



Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the LRQA Type Approval.

This certificate is issued to:

MANUFACTURER*	Parker Hannifin Manufacturing Limited
MANUFACTURER ADDRESS*	Dukesway Team Valley Trading Estate Gateshead Tyne & Wear, NE11 0PZ United Kingdom (UK)
TYPE*	BAS HL 050, BAS HL 055, BAS HL 060, BAS HL 065, BAS HL 070, BAS HL 075, BASHL080, BAS HL 085
DESCRIPTION*	BAS HL BREATHING AIR PURIFIER
TRADE NAME*	BAS HL BREATHING AIR PURIFIER
APPLICATION	Treatment of compressed air to produce Breathable Quality Air which meets or exceeds the requirements of international breathing air standards
SPECIFIED STANDARD	ISO 7183: 2007 Compressed-air dryers – Specifications and testing ISO8573-1:2010 Contaminant and purity classes ISO8573-2:2018 Contaminant measurement - Oil aerosol content ISO8573-3:1999 Test Methods for measurement of humidity ISO8573-4:2019 Contaminant measurement - Particle content ISO8573-5:2001 Test Methods for oil vapour & organic solvents ISO 8573-6:2003 Test methods for gaseous contaminant content ISO12500-1:2007 Filters for compressed air – Test methods Oil Aerosols BS EN 12021:2014 Respiratory equipment. Compressed gases for breathing apparatus European Pharmacopoeia (Ph. Eur.) 10th Edition OSHA Standard 29 CFR 1910.134 CSA Z180.1



PRODUCT RATINGS	<p>When sized in accordance with the manufacturer’s instructions, BAS HL Breathing Air Purifiers will deliver compressed air purity that meets or exceeds the following ISO 8573-1:2010 Air Purity Classifications:</p> <p>ISO 8573-1:2010 Class 1:2:0 ($\leq 0.003 \text{ mg/m}^3$ Total Oil) ISO 8573-1:2010 Class 1:2:1</p> <p>When sized in accordance with the manufacturer’s instructions, BAS HL Breathing Air Purifiers will deliver air purity that meets or exceeds the requirements of:</p> <p>EN12021:2014 European Pharmacopeia (Ph. Eur.) 10th Edition (See ‘notes’ section below regarding the use of an ‘Electrolytic’ hygrometer’) OSHA Standard 29 CFR 1910.134 Grade D CSA Z180.1</p>
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TEST CONDITIONS	<p>The BAS HL Breathing Air Purifier is supplied as a package, comprising Grade AO and AA coalescing filters upstream of a heatless adsorption dryer with integrated Grade Oil Vapour Reduction (OVR) and catalyst stage, followed by Grade AO and AA dry particulate filters downstream. The combined ISO 8573-1:2010 classifications are stated in the classifications section above.</p> <p>The Grade AO and AA coalescing pre-filters upstream of the dryer have been tested at ISO reference conditions, in accordance with the requirements of ISO 12500-1 (using ISO 8573-2). The Oil Vapour Reduction stage has been tested in accordance with the requirements of ISO 8573-5. When challenged with up to 40 mg/m^3 of oil aerosol, the residual oil content measured downstream achieved an outlet air purity equal to Class 1 ($<0.01 \text{ mg/m}^3$) and when challenged with up to 8 mg/m^3 of oil vapour, the residual oil content measured downstream achieved an outlet air purity equal to Class 0 ($<0.003 \text{ mg/m}^3$) for total oil, as defined by ISO 8573-1:2010.</p> <p>When tested in accordance with the requirements of ISO 7183 and challenged with the inlet conditions of 7 bar g, 35°C, 100% humidity, 25°C ambient temperature and 100% rated flow (as required by Table 2, Option A1), the test dryers achieved the following outlet pressure dewpoints (PDP):</p> <p>When flowed to achieve a pressure dewpoint of $\leq -40^\circ\text{C}$, the test dryers achieved a consistent outlet pressure dewpoint $\leq -40^\circ\text{C}$, equating to ISO8573-1:2010 Class 2 for water.</p> <p>When flowed to achieve a pressure dewpoint of $\leq -70^\circ\text{C}$, the test dryers achieved a consistent outlet pressure dewpoint $\leq -70^\circ\text{C}$, equating to ISO8573-1:2010 Class 1 for water.</p> <p>Power consumption (peak & average) & purge air volume were also tested and recorded in accordance with ISO7183.</p> <p>The AO and AA dry particulate filters have been tested in accordance with the requirements of ISO 8573-4. The declared air purity class measured upstream and downstream of the BAS HL Breathing air Purifier in accordance with ISO 8573-4 is provided below:</p>
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	Upstream air purity class	Downstream air purity class	Measurement uncertainty on concentration
	Class 3	Class 1	±2.5%
NOTES	<p>European Pharmacopeia (Ph. Eur.) 10th Edition specifies the use of an Electrolytic (Phosphorous Pentoxide) hygrometer for the measurement of dewpoint. During testing for water vapour, a commonly available dewpoint hygrometer consisting of a ceramic metal-oxide moisture sensor was used. As confirmed by the client, this does not align directly with European Pharmacopoeia requirement to use an Electrolytic (Phosphorous Pentoxide) hygrometer, however the sensor used is calibrated by the sensor manufacturer and is traceable to NIST standards.</p> <p>Ceramic metal-oxide moisture sensors are commonly used and fall under the remit of two international standards, ISO 7183:2007(E) Compressed-air dryers – Specification and Testing and ISO 8573-3:1999 Compressed Air - Part 3: Test methods for measurement of humidity.</p> <p>Whilst the two hygrometer sensors use different technologies to measure dewpoint, the accuracies of the two sensors are similar. It is also noted that the Electrolytic Hygrometers are not as common as other sensor types and it is recognised that pharmaceutical / medical standards are changing to reflect the use of other sensors.</p> <p>In this instance, the use of the BAS HL breathing air purifier in accordance with the European Pharmacopoeia is concluded to be “in agreement with the air purity requirements” to all concerned including the purchasers.</p>		

“This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify LRQA Verification Limited of any modification or changes to the equipment in order to obtain a valid certificate.”

Details of the actual polishers tested, the equipment, methodology, reports and results which provide the basis for this certificate, are contained within the technical documentation file COV0523080/3/TDF.

The Design Appraisal Document No. COV1613518 O-32811/DH, PRJ11100310235 / O-38987 & PRJ11100310235 / O-37934 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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