



PHMSA Public Meeting

Dresser Excess Flow Valves

Overview

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Dresser EFV - Sizes

Dresser manufactures EFV's for direct (size-on-size) application in polyethylene pipe and tubing of the following sizes:

- $\frac{1}{2}$ " CTS
- $\frac{1}{2}$ " IPS
- $\frac{3}{4}$ " CTS
- $\frac{3}{4}$ " IPS
- 1" CTS
- 1" IPS



Adapter configurations for other pipe sizes are also available

Dresser EFV – Capacities

	LOW CAPACITY	MEDIUM CAPACITY	HIGH CAPACITY
1/2" CTS	X	X	N/A
1/2" IPS	X	N/A	N/A
3/4" CTS	X	X	X
3/4" IPS	X	X	X
1" CTS	X	X	X
1" IPS	X	X	X

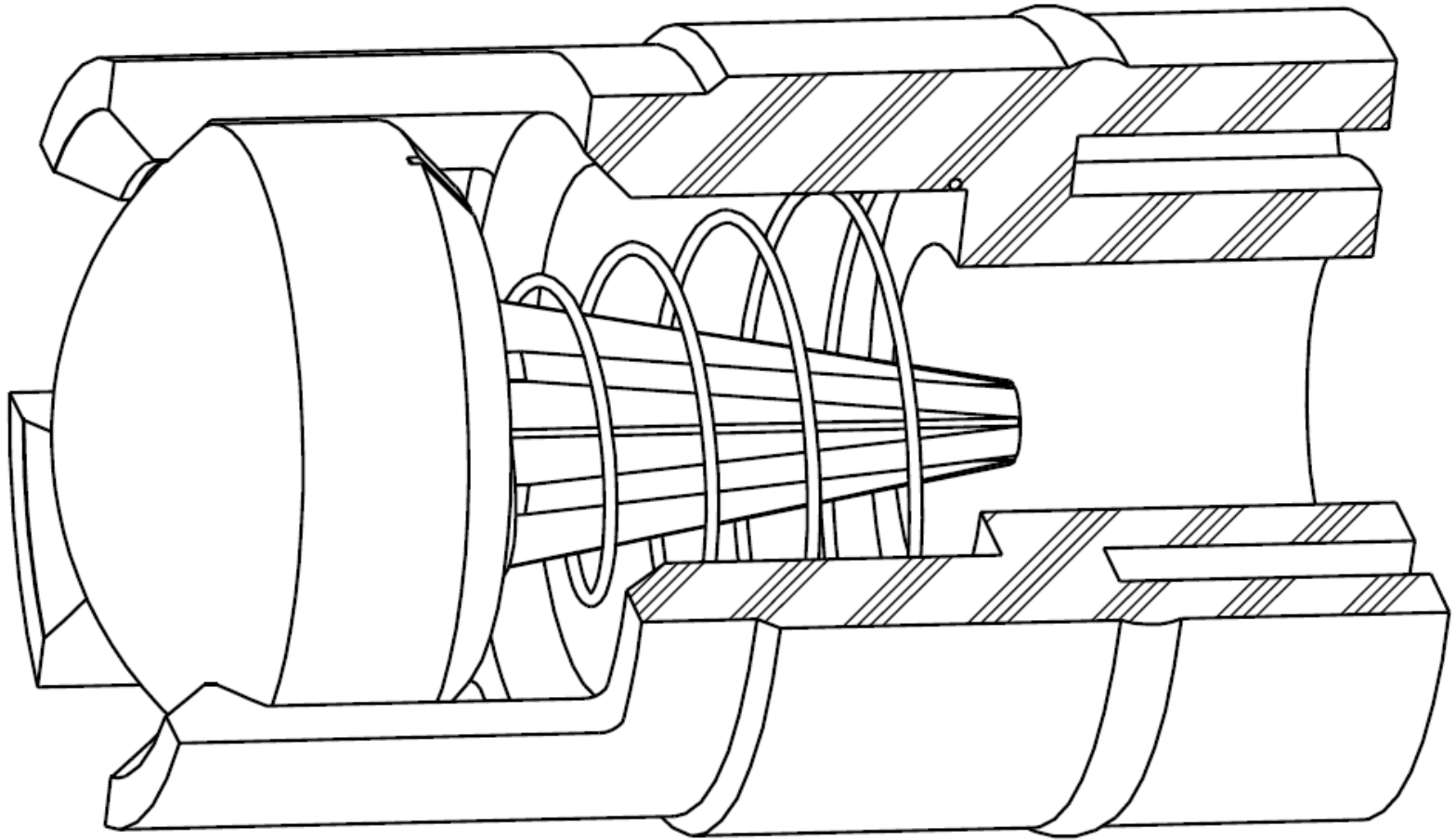
Other pipe diameters are available on application



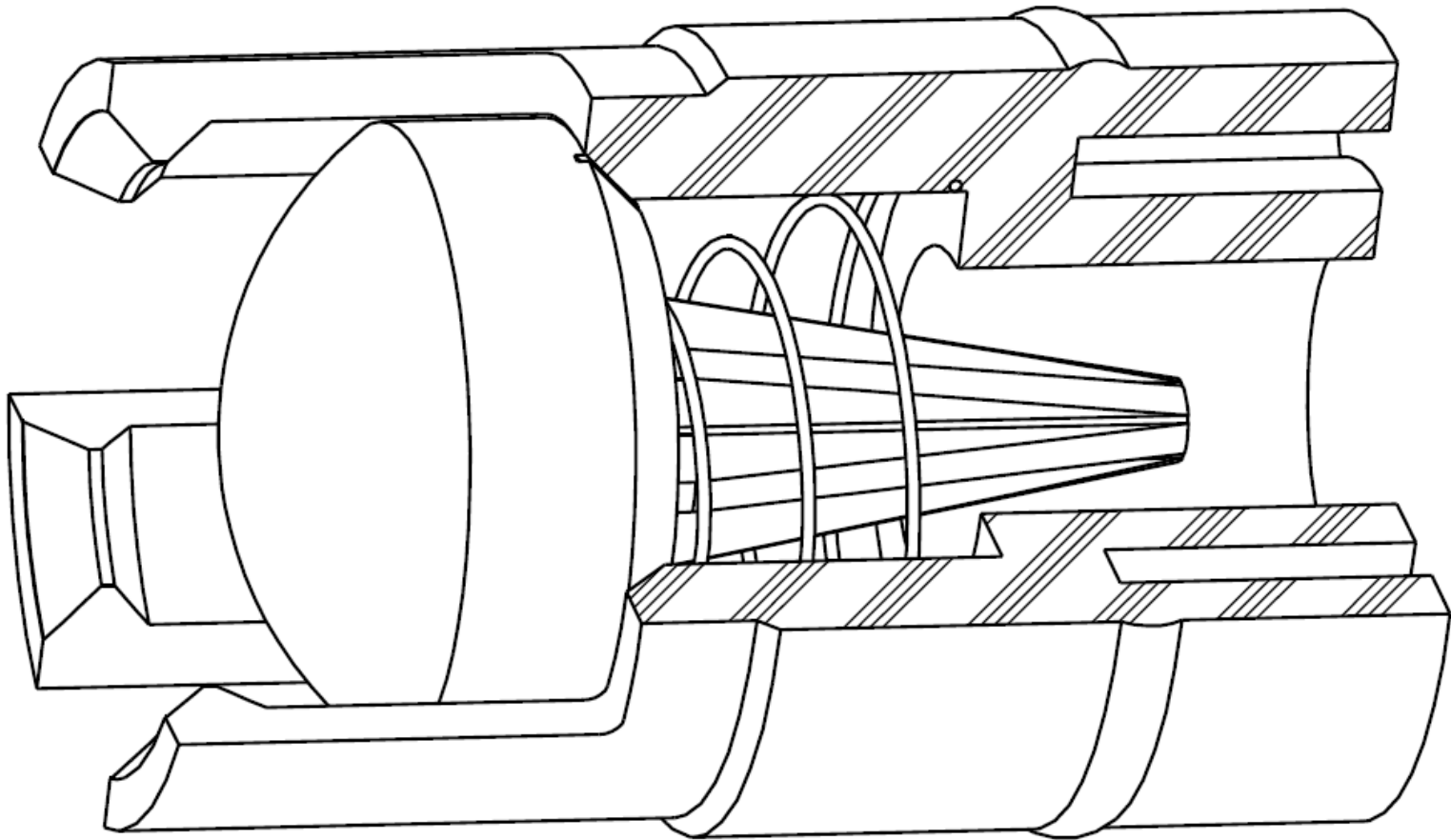
Dresser EFV - Configurations



Dresser EFV – Open Position



Dresser EFV – Closed Position



Dresser EFV - Considerations for Selection

Piping Configuration

- *Line Size*
- *Pipe Material / Wall Thickness*
- *Type of joints*

Flow Characteristics

- *Minimum system pressure*
- *Gas consumption rate (SCFH)*
- *Service line length*

Outputs:

Trip Rate vs. Line Pressure

- *Pressure Loss across EFV at Maximum Trip Rate*
- *Protected Line Length vs. Line Pressure*



Dresser EFV – Sizing Calculation

Dresser Piping Specialties

EFV Calculation Sheet

October 19, 2006

PIPE/TUBING SIZE:

3/4" CTS (7/8" OD) 0.090" WALL

0.673 in. Minimum Inside Diameter

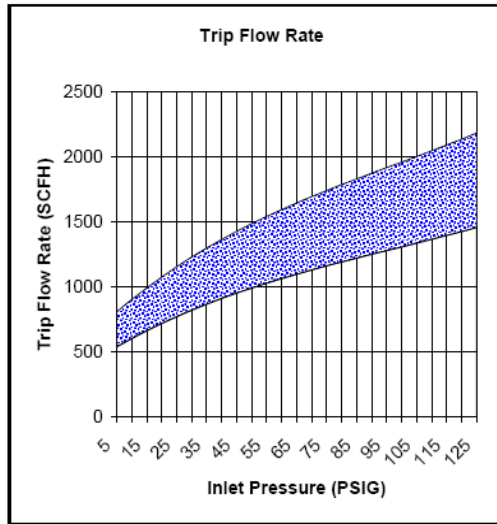
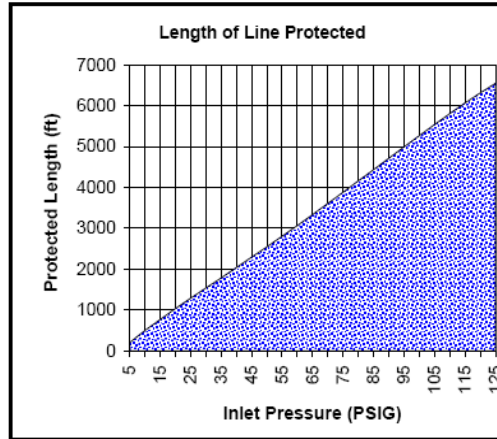
EFV SIZE AND CAPACITY:

3/4 CTS Low Capacity

52 in. w.c. pressure drop at max. trip rate

Inlet Pressure (PSIG)	Trip Flow Rate (SCFH 0.6 g Gas)		Line Length Protected (ft)
	Minimum	Maximum	
5	538	807	200
10	602	902	496
15	661	992	770
20	717	1076	1031
25	770	1155	1285
30	820	1230	1536
35	866	1300	1785
40	911	1366	2035
45	952	1428	2288
50	991	1487	2544
55	1029	1543	2803
60	1064	1596	3066
65	1098	1647	3333
70	1131	1696	3604
75	1162	1743	3878
80	1192	1789	4155
85	1222	1833	4433
90	1251	1877	4711
95	1280	1920	4989
100	1309	1963	5264
105	1337	2006	5536
110	1367	2050	5802
115	1396	2094	6060
120	1427	2140	6308
125	1458	2187	6545

Dresser Piping Specialties - Bradford PA 16701



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Line Length Equation:

$$L = \left[\frac{2826 \cdot ID^{2.725}}{G^{0.425} \cdot Q} \right]^{1.74} \cdot (P_1^2 - P_2^2)$$

Symbols:

G- Specific Gravity of Line Content -0.6 for natural gas (dimensionless)

ID- Inside diameter of service line - minimum per ASTM D2513 Tolerances (in)

Q- Maximum trip Flow Rate at given inlet pressure (SCFH)

P₁- Distribution main pressure less pressure loss across EFV corresponding to maximum trip flow rate, Q (PSIA)

P₂- Outlet pressure - atmospheric (14.7 PSIA)

L- Length of service line protected by the selected EFV (ft)

NOTES:

www.dressercouplings.com



Dresser EFV - Flow Characteristics

Minimum System Pressure

- *EFV's use the kinetic energy of flowing gas to actuate*
- *Trip flow rates are dependant on system pressure*

Maximum Gas Consumption

- *Maximum throughput of meter/regulator*
- *Total BTU/hour of all appliances/1000*



Current Offering:

EFV for customer purchase or voluntarily install an EFV on new or completely replaced service lines (single-family residences)

Current Exceptions:

- Pressure less than 10 PSIG*
- Contaminants in system that will impair performance of EFV*
- EFV interferes with maintenance activities (dewatering, etc.)*

Dresser EFV – “PIPES Act” of 2006

- *Eliminates notification option for EFV's*
- *Same exceptions as notification rule*
- *DIMP final rule expected 3rd quarter, 2009*
- *Does not address multi-unit residential buildings or commercial customers*



Dresser EFV's – Installed Base

- *Over 1 Million Sold*
- *Local Gas Distribution Utilities*
- *Gas Municipalities*
- *Distributors*
- *Service Contractors*



Dresser EFV - Standards

- *ISO 9001 Quality System*
- *Test method*
 - *ASTM F1802*
 - *Scope: ½" CTS to 1-¼" IPS*
- *Product Specifications*
 - *MSS SP-115*
 - *Scope: ½" CTS to 1-¼" NPS*
 - *ASTM F2138*
 - *Scope: ½" CTS to 2" IPS*
 - *49 CFR 192.381*
- *Each EFV is 100% Production tested per above standards*



Known EFV Issues

- *Failure to Properly Apply/Size EFV*
- *Future loads increased vs. present loads*
 - *Outbuildings, Grills, Pool Heaters, etc.*
 - *Size EFV to meet M&R capacity*
- *Stand-up and purging*
 - *Test media density not equal to natural gas*
 - *False trip during purge - avoided by throttling of valve or use of a “rate cap”*
- *3rd Party considerations:*
 - *“Walk-a-ways”*
 - *Unauthorized repairs*
- *System Contaminants*
- *Improper Reset Procedures*

Application Limits and High-Volume Inquiries

Current EFV line is designed to meet needs of current EFV market

- 5 PSI and higher
- Typical single family residential loads
- ½" CTS (0.625" OD) thru 1-1/4" NPS (1.660" OD)

Several LDC's have inquired on EFV's for larger services

- 3M-5M
- 1-1/4" NPS thru 2" NPS service sizes
- Interest is somewhat tentative at this point

Potential Issues and Obstacles - High Volume EFV's

Sizing

- *Commercial EFV's should be sized to:*
 - *Match the capacity of the regulator and meter*
 - *Protect entire service line length*

Reset Time

- *Time to reset is affected by:*
 - *Bypass flow rate*
 - *Upstream line pressure*
 - *Service line length and Size*
 - *Larger service lines will take longer to reset*
 - » *Non- bypass EFV's – Reset manually?*
 - » *Specified minimum bypass flow?*

Questions?

