



Precision Glass Works

PRESSURE TUBES With Internal Thread



Top (For the cap)

- * Easy to use threaded Glass filled PTFE plugs create tight seal
- * 25% Glass filled PTFE which gives improved compression and wear properties, lower thermal expansion and excellent chemical resistance

O Ring

- * Provides tight seal by simply hand tightening
- * O rings of different composition available

Glass

- * 3.3 Low Expansion Borosilicate Glass also complies with ISO 35858 and DIN 12287
- * Imported from SCHOTT-DURAN® Germany
- * Heavy wall tube and no JOINTS.
- * Maximum chemical roughness and minimal thermal expansion

Tubes are rated for 10 Bar pressure at as much as 120° C

Due to varying condition, PGW cannot guarantee glass tubes from breakage under pressure



Internal thread and PTFE Caps

The cap along with O ring assures a tight seal, by simply tightening. The internal glass threads and matching PTFE caps are available in 3 sizes i.e. Small (Thread size #7), Regular (Thread size #15) and Large (Thread size #25).

For pressure work, "Front Seal" cap is recommended. Back seal cap can be provided, if preferred. Back seal cap is currently available in the Regular thread (#15) size only.

Caps are precisely machined out of 25% Glass filled PTFE which is much superior to the regular PTFE. The Glass filled PTFE has excellent chemical resistance, Improved stiffness and self lubricating. Resistance to weathering and wide operating temperature.

O rings

The o-ring is the most universally recognised seal design and easy to mount. It is the most critical component in the Pressure tube, creates the tight seal between the PTFE cap and glass. O-rings of different compositions are available depending up on the chemical resistance and also the environmental conditions including temperature range and pressure. Our suggestion will be to use FFKM O-ring for best performance.

FKM (Viton® / Alwin Höfert KG)

FKM is the ASTM designation for a class of fluorinated, carbon-based synthetic rubber, commonly known as fluoroelastomers. FKM has impressive heat resistance, allowing FKM seals to withstand temperatures greater than 200°C. FKM also exhibits extraordinary levels of resistance to high pressures, chemicals, and other fluids (including several fuels). However FKM has its limitations and please refer the last page for difference between FKM and FFKM.

FFKM (Kalrez®/Chemraz®)

FFKM (by ASTM 1418 standard) (equivalent to FFKMs by ISO/DIN 1629 standard) are perfluoroelastomeric compounds containing an even higher amount of fluorine than FKM fluoroelastomers. They have improved resistance to high temperatures and chemicals and even withstand environments where Oxygen-Plasma are present for many hours. Certain grades have a maximum continuous service temperature of 327 °C (621 °F). FFKM or Perfluoroelastomers are a highly durable material that provides a long service life in tough environments, can withstand attack from more than 1,800 chemicals and boasts resistance to extreme temperatures.

- * Temperature resistance up to +327°C
- * Extraordinary chemical resistance
- * Retains elasticity similar to FKM
- * Reliable and long term service
- * Boasting enhanced physical performance properties including a very low compression and improved seal force retention

FEP Encapsulated O Rings

An encapsulated O-ring comprises an elastomer energising core, which has a seamless jacket made from fluoropolymer. The elastomeric core is Viton and the jacket is made from Teflon. There are certain applications which prohibit the use of FKM. The use of hostile chemicals or extreme temperature (both high and low) during various processes can make effective sealing very difficult using FKM and hence FEP is good alternative option. These O-rings could be a more economical alternative to FFKM materials, but they are not easily compressed. We do not offer these FEP O-rings in our regular list and is available upon request.

Pressure tubes, Front Seal



Approx volume, mL	Body O.D., mm	Approx length (below thread), mm	Pressure tube with FKM O-ring Product code	Pressure tube with FFKM O-ring Product code
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With Small (#7) size thread and cap

5	13	100	P4541	P4571
10	19	100	P4542	P4572
10	13	175	P4543	P4573
15	19	175	P4544	P4574

With Regular (#15) size thread and cap

15	26	100	P4545	P4575
30	26	175	P4546	P4576
60	26	300	P4547	P4577
60	38	100	P4548	P4578
120	38	175	P4549	P4579
200	38	300	P4550	P4580

With Large (#25) size thread and cap

60	38	100	P4551	P4581
120	38	175	P4552	P4582
120	46	100	P4553	P4583
250	46	175	P4554	P4584

Pressure tubes, Back Seal



Approx volume, mL	Body O.D., mm	Approx length (below thread), mm	Pressure tube with FKM O-ring Product code	Pressure tube with FFKM O-ring Product code
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With Regular (#15) size thread and cap

15	26	100	P4555	P4585
30	26	175	P4556	P4586
60	26	300	P4557	P4587
60	38	100	P4558	P4588
120	38	175	P4559	P4589
200	38	300	P4560	P4590

Replacement O-ring



O-ring size	FKM O-ring Product code	FFKM O-ring Product code
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Front seal

For Small (#7) thread and cap	P4561	P4591
For Regular (#15) thread and cap	P4562	P4592
For Large (#25) thread and cap	P4563	P4593

Back seal

For Regular (#15) thread and cap	P4564	P4594
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FKM Versus FFKM – A Comparison of Properties

Material/Characteristic	FKM	FFKM
Estimated temperature range (°C/°F)	-20 – 250 (-4 – 482)	-40 – 325 (-40 – 617)
Heat resistance (ASTM D2000) (°C/°F)	225/437 (Type G)	250/462 (Type H)
Elongation @ break, % (ranges)	70 – 300	100 – 300
Compression set	15-25% (on 214 o-ring after 70 hr @ 200°C)	15-25% (on o-ring after 70 hr @ 200°C); better at higher temperatures: 15-30% (on o-ring after 70 hr @ 300°C)
Hardness range (Shore A)	60 – 95	65 – 95
Tensile strength range (psi/MPa)	1,500/1.03 – 4,500/3.10	1,250/8.61 – 3,600/24.8
Specific gravity	1.8 – 2.0	1.9 – 2.2
Fluorine content of polymer (%)	66 – 70	71 – 73
Chemical resistance	Broad range of chemicals: gasoline, alcohol, fuel additives, acids, hydrocarbons, water, oils, oxidation, ozone, radiation	Broadest range of chemical resistance
Features	<ul style="list-style-type: none"> * Good wear resistance * Excellent compression set * Great heat resistance * Superior swell resistance in high octane and oxygenated fuels 	<ul style="list-style-type: none"> * Excellent thermal resistance * Excellent plasma resistance * Excellent chemical resistance * Superior compression set at elevated temperatures * Outstanding chemical compatibility
Not recommended for	<ul style="list-style-type: none"> * Ketones (MEK) * Amines * Low molecular weight esters and ethers * Nitro hydrocarbons * Hot hydrofluoric or chlorosulfonic acids 	<ul style="list-style-type: none"> * Molten metals * Gaseous alkali metals * Halogenated freons/fluids * Uranium hexafluoride
Country of Origin/Manufacturing	Germany	USA



Precision Glass Works

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