Notes on Dynamic Pumps

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Notes on Dynamics Pumps

- Two types: centrifugal (impeller) and axial (propeller)

- Their flow output is reduced as the circuit resistance is increased (and are thus not in fluid power systems).

- There is a lot of clearance between the rotating impeller or propeller and the stationary housing. So as the resistance of the circuit starts to increase some of the fluid slips back into the clearance spaces thus causing a reduction in the discharge flow rate. (the fluid follows the path of least resistance).

- When the pressure becomes excessively large, the pump will produce no flow.

This clearance has an advantage in that if the requirement for flow is reduced (e.g., fewer customers), the pump can continue running until flow drops off to zero (i.e., 0).
there is no need for a pressure relief valve).

The pump can handle the change from full flow to no flow without getting damaged. So it is ideal for these applications.

The maximum pressure is called the shut-off head. As flow increases, it is at the expense of pressure.

Due to the clearances, priming is necessary if the reservoir is below the pump, as it cannot create a suction pressure (due to the clearance).