

❖ HPG System Specifications

The HPG seal is a high reliability system used for both isolating and general sealing purposes, especially suitable in High Pressure services including ANSI 2500# and API 10,000# classes. The HPG kit consists of a PTFE spring-energized seal, or an elastomeric o-ring, seated in an isolating laminate, which is permanently bonded to a high-strength metal gasket core. Sleeves and washers complete the isolating package. Due to its unique pressure activated sealing mechanism, the gasket requires far less bolt stress to seal than any other industry gasket. The HPG inner diameter is exactly matched to the flange bore to eliminate turbulent flow and flange face erosion/corrosion.

❖ Applications:

- Flange isolation in conjunction with cathodic protection.
- Isolation between dissimilar metals to prevent galvanic corrosion.
- Wellhead isolation from inter-connected flow lines.
- Mating mismatched ring-joint to raised-face flanges (HPG will seal in ring-joint, raised-face and flat face/slip-on flanges).
- Eliminate fluid trap corrosion between ring-joint (RTJ) flanges where high concentrations of CO₂, H₂S and other aggressive hydrocarbon media are present.
- Eliminate turbulence and flow-induced erosion between ring-joint (RTJ) flanges.
- Protect against coating damage on coated flange faces.
- To seal between flanges subjected to vibration/cavitation.

❖ Metallic Core

The metallic core of gasket is made of stainless steel 316L. Other metals are available upon request.



❖ Isolating Material

1) G-10 Glass-Reinforced Epoxy (GRE) laminate:

- Compressive Strength: 65,000 PSI
- Dielectric Strength: 750-800 VPM
- Max. Continuous Operating Temp: 150°C (300°F)
- Water Absorption: 0.05%
- Flexural Strength: 65,000 PSI
- Tensile Strength: 50,000 PSI

2) G-11 Glass-Reinforced Epoxy (GRE) High Temperature.

laminated material:

- Compressive Strength: 50,000 PSI
- Dielectric Strength: 500 VPM
- Max. Continuous Operating Temp: 200°C (398°F)
- Water Absorption: 0.085%
- Flexural Strength: 57,700 PSI
- Tensile Strength: 41,000 PSI

❖ Seal Material

1) PTFE (Spring-Energized)

Recommended for all environments. Helical wound spring provides radial load. Encapsulation in the seal groove eliminates creep or cold flow.

Temperature Range: -200°C to 250°C (note: gasket

material is limiting factor)

Spring Material

Standard spring material is 302L Stainless Steel. Hastelloy C276 is also available for aggressive medias.

2) Viton

General purpose elastomer. Excellent resistance to aliphatic hydrocarbons, glycols and H₂S. Good resistance to aromatic hydrocarbons.

Not recommended for: Systems with amine inhibitors and in piping systems containing significant partial pressures of polar gases (i.e. CO₂) where radical pressure drops (i.e., 2000 PSI to 0 PSI) commonly occur.

Temperature range: -29°C to 250°C

3) Buna-Nitrile

General purpose elastomer only suitable for mild chemical resistance.

Temperature range -20°C to 110°C

4) Silicon

Suitable for use in potable water applications. Approved by WRAS.

Temperature range -55°C to 300°C

Special seal ring materials are available on request and subject to technical acceptability.

❖ Isolating Sleeve

1) GRE

GRE (Glass-Reinforced Epoxy) tubing is suitable for continuous exposure to 150°C. This material is an epoxy laminate that offers excellent resistance to crushing, cracking, breaking and thread pinch.

2) Mylar

Spiral wound Mylar is a general purpose material

recommended for bolting applications with flange temperatures below 120°C. This material has generally fair resistance to crushing, cracking, breaking and thread pinch.

3) NOMEX

Nomex is a high temperature sleeve material manufactured from solid organic polymer and is suitable for temperatures up to 210°C.

❖ Isolating Washers

1) GRE – G10/G11

1/8" (3mm) thick Glass Reinforced Epoxy washers

2) HCS Washers

Hardened Coated Steel Isolating Washers

❖ Steel Washer

1) ZPS (Zinc plated Carbon Steel)

2) XPS (Xylan coated Carbon Steel)

3) SS (Stainless Steel)

❖ Gasket Thickness

Standard thickness of HPG gasket is 6.4mm (0.25") for all flange types include RTJ. special thickness can be supplied on request.



ANSI B16.5 Bolt Torque (ft.-lbs) for 7500psi Gasket Seating Stress for Raised Face Flanges

Nominal Pipe Size	Pressure Classes					
	150 Class	300 Class	600 Class	900 Class	1500 Class	2500 Class
1/2	21	21	21	30	30	30
3/4	30	37	37	43	43	43
1	40	49	49	66	66	66
1 1/4	60	73	73	100	100	113
1 1/2	78	113	113	148	148	165
2	150	75	75	102	102	116
2 1/2	184	109	109	142	142	159
3	262	155	155	178	225	248
3 1/2	149	175	202	N/A	N/A	N/A
4	186	219	253	320	352	417
5	277	277	363	446	528	610
6	352	234	307	342	411	878
8	490	377	476	573	670	815
10	475	404	496	542	967	1272
12	619	586	517	565	1004	1817
14	767	512	617	669	1228	N/A
16	713	700	829	894	1684	N/A
18	1038	763	1169	1338	2413	N/A
20	917	842	1076	1572	2899	N/A
22	1187	1172	1355	N/A	N/A	N/A
24	1289	1272	1570	2481	4293	N/A

ANSI B16.5 Bolt Torque (ft.-lbs) for 7500psi Gasket Seating Stress for RTJ Flanges

Nominal Pipe Size	Pressure Classes					
	150 Class	300 Class	600 Class	900 Class	1500 Class	2500 Class
1/2	N/A	29	29	62	62	77
3/4	N/A	55	55	76	76	97
1	35	63	63	93	93	142
1 1/4	45	78	78	115	115	228
1 1/2	61	127	127	179	179	335
2	122	65	65	143	144	205
2 1/2	185	113	113	193	193	278
3	201	144	144	218	354	381
3 1/2	143	166	192	N/A	N/A	N/A
4	179	199	230	341	479	596
5	233	290	380	532	778	903
6	270	250	328	365	471	1390
8	382	439	555	738	879	1248
10	398	466	572	686	1247	2374
12	698	665	586	698	1230	3415
14	724	680	819	899	1732	N/A
16	675	847	1003	1178	2176	N/A
18	990	931	1427	1712	3111	N/A
20	877	1093	1396	2062	3859	N/A
22	1055	1374	1588	N/A	N/A	N/A
24	1321	1626	2007	3273	5935	N/A

❖ **Notes:**

- 1) Recommended bolt torque is based on generating a minimum gasket seating stress of 7,500 PSI arrived at using API 6A Annex D recommended flange bolt torque.
- 2) Bolt torque values listed assume a lubricated stud bolt resulting in a 0.16 friction factor.
- 3) Recommended torque values are based on using weld-neck (integral) flanges.
- 4) The torque figures in the table are based on a flange surface finish between 125 -250 rms finish, surface flatness within 0.020" tolerance and no misaligned flanges.
- 5) Deviation from these specific requirements may affect product performance or service life.

❖ **Customer Service:**

TECSON SEALING TECHNOLOGY

No. 1 Huapeng Rd Kandun Cixi Zhejiang CN 315300

Tel: 0086(0)574 2370 7877

Fax: 0086(0)574 2370 7878

E-mail: info@tecson.com.cn

www.tecson.com.cn

❖ **When ordered, the following must be specified:**

- 1) Flange Specification (ANSI/ASME, API, MSS, BSI or DIN standard)
- 2) Size Pressure Rating
- 3) Operating Pressure, Temperature and Media
- 4) Required Seal Material
- 5) Isolating Sleeve Material
- 6) Isolating Washer Material
- 7) Metal Washer Material

❖ **Warning:**

Properties shown throughout this brochure are typical. Your specific application should not be undertaken without independent study and evaluation for suitability.

For specific application recommendations consult Tecson. Failure to select the proper sealing products could result in property damage and/or serious personal injury.

Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing.

While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

❖ **Distributed by:**

