CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Atlas Copco Tools & Assembly
3301 Cross Creek Parkway
Auburn Hills, MI 48326
(and satellite locations as shown on the scope)

Fulfills the requirements of

ISO/IEC 17025:2017

and national standards

ANSI/NCSL Z540-1-1994 (R2002) and

ANSI/NCSL Z540.3-2006 (R2013)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

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Jason Stine, Vice President

Expiry Date: 30 October 2026
Certificate Number: L2003-1

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AND

ANSI/NCSL Z540-1-1994 (R2002)
ANSI/NCSL Z540.3-2006 (R2013)

Atlas Copco Tools and Assembly

3301 Cross Creek Parkway
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CALIBRATION

Valid to: **October 30, 2026**   Certificate Number: **L2003-1**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Analysis Meter (Electrical Simulation)	(0 to 200) mV	0.12 % of reading + 7.9 µN·m	Load Simulator

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Stroke Measure	Up to 200 mm	0.19 % of reading + 13 µm	Gage Blocks

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Angle [1]	(0.01 to 360)°	0.017°	Rotary Devices
Force – Measure [1]	(1 to 10) kN (2 to 20) kN	0.12 % of reading + 34 N 0.18 % of reading + 31 N	Comparison to Master Load Cell

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Quality / Production / Digital Torque Wrenches [1]	(1.5 to 15) N·m (3 to 30) N·m (8 to 80) N·m (15 to 150) N·m (25 to 250) N·m (40 to 400) N·m (60 to 600) N·m (80 to 800) N·m (100 to 1 000) N·m	0.038 % of reading + 0.028 N·m 0.08 % of reading + 0.016 N·m 0.1 % of reading + 0.032 N·m 0.068 % of reading + 0.14 N·m 0.084 % of reading + 0.12 N·m 0.082 % of reading + 0.2 N·m 0.11 % of reading + 0.11 N·m 0.11 % of reading + 0.09 N·m 0.11 % of reading + 0.15 N·m	Comparison to Torque Transducers
Click / Dial / Micrometer Torque Wrenches [1]	(0.05 to 0.5) N·m (0.5 to 50) N·m (50 to 500) N·m	0.28 % of reading + 0.002 9 N·m 0.63 % of reading + 0.03 N·m 0.68 % of reading + 0.011 N·m	Torque Test Stand
Torque Power Tools [1]	(5 to 50) cN·m (10 to 100) cN·m (20 to 200) cN·m (50 to 500) cN·m (0.2 to 2) N·m (0.5 to 5) N·m (2 to 20) N·m (2.5 to 25) N·m (7.5 to 75) N·m (18 to 180) N·m (50 to 500) N·m (75 to 750) N·m (140 to 1 400) N·m (300 to 3 000) N·m (500 to 5 000) N·m (1 000 to 10 000) N·m	0.4 % of reading + 0.002 2 cN·m 0.55 % of reading + 0.006 cN·m 0.26 % of reading + 3.3 cN·m 0.063 % of reading + 5.8 cN·m 0.04 % of reading + 0.03 N·m 0.059 % of reading + 0.05 N·m 0.058 % of reading + 0.17 N·m 0.06 % of reading + 0.2 N·m 0.072 % of reading + 0.5 N·m 0.051 % of reading + 1.7 N·m 0.085 % of reading + 2.9 N·m 0.09 % of reading + 3.7 N·m 0.21 % of reading + 15 N·m 0.19 % of reading + 36 N·m 0.18 % of reading + 32 N·m 0.15 % of reading + 84 N·m	Torque Test Stand
Torque Power Tools	(0.2 to 10) N·m (10.1 to 250) N·m (250 to 2 000) N·m	0.39 % of reading + 0.03 N·m 1.7 % of reading + 0.14 N·m 0.55 % of reading + 1.1 N·m	BLM Joint Simulator Bench, Multiple Torque Transducers
Torque Transducers	(0.5 to 5) N·m (2 to 20) N·m (2.5 to 25) N·m (7.5 to 75) N·m (18 to 180) N·m (50 to 500) N·m	0.007 % of reading + 0.004 N·m 0.034 % of reading + 0.01 N·m 0.032 % of reading + 0.005 N·m 0.06 % of reading + 0.008 N·m 0.04 % of reading + 0.015 N·m 0.45 % of reading + 0.013 N·m	Torque Arm (70), Weights

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Transducers	(1.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m	0.037 % of reading + 0.003 N·m 0.11 % of reading + 0.003 N·m 0.022 % of reading + 0.003 N·m 0.014 % of reading + 0.002 N·m	Torque Arm (70), Weights
Torque Transducers	(0.2 to 2) N·m (0.5 to 5) N·m (2 to 25) N·m	0.015 % of reading + 0.003 N·m 0.14 % of reading + 0.003 N·m 0.1 % of reading + 0.007 N·m	Torque Arm (35), Weights
Torque Transducers	(5 to 50) cN·m (10 to 100) cN·m (20 to 200) cN·m (50 to 500) cN·m (0.1 to 0.5) N·m (0.1 to 1) N·m	0.32 % of reading + 0.068 cN·m 0.3 % of reading + 0.57 cN·m 0.15 % of reading + 0.57 cN·m 0.05 % of reading + 0.58 cN·m 0.024 % of reading + 0.002 9 N·m 0.029 % of reading + 0.002 9 N·m	Torque Arm (8.66), Weights
Torque Transducers	(1.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m (100 to 1 000) N·m (200 to 2 000) N·m (300 to 3 000) N·m	0.057 % of reading + 0.002 N·m 0.054 % of reading + 0.003 N·m 0.027 % of reading + 0.055 N·m 0.055 % of reading + 0.026 N·m 0.081 % of reading + 0.52 N·m 0.052 % of reading + 0.024 N·m 0.06 % of reading + 0.027 N·m	Comparison to Master Torque Transducers
Torque Bench [1]	(0.2 to 2) N·m (0.5 to 5) N·m (1.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m (100 to 1 000) N·m (300 to 3 000) N·m	0.11 % of reading + 0.001 1 N·m 0.13 % of reading + 0.001 4 N·m 0.11 % of reading + 0.001 9 N·m 0.11 % of reading + 0.007 7 N·m 0.12 % of reading + 0.027 N·m 0.011 % of reading + 0.062 N·m 0.1 % of reading + 0.16 N·m 0.12 % of reading + 0.1 N·m	Comparison to Master Torque Transducers

Services performed at Satellite Laboratory

338 Business Circle
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Kevin Dobson 502-650-5876
Josh Lilleberg   248-219-6185

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Angle [1]	(0.01 to 360)°	0.017°	Rotary Devices
Torque Power Tools [1]	(0.2 to 2) N·m (0.5 to 5) N·m (2 to 20) N·m (2.5 to 25) N·m (7.5 to 75) N·m (18 to 180) N·m	0.031 % of reading + 0.031 N·m 0.051 % of reading + 0.045 N·m 0.055 % of reading + 0.17 N·m 0.056 % of reading + 0.2 N·m 0.072 % of reading + 0.48 N·m 0.051 % of reading + 1.7 N·m	Torque Test Stand
Torque Power Tools [1]	(50 to 500) N·m (75 to 750) N·m (140 to 1 400) N·m (300 to 3 000) N·m (500 to 5 000) N·m (1 000 to 10 000) N·m	0.085 % of reading + 2.9 N·m 0.12 % of reading + 5.4 N·m 0.044 % of reading + 15 N·m 0.053 % of reading + 36 N·m 0.18 % of reading + 32 N·m 0.15 % of reading + 84 N·m	Torque Test Stand
Torque Bench [1]	(0.2 to 2) N·m (0.5 to 5) N·m (1.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m (100 to 1 000) N·m (300 to 3 000) N·m	0.11 % of reading + 0.001 1 N·m 0.13 % of reading + 0.001 4 N·m 0.11 % of reading + 0.001 9 N·m 0.11 % of reading + 0.007 7 N·m 0.12 % of reading + 0.027 N·m 0.011 % of reading + 0.062 N·m 0.1 % of reading + 0.16 N·m 0.12 % of reading + 0.1 N·m	Comparison to Master Torque Transducers

Services performed at Satellite Laboratory

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Angle [1]	(0.01 to 360)°	0.017°	Rotary Devices
Click / Dial / Micrometer Torque Wrenches [1]	(0.05 to 0.5) N·m (0.5 to 50) N·m (50 to 500) N·m	0.28 % of reading + 0.002 9 N·m 0.63 % of reading + 0.03 N·m 0.68 % of reading + 0.011 N·m	Torque Test Stand
Torque Power Tools [1]	(0.2 to 2) N·m (0.5 to 5) N·m (2 to 20) N·m (2.5 to 25) N·m (7.5 to 75) N·m (18 to 180) N·m (50 to 500) N·m (75 to 750) N·m (140 to 1 400) N·m (300 to 3 000) N·m (500 to 5 000) N·m (1 000 to 10 000) N·m	0.031 % of reading + 0.031 N·m 0.051 % of reading + 0.045 N·m 0.055 % of reading + 0.17 N·m 0.056 % of reading + 0.2 N·m 0.071 % of reading + 0.48 N·m 0.049 % of reading + 1.7 N·m 0.085 % of reading + 2.9 N·m 0.12 % of reading + 5.4 N·m 0.044 % of reading + 15 N·m 0.053 % of reading + 36 N·m 0.18 % of reading + 32 N·m 0.15 % of reading + 84 N·m	Torque Test Stand
Torque Power Tools	(0.2 to 10) N·m (10.1 to 250) N·m (250 to 2 000) N·m	0.39 % of reading + 0.03 N·m 1.7 % of reading + 0.14 N·m 0.55 % of reading + 1.1 N·m	BLM Joint Simulator Bench, Multiple Torque Transducers
Torque Bench [1]	(0.2 to 2) N·m (0.5 to 5) N·m (1.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m (100 to 1 000) N·m (300 to 3 000) N·m	0.11 % of reading + 0.001 1 N·m 0.13 % of reading + 0.001 4 N·m 0.11 % of reading + 0.001 9 N·m 0.11 % of reading + 0.007 7 N·m 0.12 % of reading + 0.027 N·m 0.011 % of reading + 0.062 N·m 0.1 % of reading + 0.16 N·m 0.12 % of reading + 0.1 N·m	Comparison to Master Torque Transducers

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Angle [1]	(0.01 to 360)°	0.017°	Rotary Devices
Torque Power Tools [1]	(0.2 to 2) N·m (0.5 to 5) N·m (2 to 20) N·m (2.5 to 25) N·m (7.5 to 75) N·m (18 to 180) N·m (50 to 500) N·m (75 to 750) N·m (140 to 1 400) N·m (300 to 3 000) N·m (500 to 5 000) N·m	0.031 % of reading + 0.031 N·m 0.051 % of reading + 0.045 N·m 0.055 % of reading + 0.17 N·m 0.056 % of reading + 0.2 N·m 0.071 % of reading + 0.48 N·m 0.049 % of reading + 1.7 N·m 0.085 % of reading + 2.9 N·m 0.12 % of reading + 5.4 N·m 0.044 % of reading + 15 N·m 0.053 % of reading + 36 N·m 0.18 % of reading + 32 N·m	Torque Test Stand
Torque Bench [1]	(0.2 to 2) N·m (0.5 to 5) N·m (1.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m (100 to 1 000) N·m (300 to 3 000) N·m	0.11 % of reading + 0.001 1 N·m 0.13 % of reading + 0.001 4 N·m 0.11 % of reading + 0.001 9 N·m 0.11 % of reading + 0.007 7 N·m 0.12 % of reading + 0.027 N·m 0.011 % of reading + 0.062 N·m 0.1 % of reading + 0.16 N·m 0.12 % of reading + 0.1 N·m	Comparison to Master Torque Transducers

Services performed at Satellite Laboratory

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Analysis Meter (Electrical Simulation)	(0 to 200) mV	0.12 % of reading + 7.9 µN·m	Load Simulator

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Stroke Measure	Up to 200 mm	0.19 % of reading + 13 µm	Gage Blocks

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Angle [1]	(0.01 to 360)°	0.017°	Rotary Devices
Force – Measure [1]	(1 to 10) kN (2 to 20) kN	0.12 % of reading + 34 N 0.18 % of reading + 31 N	Comparison to Master Load Cell
Quality / Production / Digital Torque Wrenches [1]	(1.5 to 15) N·m (3 to 30) N·m (8 to 80) N·m (15 to 150) N·m (25 to 250) N·m (40 to 400) N·m (60 to 600) N·m	0.038 % of reading + 0.028 N·m 0.08 % of reading + 0.016 N·m 0.1 % of reading + 0.032 N·m 0.068 % of reading + 0.14 N·m 0.084 % of reading + 0.12 N·m 0.082 % of reading + 0.2 N·m 0.11 % of reading + 0.11 N·m	Comparison to Torque Transducers
Click / Dial / Micrometer Torque Wrenches [1]	(0.05 to 0.5) N·m (0.5 to 50) N·m (50 to 500) N·m	0.28 % of reading + 0.002 9 N·m 0.63 % of reading + 0.03 N·m 0.68 % of reading + 0.011 N·m	Torque Test Stand

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Power Tools [1]	(5 to 50) cN·m (10 to 100) cN·m (20 to 200) cN·m (50 to 500) cN·m (0.2 to 2) N·m (0.5 to 5) N·m (2 to 20) N·m (2.5 to 25) N·m (7.5 to 75) N·m (18 to 180) N·m (50 to 500) N·m (75 to 750) N·m (140 to 1 400) N·m (300 to 3 000) N·m (500 to 5 000) N·m	0.4 % of reading + 0.002 2 cN·m 0.55 % of reading + 0.006 cN·m 0.26 % of reading + 3.3 cN·m 0.063 % of reading + 5.8 cN·m 0.031 % of reading + 0.031 N·m 0.059 % of reading + 0.045 N·m 0.058 % of reading + 0.17 N·m 0.06 % of reading + 0.2 N·m 0.072 % of reading + 0.5 N·m 0.051 % of reading + 1.7 N·m 0.085 % of reading + 2.9 N·m 0.09 % of reading + 3.7 N·m 0.21 % of reading + 15 N·m 0.19 % of reading + 36 N·m 0.18 % of reading + 32 N·m	Torque Test Stand
Torque Power Tools [1]	(0.2 to 10) N·m (10 to 250) N·m (250 to 2 000) N·m	0.39 % of reading + 0.03 N·m 1.7 % of reading + 0.14 N·m 0.55 % of reading + 1.1 N·m	BLM Joint Simulator Bench, Master Torque Transducers
Torque Transducers	(0.5 to 5) N·m (2 to 20) N·m (2.5 to 25) N·m (7.5 to 75) N·m (18 to 180) N·m (50 to 500) N·m	0.019 % of reading + 0.002 N·m 0.091 % of reading + 0.001 6 N·m 0.096 % of reading + 0.001 3 N·m 0.093 % of reading + 0.000 7 N·m 0.094 % of reading + 0.000 1 N·m 0.09 % of reading + 0.029 N·m	Torque Arm, Dead Weights
Torque Transducers	(0.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m	0.11 % of reading + 0.002 3 N·m 0.11 % of reading + 0.007 1 N·m 0.11 % of reading + 0.039 N·m 0.011 % of reading + 0.029 N·m	Comparison to Master Torque Transducers
Torque Bench [1]	(0.2 to 2) N·m (0.5 to 5) N·m (1.5 to 15) N·m (5 to 50) N·m (30 to 300) N·m (50 to 500) N·m (100 to 1 000) N·m (300 to 3 000) N·m	0.11 % of reading + 0.001 1 N·m 0.13 % of reading + 0.001 4 N·m 0.11 % of reading + 0.001 9 N·m 0.11 % of reading + 0.007 7 N·m 0.12 % of reading + 0.027 N·m 0.011 % of reading + 0.062 N·m 0.1 % of reading + 0.16 N·m 0.12 % of reading + 0.1 N·m	Comparison to Master Torque Transducers

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. L2003-1.

Jason Stine, Vice President