

Smooth? As Smooth as you want.



CHECK LIST, SPECIFYING PULSE DAMPERS, with Sizing Information.

For mandatory compliance with: ASME VIII in 48 of 50 states, ISO9001 for US general industry, ABS, and API specs, Canadian PE's stamp for TSSA safety, EC pressure vessel directive, SEP - Module A1 cat.II & III And Module G, for CE mark, the following disclosures are necessary to enable the supplier to fulfill responsibilities.

A. CONSTRUCTION MATERIALS

- METAL KNOWN TO BE COMPATIBLE WITH THE SYSTEM LIQUID. 316/316L, A20, & Carbon Steel are inventory items
- ELASTOMERIC OR PLASTOMERIC MATERIAL KNOWN TO BE COMPATIBLE WITH SYSTEM LIQUID FOR USE AS GASKET, SEAL, DIAPHRAGM, & BLADDER. EP (EPDM), Nitrile/Buna, Fluorel Elastomers, and PTFE or LDI FLEXFLON plastomers inventory are "off the shelf" items.

B. For Materials Allowable Working Stress Consideration

- MINIMUM DESIGN METAL TEMPERATURE "MDMT" There are consequences below -20F
- DESIGN PRESSURE @ DES. TEMPERATURE Degrees

C. CONNECTIONS

- SIZES Use damper to transition from std. pump connection - to system size.

Pump	System
<input type="text"/>	<input type="text"/>
- TYPE Ex / EG :- ANSI B16.5, DIN("DN-PN"), NPT, BSP, etc.

D. SYSTEM LIQUID COMPRESSIBILITY (Why? - Please see page 31)

The system characteristic that most governs volumetric efficiency, and so the flow fluctuations.

PARTS OF A LITER VOLUME CHANGE FOR 1 BAR CHANGE OR Example 0.00005 Say 5/100th 1/20th of a ml
 Or
 SG CHANGE For A CHANGE OF 14.5 PSI AT PUMPING TEMP. Example 50e.10⁻⁶

E. FLOW

LITERS PER MINUTE US GALLONS PER HOUR
 KILOGRAMS PER SECOND "MASS FLOW" L./min. G.Hr. Kg./sec.

F. SUCTION ACCELERATION HEAD Loss Recovery

- LENGTH OF SUCTION PIPE, TUBE, HOSE.
- AVERAGE INSIDE DIAMETER OF 1 ABOVE
- VISCOSITY OF LIQUID cP AT SUCTION TEMPERATURE
- SPECIFIC GRAVITY OF LIQUID "SG" @ TEMP.
- LOWEST LIQUID HEIGHT ABOVE POINT OF SUPPLY
- PRESSURE IN SUPPLY TANK, NITROGEN, or VAPOR,
- RELATIVE HEIGHT Pl. of Supply TO CENTERLINE OF PUMP
- MINIMUM PRESSURE REQUIRED BY PUMP AT ITS INLET

G. DISCHARGE: Preventing system resistance and mass from causing your pump to have to generate acceleration head.

Pumps make FLOW, systems make PRESSURE, pressure PULSATION is a system problem not a pump mfrs. liability. How much pulsation you have depends on your system and pipe characteristics.

H. Required Smoothness Performance

- AS A % AGE OF THEORETICAL STEADY STATE FLOW, HOW LITTLE FLOW FLUCTUATION DO YOU WISH TO HAVE AFTER THE INSTALLATION OF A VOLUME ACCUMULATOR %
And Or
- AS %AGE. OF THEORETICAL STEADY STATE PRESSURE, HOW LITTLE PRESSURE PULSATION DO YOU WISH AFTER THE INSTALLATION OF A PULSATION INTERCEPTOR. %



J. The Discharge System

- LENGTH OF DISCHARGE PIPE, TUBE, OR HOSE.
- AVERAGE INSIDE DIAMETER OF 1 ABOVE
- VISCOSITY OF LIQUID cP AT DISCHARGE TEMPERATURE
- SPECIFIC GRAVITY OF LIQUID "SG" @ TEMP.
- BACK PRESSURE FROM RECEIVING VESSEL, NOZZLE, VALVE, CONTROLLER, OR OTHER RESTRICTION.

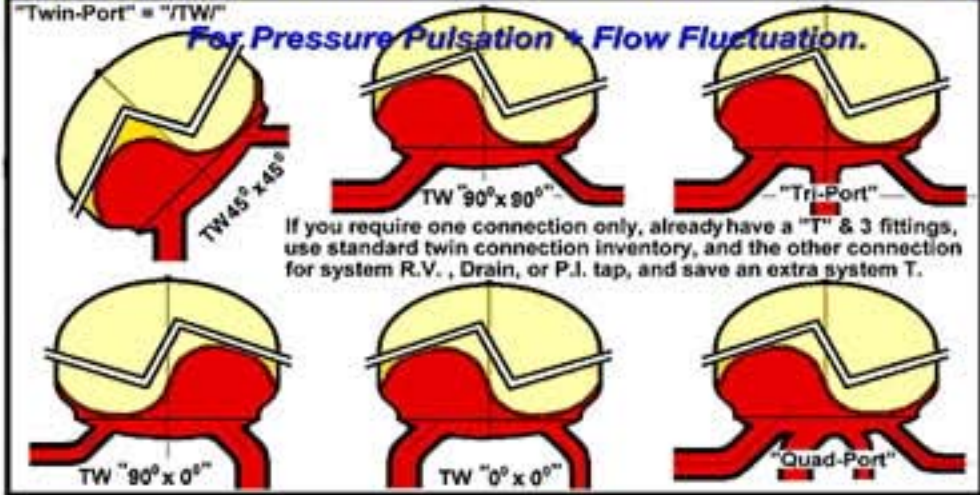
K. About the pump.

- NUMBER OF VOLUME DISPLACEMENTS PER PUMP CYCLE. "DPC"
- PUMP REVS. PER MINUTE "RPM" or CYCLES PER MIN. "CPM" "CPM"
- PUMP TYPE NUMBER, From column on right. Number

FOR PUMP START UP SURGE, SHUTDOWN SHOCK & BACKFLOW HAMMER, WITH CENTRIFUGAL, TURBINE, PITOTUBE etc (non positive displacement) FAST CLOSING VALVE MASS DECELERATION SHOCK, or THERMAL EXPANSION and CONTRACTION VOLUME COMPENSATION, PLEASE SEE www.shock-alleviators.co.uk AND www.shock-guard.com

Correction Factor "F"	For use on p 34	Pipe System From	Pump	K3
F=7.0 High Frequency, wave speed (acoustic), approach required		CENTRIFUGAL SINGLE & MULTI-STAGE, "CANNED" & "MAG-DRIVE"		1
F=6.0 Small Volume plus Large connections required.		PROGRESSIVE CAVITY AND WORM		2
F=4.0 "CLEAR-FLOW" generally essential		SCREW AND "AUGER" MESHING OR GEARED		3
F=5.0 High Frequency, wave speed (acoustic), approach required		VANE AND POSITIVE DISP-LACEMENT FLEX-IMPELLER		4
F=3.0 poorly meshing teeth give a higher number.		GEAR, SPUR, NORMAL & "INTERNAL"		5
F=1.0 But highly dependant on suction viscosity		TWO LOBE AND THREE LOBE		6
F=0.4 (Would be 1.2, but Shoe or wheel displacement rarely published.)		HOSE, TUBE AND PERISTALTIC		7
F=1.8 Assumes large air pipe.		AIR OPERATED DOUBLE END DIAPHRAGM A.O.D.e.D.		8
F=1.0 May be higher where check Vlv. pocket vol. small		PACKED PLUNGER FIXED AND VARIABLE Stroke		9
F=0.8 may be even lower by system fluid compressibility.		DIAPHRAGM (MULTI LAYER) METERING, RPM or STROKE VARIABLE		10
F=0.6 applicable for valve bounce running up to 1000 rpm		POWER PUMPS, MULTIPLEX-"674" TRIPLEX, QUIN SEPTUPLEX etc.		11
F=0.4 is adequate even at 50% of stroke.		DOSING, LOST MOTION VARIABLE BACK STROKE		12
F=0.3 on suction F=0.2 Discharges above 700 Bar		FLUID DRIVEN INTENSIFIERS & INJECTORS		14

CHOOSING CONNECTIONS ORIENTATION



Dampers that do. Flow goes through. BUT Pressure Pulsation does not.

PULSE GUARD[®] INC.

Guard against Pulsation

USA toll free (Off the shelf) 1-888-DAMPERS (326-7377)
 Inventory
 UK FreeFone (& for CE mark) - 08080-567-7423
 International --44(0)161-442-6222 & --01(1)910-270-2737