Fraunhofer

TESTED® DEVICE

Spindelantrieb OSP-E.S
Report No. HO 0403-302

IPA Qualification Certificate

This is to certify that the product mentioned below manufactured by the company

Hoerbiger-Origa GmbH

Industriestraße 8
D- 70794 Filderstadt

has been awarded an IPA Qualification Seal bearing the report number HO 0403-302.

When operated at the velocity of v = 0.15 m/s, the linear actuator OSP-E.S with ball screw (standard or cleanroom model) is suitable for use in cleanrooms (in accordance with ISO 14644-1) fulfilling the specifications of below mentioned air cleanliness classes.

Air cleanliness classification of the actuator OSP-E.S with the carriage as:	
standard model; without vacuum suction	ISO Class 7
standard model; with vacuum suction	ISO Class 4
cleanroom model; without vacuum suction	ISO Class 7
cleanroom model; with vacuum suction	ISO Class 3

Detailed information and parameters of the test environment can be found in the IPA Test Report compiled by the Fraunhofer Society.

Certified on 30th March 2004.
The duration of the validity of this certificate is unlimited.
Further information can be obtained from the web site http://www.ipa-qualification.com.

Stuttgart, Germany, 30th March 2004

i.A. Udo Sommer

Fraunhofer Institut Produktionstechnik und Automatisierung

Fraunhofer

TESTED® DEVICE

Linearantrieb OSP-P25
Report No. HO 0305-291

IPA Qualification Certificate

This is to certify that the product mentioned below manufactured by the company

Hoerbiger-Origa GmbH

Industriestraße 8
D- 70794 Filderstadt

has been awarded an IPA Qualification Seal bearing the report number HO 0305-291.

In operation at the velocity of v_1 = 0.0 m/s with vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the cleanliness class 3 (according to ISO 14644-1). In operation at the velocity of v_2 = 0.14 m/s with vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the cleanliness class 4 (according to ISO 14644-1). In operation at the velocity of v_3 = 0.5 m/s with vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the cleanliness class 5 (according to ISO 14644-1). In operation at the velocity of v_4 = 0.5 m/s without vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the cleanliness class 8 (according to ISO 14644-1).

Detailed information and parameters of the test environment can be found in the IPA Test Report compiled by the Fraunhofer Society.

Certified on May, 13th 2003.
The duration of the validity of this certificate is unlimited. For further information visit our website at http://www.ipa-qualification.com

Stuttgart, Germany, May, 13th 2003

Signature

Fraunhofer Institut
Produktionstechnik und
Automatisierung

Fraunhofer

TESTED®
DEVICE

Linearantrieb OSP-P25
Report No. HO 0305-291

Qualifizierungs-
bescheinigung

Statement of
qualification

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Qualifizierungsbescheinigung
Statement of qualification

Hersteller des Prüflings:
Manufacturer of object to be tested:

Hoerbiger-Origa GmbH
Industriestraße 8
D- 70794 Filderstadt

Untersuchte Komponenten:
Component tested:

Linearantrieb
Linear drive

Typenbezeichnung:
Type:

OSP-P25
OSP-P25

Testparameter Prüfling:
Test parameters of object to be assessed:

Betrieb des Linearantriebs bei den Verfahrgeschwindigkeiten v_1 = 0,0 m/s, v_2 = 0,14 m/s und v_3 = 0,5 m/s mit einer Vakuumabsaugung von 4 m³/h und bei v_4 = 0,5 m/s ohne Vakuumabsaugung.
Operation of the linear drive at the velocities of v_1 = 0.0 m/s, v_2 = 0.14 m/s and v_3 = 0.5 m/s with a vacuum suction of 4 m³/h and at the velocity of v_4 = 0.5 m/s without a vacuum suction.

Art der Untersuchung:
Performed tests:

Stichprobenartige Partikelemissionsuntersuchungen (luftgetragen) an repräsentativen Stellen.
Random check measurements of particle emission (airborne) at representative points.

Untersuchungsergebnis/Klassifizierung:
Test results/classification:

Der Prüfling ist für den Einsatz in Reinräumen der Luftreinheitsklasse 3 (nach DIN EN ISO 14644-1) bei der Verfahrgeschwindigkeit von v_1 = 0,0 m/s mit Vakuumabsaugung geeignet.
At the velocity of v_1=0.0 m/s with vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the Cleanliness Class 3 (according to ISO 14644-1).

Der Prüfling ist für den Einsatz in Reinräumen der Luftreinheitsklasse 4 (nach DIN EN ISO 14644-1) bei der Verfahrgeschwindigkeit von v_1 = 0,14 m/s mit Vakuumabsaugung geeignet.
At the velocity of v_2=0.14 m/s with vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the Cleanliness Class 4 (according to ISO 14644-1).

Der Prüfling ist für den Einsatz in Reinräumen der Luftreinheitsklasse 5 (nach DIN EN ISO 14644-1) bei der Verfahrgeschwindigkeit von v_1 = 0,5 m/s mit Vakuumabsaugung geeignet.
At the velocity of v_3=0.5 m/s with vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the Cleanliness Class 5 (according to ISO 14644-1).

Der Prüfling ist für den Einsatz in Reinräumen der Luftreinheitsklasse 8 (nach DIN EN ISO 14644-1) bei der Verfahrgeschwindigkeit von v_1 = 0,5 m/s ohne Vakuumabsaugung geeignet.
At the velocity of v_4=0.5 m/s without vacuum suction the linear drive OSP-P25 is suitable for use in cleanrooms fulfilling the specifications of the Cleanliness Class 8 (according to ISO 14644-1).

Zugrundegelegte Standards/Richtlinien:
Standards used for the qualification:

VDI 2083 Blatt 1 und 8, DIN EN ISO 14644-1
VDI 2083 Part 1 and 8, ISO 14644-1

Testparameter der Reinraumumgebung:
Test parameters of the cleanroom environment:

Reinraum der Luftreinheitsklasse ISO Klasse 1 (gemäß DIN EN ISO 14644-1)
Cleanroom of Cleanliness Class ISO Class 1 (according to ISO 14644-1)

Luftströmungsgeschwindigkeit: 0,45 m/s
Air flow velocity: 0.45 m/s

Strömungsführung: vertikale laminare Strömung von oben nach unten (Doppelboden)
Air flow guidance: vertical unidirectional air flow from ceiling to floor (raised floor)

Temperatur: 22°C ± 0,5°C
Temperature: 22°C ± 0.5°C

Relative Feuchte: 45% ± 5%
Relative humidity : 45% ± 5%

Die für die Qualifizierung verwendeten Messeinrichtungen werden regelmäßig kalibriert und sind auf nationale und internationale Normale rückführbar. Sofern keine nationalen Normale existieren, entspricht das Messverfahren den derzeit gültigen technischen Regeln und Normen. Die für diesen Vorgang angefertigte Dokumentation kann bei Bedarf eingesehen werden.
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.

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Fraunhofer-Institut
für Produktionstechnik
und Automatisierung IPA

Abteilung Reinst- und Mikroproduktion
Department Cleanroom Manufacturing

Nobelstrasse 12
D-70569 Stuttgart

Stuttgart, 13. Mai 2003
Ort, Datum
Place, date

i.A.
Unterschrift Bearbeiter
Signature of person responsible