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QUESTIONS & ANSWERS Saunders® EX Endurance Diaphragm

What is the EX Endurance Diaphragm?

The EX Endurance Diaphragm is a two-piece leaf-type diaphragm with a silicone backing and a modified PTFE facing.

Why is the EX called the “Endurance Diaphragm”?

The EX Endurance Diaphragm has been developed for high temperature applications and, especially, applications which expose the diaphragm to high temperatures for long periods of time. The EX will endure these high temperatures without damage.

Why use a silicone backing?

Silicone has excellent thermal properties and it can withstand very high temperatures without deterioration. Also, it can handle high temperatures for very long periods of time without damage. Silicone holds up well at low temperatures. Plus, Silicone has best-in-class resistance to compression set – much better than EPDM or other rubbers.

Why is resistance to compression set important?

Compression set is the loss of recovery that elastomers suffer from being compressed (“squeezed”). This property is critical for backings that must provide resiliency that PTFE facings lack. After compression, elastomers spring back to their original form, less any compression set. Under heat and time this ability diminishes. Silicone not only has an overall better recovery – or resistance to compression set – it also has best-in-class thermal and anti-aging properties.

Are there other benefits to improved resistance to compression set?

Yes, the requirement to retighten fasteners after thermo cycling is diminished. While this practice is still recommended 24 hours after first heat cycle, further demands are reduced.

Why not use silicone as a body diaphragm instead of a backing cushion?

Silicone has great thermal and compression set properties but is not immune to attack by hot water and especially steam. Steam attacks the Si-O-Si backbone and results in de-polymerization of the material.

Does the steam damage the silicone?

No, silicone backing is protected from the line media by the PTFE face.

What is the temperature range for the EX diaphragm?

The EX Diaphragm has been tested to 175°C (347°F). The EX also offers excellent low temperature performance and is rated to -20°C (-4°F). Consult factory for applications above and below these temperatures.

Saunders®
the science inside



- ① **High Temperature Duty**
- ② **Extended Life at Elevated Temperatures**
- ③ **Superior Resistance to Compression Set**



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What are typical applications for the EX Diaphragm?

The EX is ideal for steam supply and distribution, steam blocks/sterile barrier assemblies, and any other applications that subject the diaphragm to high temperature for extended periods of time. Also, any applications that require a wide range of thermo-cycling – for example, valves that see cold product after heat sanitization.

Does the EX Diaphragm comply with industry standards?

Yes, the EX is FDA-compliant, third party tested to USP Class VI, <87>, <88>, it is certified ADCF (Animal Derived Component Free), meets requirements of ASME BPE part SG, and is fully lot traceable.