



valid until: June 26, 2031

Fraunhofer

**TESTED[®]
DEVICE**

HYDAC International
HEC Modular
Report No. HY 2606-1780

DUPLICATE

Statement of
Qualification

Single product
Particle Emission
in Cleanroom
(atmospheric)

Customer	HYDAC International GmbH Dieselstrasse 30 71546 Aspach Germany
Tested product	
Category:	Automation Components
Subcategory:	Transfer Systems and Bearing
Product name:	HYDAC Modular Electric Cylinder (manufacturing date: 1/22/2026; weight: ~ 13.5 kg; article number: 4800878)

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: $22\text{ }^{\circ}\text{C} \pm 0.5\text{ }^{\circ}\text{C}$ - Relative humidity: $45\text{ }\% \pm 5\text{ }\%$
Test procedure parameters:	- Installation type:..... horizontal - Cycle time: t = 21 s (10 s driving, 0.5 s holding at the end positions) - Test load: none

Test result / Classification	The HYDAC Modular Electric Cylinder is suitable for use under the specified test parameters (room temperature: $22\text{ }^{\circ}\text{C} \pm 0.5\text{ }^{\circ}\text{C}$; relative humidity: $45\text{ }\% \pm 5\text{ }\%$) in cleanrooms of the following Air Cleanliness Class according to ISO 14644-1:
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Test parameter(s)	Air Cleanlines Class
Cycle time: t = 21 s	5
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.