



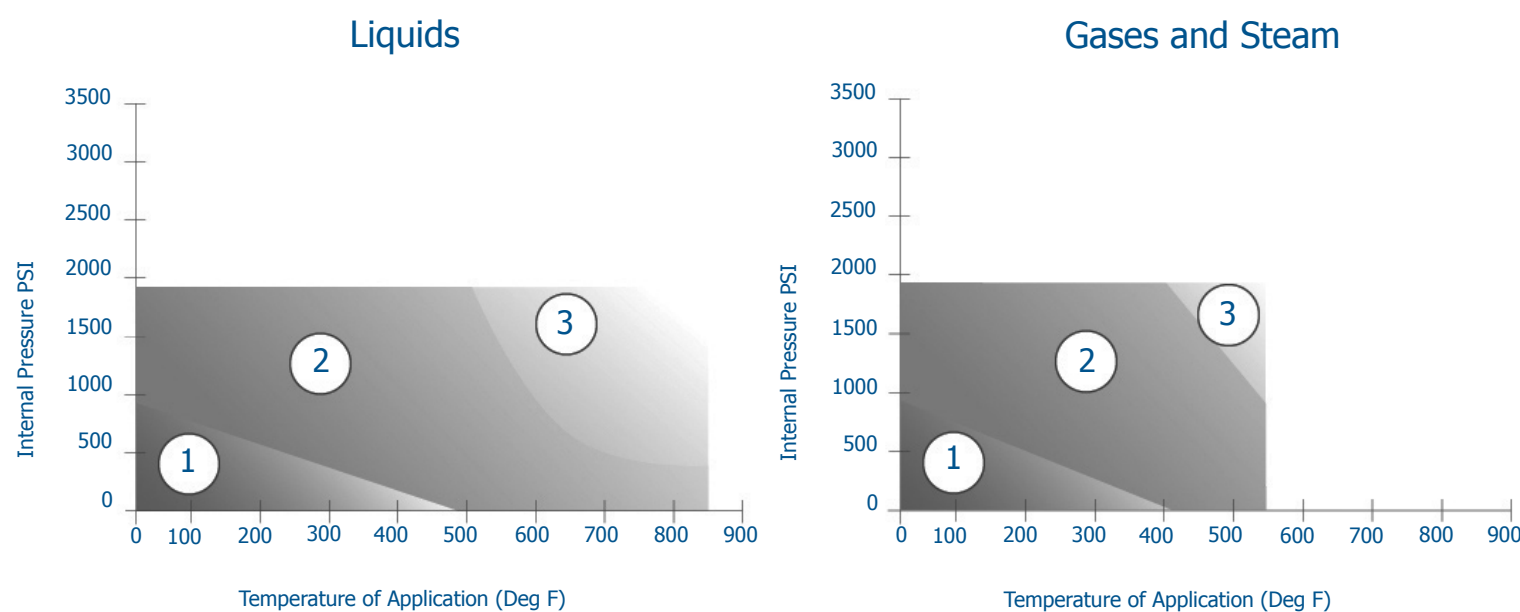
## TORQUE REQUIREMENTS FOR ROBKO 4500 NST\*

### ASME B16.21 RF STANDARDS

Nominal (Inches)	Bore (mm)	Class 150		Class 300	
		Minimum Torque Nm	Minimum Torque Ft-lbs	Minimum Torque Nm	Minimum Torque Ft-lbs
3/4	20	52	38	76	56
1	25	52	38	76	56
1 1/4	32	52	38	101	75
1 1/2	40	52	38	177	131
2	50	101	75	101	75
2 1/2	65	101	75	177	131
3	80	101	75	177	131
4	100	101	75	177	131
5	125	177	131	200	148
6	150	177	131	177	131
8	200	177	131	319	235
10	250	284	210	423	312
12	300	284	210	617	455
14	350	423	312	617	455
16	400	423	312	862	636
18	450	617	455	862	636
20	500	617	455	970	716
24	600	862	636	1533	1131

Note: All values are for lubricated bolts (coefficient of friction = 0.14)

### PRESSURE AND TEMPERATURE GRAPHS



- In area one, the gasket material is suitable using common installation practices subject to chemical compatibility.
- In area two, appropriate measures are necessary for the installation of the gasket to ensure maximum performance.
- In area three, do not install gaskets in these applications without first referring to Robco's technical support.

\*Non-Stick Treatment.

Disclaimer: The data in this specification sheet are representative; These ratings supplied are suggested as a guideline and should only be used for evaluating your specific application. When in doubt, contact Robco. The information contained in this specification sheet should not be considered a warranty, either expressed or implied, including, but not limited to, a warranty of merchantability or fitness for a particular purpose. In no event shall Robco be liable for any incidental or consequential damages resulting from the use, misuse or inability to use the product. This exclusion applies regardless of whether such damages are sought based on breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory.



## GASKET INSTALLATION PROCEDURES

(AS RECOMMENDED BY THE FLUID SEALING ASSOCIATION)

### SUPPLEMENTARY TOOLS

- Calibrated torque wrench, or other tensioning devices.
- Wire brush to clean flanges (brass is best, or mild steel).
- Low-coefficient lubricant (for fasteners and washers).

### CLEAN AND EXAMINE FLANGES

- Remove all foreign material and debris: use wire brush and/or non-metallic scraper on flange surface.
- Examine bolts and fasteners for rust, burrs, or cracks. Replace with correct grade if necessary.
- Check flange surfaces for warping, scores, tool marks, etc. Report any damage to supervisor.

### ALIGN FLANGES

- Align flanges and bolt holes without use of excessive force. If flanges are badly misaligned, gasket will not seal.

### CAREFULLY INSTALL GASKET

- Check gaskets for damage: cracks, tears, and scrapes, etc.
- Insert gasket into flange carefully, it should slide into place easily.
- Make sure gasket is centered within joint and bolt holes.
- DO NOT USE ANY RELEASE GREASE OR JOINTING COMPOUNDS ON GASKET SURFACE.
- Bring flanges together, making sure gasket does not shift or pinch.

### LUBRICATE LOAD-BEARING SURFACES

- Use only approved lubricants for applications.
- Apply lubricant to thread, nut and washer faces.
- Keep gasket and flange sealing surfaces free of lubricant.

### INSTALL AND TIGHTEN FASTENERS

- Use proper tools.
- Torque fasteners in a cross bolt pattern, in multiple steps:
  - Tighten all nuts by hand, or small hand wrench.
  - Torque to 30% of full torque.
  - Torque to 60% of full torque.
  - Torque to full torque load, using a cross pattern.
  - Apply final sequential torque pass at final torque load (clockwise or counter-clockwise) to even out flange movement.

### RETIGHTENING

- All retorquing should be performed at ambient temperature and atmospheric pressure.
- DO NOT RETORQUE RUBBER-BASED NON-ASBESTOS GASKETS AFTER THEY HAVE BEEN EXPOSED TO HIGH TEMPERATURES.
- Retorque bolts of flanges that have been exposed to aggressive thermal cycling.



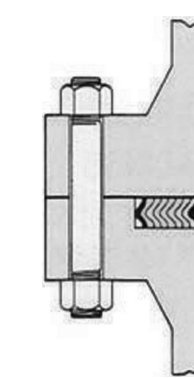
## TORQUE REQUIREMENTS FOR ROBKO CRIR 316/FG

### ASME STANDARDS

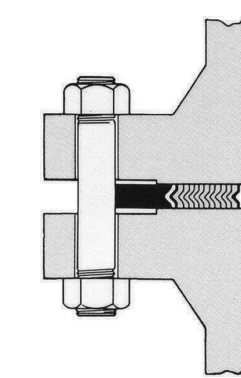
Nominal Bore Inches	Class 150		Class 300		Class 600	
	Minimum Torque Nm	Minimum Torque Ft-lbs	Minimum Torque Nm	Minimum Torque Ft-lbs	Minimum Torque Nm	Minimum Torque Ft-lbs
1/2	52	38	52	38	52	38
3/4	52	38	101	75	101	75
1	52	38	101	75	101	75
1 1/4	52	38	101	75	114	87
1 1/2	58	43	177	131	200	148
2	101	75	101	75	114	84
2 1/2	114	84	177	131	177	131
3	126	93	177	131	200	148
4	114	84	200	148	355	262
5	177	131	200	148	528	390
6	200	148	200	148	475	351
8	222	164	319	235	771	569
10	287	210	475	351	970	716
12	319	234	694	512	970	716
14	475	351	694	512	1312	968
16	423	312	970	716	1725	1273
18	617	455	970	716	2214	1634
20	617	455	970	716	2214	1634
24	862	636	1725	1273	3463	2556

Note: All values are for lubricated bolts (coefficient of friction = 0.14)

### TYPE GRAPH AND COLOUR CODING

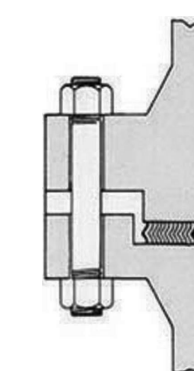


Type R

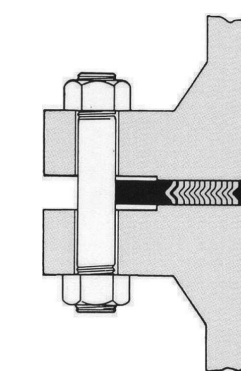


Type CR

Winding Materials	Maximum Temperature	ASME B16.20 Colour Coding
Graphite	450°C, 842°F	Grey stripe
PTFE	260°C, 500°F	White stripe
Non-asbestos	232°C, 450°F	Pink stripe
Mica	900°C, 1652°F	Light green stripe
Mica-Graphite (HOT)	650°C, 1202°F	Pink stripe
Winding Materials	Maximum Temperature	ASME B16.20 Colour Coding
Carbon Steel	500°C	Silver
304 Stainless	650°C, 1200°F	Yellow
316L Stainless Steel	800°C, 1470°F	Green
321 Stainless Steel	870°C, 1600°F	Turquoise
347 Stainless Steel	870°C, 1600°F	Blue
Monel 400	800°C, 1470°F	Orange
Nickel 200	600°C, 1112°F	Red
Titanium	500°C, 932°F	Purple
Hastelloy B-2	700°C, 1292°F	Brown
Hastelloy C-276	700°C, 1292°F	Beige
Inconel 600	1000°C, 1830°F	Gold
Inconel 625	1000°C, 1830°F	Gold
Inconel X-750	1000°C, 1830°F	No Colour
Inconel 825	650°C, 1202°F	White



Type RIR



Type CRIR



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