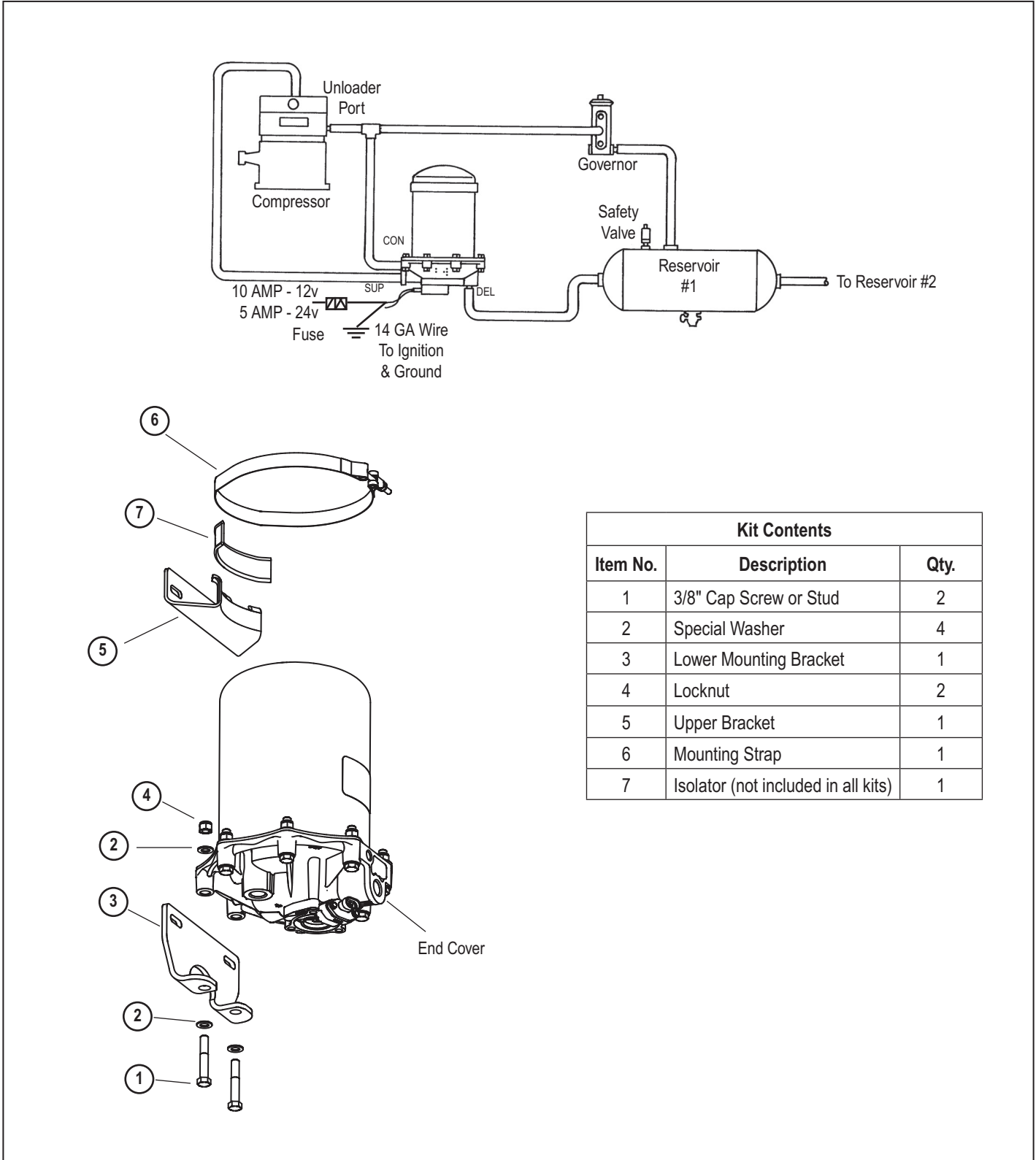




Installation Instructions

BENDIX® AD-9® AIR DRYER MOUNTING KIT



| Kit Contents | | |
|--------------|-------------------------------------|------|
| Item No. | Description | Qty. |
| 1 | 3/8" Cap Screw or Stud | 2 |
| 2 | Special Washer | 4 |
| 3 | Lower Mounting Bracket | 1 |
| 4 | Locknut | 2 |
| 5 | Upper Bracket | 1 |
| 6 | Mounting Strap | 1 |
| 7 | Isolator (not included in all kits) | 1 |

Figure 1 Bendix® AD-9® Air Dryer Schematic and Mounting Bracket Kit

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.

VEHICLE APPLICATION REQUIREMENTS

General

The basic application requirements presented here apply to a standard air dryer installation. The majority of vehicles in use today will meet these basic requirements however, some may not. Examples of vehicles that may not meet the requirements include bulk trailer unloading operations and other high air consumption/continuous flow systems. While the Bendix® AD-9® air dryer can be used on these vehicles, the standard installation procedure presented in this manual may require modification to assure proper operation and service life. Consult your local authorized Bendix® parts outlet or sales representative for additional information.

1. **Charge Cycle Time** – The AD-9 air dryer is designed to provide clean, dry air for the brake system. When a vehicle's air system is used to operate non-brake air accessories, it is necessary to determine that during normal, daily operation, the compressor should recover from governor "cut-in" to governor "cut-out" (usually 100 psi to 120 psi) in 90 seconds or less at engine RPMs commensurate with the vehicle vocation. If the recovery time consistently exceeds this limit, it may be necessary to "by-pass" the air accessory responsible for the high air usage. Consult your local authorized Bendix® parts outlet or sales representative for additional information.
2. **Purge Cycle Time** – During normal vehicle operation, the air compressor must remain unloaded for a MINIMUM OF 30 SECONDS FOR THE STANDARD AD-9 AIR DRYER, OR 40 SECONDS FOR THE EXTENDED PURGE MODEL. These minimum purge times are required to ensure complete regeneration of the desiccant material. If the purge time is occasionally shorter than the times specified, no permanent ill effect should be expected;

however, if the purge time is consistently less than the minimum, an accessory by-pass system must be installed.

3. **European Air Brake Systems** – Brake systems that incorporate compressors without integral unloading mechanisms, and/or utilize a compressor discharge line unloader valve, have special AD-9 air dryer installation requirements. Consult your local authorized Bendix parts outlet or sales representative for additional information.
4. **Air Compressor Size** – Although the AD-9 air dryer can be used in conjunction with larger compressors, it was designed primarily for units rated for up to 17 CFM. It is recommended that you contact an authorized Bendix parts outlet or Bendix marketing representative for assistance when using the AD-9 air dryer with a compressor which has a rated displacement exceeding 17 CFM.
5. **Holset® "E or QE" Type Air Compressors** – In order for the AD-9 air dryer to function properly when installed with the Holset Type "E or QE" compressor, several specialized Holset components are required. Consult your local authorized Holset parts outlet or sales representative for additional information.
6. **Use of Standard or Extended Purge Bendix® AD-9® Air Dryer** - Use the following guidelines;

| Total Vehicle Reservoir Volume | Requirement |
|--------------------------------|-----------------------------------------------------------------------------------|
| Less than 9,000 cu. in. | Standard Bendix AD-9 air dryer |
| 9,000 - 12,500 cu. in. | Extended Purge AD-9 air dryer |
| Greater than 12,500 cu. in. | Contact the Bendix Tech Team @ www.bendix.com |

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. (0 kPa).

LOCATING THE BENDIX® AD-9® AIR DRYER ON THE VEHICLE

1. The Bendix® AD-9® air dryer must be mounted vertically (purge exhaust toward road surface) outside the engine compartment, in an area of air flow while the vehicle is in motion. The AD-9 air dryer must not be exposed to direct wheel splash (locating it behind an axle mud flap is acceptable).
2. Locate the AD-9 air dryer as close to the first (supply) reservoir as possible.
3. Do not locate the AD-9 air dryer near heat producing components such as the vehicle exhaust, and make certain that adequate clearance from moving components (i.e. drive shaft, suspension, pitman arm, etc.) is provided.
4. Locate the AD-9 air dryer on the vehicle so that there is a minimum of 11 inches (28 CM) clearance below the end cover to allow servicing. Alternatively, provide access to the bracket bolts so the unit may be removed for servicing.
5. When choosing the mounting location for the AD-9 air dryer, note the discharge line length requirements stated under the heading "CONNECTING THE AIR LINES" in this instruction sheet. **IMPORTANT NOTE:** Under normal operating conditions, the maximum inlet air temperature for the AD-9 air dryer is 160° Fahrenheit.

MOUNTING THE AD-9 AIR DRYER

1. To install the lower mounting bracket(3) on the AD-9 air dryer, it will be necessary to remove and discard two of the end cover bolts and lock nuts. To determine which end cover bolts to use to attach the lower mounting bracket(3), take into consideration the piping connections required to install the air dryer, using those that will best position the unit for ease of installation. Locate the lower mounting bracket(3) so that it cradles the end cover as shown in Figure 1.
2. Utilizing the two 2-3/8" long cap screws(1), lock nuts(4), and four special washers(2) provided. Attach the lower mounting bracket(3) to the end cover and torque to 270-385 in. lbs. Note: some kits may have one cap screw and one stud instead of the two cap screws(1).
3. Place the upper mounting bracket(5) and mounting strap(6) on the upper portion of the air dryer housing. Orient the mounting strap(6) so that it sits on the cylindrical surface and does not extend onto the domed top. If an isolator(7) is included in the kit, place it on the upper mounting bracket(5) between the bracket and the mounting strap. The slot spacing between the upper and lower bracket should be a minimum of 5.5 inches apart. A universal mounting plate (Pc. No. 113209) is available to facilitate the mounting of the AD-9 air dryer to the vehicle. It can be obtained through an authorized Bendix parts outlet.

4. Mount the AD-9 air dryer using 3/8" bolts (grade 5 min.) and washers. Torque to 25 ft. lbs. (300 in. lbs.)
5. After positioning the mounting bracket(5) and mounting strap(6) assembly according to the installation requirements, secure the mounting strap(6) onto the shell by tightening its locknut to 50-60 in. lbs.

CONNECTING THE AIR LINES

Purge Control Line

1. Install a purge control air line (with a minimum inside diameter of 3/16 inches) between the AD-9 air dryer end cover control port and an unused unloader port on the governor. The control line must be plumbed direct to the governor and not in series with automatic drain valves, lubrication systems, etc.
2. The control line should slope downward to the end cover without forming potential water traps.

Discharge Line

Where minimum diameters are specified, larger line diameters generally improve performance and life and reduce inlet temperatures, particularly in severe applications.

1. The discharge line material should be wire braided "Teflon" hose, copper tubing, or a combination of both.
2. The discharge line should slope downward from the compressor discharge port to the AD-9 air dryer supply port without forming water traps, kinks or restrictions. Cross-overs from one side of the frame rail to the other, if required, should occur as close as possible to the compressor.
3. Fitting extensions must not be installed at the AD-9 air dryer supply port.
4. Discharge line lengths and inside diameter requirements are dependant on the vehicle application. The line size and length is established by the vehicle manufacturer and should not be altered without the vehicle manufacturers approval. As a reference, the line length from the compressor to the air dryer should be less than 16 feet, and the minimum line sizes should be as follows:

To guard against freeze-ups in Low Compressor Duty Cycle applications, the discharge line can be insulated if it is greater than 9 feet in length. The line can only be insulated back to 9 feet and a maximum of 3 feet. For example, if the line is 10 feet, insulate the fitting and the last one foot of the line. If the line is 15 feet, insulate the fitting and the last 3 feet of the line.

| Minimum Length | Minimum I.D. | Application |
|----------------|--------------|--------------------------------------------------|
| 6 ft. | 1/2 in. | Low Compressor Duty Cycle Applications (0-20%) |
| 10 ft. | 5/8 in. | High Compressor Duty Cycle Applications (20-40%) |

Exhaust Line

1. If it is necessary to direct air dryer discharge contaminates away from vehicle components, it will be necessary to purchase a special exhaust cover (included in kit piece no. 5003838) for the Bendix® AD-9® air dryer. A one (1) inch (25.4 mm) I.D. (inside diameter) hose can be clamped on the special AD-9 air dryer exhaust cover.

WIRING THE HEATER/THERMOSTAT

1. Determine the vehicle's electrical system voltage and make certain that the Bendix AD-9 air dryer to be installed contains the same voltage heater. Use the AD-9 air dryer part number—or Heater & Thermostat connector color to confirm the proper voltage and wattage.

| Heater & Thermostat Identification | |
|-----------------------------------------------|--------------------|
| Connector Color | Volts-Watts |
| White | 12v-75w |
| Gray | 24v-75w |
| Yellow | 24v-100w |

2. A two lead, 12 inch, wire harness with attached weather resistant connector is supplied with all retrofit and replacement AD-9 air dryers. Connect one of the two leads of the wire harness to the engine kill or ignition switch. The remaining lead of the wire harness must be connected to a good vehicle ground (not to the air dryer or its mounting bracket). A fuse should be installed in the power carrying wire; install a 10 amp fuse for a 12 volt heater, and a 5 amp fuse for a 24 volt heater.
3. Use 14 GA wire if it is necessary to lengthen the wire harness provided with the AD-9 air dryer. Make certain all wire splices are waterproofed.
4. Tie wrap or support all electrical wire leading to the AD-9 air dryer at 6 - 8 inch intervals. Note: Wires should have sufficient slack and not be completely taught.

TESTING THE AD-9 AIR DRYER

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 and note that the AD-9 air dryer purges with an audible escape of air.
3. "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-9 air dryer exhaust.
4. It is recommended that the following items be tested for leakage to assure that the AD-9 air dryer will not cycle excessively:
 - (A) Total air system leakage (See Bendix publication BW5057 "Air Brake Handbook");
 - (B) Compressor unloader mechanism;
 - (C) Governor;
 - (D) Drain cock and safety valve in first (supply) reservoir; and
 - (E) All air connections leading to and from the first (supply) reservoir.

