SOUTHWEST RESEARCH INSTITUTE®
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Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-4834

# Certificate of Calibration

ACCREDITED
Calibration Laboratory
Certificate #0972-01

**Cost Center / Customer:** DIV20 / DON BANNON
**Mail Stop:** B51
**Manufacturer/Model:** PAROSCIENTIFIC / 740-45A
**Description:** PRESSURE GAUGE DIGITAL
**Serial Number:** 60999
**Asset Number:** 003972
**Procedure:** PRESSURE, DIGITAL GAGES - 15 MAR 06

**Work Order:** 303091228
**Date Issued:** 11-Nov-2009
**Date Calibrated:** 11-Nov-2009
*** Date Due :** 11-May-2010
**** Results:** FOUND-LEFT
**Temperature:** 67.0 °F
**Humidity:** 40 %RH
**Barometer:** N/A

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 2005, ANSI/NCSL Z540-1-1994 and relevant requirements of the ISO 9000-2000 standard. This certificate shall not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. This certificate shall not be used to claim product endorsement by Southwest Research Institute, American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government. Results of this calibration relate only to the instrument described above at the time of calibration and does not imply any long term stability of the instrument.

*Determined by the customer, does not imply the instrument will remain within tolerance as any number of factors may cause an out-of-tolerance condition before this date. **Data type found in this certificate or attached measurement report must be interpreted as: Found-left - adjustment and/or repair was not performed, As-found - data is before unit is adjusted and/or repaired, As-left - data is after adjusted and/or repaired was performed. The customer has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance.

Measurement uncertainty calculated in accordance with the method described in the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM), for a confidence level of approximately 95 percent using a coverage factor of $k=2$.

**Remarks:** Accuracy ± 0.025% of Full Scale.

## Standards Used

| Asset # | Manufacturer | Model | Description | Cal Date | Due Date |
|---|---|---|---|---|---|
| 002856 | RUSKA | 2468-714-69900 | WEIGHT SET, CLASS S | 17-Jul-2008 | 17-Jul-2010 |
| 005332 | RUSKA | 2468-758 | DEAD WEIGHT PISTON (2 - 50) psi | 16-Apr-2009 | 16-Apr-2011 |
| 010442 | RICE LAKE | 1 MG - 100 G | WEIGHT SET, CLASS 1 | 12-Jun-2009 | 12-Jun-2010 |
| 013203 | HASTINGS | DV-6M | VACUUM GAUGE | 14-Jan-2009 | 14-Jan-2010 |

Walt Hill
Laboratory Manager

Perry Carpenter
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

| | | | | | |
|---|---|---|---|---|---|
| Work Order: | 303091228 | Mfr: | Paroscientific | Technician: | PWC |
| Asset No: | 003972 | Model: | 740-45A | Type Data: | Found-left |
| Serial No: | 60999 | Type: | Pressure Indicator | Cal Date: | 11-Nov-09 |
| Remarks: Accuracy ± 0.025% of Full Scale. | | | | | |

| Function/Range | Test Point | TI Reading | Difference | +/- Limit | +/- Uncertainty | Result | % Limit |
|---|---|---|---|---|---|---|---|
| Pressure | psia | psia | psia | psia | psia | | |
| | 0.0039 | 0.0064 | 0.0025 | 0.0113 | 0.0023 | Pass | 22% |
| | 4.5039 | 4.5047 | 0.0008 | | | Pass | 7% |
| | 9.0039 | 9.0054 | 0.0015 | | | Pass | 13% |
| | 13.5039 | 13.5058 | 0.0019 | | | Pass | 17% |
| | 18.0039 | 18.0054 | 0.0015 | | | Pass | 13% |
| | 22.5039 | 22.5055 | 0.0016 | | | Pass | 14% |
| | 27.0039 | 27.0055 | 0.0016 | | | Pass | 14% |
| | 31.5039 | 31.5050 | 0.0011 | | | Pass | 10% |
| | 36.0039 | 36.0048 | 0.0009 | | | Pass | 8% |
| | 40.5039 | 40.5056 | 0.0017 | | | Pass | 15% |
| | 45.0039 | 45.0060 | 0.0021 | | | Pass | 19% |
| | 40.5039 | 40.5050 | 0.0011 | | | Pass | 10% |
| | 36.0039 | 36.0049 | 0.0010 | | | Pass | 9% |
| | 31.5039 | 31.5049 | 0.0010 | | | Pass | 9% |
| | 27.0039 | 27.0052 | 0.0013 | | | Pass | 12% |
| | 22.5039 | 22.5057 | 0.0018 | | | Pass | 16% |
| | 18.0039 | 18.0052 | 0.0013 | | | Pass | 12% |
| | 13.5039 | 13.5054 | 0.0015 | | | Pass | 13% |
| | 9.0039 | 9.0051 | 0.0012 | | | Pass | 11% |
| | 4.5039 | 4.5045 | 0.0006 | | | Pass | 5% |
| | 0.0039 | 0.0076 | 0.0037 | | | Pass | 33% |

END OF REPORT