

SunChemical®

a member of the DIC group



Ink System Supply

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Metro Production
Conference

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working for you.

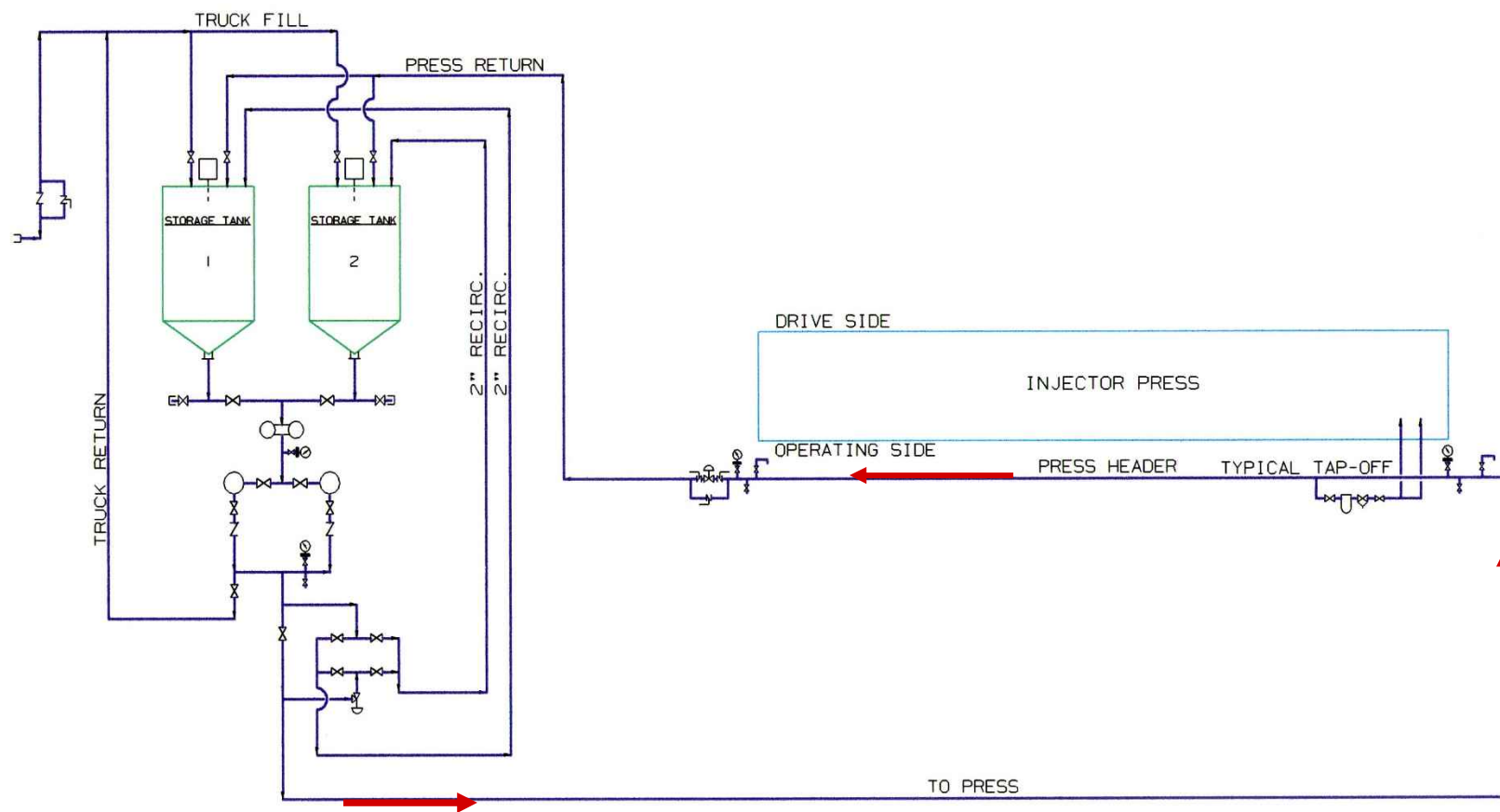


Types of Ink Supply systems

- Circulating Loop
- Dead Head Supply
- Canister

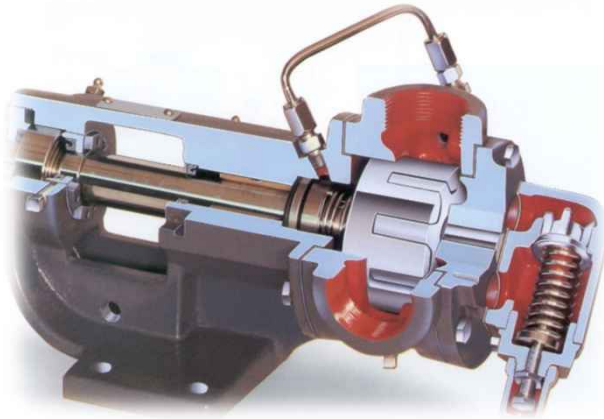


Circulation System

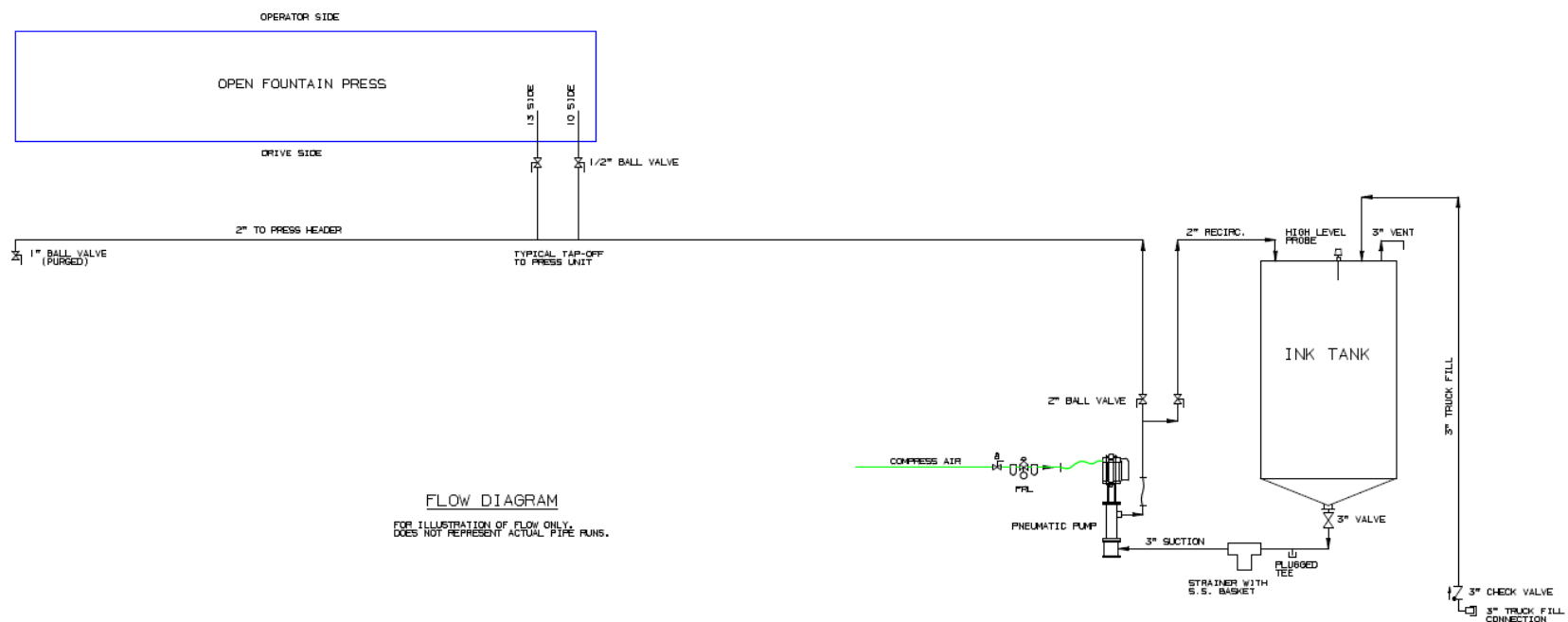


Recirculating Pumping System

- Positive displacement gear pumps



Dead Head or One Way System



TYPICAL INK SYSTEM FOR OPEN FOUNTAIN PRESS



Dead Head or One Way System



Dead Head or One Way System

- Can be supplied from
 - Tank
 - Tote
 - Drum
 - Canister



Dead Head or One Way System

- One Way Pumping System



Definitions

- Viscosity
 - Shear Stress
 - Shear Rate
- Shearing
- Thixotrophy



Viscosity

- The viscosity of a fluid is a measure of its resistance to gradual deformation by shear stress or tensile stress. For liquids, it corresponds to the informal concept of "thickness".
- Viscosity is the shear stress at a given shear rate.



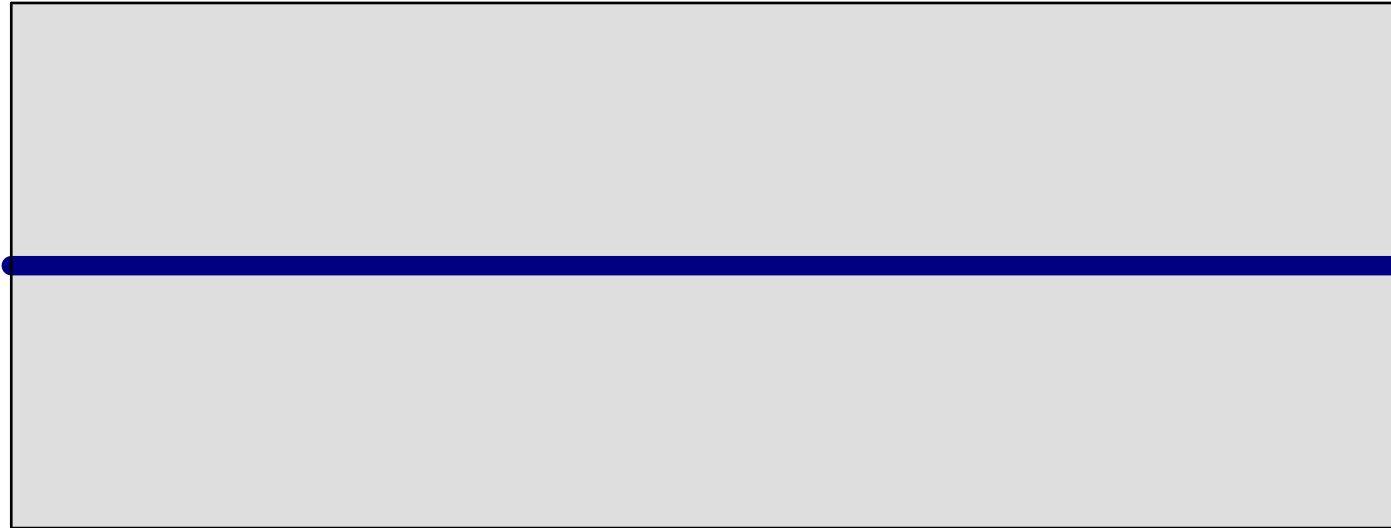
Shear Rate and Stress

- Stress How much force is being applied to the liquid
- Rate how fast is the liquid moving. This is measured in reciprocal seconds.



NEWTONIAN FLUID

Viscosity



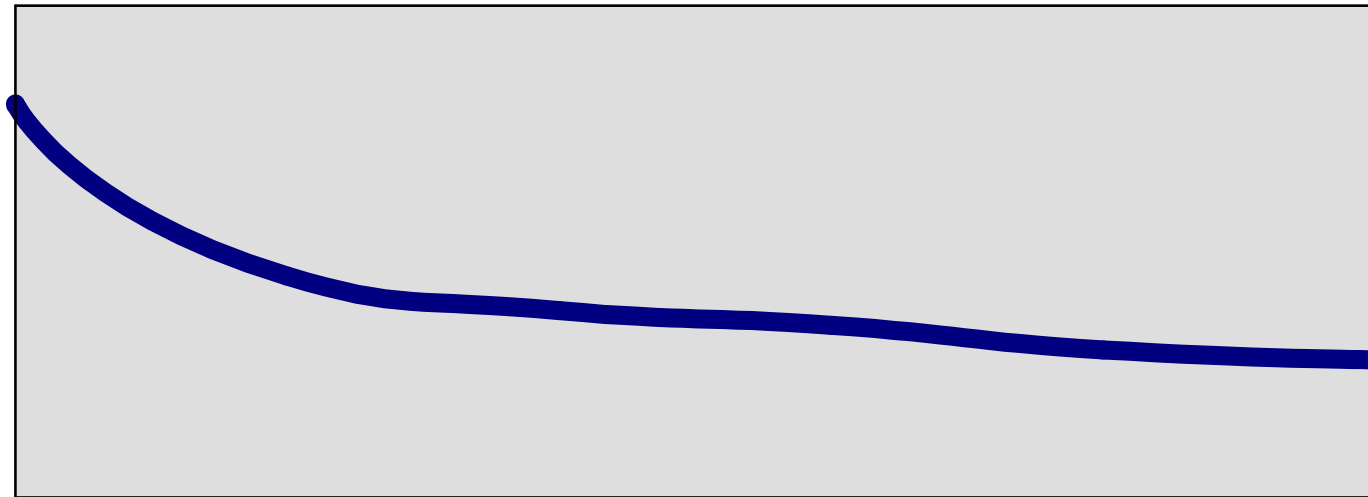
SHEAR RATE



Non-Newtonian Fluid

NON-NEWTONIAN FLUID

Viscosity



SHEAR RATE



Shear Thinning and Thixotropic

- Shear Thinning liquids, whose viscosity decreases with the rate of shear strain.
- Shear-thinning liquids are very commonly, but misleadingly confused with thixotropic.
- Thixotropic liquids, that become less viscous over time when shaken, agitated, or otherwise stressed.



VISCOSITY DEPENDS ON

- Shear Rate
- Temperature
- Pressure
- Time (History of Shear)
- Physical / Chemical Properties
 - For Ink - Oils, Resins, Pigment, etc.



Shear Rate Life Cycle

SHEAR RATE LIFE CYCLE **TYPICAL INK**

PROCESS	SHEAR RATE	TIME
Storage	0.001 - 0.00001	Days
Pumping	1 - 1000	Minutes
Roller Nip	10,000 - 10,000,000	Fraction of Second
Leveling	0.001 - .1	Seconds
Draining	0.1 - 10	Minutes

