



BY JOHNSON CONTROLS

Service Information

File In/With: N/A

SI0205

New 309

Equipment Affected: YIA/YPC Absorption Chillers

Torque Requirements & Procedure for Sealing Shell & Water Side Gaskets

General

When performing maintenance work on absorption chillers, it is essential to achieve air tight seals, especially when replacing gaskets. Follow these steps for both torque values and tightening patterns for all gasket and thread sealing tasks when working on the chiller's shellside and waterside components.

Gasket Replacement

1. Inspect the gasket and the contact surface. The contact surface must be free of any dirt, debris, old gasket material or any substance or compound that would interfere with making a good sealing joint.
2. Clean all studs with a wire brush to remove any residue.
3. If the gasket is going into a groove or contacts with an edge, make sure the edges are free from burrs and that sharp edges are removed. Use emery cloth or a stone to dress the corners.
4. If the gasket is a pass baffle gasket, be sure that any tubes mating with the gasket are faced off flush with the tube sheet surface.
5. Make sure there is no gap where gasket ends meet.
6. Install all bolts, but do not tighten.
7. Inspect gasket location and placement before beginning the torquing procedure.
8. When torquing, use incremental steps and follow the appropriate pattern that corresponds best to your bolt pattern's geometry. For example, first torque 10 ft/lbs, second torque 20 ft/lbs, then 40 ft/lbs, until final torque requirement is reached. Refer to the table on page 3 for torque values.

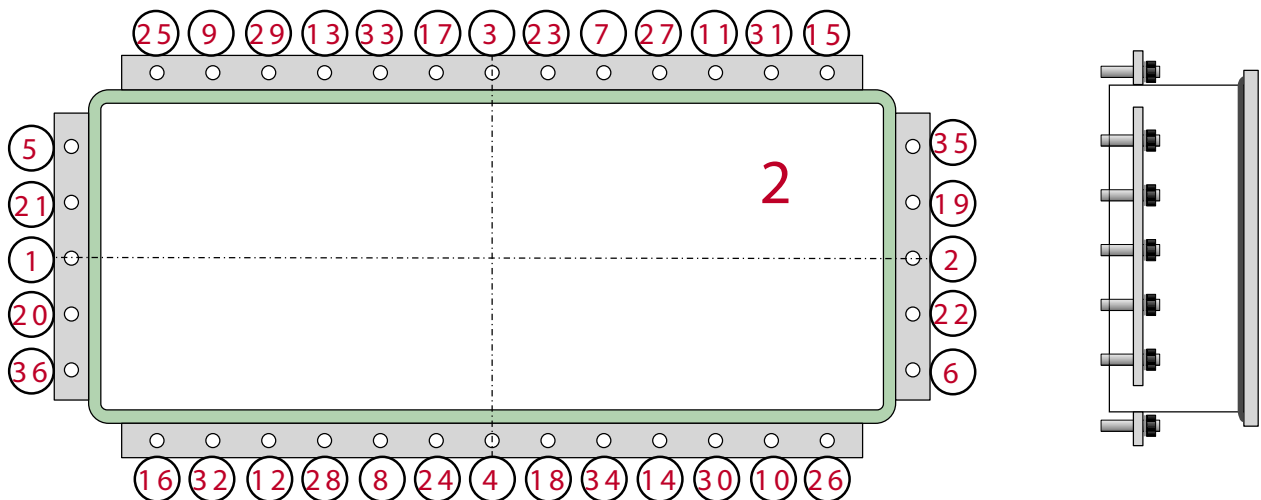


FIGURE 1 - TORQUE PATTERN FOR SQUARE AND RECTANGULAR BOXES

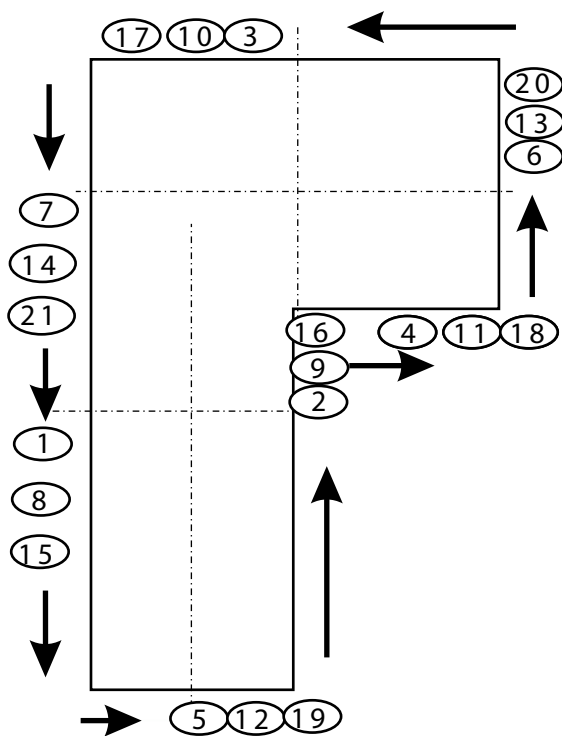


FIGURE 2 - TORQUE PATTERN FOR "L" SHAPED BOXES

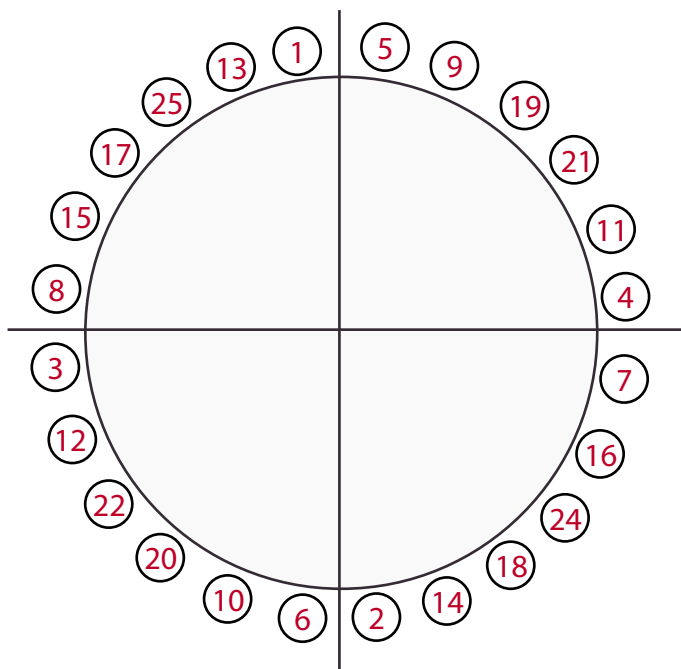


FIGURE 3 - TORQUE PATTERN FOR ROUND BOXES

Torque Requirements For Absorption Chillers		
Description	Size/Model	Torque Value
Hand operated diaphragm valves	½ and ¾ inch	95 +/- 10 in-lbs
Solenoid valves	½ and ¾ inch	95 +/- 10 in-lbs
Metallic rupture disk (4 bolt flange)	1-1/2 inch	40 ft-lbs
Metallic rupture disk (4 bolt flange)	2 inch	60 ft-lbs
Metallic rupture disk (4 bolt flange)	3 inch	80 ft-lbs
Metallic rupture disk (8 bolt flange)	4 inch	52 ft-lbs
Metallic rupture disk (8 bolt flange)	6 inch	98 ft-lbs
Carbon rupture disk (8 bolt flange) w/FEP liner	4 inch	28 ft-lbs
Carbon rupture disk (8 bolt flange) w/FEP liner	6 inch	—
Globe valve packing gland (old style)	1 inch	58 ft-lbs
Globe valve packing gland (old style)	1-1/2 inch	58 ft-lbs
Globe valve packing gland (old style)	2 inch	73 ft-lbs
Globe valve packing gland (old style)	2-1/2 inch	83 ft-lbs
Globe valve packing gland (old style)	3 inch	83 ft-lbs
Globe valve packing gland (old style)	4 inch	83 ft-lbs
Globe valve packing gland (new style)	1-1/2 inch	52 ft-lbs
Globe valve packing gland (new style)	2 inch	30 ft-lbs
Globe valve packing gland (new style)	2-1/2 inch	51 ft-lbs
Globe valve bonnet (new style)	1-1/2 inch	16 ft-lbs
Globe valve bonnet (new style)	2 inch	30 ft-lbs
Globe valve bonnet (new style)	2-1/2 inch	51 ft-lbs
Sight glass	1-1/2 inch	25 ft-lbs
Sight glass	2 inch	30 ft-lbs
Sight glass flange	4 inch	25 +5/-0 ft-lbs
Pump isolation valve flange	2 inch	30 ft-lbs
Pump isolation valve flange	2-1/2 inch	40 ft-lbs
Pump isolation valve flange	3 inch	50 ft-lbs
Pump isolation valve flange	4 inch	55 ft-lbs
Pump isolation valve flange	5 inch	65 ft-lbs
Pump isolation valve flange	6 inch	75 ft-lbs
Pump isolation valve flange	8 inch	140 ft-lbs
Pump motor flange (new style pumps)	3/8 inch bolts	20 ft-lbs
Pump motor flange (new style pumps)	5/8 inch bolts	40 ft-lbs
Pump impeller bolt	Impeller locking screw	40 ft-lbs
Pump wear ring housing	All models	9-12 ft-lbs
Absorber, condenser, evaporator compact water boxes, 150# with ½" studs	All models	50 +/- 5 ft-lbs
Absorber, condenser, evaporator compact water boxes, 150# with 5/8" studs	All models	65 +/- 5 ft-lbs
Absorber, condenser, evaporator compact water boxes, 300#	All models	65 +/- 5 ft-lbs
Absorber, condenser, evaporator marine water boxes, 150# with ½" studs	All models	70 +/- 5 ft-lbs
Absorber, condenser, evaporator marine water boxes, 150# with 5/8" studs	All models	90 +/- 5 ft-lbs
Condenser by-pass line flange	All ParaFlows ½" bolts	40 to 45 ft-lbs
Condenser by-pass line flange	All ParaFlows 5/8" bolts	60 to 70 ft-lbs
Condensate drain coolers	All models	50 ft-lbs