

Bendix® PuraGuard® System Filter

DESCRIPTION

The *PuraGuard*® system filter is used to assist the production of purified compressed air on high air use vehicles.

The *PuraGuard*® system filter consists of a filter element mounted in a die cast aluminum housing. The sump housing contains a drain valve for maintenance. For ease of serviceability, all maintenance kits do not require removal of the *PuraGuard*® system filter from its mounting on the vehicle.

High air use vehicles (e.g. transit vehicles) may require the air compressor to exceed its normal duty cycle. The resulting high compressor discharge temperatures can allow oil aerosols to pass through the air dryer, condensing downstream in air system components.

The *PuraGuard*® system filter follows the air dryer in the system and removes approximately 99% of oil aerosols. On vehicles not using an air dryer, the *PuraGuard*® system filter follows the supply (“wet tank”) reservoir (see Figures 3 & 4).

OPERATION

GENERAL (See Figure 2)

Compressed air passes through the supply port of the *PuraGuard*® system filter and travels downward through the center of the filter element. As the air passes through the filter material, oil in liquid and aerosol form are removed and collected in the sump. The air travels back up from the sump, through the *PuraGuard*® system filter delivery port and into the air system.

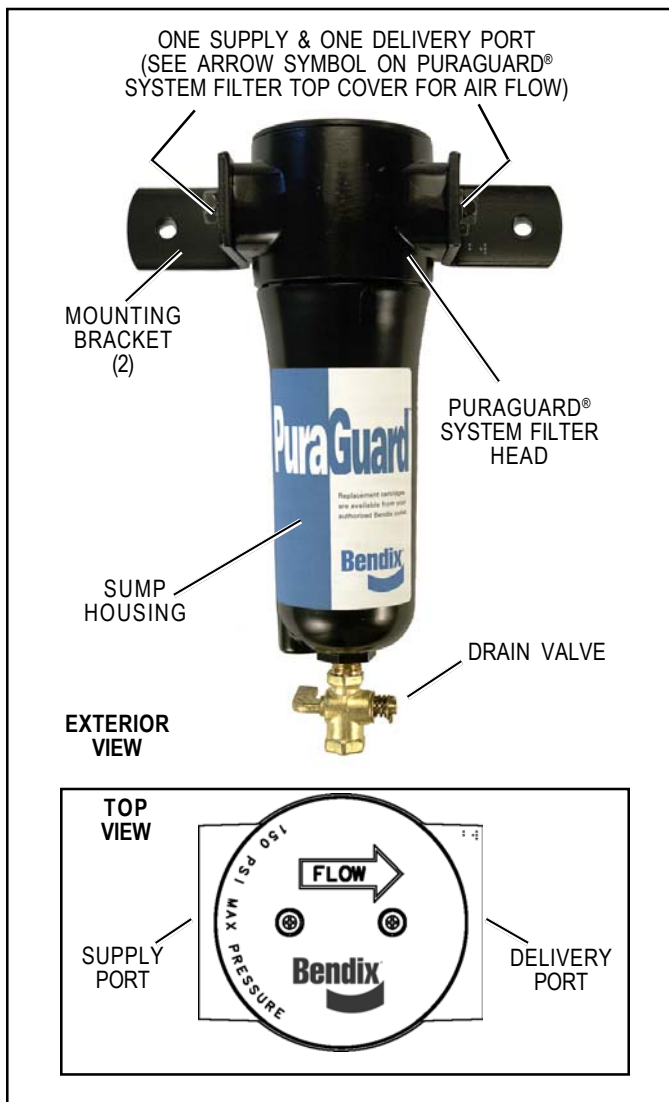


FIGURE 1 - PURAGUARD® SYSTEM FILTER

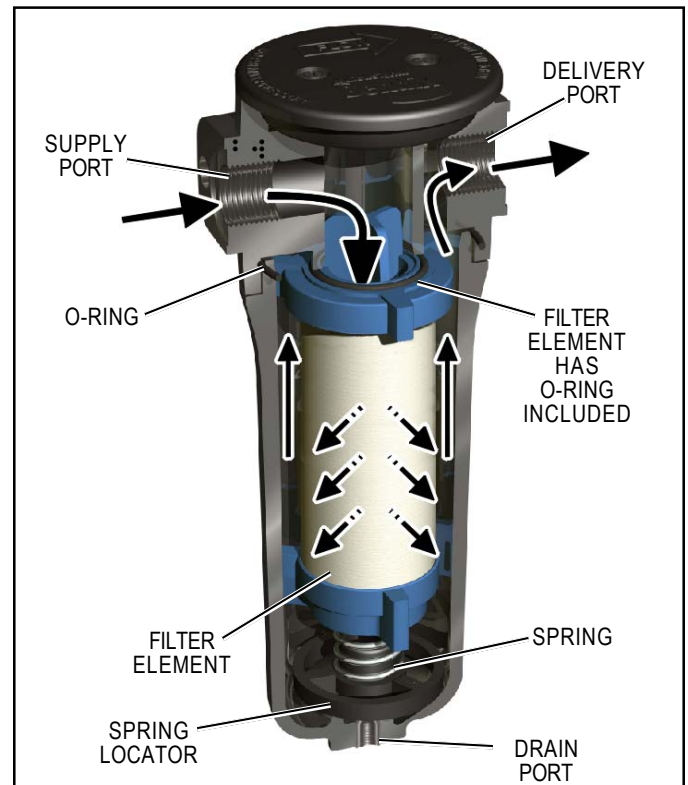


FIGURE 2 - CUT-AWAY SHOWING AIR FLOW

PuraGuard® System Filter Installation System with Air Dryer

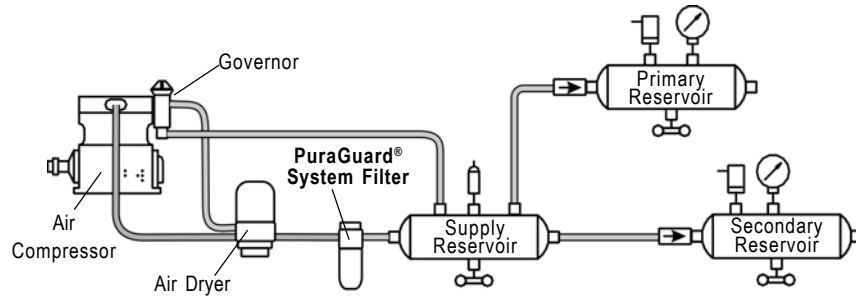


FIGURE 3

PuraGuard® System Filter Installation System without Air Dryer

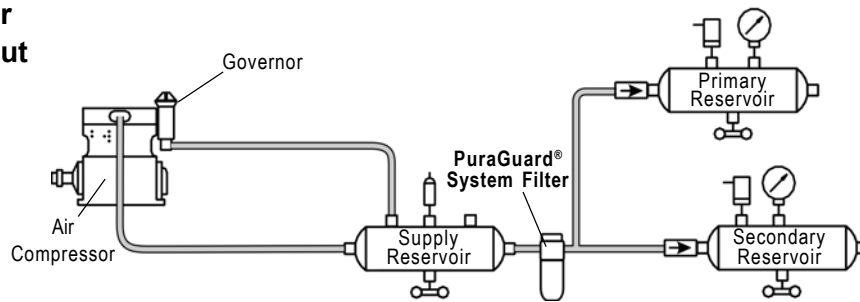


FIGURE 4

The *PuraGuard*® system filter has two female pipe thread air connections: one supply, one delivery — identified by their relationship to the arrow symbol showing air flow on the *PuraGuard*® system filter top cover (see Figure 1).

Note: The *PuraGuard*® system filter is not recommended to be used in conjunction with an alcohol evaporator or injector. The *PuraGuard*® system filter will remove the liquid or aerosol alcohol introduced, defeat the purpose of the evaporator/injector and require the sump to be drained more often than normal.

FILTER BYPASS (refer to Figure 5)

If a situation occurs where the ability of the filter to allow air to pass is impaired and causes a pressure difference of approx. 20 p.s.i. between the air entering the filter element and exiting, the filter will move downwards against the spring. The air entering will then be able to bypass the filter element.

PREVENTIVE MAINTENANCE

Important: Review the warranty policy before performing any intrusive maintenance procedures. An extended warranty may be voided if intrusive maintenance is performed during this period.

Because no two vehicles operate under identical conditions, maintenance intervals will vary. Experience is a valuable guide in determining the best maintenance interval for a vehicle.

Every 300 operating hours, or 8,000 miles or one (1) month:

1. With the air system pressure at 0 p.s.i., use the drain valve to collect contaminants for disposal.

2. Visually check for physical damage to the *PuraGuard*® system filter such as chaffed or broken air hoses and broken or missing parts.
3. Check mounting bolts for tightness. Re-torque to vehicle manufacturers guidelines.
4. Perform the *Operation & Leakage Tests* listed in this publication.

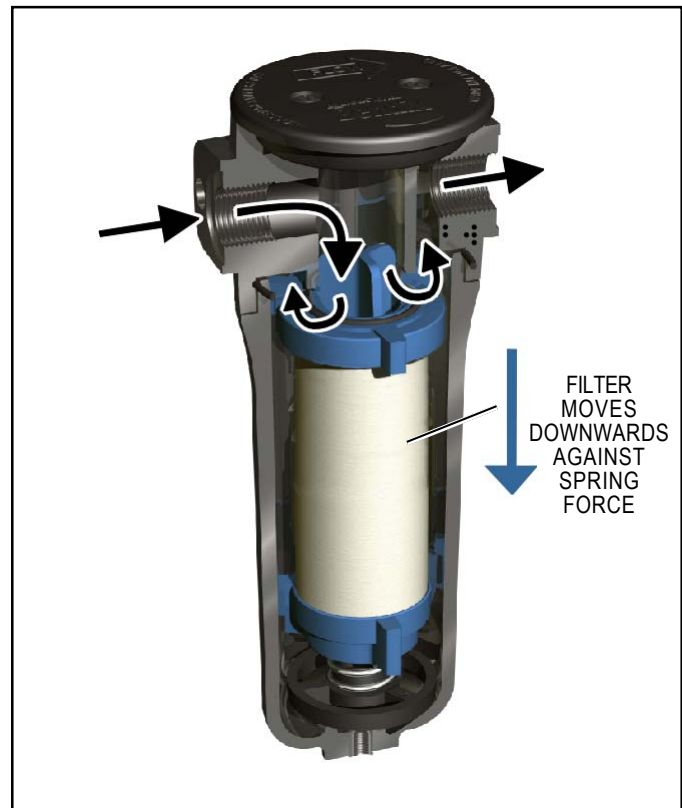


FIGURE 5 - PURAGUARD® SYSTEM FILTER BYPASS

FIGURE 6 - MAINTENANCE KITS AVAILABLE

800691
RETROFIT KIT

This kit contains the *PuraGuard*® system filter assembly, brackets, and drain valve. Some other fittings, etc. are typically required for installation.

ALL PARTS
SHOWN ARE
INCLUDED
IN KIT



5006788
MAINTENANCE KIT

INCLUDED
IN KIT



5006789
REBUILD KIT

INCLUDED
IN KIT



Every 3,600 operating hours, or 100,000 miles or one (1) year:

1. With the air system pressure at 0 p.s.i., drain collected contaminants for disposal.
2. Visually check for physical damage to the *PuraGuard*® system filter such as chaffed or broken air hoses and broken or missing parts.
3. Replace the filter element (see Maintenance Kits available, Figure 6).
4. Check mounting bolts for tightness. Re-torque to vehicle manufacturers guidelines.
5. Perform the *Operation & Leakage Tests* listed in this publication.

OPERATION & LEAKAGE TESTS

Build the air system to governor cutout. Shut off the engine. Using a soap solution, check all lines and fittings leading to and from the *PuraGuard*® system filter for leakage and integrity. Repair any excessive leaks — exceeding a 1” bubble in 5 seconds — before restoring vehicle to service.

REBUILDING THE PURAGUARD® SYSTEM FILTER

GENERAL

If, after completing the routine operation and leakage tests, it has been determined that one or more components of the

PuraGuard® system filter requires replacement or maintenance, refer to Figure 7 to find the appropriate kit.

When rebuilding or replacing components of the *PuraGuard*® system filter use only genuine Bendix parts. For ease in servicing, the *PuraGuard*® system filter has been designed so that the maintenance kits can be installed without removing the *PuraGuard*® system filter from the vehicle.

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times.

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.
2. Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.
3. Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended

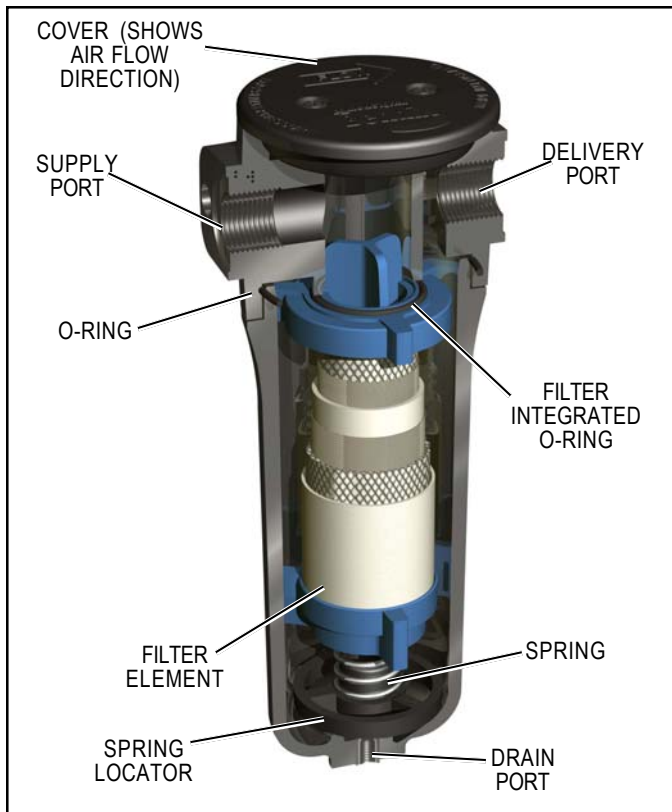


FIGURE 7 - CUT-AWAY VIEW

procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.

4. If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with an AD-IS™ air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.
5. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
6. Never exceed manufacturer's recommended pressures.
7. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.
8. Use only genuine Bendix® replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
9. Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.

10. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.

PURAGUARD® SYSTEM FILTER REMOVAL

This *PuraGuard*® system filter removal process is presented in the event it becomes necessary to replace the entire system filter.

Normal service and parts replacement does not require removal of the *PuraGuard*® system filter from the vehicle.

1. Park the vehicle on a level surface and prevent movement by means other than the brakes.
2. Drain all reservoirs to 0 p.s.i.
3. Identify and disconnect the two air hoses from the *PuraGuard*® system filter.
4. Remove the two bolts that secure the brackets to the vehicle, and remove the *PuraGuard*® system filter from the vehicle.

REPLACING OR RETROFITTING THE PURAGUARD® SYSTEM FILTER (using kit shown in figure 8)

General

The following retrofit instructions are presented for reference purposes only since Bendix aftermarket retrofit and replacement *PuraGuard*® system filters are packaged with the most up-to-date installation instructions. The instructions packaged with the *PuraGuard*® system filter should be followed in lieu of those presented here. See Figure 8.



FIGURE 8 - RETROFIT KIT

ASSEMBLY

1. Coat the drain valve threads with a liquid pipe thread sealant. Install the drain valve using two wrenches - one at the base of the *PuraGuard*® system filter and one on the drain valve, using a maximum final torque of 130-170 in. lbs.
2. The threaded top of the sump housing is pre-installed into the head of the *PuraGuard*® system filter. Check that this connection is fully hand-tight before proceeding with the installation.
3. The head cover of the *PuraGuard*® system filter has an arrow symbol showing the direction that the air must be supplied into the head (see Figure 1). Align the *PuraGuard*® system filter correctly (the label may not be facing outwards) and then insert the four bolts through the mounting bracket holes into the *PuraGuard*® system filter head. Tighten to approx. 15 ft. lbs.

RETROFIT: LOCATING THE PURAGUARD® SYSTEM FILTER ON THE VEHICLE

1. The *PuraGuard*® system filter must be mounted vertically ($\pm 5^\circ$) and must not be exposed to direct wheel splash (located behind axle mud flap is acceptable).
2. Locate the *PuraGuard*® system filter as close to the first (Supply) reservoir as possible.
 - (a) **For vehicles with air dryers**, mount the *PuraGuard*® system filter upstream of the supply reservoir (see Figure 3).
 - (b) **For vehicles without air dryers**, install the *PuraGuard*® system filter downstream of the supply reservoir (wet tank) (see Figure 4). Both the primary and secondary reservoirs will receive their air supply from the discharge of the *PuraGuard*® system filter and depending on original vehicle hose arrangement, extra fittings may be required.
3. To minimize vibration, mount the *PuraGuard*® system filter on a frame rail. If the vehicle requires the *PuraGuard*® system filter to be directly mounted to the reservoir, be sure to only use a high strength nipple fitting. (See further notes under *Connecting the Air Hoses*.)
4. Do not locate the *PuraGuard*® system filter near heat producing components such as the vehicle exhaust and provide adequate clearance from moving components e.g. drive shaft, suspension, pitman arm, etc.
5. Locate the *PuraGuard*® system filter on the vehicle so that a minimum of 12 inches clearance horizontally (90° minimum arc) to allow servicing. This will permit, for example, a strap wrench to be used when replacing the filter.
6. Be sure that there is sufficient room to attach hoses to the *PuraGuard*® system filter.

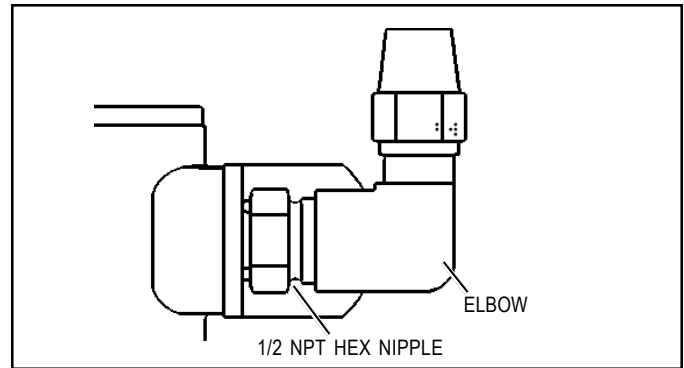


FIGURE 9 - ELBOW FITTING IF NEEDED

7. To permit draining of collected contaminants, at least a 6 inch clearance below the *PuraGuard*® system filter is recommended. Nominal clearance above is required.

MOUNTING THE PURAGUARD® SYSTEM FILTER

1. After positioning the *PuraGuard*® system filter according to the installation requirements, mark the position of the mounting holes on the frame rail. Note: Check the vehicle manual before drilling a frame member.
2. Use vehicle manufacturer guidelines for mounting hardware (use at least grade 5 hardware).

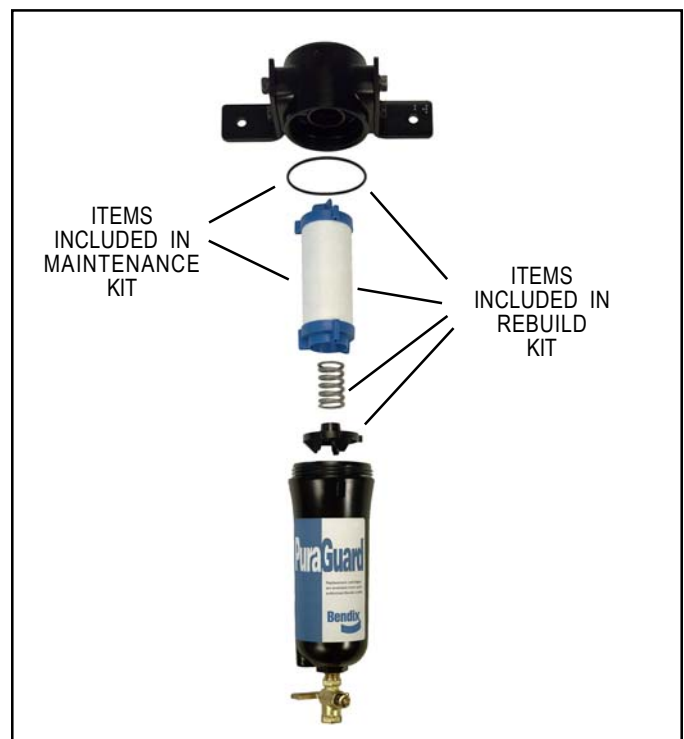


FIGURE 10 - MAINTENANCE KITS

CONNECTING THE AIR HOSES

Follow either Figure 4 or 5 for air hose arrangement.

1. The *PuraGuard*[®] system filter supply and delivery ports are 1/2-14 NPT. Install minimum 1/2 inch inside diameter air hoses. When installing an elbow fitting use the fitting arrangement shown in Figure 9, using a high strength nipple and then an elbow fitting.
2. Hoses must be installed without tight turns that might cause air flow restrictions. Note: Check that the hose attachment agrees with the air flow arrow symbol (see Figure 1). The label may not be facing forward when installation is complete.

OPERATIONAL TEST

Build the air system to governor cutout. Shut off the engine. Using a soap solution, check all hoses and fittings leading to and from the *PuraGuard*[®] system filter for leakage and integrity. Repair any excessive leaks - exceeding a 1" bubble in 5 seconds - before restoring vehicle to service.

MAINTENANCE KIT INSTALLATION

KIT DESCRIPTION

The kits available allow either a filter element replacement or major overhaul of the Bendix[®] *PuraGuard*[®] system filter.

VEHICLE PREPARATION

1. Park the vehicle on a level surface and prevent movement by means other than the brakes.
2. Drain all reservoirs to 0 p.s.i.
3. Drain the contents of the sump into a suitable container for disposal and then re-close the drain valve.
4. Using detergent and water, clean the exterior of the *PuraGuard*[®] system filter of road grime etc.

DISASSEMBLY AND CLEANING (see Figure 11)

1. Unscrew the sump housing of the *PuraGuard*[®] system filter. If necessary, use a strap wrench to assist this process.
2. Remove and discard the filter and o-ring.

If only installing the maintenance kit, go to *Inspection* section below.

3. Using long-nose pliers, carefully remove and discard the spring and spring locator inside the sump housing.
4. Using detergent and water or other suitable solvent, clean inside the sump housing.

INSPECTION

1. Inspect the *PuraGuard*[®] system filter for broken or missing parts. Replace as necessary.
2. Inspect the drain valve for any build-up that could impair its function. Clean as necessary.

ASSEMBLY (see Figure 11)

1. Install the replacement o-ring into the channel in the head of the *PuraGuard*[®] system filter.

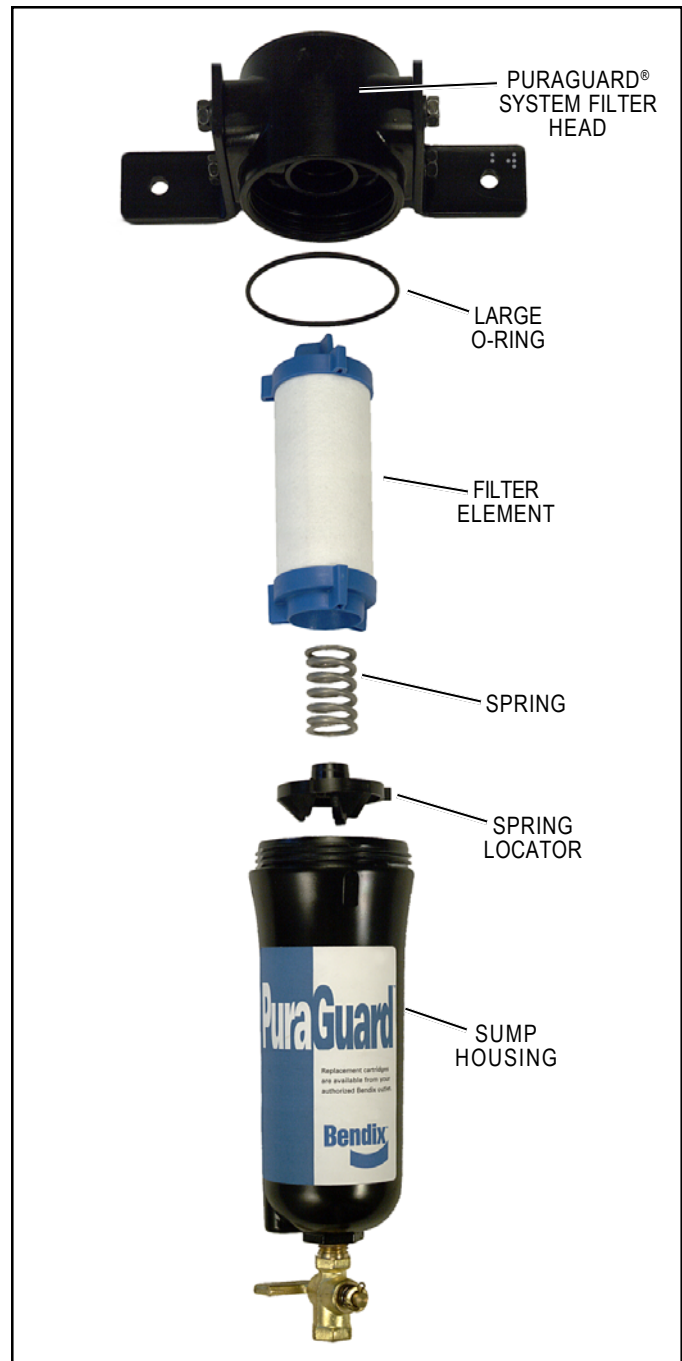


FIGURE 11 - MAINTENANCE KIT COMPONENTS

- If only installing the maintenance kit, go to item 4 below.
2. Install the spring onto the spring locator.
 3. Using long-nose pliers, install the spring locator and spring assembly into the sump (see Figure 11).
 4. Insert the replacement filter (guide lands uppermost) into the sump with its base resting on the spring.
 5. Coat the threads of the sump housing using barium or lithium grease. Sufficient torque to install the sump will be produced by turning the housing by hand until fully hand-tight. Take care not to damage the large o-ring when installing the sump housing.

OPERATIONAL TEST

Build the air system to governor cutout. Shut off the engine. Using a soap solution, check all hoses and fittings leading to and from the *PuraGuard*® system filter for leakage and integrity. Repair any excessive leaks - exceeding a 1" bubble in 5 seconds - before restoring vehicle to service.

PuraGuard® System Filter Troubleshooting Chart

SYMPTOMS	CAUSE	REMEDY
1. More often than normal (monthly) sump draining required.	A. <i>PuraGuard</i> ® system filter installed in incorrect position in system.	A. See Figures 2 and 3 for correct installation.
	B. Alcohol injector in system.	B. The <i>PuraGuard</i> ® system filter is not recommended to be used in conjunction with an alcohol evaporator or injector. [The <i>PuraGuard</i> ® system filter will remove the liquid or aerosol alcohol introduced, defeat the purpose of the evaporator/injector and require the sump to be drained more often than usual.]
	C. Air dryer malfunction.	C. Check air dryer.
	D. Compressor malfunction.	D. Check compressor.
2. Bypass feature not working.	A. Supply and delivery air connections reversed.	A. Reverse hose connections.
3. Oil in system.	A. Supply and delivery air connections reversed.	A. Reverse hose connections.
	B. Sump not drained regularly.	B. Drain sump every 300 operating hours, or 8,000 miles or one (1) month.
	C. Filter element maintenance interval exceeded.	C. Use a maintenance kit to replace <i>PuraGuard</i> ® system filter element every 3600 operating hours, or 100,000 miles or one (1) year.
	D. Air dryer malfunction.	D. Check air dryer.
	E. Compressor malfunction.	E. Check compressor.

