

# PENBERTHY

## application report

Section 2000  
Application Report 2796  
Issued 05/05  
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For: GAGE QUARTZ USE

FUSED QUARTZ: naturally occurring crystalline silica is melted

SYNTHETICALLY FUSED SILICA: synthetically derived silicon dioxide is melted

The level of contaminants (impurities) in the quartz is directly related to the mechanical properties. Surface flaws can drastically reduce the inherent strength of the material. Penberthy uses fused quartz containing less than 50 ppm impurities to ensure mechanical integrity at elevated temperatures. The physical properties of quartz require an extremely flat seating surface. Torsional or point stresses can easily cause a fracture.

Penberthy offers quartz in its model "TH" ONLY. Gasket and cushion seating surfaces on chambers and covers must be flat within 0.002" [0.05 mm] with no steps. The quartz must be centered on the chamber within 0.10" [2.54 mm] to avoid potential contact with metal surfaces.

Side connected gages with quartz will not be considered, end connected chambers are extended 0.875" [22.21 mm] per end beyond standard chamber length to move the drill and tapped holes away from the glass seating surfaces. **NOTE: This changes the minimum center to center value.** This eliminates the possibility of quartz breakage due to chamber distortion in the tapped area. If used for high temperature service, the chamber material should be stainless steel. Carbon steels tend to convert carbides to graphite at temperatures greater than 800°F (427°C) for extended periods.

Due to increased stress considerations, gages containing quartz will be limited to 3 sections maximum.

Belleville washers are used to provide equalized loading on the quartz surface. Belleville washers should be tightened to required gage torque.

