



DATA SHEET

FLANGE INSULATION KIT INSTALLATION AND TORQUE GUIDE

RECOMMENDED PROCEDURE FOR INSTALLATION OF ELECTRICAL INSULATION MATERIALS

All piping and piping components to be installed should be free of all foreign materials and construction debris.

The gasket seating surfaces should be free from tool marks, scratches, pits, deposits, or gouges greater than the regular machining marks in a circular pattern expected of the specified surface finish (typically 125-200 AARH). If the seating surface is damaged, it should be machined within the tolerance of the flange specification. If remachining is not possible, the flange should be replaced.

Replaced recommended installation procedure guide:

- (a) Inspect the gasket kit and verify that the material is as specified and that the material is not damaged.
- (b) Clean the bolting materials. Apply lubricant or anti-seizing compound to all threads required for engagement with nuts and the nut facings.
- (c) Align the flange faces so that they are parallel and concentric with each other within 0.010 inch without external loading or springing.
- (d) Line up bolt holes (by driving two tapered drift pins into the bolt hole from opposite directions to each other).
- (e) Insert insulating sleeves into the bolt holes. If they do not slide in easily, the flanges are not lined up properly. Do not force the sleeves in so as not to damage them.
- (f) Assemble the studs (or bolts) as follows:-
 - (1) Run one nut on each stud so that two full threads are showing beyond the nut.
 - (2) Insert the studs (or bolts) into the bolt holes except for those with the drift pins.
 - (3) From the opposite end of the stud, place an insulating washer, a metal washer and a nut, and hand tighten.

- (g) Torque the first two studs at diametrically opposite locations, 1 and 2 in Figure 1 to a maximum of 30% of the final torque value specified in Table 1. Replace the two drift pins with stud assemblies. Torque the remaining studs to the 30% of the final torque value in the sequence (a star pattern) illustrated in Figure
- (h) Repeat the steps in (g), increasing the torque to approximately 50 to 60% of the final torque value.
- (i) Continue torquing all studs in the sequence of Figure 1 until no further rotation of the nuts take place using the specified torque setting.
- (j) For high-pressure, high-temperature applications, retorquing may be necessary after startup to compensate for any relaxation or creep in the bolting assemblies.

Stud tensioning can be achieved using a torque wrench and other tensioning devices such as hydraulic wrenches. Raymond Bolt Gage PDX 934 or Stress Mike may be used to measure the stresses in the studs rather than torque values. A uniformity in tensioning is more important than a particular stress or torque level.

FIGURE 1 STUD (BOLT) TORQUE SEQUENCE

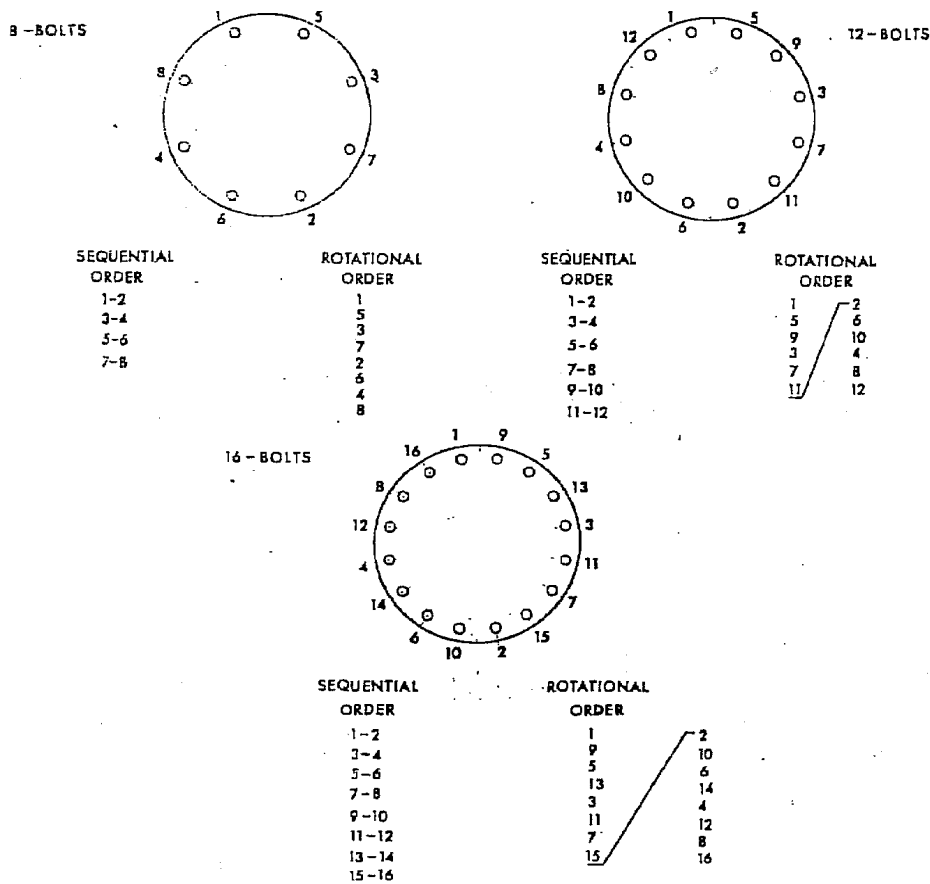


TABLE 1
RECOMMENDED TORQUE VALUES

FLANGE RATING: CLASS 150

LINE SIZE	BOLT SIZE	NO. BOLTS	TORQUE VALUE MIN TO MAX RANGE IN FOOT LBS (LUBRICATED ONLY)
2"	5/8"	4	80-90
2 1/2"	5/8"	4	80-90
3"	5/8"	4	80-90
4"	5/8"	8	80-90
6"	3/4"	8	140-160
8"	3/4"	8	140-160
10"	7/8"	12	240-270
12"	7/8"	12	240-270
14"	1"	12	360-400
16"	1"	16	360-400
18"	1 1/8"	16	520-570
20"	1 1/8"	20	520-570
22"	1 1/4"	20	740-800
24"	1 1/4"	20	740-800

FLANGE RATING: CLASS 300

LINE SIZE	BOLT SIZE	NO. BOLTS	TORQUE VALUE MIN TO MAX RANGE IN FOOT LBS (LUBRICATED ONLY)
2"	5/8"	8	80-90
2 1/2"	3/4"	8	140-160
3"	3/4"	8	140-160
3 1/2"	3/4"	8	140-160
4"	3/4"	8	140-160
5"	3/4"	8	140-160
6"	3/4"	12	140-160
8"	7/8"	12	240-270
10"	1"	16	360-400
12"	1 1/8"	16	360-400
14"	1 1/8"	20	520-570
16"	1 1/4"	20	740-800
18"	1 1/4"	24	740-800
20"	1 1/4"	24	740-800
22"	1 1/2"	24	1330-1400
24"	1 1/2"	24	1330-1400

FLANGE RATING: CLASS 600

LINE SIZE	BOLT SIZE	NO. BOLTS	TORQUE VALUE MIN TO MAX RANGE IN FOOT LBS (LUBRICATED ONLY)
2"	5/8"	8	110-120
3"	3/4"	8	230-260
4"	7/8"	8	370-410
6"	1"	12	500-540
8"	1 1/8"	12	830-880
10"	1 1/4"	16	830-900
12"	1 1/4"	20	910-960

FLANGE RATING: CLASS 900

LINE SIZE	BOLT SIZE	NO. BOLTS	TORQUE VALUE MIN TO MAX RANGE IN FOOT LBS (LUBRICATED ONLY)
2"	7/8"	8	150-175
3"	7/8"	8	250-300
4"	1 1/8"	8	500-540
6"	1 1/8"	12	540-610
8"	1 3/8"	12	1000-1060
10"	1 3/8"	16	1000-1040
12"	1 3/8"	20	1040-1120

FLANGE RATING: CLASS 1500

LINE SIZE	BOLT SIZE	NO. BOLTS	TORQUE VALUE MIN TO MAX RANGE IN FOOT LBS (LUBRICATED ONLY)
2"	7/8"	8	170-190
3"	1 1/8"	8	330-380
4"	1 1/4"	8	580-640
6"	1 3/8"	12	670-710
8"	1 5/8"	12	1170-1250
10"	1 7/8"	12	1830-1900
12"	2"	16	2000-2080

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