

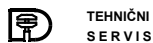
Gasket Assembly

BASIC INSTRUCTIONS

TECHNICAL INFORMATION

No: 07-180518

Testing Laboratory: **DONIT TESNIT** d.d.



Control Laboratory

Gasket Assembly

Basic instructions

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1 Assembly and Installation of Gaskets

1.1 Before mounting

Before mounting a new gasket, it is necessary to clean the sealing surface of the flanges after the old gasket has been removed.

- Concentric grooves must be cleaned with a soft brush in a circular direction, never in a radial direction.
- Flanges which show signs of corrosion have to be repaired. If sealing surfaces are uneven, it is necessary to re-machine them so that they are parallel or install a gasket which compensates for the unevenness of the flanges.

1.2 Gasket material

- Always install gaskets made of the highest quality materials. Installation of old (used) gaskets is not recommended as they have already lost their reverse elasticity.
- Economically priced gaskets are often not-cost efficient as the quality of the material is low and the duration of its working period is shorter. Therefore, this "economical" material is more costly because of higher failure rate and costly re-installation process.
- When using cut gaskets ensure that the holes for bolts and edges are smooth and without burrs. Failure to do this may cause unequal distribution of surface stresses or premature leakage.

1.3 Gasket geometry

- When choosing gaskets ensure that they are thin as possible but thick enough to compensate for unevenness on the sealing surface of the flange and bolt load differences during tightening.
- Flanges must be dimensionally stable so that gaskets with a thickness of more than 3 mm (0.118 inch) are not required.
- In most cases thickness of the gasket from 1.5 to 2.0 mm (0.059 to 0.079 inch) is sufficient.
- The width of the gasket should not be less than the following:
 - It must be at least 5 times the thickness of the gasket
 - The sealing of gases must not be less than 12 mm (0.472 inch).
- Ensure that the dimensions of the gaskets correspond to the dimensions of the flanges. During installation care must be taken that the gaskets do not extend into the pipeline. In the event of a gasket extending into the pipeline, the following will appear:
 - Worse hydraulic or flow characteristics of pipeline
 - additional - unfavorable flow resistance and turbulence
 - penetration of the fluid into the gasket

1.4 Anti-stick layers

The use of jointing compounds, graphite or grease on pipe flange gaskets is not recommended, because of:

- Reduction of the friction coefficient between the gasket and the flange sealing surface. The coefficient of friction can be reduced to the point of a gasket blow-out.
- Reduction of the friction coefficient may also cause significant reduction of gasket surface stress.

"4AS" ANTI - STICK coating allows for easier separation of the gasket from the flange, and at the same time does not diminish other characteristics of the gasket.

If it is wished to soften the gasket with jointing compound, the application of gasket material with higher compressibility or a thicker gasket is preferred.

Incompatibility of the gasket and the jointing compound leads to deterioration of the gasket.

1.5 Bolt Tightening

- Lubricate the threads and be certain that the nuts move freely.
- Place the gasket properly between the flanges.
- Tighten the nuts equally in the sequence of 40, 70, 100% of final torque. By doing so, it is assured that the gasket will have equal load and that distortion of the flange will be prevented.
- If the gasket is made from soft materials (like expanded or reinforced graphite) four tightening steps is recommended: 25, 50, 75 and 100% of final torque.
- Tightening sequences must be done in crosswise direction.

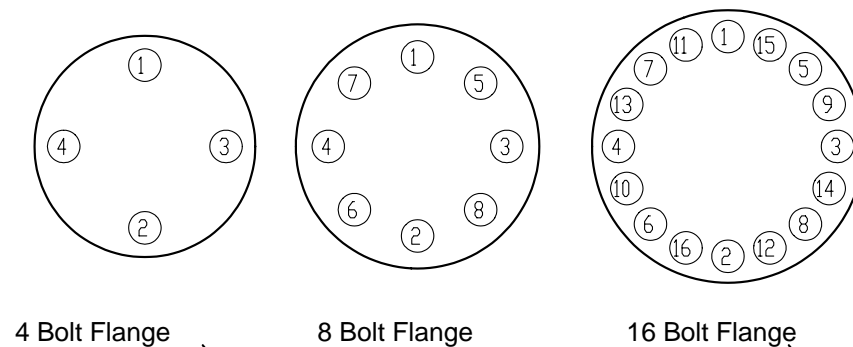


Fig.14: Bolt Tightening Sequence

- If using a torque wrench, ensure that it is correctly calibrated.
- If the bolts are large and the pipe line is subjected to extreme operating conditions, the use of a hydraulic torque wrench is recommended.
- Concerning CSF materials **no** re-tightening during operation is recommended. The required torque must be applied during installation.
- Approx. a few hours after final tightening of nuts during installation, check the final torque.
- **Re**-tighten the nuts if the final torque differs to the prescribed torque.
- Damaged bolts must be changed.