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Suggested Torque Values for Use with Teadit 905 Metalbest Gaskets / Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Use Correct size, New, bolts/studs, nuts, washers. Lubricate on bolt threads and nut faces with compatible antiseize*. (Mulitply torques by 0.70 for PTFE coated bolting and use additional compatible lubricant on threads/nut faces). This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 150

Nominal Pipe Size	Torque FT. LB
1/2	60
3/4	60
1	60
1 1/4	60
1 1/2	80
2	120
2 1/2	120
3	160
3 1/2	120
4	115
5	230
6	260
8	260
10	420
12	420
14	650
16	405
18	650
20	595
24	835

Class 300

Nominal Pipe Size	Torque FT. LB
1/2	60
3/4	120
1	120
1 1/4	120
1 1/2	200
2	90
2 1/2	130
3	160
3 1/2	200
4	200
5	260
6	210
8	320
10	500
12	710
14	535
16	835
18	835
20	835
24	1300

*Charts based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks or slip on with pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress analysis. Not suitable for flange materials with elongation at failure less than 20%.

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Suggested Torque Values for Use with Teadit Spiral wound 913M (with inner & outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Gasket to be per ASME B16.20 and used with appropriate flange bore size per the B16.20 tables. If no inner ring is used, gasket may buckle on the ID. Use Correct size, New, bolts/studs, nuts, washers (multiply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 150

Nominal Pipe Size	Torque FT. LB
1/2	28
3/4	43
1	50
1 1/4	57
1 1/2	57
2	122
2 1/2	122
3	122
3 1/2	122
4	122
5	202
6	202
8	202
10	325
12	325
14	506
16	506
18	723
20	723
24	1012

Class 300

Nominal Pipe Size	Torque FT. LB
1/2	28
3/4	43
1	72
1 1/4	101
1 1/2	151
2	108
2 1/2	144
3	173
3 1/2	202
4	202
5	202
6	202
8	325
10	506
12	723
14	614
16	867
18	1012
20	1012
24	1410

*Charts based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2.This assumes A-105 or stainless steel weld necks w/ pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress analysis. Not suitable for flange materials with elongation at failure less than 20%.

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Suggested Torque Values for Use with Teadit Spiral wound 913M (with inner & outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Gasket to be per ASME B16.20 and used with appropriate flange bore size per the 16.20 tables. If no inner ring is used, gasket may buckle on the ID. Use Correct size, New, bolts/studs, nuts, washers (multiply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% offinal pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 400

Nominal Pipe Size	Torque FT. LB
1/2	No flanges
3/4	No flanges
1	No flanges
1 1/4	No flanges
1 1/2	No flanges
2	No flanges
2 1/2	No flanges
3	No flanges
3 1/2	No flanges
4	325
5	325
6	325
8	506
10	614
12	867
14	867
16	1193
18	1193
20	1410
24	2603

Class 600

Nominal Pipe Size	Torque FT. LB
1/2	28
3/4	57
1	86
1 1/4	86
1 1/2	159
2	86
2 1/2	122
3	180
3 1/2	300
4	296
5	448
6	448
8	614
10	867
12	867
14	1193
16	1410
18	1880
20	1880
24	3471

*Charts based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks with pipe walls listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress analysis. Not suitable for flange materials with elongation at failure less than 20%.

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Suggested Torque Values for Use with Teadit Spiral wound 913M (with inner & outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Gasket to be per ASME B16.20 and used with appropriate flange bore size per the B16.20 tables. If no inner ring is used, gasket may buckle on the ID. Use Correct size, New, bolts/studs, nuts, washers (multiply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% offinal pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 900

Nominal Pipe Size	Torque FT. LB
1/2	No Flanges
3/4	No Flanges
1	No Flanges
1 1/4	No Flanges
1 1/2	No Flanges
2	No Flanges
2 1/2	No Flanges
3	265
4	500
5	840
6	590
8	950
10	950
12	1130
14	1330
16	1830
18	3000
20	3000
24	5000

Class 1500

Nominal Pipe Size	Torque FT. LB
1/2	80
3/4	100
1	160
1 1/4	200
1 1/2	275
2	200
2 1/2	300
3	400
4	650
5	1000
6	900
8	1400
10	2400
12	2500
14	3200
16	4500
18	6000
20	7730
24	12750

*Charts based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks with pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress analysis. Not suitable for flange materials with elongation at failure less than 20%.

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Suggested Torque Values for Use with Teadit Spiral wound 913M (with inner & outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Gasket to be per ASME B16.20 and used with appropriate flange bore size per the B16.20 tables. If no inner ring is used, gasket may buckle on the ID. Use Correct size, New, bolts/studs, nuts, washers (multiply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 2500

Nominal Pipe Size	Torque FT. LB
1/2	85
3/4	85
1	125
1 1/4	220
1 1/2	320
2	220
2 1/2	320
3	450
4	750
5	1300
6	2000
8	2000
10	3500
12	5000

*Chart based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks with pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress analysis. Not suitable for flange materials with elongation at failure less than 20%.

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Suggested Torque Values for Use with Teadit Compressed Non-asbestos Fiber Sheet, Tealon™ , Quimflex SH (24SH), or Flexible Graphite grades 2661, 2663 in Standard ASME B16.5 Raised Face Pipe Flanges.

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material. Gasket to be per ASME B16.21.

Use Correct size, New, bolts/studs, nuts, washers. Lubricate on bolt threads and nut faces with compatible antiseize*. (Mulitply torques by 0.70 for PTFE coated bolting and use additional compatible lubricant on threads/nut faces). This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 150

Nominal Pipe Size	Torque FT. LB
1/2	28
3/4	43
1	50
1 1/4	57
1 1/2	57
2	122
2 1/2	122
3	122
3 1/2	122
4	122
5	202
6	202
8	202
10	325
12	325
14	506
16	506
18	723
20	723
24	1012

Class 300

Nominal Pipe Size	Torque FT. LB
1/2	28
3/4	43
1	72
1 1/4	101
1 1/2	151
2	108
2 1/2	144
3	173
3 1/2	202
4	202
5	202
6	202
8	325
10	506
12	723
14	614
16	867
18	1012
20	835
24	1410

*Chart based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks or slip on and pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress analysis. Not suitable for flange materials with elongation at failure less than 20%.

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Suggested Torque Values for Use with Teadit Camprofiles 946 (with loose fitting outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Use Correct size, New, bolts/studs, nuts, washers (multiply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 150

Nominal Pipe Size	Torque FT. LB
1/2	40
3/4	60
1	60
1 1/4	60
1 1/2	60
2	120
2 1/2	120
3	125
3 1/2	120
4	115
5	200
6	200
8	225
10	320
12	320
14	500
16	405
18	650
20	595
24	835

Class 300

Nominal Pipe Size	Torque FT. LB
1/2	40
3/4	65
1	90
1 1/4	105
1 1/2	170
2	90
2 1/2	115
3	160
3 1/2	200
4	200
5	200
6	200
8	320
10	500
12	710
14	535
16	835
18	835
20	835
24	1200

*Chart based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks or slip on with pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress analysis. Not suitable for flange materials with elongation at failure less than 20%.

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Suggested Torque Values for Use with Teadit Camprofiles 946 (with loose fitting outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Use Correct size, New, bolts/studs, nuts, washers (mulitply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 400

Nominal Pipe Size	Torque FT. LB
1/2	No flanges
3/4	No flanges
1	No flanges
1 1/4	No flanges
1 1/2	No flanges
2	No flanges
2 1/2	No flanges
3	No flanges
3 1/2	No flanges
4	320
5	320
6	320
8	500
10	620
12	875
14	875
16	1200
18	1200
20	1400
24	2600

Class 600

Nominal Pipe Size	Torque FT. LB
1/2	40
3/4	60
1	85
1 1/4	85
1 1/2	160
2	85
2 1/2	160
3	180
3 1/2	300
4	330
5	470
6	470
8	650
10	875
12	875
14	1020
16	1335
18	1900
20	1900
24	3000

*Charts based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks or slip on and pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress Not suitable for flange materials with elongation at failure less than 20%.analysis.

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Suggested Torque Values for Use with Teadit Camprofiles 946 (with loose fitting outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Use Correct size, New, bolts/studs, nuts, washers (mulitply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 900

Nominal Pipe Size	Torque FT. LB
1/2	No Flanges
3/4	No Flanges
1	No Flanges
1 1/4	No Flanges
1 1/2	No Flanges
2	No Flanges
2 1/2	No Flanges
3	265
4	500
5	840
6	590
8	950
10	950
12	1130
14	1330
16	1830
18	3000
20	3000
24	5000

Class 1500

Nominal Pipe Size	Torque FT. LB
1/2	80
3/4	100
1	160
1 1/4	200
1 1/2	275
2	200
2 1/2	300
3	400
4	650
5	1000
6	900
8	1400
10	2400
12	2500
14	3200
16	4500
18	6000
20	7730
24	12750

Charts based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld necks or slip on and pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress Not suitable for flange materials with elongation at failure less than 20%.analysis.

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Suggested Torque Values for Use with Teadit Camprofiles 946 (with loose fitting outer rings)/Standard ASME B16.5 Raised Face Pipe Flanges

For Use with ASTM A193 B7 Bolting or equal yield strength bolt material.

Use Correct size, New, bolts/studs, nuts, washers (mulitply torques by 0.70 for PTFE coated bolting). Lubricate on bolt threads and nut faces with compatible antiseize*. This Chart gives the torque value for the final pass. After hand tightening, torquing must follow a cross bolting sequence as exampled in Annex 12.1 of Teadit's "Industrial Gaskets" 3rd editon by Jose Veiga. There shall be 3 complete passes (30%, 60%,100% of final pass torque). Once final torque is achieved, a minimum of 2 clockwise passes to be applied until there is no further nut rotation.

Class 2500

Nominal Pipe Size	Torque FT. LB
1/2	85
3/4	85
1	125
1 1/4	220
1 1/2	320
2	220
2 1/2	320
3	450
4	750
5	1300
6	2000
8	2000
10	3500
12	5000

*Chart based on nut factor approximately 0.17

Flange stress limitations were considered per Warren Brown and David Reeves, An Update on Selecting the Optimum Bolt Assembly Stress for Piping Flanges, (Advanced Draft for presentation at 2007 ASME PVP Conference), Table 2. This assumes A-105 or stainless steel weld neck flanges and pipe walls as listed by the document. Other arrangements may require further evaluation. Spiral wound gasket dimensions were used for the flange stress Not suitable for flange materials with elongation at failure less than 20%.analysis.

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