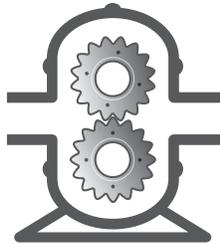




Dare to Compare

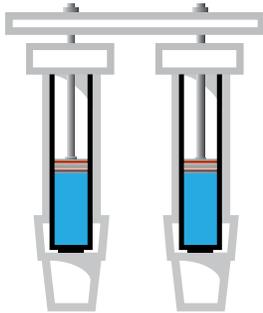
Gear Pumps vs Piston Pumps

Graco, as an industry leader in pump manufacturing, believes that piston pumps are the ideal pump technology to handle the challenging spray parameters and conditions inherent in spraying foam and polyurea.



Gear Pump

A gear pump is a type of positive displacement pump. Gear pumps move fluid repeatedly, enclosing a fixed volume using interlocking gears and transferring it mechanically using a cyclic pumping action. Gear pumps are not new and have been around for hundreds of years.



Piston Pump

Piston pumps are positive-displacement pumps that use a piston and plunger to displace and pressurize fluids. Either single or double acting, piston pumps operate by using the force of the pumping mechanism to expand and contract an internal movable volume of liquid.

When doing a side by side comparison of gear pumps versus piston pumps, it's easy to see which one is more accurate and has everything you need for successfully applying spray foam and polyurea:

| Qualities of a Good Pump | Gear Pump | Piston Pump |
|---|-----------|-------------|
| Accurate, repeatable dispensing with every stroke or cycle | ⊘ | ✓ |
| Independently maintains ratio in plural component applications | ⊘ | ✓ |
| Handles a large variability of ambient conditions | ✓ | ✓ |
| Handles a wide range of material viscosities | ✓ | ✓ |
| Handles varying triggering patterns and speeds | ⊘ | ✓ |
| Handles the effects of isocyanates (gumming, crystalizing, hardening) | ⊘ | ✓ |
| Holds static pressure when not triggering | ⊘ | ✓ |
| Provides long-term reliability and minimal downtime for the user | ⊘ | ✓ |
| Easy to service at a reasonable cost | ⊘ | ✓ |

Although gear pumps may be capable of dispensing materials, users should understand there are risks, costs, and other potential issues inherent to using gear pumps. The biggest risk is built on the assumption that the flow meters used in gear pump systems are accurate, and will remain accurate.

Cascading Downfall of Gear Meters on back side

Cascading Downfall of Gear Pumps



Leakage

Fluid leakage results from the imperfect fit between components in a gear pump assembly. Regardless of how well the two components conform to one another, gaps will exist, and fluids will move through them. Clearances at the gears and across the faces of gears are the largest contributors to internal leakage. Fluid leakage increases as the internal parts wear through usage.



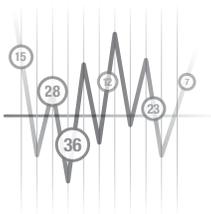
Stall Pressure

Due to internal fluid leakage, stall pressure cannot be maintained and ratio cannot be accounted for without being dependent on flow meters.



Ratio Imbalance

Being unable to maintain stall pressure leads to ratio overshoots and undershoots as the flow is corrected to compensate for fluid leakage.



Recalibration

Depending upon flow meters will require field calibration of those meters to maintain accuracy. Calibration is necessary to account for changes in materials, viscosities, flow rates, ambient conditions and equipment wear due to usage. If flow meters are not recalibrated, the system may not know the true ratio.



False Ratio

If the flow meters are not accurate, the ratio will not be accurate. However, the system will still report and display perfect accuracy and that the material is on-ratio, even if spraying off-ratio product.

