



# THE NATIONAL BOARD

OF BOILER AND PRESSURE VESSEL INSPECTORS

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November 16, 2017

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

**Subject: Capacity Certification, Valve Type: B-19434B & C-19434B  
NB Cap Cert. No.: REG-M46190**

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: B-19434B & C-19434B**

**Organization Type: Manufacturer**

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

**Certification Expiration Date: February 22, 2024**

Sincerely,

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

REFERENCING TEST NUMBERS: 45753A, 45752A

File:GF: 171116 REG-M46190 Pass

# National Board Testing Laboratory

## Nitrogen Test - Orifice Plate Flow Meter Method

| Valve ID Data                            |   | Revision 2.4                           |                     |
|--|---|--|---------------------|
| 1  | Test Number                             | 45753A                                 |                     |
| 2  | Test Sponsor                            | Engineered Controls International, LLC |                     |
| 3  | Company Type                            | Manufacturer                           | Elon, NC            |
| 4  | Test Date                               | 11/9/2017                              | REG                 |
| 5  | Valve Type                              | B-19434B300                            |                     |
| 6  | Manufacturer                            | Engineered Controls International, LLC |                     |
| 7  | Cap. Cert. ID No.                       | 46190                                  |                     |
| 8  | Set Pressure                            | 300 psig                               |                     |
| 9  | Inlet Size                              | 1/2 M                                  |                     |
| 10                                       | Outlet Size                             | Top                                    |                     |
| 11                                       | Stamped Capacity                        | 601. SCFM                              |                     |
| 12                                       | Code Section                            | VIII                                   |                     |
| 13                                       | Serial Number                           |  |                     |
| 14                                       | Date Code                               | 10C17                                  |                     |
| Operational Data and Measured Dimensions |   |  |                     |
| 15                                       | Warn Pressure                           |  | psig                |
| 16                                       | Set Pressure                            | 308.7                                  | psig                |
| 17                                       | Reset Set Pressure                      |  | psig                |
| 18                                       | Blowdown                                | 79.3                                   | psi                 |
| 19                                       | Reset Blowdown                          |  | psi                 |
| 20                                       | Bore Diameter                           | 0.387                                  | inch                |
| 21                                       | Lift                                    |  | inch                |
| Measured Data                            |   |  |                     |
| 22                                       | Flow Area                               | 0.11763                                | in <sup>2</sup>     |
| 23                                       | Line Pressure                           | 348.5                                  | psig                |
| 24                                       | Differential Pressure                   | 10.08                                  | psid                |
| 25                                       | Line Temp.                              | 41                                     | °F                  |
| 26                                       | Vessel Pressure                         | 339.0                                  | psig                |
| 27                                       | Vessel Temp.                            | 61                                     | °F                  |
| 28                                       | P <sub>b</sub>                          | 14.29                                  | psia                |
| 29                                       | Plate ID Number                         | 1A                                     | 0.8 Plate Dia.      |
| Calculated Data                          |   |  |                     |
|  | Line Pressure (absolute)                | 362.792                                | psia                |
| 32                                       | Density @ Flow Condition <sub>(w)</sub> | 1.9048                                 | lbm/ft <sup>3</sup> |
| 33                                       | Area Factor <sub>(Fa)</sub>             | 0.999578                               |                     |
| 34                                       | Trial Flow Rate                         | 0.8730                                 | lbm/sec             |
| 35                                       | Viscosity                               | 1.1321E-05                             | lbm/ft-sec          |
| 36                                       | Reynolds Number RD                      | 325,102                                |                     |
| 37                                       | Theoretical Capacity <sub>(WT)</sub>    |  |                     |
|  | WT=CKAP√M/T                             | 3,432.2                                | lbm/hr N2           |
| 38                                       | Measured Capacity at Std. Cond.         | 3,142.7                                | lbm/hr N2           |
| 39                                       | <b>Measured Capacity at Std. Cond.</b>  | <b>697.6</b>                           | SCFM AIR            |
| 40                                       | Slope                                   | <b>1.975</b>                           | SCFM/PSIA           |
| 41                                       | Coefficient                             | 0.91566                                |                     |
| 42                                       | Rated Capacity For Measured Set         | 616.1                                  | SCFM                |
| 43                                       | Rated Slope                             | 1.744                                  |                     |
| 44                                       |   |  |                     |

# National Board Testing Laboratory

## Air Test - Orifice Plate Method: Test Summary

### Test Summary for test 45753A:

1. Valve tested for 6 Year Capacity Recertification as a Manufacturer.
2. Valve tested as replacement for test number 45532A, 45531A tested at The National Board Testing Lab.

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: Sam Finley

  
Date

Test Personnel

Company Representatives

Steve Bowman  
Sam Finley

George McGonagle

# National Board Testing Laboratory

## Nitrogen Test - Orifice Plate Flow Meter Method

| Valve ID Data                                   |   | Revision 2.4                           |                     |
|---|---|--|---------------------|
| 1   | Test Number                             | 45752A                                 |                     |
| 2   | Test Sponsor                            | Engineered Controls International, LLC |                     |
| 3   | Company Type                            | Manufacturer                           | Elon, NC            |
| 4   | Test Date                               | 11/9/2017                              | REG                 |
| 5   | Valve Type                              | B-1934B250                             |                     |
| 6   | Manufacturer                            | Engineered Controls International, LLC |                     |
| 7   | Cap. Cert. ID No.                       | 46190                                  |                     |
| 8   | Set Pressure                            | 250 psig                               |                     |
| 9   | Inlet Size                              | 1/2 M                                  |                     |
| 10  | Outlet Size                             | Top                                    |                     |
| 11  | Stamped Capacity                        | 505. SCFM                              |                     |
| 12  | Code Section                            | VIII                                   |                     |
| 13  | Serial Number                           |  |                     |
| 14  | Date Code                               | 10C17                                  |                     |
| <b>Operational Data and Measured Dimensions</b> |   |  |                     |
| 15  | Warn Pressure                           | 253.2                                  | psig                |
| 16  | Set Pressure                            | 254.8                                  | psig                |
| 17  | Reset Set Pressure                      |  | psig                |
| 18  | Blowdown                                | 26.7                                   | psi                 |
| 19  | Reset Blowdown                          |  | psi                 |
| 20  | Bore Diameter                           | 0.385                                  | inch                |
| 21  | Lift                                    |  | inch                |
| <b>Measured Data</b>                            |   |  |                     |
| 22  | Flow Area                               | 0.11642                                | in <sup>2</sup>     |
| 23  | Line Pressure                           | 288.4                                  | psig                |
| 24  | Differential Pressure                   | 8.35                                   | psid                |
| 25  | Line Temp.                              | 50                                     | °F                  |
| 26  | Vessel Pressure                         | 280.3                                  | psig                |
| 27  | Vessel Temp.                            | 70                                     | °F                  |
| 28  | P <sub>b</sub>                          | 14.34                                  | psia                |
| 29  | Plate ID Number                         | 1A                                     | 0.8 Plate Dia.      |
| <b>Calculated Data</b>                          |   |  |                     |
|   | Line Pressure (absolute)                | 302.736                                | psia                |
| 32  | Density @ Flow Condition <sub>(w)</sub> | 1.5584                                 | lbm/ft <sup>3</sup> |
| 33  | Area Factor <sub>(Fa)</sub>             | 0.999717                               |                     |
| 34  | Trial Flow Rate                         | 0.7188                                 | lbm/sec             |
| 35  | Viscosity                               | 1.1476E-05                             | lbm/ft-sec          |
| 36  | Reynolds Number RD                      | 264,092                                |                     |
| 37  | Theoretical Capacity <sub>(WT)</sub>    |  |                     |
|   | WT=CKAP√M/T                             | 2,808.6                                | lbm/hr N2           |
| 38  | Measured Capacity at Std. Cond.         | 2,587.8                                | lbm/hr N2           |
| 39  | <b>Measured Capacity at Std. Cond.</b>  | <b>574.4</b>                           | SCFM AIR            |
| 40  | Slope                                   | <b>1.950</b>                           | SCFM/PSIA           |
| 41  | Coefficient                             | 0.92137                                |                     |
| 42  | Rated Capacity For Measured Set         | 513.8                                  | SCFM                |
| 43  | Rated Slope                             | 1.744                                  |                     |
| 44  |   |  |                     |

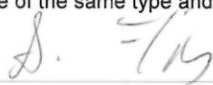
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