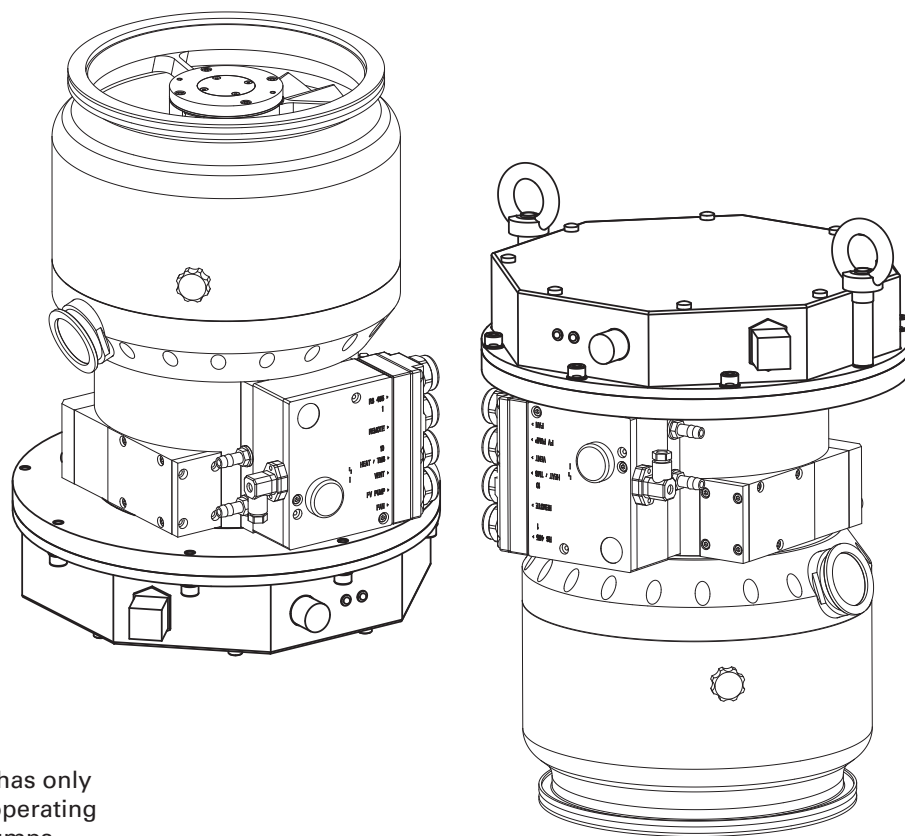


## Turbomolecular Pumps with Integrated Power Supply



The supplementary sheet has only validity with the relevant operating instructions of the turbopumps

# General Notes



The available supplementary sheet has only validity in accordance with the relevant operating instructions of the standard pumps. (please see adjacent table).

**Basically, the operating instructions of the standard pumps are applicable for the turbopumps with power supply. The available supplementary sheet describes all modifications and differences for pumps with Integrated Power Supply OPS 900.**

Turbopumps with integrated power supply have the suffix “N” in the type designation for example, TPH 1201 U P C N (please see type plate).

**Please note:** Current operating instructions are available via [www.pfeiffer-vacuum.net](http://www.pfeiffer-vacuum.net).

Pump type	Operating instructions
TPH 1201 P / P C TPU 1201 P / P C	PT 0147 BN
TPH 1201 U P / U P C	PT 0126 BN
TPH 1501 P / P C TPU 1501 P / P C	PT 0143 BN
TPH 1501 U P / U P C	PT 0128 BN
TPH 1801 P / P C TPH 1801 U P / U P C	PT 0140 BN PT 0141 BN
TPH 2101 P / P C TPU 2101 P / P C	PT 0041 BN
TPH 2101 U P / U P C TPU 2101 U P / U P C	PT 0039 BN
TPH 2301 P / P C TPH 2301 U P / U P C	PT 0104 BN PT 0123 BN

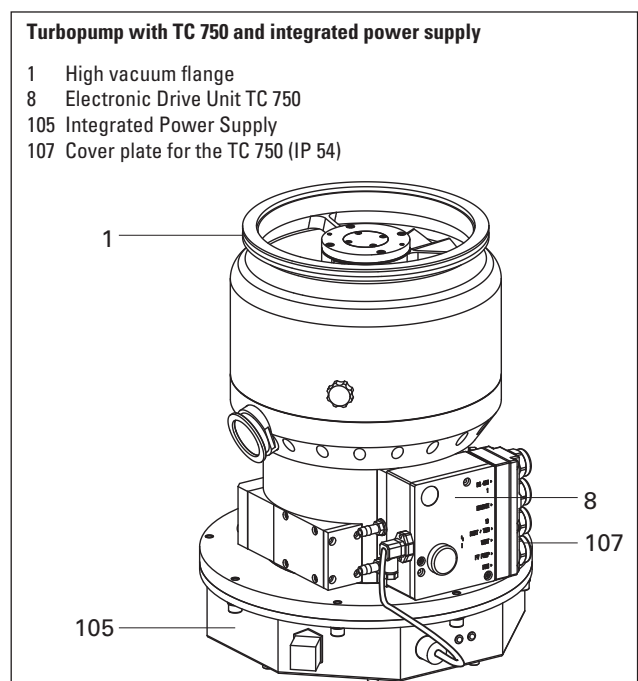
## 1. Safety Instructions

- ☞ Read and follow all instructions in this supplementary sheet and in the operating instructions of the relevant turbopumps.
- ☞ Operate the turbopump with integrated power supply only with the relevant mains cable (please see Section “Accessories”).
- ☞ Disconnect the voltage supply to the integrated power supply before opening the turbopump.

## 2. Understanding The Turbopumps

### 2.1. Main Features

Turbopumps with Electronic Drive Unit TC 750 and the integrated power supply form an unit. Voltage is supplied by the mains power (mains cable see Section “Accessories”).



## Transporting The Pumps



During transportation and installation work do not expose the Electronic Drive Unit TC 750 and the integrated power supply to mechanical stress.

In order to ensure that no contaminants can enter into the turbopump, the protective covers and the blank flanges must only be removed immediately before installing the pump.

### Turbopumps, upside down installation (U P N, U P C N)

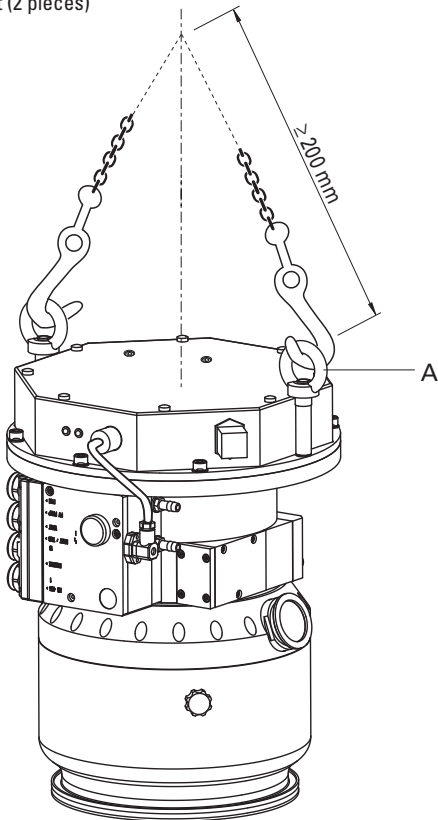
➔ The turbopumps must be lifted out of the packaging and moved using the two fitted eye bolts A in the transportation cover into which one each crane hook is engaged.

When transporting the turbomolecular pump, under all circumstances observe the following:

- Always use both eye bolts.
- The length of the crane's chains must be at least 200 mm.
- With the crane hooks, additional weights (for example a vacuum chamber) must never be lifted simultaneously.

#### Transporting the turbopumps for upside down installation

A Eye bolt (2 pieces)



The eye bolts A serve at the same time for the attachment of the power supply at the turbopump and remain therefore after transport at the pump.

### Turbopumps, standard version (P N, P C N)

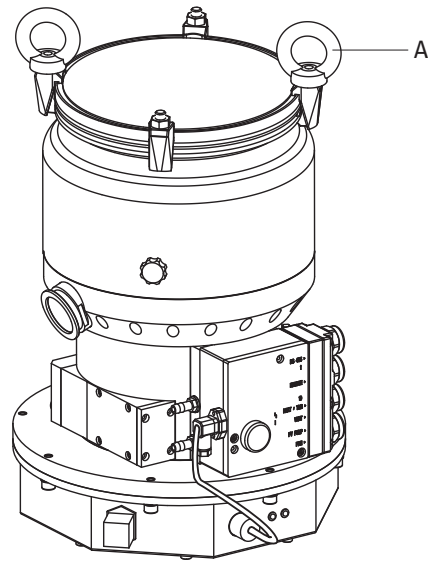
➔ The turbopumps must be lifted out of the packaging and moved using the two fitted ring nuts A in the transportation cover into which one each crane hook is engaged.

When transporting the turbomolecular pump, under all circumstances observe the following:

- Always use both ring nuts.
- With the crane hooks, additional weights (for example a vacuum chamber) must never be lifted simultaneously.
- The pump must, with its own weight only, be carefully lowered onto the Power Supply.

#### Transporting the turbopumps in standard version

A Ring nut (2 pieces)



### Abbreviations on the type plate of the turbopump

Suffix "N": Turbopump with integrated electronic drive unit and power supply

## 2.3. Scope Of Delivery

The turbopump scope of delivery includes:

- Electronic Drive Unit TC 750 and Power Supply OPS 900,
- mains cable TC 750 - power supply,
- lubricant F3 (40 ml) with filling syringe,
- cover plate for the TC 750 to fulfilled the conditions for protection class IP 54,
- protective covering for the high vacuum flange and the fore-vacuum flange,
- 2 pieces of eye bolts (or ring nuts) for transportation the pumps.



The fastening parts at the flange are not sufficient for the attachment of the pump at the recipient (please refer to Section 3.).

# 3. Installation

## 3.1. Preparations For Installation

- Floor mounting of the turbomolecular pump is **not** permissible.

## 3.5. Connecting The Electronic Drive Unit and The Power Supply



Turbopump, Electronic Drive Unit TC 750 and integrated power supply are fixed together and form a single unit. The mains cable has to be ordered separately (please see Section "Accessories").

The connecting cable 8a for the TC 750 and the power supply is included with the delivery and needs to be connected as follows:

- ➔ Insert plug 53 at the connecting cable 8a into the connection "DC In" at the TC 750 and screw tight with screw 8b.
- ➔ Connect plug 51 at the connecting cable 8a to the power supply at the connection "DC Out" and screw tight.



Secure the plugs 51 with the grub screws present.

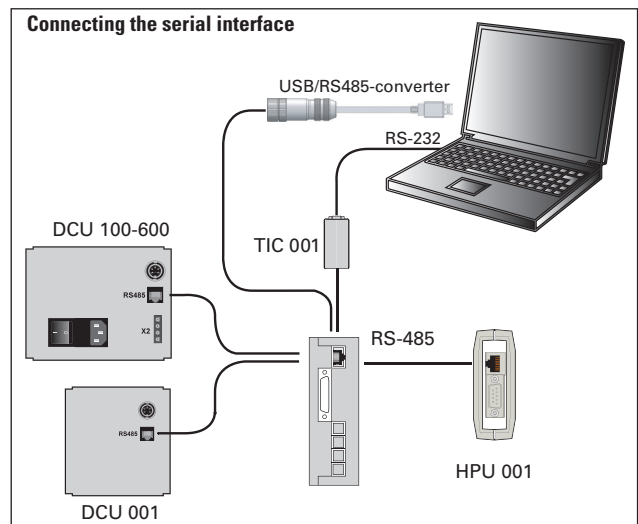
- ➔ Insert mains cable into connection X1 (AC In) on the power supply and secure with mounting.
- ➔ Connect mains cable with the mains.



The TC 750 will perform a self-test when the operating voltage is connected. The turbopump then is put into operation.

## 3.11. Connecting The Serial Interface RS 485

An external operating component DCU 001 or HPU 001 or an external computer can be connected via the connection "RS 485" on the TC 750 with the use of a shielded 8 pole modular connecting cable contained with the delivery.



The serial interface is galvanically and safely separated from the maximum supply voltage from the TC 750.

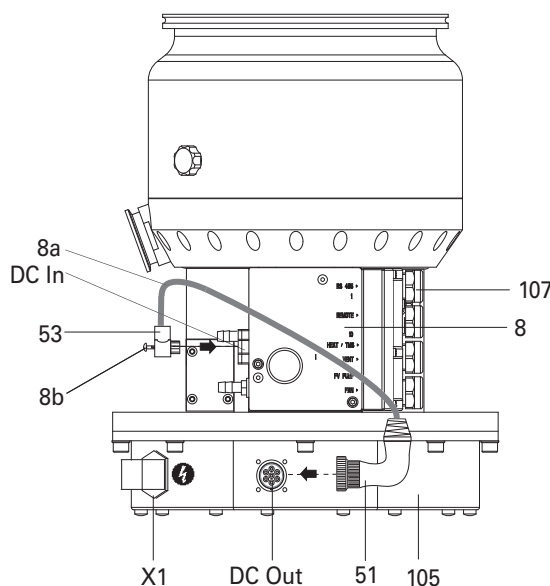


It is possible to connect an RS 232 (e.g. PC) via a level converter (please see Section 11. Accessories).

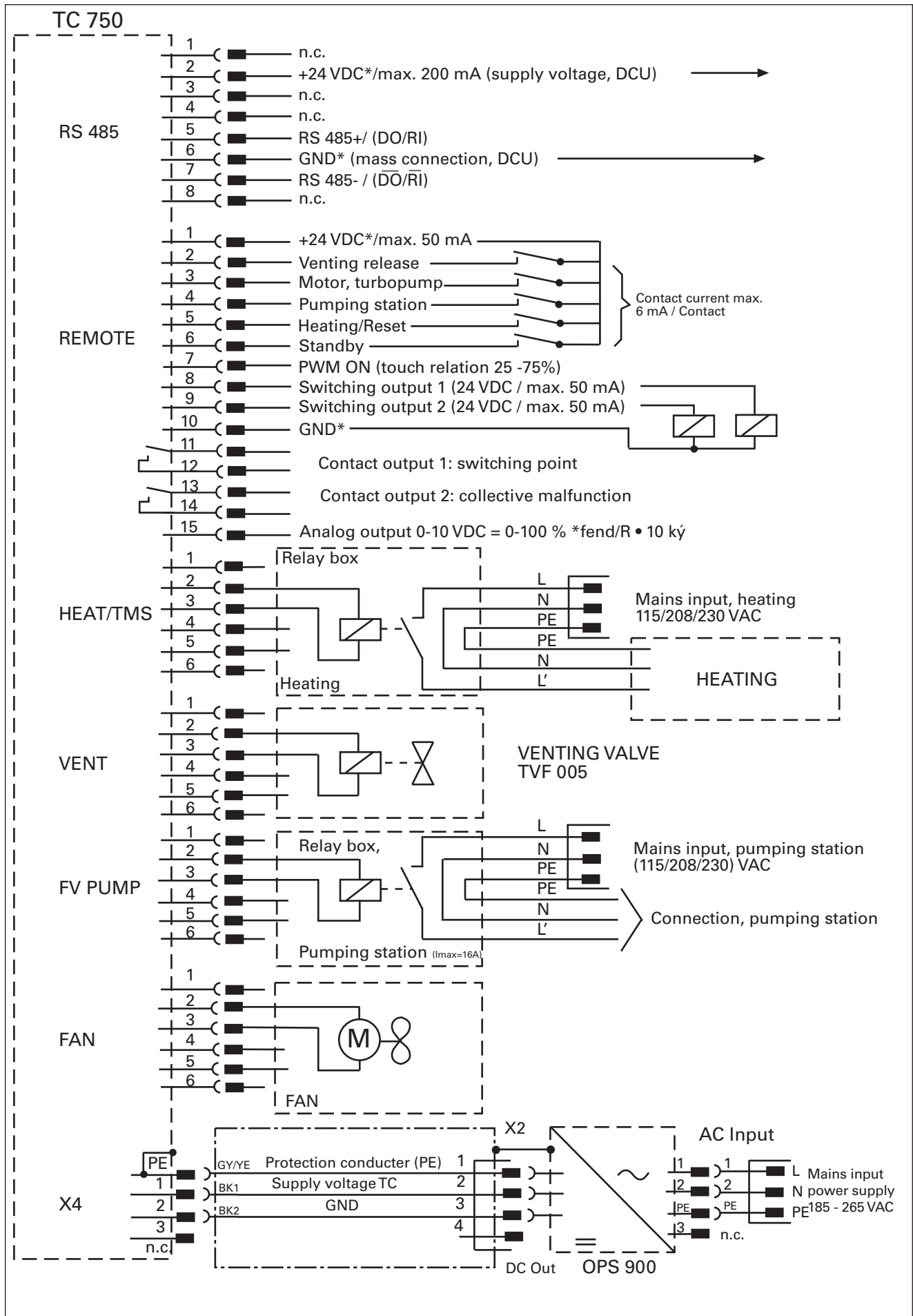
**Please refer to the respective operating instructions for all other information and details for installation the turbopumps.**

### Connecting the TC 750 with the power supply

DC Out	Power supply: DC output
DC In	TC 750: DC input
X1 (AC In)	Mains connection
8	Electronic Drive Unit TC 750
8a	Mains cable TC 750 - power supply
8b	Screw
51	Plug (male)
53	Plug (female)
105	Integrated power supply
107	Cover plate for TC 750 (IP 54)



### 3.12. Connections Diagram



## 4. Operations

### 4.3. Switching ON

- ➔ The turbopump is switched on when connecting the power supply to the mains.
- Once the self test has been successfully completed on the electronic drive unit, the turbopump runs up.



When the unit is switched on for the first time or after a lubricant change the contact to the lubricating pump can open as a result of the degassification of the lubricant. In such cases, as for other malfunctions, the electronic drive unit shuts down the turbopump.

- ➔ The turbopump must be re-started with reset, please see Section "Operations with the remote control unit" in the relevant operating instructions for the turbopump.

### 4.6. Switching OFF And Venting

- ➔ Switching off the turbo pump and backing pump together, e.g. via Remote / Pin4.  
During corrosive gas processes, the sealing gas supply can only be closed when there is no more corrosive gas in the fore vacuum system.
- ➔ The power supply must be disconnected from the mains in order to remove the current from the turbopump.
- ➔ Close the water supply.

### 4.8. Operations With The DCU 001 or HPU 001

Operations with the DCU 001 or HPU 001 should be carried out in accordance with the relevant operating instructions:

- PM 0477 BN (DCU description)
- PM 0547 BN (Pumping operations with the DCU)
- PT 0101 BN (Display an Operating Unit HPU 001)

## 5. Monitoring The Operating Conditions

### 5.3. Operating Mode Display Via Integrated Power Supply

Using the two LEDs of the integrated power supply the following operating conditions are displayed:

LED color	ON	OFF
RED	Excess temperature power supply	Temperature power supply OK
GREEN	Mains voltage OK	Check mains voltage

# 8. Maintenance/Replacement

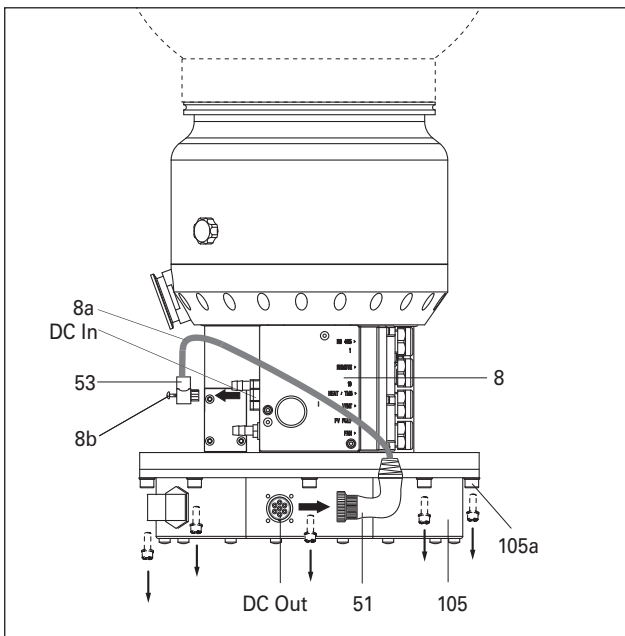
## 8.5 Replacing The Power Supply

In case of a defective power supply it may be replaced as described in the following.

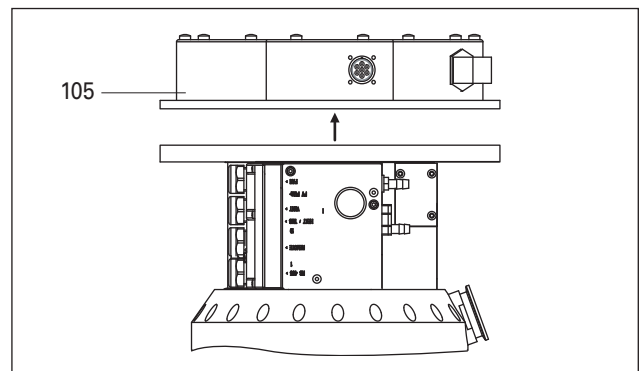
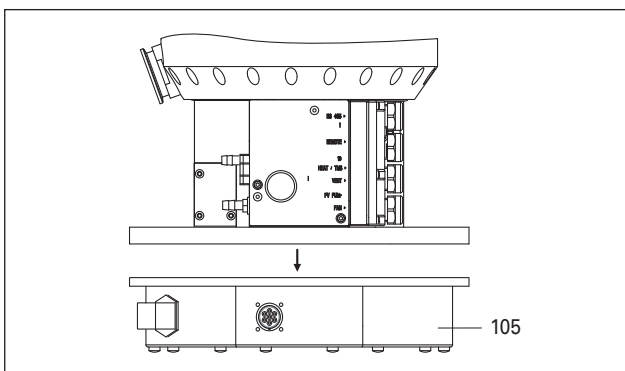
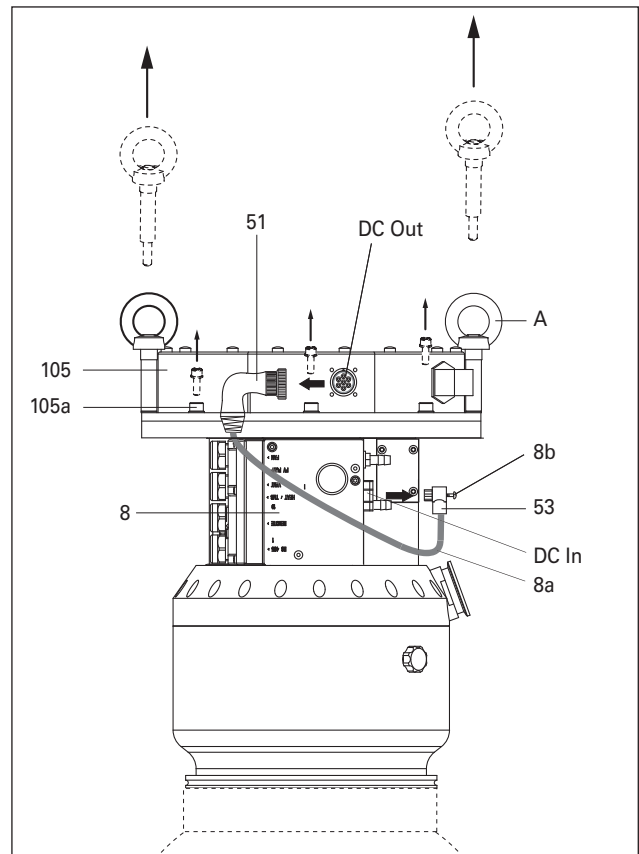
- ➔ Disconnect the turbomolecular pump from the mains power, vent to atmospheric pressure (see Chapter 4.6 "Shutdown and Venting") and, if required, wait for the pump to cool down.
- ➔ Leave the turbomolecular pump in the system. If the pump needs to be removed from the system, refer to Chapter "Replacing the power supply on a removed pump".
- ➔ Loosen mounting screw 8b at the plug 53 and pull the plug off from the TC 750 drive electronics (8).

- ➔ Loosen the grub screws at the plug 51 (connection DC Out), unscrew the plug and detach connection cable 8a.
- ➔ In the case of standard pumps unscrew the 8 screws 105a, in the case of pumps for upside down installation unscrew the 6 screws 105a and the 2 eyebolts A from the power supply (105).
- ➔ Detach the power supply (105) from the turbopump.
- ➔ Screw on the new power supply (see Chapter 10. "Spare Parts") to the turbomolecular pump and connect the power supply to the TC 750.
- ➔ Connect the turbomolecular pump to the mains power.

Replacing the integrated power supply for standard pumps



Replacing the integrated power supply for upside down installation version pumps

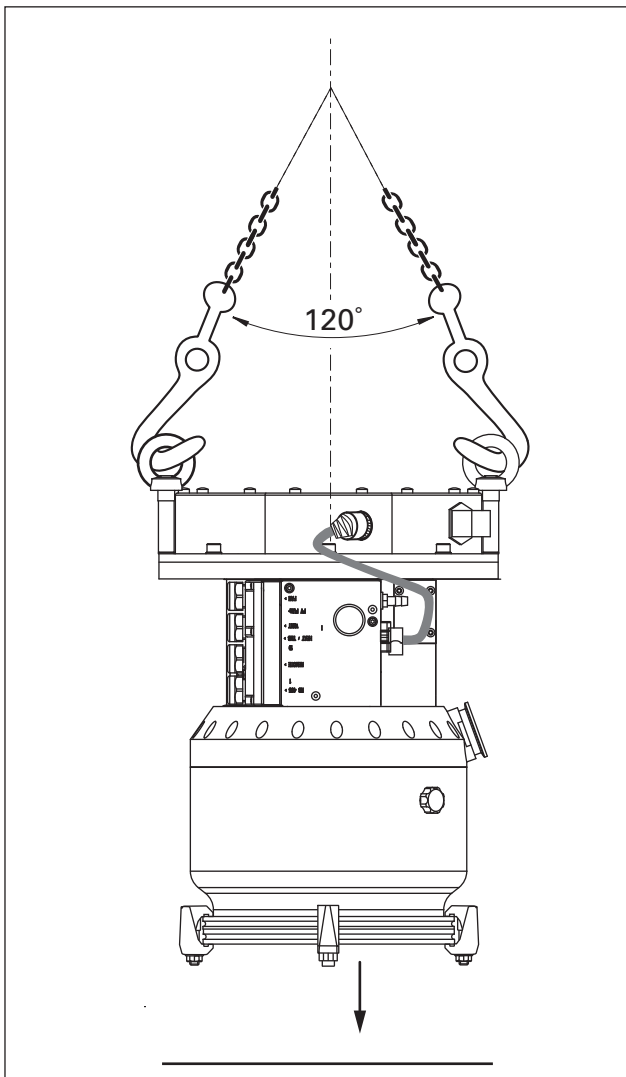


## Replacing the Power Supply on a Removed Pump

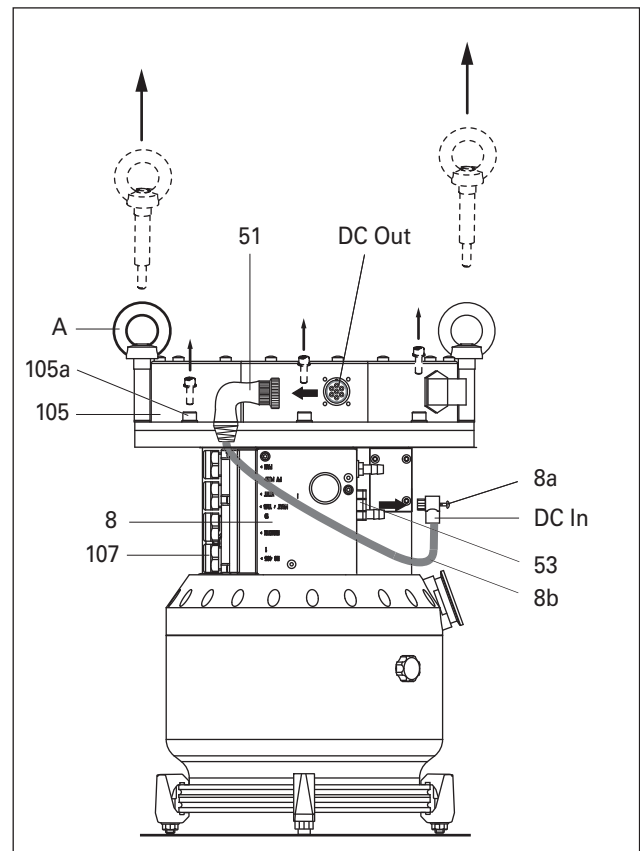
When replacing the integrated power supply, the turbomolecular pumps should remain within the system. If this is not possible, proceed as described in the following.

### Replacement for Pumps with Upside Down Installation

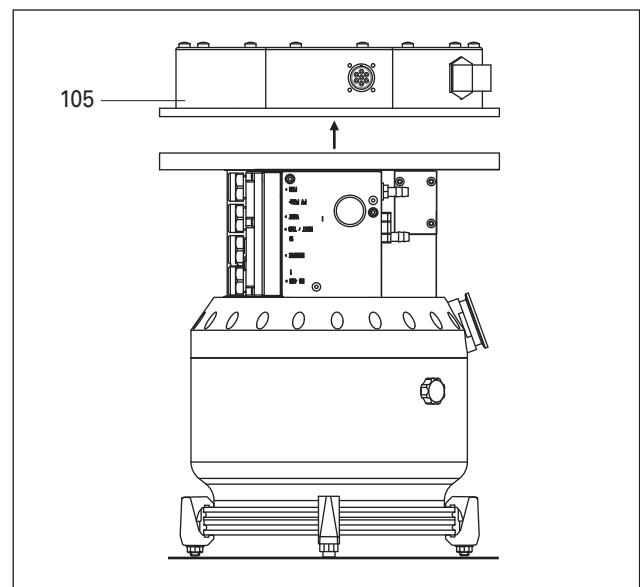
- ➔ Disconnect the turbomolecular pump from the mains power, vent to atmospheric pressure (see Chapter 4.6 "Shutdown and Venting") and, if required, wait for the pump to cool down.
- ➔ Remove the turbomolecular pump from the system. Do not stand the pump on its high vacuum flange.
- ➔ Mount the blank flange with clamping screws and stand the turbomolecular pump on the clamping screws.



- ➔ Loosen mounting screw 8b at the plug 53 and pull the plug off from the TC 750 drive electronics (8).
- ➔ Loosen the grub screws at the plug 51 (connection DC Out), unscrew the plug and detach connection cable 8a.
- ➔ Unscrew the 6 screws 105a and the 2 eyebolts A from the power supply (105).



- ➔ Detach the power supply (105) from the turbopump.

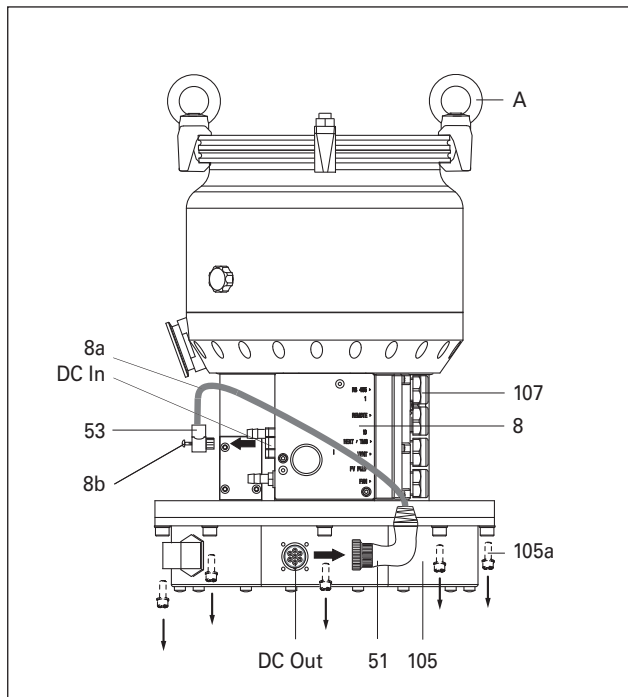


- ➔ Screw on the new power supply (see Chapter 10. "Spare Parts") to the turbomolecular pump and connect the power supply to the TC 750.
- ➔ Remove the blank flange and install the turbomolecular pump into the system.
- ➔ Connect the turbomolecular pump to the mains power.

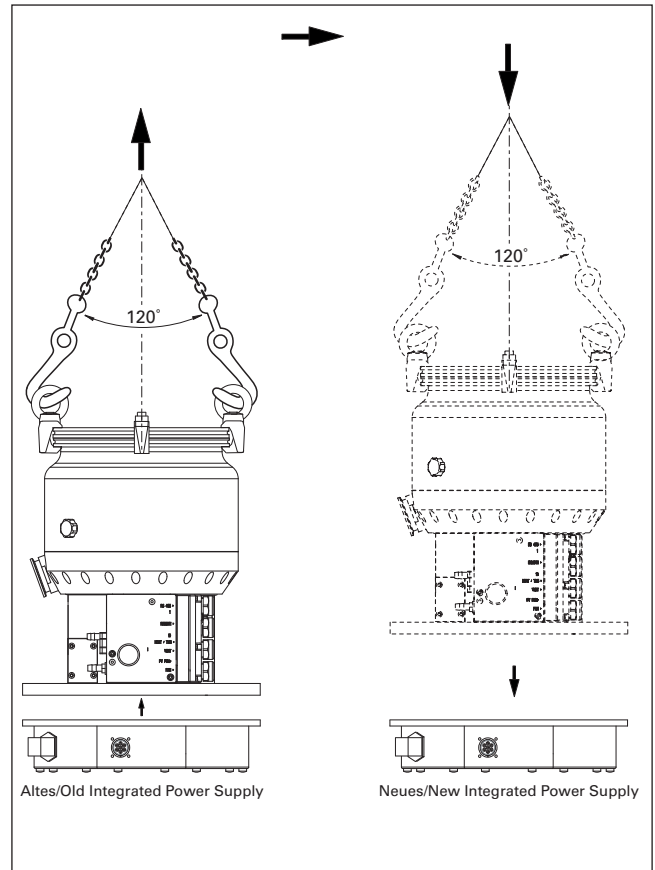


### Replacement for Standard Pumps

- ➔ Disconnect the turbomolecular pump from the mains power, vent to atmospheric pressure (see Chapter 4.6 "Shutdown and Venting") and, if required, wait for the pump to cool down.
- ➔ Remove the turbomolecular pump from the system and carefully stand it on the power supply.
- ➔ Fit the blank flange with four clamping screws and ring nuts A for transportation (see Chapter 2 "Transporting the Pumps").
- ➔ Loosen mounting screw 8b at the plug 53 and pull the plug off from the TC 750 drive electronics (8).
- ➔ Unscrew the plug 51 at the connection DC Out and detach connection cable 8a.
- ➔ Unscrew the screws 105a (8 pieces) from the power supply (105).



- ➔ Place the new power supply besides the turbopump.
- ➔ Use a crane to precisely lift the turbomolecular pump on to the new power supply.
- ➔ Screw on the new power supply (see Chapter 10. "Spare Parts") to the turbomolecular pump and connect the power supply to the TC 750.
- ➔ Remove the blank flange and install the turbomolecular pump into the system.
- ➔ Connect the turbomolecular pump to the mains power.

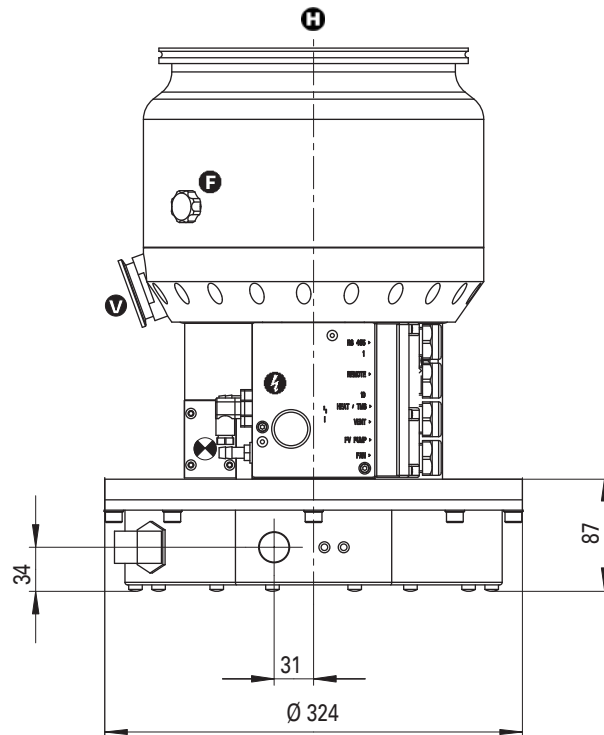


## 9. Technical Data

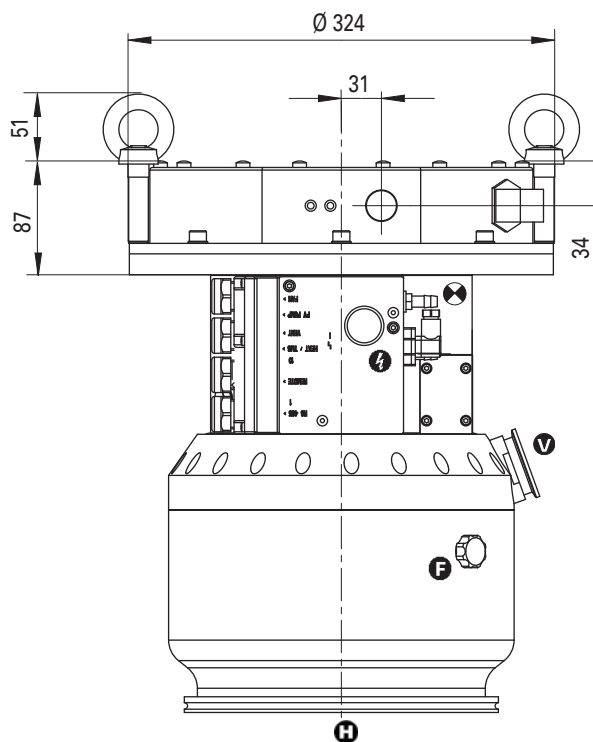
Feature	Unit	OPS 900
Weight	kg	9
Operating voltage	VAC	208-240±10%
Output voltage	V	140±3%
Current consumption, max.	A	7
Power, max.	W	900
Protection class		I
Protection category		IP 54

## 9.1. Dimensions Diagram

OPS 900 (turbopumps standard version P N, P C N)



OPS 900 (turbopumps upside down installation version U P N, U P C N)



## 10. Spare Parts

Pos.	Description	Pieces	Size	Number	Comments	Ordering Quantity
	<b>Other spare parts</b> OPS 900			PM C01 780		

## 11. Accessories

Description	Size	Number	Comments/ Operating Instructions	Order Quantity
<b>Other accessories</b>				
Mains cable Safety plug UL-plug	230 V; 3 m 208 V; 3 m	P 4564 309 HA P 4564 309 HB		
Display And Operating Unit DCU 001 Display And Operating Unit HPU 001		PM 041 816 -T PM 051 510 -T	PM 0477 BN PT 0101 BN	



**For all other information and details to the torbopumps please refer to the respective operating instructions.**

**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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