

SAFETY & LONGTERM ACCURACY OF BOURDON TUBE PRESSURE GAUGES

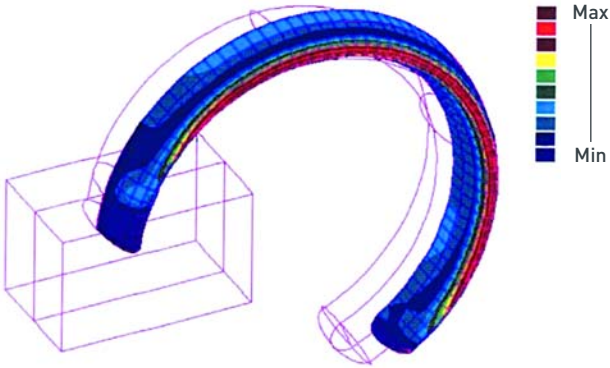


Fig. 1 Stress of a Bourdon Tube under pressure. The maximum load is over the whole length of the tube with the exception of the ends.

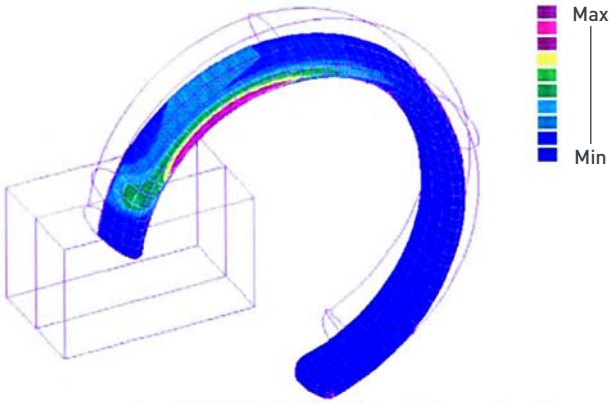


Fig. 2 Stress of a Bourdon Tube due to mechanical vibration. Maximum load over 30° to 60° from the shank.

SAFETY & LONGTERM ACCURACY OF BOURDON TUBE PRESSURE GAUGES (CONTINUED)

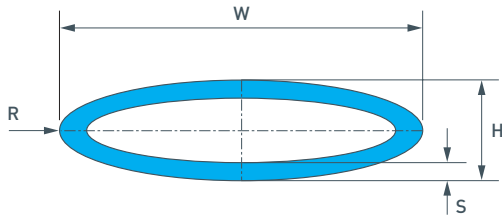


Fig. 3 The greatest tube stress occurs at the narrow edge of the tube - R.

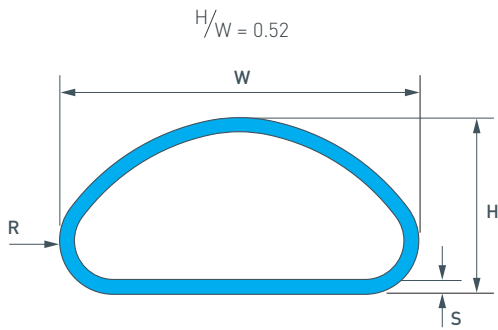


Fig. 4 Rounder profile of the WIKA tube design reduces the high stresses at R.

SAFETY & LONGTERM ACCURACY OF BOURDON TUBE PRESSURE GAUGES (CONTINUED)

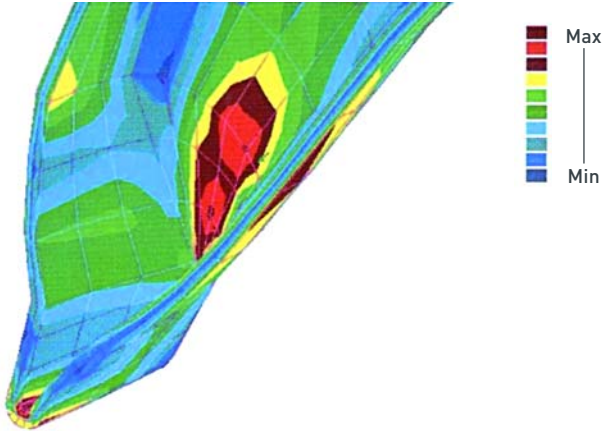


Fig. 5 If a tube is closed by compressing the end, a high area of stress is produced. Typically after 300,000 pressure cycles, failure will occur at the tip.

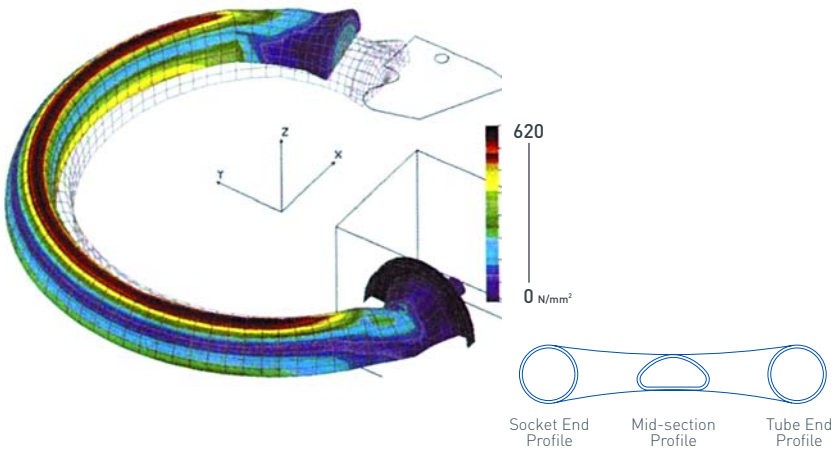


Fig. 6 Closing the tube by end capping on a circular profile removes the high area of stress at the end. This tube design will survive over 3 million pressure cycles without failure.

SAFETY & LONGTERM ACCURACY OF BOURDON TUBE PRESSURE GAUGES (CONTINUED)

WIKA Bourdon Tube – 16 bar		
Internal Pressure	% of Range	Endurance
15 bar	95%	200,000 pressure cycles before calibration error occurs (0 bar to 15 bar)
21 bar	130%	12 hours continuous overload before calibration error occurs
150 bar	900%	Minimum burst pressure of the Bourdon Tube
700 bar	4,300%	Typical burst pressure of the Bourdon Tube

Fig. 7 The special techniques used to produce the WIKA Bourdon Tube lead to a much higher degree of calibration, stability and safety.

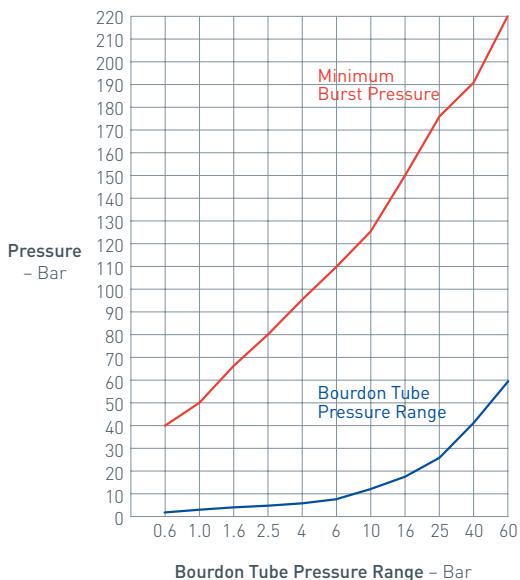


Fig. 8 The improved design produces a stronger and safer tube with high burst pressures throughout the range.