



Executive Summary

The Truth About Pump Performance

As with any purchase, there are critical factors that must be considered in order to determine which product best meets your needs and requirements. This is no different when selecting the pump used on your next fire apparatus. The purpose of this report was to determine which pumps in the North American market meet the critical requirements for a fire apparatus. In order to provide clarity to the important factors in making this decision, three different manufacturer's fully manifolded pumps were subjected to a rigorous testing protocol and ranked based on their respective performance results.

The complete performance of a fully manifolded midship pump can be tied to three important factors:

- 1) Maximum Vacuum
- 2) Horsepower Consumption of the Pump
- 3) Maximum Port Performance

The first of these factors is the maximum vacuum that can be attained. The maximum vacuum test determines what suction performance the pump can attain. The forces needed to be overcome include suction hose and strainer restrictions, lift and any other obstacles the water encounters before flowing into the pump. While many urban and suburban fire companies do not draft often, at those career fires when water from lakes, rivers, and other static sources are required, the pump with better maximum vacuum will provide higher water flow rates. The test is corrected for water temperature and environmental conditions so the results apply consistently for all pumps in all locations.

The second factor evaluated is the horsepower that is consumed by the pump to meet the standard NFPA test points. A pump that uses less horsepower with the same water flow performance as a competitive pump is the more efficient pump. The pump uses less fuel, has more reserve power on the same engine, and therefore has more power available for extra flow or pressure when required. Additionally with a more efficient pump the same engine has the opportunity to have spare power to drive additional accessories such as hydraulic generators or large foam systems. In most cases the pump is running slower, because it is more efficient, so engine noise is often decreased.

The last factor affecting pump performance is the maximum port performance of the pump. Maximum port performance measures the flow attainable at a single port as installed by an OEM. Whether supplying an LDH supply line over long distances or supplying an aerial the port performance determines how much water can be flowed from each point on the pump. This effectively determines the flows that are available from the pump for a single supply line or LDH at different pressures.

After all of the test data was compiled, there was clearly a single pump that outperformed the other manufacturers.

Total Pump Performance Testing Results			
Factor	Qmax-XS	Pump A	Pump B
Maximum Vacuum Attained			
Minimum Horsepower Needed for Operation			
Maximum Port Performance			

Hale's Qmax and Qmax-XS pumps win each category for the factors that impact pump performance.

Visit www.pumpperformance.com for the full report.