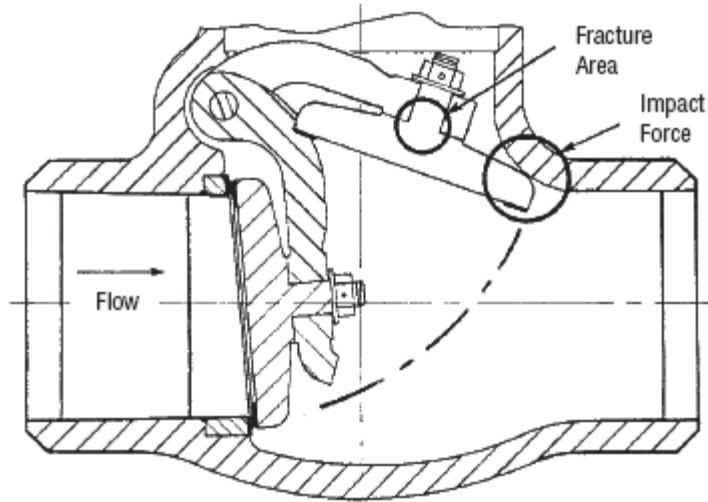




*Flowserve – Anchor Darling
Swing Check Disc Pin Failure*

Swing Check Disc Pin Failure

Figure 1 – Disc Back Impact, Disc Pin Failure

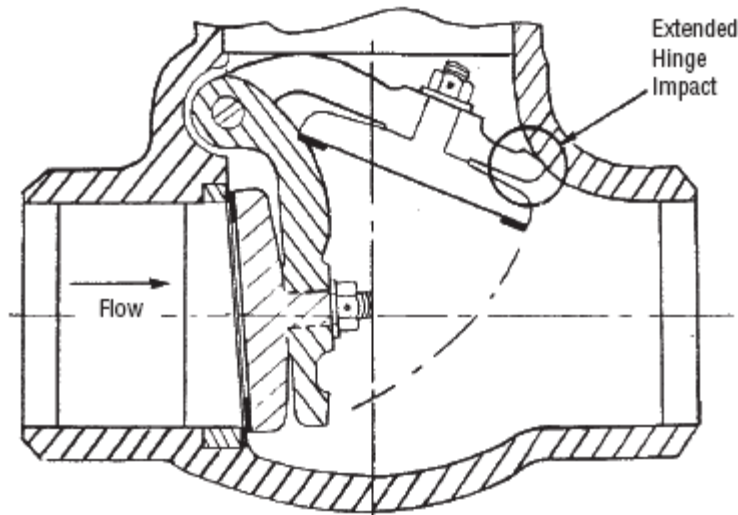


The fracturing of swing check valve disc pins has been an ongoing problem for valve manufacturers and users. The prevailing opinion is that the cause of the problem is due to disc rotation on the pin, or “turbining.”

Based on detailed failure analyses, it is our conclusion that disc pin fractures are due to fatigue, not rotation. The direct impact of the back of the disc on the body during opening results in excessive stresses in the disc pin area (Figure 1). Repeated occurrences of this impact, due to frequent operation and/or disc flutter, are the cause of the fracture.

Anti-rotational devices prevent the disc from rotating. Flowserve believes that over extended periods such devices cause leakage. By allowing the disc to rotate, seat wear is reduced and the disc can “seek its position” in the seat in order to provide a tight seal.

Figure 2 – Modified Hinge Design



As a result of these findings, Anchor/Darling Valves modified its swing check valve design. The hinge has been extended to absorb the impact in the opening mode (Figure 2). This feature eliminates disc pin fractures while providing the disc flexibility essential to an extended seat life.



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