



## Toyota Tundra 2000-2002

AMSOIL BMK-13 Dual Remote Oil Filtration Kit  
 Installation submitted by AMSOIL Dealer Fred Hubert

### Getting Started:

**1. Check all parts against the parts list and inspect for damage. For the install described herein, you'll need the following:**

- BMK-13, Dual Remote Oil Filtration Kit
- SDF-15, Super Duty Full-Flow Oil Filter \*
- BE-90, Spin-On Bypass Oil Filter Replacement Element \*
- BK-11, 90 Degree Fitting Adapters (1 long, 1 short) (order separately)
- BK-12, 45 Degree Fitting Adapters (2 per package) (order separately)
- BK-13, Oil Sampling Petcock Valve (optional & order separately)
- Two Quarts of Motor Oil

- See the Filter Selection section, below, to determine the filters you wish to use.



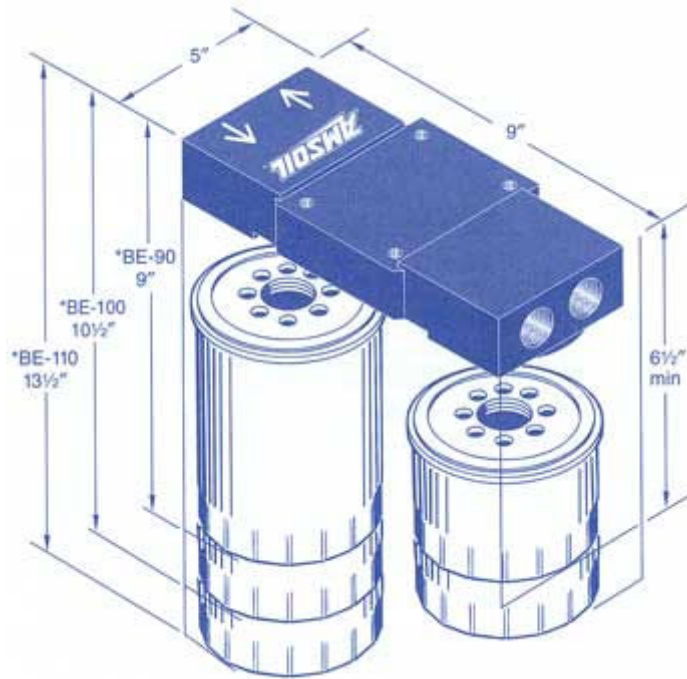
**2. Make sure you have the tools needed for the job (see Tools Required, below).**

#### Tools Required:

Adjustable Wrench	Torque Wrench	Drill
7/16" Wrench (2)	Side Cutter	1/4" Drill Bit
13/16" Wrench	Utility Knife	5/16" Drill Bit
7/8" Wrench (2)	Adjustable Filter Wrench *	Center Punch
15/16" Wrench	Oil Drain Pan	Hammer
5/16" Allen Wrench *	Small Flathead Screwdriver **	Vice *
Masking Tape	Teflon Tape ***	

Not used in my install, but listed as required in AMSOIL instructions and may be of benefit for your installation. \*\* Not listed in AMSOIL instructions but necessary for my install. \*\*\* AMSOIL provides lock-tite for use as a thread sealant, but I prefer Teflon tape.

### Filter Selection:



Any one of 7 different size AMSOIL Full-Flow Oil Filters and 2 different AMSOIL By-Pass Filters may be used with this kit for the Tundra. Select a full-flow filter that is equivalent or larger than the one originally installed on your vehicle. The larger the filter used, the greater the filtration capacity and the longer the filter life. AMSOIL says the By-Pass filter should be the largest for which space is available, but the application chart shows this need not always be a concern. The BE-90 is recommended for applications up to 9 quarts of crankcase capacity.

Full-Flow	Dia.	Height	By-Pass	Dia.	Height
SDF-26	3.690"	7.125"	BE-100	4.25"	7.375"
SDF-15*	3.720"	5.276"	BE-90*	4.25"	5.750"
SDF-96	3.720"	4.336"	* Most commonly used filters. ** OEM size filter for Tundra		
SDF-42	3.720"	3.966"			
SDF-34	2.920"	4.846"			
SDF-84	2.920"	4.053"			
SDF-57**	2.920"	3.496"			



**Note the much larger size of the SDF-15 compared to the OEM-sized SDF-57**

The best location for the kit in a Toyota Tundra appears to be in the space below the battery. There is exactly enough space in that location, and the mount should be located as close to the existing full-flow filter as possible.

#### **Mounting Bracket Installation:**

1. Remove the vehicle battery and the plastic battery tray and set them aside.
2. Cut the mounting template out of the provided instructions and tape it in place as depicted below. The edge of the bracket should be approximately 1/4" from the curved tab sticking out near the front, and just below the black connector assembly in order to provide sufficient space on either end of the filter mount assembly.

**WARNING:** The little black box in the picture below with the YELLOW cable and connector is an impact sensor for your passive restraint system. Striking it with the hammer could deploy your airbags. Not only will the passenger side bag likely smash your windshield, but the airbags and sensors are expensive to replace.

3. Disconnect the YELLOW connector from the impact sensor, remove it and set it aside to prevent any damage. Once the template is in place (as depicted below), just peel back the tape on top and fold it down to access the bolt for the sensor. The lower part of the tape should hold it in place -- when the sensor is removed, simply fold the template back up into position.



4. Locate and mark the mounting holes using a center punch and hammer. This is not exactly an easy task due to the limited space to swing the hammer, and the limited visibility of the template with both your arms in the way. As long as you get it close it will be fine.
5. Remove the mounting template when all four of the holes have been marked.
6. With a 1/4" drill bit, drill out the four mounting holes and attach the two-piece mounting bracket. If your holes were perfectly marked in step 3, the bracket will go right in. Otherwise, you will now need the 5/16" bit to enlarge the holes and allow some play for the mounting bolts. Use the four 1" long 1/4" bolts, nuts, small washers and fender washers. Place the small washers on the bolts and push them into place; the larger fender washers and nuts are attached from inside the driver fender well. Tighten with the two 7/16" wrenches to approximately 8 ft-lbs.
7. When in place, spray the fender washers and nuts with AMSOIL Heavy Duty Metal Protector spray or another suitable Protectant such as undercoating spray to prevent corrosion.
8. If you will be installing a petcock valve in the Filter Mount Assembly, you will need to reverse the harness-mounting clip shown in the pictures below.



9. It is easier to open the clip if it is unbolted from the firewall. To open the clip, or to remove the plastic clip from the metal bracket, simply insert a small screwdriver to depress the tab. When reassembled, the metal bracket will go back as before but the plastic clip will be flipped 180 degrees and the wiring harness will be on the other side -- this will provide an extra inch or more of room which should be just enough to allow room for the petcock.

### **Filter Mount Assembly:**

1. Apply thread sealant onto the two O-ring adapter fittings (BP-189) per the included instructions. If using Teflon tape, it should be wrapped no more than 1.5 - 2 turns in a clockwise direction when viewed from the thread end.
2. Install the two fittings into the end of the mounting block adjacent to the arrows. Using a 7/8" wrench, tighten to 40-43 ft-lbs. For the Tundra application, 90-degree fittings (BK-11) are required and should be installed now. DO NOT use thread sealant on either end of the adapter fittings. The fitting for the supply IN to the mounting block must be a small 90-degree adapter as the larger one will not fit when in place. If you choose to use 90-degree adapters on both ends of the hoses you may want to use both small fittings on the mounting block and both large fittings on the oil filter adapter (the pair of 90 degree fittings comes with one large and one small fitting). BEFORE tightening the 90-degree fitting adapters in place, slide the mounting block into the two-piece bracket, already mounted in the truck. This will allow you to set the correct angle of the fittings to allow proper fitment (they don't point straight down, but angle slightly to the left). Tighten the angle fittings to 525-575 in-lbs. With flare fittings, I recommend starting at the lower torque and then tighten as necessary to stop any leaks.





3. Apply thread sealant to either the Allen head O-ring plug, or the Petcock oil sampling valve assembly (BK-13). If using the Petcock valve, apply thread sealant to the external threads on all components of the Petcock valve assembly. Tighten to 40-43 ft-lbs.
4. The included instructions say to now mount the assembly to the mounting brackets, but if you do so in this particular application you will never get the hoses onto the 90-degree adapters in that tight space...

#### **Oil Supply:**

1. Apply thread sealant to the two straight adapter fittings (BP-190).
2. Using a 13/16" wrench, install the two straight fittings into the Spin-On filter adapter (BP-159). Tighten to approximately 28 ft-lbs or 2-3 turns beyond finger tight.
3. Remove the skid plate to gain better access to the area where the oil filter is located.
4. Using an oil drain pan to collect any drained oil, remove the existing full-flow oil filter. Clean the gasket seating area on the engine with a clean lint free cloth.



5. With the engine filter nipple now exposed, verify that the white adapter bushing (BP-163) threads on the nipple easily and with little free play.
6. Apply thread sealant to the outside of the adapter bushing and, with the knurled end of the bushing pointed out, thread it into the spin-on filter adapter.
7. Set aside the other 3 color-coded adapter bushings (BP-164 - BP-166) and the larger spin-on adapter plate (BP-160) and larger O-ring (BP-162) as they will not be used in this application.
8. Lubricate the smaller O-ring (BP-196) on both sides with a bit of new oil. Place the o-ring in place in the spin-on filter adapter. Tighten the adapter one full turn after it first makes contact with the sealing surface, and then back off 1/8".

#### **Oil Feed And Return Lines:**

**WARNING:** *The hose and hose fittings supplied with this kit have been matched to provide maximum performance and life expectancy. Interchanging with other types or brands is **NOT RECOMMENDED** and **SHOULD BE AVOIDED**. Should additional hose be required, order part number BP-188, but this should not be a problem for this installation because these instructions will use only about 25% of the hose provided in the kit.*



1. Measure the amount of hose (BP-188) you will need to run from the RED colored port (labeled OUT) on the spin-on adapter to the port with the arrow pointing IN on the filter mount. Additional length is needed to accommodate for engine movement during operation. When considering how the hose should be routed, make sure it does not contact any hot or moving surfaces or sharp edges. Ensure a minimum bend radius of 1.5" is maintained at all corners (a template is provided in the instructions that come with the kit). For my application, **the RED colored port ended up on the bottom and I cut a length of hose 14" long.** If you measure for yourself, be sure to allow room for the hose end fittings and any adapters. Use a utility knife to cut the hose smoothly and squarely (I used an almost new Gerber pocket knife with serrated edge and it worked superbly).
2. Install hose fittings (BP-187) on both ends of the hose using a 7/8" wrench and either a 15/16" wrench or vice. DO NOT use any form of thread sealant anywhere on the hose fittings. Disassemble the hose fitting for one end of the hose. Screw the end of the hose into the socket in a counter-clockwise direction until the hose bottoms. Back the hose out 1/2 turn. Oil the nipple threads liberally with new motor oil. Screw the nipple assembly into the socket using a 7/8" wrench on the nipple hex until the nipple shoulders against the socket. See Diagram G of the included instructions for illustrations.
3. Repeat step 2 for the other end of the hose.
4. Attach one end of this hose finger tight to the 90-degree adapter for the arrow pointing IN on the filter mount.
5. Repeat step 1 for the port labeled IN (without RED paint) on the spin-on adapter to the port with the arrow pointing OUT on the filter mount. **Because my non-colored port ended up on the top, this hose needed to be cut 13" long.** Repeat steps 2 and 3 to install hose fittings on each end of this hose.
6. Attach one end of this hose finger tight to the 90-degree adapter for the arrow pointing OUT on the filter mount.

7. Using two 7/8" wrenches, tighten hose fitting swivel nuts and swivel nuts on the 90 degree angle fittings to 525-575 in-lbs, or from finger tight rotate an additional 1/6 turn. DO NOT use any form of thread sealant anywhere on the hose or angle fittings.

8. Now attach the 45-degree angle fitting adapters to the other ends of both hoses. You also have the option of using 90-degree angle fitting adapters or possibly using a bit longer hose and not using angle-fitting adapters to connect the hoses to the spin-on adapter. I used 45-degree fittings here and they worked quite well. Tighten these only finger tight for now, as they will likely need to be repositioned when attached to the spin-on adapter. Now you are ready to install the filter-mounting block into the bracket assembly...

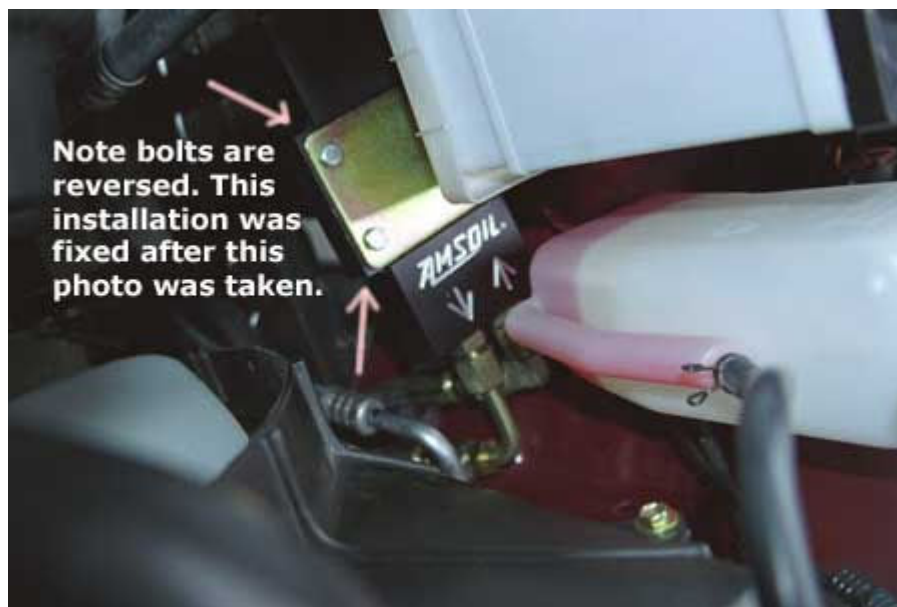
### **Installing The Filter Mounting Block:**

1. Slowly lower the mounting block assembly into the truck, taking care to ensure the hoses aren't bent forcefully and the filter nipples and gasket seating surfaces are not dented or damaged in any way.

2. Attach the filter-mounting block to the two-piece bracket assembly using four 1.5" long 1/4" bolts, nuts, and washers provided. Note that only two of the bolts use washers, while the other two will go through both pieces of the bracket assembly.

**WARNING:** The bolts **MUST** be installed so that the nuts are on the side opposite the filter nipples (on top of the mounting block assembly in our install). Failure to do this will result in the bolts contacting the oil filters and preventing the filters from establishing a proper seal. In other words, **IT WILL LEAK.**

3. Using two 7/16" wrenches, tighten the nuts and bolts to approximately 8 ft-lbs. Note that in my picture, below, the bolts are pointing in the WRONG direction -- I had to reverse them and clean up a mess.



4. Now attach the 45-degree angle fitting adapters (if used) on the free ends of the hoses to the spin-on adapter. Check and then double-check that the hose for the port labeled OUT (with RED paint) on the spin-on adapter is connected to the port with the arrow pointing IN on the filter mounting block assembly. Tighten these finger tight until you get the hoses in the desired position. Tighten the swivel nuts on both ends of the angle fittings (hose end and spin-on adapter) to approximately 525-575 in-lbs, or from finger tight rotate an additional 1/6 turn.



5. You may want to use the included plastic ties (BP-46) to secure the hoses in position and away from damage, but I found the hose runs to be so short that it was unnecessary. If you use them, trim the ties with a pair of side cutters. *Note that over tightening the plastic ties may cause the hose to collapse and restrict oil flow...*

6. Fill the selected full-flow and bypass filters with the same motor oil being used in the vehicle. I recommend either the AMSOIL original 5W-30 or the Series 2000 Racing 0W-30, depending on your preference and driving habits. Personally, I used the 5W-30 in my truck. Lubricate the filter gaskets with a bit of new oil and spin the filters onto the mount. In this install, the bypass filter will be closest to the front of the truck. Tighten one full turn after the filter gasket first contacts the mounting block, then back off 1/8".





**Start Up Procedure:**

1. Check the routing of both hoses and ensure the flow path is correct per the instructions above. Correct any mistake discovered.
2. Check that all fitting connections and hoses are securely attached and properly tightened.
3. Check that the Petcock sampling valve, if used, is closed.
4. The additional oil necessary after adding this kit is approximately 2 full quarts, including the oil to fill this kit and the oil to replace that lost when removing the existing oil filter. You may or may not want to add oil before starting the engine, depending on how much you poured into the two filters. Be careful not to overfill the engine with oil -- allowing it to run approximately 1/2 to 1 quart low just long enough to fill all the lines throughout the system will not hurt anything. Fill to the full mark on the dipstick.
5. Reinstall and reconnect the impact sensor. If you forget this step, your airbag warning light will flash and may not operate correctly in the event of an accident...
6. Reinstall the plastic battery tray and the battery.
7. Start the engine and watch the oil pressure. Note that pressure may initially take a moment or two to rise.
8. Check for leaks at fittings, hoses and mounting block assembly. If leaks are observed, STOP THE ENGINE, repair leaks and continue. DO NOT attempt to repair any leaks while the engine is running.
9. After the engine warms up, shut off and re-check the engine oil level. Fill as necessary.
10. Record the vehicle mileage and date of installation.

**Periodic Maintenance:**

Periodic visual inspection of the fittings and hoses is recommended. Check for leaks, hose deterioration and cuts. Repair and/or replace as necessary. This is actually pretty easy for this application because all of the hoses are in view and everything is relatively close together. Just take a look at things when you open the hood to check the oil or otherwise...