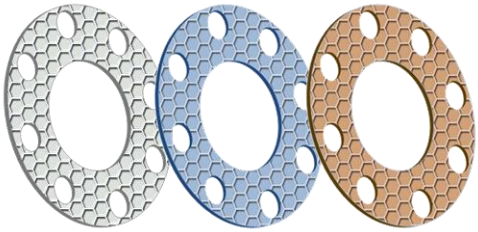
Garlock
an EnPro Industries family of companies

Installation Guide for GYLON EPIX™ Gaskets



Factors Affecting Gasket Performance

A gasket has one basic function: to create a positive seal between two relatively stationary parts. The gasket must do several different jobs well to function properly - first, create an initial seal; second, maintain the seal over a desired length of time; third, be easily removed and replaced. Varying degrees of success are dependent on how well the gasket does the following:

1. Seals system fluid.
2. Chemically resists the system fluid to prevent serious impairment of its physical properties.
3. Deforms enough to flow into the imperfections on the gasket seating surfaces to provide intimate contact between the gasket and the sealing surfaces.
4. Withstands system temperatures without serious impairments of its performance properties.
5. Is resilient and creep resistant enough to maintain an adequate portion of the applied load.
6. Has enough strength to resist crushing under the applied load and maintain its integrity when being handled and installed.
7. Does not contaminate the system fluid.
8. Does not promote corrosion of the gasket seating surfaces.
9. Is easily and cleanly removable at the time of replacement.

During the gasket selection process that follows, we recommend that these nine (9) factors be used as a checklist from the viewpoint of the user's degree of need for each factor and the manufacturer's degree of compliance.

Installation

A few simple steps must be followed during installation to ensure optimum performance:

1. Verify the flange faces are clean, free of debris/fluids, and in good working condition (flat, aligned, no major defects, etc.). For optimum performance the sealing surface should be no less than ½" wide.
2. Center the gasket on the flange. This is extremely vital where raised faces are involved.
3. Bolts/studs and nuts should be in good working order (ideally new) and turn together freely.
4. Bolt/stud threads should be lubricated with a good quality thread lubricant and installed with at least one hardened flat washer under each nut being turned to reduce friction and optimize load translation.
5. Finger-tighten and lightly snug all bolts/studs and nuts using a crossing pattern (see Figure 1) prior to beginning the torqueing process.
6. Using a calibrated torque wrench, tighten the nuts in multiple steps using a crossing pattern (see Figure 1) to evenly compress the gasket.
7. Once the final torque is achieved make a final pass at the final torque moving consecutively from bolt to bolt (see Figure 2).
8. Retorque 12-24 hours after initial installation when possible (see Figure 2). For safety reasons, Garlock does not recommend retightening a flange connection once it is brought up to temperature and/or pressure. All applicable safety standards including lockout/tagout procedures should be observed.

- NOTE: Never use liquid or metallic based anti-stick or lubricating compounds on the gaskets. Premature failure could occur as a result.

Correct Bolting Pattern

Figure 1 – Crossing Pattern

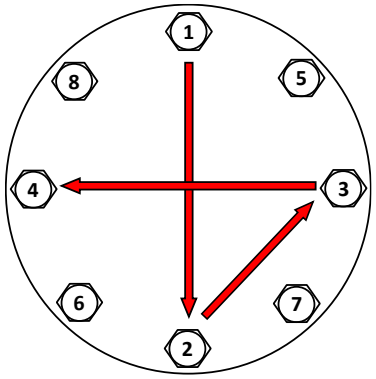
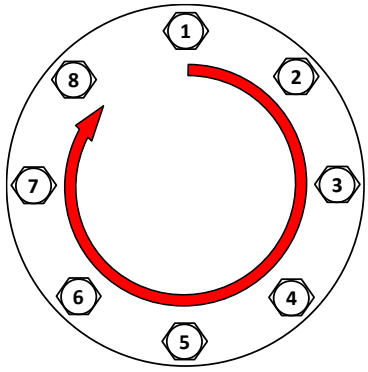


Figure 2 – Final Pass / Retorque



Garlock
an EnPro Industries family of companies

Bolt Torque Values for
GYLON EPIX™ (1) gaskets
ASME B16.5 Class 150# RAISED FACE Metallic Flanges
with A193 Grade B7 Bolts

Nom. Pipe Size (Inches)	No. of Bolts	Size of Bolts (Inches)	Internal Pressure (psig)	Preferred Torque Range Minimum(1) (ft.lbs.)	Maximum(1) (ft.lbs.)
2	4	5/8	300	52	120
2-1/2	4	5/8	300	61	120
3	4	5/8	300	89	120
3-1/2	8	5/8	300	50	120
4	8	5/8	300	63	120
5	8	3/4	300	88	200
6	8	3/4	300	111	200
8	8	3/4	300	150	200
10	12	7/8	300	141	320
12	12	7/8	300	187	320
14	12	1	300	238	490
16	16	1	300	226	490
18	16	1-1/8	300	336	710
20	20	1-1/8	300	296	710
24	20	1-1/4	300	422	1000

NOTE 1: Minimum torque values based on a minimum gasket stress of 3600 psi. Maximum torque values based on a maximum gasket stress of 15,000 psi or 60,000 psi bolt stress, whichever occurs first. Contact Garlock Application Engineering if flanges are non-metallic or if bolt grade is other than A193 B7.

Please contact Garlock Applications Engineering for flange sizes not shown.

Garlock
an EnPro Industries family of companies

Bolt Torque Values for
GYLON EPIX™ (1) gaskets
ASME B16.5 Class 300# RAISED FACE Metallic Flanges
with A193 Grade B7 Bolts

Nom. Pipe Size (Inches)	No. of Bolts	Size of Bolts (Inches)	Internal Pressure (psig)	Preferred Torque Range Minimum(1) (ft.lbs.)	Maximum(1) (ft.lbs.)
2	8	5/8	800	35	108
2-1/2	8	3/4	800	45	141
3	8	3/4	800	66	200
3-1/2	8	3/4	800	74	200
4	8	3/4	800	94	200
5	8	3/4	800	117	200
6	12	3/4	800	99	200
8	12	7/8	800	160	320
10	16	1	800	185	490
12	16	1-1/8	800	269	710
14	20	1-1/8	800	234	652
16	16	1-1/4	800	328	912
18	24	1-1/4	800	371	1000
20	24	1-1/4	800	409	1000
24	24	1-1/2	800	579	1552

NOTE 1: Minimum torque values based on a minimum gasket stress of 4800 psi to 5600 psi (depending on flange size). Maximum torque values based on a maximum gasket stress of 15,000 psi or 60,000 psi bolt stress, whichever occurs first. Contact Garlock Application Engineering if flanges are non-metallic or if bolt grade is other than A193 B7.

Please contact Garlock Applications Engineering for flange sizes not shown.

Garlock
an EnPro Industries family of companies

Bolt Torque Values for
GYLON EPIX™ gaskets
ASME B16.5 Class 150# FLAT FACE Flanges with FULL FACE gaskets
with A193 Grade B7 Bolts

Pipe Size (inch)	No. of Bolts	Size Of Bolts	Internal Pressure (psig)	Minimum Torque to Seal[1]			Preferred Torque Range[2]	
				3500 EPX (ft.lbs.)	3504 EPX (ft.lbs.)	3510 EPX (ft.lbs.)	(ft.lbs.)	(ft.lbs.)
1”	4	1/2”	300	7	7	14	35	60
1-1/4”	4	1/2”	300	8	8	16	40	60
1-1/2”	4	1/2”	300	9	9	19	46	60
2”	4	5/8”	300	16	16	33	82	120
2-1/2”	4	5/8”	300	22	22	44	112	120
3”	4	5/8”	300	24	24	49	122	122
3-1/2”	8	5/8”	300	15	15	30	75	120
4”	8	5/8”	300	16	16	22	82	120
5”	8	3/4”	300	20	20	41	102	200
6”	8	3/4”	300	23	23	46	115	200
8”	8	3/4”	300	33	33	66	166	200
10”	12	7/8”	300	32	32	64	161	320
12”	12	7/8”	300	47	47	93	233	320
14”	12	1”	300	67	67	134	334	490
16”	16	1”	300	60	60	120	301	490
18”	16	1-1/8”	300	66	66	132	330	710
20”	20	1-1/8”	300	62	62	124	311	710
24”	20	1-1/4”	300	87	87	173	433	1000

NOTE 1: Minimum Torque to Seal values are based on a minimum gasket stress of 300 psi for 3500 EPX / 3504 EPX and 600 psi for 3510 EPX. These values are applicable for ***ambient temperature liquid service up to 150 psig***.

NOTE 2: The Preferred Torque Range values are based on a minimum gasket stress of 1500 psi for ***ambient temperature liquid service up to 150 psig***; consult Applications Engineering for gas services. Maximum torque values based on a maximum gasket stress of 15,000 psi or 60,000 psi bolt stress, whichever occurs first. Contact Garlock Application Engineering if flanges are non-metallic or if bolt grade is other than A193 B7.

Garlock does NOT recommend exceeding the flange manufacturer’s maximum recommended torque. Contact Garlock Application Engineering if flanges are non-metallic, if bolt grade is other than A193 B7 or for flange sizes not shown.

Garlock
an EnPro Industries family of companies

Bolt Torque Values for
GYLON EPIX™ gaskets
ASME B16.5 Class 300# FLAT FACE Flanges with FULL FACE gaskets
with A193 Grade B7 Bolts

Nom. Size (Inches)	No. of Bolts	Size of Bolts (Inches)	Internal Pressure (psig)	Preferred Torque Range Pipe Minimum[1] (ft.lbs.)	Maximum[1] (ft.lbs.)
1/2	4	1/2	800	46	60
3/4	4	5/8	800	87	120
1	4	5/8	800	96	120
1-1/4	4	5/8	800	110	120
1-1/2	4	3/4	800	166	200
2	8	5/8	800	78	120
2-1/2	8	3/4	800	113	200
3	8	3/4	800	134	200
3-1/2	8	3/4	800	159	200
4	8	3/4	800	199	200
5	8	3/4	800	227	227
6	12	3/4	800	186	200
8	12	7/8	800	289	320
10	16	1	800	310	490
12	16	1-1/8	800	464	710
14	20	1-1/8	800	482	710
16	20	1-1/4	800	627	1000
18	24	1-1/4	800	608	1000
20	24	1-1/4	800	711	1000
24	24	1-1/2	800	1020	1600

NOTE 1: The Minimum torque values are based on a minimum gasket stress of 2500 psi for ***ambient temperature liquid service up to 150 psig***; consult Applications Engineering for gas services. The Maximum torque values are based on a maximum gasket stress of 15,000 psi or 60,000 psi bolt stress, whichever occurs first. Garlock does NOT recommend exceeding the flange manufacturer's maximum recommended torque. Contact Garlock Application Engineering if flanges are non-metallic or if bolt grade is other than A193 B7.

Garlock does NOT recommend exceeding the flange manufacturer's maximum recommended torque. Contact Garlock Application Engineering if flanges are non-metallic, if bolt grade is other than A193 B7 or for flange sizes not shown.

Rev 10/2020