

# GAGE GLASSES IN STEAM SERVICE

## Special Precautions

Standard reflex gages are recommended up to 250 PSI SATURATED Steam (401° F). Mica shields with transparent glass are recommended over 250 PSI SATURATED because of improved service life. Special Steam Gage configurations should be used above 450 PSI.

Use special Steam Gage configuration on all applications of SUPERHEATED Steam where temperature is over 450° F.

**The reason for the precaution** is that hot water attacks glass and causes a chemical corrosion. This process accelerates with higher temperature. Above 250 PSI (401° F) the rate is sufficiently high to justify the use of mica shields. Above 450° F use of MICA shields is MANDATORY.

### Recommendations- Gage Columns

**Up to 250 PSI Saturated (401° F)** .Use regular unprotected glass. Reflex style gage is cheapest; however cannot be converted to mica protection. If unacceptable glass corrosion occurs use MICA shields with Transparent style gage. Use Grafoil™ gaskets.

**Above 250 PSI (401° F) ....** Use Mica protection, series TA or TDM gages Grafoil™ sealing gaskets Belleville spring washers

**Above 450 PSI (457° F)....** use Special Design Steam Gage.

**Above 600° F** use special high temperature glass such as Almax II™ (aluminosilicate).

### Recommendations- Gage Valves

On steam service over 400 PSI (445° F SATURATED) high temperature valve stem packing must be used. Teflon™ packing only good to 450° F.

**Over 350 PSI (430° F)** provision must be made for expansion by using either slip-fit nipples with stuffing-box valves or a flanged expansion loop. Use of rigid pipe connections may cause distortion and leakage.

**Over 400 PSI (445° F)** use a Bolted Bonnet valve with Outside Screw & Yoke (OS & Y). Valve should have a back seating stem.

*SUPERHEATED Steam is steam with a temperature higher than SATURATED Steam for any given pressure. If the temperature of the steam exceeds 450° F no matter whether SATURATED or SUPERHEATED then mica protection must be used. If service life is too short using Reflex glass then change to mica-protected Transparent glass. This will require changing the gage glass housing.*

*Note that superheated steam can have a temperature of 450° F with a pressure as low as 1 PSI.*

Steam/Hot Water Service		Minimal Acceptable	Recommended Configuration			
Pressure (SATURATED)	Temp. (°F)		Mica Shields	Spring Washers	Stuffing-box / Slip Nipples	Flanged/ Expansion Loop
up to 250 PSI	0—401	RA	RA / TA			
251 PSI to 400 PSI	401—445	RA *	TA / TDM	YES		YES
400 PSI to 450 PSI	445—457	TA	TDM	YES	YES	YES
451 PSI to 649 PSI	457—495	-----	Special	YES	YES	YES
650 PSI to 750 PSI	495—512	-----	Special	YES	YES	YES
SUPERHEATED	over 431	TA	TDM— Special	YES	YES	YES

\* RA gage in service over 250 PSI saturated may give unacceptably poor service life