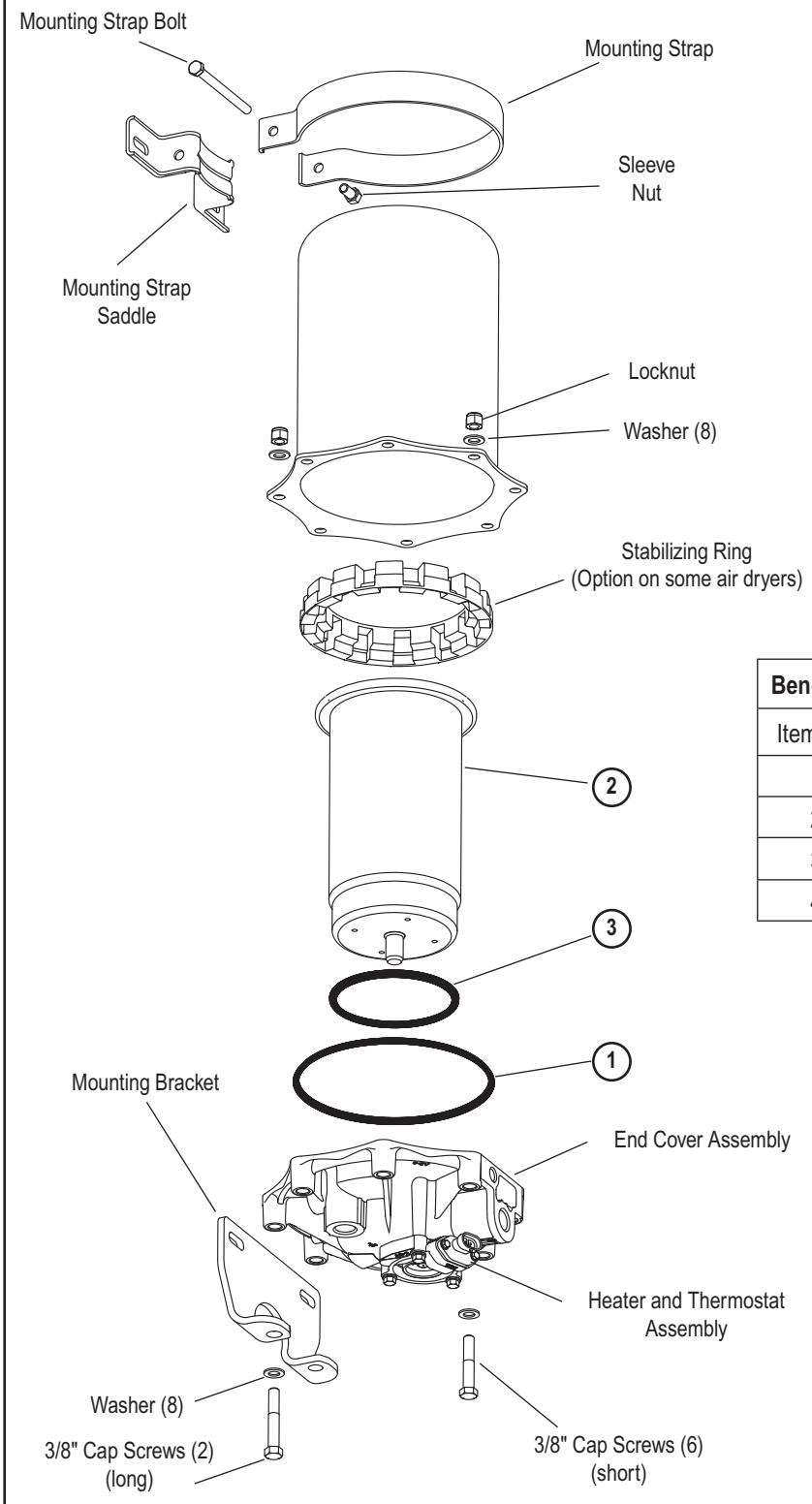
Installation Instructions

BENDIX® AD-9® AIR DRYER CARTRIDGE KIT





BENDIX® AD-9® AIR DRYER

Bendix®AD-9® Air Dryer Desiccant Cartridge Kit Contents		
Item No.	Description	Qty.
1	Outer Housing O-ring	1
2	Desiccant Cartridge	1
3	Desiccant Cartridge O-ring	1
4	Lubricant (not shown)	1

Figure 1 **Bendix® AD-9® Air Dryer Exploded View and Kit Contents**

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This kit is intended for replacing the air dryer cartridge on all Bendix® AD-9® and AD-9® PuraGuard® oil coalescing air dryers. **Caution: AD-9® PuraGuard® oil coalescing air dryers must be serviced with a Bendix® AD-9® PuraGuard® oil coalescing air dryer cartridge**. Verify the new cartridge contains the appropriate identification label as shown in Figure 2.

CLEANING AND INSPECTION

1. Using mineral spirits or an equivalent solvent, clean and dry the outside of the air dryer.
2. When servicing, inspect the interior and exterior of all metal parts for severe corrosion, pitting and cracks. If this condition exists, replace the air dryer. Superficial corrosion and/or pitting on the exterior portion of the upper and lower body halves is acceptable.
3. Inspect all air line fittings for corrosion. Repair or replace any leaking or damaged lines or fittings. Clean all old thread sealant from the pipe threads.

IMPORTANT: Prior to the assembly of this kit, coat all o-rings, o-ring grooves, and bores with the lubricant(4) provided. Refer to Figure 1 during assembly unless otherwise advised. When installing this kit, it is recommended that the AD-9air dryer be removed from the vehicle.

BENDIX® AD-9® AIR DRYER REMOVAL

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. **Caution:** The compressor discharge line may still contain residual pressure.
3. Identify and disconnect the three air lines from the end cover and note the position of end cover ports relative to the vehicle.
4. Unplug the vehicle wiring harness connector from the heater and thermostat assembly connector on the end cover assembly.
5. Loosen the 5/16" X 4-1/2" mounting strap bolts securing the upper mounting strap.

GENERAL SAFETY GUIDELINES

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 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 a Bendix® 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® brand 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.**
11. **For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.**

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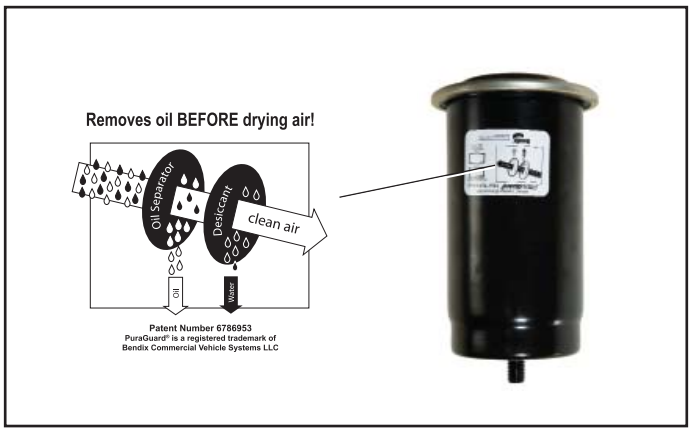


Figure 2 **Bendix® AD-9® PuraGuard® Oil Coalescing Cartridge Identification Label**



Figure 3 **Bendix® AD-9® Air Dryer Stabilizing Ring**

6. Remove, retain and mark the two 3/8" end cover cap screws, lock nuts and washers that retain the lower mounting bracket to the end cover, also mark these two holes of the end cover. (These bolts are longer than the other six bolts.)
7. Remove the Bendix® AD-9® air dryer from its mounting brackets on the vehicle.

DISASSEMBLY (Refer to Fig. 1)

Caution: While performing service on the AD-9 air dryer, it is not recommended that a clamping device (vise, C-clamp, etc.) be used to hold any die cast aluminum component as damage may result. To hold the end cover, install a pipe nipple in the supply port and clamp the nipple in a vise.

1. Remove the remaining six 3/8" cap screws, lock nuts, and twelve washers that secure the end cover to the outer housing. Separate the end cover and desiccant cartridge from the outer housing. If the AD-9 air dryer has a stabilizing ring on top of the cartridge, remove it and set it aside.
2. Remove and discard the outer housing o-ring(1).
3. Place a strap or chain wrench around the desiccant cartridge(2) so that it is approximately 2 to 3 inches away from the end cover. Rotate the cartridge counterclockwise until it completely separates from the end cover. Note: A substantial torque (up to 50 lb.ft.) may be required to perform this disassembly. Check with a Bendix parts outlet for possible core value of the removed cartridge.
4. Remove and discard the desiccant cartridge o-ring(3) from the end cover.

ASSEMBLY (Refer to Fig. 1)

1. Install the desiccant cartridge o-ring(3) in its groove in the end cover assembly. Using a light coat of the lubricant(4), lubricate the bottom of the desiccant cartridge(2) and the end cover assembly in the area that will contact the o-ring(3).
2. Screw the desiccant cartridge(2) into the end cover until light contact is made between it and the o-ring(3). Using a strap or chain wrench positioned 2 to 3 inches from the bottom of the cartridge, turn the desiccant cartridge(2) clockwise 180-225 degrees to secure the desiccant cartridge to the end cover. Torque should not exceed 50 ft. lbs.

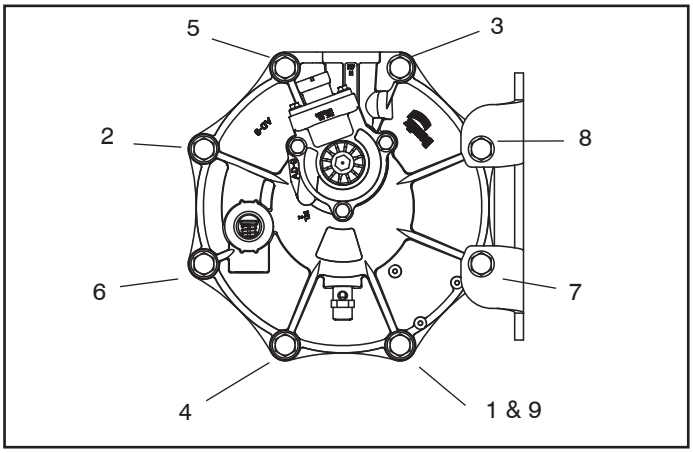
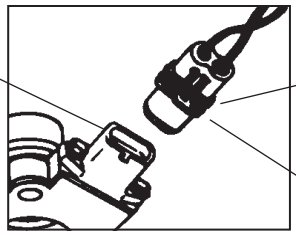


Figure 4 **End Cover Bolt Torque Pattern**

3. Install the outer housing o-ring(1) on the shoulder in the end cover.
4. If a stabilizing ring was removed during disassembly, it MUST be reused. Place the stabilizing ring on top of the air dryer cartridge (2). See Figure 3.

   NOTE: The desiccant cartridge provided in this kit comes in two heights, varying 3/4". (Although the cartridges vary in height their functionality and performance is the same.) The taller style can not be used together with the stabilizing ring. If the air dryer being serviced uses a stabilizing ring, verify the new cartridge height is the same as the cartridge removed. If a stabilizing ring is being reused, and the taller cartridge is included in the kit, please exchange the kit for one containing a shorter cartridge. Operating certain vehicles without the stabilizing ring can cause premature air dryer damage.
5. Place the outer housing over the desiccant cartridge, and stabilizing ring if applicable, and align the holes.
6. Install the six 3/8" cap screws, lock nuts and twelve washers making certain they are in the proper position as marked during disassembly. The two longer 3/8" cap screws will be used to secure the AD-9® air dryer to its mounting bracket. Tighten the six cap screws and nuts in a star pattern (Refer to Figure 4). Torque to 270-385 in. lbs. Note: The two remaining bolt holes in the end cover and two 3/8" cap screws must be the ones marked during disassembly to assure proper orientation of the ports and adequate length of the cap screws.



Note: Make certain the seal is present on the vehicle wiring harness connector. If no dielectric grease is present in the mating connector, apply a small amount over each connector pin before plugging in the connector.

Figure 5 **Wiring Harness Connectors**

INSTALLATION

1. Install the assembled Bendix® AD-9® air dryer back onto the vehicle by slipping it into the mounting strap and saddle. Align the two unused holes in the end cover with the bottom mounting bracket such that the bottom of bracket supports the air dryer. The AD-9 air dryer end cover should rest on the bracket. Using the remaining two 3/8" cap screws (long), four washers and two lock nuts, secure the air dryer to the lower bracket. Tighten, then torque the two remaining cap screws to 270-385 in. lbs.
2. Tighten the 5/16" X 4-1/2" bolt and nut on the upper mounting strap and saddle. Torque to 80-120 in. lbs.
3. Re-connect the three air lines to the proper ports on the end cover assembly (identified during disassembly).
4. Re-connect the vehicle wiring harness connector to the AD-9 air dryer heater and thermostat assembly connector by plugging it into the air dryer connector until its lock tab snaps in place. See Figure 5.
5. Before placing the vehicle back into service, perform the Operation and Leakage Tests stated at the end of this instruction sheet.

OPERATION AND LEAKAGE TESTS

1. Test the outlet port check valve by building the air system to governor cut-out and observing a test air gauge installed in the #1 reservoir. Check all lines and fittings leading to and from the air dryer for leakage and integrity. A rapid loss of pressure could indicate a failed outlet check valve. To confirmed, bleed the system down, remove the check valve assembly from the end cover and bench test by applying air pressure to the check valve and soaping the other end. Leakage should not exceed a 1" bubble in 1 second.
2. Check for excessive leakage of the purge valve. With the compressor loaded (compressing air), apply a soap solution to the purge valve housing assembly exhaust port and observe that leakage does not exceed a 1 inch bubble in 1 second. If the leakage exceeds the maximum specified, service the purge valve housing assembly.
3. Close all reservoir drain cocks. Build up system pressure to governor cut-out and note that AD-9 air dryer purges with an audible escape of air. "Fan" the service brakes to reduce system air pressure to governor cut-in. Note that the system once again builds to full pressure and is followed by an AD-9 air dryer purge.
4. Check the operation of the safety valve by pulling the exposed stem while the compressor is loaded (compressing air). There must be an exhaust of air while the stem is held and the valve should re-seat when the stem is released.
5. Check the operation of the end cover heater and thermostat assembly during cold weather operation as follows:

   A. Electric Power to the Dryer (Refer to Fig. 5)
   With the ignition or engine kill switch in the ON position, check for voltage to the heater and thermostat assembly using a voltmeter or test light. Unplug the electrical connector at the air dryer and place the test leads on each of the pins of the male connector. If there is no voltage, look for a blown fuse, broken wires, or corrosion in the vehicle wiring harness. Check to see if a good ground path exists.

   B. Thermostat and Heater Operation
   Turn off the ignition switch and cool the end cover assembly to below 40° Fahrenheit. Using an ohmmeter, check the resistance between the electrical pins in the female connector. The resistance should be between 1.0 and 3.0 ohms for the 12 volt heater assembly and 4.8 to 9.0 ohms for the 24 volt heater assembly. If the resistance is higher than the maximum stated, replace the heater and thermostat assembly.

   Warm the end cover assembly to over 90° Fahrenheit and again check the resistance. The resistance should exceed 1000 ohms. If the resistance values obtained are within the stated limits, the thermostat and heater is operating properly. If the resistance values obtained are outside the stated limits, replace the heater and thermostat assembly.

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