Turbomolecular Drag Pumping Stations

TSH 071 / TSU 071
TSH 261 / TSU 261
TSH 521 / TSU 521
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Please note: Current operating instructions are available via www.pfeiffer-vacuum.net.
1. Safety Instructions

☞ Read and follow all instructions in this manual.
   – Inform yourself regarding:
     – Hazards which can be caused by the pumping station;
     – Hazards which can be caused by your system;
     – Hazards which can be caused by the medium being pumped.
☞ Avoid exposing any part of the body to vacuum.
☞ Observe the safety and accident prevention regulations.
☞ Regularly check that all accident prevention measures are being complied with.
☞ Do not operate the turbo pumping station with open high vacuum flange.
☞ Use at least 4 bracket screws to connect the high vacuum flange.
☞ The unit has been accredited protection class IP 30. When the unit is operated in environments which require other protection classes, the necessary measures must be taken.
☞ Do not carry out any unauthorised conversions or alterations to the turbo pumping station.
☞ The control of turbopumping stations has been so designed that the pumps re-start automatically following an interruption to the mains power supply. For this reason, access to the vacuum chambers (for example, via doors, flanges, valves) may only be opened once the pumping station has been switched off.
☞ When returning individual components please observe the shipping instructions (refer to the operating instructions for the pumping station components).

1.1. For Your Orientation

Instructions in the text
☞ Working instruction: here, you have to do something.

Symbols used
The following symbols are used throughout in illustrations.

lıkl High vacuum flange
 кред Cooling water connection
 điện Electric connection
haust Exhaust

Abbreviations used
DCU = Display and operating unit
TC = Electronic drive unit, turbopump
TPS = Power supply

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

1.2. Pictogram Definitions

![WARNING] Warning, danger of personal injury.

![CAUTION] Caution, danger of damage to the pump or the system.

![WARNING] Warning, danger of burns from touching hot parts.

![WARNING] Warning, danger of injury from rotating parts.

![PLEASE NOTE] Please note, attention to particularly important information on the product, handling the product or to a particular part of the documentation.

Modifications reserved.
2. Understanding The Pumping Stations

2.1. Main Features

The plug and play type pumping stations are fully automatically operating pumping units.

The integrated power part with the Display And Operating Unit DCU 001 serves to control and monitor the pumping station and works in conjunction with the Electronic Drive Unit TC 600.

Cooling
Standard type: Air cooling integrated in the casing (up to 35 °C ambient temperature).
Alternative: Water cooling (please see Section 9. Accessories).

Details regarding the pumping station components can be found in the respective operating instructions.
The possible pumping station variants and their components are set out in Section 2.3. of these operating instructions.

Transport
Lifting gear, which may only be attached to the ring screws, can be used to transport the pumping stations.
The threaded holes for the ring screws are located in the high vacuum flange.
The two carrying handles 3 (please see the illustration above) are provided only for manual carrying.

Where the delivery of pumping stations include a rotary vane vacuum pump it must be noted that this rotary vane pump is supplied without a filling of operating fluid.
Before first time starting, the rotary vane vacuum pump must be filled with operating fluid. The operating fluid is contained in a pack included with the delivery consignment.

Proper Use
- The turbomolecular pumping stations may only be used for the purpose of generating vacuum.
- The turbomolecular pumping stations may only be operated in the existing configuration.

Improper Use
The following is regarded, inter alia, as improper:
- The pumping of explosive or corrosive gases.
- Operating the pumping stations in areas where there is a danger of explosion.
- The use of accessories which are not named in this manual or which have not been agreed by the manufacturer.

Improper use will cause all claims for liability and guarantees to be forfeited.

2.2. Pumping Station Control

<table>
<thead>
<tr>
<th>Pumping Station</th>
<th>Pumping Station Control</th>
<th>Operating Instructions for DCU/TPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSH 071 TSU 071</td>
<td>TC 600 with DCU 001 and TPS 100</td>
<td>PM 0477 BN/PM 0521 BN</td>
</tr>
<tr>
<td>TSH 261 TSU 261</td>
<td>TC 600 with DCU 001 and TPS 200</td>
<td></td>
</tr>
<tr>
<td>TSH 521 TSU 521</td>
<td>TC 600 with DCU 001 and TPS 300</td>
<td></td>
</tr>
</tbody>
</table>
2.3. Pumping Station Components

<table>
<thead>
<tr>
<th>Components</th>
<th>TSH 071 TSU 071</th>
<th>TSH 281 TSU 281</th>
<th>TSH 521 TSU 521</th>
<th>Operating Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbomolecular Drag Pump</td>
<td>TMH 071 TMU 071</td>
<td>TMH 261 TMU 261</td>
<td>TMH 521 TMU 521</td>
<td>PM 0504 BN</td>
</tr>
<tr>
<td>Diaphragm Pump</td>
<td>MVP 015-2</td>
<td>MVP 035-2</td>
<td>MVP 055-3</td>
<td>PU 0012 BN</td>
</tr>
<tr>
<td>Rotary Vane Vacuum Pump</td>
<td>DUO 2.5 UNO 005 A DUO 5 DUO 10</td>
<td>DUO 2.5 UNO 005 A DUO 5 DUO 10</td>
<td>DUO 2.5 UNO 005 A DUO 5 DUO 10</td>
<td>PK 0152 BN PK 0197 BN</td>
</tr>
<tr>
<td>Venting Valve</td>
<td>TVF 005</td>
<td>TVF 005</td>
<td>TVF 005</td>
<td>PM 0 507 BN</td>
</tr>
</tbody>
</table>

For further accessories please refer to Section 9.

3. Installation

3.1. Preparations For Installation

Do not carry out any unauthorised conversions or alterations to the turbo pumping station.

- Only remove the blank flange from the high vacuum side immediately before connection.
- The lubricant reservoir is already fitted to turbopumps and filled.
- Where the use of rotary vane vacuum pumps is involved, the operating fluid is included in the delivery consignment and must be filled into the pump before first time operating.
- Diaphragm pumps do not require lubricant.
- Permissible magnetic fields:
  - TSH 071/TSU 071 ≤ 4 mT
  - TSH 261/TSU 261 ≤ 5.5 mT
  - TSH 521/TSU 521 ≤ 5 mT
- The pumping station should be erected on a horizontal surface.

On delivery, the pumping station is provided with four elastic buffers on the underside.
In addition, and to render the pumping station mobile, rollers can be fitted (please see Section 9. Accessories).

3.2. Laying The Exhaust Line

Please observe the backing pump operating instructions when laying the exhaust line. Exhausted gases and vapours can be hazardous to health and cause environmental pollution.

3.3. Venting Units

The pumping stations are equipped with Venting valve TVF 005 as standard.
Control is effected via the pre-selected setting on Electronic Drive Unit TC 600.
The venting mode of the TVF 005 is selected via the DCU.

Drying Unit TTV 001 (Accessory)
The drying unit keeps moisture away from the apparatus when venting with atmospheric air.
- Secure Drying Unit TTV 001 to the rear side of the pumping station casing using the two knurled screws.
  Where the casing variant with additional cover for the rotary vane vacuum pump is involved the drying unit must be fitted within this cover.
- Make the connection to the venting valve with a PVC hose (please refer to Section 9. Accessories).
3.4. Electrical Connections

Piping must be connected free of stress. A bellows fitted in the piping will compensate for any stress arising.

Alternating current is required for operating the pumping station. The mains connection cable (length 2.5 m) is provided on the pumping station.

- Plug in mains connection plug (the pumping station can now be operated).

Accessory Connections:
For the electrical connections of accessories please refer to Section 3.7. "Connections Plan".

3.5. Connecting The Vacuum Unit

The utmost cleanliness must be observed when fitting all high vacuum parts. Unclean components prolong the pumping time.

- Only remove the blank cover on the high vacuum flange once the vacuum unit is ready for connection so that no moisture, which would prolong the pumping time to attainment of final vacuum, precipitates in the pump.
- The use of a splinter shield in the high vacuum flange protects against foreign bodies (please see accessories for the turbopump).

3.6. Cooling

Water cooling is necessary where casing heating is being used.

The pumping stations have been designed to be air cooled as standard where ambient temperatures of up to 35 °C are involved. If required, conversion to water cooling is possible (for water cooling please refer to the "Accessories").

3.4. Electrical Connections

The electrical connections must be effected in accordance with local regulations. The voltage requirements shown on the rating plate must comply with the mains voltage.

Alternating current is required for operating the pumping station.

The mains connection cable (length 2.5 m) is provided on the pumping station.

- Plug in mains connection plug (the pumping station can now be operated).

Accessory Connections:
For the electrical connections of accessories please refer to Section 3.7. "Connections Plan".

3.5. Connecting The Vacuum Unit

There should be no unilateral loading on the high vacuum flange.

The weight of a vacuum chamber freely flanged on the vacuum flange must not exceed, with the TSH/TSU 071 maximum 200 N (20 kg), with TSH/TSU 261 maximum 500 N (50 kg), and with TSH/TSU 521 maximum 1000 N (100 kg).

The utmost cleanliness must be observed when fitting all high vacuum parts. Unclean components prolong the pumping time.

- Only remove the blank cover on the high vacuum flange once the vacuum unit is ready for connection so that no moisture, which would prolong the pumping time to attainment of final vacuum, precipitates in the pump.
- The use of a splinter shield in the high vacuum flange protects against foreign bodies (please see accessories for the turbopump).

Connecting The Pumping Station Via A Bellows

Advantage: Reduced vibration transmission.

The pumping station must be mechanically anchored.

- Screw the pumping station to a holder with threaded screws M10. The elastic buffers need not be removed.
3.7. Pumping Station Connections Plan

General Schema
Bridge relay contacts 11 and 21 
and also 14 and 24 
(DU-cable end sleeves) 

Connection to KL 21 and 22 
with DUO sleeve 1.5 mm 

Fit switch 1S2 in such a 
way that terminal positions 
1A and 4B point upwards. 

Fuse-rating according to type-plate 

Connection Involving Rotary Vane Vacuum Pumps
Connection Involving Diaphragm Pumps

- Connection to KL.21 and 22 with 0.00 sleeve 1.3 mm
- Fit switch 1S2 in such a way that terminal positions 1A and 4B point upwards.
- Fuse rating according to type plate
- Connection involving diaphragm pumps

PM 051 407 - S
4. Operations

4.1. Transportation Protection
Pumping stations which contain a Diaphragm Pump MVP 055-3 or a rotary vane vacuum pump are shipped with transportation protection (please see also the sticker on the pumping station). The following must be removed before first-time starting:

- Remove both side panels from the pumping station by unscrewing each two screws.
- Disconnect the earthing cable from the side panels.
- Unscrew the Allan head screws 10 (M6) from both sides of the pumping station base.

4.2. Filling In The Lubricant
- The turbomolecular drag pump bearing has been filled with the required amount of lubricant in the works.
- The diaphragm pump is lubricated for the whole of its working life.
- The rotary vane vacuum pump must be filled with operating fluid P3 before first time starting. A filling of operating fluid is included with the delivery consignment.

Procedure:
(please also refer to Section 6.1.).
- Unscrew two screws on the right-hand side panel. Slightly lift the panel and remove.
- Unscrew operating fluid filler screw 8.
- Unscrew the locking screw on the operating fluid flask (included) and screw on the filling hose (in the side panel).
- Insert the filling hose in the operating fluid filler opening and allow operating fluid to flow in; the amount and type of operating fluid is shown on the rating plate.
- Screw in operating fluid filler screw 8 and take care with the O-ring.
- Re-secure the filling hose in the side panel.
- Fit the side panel back onto the pumping station.

4.3. Operational Behaviour With Gas Load
Water cooling is necessary if the pumping station is to be operated with gas load.

Details regarding the operational behaviour with gas load can be found in the respective turbopump operating instructions.
4.4. Starting

Turbopump rotors turn at great speed. When the high vacuum flange is open there is a danger of personal injury and of damage to the pump resulting from the falling in of objects. Therefore, never operate the pump with an open high vacuum flange.

- With water cooling: Open the cooling water supply and check flow.
- Switch on the pumping station with the "Pumpstand EIN/AUS" ("pumping station ON/OFF") key (6) on the front panel.

- Once the self test has been successfully completed (duration: TSH/TSU 071 approximately 10 s; TSH/TSU 261 approximately 10 s; TSH/TSU 521 approximately 15 s), the pumping station begins to operate.
- If the vacuum pump does not start after being switched on please refer to “What To Do In Case Of Breakdowns” in the respective operating instructions for the turbopump.
- The turbomolecular drag pump starts up automatically. The start up phase up to attainment of the rotation speed switchpoint is dependent on the size of the vacuum chamber. For start up times in respect of the turbopump please refer to “Technical Data” in the relevant operating instructions.

Where the incidence of water vapour is anticipated, before starting the pumping station it is recommended to open the gas ballast valve on the backing pump by hand. If it is ascertained that the intake pressure of the pump increases or is unusually high, the valve can be opened while the pumping station is running. Once the final pressure has stabilized the valve can be closed again.

4.5. Switching OFF And Venting

- The complete pumping station is switched off with the key 6 "Pumpstand EIN/AUS" / "pumping station ON/OFF".
- Turbopump and vacuum chamber are vented via Venting Valve TVF 005 which opens for 0.3 seconds when the venting frequency does not attain 50% of the final rotation speed. It then closes again for 10 seconds and is then opened for the venting time of 3,600 seconds (1 hour).
- The venting mode can be changed via the DCU.
- Where water cooling is involved: Shut off water supply.

5. What To Do In Case Of Breakdowns?

Please refer to the operating instructions for the individual components for information on the elimination of malfunctions.
6. Maintenance

Maintenance on the individual components of the pumping station should be carried out in accordance with the instructions in the respective sections of the relevant operating instructions.

6.1. Replacing The Lubricant Reservoir And The Operating Fluid

- The diaphragm pump bearings are lubricated for the whole of their working life.

- The lubricant reservoir in respect of the turbopump should be replaced at least once a year. Where extreme operating conditions or unclean processes are involved, the replacement interval should be shorter.

Procedure:

- Unscrew the four screws from the cover plate and remove.
- Unscrew four screws from the turbopump holding plate.
- Lift out the turbopump with the holding plate from the pumping station.
- Carry out the change of the lubricant reservoir in accordance with the turbopump operating instructions.

The Lubricant can contain toxic substances from the medium pumped. Lubricant must be disposed of in accordance with the respective regulations. Safety instructions data sheet for the lubricant on request.

- The operating fluid for the rotary vane vacuum pump should be changed at least once a year.

Procedure:

- Unscrew the two screws on the right hand side panel. Slightly lift up the side panel and remove.
- Unscrew two screws 4 and pull out perforated plate 5 to the right hand side.
- Exert slight downward pressure on operating fluid duct 6, turn 90° and bring into the forward position.
- Unscrew operating fluid drain screw 7 and drain operating fluid via operating fluid duct 6 into a suitable container.

The temperature of the operating fluid can be as high as 80 °C.

Toxic gases and vapours can escape from the operating fluid which can be enriched with substances which represent a hazard to health. Disposal must be carried out in accordance with the relevant regulations.

Screw back in operating fluid drain screw 7 taking care with the O-ring.
Fill in operating fluid as described in Section 4.1. of these operating instructions.
Re-fit the perforated plate and the side panel.
Check the operating fluid daily where non-stop operations are involved, otherwise each time the pumping station is switched on.

Further information regarding changes of operating fluid can be found in the operating instructions for the respective rotary vane vacuum pump.

Changing the operating fluid on rotary vane vacuum pumps

4 Screws (2 pieces)
5 Perforated plate
6 Operating fluid duct
7 Operating fluid drain screw
8 Operating fluid filler screw
9 Sight glass

Order numbers for the lubricant reservoir on turbopumps and operating fluid on rotary vane vacuum pumps

<table>
<thead>
<tr>
<th>Lubricant reservoir on turbomolecular pumps</th>
<th>Order number</th>
</tr>
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<tbody>
<tr>
<td>TMH/U 071</td>
<td>PM 073 073 -T</td>
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<tr>
<td>TMH/U 261</td>
<td>PM 063 265-T</td>
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<tr>
<td>TMH/U 521</td>
<td>PM 063 265-T</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating fluid for rotary vane vacuum pumps</th>
<th>Pack size</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3</td>
<td>1 l</td>
<td>PK 001 106 -T</td>
</tr>
<tr>
<td>P3</td>
<td>5 l</td>
<td>PK 001 107 -T</td>
</tr>
<tr>
<td>P3</td>
<td>20 l</td>
<td>PK 001 108 -T</td>
</tr>
</tbody>
</table>


7. Service

Do make use of our service facilities
In the event that repairs are necessary on your pumping station 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 Pfeiffer Vacuum Service Engineers,
- Return individual components to the manufacturer for repairs,
- Replace individual components.

Local Pfeiffer Vacuum representatives can provide full details.

Before returning:
- Dismantle all accessories.
- Drain lubricant/operating fluid (please see Section 6.1.).
- If the units are free of harmful substances 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 substances and preparations as defined in the current, local, dangerous substances regulations; 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 declaration of contamination
- In every case the “Declaration of Contamination” 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 Vacuum Service Center.

Please get in touch with your local Pfeiffer Vacuum 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.

Repair orders are carried out according to our general conditions of sale and supply.

If repairs are necessary, please send the unit together with a short damage description to your nearest Pfeiffer Vacuum Service Center.

Contact addresses and telephone hotline
Contact addresses and telephone numbers can be found on the back cover of these operating instructions.
### Technical Data

<table>
<thead>
<tr>
<th>Pumping Station</th>
<th>Unit</th>
<th>TSH 071</th>
<th>TSH 071</th>
<th>TSU 071</th>
<th>TSH 261</th>
<th>TSU 261</th>
<th>TSH 521</th>
<th>TSH 521</th>
<th>TSU 521</th>
<th>TSU 521</th>
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</thead>
<tbody>
<tr>
<td><strong>Connection, nominal diameter</strong></td>
<td></td>
<td>DN 40 ISO-KF</td>
<td>DN 63 ISO-K</td>
<td>DN 63 CF-F</td>
<td>DN 100 ISO-K</td>
<td>DN 100 CF-F</td>
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<td>210</td>
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<td><strong>Final pressure with</strong></td>
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<tr>
<td>diaphragm pumps</td>
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<td>&lt; 1·10⁻⁷</td>
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<td><strong>Pumping speed, backing pump at a mains frequency of 50 Hz with</strong></td>
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<td>2.1</td>
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<td>Rotary Vane Pump DUO 2.5</td>
<td>m³/h</td>
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<td><strong>Mains connection-power consumption with</strong></td>
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<td>Diaphragm Pump MVP 015-2</td>
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</tr>
<tr>
<td>MVP 055-3</td>
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<td>230</td>
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<td>Rotary Vane Pump DUO 2.5</td>
<td></td>
<td>470</td>
<td>470</td>
<td>470</td>
<td>570</td>
<td>570</td>
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<td>UNO 5</td>
<td></td>
<td>650</td>
<td>650</td>
<td>650</td>
<td>750</td>
<td>750</td>
<td>850</td>
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</tr>
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<td>DUO 5</td>
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<td>44</td>
<td>44</td>
<td>44</td>
<td>54</td>
<td>54</td>
<td>63</td>
<td>63</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td><strong>Weight with</strong></td>
<td>kg</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>32</td>
<td>32</td>
<td>42</td>
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<td>Diaphragm Pump MVP 015-2</td>
<td></td>
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<tr>
<td>MVP 035-2</td>
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<td>32</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MVP 055-3</td>
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<td>44</td>
<td>54</td>
<td>54</td>
<td>63</td>
<td>63</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>Rotary Vane Pump DUO 2.5</td>
<td></td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>42</td>
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<td>51</td>
<td>51</td>
</tr>
<tr>
<td>UNO 5</td>
<td></td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>42</td>
<td>42</td>
<td>51</td>
<td>51</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>DUO 5</td>
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<td>54</td>
<td>63</td>
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</tr>
</tbody>
</table>
8.1. Dimensions

Nur mit DUO 10/5
With DUO 10/5 only
### 9. Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Size</th>
<th>Number</th>
<th>Comments/relevant operating instructions</th>
<th>Ordering quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drying Unit TTV 001</td>
<td></td>
<td>PM Z00 121</td>
<td>filled with zeolite/PM 0022 BN</td>
<td></td>
</tr>
<tr>
<td>Zeolite filling for the drying unit</td>
<td>approx. 260 cm³</td>
<td>PM006 786  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set of rollers consist of:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 wheels without brakes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 wheels with brakes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 screws</td>
<td></td>
<td>P 0994 830</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 spring washers</td>
<td></td>
<td>P 3885 259 EA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N 3059 469 8P</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N 3535 913 SP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating sleeve TMH/TMU 071</td>
<td>230 V; Schuko plug</td>
<td>PM 041 900  -T</td>
<td></td>
<td>PM 0542 BN</td>
</tr>
<tr>
<td></td>
<td>208 V; UL plug</td>
<td>PM 041 901  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>115 V; UL plug</td>
<td>PM 041 902  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating sleeve TMH/TMU 261</td>
<td>230 V; Schuko plug</td>
<td>PM 041 903  -T</td>
<td></td>
<td>PM 0542 BN</td>
</tr>
<tr>
<td></td>
<td>208 V; UL plug</td>
<td>PM 041 904  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>115 V; UL plug</td>
<td>PM 041 905  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating sleeve TMH/TMU 521</td>
<td>230 V; Schuko plug</td>
<td>PM 051 096  -T</td>
<td></td>
<td>PM 0542 BN</td>
</tr>
<tr>
<td></td>
<td>208 V; UL plug</td>
<td>PM 051 097  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>115 V; UL plug</td>
<td>PM 051 098  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water cooling TSH/TSU 071</td>
<td></td>
<td>PM 016 102  -T</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>PM 016 101  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PM 016 101  -T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Mist Filter ONF 25</td>
<td></td>
<td>PM 015 399  -T</td>
<td></td>
<td>PK 0213 BN</td>
</tr>
<tr>
<td>(for DUO 5 and DUO 10)</td>
<td></td>
<td>PM 015 400  -T</td>
<td></td>
<td>PK 0169 BN</td>
</tr>
<tr>
<td>Oil Mist Filter ONF 16</td>
<td></td>
<td>PM 015 401  -T</td>
<td></td>
<td>PK 0213 BN</td>
</tr>
</tbody>
</table>

Further accessories are listed in the operating instructions for the individual components.

When ordering accessories please be sure to state the full part number. Please use this list as an order form (by taking a copy).

### 10. Spare Parts

Spare parts are listed in the relevant operating instructions for the individual components
**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:

<table>
<thead>
<tr>
<th>1. Description of component:</th>
<th>2. Reason for return:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Equipment type/model: ______________________</td>
<td>______________________</td>
</tr>
<tr>
<td>- Code No.: ______________________</td>
<td>______________________</td>
</tr>
<tr>
<td>- Serial No.: ______________________</td>
<td>______________________</td>
</tr>
<tr>
<td>- Invoice No.: ______________________</td>
<td>______________________</td>
</tr>
<tr>
<td>- Delivery Date: ______________________</td>
<td>______________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Equipment condition</th>
<th>4. Process related contamination of equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Has the equipment been used?</td>
<td>- toxic yes ☐ no ☐</td>
</tr>
<tr>
<td>yes ☐ no ☐</td>
<td>- corrosive yes ☐ no ☐</td>
</tr>
<tr>
<td>- What type of pump oil was used?</td>
<td>- microbiological hazard* yes ☐ no ☐</td>
</tr>
<tr>
<td>______________________</td>
<td>- explosive* yes ☐ no ☐</td>
</tr>
<tr>
<td>- Is the equipment free from potentially harmful substances?</td>
<td>- radioactive* yes ☐ no ☐</td>
</tr>
<tr>
<td>yes ☐ (go to section 5)</td>
<td>- other harmful substances yes ☐ no ☐</td>
</tr>
<tr>
<td>no ☐ (go to section 4)</td>
<td></td>
</tr>
</tbody>
</table>

*) 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:

<table>
<thead>
<tr>
<th>Tradename</th>
<th>Chemical name (or Symbol)</th>
<th>Danger class</th>
<th>Precautions associated with substance</th>
<th>Action if spillage or human contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Legally Binding Declaration</th>
</tr>
</thead>
</table>

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: __________________________________________
Konformitätserklärung
Declaration of Conformity

im Sinne folgender EU-Richtlinien:
pursuant to the following EU directives:

- Maschinen/Machinery 98/37/EG (Anhang/Annex IIA)
- Elektromagnetische Verträglichkeit/Electromagnetic Compatibility 89/336/EWG
- Niederspannung/Low Voltage 73/23/EWG


We hereby certify, that the product specified below is in accordance with the provision of EU Machinery Directive 98/37/EEC, EU Electromagnetic Compatibility Directive 89/336/EEC and EU Low Voltage Directive 73/23/EEC.

Produkt/Product:
TSH/TSU 071
TSH/TSU 261
TSH/TSU 521

Angewendete Richtlinien, harmonisierte Normen und angewendete nationale Normen:
Guidelines, harmonised standards, national standards which have been applied:

EN 292-1 EN 50 081-1
EN 292-2 EN 50 082-2
EN 294 IEC 801 1-4
EN 61 010 VDE 0843-6
EN 55 011

Unterschrift/Signature:

(W. Dondorf)
Geschäftsführer
Managing Director

Pfeiffer Vacuum GmbH
Berliner Str. 43
35614 Asslar
Germany

Konf.I/2003