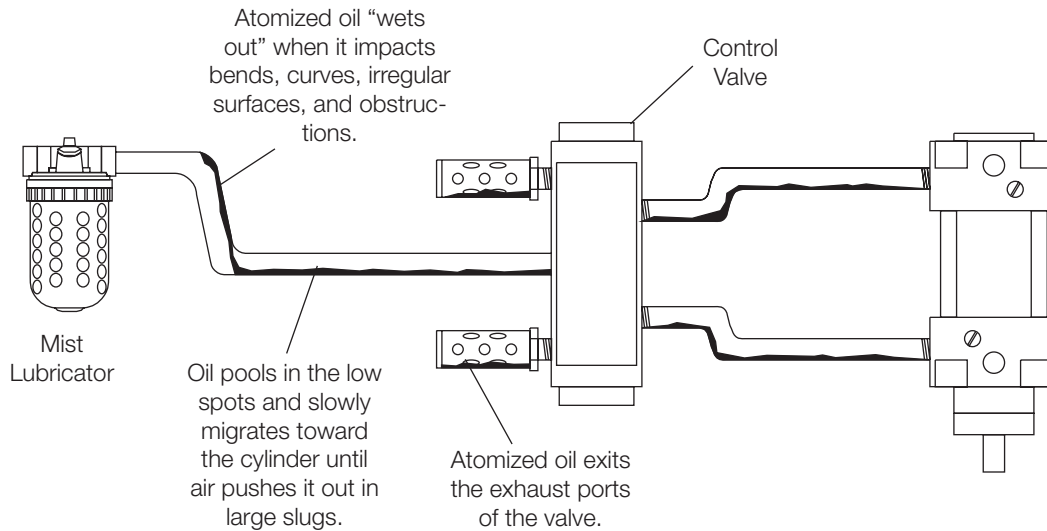


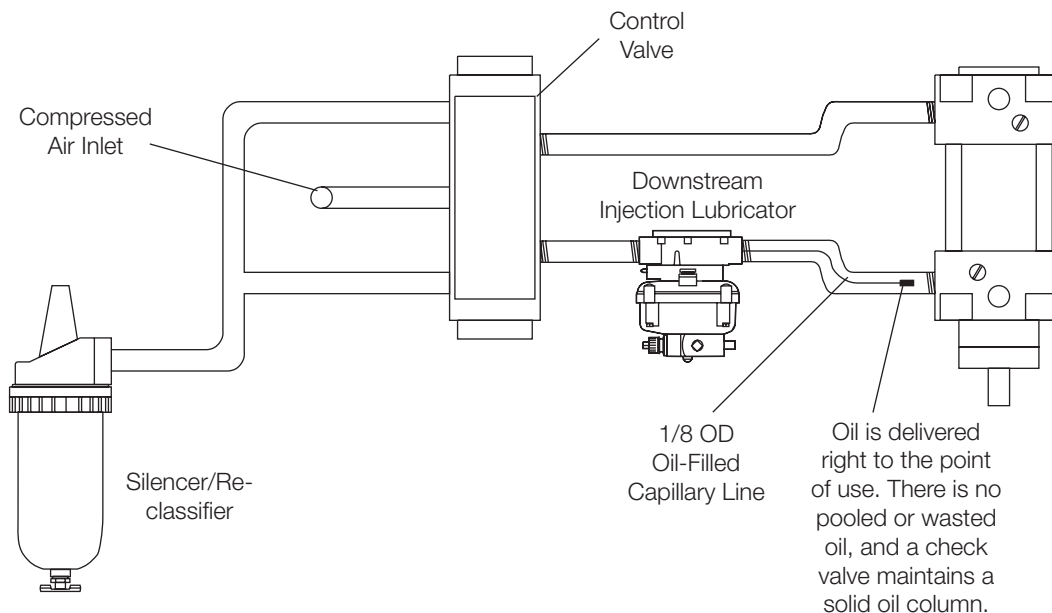
PNEUMATIC CYLINDER LUBRICATION

Extend Cylinder Life and Decrease Downtime

CONVENTIONAL MIST LUBRICATION



INJECTION LUBRICATION



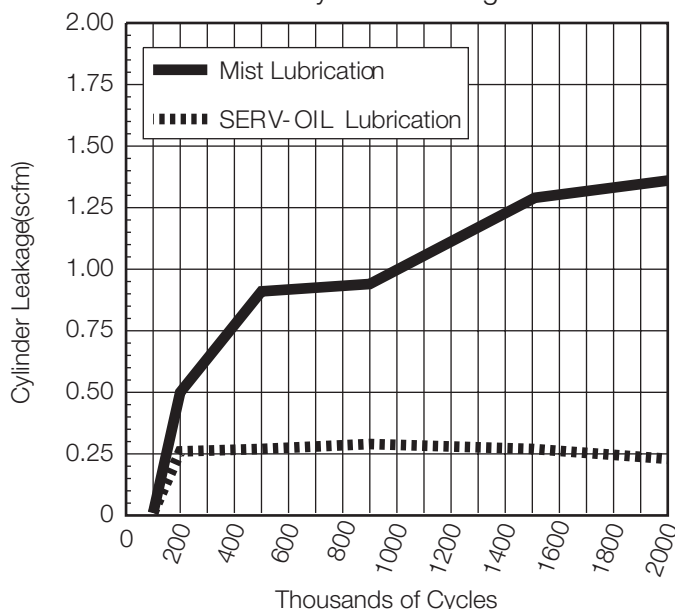
Cylinder Lubrication: Mist vs. SERV-OIL

A test was conducted for a major automotive plant to compare the effectiveness of mist type and SERV-OIL injection type lubricators. The test used special dual lip piston weld cylinders, and was conducted over a period of three and a half months. Cylinders were run for approximately 14 hours at a time. Both types of lubricators were adjusted to dispense the equivalent of one-tenth drop of oil for each 10 cylinder cycles.

Triple-filtered air was used in this test, and when the cylinders were disassembled at the end of the test no visible foreign particles were found in the cylinders. Filtration was at the 0.3- μ m level, and this is much finer than is found in most air cylinder operations where only 40- μ m filtration is common.

At the end of each daily test run, an air flow meter was attached to each cylinder to measure rod end leakage while the cylinders were still warm. The findings are displayed in the graph below.

Effect of Lubrication on Cylinder Leakage



The cylinder leakage graph above displays the results at intervals up to 2 million cycles, the cycle count for the entire test. Air bypass around the piston can be seen to be significantly greater with mist type lubrication. This bypass is a failure that directly affects the force and speed of a cylinder. With **SERV-OIL** lubrication bypass loss is small, and essentially constant after establishing a low initial loss level.

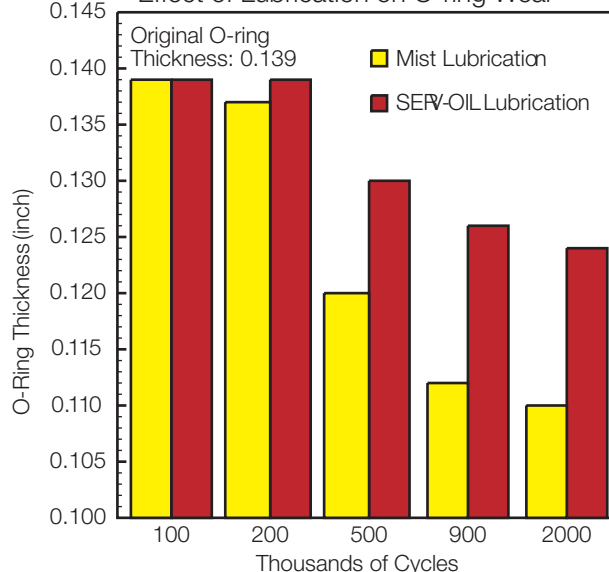
If the cylinders had been of conventional construction, and had air filtration been at the more common plant level (40- μ m), cylinder wear could be expected to be much greater than that recorded in this test.

With the use of **SERV-OIL** injection lubrication, it is guaranteed that lubricant is reaching the cylinder at the rod end. Oil is carried from the **SERV-OIL** injector to the lubrication point by 1/8-inch nylon tubing inside the air line. The rod, therefore, is well lubricated and as a result, due to the piston's extended resting period (usually directly under the retract air supply port), the piston also receives a beneficial delivery of lubricant.

The longer and more tortuous the air pathway from control valve to cylinder, the less effective the mist lubricator becomes. Oil tends to coalesce on the air line walls and puddle in low points. Much of the oil can also be blown into the atmosphere from the valve's exhaust port, so that it serves no purpose in lubricating the cylinder, but does create a health hazard.

Wear in the cylinder during this test is exemplified by the O-ring wear shown in the graph below.

Effect of Lubrication on O-ring Wear



As shown in this graph, an initial O-ring thickness of 0.139 inch was reduced by little more than 10% after two million cycles using **SERV-OIL** lubrication. With mist lubrication, the O-ring wear was nearly twice as great.

* See page 289 for Cylinder Lubrication Rate chart.

