ISO 15848-1
Helium Fugitive Emission Test Report

Performed for

Metso Automation

www.metso.com

4” Class 300 Series 9000 Ball Valve

CC1 Endurance Level

Project Number: 211208
Test Date: Feb. 8, 2012

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

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Fugitive Emission Test Data Sheet

Customer:	Metso Automation	**Date:**	2/8/2012
Project #:	211208		
Product Description:	4" 9000 ASME Class 300 Flanged Ball Valve		
	4 9300312236XTZ1LW		
Sample Supplied by:	Customer		
Stem Diameter:	44.9 mm		
Packing Nut Torque:	21 ft lbs		

Test Conditions

Test Standard:	ISO 15848-1: First Edition 2006	**Test Stand:**	Yarmouth Stand 1
Tightness Class:	BH	**Allowable:**	7.91E-05 atm cc/sec
Test Media:	99% Helium		
Endurance Class:	CC1 20,000 Mechanical Cycles		
Temperature Class:	200C 2 Thermal Cycles		
Pressure Class:	300 **Rating:** 740 psig@amb		635 psig@temp
Testing Method:	Purge for stem seals, sniffing (enclosed area) for bonnet seal		
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 15 seconds		

Test Data Summary - Stem Seal

		Stem Seal Leakage Readings - atm cc/sec				*Packing*	*Actuator*
Cycle	*Nom.Temp*	*Static*		*Dynamic*		*Retorque*	*Pressure*
Number	*(C)*	*Avg.*	*Max.*	*Avg.*	*Max.*	*See Notes*	*(psig)*
0	20	5.8E-06	5.8E-06	5.1E-06	5.6E-06		38
5,000	20	2.4E-06	2.4E-06	2.5E-06	2.6E-06		38
5,000	200	3.4E-06	3.5E-06	3.5E-06	3.7E-06		38
10,000	200	4.3E-06	4.4E-06	4.7E-06	5.1E-06		38
10,000	20	1.4E-05	1.6E-05	1.2E-05	1.4E-05		38
15,000	20	8.5E-06	8.6E-06	8.1E-06	8.8E-06		38
15,000	200	3.1E-06	3.2E-06	3.1E-06	3.2E-06		38
20,000	200	2.4E-06	2.4E-06	2.5E-06	2.6E-06		38
20,000	20	3.3E-06	3.5E-06	3.5E-06	4.4E-06		38
Maximum Leakage:		**1.4E-05**	**1.6E-05**	**1.2E-05**	**1.4E-05**		**38**
Maximum Allowable:		**7.91E-05**	**7.91E-05**				

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Test Data Summary - Bonnet Seal

Cycle Number	*Nom.Temp (C)*	*Leakage - PPMv*	
		Avg.	*Max.*
0	20	2.2	2.2
20,000	20	2.4	2.4
Maximum Leakage:		**2.4**	**2.4**
Maximum Allowable:		**50**	**50**

Packing Retorque Notes:

Adjustment Number	*Cycle Number*	*Nom.Temp (C)*	*Static Leakage Readings before Tightening*		*Before Adjustment Nut Torque (in-lb)*	*After Adjustment Nut Torque (in-lb)*
			Avg.	*Max.*		
1						
2						
3						
	Maximum Allowable:		**7.91E-05**	**7.91E-05**		

Results

Valves passed the CC1 level with no packing nut adjustments.

Extension of Qualification

(In accordance with para. 8 of ISO 15848-1)

3" - 10" 7000 Series, Flanged, Class 150 and 300 Ball Valves (DN 80 - 250; PN10 - PN40)

2" - 12" 9000 Series, Flanged, Class 150 and 300 Ball Valves (DN 50 - 300; PN10 - PN40)

Witnessed:

President, Yarmouth Research