

Reverse Integrity Test (RIT) Rings

Introduction

Freudenberg Oil & Gas Technologies (FO>) has developed a means of testing a Vector Techlok® clamp connector joint (or any connector using a Vector Techlok® metal sealing) in-situ prior to, or in place of a line leak test to save time and ensure seal integrity. There are two variations of this product, firstly a modified standard Techlok® ring (allowing for “hot shot” delivery using stock items) or secondly an alternative design for those sealing sizes that cannot be modified. Both types are available with an integral test pipe (as shown in Figure 1), or alternatively the test pipe can be omitted. The integral test pipe allows the Vector Techlok® RIT-ring to be “retro fitted” to existing equipment. RIT-rings with no test pipe are used in hubs/flanges with pre-drilled test ports and for those joints using recessed seat pockets which would prevent the exit of the test pipe.

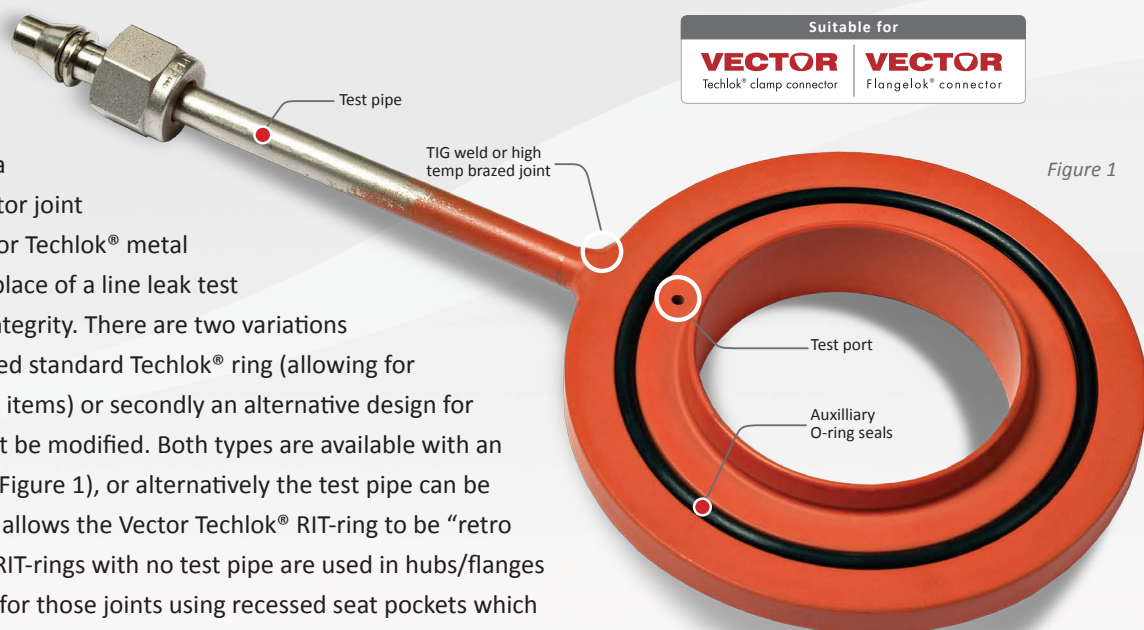
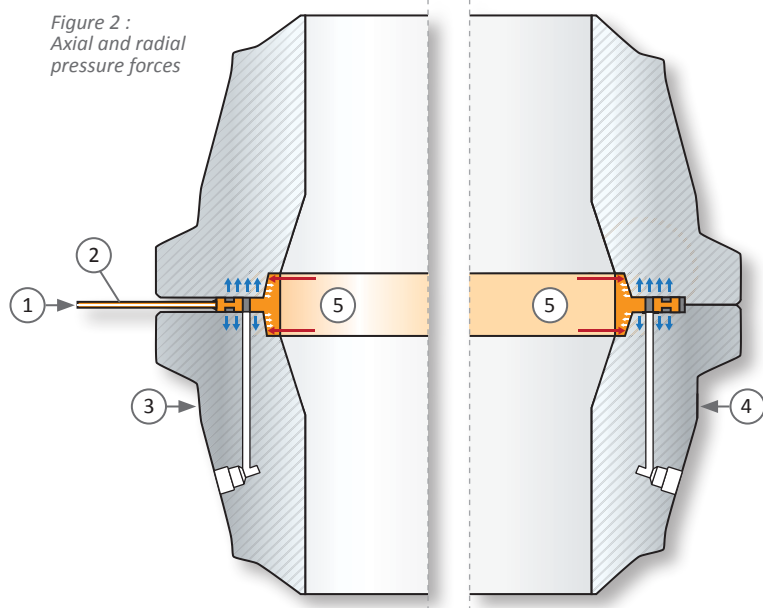


Figure 1

non-recessed seat pocket

recessed seat pocket

Figure 2 :
Axial and radial
pressure forces



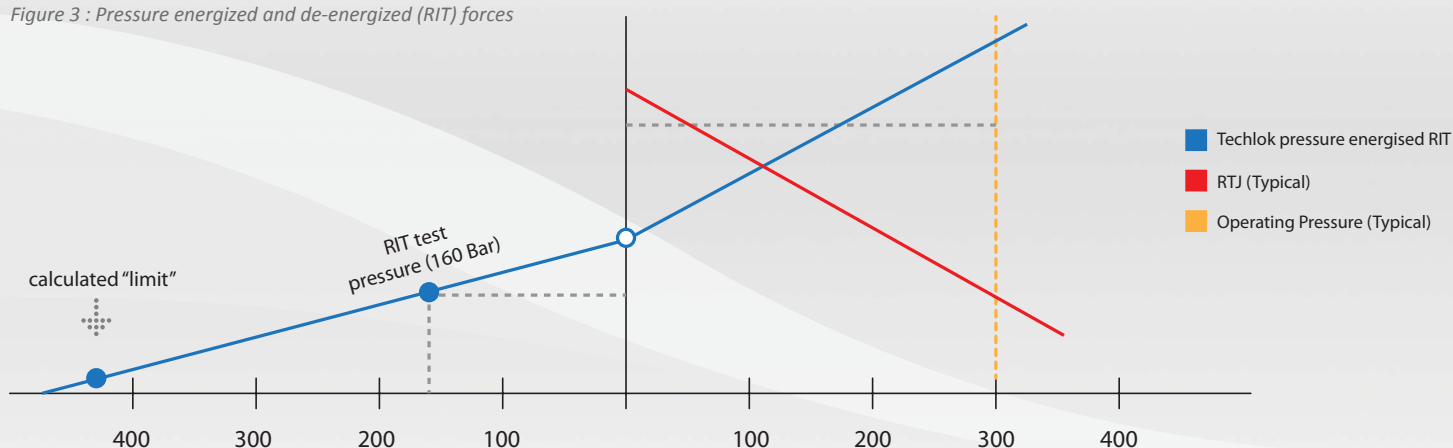
NOTES : 1) pressure In
2) test pipe
3) external test port (optional)
4) external test port
5) seal contact forces

How it works

Figure 2 shows the pressure forces applied to the sealing during RIT testing. The axial forces are resisted by the joint clamp or bolts, whilst the radial forces counteract the sealing contact forces. The pressure energized (and de-energized) forces are shown in Figure 3. It can be seen that the sealing forces during RIT testing are significantly below normal

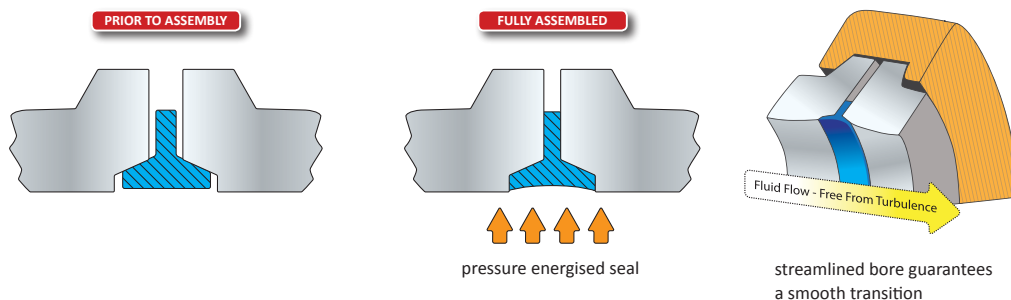
operating sealing forces, resulting in a very stringent or “searching” test concept. In operation, sealing forces are much higher than during RIT testing (in contrast to RTJ type gasket forces), and it is therefore sufficient to standardize on a relatively low RIT test pressure of 160 Bar (max).

Figure 3 : Pressure energized and de-energized (RIT) forces



Pressure energized sealing

The Vector Techlok® sealing offers several advantages over conventional gasket types; for example, the gasket forces and seal diameter are minimal, meaning that the load capacity of the components is maximized and the lack of a conventional flange gasket gives a gas-tight metal-to-metal seal.



VECTOR
Techlok® clamp connector
SEALING TECHNOLOGY

Assembly and RIT testing

In addition to normal assembly practice for Vector Techlok® sealings (ref. Assembly/Disassembly pocket guide), care should be taken to ensure hub (or flange) faces are kept in good condition to function properly with the O-ring seals. Care also should be taken when positioning the test pipe. For Vector Techlok® clamp connectors, there is sufficient gap between clamp segments to allow the pipe to exit, however extra care should be taken when final bolting is performed.

Once fully assembled, the RIT test can be undertaken via a hand pump or gas bottle, etc... to achieve the standard RIT test pressure of 160 Bar. Due to the very small pressurised volume, the RIT test is both inherently safe and sensitive - even the smallest leak will be detected via a pressure loss.

Consequently, the pressure is normally allowed to stabilise and then held for 15 minutes only to complete the test. FO> can assist with all aspects of RIT testing. Please contact us for more details.

