



Fraunhofer

TESTED[®] DEVICE

Atlas Copco
ICB-A21-07-06-HMI
Report No. AT 2110-1262

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer	Atlas Copco Industrial Technique Sickla Industriväg 19 10523 Stockholm Sweden
Component tested	
Category:	Working Place and Operator
Subcategory:	Work Equipment
Product name:	Angle Cordless Nutrunner Tensor ICB-A21-07-06-HMI (manufacturing date: 5/5/2020; color: black; article number: 8436 0021 07 serial number: A2530390) in combination with: <ul style="list-style-type: none"> • Battery 18V (manufacturing date: 6/11/2017; product number: 4211 6030 85; serial number: A979 0091 & A979 0098) • Battery Charger FLEX CHARGER 18-36V (manufacturing date: week 28/2018; product number: 4211 6083 84; serial number: A 062 0153)

Test result / Classification

When operated under the specified test conditions, the Angle Cordless Nutrunner Tensor ICB-A21-07-06-HMI in combination with Battery 18V as well as the Battery Charger FLEX CHARGER 18-36V in combination with Battery 18V are suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanlines Class
Nutrunner in combination with battery: <ul style="list-style-type: none"> • Installation position: horizontal • Velocity: $v = 40 - 250$ rpm • Movement: 2 s; Break: 8 s 	7
Battery in combination with charger <ul style="list-style-type: none"> • Installation position: vertical 	1
Overall result	7

Please note: Transport damages, incorrect installation, oil leakage, aging behavior, etc. can influence the test result.

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines:	ISO 14644-1, -14 The norms stated generally refer to the version valid at the time of the tests.
Test devices:	Optical particle counter: LasAir II 110 and LasAir III 110 with measuring ranges $\geq 0.1 \mu\text{m}$, $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$
Test environment parameters:	<ul style="list-style-type: none"> • Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1 • Airflow velocity:.....0.45 m/s • Airflow pattern:..... vertical laminar flow • Temperature:22 °C \pm 0.5 °C • Relative humidity: 45 % \pm 5 %
Test procedure parameters:	<ul style="list-style-type: none"> • Installation position Nutrunner:..... horizontal • Velocity: $v = 40 - 250$ rpm • Interval during measurements:.....movement: 2 s; break: 8 s • Step 1 (Rundown):..... $v = 250$ rpm; $t = 1$ s • Step 2 (Wait): $v = 0$ rpm; $t = 0.55$ s • Step 3 (Tightning):..... $v = 40$ rpm; $t = 0.45$ s • Step 4 (Wait): $v = 0$ rpm; $t = 8$ s

The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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on behalf of 
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