

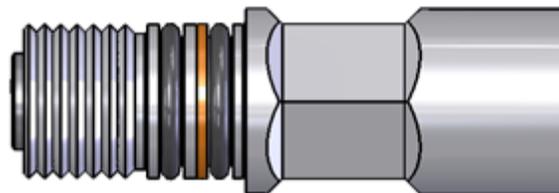
## O-Ring Information

If your job is critical, DataCan recommends using an Aflas 7182B® material. This material is great for H<sub>2</sub>S, CO<sub>2</sub>, and high pressure conditions. The cost of a failure due to a poor o-ring selection is too great.

For an o-ring to seal properly, it must have chemical and mechanical strength. The material must be chemically compatible with the sealing fluid. The gland and o-ring must be tough enough to maintain the seal during high pressures and high temperatures.

Chemical strength means matching the material to the environment. DataCan has a simplified o-ring selection guide that helps operators choose the correct material. In general, Viton 90 o-rings work most of the time. For critical wells, long term surveys, and unknown environments, DataCan recommends using Aflas 7182B® seals.

The physical strength of a seal is dependent on the o-ring strength and the gland design. Commonly, an o-ring will have an extrusion failure at high pressures and temperatures. This is because the high pressure squeezes the o-ring through the gap in the seal joint. An easy solution to this problem is to reduce the gap size. The smaller the gap, the higher pressure the seal can withstand before extruding. However, it becomes difficult to machine small gaps. Another solution, is to use a high strength back-up, such as a PEEK® back-up. The back-up must extrude through the seal gap. Since the back-up material is stronger than the o-ring, higher pressures can be withstood. The final solution is to use a face seal joint design, as seen in DataCan's super seal. In the super seal design, a metal to metal face seal behind the o-ring gland prevents the o-ring from extrusion failures.



The premature failure of an o-ring can usually be attributed to a combination of causes and not merely a single failure mode. It is important to maximize sealing life and reliability by reducing the probability of seal failure at the onset with proper compound selection, installation and continued education of personnel.

### O-Ring Information

#### Compression Set

The seal exhibits a flat-sided cross-section, the flat sides correspond to the mating seal surfaces. Excessive pressure and temperature, excessive volume swell in chemical, and specific elastomers with high compression set lead to this failure mode.

Once an o-ring has compression set, it is no longer elastic and will not form a seal.



#### Chemical Degradation

The seal may exhibit many signs of degradation including blisters, cracks, voids or discoloration. In some cases, the degradation is observable only by measurement of physical properties.

The selection of a more chemically resilient elastomer such as Aflas 7182B will prevent degradation.



#### Explosive Decompression

The seal exhibits blisters, pits, or pockets on its surface. Absorption of gas at high pressure and the subsequent rapid decrease in pressure results in gas that was once trapped inside the elastomer to explosively decompress and exit the seal. The absorbed gas blisters and ruptures the surface as the pressure is rapidly removed.

High modulus or a harder elastomer, as well as a slower decompression rate will prevent this mode of failure. Aflas 7182B is explosion decompression resistant. It is an effective seal material for high CO2 gas wells.



#### Extrusion

The seal develops ragged edges (generally on the low pressure side) which appear tattered. Excessive seal clearances, excessive pressure, low modulus or hardness elastomers, or improper sizing will lead to an extruded seal.

Decreasing gland clearances, use of a high strength back-up ring, or DataCan's metal to metal super seal will prevent extrusion.



### O-Ring Information

Memory Tool - Redress Kits		
Product	Material	Part No.
3/4" Quartz DXB, 1" Quartz 3/4" Piezo (Standard, Accelerometer)	Viton 90	100445
	Aflas 718 2B	100446
	Chemraz 510	100447
1-1/4" Quartz 1-1/4" Burst	Viton 90	100908
	Aflas 718 2B	100237
	Chemraz 510	100238
1-1/4" Piezo (Standard, Welded III, RTD)	Viton 90	100911
	Aflas 718 2B	101002
	Chemraz 510	101003
1-3/8" Welded Piezo	Viton 90	101372
	Aflas 718 2B	101373
	Chemraz 510	101374
Geothermal	Viton 90	101672
	Aflas 718 2B	101673
	Chemraz 510	101674
1-1/4" Quartz DXB II	Viton 90	101693
	Aflas 718 2B	101694
	Chemraz 510	101685

Quick Shut In Tool - Redress Kits		
Product	Material	Part No.
2-3/8" Quick Shut In Tool	Viton 90	100190
	Aflas 718 2B	100191
	Chemraz 510	100192
1-1/4" Quartz 1-1/4" Burst	Viton 90	100223
	Aflas 718 2B	100224
	Chemraz 510	100225
1-1/4" Piezo (Standard, Welded III, RTD)	Viton 90	102444
	Aflas 718 2B	102445
	Chemraz 510	102446

Material Properties			
Property	Viton	Aflas	Chemraz
Low Temp Duty	-10°C	30°C	0°C
High Temp Duty	200°C	220°C	230°C
Carbon Dioxide	Fair	Good	Good
H2S	Poor	Fair	Good
Tear/Abrasion Resistance	Good	Fair	Fair
Compression Set Resistance	Good	Fair	Poor

