

Preventing pneumatic component failure in the meat processing industry

Many pneumatic component failures can be traced back to the source of compressed air. For reliable operation and long tool life, the components of process equipment require clean, moisture free air at the proper pressure and flow rate.

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How do you protect compressed air processing equipment, such as air driven knives, saws and deboners, that are used in meat and poultry processing plants.

Pneumatic tool and airline protection is easy, use an NSF H1 food grade airline oil, designed with air line and pneumatic tools in mind, not hydraulics. A properly formulated, versatile, colourless ISO VG 22 airline lubricant maximises air tool life while optimising pneumatic system performance.

First and foremost, it is very important to install and take care of an FRL (Filter, Regulator, Lubricator), available in modular or conventional mode.

There are different sizes, styles and flow-rates available. You can assemble and plumb the three components, or install a pre-designed set up.

How does an FRL work?

An FRL is a device that conditions air for use in pneumatic systems.

Let's start with the filter (F) which doubles as a water separator and filter. If the compressed air has not been de-hydrated, a considerable amount of water will be collected in the filter.

The filter will hold back most of the physical contaminants. The standard filter is rated at five microns.

As the air enters the filter with great velocity there is a centrifugal air rotation created throwing the water to the outside of the filter bowl where it runs downward

below a baffle collecting at the bottom of the bowl. Many times during plant surveys I have seen discoloured filter bowls full of rusty water and sludge from the lack of maintenance beyond the compressor or down line and/or from using a poor quality airline lubricant.

One very noticeable clue is the discolouration of the filter bowl, usually an indication of rusty/contaminated standing water.

This has always been a clue to me that little or no service has been performed and it is definitely an indication that a premium performance food grade air line lubricant is long overdue for this system. It is quite simple to drain the water out of the filter bowl on a regular basis. Filter bowls have a drain valve. All you have to do is turn the valve a quarter turn and the water drains out. In fact, there is even an automatic drain type available.

Sometimes the drain valve is or will become plugged up with a goeey slime. You will need a pipe cleaner and, time permitting, take it apart, clean the bowl and flush it out.

When walking through a processing plant and you see the FRL, take a moment to look at the filter bowl which is usually clear plastic and when you see brown rusty water in the bowl, point this out to the maintenance department and enquire as to the type of oil used for airline lubrication. There is a good chance you will hear 'ISO VG 32 hydraulic oil', which is a problem.

When we survey/audit industrial process plant equipment and the lubricants used, it is quite common to uncover the use of an ISO VG 32 hydraulic oil used as an airline lubricant. This is not acceptable.



When hydraulic oil, food grade or not, is being used as an airline lubricant, moisture is denser than the hydraulic oil thereby penetrating the hydraulic oil and attacking metal surfaces.

The moisture stays below the hydraulic oil film settling in and attacking the metal surface of the airlines, the moving components of pneumatic tools, all while inducing rust, gum, sludge, and power robbing deposits.

The regulator (R) is used to maintain/regulate constant air supply pressure to the pneumatic components of the processing equipment. There is usually a pressure gauge installed for at a glance monitoring.

The lubricator (L) which looks similar to the filter canister is the third piece of the FRL puzzle or the end of the line for the compressed, filtered and regulated air to mix with the proper amount of food grade airline lubricant.

The oil to air volume ratio can be adjusted on the lubricator preventing over or under lubrication of the pneumatic tools.

The outlet air, which is an atomised mixture of oil and air, not only lubricates the tools, it protects the air lines and all components of the air tool system.

Food processing and more

Bel-Ray No-Tox Food Grade Air Line Lubricant (62050) is not only used for meat and poultry processing equipment, it is also used in pharmaceutical, beverage, and other 'clean' industries.

Not limited to the clean industry, it is also recommended and used in the mining industry, general construction and manufacturing facilities around the world.

The product is more than the highest quality USP white mineral oil that meets NSF H1 and FDA requirements for materials that may have incidental contact with food as defined under Title 21 CFR, 178.3570.

It is Kosher and Pareve approved, as well as Halal certified. It is designed and formulated to maximise air tool life and optimise pneumatic system performance.

The advantages and benefits include:

- Excellent film strength.
- Anti-wear properties.
- The unique feature of emulsifying with water.
- Bacteriological protection.

Moisture absorption

The emulsifying feature of No-Tox Food Grade Air Line Lubricant aids in absorbing a significant amount of moisture present in all airlines. The moisture is generated by the expansion and cooling of compressed air. Thus, rust and oxidation, tool sticking and line clogging is eliminated optimising tool and system performance.

In fact, the moisture absorption properties (water in oil emulsion) means that instead of moisture interfacing with the oil creating acids that form rust, gum, and sludge, especially on tools not in use, the oil wets out due to its polarity with metal, protecting against the formation of acids that can form rust, gum and sludge, especially when air operated tools are not in use.

The superior bacteriological protection effectively inhibits the growth of certain bacteria, yeast and mould in the lubricant which can also be a contributing factor to the goeey slime found in the filter bowl/drain valve and infrequently used air tools and systems.

Bel-Ray No-Tox Food Grade Air Line Lubricant is at the head of the pack when it comes to the maintenance and care of FRLs, airline systems and the lubrication of pneumatic tools. ■