

# CERTIFICATE OF COMPLIANCE



*TUM Certification  
hereby declares that the product*

**Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnsel ESH/EDH  
mechanical seal**

*from*

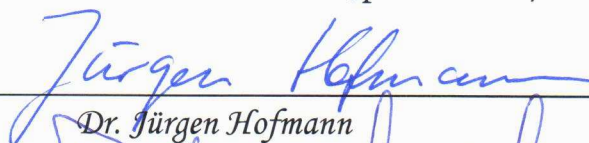
**ITT Bornemann GmbH, 31683 Obernkirchen, Germany**

*has been evaluated for compliance with the  
Hygienic Equipment Design Criteria of the EHEDG, by:*

*TUM (Forschungszentrum für Brau- u. Lebensmittelqualität) at Weihenstephan, Germany  
and meets the criteria as demonstrated by:*

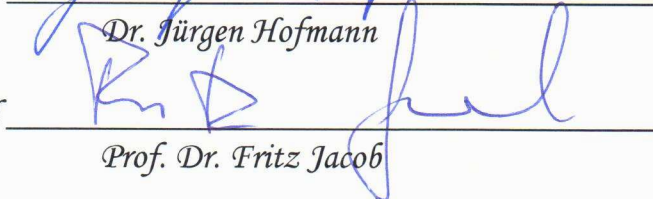
*Evaluation Report No. 377/26.11.2012*

*Signed*

  
Dr. Jürgen Hofmann

*Evaluation Officer*

*Signed*

  
Prof. Dr. Fritz Jacob

*Head of Department*

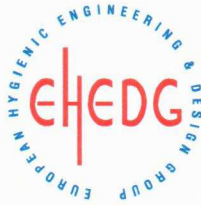
*Date of first issue: 21 July 2014*

***Certificate No. 06/2014***



*85354 Freising-Weihenstephan, Germany*

*©EHEDG*



## **CONTRACT TO USE THE EHEDG CERTIFICATION LOGO FOR EQUIPMENT**

A Contract entered into this **21th day of July 2014** between EHEDG, an organization existing under Netherlands law, with its Secretariat at Lyoner Str. 18 in 60528 Frankfurt, Germany, herein after called "EHEDG" and **ITT Bornemann GmbH, Industriestr. 2, 31683 Obernkirchen, Germany**, herein after called "Company".

1. Certified product(s) are any equipment, component, system, material or service for which EHEDG has specifically authorized the use of the EHEDG Certification Logo. The EHEDG Certification Logo is a registered mark. All existing rights in connection with or future rights through the use of the logo are exclusively reserved to the EHEDG.
2. EHEDG or an EHEDG Authorized Organization (Appendix 1A) has determined that the products identified in Article 9 of this Contract comply with the requirements of the applicable criteria and certification classification under Appendix 1B (EHEDG Certification Type) of this Contract.
3. Upon execution of this Contract and payment of any outstanding fees, EHEDG authorizes the Company to use the EHEDG Certification Logo on the products identified in Article 9, subject to the conditions described in Appendix 2 (Conditions for Use of the EHEDG Certification Logo) of this Contract for a period of one year. The period may be extended annually by providing documentation which shows that the products certified still fully meets the provisions of this Contract and payment of an annual prolongation fee.
4. The Company undertakes to place the Logo only on those products which have been certified in compliance with this Contract.
5. It is understood and agreed that a Logo on a product and its Certification are invalid if the product has been significantly altered or has been represented as being Certified for any purpose or end use other than that Certified by EHEDG. EHEDG assumes no liability for any claims arising from such alteration, misuse, or misrepresentation by the Company.
6. The Company assumes responsibility to inform EHEDG or an EHEDG Authorized Organization of any changes or modification in the design and manufacture of Certified products which may affect its compliance with the EHEDG Criteria. EHEDG or an EHEDG Authorized Organization will judge whether the changes or modifications render the current certification void. The need of review of the modified product depends on the modification being carried out. Some modifications might be of such nature that a review is not necessary, but nonetheless the Company has to report the modifications.
7. EHEDG assumes no liability for any claims for damages of any kind occurring to any person or entity as a result of sale, resale, use or misuse of the Company's products, whether or not the products are Certified. The Company assumes full and complete responsibility for its use of the Logo or other representation that its products are certified. EHEDG assumes no liability for any claims arising from the Company's misuse of the Logo or misrepresentation of the Certification status of its products.
8. This Contract is concluded for an indefinite period of time. The Company undertakes to declare in writing the latest by 31st December of the following year that no modifications were made on the certified product, or parts thereof. If modifications have been made on the certified product, the Company is to notify EHEDG or an EHEDG Authorized Organization thereof who determines whether the certified product needs review or not. The Contract may be terminated at three months' notice to the end of the year. The notice must be given in writing per registered letter. The right to terminate the Contract for cause



remains unaffected. Good cause is especially given, if the licence fees were not paid or modifications have been carried out on the certified product without prior notification. This Contract will be terminated when replaced by a mutually agreed new contract or contract revision provided by EHEDG or in case of abuse of the Logo as mentioned under 12, below.

9. The EHEDG Logo may be used on or in connection with the following products:  
- **Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH mechanical seal** as shown on the drawings or copies of drawings with original (NOT copied) EHEDG stamp, dated and signed by EHEDG, provided that the equipment - if applicable - has means for use and/or mounting such that compliance with the EHEDG Criteria is not adversely affected.  
**(integrated with CIP-able process connections, based on the Evaluation Report.)**
10. EHEDG or the EHEDG Authorized Organization will keep all documents and other evidence of the Company's product on file. The Secretariat of EHEDG will keep records of products that have been certified.  
EHEDG or the EHEDG Authorized Organization undertakes to treat all documents received from the Company as confidential.
11. Upon request, a Certificate will be provided bearing the EHEDG Corporate Logo and optionally the name and/or logo of the EHEDG Authorized Organization, with the following statements:
- "Certificate of Compliance with the Hygienic Design Criteria of EHEDG".
  - **"TUM hereby declares that the product Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH mechanical seal from ITT Bornemann GmbH, Industriestr. 2, 31683 Obernkirchen, Germany, has been evaluated by *Forschungszentrum Weihenstephan für Brau- und Lebensmittelqualität (BLQ)*, TUM, for compliance with the Hygienic Design Criteria of EHEDG. The results justify the use of the EHEDG Certification Logo Type *(type identification as shown on Appendix 3 of this Contract)*."**

The Certificate will be signed and dated.

12. Abuse of the Logo (i.e. its use under conditions conflicting with this Contract) may result in any or all of the following sanctions:
- a. a request to immediately take corrective actions;
  - b. termination of the Contract;
  - c. a request to the appropriate court for indemnities and damages to the maximum amount of Euro 10.000,- per case.

Examples of Abuse:

The Company uses the EHEDG certification logo on products, drawings, brochures or other documents which have not been certified.

The Company uses the EHEDG certification logo as general information on documents.



The Company uses the EHEDG certification logo on modified products, drawings, brochures or other documents without prior notification to EHEDG.

The Company uses the EHEDG certification logo on certified products, drawings, brochures or other documents using another name and/or designation without prior notification to EHEDG.

The Company uses the EHEDG certification logo on products and on drawings, brochures or other documents of products which passed the in-place cleaning test but do not comply with the Hygienic Design Criteria.



13. Disputes between Parties in connection with or arising out of the contract, which cannot be resolved by arrangement between parties, shall be finally settled by arbitration in accordance with the rules of Conciliation and Arbitration of the International Chamber of Commerce by one or more arbiters appointed in accordance with those rules. The place of arbitration shall be Den Haag (The Hague).
14. This Contract and referenced documents constitute the entire agreement between Parties and supersede all previous communications, representations or agreements between Parties with respect to the Certified products. No modification will be binding upon either party unless it is made in writing and is signed by duly authorized representatives of both Parties.
15. This Contract will be subject to Netherlands law.

<i>For</i> <b>ITT Bornemann GmbH</b>	<i>For EHEDG:</i> <b>BLQ Weihenstephan, TU München</b>
<i>Name and Title</i>	<i>Name and Title</i>
<i>Jens Duelle (Product Manager Food &amp; Pharma)</i>	Prof. Dr.-Ing. F. Jacob (Head of Department)
<i>Signature:</i> 	<i>Signature:</i> 
<i>Date:</i> 24.07.2014	<i>Date:</i> 21.07.2014

***This Contract is not complete without the following documents:***

- Appendix 1A - EHEDG Authorized Certification Organisations
- Appendix 1B - EHEDG Certification Type
- Appendix 2 - Conditions for Use of the EHEDG Certification Logo
- Appendix 3 - EHEDG Certification - Equipment Evaluation Form

Drawings, stamped, signed and dated by or on behalf of EHEDG, as specified under article 10 of this Contract.

## Appendix 1A

### ***EHEDG AUTHORIZED CERTIFICATION ORGANISATIONS***

#### **ACTALIA Sécurité des Aliments,**

Dr. Nicolas Rossi  
Centre d' Expertise Agroalimentaire, Dpt. Research  
Boulevard 13 Juin 1944  
14310 VILLERS BOCAGE  
France  
Tel. +33 2 31 25 43 00

#### **Ainia, Centro tecnológico**

Mr. A. Pascual Vidal  
Departamento de Calidad y Medio Ambiente  
Parque Tecnológico de Valencia  
C/ Benjamín Franklin, nº 5-11  
46980 Paterna (Valencia)  
Spain  
Tel. + 34 961 366 090  
Fax + 34 961 318 008

#### **Campden BRI (Chipping Campden) Limited**

Dr. Roy Betts  
Station Road  
Chipping Campden  
GLOS, GL55 6LD  
U.K.  
Tel. +44 1386 842075  
Fax +44 1386 842100

#### **The University of Tennessee**

Dr. M. Morgan  
2510 River Drive  
Knoxville  
TN 37996-4539  
U.S.A.  
Tel. +1 865 974-7499

#### **TÜV Rheinland Nederland B.V. (former TNO Certification BV)**

Mr R. van Kuringen  
P.O. Box 541  
NL-7300 AM Apeldoorn  
Netherlands  
Tel. +31 88 888 7888  
Fax +31 88 888 7879

#### **TU München**

Dr. F. Jacob  
Forschungszentrum Weihenstephan für Brau- und Lebensmittelqualität  
Alte Akademie 3  
D-85354 Freising  
Germany  
Tel. +49 8161 71 3331  
Fax +49 8161 71 4181

## Appendix 1B

### ***EHEDG CERTIFICATION TYPE EL CLASS I***

#### **EQUIPMENT INTENDED FOR CLEANING WITH LIQUIDS WITHOUT DISMANTLING**

Equipment intended for cleaning with liquids without dismantling may be ***EHEDG Certified*** if it complies with the current Hygienic Design Criteria (HDC) of the EHEDG.

#### **EL Certification**

EL Certification applies to equipment of which inspection, including inspection of any evidence\* provided, by an EHEDG authorised organization has shown that it either fully complies with the HDC, or that ***for functional reasons, which are unavoidable***, does not fully comply with the HDC, but additional evidence\* has been provided that specified measures compensate for the lack of compliance. The logo may then be used under the provisions that these specific measures are clearly mentioned where and when the logo is used and they are clearly described in any technical description of the equipment as well as in any operating instructions to be provided by the equipment supplier.

#### **Examples**

- A pipe bend made of stainless steel type AISI 316, of which the product contact surface is crevice free and has a surface roughness  $R_a < 0.8\mu\text{m}$ .
- A rotary lobe pump containing unavoidable crevices for functional reasons and otherwise complying with the HDC, of which testing removes doubts about its cleanability.

\* *Evidence may typically consist of reports of cleanability tests, but also include results of the measurement of surface roughness, radiuses of corners, etc.*

**Other products and services to be defined when available.**

## Appendix 2

### CONDITIONS FOR USE OF THE EHEDG CERTIFICATION LOGO

#### EQUIPMENT INTENDED FOR CLEANING WITH LIQUIDS WITHOUT DISMANTLING

*EHEDG Certification* of equipment intended for cleaning with liquids is possible if it complies with EHEDG Hygienic Design Criteria (HDC). The decision whether or not to grant certification (Appendix 3: EHEDG Certification - Equipment Evaluation Form) rests with the EHEDG and must be based on an evaluation report. The EHEDG may delegate this responsibility to organizations that for this purpose have been authorized by the EHEDG. Hereinafter, "EHEDG" shall mean the EHEDG organization or an EHEDG Authorized Organization.

**1. Eligibility**

An Applicant with Products which comply with the current HDC published by the EHEDG.

**2. Application for EHEDG Certification**

An application shall be submitted by the Applicant for each Product together with the appropriate fee.

**3. Contract for EHEDG Certification**

Upon obtaining evidence of compliance (see Appendix 1B: EHEDG Certification Type), a contract shall be executed by the Company and EHEDG or an EHEDG Authorized Organization (see Appendix 1A). The contract shall detail the Product for which Certification is provided. The Certification Logo will be dated (month and year) and will last for life unless the equipment, or any part thereof, is modified, in accordance with clauses 3 and 6 of the Contract.

**4. Use of the Logo and responsibility of Applicant**

4.1 The Applicant shall represent as Certified, by use of the Logo or otherwise, only Products described in the Contract.

4.2 The language allowed is either "certified by EHEDG" or "EHEDG Certified". Correct literal translations are also allowed.

4.3 The Logo may be printed in black or in two colours. If printed in two colours, "EHEDG" must be in red no. PMS 032 and all other text in blue no. PMS 072 (see 13, below).

4.4 The Logo must be used in combination with "TYPE EL CLASS I" and the date (month in text and year in four digits) of Certification. Both must be produced below the logo in the way shown in under 13. The text "TYPE EL CLASS I" must be at least 1/10 times the size of the logo and the date must be at least 1/20 times the size of the logo, but both must never be less 2 mm in height. The font must be ARIAL Rounded MT Bold or ARIAL (Western) Bold or similar and equally clear.

4.5 If the logo is applied directly on to the Product, this may be done without using colours. If colours are used, the colours mentioned under 4.3 must be used, as indicated. It must be ascertained that the use of the Logo on Products does not adversely affect either hygiene or food safety. Dimensional requirements are as specified under 4.4.

4.5 The Logo may not be cropped in any way.

4.6 The Logo may be used in combination with other logos or marks.

If used in combination with other logos, it does not automatically mean that the EHEDG is linked to those organisations in one way or the other.

**5. Written Authorization for Certification and Use of the Logo**

The EHEDG Logo is a registered Mark. No Company or person shall apply or use the Logo in connection with a Product, or represent in any way that the Product is EHEDG Certified, until receipt of written authorization from EHEDG. EHEDG may pursue legal recourse if the Logo is misused.

- 6. Transfer of Authorization for Certification and Use of the Logo**  
Upon request and with documentation of continued compliance, EHEDG may transfer authorization for continued Certification of specific Products to another Company for the purpose of a name change, change of ownership, or change of a production location. An administration fee will be charged.
- 7. EHEDG Acknowledgement of Certified Products**  
Certified Products may bear the Logo or be otherwise represented as Certified.
- 8. Trade Designations**  
A Company shall not use the letter combination "EHEDG" in its trade designation (e.g. name, model number, or other identification assigned by the Company) for a Certified or non-Certified Product.  
  
A Company shall not have a trade designation for a Certified Product that directly or indirectly states or implies an end use application for which the Product is not Certified.
- 9. Product modification**  
Any modification of the product, which has been certified renders the Certification void for the modified products. If Certification of the modified product is desired, a new application must be submitted. If the modification proves to be relatively insignificant, the fee may be reduced or waived at the discretion of EHEDG.
- 10. Implementation of Revisions to Referenced EHEDG Guideline(s)**  
Upon adoption of a revision to any referenced EHEDG Guideline(s), mentioned in the Contract, the Company shall be encouraged to implement all changes in requirements in its Certified Products.
- 11. Certification of Distributors**  
A Company distributing a Certified Product with a trade designation other than that of the original manufacturer may apply for an extra EHEDG Certification.
- 12. Private Labelling of Certified Products**  
If a Company has the intention to label Certified Products with another name and/or designation the Company shall prior to any changes notify the EHEDG thereof it in writing. On written consent of the EHEDG, the Company may proceed as intended.
- 13. Example of the EHEDG Certification Logo**





Appendix 3

**EHEDG CERTIFICATION - EQUIPMENT EVALUATION FORM**

OFFICIAL ENGLISH VERSION

**EQUIPMENT INTENDED FOR CLEANING WITH LIQUID WITHOUT DISMANTLING, TYPE EL CLASS I**

**Equipment:**

Name: ITT Bornemann GmbH

Type no.: Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH mechanical seal

Other essential identification:

Date: 21.07.2014

Number: 06/2014

**Evaluated by:**

Name: Dr. Jürgen Hofmann

EHEDG or EHEDG Authorized Organization: TUM, BLQ, Germany

**Approved by:**

Name: Nicolas Rossi

EHEDG or EHEDG Authorized Organization: ACTALIA Sécurité des Aliments, VILLERS BOCAGE, France

1. Results of inspection for compliance with the EHEDG Hygienic Design Criteria. Conclusion : <b>The equipment complies with the criteria.</b> <b>The use of the EHEDG Certification Type EL CLASS I logo is justified :</b>	YES <input type="checkbox"/>
	MAYBE <input checked="" type="checkbox"/>
	NO <input type="checkbox"/>
2. Only unavoidable reasons for non-compliance present. Evidence for compensation provided and convincing for Certification. Conclusion : <b>The equipment complies with the criteria where possible.</b> <b>The use of the EHEDG Certification Type EL CLASS I logo is justified :</b>	YES <input checked="" type="checkbox"/>
	NO <input type="checkbox"/>

Signature :



Date : 21.07.2014

Type EL Certification: Yes

~~No~~

*Cross out as appropriate.*

*The original of this form will be kept together by the EHEDG or the EHEDG Authorized Organisation with the application, the inspection report, the evidence provided and any other relevant documentation, as listed on the back.*

No.	Description
1.	EHEDG / TUM Certificate of Compliance
2.	Contract to use the EHEDG Certification Logo for equipment
3.	Appendix 1A: EHEDG authorized certification organisations
4.	Appendix 1B: equipment intended for cleaning with liquids
5.	Appendix 2: conditions for use of the EHEDG Certification Logo
6.	Appendix 3: Equipment evaluation form
7.	Evaluation report of the design of the Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH mechanical seal No. 377/26.11.2012
8.	Drawing of the Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH mechanical seal, original stamped

**EHEDG Evaluation Report**  
**no. 377/26.11.2012**

***Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH  
mechanical seal***

***ITT Bornemann GmbH, 31683 Obernkirchen, Germany***

*Materials, Surface Roughness, Fabrication and Surface Geometry*

- Product contact surfaces are constructed from stainless steel alloy 1.4404. The housing has a chromium carbide finishing. These materials are considered non-toxic and corrosion resistant under the intended conditions of use.
- Product contact surfaces are polished to 0.8 µm Ra or better.
- The gaskets of the pump are of the material EPDM. The surface of these O-rings are smooth without bigger pores and damages. All materials are allowed to be used in contact with food; EPDM according FDA 21 CFR title 177.
- The mechanical seal is made of SiC-SiC material.
- All gaskets are pressed into the housing by controlled compression.
- Internal geometry of the pumps complies with the design criteria of Documents. 8 and 10 with minimum 3.0 mm radius in all housing areas and contain no sharp internal angles or crevices. Only the screws have due to functional reasons sharp internal angles.

*Drainability and Layout*

- Instruction manuals specify correct installation orientations for self-draining applications. Drainability is provided through the inlet port.

*Installation and Cleaning*

- Instructions provided containing information regarding running the pump and minimum cleaning velocity of 1.5 m/s in relation to the inlet pipe diameter.
- Pipe connections provided are in accordance with the EHEDG position paper (available on the EHEDG website [www.ehedg.org](http://www.ehedg.org)) for accepted couplings with the use of special gaskets specified as applicable or welded in.

*Adhesives, Lubricants and Signal transfer liquids*

- No adhesives or lubricants are used in the pump where they can come into contact with the product.
- No signal transfer liquids or thermal insulation materials are used in the pump construction.

*Transfer of cleanability results to other sizes*

- The different sizes of this pump series are similar in design. Especially the sealing areas are always the same crevice free design. Only the mechanical seal is different in diameter according the shaft. Therefore it is possible to transfer the results of the cleanability test of size 3000 to the others.

### *Conclusion*

The Hygienic Design Criteria Evaluation Report concludes that these ***Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH mechanical seal*** in sizes 1000, 2000, 3000 and 4000 comply with the applicable EHEDG Hygienic Design Criteria (Documents 8, 10, 16, 17 and 32) for Hygienic Equipment Class I.

The in-place cleanability test method has proven that this twin screw pump with EPDM gaskets and Huhnseal ESH mechanical seal in size 3000 with DN 80 pipe connections is easy to clean. There were no problems in cleaning the product contact surfaces. The cleanability was comparable to the reference pipe.



**Dr.-Ing. J. Hofmann**  
**21.07.2014**



# Drawing of the Twin Screw pumps series SLH-4G with EPDM gaskets and Huhnseal ESH/EDH mechanical seal

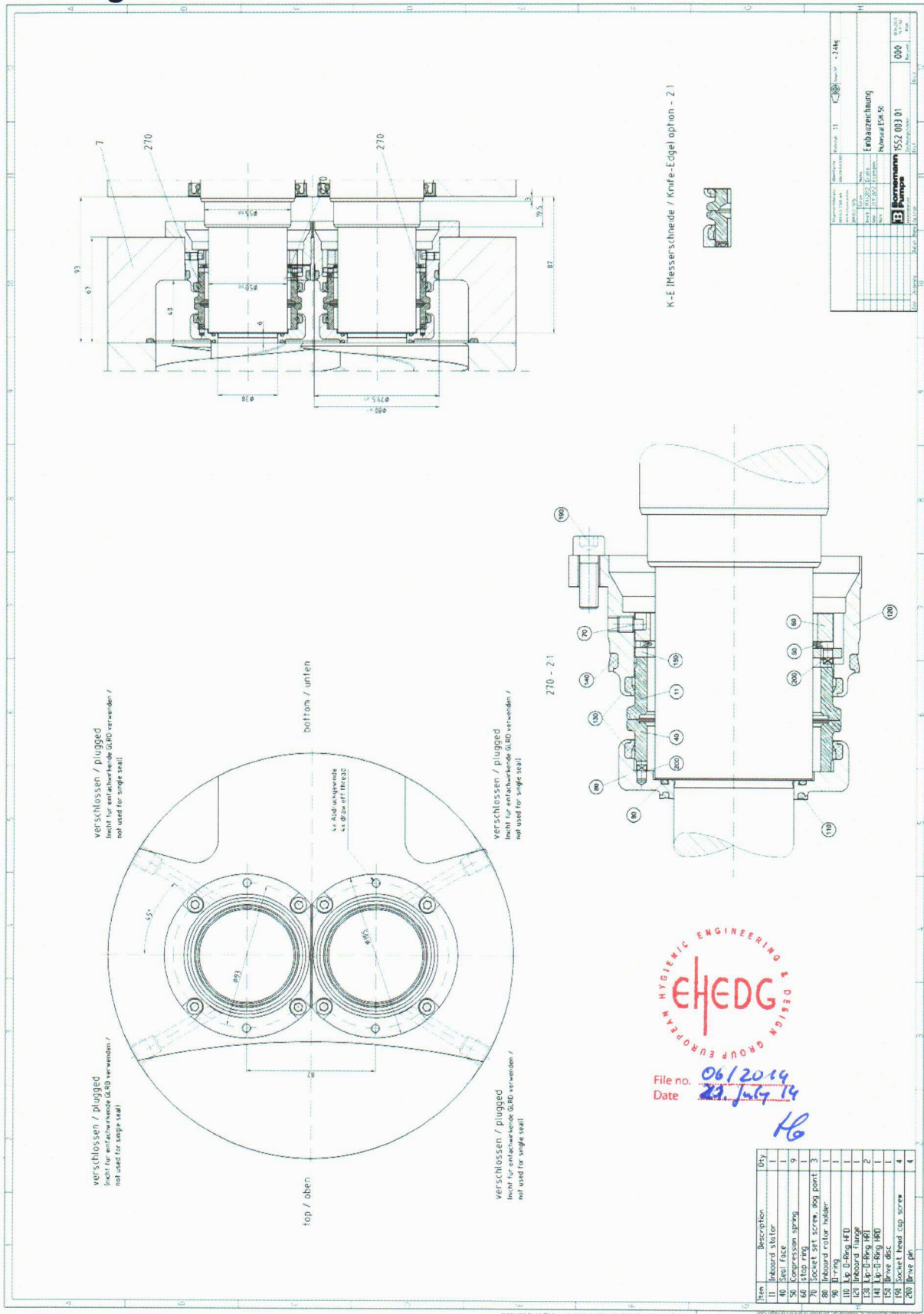


Fig. 2: sectional drawing of the mechanical seal, Huhnseal type ESH