# Betriebsanleitung • Operating Instructions

ACCESSORY

## Backing pump relay box

**PM 061 372-T / PM 061 373-T**
**PM 061 374-T / PM 061 375-T**

PT 0294 BEN/B (1005)

PFEIFFER VACUUM

# Table of contents

# 1 About this manual

## 1.1 Validity

This operating manual is for customers of Pfeiffer Vacuum. It describes the functioning of the designated product and provides the most important information for safe use of the unit. The description follows applicable EU guidelines. All information provided in this operating manual refer to the current state of the product's development. The documentation remains valid as long as the customer does not make any changes to the product.

Up-to-date operating instructions can also be downloaded from

www.pfeiffer-vacuum.net.

## 1.2 Conventions

**Safety instructions**

The safety instructions in Pfeiffer Vacuum operating manuals are the result of risk evaluations and hazard analyses and are oriented on international certification standards as specified by UL, CSA, ANSI Z-535, SEMI S1, ISO 3864 and DIN 4844. In this document, the following hazard levels and information are considered:

| DANGER |
| --- |
| **Immediate danger**<br>Death or very severe injuries can occur. |

| NOTE |
| --- |
| **Command or note**<br>Command to perform an action or information about properties, the disregarding of which may result in damage to the product. |

**Pictograph definitions**

Warning of a displayed source of danger in connection with operation of the unit or equipment.

Command to perform an action or task associated with a source of danger, the disregarding of which may result in serious accidents.

**Instructions in the text**

➔ Work instruction: here you have to do something.

**Symbols used**

- Fore-vacuum flange
- Vacuum flange
- Exhaust flange
- Electric connection

**Abbreviations used**

**TC:**Electronic drive unit for turbopump
**TM:**Electronic drive unit and magnetic bearing controller
**TCP:**External electronic drive unit

# 2 Safety

## 2.1 Safety precautions

**NOTE**

**Duty to inform**

Each person involved in the installation or operation of the unit must read and observe the safety-related parts of these operating instuctions.

➔ The operator is obligated to make operating personnel aware of dangers originating from the unit or the entire system.

- Observe all safety and accident prevention regulations.
- Regularly check the proper observance off all safety measures.
- Do not loosen any plug connection during operations.
- Keep leads and cables well away from hot surfaces (> 70 °C).
- The unit has been accredited with protection class IP 65. When installing into ambient conditions, which afford other protection classes, the necessary measures must be taken.
- Always ensure a safe connection to the protective earthing conductor (PE, protection class I).
- Before carrying out any work disconnect the unit and all associated installations safely from the mains.

## 2.2 Proper use

**NOTE**

**CE conformity**

The manufacturer's declaration becomes invalid if the operator modifies the original product or installs additional components!

➔ Following installation into a plant and before commissioning, the operator must check the entire system for compliance with the valid EU directives and reassess it accordingly.

- The relay box may only be used to control vacuum backing pumps on Pfeiffer Vacuum turbopumps with related electronic drive units.
- The relay box may only be used up to the specified maximum contact load.
- Permissible electronic drive units for the connection of the relay boxes:
  - integrated electronic drive unit TC 110 with connection cable
  - integrated electronic drive unit TC 110 with TCS 12
  - integrated electronic drive unit TC 400
  - integrated electronic drive unit TC 400 with Y-Connector
  - integrated electronic drive unit TC 1200
  - integrated electronic drive unit TC 1200 with Y-Connector
  - integrated electronic drive unit TM 3000 with adapter cable
  - external electronic drive unit TCP 350 with adapter cable

## 2.3 Improper use

Improper use will cause all claims for liability and warranties to be forfeited. Improper use is deemed to be all use for purposes deviating from those mentioned above, especially:

- The connection of a mains power voltage not corresponding to the rating plate
- Operation with contact loads higher than the information on the rating plate

# 3 Product description

To correctly identify the product when communicating with Pfeiffer Vacuum, always have the information from the rating plate available.

## 3.1 Relay box 1-phase, PM 061 372-T / PM 061 374-T

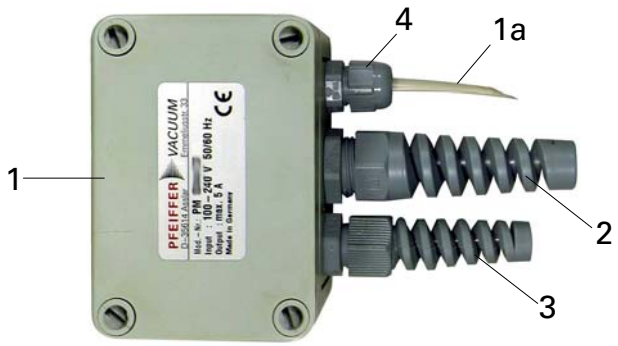



**Fig. 1: View of backing pump relay box, 5 A**

| | | | |
|---|---|---|---|
| 1 | Casing / Relay box | 3 | Cable fitting PG 9 |
| 1a | Control lead | 4 | Cable fitting PG 7 |
| 2 | Cable fitting PG 11 | | |

The relay box PM 061 372-T / PM 061 374-T with semiconductor relay is provided especially for the intermittent operation on Pfeiffer Vacuum diaphragm vacuum pumps. The maximum relay contact load is 5 A..

## 3.2 Relay box 1-phase, PM 061 373-T / PM 061 375-T


**Fig. 2: View of backing pump relay box, 20A**

| | | | |
|---|---|---|---|
| 1 | Casing / Relay box | 3 | Cable fitting PG 9 |
| 1a | Control lead | 4 | Cable fitting PG 7 |
| 2 | Cable fitting PG 11 | | |

The relay box PM 061 373-T / PM 061 375-T with mechanical relay is provided for the operation of larger Pfeiffer Vacuum backing pumps. The maximum relay contact load is 20 A.

# 4 Installation

**DANGER**

**Voltage-bearing elements**

Danger to life from electric shock as a result of improper installation.

➔ Electrical connection may be carried out only by trained and authorised electricians.

➔ Ensure the system is adequately earthed.

➔ Establish an adequate fuse protection on customer side (depending on the model).

## 4.1 Electrical connection

➔ Unscrew and remove the cover of the relay box.

➔ Install the wiring of the mains power and the backing pump according to the technical data and the following illustrations.

➔ Close the relay box.

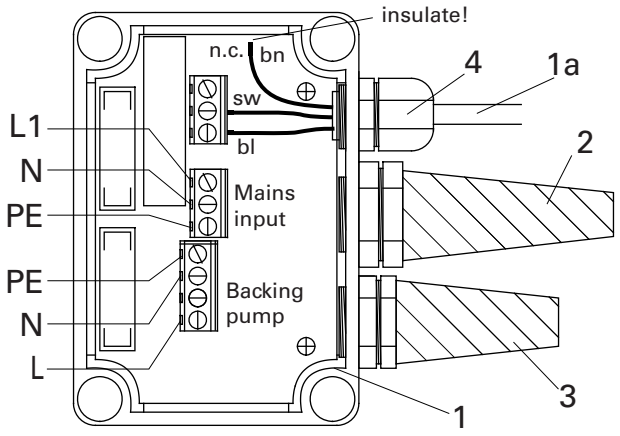



**Fig. 3: Backing pump relay box, 5 A, internal view**

| | | | |
|---|---|---|---|
| 1 | Casing / Relay box | 3 | Cable fitting PG 9 |
| 1a | Control lead | 4 | Cable fitting PG 7 |
| 2 | Cable fitting PG 11 | | |

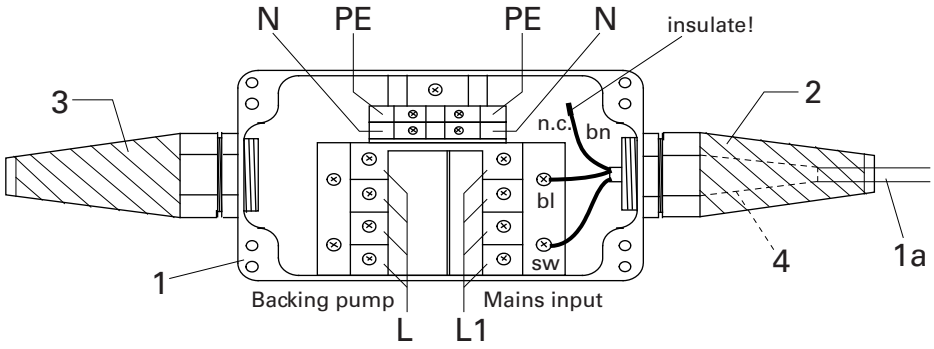



**Fig. 4: Backing pump relay box, 20 A, internal view**

| | | | |
|---|---|---|---|
| 1 | Casing / Relay box | 3 | Cable fitting PG 9 |
| 1a | Control lead | 4 | Cable fitting PG 7 |
| 2 | Cable fitting PG 11 | | |

## 4.2 Connections diagram

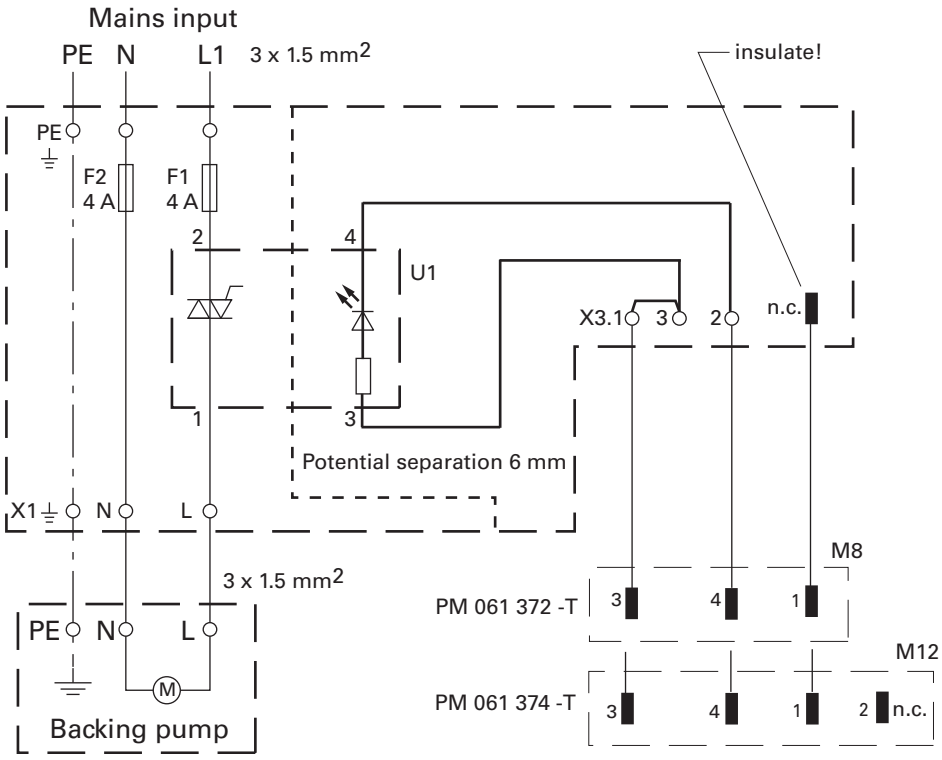



**Fig. 5: PM 061 372-T / PM 061 374-T**

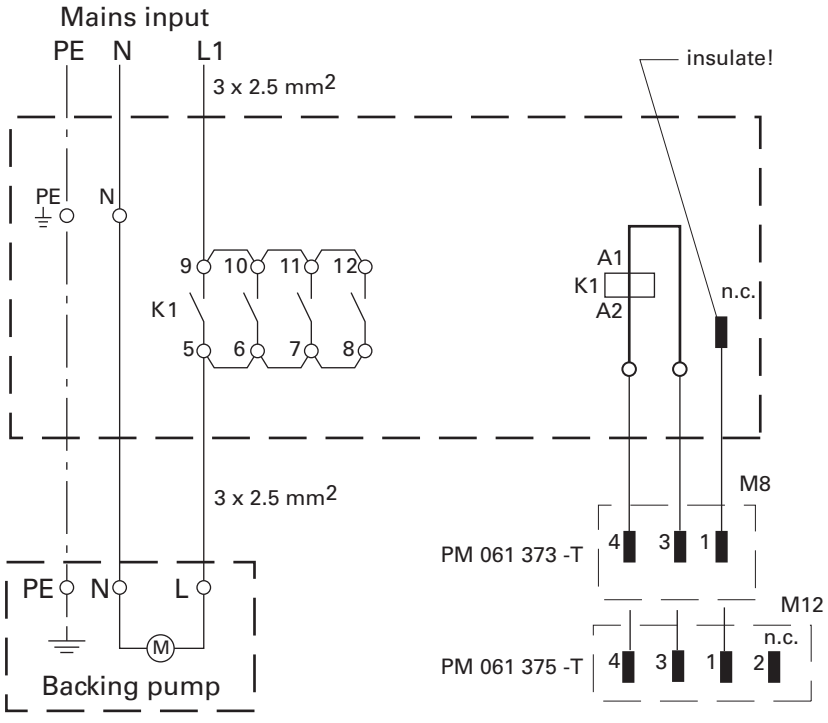



**Fig. 6: PM 061 373-T / PM 061 375-T**

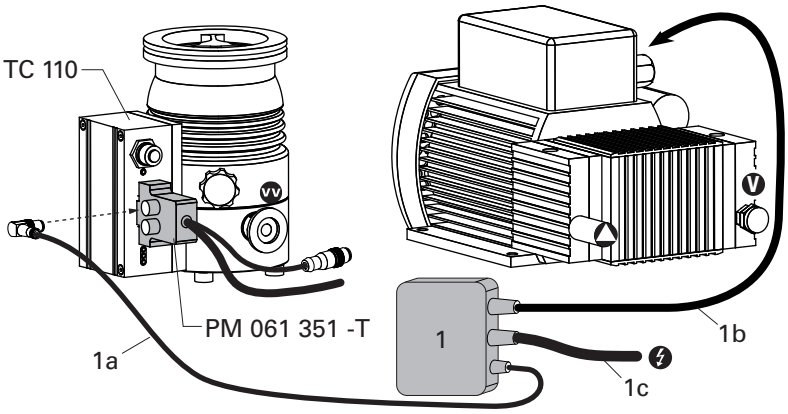
## 4.3 Connection to the electronic drive unit

Relay box model and connection to a Pfeiffer Vacuum turbopump depends on the respective electronic drive unit and the applied backing pump.

**Caption for the connection of the relay box to turbopump and backing pump**

| | | | |
|---|---|---|---|
| 1 | Backing pump relay box | 1b | Connection backing pump |
| 1a | Control lead | 1c | Mains input connection |

### TC 110



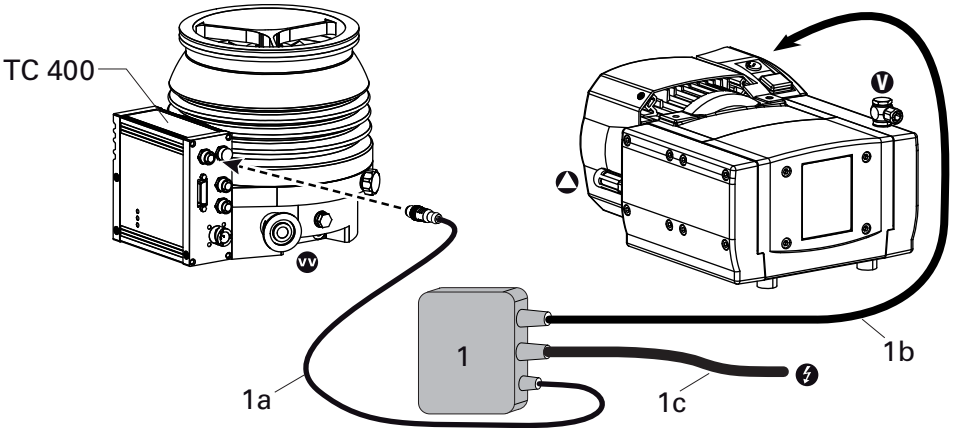

➔ Connect the control lead of the relay box to the electronic drive unit via a connection cable (e.g. PM 061 351 -T) **or** via TCS 12.

➔ Establish the mains supply for the relay box according to the accessory operating instructions.

– Observe the valid supply voltage of the backing pump.

➔ Make the settings and control via the interfaces of the electronic drive unit.

### TC 400



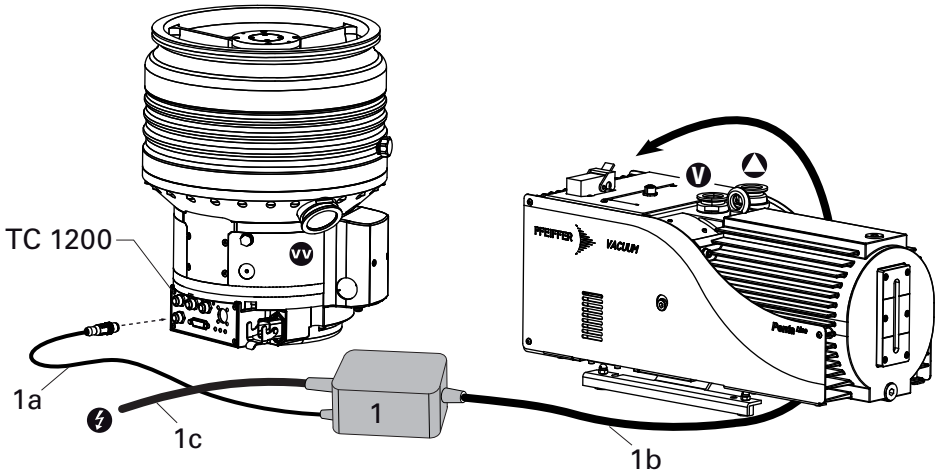

➔ Connect the control lead of the relay box directly to a vacant accessory port of the electronic drive unit **or** using an Y-Connector.

➔ Establish the mains supply for the relay box according to the accessory operating instructions.

– Observe the valid supply voltage of the backing pump.

➔ Make the settings and control via the interfaces of the electronic drive unit.

## TC 1200



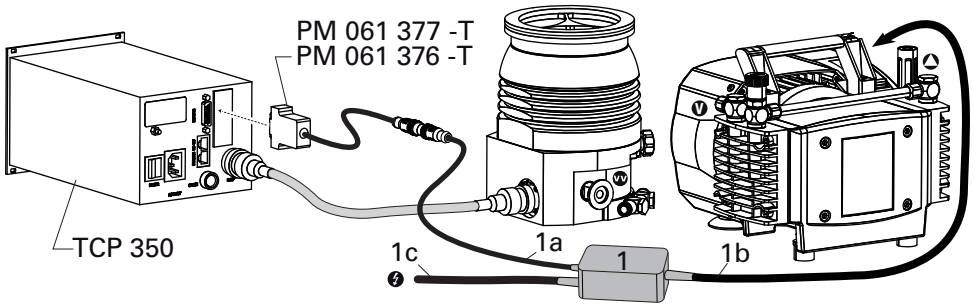

➔ Connect the control lead of the relay box directly to a vacant accessory port of the electronic drive unit **or** using an Y-Connector.

➔ Establish the mains supply for the relay box according to the accessory operating instructions.

– Observe the valid supply voltage of the backing pump.

➔ Make the settings and control via the interfaces of the electronic drive unit.

## TCP 350



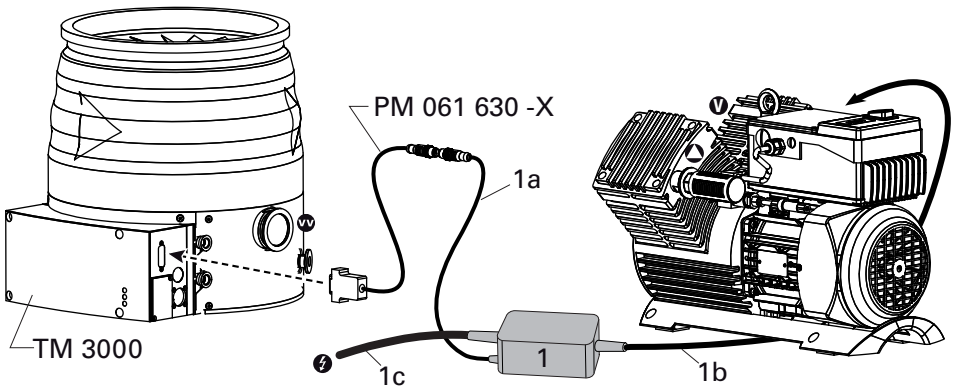

➔ Connect the control lead of the relay box to the "remote" connection of the electronic drive unit using an adapter cable.

➔ Establish the mains supply for the relay box according to the accessory operating instructions.

– Observe the valid supply voltage of the backing pump.

➔ Make the settings and control via the interfaces of the electronic drive unit.

## TM 3000




➔ Connect the control lead of the relay box to the "remote" connection of the electronic drive unit using an adapter cable.

➔ Establish the mains supply for the relay box according to the accessory operating instructions.
  – Observe the valid supply voltage of the backing pump.

➔ Make the settings and control via the interfaces of the electronic drive unit.

# 5 Accessories

| Accessories | Remarks | Order No. |
|---|---|---|
| Connection cable for linking HiPace with TC 110 to power supply TPS/DCU 110 / 111 / 180 / 181 | other lengths on request | PM 061 351-T |
| Connection cable TC 110 - TPS/DCU 110/180 with 3 accessory ports without bridges, RS-485 | other lengths on request | PM 061 512 -T |
| Connection cable, TC 110 - TPS 110/180 with accessory ports and bridges | other lengths on request | PM 061 552-T |
| TCS 12, adapter for TC 110 with interface RS-485 and 4 accessory ports | | PM 061 638-U |
| Y-Connector M12 for accessories | | P 4723 012 |
| Adapter cable from M8 socket on relay box to TCP 350 | | PM 061 376-T |
| Adapter cable from M12 socket on relay box to TCP 350 | | PM 061 377-T |
| Adapter cable from M12 socket on relay box to TM 3000 | | PM 061 630-X |
| Extension cable for accessory M8 on M8 | other lengths on request | PM 061 783-T |
| Extension cable for accessory M12 on M12 | other lengths on request | PM 061 747 -T |

# 6 Technical data

| Parameter | Relay Box | Relay Box |
|---|---|---|
| Mains requirement: frequency (range) | 50/60 Hz | 50/60 Hz |
| Netzanschluss: Spannung (Bereich) | 100-240 (± 10 %) V AC | 100-240 (± 10 %) V AC |
| Contact rating /<br>Minimum fuse protection by customers | 5.0 A | 20 A |
| Control voltage | 24 V DC | 24 V DC |

## 6.1 Dimensions

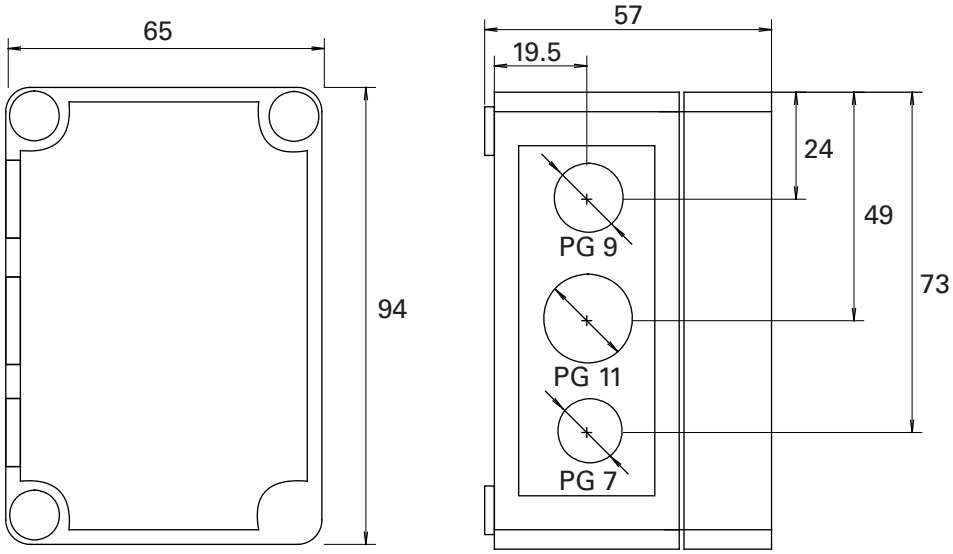



**Fig. 7: PM 061 372-T / PM 061 374-T**

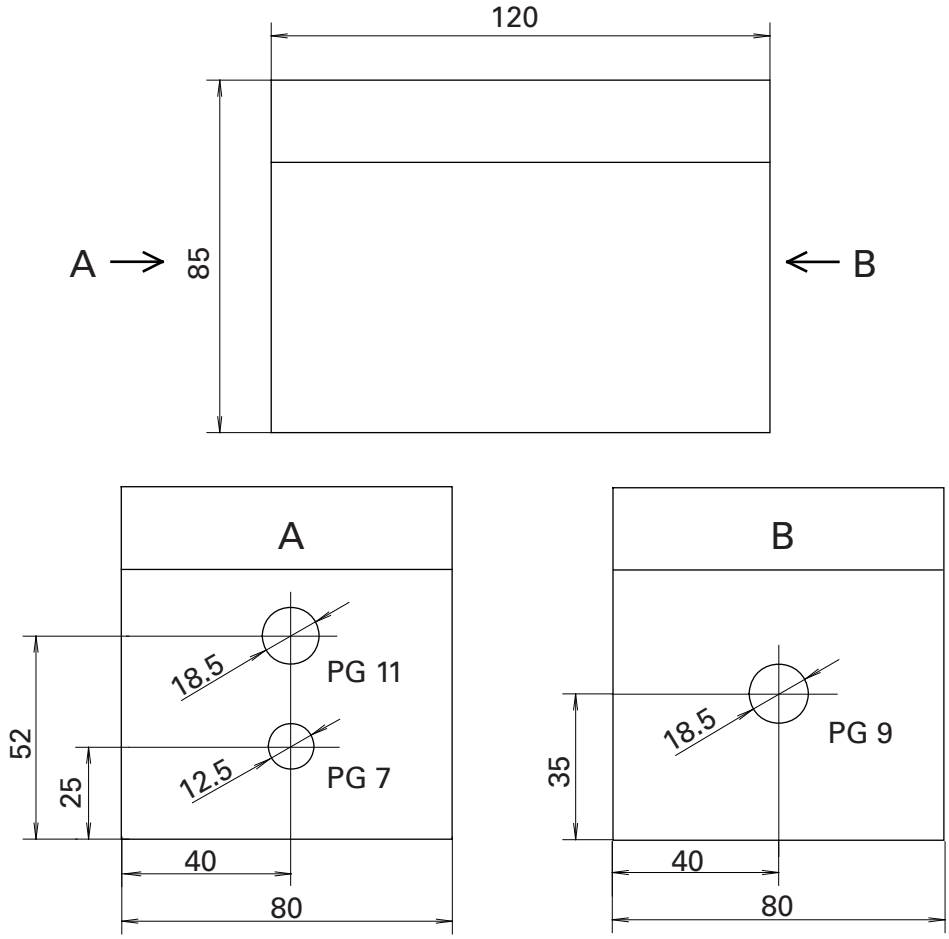



**Fig. 8: PM 061 373-T / PM 061 375-T**

# Declaration of conformity

according to the EC directive:

- **Low Voltage 2006/95/EEC**
- **Electromagnetic Compatibility 2004/108/EC**

We hereby certify, that the product specified below is in accordance with the provision of EU Electromagnetic Compatibility Directive **2004/108/EEC** and EU Low Voltage Directive **2006/95/EEC**.

**PM 061 372 -T / PM 061 373 -T**
**PM 061 374 -T / PM 061 375 -T**

Guidelines, harmonised standards and national standards and specifications which have been applied:

DIN EN 61000-3-2 : 2008
DIN EN 61000-3-3 : 2006
DIN EN 61010-1 : 2002
DIN EN 61326-1 : 2006
DIN EN 62061 : 2005

Signatures:

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CE/2009

PFEIFFER VACUUM

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**Roots pumps**

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**Leak detectors**

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PFEIFFER VACUUM

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