Installation Instructions

AD-SP AIR DRYER INSTALLATION

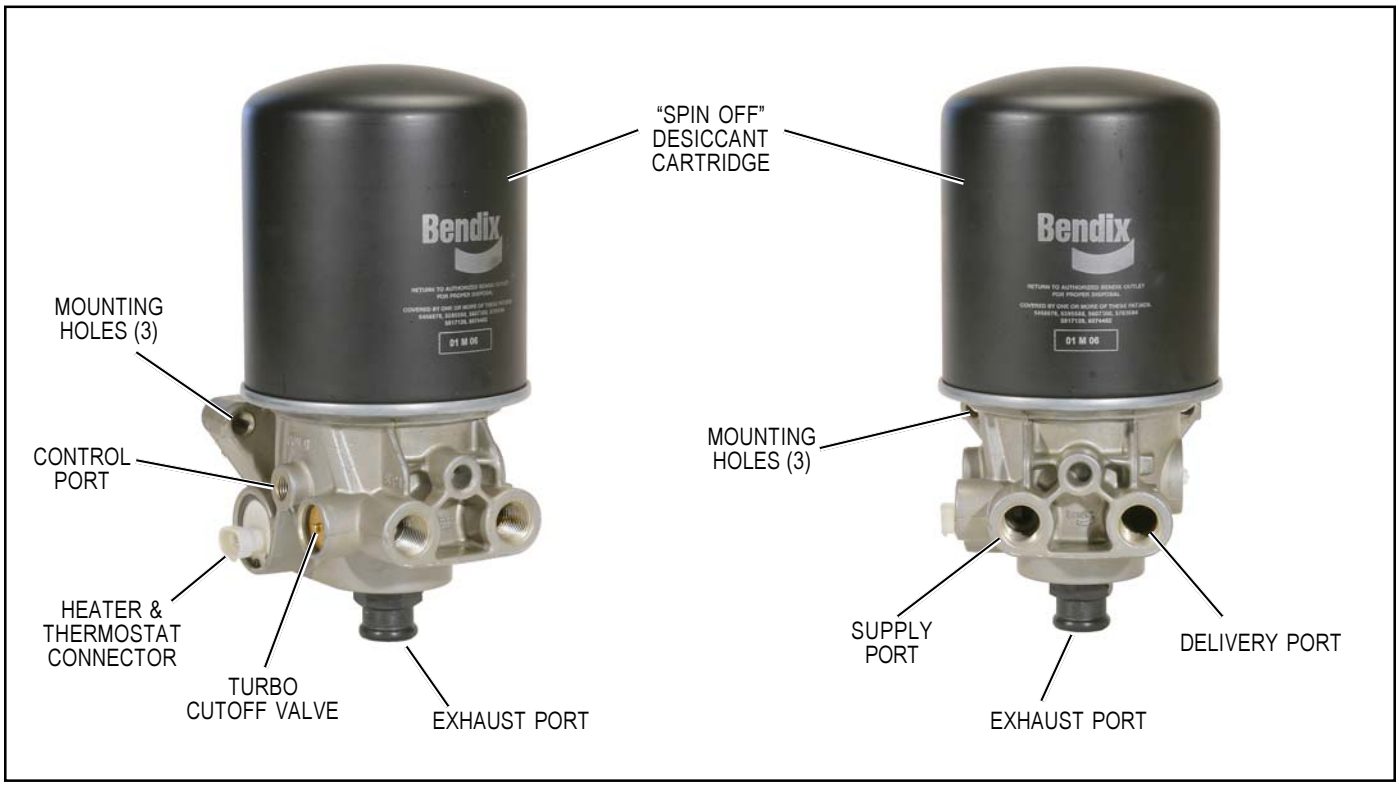

FIGURE 1 - ***AD-SP AIR DRYER***

DESCRIPTION

The function of the AD-SP **S**ystem **P**urge **A**ir **D**ryer is to collect and remove air system contaminants in solid, liquid and vapor form before they enter the brake system. It provides clean, dry air to the components of the brake system which increases the life of the system and reduces maintenance costs. Daily manual draining of the reservoirs is eliminated.

The system purge designation is used because the AD-SP uses a small portion of system air pressure from the supply and front axle service reservoirs to perform the purge or regenerative function. An SC-PR Single Check Protection valve or a valve that performs the same function is always used in conjunction with the AD-SP to protect the service system.

IMPORTANT! 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.**
2. **Stop the engine when working around the vehicle.**
3. **Drain the air pressure from all reservoirs before beginning ANY work on the vehicle.**
4. **Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that removes all electrical power from the vehicle.**
5. **When working in the engine compartment the engine should be shut off. 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.**
6. **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.**
7. **Never exceed recommended pressures and always wear safety glasses.**

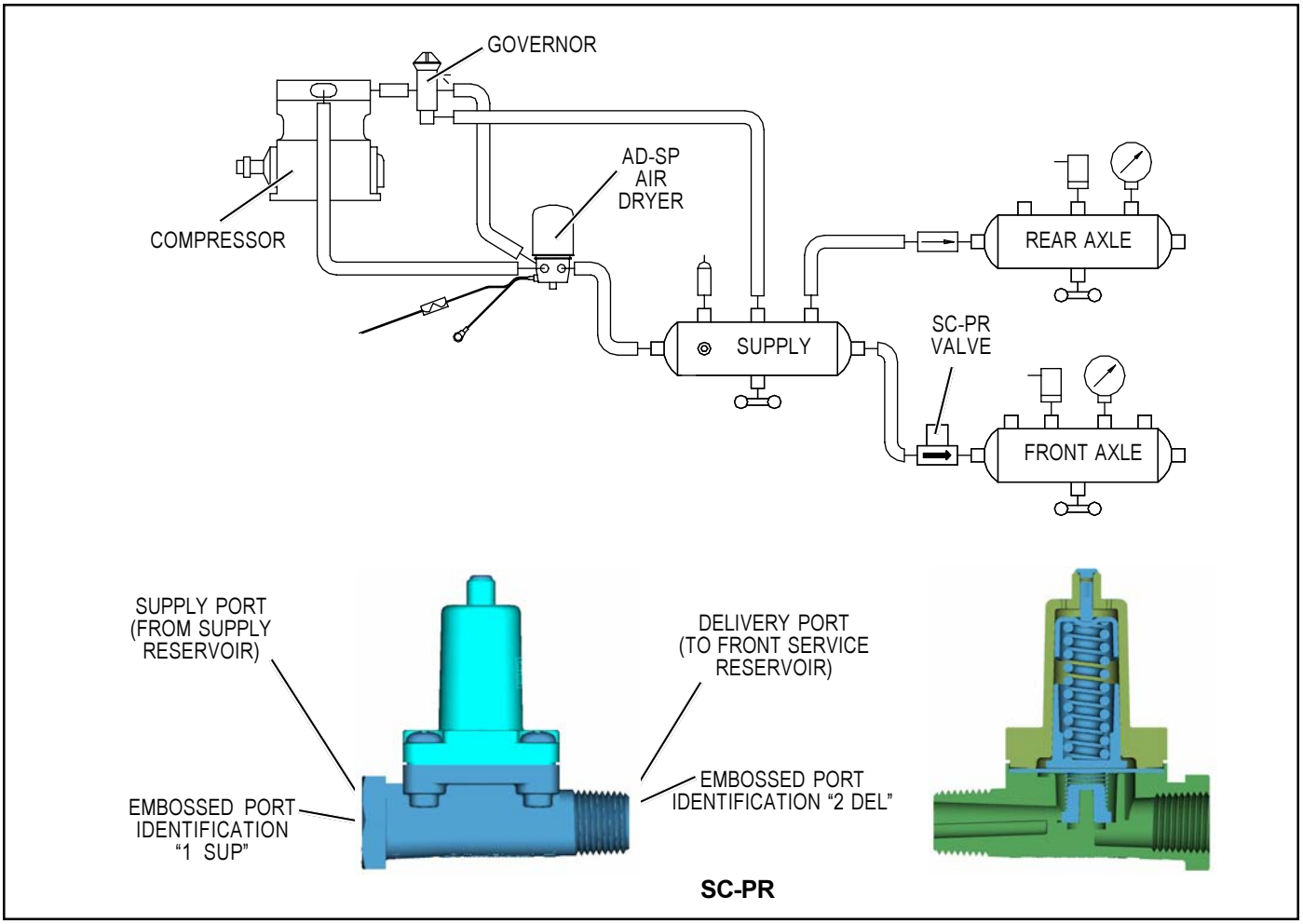

FIGURE 2 - ***AD-SP SYSTEM DRAWING WITH EXTERIOR AND CROSS-SECTION OF SC-PR VALVE.***

8. **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.**
9. **Use only genuine Bendix replacement parts, components, and kits. Replacement hardware, tubing, hose, fittings, etc. should be of equivalent size, type, and strength as original equipment and be designed specifically for such applications and systems.**
10. **Components with stripped threads or damaged parts should be replaced rather than repaired. Repairs requiring machining or welding should not be attempted unless specifically approved and stated by the vehicle or component manufacturer.**
11. **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**

AD-SP 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. (0 kPa). - **Caution: Compressor discharge line may still contain residual pressure.**
3. Identify, mark and disconnect the Supply, Delivery and Control port air lines. Disconnect the wiring harness connector from the heater and thermostat assembly connector on the body assembly.
4. If so equipped, disconnect, remove and save the Exhaust Line from the exhaust port of the air dryer.
5. Remove the three mounting bolts that secure the air dryer to the vehicle and remove the air dryer.

   Note: It is important to retain the three mounting bolts since their length is specific to mounting the air dryer without damage. If these bolts must be replaced, the **same length must be used**.
6. Remove the air dryer from its mounting bracket on the vehicle.

INSTALLATION

1. Install the assembled AD-SP air dryer onto the vehicle using the same three mounting bolts retained during removal. Tighten, then torque the three cap screws to 40 to 50 lb. ft.
2. Reconnect the three air lines to the proper ports on the body (identified during disassembly). If the fittings were removed from the body, use a thread sealant making certain none enters the body during re-installation.
3. Apply a dielectric grease on the heater and thermostat connector contacts (both the heater and thermostat and vehicle wiring harness connector halves).
4. After making certain the accordion seal is in place on the vehicle wire harness connector, connect the wire harness to the heater and thermostat assembly on the dryer by plugging it into the air dryer connector until its lock tab snaps ("clicks") into place.
5. If so equipped, reconnect the Exhaust Line to the exhaust port of the air dryer.
6. Check for the presence of an SC-PR valve at the front axle reservoir. If not equipped, install an SC-PR valve as shown in the schematic in figure 2.
7. Before placing vehicle back into service, perform the *Operation & Leakage Tests* stated elsewhere in this manual.

TESTING THE AD-SP

GENERAL OPERATIONAL STATEMENT

The AD-SP, system purge air dryer, operates differently than integral purge air dryers such as the AD-9. The "System Purge" designation is used because this air dryer uses a small portion of the supply and front axle (secondary) reservoir air pressure to purge or dry the desiccant material. During the Purge cycle, an approximately 8 - 14 psi drop in air pressure will be noted on the front axle (secondary) service reservoir dash gauge. The drop in pressure is the result of using a small amount of air from the reservoir to purge the AD-SP desiccant.

The SC-PR valve protects the air pressure in the front axle (secondary) service reservoir, in the event of a compressor, supply reservoir or rear axle reservoir failure, or malfunction of the AD-SP Purge control valving.

TESTING

Before placing the vehicle in service, perform the following tests:

1. Close all reservoir drain cocks.
2. Build up system pressure to governor cut-out while observing that both the front axle (secondary) and rear axle service reservoir dash gauges rise equally in pressure from 0 psi to governor cut-out. **Note:** When building up brake system pressure to governor cutout during testing, the engine/compressor should be run at approximately 1,800 rpm to simulate normal operation of the vehicle.

   If either gauge fails to display this condition, stop testing and check the installation of the SC-PR. Note that the AD-SP purges with an audible escape of air when governor cut-out pressure is reached.
3. Note that the front axle (secondary) service reservoir pressure drops approximately 8 - 14 psi and that the rear axle service reservoir loses no air pressure.
4. "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 a purge at the AD-SP exhaust.
5. Test the operation of the SC-PR valve. Build system air pressure to governor cut-out and turn the ignition off. Drain the supply reservoir and note that pressure in the front axle (secondary) service reservoir does not drop below 90 psi.
6. It is recommended that the following items be tested for leakage to assure that the AD-SP will not cycle excessively:
   (A) Total air system leakage (See Bendix publication BW-5057 "Air Brake Handbook").
   (B) Compressor unloader mechanism.
   (C) Governor.
   (D) Drain cock and safety valve in first (supply) reservoir.
   (E) All air connections leading to and from the first (supply) reservoir.

For more troubleshooting – see SD-08-2415.