DUVALCO VALVES & FITTING PTE LTD
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Company Registration – UEN No.: 198900535R

Capabilities of vulcanised (bonded) liners in respect of replaceable liners

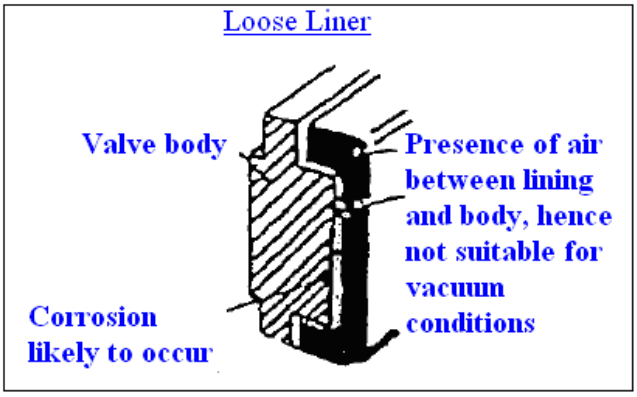
With vulcanized liners in conjunction with top and bottom stem bearings, the valve body and stem are completely isolated against the contact with the medium which eliminates corrosion. (This being a possibility with certain valve types having replaceable liners).

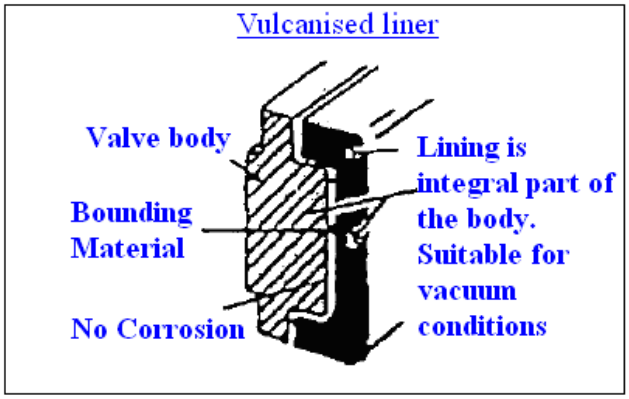
Vulcanisation to the entire body interior prevents distortion (creep) during the operation of the valve.

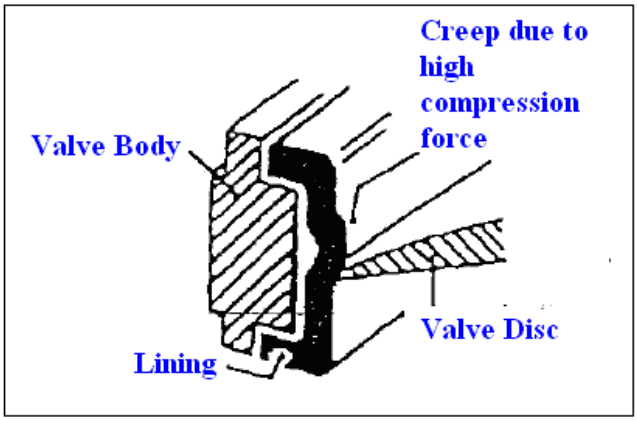
Vulcanisation ensures that the valves are suitable for use on applications having high velocities and for applications under vacuum conditions.

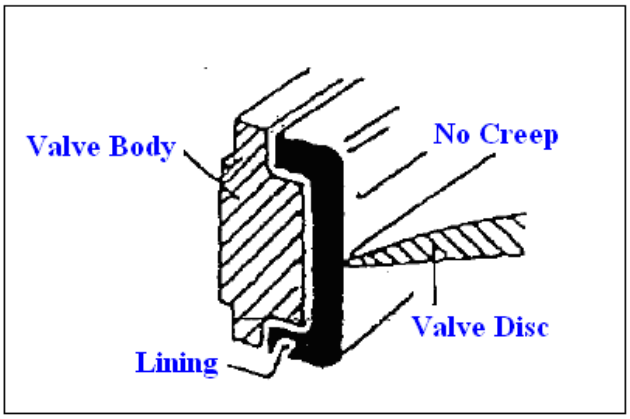
Vulcanisation assists in the prevention of damage to the valve's body interior, which in the event of the liner needing replacement reduces overall costs. With certain valve types that have replaceable liners. It has been found that in the event of these liners needing replacement, the body may already have started to corrode. This entails the valve having to be taken out from the line and refurbished, due to the corrosion on the valve bodies machining tolerances and therefore may not accept a new replaceable liner. The consequences and time involved with this process can outweigh any original cost savings.

BUTTERFLY VALVES









Principle findings on the benefit of using bonded lined valves against loose lined valves.

ADVANTAGES / DISADVANTAGES

1) Flow velocity higher with bonded lining.
2) Torque figures are lower with a bonded liner.
   The contour of the rubber remains fixed. The loose lining is subjected to distortion.
   Breakaway torque with a bonded liner is less than with loose lining.
3) Shore hardness higher with bonded liner increased with use. With replaceable, shore hardness deteriorates which leaves replaceable liners susceptible to tearing.
4) Sealing face both sides of the valve ensures correct installation and compression of the rubber, this acts again to ensure no distortion of the liner as does complete vulcanisation.
5) The higher the rubber face on the replaceable lined valve, the likelier the liner is to distortion at the valve stem oval shape occurs). See attached sketch.

   In case the replaceable lined valves do not have a bottom stem bearing, the valve can be subjected to leakage at these locations. This results in the possibility of the medium gathering and becoming trapped between the liner and body. This creates the possibility of body/stem corrosion.

Furthermore experience has shown that whilst initial costs on valve installations using replaceable lined valves are economically more viable.
The long term running costs have proven to be more expensive that the initial costs of using bonded lined valves.

On one of our global projects (m/v Vinlander), Paul Prescott implemented changes to this rig, his findings were a stated above. These were replaced using bonded lined valves.

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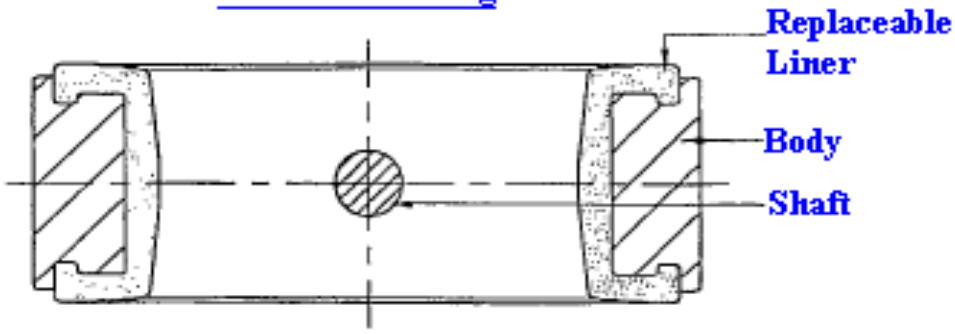
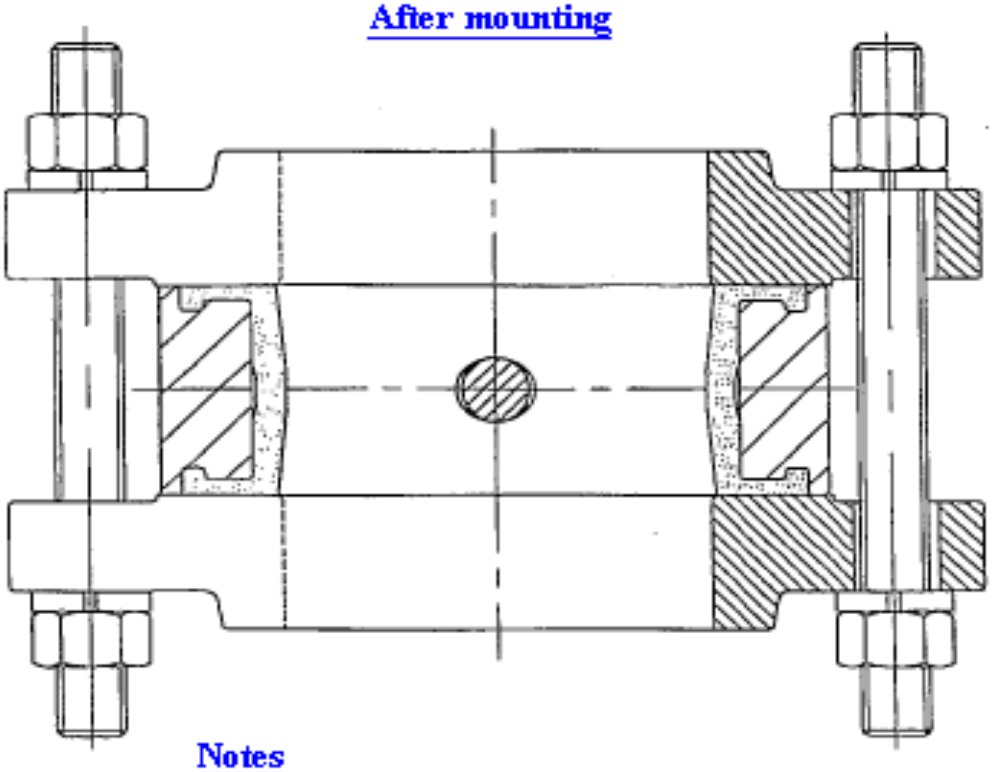
Position of replaceable liner on valve body
Prior to mounting



Position of replaceable liner on valve body
After mounting



Notes

Possible distortion of liner at valve stem during compression where sealing face is concaved. This creates a recess between the body and liner and in turn, increases the torque.

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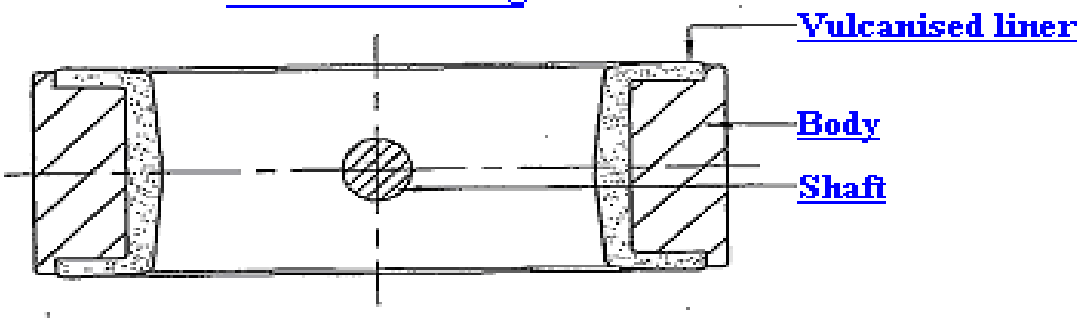
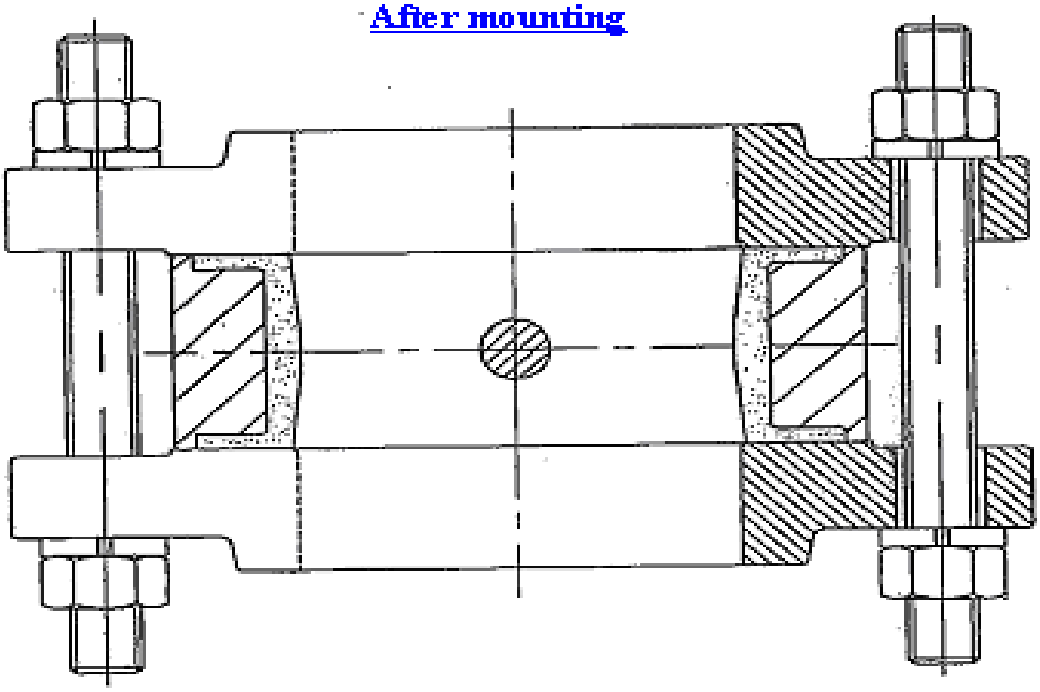
Position of vulcanised liner on valve body
Prior to mounting



Position of vulcanised liner on valve body
After mounting



Notes

The liner is bonded to the entire internal body surface, thus preventing any movement (drag) during the operation of the valve. This also helps in reducing the breaking and closing torque.

The bonded liner when in conjunction with top & bottom stem bearings, ensures that there is no possibility of leakage to both the body and stem. This promotes a longer life span of the valve.