Dump Tank Flange and Suction Elbow Enhance Single Lane Water Supply Setup

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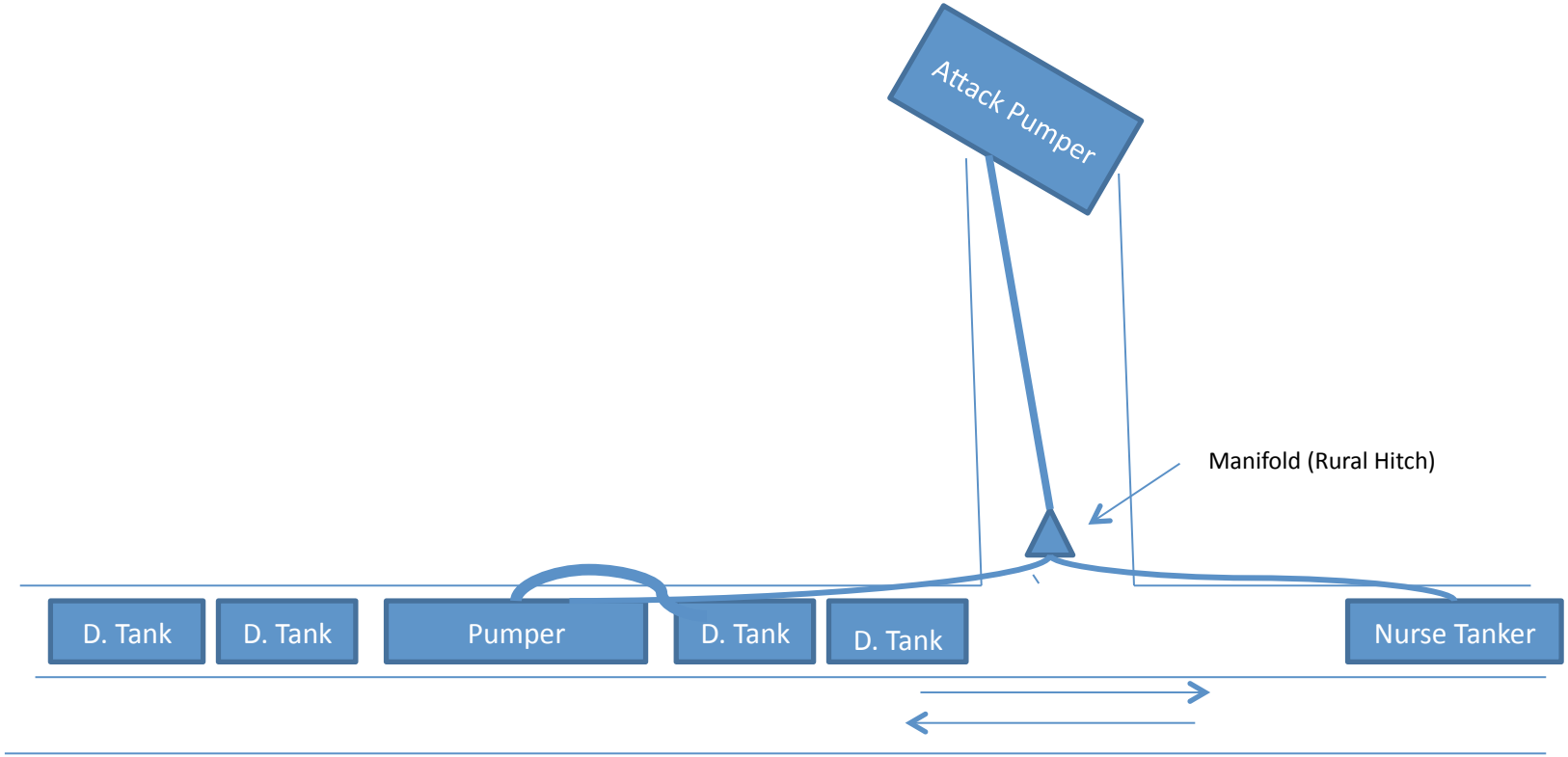
Shuttling water to a large fire can be a major logistical operation. Fire Departments are always looking for more efficient ways to truck water to a fire scene without creating a tanker traffic jam.

The single lane water supply set up



Some departments are exploring the idea of using rectangular dump tanks to keep all pumpers and dump tanks on the roadway and in a single traffic lane. This keeps one traffic lane open for tankers to travel in both directions to get water.

Setting dump tanks in the same traffic lane as the pumper has often required 3 sections of suction hose to get water to the pumper. It is difficult to prime the pump and establish suction from the dump tank.

It is challenging to get a tanker past a pumper on a 16 ft. wide roadway when suction hose has to reach around to the front of the pumper.

Thanks to networking among fire departments (made possible by the www.gotbigwater.com website) a solution to this problem has been found.

Below: Single Lane Water Supply Setup: Rectangular dump tank 8 ft. wide X 14 ft. long. It holds 2,000 gal. of water. The tank is the same width as pumper-no hanging down into ditch.

Below: No berm with steep bank. A fire truck rolled over when it got off the pavement at this location.

The Porter Kingston Fire District in Delaware County, Ohio uses dump tank flanges to draft water through the side of a dump tank instead of running suction hose up over the top.

Drafting through the side of a dump tank

You can install the dump tank flange wherever it works best for you.

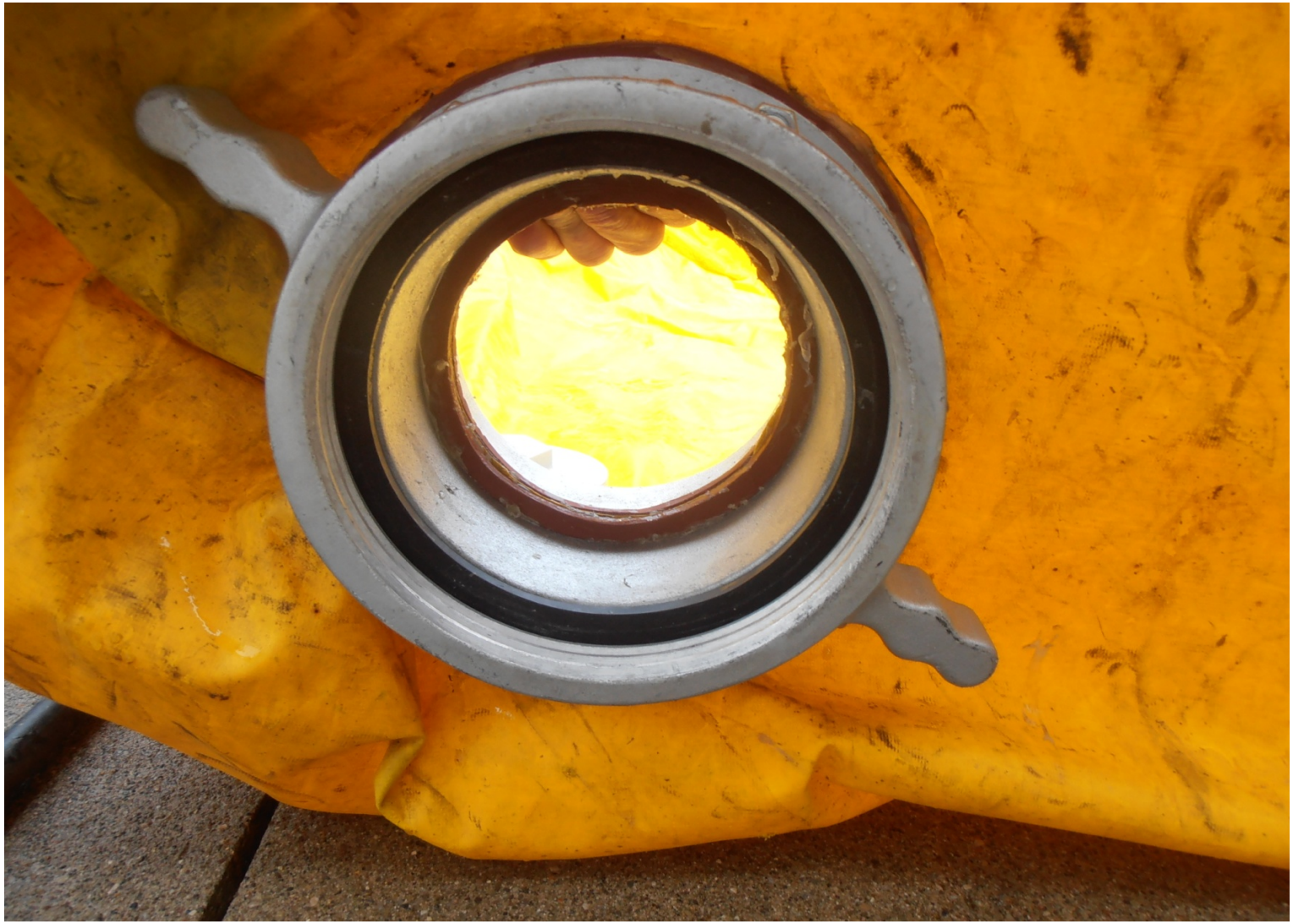
When using a dump tank flange the low level strainer is mounted inside the dump tank.

Aluminum dump tank flanges bolt onto the fabric liner of the folding dump tank.

The inside half of the flange has male threads to attach to a low level strainer. It is mounted approx. 3 inches above the floor of the dump tank. You'll need to hold your low level strainer in position to measure where to attach the flange.

The outside half of the flange has a swivel female fitting set up to accept the male threads of suction hose.

Notice the brown gasket material and silicon caulking which have not yet been trimmed flush to allow a smooth flow of water. This can be done with a razor blade knife.



Caps are provided for both sides of the dump tank flanges.

The inside cap makes it possible to fill the dump tank before hooking up suction hose. But you would have to reach down into the water to hook up the low level strainer.

Colerain FD leaves the outside cap off the flange. It is extra weight and the complete hookup is done before water is dumped in the dump tank.

This dump tank flange kit can be purchased for $276.

The Porter Kingston Fire District has swivel inlets on their suction. When this setup was applied by Colerain Twp. FD (in south central Ohio) they used the 6 inch Kochek 90 degree suction elbow (cost $224). Notice the two 45 degree angles which help achieve the long sweep effect for the 90 degree turn. This allows less resistance to the flow of water. The elbow is made of aluminum and is very light to handle.

The 90 degree elbow guides the suction hose right down under the running boards and along the tires of the pumper right up to the corner of the dump tank.

The 90 degree elbow holds the suction hose next to the pumper to allow tankers to pass by when using the single lane water supply setup on narrow roads.

The suction elbow can be set at any angle to allow for a gentle incline into the suction inlet. It also allows for the pump operator to stand up closer to the pump panel without having to straddle the suction hose.

• Vastly Improved Pump Priming Time

Even though this pumper is longer than average (17 ft. from suction outlet to front bumper), **two sections of suction hose can easily reach the dump tank in front of the pumper** with safety space to spare. Two sections can also reach the back of the truck (14 ft.) **It is easy to see when water from the dump tank seeks its own level in the suction hose that there is only 2-3 ft. from the water level to the pump inlet. It takes less than 5 seconds to prime the pump with this setup!** You can imagine how long it would take to prime the pump when using 30 ft. of suction hose up over the side of the dump tank with a big air pocket between the dump tank and pumper. The time saved in pump priming can make a huge difference in set up time. Could only 2 people set up this dump site within the I.S.O. time limit of 5 minutes? (A good challenge for our Explorers) Could this help avoid tying up a nurse tanker to buy setup time? It would be nice if depts. could share videos of how they set up dump sites. "Google" "Hambden FD Tanker Video" to see one Explorer (Jr. FF) setting up a dump site in 2 ½ min. This innovation is inspiring!

A support was needed for the suction hose to prevent the low level strainer from tilting up in the dump tank. This also helped in turning the female swivel fitting when hooking up the suction hose.

When attached to the dump tank flange the low level strainer is in the corner of the dump tank. It is isolated from most of the turbulence of water entering the dump tank.

If this dump tank were set behind the pumper the flange would be on the passenger or officer side of the truck. With the natural crown or slope in the road the water would naturally flow down to the berm side of the dump tank. More water in the dump tank would be accessible to the low level strainer. What if you were to draft from both sides of the pumper through the large suction inlets? This would help solve the issue of getting water from dump tanks behind the pumper. You would need butterfly shut off valves for both large suction inlets on you pumper to be able to alternate between suction inlets. Automatic air primers would also be beneficial.

<u>Conclusions</u>: **For about $500 you can equip your pumper to easily draft from either the front or the back.** Compare this to factory installed front suction ($4,000 - $6,000) or rear suction ($4,000)(Rear suction lines take up prime chest height storage space). Both methods need extra primers. Although front suction has the potential to have suction hose preconnected for quick setup it is often very limited in the flow of water to the pump. This is due to many angles and restrictions (100 ft. equivalent) in the suction line to go around the front axle, etc.

Mutual aid pumpers can operate in this water supply set up with no special modifications or training. Most pumpers carry two sections of suction hose. This system was set up for 6 in. suction. You would need adaptors if mutual aid pumpers have other suction sizes. This is an example of why it is important to have an inventory of mutual aid department water supply equipment and sizes.

This is a new concept to our department. There are a few questions yet to be answered. Your input would be greatly appreciated.

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A Challenge is Issued:

Look around your trucks and ask yourself: "Why do we do things the way we do?" For example: Why do we carry suction hose on top of the truck when it is often the first thing we need? How many people does it take to get that suction hose down off the truck? How often are you short on man power to perform this task? The Hambden FD in Ohio decided that they wanted to set up a dump site using just one person. They built several excellent features into their pumper/tanker which made this possible. Challenge your fire fighters to innovate. Get everyone thinking. Water supply for fire fighting is not rocket science. Think outside the box and ask yourself, "Why can't we deliver water this way?" Most of us have to deliver water on narrow roads. We have to be prepared to efficiently operate in that environment.

Acknowledgements:

- Thanks to Cody Beacom of the Porter Kingston Fire District for sharing the promising idea of dump tank flanges. Check out the water supply unit (Hose 381) on their website. Just Google "Porter Kingston Fire District."
- Thanks to Chief Scott Hildenbrand and the Hambden Fire Department for sharing the many features they built into their tanker.
- Thanks to the Colerain Township FD for their support and patience during all the experimentation on water movement techniques.
- Thanks to Fol-Da-Tank Co. for supplying the dump tank flange assembly for this demonstration.
- Thanks to Parker Browne for sharing his research on automatic air primers.
- Thanks to Jason Estep for sharing his expertise of portable pumps and vacuum tankers. If you want information on using vacuum tankers the Morrisvale WV FD is the perfect resource. You need to consult with them before you buy your next tanker. Jason has a blog called "The Fill Site."

- **Special Note:** Cody Beacom, Parker Browne (chairman), Charles Clark, and Chief Scott Hildenbrand are all members of the Ohio Fire Chief's Association Water Delivery Technical Advisory Committee for the Statewide Emergency Response Plan.

This power point presentation, “Dump Tank Flanges and 90 Degree Suction Elbow Enhance Single Lane Water Supply Setup” was produced by Charles D. Clark of the Colerain Twp. Vol. FD in Ross County Ohio