



BMK-30

Heavy-Duty By-Pass Filtration System Installation and Servicing Instructions

IMPORTANT NOTICE

Read **all** instructions completely before attempting to install this unit. Improper installation could result in serious system and/or equipment damage. The installation of this system is not difficult, however, some mechanical ability is necessary. If you are not comfortable with the instructions or have questions, **do not attempt the installation**. Consult a mechanic or contact AMSOIL INC. for further instructions or assistance. If installing on a Japanese- or European-built vehicle utilizing **Metric** or **B.S.P.** threads, additional parts may be required. Consult step D.1 before you continue.

WARNING: This filter system is not designed to replace the engine's normal full-flow filter. Do not attempt to install a by-pass filter element in place of the existing full-flow filter.

WARNING: Extreme care should be taken to avoid bodily harm during installation. Before starting, ensure the engine is cool to avoid burns and never work in the engine compartment area with the engine running.

A. Getting started

1. Check all parts against the parts list and inspect for damage.
2. Make sure you have the tools needed for the job.

Recommended tool list

Adjustable wrench	Torque Wrench	Drill
5/8" wrench (2)	Side Cutter	7/16" drill bit
13/16" wrench	15/16" wrench	Utility knife
Center punch	7/8" wrench (2)	Adjustable filter wrench
Hammer	Oil drain pan	Vice

B. Attaching the filter mount

1. Survey the engine compartment for possible mounting locations. Solid structures such as the firewall, fender well, radiator support or frame are normal locations. (**Do not mount on engine.**) See diagrams A and G
2. This filter system must be mounted vertically to operate properly.
3. When the location has been determined, mark the area using the filter mount as a template and mark the holes with a center punch and hammer.

See diagram B

4. Install adapter fittings (BP-190) on filter mount (BK-305) using PST or thread tape. Using a 13/16" wrench, tighten fittings 2-3 turns beyond finger tight.
5. With a 7/16" drill bit, drill out the previously marked mounting holes and attach the filter mount using the 7/16" bolts, nuts, small washers and fender washers provided. The bolts should be tightened to 20 foot pounds. 5/8" wrenches or socket will be required for this operation.
6. Fill the By-Pass Filter element (EaBP-120) with the same motor oil being used in the vehicle. Lubricate the filter gasket with oil and spin filter onto mount. Tighten per instructions on the filter.

C. Oil Supply

1. Locate a pressurized oil port such as a gallery port, pressure sender port, etc. **Note:** AMSOIL recommends adapting off of the pressurized oil port using a fitting(s) to accept the 1/2" JIC female hose end provided in this kit. Purchase of adapters for your specific application is required.
2. Measure the amount of hose (BP-250, **Purchased Separately**) needed to run from the pressurized oil port. Using a utility knife, squarely cut the hose to the proper length.

3. Install hose fittings (BP-260) on both ends of the hose following the instructions **noted in diagram F**. Tools required are one 7/8" and one 15/16" wrench or vise.

Note: The hose and 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, it may be obtained from AMSOIL by ordering part number BP-250. Do not use any form of thread sealant anywhere on the BP-260 hose fittings.

4. Route and connect the hose assembly to the filter mount (BK-305) at the **IN** port **see diagram C** and to the 1/2" JIC male fitting at the pressurized oil port, making sure the hose does not contact any hot or moving surfaces or sharp edges. Ensure a minimum of a 3/4" bend radius is maintained at all corners. Also, bends in hose should not begin at hose fittings. **See diagrams D and H**
5. Using two 7/8" wrenches, tighten hose fitting swivel nuts to 525-575 inch pounds or from finger tight, rotate an additional 60° or 1/6 of a turn. **Note:** Do not use any form of thread sealant anywhere on the hose fittings.

D. Oil Return

1. The outlet of the by-pass unit (BK-305) should be connected to a low pressure or free oil return to the crankcase or sump of the engine. Many heavy duty diesels have access ports on the side of the oil pan or at the oil fill tube.
2. Measure the amount of hose (BP-250, **Purchased Separately**) you will need to run from the filter mount (BK-305) to the low pressure oil outlet on the engine.

Note: AMSOIL recommends adapting off of the crankcase or sump port using a fitting to accept the 1/2" JIC female hose end provided in this kit. Purchase of adapters for your specific application is required.

3. Using a utility knife, squarely cut the hose to the proper length.
4. Install hose fittings (BP-260) on both ends of the hose following the instructions noted in diagram F. Tools required are one 7/8" and one 15/16" wrench or vise.
5. Route and connect the hose assembly to the filter mount (BK-305) at the **OUT** port **see diagram C** and to the 1/2" JIC male fitting at the low pressure oil port, making sure the hose does not contact any hot or moving surfaces or sharp edges. Ensure a minimum of a 3/4" bend radius is maintained at all corners. Also, bends in hose should not begin at hose fittings.
6. Using two 7/8" wrenches, tighten hose fitting swivel nuts to 525-575 inch pounds or from finger tight, rotate an additional 60° or 1/6 of a turn. **Note:** Do not use any form of thread sealant anywhere on the hose fittings.
7. Use plastic ties (BP-46) to secure hose in position and away from damage. Trim ties using side cutter. **Note:** Over tightening the plastic ties can restrict oil flow.
5. Record vehicle mileage/operating hours and date of installation.

E. 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 if necessary.
3. Set vehicle parking brake. With transmission in park/neutral start the engine and immediately check oil pressure. **Note:** Pressure may initially take a moment or two to rise. **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.

F. Periodic maintenance

1. Periodic visual inspection of the fittings and hoses is recommended. Check for leaks, hose deterioration and cuts. Repair and/or replace as necessary.
2. Refer to Recommended Filter Change Interval chart 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.
- i. Record vehicle mileage/operating hours for future reference.

Diesel Powered Engines: Due to higher oil contamination levels in diesel engines and variance in fuel quality, maintenance intervals for the filter element and oil change intervals should be determined using oil analysis. For more on oil analysis see the last page.

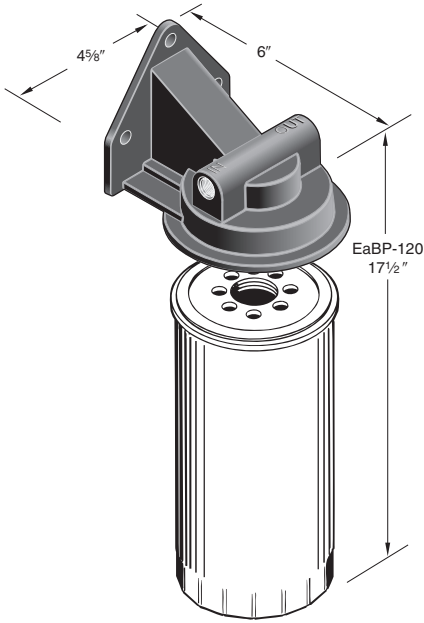


Diagram A

MINIMUM AREA NEEDED FOR DUAL MOUNT AND SPIN-ON OIL FILTER ELEMENTS
 * Mount and element heights plus 1-inch removal clearance

Parts and Assembly List

Item	Description	AMSOIL Part Number	Quantity
1.	Filter Mount	BK305	1
2.	1 3/32" Hose Fitting	BP260	4
3.	3/8" NPT X 1/2" JIC	BP190	2
4.	Instruction Sheet	BP30	1
5.	7/16" Flat Washer	BP285	3
6.	7/16" Fender Washer	BP286	3
7.	7/16"-14 x 1 1/2" Bolt	BP287	3
8.	7/16"-14 Ny lock Nut	BP288	3
9.	6" Nylon Cable Tie	BP46	6
10.	1 3/32" ID Hose	BP250	Purchased Separately

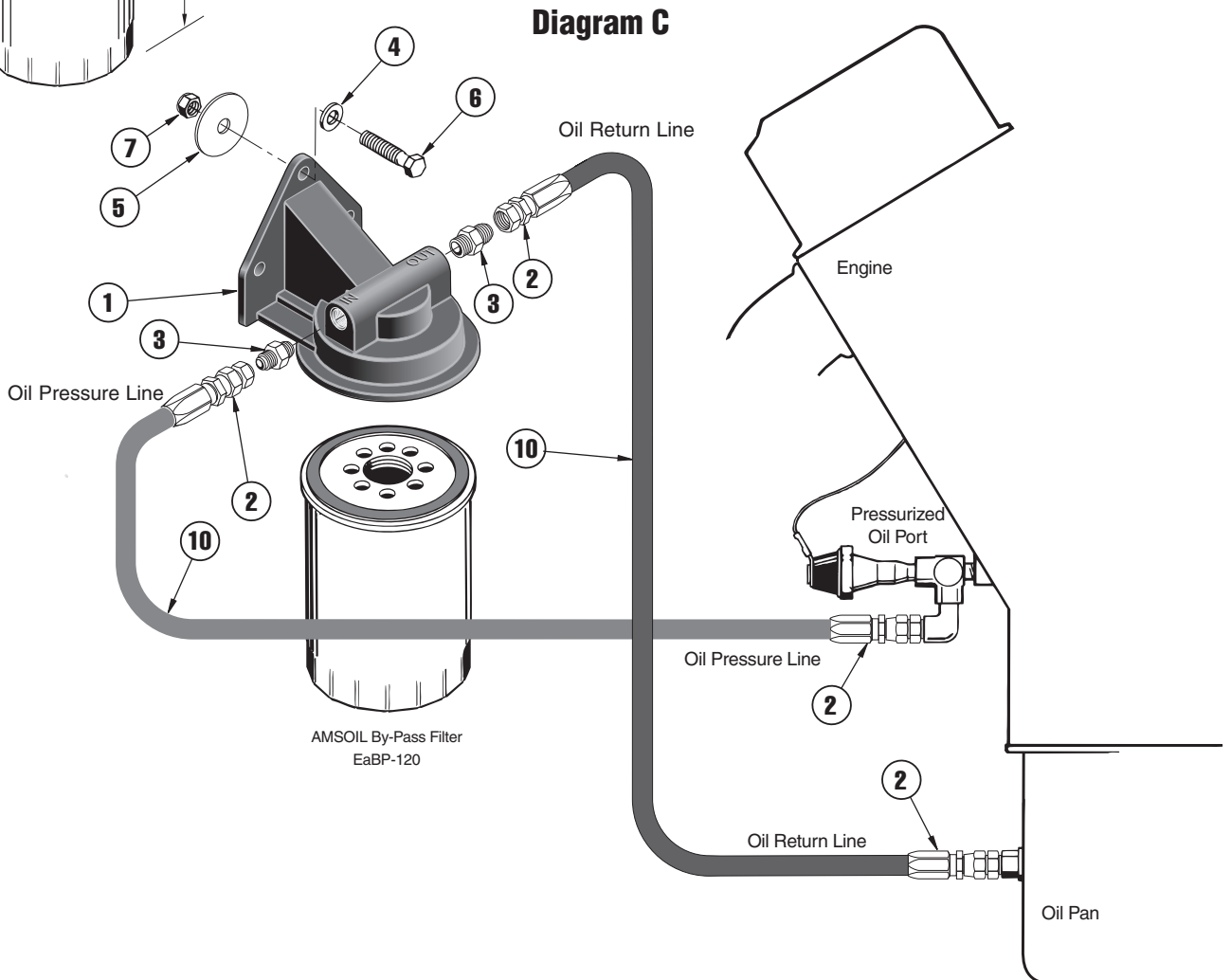


Diagram B

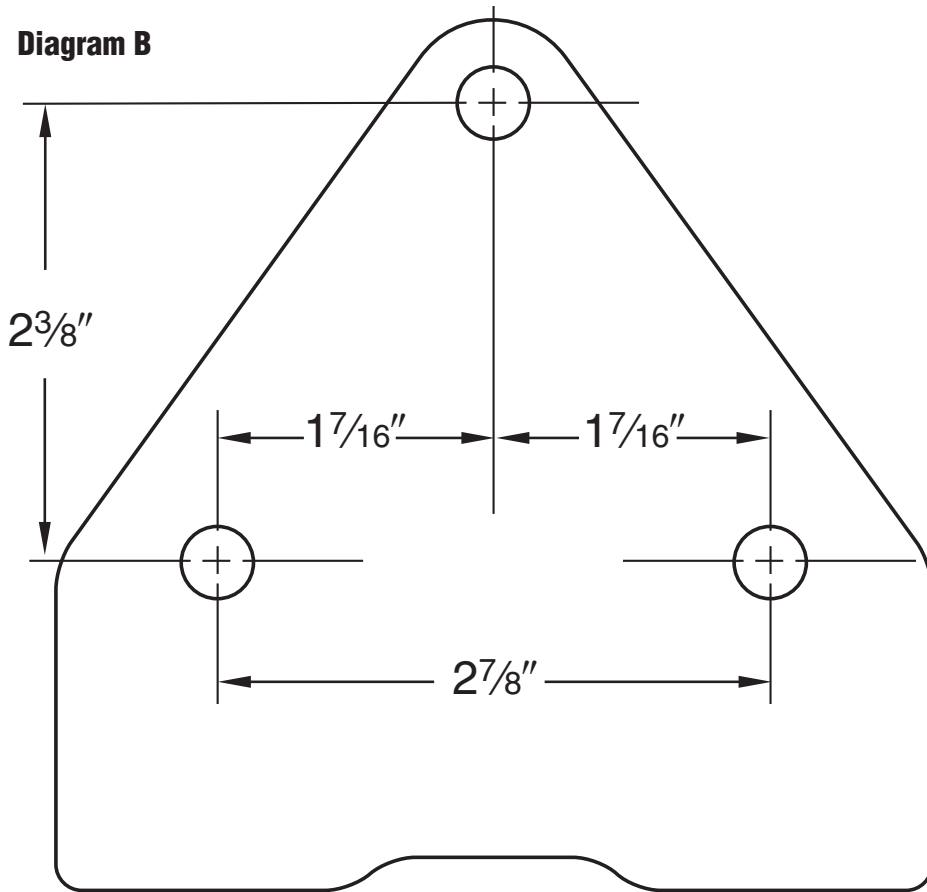


Diagram F

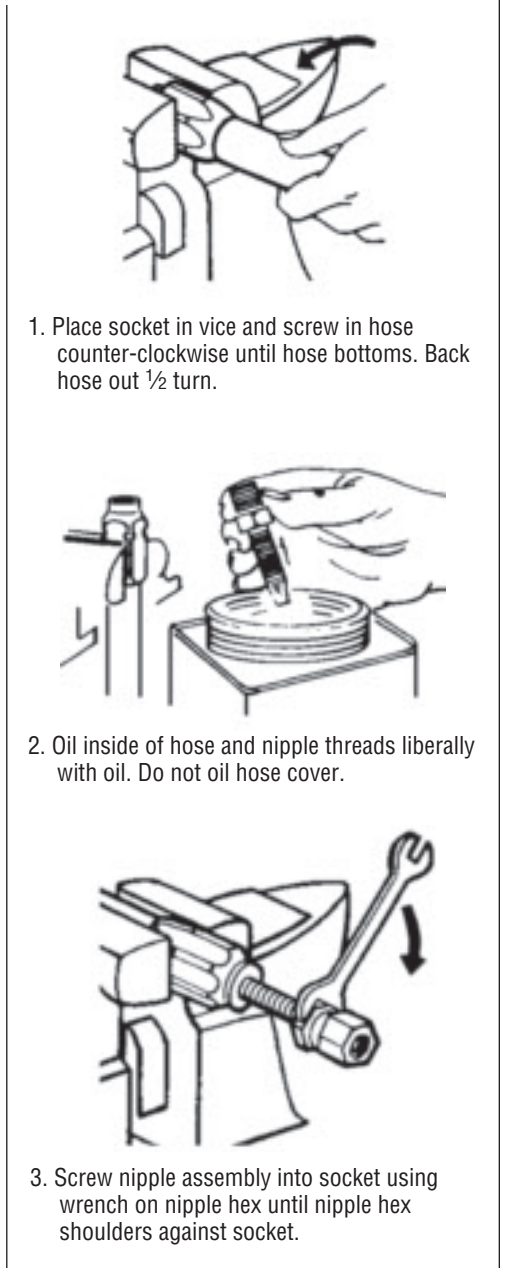


Diagram D

Minimum Bend Radius
(Actual size)

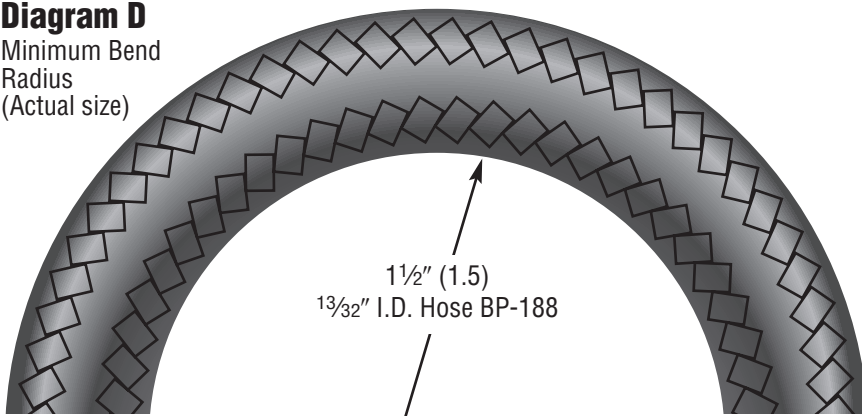
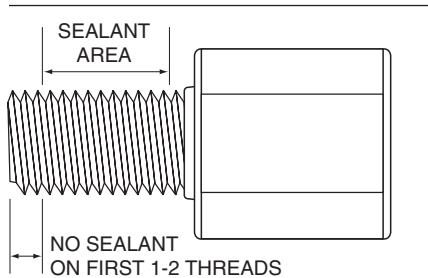


Diagram E

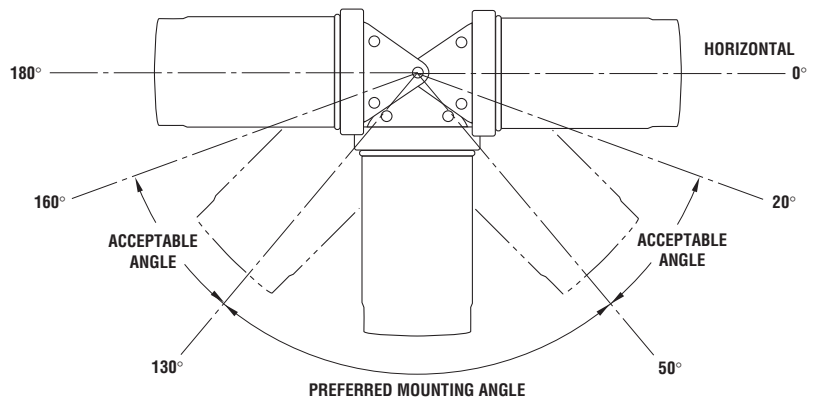


Note: If Teflon tape is used, it should be wrapped no more than 1 1/2 to 2 turns in a clockwise direction when viewed from the thread end.

Caution: More than two turns of tape may cause distortion or cracking of the port. Never back off (loosen) pipe threaded connectors to achieve alignment.

Mounting Angle Diagram G

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

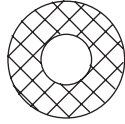


AMSOIL By-Pass Warranty

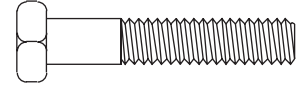
AMSOIL INC. warrants each AMSOIL By-pass System to be free from defects in material and workmanship for a period of one year from the time of purchase. **THIS WARRANTY DOES NOT APPLY IF THE BY-PASS SYSTEM HAS BEEN IMPROPERLY INSTALLED, ABUSED, DAMAGED, USED IN COMPETITIVE RACING OR ON MODIFIED ENGINES OR IF USED IN ANY AIRCRAFT OF AVIATION APPLICATION. AMSOIL INC. DOES NOT MAKE BY-PASS RECOMMENDATIONS FOR AIRCRAFT OR AVIATION USE.** If your AMSOIL By-pass System is found to be defective within a period of one year from the time of purchase, AMSOIL INC. will replace the By-pass System or defective component with another AMSOIL By-pass System or component or refund or credit the AMSOIL Dealer's or customer's account. AMSOIL will reimburse you for the reasonable costs of the parts and labor required to repair your engine or equipment to the extent the damage was solely attributable to a defect in your AMSOIL By-pass System. In order to obtain engine or equipment repairs under this warranty the Dealer or customer must directly contact AMSOIL Technical Service, AMSOIL INC., 1101 Susquehanna Ave., Superior WI 54880, Tel: 715-399-TECH (8324). The customer must also allow the AMSOIL Technical Services Department to examine the By-pass System or Filter(s) and, if required, the engine or equipment, to determine the extent of damage and whether it was caused by a defective AMSOIL By-pass System or Filter(s). The By-pass System and Filter(s) must be returned, in its original, undamaged condition, to the AMSOIL Technical Service Department for examination. This warranty is exclusive of any other warranty, express or implied. **AMSOIL BY-PASS SYSTEMS EXPRESSLY DISCLAIMS, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE.** The foregoing states the entire AMSOIL By-pass System's exclusively liability and the buyer's exclusive and sole remedy for any damages or claim made in connection with the sale of an AMSOIL By-pass System. AMSOIL By-pass Systems shall in no event be liable for any special, incidental, or consequential damages whatsoever, except those specifically provided for in this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

BMK-30 PARTS IDENTIFICATION SHEET

(3) BP-285
7/16" I.D. WASHER



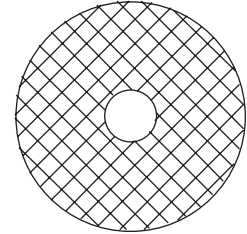
(3) BP-287
7/16"-14 X 1 1/2"
BOLT



(3) BP-288
7/16" NUT



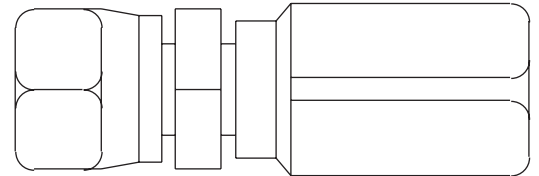
(3) BP-286
7/16" FENDER
WASHER



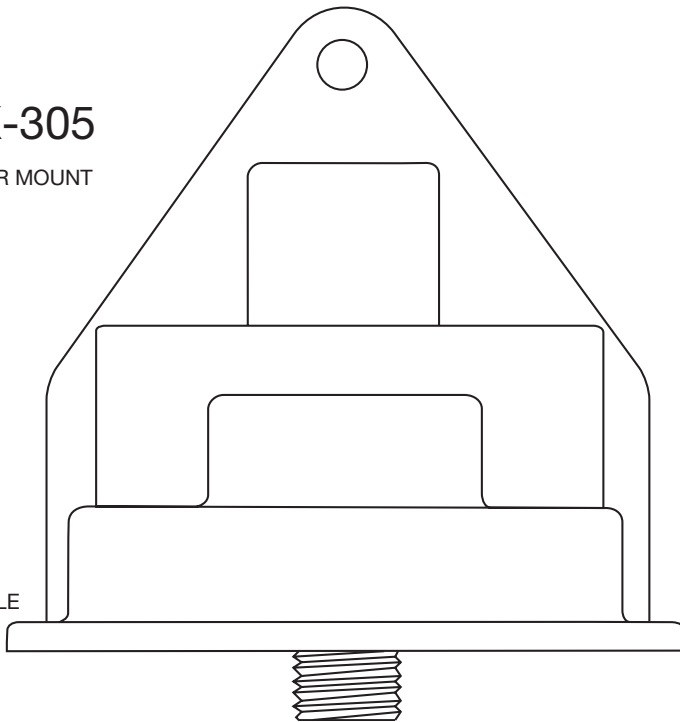
(6) BP-46
PLASTIC TIE



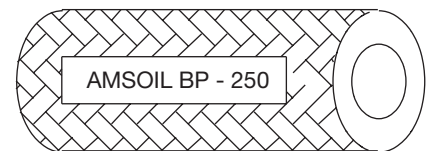
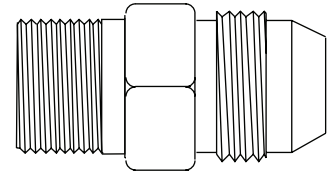
(4) BP-260
HOSE FITTING



(1) BK-305
FILTER MOUNT



(2) BP-190
"O" RING
FITTING
ADAPTER



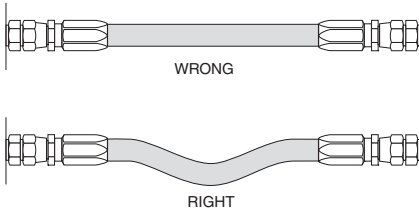
Order Separately

BP-250

1 3/32" HOSE

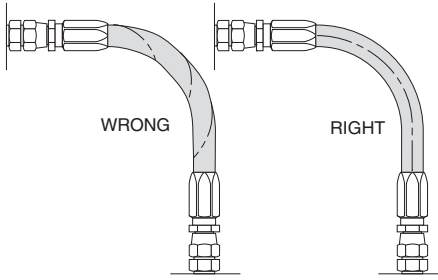
Diagram H Hose routing examples

1. Provide for length change



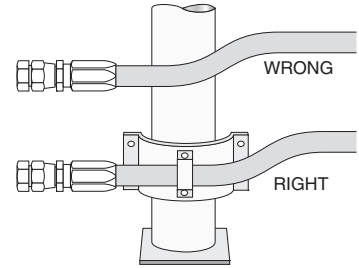
In straight hose installations allow enough slack in the hose line to provide for changes in length that will occur when pressure is applied. This change in length can be from +2% to -4%.

2. Avoid twisting and orient properly



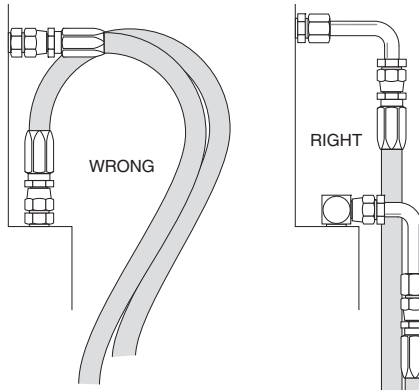
Do not twist hose during installation. This can be determined by the printed layline on the hose. Pressure applied to a twisted hose can cause hose failure or loosening of connections.

3. Protect from hazardous environment



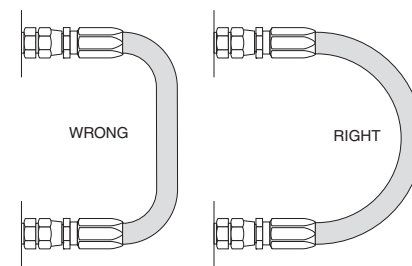
Keep hose away from hot parts. High ambient temperatures will shorten hose life. If you can not route it away from the heat source, insulate it.

4. Avoid mechanical strains



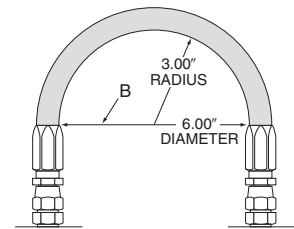
Use elbows and adapters in the installation to relieve strain on the assembly, and to provide easier and neater installations that are accessible for inspection and maintenance.

5. Use proper bend radius



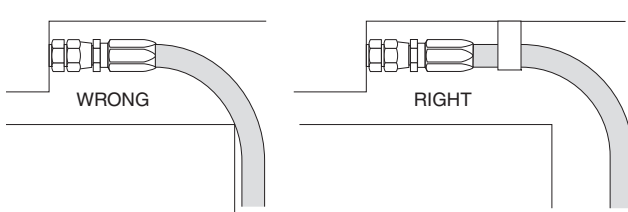
Keep the bend radius of the hose as large as possible to avoid collapsing of the hose and restriction of flow. Follow catalog specs on minimum bend radii.

6. Use proper bend radius (cont.)



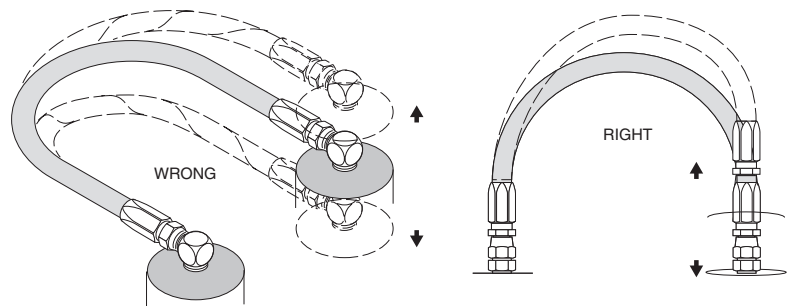
Maximum bend radius is measured on the inside bend of the hose. To determine minimum bend, divide the total distance between ends (B length) by 2. For example B = 6, minimum bend radius = 3.

7. Secure for protection



Install hose runs to avoid rubbing or abrasion. Use clamps to support long runs of hose or to keep hose away from moving parts. It is important that the clamps do not allow the hose to move. This movement will cause abrasion and premature hose failure.

8. Avoid Improper Hose Movement



Make sure relative motion of the machine components produces bending rather than twisting of the hose. Hose should be routed so that the flex is in the same plane as the equipment movement.