# TROUBLE SHOOTING FOR THE STREET SMART PUMP OPERATOR

# DURING HYDRANT OPERATIONS

As pump operators, proficiency is demanded on the scene of an incident. Engine crews rely on operators to provide them with the needed and sustained fire flow to combat any fire that may be encountered from the mundane rubbish fire to the multi-alarm building fire. Engine companies and their operators are the heart beat of the fire ground moving water from a source to the target for the duration of the incident. Without them, no fire could be completely extinguished.

When situations out of the ordinary arise, how will you respond as an operator? Has your training prepared you to handle the task at hand? What will you do to overcome circumstances when a snag occurs?

Here are just a few situations encountered by experienced pump operators including the corrective measure that may challenge any pump operator working on the scene of an incident:

1. The 2 ½” side butt cap is missing from the hydrant.

Before opening the hydrant, either add a 2 ½” to 4”stortz gate valve ***(preferred method for water expansion)***, a 2 ½” blind cap, or a 2 ½” to stortz adapter with a section hose to your intake.

2. The hydrant bonnet is missing or the hydrant wrench does not fit the size of the nut.

Use a pipe wrench to open the hydrant…….open the hydrant completely anywhere from 13 to 17 turns.

3. The 4 ½” steamer cap from the hydrant can not be removed.

Some engine companies carry a 3’ section of pipe or box channel to use as a cheater bar in conjunction with their hydrant wrench for mechanical advantage. Ensure that the hydrant is closed and not open under pressure. If it is open, close it all the way then attempt to slowly open the 2 ½” butt cap to release water and pressure. If it is winter, consider that the cap may be frozen and use a flare to thaw. If you are still unable to remove the 4 ½” steamer cap, consider using both 2 ½” side butts. The popular fire service myth of busting the steamer cap with force may actually do more damage than good to the hydrant **(T*his is not an easy task as the author has attempted unsuccessful; you may stand a chance at doing severe damage to the steamer connection. THIS SHOULD NO LONGER BE A CONSIDERATION)*.**

4. The hydrant is either inoperable or not at the selected location as indicated on the water map.

Either hand-jack a line to the next closest hydrant or to a location where the next arriving engine can complete your split lay. Another consideration would be to have the next arriving engine reverse lay from your unit until they find the next closest hydrant. Remember, you have valuable tank water that can be provided to support initial operations. Support the first attack line until you have an established water supply.

5. Your pump will not go into gear.

Compose yourself, reverse your steps, and then attempt to place the unit into pump gear again. Typically, a nervous driver may forget a step or two in the pump transfer process. All drivers should practice and review the signs of confirming that the pump is in gear. The indicator light should be green; if it is not, listen for changes in the sound of the engine, ensure that the speedometer registers between 10-15 mph, or that the drive shaft is turning. Also, when reattempting to engage the pump, shift the transmission from neutral, through reverse, and then to drive to ensure that the gears mesh. In the event there is an electric transfer problem, manual shift operations will have to be utilized which requires two people **(*check with the manufacturer for manual shift operations for your unit*)**. If you can not shift to manual pump

operations or if your unit is not equipped with the manual override feature, you will have to have an engine “pump through” you to supply attack lines. This tactic works well; the supply engine will have to adjust its discharge pressure to overcome additional friction loss.

6. Your soft sleeve begins to collapse as you increase your flow while pumping from a hydrant.

Generally, this is a sign that you have reached the capacity of the hydrant. Check the hydrant and ensure that it has been opened completely. If prior to hooking up to the hydrant you have installed a gate valve on the 2 ½” butt cap **(*heavy water hook up*)**, now would be the time to run a line from the valve to your intake to maximize available water from your source. If neither of these measures work, then reduce your discharge pressure [or shut down a line of least priority]. Call for another supply line from another source to augment your supply or hand-jack it yourself.

7. Just before connecting to a combination sprinkler/standpipe system, you discover that the connection is either blocked with debris or damaged.

The pump operator will have to advance a 3” supply line into the building and connect to a standpipe riser. There are a couple of things that must be observed prior to beginning emergency operations:

- The riser selected must be between the fire floor and the normal intake of the system
- The globe valve must be opened partially prior to charging the discharge valve with time given to allow for pressure to equalize throughout the system

8. Your pump is confirmed to be in gear, you open your tank to pump valve, you open a discharge valve, you throttle up to reach discharge pressure, and you get no reading on your master discharge gauge.

First check the dampening valve for the gauge; it may be closed. If you are still not getting a reading or generating discharge pressure, chances are there is air in your pump. Pull the primer valve monetarily to evacuate the air trapped in your pump; once your primer expels water onto the ground, open the discharge again, and attempt to throttle up. This should resolve the problem.

9. During the advance of the initial attack line, you assist the crew with clearing hose from the cross lay and are distracted from your supply line. The supply driver calls you on the radio several times with no response then “lets the water go” without your confirmation. Your supply bed gets charged.

We no longer have the security of using hose clamps with 4” hose due to safety issues that may arise. The first priority when getting out of the cab, aside from placing the wheel chock in place, should be to break the supply hose and connect it to your PIV

**(piston intake valve)**. Supply pumper operators need to communicate with the attack engine before charging any supply lines. If you are unfortunate enough to have this happen, the supply engine must cease operations and then disconnect the supply line from their piece to facilitate draining before you can break and connect to your intake.

10. The hydrant selected is obstructed by a vehicle or is set back a distance much further than the front soft sleeve.

As we have transitioned to the use of LDH with comparable appliances, we have a number of creative ways to take greater amounts of GPM into the pump:

- Connecting a 4 ½" to 4"stortz adapter on the 4 ½" steamer connection of the hydrant is one way to take water in.
- For hydrants that are set back, simply use a longer section of 4" hose to reach the hydrant with the appropriate adapter. Try humat to humat.
- Using short sections of 4" hose, connect to the 2 1/2" butt caps with gate valves to take water in.

The ten problems identified are a small example of what can happen when things go wrong. Other examples may include apparatus parked on supply lines, a broken supply line, a stuck tank to pump valve, or frozen LDH couplings. Although the list goes on and on, the training should go further.

During hydrant operations, always consider flushing the hydrant briefly before making your connections. Flushing the hydrant will assist in the reduction of debris being caught in an intake screen or in the pump. **Also, make a concerted effort to complete a "heavy water hook up" whenever possible to maximize water supply capabilities when needed.** For safety's sake, always stand behind the 4 ½" steamer connection when opening the hydrant; if the 2 ½" but caps are not secured properly they may blow off under pressure and injure any one in close proximity. As with any changes that may delay or affect water supply operations, always notify the crews being affected as well as command.


Sources:

MFRI Pump Operators Manual 1998 Edition

www.firefighterclosecalls.com

A Fire Officer's Guide to Operating Fire Department Pumpers, NFPA, 1974


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