



Fraunhofer

TESTED[®] DEVICE

Franke GmbH
LTD-0320-Z

Report No. FR 2410-1564

Statement of
Qualification

Single product
Particle Emission
in Cleanroom
(atmospheric)

Statement of Qualification · Single product

Customer	Franke GmbH Obere Bahnstrasse 64 73431 Aalen Germany
Tested product	
Category:	Automation Components
Subcategory:	Transfer Systems and Bearing
Product name:	Slewing ring with direct drive LTD-0320-Z (manufacturing date: week 23/2024; weight: 39.5 kg; article number: 615410)

Random sampling of particle emissions (airborne) at representative sites in cleanroom under atmospheric conditions

Standards/guidelines:	ISO 14644-1, -14 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 $\geq 0.1\text{ }\mu\text{m}$, $\geq 0.2\text{ }\mu\text{m}$, $\geq 0.3\text{ }\mu\text{m}$, $\geq 0.5\text{ }\mu\text{m}$, $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$
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 - Room temperature:22 °C ± 0.5 °C - Relative humidity: 45 % ± 5 %
Test procedure parameters:	- Installation position:..... 45° angle - Travel distance:..... -180° bis +180° (endurance run) - Cycles per minute:..... n = 2 - Payload: m = 50 kg

Test result / Classification	The slewing ring with direct drive LTD-0320-Z is suitable for use under the specified test parameters (room temperature: 22 °C ± 0.5 °C; relative humidity: 45 % ± 5 %) in cleanrooms of the following Air Cleanliness Class according to ISO 14644-1:						
	<table><tr><th>Test parameter(s)</th><th>Air Cleanlines Class</th></tr><tr><td>Installation position: 45° angle Travel distance: -180° to +180° Cycles per minute: n = 2 Payload: 50 kg</td><td>4</td></tr><tr><td>Overall result</td><td></td></tr></table>	Test parameter(s)	Air Cleanlines Class	Installation position: 45° angle Travel distance: -180° to +180° Cycles per minute: n = 2 Payload: 50 kg	4	Overall result	
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Overall result							
	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	FR 2410-1564 Report No. first document	Stuttgart, June 3, 2025 Place, date of first document issued
Business unit Testing and Certification	-- Report No. current document	-- Place, current date
Nobelstrasse 12 70569 Stuttgart Germany	on behalf of Dr.-Ing. Frank Bürger, head of business unit Testing and Certification	



This document only applies to the named product in its original state and is valid for a period of 5 years from the date the first document was issued. The document can be verified under www.tested-device.com.