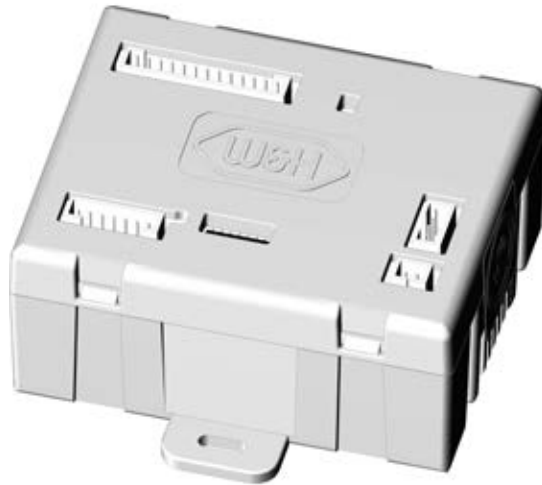




# Installation manual



**Piezo Built-in Kit**  
PC-2 E / PC-2 E LED  
PB-2 E / PB-2 E LED

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# W&H symbols

## Symbols in the Instructions for use



**WARNING!**  
[risk of injury]



**ATTENTION!**  
[to prevent damage occurring]



General explanations,  
without risk to people or objects

## Symbols on the electronics system



Consult instructions for use

**REF** Catalogue number



Do not dispose of with  
domestic waste



UL Component Recognition Mark  
indicates compliance with Canadian  
and U.S. requirements



Date of manufacture

# 1. Scope of delivery

<b>REF 06918600</b>	<b>Built-in Kit PC-2 E</b>
REF 06915000	Handpiece PB-3
REF 07006900	Handpiece hose PC-2 E

<b>REF 06914700</b>	<b>Built-in Kit PC-2 E LED</b>
REF 05547600	Handpiece PB-3 LED
REF 06914800	Handpiece hose PC-2 E LED

## Optional

REF 06747400	Handpiece PB-3 LED E
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## Accessories

REF 06992100	W&H Piezo built-in electronics system
REF 05866200	Flat cable, 7 pole
REF 06020900	Flat cable, 13 pole
REF 06094500	Potentiometer 5K
REF 06078200	Ring core
REF 05076200	Tip changer with fitted 1U universal tip (1 pc)
REF 05368200	Tip changer with fitted 3U universal tip (1 pc)
REF 00636901	Nozzle cleaner
REF 02060203	O-ring for hose coupling (2 pcs)
	Tip card

## Scope of delivery

<b>REF 05852200</b>	<b>Built-in Kit PB-2 E</b>
REF 06915000	Handpiece PB-3
REF 07006900	Handpiece hose PB-2 E

<b>REF 05852100</b>	<b>Built-in Kit PB-2 E LED</b>
REF 05547600	Handpiece PB-3 LED
REF 06914800	Handpiece hose PC-2 E LED

### Optional

REF 06747400	Handpiece PB-3 LED E
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### Zubehör

REF 06914600	W&H Piezo built-in electronics system
REF 05866200	Flat cable, 7 pole
REF 06020900	Flat cable, 13 pole
REF 06094500	Potentiometer 5K
REF 06078200	Ring core
REF 05076200	Tip changer with fitted 1U universal tip (1 pc)
REF 05368200	Tip changer with fitted 3U universal tip (1 pc)
REF 05370400	Tip changer with fitted 1P periodontal tip (1 pc)
REF 00636901	Nozzle cleaner
REF 02060203	O-ring for hose coupling (2 pcs)
	Tip card

## 2. Instructions before installation

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Customer satisfaction is the main priority of the W&H quality policy. This product has been developed, manufactured and tested in accordance with the applicable statutory regulations and quality & industry standards.

This manual will assist you in installing the W&H Piezo built-in kit. Please read this manual carefully before installing the device and follow the instructions.



Please observe the safety notes to prevent injury to persons and damage to objects.

We would be happy to assist you with any questions and suggestions you may have. Please contact your supplier or a W&H accredited repair centre if you have any problems.

W&H reserves the right to carry out changes to technology, accessories and the instruction manual as well as the content of the original packaging in the course of technical or scientific developments.


### **Intended use**


Drive unit with a piezoceramic oscillating system, which moves the tip in a linear oscillation. The drive unit is used for the removal of supragingival calculus and subgingival concretions and for endodontic application and preparation of tooth enamel.


Misuse may damage the W&H Piezo Built-in Kit and hence cause risks and hazards for patients, users and third parties.


### 3. Device information


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 The Piezo Built-in Kit (PC-2 E, PC-2 E LED, PB-2 E, PB-2 E LED) is compliant with electrical safety standards IEC 60601-1:2005 / ANSI/AAMI ES 60601-1:2005 / CAN/CSA-22.2 No.60601-1:2008.

 The Piezo Built-in Kit must be installed in the dental unit by qualified staff who have been authorized by the unit manufacturer.

 Once installation is complete, the system assembler is responsible for conducting the functional test and measurements on the leakage currents, ensuring that they comply with IEC 60601-1:2005 / ANSI/AAMI ES 60601-1:2005 / CAN/CSA-22.2 No.60601-1:2008 and ensuring that the system is electromagnetically compatible (IEC 60601-1-2:2007).

 **Production according to EU-Directive**  
The electronics system is a medical product according to the EU-directive 93/42/EEC.

 **Responsibility of the manufacturer**  
The manufacturer shall only be held responsible for negative impact on the system's safety, reliability and performance if these installation instructions were followed when the electronics system was being integrated into the unit.

## 4. Safety notes – Physical installation



### General information for the system assembler

- > Disconnect the dental unit from the power supply before opening.
- > Before using the electronics system for the first time, store it at room temperature for 24 hours.
- > The ESD guidelines must be observed when handling electronic components.
- > The system assembler must provide a description of how to start up and shut down the system.
- > The system assembler must provide information and instructions about the separator.
- > Check the Piezo Built-in Kit for damage and loose parts each time before using.  
Do not operate the electronics system if it is damaged.

### Ambient conditions (unit)

- > In accordance with IEC 60601-1/ANSI/AAMI ES 60601-1, the Piezo Built-in Kit is not suitable for use in potentially explosive atmospheres or with potentially explosive mixtures of anaesthetic substances containing oxygen or nitrous oxide.
- > The Piezo Built-in Kit is not suitable for use in oxygen-enriched atmospheres.
- > Operation is permitted only on supply units which correspond to standards IEC 60601-1 (EN 60601-1) and IEC 60601-1-2 (EN 60601-1-2).
- > The power supply unit for the dental unit must comply with the following requirement:
- > Double insulation for the highest expected supply voltage must be provided between the primary and secondary power circuits.
- > The compliance with the leakage currents of the applied part must be guaranteed by the system assembler.
- > Double insulation for the highest expected secondary voltage must be provided between the secondary voltage and earth (PE).
- > The system configurator has to ensure a galvanic separation between all secondary voltages incl. light supplies.
- > The secondary circuits must be protected against short-circuiting and overloading.
- > The supply voltage must not exceed 42.3 V<sub>peak</sub> or 60 V DC under any circumstances (also applies to first fault).



## Safety notes – Physical installation

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### Installation

- > Do not install the Piezo Built-in Kit immediately adjacent to a device which emits a high level of heat. Place the Piezo Built-in Kit somewhere sufficiently ventilated to prevent overheating.
- > The Piezo Built-in Kit must be installed in a fire-retardant housing (UL94V-0).
- > The system assembler is responsible for installing the unit wiring. The electrical wiring and media tubing must comply with standard IEC 60601-1.
- > The housing does not offer any protection against water or other liquids. Care must be taken to ensure that the electronics system is installed in a dry area.
- > The usability of the selected function and set values must be guaranteed by the system assembler.
- > In order to prevent a capacitive voltage injection in the secondary voltage range, we recommend using a screened transformer and/or power pack.

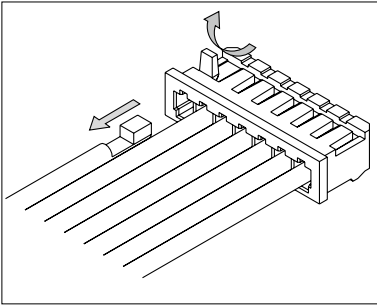


- > In order to be able to fully integrate the W&H Piezo built-in kit in a dental treatment unit, it is essential to combine together different switch diagrams with the following description. If more than one switch element is required between the same pin contacts in this process, these must be connected to one another in series. Parallel connection of the switch elements causes a malfunction and can damage the dental unit and the Piezo scaler built-in kit.



- > To ensure that the switching combination works, the corresponding switch position combination must be set on the DIP-Switch S1 .

## Safety notes – Physical installation



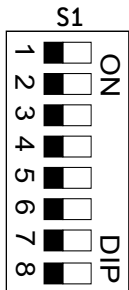
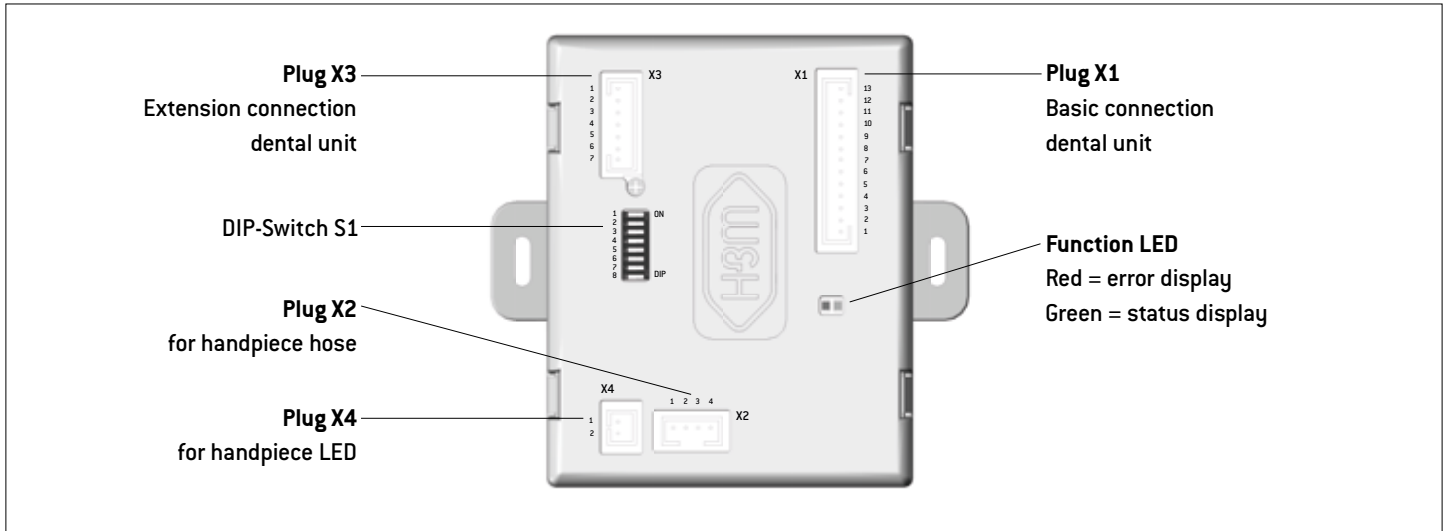
Unused strands of the flat cable must be removed from the plug or the free end must be insulated.

### Service

In the event of any malfunctions, contact the manufacturer immediately.  
Repair and maintenance work must only be carried out by authorized personnel.

For direct support, please contact the manufacturer.

## 4.1 Description of the electronics system

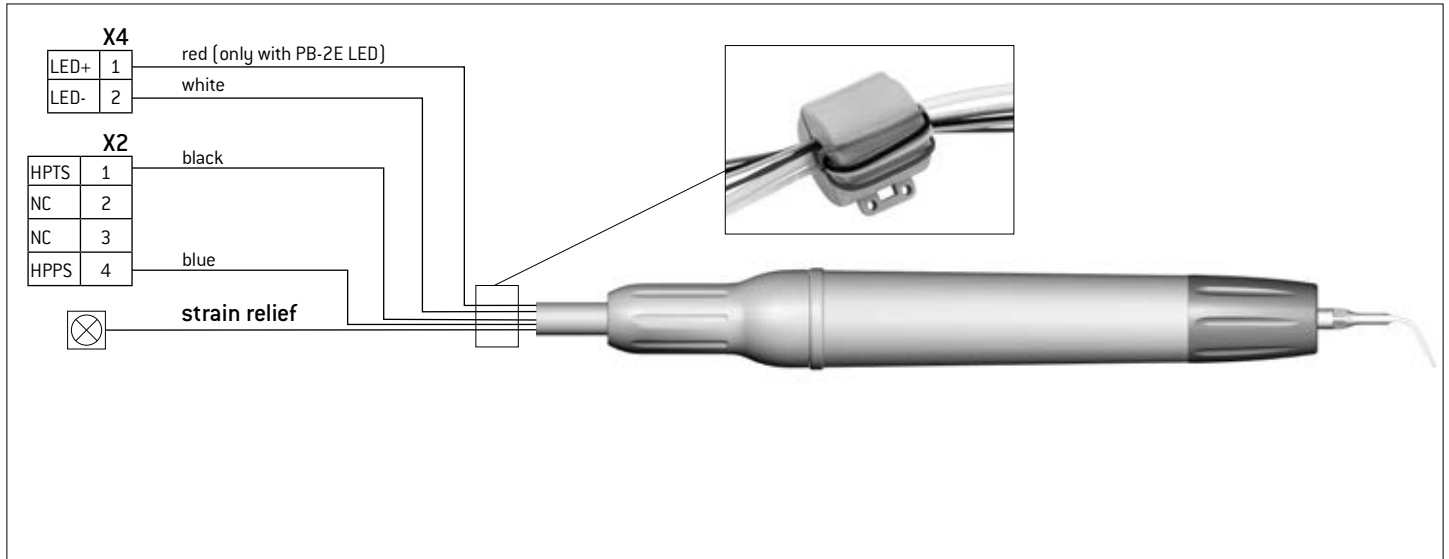


- 1...Standard
- 2...Handpiece Select (remote activation)
- 3...Switch Select Paro/Scaling/Endo
- 4...Potentiometer 2K2 [2.2 kOhm]
- 5...Potentiometer 4K7/5K0 [4.7/5.0 kOhm]
- 6...Performance control with voltage requirement (ON = 0-5 V DC, OFF = 0-10 V DC)
- 7...Remote activation Pull-Up
- 8...Remote activation Pull-Down (ON = bridge between X1-3 [GNDL] and X1-9 [ONOL])


# Description of the electronics system

connected internally	[X1-1]	FKTL	Optional: Function LED (ready for operation display)
	[X1-2]	DCVO	DC Voltage Output (voltage output when there is a supply of alternating voltage)
	[X1-3]	GNDL	Ground Logic (reference potential; switch logic)
	[X1-4]	NC	Not connected
	[X1-5]	PCIN	Potentiometer Control Input
	[X1-6]	VCIN	Voltage Control Input
	[X1-7]	RDAT	Optional: Receive Data (RS 232)
	[X1-8]	TDAT	Optional: Transmit Data (RS 232)
	[X1-9]	ONOL	ON/OFF Logic (ON/OFF Remote activation)
	[X1-10]	ACV1	AC Voltage 1
	[X1-11]	ACV2	AC Voltage 2
	[X1-12]	DCVI	DC Voltage Input (voltage input when there is a supply of continuous current)
	[X1-13]	GNDP	Ground Power (reference potential when there is a supply of continuous current)
[X3-1]	5VDC	5 Volt DC (internal 5 V DC voltage output)	
[X3-2]	NC	Not connected	
[X3-3]	HPSE	Handpiece Select	
[X3-4]	PARO	Switch Paro	
[X3-5]	ENDO	Switch Endo	
[X3-6]	VAO -	Valve Output - (DC Ventil)	
[X3-7]	VAO +	Valve Output + (DC Ventil)	
[X4-1]	LED +	(Handpiece LED+)	
[X4-2]	LED -	(Handpiece LED-)	
[X2-1]	HPTS	Handpiece Tip	
[X2-2]	NC	Not connected	
[X2-3]	NC	Not connected	
[X2-4]	HPPS	Handpiece Piezo	

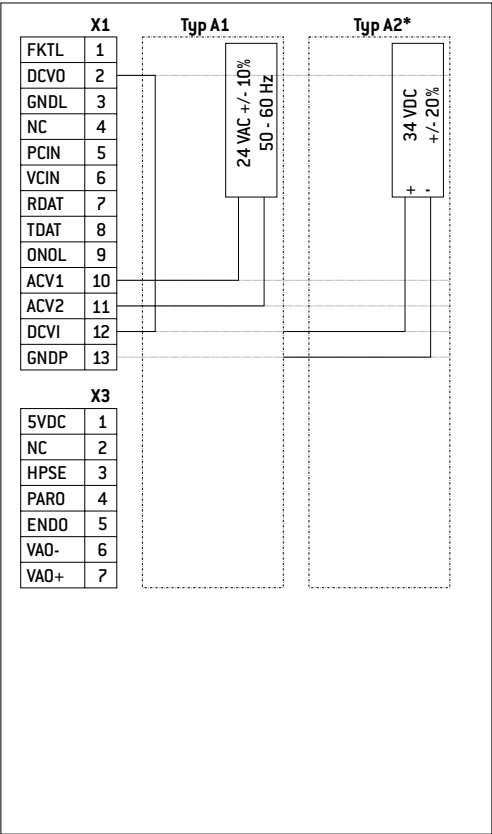
## 4.2 Connection of the handpiece hose



Connect the water connection of the handpiece hose to the intended valve in the dental unit.

-  The strands of the handpiece hose must not be shortened.  
Fasten the strain relief securely into the dental unit to prevent the handpiece hose from tearing out when under tensile load.

# 4.3 Power supply via dental unit [Typ A]

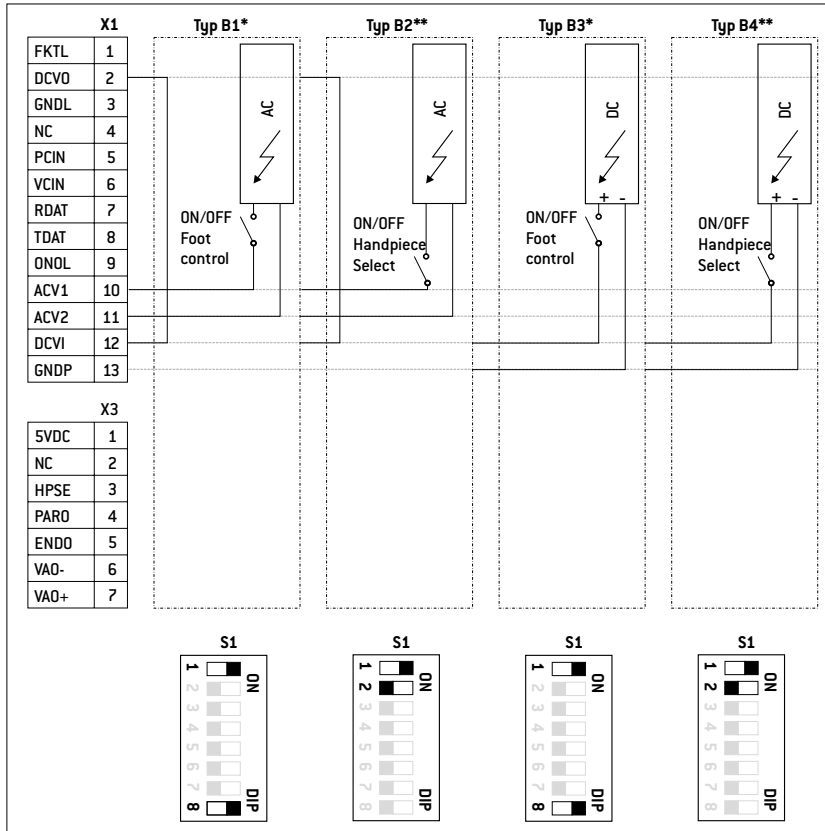


\* Permitted power supply voltage for performance control via variable power supply:

Typ D5 = 20 - 28 VDC

Typ D6 = 24 - 29 VDC

# 4.4 ON/OFF Power supply [Typ B]



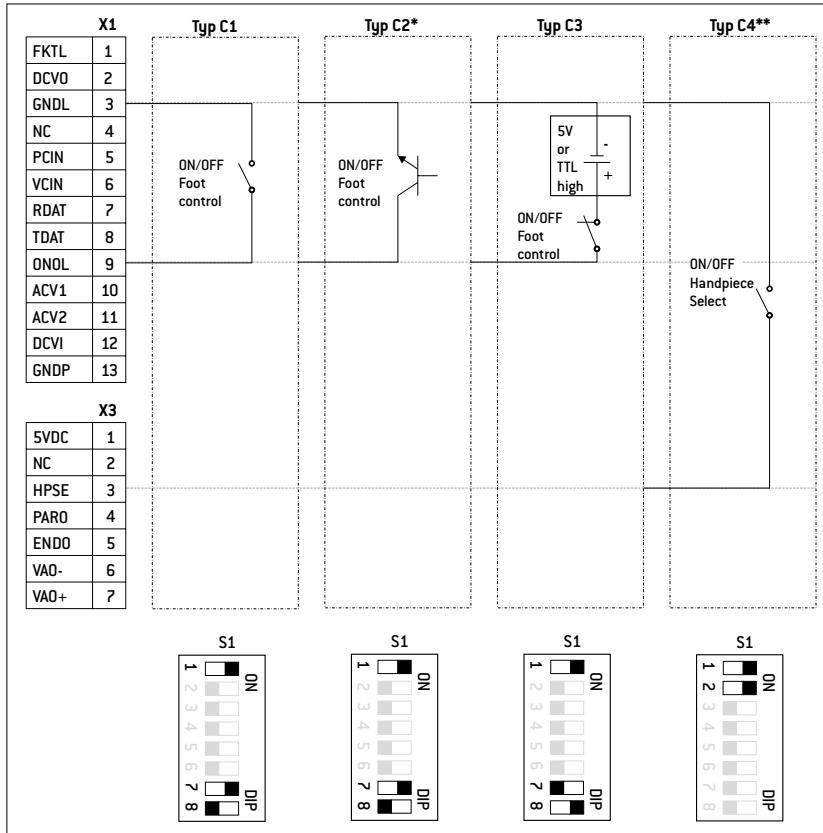
\* DIP-Switch 8 = OFF if the switching mechanism is combined with ON/OFF Foot control (activated remotely) according to Typ C1/C2.

\*\* It is imperative that this switching mechanism is at least combined with ON/OFF Foot control according to Typ B1/B3 or Typ C1/C2/C3.



The Foot control and Handpiece Select must be suitable for a switching current of at least 1 A.

# 4.5 ON/OFF remote activation [Typ C]

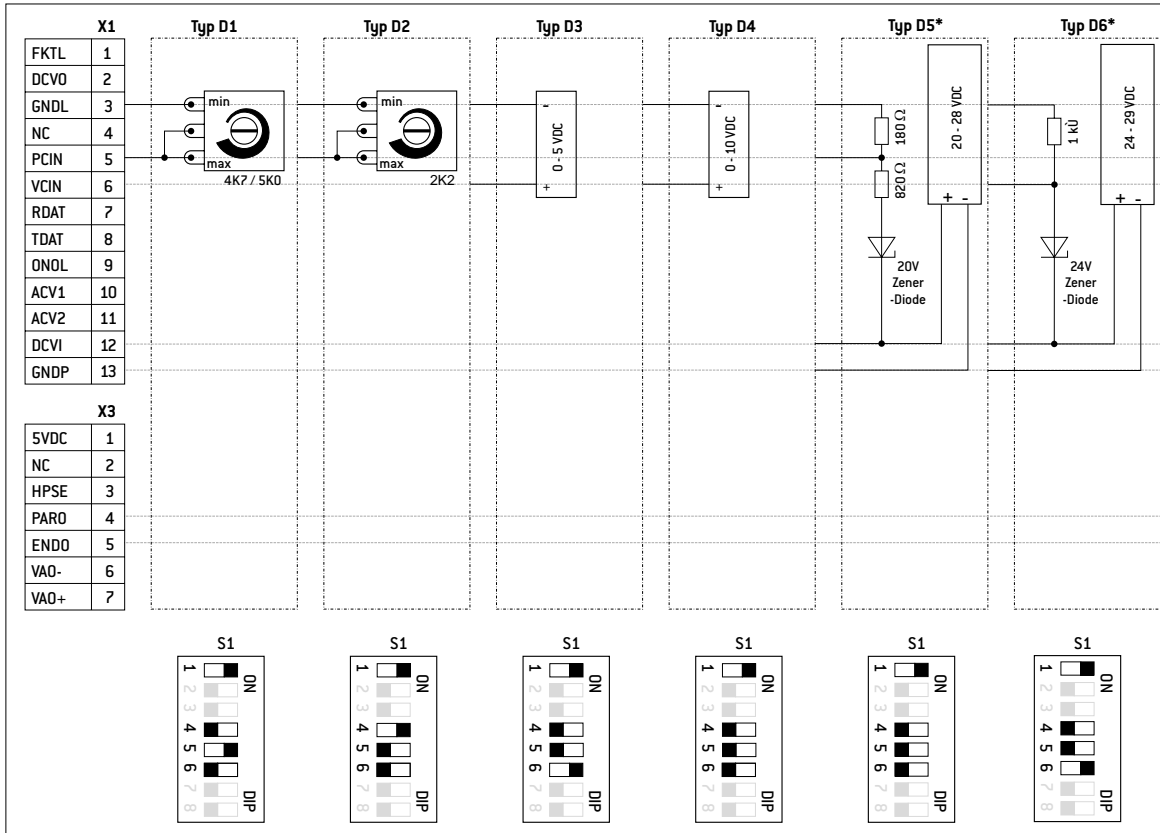


\* In the case of a switching current  $\geq 1.6$  mA, the transistor must switch to 5 V DC.

\*\* It is imperative that this switching mechanism is combined with ON/OFF Foot control according to Typ B1/B3 or Typ C1/C2/C3.

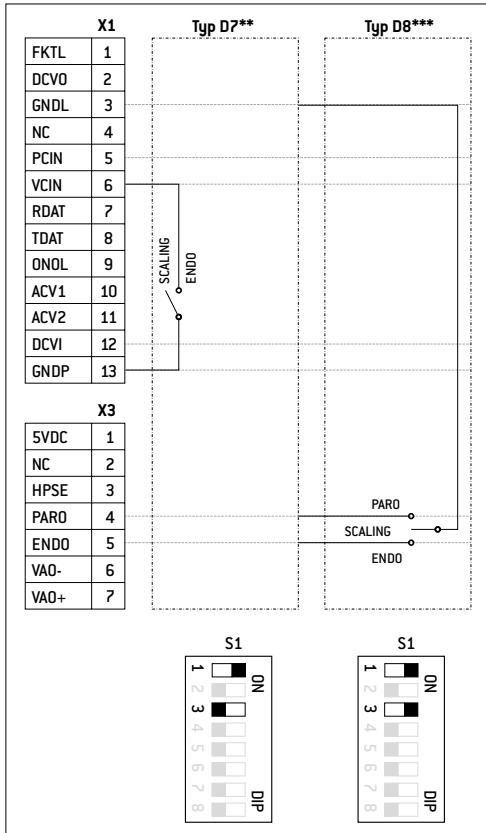


## 4.6 Performance control/restriction [Typ D]



\* It is imperative that this switching mechanism is at least combined with ON/OFF Foot control according to Typ B1/B3 or Typ C1/C2/C3. If the supply voltage falls below a value of 17 V DC, then the device is switched off.

# Performance control/restriction [Typ D]



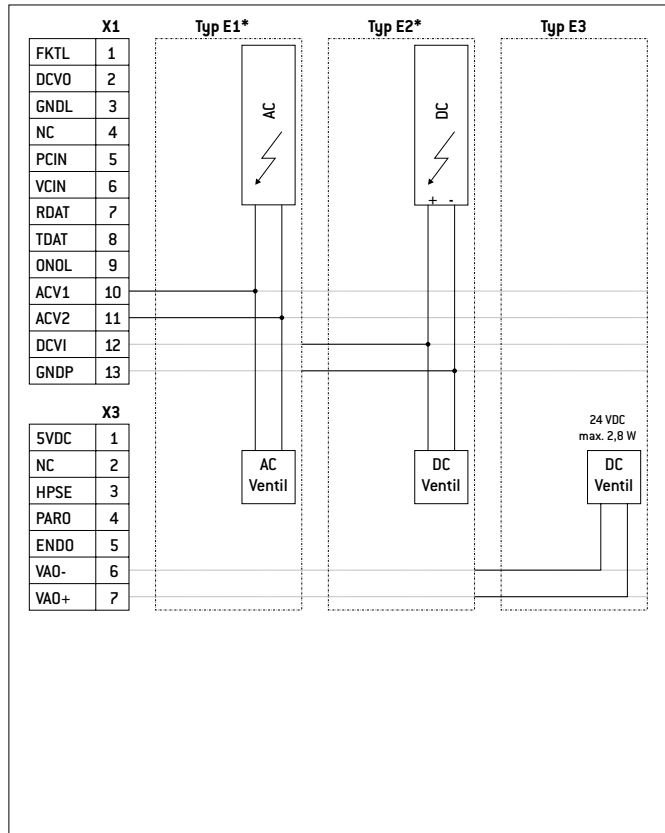
\*\* Scaling = 100% scaling performance/Endo = approx. 66% scaling performance

\*\*\* Scaling = approx. 100% scaling performance

Endo = approx. 50% scaling performance

Paro = approx. 25% scaling performance

## 4.7 Valve activation [Typ E]



\* The AC and DC valve must always be combined with ON/OFF Foot control according to Typ B1 and B3.



Adapt the performance data of the valve to the power supply.

## 4.8 Error codes

Flashing cycle	Description	Solution
1-1 (2x)	No clear point of response found	Test tip (breakage/wear/tightening torque)
1-1-1 (3x)	Handpiece not recognised when starting the Piezo built-in kit	Test handpiece connection to the supply hose
1-1-1-1-1 (5x)	Foot control continuously active for longer than 15 min	Deactivate foot control/restart
1-1-1-1-1-1 (6x)	Electronics temperature error	Allow to cool/restart
1-1-1-1-1-1-1 (7x)	Overload at handpiece outlet	Check and replace or repair faulty part(s)/ component(s)
1-1-1-1-1-1-1-1 (8x)	Error when switching User Select Paro/Endo/Scaling	Check and replace or repair switch
1-1-1-1-1-1-1-1-1 (9x)	DIP-Switch is set incorrectly	Check DIP-Switch and set correctly
Intermittent	Various system errors	Check and replace or repair faulty part(s)/ component(s)

## 5. Servicing

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### Regular checking of Piezo Built-in Kit

Regular servicing of function and safety including the accessories is necessary and should be carried out at least once every three years, unless shorter intervals are prescribed by law.

The inspection must be undertaken by a qualified organization and must include the following procedures:

- > External visual inspection and a check of the safety-relevant functions
- > Measurement of leakage current
- > Measurement of patient leakage current
- > Measurement of patient auxiliary current
- > Internal visual inspection if there is a suspicion of impaired safety, e.g. in the event of mechanical damage to the case or signs of excessive heating.

We recommend that this inspection only be carried out by an authorized individual or the unit manufacturer.

## 6. Test run

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Do not hold the handpiece at eye level.

- > Attach the handpiece to the supply hose.
- > Insert the tip in the handpiece.
- > Start the Piezo Built-in Kit.
- > In the event of malfunctions (e.g. vibrations, unusual noises, overheating, leakage), or change of LED colour, **stop Piezo Built-in Kit immediately.**

## 7. Technical data

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Manufacturer:	W&H Dentalwerk Bürmoos GmbH, A-5111 Bürmoos, Austria
Model:	W&H Piezo Built-in Kit PC-2 E / PC-2 E LED / PB-2 E / PB-2 E LED
Classification:	EN 60601-1: type B MDD 93/42: class IIa Protection against contact: IP X0
Operating mode:	S6 5/2 min
Supply voltage:	34V DC +/-20%, 24V AC +/-10% 50-60Hz
Nominal power:	21,6 VA
Max. output power:	10 W
Max. water pressure:	6 bar
Frequency range:	27-32 kHz
Weight:	114 g
Dimensions (HxWxD):	34 x 61 x 76 mm

### Physical characteristics

Temperature in storage and transport:	-40 °C (-40 °F) to +70 °C (+158 °F)
Air humidity in storage and transport:	8 % to 80 % [relative], non-condensing
Temperature in operation:	+10 °C (+50 °F) to +35 °C (+95 °F)
Air humidity in operation:	15 % bis 80 % [relative], non-condensing

Pollution level:	2
Overvoltage category:	II
Altitude:	up to 3,000 m above sea level

## 8. Recycling and disposal

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### Recycling

W&H considers it its special duty to protect the environment. The Piezo Built-in Kit along with its packaging has been designed to be as environmentally friendly as possible.



### Disposal of the Piezo Built-in Kit

Follow your country-specific laws, directives, standards and guidelines for the disposal of used electrical devices.



Upon disposal, ensure that the display is not contaminated.

### Disposal of the packaging material

All packaging materials have been selected according to environmentally compatible and disposal aspects and can be recycled. Please send old packaging materials to the relevant collection and reprocessing system. This way, you will contribute to the recycling of raw materials and the avoidance of waste.

**Manufacturer**

**W&H Dentalwerk Bürmoos GmbH**  
**Ignaz-Glaser-Straße 53, 5111 Bürmoos, Austria**

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