

Lubrication fittings

The how (and why) of maintenance Part 9

By Ingolf Fra Holmslet



In this series of articles, we have been discussing the need for lubrication fitting and why one should use valve cleaner and sealing component. We have also been looking at why one should have an auxiliary valve in the cavity of the main valve.

We all know that all connections on the valve body are possible leak points, and where one, in the worst case, may suffer HC leakage. For those reasons there are installations or plants where the major ball/gate valves are installed with lubrication fittings in the body, BUT nobody is allowed

***never clean
or lubricate a
pressurised valve
without a leak lock***

to touch them as long as there is pressure in the pipe system. This is because a leak could occur in the fittings after maintenance is performed. Yes, it is true that allowing personnel without the proper skills to carry out maintenance, you may end up with a leaky valve or an accident resulting in personnel injury. But that is no reason for

not maintaining the valves. If you allow a person without a driving licence and the proper training to drive your car on the freeway in the rush hour, you are asking for an accident to happen, and it could be a fatal one as well.

As I have stated several times: *Personnel performing maintenance on pressurised valves MUST use the correct safety equipment, and they MUST be trained in valve maintenance.*

Now you could ask: What safety equipment do you need when performing maintenance on the valve? The most important safety equipment is the leak lock which is to be installed on top of your lubrication fitting. *I would never clean or lubricate a pressurised valve without a leak lock.* The leak lock is the safety device



Figure 51

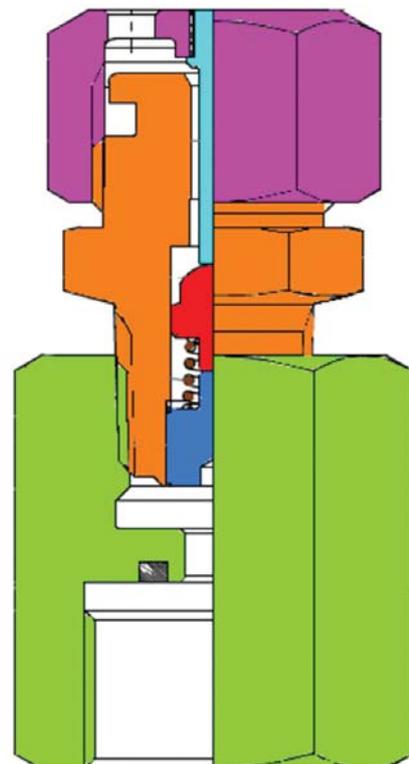


Figure 52

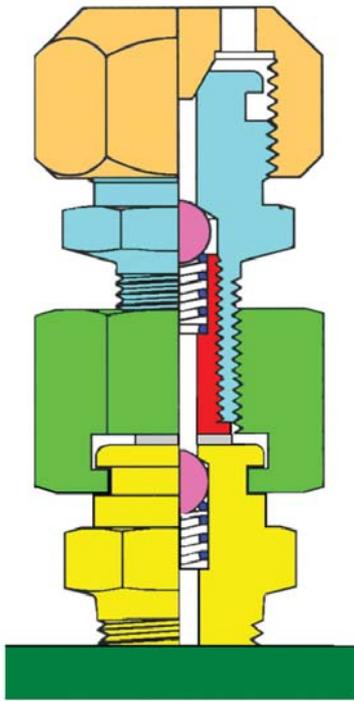


Figure 53

that if the installed fitting starts to leak when working with the valve, you still could stop the HC from leaking out to the atmosphere.

You may ask why a safety device is needed. Looking at Figure 51, imagine the red line is minor damage to the ball due to vibration. As long as it is in the same position the ball seals. But what happens if something is injected past the ball and ball rotated slightly? Then the damage would cross over the seal area and the ball would leak. If the ball sealed due to heavy hydrocarbons (green line) on the ball surface, and the valve + the ball in the fitting was cleaned, then the fitting could start to leak.

During the time I have been doing valve maintenance, I have lost count of the number of times I have ended up with a leaky fitting and then ended up using sealant component to seal the fitting. There are several types of lubrication fitting; threaded types with different dimensions and types on the threads, button head small and large and with or

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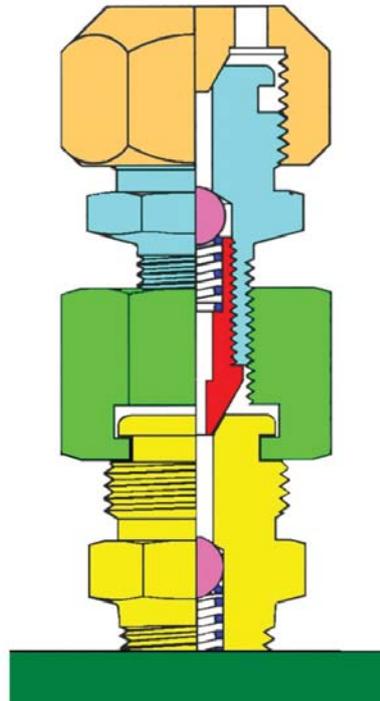


Figure 54

without a cap. We need leak locks for all the types of lubrication fittings. Figure 52 illustrates a leak lock to be used on fittings with a threaded connection. It could be 1/2", 3/4", 1" or 27 mm parallel threads. You can see that the leak lock consists of an adapter with a lubrication fitting on the top. But what is important with the leak lock is that, after the maintenance, you need to be able to test the inner lubrication fitting which is installed on top of the leak lock. Looking at the leak lock in figure 52, one can see that the cap consists of two parts; the cap itself (pink) and a needle in the centre (blue). After taking the button head connection from the pump away from the leak lock, one tests the inner fitting by taking the cap with the needle and screwing it on to the top of the leak lock. Turn it down until the needle hits the check and pushes it away from the seat. If it is leaking, the leak will flow out the holes of the cap and one must unscrew the cap with the needle. The inner fitting can be sealed by the use of a small amount of sealing component, or a standard cap can be installed on the leak lock which should be left on the fitting until the fitting can be replaced.

The illustrations in Figures 53 and 54 show two different types of leak lock. In Figure 53 the fitting installed in the main valve (yellow) is a button head type without a cap. I personally would NOT recommend using that type of lubrication fitting on HC

systems. But if it is installed, you need a leak lock with button head connection and soft seal towards the top of the fitting. The lubrication fitting in Figure 54 is a button head with cap. On this one you could also use the leak lock type illustrated in Figure 52. But back to the leak lock in Figure 54, which is metal-sealed towards the cone on top for the fitting.

When installing the leak locks illustrated in Figures 53 and 54, you slide the leak lock on to the button head and tighten the leak lock by rotating the upper fitting (blue) and holding the adapter (green). You are now ready for injection through the leak lock and the lubrication fitting.

When the maintenance is done and you are ready for disconnection of the equipment, disconnect the button head connector from the leak lock, hold the adapter (green) with a wrench and carefully unscrew the upper fitting (blue). If nothing comes out, the inner ball in the lower fitting seals and you can disconnect the leak lock. But if when unscrewing the upper fitting (blue) a leak should occur between the adapter (green) and the main fitting (yellow), you should re-tighten the leak lock and inject a small amount of sealing component, or install the cap on the leak lock and leave it on the fitting to be replaced at a time when the system is depressurised.

Take care when injecting anything into a pressurised system.

To be continued...

Norwegian consultant and valve instructor, Ingolf Fra Holmslet writes a series of articles for Valve World.

*Klyde Consultants AS
www.valve.no
ingolf@valve.no*



The two books: *Cheater bar for valves with rotating spindle and Cheater bar for valves with rising spindles* are written by Ingolf Fra Holmslet and can be ordered from his web page www.valve.no