



THE NATIONAL BOARD

OF BOILER AND PRESSURE VESSEL INSPECTORS

November 16, 2017

Zachary Berggren
Engineered Controls International, LLC
100 Rego Drive
Elon, NC 27244

**Subject: Capacity Certification, Valve Type: AR4112A, AR5112A
NB Cap Cert. No.: REG-M46381**

Dear Mr. Berggren:

We have reviewed the enclosed test results, referenced below, which were performed at the **National Board Testing Laboratory** on November 9, 2017 for the purpose of testing for capacity certification of the subject valve type as required by paragraph UG-136(c)(3) of Section VIII of the ASME Code.

Engineered Controls International, LLC is hereby granted capacity certification and authorization to apply the “NB” mark and ASME Certification mark with “UV” designator to the valve type listed in the scope of certification. This authorization is valid only for the above location and only while the organization is fully implementing its quality control system as accepted by the National Board.

SCOPE OF CERTIFICATION

Valve Type: AR4112A, AR5112A

Organization Type: Manufacturer

Certified Rating Value/Sizes/Pressure Ranges: As listed in the NB-18

Certification Expiration Date: March 13, 2024

Sincerely,

Thomas P. Beirne, P.E.
Technical Manager, Pressure Relief Dept.

REFERENCING TEST NUMBERS: 45763A, 45762A

File:GF: 171116 REG-M46381 Pass

National Board Testing Laboratory

Nitrogen Test - Sonic Flow Method

Valve ID Data		Revision 3.8	V:\apps\Labview Programs\DATA\Air Tests\45763A.xls
1	Test Number	45763A	
2	Test Sponsor	Engineered Controls International, LLC	
3	Company Type	Manufacturer	Elon, NC
4	Test Date	11/9/2017	REG
5	Valve Type	AR4112A355	
6	Manufacturer	Engineered Controls International, LLC	
7	Cap. Cert. ID No.	46381	
8	Set Pressure	355 psig	
9	Inlet Size	1 1/2 M	
10	Outlet Size	2 F	
11	Stamped Capacity	3,185 SCFM	
12	Code Section	VIII	
13	Serial Number		
14	Date Code	10D17	
Operational Data and Measured Dimensions			
15	Warn Pressure		psig
16	Set Pressure	346.8	psig
17	Reset Set Pressure		psig
18	Blowdown	19.9	psi
19	Reset Blowdown		psi
20	Bore Diameter	0.906	inch
21	Lift		inch
Measured Data			
22	Flow Area	0.64468	in ²
23	Vessel Pressure	381.4	psig
24	P _b	14.29	psia
25	Vessel Temp.	53.7	°F
26	Nozzle Pressure	1,499.2	psig
27	Nozzle Temp.	66.6	°F
28	Nozzle Area	0.11589	in ²
Calculated Data			
29	Vessel Pressure	395.7	psia
30	Nozzle Total Press.	1,513.5	psia
31	Nozzle Total Temp.	526.6	°R
32	Critical Flow Function	0.7112	C*
34	Meas. Cap.	4.10932	lbm/sec N2
35	Vessel Total Temp.	513.7	°R
36	Reference Temp.	520.0	°R
37	Nitrogen Density	0.073835	lbm/ft ³
38	Vessel Temp. Correction	0.993924	
39	Measured Capacity	3263.8	scfm AIR
40	Slope	8.2485	scfm/psia
41	Coefficient	0.6976	
42	Rated Capacity For Measured Set	3110.1	scfm
43	Rated Slope	7.86	
44			

National Board Testing Laboratory

Air Test - Sonic Flow Method: Test Summary

Test Summary for test 45763A:

V:\apps\Labview Programs\DATA\Air Tests\45763A.xls

1. Valve tested for 6 Year Capacity Recertification as a Manufacturer.

I certify that the data on the attached test data sheets was obtained under my supervision in accordance with the provisions of ASME PTC 25, the applicable sections of the ASME Boiler and Pressure Vessel Code, and the National Board Testing Laboratory Quality Control Manual. To the best of my knowledge and belief the objects tested were of the same type and design as indicated.


Authorized Observer: Ryan Ford

11-9-17
Date

Test Personnel

Company Representatives

Tim Brown
Ryan Ford

George McGonagle

National Board Testing Laboratory

Nitrogen Test - Sonic Flow Method

Valve ID Data		Revision 3.8	V:\apps\Labview Programs\DATA\Air Tests\45762A.xls
1	Test Number	45762A	
2	Test Sponsor	Engineered Controls International, LLC	
3	Company Type	Manufacturer	Elon, NC
4	Test Date	11/9/2017	REG
5	Valve Type	AR4112A350	
6	Manufacturer	Engineered Controls International, LLC	
7	Cap. Cert. ID No.	46381	
8	Set Pressure	350 psig	
9	Inlet Size	1 1/2 M	
10	Outlet Size	2 F	
11	Stamped Capacity	3,142. SCFM	
12	Code Section	VIII	
13	Serial Number		
14	Date Code	10D17	
Operational Data and Measured Dimensions			
15	Warn Pressure		psig
16	Set Pressure	350.9	psig
17	Reset Set Pressure		psig
18	Blowdown	16.9	psi
19	Reset Blowdown		psi
20	Bore Diameter	0.906	inch
21	Lift		inch
Measured Data			
22	Flow Area	0.64468	in ²
23	Vessel Pressure	387.0	psig
24	P _b	14.29	psia
25	Vessel Temp.	53.1	°F
26	Nozzle Pressure	1,446.2	psig
27	Nozzle Temp.	63.8	°F
28	Nozzle Area	0.11589	in ²
Calculated Data			
29	Vessel Pressure	401.3	psia
30	Nozzle Total Press.	1,460.5	psia
31	Nozzle Total Temp.	523.8	°R
32	Critical Flow Function	0.7109	C [*]
34	Meas. Cap.	3.97456	lbm/sec N2
35	Vessel Total Temp.	513.1	°R
36	Reference Temp.	520.0	°R
37	Nitrogen Density	0.073835	lbm/ft ³
38	Vessel Temp. Correction	0.993343	
39	Measured Capacity	3154.9	scfm AIR
40	Slope	7.862	scfm/psia
41	Coefficient	0.6649	
42	Rated Capacity For Measured Set	3154.1	scfm
43	Rated Slope	7.86	
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National Board Testing Laboratory

Air Test - Sonic Flow Method: Test Summary

Test Summary for test 45762A:

V:\apps\Labview Programs\DATA\Air Tests\45762A.xls

1. Valve tested for 6 Year Capacity Recertification as a Manufacturer.
2. The flow pressure was set $(350.9) \times 1.104$ to get 387.4 psig absolute max

I certify that the data on the attached test data sheets was obtained under my supervision in accordance with the provisions of ASME PTC 25, the applicable sections of the ASME Boiler and Pressure Vessel Code, and the National Board Testing Laboratory Quality Control Manual. To the best of my knowledge and belief the objects tested were of the same type and design as indicated.


Authorized Observer: Ryan Ford

11-9-17
Date

Test Personnel

Company Representatives

Tim Brown
Ryan Ford

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