does not reach.
 - 1992-2012 Ford Crown Victoria
 - 1990-2011 Lincoln Towncar
 - 1996-2004 Mustang GT
- 1996-2004 Mustang SVT Cobra and Mustang Mach 1 use an inline coolant thermostat on the lower radiator hose and requires:
 - A 1.75" to 1.50" rubber reducer (Part # RHR-175-150) is required to connect the modified EFR-800 hose to the OEM engine thermostat.
 - Modified EFR-800 silicone radiator hose cut with a sharp cutting tool along the green dotted line shown in Figure 1.

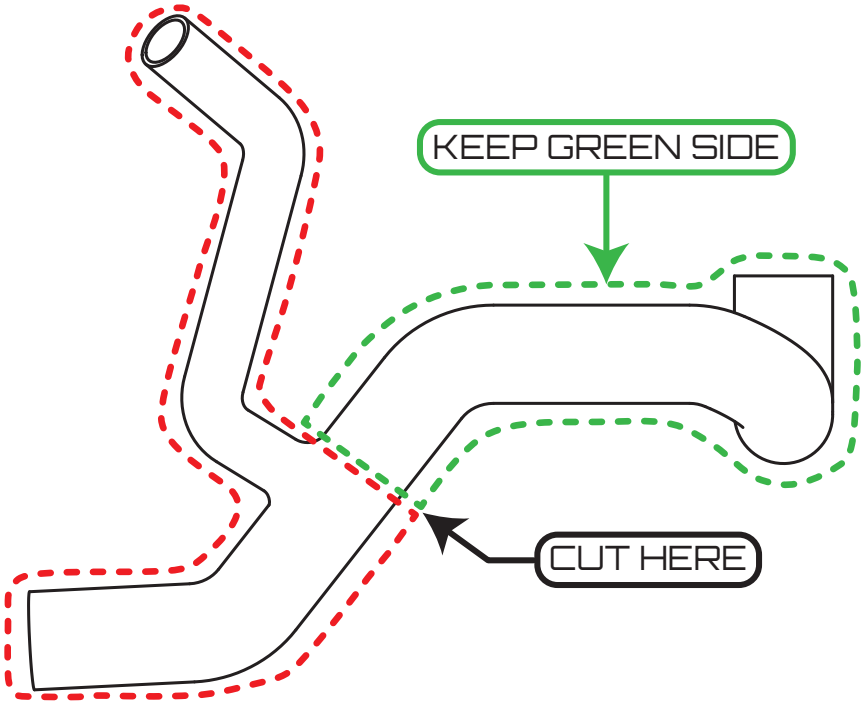


Figure 1 - Cut Line for EFR-800 Radiator Hose: SVT Cobra & Mach 1 Trims

- Vehicles listed below may reuse the factory lower radiator hose but must use the optional 1.50" radiator hose fitting (Part # OB-16-24).
 - 1995-2010 Ford F-Series trucks
 - 2005-2010 Ford Mustang GT

STANDARD PARTS LIST

Item	Qty	Part Number	Description
1	1	EFR-100-01	Remote Oil Filter & Cooler Adapter
3	4	HSC-1058	M8x1.25 x 20mm Mounting Screws
4	1	PP-04S	1/4"-18 NPT Plug
5	1	PP-02S	1/8"-27 NPT Plug
6	1	HGA-1200	Gasket for most 1996-1999 Engines
7	2	HGA-1201	Gasket for most 2000-2014 Engines

OPTIONAL CONFIGURATION PARTS

Qty Required for EFR-100	Part Number	Description
1	OB-16-24	-16 SAE Straight Thread O-ring to 1.50" Hose Barb
	-OR-	-OR-
	OB-16-28	-16 SAE Straight Thread O-ring to 1.75" Hose Barb
2	OM-10-08	-10 SAE ORB to -8 SAE 37° Male Flare Adapter Fitting
	-OR-	-OR-
	OM-10-10	-10 SAE ORB to -10 SAE 37° Male Flare Adapter Fitting
	-OR-	-OR-
	OM-10-12	-10 SAE ORB to -12 SAE 37° Male Flare Adapter Fitting
1	EFR-800	SN95 Mustang V8 Replacement Silicone Radiator Hose (See Installation Notes on Page 2 and Page 3)

TECHNICAL SPECIFICATIONS

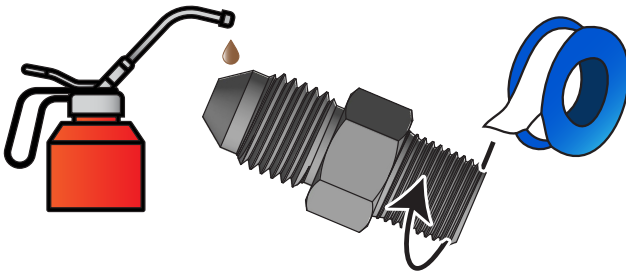
Maximum Operating Temperature	302°F (150°C)
Minimum Operating Temperature	-22°F (-30°C)
Maximum Operating Pressure	300 psi (20.68 bar)
Dimensions (W x H x D)	3.20" x 5.72" x 1.00" (8.1 cm x 14.5 cm x 2.54 cm)
Coolant Fitting Port	-16 SAE Straight Thread J1926-1 (ISO 11926-1) O-ring Port, 1- ⁵ / ₁₆ "-12 UN
Oil Fitting Ports	2 x -10 SAE Straight Thread J1926-1 (ISO 11926-1) O-ring Port, ⁷ / ₈ "-14 UNF
Sensor Fitting Ports	1 x ¹ / ₈ "-27 NPT 2 x ¹ / ₄ "-18 NPT
Housing Material	CNC-Machined 6061-T6 Billet Aluminum
Housing Finish	MIL-A-8625 Type II Anodize, Black
Mounting Hardware	M8x1.25x20 Socket Screw, 6 mm Hex-Drive
¹ / ₈ "-27 NPT Plug Info	Zinc-Plated Steel, Acrylic Sealant, ³ / ₁₆ " Hex-Drive
¹ / ₄ "-18 NPT Plug Info	Zinc-Plated Steel, Acrylic Sealant, ¹ / ₄ " Hex-Drive

BEFORE YOU BEGIN

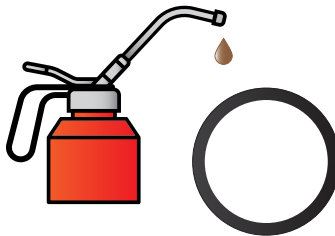
 **WARNING: NEVER work under a vehicle supported only by a jack.**

 **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.**
- ⚠ 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 prior to installation to prevent damage and ensure a leak-free seal.



- 💡 Use aluminum tools to avoid damaging the aluminum fittings.

PORT IDENTIFICATION

Note the port identification and directions of flow illustrated in Figure 2 below.

There are two $\frac{1}{4}$ "-18 NPT ports for the factory pressure sender or turbo oil supply lines. There is one $\frac{1}{8}$ "-27 NPT port for aftermarket sensors. Any unused ports must be plugged with the included NPT plugs.

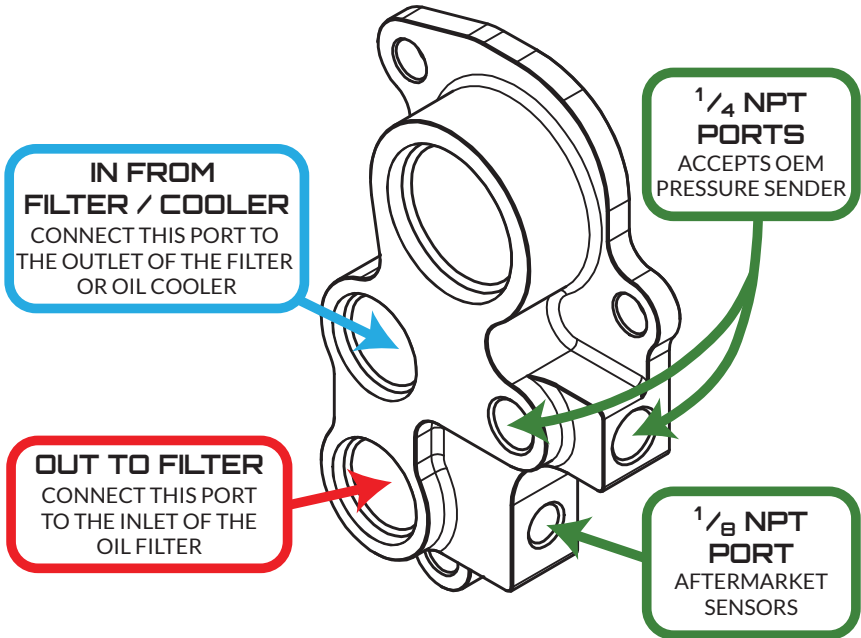


Figure 2 - Port Descriptions

OIL LINE ROUTING AND FLOW DIAGRAMS

⚠ WARNING: Pay close attention to the oil line routing. Incorrect line routing will impede oil flow to the engine.

- Some example flow configurations using Improved Racing remote filter mounts are presented in Figure 3 through Figure 5.
- Oil filter mounts from other brands will have IN and OUT ports in different configurations.
- Be certain of what port is IN and what port is OUT on your remote filter mount to ensure oil flows to your engine properly.

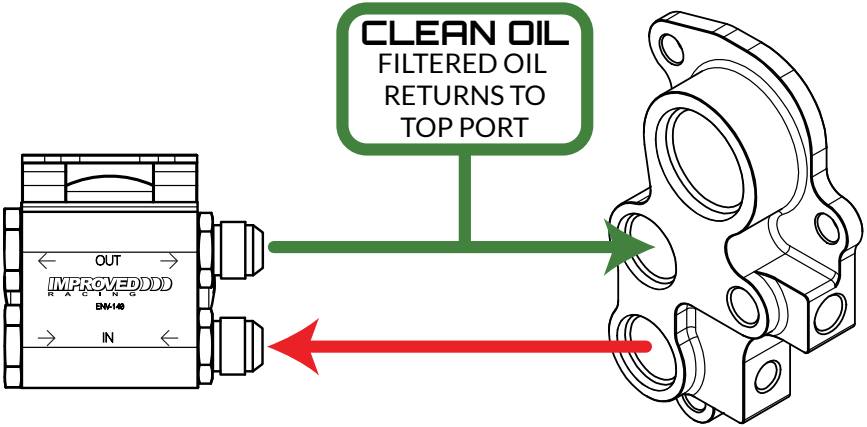


Figure 3 - Remote Oil Filter Only (No Oil Cooler)

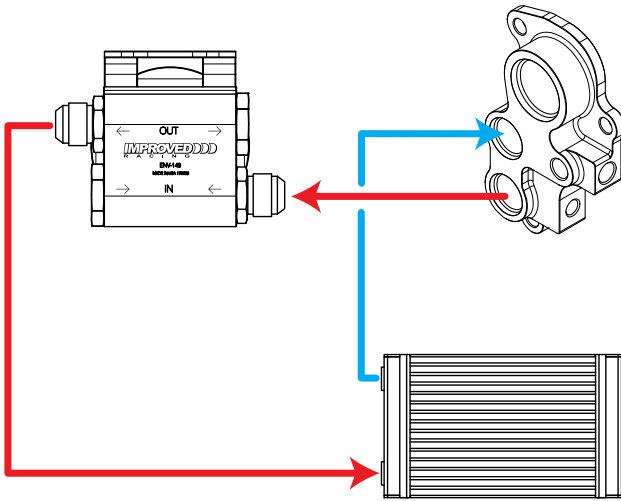


Figure 4 - Non-Thermostatic Remote Oil Filter with Oil Cooler

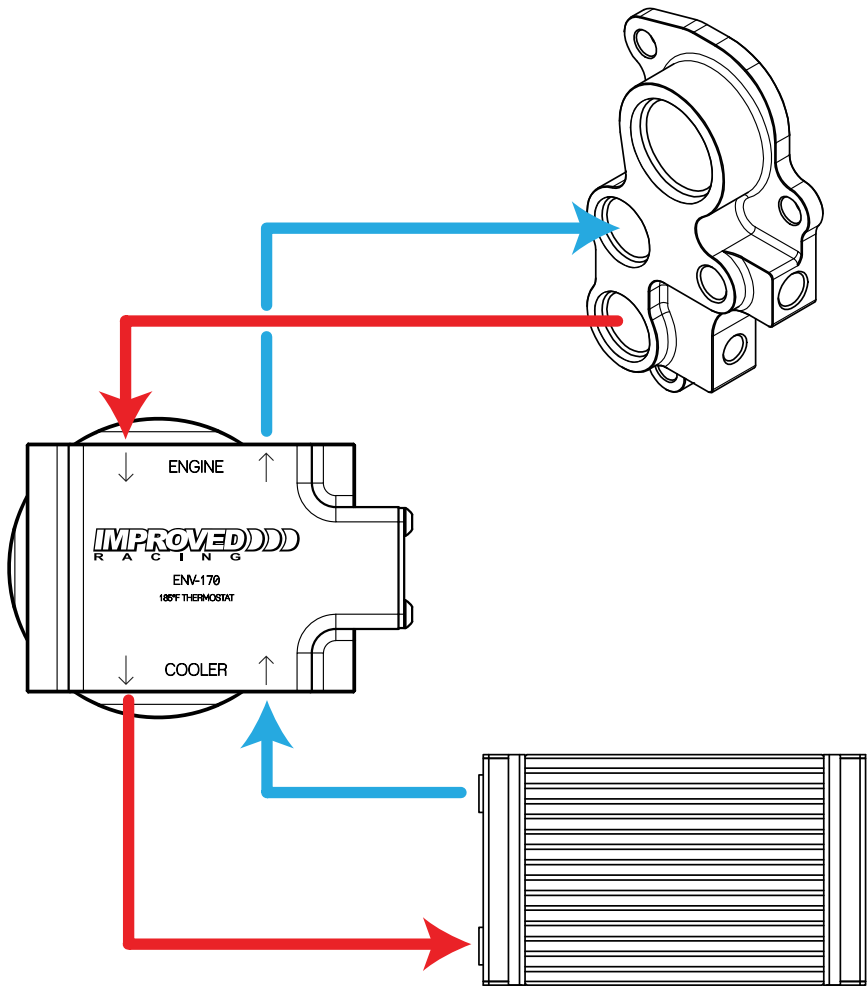


Figure 5 - Thermostatic Remote Oil Filter with Oil Cooler



PREPARING FOR INSTALLATION

1. Raise the front of the vehicle and support with automotive-approved frame stands, lift, or ramps.


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


2. Remove any underbody panels necessary to access the oil filter.
3. Place a drain pan under the filter, remove the oil filter and allow the oil to drain.

⚠ Caution: Oil may be hot!

4. Remove the front bumper cover and head lights to gain access to the front bumper.
 5. Place a drain pan under the lower radiator hose connection at the radiator.
 6. Use channel-lock pliers to release and slide away the hose clamp on the lower radiator hose at the radiator connection.
 7. Remove the hose from the radiator to drain the coolant.
 -  If the hose is stuck, use a plastic tool to loosen the hose from the barb.
 8. Use channel-lock pliers to release and slide away the hose clamps at the engine and coolant overflow tank connections.
 9. Remove the lower radiator hose from the vehicle completely.
 10. Unplug the wire harness from the pressure sensor on the factory oil filter manifold.
 11. Use a $13/16$ " tool to remove the pressure sensor from the factory manifold.
 12. Use a 10 mm socket wrench to remove all four screws from the factory manifold, then carefully remove the oil filter and coolant manifold from the engine block.
 13. Inspect and clean the engine block's sealing surface.
-  **Sealing surface must be clean and smooth for gasket to seal properly.**

INSTALLING THE OIL COOLER ADAPTER

1. Clean the threads on the factory pressure sensor. Wrap the threads three to four times with Teflon tape or apply Teflon thread sealant and install into one of the $1/4$ " NPT ports shown in Figure 2.
 2. Install the provided $1/4$ " NPT plug into the unused sensor port on EFR-100 if no other sensors are being used.
 3. Install the provided $1/8$ " NPT plug into the bottom sensor port on EFR-100 if no other sensors are being used.
 4. Install the coolant barb fitting and oil cooler adapter fittings into EFR-100. Torque the coolant barb fitting to 30 lb-ft (41 N-m). Torque the oil line adapter fittings to 20 lb-ft (27 N-m).
-  Lubricate the O-rings with engine oil to prevent O-ring damage.
5. Ford used two different oil pedestal gaskets that are slightly different throughout the production years. This kit includes one of each gasket type. Install the gasket that most closely matches the original gasket on your engine (either part number HGA-1200 or HGA-1201).

6. Use a 6 mm hex tool and the HSC-1058 mounting screws to secure EFR-100 to the engine block.
 7. Torque all HSC-1058 screws to 25 lb-ft (33 N-m).
 8. Install the lower radiator hose and clamps.
-  Consult the Installation Notes on Page 2 and Page 3 for vehicle specific fitment and parts.

EFR-800 HOSE MODIFICATION FOR 1996-2004 MUSTANG SVT COBRA & MACH 1 TRIMS


1. Install the correctly cut hose onto the barb fitting of EFR-100.
2. Insert the reducer into the cut end of the hose and secure to the inline thermostat with the included worm clamp.
3. Use a 7mm (9/32") tool to secure the hose onto the barb using the provided worm clamp.

INSTALLING THE REMOTE OIL FILTER MOUNT

1. Secure the remote oil filter mount to the vehicle.
2. Plan, measure, cut, and assemble the oil system lines.
3. Connect the oil lines to the EFR-100 and the remote oil filter mount.
4. Torque the fittings to 20 lb-ft (27 N-m).
5. Pre-fill a new oil filter with oil, lubricate the seal and install the oil filter onto the remote oil filter mount.

INSTALLING AN OIL COOLER (OPTIONAL)


1. Plan, measure, cut, and assemble the oil system lines that will connect the oil cooler to the remote oil filter mount and/or the EFR-100.
2. Connect the lowest oil cooler port to the OUT TO COOLER port of the oil filter mount.
3. Torque the fittings to 20 lb-ft (27 N-m).
4. Connect the next oil line to the oil cooler.
5. Leave the highest from ground level line disconnected from the oil cooler so that the cooler can be pre-filled.

-  Refer to Figure 2 through Figure 5 for plumbing help.
6. Torque the fittings to 20 lb-ft (27 N-m).

7. Pre-fill the oil cooler with engine oil using a tube and funnel.
8. Connect the remaining oil line(s).
9. Torque the fitting to 20 lb-ft (27 N-m).
10. Secure the oil cooler to the vehicle.

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 specific vehicle.

 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.

 **Caution: Ensure the starter does not overheat.**

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.
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.
10. Verify that the car does not overheat to ensure coolant levels are properly filled.
11. Reinstall the front bumper 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!