When The Cold Weather Hits, There's Help

As the cold weather approaches, fleets and owner operators will begin to winterize their vehicles, especially against air system freeze-ups. Here are some basic tips for optimum cold weather operation from the brake system experts at Bendix Commercial Vehicle Systems LLC.

❄ Engine Idle

Avoid idling the engine for extended periods of time. Winter idling is a major factor in compressor discharge line freeze-ups, which account for a significant number of compressor failures annually.

The discharge line recommendations – listed in the section below – are important for all vehicles, especially when extended engine idling cannot be avoided.

❄ Discharge Lines

The discharge line should slope downward from the compressor discharge port without forming water traps, kinks, or restrictions. If it crosses over from one side of the frame rail to the other, it should occur as close to the compressor as possible. Fitting extensions must be avoided. Recommended discharge line lengths and inside diameters are application dependent as follows:

Typical P&D, School Bus & Line Haul –
The maximum discharge line length is 16 feet+.

Length	I.D. Minimum	Other Requirements
6.0 – 9.5 ft	½ inch	None
9.5 - 12 ft	½ inch	The last three (3) feet, including the fitting at the end of the discharge line, must be insulated with ½ inch thick closed cell polyethylene pipe insulation
12 – 16 ft	5/8 inch	

Severe Service / High Duty Cycle Vehicles (City Transit Coaches, Refuse Haulers, etc…) –
The maximum discharge line length is also 16 feet+.

Length	I.D. Minimum	Other Requirements
10 – 16 ft	½ inch	None

+ If the discharge line length must be less than six (6) feet or greater than 16 feet in these applications, contact your local Bendix Account Manager, or the Bendix Tech Team at 1-800-AIR-BRAKE for additional information and assistance.

❄ System Leakage

Check the air brake system for excessive leakage using the Bendix Dual Circuit Brake System Troubleshooting guide (BW1396). Excessive system leakage causes the compressor to pump more air and moisture into the brake system.

❄ Reservoir Draining
(System without an air dryer)

Routine reservoir draining is the most basic step (although not completely effective) in reducing the possibility of freeze-up. All reservoirs in a brake system can accumulate water and other contaminants, which must be drained. The best practice is to drain all reservoirs daily.

After turning off the engine, drain all of the air from each reservoir *(Alternate Method - Open the drain cocks on all reservoirs and leave them open over night to assure all contamination is drained. See Bendix SD-04-400)*. If Bendix® DV-2™ automatic drain valves are installed, check their operation before the weather turns cold *(see our SD-03-2501)*. While the need for daily reservoir draining is eliminated through the use of an automatic drain valve, periodic manual draining is still required.

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❄ Alcohol Evaporator or Injector Systems

Using an alcohol evaporator or injector in conjunction with an air dryer is not recommended. The air dryer will remove most of the alcohol that is added at the compressor inlet and may reduce the air capacity of the dryer.

Installing an alcohol injector downstream of the dryer can cause excessive back pressure in the compressor discharge line. In some cases, this can lead to pressure relief at the compressor safety valve. If air drying capacity is not adequate, then the air dryer is undersized for the application. Please refer to the Bendix® Air Dryer Application Guideline (BW2600) for proper recommended sizing. Also see Technical Bulletin TCH-008-042 *(Alcohol in the Air Brake System)* for a more detailed explanation into the affects of alcohol.

To address concerns with contaminants in trailer air brake systems, the Bendix® Cyclone DuraDrain™ trailer water separator and the Bendix® System-Guard® trailer air dryer are available. Please refer to our SD-08-2402 and SD-08-2416 respectively for details.

❄ Air Dryers

Proper air dryer operation is critical to helping your system run clean and dry. Ensure air brake system leakage is within the limits stated by checking the Bendix Dual Circuit Brake System Troubleshooting guide (BW1396). Refer to the applicable Bendix Service Data Sheet to confirm the correct operation and function of your vehicle's air dryer.

Air Dryer	Bendix Service Data Sheet
Bendix® AD-2® Air Dryer	SD-08-2403
Bendix® AD-4® Air Dryer	SD-08-2407
Bendix® AD-9® Air Dryer	SD-08-2412
Bendix® AD-IP® Air Dryer	SD-08-2414
Bendix® AD-IS® Air Dryer	SD-08-2418
Bendix® AD-SP® Air Dryer	SD-08-2415
Bendix® Dryer Reservoir Module	SD-98-9808

❄ Thawing Frozen Air Lines

Here are some simple Do's and Don'ts for prevention and thawing:

❄ Do

- Check the air dryer for proper operation, changing the desiccant cartridge and purge valve as necessary.
- Thaw out frozen air lines and valves by placing the vehicle in a warmed building. This is the only method for thawing that will not cause damage to the air system or its components.
- Use dummy hose couplings on the tractor and trailer.
- Check for drooping air lines, which could form water traps.

❄ Don't

- Do not apply an open flame to air lines or valves. ***This practice is unsafe and can result in a vehicle fire.*** It can also damage the valve and melt the air lines.
- Do not pour fluids into air lines or glad hands. Certain fluids can cause immediate and severe damage to rubber components. Even methanol, which is used in Alcohol Evaporators and Injectors, should not be poured into air lines. Fluids poured into the system wash lubricants out of valves, collect in brake chambers and valves, and can cause malfunction. Loss of lubricant can affect valve operating characteristics, accelerate wear and cause premature replacement.
- Do not immediately park a vehicle outside after thawing its air system indoors. Condensation will form in the system and re-freeze. Place the vehicle in operation when it is removed to the outdoors.

❄ Supporting Air and Electrical Lines

Ensure tie wraps are replaced and support brackets are re-attached, if removed. These items prevent the weight of ice and snow accumulations from breaking or disconnecting air lines and wires.

For more details on proper cold weather operation for your vehicles, talk to your Bendix Account Manager, call the Bendix Tech Team at 1-800-AIR-BRAKE, or visit www.bendix.com.

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