IPA

Dry-Cleanroom

valid until: March 25, 2031

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TESTED®
DEVICE

Norgren GmbH
RA/192032/M/75
Report No. NO 2511-1684

Statement of
Qualification

Single product
Particle Emission
in Dry-Cleanroom

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Statement of Qualification · Single product

Customer

Norgren GmbH
Bruckstrasse 93
46519 Alpen
Germany

Tested product

Category: Automation Components

Subcategory: Transfer Systems and Bearing

Product name: ISO compact double acting cylinder RA/192032/M/75
(manufacturing date: 7/2025; operation mode: double acting; article number: RA/192032/M/07/202575)

Random sampling of particle emissions (airborne) at representative sites in dry-cleanroom

Standards/guidelines: ISO 14644-1, -14; VDI-EE 2083 Part 4.3
The norms stated generally refer to the version valid at the time of the tests.

Test equipment: Optical particle counter:
LasAir II 110 and LasAir III 110 with measuring ranges ≥ 0.1 µm, ≥ 0.2 µm, ≥ 0.3 µm, ≥ 0.5 µm, ≥ 1.0 µm and ≥ 5.0 µm

Test environment parameters:

- Dry-Cleanroom Air Cleanliness Class (according to ISO 14644-1): ..... ISO 1
- Airflow velocity: ..... 0.45 m/s
- Airflow pattern: ..... laminar airflow
- Room temperature: ..... 22 °C ± 1 °C
- Dew point: ..... -40 °C ± 5 °C

Test procedure parameters:

- Installation position: ..... horizontal
- Cycle time: ..... 1 s per single stroke (0.5 Hz)
- Test load: ..... 0.4 kg
- Operating pressure: ..... 6 bar

Test result / Classification

The ISO compact double acting cylinder RA/192032/M/75 is suitable for use under the specified test parameters (room temperature: 22 °C ± 1 °C; dew point: -40 °C ± 5 °C) in dry-cleanrooms of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter(s)	Air Cleanlines Class
Installation position: horizontal 1 s per single stroke (0.5 Hz) Test load: 0.4 kg	**5**
Overall result	

Lubricant is clearly visible on the exterior. Therefore, use of the test piece in clean/hygienic areas is considered to be critical.

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.

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on behalf of
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