Hale Products, Inc. Service Bulletins

Bulletin#: 86 **Revision#:** A **Date:** 2/27/06

Product Type Covered: **Hale Pump** X **Hurst Tool** **Lukas Tool**

Product Covered:

Improved Pump Suction Performance with a Wire Basket Style Strainer

Problem Statement:

Many popular barrel type suction strainers can restrict pump performance from draft

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Body of the Bulletin

Pumps need quality appliances or accessories to function properly. An often overlooked appliance in the pumping system is the suction strainer. Suction strainers perform a vital function in keeping harmful debris out of the pump, but they can also limit the maximum flow from any pump.

NFPA pump performance is based on a test from draft where the water is drawn from a reservoir up into the pump. Actually, it is more accurate to say the water is pushed up into the pump by atmospheric pressure acting on the surface of the water. Since the atmosphere is approximately 14.7 psi, there is a limit to how much pressure is available to push water into the pump. This makes fire pumps sensitive to inlet restrictions in suction hose and plumbing, including the suction strainer.

Some suction strainer types are less restrictive than others. Hale recommends a basket type strainer because it offers lower pressure drop while providing effective protection for the pump. In fact a well designed basket strainer has less restriction than no strainer at all. This is because a well built strainer has a radius on the inlet to help water flow into the hose. Barrel type strainers typically lack this feature and are typically more restrictive, and can have a limit on pump performance. Basket strainers are pictured in foreground of picture below.

Many Fire Departments do not specify the type of strainer so they end up with the least expensive strainer hanging on the end of the hose, or they see the long shiny barrel strainer and do not realize it is not the best choice. Pumps may pass their annual performance test with any strainer. However during high challenge drafting conditions, the incorrect strainer choice can limit the flow available from the pump. High water temperature, high vertical lift, extra lengths of suction hose or low barometer, can affect pump drafting performance. In these challenging conditions where that last couple of gallons per minute of flow are needed, the limitations of the strainer can become an issue.

The table below shows what happens when a Quality 1500 gpm fire pump is pushed to the limit under reasonably good drafting conditions. It can be seen that a basket strainer, whether made by Hale or someone else allows the pump to produce more flow. Don't limit pump performance, use a good quality basket strainer and good quality hose and keep hose and hose gaskets in good condition for maximum performance when needed.

Strainer Type	Maximum Flow
Barrel Strainer	1655 GPM
No Strainer	1690 GPM
Brand X Basket Strainer	1795 GPM
Hale Basket Strainer	1810 GPM

Note that cavitation induced by suction restrictions can cause damage and premature wear to any pump, so proper training and care should be used in all high challenge drafting operations.

This information is provided to help customers to make a good choice when purchasing appliances. The strainer characteristics apply to all pump makes and models when run from draft conditions. Performance noted is for the same pump and typical strainer samples. Other strainers may perform differently. Hale recommends the Hale basket strainer for best performance.