

# SAM<sup>TM</sup> Toolkit

## Everything You Need to Know about SAM

When SAM is on the scene, your fire ground is more efficient and safer. Period.

### SAM Apparatus Build Packet

#### Why SAM is so important to the fire service

When was the last time you specified equipment on your apparatus that directly impacted every fire you responded to? If you've ever struggled with these things on your fireground, you need to find out what SAM can do for your department:

- Interrupted radio communication with the attack team (causing delays in charging lines, adjusting pressures, communicating water level status)
- Being forced to operate the truck while in traffic or from an unsafe location
- Pump operator errors delaying water delivery or damaging the truck by forgetting steps (like opening the tank to pump valve, recirculate, cavitation, overheating...)
- Low staffing or limited daytime response, lack of staffing, or just low manpower in general
- Over-pressurization of attack lines from operator errors or hot hydrants, wearing out your crews and causing stops in fire attacks for adjustments
- Difficulty drafting when your best operator isn't there that day.
- Loss of water to the attack crew (burst intake hose, lost draft, pump operator mistakes)
- Rookie pump operators that can be prone to mistakes
- More new recruits that are less mechanically inclined or don't have the necessary experience yet

**SAM is a better way.** A better way to keep your crew safer while you save lives and protect property, faster and more efficiently than ever possible before. Would you buy a fire truck with a manual transmission? Of course not; why would you want your driver distracted with shifting gears when they should be focusing on clearing intersections and traffic.

We think of SAM the same way and have one question. If you could provide your department with a tool that helps them focus and more time to do critical tasks on every fireground, shouldn't that be a priority for your next apparatus?



**Learn all about SAM!**



To learn more about SAM, please contact us at [www.samflows.com/schedule-a-demo/](http://www.samflows.com/schedule-a-demo/)

**IDEX**  
FIRE & SAFETY

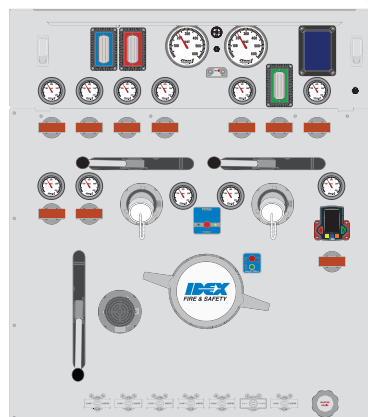
## So, what exactly is SAM?

**SAM is the latest pumping technology available for your apparatus.** It is built around proven equipment that has been on your apparatus for years and is proven in the field. Think of SAM like an autopilot on an airplane – it automates the steps of flying a plane to make it safer and more efficient.

SAM does the same – it automates moving water from the apparatus or water source to the fire. SAM controls the intake, discharge, and tank valves, engine speed, primer operation, bleed valves, and tank recirculation to automate the entire pumping process for the operator. By doing this, SAM reduces the number of pumping steps for the operator during the stressful first five minutes of an incident. But don't worry, even though it's automated, it only does what the operator tells it to.

	OPERATOR TASKS WITHOUT SAM	OPERATOR TASKS WITH SAM
<b>Initial Attack Phase</b>		
Open tank-to-pump	X	
Set pressure governor to PSI	X	
(Select line and give SAM set pressure)		✓
Open first discharge	X	
Adjust governor setting to desired discharge pressure	X	
(Select line and give SAM set pressure)		✓
Opens second discharge	X	
Adjust valve to obtain desired pressure	X	
<b>Establish Water Source</b>		
(Tell SAM to transition to hydrant)		✓
Bleed LDH	X	
Slowly open intake valve to minimize disruption to discharge pressure	X	
If hydrant pressure is too high, gate discharge valves	X	
Close tank-to-pump	X	
Open tank fill valve and refill tank	X	
Check discharge 1 and 2 and feather as needed	X	
Close tank fill valve once tank is full	X	

**Traditional Pump Panel  
13 Tasks**



**Pump Panel with SAM  
3 Tasks = More time to focus on the crew & fireground**



## Oh, and did we mention there is a SAM Nozzle, too?

The SAM nozzle allows the attack crew to charge the line from the nozzle, see the tank level in real-time, and know when hydrant supply has been established. It also manages pressure at the nozzle, not the pump.

So what does that mean? It means you don't have to worry about friction loss in the hose anymore. [www.samflows.com/sam-nozzle/](http://www.samflows.com/sam-nozzle/)

## How to learn more

Now that you know what SAM can do for your department and how the system works, we're guessing you still have a few questions and would like to see SAM in action. Everybody does. Let's explore some opportunities to learn more:



- **Videos:** If you haven't watched the online videos yet, check them out here: [www.samflows.com/sam-videos/](http://www.samflows.com/sam-videos/)
- **Online SAM experience:** We have a team of experts ready to meet with you virtually to walk through an online demo and answer questions. Apparatus committees find this very helpful as a first step to finding out if SAM is suitable for their department. Schedule a time for your department here: [www.samflows.com/schedule-a-demo/](http://www.samflows.com/schedule-a-demo/)
- **Live SAM demonstration at your department:** Most departments want to meet SAM in real life before committing to it on their apparatus. If you have done an online demo and your department is serious about SAM, we'd love to bring one of our SAM demo trucks to your department so you can put it to the test. Schedule your live demo here: [www.samflows.com/schedule-a-demo/](http://www.samflows.com/schedule-a-demo/)
- **Other SAM users: Don't take our word for it.** Call and talk to some departments with SAM in service and see what they say. To check out the growing list of SAM ambassadors here, contact us here: [www.samflows.com/schedule-a-demo/](http://www.samflows.com/schedule-a-demo/)
- **Talk to an IDEX Fire & Safety SAM expert:** If you're not sure what to do next or have any questions about SAM. They would love to talk to you. [www.samflows.com/schedule-a-demo/](http://www.samflows.com/schedule-a-demo/)



## Trusting SAM in mission-critical applications

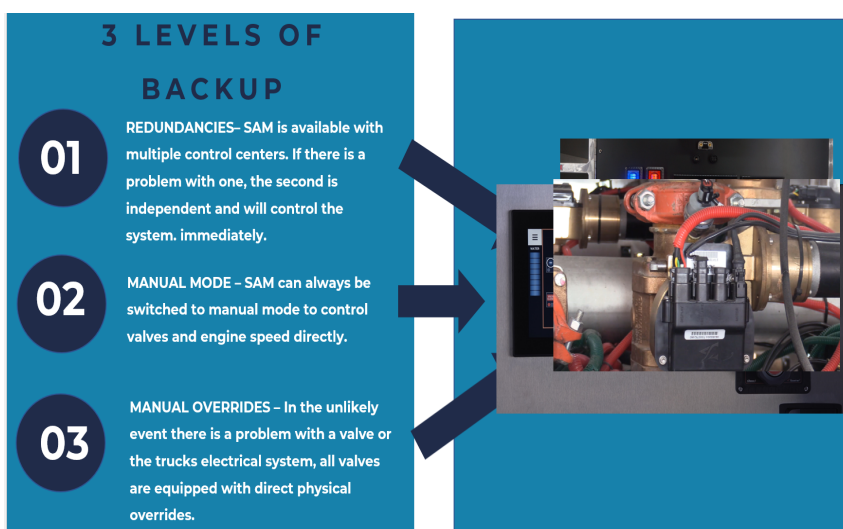
**We know you're skeptical. You should be.** Your fire apparatus is a mission-critical piece of equipment, and you need it to work every time you show up to a fire. That's why the SAM system is designed with multiple layers of redundancy, safeguards, and overrides so that no matter what happens, you'll be able to get water to the fire.

Let's explore things that could go wrong and how SAM keeps you in the fight no matter what happens.

- **We can't control the environment.** SAM has to operate in all conditions. Rain, Sleet, Snow, Heat and Cold. All SAM components are rated to use in the rain and snow have an operating temperature range from -40°F to 130°F, so they are guaranteed to perform in all conditions. Check out this video of the SAM screens operating at -40°F and covered in ice and water, see the **"SAM Screens in the Worst Climates"** video [www.samflows.com/sam-videos/](http://www.samflows.com/sam-videos/)

- **SAM Control screens are 100% redundant.**

Even though it is incredibly unlikely you'll have an issue with the SAM screen, there is a second SAM control center on your apparatus that is 100% redundant to the first screen if it ever were to happen. This 2nd screen means you can continue to pump from that screen until you get the first one fixed. Most importantly, the screens are not doing all of the thinking for the water flow, so they are not a single point of failure



- **Electrical valves all have physical overrides and are independent of one another.** Each valve is 100% independent, and if one valve goes down, the rest will continue to work. If you have to operate that valve specifically, use the manual override. Each valve comes standard with a manual override shaft that can open or close that valve manually and has an optional handwheel that can be mounted directly to the valve.
- **I don't trust electronics.** First of all, you do, and you have been since the late '90s. There has not been a single-engine, transmission, or braking system built since the late '90s that is not 100% digitally controlled. That being said, you haven't stopped using fire trucks, and we are all getting the job done. So how does that relate to SAM and the rest of the fire industry? Let's be honest, the fire industry back in the early 2000s tried to do it their own way that was different from the broader automotive industry. IDEX Fire & Safety included. However, at the same time, the automotive industry around the world developed standards that have given us the reliability we see today globally. So we can't say technology fails or the roadways would be littered with vehicles on the side of the road. SAM uses ONLY those automotive standards and only proven parts that have been in existence for years. So the logic follows that if you trust your truck to drive, you can trust SAM to pump.



- **Repairing SAM components.** Let's be realistic; something will break or fail at some point in time. To ignore this fact would be reckless. So how do we deal with that?
  - 1. We use only components that we have previously sold and stocked.** So regular EVTs can identify parts and replace them easily.
  - 2. SAM has its own diagnostics,** which are all displayed in plain English on our screens. No laptops or plug-ins are needed to see what's wrong. We will specifically tell you what's wrong and with what component. This is a huge feature because instead of finding out something is wrong with SAM on the fire ground, you will see it anytime you power up the truck. Just like the dash lights on your apparatus.
  - 3. We have a specific SAM support team** of EVTs dedicated to helping field service techs with any issues. Your mechanics will talk to our qualified mechanics. If that's not enough, we will get somebody onsite to help you get your truck up and running. We have lots of SAM trucks on the road with lots of different OEMs and dealers, and everyone has been primarily self-sufficient.

### Just two more things:

- 1. SAM components are NOT new.** All components used for the SAM controls have been on fire trucks for years and years and are proven. We didn't make new hardware; we just made it all work together so it can help you save lives and protect property better than you could before. Check out this overview (link to system diagram of SAM system components) of what components are included in the SAM system to see for yourself it isn't new hardware. Because of this, you can trust SAM to keep you in the fight just as well as your current apparatus.



**Utilizes Existing Fire Truck Components  
from brands that have been around for over 100 years**



**Electric  
Valves**



With  
mechanical  
overrides

Introduced in 1992



**Pressure  
Governor  
Technology**



On every truck since 1999



**Qmax  
Pumps**



Released to market in 1999



**Electric  
Intake  
Valves**



With External  
Manual  
overrides

Introduced in 1995



To learn more about SAM, please contact us at [www.samflows.com/schedule-a-demo/](http://www.samflows.com/schedule-a-demo/)



**2. SAM is pre-wired and thoroughly tested at the factory before it gets shipped to the truck builders.** Not only that, but the wiring is manufactured to the same rigorous standards as wiring already on your apparatus today. We use SAE standards and waterproof Deutsch connectors...the same connectors used for fire apparatus wiring for decades. It's reliable, waterproof, and proven in the field.

The number of departments choosing SAM is growing every day. We ask them why they aren't afraid to choose SAM. Their take is this: Sure, more components could eventually have problems than on a mechanical pumper, but the benefits of SAM on the fireground far outweigh any intermittent or infrequent problem that may never happen. The departments that have chosen SAM realize that it is safer and more efficient every time SAM is on a working incident with them. They aren't willing to give up these benefits because someone is afraid of having a problem with a piece of electronics ten years down the road. **You shouldn't either.**



**Which one do you want for your department?**

- A safer fireground every time your crew is at risk

**OR...**

- Less secure technology on your apparatus so you can avoid maybe having to fix a couple of valves in 10 or 15 years

After you've done your research and know everything you need to know about SAM, we've found it to be helpful when departments pull everything together and put it in one place. Since every department is different and has different needs, give this tool a try to summarize why SAM is important for your department:

What SAM Can Do on the Fireground	Requirements for my department (check all that apply)
Prevent the loss of water from burst intake hose, lost draft, or pump operator errors	
Reduce radio traffic in the critical first five minutes	
Allow the attack crew to charge lines on their own to attack the fire faster	
Minimize over-pressurization of attack lines to prevent injury	
Automatically pull a draft the first time without interruption or delay	
Amplify workforce during daytime response when volunteers aren't able to respond	
Reduce human pump operator errors (like forgetting to open the tank to pump valve, etc.)	
Pump from a safe location out of traffic	
Allow your rookie pump operators to pump with confidence and minimize mistakes.	



## Adding SAM to your apparatus spec

### Who can build a SAM truck?

Now that you're ready to add SAM to your spec, you're probably wondering who can build an apparatus with SAM. The answer: All fire apparatus builders in North America can build a truck with SAM. Almost all of them already have produced at least one, and the number is growing every day. Whether you're going out for a bid or buying through a builder on a state bid contract, all manufacturers can include SAM on your apparatus. If you're being told otherwise, give us a call, and we're happy to work through it with you!

### Discussing with your dealer

No matter what dealer you are working with, there are a few things to review with them. The SAM system requires specific equipment to be included in your spec. Because the SAM system has been precisely engineered and thoroughly tested, it is only supplied with IDEX Fire & Safety components to assure proper operation under all conditions.

### The SAM System

The SAM system comes standard with two Control Centers, one pump controller, and a twister throttle control knob for manual mode. Also standard with SAM is a set of four speakers, MIV manual and electric override controls, primer override control, remote MIV activation buttons, buzzer, and an emergency idle button for the secondary control center location. All required control modules and harnessing are also standard with the SAM system.



### Hale Qmax or Qmax-XS Pump

Qmax or Qmax-XS Pumps are recommended, but some other pumps are available. Contact your dealer or IDEX Fire & Safety rep if you require something different than a Qmax pump.



### Akron Brass Electric Valves with Pressure Transducers

Tank to pump, tank fill, auxiliary intakes, and all discharge valves need to be Akron electric valves. Available in 2" – 4" valve size. SAM can support a maximum of 12 discharges.



### Hale Electric Master Intake Valve (MIV)

MIVs are required as a standard for master intakes to be controlled by SAM. SAM can support a maximum of four MIVs and two auxiliary intakes.



### Hale Primer

SAM has been designed to work specifically with the Hale primer for optimal performance. So, nope, other primers can't be specified with SAM.



### Class1 ITL Tank Level Gauges

SAM requires Class1 tank level gauges for foam or water tanks to read the tank level and control the system accordingly.



### Akron Brass Monitors (if equipped)

Integrated monitor control from the SAM system will be available soon. We strongly recommend including it in your spec so you can take advantage of the integrated control features.



## There are also a few optional items to consider for the SAM System

### SAM Tablet

Instead of a complex fire engine pump panel, SAM provides optional multiple control centers or a wireless tablet - both allowing you to maintain visual contact with the crew



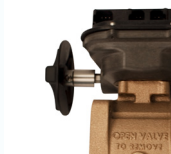
### SAM Smart Nozzles

The innovative SAM Smart Nozzle, with patent-pending N<sub>2</sub>P Technology, is designed to give nozzle operators more information than they've ever had before.



### Manual Override Knobs

All Akron Electric valves come with an override shaft (operated with a standard wrench). Some departments like to have an override knob permanently installed on the valve for easy operation.



### Flow Meters

While flowmeters are not required with SAM, some departments want to measure flow on some or all of their discharges. The Flow Meter is an option available with SAM and needs to be specified.



### SAM Display Cover

A protective aluminum cover is available to cover the SAM control center screen, which flips up during operation. Recommended if screens are installed directly below cross lays or otherwise in harm's way.



### Hale SmartFoam or SmartCAFS

SmartFoam and SmartCAFS systems can be integrated with SAM for optimal and efficient operation and should be specified with SAM.



## There are a couple of things you *don't need* when you specify a SAM system:

- **Pressure Governor:** The **pressure governor is included in SAM**, so you don't need to specify a separate pressure governor.
- **Thermal Relief Valve (TRV):** Since **SAM automatically recirculates water to keep your pump cool**, a TRV is not required with a SAM system.
- **Smart Anode System:** **Anodes are still installed on the pump but integrated with SAM**, so anode replacement status is always indicated.
- **Master Pressure Gauges:** **Master pressure gauges are included in the SAM interface** and are not required when SAM is installed.

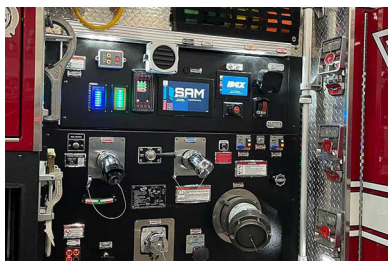


## SAM offers several significant advantages for you in the design of your apparatus

### Make sure to consider some of these things when working with your dealer on your spec:

- **Pump panel location**

Traditional fire apparatus have one pump panel. With SAM, you have two. While most departments install the SAM control center on either side of the pump house, this doesn't have to be the case. Take a look at these creative builds for New Melle, Ada, and Lawrence Fire departments to get your creative juices flowing.



- **Pump house width**

Most of the time, the pump house width is determined by the manual controls and linkages. SAM eliminates the manual controls and linkages and allows for much more flexibility in pump house design. Talk to your dealer or manufacturer of choice about options to shrink your pump house and create more compartment space and flexibility with your next apparatus. In the meantime, check out some of these pump houses:



- **Valve location and pump house access**

While it's doubtful you'll ever need to use the manual override on your valves; it's always good to plan for the worst-case scenario. We recommend working with your manufacturer so that you have easy access to the pump house (fortunately, SAM controls can be mounted on a swing-out panel that opens easily). Make a plan so that if you need to get to a couple of valves to use the manual override, you'll have easy access and a way to do this under pressure.

- **Aerial build flexibility – SAM offers several potential advantages on an aerial build**

Typically, aerial apparatus has limited space for a pump house. SAM is a great option to minimize pump panel space and pump house size. Since the SAM system can come with a second or third screen, the operator could pump from the bucket or platform. Additionally, since pumping with SAM is so much simpler, the operator can focus on aerial operations to maximize the safety of the aerial.



## JUSTIFYING YOUR INVESTMENT IN SAM

We know the drill. You probably have 95% of the decision-makers sold on SAM by now. All that's left is to justify your investment in SAM and get the financial team to dig a little deeper into their pocketbooks.

Now that you've realized what SAM can do for your department and the impact it can have every time your crew arrives at an incident, let's take a look at how departments have been justifying the additional cost of SAM. Because SAM increases safety and efficiency on the fireground, there are some significant ways SAM can help to avoid costly injuries and repairs.

With a SAM system, you also get a ten-year parts AND labor warranty with your pump. In addition, SAM includes equipment alerts and warnings throughout the life of the apparatus so you can catch problems and fix them before they become major repairs.

- For example, In an NFPA survey For the 2003-2006 period, there was an estimated annual average of 40,270 firefighter fireground injuries in the U.S. Of these, 29,710 were minor, and 10,560 were moderate or severe. In the present day, these injuries are increasing. We need to recognize that SAM can reduce firefighters' injuries by making a safer fireground for firefighters. We need to say why we fix these issues with decreased

slips and falls by not overfilling the tank, no top mount injuries, out of traffic, more focused pump operators taking fewer steps on the fireground, not running around the truck.

- Cost to the department for firefighter injuries per the 2019 NIST technical note shows that the average price for a firefighter injury can cost between 12,769 – 158,790 per event. If you can prevent one injury using SAM, you have already paid for your investment.
- SAM also includes a ten-year parts AND labor warranty on the pump and gearbox. This warranty would typically cost \$8,000 but is included at no charge with SAM.

# WARRANTY

### PUMP & GEAR BOX



**10 YEAR**  
PARTS & LABOR

- Auto Cooling protects from cold shocking and over heating
- Auto T2P and re-circ protects from dry pumping and overheating
- Sensors & maintenance reminders ensure operators keep pump serviced

### VALVES



**10 YEAR**  
PARTS

### ELECTRONICS

Screen, Sensor, PMS, Networking



**4 YEAR**  
PARTS



## SAM in service – what departments have to say

### Are you still deciding whether SAM is the right fit for your next apparatus?

The good news is that you don't have to take our word for it. Hear directly from departments that have SAM in service. Here are our customer's testimonial videos - why they bought SAM and the benefits they have seen:

<https://www.samflows.com/sam-videos/>

(Scroll down to "Testimonials")

