When the system has been designed, then a pump can be chosen, with characteristics that suit the system. That is the best way to avoid shock surge and pulsation.

Because flow is so slow, there is time to flow up, come to a stop, and flow back down a "T" - on the other hand, what ever the residual pressure pulsation level is, it may still shake the pipes.

A Pulsation Dampener intercepts pressure pulsation and smooths flow fluctuations; is smaller & costs less to install.

Mass of liquid in a pipe is transferred at not above 180 inches/sec or say 460 cm/sec

Pressure in a fluid travels at, Mach 1 (in Air) In harder substances (liquid) is transferred at up to 4000 MPH, or say 140,000 cm/sec.

PULSATION AND SHOCK IS COMMON TO ALL PIPING SYSTEMS, IT IS ONLY THE PRESSURE AMPLITUDE & FREQUENCY THAT CHANGES.