

Sanitary-Design Fused Glass/Metal Windows Improve Process Sight Glass Safety

2/99



Sight-glass discs or viewports typically fail because the glass cannot tolerate a particular combination of shock and the bending forces they encounter when operating under pressure. When undue stress is applied to conventional glass - both the stress introduced by system pressure and that inadvertently induced during reinstallation after cleaning - the force is concentrated along tensile stress lines. At some point the lines develop into cracks which can immediately compromise the barrier. Worse, a general pattern of cracking can occur suddenly, either spontaneously or as the result of a slight impact, compromising the physical integrity of the glass. So, when a conventional glass element fails, it can do so with absolutely no warning, suddenly developing a leak or shattering into fragments with explosive force.

Metaglas windows accept a much higher level of stress without damage because, being uniformly prestressed, they are more uniformly elastic. Cracks are absorbed by the homogeneous compression stress that is imposed across the full section of the glass. When further stressed to failure, by either extreme pressure or by impact, the reaction is a progressive pattern of spalling or slivering, usually on the external surface of the glass, and the barrier is uncompromised.

The strongest, most secure glass elements available, Metaglas® mechanically prestressed windows, are now available in a sanitary design for visual flow indicators or sight ports in processing applications. The new units incorporate 3-A approved Meta-Clamp™ sanitary-service fittings.

Described as offering the optics of glass and strength of steel, these glass elements provide a level of safety, and a useful service life, well beyond that provided by conventional tempered glass or plastic in sanitary service. Even in the most extreme temperature (to 536°F) or overpressure situations, sudden, total failure, with leakage or explosive shattering of the glass, essentially never occurs.

Patented* Metaglas windows are formed by melting glass, typically borosilicate, into a precisely formed metal ring. As the glass cools, it solidifies and prevents the metal ring from contracting back to its theoretical size at normal temperatures. The result is uniform, mechanically prestressed fusion of glass and metal that combines excellent optical characteristics with greatly enhanced physical characteristics. Also, vital in sanitary service, this high-pressure fusion of glass window and metal ring produces an uninterrupted surface with no open space between the two.

Sanitary visual flow indicators are available in sizes 1-inch through 8 inches, in either 316 or 304 stainless steel. Line connections are available in four styles: clamp, butt weld, flange and bevel seat. Gasket options include Buna, EPDM, Viton, PTFE and Silicone.

For additional information and applications assistance contact: L.J. Star Incorporated, P.O. Box 1116, Twinsburg, OH 44087
Phone: (330) 405-3040 • Fax: (330) 405-3070
Web Page: www.ljstar.com • e-mail: view@ljstar.com

* U.S. Patent # 4,961,628

L.J. STAR
INCORPORATED