

Metering Rubberized Asphalt



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Presentation Overview

- Cold Start-up Problems
- Common Metering Problems
 - Entrained Air
 - Pump pulsations and cavitation
 - Helical Gears and Phased Balanced Gears
- Summary and Conclusions

Understanding the Problem

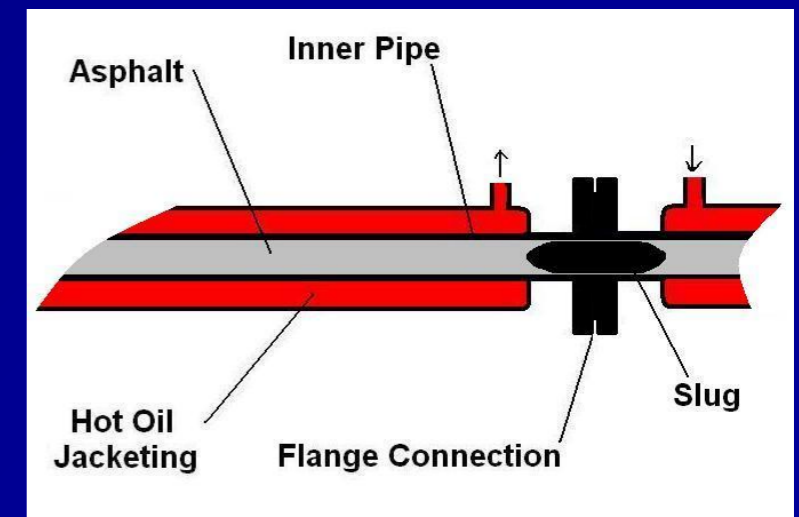
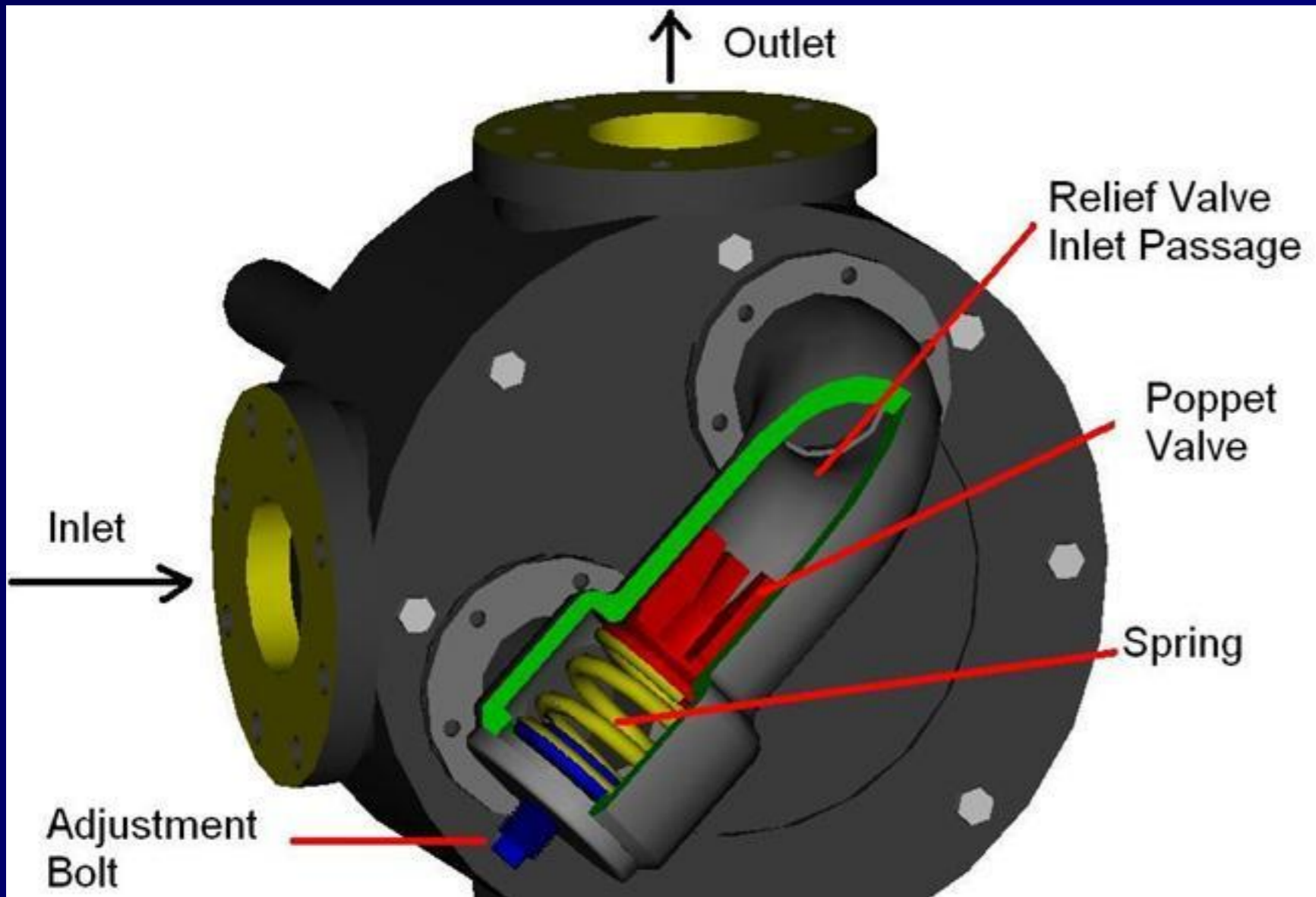
- Heat and Pressure for Start-up
 - Most pumps have *non-heated* relief valves
 - RV inlet passage full of cold asphalt



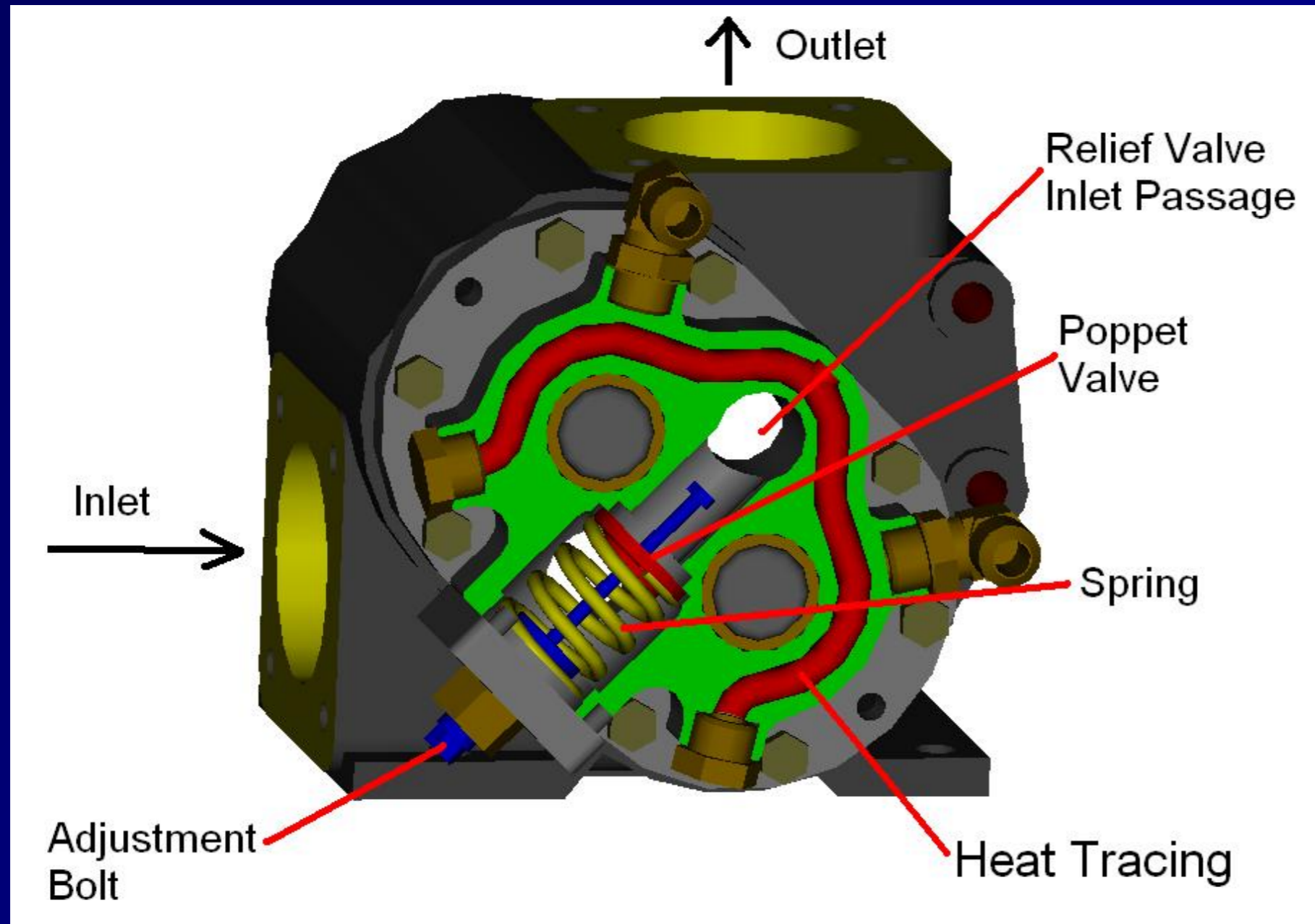
Non-Heated Relief Valve



Non-Heated Relief Valve



Heated Relief Valve

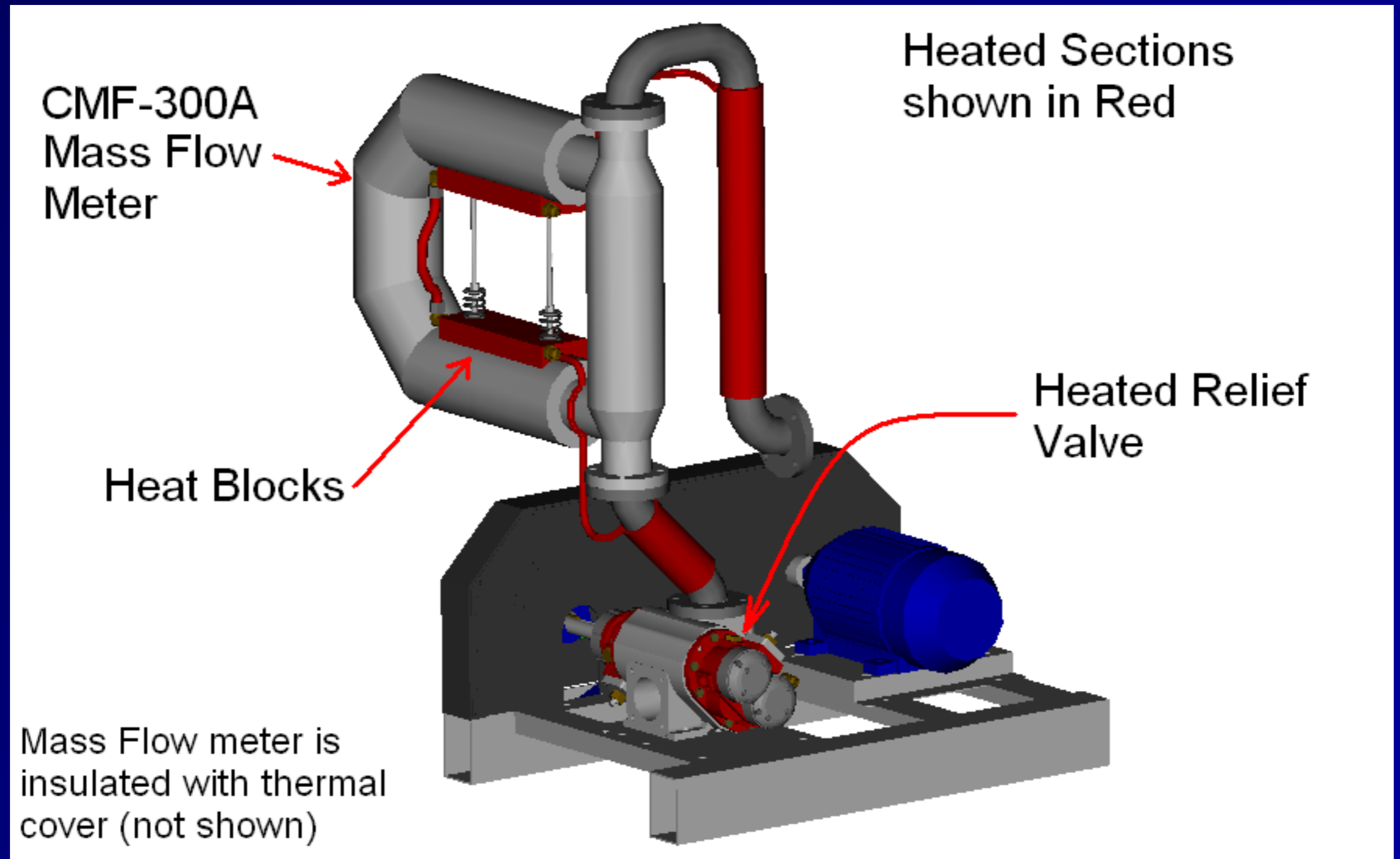




Mass Flow Meter

- Not designed for asphalt originally
- CMF300A - 662°F rating
- Lacking adequate method to heat meter
 - Internal wires and solder

Heat and Pressure Solution

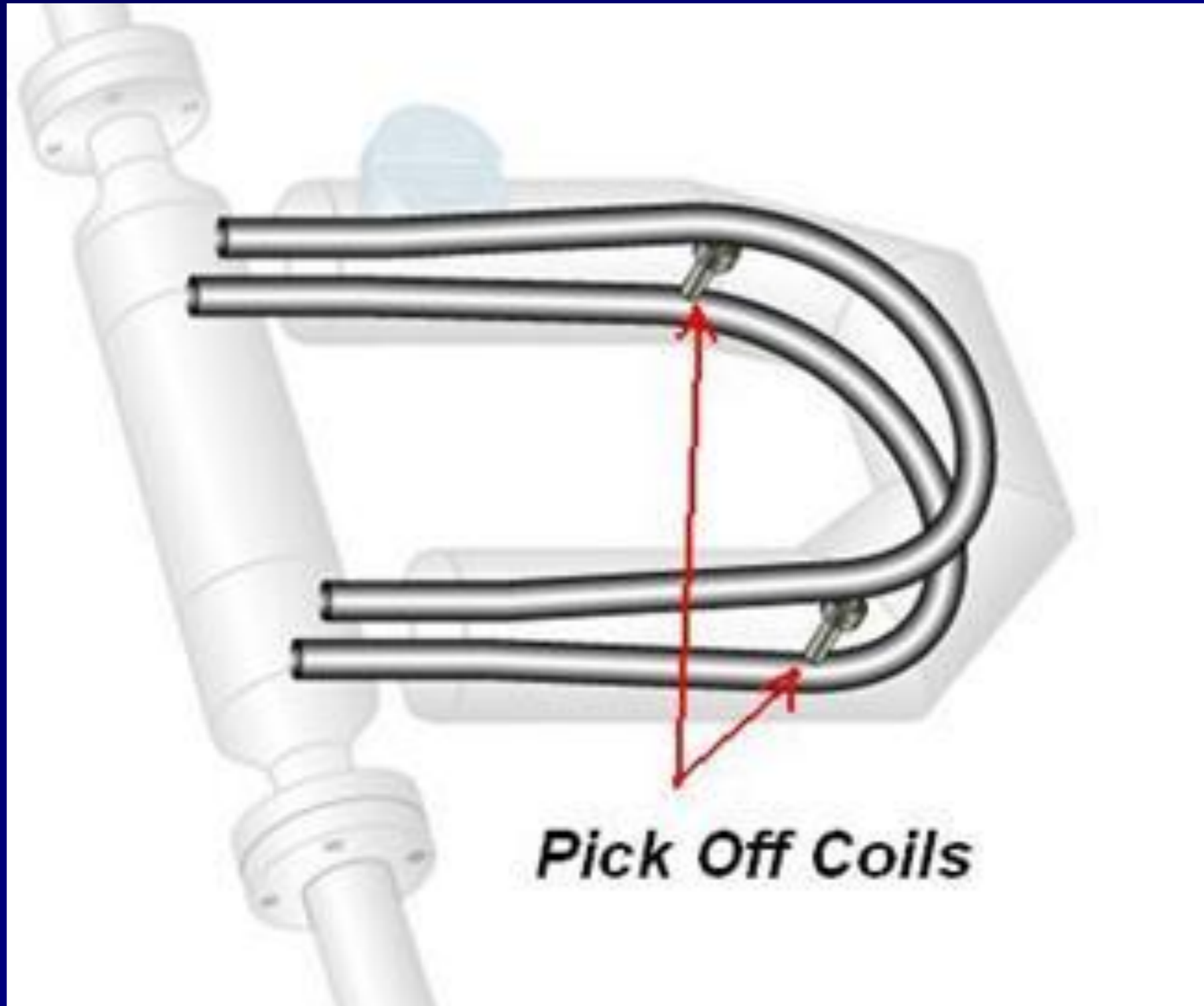




Liquid Noise

- Entrained Air
- Cavitation
- Pump Pulsations
- How the meter works
 - Tuning Fork
 - Drive Coil
 - Pick Off Coils

Liquid Noise



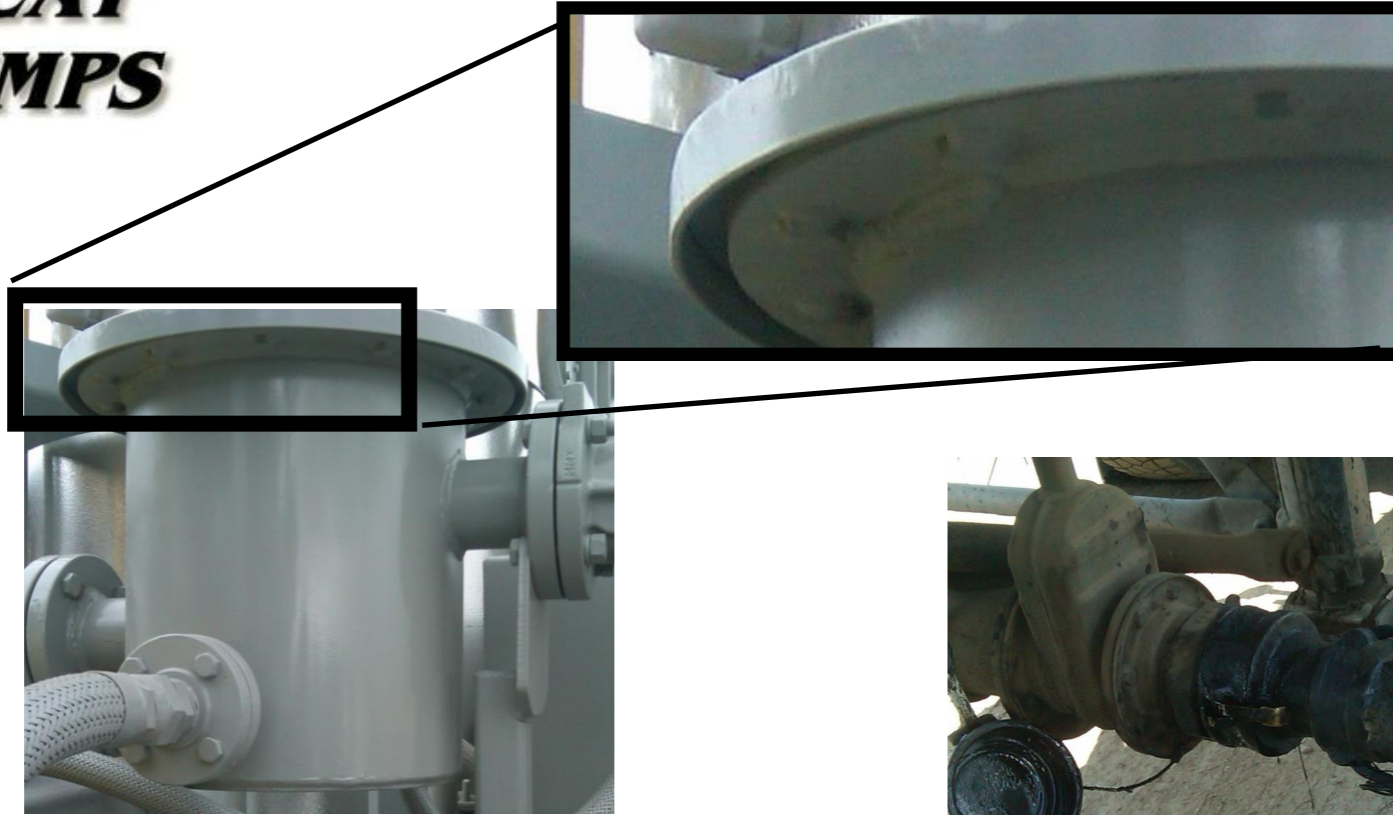


Entrained Air

- Most common cause of metering problems
- Creates an imbalance
- Determine by observing Drive Gain
- Leaks
 - Viton® o-ring port connection



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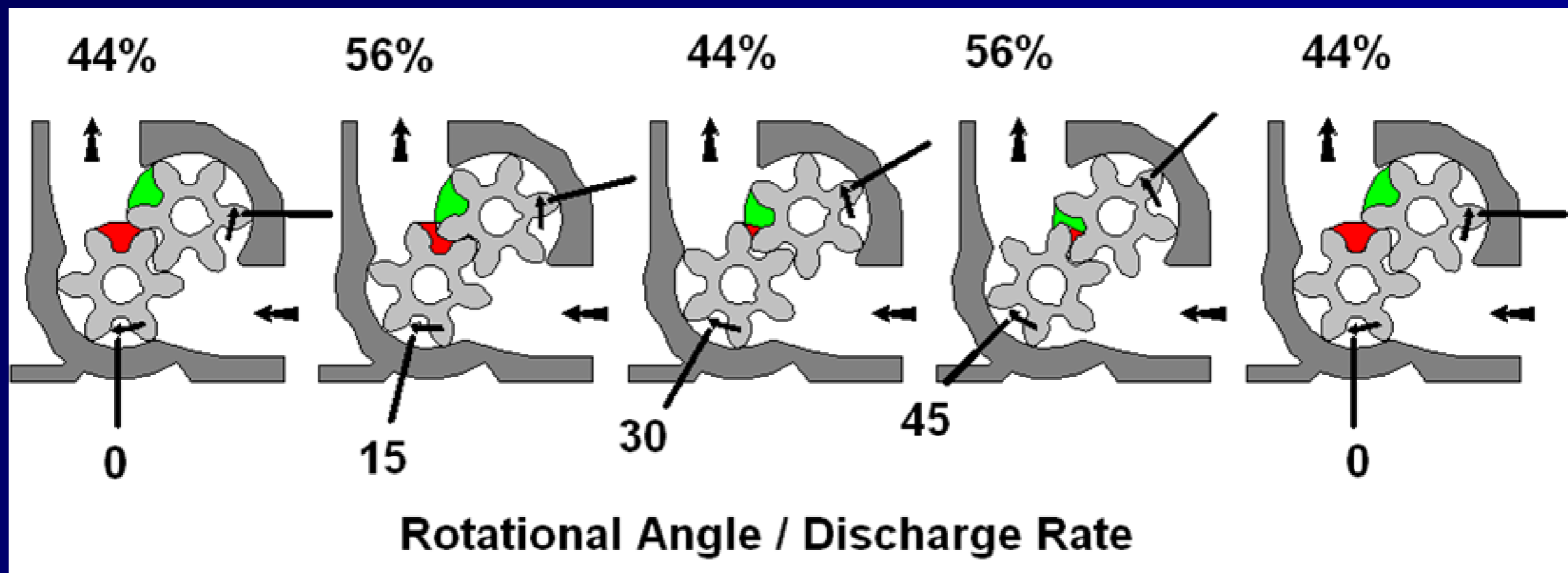




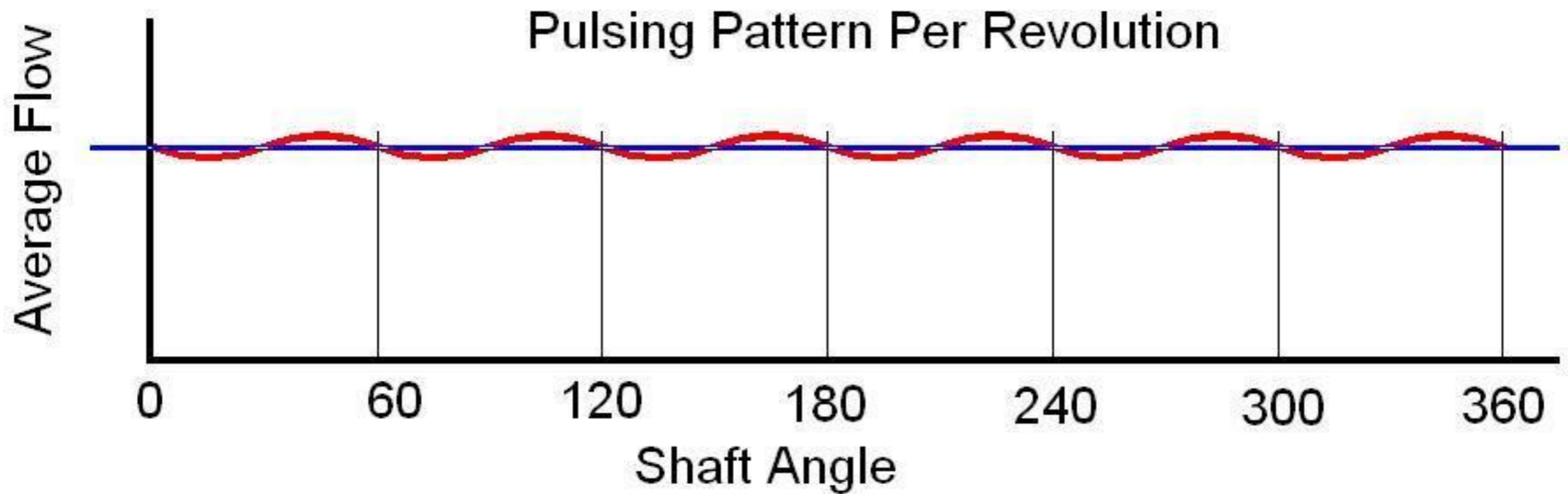
Pump Pulsations and Cavitation

- Positive displacement pumps inherently create pulsations
- Directly related to number of gear teeth
- Adverse effects on Mass Flow meters

Pulsing Flow from Pumps

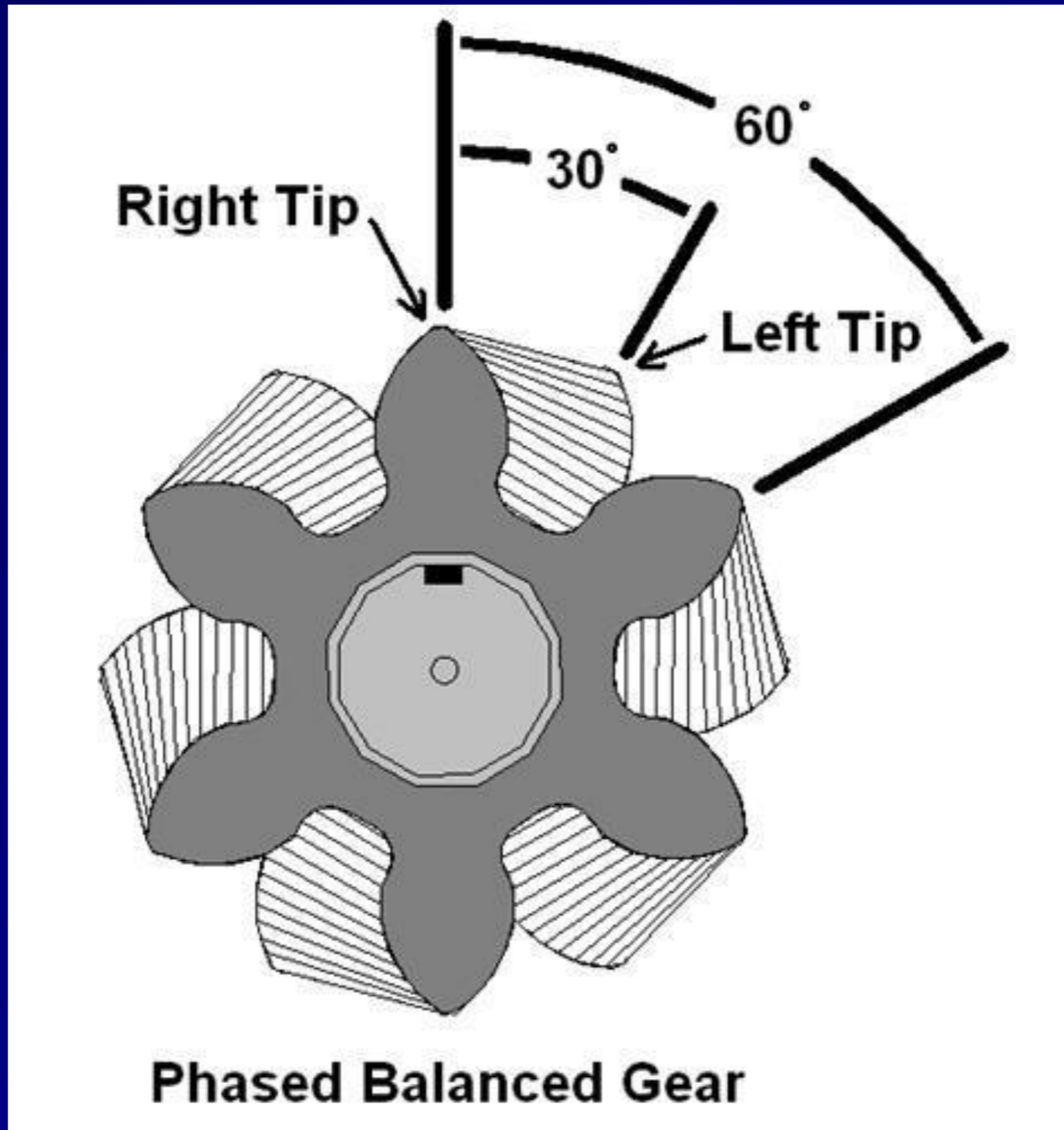


Discharge of One Revolution





Phased Balanced Gear





Helical Gears



