

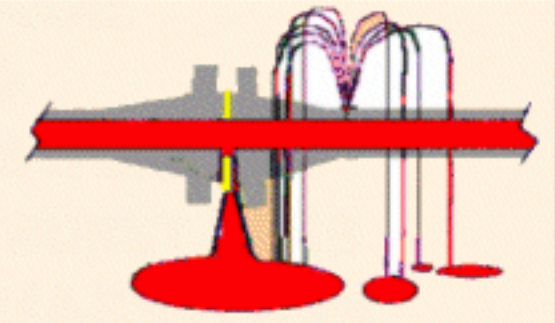
# CHECKING SAFE AND SPECIFIC PERFORMANCE

The characteristics of the damper depend on the data for the pump system and what level of "smoothness" performance (see below) you require.

## MECHANICAL DAMAGE PREVENTION

Pipe Shake, Fatigue, Weld Cracking, & Over Stress Unions, Flanges, & Fittings.

The level of allowable pressure pulsation, depends on three factors :  
1. Diameter of pipe. 2. Operating Pressure. 3. Pulse Frequency.  
A Nomogram - or " 3 axis Graph " - to help you specify allowable residual pressure fluctuation has been included. PG-127



## COARSE DAMPENING

**STOP PUMP PARTS DAMAGE**  
GEAR TOOTH WEAR, CHATTER, AND FRACTURE.  
DRIVE BELT SLIP, BURN-OUT, AND BREAK-UP  
CROSS-HEAD, ROD, AND YOKE DEFLECTION

**KEEP PRESSURE VARIATION LESS THAN 12%**

PmpPtsDm.bmp

**STOP WEEPAGE**  
RELIEF VALVE WEEPING  
SURGES CAUSING PREMATURE LIFT  
FATIGUE CRACKING OF BURST DISKS

**KEEP PRESSURE VARIATION LESS THAN 9%**

RVBDweep.bmp

**STOP GAUGE DAMAGE**  
BEFORE GAUGES DON'T READ PULSATION AFTER  
Springy Bourdon Tube , Rack & Pinnion wag at their own natural frequency, WITHOUT VIBRATIONS YOU READ AVERAGE STEADY STATE PRESSURE

**KEEP PRESSURE VARIATION LESS THAN 6%**

GageDang.bmp

**INCOMPLETE ATOMIZATION**  
BEFORE Stop Globlets, Drops & Squirts AFTER  
- when you want a fine spray -  
Depending on viscosity and nozzle design

**KEEP PRESSURE VARIATION LESS THAN 5%**

Atomize.bmp

## MEDIUM DAMPENING

**IMPROVE STATIC MIXING**  
BEFORE Pulsed in Un-mixed out AFTER  
Pulseless in Mixed out

**KEEP PRESSURE VARIATION LESS THAN 4%**

StatMix.bmp

**MAKE SET FREQUENCY MAG. METERS USEABLE**

Kg./Sec.  
4.0  
3.0  
2.0  
1.0

0.5 Sec. 0.5 Sec. 0.5 Sec.

Sample at Any Frequency  
1.72Kg./S. 1.74Kg./S.  
2 Hz.

**KEEP FLOW FLUCTUATION LESS THAN 3%**

MagMetr.bmp

**STOP PADDLE WHEEL METER SURGING**  
BEFORE Erratic Jerks AFTER  
Constant Rotation

**KEEP PRESSURE VARIATION LESS THAN 2%**

PadlWheI.bmp

**TURBINE SCREW METER "RATCHETING"**  
KICK FROM PULSE STARTS THE SPIN WEIGHT OF SCREW BLADES & SHAFT KEEPS IT SPINNING, NEXT KICK GIVES OVERSPEED OR STOPS IT,  
SOON YOU HAVE NO ACCURACY

**STAY LESS THAN 1.5%**  
DEPENDING ON VISCOSITY

TurbMetr.bmp

## FINE DAMPENING

**CORIOLIS** Loop tube 90 Hz or Straight tube 900 Hz  
Hit a multiple or divisor of, or that frequency AND THE TUBES SWING WILDLY  
They can register 100 Kilos /sec. When you have only 5

The more the swing the more mass flow is indicated

**Stabilize to LESS THAN 1.0%**

Coriolis.bmp

**NO NON-SENSE VORTEX SHEDDING**  
BEFORE 294.71 VORTEXES, ARE MINUTE LOW PRESSURE ZONES AND ARE CREATED AT A RATE RELATIVE TO FLOW VELOCITY AFTER  
75.5  
WITHOUT PRESSURE PULSATION "VORTEX SHEDDING" METERS WORK

**GO LESS THAN 0.75 %**

VortShed.bmp

**DELTA P. METER A SHARP EDGED ORIFICE & A DIFFERENTIAL PRESSURE GAUGE**

**BEFORE** **AFTER**

0,2 Bar 3.0 psi 0.4 x D 12 x D

0,05 Bar 0.75 PSI

**KEEP PULSES LESS THAN 1 PSI 0,07 Bar**

DPmeter.bmp