

# Emergency isolation for pneumatic actuated control valves

Now any pneumatic control system can be designed to automatically shutdown in a local fire or excess heat situation. The FireChek® can be installed on most fail-safe standard pneumatically operated process control valve actuator, either on/off or throttling. The enhanced FireChek PLUS assembly includes the memory-shape alloy FireChek® thermal shutoff with Versa's SIL Capable High Flow valve. The FireChek and the FireChek PLUS assembly provide a supplementary level of fire safety, while maintaining the original functionality of the specific valve in the process control system.

By Jack Siedler, Assured Automation

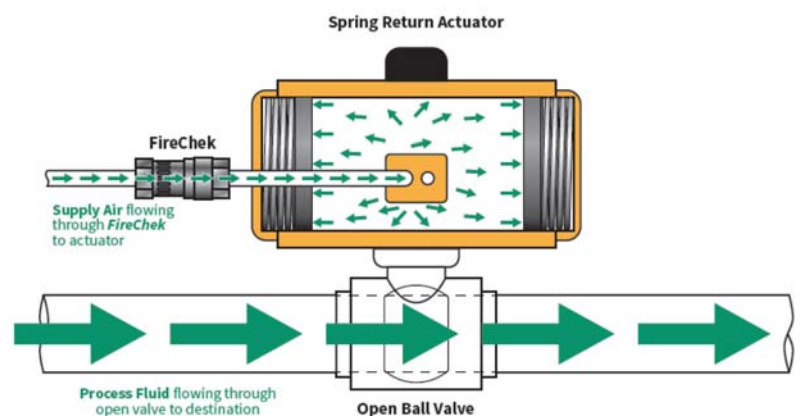
If fire generates heat near the FireChek equipped process control valve, the FireChek closes, shutting off the air supply to the valve, and simultaneously allows the actuator to vent. The spring return pneumatic control valve actuator moves to its failure position. For example, if the actuator /process valve is a fail-closed unit, the control valve will close. This speed and completeness of the FireChek initiated emergency shutdown is critical when piping the following media:

- Flammable or combustible media**  
 The stoppage of flow of a flammable or combustible media through the control valve prevents feeding the fire with more fuel. And since the FireChek also shuts off the air supply, combustibility is further reduced.
- Toxic, carcinogenic or corrosive media**  
 Reduce risk to life and property when media is toxic, carcinogenic or corrosive.
- Valuable media**  
 Minimize financial loss for valuable media.

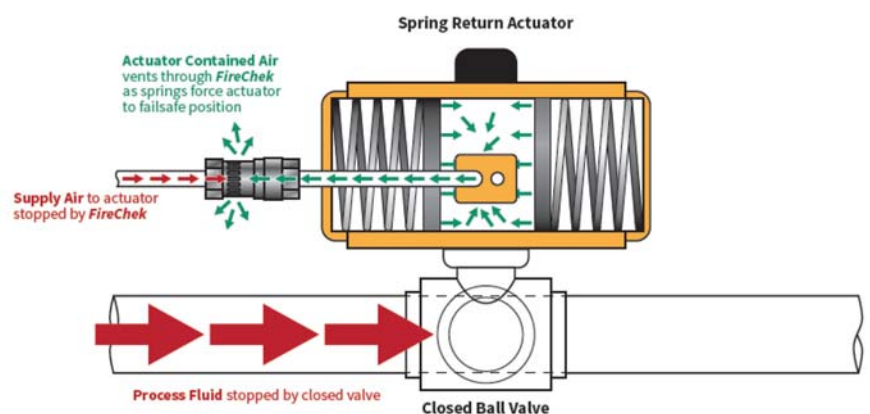
## FireChek alone

Note that the FireChek itself is well suited for the vast majority of pneumatic actuators with ¼" air supply input ports. For larger pneumatic actuators, with air supply ports of ¼", 3/8", ½" or 1", a FireChek assembly is recommended. The FireChek with Quick Exhaust is the next step up, followed by the FireChek PLUS Pilot with a Versa SIL capable high flow pilot valve for quickly closing valves operated by large spring return actuators.

## FireChek® Alone Normal Operation



## Thermal Shut-Off Operation



FireChek® Alone Piped to the Actuator



FireChek with Quick Exhaust when supply air enters the actuator during normal operation



FireChek with Quick Exhaust when contained air exits the actuator if supply air is shut off either by the FireChek or the control system

### FireChek with Quick Exhaust

The FireChek supports excellent opening and closing speeds for pneumatic actuators with 1/4" air supply port. In the event quicker failure position speeds (either open or closed) are desired, a Quick Exhaust Valve can be added to the FireChek to increase its fail safe speed.

### FireChek PLUS with Versa SIL capable high flow Pilot Valves on large actuators

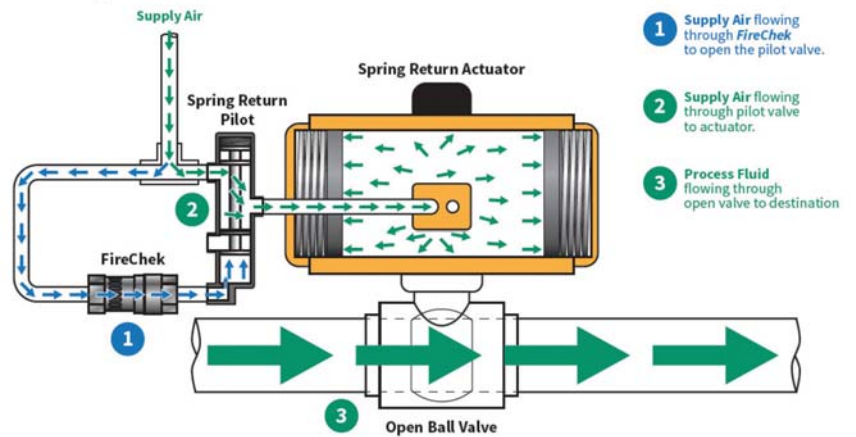
When thermal shutoffs are needed for actuators with large volumes of instrumented air supply requiring air pilot valves, the FireChek PLUS with Versa SIL capable high flow pilot valve is the answer. This solution enables these larger actuators to move swiftly to their fail-safe position (either open or closed) in the event of a fire or heat related emergency. In this case, the FireChek vents the air from the high flow pilot rather than the actuator itself. Note that the FireChek itself is well suited for the vast majority of pneumatic actuators with 1/4" air supply input ports. For larger pneumatic actuators, with air supply ports of 1/4", 3/8", 1/2" or 1", the FireChek PLUS assembly is the preferred solution.

### Benefits of using FireChek thermal shutoff

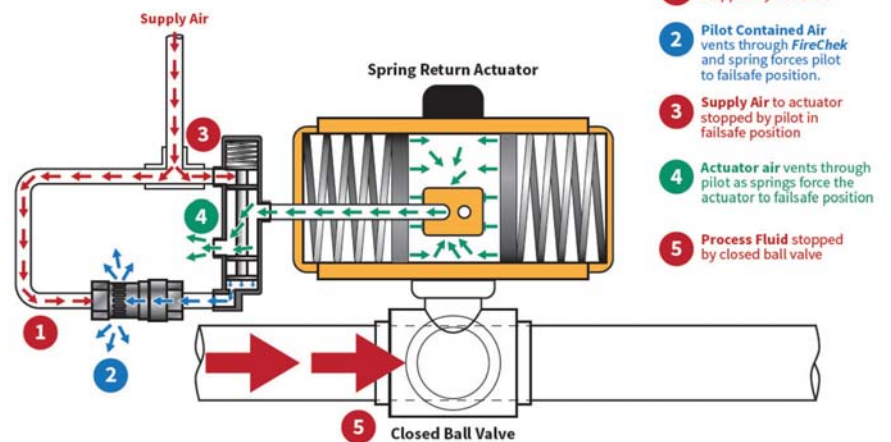
Insurers increasingly require several layers of safety protection. The FireChek replaces

1. The Quick Exhaust Valve cannot be used with NAMUR mounted solenoid or NAMUR mounted air pilot valves. Quick Exhaust Valve must be used with pipe mounted solenoid or air pilot valves.

## FireChek® PLUS with Air Pilot Normal Operation



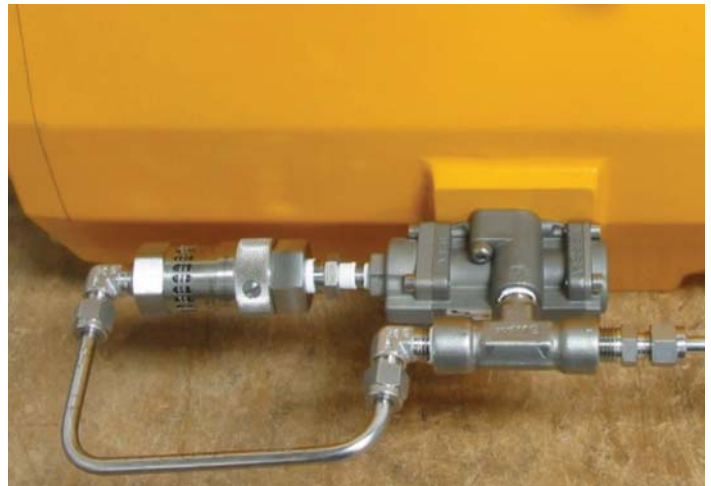
## Thermal Shut-Off Operation



FireChek® PLUS Available in Air Pilot or Solenoid Pilot!



FM Approved FireChek® Piped into the Actuator



FireChek® PLUS with Namur Mounted Air Pilot Valve

the crude and inefficient solutions such as melting plastic tubing, while adding the benefit of supply air shutoff. The FireChek, FireChek with Quick Exhaust, and FireChek PLUS now allow any pneumatically actuated process valve to efficiently double as an isolation valve. Insurers concerned with managing risk increasingly request plant upgrades to include thermal shutoffs throughout the plant's processing – not just at tank sites or pumps. Facilities respond by upgrading their process valves with FireChek assemblies to minimize loss risk in pneumatically controlled process applications for both liquids and gases. And since the FireChek thermal shutoff is FM APPROVED, its usage may help save on insurance costs.

### New installations

The FireChek PLUS thermal shutoff with the Versa stainless steel SIL Capable High

Flow valve can be specified and installed in a number of configurations, such as:

- Temperature activation options of 135°F, 150°F or 165°F
- Operate with an air supply of up to 125 psi (Air control supplied by others), or
- Operate with air or an integral explosion proof solenoid (120 vac). standard, other voltages also available
- Operate with either ¼", 3/8", ½", or 1" air supply piping systems and actuator air supply input ports.

### Upgrades

Existing facilities can easily improve their safety profile by upgrading most pneumatically actuated valves with a FireChek solution. Upgrading to the more efficient, more economical, and

testable FireChek technology does not affect normal everyday plant operation or normal function of the control valve. The upgrade is achieved by simply installing the FireChek, FireChek with Quick Exhaust, or FireChek PLUS pilot valve onto the existing control valve's air supply line.

### Testable and resettable!

A significant advantage of the FireChek thermal shutoff is its testability. Simply heating the unit activates the unit, moving the control valve to its fail-safe position. Then, after allowing the FireChek to cool, a simple twist of the FireChek body by hand, resets the unit and it continues its job in protecting the facility. No tools are required and testing is non-destructive.

(See <http://assuredautomation.com/firechek/FC4> )



FireChek® PLUS with Solenoid Operated Pilot Valve on Mounting Plate

### About the author

Jack Siedler has spent 43 years in the valve industry, including his current eleven year stint as a technical sales specialist with Assured Automation. During his career, Mr. Siedler has worked with bar stock globe control valves (with customized trim), rising-stem three-piece, three-way globe valves and spring and diaphragm-actuated diaphragm control valves. He has experience with sizing valves for chemical and pharmaceutical applications and has provided technical input for valve applications in the nuclear and fossil power industries. Mr. Siedler has also worked with the NAVSEA engineering group in Crystal City, Va. on valve applications for the military market. Mr. Siedler can be reached at [jacks@aa-fs.com](mailto:jacks@aa-fs.com).