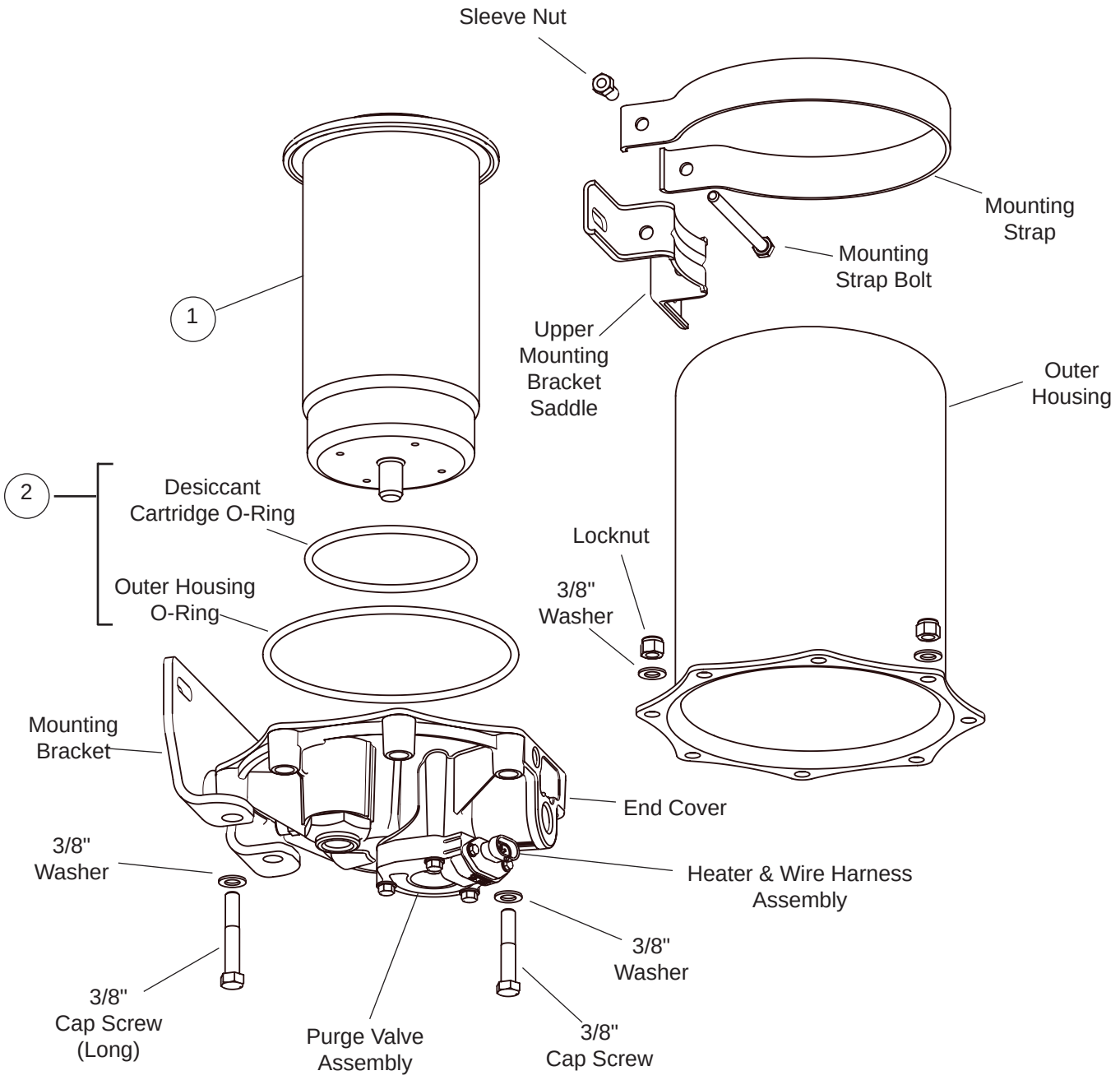
TRUCK™ PRODUCTS
BENDIX COMMERCIAL VEHICLE SYSTEMS

Installation Instructions

REBUILT CARTRIDGE KIT FOR BENDIX® AD-9® AIR DRYER



DESICCANT CARTRIDGE KIT CONTENTS

Key	Description	Qty.
1	Desiccant Cartridge	1
2	O-Ring Kit	1
	• outer housing o-ring	1
	• desiccant cartridge o-ring	1
	• grease (not shown)	1

Replacement Cartridge Kit for AD-9® Air Dryer
Contains parts not made to Genuine Bendix® specifications.

Figure 1 **AD-9® Air Dryer Exploded View**

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.
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. 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 Antilock 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.

IMPORTANT: Prior to assembly of any kit, coat all o-rings, o-ring grooves and bores with the grease included in this kit. Refer to Figure 1 during assembly unless otherwise advised.

INSTALLING NEW DESICCANT CARTRIDGE KIT

When using this kit, it is recommended that the AD-9® air dryer be removed from the vehicle. Refer to Figure 1.

AD-9® Air Dryer Removal

1. Identify and disconnect the three air lines from the end cover and note the position of end cover ports relative to the vehicle.
2. Unplug the vehicle wiring harness connector from the heater and thermostat assembly connector on the purge valve assembly.
3. Loosen the mounting strap bolt that secures the mounting strap.
4. Remove, retain and mark the two 3/8" end cover cap screws (long), locknuts and four washers that secure 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.)
5. Remove the AD-9® air dryer from its mounting brackets on the vehicle.

Disassembly (Refer to Figure 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, locknuts and twelve washers that secure the end cover to the outer housing. Separate the end cover and desiccant cartridge from the outer housing.
2. Remove and discard the outer housing o-ring.
3. Place a strap or chain wrench around the desiccant cartridge so that it is approximately 2-3 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.
4. Remove and discard the desiccant cartridge o-ring from the end cover.

Cleaning and Inspection

1. Using mineral spirits or an equivalent solvent, clean and thoroughly dry all metal parts.
2. Inspect the interior and exterior of all metal parts that will be reused for severe corrosion, pitting and cracks. Superficial corrosion and or pitting on the exterior portion of the upper and lower body halves is acceptable.
3. Inspect the pipe threads in the end cover. Make certain they are clean and free of thread sealant.

4. Inspect all air line fittings for corrosion. Clean all old thread sealant from the pipe threads.
5. All o-rings removed should be discarded and replaced with new o-rings provided in this kit. Any component exhibiting severe corrosion, pitting or cracks should be replaced.

Assembly (Refer to Figure 1)

1. Install the desiccant cartridge o-ring in its groove in the end cover. Using a light coat of the grease included in this kit, lubricate the bottom of the desiccant cartridge in the area that will contact the desiccant cartridge o-ring and the end cover.
2. Screw the desiccant cartridge into the end cover until light contact is made between it and the o-ring. Using a strap or chain wrench positioned 2-3" from the bottom of the cartridge, turn the desiccant cartridge clockwise 180-225 degrees to secure the desiccant cartridge to the end cover. Torque should not exceed 50 ft. lbs.
3. Install the outer housing o-ring on the shoulder in the end cover. Place the outer housing over the desiccant cartridge and align the holes. Install the six 3/8" cap screws, six locknuts, and twelve washers making certain they are in the proper position as marked during disassembly. Note: 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 as shown in Figure 2. 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 appropriate length of the cap screws.

Installation

1. Install the assembled AD-9® air dryer back onto the vehicle by slipping it under the upper mounting bracket saddle and mounting strap attached to the vehicle. Align the two unused holes in the end cover with the bottom mounting bracket such that the bottom of the 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, four washers and two locknuts, secure the air dryer to the lower bracket. Tighten, then torque the two remaining cap screws to 270-385 in. lbs.
2. Tighten the mounting strap bolt and sleeve nut on the upper mounting bracket. Torque to 80-120 in. lbs.
3. Reconnect the three air lines to the proper ports on the end cover (identified during disassembly).

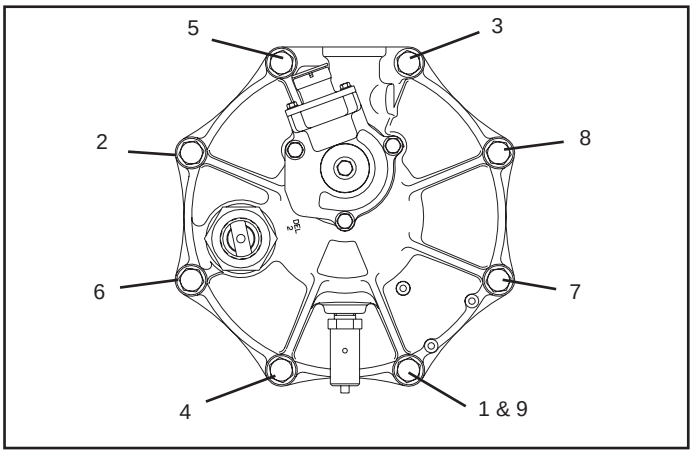


Figure 2 **Bolt Torque Pattern for End Cover**

4. Reconnect 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 the lock tab snaps in place. (Refer to Figure 3 and read all notes.)
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. This can be confirmed by bleeding the system down, removing the check valve assembly from the end cover. 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 the 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.

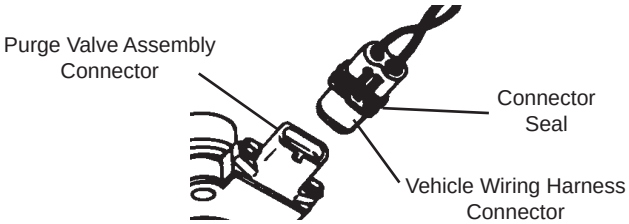
4. Check the operation of the end cover heater and thermostat assembly during cold weather operation as follows:

A. Electric Power to the Dryer (Refer to Figure 3.)

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 entire purge valve assembly, which includes the heater and thermostat (old versions) or replace just the heater and thermostat assembly (new versions), both standard and DLU style.

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 entire purge valve assembly (old versions) or replace just the heater and thermostat assembly (new versions).



Note: Make certain the seal is present on the vehicle wiring harness connector. If dielectric grease is not present in the mating connector, apply a small amount over each connector pin before plugging the connector in.

Figure 3 **Purge Valve Assembly & Wiring Harness Connectors**

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