VIKING® **DESIGN DATA** **AIR SUPPLIES FOR RELEASE SYSTEMS**

V. AIR SUPPLIES FOR RELEASE SYSTEMS

A. GENERAL

A Pneumatic Deluge Release System requires a compressed air or gas supply. The pneumatic system supporting the Deluge Pneumatic Release System must be maintained dry and free of condensation. Moisture in the pneumatic system may cause ice to form in the releases or release piping when exposed to freezing temperatures. Moisture will also increase the deterioration of the galvanized piping normally used in the release system.

Note

If a common air/gas supply is used for multiple release systems, a separate air maintenance device and an air pressure gauge are required for each release system. This will allow release system isolation for maintenance and individual operation. See Figure 5.

The time necessary to pressurize 1000 feet (304,8m) of release line to 10 psi (0,689 bars), minimum operating pressure, with 20 psi (1,38 bars) of supply pressure and the appropriate orifice is approximately as follows:

Minutes	Pipe Size	Orifice Size
3	½" (15 mm)	1/32" (0,79 mm)

The deluge valve control equipment will open the deluge valve when release-line pressure is reduced to the trip point. In practice, 30 psi (2,07 bars) air pressure is used when water pressures are 175 psi or less and 50 psi (3,45 bars) air pressure is used when water pressures are above 175 psi and is commonly used with a low air-pressure alarm at 15 psi (1,03 bars). Lower pressures should not be used unless necessary for higher speed.

An air maintenance device is required when the pneumatic release line is supplied by an air compressor. The air maintenance device will automatically maintain the required air pressure on the system.

For details on each device making up the air supply system, see the Deluge System Equipment section of the Engineering and Design Data Book.

See the schematics in Figures 1 through 5 showing suggested arrangements of air-supply equipment.

B. SPECIAL TECHNIQUES FOR VIKING C-1 THERMOSTATIC RELEASE SYSTEMS EMPLOYING A BOTTLED GAS SUPPLY

Special attention must be given to release systems employing a bottled-gas supply. Because only a limited amount of gas is available, small leaks which normally would go unnoticed in systems being supplied by mechanical compressors, can become critical to the system's overall performance. If the system is to function at temperatures as low as -40° F. (-40° C.), and, if bottled nitrogen is the gas supply for the release system, the system is particularly susceptible to leakage, and special care should be taken to ensure against leaks throughout the entire system.

Some techniques which can be employed to ensure against system leakage are:

a. The use of cast iron fittings since their use results in fewer leaks than the use of malleable fittings.
b. Internally clean all piping in the supply and release systems prior to assembly since dirt and small chips may lodge under the clapper of the releases and create small leaks. Particular care should be taken in the connection of the gas-supply tank to the system. During system assembly, all threads should be inspected for imperfections.
c. When the system is assembled, test for leaks by hydrostatically testing 200 psi (13,79 bars) for 2 hours and pneumatically test release line at 40 psi (2,76 bar) for 24 hours. Normal operating pressure of the system should be set at 30 or 50 psi (2, 07 bars to 3,45 bars). If there is leakage, subject the entire system to a soap-bubble test in an effort to locate the leaks. Repair any leaks. Leaks in the release system do not impair in any way the system's ability to react to a fire condition, however, they will consume excessive quantities of gas and make necessary frequent cylinder replacement. Failure to detect leaks in time will result in low release system pressure and the possible tripping of the system. A low air pressure alarm switch must be installed on the release line as a supervisory alarm.

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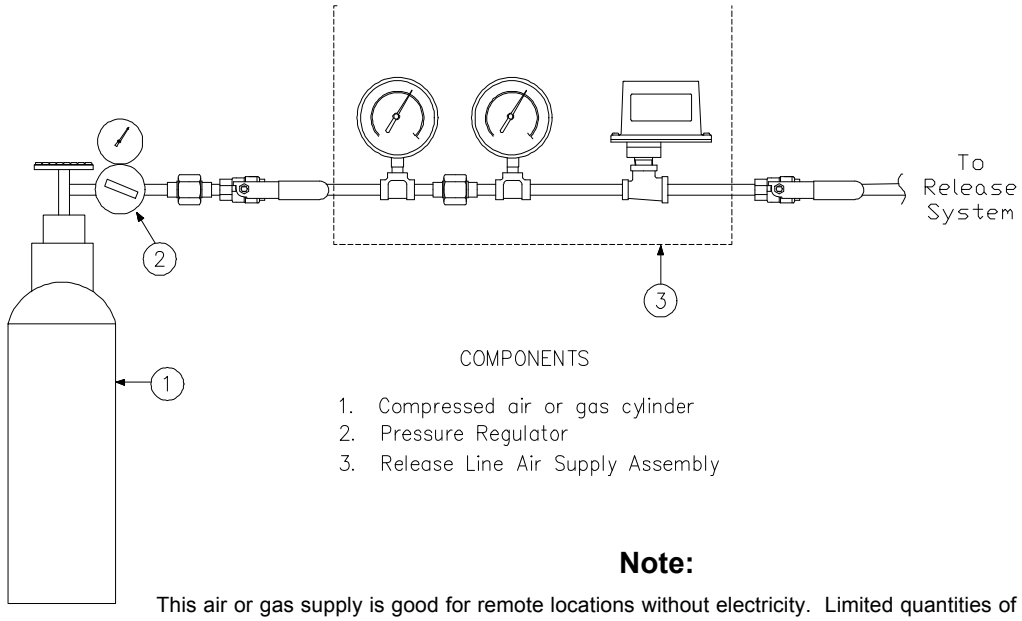
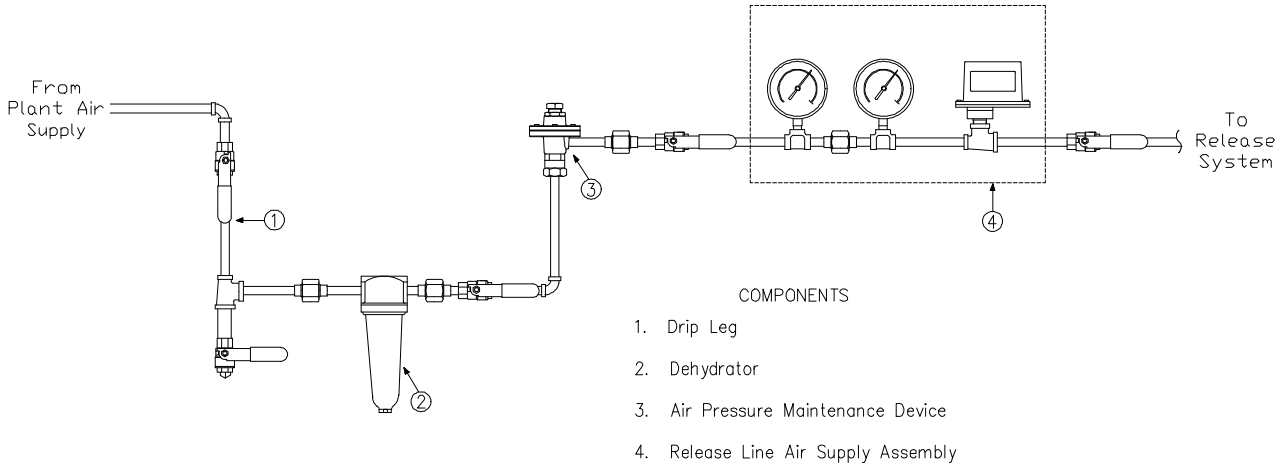


Note:

This air or gas supply is good for remote locations without electricity. Limited quantities of gas, however, may require frequent replacement of cylinders depending upon the "tightness" of the system. The release line air supply assembly contains a restriction, a low air pressure alarm switch and two gauges. Use a 1/32 inch (0,79 mm) orifice in the restriction for half-inch (15 mm) release lines. DO NOT USE CO_2 as a gas supply.

Figure 1 - Air or Gas Supply Controller Utilizing a Pressurized Tank



Note:

This air supply reduces air to system pressure. The release line air supply assembly contains a restriction, a low air pressure alarm switch and two gauges. Use a 1/32 inch (0,79 mm) orifice in the restriction for half-inch (15 mm) release lines.

Figure 2 - Air Supply Controller Utilizing Plant Air and an Air Maintenance Device

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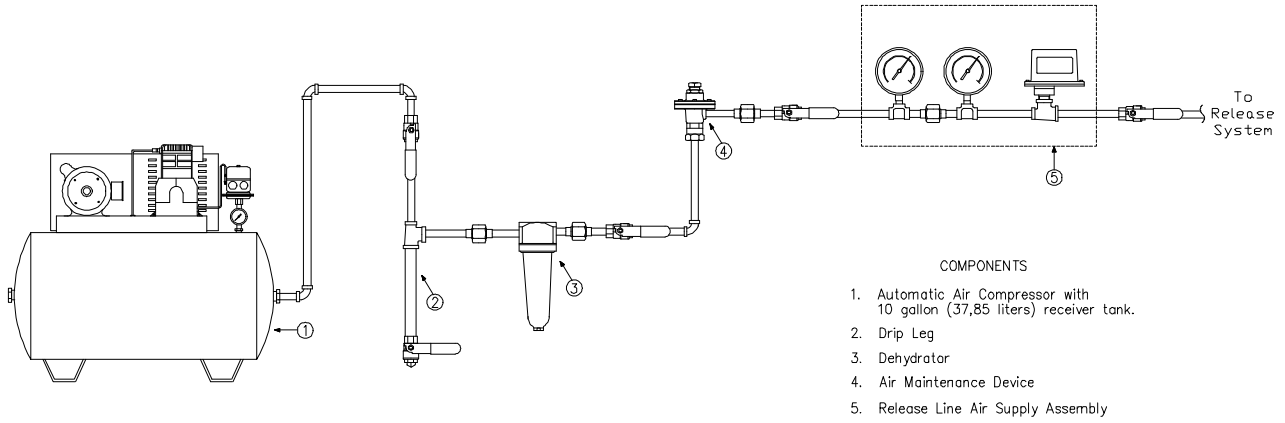
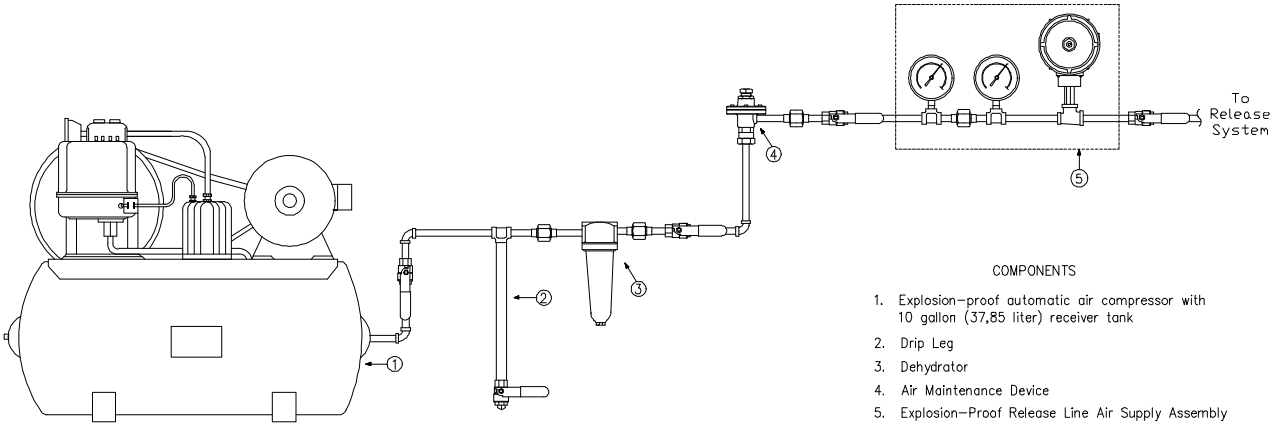


Note:

The release line air supply assembly contains a restriction, a low air pressure alarm switch and two gauges. Use a 1/32 inch (0,79 mm) orifice in the restriction for half-inch (15 mm) release lines.

Figure 3 - Air Supply Controller Utilizing a Self-contained Air Compressor Unit with Pressure Switch



Note:

The completely explosion=proof air compressor must be used where the atmosphere is explosive and no plant air is available. The explosion-proof release line air supply assembly contains a restriction, a low air pressure alarm switch and two gauges. Use a 1/32 inch (0,79 mm) orifice in the restriction for half-inch (15 mm) release lines.

Figure 4 - Air Supply Controller Utilizing an Explosion-Proof Compressor Unit with Pressure Switch

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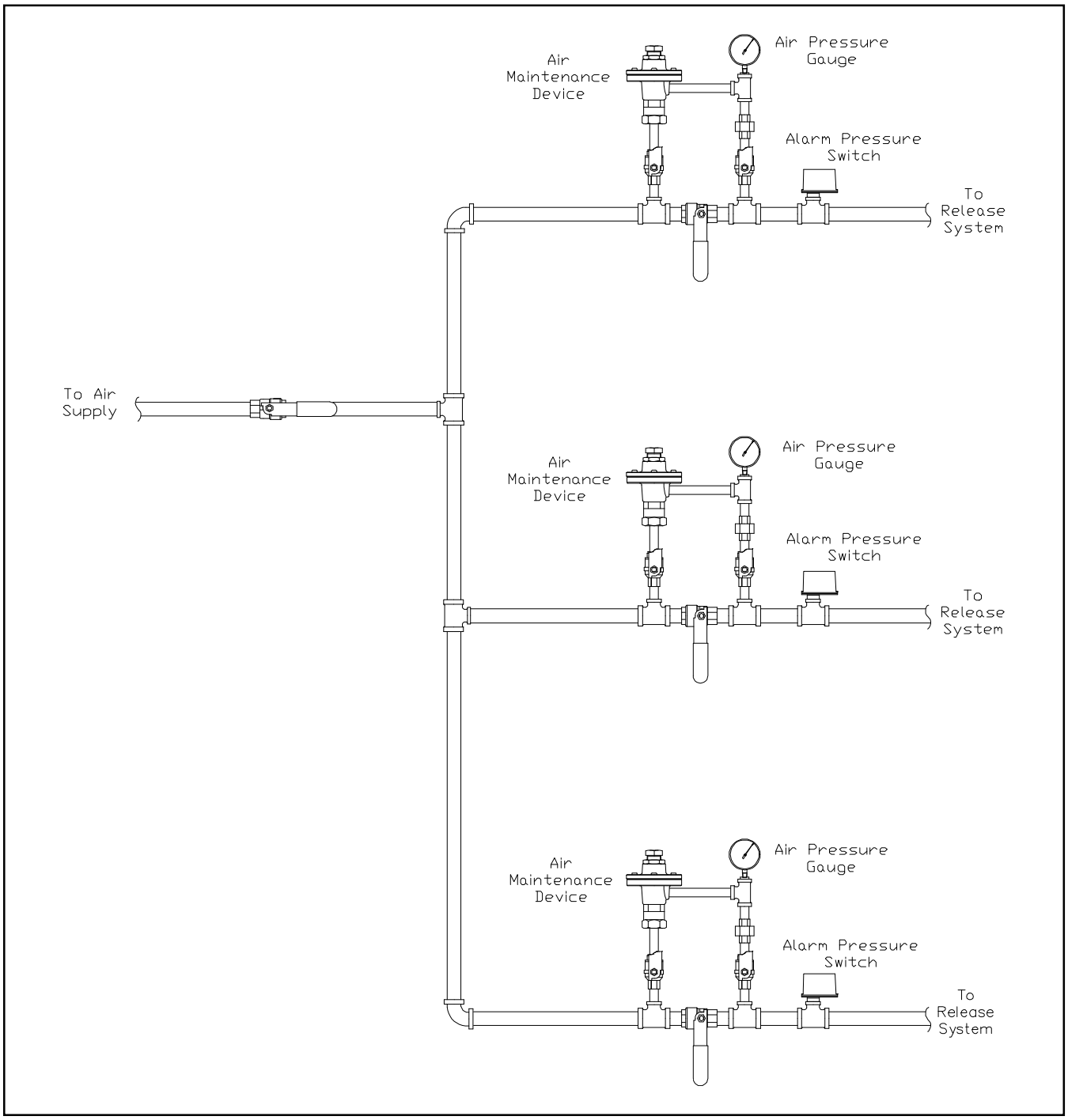

Figure 5 - Multiple Pneumatic Release Systems supplied from a common source

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