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# ***THE GAMGRAM***

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**GAMGRAM 62**

**REFUELER VEHICLE MOUNTED  
COMPRESSED AIR SYSTEMS**

**MARCH 2011**

A typical truck air system starts with a compressor. Most air compressors large enough to handle all the loads of a large refueler truck or powered hydrant cart (including brakes and fuel air systems) are water cooled via the engine coolant and use the engine oil and the engine's own air filter. Clean coolant, clean oil and clean air are essential to the life of the air compressor. It is critically important to keep the air and oil filters clean to maintain proper life of all components, and the air compressor is no exception.

Compressed air usually drives two systems on an aircraft refueler vehicle: the air brake system and the air systems related to the refueling operation. These two systems should be separate from one another.

Compressed air leaving the air compressor is normally run to a remote, separate air reservoir tank to operate the refueling system, to provide air to pressure controls, deadman controls, interlocks, pneumatic valves, air powered reels, internal valves, vents and so forth.

It is best to run all refueling equipment air through a filter/lubricator. Particles (dirt) is removed and lubricant (and air dry chemical) can be added to protect moving parts in the air system from excessive wear as well as water and ice at low temperatures.

Pneumatic systems on trucks have been criticized for being susceptible to water problems for as long as trucks have had air systems. The problems include corrosion/micro-organism problems, and freezing.

There are two reasons for air problems in truck systems, temperature change and the fact that when you compress a gas, it cannot hold as much water - water condenses out at pressure. For example air at 150 psi will hold much less water in solution as air before compression.

We cannot change either of these facts, but there are solutions:

- 1. Air Dryers** - These devices are added to the system to remove water. They are expensive, but many people have seen great improvement in their pneumatic systems with air dryers installed. They are usually a combination of a heater and a desiccant, the long term cost of replacement cartridges can be high. They have an automatic drain to release accumulated water.
- 2. High/Low Air Tanks.** This is as described. Use two air tanks, the first one mounted lower than the second one. By feeding compressed air into the lower tank, much of the water is condensed into the lower tank, and does not reach the outlet at the top of the upper tank.

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**3. Air-Dry.** A chemical often called “alcohol” (or Air-Dry) but it is not “just alcohol” . **Isopropyl alcohol** will attack rubber seals, **Air-Dry is a methyl alcohol, with special lubricants added - it prevents** water from freezing and also lubricates seals and moving components for long life.

**4. Automatic Water Drain Valves.** These “Spitter” valves automatically vent the drains on the bottom of the air tanks periodically to eliminated accumulated water.

**5. Manual Drain Valves.** These are usually cable operated valves for periodically draining water from air tank bottoms manually.

So what is the best solution? This depends on your climate and your people. In cold weather, when humidity can increase and decrease as the temperature changes, you will have more serious freezing problems. In a dry desert climate, you may have micro-organisms and lubrication problems, causing premature wear in air operated items.

The fact is that if all you do is to manually drain the tanks every day, you will have few freeze-up problems in cold weather, and few other problems in warm weather. Adding Air-Dry is a very good additional step to help protect the pneumatic equipment and provide long life. An “alcohol inducer” is usually used.

Reality - if we can agree that people tend to forget to do maintenance, and we can further agree that a few dollars wisely spent can save many more dollars later, lets suggest a reliable solution:

**DO ALL OF THE ABOVE.**