



Fraunhofer

**TESTED[®]
DEVICE**

Linear actuator HPLA 80

Parker Hannifin

Report No. PA 0412-314

DUPLIKAT

Statement of
Qualification

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Manufacturer of object to be tested: Parker Hannifin GmbH
Robert-Bosch-Straße 22
D- 77656 Offenburg

Component tested: Linear actuator

Model number: HPLA 80
(LBB080SP02000NLE00000NVNX)

Test parameters: Horizontal operation with a load of approx. 10 kg
• Distance of travel: 1500 mm
• Set of parameters 1: $v_1 = 100 \text{ mm/s}$; $a_1 = 50 \text{ mm/s}^2$; $\text{jerk}_1: 100 \text{ mm/s}^3$
• Set of parameters 2: $v_2 = 500 \text{ mm/s}$; $a_2 = 1000 \text{ mm/s}^2$; $\text{jerk}_2: 100 \text{ mm/s}^3$
• Set of parameters 3: $v_3 = 1500 \text{ mm/s}$; $a_3 = 3000 \text{ mm/s}^2$; $\text{jerk}_3: 500 \text{ mm/s}^3$

Performed tests: Random check measurements of particle emission (airborne) at representative points.

Test results/classification: When the test piece is being operated at the conditions of the following table, it is suitable for use in cleanrooms fulfilling the specifications of the given Air Cleanliness Classes according to ISO 14644-1.

Velocity (mm/s)	Air Cleanliness Class
100	ISO Class 5
500	ISO Class 5
1500	ISO Class 7

Standards used for the qualification: VDI 2083 Part 1 and 8: ISO 14644-1

Test parameters of the cleanroom environment: Cleanroom of Air Cleanliness Class ISO Class 1 (according to ISO 14644-1)
Air flow velocity: 0.45 m/s
Air flow guidance: vertical unidirectional air flow from ceiling to floor (raised floor)
Temperature: $22^\circ\text{C} \pm 0.5^\circ\text{C}$
Relative humidity : $45\% \pm 5\%$

The measuring equipment used for the qualification is regularly calibrated and is based on national and international standards. In the case where no national standards exist, the measuring procedure used corresponds with technical regulations and norms valid at the time of the measurement. The documents drawn up for this procedure are available for viewing.