



# Air Primer Drafting Test: 14.7-feet of Lift

Winfield, Maryland  
November 5, 2012

# Overview

- In late July 2012, the Winfield Community VFD located in Carroll County, Maryland, was the first fire department in the United States to have the new, Trident Automatic Air Primer installed on one of its pumpers.
- Winfield's Engine 142 is a 2007, 4-Guys pumper built on a Spartan chassis and equipped with a Hale Q-Max 1,500 gpm pump. The Hale pump was equipped with a Hale Environmentally Safe Primer (ESP) – a traditional, electric motor-driven primer pump.
- Arrangements were made between Trident Emergency Products, 4-Guys Fire Trucks, and the Winfield VFD to have the new, automatic air primer retrofitted onto E142 by the folks at 4-Guys.

# Overview

- On July 26, 2012, the retrofit installation was completed and E142 was returned to front-line service back in Winfield.
- The retrofit included the complete removal of the electric primer.
- During the course of the next several days, drivers were oriented to the use of the new automatic air primer.
- Once driver orientation was completed, the folks at Winfield partnered with the folks from GBW Associates, LLC to conduct a few tests on E142.
- This presentation is a summary of a “lift” test.

# The Process

- The lift test was rather simple – Engine 142 set-up to draft from a local stream using 35 feet of 6-inch, lightweight suction hose equipped with a Kocheck BW Low Level suction strainer.
- The pumper drafted using the driver's side 6-inch suction intake, and discharged water through its pre-piped deck gun equipped with a 2-inch smooth bore tip.
- Lift was measured using a vacuum gauge connected to the vacuum test port on the pump panel.
- Once primed, the vacuum gauge displayed 13" of mercury which is equal to 14.7-feet of lift.

# The Process

- Priming time was measured using the stopwatch feature of a cell phone. Time was started when the pump operator pushed the primer switch and time was stopped when discharge pressure was registered on the pump's master discharge gauge.
- The discharge flow output was not measured because the test was about the time needed to prime – not the flow.

# Test Pumper

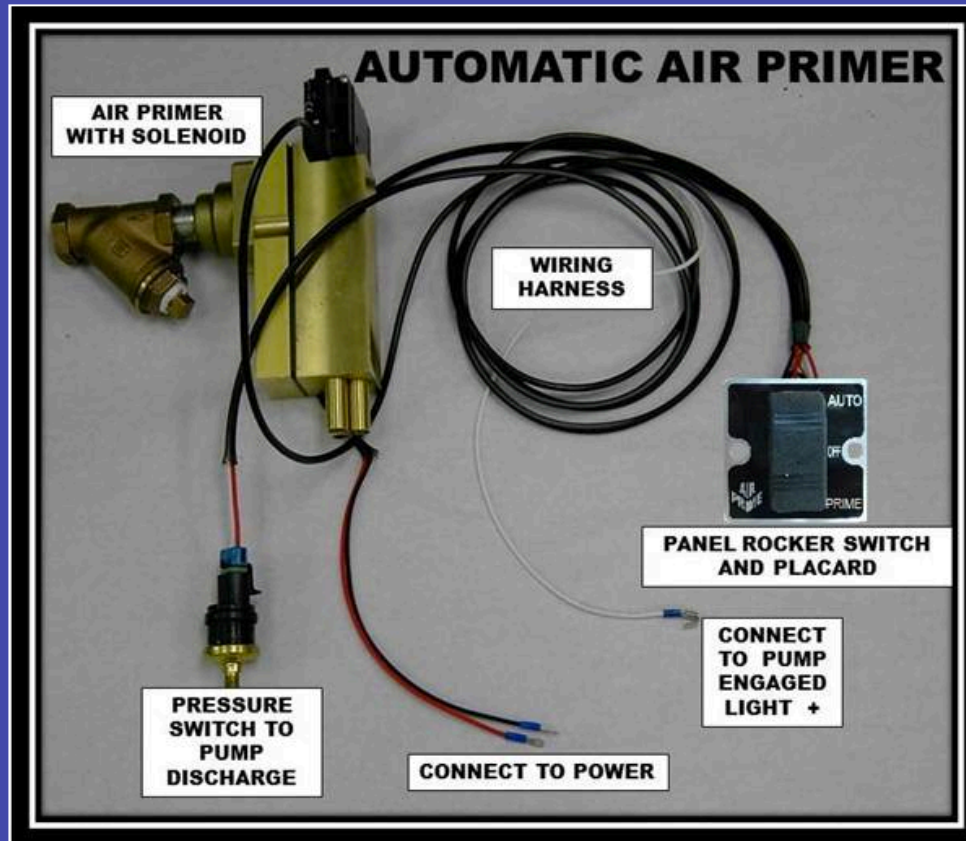


Winfield Community VFD's Engine 142 – a 2007, 4-Guys pumper with a Hale 1,500 gpm single-stage, QMax pump and a 4-inch high-flow discharge.

© 2012 GBW Associates, LLC – Westminster, MD

[www.gotbigwater.com](http://www.gotbigwater.com)

# Test Primer



The test primer was the new, Automatic Air Primer made by Trident Emergency Products. The primer was installed on E142 by 4-Guys.



# Flow Test – Set-Up



35-feet of 6-inch hard suction hose was connected to the driver side 6-inch suction intake on Engine 142. The other end of the suction hose was connected to a 6-inch Kochek low level strainer and placed into the stream.



# Flow Test – Set-Up



The total lift was initially estimated at 15 to 16-ft – however, an absolute measurement was obtained during the test using a vacuum gauge.

# Flow Test – Set-Up



A vacuum gauge was connected to the pumper's vacuum test port for accurate measurement of lift. The gauge was graduated in 1-inch increments.

# Flow Test – The Results



Time was started when the driver pushed the air primer's control switch and stopped when discharge pressure was observed on the master discharge gauge.



# Flow Test – The Results



Around the 39-second mark, water was over the bridge guard rail and well on its way to the pump.



# Flow Test – The Results



The vacuum gauge displayed a reading of 13-inches which equaled 14.7 feet of lift.

# Summary

- This lift test clearly illustrates that the automatic air primer can easily handle a lift of almost 15-feet in less than 1-minute of operation.
- The results of the test also reinforces the need for rural pumpers to carry more than 20-feet of hard suction hose.
- The results show the capability of the automatic air primer – the device has no moving parts and does not put a “drain” on the vehicle’s electrical system.



# Summary

- GBW Associates, LLC wishes to thank Trident Emergency Products, 4-Guys Fire Trucks, and the Winfield Community VFD for working on this project together.



[www.GotBigWater.com](http://www.GotBigWater.com)

*This program was developed by  
GBW Associates, LLC*

*© 2012*

*No part may be used or copied  
without expressed written consent.*

*For more information contact us at  
**[thebigcamel@gotbigwater.com](mailto:thebigcamel@gotbigwater.com)***