

BOURDON TUBE RUPTURE, PROOF AND OVER PRESSURES

For various reasons, we are often asked for Bourdon tube rupture (burst) pressures, over pressures or proof pressures for specific ranges of Ashcroft® gauges.

Rupture or burst pressure should not be confused with over pressure or proof pressure.

ASME B40.100 definitions are as follows:

Rupture Pressure (or burst pressure)—the maximum pressure above which the pressure assembly may no longer hold pressure.

Over Pressure—the application of pressure beyond full scale pressure.

Proof Pressure—the maximum pressure a gauge can withstand without evidence of change in accuracy. Proof pressure may be a semi-destructive test and should not be conducted repeatedly on the same gauge. It may be expressed as a pressure or as a percentage of full scale.

As a guide, the following should be used in determining proof pressures:

- 4½" and larger open or solid front Bourdon tube pressure gauges per ASME B40.100-2013 (except retard and differential gauges) ranges to 1000 psi have a proof pressure of 130% of full scale. For ranges above 1000 psi to 15,000 psi proof pressure is 110% of full scale.

The above gauges are available with an optional overload stop (variation code XOS which increases proof pressure an additional 20%.

When an overload stop is specified, ranges to 1000 psi have a proof pressure of 150% of full scale. For ranges above 1000 psi to 15,000 psi proof pressure is 130% of full scale with an overload stop.

When there is a possibility of a sudden decrease in pressure, vacuum may tend to create inertia in the pointer motion, causing it to go beyond the maximum vacuum point. This may result in disengagement of the segment/pinion gearing. When sudden decrease in pressure are present in the process, a vacuum stop (variation code XVS) is an available option.

- Unigauge product, models 2½", 3½" 1009S and 63mm 1008S (excluding 1008A) with ranges up to 600 psi have a proof pressure of 125% of full scale. For ranges above 600 psi, the proof pressure is 110% of full scale.
- 100 mm and larger open or solid front Bourdon tube pressure gauges per EN 837-1: have a proof pressure of 130% of full scale. When an overload stop is specified, proof pressure is 150% of full scale.

Gauges should not operate continuously at the proof pressure limits stated. The maximum continuous pressure a gauge should be subjected to is 75% of the gauge range as called out in ASME B40.100.

Listed below are rupture pressures for standard pressure ranges. For non-standard ranges or ranges and tube materials not indicated, consult Stratford Customer Service.

Remember, know the reason why your customer is asking about over pressure. To give the right answer, you need to know what he or she is asking.

RUPTURE PRESSURES FOR 2½" AND 3½" 1009 AND 63MM AND 100MM 1008S

ASME B40.100 TYPE GAUGES

<u>Range (psi)</u>	<u>Rupture Pressure (psi)</u>
15	700
30	1800
60	2600
100	2400
160	2000
200	3600
300	4300
400	6500
600	8500
800	18000
1000	18000
1500	19000
2000	19000
3000	20000
4000	20000
5000	21000
6000	21000
7500	25000
10000	25000
15000	29000

RUPTURE PRESSURES FOR 4½" AND LARGER ASME B40.100 TYPE GAUGES

**Rupture Pressure (psi)
Bourdon Tube Material**

<u>Range (psi)</u>	<u>A</u>	<u>R/S</u>	<u>P Age Hard</u>
12	750	1900	450
15	800	2000	500
30	1300	2050	1600
45	1600	2100	3600
60	2400	4700	1800
75	2500	4800	4100
100	2600	4900	4300
160	3400	2500	1900
200	3900	7500	4500
300	4000	8000	7500
400	4600	8500	7800
600	6000	12000	8000
1000	6200	7500	8200
1500	—	15000	16500
2000	—	17000	17800
3000	—	18000	21000
4000	—	20000	22000
5000	—	22000	23500
6000	—	23000	30000
10000	—	28000	33000
15000		30000	35000
		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> 135,000 psi min. (Inconel 718) </div>	
23000		37000	37000
30000	—	40000	40000
50000			
80000			
100000			