Quick Disconnect Cyclic Study

Polypropylene and Kynar Housings / EPDM O-Rings

Background

SeriesLock quick disconnect couplers are available in a variety of housing materials, tube connection options, spring materials and O-ring materials. The main benefits of SeriesLock over competitive product is the patented spring outside of the flow path feature and larger average flow area through the connector body resulting in a reduction in flow resistance. This paper will summarize the recent cyclic testing results that was completed to illustrate what the customer will expect with respect to cycles before failure of the seals and the housing materials. These results should be viewed as a reference as different fluids flowing through the connector can influence these results and as such, SeriesLock recommends that internal testing be completed on a specific fluid flow.

Test Definition and Setup

SeriesLock cyclic testing was completed on product with polypropylene and Kynar housings with EPDM O-rings. The goal was to determine the usable cycle count that a customer would expect when using a SeriesLock connector.

Testing was replicated three (3) times using the following female/male combinations:

Polypropylene Housings / EPDM O-Rings:
- B-FV-PO-ES-3 / B-MV-P-ES-2
- MBV-FV-PO-ES-4 / MBV-MV-P-E-4

Kynar Housings / EPDM O-Rings:
- B-FV-KO-ES-3 / B-MV-K-ES-2
- MBV-FV-KO-ES-4 / MBV-MV-K-E-4

The small housings (B-) where chosen for the Series 100 connectors as they present the greatest o-ring challenge with the most stretch and compression when compared to the medium (sizes -4 thru -6) and large (sizes -8 thru -12) housings. The micro housings (MBV) have only one option.

The test included a series of two-hundred connection/disconnection/connection cycles with leak testing and female to male latch engagement testing every two hundred (200) cycles. Additionally, button function and return and connection audible click presence was inspected every cycle.

Results / Summary

Polypropylene Housings / EPDM O-Rings:

Female	Male	Cycles Complete
B-FV-PO-ES-3	B-MV-P-ES-2	5000
MBV-FV-PO-ES-4	MBV-MV-P-E-4	5000

1. All polypropylene housings survived 5000 cycles without failure.
2. The 5000-cycle life limit will be extended to the following POLYPROPYLENE part code families since the inner components are all common:

   All B, PM, SF12, SF24, NPT1/8", NPT1/4", NPT3/8", NPT1/2" and PP families.
   MBO, MBV, MPMO and MPMV families.

Kynar Housings / EPDM O-Rings:

Female	Male	Cycles Complete
B-FV-KO-ES-3	B-MV-K-ES-2	5000
MBV-FV-KO-ES-4	MBV-MV-K-E-4	2600

1. Kynar small housings survived 5000 cycles without failure.
2. The 5000-cycle life limit will be extended to the following KYNAR part code families since the inner components are all common:

   All B, PM, SF12, SF24, NPT1/8", NPT1/4", NPT3/8", NPT1/2" and PP families.
3. Kynar MBV (micro) housings survived 2600 cycles without failure. The female to male latch engagement was the limiting factor with this combination. No leaks where reported when disconnected, however, up to 5000 cycles.
4. The 2600 cycle life limit will be extended to the following KYNAR part code families since the inner components are all common:

   All MBO, MBV, MPMO and MPMV families.