

R.W. LYALL

**U.S. D.O.T. PHMSA
Excess Flow Valves
Group Meeting**

**Applications beyond single
family residence**



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Gas Piping Products

Brief Introduction

- **R.W. Lyall remains dedicated to working with its customers to provide the products they need to provide safe and reliable service.**
- **R. W. Lyall first entered the EFV market in 1992 to meet a customers specific need.**
- **Today, R. W. Lyall supplies EFV's to over 200 customers in the U.S.A., Canada & Mexico with an estimated 1MM units sold.**



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Expanding EFV Application

- We need to be clear on what we are expanding.
 - A device that is designed to reduce the flow of gas when conditions exceed predetermined levels.
 - A device that takes advantage of Bernoulli's principles to provide the *force* to *close* some sort of sealing mechanism that is normally held open by an opposing force (spring, magnet, gravity, etc.).

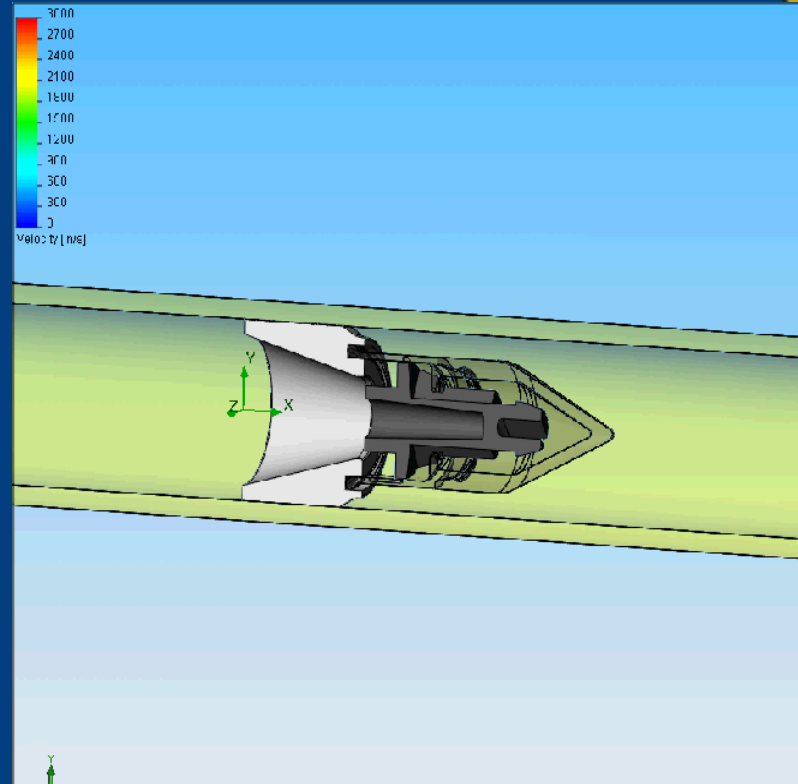


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An Illustration

- **Actuation of a Mechanical Excess Flow Valve is Directly Dependent upon Gas *Velocity* through the orifice causing a pressure drop across the valve.**

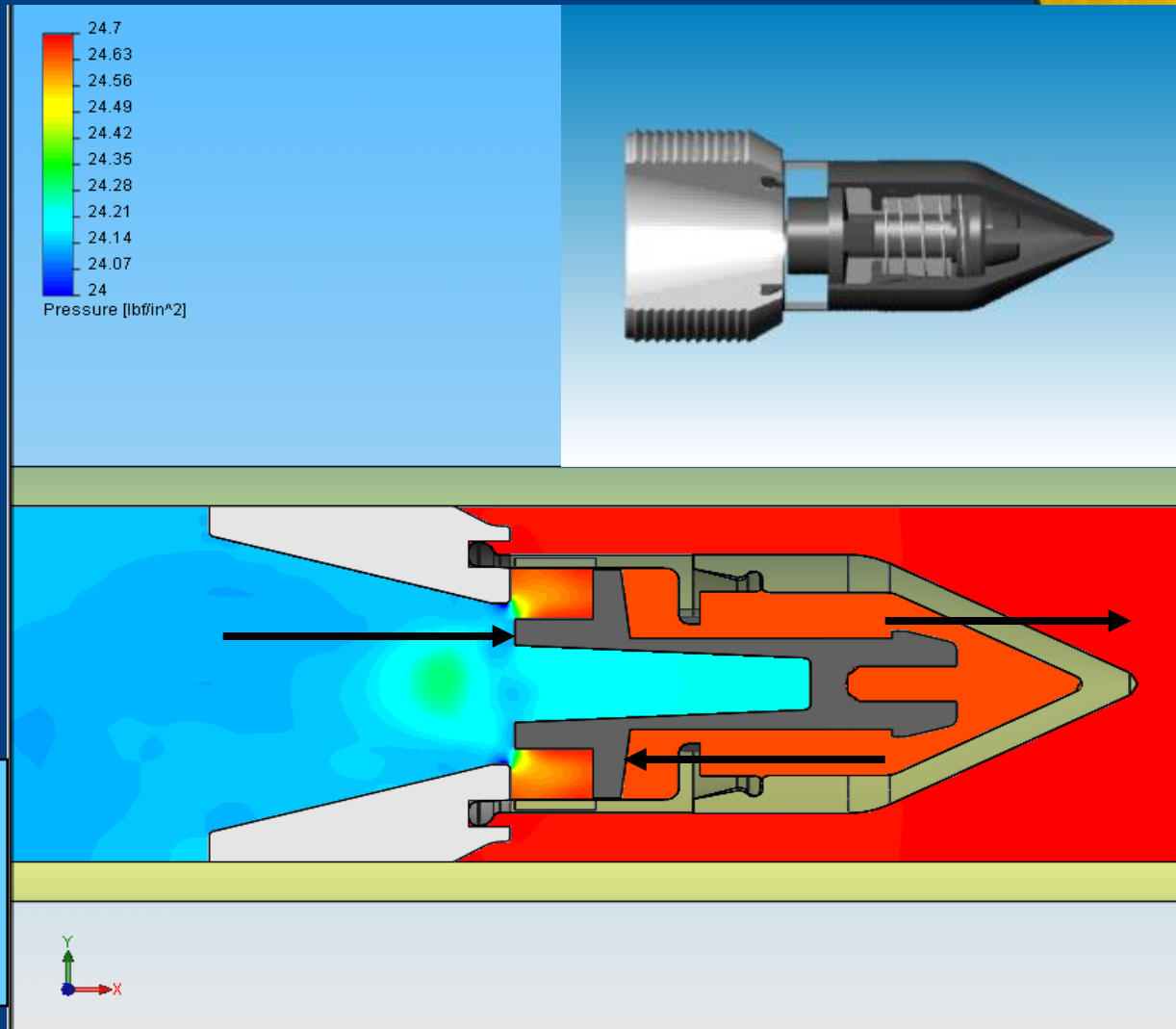
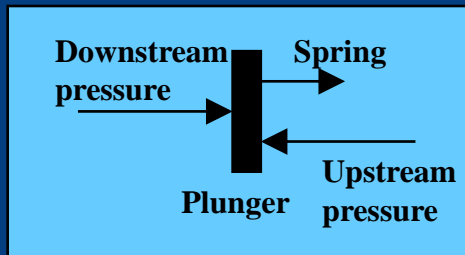


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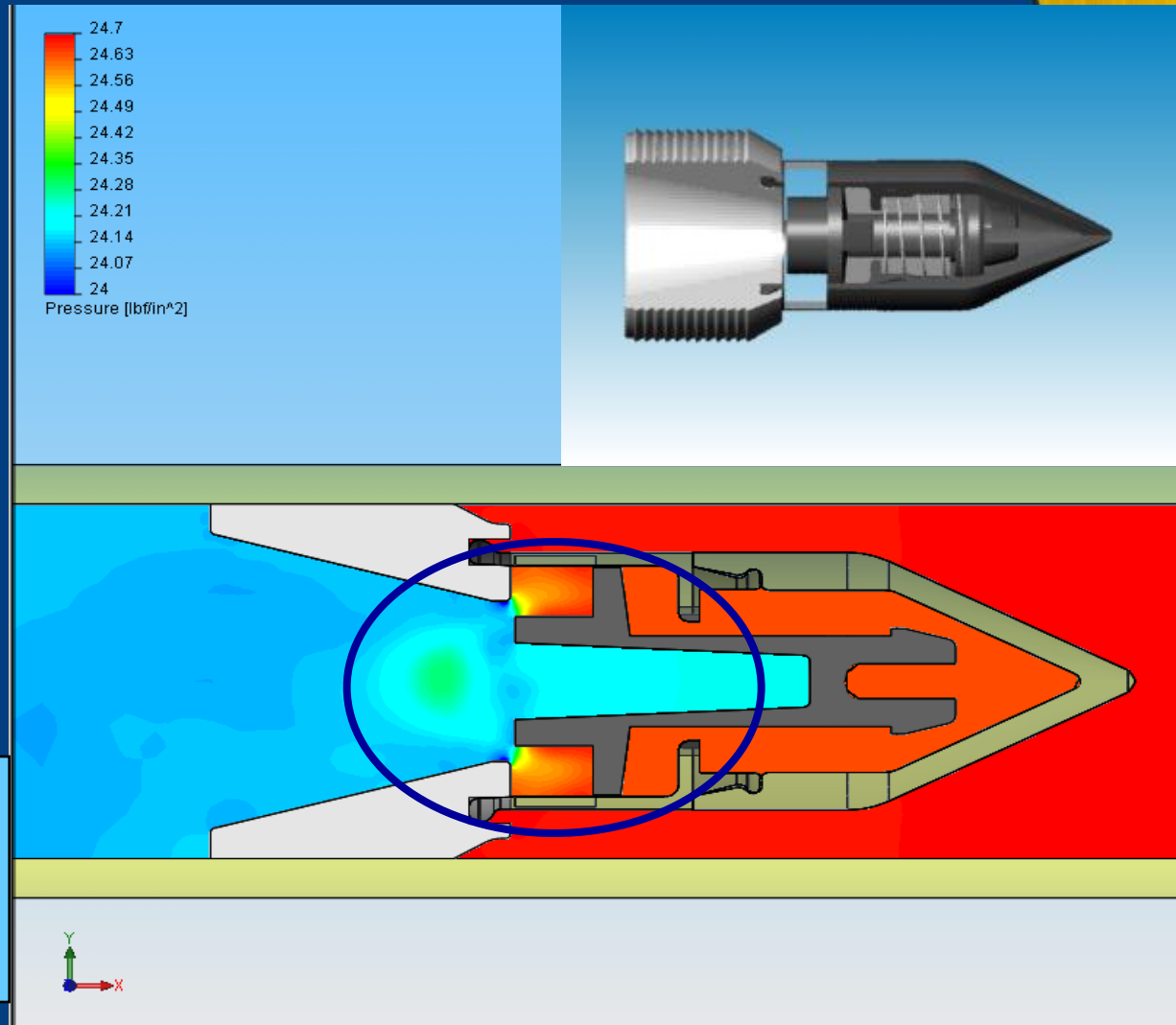
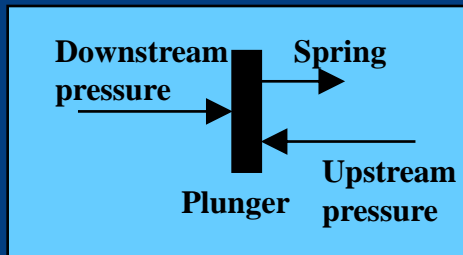
What's Happening?

- The plunger is exposed to three forces



How Do They Work?

- When the pressure drop across the device is just right...
- Snap! – The EFV closes.



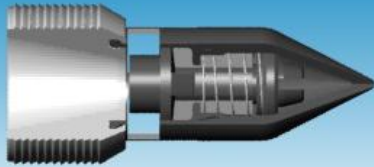
What does this mean?

- **This device actuates when a specific pressure differential signature is created.**
- **This principle of operation remains true as the size of the device and “trip point” of the device are increased.**



What does this mean?

ΔP Valve

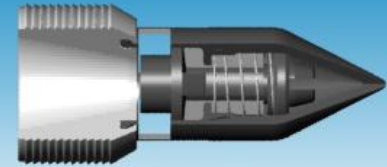


When properly sized

=

and designed into
the service system

EFV Valve



- **The device itself does not know what EXCESS flow is.**
- **It is very reliable but “Dumb”.**



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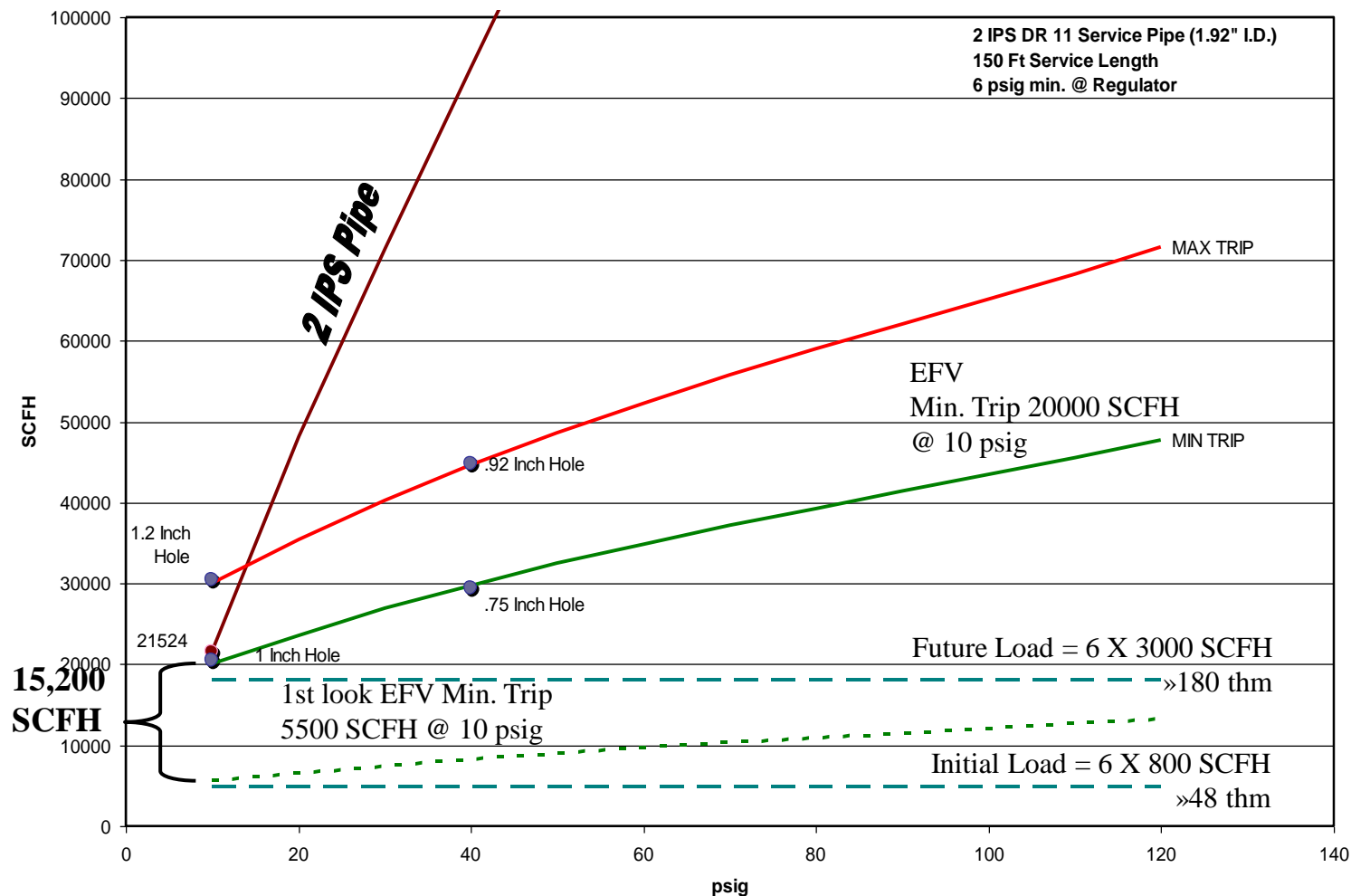
How Do I Determine the Correct EFV for My Application?

- ASTM F 2138 suggests that an EFV should be selected with a trip flow, at the distribution system minimum pressure, above the maximum customer load, and above meter capacity.
- For residential services the anticipated load is determined and the appropriate EFV is selected to prevent **Nuisance Trips** and provide protection for the entire service length.
- For Commercial and Industrial applications sizing needs to be even more carefully considered as load requirements can be more variable.



Why is this important?

COMMERCIAL EFV SIZING EXAMPLE



What does Damaged Pipe Look Like?



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Summary

- The devices are relatively simple and will reliably function under specific conditions.
- The principles of operation remain the same as sizes become larger and “Trip points” are increased.
- The device only becomes an EXCESS flow valve when it is properly sized within the service system.
- Not all situations will derive the same benefits from the installation of an EFV.





Thank you!

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