STATEMENT OF CONFORMITY
KONFORMITÄTSERKLÄRUNG
CONFORMITEITSVERKLARING

(1) Assembly package **Oxygen Buffer Vessel 280 L**

(2) Serial number **NLY 502023**

(3) We, Atlas Copco Air & Gas Purification, certify that the package detailed above fully conforms with our specifications.

(4) Name, Signature;
S. den Boer

Date: 03.05.2018
Document: 05.01.02

Explanations / Toelichtingen / Erklärungen

Atlas Copco
04

NL:
(1) Samenbouw (2) Serienummer
(3) Wij verklaren dat de prestaties van de hierboven vermelde samenbouw volledig overeenstemmen met onze specificaties.
(4) Naam, Handtekening

DE:
(1) Zusammenbau (2) Seriennummer
(3) Wir bestätigen, daß die Leistung des oben genannten Zusammenbau übereinstimmen mit den Spezifikationen.
(4) Name, Unterschrift

Atlas Copco Air & Gas Purification
Atlas Copco Internationaal B.V.
Technologieweg 19
4906 AC Oosterhout
The Netherlands

Telephone: +31(0)162 447000
Telefax: +31(0)162 456458
www.atlascopco.com

IBAN Code: NL17DEUT0265213215
BICCODE: DEUTNL2A
VAT No: NL 0013 84983 B01
Chamber of Commerce no.: 23032900
Registered Office: Rotterdam

DANA-TANK A/S

OVERENSSTEMMELSESERKLÆRING
KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY

CE

Producent
Hersteller
Manufacturer

Tel. +45 97 34 22 00
Fax +45 97 34 26 26

Leverandør
Lieferer
Supplier

Atlas Copco
Technologieweg 19
4906 AC Oosterhout

Type/Objektart: / /

Fremstillingsnorm
Prüfgrundlage
Testing code

Trykudstyrsdirektivet Modul B+D og AD 2000-M.
Druckgeräterichtlinie Modul B+D und AD 2000-M.
Pressure Equipment Directive Modul B+D and AD 2000-M.

Ordre nr.
Bestillung Nr.
Order no.

4501480168

1. BESIGTIGELSE-SCHLUSSPRÜFUNG-CONSTRUCTION INSPECTION

Dato/Datum/Date **17-06-18**

Drawing no.: **20000191B**

Drifttryk
Betriebsüberdruck
Working pressure
PS max/min + **11,00/ 0** bar

Metode for overensstemmelsesvurdering:
Konformitätsbewertungsverfahren:
Evaluation of conformity method:

Modul B, certifikat nr.
Modul B, Zertifikats Nr.
Modul B, certificate no. **2009.018.044**

Driftstemperatur
Betriebstemperatur
Working temperatur
Tmax/Tmin **+50 / -10** °C

Modul D, certifikat nr.
Modul D, Zertifikats Nr.
Modul D, certificate no. **K0382201**

Indhold
Inhalt
Capacity
V **280** Ltr.

Fabrikationsår
Baujahr
Year of construction **2018**

Anvendte materialer
Verwendete Werkstoffe
Material used **P265GH/ P265GH**

Fabrikationsnr.
Fabrik-Nr.
Maker's no. **276810**

Tilladelige antal tryksætninger
Zulässige Lastspielzahl
Allowable no. of pressure cycles **Mainly static load, AD2000 S 1 1.4**

2.TRYKPRØVNING-DRUCKPRÜFUNG-PRESSURE TEST

Dato/Datum/Date **17-06-18**

Prøvningstryk/Prüfüberdruck/Test pressure

PT **15,80** bar

Trykmedie/Druckmedium/Pressurizing fluid

Vand /Wasser /Water

3. BEMÆRKNINGER-BEMERKUNGEN-REMARKS

er i overensstemmelse med kravene i direktiv 97/23/EF.
Der ist mit den Forderungen der EG-Richtlinie 97/23/EG konform
The is in accordance with the requirements of directive 97/23/EC

"PED" - 1727 Fluid gr. 1+2

Kontrolstempler, direktiv
Prüfzeichen DGR
Testmarks PED

CE 1727

Producentens bomærke
Hersteller Kennzeichen
Manufacturers mark

P I L

DANA-TANK A/S
QA/AC

DANA-TANK A/S
Nylandsvej 9
DK-6940 Lem St.

Sted-Ort-Location

18-06-18
Dato/Datum/Date

Underskrift/Unterschrift/Signature

BRUGSANVISNING

Anvendelse	: O2-beholder.
Beholderdata	: Se certifikat/mærkeplade.
Installering	: Montering af rør m.v. skal ske med egnede materialer og uden, at påføre beholderen kraft- eller momentpåvirkninger.
Placering	: Overhold beholderens driftstemperatur. Hold plads til besigtigelse/vedligeholdelse.
Pumpe	: Påsæt aldrig pumpe, der ikke opfylder pumpeleverandørens instruktion om størrelse/ydelse.
Sikkerhedsventil(er)	: Skal i alle driftstilfælde sikre at PS ikke kan overskrides. Må aldrig indstilles højere end PS. Trykket må ikke overskride PS med mere end 10% i en kort periode. (Se pumpeleverandørens instruktion).
Korrosionsbeskyttelse	: Overfladebehandling vedligeholdes efter behov. Korrosionstillæg 1 mm. Indvendig besigtigelse efter nationale foreskrifter.
Ombygning/reparation	: Der må ikke svejses på trykbærende dele. Hvis nødvendigt, rengør for olie og fedt.
PS	: PS er det maksimale driftstryk, som beholderen må udsættes for.

BEDIENUNGSANLEITUNG

Anwendung	: O2-Behälter.
Behälterdaten	: Siehe Zertifikat/Kesselschild.
Installation	: Montage von Rohren etc. nur mit geeigneten Materialen. Bei der Montage der angeschlossenen Rohrleitungen, ist auf einen spannungsfreien Einbau zuachten.
Plazierung	: Die Betriebstemperatur des Behälters ist einzuhalten. Platz für Besichtigung und Wartung berühsichtigen.
Pumpe	: Niemals einen Pumpe montieren, der nicht den Vorschriften des Pumpe-Lieferanten hinsichtlich der Grösse und Leistung entspricht.
Sicherheitsventil(e)	: Soll in allen Betriebsfällen sichern, daß PS nicht überschritten wird. Darf nielmals höher als PS eingestellt werden. Der Druck darf PS nicht mehr als 10% in einer kurzen Periode übersteigen (Siehe Vorschrift des Pumpe-Lieferanten).
Korrosionsschutz	: Oberflächenbehandlung nach Bedarf pflegen. Korrosionszuschlag 1 mm. Innere Prüfung nach nationale Vorschriften.
Umbau/Reparatur	: Auf drucktragenden Teilen darf nicht geschweisst werden. Wenn notwendig, für Öl und Fett reinigen.
PS	: PS ist der maximale betriebsüberdruck, dem der Behälter ausgesetzt werden darf.

DIRECTIONS FOR USE

Application	: O2-vessel.
Vessel data	: See certificate/data plate.
Installation	: Mounting of tubes ect. must be done with suitable materials and without adding external force and moment stress to the vessel.
Placement	: Observe the working temperature of the vessel. Keep room for inspection/maintenance.
Pump	: Never install pump witch does not fulfil direction of the supplier of the pump regarding dimensions and performance.
Safetyvalve(s)	: Must in all working operations ensure that PS is not exceeded. Never adjust higher than PS. Pressure must never exceed PS with more than 10% for a short period. (See direction for use from supplier of pump).
Corrosion procteion	: Maintenance of surface treatment has to be done according to requirement. Corrosion allowance 1 mm. Inside inspection must take place according to national prescribtions.
Rebuilding/repairs	: Do not weld on pressure bearing parts. If necessary, clean for oil and grease.
PS	: PS is the maximal working pressure for the vessel.

DANA-TANK A/S
DK 6940 Lem St.

63872

하이록코리아주식회사
HY-LOK CORPORATION

97,Noksansandan 27-ro,Gangseo-gu,
Busan, 46751, Korea
Tel : 82.51.970.0940
Fax : 82.51.831.7923
www.hy-lok.com

CERTIFICATE OF MATERIAL

* According to EN 10204:2004 (E) 3.1

Specification : KS D 5101 C3604BD-F
Material Mfr. : POONGSAN
Customer : HY-LOK EUROPE
Project Name :

Certificate No.: HY201808-1162
PO No. : 201840426
POR No. : AIR
Date of issue : 20-06-2018

HCD No.	Description (Part Name)	Q'ty
2ZK	Adjustable Check Valve R 3/8,C.P 150-350psig,PS,OS(VCVA-M6R-C-PS-OS) - BODY	20 EA

Chemical Composition (%)

Cu	Pb	Fe	Fe+Sn	Zn											
57.0-61.0	1.8-3.7	0.50 max	1.0 max	Rem.											
58.90	3.48	0.1885	0.4415	Rem.											

Mechanical Properties

Yield Strength	Tensile Strength	Elongation (%)	Reduction of Area (%)	Hardness (HV)
				80 min
				124

Remarks
* Ammonia Test : Good
* Visual & Dimensional Inspection : Good

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

(Customer / Third Party)

Manager of Quality Assurance Dept.

하이록코리아주식회사
HY-LOK CORPORATION

97,Noksansandan 27-ro,Gangseo-gu,
Busan, 46751, Korea
Tel : 82.51.970.0940
Fax : 82.51.831.7923
www.hy-lok.com

CERTIFICATE OF MATERIAL

* According to EN 10204:2004 (E) 3.1

Specification : KS D 5101 C3604BD-F
Material Mfr. : POONGSAN
Customer : HY-LOK EUROPE
Project Name :

Certificate No.: HY201808-1163
PO No. : 201840426
POR No. : AIR
Date of issue : 20-06-2018

HCD No.	Description (Part Name)	Q'ty
VYN	Adjustable Check Valve R 3/8,C.P 150-350psig,PS,OS(VCVA-M6R-C-PS-OS) - POPPET	20 EA

Chemical Composition (%)

Cu	Pb	Fe	Fe+Sn	Zn											
57.0-61.0	1.8-3.7	0.50 max	1.0 max	Rem.											
58.130	3.2940	0.1370	0.3178	Rem.											

Mechanical Properties

Yield Strength	Tensile Strength	Elongation (%)	Reduction of Area (%)	Hardness (HV)
				80 min
				167

Remarks
* Ammonia Test : Good
* Visual & Dimensional Inspection : Good

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

(Customer / Third Party)

Manager of Quality Assurance Dept.

CAS NO. : 20180614-808

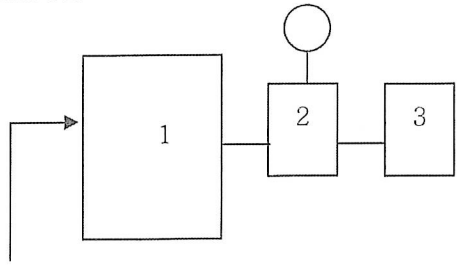
PRESSURE TEST REPORT

TS-065 (Rev.2), TS-035 (Rev.5)

NO. PTR-16H-D36

CUSTOMER	HY-LOK EUROPE	TEST DATE	2018. 05. 15
PROJECT NAME	N /A	RESULTS	ACCEPT

SKETCH



- SHELL TEST
- LEAKAGE TEST
- CRACKING PRESSURE TEST
- BACK PRESSURE TEST

NOTE

1. PRESSURE
2. PRESSURE GAUGE (ID No. : TPG-63, Due Date : 2018. 08. 11)
   (ID No. : TPG-56, Due Date : 2018. 05. 17)
   (ID No. : PG-07, Due Date : 2018. 05. 17)
3. Adjustable Check Valve R 3/8,C.P 150-350psig,PS,OS(VCVA-M6R-C-PS-OS) = 20 EA

SHELL TEST	LEAKAGE TEST	CRACKING PRESSURE TEST	BACK PRESSURE TEST
Fluid : ■ Water	Fluid : ■ Nitrogen	Fluid : ■ Nitrogen	Fluid : ■ Nitrogen
Test Pressure : 4500 psi	Test Pressure : 1000 psi	Test Pressure : 150-350 psi	Test Pressure : 125-350 psi
Time : 15 sec	Time : 15 sec	Time : N / A sec	Time : N / A sec
Result : NO LEAKAGE	Result: : NO LEAKAGE	GOOD	GOOD

REMARKS :

* Setting Pressure (10.5bar) - Nitrogen : GOOD
* MATERIAL : ASTM A479 TYPE316
* Visual & Dimensional Inspection : Good

Inspected by _____

Approved by _____
(QA MANAGER)

N

CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

Hy-Lok Corporation
97, Noksansandan 27-ro
Gangseo-gu, Busan 46751
Republic of Korea

SCOPE:

Construction of Class 1, 2, 3 valves at the above location and with additional Code activities as described in the Quality Program Manual at 92, Noksansandan 27-ro, Gangseo-gu, Busan 46715, Republic of Korea and 33, Noksansaneopjung-ro, 61Beon-gil, Gangseo-gu, Busan 46715, Republic of Korea

AUTHORIZED: **September 11, 2015**

EXPIRES: **August 28, 2018**

CERTIFICATE NUMBER: **N-3382**

Richard R Stevenson

Board Chair, Conformity Assessment

Joseph Lovecchio

Director, Conformity Assessment

The American Society of Mechanical Engineers

NPT

CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

Hy-Lok Corporation
97, Noksansandan 27-ro
Gangseo-gu, Busan 46751
Republic of Korea

SCOPE:

Class 1, 2, & 3 fabrication without design responsibility and as a Material Organization manufacturing and supplying ferrous & nonferrous material at the above location and with additional Code activities as described in the Quality Program Manual at 92, Noksansandan 27-ro, Gangseo-gu, Busan 46715, Republic of Korea and 33, Noksansaneopjung-ro, 61Beon-gil, Gangseo-gu, Busan 46715, Republic of Korea

AUTHORIZED: **September 11, 2015**

EXPIRES: **August 28, 2018**

CERTIFICATE NUMBER: **N-3383**

Board Chair, Conformity Assessment

Director, Conformity Assessment

The American Society of Mechanical Engineers

The American Society of Mechanical Engineers

NS

CERTIFICATE OF AUTHORIZATION

This certifies the named company as having had the adequacy of their quality assurance program verified for the scope of the activity shown below in accordance with the applicable rules of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME). This certificate does not include authorization to use the ASME certification mark. The certification granted by this certificate is subject to the provisions of the agreement set forth in the application.

COMPANY:

Hy-Lok Corporation
97, Noksansandan 27-ro
Gangseo-gu, Busan 46751
Republic of Korea

SCOPE:

Class 1, 2 & 3 fabrication without design responsibility for supports at the above location and with additional Code activities as described in the Quality Program Manual at 92, Noksansandan 27-ro, Gangseo-gu, Busan 46715, Republic of Korea and 33, Noksansaneopjung-ro, 61Beon-gil, Gangseo-gu, Busan 46715, Republic of Korea

AUTHORIZED:	**September 11, 2015**
EXPIRES:	**August 28, 2018**
CERTIFICATE NUMBER:	**N-3384**

Board Chair, Conformity Assessment

Director, Conformity Assessment

목 차

REV.	DATE	DESCRIPTION	PREPARED BY	REVIEWED BY	APPROVED BY	REFERENCED BY Products Control DEPT
1	2011. 12. 13	Revised by 2.0,6.0				
0	2009. 03. 13	ISSUED FOR APPROVAL	Y.S.HA	-	K.C.SONG	T.C.KIM

1.0 적용 범위 [Scope]

본 표준서는 Oil-Free & Oxygen Service용으로 하이록코리아에서 생산하는 모든 Stainless Steel 부품의 세정 · 조립 · 검사 · 포장에 대해 적용한다.
[This specification establishes the cleaning, assembly, inspection and packing standard of all stainless steel components manufactured by Hy-Lok Corporation for Oil-Free & Oxygen Service.]

2.0 일반 요구사항 [General Requirements]

2.1 Oil-Free & Oxygen Service용 부품은 본 표준서에 따라 세정 · 조립 · 검사 · 포장되어야 한다.
[The components for Oil-Free & Oxygen Service shall be cleaning, assembly, inspection and packing according to this specification.]

2.2 Oxygen Service용 부품은 다음의 요구조건을 만족하여야 한다:
[The components for Oxygen Service shall meet the requirements of the following:]

2.2.1 ASTM G93 Level C에 규정된 것처럼 비-휘발성 잔존물이 6㎎/ft^2 (66㎎/㎡) 이하여야 한다.
[Nonvolatile residues shall be removed to a level of 6㎎/ft^2 (66㎎/㎡) or less specified in the ASTM G93 Level C.]

2.2.2 밸브 Seal 부위와 같이 기능상 윤활처리가 필요한 부분은 ASTM G93의 요구조건을 충족시키는 Krytox® 240AC와 같은 Non-hydrocarbon 윤활제를 사용해야 한다.
[The parts of valve seal requiring lubrication for function shall be lubricated with non-hydrocarbon lubricants, such as Krytox® 240AC, meeting the requirements of ASTM G93.]

2.2.3 완제품은 Oxygen Service용 폴리에틸렌 포장지에 개별적으로 포장되어야 한다. 포장지에는 다음과 같이 Labeling해야 한다:
[Finished products shall be packaged individually in a polyethylene bag for oxygen service. The package shall be labeled:]

Std. for Oxygen Service (WS-227)
ASTM G93, Cleanliness Level C
Do not open until ready for installation.

2.3 포장된 제품은 운송 · 저장 및 선적 시 오염이나 피손을 방지하기 위해 Box에 보관해야 한다.
[Bagged products shall be boxed for protection from contamination and damage during transport, storage, and shipping.]

3.0 세정 절차 [Cleaning Procedure]

3.1 Oil-Free & Oxygen Service용 부품은 다-단계 세정공정을 거쳐야 한다.
[Components for Oil-Free & Oxygen Service are cleaned using multi-step processes involving alkaline degreasing, acid cleaning, ultrasonic DI water rinsing, and drying.]

3.2 전-세정 [Pre-cleaning]
얼룩 · 녹 · 산화 스케일 · 유분 · 그리스 · 이물질을 제거하기 위해, 가성소다 및 알칼리 탈지 전-세정을 실시한다.
[Machined components are pre-cleaned using caustic and alkaline degreasing solutions to remove general dirt, rusts, oxide scales, oils, greases and other foreign matters.]

3.1.1 수세 (Water Rinsing)

3.1.2 탈지 (Caustic Degreasing)
✧ Purpose 제품 내·외면에 묻은 절삭유 · 그리스 등의 유분 및 이물질을 제거하기 위해, 알칼리 수용액에서 탈지를 행한다.
[Removal of Cutting Fluids, Greases, Oils and Foreign Matters]
✧ Method 침지 탈지 [Immersion Cleaning in Sodium Hydroxide Solutions]
✧ Solution
✧ Temperature
✧ Time

3.1.3 수세 (Water Rinsing)
✧ Purpose 제품 내·외면의 탈지액 제거 [Removal of Degreasing Agents]
✧ Method 침지 수세 [Immersion Cleaning in Water]
✧ Temperature
✧ Time

3.1.4 2-단 알칼리 탈지 (2-Stage Alkaline Degreasing)
✧ Purpose 제품 내·외면의 절삭유 · 그리스 · 유분 · 이물질 제거
[Removal of Cutting Fluids, Greases, Oils and Foreign Matters]
✧ Method 초음파 침지 알칼리 탈지
[Ultrasonic Immersion Cleaning in Alkaline Solutions]
✧ Solution
✧ Temperature
✧ Time

3.1.5 2-단 수세 (2-Stage Water Rinsing)
✧ Purpose 제품 내·외면의 알칼리 탈지액 제거 [Removal of Alkaline Degreasing Agents]
✧ Method 침지 수세 [Immersion Cleaning in Water]
✧ Temperature
✧ Time

3.3 산-세정 [Acid Cleaning]

녹 · 산화 스케일 · 유분 · 기타 오염물을 제거하기 위해, 산-세정을 실시한다.
[Acid cleaning is performed using acid solutions to remove rusts, oxide scales, oils and other contaminants from components.]

3.2.1 2-단 산 세정 [2-Stage Acid Cleaning]

✧ Purpose 제품 내·외면의 녹 · 산화 스케일 · 유분 · 금속 침전물/오염물 제거
[Removal of Rusts, Oxide Scales, Oils and Metallic Deposits/Contaminants]
[Chemical Pickling + Passivation (Corrosion Protection)]

✧ Method 침지 산 세정 [Immersion Cleaning in Acid Solutions]

✧ Solution

✧ Temperature

✧ Time

3.2.2 2-단 수세 (2-Stage Water Rinsing)

✧ Purpose 제품 내·외면의 산 세정액 · 유분 · 금속 침전물/오염물 · 이물질 제거
[Removal of Acid Cleaning Agents, Hydrocarbon Oil and Foreign Matters]

✧ Method 침지 수세 (Immersion Cleaning in Water)

✧ Temperature

✧ Time

3.2.3 2-단 초음파 수세 (2-Stage Ultrasonic Water Rinsing)

✧ Purpose 제품 내·외면의 유분 · 금속 침전물/오염물 · 이물질 제거
[Removal of Hydrocarbon Oils, Metallic Deposits and Foreign Matters]

✧ Method 초음파 침지 수세 [Ultrasonic Immersion Cleaning in Water]

✧ Temperature

✧ Time

3.2.4 2-단 초음파 수세 (2-Stage Ultrasonic Distilled Water Rinsing)

✧ Purpose 제품 내·외면의 유분 · 금속 침전물/오염물 · 이물질 제거
[Removal of Hydrocarbon Oil, Metallic Deposits and Foreign Matters]

✧ Method 초음파 침지 증류수 수세 [Ultrasonic Immersion Cleaning in Distilled Water]

✧ Temperature

✧ Time]

3.2.5 2-단 건조 (2-Stage Drying)

✧ Purpose 제품 표면의 물 · 세정액 제거
[Removal of Water or Other Solvents from the surface of components]

✧ Method 청정 공기로 건조 [Blow Dry the components with Clean Dry Air]

✧ Temperature

✧ Time

3.4 정밀 세정 · PN_2 건조 [Deionized Water Precision Cleaning & UHP N_2 Gas Drying]
Oil-Free & Oxygen Service에서 요구하는 제품/부품 청정도를 위해, 다단계 초음파 탈이온수 세정 및 고순도 질소가스로 건조공정을 거친다.
[To obtain the level of cleanliness required in Oil-Free & Oxygen Service, the components undergo multi-stage ultrasonic deionized water cleaning and high purity nitrogen gas drying process.]

3.3.1 10-단 DI Water 초음파 정밀 세정 [10-Stage Deionized Water Precision Cleaning]

✧ Purpose 제품 표면의 유분 · 세정액 · 이물질 제거
[Removal of Hydrocarbon Oils, Cleaning Agents and Foreign Matters]

✧ Method DI Water 초음파 침지 세정
[Ultrasonic Immersion Cleaning with 0.1㎛ filtered, 18㏁·㎝ Deionized Water]

✧ Temperature

✧ Time

3.3.2 자동 4-단 DI Water 정밀 세정 [4-Stage Deionized Water Precision Cleaning]

✧ Purpose 시스템에서 요구하는 청정도 레벨을 충족시키기 위해, Class 10,000 클린 룸 내에서 0.1㎛ 필터로 어과된 18㏁·㎝ DI Water로 4-단계 초음파 탈이온수 정밀 세정을 행한다.
[To obtain the required cleanliness levels, the components are cleaned in a class 10,000 cleanroom with 0.1㎛ filtered, 18 ㏁·㎝ DI Water.]

✧ Method DI Water 초음파 침지 세정
[Ultrasonic Immersion Cleaning with 0.1㎛ filtered, 18㏁·㎝ Deionized Water]

✧ Temperature

✧ Time

3.3.3 PN_2 Drying

✧ Purpose 제품 표면의 물기를 완전히 제거하기 위해, Class 10,000 클린 룸 내에서 열풍으로 건조시킨다.
[In order to remove the water or other solvents, the components are dried in a class 10,000 cleanroom utilizing hot air, filtered to 0.2㎛.]

✧ Temperature

✧ Time

3.5 최종 건조가 끝난 모든 부품은 PN_2 Purge를 실시해야 하며, 어떠한 오염으로부터 격리하고 보호해야 한다.
[After final DI water cleaning & drying, all components shall be purged by purified nitrogen and protected from any contaminants.]

4.0 검사방법 및 합격기준 [Inspection Methods and Acceptance Criteria]

4.1 모든 검사는 클린 룸 내에서 실시한다. [All inspections shall be done in a cleanroom.]

4.2 형광 조명 또는 자외선으로 육안검사를 실시한다.
[Visual inspection performed with the aid of bright illumination or ultraviolet light.]

4.3 육안검사 (백색광) [Visual Inspection with White Light]

4.2.1 백색광 아래에서 세척된 표면의 오일 · 그리스 · 습기 · 녹과 같은 오염물의 존재를 육안으로 검사한다.
[Inspect all cleaned surfaces visually under white light to detect the presence of contaminants such as oils, greases, moistures, rusts, oxide scales, and other foreign matters.]

4.2.2 합격기준 [Acceptance Criteria]
세척된 표면에 오일 · 그리스 · 녹 · 산화 스케일 · 잔류 세정액 · 습기 등이 없어야 한다.
[Visual inspection of the cleaned surfaces under bright light shall show no evidence of:]
- Organic Materials such as Oil, Grease, etc.
- Rust and Oxide Scale, Cleaning Agent, Moisture, and Other Foreign Matter

4.2.3 오염물이 관찰될 경우, 재-세정을 실시한다.
[If any contamination is observed, the components must be re-cleaned.]

4.4 육안검사 (자외선) [Visual Inspection with Ultraviolet Light (Black Light)]

4.3.1 자외선은 탄화수소 · 유기 오일 · 그리스에 대해 형광 빛을 발하기 때문에 일반 육안검사로는 검출할 수 없는 탄화수소 · 유기 오일 · 그리스를 검출하는데 사용되는 시험이다.
[Ultraviolet light (black light) causes common hydrocarbons, organic oils and greases to fluoresce, rendering them visible when they cannot be detected by other visual means. Inspection in ultraviolet light is the most common used test for detecting hydrocarbons, organic oils and greases.]

4.3.2 0.25~0.37㎛ 파장의 자외선을 사용하여 암시야 속에서 제품 표면을 검사한다.
[Examine all cleaned surfaces in darkness using ultraviolet (black) light radiating at wavelengths between 0.25㎛ and 0.37㎛.]

4.3.3 합격기준 [Acceptance Criteria]
세척된 표면에 어떠한 탄화수소 형광 빛이 없어야 한다.
[The cleaned surfaces shall show no evidence of hydrocarbon fluorescence.]

4.3.4 자외선 하에서 관찰되는 오염물/먼지는 고순도 질소가스로 불어내거나 클린 천으로 닦아서 제거한다.
[Accumulations of contaminant or dust that may be visible under the UV (black) light shall be removed by blowing with clean nitrogen, wiping with a clean lint-free cloth.]

5.0 조립 및 시험 [Assembly and Test]

5.1 외부 오염으로부터 부품을 보호하기 위해, Oil-Free & Oxygen Service용 제품은 Clean Area 내에서 조립 · 테스트한다.
[To protect components from outside contamination, Oil-Free & Oxygen Service Products are assembled and tested at clean area.]

5.2 세척된 밸브 부품은 조립절차에 따라 조립한다. 조립 작업장 및 장비는 세척된 부품이 오염으로부터 보호되도록 관리하여야 한다.
[Cleaned valve components are assembled using cleaned tools in accordance with assembly instruction manuals. Assembly work areas and equipments are maintained to protect cleaned components from contamination.]

5.3 Oxygen Service용 밸브 조립 시에는 부품의 Galling 방지 · 마찰 감소 · Sealing을 위해, 나사 · 접촉면 · O-ring 및 Seal 부위에는 ASTM G93의 요구조건을 충족시키는 Non-Hydrocarbon Lubricant를 적용한다.
[At the assembly of valve for Oxygen Service, non-hydrocarbon lubricant meeting the requirements of ASTM G93 is applied to threads, mating surfaces, O-rings and seals to prevent galling, reduce friction, and promote sealing.]

5.4 Oil-Free 제품의 경우, 어떠한 윤활처리도 허용되지 않는다.
[In the case of Oil-Free products, any lubrication is not permitted.]

5.5 조립이 완료된 후에는 고순도 질소가스로 압력시험을 실시한다.
[After assembly is complete, pneumatic pressure test is done with high purity nitrogen gas in accordance with valve test procedure.]

5.6 외부 누설 & Seat 누설 검사: 누설감지용 비눗물이 밸브 내로 유입되어서는 안 된다.
[Soapy water for leak detection must not get in wetted part of valve.]

5.7 조립 · 테스트가 끝난 밸브는 오염을 방지하기 위해 0.003㎛ 필터로 여과된 PN_2로 Purge를 실시한다.
[After assembly and test is complete, all valves are purged using 0.003㎛ filtered purified nitrogen to prevent contamination.]

5.8 조립 및 테스트에 사용된 모든 도구 · 설비는 이 표준서에 따라 세척되어야 하며, 작업자는 클린 룸 의복과 장갑을 착용해야 한다.
[All tools and equipments used in assembly & testing must be cleaned per this specification. The operator shall wear cleanroom garments and gloves.]

6.0 포장 [Packing]

6.1 조립 및 시험이 완료된 Oil-Free & Oxygen Service용 제품은 외부 오염 및 손상으로부터 보호하기 위해 Class 10 클린 룸 내에서 포장한다.
[The Oil-Free & Oxygen Service Products are packaged in class 10 cleanroom to protect products from outside contamination and damage.]

6.2 0.003㎛ 필터로 여과된 PN_2로 완제품을 Purge한 후, 나사 보호 및 청정도 유지를 위해 End Connection을 폴리에틸렌 Cap 또는 Plug로 막는다.
[Finished products are purged prior to packing using 0,003㎛ filtered PN_2, and then the end connections are covered with polyethylene caps or plugs to protect threads and maintain cleanliness.]

6.3 Oil-Free용 완제품은 5~15EA 단위로 단위포장을 한 후, 진공상태로 밀봉한다.
[Finished products for oil free is 5~15EA quantity per packed and vacuum sealed.]
Oxygen Service용 제품은 정전기 방지용 폴리에틸렌 포장지로 개별적으로 포장한 후, 진공상태로 밀봉한다.
[Product for oxygen service is individually packed with anti-static polyethylene bag and vacuum sealed.]

6.4 포장된 제품은 적절한 보호용 재질로 Carton Box에 포장하며, 포장박스에 Part No. · 수량 등의 식별라벨을 부착한다.
[Bagged products are packed in carton boxes with proper protective material. Packing boxes are labeled with the part number and quantity.]

7.0 제품 보호 [Product Protection]

7.1 Oil-Free & Oxygen Service용 제품/부품은 全 세정공정 동안 신중하게 취급해야 하며, 유기 오염물이 존재하는 환경에 노출되어서는 안 된다.
[Components intended for Oil-Free & Oxygen Service must be handled carefully during every stage of the cleaning procedure. Cleaned components must not be exposed to an environment with the presence of organic contaminants.]

7.2 모든 제품/부품은 오염물에 노출되지 않도록 청정 철망 Carrier에 담아서 다음 공정으로 이동시키며, 차기 공정 중에도 계속적으로 보호되어야 한다.
[All components shall be put in a clean wire net carrier and conveyed to the next process, and must be continuously protected during all subsequent processes to prevent exposure to contaminants.]

7.3 모든 제품/부품은 습기 · 유분 · 먼지 · 기타 오염물에 노출되지 않도록, 청정도가 유지되도록 취급해야 한다.
[All components shall be handled in a way which maintains their cleanliness and prevents ingress of moisture, oil, dust, and other contaminants.]

7.4 세척된 부품은 적절한 포장 및 보관에 의해 재-오염으로부터 보호되어야 한다.
[Cleaned components shall be protected from re-contamination by appropriate packaging and storage.]

7.5 최종 세정이 완료되자마자 세척된 부품의 보호조치를 취해야 하며, 다음 조립 · 테스트 · 포장 · 보관 동안 유지되어야 한다.
[Measures to protect cleaned components should be taken as soon as final cleaning is completed, and should be maintained during all subsequent inspection, assembly, testing, packing, and storage.]

7.6 외부 오염으로부터 제품/부품을 보호하기 위해, Class 10 클린 룸 내에서 포장한다.
[To protect components from outside contamination, Oil-Free & Oxygen Service Products are packed at class 10 cleanroom.]

7.7 산소와 접촉하는 손의 접촉에 의해 재-오염될 위험이 존재하므로 세척 후에는 청정 장갑 또는 도구를 사용하여 취급한다.
[Wear clean gloves or use handling devices to touch components surfaces that come into contact with oxygen.]

8.0 부적합 제품 처리 [Handling of Nonconformance]

부적합 사항 발생시 이 표준서에 따라 불합격 처리하며, 부적합 제품은 QAP-13.1에 따라 관리한다.
[If nonconformance occurs, the product can reject in accordance with this specification. The nonconformance items shall be managed in accordance with a Hy-Lok Quality Assurance Procedure 13.1.]

9.0 참고 문서 [Reference Documents]

9.1 ASTM G93 Standard Practice for Cleaning Methods and Cleanliness Levels for Material and Equipment Used in Oxygen-Enriched Environments
9.2 ASTM G121 Standard Practice for Preparation of Contaminated Test Coupons for the Evaluation of Cleaning Agents
9.3 ASTM G122 Standard Test Method for Evaluating the Effectiveness of Cleaning Agents
9.4 ASTM G127 Standard Guide for the Selection of Cleaning Agents for Oxygen Systems
9.5 ASTM G131 Standard Practice for Cleaning of Materials and Components by Ultrasonic Techniques
9.6 ASTM G144 Standard Test Method for Determination of Residual Contamination of Materials and Components by Total Carbon Analysis Using a High Temperature Combustion Analyzer

Certificate

Quality-Assurance System

acc. to Directive 97/23/EC

Certificate no.: **01 202 ROK/Q-02 0017**

Name and address of the manufacturer:

HY-LOK Corporation
97, Noksansandan 27-Ro,
Gangseo-gu, Busan, 618-817, Korea

Herewith we certify that the above mentioned manufacturer operates a quality system according to the European Directive 97/23/EC. The manufacturer has the permission to affix the following CE marking to pressure equipment described and manufactured in accordance to the scope covered by this Quality-Assurance System:

CE 0035

Tested acc. to Directive 97/23/EC: **QS-System (Module H)**
(the QS-Modules E1, E, D1 and D are covered by Module H)

Audit report no.: ROK/Q-02 0017

Area of validity: Design and Manufacturing of Industrial Valves, Fittings, Filters and Sub-Assemblies of Fittings, see annex to certificate

Manufacturing plant:

1st plant
97, Noksansandan 27-Ro,
Gangseo-gu, Busan, 618-817, Korea

2nd plant
176, Dadae-Ro, Saha-gu, Busan,
604 – 030, Korea

Valid until: **November 30, 2017**

Cologne, November 24, 2014 Dipl.-Ing. Svenja Kreß

TÜVRheinland® 0035 Notified Body

TÜV Rheinland-Certification Body for Pressure Equipment
TÜV Rheinland Industrie Service GmbH
Notified Body, ID-No. 0035
Am Grauen Stein, D-51105 Köln

E-014-Rev7

www.tuv.com

TÜVRheinland®
Precisely Right.

TÜVRheinland®

Annex to Certificate No.: 01 202 ROK/Q 02 0017

Scope of the Validity of the Approval as Manufacturer of Industrial Valve in accordance to PED 97/23/EC QM- System

Manufacturer	Production Plant	Nationality	Date	Page No.	TÜV-Name /Stamp
Name: HY-LOK Corporation Adress:1) Head office & 1st plant : 97, Noksansandan 27-Ro, Gangseo-gu, Busan, 618-817, Korea 2) 2nd plant : 176, Dadae-Ro, Saha-gu, Busan, 604 – 030, Korea	Busan works	Korea	2014.Nov.07 Rev.: 1	1 of : 1	TÜV Rheinland Industrie Service GmbH

Current No.	Valve Type	Series No.	Pressure Class	Nominal Diameter	Until now applied codes	Listing of Module B/B1 certificates (for QS-module D/E)	Remarks
1	TUBE FITTING	HY-LOK, BITE, FLARED, ZCO, CLEAN, OF, RS, HP	60,000 PSI	25mm < DN≤150mm	ASME B31.3		
2	PIPE FITTING	THREAD & WELD, JIS/ANSI, RS	ASME CLASS 6000	25mm < DN≤150mm	ASME B31.3, B16.11		
3	WELDING FITTING	WELD	ASME CLASS 6000	25mm < DN≤150mm	ASME B31.3, B16.11		
4	HOSE FITTING	HOSE	4,500 PSI	25mm < DN≤150mm	JIS B8363		
5	Quick CONNECTOR	Q, QF	3,000 PSI	25mm < DN≤150mm	ASME B31.3		
6	BALL VALVE	102, 105, 110, 112, 115, 116, 118, SO, T, CNG, CRYOB	10,000 PSI	25mm < DN≤200mm	ASME B31.3, B16.34		
7	GATE VALVE	GATE	6,000 PSI	25mm < DN≤200mm	ASME B31.3, B16.34		
8	GLOBE VALVE	GLOBE	6,000 PSI	25mm < DN≤200mm	ASME B31.3, B16.34		
9	PLUG VALVE	P, RP	6,000 PSI	25mm < DN≤200mm	ASME B31.3, B16.34		
10	MANIFOLD VALVE	M	6,000 PSI	25mm < DN≤200mm	ASME B31.3, B16.34		
11	CHECK VALVE	700, 700H, 701, 700A, CVL, CNG, CCV, CGH2	6,000 PSI	25mm < DN≤200mm	ASME B31.3, B16.34		
12	DOUBLE BLOCK & BLEED VALVE	DBB	6,000 PSI	25mm < DN≤200mm	ASME B31.3, B16.34		
13	RELIEF VALVE	RV1, RV2, CRV, CNGRV	6,000 PSI	25mm < DN≤150mm	ASME B31.3, B16.34		
14	NEEDLE VALVE	NV, SV, SVH, GB, CRYO, GVL, CGNS	6,000 PSI	25mm < DN≤150mm	ASME B31.3, B16.34		
15	EXCESS FLOW VALVE	CGH2	6,000 PSI	25mm < DN≤150mm	ASME B31.3, B16.34		
16	AIR MANIFOLD	AIR MANIFOLD	6,000 PSI	25mm < DN≤200mm	ASME B31.3		
17	CONDENSATE POT	CONDENSATE POT	6,000 PSI	25mm < DN≤200mm	ASME B31.1		