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

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APPLICATIONS


- If the water neck on the factory filter pedestal is curved (1996-2004 Mustang GT, EXCEPT SVT Cobra and Mach 1 trims) use the optional radiator hose (part number EFR-800) and 1.75” hose barb adapter (part number OB-16-28) for a direct bolt-on installation.

- 2005-2010 Ford Mustang GT’s may reuse the factory radiator hose but must use the optional 1.5” hose barb adapter (part number OB-16-24).

INSTALLATION NOTES

- The EFR-100 adapter is designed for remote oil filter systems only.
  - Improved Racing recommends locating the oil filter pedestal on the driver-side of the front bumper bar, facing rearward.

- EFR-100 can be used with or without an oil cooler.
  - The recommended remote filter pedestal is part number ENV-140 (non-thermostatic, oil cooler optional) or ENV-170 (thermostatic, must use oil cooler).

- EFR-100 has two 1/4”-18 NPT sensor ports; one for the factory pressure sensor and one for another sensor of your choice.

PARTS LIST

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>EFR-100-01</td>
<td>Remote Oil Filter &amp; Cooler Adapter</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>OB-16-24</td>
<td>-16 SAE Straight Thread O-ring to 1.50&quot; Barb (Optional)</td>
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<td></td>
<td></td>
<td>-OR-OB-16-28</td>
<td>-16 SAE Straight Thread O-ring to 1.75&quot; Barb (Optional)</td>
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<tr>
<td>3</td>
<td>4</td>
<td>HSC-1049</td>
<td>M8x1.25x16 Mounting Screws</td>
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<tr>
<td>4</td>
<td>2</td>
<td>PP-04S</td>
<td>1/4”-18 NPT Plug, 1/4 Inch Drive</td>
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<td>5</td>
<td>1</td>
<td>PMPF-090-04</td>
<td>90° Elbow 1/4”-18 MNPT to 1/4”-18 FNPT</td>
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<td>6</td>
<td>1</td>
<td>HRG-1018</td>
<td>AS568 -135 O-ring for Coolant Port</td>
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<tr>
<td>7</td>
<td>2</td>
<td>HRG-1019</td>
<td>AS568 -119 O-ring for Oiling Ports</td>
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TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Maximum Operating Temperature</td>
<td>302°F (150°C)</td>
</tr>
<tr>
<td>Minimum Operating Temperature</td>
<td>-22°F (-30°C)</td>
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<tr>
<td>Maximum Operating Pressure</td>
<td>300 psi (20.68 bar)</td>
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<tr>
<td>Dimensions (W x H x D)</td>
<td>3.20” x 5.72” x 1.00”</td>
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<td>(8.1 cm x 14.5 cm x 2.54 cm)</td>
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<td>Coolant Fitting Port</td>
<td>-16 SAE Straight Thread J1926-1 (ISO 11926-1)</td>
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<td>O-ring Port, 1⅜-12 UN</td>
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<td>Oil Fitting Ports</td>
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<td></td>
<td>O-ring Port, 7/8-14 UNF</td>
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<tr>
<td>Sensor Fitting Ports</td>
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<td>CNC-Machined 6061-T6 Billet Aluminum</td>
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<tr>
<td>Housing Finish</td>
<td>MIL-A-8625 Type II Anodize, Black</td>
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<tr>
<td>Mounting Hardware</td>
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<td>M8x1.25x16 Socket Screw, 6 mm Hex-Drive</td>
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<td>⅛”-18NPT 90° Elbow Info</td>
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<td>8625 Type II Black-Anodized</td>
</tr>
<tr>
<td>Adapter O-ring (Coolant Port)</td>
<td>AS568-135 Size, OD = 2.131 inch, ID = 1.925 inch, W = 0.103 inch, Viton Rubber (75A)</td>
</tr>
<tr>
<td>Adapter O-ring (Oil Ports)</td>
<td>AS568-119 Size, OD = 1.130 inch, ID = 0.924 inch, W = 0.103 inch, Viton Rubber (75A)</td>
</tr>
</tbody>
</table>

BEFORE YOU BEGIN

⚠️ WARNING: DO NOT CAP OFF THE OIL PORTS after the adapter is installed. Running the engine with the ports capped will block oil flow and result in catastrophic engine damage. This product is designed to be used with remote oil filter systems only. DO NOT loop the lines together, or the engine oil will not be filtered.

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

💡 Tip: Use aluminum tools to avoid damaging fittings.
Lubricate all fitting flares for a better seal.

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.

PREPARING FOR INSTALLATION

1. Raise the front of the vehicle and support with approved automotive 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 another 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.
Tip: If the hose is stuck, use a plastic tool to loosen the hose from the engine coolant 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 $\frac{13}{16}$ inch wrench 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.

⚠️ Important: Sealing surface must be clean and smooth to allow O-ring to seal properly without leaks.

OIL LINE ROUTING AND FLOW DIAGRAMS

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

1. Note the port identification and directions of flow illustrated in Figure 1.

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**Figure 1 - Port Descriptions**

**IN FROM FILTER / COOLER**
Connect this port to the outlet of the filter or oil cooler.

**OUT TO FILTER**
Connect this port to the inlet of the oil filter.

**POST-FILTER SENSOR PORT (1/4” NPT)**

**PRE-FILTER SENSOR PORT (1/4” NPT)**
2. Note the three example flow configurations illustrated in Figures 2 through 4. Other filter pedestals will have ports in different configurations. Be sure to carefully identify the IN and OUT ports on your remote filter pedestal to ensure correct line routing.

![Figure 2 - Remote Oil Filter Only (No oil Cooler)](image1)

![Figure 3 - Non-Thermostatic Remote Oil Filter with Oil Cooler](image2)
INSTALLING THE OIL COOLER ADAPTER

1. Wrap the male threads on the provided 90° ¼ inch NPT adapter fitting with Teflon tape three or four times or apply Teflon thread sealant.
2. Install the provided 90° ¼”-18 NPT adapter fitting into the sensor port of EFR-100.
3. 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 the provided 90° NPT adapter fitting.

4. Install the provided \(1/4''\)-18 NPT plug into the second sensor port on EFR-100 if no other sensors are being used.

5. 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).

   **Tip:** Lubricate the O-rings with engine oil to prevent O-ring damage.

6. Ensure that three O-rings are installed into the glands of EFR-100 prior to installation. HRG-1018 and HRG-1019 should be inserted into the glands as shown in Figure 5.

   ![Figure 5 - HRG-1018 and HRG-1019 O-Ring Placement](image)

   **Tip:** Lubricate the O-rings with engine oil to help retain them in the glands during installation.

7. Using a 6 mm hex key, carefully install EFR-100 onto the engine block using the provided M8x1.25 socket screws.

   **Use caution not to pinch or damage the O-rings.**

8. Torque all M8 socket screws to 18 lb-ft (24 N-m).

9. Install the lower radiator hose and clamps.

   **Note:** Improved Racing’s EFR-800 radiator hose is required for 1996-2004 (SN-95 Chassis, 4th Generation) Mustang GT’s except the SVT Cobra and Mach 1 trims. 1996-2004 SVT Cobra and Mach 1 Mustangs will require a custom or adjustable hose to connect the thermostat housing to the EFR-100 coolant hose barb.

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**INSTALLING THE REMOTE OIL FILTER PEDESTAL**

1. Mount the remote oil filter pedestal to the vehicle.

   **Tip:** The recommended location is the driver-side of the bumper bar,
facing rearwards.

2. If necessary, measure, cut and assemble the oil system lines.

💡 **Tip:** Use two 45° hose-ends on the EFR-100.

3. Connect the oil lines to the EFR-100 and the remote oil filter pedestal. Refer to the port descriptions in Figure 1 and the routing diagram in Figure 2. Torque the fittings to 20 lb-ft (40 N-m).

💡 **Tip:** Trim any fascia plastic necessary for line routing.

4. Lubricate the oil filter seal, pre-fill with engine oil, and install the oil filter into the remote oil filter pedestal.

### INSTALLING THE OIL COOLER (OPTIONAL)

💡 **Tip:** Plan for pre-filling the heat exchanger by leaving the port which is highest from ground level open so that oil can be funneled into the heat exchanger.

1. If necessary, assemble the oil lines that will connect the oil cooler to the remote oil filter pedestal and/or the EFR-100.

2. Connect the lowest oil cooler port to the OUT TO COOLER port of the oil filter pedestal. Torque the fittings to no more than 20 lb-ft (27 N-m). Connect the second oil line to the IN FROM COOLER port on the oil filter pedestal (for thermostatic filter pedestals) or the IN FROM COOLER port on the EFR-100 (for non-thermostatic filter pedestals). Leave the other end of the line disconnected from the oil cooler so that the cooler can be pre-filled. Refer to the port descriptions in Figure 1 and the routing diagram in Figures 3 and 4. Torque the fittings to 20 lb-ft (40 N-m).

3. Pre-fill the oil cooler with engine oil using a tube and funnel.

4. Connect the remaining oil line to the cooler. Tighten the fitting to no more than 20 lb-ft (27 N-m).

5. Secure the oil cooler to the vehicle.

💡 **Tip:** Ensure the heat exchanger is isolated from vibration.

### COMPLETING THE INSTALLATION

1. Check the engine oil level and add oil if necessary.

2. Refill (recharge) the engine’s coolant system using the manufacturer’s approved method for your specific vehicle.
Tip: Consult the vehicle’s factory service manual for the correct coolant specifications and refill procedure.

3. Remove the fuel pump fuse.

Tip: Consult the vehicle’s factory service manual for the fuse location.

4. Crank the engine over for five seconds to build oil pressure. Repeat this cycle three to five times.

5. Reinstall the fuel pump fuse.

6. Start the vehicle and inspect for oil and coolant leaks.

IMPORTANT: Check that the engine has oil pressure immediately after startup. If the oil pressure is abnormal or if the engine makes excessive noise that does not subside within 3-5 seconds, turn off the engine immediately and check the oil line connections for routing for errors or for a kinked oil line.

7. Turn-off the vehicle, inspect the engine oil and coolant level and add oil or coolant as needed.

8. Reinstall all underbody panels and lower the vehicle back onto the ground.

9. Inspect lines and fittings for leaks after one heat cycle. If any leaks are detected, re-tighten the fittings until the leak is eliminated.

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