

# APPLICATION NOTE A056-GP03 - VALVE SEAT TESTING

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### VALVE SEAT TESTING IN THE AUTOMOTIVE INDUSTRY

**Valve manufacturers check any metal to metal valve seats using pressure degradation methods. Since the new generation car engines are running on higher pressures the manufacturers are in need of new methods for leak testing to keep up with customer needs.**

Bronkhorst has been developing innovative solutions throughout the years (hardware and software) to meet the top quality industrial manufacturer's high standards. Recently Bronkhorst has been successfully involved with manufacturers of valves and valve seat testing machines to implement low flow measurement as the alternative method for a better performance.



#### Application requirements

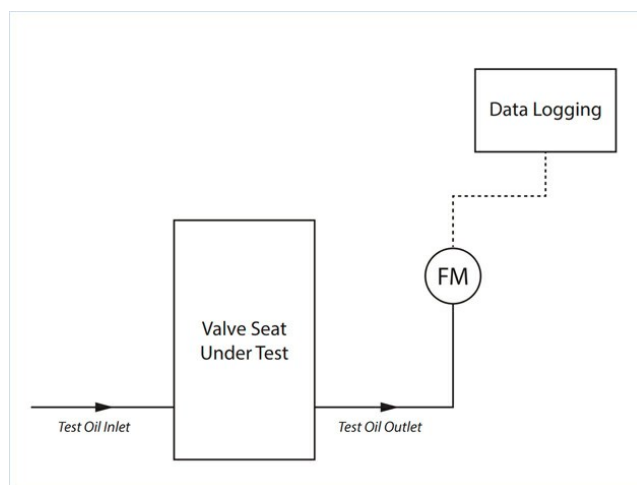
Valve manufacturers use pressure degradation to meet international leakage standards. However logging the pressure reduction over a time period is difficult to administer and can be very labour intensive. Instead the manufacturers are looking to measure the flow across the valve seats under test. This method has to reduce testing time, improve the accuracy of the overall valve seat leak integrity and make the outputs accessible for data logging.

#### Important topics

- High accuracy
- Reduced testing time
- Data logging

#### Process solution

Bronkhorst used Coriolis mass flow meters ([mini CORI-FLOW ML120 series](#)) in collaboration with the manufacturers to allow a measure of the very low flow leak rates. Flow rates as low as 50 milligrams per hour have easily been achieved within these very compact physical units. The implementation of the Coriolis instruments has given the operators an instant reading for a pass or a fail, reducing production time and increasing productivity. Moreover the valve seats quality is improved by using the very accurate ( $\pm 0.2\%$  reading) ultra low-flow meters / controllers in the testing process of the manufacturers. With the low flow measurement technology in the system the manufacturers can now use the outputs for data logging the flow profiles and the direct performance of each valve seat. This not only enables management to improve their manufacturing process continuous. It also gives them a valuable tool for reporting data to their customers and reaching a new level of confidence.



Flow scheme

## Recommended Products



**MINI CORI-FLOW™ ML120V00**

Min. flow 0,05...5 g/h  
Max. flow 2...200 g/h  
Pressure rating 200 bar  
Independent of fluid properties  
High accuracy, fast measurement



**EL-PRESS P-522C**

Min. pressure 2...100 bar  
Max. pressure 4...200 bar  
Absolute or gauge pressure  
High accuracy



**E-8000 SERIES**

### Digital Readout / Control Systems

Bright, wide angle, 1.8" display (TFT technology)  
User friendly operation, menu driven with 4 push buttons



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