

HiPace 1200
Turbo Pump (back-up)
Muhammad Farooq

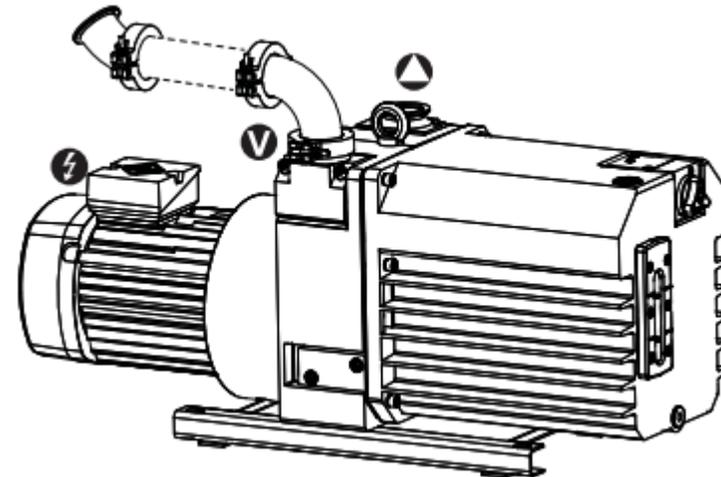
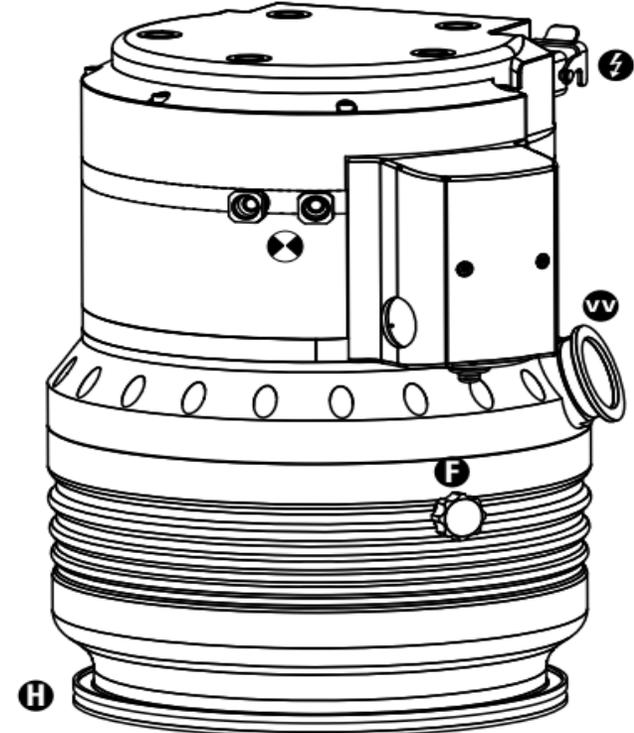
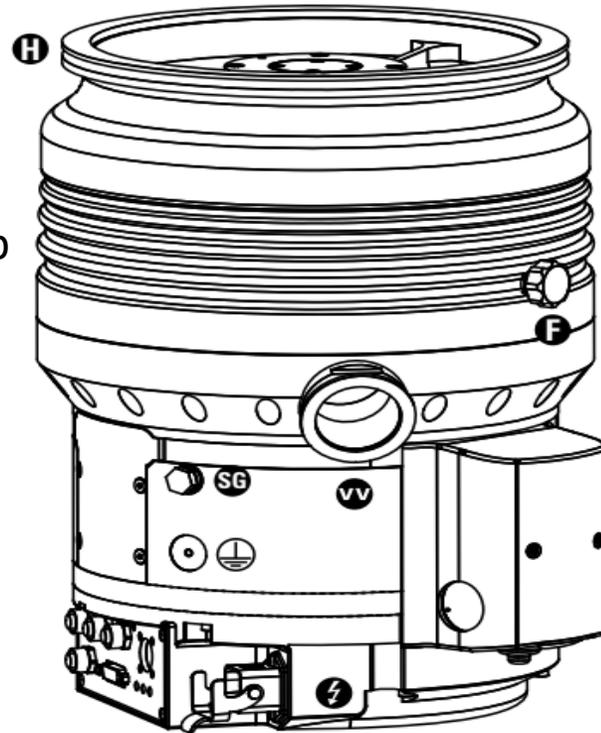
Abbreviations & Symbols

Abbreviations:

- **DCU:** Display Control Unit
- **HPU:** Handed Programming Unit
- **TC:** Electronic drive unit for turbopump
- **PB:** Profibus version
- **DN:** DeviceNet version

Symbols

- Ⓜ High vacuum flange
- Ⓥ Fore-vacuum flange
- Ⓥ Vacuum flange of the backing pump
- Ⓢ Exhaust flange of the backing pump
- ⚡ Electrical connection
- Ⓢⓖ Sealing gas connection
- ⓕ Venting connection
- Ⓢ Cooling water connection



Range of Applications

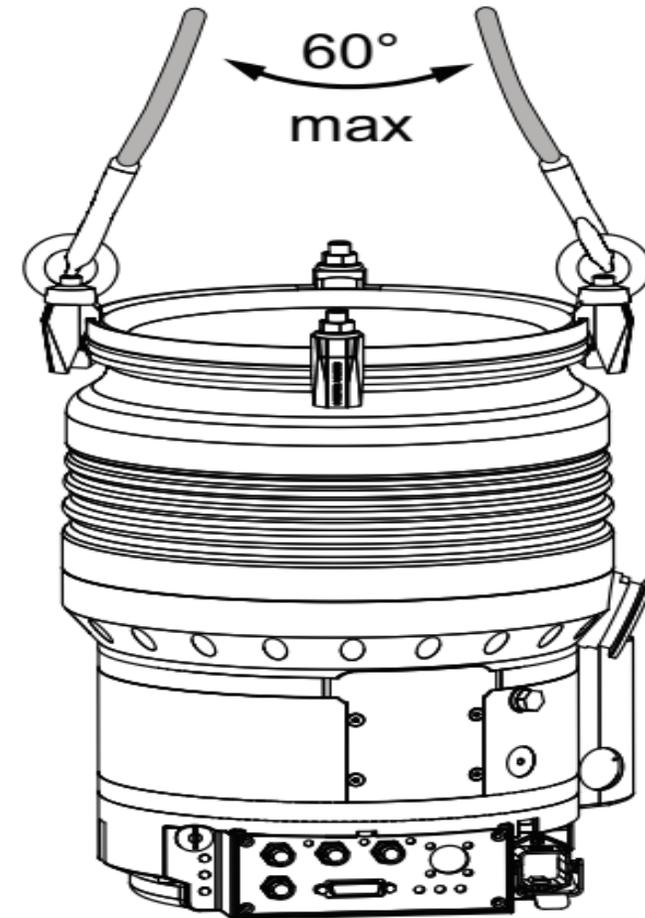
Installation location	weather protected (indoors)
Protection class	IP54
Temperature	+5 °C to +40 °C
Relative humidity	max. 80 %, at $T \leq 31$ °C, to max. 50 % at $T \leq 40$ °C
Atmospheric pressure	750 hPa - 1060 hPa
Installation altitude	2000 m max.
Degree of pollution	2
Permissible surrounding magnetic field	≤ 6 mT
Overvoltage category	II
Connection voltage	100-120/200-240 ($\pm 10\%$) V AC

Transport of turbo pump

Information regarding transport of the turbopump without packaging

2 eye bolts are included in the shipment and are firmly bolted to the turbopump ex works.

1. Attach suitable lifting tools to both eye bolts.
2. Pay attention to the correct use and fastening of the lifting equipment.
3. Lift the turbopump vertically (e.g. out of the packaging).
4. Only transport the turbopump in its valid spatial position and with the rotor axis vertically aligned.



Connecting to Cooling system

Procedure:

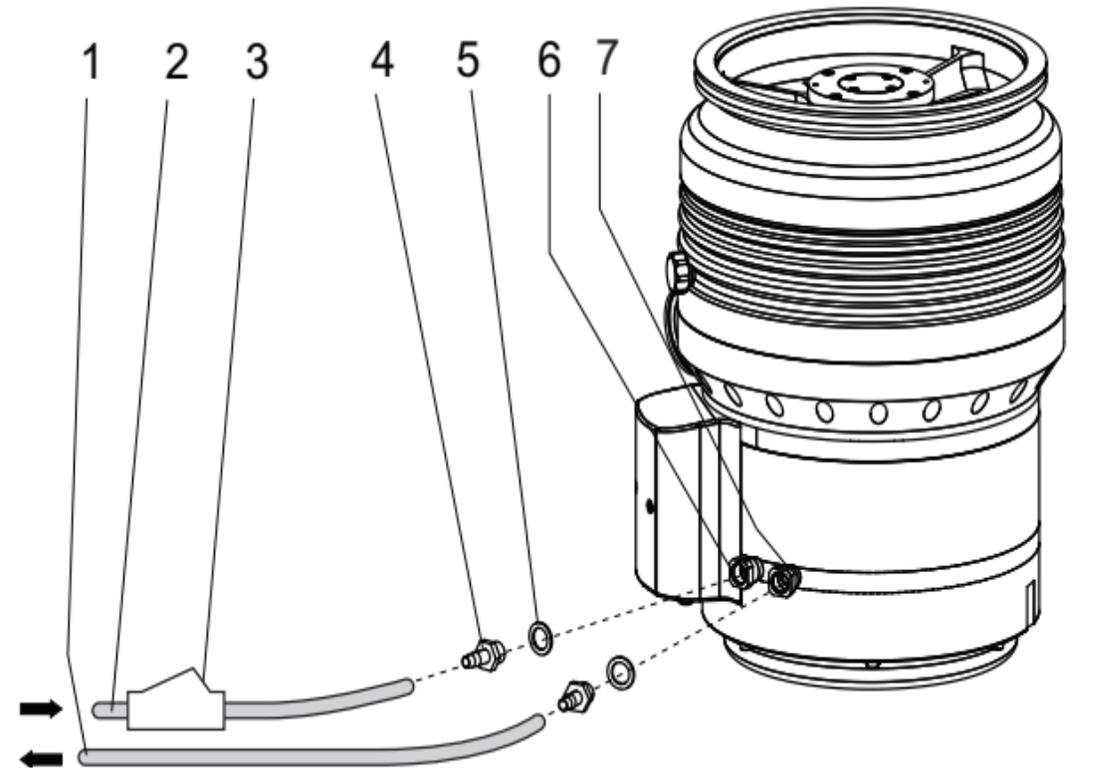
1. Screw one hose nozzle with sealing ring onto each of the turbopump's cooling water connections.

– Tightening torque: max. **15 Nm**

2. Connect the cooling water supply line to the hose nozzle at the designated cooling water inlet of the turbopump.

3. Connect the cooling water return line to the hose nozzle at the designated cooling water outlet of the turbopump.

4. Secure the hose lines on the turbopump with hose clamps.



- | | | | |
|---|----------------------|---|-----------------------------------|
| 1 | Return line | 5 | Sealing ring (2x) |
| 2 | Feed line | 6 | Cooling water inlet, 1/4" thread |
| 3 | Dirt trap | 7 | Cooling water outlet, 1/4" thread |
| 4 | Threaded nozzle (2x) | | |

Filling up the Operating Fluid

Notes: There are two bottles of oil. Use the one with model number “ PM 006 336 T“ Fomblin oil F3 50 ml. The other bottle is backup for the old turbo

Draining the oil:



Design of the operating fluid pump

The operating fluid pump is largely mirror symmetrical. The screws for filling the operating fluid are located at the sides of the operating fluid pump. The screws for draining the operating fluid are located at the front of the operating fluid pump.

- Always use the higher positioned screw for filling.
- Always use the lower positioned screw for draining.
- Never fill via the draining screws.

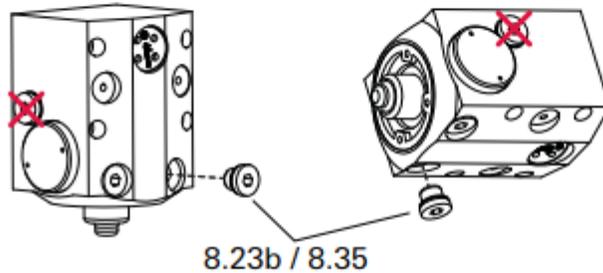


Fig. 18: Draining the operating fluid with vertical and horizontal installation orientation

8.23b Drain screw

8.35 O-ring

- Unscrew the respectively lower positioned drain screw 8.23b of the operating fluid pump.
 - Observe the O-ring 8.35 !
- Drain the operating fluid in a suitable tank.
- Lock the drain screw 8.23b again.
 - Observe the O-ring 8.35 !

Fill the oil:

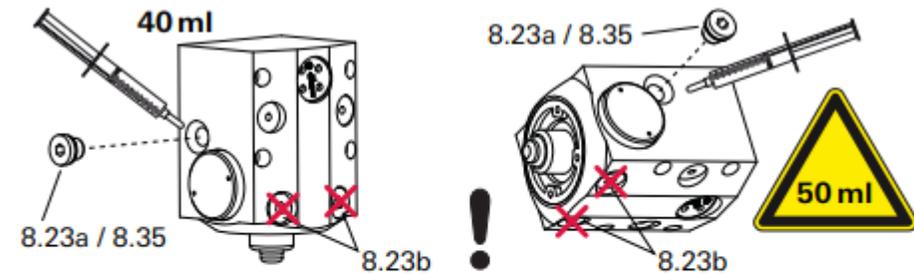


Fig. 19: Filling the operating fluid with vertical and horizontal installation orientation

8.23a Filler screw

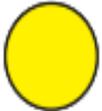
8.35 O-ring

8.23b Drain screw (do not use for filling!)

- Unscrew the respectively higher positioned filler screw 8.23a of the operating fluid pump.

- Fill in the operating fluid (max. 50 ml) into the operating fluid pump by using the filling syringe.
- Lock the filler screw 8.23a again.
 - Observe the O-ring 8.35 !

Operation display Via LED

LED	Symbol	LED status	Display	Meaning
Green 		Off		currentless
		On, flashing		"Pumping Station OFF", rotation speed $\leq 60 \text{ min}^{-1}$
		On, invers flashing		"Pumping Station ON", set rotation speed not attained
		On, constantly		"Pumping Station ON", set rotation speed attained
		On, blinking		"Pumping Station OFF", rotation speed $> 60 \text{ min}^{-1}$
Yellow 		Off		no warning
		On, constantly		Warning
Red 		Off		no malfunction
		On, constantly		Malfunction

Switching off and venting

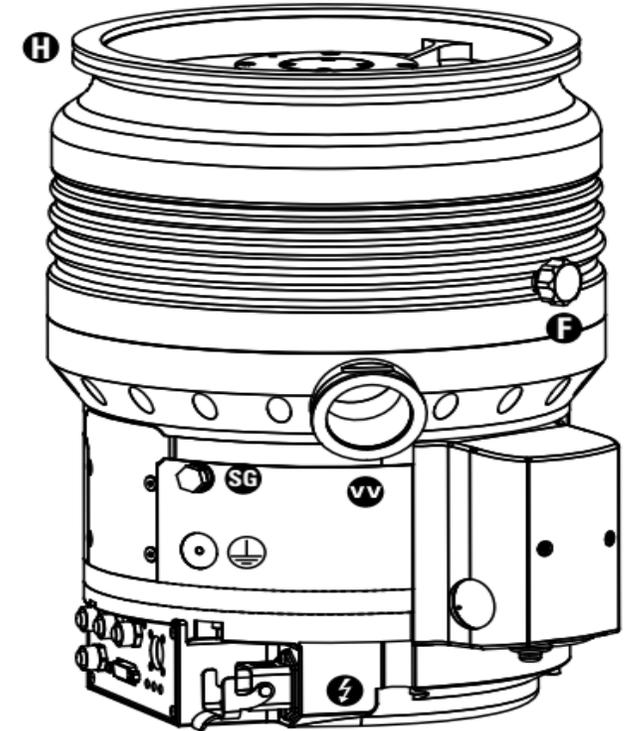
Switching off

- **Notes for switching off the turbopump**

1. Shut down the turbopump via the control unit or remote control.
2. Close the fore-vacuum line.
3. Switch off the backing pump, if necessary.
4. Vent the turbopump (options see below).
5. Close the supply lines (e.g. for cooling water or sealing gas).

Manually Venting

- Manual venting describes the standard process for venting the turbo pumping station.
 1. Ensure that the vacuum system is shut down.
 2. Open the black venting screw on the turbopump by one revolution maximum.
 3. Wait for pressure equalization to atmospheric pressure in the vacuum system.
 4. Close the venting screw again.



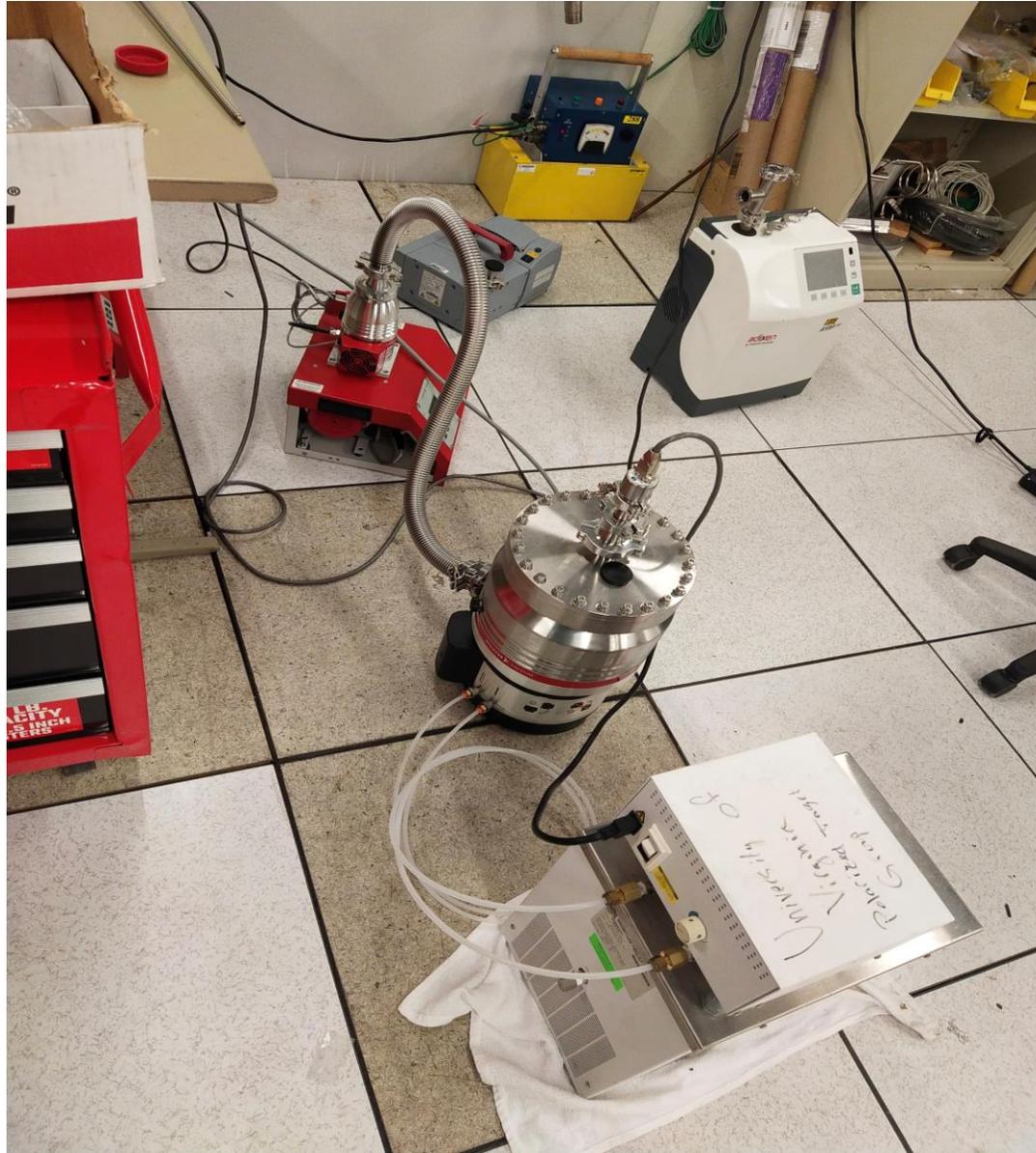
Rectifying malfunctions

Problem	Possible causes	Remedy
Pump will not start; none of the built-in LEDs on the TC 1200 lights up	• Electrical supply interrupted	⇒ Check plug contacts on the power supply ⇒ Check supply lines on the power supply
	• Operating voltage incorrect	⇒ Apply correct operating voltage ⇒ Observe the rating plate
	• No operating voltage applied	⇒ Apply operating voltage
	• TC 1200 defective	⇒ Request an exchange of the TC 1200 ⇒ Contact the Pfeiffer Vacuum Service
Pump will not start; green LED on the TC 1200 is flashing	• At operation without control panel: Pins 1-3, 1-4 or 1-14 are not connected on the "remote" connection	⇒ Connect the pins 1-3, 1-4 or 1-14 on the "remote" connection ⇒ Install the mating plug (scope of delivery) to the "remote" connection.
	• At operation via RS-485: Bridge at Pin 1-14 prevents control commands	⇒ Remove the bridge at the "remote" connection ⇒ Remove the mating plug from the "remote" connection.
	• At operation via RS-485 (without counter plug): Parameters of the electronic drive unit not set	⇒ Set parameters [P: 010] and [P: 023] "ON" via interface RS-485. ⇒ Please refer to operating instructions of the electronic drive unit.
Pump does not attain the final rotational speed within the specified run-up time	• Fore-vacuum pressure too high	⇒ Ensure function and suitability of the backing pump
	• Leak	⇒ Perform leak detection ⇒ Check sealings and flange fastenings ⇒ Eliminate leaks
	• Gas load too high	⇒ Reduce process gas supply
	• Rotor runs hard, bearing defective	⇒ Check the bearing for noises ⇒ Contact the Pfeiffer Vacuum Service
	• Setpoint for run-up time too low	⇒ Extend the run-up time via DCU, HPU or PC
	• Thermal overload: – Lack of air ventilation – Water flow too low – Fore-vacuum pressure too high – Ambient temperature too high	⇒ Reduce thermal loads – Ensure adequate cooling – Ensure the cooling water flow – Lower the fore-vacuum pressure – Adjust ambient conditions
Pump does not attain the ultimate pressure	• Pump is dirty	⇒ Bake out the pump ⇒ Cleaning in case of heavy contamination – Contact the Pfeiffer Vacuum Service
	• Vacuum chamber, pipes or pump are leaky	⇒ Leak detection starting from the vacuum chamber ⇒ Eliminate leaks
Unusual noises during operation	• Bearing damage	⇒ Contact the Pfeiffer Vacuum Service
	• Rotor damage	⇒ Contact the Pfeiffer Vacuum Service
	• Splinter shield or protective screen are loose	⇒ Correct the seat of the splinter shield or the protective screen ⇒ Observe the installation notes
Red LED on the TC 1200 is on	• Collective fault	⇒ Reset by switching the mains OFF/ON ⇒ Reset via pin 13 on the "REMOTE" connection ⇒ Differentiated malfunction display is possible via "RS 485" ¹⁾ ⇒ Contact the Pfeiffer Vacuum Service

¹⁾If no Pfeiffer Vacuum display and control unit is available, please contact the Pfeiffer Vacuum Service.

Backup Slides

Running turbo pump



MR
Long
Cable

CAUTION!
FLOOR TILES MAY BE
REMOVED
POSSIBLE FALL HAZARD

CAUTION!
FLOOR TILES MAY BE
REMOVED
POSSIBLE FALL HAZARD

SKU: D1-1172A
CARTON NO. ___ to ___
NW 2.8 KGS GW 2.05 KGS
SIZE 31X21X22 CM
QUANTITY: 1 PCS/CTN
MADE IN CHINA TO USA



PFEIFFER VACUUM

Hi-CUBE

