

Engineering Specification PS-104

Valve Stem Packing (Compression Type)

Purpose:

Provide a specification that addresses the assembly/installation of compression type packing.

Scope:

This specification extends to brass and steel shutoff valves. This specification extends to valve stem seals that have been machined to accept compression type packing.


This specification covers the application listed in the chart below:

Application	Temperature - Pressure Refrigerant	Comments:
Temperature Range	-40°F To +300°F	-----
Intermittent Temperature	400° F Max. for short duration	(for tube or fitting braze application)
Service Pressure	700 psig maximum	As installed
Burst Pressure	2500 psig minimum	As installed

Process:

The following assembly procedure is to be followed when installing compression packing.

1. Following the furnace brazing operation, and prior to actuating the valve stem, set the valve in a vertical position with compression packing cavity up.
2. Apply refrigerant oil into the Compression Packing cavity stem threads. Note: When assembling 1 3/8" valves, it is important to apply oil to the stem shank OD in the area that will make contact with the valve packing.
3. Using your fingers, turn the stem so it travels up and down freely without binding. Turn the stem until the stem button is in the neutral (mid) position.
4. Assemble packing washer. Note: The orientation of the washer on 3/4 and 7/8 body valves is not critical, but on 1 3/8 valves it is important to locate the side having the chamfer on the ID and positioning it facing the open end of the cavity.
5. After inserting the compression packing, tamp it into place with the supplied tool to seat the packing, which will assist in the installation of the gland nut.
6. The gland nut must be assembled against the packing and tightened to the torque per chart below:

<p>Specification Number: PS- 104 (Doc. Control # CDP-035)</p> <p>Revision: C (08/11)</p> <p><i>Valve Stem Packing Process (Compression Type)</i></p>	 <p style="text-align: right;">Taunton, MA</p>
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Valve Body Size and Shape	Stem Square Size	Torque Rate
3/4 Hex and Square	1/4 Square	6 - 8 Ft.- Lb.
7/8 Hex and Square	1/4 Square	6 - 8 Ft.- Lb.
1 and 1 1/8 Square	5/16 Square	6 - 8 Ft.- Lb.
1 3/8 Square	3/8 Square	15 - 20 Ft.- Lb.

Note: When assembling plated steel valves the recommended torque values change approximately one (1) Ft.-Lb. less than values listed in above chart.

When working with 1 3/8 square valves only, the following additional steps must also be followed:

7. Advance (turn) the valve stem approximately (3) turns up and (3) turns down.
8. It is important that the gland nut be tightened to a torque of 15 - 20 Ft.-Lbs.


Notes:

ÿ When performing a recheck of the gland nut torque 24 hours after assembling to the recommended torque values, shown in chart per note 6, it should be noted that the residual torque will be less than the original torque by 3-13 Ft.- Lbs. (depending on valve size). This change is due to the compression set of the compression packing material and does not present any adverse condition that will affect its sealing values.

ÿ When the installed packing is subject to a "system dehydration process", usually for a (3) hour period and at a temperature range of 200° F and 300° F, it will be necessary to re-torque the gland nut to the recommended torque (see note 6) this will be approximately one quarter (1/4) turn.

ÿ A similar condition will exist after performing a brazing operation on a valve with compression packing installed. As in note 2 above, the gland nut must be re-tightened to proper torque per specification, approximately 1/4 turn.

ÿ As described in notes 2 and 3 above, when the valve stem is actuated multiple turns, it is necessary to re-torque the gland nut to meet recommended torque values.

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