



# Installation Instructions

## BENDIX® AD-9® AND AD-9si™ AIR DRYER HEATER & THERMOSTAT KIT

Wiring Harness Connector  
Connector Seal  
Heater Element  
Thermostat  
Washer  
1/4" Screw  
Purge Valve Assembly

Heater Element  
Rubber Cushion  
Thermostat

Bendix® AD-9® Purge Valve w/Heater & Thermostat Installed (sectional view from bottom)

Heater & Thermostat Identification	
Connector Color	Volts-Watts
White	12v-75w
Gray	24v-75w

Bendix® AD-9® Air Dryer

Optional Components

Gasket  
Extended Exhaust Cover (optional)  
Silencer and Adapter (optional)

Bendix® AD-9si™ Air Dryer

Heater & Thermostat Kit Contents					
Item	Description	Kit Contents	Quantity used with Bendix® Air Dryer		
			AD-9® Standard	AD-9® DLU-Style	AD-9si™
1	O-ring	1	1	1	—
2	O-ring — medium	1	1	—	—
3	O-ring	1	1	1	—
4	Screw	2	2	2	2
5*	Heater & Thermostat	1	1	1	1
6*	Sealing Ring	1	1	1	1
7	Lubricant (not shown)	1	1	1	1
8	Dielectric Grease (not shown)	1	1	1	1
—	Indicates this item should be discarded when servicing the air dryer shown.				

\* These components are pre-assembled together.

Figure 1 Heater & Thermostat Kit Contents



## 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 guidelines should be observed **AT ALL TIMES**:

- ▲ Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.
- ▲ Stop the engine and remove the 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.
- ▲ 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.
- ▲ 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, a Bendix® DRM™ dryer reservoir module, or a Bendix® AD-9si™ air dryer, be sure to drain the purge reservoir.
- ▲ Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
- ▲ You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.
- ▲ Never exceed manufacturer's recommended pressures.
- ▲ 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.
- ▲ 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.
- ▲ 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.
- ▲ Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
- ▲ 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.
- ▲ The power **MUST** be temporarily disconnected from the radar sensor whenever any tests **USING A DYNAMOMETER** are conducted on a Bendix® Wingman® Advanced™-equipped vehicle.

This kit is intended for use when servicing a Bendix® AD-9®, AD-9® DLU, or AD-9si™ air dryer Heater and Thermostat. Note that not all components contained in this kit are used when servicing each air dryer. Identify the components needed for your application and discard the remaining items.

### VEHICLE PREPARATION

1. Park the vehicle on a level surface and prevent movement by means other than the brakes, such as chocking the wheels.
2. Drain ALL reservoirs to 0 psi and clean the exterior of the air dryer purge valve assembly and the wiring harness and connectors.
3. Go to the section that pertains to the air dryer type being serviced.

### BENDIX® AD-9® AND AD-9® DLU AIR DRYERS

#### DISASSEMBLY

Although the kit contains purge valve o-rings, it may not be necessary to remove the purge valve assembly from the air dryer to install the Heater and Thermostat kit. If removal of the purge valve assembly is not necessary, skip steps 2 through 5. *Refer to Figure 1 for the disassembly unless otherwise instructed.* Before removing any components, be sure to mark their orientation for ease of reassembly.

1. Disconnect the vehicle wiring harness connector that mates with the connector on the purge valve assembly. Make sure the connector seal is present on the wire harness. *Refer to Figure 1.*
2. If a silencer is installed, pull the silencer down away from the end cover to remove it.

- Remove the three 1/4" self-tapping screws that secure the purge valve assembly to the end cover and the three flat washers, if present. Note that Bendix® AD-9® air dryers with extended covers do not have flat washers on these screws.
- NOTE: In some cases a flat (non-extended) exhaust cover is used. This cover should be left intact while servicing the purge valve assembly. However, if an extended type exhaust cover is in use to accommodate the attachment of an exhaust hose or silencer, the exhaust cover must be carefully peeled off the purge valve housing.

USE A THIN FLAT BLADE TO PRY THE EXHAUST COVER OFF, TAKING CARE NOT TO DAMAGE THE POTTING MATERIAL (RTV SEALANT) OR GASKET UNDER THE COVER.

- If the seal is damaged during removal, repair with silicone sealant (Dow Corning® 736 or 732 RTV), or replace the extended cover assembly.
- Pull the purge valve assembly out of the end cover. Discard o-rings (1), (2) and (3). Note: O-rings (1) and/or (2) may be lodged in the end cover bores — be sure to remove these. Note: DLU-style purge valves do not have an o-ring (2) or an o-ring groove in the purge valve housing. Refer to Figure 3.
  - Remove and discard the two screws (4) that secure the Heater and Thermostat assembly (5) to the purge valve assembly.

### CAUTION

**DO NOT PULL THE HEATER & THERMOSTAT ASSEMBLY STRAIGHT OUT OF THE PURGE VALVE BODY! READ STEP 7 COMPLETELY BEFORE ATTEMPTING REMOVAL.**

- Study Figure 1 closely and note the "Y" shape of the assembly in its installed position in the purge valve housing. Refer to Figure 2 and, as illustrated, remove the Heater & Thermostat assembly by gently "rotating" the connector to the left (A)—until the thermostat clears the purge valve housing—then slide the heater element out, to the right and up (B).
- Compare the color of the removed Heater & Thermostat assembly (5) with the one contained in the kit. The color identifies the voltage and wattage of the heater. If the Heater & Thermostat assemblies are the same color, discard the old Heater & Thermostat assembly (5) along with its sealing ring (6). If they are not the same, then the correct kit must be acquired.

### CLEANING AND INSPECTION

- If the purge valve assembly was removed to replace the Heater and Thermostat, clean the exterior, paying particular attention to the o-ring grooves.
- Clean the Heater and Thermostat sealing surface on the purge valve housing.
- Inspect the interior and exterior of the housing for severe corrosion, pitting and cracks. Superficial corrosion and/or pitting on the exterior portion is acceptable.

- Make certain that all purge valve housing and end cover passages are open and free of obstructions.
- Inspect the purge valve housing bore and seats for excessive wear and scuffing.
- All o-rings removed should be discarded and replaced with new o-rings provided in this kit(s). Any component exhibiting a condition described in steps 1 to 5 should be replaced.

### ASSEMBLY

- The "square cut" sealing ring (6) should be pre-installed on the back side of the connector on the piloted surface (refer to Figure 2). If the sealing ring (6) has slipped off, re-lubricate it and install it on the connector. Make certain that this "square cut" sealing ring is NOT TWISTED anywhere along its circumference.
- To install the Heater and Thermostat assembly (5), first install the heater element into the heater element "hole" until the connector contacts the purge valve housing. Gently push the connector and thermostat to the left until the thermostat clears the cavity in the housing. Then, gently rotate the connector to the right while pushing the thermostat down into the cavity (until the thermostat is inside the cavity and the connector seats against the housing). Note: Make certain the sealing ring (6) is not pinched.
- While holding the connector against the purge valve housing, install the two screws (4) that secure the connector to the purge valve housing. Torque to 10–20 inch pounds. If the purge valve assembly WAS NOT removed from the air dryer, discard the three o-rings (1), (2) and (3) and skip to step 9, otherwise continue to step 4.

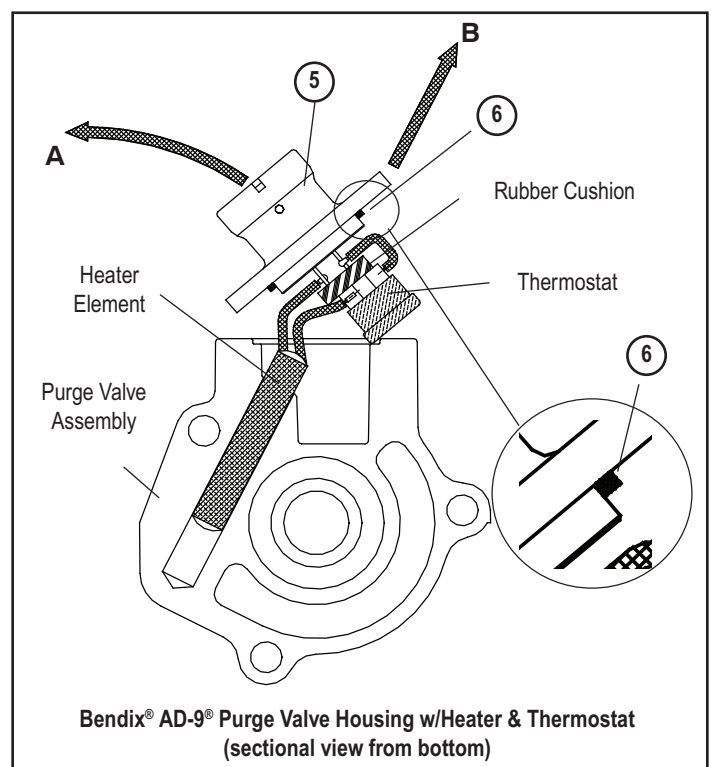


Figure 2 Heater & Thermostat Removal & Installation

4. Determine if the purge valve assembly is a standard or DLU-style. *Refer to Figure 3.*
5. Lubricate the o-rings (1), (2) and (3) and the respective grooves or support areas on the purge valve assembly. *Note: The DLU-style air dryer does not use o-ring (2).*
6. Install o-rings on the purge valve. **IF THE DLU-STYLE PURGE VALVE ASSEMBLY IS IN USE, DISCARD O-RING (2).** *Refer to Figure 3.*
7. Install the purge valve assembly, with o-rings, into the air dryer end cover using the relationship marks made during removal to align the parts.
8. Install the three 1/4" screws and flat washers (or extended exhaust cover) if present at removal. Start the screws by hand, then torque to 50-80 in-lbs. If a silencer was removed, reinstall it on the extended exhaust cover.
9. Test for vehicle power at the two pins of the vehicle wiring harness connector. The vehicle battery voltage should be detected with the ignition ON. If voltage is not detected, check for a "blown" fuse, or broken or pinched wiring.
10. Reconnect the vehicle wiring harness connector to the Heater and Thermostat assembly. Make certain the seal is present on the vehicle wiring harness. If dielectric grease (8) is not present in the mating connector, apply a small amount over each connector pin before plugging in the connector. Plug the wire harness connector into the Heater and Thermostat assembly connector until its lock tab snaps in place. *Refer to Figure 1.*
11. Go to the Operation And Leakage Tests outlined in this document.

3. Remove the Heater and Thermostat assembly (5) by pulling it straight out from the air dryer.
4. Compare the color of the Heater and Thermostat assembly (5) with the one contained in the kit. The color identifies the voltage and wattage of the heater. If the Heater and Thermostat assemblies are the same color, discard the old Heater and Thermostat assembly (5) along with its sealing ring (6). If they are not the same, then the correct kit must be acquired.

### CLEANING AND INSPECTION

1. Clean the Heater and Thermostat sealing surface on the air dryer body.
2. Inspect the interior and exterior of the air dryer body for severe corrosion, pitting and cracks. Superficial corrosion and/or pitting on the exterior portion is acceptable.

### INSTALLATION *(Refer to Figures 1 through 3.)*

1. The "square cut" sealing ring (6) should be pre-installed on the back side of the connector on the piloted surface. If the sealing ring (6) has slipped off, re-lubricate it with the lubricant (7) provided in this kit and install it on the connector. Make certain that this "square cut" sealing ring is NOT TWISTED anywhere along its circumference.
2. To install the Heater and Thermostat assembly (5), first align the heater element as shown in Figure 1. Gently insert the heater element into the heater element cavity in the air dryer until the connector seats against the housing. Make certain the sealing ring (6) is not pinched.
3. While holding the connector against the air dryer body, install the two screws (4) that secure the connector to the air dryer body. Torque to 20–30 in-lbs. Verify the connector is seated against the air dryer body.
4. Test for vehicle power at the two pins of the vehicle wiring harness connector. The vehicle battery voltage should be detected with the ignition ON. If voltage is not detected, check for a "blown" fuse, or broken or pinched wiring.

## BENDIX® AD-9si™ AIR DRYERS

### DISASSEMBLY

1. Disconnect the vehicle wiring harness connector that mates with the connector on the Heater and Thermostat assembly. Make sure the connector seal is present on the wire harness. *Refer to Figure 1.*
2. Remove and discard the two screws (4) that secure the Heater and Thermostat assembly (5) to the air dryer.

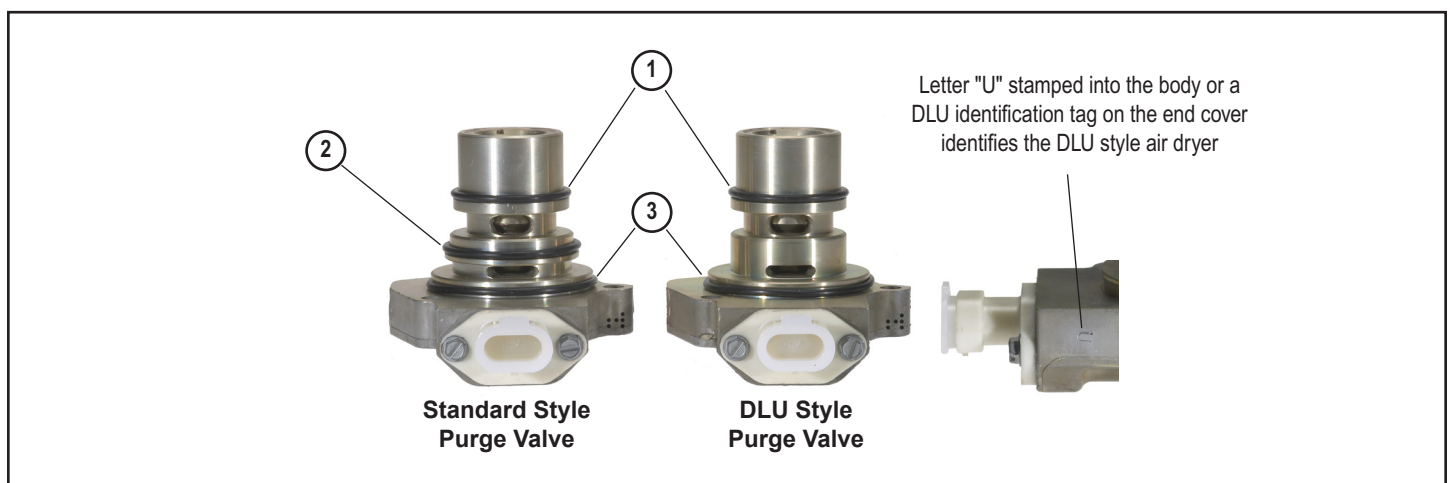


Figure 3 Identifying the Bendix® AD-9® and AD-9® DLU Purge Valve Assembly

5. Reconnect the vehicle wiring harness connector to the Heater and Thermostat assembly. Make certain the seal is present on the vehicle wiring harness. If dielectric grease (8) is not present in the mating connector, apply a small amount over each connector pin before plugging in the connector. Plug the wire harness connector into the Heater and Thermostat assembly connector until its lock tab snaps in place. *Refer to Figure 1.*
6. Perform the Operation And Leakage Tests outlined in this document.

## **OPERATION AND LEAKAGE TESTS (All Air Dryer Models)**

1. Close all reservoir drain cocks.
2. If the purge valve was removed from the air dryer, 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 one inch bubble in one second. Also, apply the soap solution around the purge valve housing where it meets the air dryer end cover. No leakage should be detected in this area. If the leakage exceeds the maximum specified, service the purge valve assembly.
3. Build up system pressure to governor cut-out and note that the air dryer purges with an audible escape of air. Apply and release 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 a purge cycle.



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