FireChek® Heat Activated Pneumatic Shut-off Valves and Pilot Valves

**FEATURES**
- Rapidly responds to temperature rise, not flames
- Vents actuator air pressure
- Closes actuator air supply line
- Needs no power source, self-activates
- Compatible with all pneumatic actuators
- No contact with process fluids
- Easy to test and reset
- Reliable, intrinsic triggering
- Easy to retrofit, installs in minutes
- FM approved

**SPECIFICATIONS**
- **Actuation Time:** 25 sec. or less at a temperature rise rate of 30°F/min.
- **Fill and Discharge Capacity:** 1 liter of air in under 1 sec. at 125 PSI (8.62 bar); 0.49 Cv.
- **Dimensions:** 2.59” length, 1.00” diameter.
- **Weight:** 0.482 lbs.
- **Cv:** see chart on page 6

**MATERIALS**
- Shape-memory Alloy Actuator and Sensor: MEMRY®
- Thermal Insulators: DELRIN®
- O-rings: BUNA-N
- Body Cover, Reset, Shuttle Cap, Pin, and Bias Spring: 300 stainless steel

**NORMAL OPERATION**
- Process Fluid flows through open valve to destination
- Spring Return Actuator

**EMERGENCY OPERATION**
- Process Fluid stopped by closed valve
- Spring Return Actuator

**FireChek® Valve MODEL NUMBERING**
- **Model Number:** FC4XX
- **Connection Type:**
  - NPT = 1/4" NPT female
- **Initiation Temperature:**
  - 135 = 135°F
  - 150 = 150°F
  - 165 = 165°F

**FireChek® Valves**
When the FM approved FireChek® valve senses excessive heat from a nearby fire, it immediately vents the pneumatic actuator and closes the actuator air supply line. Because the FireChek® valve responds to heat, not flame, it offers dramatically improved protection compared with conventional plastic tubing burn-through. The testability and reset ability of the FireChek® valve make it a preferred choice over fusible link-based shutoffs or plastic burn-through tubing. The FireChek® valve triggers quickly to shut off the air supply, preventing plant air from feeding oxygen to a fire.

The shape-memory element senses the ambient temperature and, through a phase induction change, rapidly produces the force and motion to trigger the FireChek® valve. The element is 100% reliable because the shape-memory effect is intrinsic to the alloy. Shape-memory alloys have performed successfully for many years in military, industrial, and consumer product applications.

The FireChek® valve’s manual reset allows routine performance testing for safety maintenance programs. A hot-air gun will quickly actuate the FireChek® valve. After cooling briefly, the FireChek® valve can easily be reset without the use of tools, for continued protection.

FireChek® valves install easily between the pneumatic supply and spring return actuator via two female threaded connections.

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FireChek® Valves with Quick Exhaust

Testable and Resettable Heat Activated Pneumatic Shut-off Valves
(Female 1/4” NPT port for supply, Female 3/8” or 3/4” NPT exhaust port)

FireChek® with Quick Exhaust

The FireChek® valve with Quick Exhaust provides the same protection and functionality as the FireChek® valve, with the added benefit of a larger exhaust port. During normal operation, the FireChek® valve functions exactly the same way as it does when installed by itself, however, when the emergency operation is triggered by excessive heat, the actuator exhaust air is diverted to a larger port by the Quick Exhaust valve. This allows for the spring return actuator to move to the failsafe position faster.

The addition of the Quick Exhaust valve increases the exhaust Cv from 0.56 to 3.3 or 8.8!
(see Cv Values chart on page 5)

MATERIALS
Valve Body: 316SS
Seals: FKM

MODEL NUMBERING
Model Number FC4NPTXQA
Initiation Temperature:
135 = 135°F
150 = 150°F
165 = 165°F
Quick Exhaust:
QSA = NPT 1/4” x 3/8” Exhaust
QSC = NPT 1/2” x 3/4” Exhaust

NORMAL OPERATION

EMERGENCY OPERATION
FireChek® Valve with SIL III High Flow Pilot Valves

Testable and Resettable Heat Activated Pneumatic Shut-off Valves (Compression fitting or NPT ported pilot valves without solenoid valve)

FireChek® Valve with High Flow Pilot Valves

These FireChek® Pilot Valve assemblies add the FM approved FireChek® thermal shutoff valve to a SIL Class III High Flow Pilot Valve without a solenoid valve. They are available with either NPT ported connections, or with a compression fittings for easy retrofitting inline. FireChek® Pilot Valves are available for actuators with port sizes from 1/4” to 1” to accommodate most pneumatic actuator sizes. The assembly has the FireChek® valve installed on the external pilot of a high flow spool valve, thus causing a chain reaction where the FireChek® valve vents the pilot valve, which in turn vents the actuator. See the next page for similar assemblies that include a solenoid valve.

Inline NPT Ported Mounting
Mounts inline on 1/4”, 3/8”, 1/2” or 1” pipe using NPT female ports. Can be installed anywhere inline, including before or after a solenoid valve, making these units operate as a larger version of the FireChek® valve itself.

CONNECTION SIZES
1/4”, 3/8”, 1/2”, 1” NPT female

Cv VALUES
1/4” NPT: 1.8
3/8” NPT: 2.0
1/2” NPT: 5.5
1” NPT: 11.1

MODEL NUMBERING
See Page 6

Inline Mounting with Compression Fittings
Mounts inline on 1/4”, 3/8”, 1/2” or 1” tubing using compression fittings. Can be installed anywhere inline, including before or after a solenoid valve, making these units operate as a larger version of the FireChek® valve itself.

CONNECTION SIZES
1/4”, 3/8”, 1/2”, 1” Compression

Cv VALUES
1/4” NPT: 1.8
3/8” NPT: 2.0
1/2” NPT: 5.5
1” NPT: 11.1

MODEL NUMBERING
See Page 6

NORMAL OPERATION

1. Supply Air flowing through the FireChek® valve to open the pilot valve.
2. Supply Air flowing through pilot valve to actuator.
3. Process Fluid flowing through open valve to destination

EMERGENCY OPERATION

1. Supply Air to pilot valve stopped by the FireChek® valve
2. Pilot Contained Air vents through the FireChek® valve and spring forces pilot to failsafe position.
3. Supply Air to actuator stopped by pilot in failsafe position
4. Actuator air vents through pilot as springs force the actuator to failsafe position
5. Process Fluid stopped by closed ball valve

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FireChek® with Solenoid Operated High Flow Pilot Valves

These FireChek® assemblies add the FM approved FireChek® thermal shutoff valve to a solenoid operated SIL Class III High Flow Pilot Valve. These assemblies are available with either an NPT ported connection to the actuator, or with a NAMUR mounting interface for direct mount of the pilot valve to the actuator. FireChek® Pilot Valves are available for actuators with port sizes from 1/4” to 1” to accommodate most pneumatic actuator sizes. Available for actuators with port sizes from 1/4” to 1” to accommodate most pneumatic actuator sizes. The assembly has the FireChek® valve installed on the external pilot of a high flow spool valve, thus causing a chain reaction where the FireChek® valve vents the pilot valve, which in turn vents the actuator.

NAMUR Mounting
Mounts directly to a ¼” NAMUR style pneumatic valve actuator. Can be installed as a new installation, or to replace an existing NAMUR solenoid in the field.

NPT Ported Mounting
Mounts directly to actuator using a SS plate. Can be special ordered without plate and either no actuator connection tube or custom length tube for remote mounting.

**CONNECTION SIZES**

To Actuator:
1/4” NAMUR

To Supply Air:
1/4” NPT Female

**SOLENOID VOLTAGES**

12vDC, 24vDC, 120vAC, 240vAC

**SOLENOID RATINGS**

Nema 4/4x/7/9
Class I, Div. 1 Groups C & D
Class I, Div. 2 Groups A, B, C & D

**Cv VALUES**

Inlet: 1.6
Exhaust: 1.6

**MODEL NUMBERING**

See Page 6

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**NORMAL OPERATION**

1. Supply Air flowing through the FireChek® valve to solenoid pilot valve.
2. Supply Air flowing through the energized solenoid to open the pilot valve.
3. Supply Air flowing through pilot valve to actuator.
4. Process Fluid flowing through open valve to destination

**EMERGENCY OPERATION**

1. Supply Air to pilot valve stopped by FireChek® valve
2. Pilot Contained Air vents through the solenoid and FireChek® valve as spring forces pilot to failsafe position.
3. Supply Air to actuator stopped by pilot in failsafe position.
4. Actuator air vents through pilot as springs force the actuator to fail safe position.
5. Process Fluid stopped by closed ball valve

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## FireChek® Series

Testable and Resettable Heat Activated Pneumatic Shut-off Valves

<table>
<thead>
<tr>
<th>Shut-off Valve Type</th>
<th>P&amp;ID Symbol</th>
<th>Pneumatic Schematic Symbol</th>
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</thead>
<tbody>
<tr>
<td>FireChek®</td>
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<td><img src="image2" alt="FireChek® Pneumatic Schematic Symbol" /></td>
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<td>FireChek® with Quick Exhaust</td>
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<td><img src="image4" alt="FireChek® with Quick Exhaust Pneumatic Schematic Symbol" /></td>
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<td>FireChek® with High Flow Pilot</td>
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<td>FireChek® with Solenoid Operated High Flow Pilot</td>
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<td><img src="image8" alt="FireChek® with Solenoid Operated High Flow Pilot Pneumatic Schematic Symbol" /></td>
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FireChek® with High Flow Pilot Valves

Testable and Resettable Heat Activated Pneumatic Shut-off Pilot Valves

MODEL NUMBERING

Model Number
Series:
**FC4NPT** = *FireChek®* Heat Activated Pneumatic Shut-off Valve

Initiation Temperature:
- **135** = 135°F (special order)
- **150** = 150°F (special order)
- **165** = 165°F (standard)

Pilot Valve:
- **PS3** = Stainless Steel, 3-way, SIL III High Flow Pilot Valve

Size of Pilot Valve Ports:
- **A** = 1/4”
- **B** = 3/8”
- **C** = 1/2”
- **E** = 1”

Pilot Valve Mounting Connection:
- **N** = NAMUR (1/4” only)
- **P** = Plate Mounted (for Electric Pilots) Inline NPT Ported (FNPT inlet and outlet)
- **C** = Inline Compression fittings (not available on Electric Pilots)

Note: All models come with NPT exhaust port

Pilot Type:
- **E** = with explosion proof electric solenoid valve
- **P** = without solenoid valve

Pilot Solenoid Voltage:
- **A** = 120vAC
- **B** = 24vDC
- **C** = 240vAC
- **F** = 12vDC
- **P** = None (if P is chosen above for Pilot Type)

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Cv VALUES

<table>
<thead>
<tr>
<th>Shut-off Valve Type</th>
<th>1/4” Inlet</th>
<th>1/4” Exhaust</th>
<th>3/8” Inlet</th>
<th>3/8” Exhaust</th>
<th>1/2” Inlet</th>
<th>1/2” Exhaust</th>
<th>1” Inlet</th>
<th>1” Exhaust</th>
<th>Air Pressure (min - max)</th>
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<tbody>
<tr>
<td>FireChek® Valve</td>
<td>0.45</td>
<td>0.56</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0 - 125 psi</td>
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<tr>
<td>FireChek® valve with Quick Exhaust</td>
<td>0.45</td>
<td>3.3</td>
<td>-</td>
<td>-</td>
<td>0.45</td>
<td>8.8</td>
<td>-</td>
<td>-</td>
<td>5 - 125 psi</td>
</tr>
<tr>
<td>FireChek® Valve with NAMUR Pilot</td>
<td>1.6</td>
<td>1.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>25 - 125 psi</td>
</tr>
<tr>
<td>FireChek® Valve with Ported Pilot</td>
<td>1.8</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
<td>5.5</td>
<td>5.5</td>
<td>11.1</td>
<td>11.1</td>
<td>50 - 125 psi</td>
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