

ISO 15848-1:2015
Helium Fugitive Emission Test Report

Performed for

A-T Controls, Inc.

www.a-tcontrols.com



TR20DAV Actuator with FKM Seals
Mounted to a 1/2 inch Class 150 Series F90 Ball Valve
Product Code: F90-F1-050/TR1D-XX

Project Number: 218159

Test Start Date: December 14, 2018



Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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Fugitive Emission Test Data Sheet

Customer: A-T Controls, Inc

Date: 12/14/2018

Project #: 218159

Valve Description: TR20DAV actuator with FKM seals mounted to a 1/2" Series F90

Product Code: F90-F1-050/TR1D-XX

Sample Supplied by: Customer

Stem Diameter: 10.9 mm

Packing Nut Torque: 87 in*lbs

Test Conditions

Test Standard: ISO/FDIS 15848-1:2015

Test Stand: Yarmouth Stand 1

Tightness Class: BH

Allowable: 1.94E-05 mbar l/sec

Test Media: 99% Helium

Endurance Class: CO3 2500 Mechanical Cycles

Temperature Class: 200C 4 Thermal Cycles

Pressure Class: ANSI 150

Rating: 285 psig @ambient

198 psig @high temp

Testing Method: Suck Through Method

Mounting Position: Stem and Bore Horizontal

Max. Allowable Bonnet Gasket Leakage: 50 PPMv by sniffing method

Leakage Device: Pfeiffer SmartTest HLT560

Cycling Rate: 1 cycle per 30 seconds

Test Data Summary - Stem Seal

Cycle Number	Nom.Temp (C)	Static Stem Seal Leakage (mbar l/sec)		Packing Retorque See Notes
		Avg.	Max.	
0	20	7.9E-07	8.0E-07	
50	20	8.6E-07	8.8E-07	
50	200	9.9E-07	1.0E-06	
100	200	8.9E-07	9.1E-07	
100	20	1.1E-05	1.2E-05	
150	20	1.3E-05	1.5E-05	
150	200	1.1E-06	1.2E-06	
200	200	1.1E-06	9.1E-07	
205	20	4.2E-05	5.1E-05	1
205	20	9.0E-07	9.1E-07	
1,000	20	1.1E-06	1.1E-06	
1,000	200	1.7E-06	1.7E-06	
1,500	200	1.5E-06	1.5E-06	
1,500	20	1.2E-06	1.3E-06	
2,000	20	8.7E-04	8.9E-04	2
2,000	20	7.8E-06	8.1E-06	
2,000	200	1.3E-06	1.3E-06	
2,500	200	8.9E-07	9.0E-07	
2,500	20	1.4E-06	1.6E-06	
Maximum Leakage:		8.7E-04	8.9E-04	
Maximum Allowable:		1.94E-05	1.94E-05	

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Test Data Summary - Body Seal

Cycle Number	Nom.Temp (C)	Leakage - PPMv	
		Avg.	Max.
0	20	1	1
205	20	3	3
1,500	20	6	6
2,500	20	5	5
Maximum Leakage:		6	6
Maximum Allowable:		50	50

Test Data Summary - Operating Actuator Pressure

Cycle Number	Nom.Temp (C)	Operating Actuator Pressure (psig)
0	20	41
2,500	20	31

Packing Retorque Notes:

Adjustment Number	Static Leakage Readings before Tightening (mbar l/sec)		Before Adjustment Nut Torque (in-lb)	After Adjustment Nut Torque (in-lb)	Operating Actuator Pressure (psig)	
	Avg.	Max.			Before Adjustment	After Adjustment
	1	4.2E-05			5.1E-05	35
2	8.7E-04	8.9E-04	28	133	28	55
3						
	1.94E-05	1.94E-05	<- Maximum Allowable Leakage			
Nut Torque at End of Test:				42	ft-lb	

Performance Class:

ISO FE BH - CO3 - SSA 2 - t200C - ANSI Class 150 - ISO 15848-1

Results

The valve met the requirements of the performance class stated above.

Certified By



Matthew J. Wasielewski, PE
 President and Manager
 Yarmouth Research and Technology, LLC

