



valid until: January 18, 2028

Fraunhofer

TESTED[®] DEVICE

TOX Pressotechnik
EXe-K 030.555.300.002
Report No. TO 2211-1362

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer
 TOX PRESSOTECHNIK GmbH & Co. KG
 Riedstrasse 4
 88250 Weingarten
 Germany

Component tested

Category: Automation Components

Subcategory: Linear Units

Product name: EXe-K 030.555.300.002 ElectricPowerDrive
 (manufacturing date: 5/2022; material: Aluminum anodized; serial number: 1150775.1)

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:

- 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:

- Maximum velocity: $v_{\text{max}} = 280 \text{ mm/s}$
- Minimum velocity: $v_{\text{min}} = 15 \text{ mm/s}$
- Parameter Set 1:
 - Extension with max. velocity:.....250 mm
 - Extension with min. velocity:..... 17.61 mm
 - Depth of immersion into the elastomer:..... 4.80 mm
 - Pressing force:6 kN
- Parameter Set 2:
 - Extension with max. velocity:.....250 mm
 - Extension with min. velocity:..... 20.68 mm
 - Depth of immersion into the elastomer:..... 7.73 mm
 - Pressing force: 10 kN
- Parameter Set 3:
 - Extension with max. velocity:..... 250 mm
 - Extension with min. velocity:..... 25.61 mm
 - Depth of immersion into the elastomer:..... 12.72 mm
 - Pressing force: 15 kN

Test result / Classification

When operated under the specified test conditions, the EXe-K 030.555.300.002 ElectricPowerDrive is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
$v_{\text{max}} = 280 \text{ mm/s}$; $v_{\text{min}} = 15 \text{ mm/s}$ Depth of immersion into elastomer = 4.80 mm Pressing force = 6 kN	5
$v_{\text{max}} = 280 \text{ mm/s}$; $v_{\text{min}} = 15 \text{ mm/s}$ Depth of immersion into elastomer = 7.73 mm Pressing force = 10 kN	4
$v_{\text{max}} = 280 \text{ mm/s}$; $v_{\text{min}} = 15 \text{ mm/s}$ Depth of immersion into elastomer = 12.72 mm Pressing force = 15 kN	5
Overall result	5

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

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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Stuttgart, January 18, 2023
 Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

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 Place, current date

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on behalf of 
 Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA