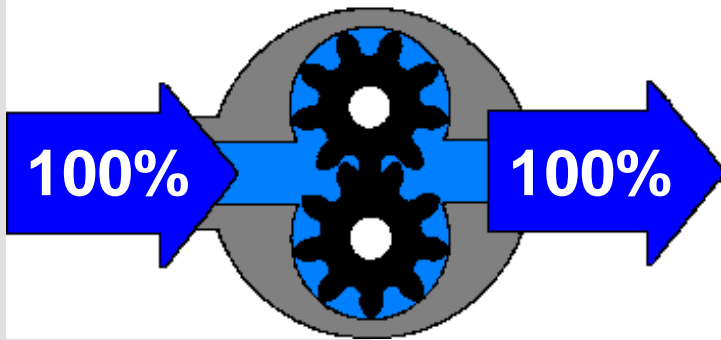
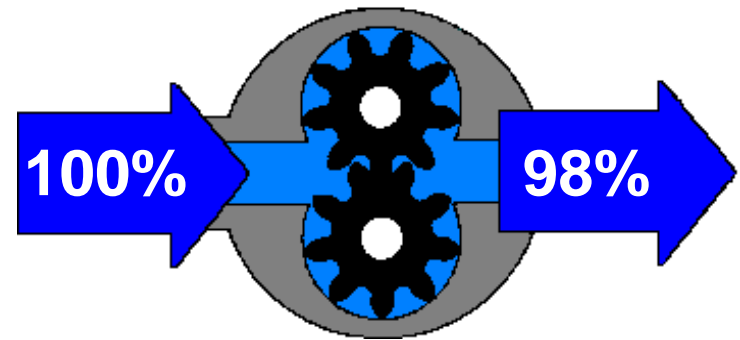


## Gear Pump Repeatability



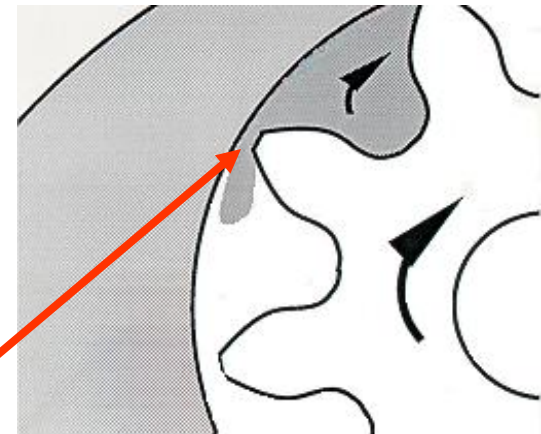
Theoretical flow rate



Actual flow rate

- The amount of fluid that actually makes it to the outlet, in relation to the amount that theoretically should is known as volumetric efficiency. A small percentage of the carried fluid continually 'slips' back, hence the difference between theory and actual.

Exaggerated slip area shown





## Gear Pump Repeatability

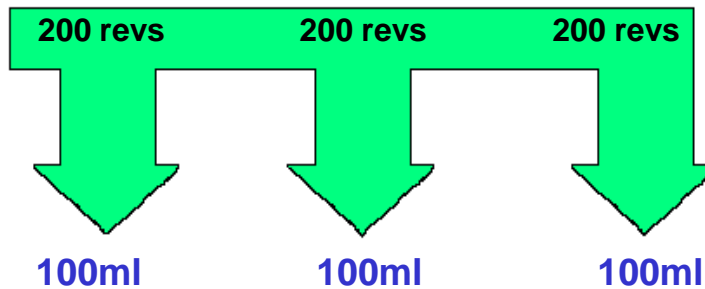
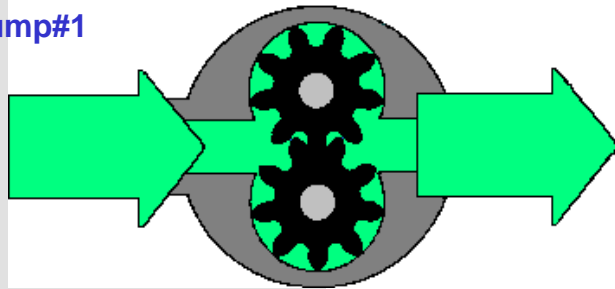
- Design Tolerances and manufacturing capabilities play an important role in producing efficient rotary pumps - consistently.
- Micropump uses a combination of gear and cavity materials that are manufactured to very close tolerances, producing pumps with small clearances.
  - This results in efficient pumps with minimal slip.
- Pump slip will eventually increase as the pump is used. This is caused by normal wear of the parts involved in the critical sealing areas.
  - Though part tolerances are minimal, each part can be slightly different from a supposed identical part.

Continued..

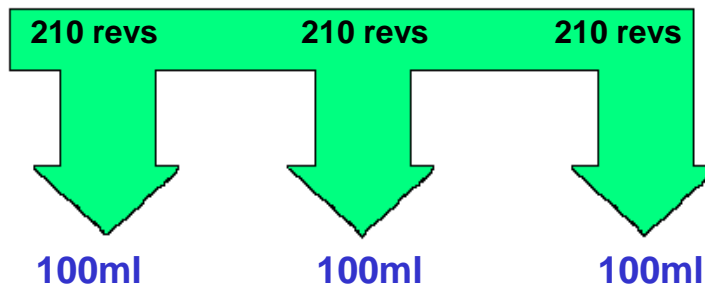
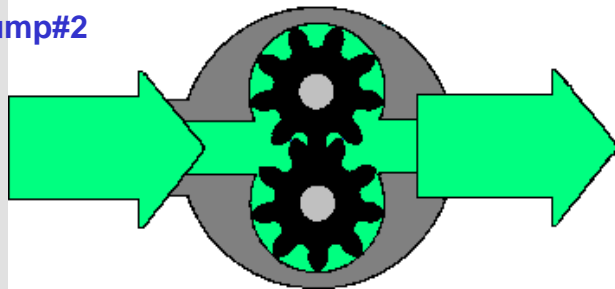
## Gear Pump Repeatability

•Consequently, 2 pumps that run at identical speeds, may not have identical output. However, whatever the output is, it will be consistent and repeatable. Therefore the speed of the pump can be altered to deliver desired performance.

Pump#1

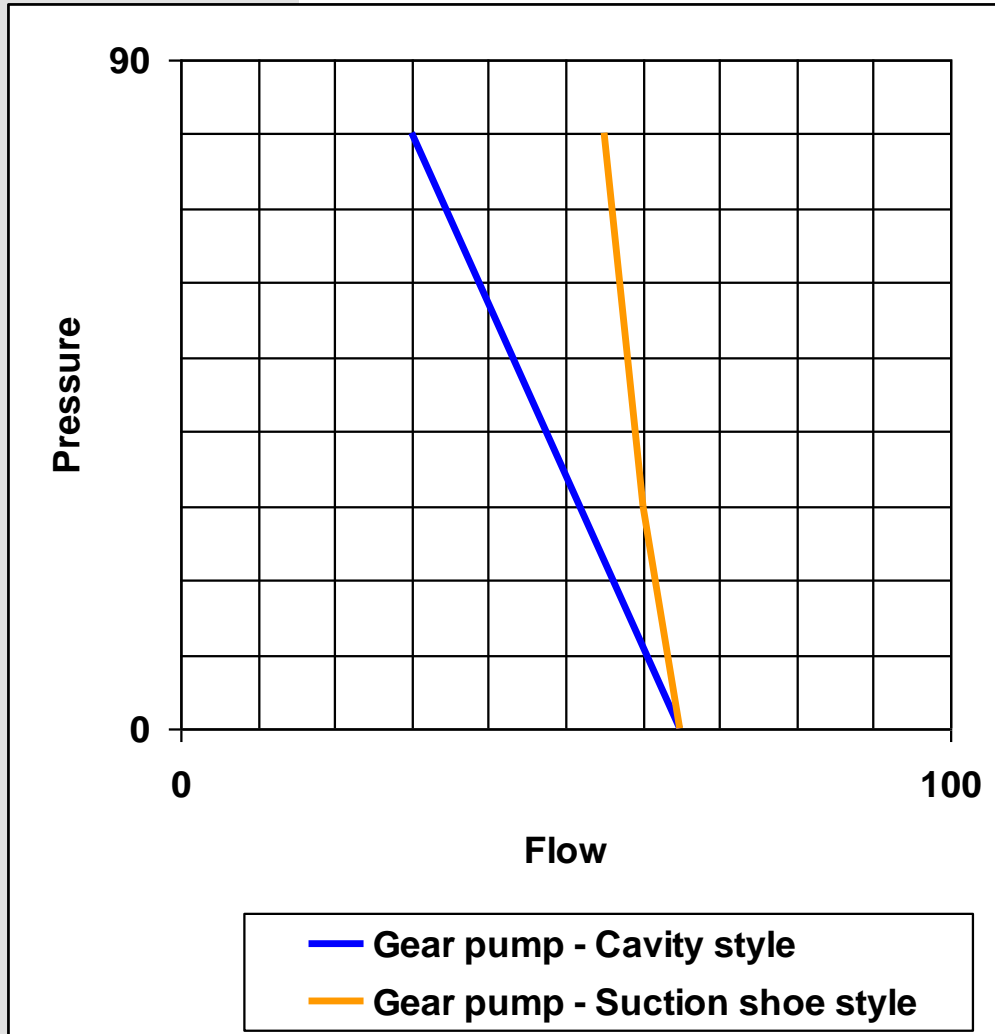


Pump#2



•Note pump#2 will deliver 100ml consistently at 210 revs, whilst pump#1 will deliver the same amount at 200 revs.

## Gear Pump Repeatability



- As pressure increases flow decreases in a traditional cavity design gear pump.
- Suction shoe style pumps allow good repeatability at varying outlet pressures.
- Suction shoe style pumps are more efficient as greater pressure equals less slip, which means more flow.