



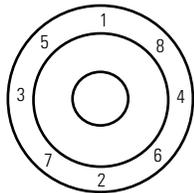
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Bolt Pattern and Torque Specification

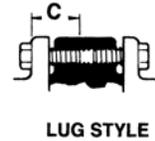
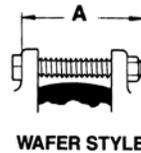
Recommended Bolt Tightening Torques

Flange Size	Bolt Size	Minimum Bolt Torque (ft.•lbs.)	Maximum Bolt Torque (ft.•lbs.)
2" - 4"	5/8"	20	70
5" - 8"	3/4"	30	120
10" & 12"	7/8"	50	200
14" & 16"	1"	70	240
18" & 20"	1-1/8"	100	380
24" & 30"	1-1/4"	140	520
36" - 48"	1-1/2"	200	800

Bolt Tightening Cross Over Pattern



Suggested Bolting Method



Start the tightening procedure by lubricating the nuts and bolts. Then hand tighten till they are snug against the flanges. If an air wrench is used make sure the pressure is set to the minimum. When tightening, always use the correct cross over pattern for the flange.

4 AND 8 BOLT FLANGES:

- First round - 30% of final torque (flange sequential order)
- Second round - 60% of final torque (flange sequential order)
- Third round - 100% of final torque (flange sequential order)
- One final round - clockwise or counter clockwise sequentially around the flange.
- When installing a lug valve each round should be alternated between the upstream and downstream side of the valve.

12 BOLT FLANGES AND MORE:

- First round - 20% of final torque (flange sequential order)
- Second round - 40% of final torque (flange sequential order)
- Third round - 80% of final torque (flange sequential order)
- Fourth round - 100% of final torque (sequential order)
- One final round - clockwise or counter clockwise sequentially around the flange.
- When installing a lug valve each round should be alternated between the upstream and downstream side of the valve.