

Translation of the Original Operating Instructions



Turbo pumping station

HiCube 80 Eco

HiCUBE

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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.

Applicable documents

HiCube 80 Eco	Operating instructions
Safety information for vacuum pumps "Safety Guide"	PT 0300 BN*
Declaration of Conformity	Part of this document
Operating instructions for components	see product description*
Operating instructions for accessories	see section "Accessories"*

*also available via www.pfeiffer-vacuum.net

For information about other certifications, if applicable, please see the signet on the product or:

- www.tuvdotcom.com
- TUVdotCOM-ID 0000021320

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
<p>Immediate danger Death or very severe injuries can occur.</p>
WARNING
<p>Possible danger Injuries or severe property damages can occur.</p>
CAUTION
<p>Possible danger Injuries or property damages can occur.</p>
NOTE
<p>Command or note Command to perform an action or information about properties, the disregarding of which may result in damage to the product.</p>

Pictograph definitions



Prohibition of an action or activity in connection with a source of danger, the disregarding of which may result in serious accidents.



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.

Abbreviations used

DCU: Display and operating unit
HPU: Handheld programming unit
TC: Electronic drive unit for turbopump
TPS: Mains pack

Symbols used

The following symbols are used consistently throughout the diagrams:

- Ⓜ High vacuum flange
- Ⓦ Fore-vacuum connection
- ⚡ Electric connection
- ⊕ Air cooling unit
- Ⓧ Venting connection
- Ⓢ Sealing gas connection
- ⚠ Exhaust connection

2 Safety



NOTE

Duty to inform

Each person involved in the installation, operation or maintenance of the vacuum pump must read and observe the safety-related parts of these operating instructions.

- Absolute observe the safety information for vacuum pumps (PT 0300 BN) !
- The operator is obligated to make operating personnel aware of dangers originating from the vacuum pump, the pumped medium and the entire system.

2.1 Safety precautions



WARNING

Ensure safe electrical installation

Safe operation after installation is the responsibility of the operator.

- Do not independently modify or change the pump and electrical equipment.
- Make sure that the system is integrated in an emergency off safety circuit.
- Consult Pfeiffer Vacuum for special requirements.



WARNING

Danger of electric shock

In case of defect, the parts connected to the power supply are under voltage.

- Always keep the mains connection freely accessible so you can disconnect it at any time.



NOTE

Checking the safety system against excess rotation speed

To provide the functioning of the integrated safety system for avoiding excess rotation speed, the pump must run-up from the standstill at least once a year.

- Switch off the pump and await the complete standstill (rotation speed = 0 Hz).
- Run-up the pump according to this operating instructions.

- Always ensure a safe connection to the protective earthing conductor (PE, protection class I).
- Do not loosen any plug connection during operations.
- Wait for the rotor to reach standstill before performing work on the high vacuum flange.
- Keep leads and cables well away from hot surfaces (> 70 °C).
- Never fill or operate turbopump with cleaning agent.
- Do not carry out any unauthorised modifications or conversions to the pumps.
- The unit has been accredited with protection class IP 20. When installing into ambient conditions, which afford other protection classes, the necessary measures must be taken.

2.2 Proper use



NOTE

CE conformity

The manufacturer's declaration of conformity 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.

- Only use the pumping station for creating vacuum.
- Only operate the pumping station as an entire unit.
- Only use the pumping station for evacuation of dry and inert gases; other applications only after consultation with Pfeiffer Vacuum.

2.3 Improper use

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

- Pumping of corrosive or explosive media.
- Pumping of condensing vapors.
- Operation with improper high levels of gas loads.
- Operation with improper high fore-vacuum pressures.
- Operation with improper gas mode.
- Operation with improper high levels of insulated heat input.
- Venting with improper high venting rates.
- The operation of the devices in potentially radioactive areas.
- The operation of the devices in systems where the turbopumps are subjected to impact-like stress and vibrations or the effect of periodically occurring forces.
- The connection to a power supply with earthing of a direct voltage pole.
- The use of accessories, which are not named in this manual.



NOTE

Warranty seal

The product is sealed at the factory. Damaging or removal of the seal leads to the loss of liability and warranty entitlements.

→ Do not open the product within its warranty period!

→ For process-related shorter maintenance intervals please contact the Pfeiffer Vacuum Service.

3 Transport and storage

3.1 Transport

- Only transport the pumping station by hand.
- Always transport the pumping station uprightly and as even as possible.
- Keep the original protective covers.

3.2 Storage

- Close the flange openings by using the original protective covers.
- Close further connection ports by using the corresponding protective covers.
- Only store the pumping station indoors at an ambient temperature between -25 °C and +55 °C.
- In rooms with moist or aggressive atmospheres, the pumping station must be airproof shrink-wrapped in a plastic bag together with a bag of dessicant.

4 Product description

4.1 Product identification

Product features

Feature	HiCube 80 Eco			Operating instructions
	DN 63 ISO-K	DN 63 CF	DN 40 ISO-KF	
High vacuum flange	Aluminium	Stainless steel	Aluminium	
Flange material	Aluminium	Stainless steel	Aluminium	
Turbopump	HiPace 80	HiPace 80	HiPace 80	PT 0208 BN
Electronic drive unit	TC 110	TC 110	TC 110	PT 0204 BN
Backig pump	MVP 015-2	MVP 015-2	MVP 015-2	PU 0012 BN
Power supply pack	TPS 110	TPS 110	TPS 110	PT 0199 BN
Display and control unit (option)	DCU 002	DCU 002	DCU 002	PT 0250 BN
Accessories	Air cooling unit	Air cooling unit	Air cooling unit	PT 0231 BN
Order number without display and control unit	PM S03 550	PM S03 551	PM S03 552	
Order number with display and control unit	PM S03 555	PM S03 556	PM S03 557	

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

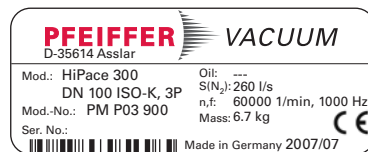


Fig. 1: Example for a rating plate

Scope of delivery

- HiCube 80 Eco
- Protective cover for the high vacuum flange
- Connection cable M12, 3 m length
- Operating manuals for pumping station and individual components

4.2 Function

The turbo pumping stations in the HiCube range are fully automatic pump units which are ready for connection. The turbo pumping station consists of a portable or mobile vacuum pumping unit with a turbopump and a specially matched back-ig pump.

The turbo pumping station HiCube 80 Eco is available with or without a display and control unit. The display and control unit DCU 002 is used to control and monitor the pumping station. The DCU can be detached from the pumping station and used together with an connection cable M12 (accessory) as a remote control.

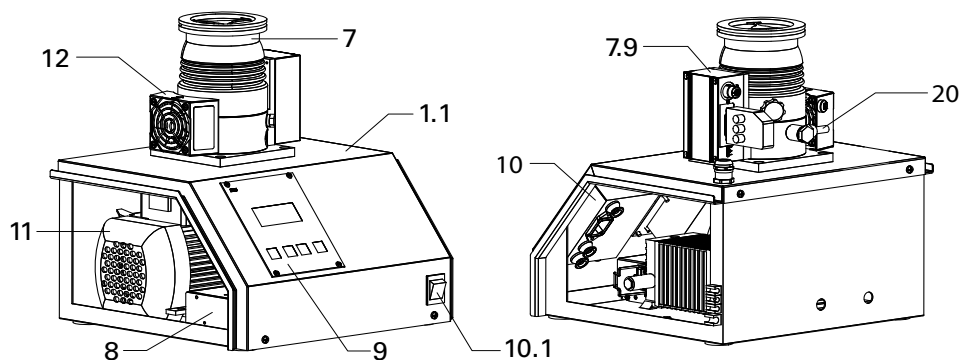


Fig. 2: Views of HiCube 80 Eco

1.1	Casing	10	Relay box
7	Turbopump HiPace 80	10.1	Main switch
7.9	Electronic drive unit TC 110	11	Backing pump MVP 015-2
8	Power supply pack TPS 110	12	Air cooling unit
9	Display and control unit DCU 002 (option)	20	Fore-vacuum connector

Cooling

- Air cooling
- Water cooling (optional)

In the case of excess temperature the electronic drive unit reduces the drive power automatically.

Drive

Electronic drive unit of the turbopump

4.3 Range of application

The pumping station HiCube 80 Eco must be installed and operated in the following ambient conditions.

Installation location	weather protected (indoors)
Protection category	IP 20
Protection class	I
Temperature	+5 °C to +30 °C with convection cooling without gas load +5 °C to +35 °C with air cooling +5 °C to +40 °C with water cooling
Relative humidity	max. 80 %, at T ≤ 31 °C, up to max. 50% at T ≤ 40 °C
Atmospheric pressure	77 kPa - 106 kPa
Installation altitude	2000 m max.
Degree of pollution	2
Permissible surr. magnetic field	≤ 3 mT
Overvoltage category	II
Connection voltage TC	24 VDC ±5%

5 Installation

5.1 Set-up

The installation location is to be chosen so that components that need servicing are freely accessible at all times. No special foundations or base are necessary for installation. The unit must not be used outdoors. Conditions are:

- The ambient conditions specified for the area of use.
- a level, vibration-free surface.
- Distance to side walls or adjacent devices: at least 50 cm.
- Distance to possible edges of tables: at least 10 cm.
- When using a casing heating and a water cooling unit the temperature of the connected flange of the vacuum chamber must not exceed 120 °C.
- It is not allowed to operate the device in systems where impact-like stresses and vibrations or periodically forces occur.

5.2 Preparatory work

- Ensure sufficient cooling for the pumping station.
- Where magnetic fields > 3 mT are involved, a suitable shielding must be used. Check installation location and consult Pfeiffer Vacuum if needed!
- The maximum permissible rotor temperature for the turbopump is 90 °C. If high temperatures arise for process reasons, the radiated heat input must not exceed 3 W. Install suitable screening sheets, if necessary (design information on request).

5.3 Connecting the high vacuum side

The assembly of superstructure on the pumping station HiCube 80 Eco is in the operator's responsibility. The load capacity of the high vacuum flange is specific for the used turbopump. The gross weight of superstructure on the pumping station HiCube 80 Eco may **not** exceed 50 kg!

- Observe barycentric shifting by using high or lateral protruding superstructure (e.g. vacuum chamber). **Danger of tilting!**
- Install the high vacuum flange in accordance with the instructions in the operating manual of the turbopump.
- Ensure the greatest possible cleanliness when installing any high vacuum parts. Unclean components prolong the pump-down time.
- Observe the minimum strength of 170 N/mm² for the flange material.

For the installation of the flange connections the following components are available:

- The valid mounting kit of the Pfeiffer Vacuum accessories programme.
- A protective screen or splinter shield can optionally be used.

5.4 Connecting the exhaust side



CAUTION

High pressure in the exhaust line!

Danger of damage to the seals and danger of the pump bursting.

- Install the line without shut-off valves on the exhaust side.
- Pumpe nicht mit Überdruck am Einlass betreiben; max. zulässige Drücke und Druckdifferenzen beachten.

- Choose the cross-section of the exhaust line to be at least the size of the nominal connection diameter of the vacuum pump's exhaust connection.
- Piping to the pump must be suspended or supported.
 - Physical forces from the piping system must not be allowed to act on vacuum pumps.
- Lay piping from the pump sloping downward so that no condensate can flow back into the pump; otherwise fit a condensate separator.
 - If an air trap is created in the system, then a device for draining condensation water must be provided at the lowest point.

5.5 Connecting accessories



NOTE

Installation and operation of accessories

Pfeiffer Vacuum pumps can be equipped with a series of adapted accessories. The installation, operation and maintenance of connected devices are described in detail in the operating instructions of the individual components.

- For information on the operating instructions of components, see "Accessories".
- Use original accessory parts only.

The pumping station is equipped with air cooling as a standard accessory.

- Connect additional accessories according to the operating manual of the turbo-pump.

6 Operation

6.1 Commissioning

The following important settings are programmed in the electronic drive unit ex factory.

- Control max. run-up time: 8 min
- Gas mode: 0 = heavy gases
- Rotation speed switchpoint: 80% of the nominal rotation speed
- Venting rotation speed at delayed venting: 50% of the nominal rotation speed
- Venting time: 3600 s

→ When water cooling is used: Open cooling water supply and check the flow.

→ When sealing gas is used: Open the sealing gas supply and check the flow.



CAUTION
<p>Danger of the pump being destroyed</p> <p>Pumping of gases with the molecular mass > 39 in the wrong gas mode can lead to destruction of the pump.</p> <p>→ Ensure the gas mode is correctly set.</p> <p>→ Contact Pfeiffer Vacuum before using gases with a greater molecular mass (> 80).</p>

Voltage range of the backing pump

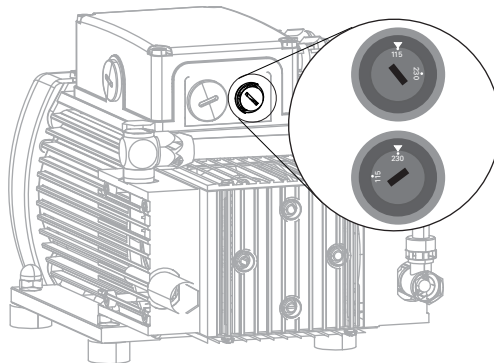
The backing pump is driven by single-phase extended voltage range motors with reversible voltage ranges.



NOTE
<p>Overvoltage!</p> <p>An incorrect voltage range setting can damage the motor.</p> <p>→ Always check the voltage range before switching on the pumping station.</p> <p>→ Disconnect the mains supply before changing the voltage range of the backing pump.</p>

- 180 ... 254 V, 50/60 Hz
- 90 ... 126 V, 50/60 Hz

→ Set the desired voltage range on the voltage selector switch using a suitable screwdriver.



Switch position:	"115"	"230"
Voltage ranges:	90 ... 126 V; 50/60 Hz	180 ... 254 V; 50/60 Hz

Fig. 3: Switch position for the voltage range at the backing pump

Connecting to the mains power supply



WARNING

Ensure safe electrical installation

Safe operation after installation is the responsibility of the operator.

- Do not independently modify or change the pump and electrical equipment.
- Make sure that the system is integrated in an emergency off safety circuit.
- Consult Pfeiffer Vacuum for special requirements.



CAUTION

Automatic start

After connecting the supply voltage and switching on the main switch, pumping stations **without** display and control unit will run up immediately.

- Switch the mains switch to position "0" before plugging in the mains cable.
- Switch on the mains supply immediately before operation.

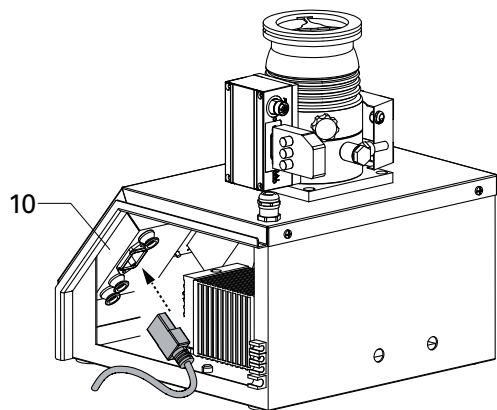


Fig. 4: Connecting the mains supply

10 Relay box

- Order the mains cable separately (see "accessories").
- Plug the mains cable into the the mains connection of the relay box.
- Connect the mains cable to the mains.
- Always ensure a safe connection to the protective earthing conductor (PE, protection class I).

6.2 Operation modes

The following operation modes are available:

- Operation without operating unit
- Operation via RS485 and Pfeiffer Vacuum display and control units or PC

6.3 Function description



WARNING

Danger due to open high vacuum flange

The rotor of the turbopump turns at high speed. If the high vacuum flange is open, there is a danger of cut injuries and that the pump can be destroyed by objects falling into it.

- Never operate the pump with an open high vacuum flange.

Operation without operating unit



CAUTION

Automatic start

After connecting the supply voltage and switching on the main switch, pumping stations **without** display and control unit will run up immediately.

- Switch the mains switch to position "0" before plugging in the mains cable.
- Switch on the mains supply immediately before operation.

→ Switch on the pumping station at the master switch.

After switching on the main switch, the electronic drive unit of the turbopump performs a self-test to check the supply voltage. Once the self test has been successfully completed, the turbopump and the backing pump begin to operate.

Operation with DCU

→ Consider the following manuals for the operation via Pfeiffer Vacuum display and control units:

- Operating instructions "DCU"
- Operating instructions "Electronic drive unit"



→ Switch on the mains supply via the main switch.

→ Switch on the pumping station via button "ON/OFF" on the DCU 002.

→ Settings are possible via the RS485 by using DCU, HPU or PC.

Use of the DCU as a remote control

The display and control unit can be removed from the pumping station and used as a remote control.

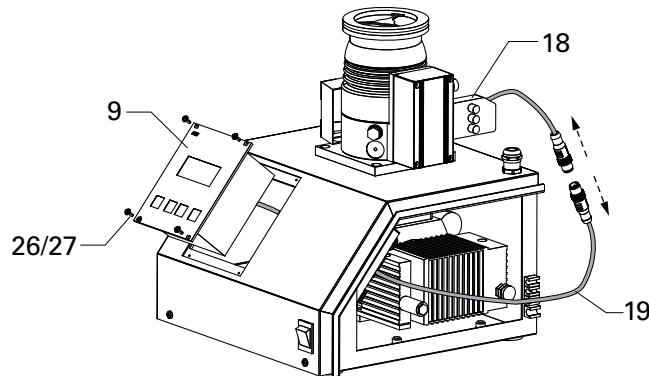


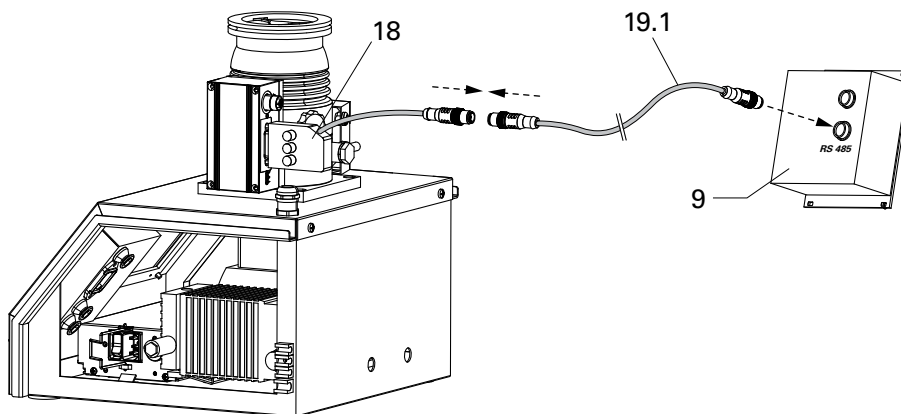
Fig. 5: Setting up the DCU for use as a remote control

9	Display and control unit	19.1	Connecting cable M12, 3 m (scope of delivery)
18	Connecting cable TC-DCU	26	Fixing screw
19	Connecting cable M12, 0.7 m	27	Washer

→ Switch off the pumping station at the master switch.

→ Disconnect the mains plug.

→ Unscrew and remove the 4 fastening screws with washers from the front panel of the display and control unit.



- ➔ Lift out the display and control unit from the casing.
 - Be careful of the casing seal.
- ➔ Swap the connecting cable between the display and control unit and the electronic drive unit marked "RS485" for a longer M12 connection cable (scope of delivery).
 - Other lengths on request.

6.4 Operation with gas ballast valve

Steam or moisture from pumped media can condense in the vacuum pump and hence impair the suction performance.

Letting in gas ballast improves the discharge of condensate, and the pump achieves the specified final vacuum more quickly. The gas ballast valve can be replaced with a flushing gas connection if necessary.

- ➔ For operation with gas ballast, please refer to the operating manual for the backing pump.

6.5 Monitoring of the operation conditions

Operating mode display via LED

LEDs in the front panel of the electronic drive unit show basic operating conditions of the turbopump. A differentiated malfunction and warning display is possible only for operation with DCU or HPU.

LED	Symbol	Steady OFF	Flashing (1/12 s active)	Blinking (1/2 s active)	Steady ON
Green		insufficient power supply	Pumping station "OFF" Rotation speed $\leq 1\text{Hz}$	Pumping station "OFF" Rotation speed $> 1\text{Hz}$	Pumping station "ON"
Yellow	△	no warning			Warning
Red	⚡	no malfunction			Malfunction

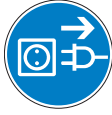
Temperature monitoring

The drive power is reduced in case of impermissible motor temperature or impermissibly high housing temperature. This can cause falling below the rotation speed switchpoint and so result in turning off the turbopump.

6.6 Switching off and venting

Switching off

After the turbopump is switched off, it must be vented to avoid contamination due to particles streaming back from the fore-vacuum area.



WARNING

Risk of electric shock

The pumping station is only free of voltages when the mains plug has been disconnected.

→ Switch off the master switch and disconnect the mains plug before all work.

Switching off without the DCU

- Switch off the pumping station at the master switch.
- Venting (possibilities, see below)
- For water cooling: Shut off the water supply.

Switching off with the DCU



- Switch off the pumping station via the "ON/OFF" button on the DCU.
- Switch off the pumping station at the master switch.
- Venting (possibilities, see below)
- For water cooling: Shut off the water supply.

Venting

Manually Venting

- Open the venting screw (included) in the venting connection of the turbopump about one turn.

Venting with Pfeiffer Vacuum Venting Valve

- Enable venting via the functions of the electronic drive unit.
- Settings are possible via the RS485 by using DCU, HPU or PC.

Venting rotation speed	Switch off the pumping station	Mains power failure ¹⁾
50% of the nominal rotation speed	Venting valve opens for 3600 s (1 h, works setting)	Venting valve opens for 3600 s (1 h, works setting)

¹⁾When mains power is restored the venting procedure is aborted.

Basic information for the rapid venting

Venting of the vacuum chamber in two steps. Ask for details on individual solutions from Pfeiffer Vacuum.

- Vent for 20 seconds at a rate of pressure rise of max. 15 mbar/s.
 - The valve cross section for the venting rate of 15 mbar/s must be adapted to the size of the vacuum chamber.
 - For small vacuum chambers, use the Pfeiffer Vacuum venting valve.
- Then vent with an additional venting valve of any desired size.

7 Maintenance / replacement



WARNING

Contamination of parts and operating fluid by pumped media is possible.

Poisoning hazard through contact with materials that damage health.

- In the case of contamination, carry out appropriate safety precautions in order to prevent danger to health through dangerous substances.
- Decontaminate affected parts before carrying out maintenance work.



NOTE

Disclaimer of liability

Pfeiffer Vacuum accepts no liability for personal injury or material damage, losses or operating malfunctions due to improperly performed maintenance. The liability and warranty entitlement expires.



WARNING

Risk of electric shock

The pumping station is only free of voltages when the mains plug has been disconnected.

- Switch off the master switch and disconnect the mains plug before all work.

7.1 Maintenance intervals and responsibilities

- Clean the pumping station externally with a lint-free cloth and little industrial alcohol.
- Carry out the required maintenance on the components of the pumping station in accordance with the instructions in the individual operating manuals.
- Clarify shorter change intervals for extreme loads or impure processes with Pfeiffer Vacuum Service.
- For all other cleaning, maintenance or repair work, please contact your Pfeiffer Vacuum service location.

7.2 Removal of components for their maintenance

In some cases, components may need to be dismantled from the pumping station so that customers can carry out necessary maintenance work on them (they should then be reassembled in reverse order).



CAUTION

Refer to the notes on Proper Use of the unit.

The pumping station must only be operated as a complete unit. Disassembly and operation of individual pumping station components is deemed to be improper use.

- In this case the declaration of conformity will become invalid.

Dismantling connections

- Switch off the pumping station at the master switch.
- Disconnect the mains plug.
- Pull out the mains cable from the relay box.
- Pull out the mains supply cable (x2) for components from the relay box.
- Take off the connector from the electronic drive unit TC 110.
- Detach the accessory control lines from the connector and remove them.



NOTE

Note the factory settings.

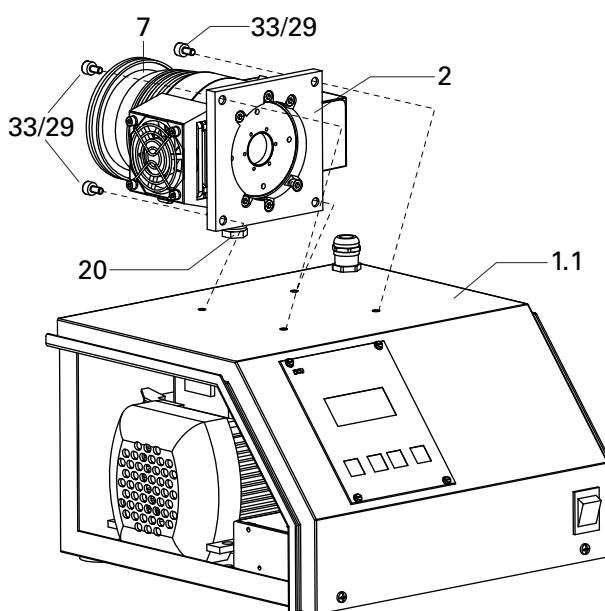
The accessory connections on the turbopump have been preconfigured at the factory. Interchanging the control leads on the connector cause the pumping station to malfunction or fail.

- Do not interchange the control leads.
- Accessory connections can be configured for operation with the DCU.
 - For more information refer to the operating instructions for the electronic drive unit of the turbopump.

Connection to X3	Preset accessory
acc. A1	Air cooling unit
acc. B1	Venting valve
acc. DO1	Backing pump

Overview of factory preconfigured accessory connections on the HiCube 80 Eco

Dismantling of the turbopump



- 1.1 Housing
- 2 Mounting plate
- 7 Turbopump
- 20 Fore-vacuum connection, elbow union
- 29 Spring washer
- 33 Allen head screw

Fig. 6: Disassembly of the turbopump

- Detach the fore-vacuum line from the turbopump and take it off.
 - Do not kink or damage the fore-vacuum hose.
- Unscrew and remove all Allen head screws 95 (7x) from the mounting plate.
 - Tightening torque for the fixing screws when mounted: 10 Nm
- Take off the turbopump with the mounting plate from the casing.

The opening in the mounting plate makes it easy for customers to perform maintenance work on the turbopump (e.g. change the lubricant reservoir).

Removing the backing pump

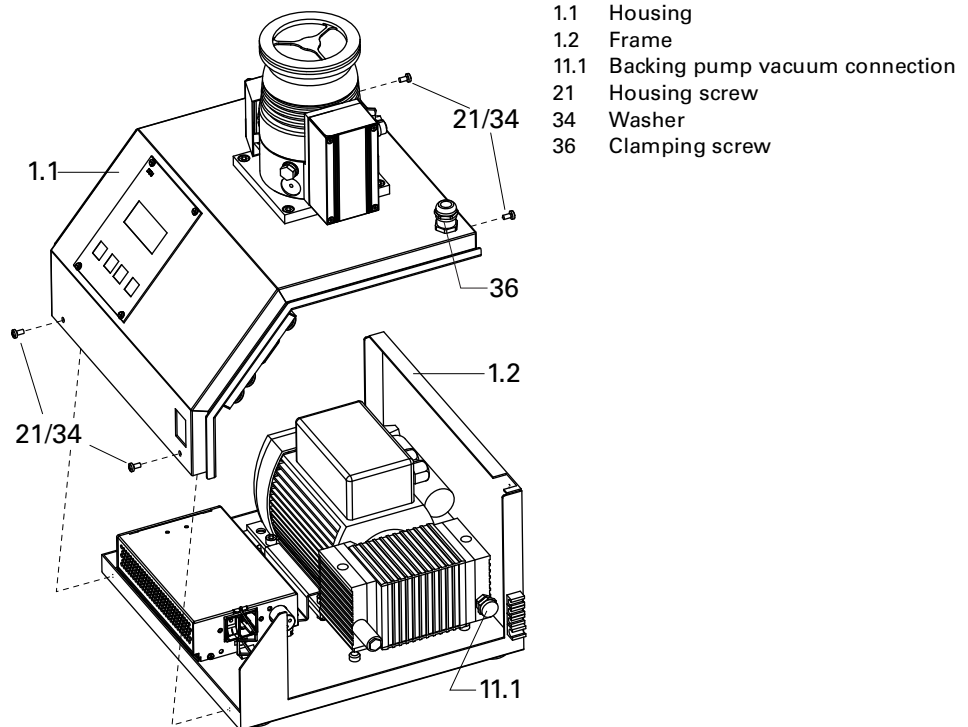


Fig. 7: Disassembly of the pumping stand housing

- Detach the fore-vacuum line from the vacuum connection of the diaphragm pump and take it off.
 - Do not kink or damage the fore-vacuum hose.
- Unscrew and remove the housing screws and washers on the front and rear of the pumping stand frame.
- Take off the housing with turbopump, display and control unit and relay box from the pumping stand frame.

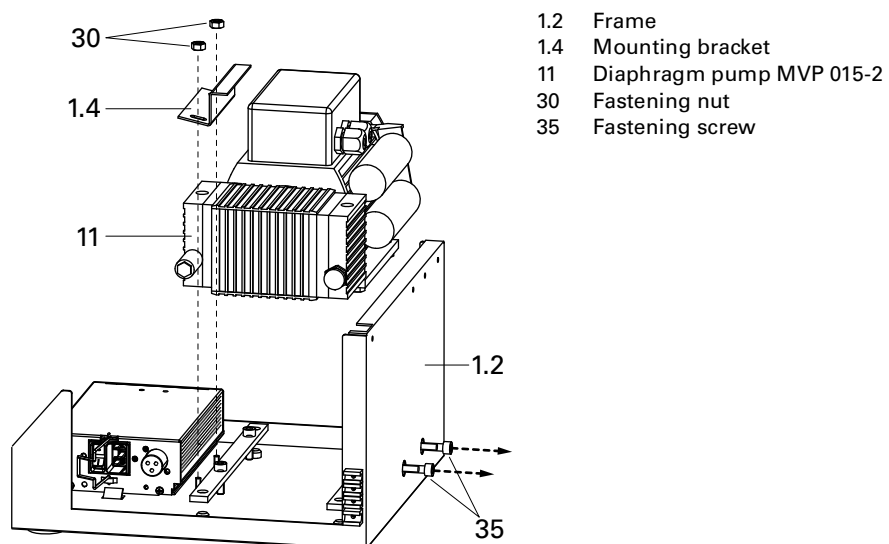


Fig. 8: Disassembly of the diaphragm pump from the pumping stand frame

- Unscrew and remove the fastening nuts 30 from the bottom of the frame.
- Take off the mounting bracket from the diaphragm pump.
- Unscrew the fastening screws 35 (Allen head) far enough from the frame until the backing pump becomes detached.
- Lift out the diaphragm pump above the top of the pumping station frame.

8 Decommissioning

8.1 Shutting down for longer periods



WARNING

Contamination of parts and operating fluid by pumped media is possible.

Poisoning hazard through contact with materials that damage health.

- In the case of contamination, carry out appropriate safety precautions in order to prevent danger to health through dangerous substances.
- Decontaminate affected parts before carrying out maintenance work.

If the pumping station should be shut down for longer than a year:

- Remove the pumping station from the system, if necessary.
- Change the operating fluid reservoir of the turbopump.
- Only store the pumping station indoors at an ambient temperature between -25 °C and +55 °C.
- In rooms with moist or aggressive atmospheres, the pumping station must be airproof shrink-wrapped in a plastic bag together with a bag of desiccant.

8.2 Re-starting



CAUTION

Re-starting

The serviceability of the operating fluid of the turbopump without operation is a maximum of 4 years. Before restarting after a shut-down of **4 years or longer**, carry out the following work:

- Replace the operating fluid reservoir
 - Replace bearings
 - Follow the maintenance instructions and inform Pfeiffer Vacuum
- Check pumping station for contamination and moisture.
 - Clean the pumping station externally with a lint-free cloth and little industrial alcohol.
 - If necessary, have Pfeiffer Vacuum Service clean the pumping station completely.
 - Installation and commissioning in accordance with the operating instructions.

8.3 Disposal

Products or parts thereof (mechanical and electrical components, operating fluids, etc.) may cause environmental burden.

- Safely dispose of the materials according to the locally applicable regulations.

9 Malfunctions

Malfunctions on the pumping station are usually caused by faults on individual components. Faults are indicated by the LEDs at the electronic drive unit of the turbopump. Alternatively, a fault code can also be output at the display and control unit DCU.

- Please refer to the relevant operating manual for information about troubleshooting individual pump components.
- If no display and control unit is available, please contact the Pfeiffer Vacuum Service.

9.1 Rectifying malfunctions

Problem	Possible causes	Remedy
Pumping station will not start; none of the integrated LEDs on the electronic drive unit of the turbopump light up	• Electrical supply interrupted	⇒ Check the plug contacts at the relay box and the power supply unit. ⇒ Check the supply lines of the pumping station. ⇒ Check the output voltage (24 VDC) at the "DC out" terminal of the power supply unit ⇒ Check the plug contacts on the power supply unit
	• Incorrect operating voltage	⇒ Apply correct operating voltage ⇒ Observe the ratings on the type plate.
	• No operating voltage applied	⇒ Apply the correct operating voltage.
	• Electronic drive unit defective	⇒ Replace the electronic drive unit. ⇒ Contact Pfeiffer Vacuum Service.
Pump not achieving the required final pressure	• Condensate in the backing pump	⇒ Open the gas ballast valve at the backing pump.
	• Gas ballast valve open	⇒ Close the gas ballast valve at the backing pump.

10 Service

Pfeiffer Vacuum offers first-class service!

- Operating fluid and bearing change on the spot by Pfeiffer Vacuum FieldService
- Maintenance / repair in the nearby ServiceCenter or ServicePoint
- Fast replacement with exchange products in mint condition
- Advice on the most cost-efficient and quickest solution

Detailed information, addresses and forms at: **www.pfeiffer-vacuum.net** (**Service**).

Maintenance and repair in the Pfeiffer Vacuum ServiceCenter

The following steps are necessary to ensure a fast, smooth servicing process:

- Download the forms "Service Request" and "Declaration on Contamination".¹⁾
- Fill out the "Service Request" form and send it by fax or e-mail to your Pfeiffer Vacuum service address.
- Include the confirmation on the service request from Pfeiffer Vacuum with your shipment.
- Fill out the declaration on contamination and include it in the shipment (required!).
- Dismantle all accessories.
- Drain the operating fluid (applies for turbopumps with pumping speed > 700 l/s).
- Leave electronic drive on the pump.
- Close the flange openings by using the original protective covers.
- If possible, send pump or unit in the original packaging.

Sending of contaminated pumps or devices

No units will be accepted if they are contaminated with micro-biological, explosive or radioactive substances. "Hazardous substances" are substances and compounds in accordance with the hazardous goods directive (current version). If pumps are contaminated or the declaration on contamination is missing, Pfeiffer Vacuum performs decontamination at the shipper's expense.

- Neutralise the pump by flushing it with nitrogen or dry air.
- Close all openings airtight.
- Seal the pump or unit in suitable protective film.
- Return the pump/unit only in a suitable and sturdy transport container and send it in while following applicable transport conditions.

Exchange unit

The factory operating parameters are always preset with exchange units. If you use changed parameters for your application, you have to set these again.

Service orders

All service orders are carried out exclusively according to our repair conditions for vacuum units and components.

¹⁾ Forms under www.pfeiffer-vacuum.net

11 Spare parts HiCube 80 Eco

Please also specify model number of the the rating plate when ordering accessories or spare parts.

Refer to the operating manuals for the individual components.

12 Technical data and dimensions

12.1 General

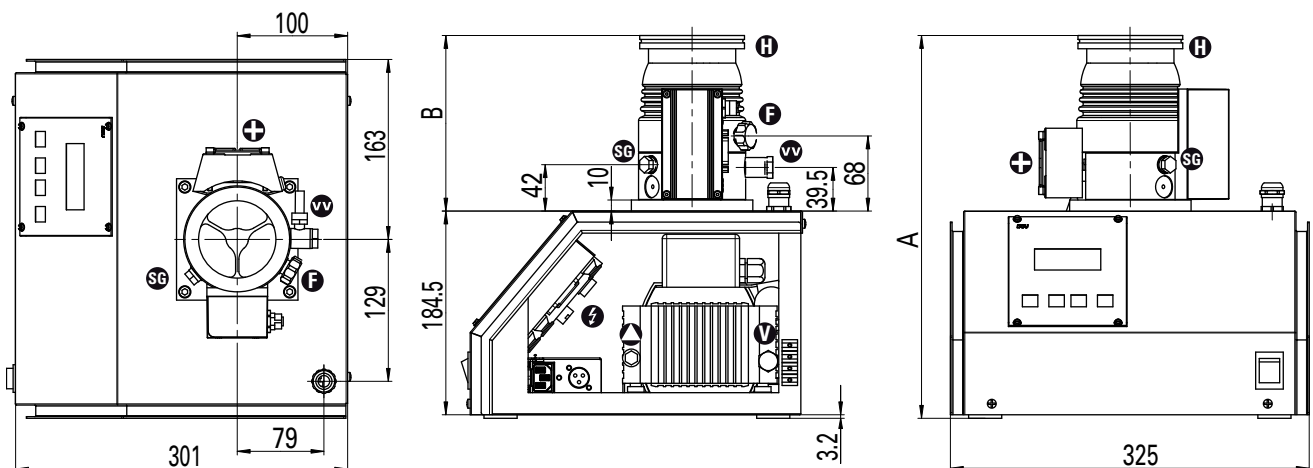
Basic principles for the Technical Data of Pfeiffer Vacuum Turbopumps:

- Recommendations of PNEUROP committee PN5
- ISO 21360; 2007: "Vacuum technology - Standard methods for measuring vacuum-pump performance - General description"
- ISO 5302; 2003: "Vacuum technology - Turbomolecular pumps - Measurement of performance characteristics"
- Ultimate pressure: using a test dome and a 48 hrs. period of baking out
- Gas throughput: water cooling; backing pump = rotary vane pump (10 m³/h)
- Cooling water consumption: at max. gas throughput, cooling water temp. 25 °C
- Integral leak rate: using a Helium concentration of 100 %, period 10 s
- Acoustic pressure: Distance 1 m to the pump

12.2 Technical data

Parameter	HiCube 80 Eco	HiCube 80 Eco	HiCube 80 Eco
Flange (in)	DN 63 ISO-K	DN 63 CF-F	DN 40 ISO-KF
Venting connection	G 1/8"	G 1/8"	G 1/8"
Run-up time	1.7 min	1.7 min	1.7 min
Enddruck	1·10 ⁻⁷ mbar	5·10 ⁻¹⁰ mbar	1·10 ⁻⁷ mbar
Cooling method, standard	Luft	Luft	Luft
Operating voltage power supply	90-265 V AC	90-265 V AC	90-265 V AC
Relative humidity of air	5-85, non condensing %	5-85, non condensing %	5-85, non condensing %
Weight	16,6 kg	18 kg	16,6 kg

12.3 Dimensions



Maße	HiCube 80 Eco, DN 63 ISO-K, MVP 015	HiCube 80 Eco, DN 63 CF-F, MVP 015	HiCube 80 Eco, DN 40 ISO-KF, MVP 015
A	347 mm	349.5 mm	352.5 mm
B	159 mm	165 mm	168 mm



Declaration of conformity

according to the EC directive:

- **Machinery 2006/42/EC (Annex II, no. 1 A)**

We hereby declare that the product cited below satisfies all relevant provisions of EC directive "Machinery" **2006/42/EC**.

In addition, the product cited below satisfies all relevant provisions of EC directive "Electromagnetic Compatibility" **2004/108/EC**.

The agent responsible for compiling the technical documentation is Mr. Jörg Stanzel, Pfeiffer Vacuum GmbH, Berliner Straße 43, 35614 Asslar.

HiCube 80 Eco

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

DIN EN ISO 12100-1 : 2004	DIN EN 61000-3-2 : 2008
DIN EN ISO 12100-2 : 2004	DIN EN 61000-3-3 : 2006
DIN EN ISO 14121-1 : 2007	DIN EN 61326-1 : 2006
DIN EN 1012-2 : 1996	DIN EN 62061 : 2005
DIN EN 61010-1 : 2002	

Signatures:

Pfeiffer Vacuum GmbH
Berliner Straße 43
35614 Asslar
Germany

(M. Bender)
Managing Director

(Dr. M. Wiemer)
Managing Director

CE/2010

Vacuum is nothing, but everything to us!



Turbopumps



Rotary vane pumps



Roots pumps



Dry compressing pumps



Leak detectors



Valves



Components and feedthroughs



Vacuum measurement



Gas analysis



System engineering



Service

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Pfeiffer Vacuum Technology AG · Headquarters/Germany

Tel. +49-(0) 64 41-8 02-0 · Fax +49-(0) 64 41-8 02-2 02 · info@pfeiffer-vacuum.de · www.pfeiffer-vacuum.net