



Knuckle Buster

Newsletter of the Wisconsin Association of Emergency Vehicle Technicians

www.waevt.com

March 2017

Spring Seminar Registration Open

The 50th Annual Spring Seminar will be held on Wednesday and Thursday, May 24-25, 2017 at the FVTC Public Safety Training Center in Appleton, WI. The classes this year will be Detroit Diesel updates with Gary Stroik from Inland Power Group; Waterous Pumps; and Charging/Starting Systems with CE Niehoff. Flyers and registration forms were e-mailed last month. If you did not receive one, they are available on the website, or contact Jon Coutts. **Registration is \$150 by May 1, \$175 after.**

Hotel Information for Spring Seminar

We will again be using the Holiday Inn – Appleton, located at 150 S. Nicolet Road. This is at the intersection of I-41 and College Ave. Rate is \$82 for those with a valid state or municipal ID. (Letter from municipality, business card, city ID) Rate is \$99 for those not eligible for the state rate. These rates are for single and double. Make reservations by calling 920-735-9955 and asking for the WI Association of Emergency Vehicle Technicians block. **Rooms must be reserved by APRIL 23, 2017 to guarantee a room.**

EVT Testing Again Offered at Spring Seminar

We will once again be offering EVT Certification testing at the Spring Seminar. Registration for testing is required and must be completed by May 9th, and is available online. For more information on EVT testing, study guides and registration visit www.evtcc.org. It is not necessary to take all the certification exams, but only those for the areas you do repairs and maintenance on. If you would like more information on exams, contact Mike Meyer or Jon Coutts.

Elections to be held at Annual Meeting

Elections for two Executive Board positions will be held at the Annual Meeting Wednesday, May 25th, 2017. The two positions that are up for election this year are President, currently held by Jon Coutts, and Recording Secretary, currently held by Skip Burg.

WAEVT Logo Items at Spring Seminar

We will have several items available for sale at the Spring Seminar. Hats, t-shirts, and polo shirts with the WAEVT logo will be for sale at the Spring Seminar. Show your pride and membership in this great organization. Window decals will be available at no charge. If you have ordered the new t-shirts, they will be available for pickup at the seminar.

Fall Seminar Set For September 28

The 2017 Fall Seminar will be Thursday, September 28, 2017 at the FVTC Public Service Training Center in Appleton. The class will be Harrison Hydra Gen hydraulic generators with Paul Newton. This will cover Installation, Troubleshooting and Maintenance. This will be a “hands on” class with student participation. More information will follow. Mark your calendars now.

Back Flushing Pumps

While doing research for a pump class I was instructing, I came across this posting on the EVTA bulletin board about back flushing pumps. It was written by retired Tulsa, Oklahoma EVT Tom Gaines. Thanks to Tom for sharing this information.

Back flushing Centrifugal Fire Pumps: Contributed by Tom Gaines

Recently, several Emergency Vehicle Technicians have been discussing the subject of “Back Flushing” fire pumps. Others, who are unfamiliar with this practice, have questions about how this procedure is done. What is “Back Flushing” and why might someone do this to a fire pump? How is this procedure performed? And, can “Back Flushing” cause a problem rather than curing one?

A simple explanation of back flushing would be: “The reversing of the water flow through a fire pump.” Normally, water flows from intake to the discharge side of the fire pump. The idea of reversing the water flow is in the event some “foreign object” may have entered into the pump and became stuck in the intake side of the impeller, reversing the flow of water should cause the object to flow back out of the impeller and thus be flushed out of the pump through pump intake. If some foreign object has become stuck in the pump impeller, the pump may not be able to perform as well as it was designed to do.

My experience over many years of Fire Pump service, repair and overhaul has proven to me that back flushing fire pumps is a wise thing to do and should be performed at least on an annual basis or after pumping unclean water. Like many others, I have found all kinds of strange and amazing things will be flushed out of a fire pump. I won’t list all the things I have found over the years, but don’t be surprised at what you find when you back flush your fire pumps. If an object can physically pass through a 2 1/2” intake or the larger “Steamer” intake or through the water tank to pump plumbing it can and may be stuck in your fire pump. Of course there are times when back

flushing will not clear all foreign objects or obstructions that may be stuck in plumbing, castings or wedged in the impeller. At times you may have to disassemble the pump or plumbing to clear the obstruction. But, when you see the many things that flushing will bring out of your pump, you too will be convinced that it is a wise procedure to include in your scheduled maintenance. Whenever I see missing or damaged intake screen, I say to myself "Oh no! I wonder what has gone into that pump and is stuck in the impeller." The wise thing to do is to back flush the pump and then replace the missing screens. Also, don't forget to check the water tank fill area for the protective screen under the cover that prevents things from being dropped into the water tank, such as Cigarette Lighters and ball-point pens.

At the present time, I am not a City Mechanic or a Fire Department employee. However there are times that I am hired by fire departments to perform Pump Service Tests. So if and when a pump fails to perform the Pump Service Test, this is when I do the back flush of the fire pump. And after seeing all the "Junk" that comes out of the pump, I retest the pump and find that in most cases instead of pump Cavitation and failing the test, the pump will pass the test with flying colors! And also, when I tell the Fire Chief and the Pump Operator their Pumper truck will now pass the service test and they won't have to do an expensive pump overhaul, they treat me like I'm some kind of special Hero!

Some areas that deserve special attention:

1. Check all intake screens and the water tank screen for being in place and in good condition. This is the first line of defense against unwanted things getting into the pump. The intake screens are designed to allow some small things to pass through into the pump and through the impeller and on out and these small things will usually cause no problem and may be found stuck in a nozzle or they get expelled in the water stream never to be seen. Missing or damaged intake screens will soon cause some kind of problem. Give special attention to the Anode style strainers in the large Steamer intakes on both side of the pump, if so equipped. These are most often forgotten because these large intakes may seldom be used. The Anode style screen will over time do their job and then deteriorate and begin to fall apart allowing large chunks of metal from the screen into the fire pump and they may become stuck in the intake eye of the impeller. These Anode style screens should be replace as soon as they show any signs of deterioration. Anode style screens are a "Service Item" and should be replaced as needed.
2. Always flush the Hydrant before using that water to do a back flush. Here too is a source of many unwanted things. Large chunks of gravel, rocks, concrete, sticks and mud will sometimes come flying out of the hydrant during a large volume water flow. When doing water main repairs some of these unwanted things just find their way into the water system. And unless they are flushed out of the system they are waiting for a large flow of water to move them down the water main to a waiting fire pump. The water department and fire department in many areas do regular hydrant testing and flushing. But, since it only takes a few minutes, do your own hydrant flushing. The next point helps to prove why this is so important. Remember, when you flow water into the "discharge" side of your fire pump there are "no screens" to protect against some kind of "trash" from going into your fire pump. Once inside the discharge manifold of your pump this trash may be sent anywhere in the discharge side of the pump. It could cause the plugging lines, the relief valve to be stuck in the open position or interfering with other valves or some other operations of the fire pump. You could be causing a big problem rather than repairing one. Anyway, for me the larger

the flow of fresh clean water, the better the fire pump seems to be flushed. Also a simple solution to protect your pump at this time is to borrow a 2.5" intake screen from an intake valve and install the screen in the double female adaptor. This should catch any unwanted item from going into your fire pump.

3. When back flushing a "Two stage fire pump" it is good to move the change-over valve to each position, "Volume and Pressure" when back flushing. I like to shift the valve many times to help free it up. The change-over valve will often be stuck in one position due to lack of use and or the accumulation of sand or grit in the valve. Also, you will find it necessary to remove the large Steamer Caps and screens and then use something like a "broom handle" or a "Pike pole" to block open the swing-check valves in the pump front intake passage. Things can become trapped behind these swing-check valves and no amount of back flushing can remove them if the swing-check valves remain in the down or closed position. Also this is a good time to check the swing-check valves for moving freely and for damage due to being operated under too great of pressure. On one occasion I overhauled a fire pump because it would not pass the Pump Service Test. After lowering the pump lower housing and impeller assembly, I found a 2 1/2" hose gasket had become trapped in the front intake passage and couldn't be back flushed due to the closed swing-check valves. The gasket would cause pump Cavitation to occur before we could reach the maximum rated flow of the 100% test.

The way I back flush the fire pump is to:

1. Drain the fire pump and remove both large steamer caps and screens, if so equipped. I also, like to pull the master pump drain at this time to ensure all drain lines are clear of any accumulation. Many times you may find the master drain valve to be stuck in place due to lack of use. This is a good time to free-up the valve and to clean the drain lines by draining the water from them. Close the master drain valve before back flushing the pump.
2. When doing a two stage pump, check the swing-check valves in the front intake passage for working freely and for not being damaged. Feel behind the swing-check valves for anything that shouldn't be there and then block them open.
3. Select a hydrant that will produce the maximum pressure and dynamic flow. After flushing the hydrant through its largest opening, hook-up one or two 3 inch hose lines to a pump discharge valve by using a double female adaptor. Remember to put a screen in the female adaptors! Also another "warning" remember during back flushing, the pump becomes a "turbine" and depending on the amount of water flowing may spin backwards at very high speeds, so only flush for a minute or so.
4. Open the discharge valves or valve and then open the hydrant. Observe the area below the steamers intakes for things being back flushed out of the pump main intake. Operate the change-over valve if you can while flowing water. If you are unable, shut down the hydrant and then change the change-over valve position. After a few minutes slowly shut down the hydrant while leaving the discharge valves open. By shutting the hydrant first, you avoid any water hammer that might occur if the discharge valve is closed too quickly and you allow the hose lines to vent any pressurized water that could be trapped in them.

5. Gather up all the “Junk” that was flushed out of the pump and show it to the Chief and the pump Operator and any of your friends that will allow you to do so. And feel real good about yourself, because you have performed a good and wise service that will help ensure the fire pump will be able to perform the job it was designed to do.

EVTA Bulletin Board

Do you have a problem that is causing you trouble and can't figure out? Go to the EVTA Forums and become a member of the site. There is no charge and there are technicians and factory personnel from around the country asking and answering questions on all topics. There are several WAEVT members on the board as well. If you haven't visited the website, it is a very valuable source of information and sharing. You do need to register to post to the site, but there is no cost. Visit the site at www.evta.info/forums.

E-Mail Addresses

If you know of someone that should be receiving our newsletters and information but isn't, please let Jon Coutts know so they can be added to our mailing list . Thank you to all those that have provided your e-mail addresses in the past. We would like to utilize e-mail for sending information and newsletters to help keep costs down. Jon can be contacted at jdcoutts@sbcglobal.net.

Training Opportunities

WAEVT Spring Seminar May 24-25, 2017 FVTC PSTC, Appleton

WAEVT Fall Seminar September 28, 2017 FVTC PSTC, Appleton

Hale Pump Schools <http://www.haleproducts.com/Main/Content,30,10.aspx>

Pierce Factory Training <http://www.piercemfg.com/company/training.cfm>

EVT Certification Commission <http://www.evtcc.org/>

Spartan Motors www.spartanchassis.com

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