PFEIFFER VACUUM

Operating Instructions

TPH 180 HM / TPU 180 HM

Wide Range Magnetic Bearing Turbomolecular Pumps

PM 800 304 BE/B (9803)

Index

1. Safety Precautions

- ☞ Read and follow all the instructions in this manual.
- ☞ Inform yourself regarding:
  - – Hazards which can be caused by the pump;
  - – Hazards which can arise in your system;
  - – Hazards which can be caused by the medium being pumped.
- ☞ Avoid exposing any part of your body to vacuum.
- ☞ Comply with all safety and accident prevention regulations.
- ☞ Check regularly that all safety requirements are being complied with.
- ☞ Do not operate the pump with open high vacuum flange.
- ☞ Do not carry out any unauthorised conversions or modifications on the pump.
- ☞ When returning the pump to us please note the shipping instructions.
- ☞ Use at least four bracket screws to connect the high vacuum flange.
- ☞ Fix down the pump in accordance with the instructions on installation.
- ☞ Do not disconnect the pump cable during operations.
- ☞ When the pump is open, disconnect the electronic drive unit from the mains.
- ☞ After switching off the pump, disconnect the electronic drive unit only once the rotor is at rest.
- ☞ When working on the pump, only open the high vacuum flange once the rotor is at rest.

Modifications reserved.

Pictogram Definition

Danger of burns from touching hot parts.

Danger of an electric shock.

Danger of personal injury.

Danger of damage to the pump or system.

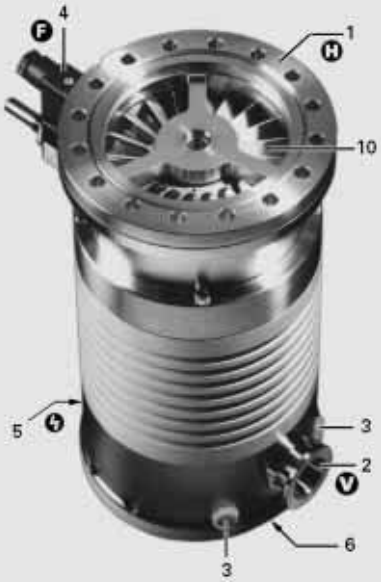
Danger of injury from moving parts.

2. Understanding The Pumps TPH 180 HM / TPU 180 HM

2.1. Main Features

Turbomolecular Pump TPU 180 HM

1	High vacuum flange	5	Power connection
2	Fore-vacuum flange	6	Rubber feet (underside)
3	Cooling water connection	10	Rotor
4	Venting valve		



Cooling

Standard: Convection cooling

Pre-condition: Fore-vacuum pressure ≤ 4 mbar.
High vacuum pressure ≤ $1 \cdot 10^{-4}$ mbar.

Alternative: Cooling water connection or air cooling as an accessory.

Integrated excess temperature safety feature: Electronic drive unit reduces rotor rotation speed to zero.

Bearings

High vacuum side: Wear free permanent magnetic bearing.

Fore-vacuum side: Wear free electromagnetic radial and axial bearing.

Additionally: Dry running safety bearing.

Proper Use

- The Turbomolecular Pumps TPH 180 HM / TPU 180 HM may only be used for the purpose of generating vacuum.
- The Turbomolecular Pumps TPH 180 HM / TPU 180 HM may only be operated with a PFEIFFER Magnetic Bearing and Electronic Drive Unit TCM 180 and relevant cables.
- The turbopump must be connected to a backing pump as per Section 3.3.

Improper Use

Certain types of use are regarded as improper, e.g.

- Pumping corrosive or explosive gases.
- Operating the pump where explosive processes are involved.
- Using accessories not named in this manual and/or not authorised by PFEIFFER.

Improper use will cause any rights regarding liability and guarantees to be forfeited.

2.2. Differences Between The Pump Types

Feature	TPH 180 HM	TPU 180 HM
HV flange	ISO-K	CF-F
HV Seal	Viton	Metal
Attainable final pressure	$1 \cdot 10^{-8}$ mbar (without baking out)	$< 5 \cdot 10^{-11}$ mbar (with baking out)

2.3. For Your Orientation

Instruction in the Text

➡ Working instruction: Here, you have to do something.

Symbols Used

The following symbols are used throughout in the illustrations:

- High vacuum flange
- Fore-vacuum flange
- Venting connection
- Cooling water connection
- Power connection
- Air cooling

Position Numbers

Identical pump and accessory parts have the same position numbers in all illustrations.

3. Installation

3.1. Preparations For Installation

Do not carry out any unauthorised conversions or modifications on the pump.

- Only remove blank flanges on the high and fore-vacuum side just before connecting.
- Appropriate shielding must be provided (available on request) if magnetic fields > 4 mT are involved.
- If the pump is baked out, measures must be taken to prevent contact with the heating jacket and the body of the pump.

3.2. Assembling The Pump, Connecting The High Vacuum Side

Important
Maintain the utmost cleanliness when fitting all high vacuum parts. Unclean components prolong the pumping time.

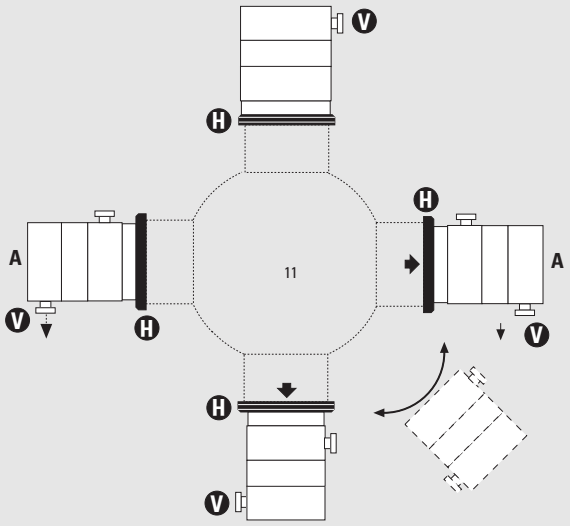
Use of the splinter shield
A splinter shield in the high vacuum flange protects the pump against foreign particles emanating from the vacuum chamber but it does reduce the volume flow rate of the pump by approx. 15%.
For fitting please refer to 'Fitting The Splinter Shield'.

The high-vacuum side can be flanged direct or via a metal bellows to the vacuum chamber.

Direct Flanging

Optional turbopump positioning

11 Vacuum chamber



Maximum high vacuum flange axial loading capacity 500 N (corresponds to 50 Kg).
No asymmetrical loading on the high vacuum flange.
Avoid jolting the pump.
The fore-vacuum flange must point downwards with oil sealed backing pumps and installation position A, otherwise the turbopump can become contaminated.

Flanging The Vacuum Chamber Via The Bellows

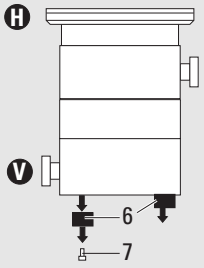
Advantage: Reduced vibration transmission.

The pump must be mechanically bolted onto a holder.

➡ Unscrew the rubber feet from the underside (of the base). Bolt the pump onto a holder with M5 screws.

Anchoring points on the underside of the turbopump

6 Rubber feet (4x)
7 M5 screws (4x)



No forces must be transmitted from the pipe system to a pump which is anchored.
Suspend or support all piping leading to the pump.

Fitting The Splinter Shield

Insert the splinter shield in the high vacuum flange so that the curvature of the grill faces outwards.

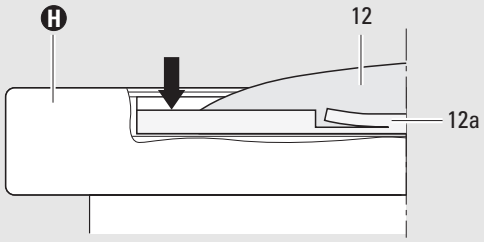
➡ Bend clamping lugs slightly outwards so that the splinter shield will sit firmly in the high vacuum flange (preventing noise).

➡ Insert splinter shield in the high vacuum flange with clamping lugs bent slightly inwards.

➡ Press splinter shield outer ring into the high vacuum flange up to the stop limit.

Inserting the splinter shield

12 Splinter shield
12a Clamping lug



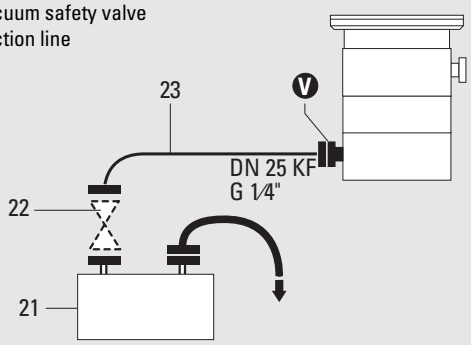
➡ Fit the vacuum safety valve in the fore-vacuum line (in PFEIFFER-rotary vane vacuum pumps already integrated). This prevents vacuum chamber venting via the backing pump.

➡ With rigid pipe connections: Fit bellows in the connecting line to reduce vibration.

➡ Backing pump power connection: see operating instructions for magnetic bearings/electronic drive unit.

Connecting the backing pump

21 Backing pump
32 Vacuum safety valve
23 Suction line



3.3. Connecting The Fore-Vacuum Side

Recommended backing pump: Oil free diaphragm pump. These pumps prevent oil backstreaming.
With convection cooling: Fore-vacuum pressure of ≤ 4 mbar is required.

Connecting the backing pump
All fore-vacuum line connections: With normal small flange components. The connecting hose backing pump - turbo pump can also be supplied with G1/4" thread.

Exhaust gases from the backing pump must be conducted away. Ensure the full width of the fore-vacuum flange remains unhindered by other components. Exhausted process gases and vapours can be hazardous to health and harmful to the environment.

3.4. Connecting The Cooling Unit

Turbomolecular Pumps TPH 180 HM / TPU 180 HM are convection cooled as standard. Pre-condition: Fore-vacuum pressure ≤ 4 mbar, high vacuum pressure ≤ $1 \cdot 10^{-4}$ mbar.
Ambient temperature < 35 ° C: Air cooling possible, see "Accessories".
Ambient temperature > 35 ° C: Water cooling only.

Cooling water either
– from the mains
– or from Water Recycling Unit TZK with closed circuit (accessory).

Cooling Water From The Mains

Cooling water must be filtered to prevent deposits forming in the pump.

Minimum cooling water requirements:
Mechanically clean, optically clear, no turbidity, no sediment, chemically neutral.

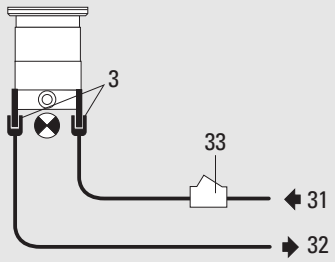
Oxygen content:	max.	4	mg/kg
Chloride content:	max.	100	mg/kg
Carbonate hardness:	max.	10	° dH
Potassium permanganate consumption:	max.	10	mg/kg
Carbon dioxide:		absent	
Ammonia:		absent	
pH-value:		7 – 9	
Fore-line over pressure:	max.	6	bar
Minimum flow rate:	50 l/h at 15 °C (max. gas throughput)		

Connecting from the water mains

➡ Screw cooling water Connections 3 (accessory) with USIT-ring 3a onto the Turbopump.
➡ Fit dirt trap (accessory) in the fore-line.
➡ Using circlips, connect fore-line to one of the two cooling water connections.
➡ Connect return line to the other torbopump cooling water connection.
➡ Tighten all circlips and ensure hose lines are seated firmly.

Cooling from the water mains

3 Cooling water connections
31 Fore-line
32 Return line
33 Dirt trap



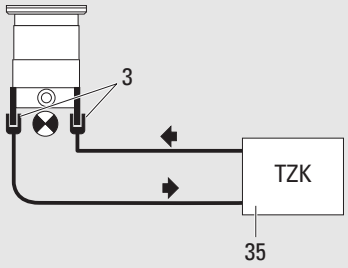
Cooling With The Water Recycling Unit TZK (Accessory)

Connecting to the TZK

A dirt trap in the fore-line is not permissible.
All other steps: As for connection to the water mains.

Cooling with the Water Recycling Unit TZK

3 Cooling water connections
35 Water recycling unit TZK



Air Cooling (Accessory)

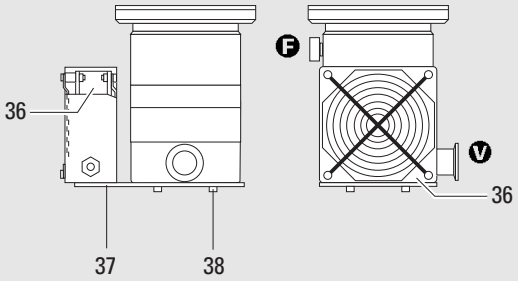
Air cooling only if ambient temperature < 35 °C.
Ensure adequate air circulation and ventilation.

Fitting the air cooling

➡ Place a fluff free, clean cloth on the working surface.
➡ Place torbopump on its high vacuum flange (Caution: sealed surface, do not damage).
➡ Unscrew rubber feet from the base of the pump. The fan must be parallel to the fore-vacuum connection - venting connection (see illustration below).
➡ Screw air cooling with holder 37 with 4 M5 screws and spring washers onto the torbopump.

Fitting the air cooling

36 Fan
37 Holder
38 M5 screw and spring washers (4x)



Power connection, air cooling

Please see the operating instructions, magnetic bearing / electronic drive unit.

3.5. Venting Valve

The TPH/U 180 HM may only be vented via the venting valve fitted. The use of other venting valves is impermissible.

Selecting the venting mode

Venting type "0": Venting for serious malfunctions
Venting type "1": Venting at each shut-down.

For venting mode setting please see the operating instructions for the Magnetic Bearing Electronic TCM 180.

The venting valve opens basically with a delay of three seconds following TCM 180 switch-off or a malfunction.
In venting mode "1", control of the venting valve is assumed by the bearing regulating processor as long as the rotor is turning. When stationary, the valve remains open for 30 minutes.

Maximum pressure on the venting valve: 1.5 bar.

Power connections, venting valve
The power connection of the venting valve is effected via the connecting cable magnetic bearing electronics - torbopump.

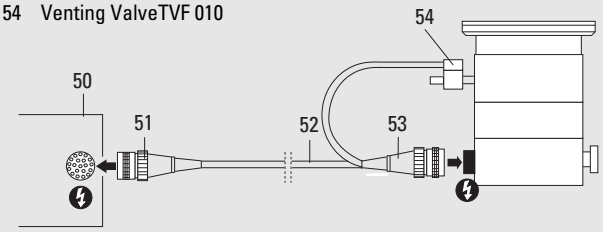
3.6. Connecting The Magnetic Bearing / Electronic Drive Unit

Voltages up to 150 V can be present on the open electrical contacts on a running down pump. There is danger of an electrical shock if the contacts are touched.
Disconnect the plug to the magnetic bearing electronic unit only once the pump is completely at rest and the magnetic bearing electronic unit has been disconnected from the mains.

➡ Plug in connecting cable between the magnetic bearing electronic unit and the torbopump. Standard cable length 3 m; Max. possible cable length 50 m. For details please see the operating instructions for the magnetic bearing electronic unit.

Connecting the magnetic bearing electronic unit to the torbopump

50 Magnetic Bearing Electronic Unit TCM 180
51 Bayonet plug--> TCM 180
52 Connecting cable
53 Bayonet plug--> torbopump
54 Venting ValveTVF 010



4 Operations

4.1. Switching On

torbopump rotors rotate at high speed. When the high vacuum flange is open there is a danger of injury and of objects falling into the pump. Therefore never operate the pump with open high vacuum flange.

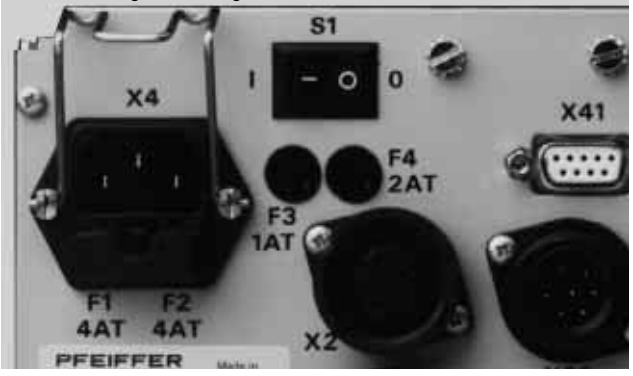
When operating with convection cooling the surface of the pump can become very hot.

Before switching On
➡ With water cooling: Open cooling water supply and check flow.

Switching On
➡ Switch on magnetic bearing electronic unit with mains switch S1 on the rear panel of the TCM 180.
➡ Switch on drive and bearings with the 'Start/Stop' switch 23 on the front panel of the TCM 180.

The magnetic bearing electronic unit switches (rear panel)

S1 Switching the bearing electronic unit On and Off



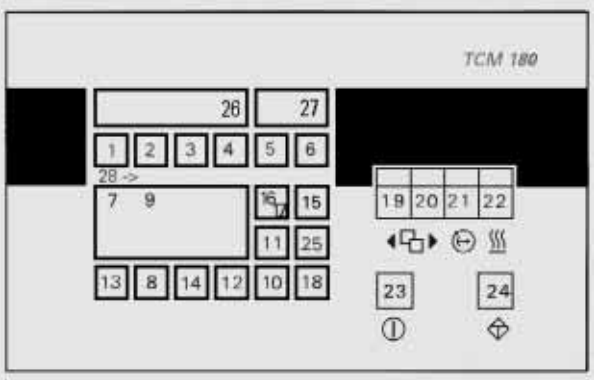
– With air cooling the cooling fan of the magnetic bearing electronic unit / electronic drive unit is also switched on.
– With Pumping Station Control Unit TCS 180, the backing pump and the cooling water unit are started automatically.
➡ Now switch on the backing pump if it is not started via a pumping station control unit.

Take care when pumping hazardous gases. Comply with all the gas manufacturer's safety instructions.

4.2. Heating (Only Pumps With Heating Sleeves)

Heating torbopumps and vacuum chambers accelerates the attainment of final pressures.
The heating period is dependent on the level of contamination and the required final pressure. Heat for at least four hours.
➡ Switch on torbopump heating via switch 22 on the magnetic bearing electronic unit.

The magnetic bearing electronic unit switches (front panel)



High temperatures are generated when torbopump or vacuum chamber are baked out. Contact with hot parts can cause burns, even when the heating has been switched off. Heating jackets, pump casing and vacuum chamber should all be insulated when fitting.
Do not touch heating jackets, pump casing and vacuum chambers during baking out.

If the vacuum chamber itself is heated the temperature of the high vacuum flange must not exceed 120 °C.
If the vacuum chamber is heated to 200 °C plus, heat radiation shielding must be fitted to the pump rotor.

4.3. Switching Off And Venting

To avoid contamination occurring when switching off, the pump should be vented with dry venting gas before shut-down. After switching off, the venting valve can be opened or closed at any time with selector switch S2 on the rear panel of the TCM 180. The venting valve closes 30 minutes after switching off irrespective of the position of the selector switch.

➡ Close vacuum safety valve in the fore-vacuum line.
➡ Switch off both torbopump and magnetic bearing electronic unit at the same time with switch S1.
➡ With water cooling: Shut off water supply.

4.4. Contact With The Safety Bearing

It is possible that as a result of serious jolting, the pump runs into the dry-running safety bearing. This results in a noise which cannot be overheard. After 5 such occurrences, the safety bearing must be replaced. Please get in touch with your local PFEIFFER Service.

4.5. Shutting Down For Longer Periods

Vacuum pumps are sometimes used to pump aggressive or hazardous gases. There is a danger of personal injury resulting from coming into contact with process gases. Before removing a torbopump from the system, first:

– Vent the torbopump with a neutral gas or dry air;
– Ensure that there is no residual process gas in the system nor in the feeder lines.

If the torbopump is to be shut down for more than a year:

➡ Remove torbopump from the system.
➡ Close high vacuum flange and evacuate pump via the fore-vacuum flange.
➡ Vent torbopump via the venting connection with nitrogen or dry air.
➡ Close fore-vacuum connection by blank flanging.
➡ Place the pump vertically on its rubber feet.
➡ In rooms with moist or aggressive atmospheres, the torbopump must be air-sealed in a plastic bag together with a bag of dessicant, e.g silicagel.

5. What To Do In Case Of Breakedowns?

Problem	Possible Cause	Remedy
Pump doesn't start	• Power supply interrupted	• Check fuse in the magnetic bearing electronic unit • Check plug contacts on the pump and the magnetic bearing electronic unit • Check feeder lines
Pump doesn't attain rated rotation speed	• Fore-vacuum pressure too high • Leak or too much gas	• Check backing pump function • Check seals • Seek leak and repair
Pump doesn't attain final pressure	• Pump dirty • Leak in vacuum chamber lines or pump	• Bake out pump • If seriously contaminated: Inform PFEIFFER Service of need for cleaning • Seek leak starting with vacuum chamber; • Repair leak
Unusual operating noises	• Rotor damaged • Splinter shield (if fitted) not seated firmly	• Inform PFEIFFER Service of need for repair • Check splinter shield: press clamping lugs away from each other (see section 3.2)
Pump cuts out during operations	• Run-up phase in the Magnetic Bearing Electronik Unit TCM too short • Thermal overloading caused by – Water cooling: Flow not safe guarded – Air cooling: Air supply restricted – Fore-vacuum pressure too high – Ambient temperature too high • Leak or too much gas	• Extend run-up time phase setting time • Ensure free flow • Ensure adequate air supply • Reduce fore-vacuum pressure • Reduce ambient temperature • Seek leak in the system and repair • Reduce process gas feed

6. Maintenance

Important:
No liability for personal injury nor material damage will be accepted for damages and operational interruptions which have been caused by improper maintenance; in addition, all guarantees become invalid.

Your pump can be cleaned on the spot if it is not very dirty. Your local PFEIFFER Service can advise you regarding cleaning procedures and any other maintenance and service work e.g. changing the safety bearings.

7. Service

Do make use of our service facilities
In the event that repairs are necessary a number of options are available to you to ensure any system down time is kept to a minimum:
- Have the pump repaired on the spot by our Service Engineers;
- Return the pump to the manufacturer for repairs;
- Replace with a new value pump.

Local PFEIFFER representatives can provide full details.

Before returning:
➡ Please attach a clearly visible notice "Free of harmful substances" (both on the unit and also on the delivery note and any accompanying letters).

"Harmful substances" are defined in the current, local regulations and in the U.S.A. as "materials in accordance with the Code of Federal Regulations (CFR) 49 Part 173.240 Definition and Preparation".
We will carry out the decontamination and invoice this work to you if you have not attached this note. This also applies where the operator does not have the facilities to carry out the decontamination work. Units which are contaminated microbiologically, explosively or radioactively cannot be accepted as a matter of principle.

Fill out the contamination declaration
➡ In every case the "Contamination Declaration" must be completed diligently and truthfully.
➡ A copy of the completed declaration must accompany the unit: any additional copies must be sent to your local PFEIFFER Center.

Please get in touch with your local PFEIFFER representatives if there are any questions regarding contamination.

Decontaminate units before returning or possible disposal. Do not return any units which are microbiologically, explosively or radioactively contaminated.

Returning contaminated units
If contaminated have to be returned for maintenance/repair, the following instructions concerning shipping must be followed:
➡ Neutralise the pump by flushing with nitrogen or dry air.
➡ Seal all openings to the air.
➡ Seal pump or unit in suitable protective foil.
➡ Ship units only in appropriate transport containers.

Please note:
Repair orders are carried out according to our general conditions of sale and supply. If repairs are necessary, please send the unit to your nearest PFEIFFER Service Center.

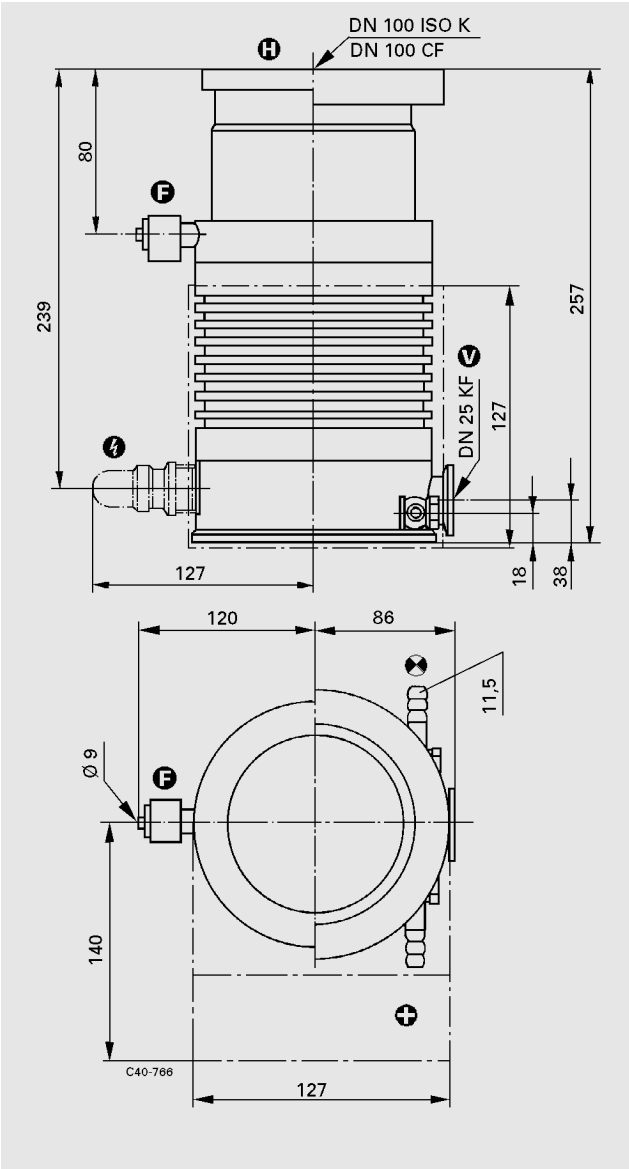
Contact addresses and service hotline
Contact addresses and service hotlines can be found on the back cover of these operating instructions.

8. Technical Data

Feature	Unit	TPH 180 HM	TPU 180 HM
Connection nominal diameter:			
Inlet		DN 100 ISO-K	DN 100 CF-F
Outlet		DN 25 ISO-KF/G 1/4"	
Weight	kg	12	12
Permissible magnetic field	mT	4	
Magn. bearing/Electron. drive unit		TCM 180	
Nominal rotation speed	1/min	50 000	
Standby-rotation speed	1/min	33 000	
Run-up time (up to 90 % of the rated rotation speed with TCM 180)	min	3:30	
Noise level	dB (A)	< 70	
Fore-vacuum pressure, max. (N_2)			
Cooling type: Water	mbar	20	
Air	mbar	12	
Convection	mbar	4	
Max. gas throughput (N_2)			
Cooling type: Water	mbar l/s	6	
Air	mbar l/s	1	
Volume flow rate (with oil sealed rotary vane vacuum pump):			
Nitrogen N_2	l/s	170	
Helium He	l/s	170	
Hydrogen H_2	l/s	130	
Compression ratio for:			
N_2		$> 1 \cdot 10^{12}$	
He		$4 \cdot 10^{7}$	
H_2		$2{,}5 \cdot 10^{5}$	
Theoretical final pressure	mbar	$< 10^{-11}$	
Final pressure 1 (Metal seals with baking out)	mbar	$5 \cdot 10^{-11}$	
Final pressure 2 (Viton seals without baking out)	mbar	$1 \cdot 10^{-8}$	
Cooling water consumption with water at 15 °C[1)]	l/h	50	
Cooling water temperature	°C	5 - 25	
Permissible ambient temperature with air cooling	°C	0 - 35	
Heating power consumption	W	60	

1) With maximum gas throughput.

8.1. Dimensions



9. Accessories

Description	Size	Number	Operating Instructions/ Comments	Order Quantity
Magnetic Bearing/ Electronic Drive Unit				
TCM 180	100 - 240 V; 50/60 Hz	PM C01 650	PM 800 310 BN	
Connection cable torbopumpe – TCM	3 m	PM 041 203 -T	(other lengths on request)	
Pumping Station Control Unit TCS 180	100-115/230 V; 50/60 Hz	PM C01 655	PM 800 384 BN	
Heating jacket TPH/U	115 V/230 V	PM 043 444 -T		
Splinter shield	DN 100	PM 006 125 AX		
Protective mesh	DN 100	PM 006 596 -R		
Sealing ring for TPH	DN 100 ISO-K	BP 213 199 -T		
Collar flange, TPH	DN 100 ISO	BN 845 071 -T		
CU-seal (10 pieces), TPU	DN 100 CF	BN 845 038 -T		
Set of screws, TPU	DN 100 CF	BN 845 013 -T		
Fore-Vacuum Safety Valve TVV 001	230 V	PM Z01 205	PM 800 263 BN	
	115 V	PM Z01 206		
Vibration compensator TPH	DN 100 ISO-K	PM 006 459 -X		
TPU	DN 100 CF-F	PM 006 488 -X		

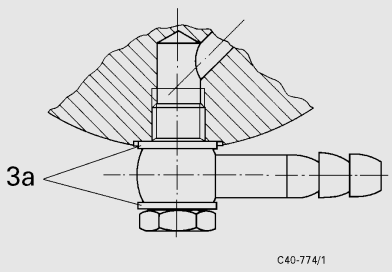
Description	Size	Number	Operating Instructions/ Comments	Order Quantity
Components for cooling				
Connection set for cooling water		PM 006 802 -T		
Dirt trap	R 3/8"	P 4161 300 2R		
Water Recycling Unit TZK 400	230 V, 50/60 Hz	PM Z01 245	PM 800 369 BN	
Set of components for air cooling TPH	230 V, 50/60 Hz	PM Z01 210		
	115 V, 50/60 Hz	PM Z01 211		
Componets for drying				
Drier TTV 001 (filled with zeolite)		PM Z00 121	PM 800 022 BN	

10. Spare Parts

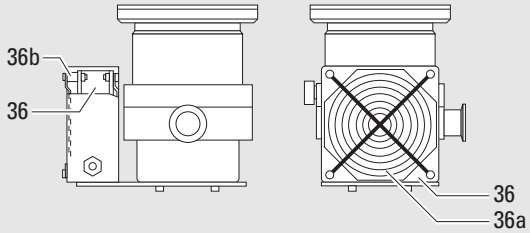
Pos.	Description	Pieces	Size	Number	Comments	Ordering Quantity
	Spare Parts TPH/TPU 180 HM					
54	Venting Valve TVF 010	1	G 1/8"	PM Z01 131		
6	Rubber feet	4		P 3695 700 ZE		
3a	USIT Ring	4	MS-NBR U 12,7/18x1,5	P 3529 142		
	Spare Parts, Air cooling					
36	Fan	1	230 V	P 5099 251 -R7		
		1	115 V	P 5099 251 -R1		
36a	Finger protector	2		P 5099 251 Z4		
36b	Buffer	4		P 3695 705 LB		

When ordering accessories and spare parts please be sure to state the full part number. When ordering spare parts please state additionally the unit type and unit number (see rating plate). Please use this list as an order form (by taking a copy).

Cooling water connection



Air cooling



Declaration of Contamination of Vacuum Equipment and Components

The repair and/or service of vacuum components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.

The manufacturer could refuse to accept any equipment without a declaration.

This declaration can only be completed and signed by authorised and qualified staff:

1. Description of component:

- Equipment type/model: _____
- Code No.: _____
- Serial No.: _____
- Invoice No.: _____
- Delivery Date: _____

2. Reason for return:

_____

_____

_____

_____

_____

3. Equipment condition

- Has the equipment been used?

  yes ❒ no ❒

- What type of pump oil was used?

  _____

- Is the equipment free from potentially harmful substances?

  yes ❒ (go to section 5)
  no ❒ (go to section 4)

4. Process related contamination of equipment

- toxic yes ❒ no ❒
- corrosive yes ❒ no ❒
- microbiological hazard*) yes ❒ no ❒
- explosive*) yes ❒ no ❒
- radioactive*) yes ❒ no ❒
- other harmful substances yes ❒ no ❒

*) We will not accept delivery of any equipment that has been radioactively or microbiologically contaminated without written evidence of decontamination!

Please list all substances, gases and by-products which may have come into contact with the equipment:

Tradename Product name Manufacturer	Chemical name (or Symbol)	Danger class	Precautions associated with substance	Action if spillage or human contact
1.				
2.				
3.				
4.				
5.				

5. Legally Binding Declaration

I hereby declare that the information supplied on this form is complete and accurate. The despatch of equipment will be in accordance with the appropriate regulations covering Packaging, Transportation and Labelling of Dangerous Substances.

Name of Organisation: _____

Address: _____ Post code: _____

Tel.: _____

Fax: _____ Telex: _____

Name: _____

Job title: _____

Date: _____ Company stamp: _____

Legally binding signature: _____

PFEIFFER VACUUM

Pfeiffer Vacuum GmbH

Emmeliusstr. 33
D-35614 Asslar

➪ DE, AT

Herstellererklärung im Sinne folgender EU-Richtlinien:
- Maschinen 89/392/EWG
- Elektromagnetische Verträglichkeit 89/336/EWG
- Niederspannung 73/23/EWG

Hiermit erklären wir, daß das unten aufgeführte Produkt zum Einbau in eine Maschine bestimmt ist und daß deren Inbetriebnahme so lange untersagt ist, bis festgestellt wurde, daß das Endprodukt den Bestimmungen der EU-Richtlinie 89/392/EWG, Anhang II B entspricht.
Wir bestätigen Konformität mit der EU-Richtlinie über elektromagnetische Verträglichkeit 89/336/EWG und der EU-Niederspannungsrichtlinie 73/23/EWG.
Die angewandten Richtlinien, harmonisierten Normen, nationalen Normen und Spezifikationen sind unten aufgeführt.

➪ GB, IE

Manufacturer´s declaration pursuant to the following EU directives:
- Machinery Directive 89/392/EEC
- Electromagnetic Compatibility Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC

We hereby certify that the product specified below is intended for installation in a machine which is forbidden to be put into operation until such time as it has been determined that the end product is in accordance with the provision of EU Directive 89/392/EEC, Annex II B.
We certify conformity with EU Electromagnetic Compatibility Directive 89/336/EEC and EU Low Voltage Directive 73/23/EEC.
The guidelines, harmonized standards, national standards and specifications which have been applied are listed below.

➪ BE, FR

Déclaration du constructeur conformément aux directives CE suivantes:
- directive machine CE 89/392/CEE
- directive CE 89/336/CEE concernant la compatibilité électromagnétique
- directive CE 73/23/CEE concernant la basse tension

Nous déclarons par la présente que le produit mentionné ci-dessous est prévu pour le montage sur une machine et que sa mise en service est interdite tant qu'il n'a pas été déterminé que le produit final répond bien aux dispositions de la directive CE 89/392/CEE, appendice II B.
Nous confirmons la conformité du produit avec la directive CE 89/336/CEE concernant la compatibilité électromagnétique et la directive CE 73/23/CEE concernant la basse tension. Les directives appliquées, normes harmonisées et les normes et spécifications nationales appliquées figurent ci-dessous.

➪ IT

Dichiarazione del costruttore ai sensi delle seguenti direttive UE:
- Macchinari 89/392/CEE
- Compatibilità elettromagnetica 89/336/CEE
- Bassa tensione 73/23/CEE

Si dichiara che il prodotto qui menzionato è destinato al montaggio in una macchina e che la sua messa in funzione è vietata sin quando non è stato accertato che il prodotto finale non rispetta le disposizioni della direttiva UE 89/392/CEE, Appendice II B.
Attestiamo la conformità con la direttiva UE sulla compatibilità elettromagnetica 89/336/CEE e la direttiva UE sulla bassa tensione 73/23/CEE.
Sono riportate in basso le direttive applicate, le norme standardizzate nonché le norme e le specifiche nazionali utilizzatte.

➪ ES

Declaración del fabricante al tenor de las siguientes Directivas de la UE:
- Maquinarias 89/392/MCE
- Compatibilidad Electromagnética 89/336/MCE
- Baja Tensión 73/23/MCE

Por la presente declaramos que el producto mencionado más abajo está previsto para ser incorporado en una máquina y que la puesta en servicio de la misma queda prohibida en tanto que no se haya verificado que el producto final concuerda con las disposiciones resultantes de la Directiva 89/392/MCE de la UE, Apéndice II B.
De nuestra parte certificamos la conformidad con la Directiva 89/336/MCE de la UE sobre Compatibilidad Electromagnética y la Directiva 73/23/MCE de la UE sobre Baja Tensión.
Las directivas aplicadas, normas armonizadas y las normas y especificaciones nacionales aplicadas se mencionan abajo.

➪ NL

Verklaring van de fabrikant in de zin van de volgende EU-richtlijnen:
- machinerichtlijn 89/392/EEG
- richtlijn over elektromagnetische compatibiliteit 89/336/EEG
- richtlijn over laagspanning 73/23/EEG

Hiermee verklaren wij dat het hieronder genoemde produkt is bedoeld om te worden ingebouwd in een machine en dat de ingebruikneming hiervan zolang verboden is, totdat is vastgesteld dat het eindprodukt voldoet aan de bepalingen van EU-richtlijn 89/392/EEG, appendix II B.
Wij bevestigen de conformiteit met de EU-richtlijn over elektromagnetische compatibiliteit 89/336/EEG en de EEG-richtlijn over laagspanning 73/23/EEG
De toegepaste richtlijnen, geharmoniseerde normen en de toegepaste nationale normen en specificaties zijn hierna aangegeven.

➪ DK

Producenterklæring i henhold til følgende EU-direktiver:
- Maskiner 89/392/EWG
- Elektromagnetisk kompatibilitet 89/336/EWG
- Lavspænding 73/23/EWG

Hermed erklærer vi, at det nedenstående produkt er beregnet til indbygning i en maskine og at dennes idriftsættelse er forbudt, indtil det er fastslået, at slutproduktet er i overensstemmelse med EU-direktiv 89/392/EWG tillæg II B.
Vi attesterer konformitet med EU-direktiv vedrørende elektromagnetisk kompatibilitet 89/336/EWG og med EU-lavspændingsdirektiv 73/23/EWG.
De anvendte direktiver, harmoniserede standarder og de anvendte nationale standarder og specifikationer er angivet nedenfor.

Herst.I/9604

➪ SE

Tillverkarens förklaring enligt följande EG-direktiv:

- Maskindirektiv 89/392/EEC

- Elektromagnetisk tolerans 89/336/EEC

- Lågspänning 73/23/EEC

Härmed förklarar vi, att den nedan nämnda produkten är avsedd för inmontering i en maskin och att denna maskin inte får tas i drift förrän det har konstaterats, att slutprodukten stämmer överens med EG's direktiv 89/392/EEC, annex II B.
Vi bekräftar konformitet med EG's-direktiv om elektromagnetisk tolerans 89/336/EEC och EG's lågspänningsdirektiv 73/23/EEC.
De riktlinjer, anpassade standarder, nationella standarder och specifikationer som har blivit accepterade, anges här nedan.

➪ FI

Valmistajan vakuutus seuraavien EU-direktiivien mukaisesti:

- konedirektiivi 89/392/ETY

- sähkömagneettinen siedettävyys 89/336/ETY

- pienjännite 73/23/ETY

Vakuutamme täten, että allamainittu tuote on tarkoitettu asennettavaksi koneeseen ja sen käyttöönotto on kielletty kunnes on todettu, että lopullinen tuote vastaa EU-direktiivin 89/392/EtY vaatimuksia.
Vahvistamme vaatimustenmukaisuuden EU-direktiivin sähkömagneettinen siedettävyys 89/336/ETY ja EU-pienjännitedirektiivin 73/23/ETY kanssa.
Soveltamamme suuntaviitat, harmonisoidut standardit, kansalliset standardit ja rakennemääräykset on luteltu alempana.

➪ PT

Declaração do fabricante, de acordo com as seguintes Directivas CE:

- Máquinas, na redacção 89/392/CEE

- Compatibilidade electromagnética, na redacção 89/336/CEE

- Baixa tensão, na redacção 73/23/CEE

Com a presente, declaramos que o produto abaixo indicado se destina à montagem numa máquina e que é proibida a colocação em serviço da mesma antes de se ter declarado, que o produto final está em conformidade com o disposto na Directiva CE, na redacção 89/392/CEE, Apêndice II B.
Certificamos haver conformidade com o disposto na Directiva CE sobre compatibilidade electromagnética, na redacção 89/336/CEE, e o disposto na Directiva CE sobre baixa tensão, na redacção 73/23/CEE.
Abaixo, dá-se indicação das directivas aplicadas, das normas harmonizadas e das normas e especificações aplicades no respectivo país.

➪ GR

Δήλωση κατασκευαστή κατά το νόημα των εξής οδηγιών της Ε.Ε:

- περί μηχανών 89/392/Ε.Ο.Κ.
- περί ηλεκτρομαγνητικής συμβατότητας 89/336/Ε.Ο.Κ.
- περί χαμηλής τάσης 73/23/Ε.Ο.Κ.

Με την παρούσα δήλωση βεβαιώνουμε ότι το κατωτέρω αναφερόμενο προϊόν προορίζεται για την προσαρμογή σε μία άλλη μηχανή, και ότι η έναρξη λειτουργίας της απαγορεύεται, μέχρις ότου διαπιστωθεί, ότι το συνολικό συγκρότημα ανταποκρίνεται στους ισχύοντες κανονισμούς της οδηγίας της Ε.Ε. 89/392/Ε.Ο.Κ., παράρτημα ΙΙ Β.
Οι εφαρμοσθέντες κανονισμοί, οι εναρμονισμένες προδιαγραφές και οι εφαρμοσθείσες εθνικές προδιαγραφές και τεχνικές προδιαγραφές αναφέρονται κατωτέρω

Produkt/Product/Produit/Prodotto/Producto/Produkt/Produkt/Produto/ Προϊον:

TPH 180 HM
TPU 180 HM

Angewendete Richtlinien, harmonisierte Normen und angewendete, nationale Normen in Sprachen und Spezifikationen:
Guidelines, harmonised standards, national standards in languages and specifications which have been applied:
Les directives appliquées, normes harmonisées et les normes nationales appliquées en langues et spécifications:
Direttive aplicate, norme standardizzate e norme nazionali utilizzate in lingue e specifiche:
Directivas aplicadas, normas armonizadas y normas nacionales aplicadas en idiomas y especificaciones:
Toegepaste richtlijnen, geharmoniseerde normen en toegepaste nationale normen met betrekking tot talen en specificaties:
Anvendte direktiver, harmoniserede standarder og de anvendte nationale standarder med sprog og specifikationer:
Directivas aplicadas, normas harmonizadas e normas aplicadas na linguagem e nas especificações do respectivo país:
Εφαρμοσθέντες κανονισμοί, εναρμονισμένες προδιαγραφές και εφαρμοσθείσες εθνικές προδιαγραφές σε γλώσσες και τεχνικές προδιαγραφές:

EN 292-1 **EN 294** **EN 1012-2**
EN 292-2 **EN 61 010**

Unterschriften/Signatures/Signature/Firme/Firmas/Handtekeningen/Underskrifter/Underskrift/ Allekirjoitukset/Assinaturas/ Υπογραφές:

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Gérant d'affairs
Gerente
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