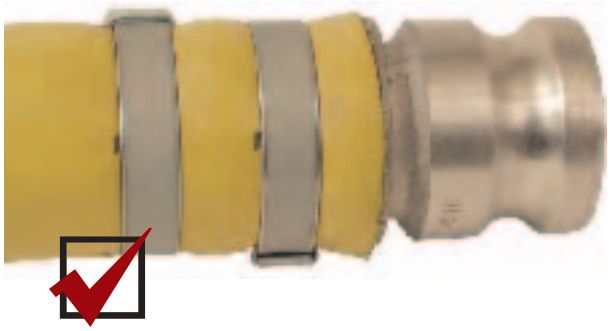
Ignoring Pressure or Temperature Ratings Can be Dangerous—or Deadly

By Phil Kimble

A freshly paved road is a beautiful thing. It makes the daily commute to work less stressful or the family vacation more enjoyable. However, age, weather and traffic all take their toll. Cracks appear. Ripples form. Potholes spring out of nowhere. The road that was once a pleasure to traverse is now an unsettling adventure.

BAND CLAMPS - DO AND DON'T



DO:

- Offset buckles around hose to eliminate "straight line leak."
- Mark intended clamp positions on hose casing.

DON'T:

- Align buckles
- Neglect to mark hose indicating proper band placement.

We're all familiar with the orange cones and lane closure signs that often signal traffic jams, elevated frustration levels and a long commute. To the road repair crew, it's just another day on the job. To fill cracks and potholes, various combined materials are used to fill the void and then sealed and bonded with hot tar that is sprayed onto the area. It is then packed down with a hand tamper or a mechanical roller.

The tar starts in solid block form and is put into a portable "tar pit" to make it into a liquid. This "tar pit" consists of a kettle that holds the tar, a burner to heat the tar to liquid form, a pump, a length of hose and a spraying wand. Tar, even when heated, is a thick viscous product. If mishandled, it can even turn lethal.

On a summer day, a road repair crew was out doing its job but, for various reasons, was way behind schedule. The supervisor was intent on bringing his crew back on schedule and, if his idea worked out, even pushing his men ahead of schedule. He determined that the bottleneck was the rate at which the tar was being applied to the aggregate. If the tar could be sprayed more quickly, then the repairs would be finished faster.

The first thought was to increase the output on the pump supplying the tar to the spraying wand. This helped some, but not as much as hoped. The next thought was that because tar is thick, if it were hotter it would flow easier. If 250 degrees Fahrenheit works fine under normal use, then 500 degrees would make the tar flow twice as fast. The supervisor increased the output of the burner as high as it would go. With the increased pump pressure and hotter tar, the repairs progressed rapidly. For a while.

The hose ruptured just behind the coupling that connects the pump to the wand. Luckily, the wand operator was wearing all of his protective gear, but even with this precaution, some tar got into one glove, leaving him with second- and third-degree burns on his forearm and hand.

The temperature of the tar, estimated to be between 450 and 475 degrees, exceeded the maximum temperature rating of the hose. Know the limitations of the component parts to a system. Follow the manufacturer's operating recommendations. If uncertain, call the manufacturer. Never exceed the maximum pressure rating or the maximum temperature rating of either the hose or the couplings. Doing so can lead to painful, if not deadly, results.