



Installation Instructions

DROP-IN AIR DRYER MAKEUP LINE, CHECK VALVE & ADAPTER REPLACEMENT

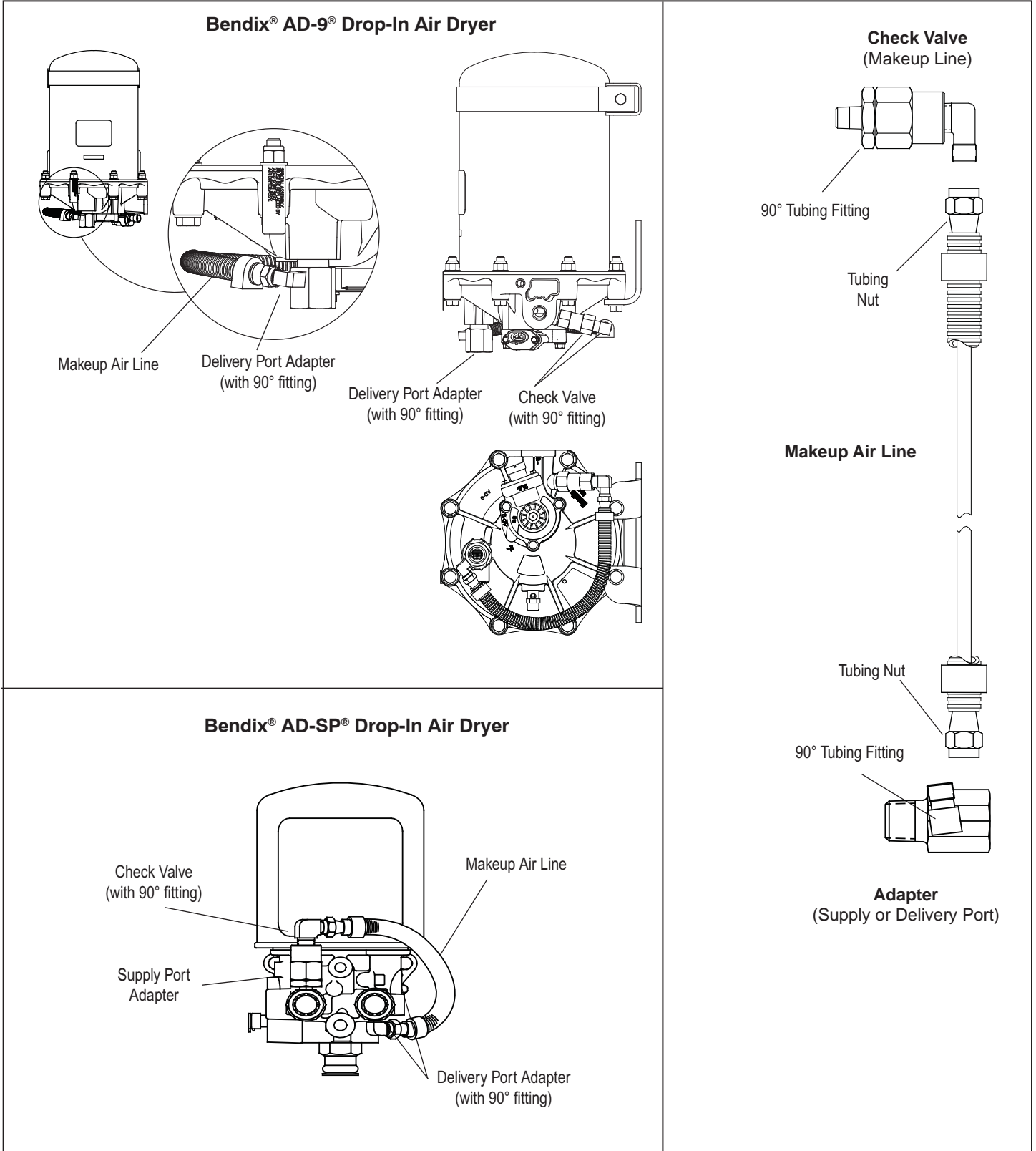


Figure 1 Makeup Line Components on Drop-In Air Dryer

DESCRIPTION

The following instructions describe the removal and installation procedures necessary to replace components on the Bendix® AD-9® and AD-SP® Drop-In (DI) air dryers. The parts are common to both Drop-In air dryer models.

PREPARATION

General

The replacement of components in the makeup line of a drop-in air dryer model does not generally require removal of the air dryer from the vehicle however, if removal is necessary adhere to the following caution.

Caution: While performing service on the 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.

1. Clean the exterior of the air dryer end cover or body.
2. Determine which part or parts are being replaced and on which air dryer model. See figure 1.
3. Remove the delivery line from the air dryer delivery port if the delivery port adapter and fitting will be replaced (both AD-9 & AD-SP air dryers).
4. Remove the supply line from the air dryer supply port if the supply port adapter will be replaced on the AD-SP DI air dryer.

REPLACING THE MAKEUP LINE

1. Disconnect the makeup line from the 90° fitting at the check valve and delivery port adapters. Remove and discard the makeup line. Important: Prevent the 90° tubing fittings from turning during this operation.

2. Perform the steps under the Cleaning & Inspection heading.
3. Install the replacement makeup line and tighten the tubing nuts at both ends while preventing the 90° fittings from turning. Tighten the nuts sufficiently to prevent air leakage, but do not over tighten.
4. Before placing vehicle back into service, perform the steps under the TESTING heading.

REPLACING THE CHECK VALVE & FITTING

1. Before beginning, note the approximate angle of the fitting in the check valve and the general routing of the makeup line on the air dryer. It is important that the same approximate routing be duplicated during re-installation.
2. Disconnect the makeup line from the 90° fitting on the check valve. Remove and discard the check valve and 90° fitting from the end cover of the AD-9 air dryer or the supply port adapter of the AD-SP air dryer.
3. Perform the steps under the CLEANING AND INSPECTION heading.
4. Install the replacement check valve and fitting taking care that the replacement is in the same approximate position as the original.
5. Install the replacement makeup line and tighten the tubing nuts at both ends while preventing the 90° fittings from turning. Tighten the nuts sufficiently to prevent air leakage, but do not over tighten.
6. Before placing vehicle back into service, perform the steps under the TESTING heading.

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.

REPLACING THE ADAPTER (Supply & Delivery Port)

1. Before beginning, note the approximate angle of the fitting or check valve attached to the port adapter and the general routing of the makeup line on the air dryer. It is important that the same approximate routing is duplicated during re-installation.
2. Disconnect the makeup line from the 90° fitting on the port adapter itself or the check valve. Depending upon where the port adapter is located, follow either A or B below.
 - A. If the adapter is located at the delivery port (either Bendix® AD-9® or AD-SP® air dryers), remove and discard the adapter along with the attached 90° fitting.
 - B. If the adapter is located at the supply port (AD-SP air dryer only), remove the check valve from the adapter and retain it for reuse, then remove the adapter from the air dryer and discard.
3. Perform the steps under the CLEANING & INSPECTION heading.
4. Install the adapter in the air dryer and – depending upon where the port adapter is located – follow either A or B below.
 - A. If the adapter is located at the delivery port (either AD-9 or AD-SP air dryers), install the adapter along with the attached 90° fitting. Take care that the replacement adapter and attached fitting is in the same approximate position as the original.
 - B. If the adapter is located at the supply port (AD-SP air dryer only), first remove the 90° tubing fitting that is installed in the replacement adapter. Then install the adapter in the air dryer supply port, taking care that the replacement is in the same approximate position as the original. Install the check valve retained in step 2B.
5. Install the replacement makeup line and tighten the tubing nuts at both ends while preventing the 90° fittings from turning. Tighten the nuts sufficiently to prevent air leakage, but do not over tighten.
6. Before placing the vehicle back into service, perform the steps under the TESTING heading.

CLEANING AND INSPECTION

1. Using a clean rag, wipe any ports clean. Clean any thread sealant from the pipe threads in ports and on fittings.
2. Inspect for physical damage to related parts (cracked ports in the end cover or body etc.) and replace as necessary.

TESTING

1. Check that all reservoir drain cocks are closed.
2. Test by building the air system to governor cut-out and observing a test air gauge installed in the Supply ("wet") reservoir. Check all lines and fittings leading to and from the air dryer for leakage and integrity. Note the pressure on the air gauge installed in the Supply ("wet") reservoir after governor cut-out pressure is reached. A rapid loss of pressure could indicate a failure in the Holset (Cummins) compressor unloading mechanism, or excessive leakage in the air brake system. This can be confirmed by building system pressure to governor cut-out, shutting off the engine, and noting pressure on the vehicle dash gauges. If the same pressure loss is noted on the dash gauges, then brake system leakage should be checked. If little or no loss of pressure is noted on the dash gauges, the compressor should be tested for proper operation.
3. Build up system pressure to governor cut-out and note that the 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 a purge.