

Safety Alert

Mines

Mines Inspectorate

Safety Alert No. 267
25 May 2011

Incorrect assembly causes dangerous projectile

Mine type: All | **Hazard:** Air header becoming a projectile | **Cause:** Incorrect assembly; not fit for purpose

Incident: A four-inch flexible Victaulic SC77 coupling was used to join a poly shouldered adaptor to a 6.3 kg steel air header in an underground mine. When air pressure was applied, the coupling failed to secure the ends, and as a result the air header was propelled 7 metres.

Equipment: Victaulic flexible coupling, Style SC77 (shown below left with air fittings attached) and a poly shouldered adaptor (shown below right) in combination with a steel Victaulic shoulder.

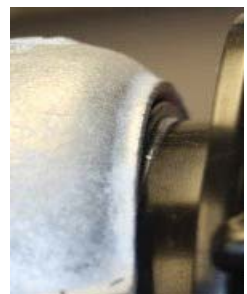


Comments:

Investigations found that the coupling should not have failed if installed correctly. However, the manufacturer's installation instructions refer to use with *shouldered* steel pipe and do not endorse *poly* pipe.

The two key criteria for correct assembly are:

- a visual check to ensure the coupling keys have engaged behind the edges of the shouldered ends when the coupling is tightened
- correct alignment of the two coupling halves — although it is important to note that having them aligned does not guarantee that the coupling is assembled correctly, as the alignment can be achieved when part of the coupling key is sitting on top of the poly shoulder (as shown in the two images on the right).



Assembly instructions for the SC77 can be found at www.victaulic.com/Docs/lit/I-SC77.pdf (1.93MB pdf).

Recommendations:

1. That Victaulic style SC77 flexible couplings **not** be used in combination with Plasson poly shouldered adaptor fittings, and any that are be removed. (See warning notice on the next page.)
2. That, when introducing a new item of plant into the work environment, risk-management principles that take into account manufacturer's instructions be applied.

In this case, because the consequences of failure could reasonably have been foreseen as fatal, the change-management process should have been rigorous.

2nd May 2011

Warning Notice

Plasson 7320 and 17320 Shouldered Adaptor Fittings are not suitable for use with Victaulic® Style SC77 Flexible Couplings (Installation Ready Style).

The SC77 style coupling from Victaulic is designed only for use with Victaulic fittings according to the installation instructions from the Victaulic web site¹. The geometry of this coupling is not suitable for use with Plasson shouldered fittings as the oval shape of the housing keys result in areas of reduced overlap with the shoulder on the Plasson fitting. This creates excessive stresses in the Plasson fitting and could lead to joint failure.

Testing by Plasson indicates that assemblies made with our fittings and this coupling do not comply with the performance requirements of the Australian Standard for fittings for use with polyethylene pipe AS/NZS4129-2008.

Plasson holds Standards mark license 2018 for our polyethylene pipe fittings and the shouldered adaptor fittings are rated for 1600 kPa working pressure with a design life of 50 years.



Image of SC77 coupling showing areas with reduced overlap due to the oval design of the fitting

Recommendation

- Do not use this style of fitting with Plasson shouldered adaptors
- Only use shouldered couplings that provide a constant overlap with the Plasson shoulder when installed and have the following maximum internal diameter of the clamping key
 - 50 NB Shoulder – 63mm
 - 100 NB Shoulder – 117mm

Note: Plasson fittings have been tested and approved for use with couplings from:

- Klambon
- Minsup Shouldered
- Ever

All have a significantly increased overlap behind the shoulder of the Plasson fitting than the Victaulic SC77 coupling and have performed safely for at least 20 years in Australian mining applications with Plasson fittings.

¹ <http://www.victaulic.com/Docs/lit/I-SC77.pdf>

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