

P50 Vent Port Leak Testing

Scope:

In response to a recent document released by ENEFEN, BelGAS performed testing to ensure that the P50 regulators are suitable for natural gas service. After a discussion with ENEFEN's engineering team, it was decided that a sampling of the current BelGAS P50s would be tested to the same bonnet leakage specification as the BelGAS P627.

Testing:

Per the BelGAS P627 QC Spec, 70-1759, Section 5.0 Leakage:

"5.3 Install plug with tube in bonnet vent port. Place free end of tube in water. Wait a minimum of 15 seconds. No bubbles should form through the tube."

13 Pieces of P05000212000000, LOT BEL3534, Dated DEC 17, were pulled from stock for this testing. It was determined that the P50's with the highest outlet pressure (120 PSIG) had highest potential to leak across the diaphragm assembly. The units were tested by installing a ¼ NPT fitting with a tube into the bonnet port of the P50s and submerging the tube approximately 1" under water. This is the same method that is used to test the BelGAS P627s. The operator waited for 30 seconds to check for leakage, please note this is twice as long that the test for the P627s lists above.

Results:

| Unit # | Outlet Pressure (PSIG) | Bubbles in 30s |
|--------|------------------------|----------------|
| 1 | 121.15 | 0 |
| 2 | 121.90 | 0 |
| 3 | 121.30 | 0 |
| 4 | 121.05 | 0 |
| 5 | 121.75 | 0 |
| 6 | 121.75 | 0 |
| 7 | 121.25 | 0* |
| 8 | 120.95 | 0* |
| 9 | 121.80 | 0* |
| 10 | 120.70 | 0* |
| 11 | 120.85 | 0* |
| 12 | 120.75 | 0* |
| 13 | 120.45 | 0* |

*Units were observed for 90 seconds with no bonnet leakage.

Conclusion:

This testing shows that the current construction of the standard BelGAS P50s has no leakage across the diaphragm and is suitable for natural gas service. The current literature will be update as soon as possible to properly show this. The BelGAS P50s have been used in the natural gas service for approximately 2 decades without issue.



Note: Prepared by Mark Bernardo, E.I.T