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Certificate #L2216

# Calibration Certificate

**#2107445**

(Level 3) ISO/IEC 17025:2017 Accredited Calibration with Measurement Uncertainty

## Customer

*Illiana Instrumentation Service LLC*  
 (7954)  
 1831 Govert Drive  
 Schererville, Indiana 46375  
 PO Number: 4097

## Instrument Profile

Manufacturer: *Craftsman*  
 Model: 44598  
 Asset ID: 1293  
 Serial: 012498  
 Description: *Electronic Rotary Torque Sensor System*

## Calibration Information

†Requested Interval: 2 Years

Calibration Date: 06/30/2020

†Due Date: 06/30/2022

Temperature: 68.9 °F (20.5 °C)

Batch #: 1848443

Calibration Location: *Indiana Physical Lab*

Calibration Procedure: *CP-0136*

Relative Humidity: 48.1 %

## Instrument Condition

As Received: *In Tolerance*

As Returned: *In Tolerance*

Tolerance(s): *Manufacturer specification(s) unless otherwise specified.*

Phys. Damage: *No apparent evidence of physical or cosmetic damage noted during this calibration.*

## Quality & Traceability Statements

### Level 3 Calibration

The results reported herein apply only to the calibration of the item described above. All calibration standards used in this calibration are traceable to the International System of Units (SI) through NIST or equivalent National Measurement Institute signatories to the CIPM MRA. Supporting documentation relating to this traceability is initiated by the Trace Number listed in the Calibration Standards section of this certificate. Additional documentation is available for review by a scheduled appointment. Our Quality System is accredited to ISO/IEC 17025:2017, ANSI/NCSL Z540-1:1994 and ANSI/NCSL Z540.3:2006 via the ANSI-ASQ National Accreditation Board. Details of our scope of accreditation are available at [www.anab.org](http://www.anab.org).

†Per the requirements of ISO-17025:2017, Cal Lab does not make recommendations for recall therefore the listed Due Date is dictated by the owner of this equipment. Although the item calibrated meets the conditions or specifications at the time of the calibration, due to a number of factors the due date of the item calibrated does not imply continuing conformance during the calibration interval.

The parameters of this calibration are directly or indirectly covered under our current scope of accreditation unless otherwise noted. The reported expanded uncertainty of measurement is reported at a coverage factor of k=2, which for a normal distribution corresponds to a coverage of approximately 95%. The EMU does include the resolution of the instrument calibrated, which in some cases, may be a dominate source of error, but does not include Type A contributors (repeatability/reproducibility studies) of the instrument calibrated unless specifically requested by the customer. The uncertainty values reflect the measurement processes uncertainty and may not reflect the measurement uncertainty listed on our scope of accreditation. The reported measurement uncertainty is not considered (i.e. measured value ± EMU) when making statements of compliance to specification (i.e. In tolerance, OOT, Pass/Fail, etc.) unless requested by the customer.

For purposes of determining conformance with the listed specifications (tolerances), the observed value or a calculated value has been rounded "to the nearest unit" in the last right-hand digit used in expressing the specification limit, in accordance with the rounding method of ASTM Practice E 29 for Using Significant Digits in Test Data to Determine Conformance with Specifications.

This certificate may contain calibration data with results listed as either Pass or Fail. These attributes are typically listed as a functional check based on an applied measurand or verification, however, this is strictly Qualitative and should not be interpreted as a Quantitative measurement.

*Michael Mathews*

Calibration Technician

Michael Mathews

[michael.mathews@callabco.com](mailto:michael.mathews@callabco.com)

*E. Guess*

Review & Approval

Esther Guess


Quality Manager


[esther.guess@callabco.com](mailto:esther.guess@callabco.com)





### Calibration Standard(s)

Description	Manufacturer	Model	ID#	Due Date	Traceability #
Torque Transducer, 4 lbf-in to 250 lbf-ft	CDI	2000-400-0	1583	12/31/2020	2106367
 Thermohygrometer, (Environmental Only)	Dickson	TM320	2392	11/30/2020	2092601

 Indicates that this equipment is only used to monitor & record environmental conditions as listed in the Calibration Information Section.

### Technician Remarks

Torque sensor is calibrated with display; both have the same serial number (s/n#012498).

### Calibration Data

>>> For quick review, any Function/Attribute with an Out-of-Tolerance reading (OOT) has been highlighted. <<<

Function / Attribute	Nominal Value	As Found	OOT	As Left	OOT	Tolerance
Torque Clockwise	30.00 lb-ft	29.00		29.00		28.50 to 31.50 lb-ft [EMU 0.065 lb-ft]
Torque Clockwise	90.00 lb-ft	88.50		88.50		87.30 to 92.70 lb-ft [EMU 0.16 lb-ft]
Torque Clockwise	150.00 lb-ft	146.70		146.70		145.50 to 154.50 lb-ft [EMU 0.24 lb-ft]
Torque Counterclockwise	30.00 lb-ft	29.00		29.00		28.50 to 31.50 lb-ft [EMU 0.065 lb-ft]
Torque Counterclockwise	90.00 lb-ft	87.40		87.40		87.30 to 92.70 lb-ft [EMU 0.16 lb-ft]
Torque Counterclockwise	150.00 lb-ft	145.80		145.80		145.50 to 154.50 lb-ft [EMU 0.24 lb-ft]