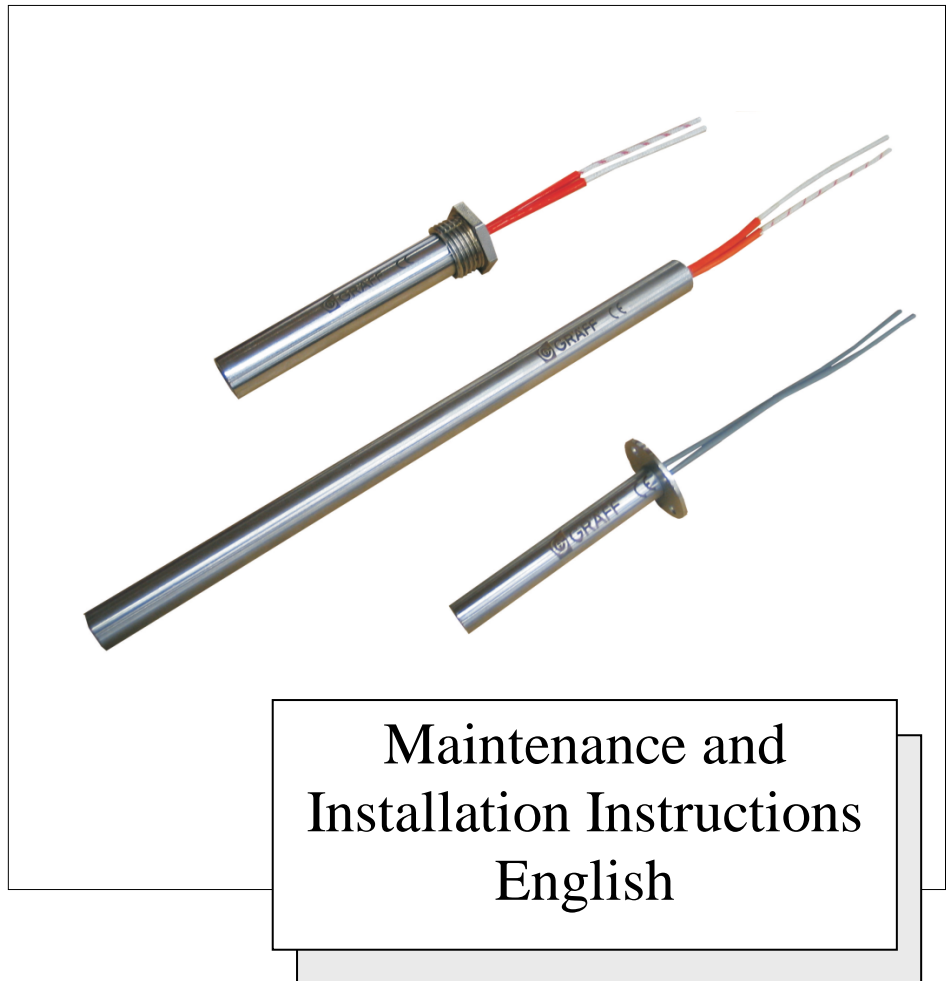


# Heating Cartridges (HLP)



**Please read these operating instructions before operating the unit for the first time.**

Rev. status: November 2012 (Rev. 0)

## Maintenance and Installation Instructions

### General Information

Please carefully and completely read the operating instructions prior to the installation and connection of the heating cartridge! If damage is caused by failure to comply with these operating instructions, all warranty claims become void. We do not assume liability for any resulting damage.

Warranty:

The warranty period for this article is 24 months starting from the date of purchase.

The warranty includes the repair of any faults at no charge provided they can be proved to be caused by the use of imperfect materials or faulty construction. As soon as a fault is detected, the faulty unit, together with the proof of purchase and a fault description, must be sent to the manufacturer without undue delay.

Any further claims are excluded.

The liability for defects does not refer to natural wear and tear, transport damage, or damage caused by the failure to comply with the installation instructions, country-specific installation regulations, or by incorrect installation.

The manufacturer does not assume liability for any damage which did not occur on the delivery item, especially not for indirect or consequential damage, or financial loss arising from this product.

We reserve the right to repair or improve the product, deliver a spare part, or refund the purchase price.

No warranty claims are accepted if our label (serial number) is removed or the unit is opened.

If you have any questions and/or comments, please feel free to contact us:

**Gräff GmbH**  
**Temperatur-, Mess- und Regeltechnik**  
**Bonner Strasse 54**  
**D-53842 Troisdorf**

## Maintenance and Installation Instructions

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**Fax: +49 2241 4907-66/-77**

**Certified**



**acc. to DIN ISO 9001:2008**

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### 1. Safety Instructions

Please keep these instructions in a safe place and, if applicable, pass them on to future users.

- Gräff heating cartridges are designed exclusively for industrial use, the use in the private area is expressly prohibited!
- When selecting a heating cartridge, please exclusively observe the surface tension, which should not exceed a value of 3 W/cm<sup>2</sup>. In case of higher load, the user bears the risk alone!
- Repair and internal work on the unit must be performed by experts only.
- In the event of an error, the unit must be switched free of voltage!
- When operated, heating cartridges and possible protective tubes must be completely enclosed by the medium or metal body on all sides!
- Caution! Exterior surfaces and connector head become hot during operation.
- Thermal medium dissipation must not be hindered!
- Please observe the maximum connection temperature when connecting the lines!
- The unit must not be operated in removed condition!

### 2. Installation

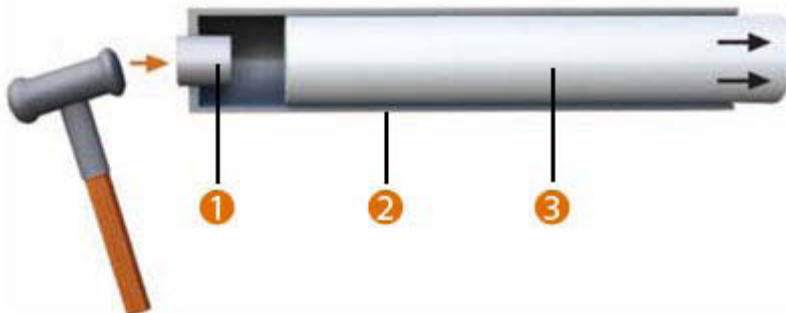
- The installation and electrical connection must only be performed by trained specialist staff in accordance with all known standards and regulations!
- Prior to installation, the unit must be checked for correct condition. Furthermore, it must be ensured that the heating elements are not in contact with one another; if required, they must be re-aligned by hand!
- With respect to the minimum clearance of the connectors, please make sure that there is enough space for a later installation or removal of the heating cartridge.
- During installation and removal, please make sure that medium cannot escape. To that end, it must be ensured in advance that possible containers or flow devices are drained according to the manufacturers' specifications!
- The installation and removal may only be performed in voltage-free condition and with the use of suitable tools; please pay particular attention to the connecting line!



## Maintenance and Installation Instructions

- When routing the connecting line, ensure sufficient distance from foreign objects and sufficient clearance. (Loosely routed!)
- The electrical connection must be performed in a professional and proper manner according to the terminal diagram!
- Observe the correct supply voltage; the corresponding information can be found on the embossing on the surface of the heating cartridge!
- We recommend re-inspection of the electrical connection after approx. 4 weeks of operation, since it cannot be ruled out that the contact points come off due to the influence of heat!
- Please pay attention to the fact that a heating cartridge contains aluminium oxide and, therefore, moisture may form inside the cartridge during standstill or storage. This must be "baked out" through corresponding heating curves at a maximum temperature below the boiling point of water. (approx. 80 °C)  
Safe and continuous operation of the heating cartridge can only be guaranteed once the heating cartridge is completely dry.
- For the connecting line, it must be ensured that the correct insulation is selected; the maximum operating temperature only refers to the heating cartridge, but not to the connecting line!
- During installation, avoid damage to the heating cartridge from jolts or pointed tools; surface damage will inevitably lead to failure!

### Disassembly:



- 1 = Frontal bore for disassembly  
2 = Fitting mould  
3 = Heating element

### 3. Electrical Connection:

The electrical connection is performed according to the customer specifications!



## Maintenance and Installation Instructions

### 4. Initial Operation

Prior to the initial operation, the heating cartridge must be safe and sufficient heat dissipation must be provided! (Fitting bore in the workpiece, medium bathing!)

A heating cartridge must never be operated without sufficient heat dissipation.

The first heating-up process must be closely observed and correspondingly monitored!

For safety reasons, check and ensure correct power protection!

#### 4.1. Versions with Temperature Sensors

On request, almost all heating cartridges can be equipped with an internal thermal element, standardly NiCr-Ni, type K. Upon customer request, it can be implemented in the bottom-welded position or in the area of the line entry. Please observe, however, that the temperature to be measured is only measured inside the cartridge and, thus, the workpiece temperature cannot be derived on this basis!

### 5. Maintenance and Revision

The installation location and/or the container (if used) must be checked for contamination and deposits at appropriate intervals.

Possibly deposited sludge must be removed to ensure that the heating surface can transfer the generated heat to the medium. If the sludge is not removed, this will result in a heat build-up that may lead to the fusing of the heating elements. Sludge deposited in the lower part of the container can be rinsed out. Deposits that cannot be removed by rinsing must be removed mechanically or must be dissolved. During cleaning, please avoid mechanical damage to the heating elements. In the event of mechanical damage and/or damage caused by corrosion, all warranty claims become void!

#### 5.1 Maintenance Recommendations

##### - Disassembly of the Gräff heating cartridges

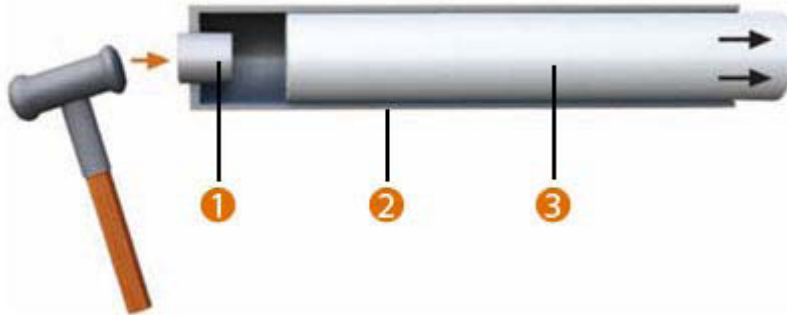
If it is required to remove the heating cartridges used for heating liquids from the container, for instance to clean them, the following guidelines should be adhered to:

Disconnect the power supply. All types of electrical work on our heating cartridges must be performed by qualified electricians only. Make sure that there is no excess pressure in the container and the medium has been drained. The container or workpiece must be cooled down to room temperature. Afterwards, the heating cartridge can be pulled out of the container or workpiece. In doing so, please ensure that the connecting line is not subjected to excessive mechanical load; otherwise, single strands or the connecting line may be damaged.

Connecting lines or pigtails must only be extended or repaired with appropriate extensions and terminal clamps intended for this use!

## Maintenance and Installation Instructions

### Disassembly:



- 1 = Frontal bore for disassembly
- 2 = Fitting mould
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### - Replacing wiring or terminal clamps

If the wiring or terminal clamps are damaged, they must be replaced immediately. In doing so, please make sure to use materials that are suitable for the temperature that may occur in the connection housing. It is recommended to order genuine spare parts at Gräff GmbH indicating the article number or return the heating device to us for inspection!

### 6. Technical Data

For all technical details, please refer to our quality characteristics that can be found on all business documents, such as the order confirmation and the delivery note! Please thoroughly check and compare them to your technical requirements!

### 7. Disposal Instructions

This product must not be disposed of in normal household waste, but at a local waste disposal site.



## Maintenance and Installation Instructions

### *EU Declaration of Conformity*

#### EU Konformitätserklärung / EU Declaration de Conformity

Document No. CE 20120609001  
Dokument Nr. / Document n°

Manufacturer Gräff GmbH  
*Hersteller/Inverkehrbringer / Etabil par*

Address Bonner Straße 54

Anschrift / Adresse D – 52384 Troisdorf

Date of initial installation CE: 06/2010  
Datum / Date

Product designation Heating cartridges  
*Produkt / Produit* Model/Series: **HLP**  
Type: Heating element

**We confirm for the designated product that the protection requirements correspond to the European directives.**

*Hiermit wird bestätigt, dass das oben aufgeführte Produkt den Schutzanforderungen der Europäischen Richtlinien entsprechen.  
Nous confirmons la conformité du produit spécifié ci-dessus aux exigences des directives européennes.*

Directive: 2006/95/EC, Annex III  
*Richtlinie / Directive*

Standards applied: DIN EN 60335 Part 1, VDE0700 Part 1  
*Angewandte Normen / Normes appliquées*

Recognized quality assurance schemes in production:

**DIN EN ISO 9001:2008**

TÜV Rheinland Group, Cologne

Certificate number: 01 100 000716

Company: Gräff GmbH  
*Firma / Société*

Place, Date: Troisdorf, 2010-06-09  
*Ort Datum / Lieu Date*