Excess Flow Valves for Gas Service Lines

elster
Perfection

Excess Flow Valves (EFV)

The safe delivery of gas remains a primary mission of the worldwide natural gas industry.

To help accomplish this fundamental task, more and more utilities are taking safeguards to minimize occurrences of blowing gas due to pipe line breaks caused by third party damage and natural disasters. And the easiest, most dependable, and economical way is with an EFV excess flow valve from Elster Perfection.

Excess flow valves are incorporated into our Permasert® couplings, PermaLock® Mechanical Tapping Tees and other gas distribution products...making the installation of an EFV as easy as installing Elster Perfection products. These self-actuating valves automatically close when gas flow exceeds a predetermined rate.

Excess Flow Valves for Gas Service Lines

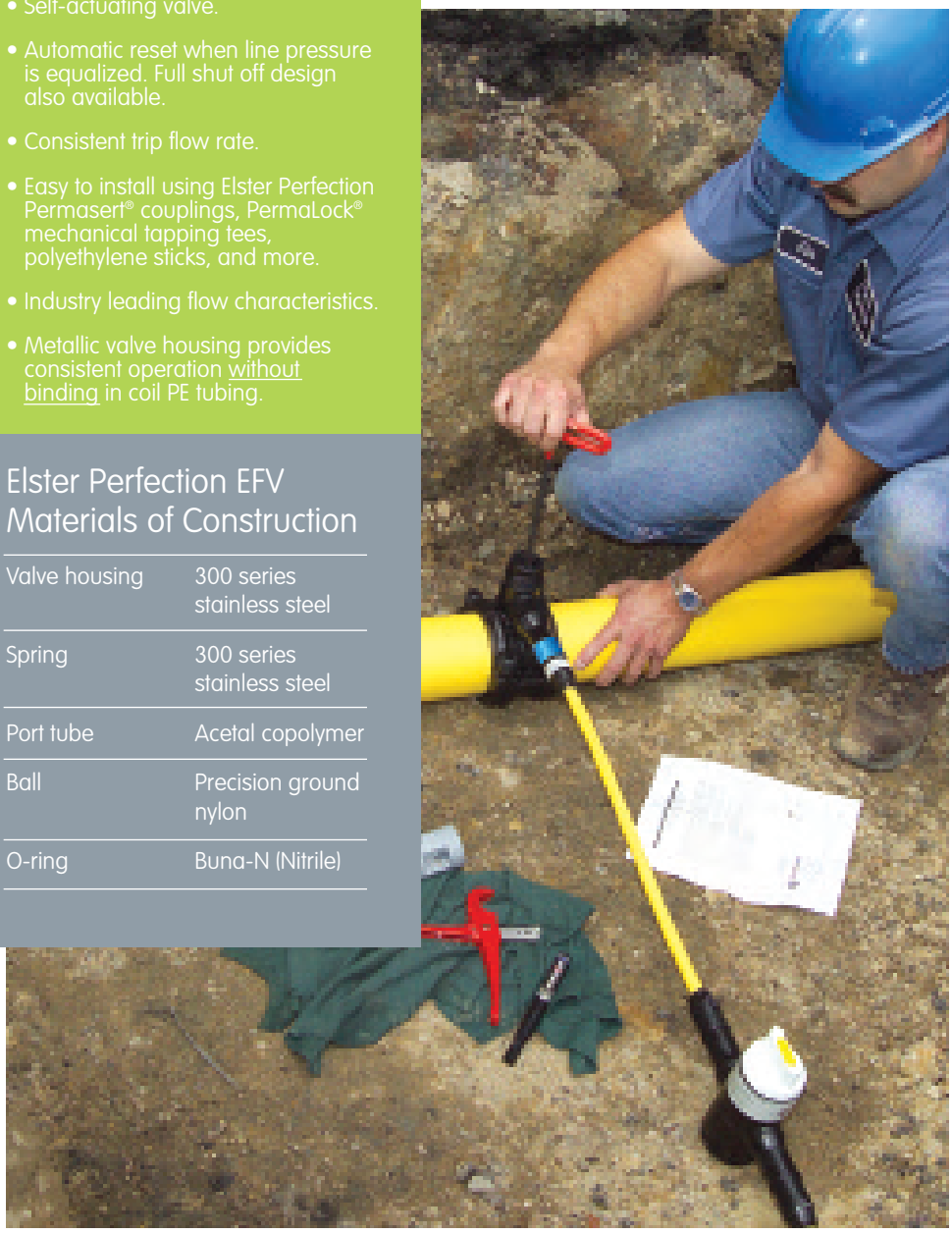
Excess flow valves are incorporated into Elster Perfection's Permasert® couplings, PermaLock® mechanical tapping tees and other gas distribution products...making the installation of an EFV as easy as installing the coupling or tapping tee.

Advantages

- Self-actuating valve.
- Automatic reset when line pressure is equalized. Full shut off design also available.
- Consistent trip flow rate.
- Easy to install using Elster Perfection Permasert® couplings, PermaLock® mechanical tapping tees, polyethylene sticks, and more.
- Industry leading flow characteristics.
- Metallic valve housing provides consistent operation without binding in coil PE tubing.

Elster Perfection EFV Materials of Construction

Valve housing	300 series stainless steel
Spring	300 series stainless steel
Port tube	Acetal copolymer
Ball	Precision ground nylon
O-ring	Buna-N (Nitrile)



How the Elster Perfection EFV Functions

The EFV prevents catastrophic leakage by automatically tripping when gas flow exceeds a predetermined rate. When the gas flow rate reaches the predetermined critical value, the force on the ball exceeds the opposing force on the spring causing the ball to seal against a seat. Bleed-by, or by-pass of gas, is achieved with a small notch in the ball seat. Once the damage down stream is corrected, the bleed-by flow of gas allows for pressure equalization of the upstream and downstream sides of the valve, allowing the valve to reset into the open position. A full shut-off EFV design is available but requires manual reset of the EFV.

Elster Perfection EFVs are currently available for operation at trip flow rates of 400, 600, 800, 1100 and 1800 SCFH (measured at 10 psig). These valves are designed to provide dependable maintenance-free operation. The Elster Perfection EFV design and large port area allow particulate matter to pass through the valve without damage or build-up. These excess flow valves provide extremely consistent trip flow rates and very low pressure drop across the valve. Carefully controlled bleed-by assures automatic reset at a pressure differential as low as 1.5 psig.

Excess Flow Valve Performance Characteristics

Extensive testing at our research and development laboratory confirms all performance characteristics of the EFV.

Testing and Compliance

Extensive testing at the Elster Perfection research and development laboratory confirms all performance characteristics of the Excess Flow Valve. Testing for trip flow rates, bleed-by flow rates, and pressure drop confirms that it meets or exceeds all applicable existing and proposed standards and regulations.

Elster Perfection Excess Flow Valves are in full compliance with the requirements of MSS SP-115, ASTM F 1802, ASTM F 2138 and US DOT CFR Title 49, Part 192.381. All valves are 100% factory tested for trip point and bleed-by flow rate, prior to shipment.

EFV Performance Characteristics

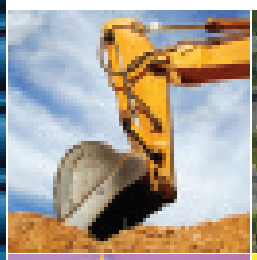
Trip Flow Rate

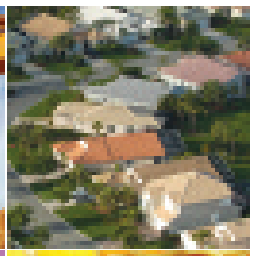
The flow rate for each of the charts included in this literature is measured at 10 psig for a random sampling of 20 EFVs. The range is calculated using +/-3 standard deviations from the mean. The trip flow rate throughout the pressure range is then extrapolated by testing three (3) typical EFVs at various pressures and adding and subtracting the same percentage of flow as at 10 psig to achieve +/-3 standard deviations.

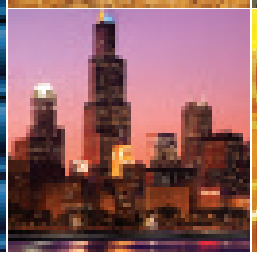
Elster Perfection EFV

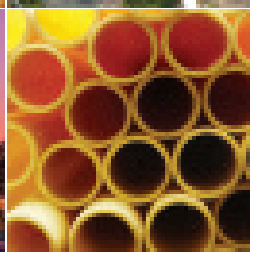
The Elster Perfection EFV is manufactured to its own specifications and testing requirements. These requirements are available upon request. The accompanying data should be consulted as a guide for the selection and use of the EFV since the environment can impact operation and actuation of the installed EFV. The Elster Perfection EFV is not designed to actuate below 5 psig.

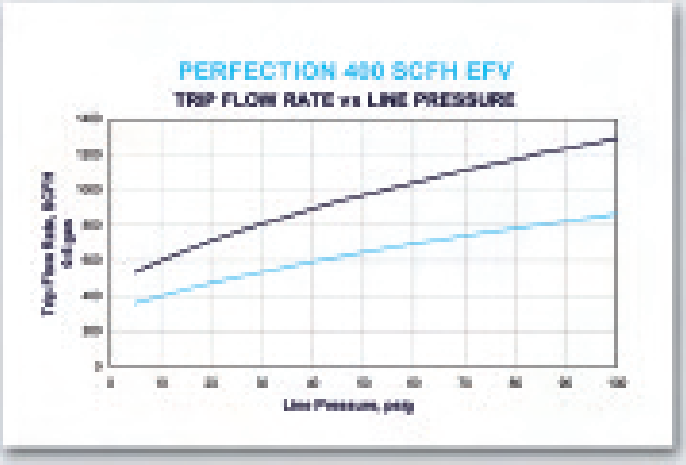
Any questions relating to the suitability of an Elster Perfection EFV for a particular application should be directed to Elster Perfection.

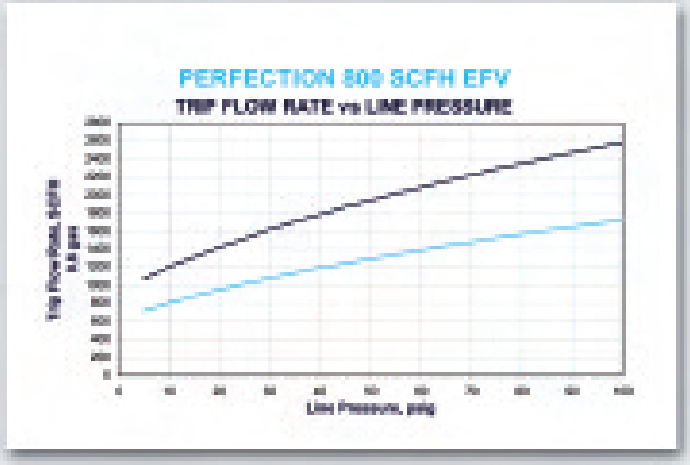


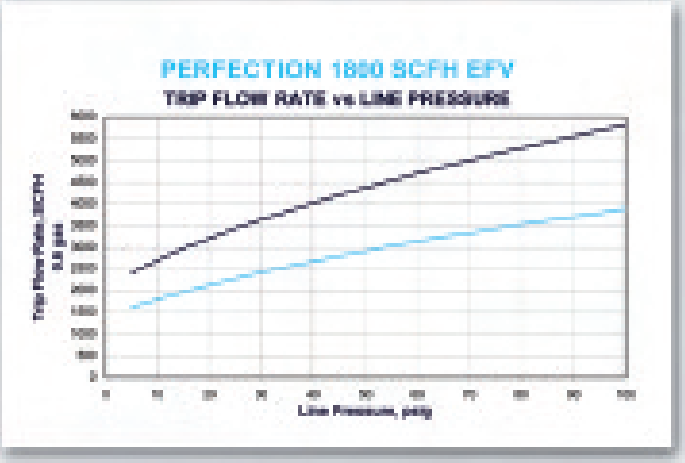












For a detailed specification including additional sizes and flow test results, please contact your local Elster Perfection sales representative or Elster Perfection directly at 800-544-6344.

Excess Flow Valve Sizing and Protectable Line Length

Elster Perfection has designed a quick and easy to use excess flow valve sizing calculator. The Elster Perfection EFV flow calculator provides assistance in selecting the appropriately sized EFV for the application. The flow calculator also provides the protectable line length. To use the calculator, the following information must be available:

- Service line tubing size
- Service line wall thickness
- Minimum service inlet pressure
- Maximum anticipated operating flow

For a copy of the Elster Perfection flow calculator or assistance in sizing your excess flow valve, please contact your local Elster Perfection sales representative.

Excess Flow Valve Frequently Asked Questions

Q: What is the reset time associated with your bleed-by version EFV?

A: This is directly related to the service line length. Elster Perfection does have data summarizing reset times at prescribed pressures and service lengths. Please contact your local sales representative or Elster Perfection directly for more information.

Q: Do these valves reset themselves automatically?

A: Yes, Elster Perfection's EFV with bypass is designed to allow a small amount of gas or "bleed-by" past the ball. After the service line has been repaired, the bleed-by allows pressure to equalize on both sides of the ball, allowing the spring to push the valve back into the open position.

Q: Does Elster Perfection offer a full shut-off design? If so, how is that design reset?

A: Yes, we also manufacture an EFV that is considered full shut-off. To reset the EFV, follow your company's procedure to reset or you can purchase a full shut-off EFV version housed in a curb valve that allows manual reset of the EFV without back pressuring the service.

Q: Why does the EFV shut-off when I energize the customer's service or open the gas cock on the riser?

A: As per the instruction sheet included with our EFV, you must actuate the gascock slowly or throttle the valve to prevent a sudden push of gas. The EFV can interpret this sudden push of gas as service line rupture and shut-off the flow of gas.

Q: Will particulate matter (dirt, debris, etc.) affect the performance of the Elster Perfection EFV?

A: Elster Perfection's unique ball and spring design EFV has been tested and qualified and meets all applicable codes and standards. Specifically, ASTM 1802 requires the valve be tested in a line with a prescribed amount of ferric oxide powder and kerosene.

Excess Flow Valve Product Applications

The safe delivery of gas remains a primary mission of the worldwide natural gas industry.

Permasert® Couplings

The heart of our complete main-to-meter gas distribution system, Permasert couplings are safe and remarkably easy to install. Permasert EFV couplings are available in many different configurations and sizes, including a special repair or "cut-in" coupling for service line EFV retrofitting. All Permasert couplings provide a pull-out strength greater than the connected polyethylene tubing.

- Ideal for retrofitting EFVs into service lines or for new installations
- Tee and Wye fittings are available and are designed to accommodate branch service installations
- Sizes from 1/2" CTS to 1-1/4" IPS
- Available for all plastic pipe wall thicknesses
- Molded from ASTM D 2513, gas grade polyethylene materials

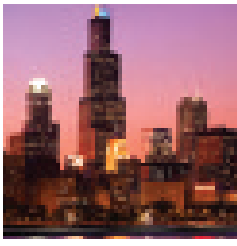
PermaLock® Mechanical Tapping Tees

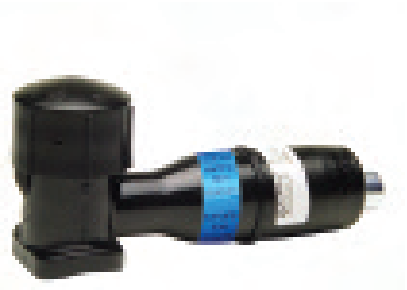
Our full-encirclement mechanical tapping tee is the safe, reliable and economical way to join a polyethylene service line to a polyethylene gas main. PermaLock EFV tees provide a simple, gas-tight, non-heat fusion service line connection without special equipment.

- Economical means of installing EFVs into new service lines without the need for special tools
- Main sizes of 1-1/4", 2", 3", 4", 6", 8" and 12" IPS
- Permasert and fusion outlet sizes from 1/2" CTS to 1-1/4" IPS
- Molded from ASTM D 2513 gas grade materials
- Allows for EFV installation closest to the main for maximum service line protection

Stick and Stick-by-Permasert

- Available in stick design to accommodate mechanical, butt fusion, socket fusion or electrofusion joining methods, 1/2" CTS through 2" IPS in either PE2406 or PE3408 materials
- Stick by Permasert outlet also available in sizes 1/2" through 2" IPS
- Steel sticks also available





Heat Fusion Tapping Tees

Heat fusion tapping tees are available from Elster Perfection with factory-installed excess flow valves located in the tee outlet or fused on PE "stick". Permasert couplings or fusion outlets are available.

- Ideal for new service line installations including EFVs
- Allows for EFV installation closest to the main for maximum service line protection
- Permasert or fusion outlet sizes from 1/2" CTS to 1-1/4" IPS
- Electrofusion tapping tee configurations also available

PSV/EFV Combo Shut-off Valves

Elster Perfection's exclusive combo valve incorporates a full shut-off EFV inside the industry's leading curb valve. The combo valve automatically and completely shuts off the gas flow if activated, and allows for simple and safe resetting after service line repairs are completed.

- Sizes from 1/2" CTS to 1-1/4" IPS
- Available with EFV located in valve port opening to allow for easy manual reset of the EFV without back pressuring the service line
- Controlled reset of the EFV (not subject to waiting for pressure equalization)
- Provides the ability for manual shut off under any condition of flow
- Allows timely and easy purging of the repaired service line