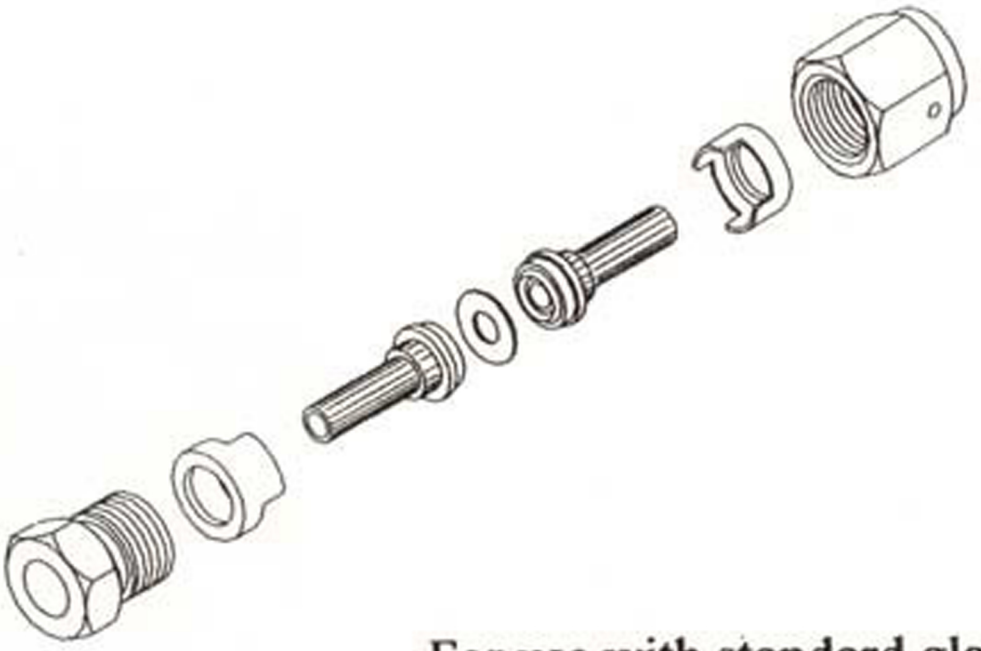
OmniSafe®

Torque Suppression

Dramatic reduction of particles in UHP gas systems

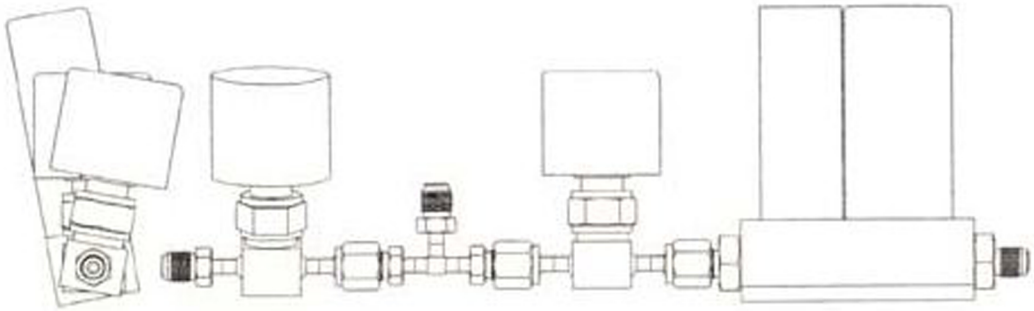


For use with standard glands & gasket with or without gasket retainer.

Design and Application of OmniSafe

Typical metal face seal fittings, when tightened, cause rotation and twisting of attached tubing and components.

- EASIER: With no rotational displacement on make up *OmniSafe* keeps components in line.
- The *average* Rotational Displacement of a standard metal face seal fitting is over 14 degrees with only an 1/8th turn past finger tight.

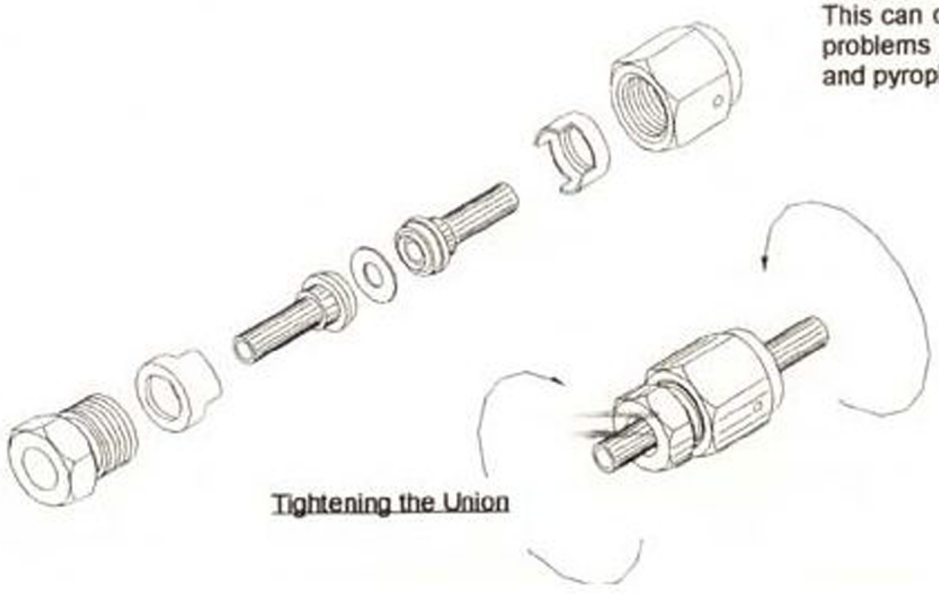


Skewed Components as a result of Counterrotational Torque

Assembly and Installation

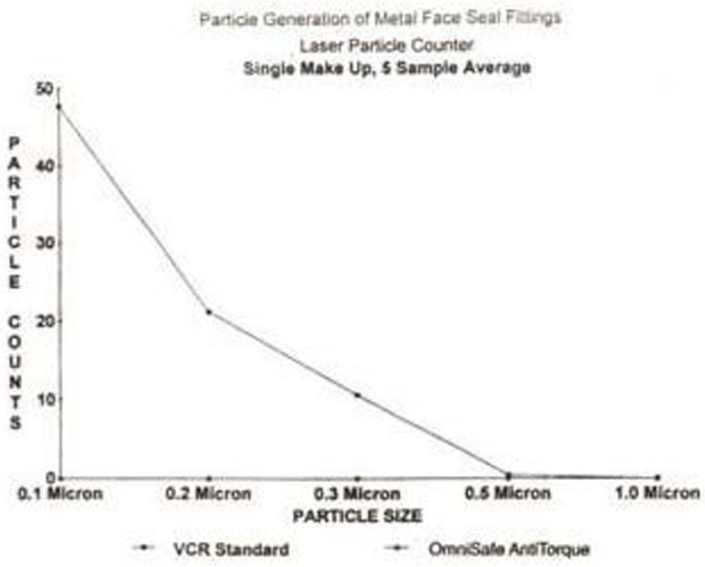
Assembly is easy with standard glands and gasket. The torque suppressors engage as the fitting is brought to finger tight. This engagement completely cancels the rotational component of the force transmitted from the male and female nuts to the glands.

- SAFER: *OmniSafe* will not loosen with vibration due to residual torque. Residual torque is stored in the tubing of non-torque suppressed systems during installation.
- The standard metal face seal fitting union will "break loose" if an attached component is back rotated. This can cause catastrophic problems in toxic, corrosive and pyrophoric lines.



Tightening the Union

- CLEANER: Since there is no torque transferred to the glands OmniSafe has no gland to gasket galling and no subsequent particle generation.
- The toroid of the standard metal face seal fitting galls against the gasket. This generates an average of 79 metal particles in the 0.1 to 1.0 micron range.



Sealing surface of VCR gland after single make up, 1/8 turn past finger tight, using Nickel Gaskets. Photomicrograph 1000x.

Sealing surface of *OmniSafe* gland after single make up, 1/8 turn past finger tight, using Ni Gaskets. Photomicrograph 1000x.

Sealing surface of VCR gland after 25 make ups, 1/8 turn past finger tight, using Nickel Gaskets. Photomicrograph 1000x.

Sealing surface of *OmniSafe* gland after 25 make ups, 1/8 turn past finger tight, using Nickel Gaskets. Photomicrograph 1000x.

Photomicrographs courtesy of Lam Research

OmniSafe Torque Suppression Advantages:

- Ease of system assembly
- Prevention of particle generation
- Increased corrosion resistance
- Better sealing characteristics
- Increased safety
- Extension of component life