IPA

Cleanroom (atmospheric)

valid until: February 6, 2031

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TESTED®
DEVICE

Horton Automatics
7100 Swing Operator (Single)
Report No. HO 2601-1711

Statement of
Qualification

Single product
Particle Emission
in Cleanroom
(atmospheric)

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Statement of Qualification · Single product

Customer

Horton Automatics
2501 S. State Hwy 121 Bus Ste 200
7507 Lewisville, Texas
United States of America

Tested product

Category: Automation Components

Subcategory: Positioning Systems

Product name: 7100 Easy Access Low Energy Swing Operator (Single Operator)
(manufacturing date: 11/12/2025; material: clear anodized aluminum;
article number: Sample 2; sales order: 3421589)

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 ≥ 0.1 µm, ≥ 0.2 µm, ≥ 0.3 µm, ≥ 0.5 µm, ≥ 1.0 µm and ≥ 5.0 µm

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:

- Low Energy Default:
  - Open Speed: ..... v_{os} = 40 %
  - Open Check Speed: ..... v_{ocs} = 30 %
  - Open Seek Speed: ..... v_{ss} = 20 %
  - Open Check Point: ..... 85 %
  - Close Speed: ..... v_{cs} = 30 %
  - Close Check Speed: ..... v_{ccs} = 15 %
  - Close Check Point: ..... 20 %
  - Partial Open Point: ..... 60 %
  - Time Delay, Standard: ..... t_{ts} = 5 s
  - Time Delay, Obstruction: ..... t_{to} = 0 s
  - Time Delay, Partial Open: ..... t_{tpo} = 5 s
  - Unmonitored Unlock Delay ..... t = 1000 ms
  - Lock Type: ..... none
- Test load: ..... no tool mounted

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Test result / Classification

The 7100 Easy Access Low Energy Swing Operator (Single Operator) 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:

Test parameter(s)	Air Cleanlines Class
Low Energy, without test load	4
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

Business unit
Testing and Certification

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-- — Report No. current document
-- — Place, current date

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**.

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