

Fugitive Emission Test Report

API 624 1st Edition Standard

Performed for

Quest-Tec Solutions

2014

Quest ½" x ¾" Class 600 Gage Valve
Met Qualifications Set Forth In API 624 1st Edition Using
Teadit Style 2236 Graphite Packing

Start Date: August 27, 2014

End Date: August 29, 2014

Performed by

United Valve, LLC

9916 Gulf Freeway
Houston, TX 77034
Phone: 713-944-9852
Fax: 713-944-5964
www.unitedvalve.com

United Valve

API 624 Testing Summary

Start Date: 8/27/2014

Customer: Quest-Tec Solutions

Selection Process: Quest-Tec Solutions selected and provided a ½" x ¾" 600 class A105N gage valve with Teadit Style 2236 graphite packing and provided gland torque value of 18 ft-lbs. was confirmed/applied.

Packing Information

Packing Description Teadit Style 2236 Graphite Packing
Packing Set 4 Graphite Ring Set
Packing Cross Section .187 inch
Test Fixture ½" x ¾" 600 Class A105N Gage Valve
API 622 Completion Yes, See Appendix B

Testing Criteria

| | | |
|--------------------------------------|-------------|--------------------|
| EPA Maximum Allowable Leakage | 100 | PPM |
| Test Pressure (Ambient) | 600 | PSIG |
| Test Pressure (500°F) | 600 | PSIG |
| Test Media | 99% Methane | |
| Recommended Nut Torque | 18 | ft-lbs |
| Tested Stem Travel Per Stroke | .3 | inches |
| Cycling Speed | 2.4 | Seconds per Stroke |
| Cycling Rate | 4.8 | Seconds per Cycle |

Results

| | |
|---|-----|
| Number Mechanical Cycles Required | 310 |
| Number Mechanical Cycles Completed | 310 |
| Number Thermal Cycles Required | 3 |
| Number Thermal Cycles Completed | 3 |

| Stem Seal Leakage (PPMv) | | | | Gland Torque (ft-lbs) | |
|--------------------------|------|-----------------|-----|-----------------------|-----|
| Static Leakage | | Dynamic Leakage | | | |
| Avg. | Max. | Avg. | Max | Avg. | Max |
| 0.923 | 2 | 1.167 | 3 | 13.643 | 18 |

Tested By: Randy L. Davis

Drury Davis, Staff Engineer

"Certified Low Leakage"

United Valve – Fugitive Emissions Test Form

Test Laboratory: United Valve

Test Fixture: ½" x ¾" 600 Class A105N Gage Valve

Packing Description: Teadit Style 2236 Graphite Packing

Test Pressure Required: 600 ± 10 PSIG

Test Temperature Required: Ambient, Thermal 500°F ± 25°F

EPA Maximum Leakage Rate: 100 PPMv (Methane)

| Day | Cycle Count | Temperature | Gland | Packing Leakage PPMv | |
|---------|-------------|-------------|---------------------------|----------------------|-----------------|
| | | | Gland Nut Torque (ft-lbs) | Static Leakage | Dynamic Leakage |
| 1 | 0 | Ambient | 18 | 0 | |
| 1 | 50 | Ambient | | 0 | 0 |
| 2 | 51 | 500°F | 17 | 2 | |
| 2 | 100 | 500°F | | 2 | 2 |
| 3 | 101 | Ambient | 16.6 | 1 | |
| 3 | 150 | Ambient | | 2 | 0 |
| 4 | 151 | 500°F | 17 | 0 | |
| 4 | 200 | 500°F | | 0 | 2 |
| 5 | 201 | Ambient | 12.5 | 1 | |
| 5 | 250 | Ambient | | 2 | 0 |
| 6 | 251 | 500°F | 4 | 0 | |
| 6 | 300 | 500°F | | 0 | 3 |
| 7 | 301 | Ambient | 10.4 | 2 | |
| 7 | 310 | Ambient | | 0 | 0 |
| Average | | | 13.643 | 0.923 | 1.167 |
| Maximum | | | 18 | 2 | 3 |

DIMENSIONAL INFORMATION

Manufacturer's Information

| | |
|-----------------------------------|------------------------------------|
| Packing Description: | Teadit Style 2236 Graphite Packing |
| Packing Set: | 4 Graphite Ring Set |
| Test Start Date: | 8/27/2014 |
| Packing- Pre-Installed or Repack: | Pre-Installed |
| Required Torque on Packing Gland: | 18 ft-lb |

Testing Parameters

| | | |
|-----------------------------------|-----|--------------------|
| Cycle Speed: | 2.4 | seconds per stroke |
| Tested Stoke Length: | .3 | inches |
| Time to Open Valve: | 2.4 | seconds |
| Time to Close Valve: | 2.4 | seconds |
| Total Time to Complete One Cycle: | 4.8 | seconds |

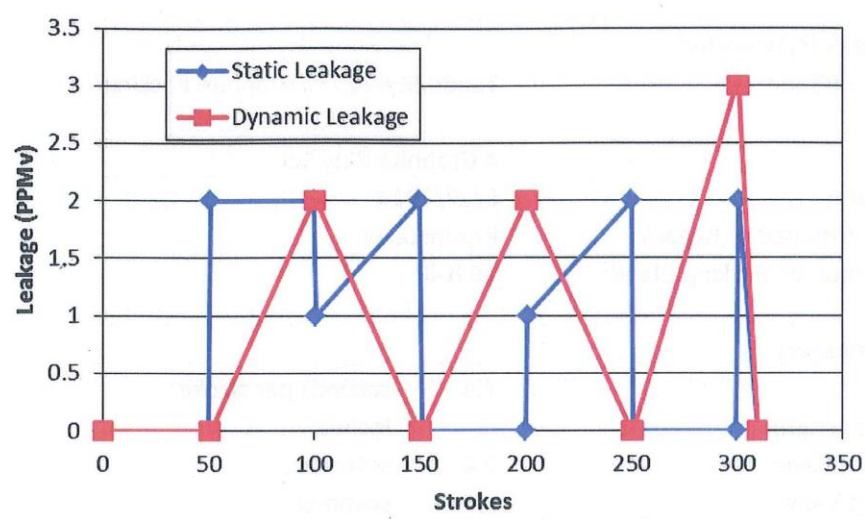
Pre-Test and Re-Packing Dimensions

| | | |
|---------------------------------|------|--------|
| Stem Diameter: | .625 | Inches |
| Total Stem Travel: | .3 | Inches |
| Packing Cross-Section: | .187 | Inches |
| Number of Packing Rings | 4 | |
| Initial Packing Torque Applied: | 18 | ft-lb |
| Gland Stud Dimension: | 5/16 | Inches |

Post-Test Dimensions

| | | |
|------------------------|-------|--------|
| Final Packing Torque: | 10.4 | ft-lb |
| Stuffing Box Diameter: | 1.000 | Inches |
| Gland ID: | .644 | Inches |
| Gland OD: | .994 | Inches |
| Packing ID: | .627 | Inches |
| Packing OD: | 1.005 | Inches |

Graph:



Markings:



Bushing: N/A

Stuffing Box:



Gland:



Spacer: N/A

Test packing:

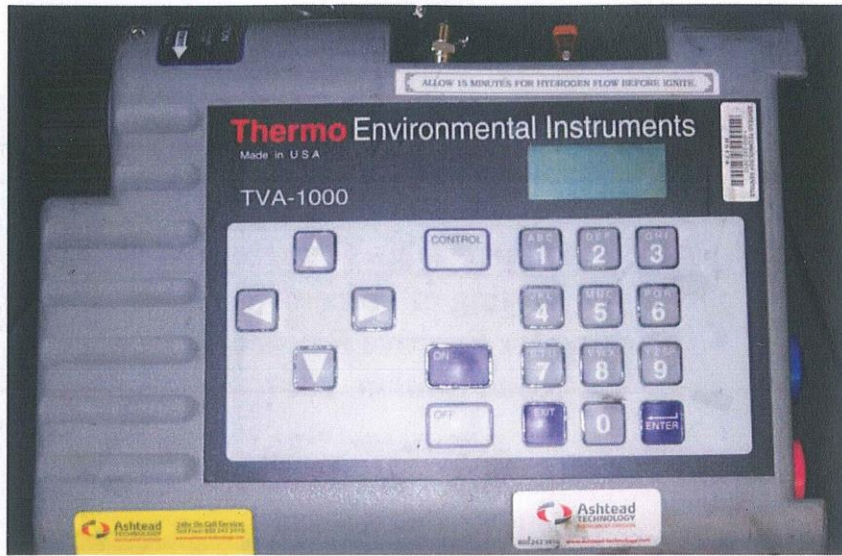


Stem:



Stem Nut: N/A

Leakage Detector:



APPENDIX B

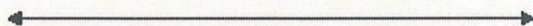
API Standard 622 Test Report

**“Type Testing of Process Valve
Packing for Fugitive Emissions”
Second Edition, 2011**

Performed for

Teadit North America

www.teadit-na.com



Teadit Style 2236 Graphite Packing

Project Number: 211142

Test Start Date: June 8, 2011



Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

434 Walnut Hill Road
North Yarmouth, ME 04097 USA
(207) 829-5359

info@yarmouthresearch.com
www.yarmouthresearch.com