

Valve Packing Gland Loads

Garlock recommends using one of the two methods that follow to determine the proper gland load on a valve packing set.

The first, and probably most common, is the percent compression method. Here we simply determine the amount of distance that the set should be compressed in order to achieve a seal. The recommended percent compression varies with packing style.

- For our 9000-EVSP Simplified and 9001 QuickSet, we recommend 30% compression.
- For our 70#/Ft.³ density GRAPH-LOCK and #98 sets we recommend 25% compression.
- For our 90#/Ft.³ density GRAPH-LOCK and #98 sets we recommend 20% compression.
- When using a packing set consisting entirely of Garlock braided packing, we recommend 25% compression.

In cases where the system pressure is very high (over 2500 psi/172 bar) higher compression may be required to achieve a seal.

The second method for determining proper loading of the gland is to use a pre-determined gland bolt torque. This method can help to more accurately arrive at the proper gland load. One needs to insure that the gland studs and nuts are in good condition. They should be cleaned with a wire brush and well lubricated with a suitable grease.

The bolt torque is dependent upon packing size, gland bolt size, packing style, system pressure, and the number of bolts. The following equation is used to determine appropriate bolt torque.

$$\text{Bolt torque} = \frac{(\text{Bore dia.}^2 - \text{Stem dia.}^2) \times (\text{Gland bolt dia.}) \times (\text{Load Factor})}{76.39 \times (\# \text{ of bolts})}$$

Where: Bolt torque is in ft.lbs.
Bore, stem, and bolt diameters are in inches
Load factor is in psi

The load factor is determined by the following choices:
When using a 9000-EVSP Simplified set, a QuickSet or a #98 and GRAPH-LOCK set,
LF = 1.5 system pressure or 3800 psi (whichever is greater)

When using any other Garlock packing,
LF = 1.5 system pressure or 5500 psi (whichever is greater)