

Product News

with [Robert Avsec](#)

5 fire engine pump operator mistakes

Here's how to correct the most common pump operator mistakes and bonus tips from seasoned fire service veterans

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I've always taught firefighters training to become a motor pump operator (MPO) that nobody is busier than the MPO in the first 10 minutes of any fire.

There is a lot of knowledge, skill and hustle that must be employed to establish a water supply, supply the attack lines or appliances and carry out support tasks identified by the MPO's own observations such as scene lighting, pulling additional hand lines or raising ground ladders.

Recently, I connected with a fellow firefighter on LinkedIn who listed his job as fire control engineer. Thinking this was perhaps a new term for firefighter in his department, I asked him what his job description entailed.

He replied that his primary responsibilities were for driving and operating the engine that he was assigned to. In the common fire service vernacular, he was a motor pump operator.

I like the term fire control engineer. For me, it more accurately describes the technical and mechanical nature of the job.

Call it what you will, it is a tough job with little margin for error. Here are the five most common mistake MPOs make and how to set them right.

1. Not knowing the engine

Today's pumping apparatus are much more than a pump mounted on a truck. They are an amazing piece of mechanical, electrical and computer engineering. It's critical that MPOs have a complete understanding of all the whats, whys and hows of their assigned engine.

NFPA 1901: Standard for Motorized Fire Apparatus places an extraordinary amount of responsibility on apparatus manufacturers to provide fire departments with a vast amount of technical information about the pumping apparatus a department purchases.

Both new and incumbent MPOs should take full advantage of everything the manufacturer has to offer to get the most out of every technical feature on their apparatus. This includes the owner's manual, training videos and on-line information and training resources.

2. Not pumping the correct pressure

After a safe arrival and proper positioning of the apparatus, the MPO's first true performance benchmark is the ability to pump the correct pressure to the hose line to deliver the proper flow of water that the nozzle was designed for.

Today's nozzles are marvels of engineering in their own right, but the nozzle can't perform up to its capabilities without proper water flow.

The attack team pulled that nozzle for a reason. If they wanted a different flow, they could have pulled another available hose line and nozzle.

Modern fire engines make it much easier for the MPO to identify the exact required flow pressure for every pre-connected hose line on their apparatus without ever remembering a single mathematical formula — provided they've learned their pump.

3. Not balancing the pressure discharge manifold

The next performance benchmark is delivering the correct pressure to the next hand line pulled without the crew on the first hand line ever knowing anything has changed.

The common mistake here is not maintaining balanced discharge pressures by only opening discharge valves as far as necessary to deliver the correct pressure. The MPO can avoid this mistake by setting the discharge pressure relief valve (on older apparatus) or by using the computerized governors found on modern engines.

4. Not balancing the discharge and intake manifolds

Every drop of water that the MPO provides to deployed hand lines first came into the pump through the pump's intake manifold. Both intake and discharge manifolds have many holes with valves attached to them that the MPO needs to control if they are to effectively deliver functional fire streams.

If the MPO has 750 gpm coming into the intake manifold, then they should be able to deliver no less than 750 gpm from the discharge manifold.

A proficient MPO doesn't keep secret the fact that the water supply is delivering 750 gpm and the attack crew is only using 250 gpm. It's really helpful for the incident commander to know that they still have 500 gpm of available supply, especially if the fire isn't going out right away.

5. Not managing the intake manifold

The MPO's fourth performance benchmark is quickly managing the pump's intake manifold. Today's faster and hotter burning fires put a premium on the ability of attacking fire crews to flow the wet stuff on the red stuff to prevent flashover.

Many departments are using a transitional fire attack strategy based on fire-behavior research coming from UL and NIST. Obtaining a successful outcome when employing a transitional fire attack is predicated on getting those initial hose lines properly supplied.

Particularly in suburban or rural areas, the MPO must work incredibly hard to build an effective water supply. In many cases, the MPO has available water coming from several different directions simultaneously — booster tank water, supply lines and front/side suction intakes.

Effectively managing the intake manifold will enable the MPO to deliver the critical fire flow necessary to put the fire out now, not in an hour after the fuels have burned down to whatever water was being flowed.

Experienced voices

I asked my former colleagues with the Chesterfield County (Va.) Fire and EMS to chime in with their thoughts to help MPOs better do their job.

My respondents are all old hands who served as company officers as well as MPO trainers and evaluators for our department. Several of them continue their work as adjunct instructors for the Virginia Department of Fire Programs teaching and evaluating new MPOs.

Here are 18 tips from these seasoned fire service veterans.

- Open the tank-to-pump valve or intake valve so water goes into pump.
- Note the incoming static (hydrant) water pressure to determine available water supply.
- Complete daily apparatus maintenance and morning set up. Go over that pumper completely; be sure everything is where and how you want it.
- Make sure the tank is full, no drains are open and the relief valve is working.
- Practice making connections with something other than what you normally use — have a work around for when something breaks. If the steamer cap won't open, use two three-inchers. Use a gated wye on the 2½-inch if you don't have a 1½-inch adapter.
- Get the supply line connected and charged as quickly as possible.
- Use a stacked tip to reduce a line.
- Learn to pump in manual mode with no pre-sets.
- Stand at the pump panel blindfolded. Know where valve handles are so you can operate the pump at night when the panel lights go out.
- Know and practice what to do if a line breaks.
- Always ensure the pump has gone into gear before leaving the apparatus cab.
- Practice in-cab procedure.
- Prime the pump when it has been drained due to cold weather.
- Refill the tank once a water supply has been established.
- Circulate water when the pump is in gear but no water is flowing to prevent overheating the pump and damaging the pump packing.
- Know and practice how to establish a draft from a static water source.
- Practice spotting hydrants to develop distance control for every intake valve on the engine.
- Know how to do friction-loss calculations.