



# Fraunhofer

## TESTED<sup>®</sup> DEVICE

Bosch Rexroth AG  
Hinge AI 3842544531  
**Report No. BO 2112-1289**

Statement of  
Qualification

Single product  
Particle Emission

# Statement of Qualification · Single product

## Customer

Bosch Rexroth AG  
Löwentorstrasse 74  
91136 Stuttgart  
Germany

## Component tested

Category: Working Place and Operator  
Subcategory: Equipment Parts  
Product name: HINGE AL 45/45 3842544531  
(manufacturing date: 12/2021; article number: 3842544531)

## 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:

- Weight: ..... m = 20 kg
- Cycles:..... 1/min
- Cycle description:
  - Cylinder opens:.....  $t_o = \sim 1$  s
  - Pause:.....  $t_p = 28$  s
  - Cylinders closes: .....  $t_c = 1$  s
  - Pause:.....  $t_p = 28$  s
- Parameter Set 1:
  - Installation position:..... horizontal
- Parameter Set 2:
  - Installation position:.....vertical

## Test result / Classification

When operated under the specified test conditions, the HINGE AL 45/45 3842544531 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
Cycles: 1/min Installation position: horizontal	4
Cycles: 1/min Installation position: vertical	4
<b>Overall result</b>	<b>4</b>

Please note: Transport damages, corrosion, incorrect installation, oil leakage, aging behavior, 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  
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on behalf of   
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