

# SAFETY AND GAS OVERLOAD PROTECTION

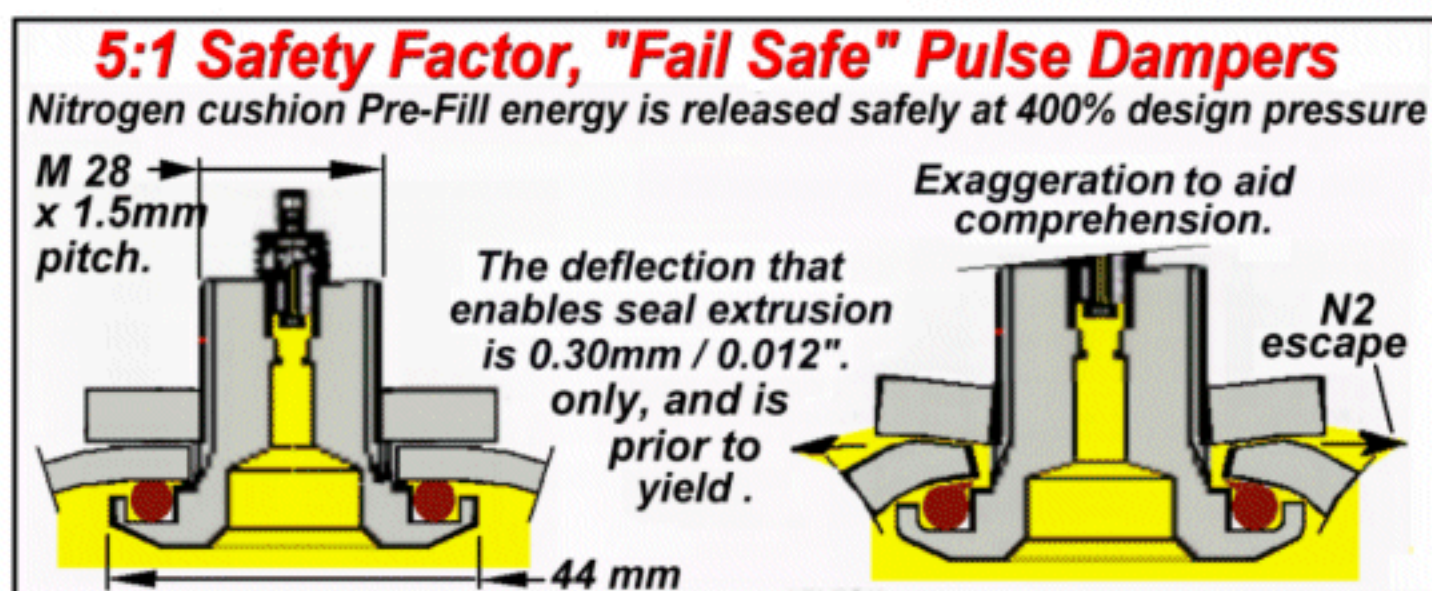
## Pulsation Damper, of the gas cushion type:

1. Always de-pressurize both gas cushion, and liquid, before service.
2. Use NITROGEN, (*commercially*) oxygen free nitrogen, also know as "O.F.N."  
This is a precaution against a "diesel" explosion.  
If oxygen were in the damper cushion chamber, and if it had been assembled with a hydrocarbon lubricant, and then a sudden pressure increase or shock occurred the rapid compression of the air or oxygen in the presence of hydrocarbon could cause a diesel explosion. The intense heat of the explosion can generate pressures in excess of the failure pressure of the damper.  
The end result could be flying components that endanger life as well as the system to which the damper is installed.
3. Do not use CO<sub>2</sub>, instead of Nitrogen. Yes CO<sub>2</sub> is inert, but CO<sub>2</sub> will permeate membranes and seals of nearly all known flexible elastomer and plastomer seperator types.
4. Always ensure that there is a direct acting relief valve, safety overload protection, or burst disk, in the system. That it is connected in a manner that can not be isolated by a block valve, from the damper.  
This is because in the event of fire, the gas in a damper will try to expand. Being enclosed, and unable to expand, it will increase its pressure. At the same time the materials of construction will become weaker. In damper designs that are NOT designed to "fail safe", for example those built to ASME (dangerous) code, there may be a burst. The burst will have the stored energy of the pressurized gas behind it. This can spread the fire, endangering the life of emergency response persons.  
Note: Even under the CE pressure equipment directive CE marking code, gas burst discs are not mandatory.  
If you are in Europe or the USA, you may have a damper that is not constructed in accordance with our safety design code. This manufacturer removes all warranties of safety in the USA where the equipment is made to ASME or CE rules, so be sure your system is protected by an overpressure relief device. Also Note : Canada no longer accepts vessels to American code, being adequately safe.

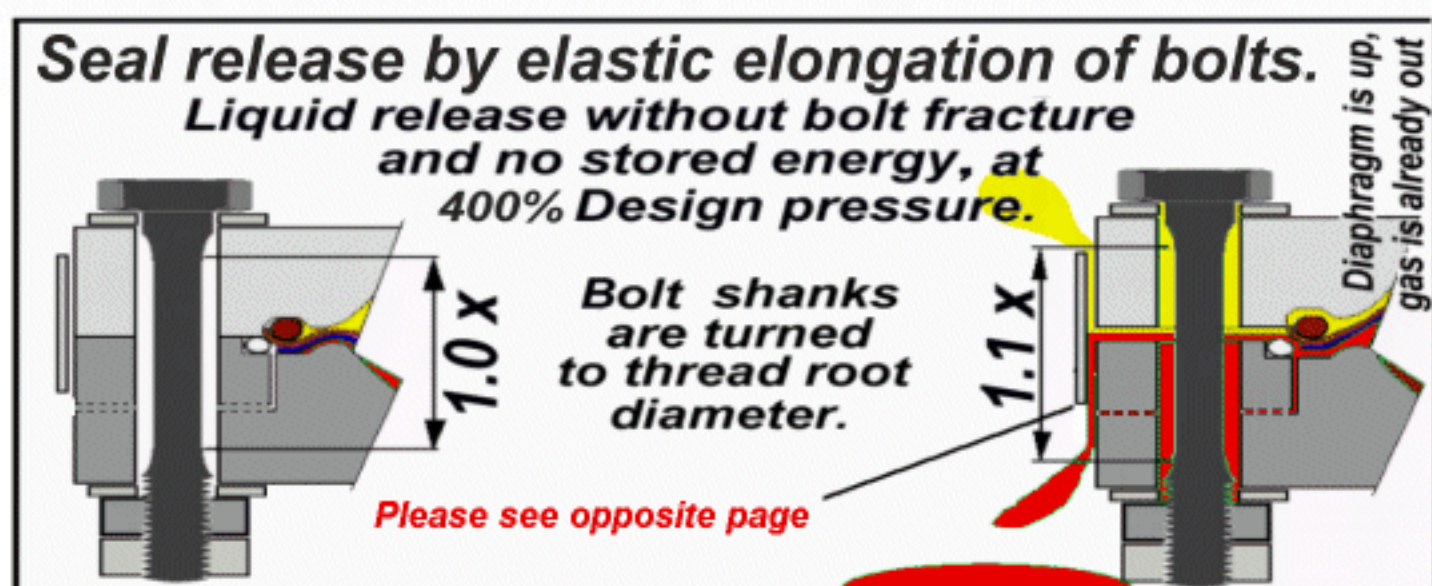
5. Ensure that your mounting method does not prevent built in fail safe features from protecting you.  
SEE BELOW:

### The PulseGuard Safety Difference

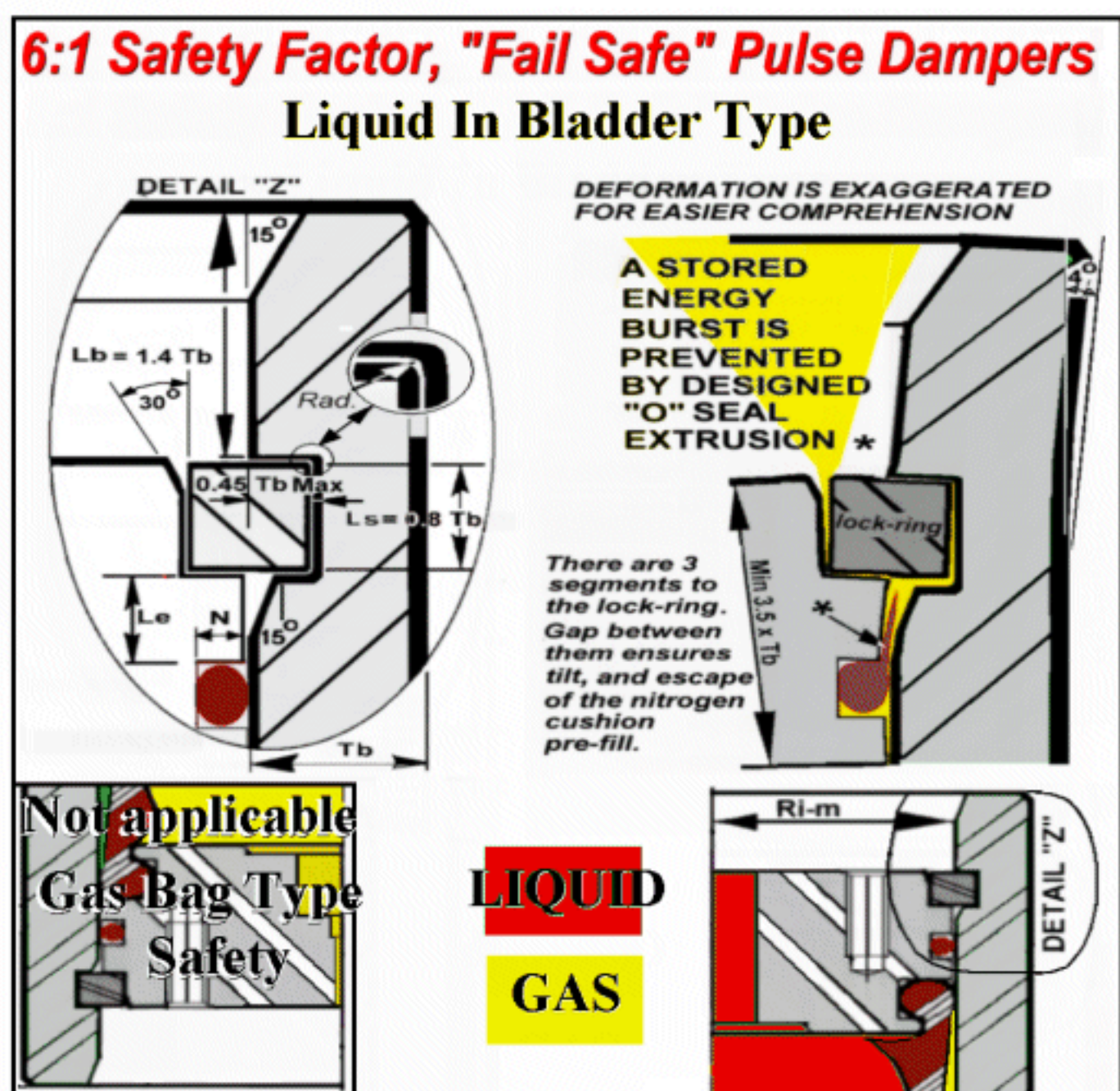
Fail safe, compressed gas overpressure release methods, deployed under our license from M. Packer.



Do NOT mount beneath anything that could stop gas end swell.



Do NOT mount between brackets that could stop bolt elongation.



Do NOT mount in clamps that could stop end "bell mouthing".