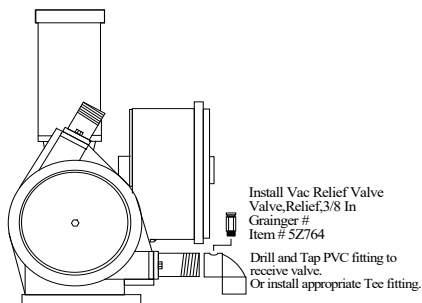


### Pulsation Dampener Options

#### Option # 1

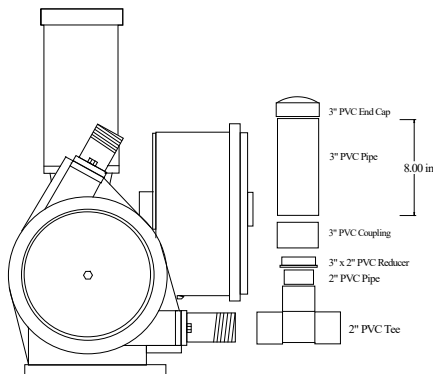
Install a vacuum relief valve in the suction line of the system.  
(Low cost-moderate effect ~ \$20.00 material + labor, potential 50-60% reduction)



Install the vacuum relief valve in the suction line and adjust to allow a slight flow of air to enter the influent stream.  
Take care not to allow too much air. This will adversely affect the pumps ability to create and maintain sufficient vacuum to evacuate a holding tank.  
(Valve pictured if suction were bottom connection)  
The air introduced compresses and expands reducing hydraulic hammer.

#### Option # 2

Install vacuum/pressure equalizer chamber(s)-Field Fabricated  
(low-medium cost-moderate effect ~\$35.00 mat + Labor, potential 70-75% reduction)



Fabricate and install a chamber in the influent stream (and potentially in the effluent). This creates an air pocket and will act as a "shock absorber" and aid to equalize flow.

The chamber is fabricated from 3" pipe and is approximately 8-12" long. Adapt to existing plumbing as close to pump as practical. The object is to trap air inside the chamber.

#### Option # 3

Install a commercially available pulsation dampener/vacuum equalizer.  
(high cost, ~\$600.00 + labor, published at 95% or better)



Installation can be similar to the chamber above depending on the manufacture selected. Edson has supplied units provided by Blacoh Fluid Control. [www.Blacoh.com](http://www.Blacoh.com)

Edson has supplied nearly 1000 peristaltic pumpout stations around the world. The above options have been discussed and implemented less than 10 times. The hammer has been determined to be a noise concern, but not damaging to equipment. The remedies and associated costs were not a value to the end users due to the intermittent use and minimal run time during operation.

**Edson does not guarantee any of the above options.**