

Ingolf's insight

Do end-users really care about fugitive emission, or do they only want cheaper valves?

Part 2

Braided packings are to be cut to fit the packing groove, whereas die-formed are produced as finished rings. Graphite packings can be **high density**, hard rings that can be compressed to within 10-12% of their thickness, or **low density**, soft rings that are compressible up to 40% of their thickness.

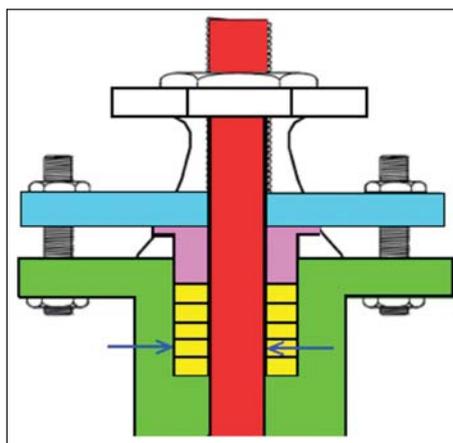


Figure 7.

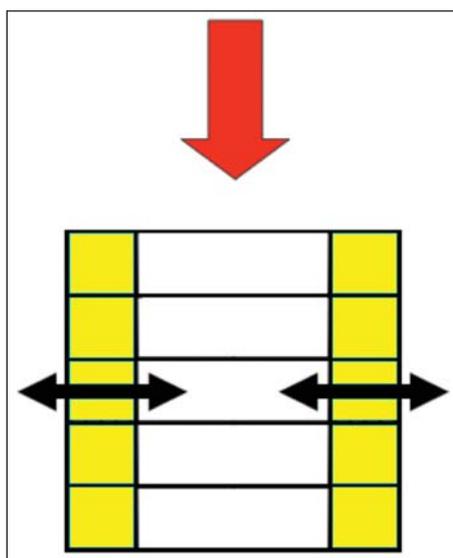


Figure 8.

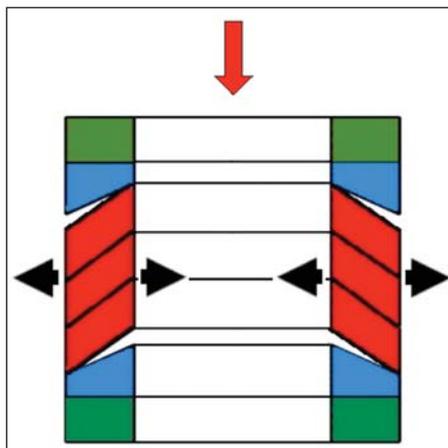


Figure 9.

To be able to seal, the packing rings must be in good contact with both the spindle-side and the bonnet-side of the packing, indicated by blue arrows on Figure 7. Because graphite fibres are very coarse most of the compression of the packings will go down-wards and very little will go out-wards to the sides as illustrated in Figure 8. Because of this fact, it is important that the packing rings fit perfectly into the packing groove, before compression starts. The reason why Garlock 9000 packings were so successful in the 1990's was the fact that the packings expanded outwards due to the construction illustrated in Figure 9, when relatively little force was applied down-wards the packings expanded to fill the whole packing groove and provided a good contact between the packing and the spindle/bonnet. The rest of the commercial I will leave to others. I am not saying that the low density, angle-shaped, die formed packings, are better than braided packing rings. You just have to use the low density reinforced braided packings the correct way.



First of all the packing has to fill the whole groove within 1/10 of a millimetre, just like the 9000 packings. To be able to do that the braided packing has to be rolled by a rolling pin like the one shown in Figure 10.



Figure 10.

Below the roller there are three braided packings, in fact it's the same one being rolled. The one in the centre is the original 7.9 millimetres cross-section, which has been rolled down to 6.9 millimetres; shown by the upper packing. And the packing in the bottom is the same one shown at the top, tilted 90°. As you can see that one is somewhat wider; it is 8.9 millimetres. This shows that the packing is not compressed, because the one millimetre with graphite is moved outwards. This is done with careful rolling. You **cannot** do this with a hammer or in a vice, as then the packing material will become compressed and destroyed. If you do this right, the low density braided packings will have the same advantage as the low density angled packings illustrated in Figure 9.

Next question! How many layers of packing should there be in one stack? It all depends on who you ask. I have been talking to packing producers, not valve manufacturers. The idea is that there should be enough but not too many. Five times the cross-section of the groove is a good base. Then the packings will be evenly compressed against the spindle. If you are putting too many packings into the groove, as indicated in Figure 11 you will get a higher degree of compression

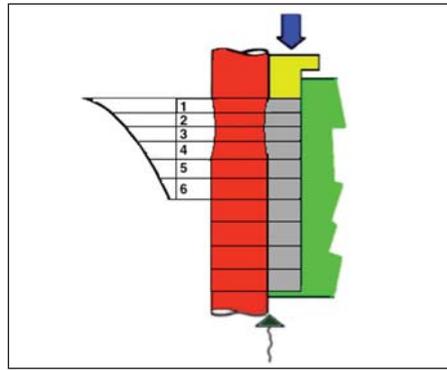


Figure 11.

and wear on the uppermost packings and less compression down in the packing-stack, so the packing rings at the bottom will not function as intended. This goes for all compressed spindle packings. So what about die formed high density rings? We will look into that matter in the next issue of Valve World.

To be continued in next issue.

About the author

Ingolf Fra Holmslet's career in the world of valves began in 1972 as a production operator on the first production platform on the Norwegian continental shelf in the North Sea. From 1975 to 1985 he went onshore, working for a valve repair shop, after which he developed his first valve training course. In 1986 he started Klyde Consultants AS and for the last 27 years has been working as a valve consultant and instructor to Norwegian oil companies including Phillips Petroleum Co., BP, Shell, Norsk Hydro, Elf and Statoil, moving his valve training operation to Statoil's training centre in Bergen in 1994. Ingolf has also written 2 books, both due for release in 2013.

Outside work, his spare time is taken up with looking after his menagerie consisting of 3 borzois, 4 alaska huskies, 2 american paint horses and 2 african gray parrots.

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