



CERTIFICATE NUMBER 18-HG1720147-PDA  
EFFECTIVE DATE 26 March 2018  
EXPIRATION DATE 25 March 2023  
ABS TECHNICAL OFFICE  
Hamburg Engineering Department

## CERTIFICATE OF

# Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

## **VOSS FLUID GMBH**

located at

Luedenscheider Str. 52-54  
D-51688 Wipperfuerth  
Germany

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

### **Product Fitting, Flange**

### **Model ZAKO, ZAKO LP**

This Product Design Assessment (PDA) Certificate remains valid until expiration date or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau of Shipping

Dagmar Gramatzki,  
Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

**VOSS FLUID GMBH**  
LUEDENSCHIEDER STR. 52-54  
D-51688 WIPPERFUERTH  
Germany  
Telephone: 49-2267-635657  
Fax: 49-2267-639657  
Email: fluid@voss.net  
Web: www.voss.net

**Tier: 3 - Type Approved, unit certification not required**

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**Product:** Fitting, Flange  
**Model:** ZAKO, ZAKO LP  
**Intended Service:**

For flanged connections in steel piping system for non-flammable fluids.

**Description:**

"VOSS-ZAKO" (SAE/Square) Flanges applies "ZAKO" 10 degrees flare technology. Made of forged, drawn, cast or stainless steel (1.4571); For higher load applications such as vibrations, pressure impulses or high pressure in tubes of larger dimensions; the flange couplings system comprises of following components: ZAKO-flange; ZAKO-ring (with o-ring groove); 4 x ISO 4762 cylindrical screws (SAE flanges). For tube to tube flanged connection one (1) additional "ZAKO"-flange, "ZAKO" ring (but without O-ring groove) and four (4) nuts - ISO 4032 are to be added. O-rings normally employed in "ZAKO" flanged coupling designs are made of "NBR" (Perbunan) material.

**Rating:**

Series: Standard, Flanged Type SAE, Nominal Pressure PN-250, Pipe OD: up to 80 mm.  
Series: High Pressure, Flanged Type SAE, Nominal Pressure PN-400, Pipe OD: up to 80 mm.  
Series: High Pressure, Flanged Type SQUARE, Nominal Pressure PN-400, Pipe OD: up to 88 mm.  
Operating temperature: -35°C to +100°C.

**Service Restriction:**

- Unit certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

**Comments:**

- The manufacturer has provided a declaration about the control of, or the lack of asbestos in this product.  
- The installation of flanged "ZAKO" pipe connections is to be carried out by duly qualified personnel according to the manufacturer's recommended and established procedures.  
- The subject piping components are to bear permanent identification, such as the manufacturer's name or trademark, standard of compliance, material identify, pressure rating, etc. as required by the standard of compliance and at which the manufacturer guarantees the piping components to meet the requirements of the standards. Such markings may be cast or forged integral with, stamped on, or securely affixed by nameplate on the component, and are to serve as a permanent means of identification of the component throughout its service life in accordance with 4-6-1/7.1.3 and 4-6-1/7.1.4 of the Steel Vessels Rules.

**Notes/Drawing/Documentation:**

Document No. Assembly instruction ZAKO, Assembly Instruction ZAKO, Revision: -, Pages: 7.  
Document No. Burst\_ZAKO\_008091\_German, Test Report of 28 Jan 2009\_Voss - ZAKO Burst Pressure, Revision: -, Pages: 9.  
Document No. Burst\_ZAKO\_092041\_English, Test Report of 17 Jun 2004\_Voss - ZAKO Burst Pressure, Revision: -, Pages: 11.  
Document No. Burst\_ZAKO\_2013530\_English, Test Report of 8 May 2006\_Voss - Burst Pressure, Revision: -, Pages: 7.  
Document No. DS ZAKO flared flanges, Data sheet ZAKO flared flanges, Revision: -, Pages: 32.  
Document No. Drawing ZAKO, Technical Drawing ZAKO, Revision: -, Pages: 4.  
Document No. Fire\_ZAKO\_R10000007439\_German, Test Report of 26 May 2010\_WTD - Fire, Revision: -, Pages: 5.  
Document No. Product information ZAKO, Product information ZAKO, Revision: -, Pages: 6.  
Document No. Pulsation-Vibration\_ZAKO\_093061\_German, Test Report of 8 May 2006\_Voss - Pulsation - Vibration, Revision: -, Pages: 4.  
Document No. VOSS Fluid ISO 14001\_2015, ISO 14001\_2015 Certificate, Revision: -, Pages: 3.  
Document No. VOSS Fluid ISO 50001\_2011, ISO 50001\_2011 Certificate, Revision: -, Pages: 1.  
Document No. VOSS Fluid ISO 9001\_2015, ISO 9001\_2015 Certificate, Revision: -, Pages: 1.

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**Terms of Validity:**

This Product Design Assessment (PDA) Certificate 18-HG1720147-PDA, dated 26/Mar/2018 remains valid until 25/Mar/2023 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

**STANDARDS**

**ABS Rules:**

2018 Rules for Building and Classing Steel Vessels: 1-1-4/7.7, 1-1-Appendix 3 and 4, 4-6-1/7, 4-6-2/3, 4-6-2/5.5.5, 4-6-2/5.9.

**National:**

NA

**International:**

DIN EN ISO 4032:2013-04, DIN EN ISO 4762:2004-06, DIN EN ISO 7092:2000-11.

**Government:**

NA

**EUMED:**

NA

**OTHERS:**

NA