

AMSOIL[®] BMK21

Universal Single-Remote Bypass System Installation and Servicing Instructions

IMPORTANT NOTICE

- Read **ALL** instructions completely.
- Improper installation can result in serious system and/or equipment damage. If you are uncomfortable with the instructions or have questions, **do not attempt installation**. Consult a mechanic or contact AMSOIL Technical Services at (715) 399-TECH for assistance.
- **WARNING:** Extreme care should be taken to avoid bodily harm during installation. Before beginning, ensure engine is cool to avoid burns. Never work in the engine compartment with the engine running. It is advised that you perform a full oil change with installation of this system.

A. BEFORE YOU BEGIN

Ensure you have the required tools for the job.

RECOMMENDED TOOL LIST

- 5/16" drill bit
- 3/8" drill bit
- 7/16" wrench
- 1/2" wrench
- 1/2" socket
- 9/16" wrench
- Torque wrench
- Hose cutter
- Utility knife
- Drain oil pan
- Adjustable filter wrench
- Center punch
- Drill
- Hammer
- Vice

PARTS LIST

Universal Single-Remote Bypass System (BMK21)

Item	Description	Qty.	Part No.
1.	Oil Pressure Sending Unit (existing)		
2.	Filter Mount Assembly, - BMK21	1	BK303
3.	Fitting, 1/8" NPT to 7/16"-20 JIC	4	BP208
4.	5/16" Fender Washer	3	BP205
5.	5/16" Flat Washer	3	BP120
6.	5/16" 18 Self Locking Nut	3	BP121
7.	5/16" 18 x 1" Hex Head Bolt	3	BP122
8.	Hose, 1/4" I.D.	12'	BP251
9.	Fitting, 1/4" Hose, 7/16"-20 JIC	4	BP261
10.	Fitting, Street Tee, 1/8" NPT	1	BP33
11.	Fitting, Tee, 1/4" NPT	1	BP34
12.	Fitting, Street Elbow, 1/8" NPT	4	BP52
13.	Bushing, Reducer, 1/8" to 1/4" NPT	1	BP38
14.	Pipe Nipple, 1/4" NPT x 2"	1	BP39
15.	Fitting, Self-tapping hollow bolt	1	BP40
16.	Washer, Sealing, hollow bolt	1	BP41
17.	Assembly, Filler Cap Return Fitting	1	BP89
	Plastic Tie	2	BP46
	Thread Sealant	1	BP198
	BMK21 Mounting Template	1	BP501
	Instruction Sheet	1	BP83

OPTIONAL PARTS (Not Included)*

Description	Part No.
Assembly, Petcock Valve with 1/8" NPT Street Tee Fitting	BP67

*Not required, but available to ease installation.
Contact your AMSOIL Dealer to order.

B. FILTER SELECTION

Any of the three different sizes of the AMSOIL Spin-On Bypass Oil Filter elements may be used with this mount. Select the element size according to your vehicle's oil capacity.

Vehicle Oil Capacity	Recommended Element
Up to 15 quarts	EaBP90 (5.78" long)
Up to 18 quarts	EaBP100 (7.25" long)
Up to 24 quarts	EaBP110 (10.44" long)

Note: The EaBP120 will not fit this system.

Selecting a larger filter than recommended may extend the service interval, while selecting a smaller filter than recommended may shorten the service interval.

C. ATTACHING FILTER MOUNT

1. Survey the engine compartment for possible mounting locations. The mount should be located as close to the existing full-flow filter as possible. Select an area where the filtration system will not be damaged by road debris or off-road travel, and make sure the mounting structure is adequate to carry the weight of the filtration system. Reference Diagram A for an approximation of space required for mounting the system and removing filters. Reference Diagram B for appropriate mounting angles.
2. When the mounting location has been determined, put the provided mounting template sticker in place. Using a center punch and hammer, mark the centers of the drilling locations.
3. Install a fitting adapter (BP208) into the BK303 using provided thread sealant as noted in Diagram C. If desired, 90° angle fitting (BP52) may also be used. Tighten fittings 2-3 turns beyond finger-tight. Keep in mind the direction you wish to have the hoses intersect the mount.
4. With a 5/16" drill bit, drill the center-punched holes on the template, remove the sticker and attach the BK303 using the three 5/16" bolts, nuts, small washer and fender washers provided. See assembly Diagram E for details. Use a wrench to hold either the nut or bolt in place; use the socket and torque wrench on the opposite end to tighten to 16-18 ft-lbs.
5. Fill the Bypass Filter element with the same engine oil being used in the vehicle. Lubricate the filter gasket with oil and spin filter onto mount. Tighten per instructions on the filter.

D. OIL SUPPLY

- **NOTE:** The hose and hose fittings supplied with this kit are 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, it may be obtained from AMSOIL by ordering part number BP251 by the foot.
- **DO NOT** install oil hoses near hot exhaust parts or near sharp metal components that could cause abrasive wear.
- **DO NOT** create sharp bends in oil hoses when installing.

1. Locate oil pressure sending unit (see Diagram E) or another pressurized port on the engine to pull oil from. Remove unit and install BP33 using thread sealant as noted in Diagram C and tightening 2-3 turns beyond finger-tight.

Note: See Diagram F if oil pressure sending unit has a 1/4" N.P.T. thread.

Note: Special adapters may be needed to install "T" on some engines. Occasionally, additional fittings may be needed.

2. Reinstall sending unit in one opening of the BP33 and a BP208 in the other. Use thread sealant and tighten as noted in D.1. Use BP52 if necessary, keeping in mind the direction you wish the hose to intersect the fitting.

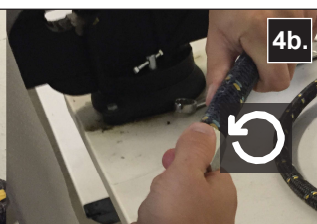
3. Measure the amount of hose (BP251) required to run from the oil pressure sending unit to the filter mount fitting labeled **IN**. Additional length will be required to accommodate engine movement during operation.

4. HOSE FITTING ASSEMBLY INSTRUCTIONS

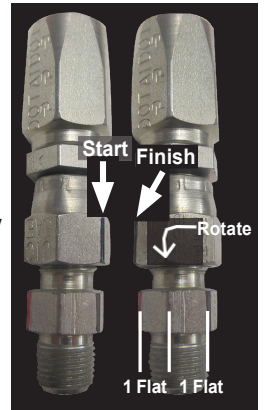
- Using a utility knife or hose cutter, squarely cut the hose to the proper length (Step 4a).
- Install BP261 on both ends of the cut hose. Screw nut portion of the fitting counter-clockwise onto hose until it bottoms. Back hose out 1/2 turn (Step 4b).

Note: Do not use any form of thread sealant anywhere on the hose fittings (BP261).

- Oil tapered nipple thread areas liberally with oil. You may also oil inside of hose. Do not oil hose cover (Step 4c).
- Screw nipple thread into socket using wrench on nipple hex until nipple hex shoulders against socket (Steps 4d, 4e, 4f).



5. Route and connect the hose assembly. Ensure a minimum of a 3/4" bend radius is maintained at all corners. Also, bends in hose should not begin at hose fittings. On both ends of the hose assembly, tighten the nut of the BP261 finger-tight. Place a mark on the ridge between two flats. Starting from this position, tighten the nut further by two flats or 1/3 of a turn using one wrench to hold the BP208 and the other to turn the nut on the BP261. (A flat is referred to as one side of the hexagonal tube nut and equates to 1/6 of a turn.)



E. OIL FEED AND RETURN LINES

Two options are available for returning the filtered oil to the engine. The first uses an optional swivel fitting (**BP89**) and returns the oil to the oil filler cap already installed on your vehicle. The second uses a self-tapping hollow bolt (**BP40**) and allows the oil to be returned to either the oil pan or a rocker arm/valve cover.

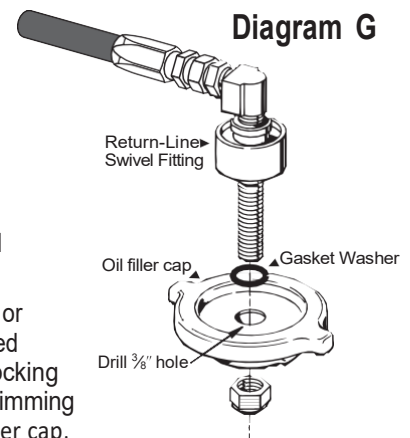
a. Using the BP89

Note: Installation requires drilling that will produce metal and plastic fragments. Be sure these fragments do not get into the lubrication system. It is recommended to remove the fill cap from the engine before drilling. Before returning, clean the part thoroughly to remove all debris.

- Remove the existing oil filler cap. Be sure there is not a PCV pick-up in this area.

- In the center of the cap, drill a 3/8" hole.

- Install the long threaded portion of the optional return line swivel fitting (**BP89**) into the top of the oil filler cap. Secure with the provided self-locking nut and 9/16" wrench.



- Using either a cut-off wheel or saw blade, trim BP89 threaded portion within 0.25" of self-locking nut. Ensure all debris from trimming is cleaned from BP89 and filler cap, and ensure hole through BP89 and filler cap, was not compromised during trimming operation.

- Install a fitting adapter (BP208) into the return line swivel fitting with thread sealant as noted in Diagram C. Tighten 2-3 turns beyond finger-tight. Reinstall oil filler cap on vehicle. A 90° elbow (BP52) may also be used to ease hose routing installation.

3. Measure the amount of hose (BP251) you will need to run from the self-tapping bolt or optional return line swivel fitting to the filter mount fitting with thread seal labeled **OUT**. Additional length will be required to accommodate engine movement during operation. Using a utility knife, squarely cut the hose to the proper length.

4. Install BP261 on both ends of the hose. See Section D.4.

5. Use plastic ties (BP46) to secure hoses in position and away from damage. Trim ties.

Note: Over tightening the plastic ties may cause the hose to collapse and restrict oil flow.

a. Using the BP40

Select either the oil pan or valve cover for installation.

Note: The self-tapping hollow bolt should be used on stamped metal components only.

- b. For oil pan installation, mark a spot approximately 3" above the bottom of the pan. Avoid any pan formations that may suggest an internal obstruction. For the valve cover, choose a mounting location that will not interfere with the movement of internal components and away from the PCV pick-up.
- c. Using a punch and hammer, punch a hole in the chosen location between 1/4" (.25") and 5/16" (.3125") in diameter.

Note: Do not drill this hole as metal filings are likely to enter the engine.

- d. Using a 9/16" wrench, thread in the BP40 and BP41. As the bolt is tightened, make sure sealing gasket is snug all the way around bolt. Tighten bolt to 6-8 ft-lbs.
- e. Using a 7/16" and 9/16" wrench, install the BP208 in the BP40. Use a BP52 if necessary, keeping in mind the direction you wish the hose to intersect the fitting. Use thread sealant provided as noted in Diagram C. Tighten 2-3 turns beyond finger-tight.

F. START UP PROCEDURES

1. Check that all fittings and hoses are securely attached, and that the hoses are routed properly.
2. Check engine oil level. Fill to full mark on engine dipstick if necessary.
3. With the equipment secured start the engine and **immediately check oil pressure**. **Note:** Pressure may initially take a moment or two to rise.



Caution: If no oil pressure registers on the gauges, **STOP ENGINE IMMEDIATELY**. Check hose connections and oil level, and review Startup Procedures.

Caution: Carefully check for leaks at fittings, hoses and mount. If leaks are observed, **STOP ENGINE IMMEDIATELY**, repair leaks and continue.

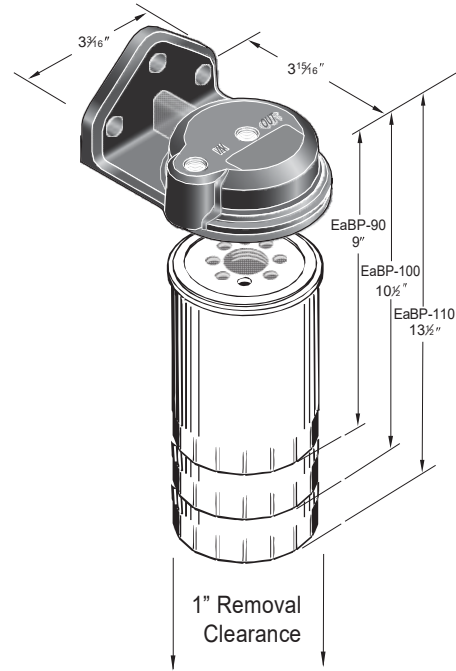
4. After engine has warmed, shut off and re-check engine oil level. Fill as necessary.
5. Record vehicle mileage/operating hours and date of installation.

G. PERIODIC MAINTENANCE

1. During the warranty period, annually inspect the fittings and hoses. Check for leaks, hose deterioration and cuts. Repair and/or replace as necessary. See the AMSOIL Limited Warranty-Bypass Filter Systems at www.amsoil.com for complete information.
2. Refer to recommended filter change intervals for servicing intervals.
3. To change the filter element:
 - a. Ensure engine is off and use caution as the engine, oil and filter may be hot and could result in an injury.
 - b. Using a filter wrench, remove the filter element. Dispose of properly.
 - c. Clean the filter gasket contact area on the mount with a clean, lint-free rag.
 - d. Lubricate the new filter gasket with clean oil.
 - e. Fill filter as full as possible with engine oil.
 - f. Screw on new filter, tighten per instructions on the filter.
 - g. Start engine and check for leaks.
 - h. Check engine oil level, fill as needed.
4. Record date of installation and equipment operating hours or mileage for future reference.

Diagram A

MINIMUM AREA NEEDED FOR MOUNT AND OIL FILTER ELEMENT
*Mount and element heights plus 1-inch removal clearance



Mounting Angle Diagram B

(Recommendations are the same right to left and front to back)
Mounting angle above horizontal is not recommended

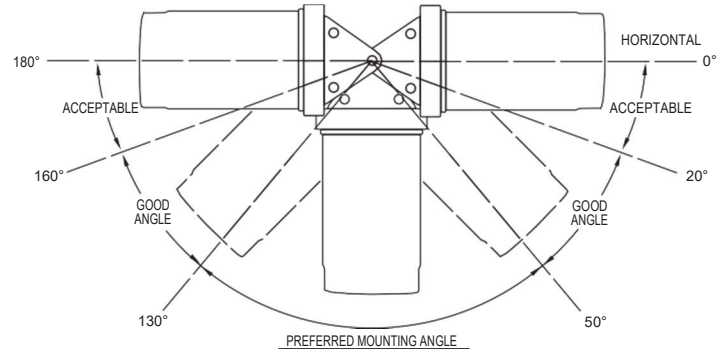


Diagram C

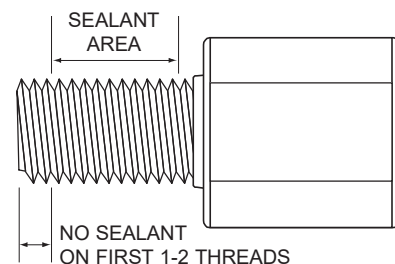


Diagram D

Minimum Bend Radius

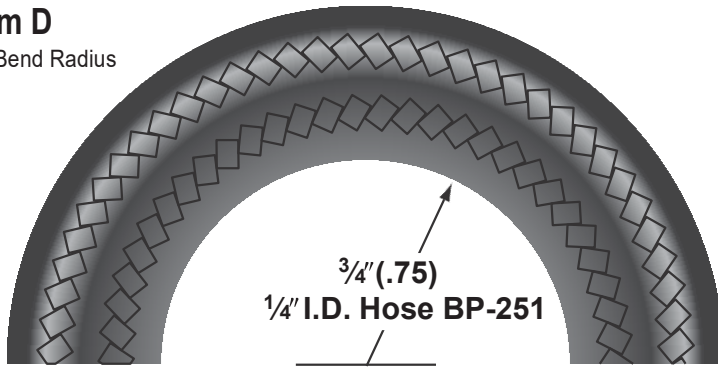


Diagram F

Optional installation at oil sending location (for 1/4")

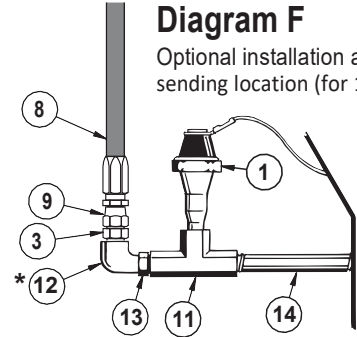
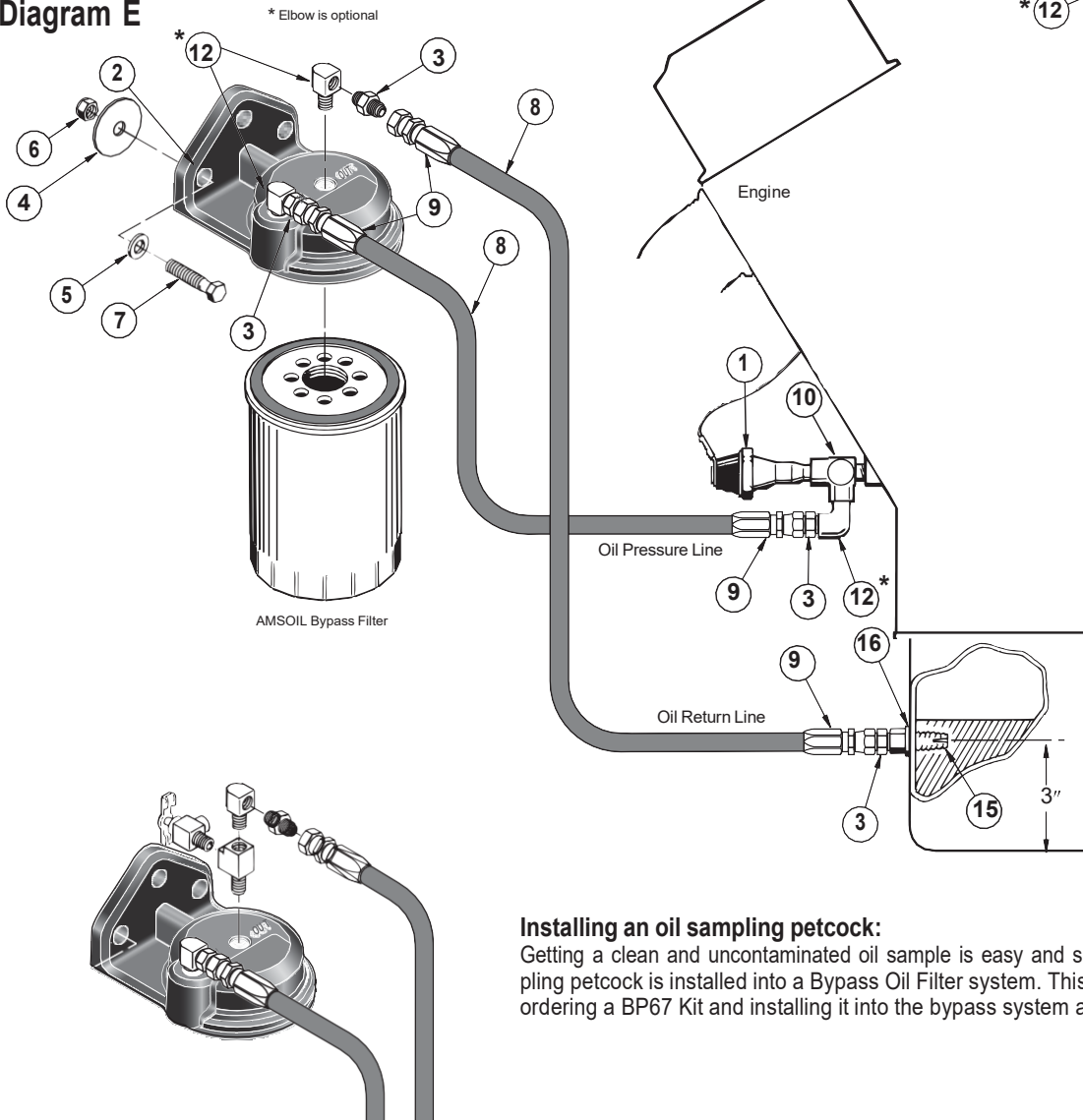


Diagram E



Note: When installing self-tapping hollow bolt to oil pan, locate approximately 3" from bottom of sump. Avoid installing on or near any unusual pan formations which might indicate an internal obstruction.

Installing an oil sampling petcock:

Getting a clean and uncontaminated oil sample is easy and simple when an oil sampling petcock is installed into a Bypass Oil Filter system. This can be easily done by ordering a BP67 Kit and installing it into the bypass system as shown here.

For Technical/ Installation support: 1-715-399-8324 | tech@amsoil.com

Your referral Number: 323230 | Dale Cox

For Sales and Service:

www.SyntheticLubricants.ca/

1-613-867-4349 | DaleCox@SyntheticLubricants.ca