

## TPS wall rail fitting

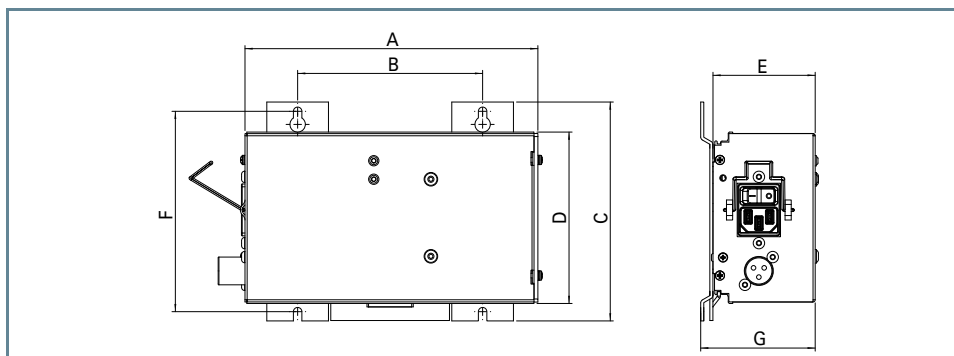
**Power supplies for wall and standard-rail mounting. Simple integration and Plug and Play-ready. Performance ideally matched to the respective pump model. Satisfies international standards.**

### TPS wall rail fitting



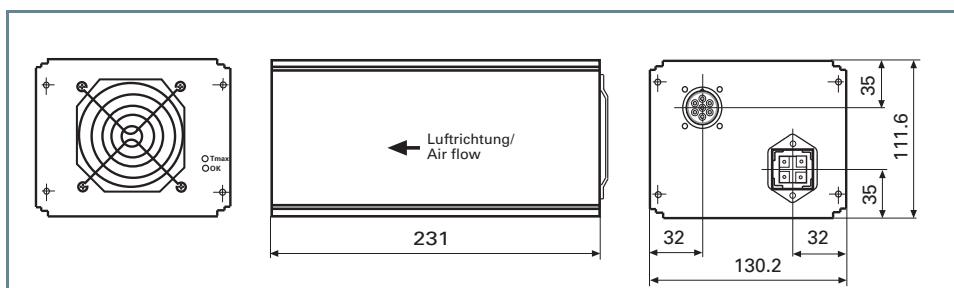
► Power supply for wall or standard-rail mounting

### Dimensions



TPS 110  
TPS 180  
TPS 310  
TPS 400

|   | TPS 110  | TPS 180  | TPS 310  | TPS 400  |
|---|----------|----------|----------|----------|
| A | 169 mm   | 190 mm   | 190 mm   | 190 mm   |
| B | 120 mm   | 120 mm   | 120 mm   | 120 mm   |
| C | 142 mm   | 142 mm   | 142 mm   | 142 mm   |
| D | 111.2 mm | 111.2 mm | 111.2 mm | 111.2 mm |
| E | 48.7 mm  | 58.4 mm  | 67.3 mm  | 104.6 mm |
| F | 130 mm   | 130 mm   | 130 mm   | 130 mm   |
| G | 56.6 mm  | 66.5 mm  | 75.5 mm  | 112.5 mm |



TPS 1400

| <b>Technical data</b>                | <b>TPS 110</b>           | <b>TPS 180</b>           | <b>TPS 310</b>           | <b>TPS 400</b>           |
|--------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Output voltage                       | 24 +/-2% V DC            | 24 +/-2% V DC            | 24 +/-2% V DC            | 48 +/-2% V DC            |
| Output current                       | 4.6 A                    | 7.5 A                    | 12.5 A                   | 8.4 A                    |
| Weight                               | 0.7 kg                   | 1.0 kg                   | 1.1 kg                   | 1.75 kg                  |
| Mains requirement: frequency (range) | 50/60 Hz                 | 50/60 Hz                 | 50/60 Hz                 | 50/60 Hz                 |
| Mains requirement: power consumption | 130 VA                   | 210 VA                   | 340 VA                   | 450 VA                   |
| Mains requirement: voltage (range)   | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC |
| Protection category                  | IP 20                    | IP 20                    | IP 20                    | IP 20                    |
| Ambient temperature                  | 5-50 °C                  | 5-50 °C                  | 5-50 °C                  | 5-50 °C                  |

| <b>Order number</b>   | <b>TPS 110</b>      | <b>TPS 180</b>      | <b>TPS 310</b>      | <b>TPS 400</b>      |
|-----------------------|---------------------|---------------------|---------------------|---------------------|
| TPS wall rail fitting | <b>PM 061 340-T</b> | <b>PM 061 341-T</b> | <b>PM 061 342-T</b> | <b>PM 061 343-T</b> |

| <b>Accessories</b>   |                      |                      |                      |                      |
|--|----------------------|----------------------|----------------------|----------------------|
| 230 V AC mains cable with Euro-style safety plug, IEC power socket (straight), 3 m | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZE</b> |
| 115 V AC mains cable with UL plug, IEC power socket (straight), 3 m                | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZF</b> |
| 208 V AC mains cable with UL plug, 3 m   | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZA</b> |

| <b>Technical data</b>                | <b>TPS 1400</b>             |
|--------------------------------------|-----------------------------|
| Output voltage                       | 140 V DC                    |
| Output current                       | 10 A                        |
| Weight                               | 3.4 kg                      |
| Mains requirement: power consumption | 1700 VA                     |
| Mains requirement: voltage (range)   | 187 - 265 V AC,<br>50/60 Hz |
| Protection category                  | IP 20                       |
| Ambient temperature                  | 5-40 °C                     |

| <b>Order number</b>   | <b>TPS 1400</b>   |
|-----------------------|-------------------|
| TPS wall rail fitting | <b>PM C01 760</b> |

| <b>Accessories</b>   |                      |
|--|----------------------|
| Connection cable for linking HiPace MC with TM 3000 to TPS 1400/1401 | <b>PM 051 983-T</b>  |
| 230 V AC mains cable with Euro-style safety plug, VII-HAN 3A, 3 m    | <b>P4 564 309 HA</b> |
| 208 V AC mains cable with UL plug, NEMA-HAN 3A, 3 m                  | <b>P4 564 309 HB</b> |

## TPS-19" rack module

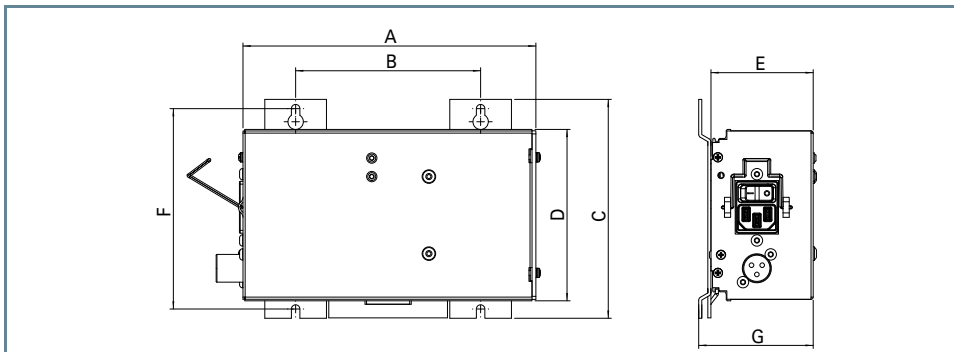
Power supply in the form of a 3 RU 19" rack module with front panel; for installation directly in 19" rack systems. Performance ideally matched to the respective HiPace pump model. Plug and Play-ready. Satisfies international standards.

### TPS-19" rack module



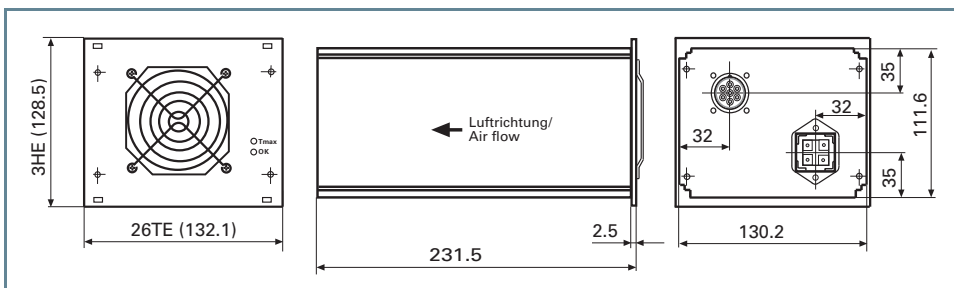
► Power supply in the form of a 3 RU 19" rack module with front panel

### Dimensions



TPS 111  
TPS 181  
TPS 311  
TPS 401

|   | TPS 111  | TPS 181  | TPS 311  | TPS 401  |
|---|----------|----------|----------|----------|
| A | 161.5 mm | 187.5 mm | 187.5 mm | 187.5 mm |
| B | 164 mm   | 190 mm   | 190 mm   | 190 mm   |
| C | 128.4 mm | 128.4 mm | 128.4 mm | 128.4 mm |
| D | 111.2 mm | 111.2 mm | 111.2 mm | 111.2 mm |
| E | 48.7 mm  | 58.4 mm  | 67.3 mm  | 104.6 mm |
| F | 50.5 mm  | 60.7 mm  | 70.8 mm  | 106.4 mm |



TPS 1400

| <b>Technical data</b>                | <b>TPS 111</b>           | <b>TPS 181</b>           | <b>TPS 311</b>           | <b>TPS 401</b>           |
|--------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Output voltage                       | 24 +/-2% V DC            | 24 +/-2% V DC            | 24 +/-2% V DC            | 48 +/-2% V DC            |
| Output current                       | 4.6 A                    | 7.5 A                    | 12.5 A                   | 8.4 A                    |
| Weight                               | 0.7 kg                   | 1.0 kg                   | 1.1 kg                   | 1.75 kg                  |
| Mains requirement: frequency (range) | 50/60 Hz                 | 50/60 Hz                 | 50/60 Hz                 | 50/60 Hz                 |
| Mains requirement: power consumption | 130 VA                   | 210 VA                   | 340 VA                   | 450 VA                   |
| Mains requirement: voltage (range)   | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC |
| Protection category                  | IP 20                    | IP 20                    | IP 20                    | IP 20                    |
| Ambient temperature                  | 5-50 °C                  | 5-50 °C                  | 5-50 °C                  | 5-50 °C                  |

| <b>Order number</b> | <b>TPS 111</b>      | <b>TPS 181</b>      | <b>TPS 311</b>      | <b>TPS 401</b>      |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| TPS-19" rack module | <b>PM 061 344-T</b> | <b>PM 061 345-T</b> | <b>PM 061 346-T</b> | <b>PM 061 347-T</b> |

| <b>Accessories</b>   |                      |                      |                      |                      |
|--|----------------------|----------------------|----------------------|----------------------|
| 230 V AC mains cable with Euro-style safety plug, IEC power socket (straight), 3 m | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> |
| 115 V AC mains cable with UL plug, IEC power socket (straight), 3 m                | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> |
| 208 V AC mains cable with UL plug, 3 m   | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> |

| <b>Technical data</b>                | <b>TPS 1401</b>             |
|--------------------------------------|-----------------------------|
| Output voltage                       | 140 V DC                    |
| Output current                       | 10 A                        |
| Weight                               | 3.4 kg                      |
| Mains requirement: power consumption | 1700 VA                     |
| Mains requirement: voltage (range)   | 187 - 265 V AC,<br>50/60 Hz |
| Protection category                  | IP 20                       |
| Ambient temperature                  | 5-40 °C                     |

| <b>Order number</b> | <b>TPS 1401</b>   |
|---------------------|-------------------|
| TPS-19" rack module | <b>PM C01 761</b> |

| <b>Accessories</b>   |                      |
|--|----------------------|
| Connection cable for linking HiPace MC with TM 3000 to TPS 1400/1401 | <b>PM 051 983-T</b>  |
| 230 V AC mains cable with Euro-style safety plug, VII-HAN 3A, 3 m    | <b>P4 564 309 HA</b> |
| 208 V AC mains cable with UL plug, NEMA-HAN 3A, 3 m                  | <b>P4 564 309 HB</b> |

## DCU with integrated power supply

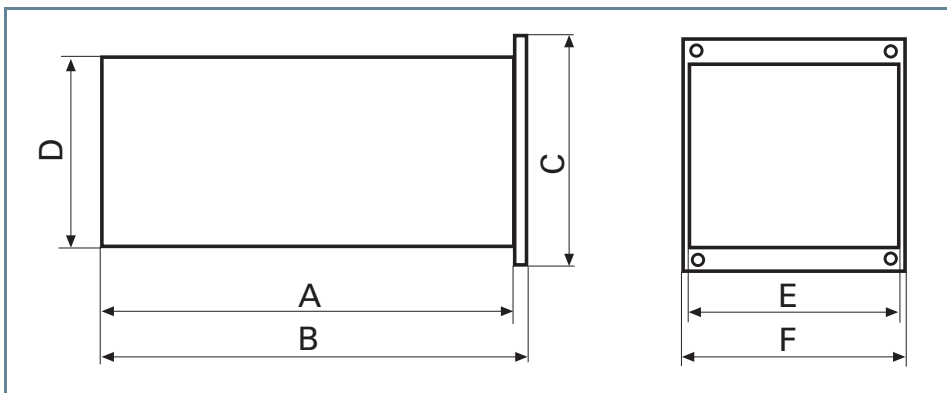
**Display Control Unit (DCU) with integrated power supply for electrical supply to the HiPace series of pumps. 3 RU 19" rack module with easy-to-read, backlit display. The DCU affords operation and monitoring of all parameters of the HiPace turbo-pumps.**

### DCU with integrated power supply



- ▶ To control and monitor all parameters of the drive electronics
- ▶ With integrated power supply
- ▶ The operating voltage is securely isolated from the power supply in accordance with EN60742.
- ▶ Pressure measurement with Pfeiffer Vacuum gauge heads is possible.

### Dimensions



DCU with integrated power supply

|   | <b>DCU 110</b> | <b>DCU 180</b> | <b>DCU 310</b> | <b>DCU 400</b> |
|---|----------------|----------------|----------------|----------------|
| A | 197.5 mm       | 227.5 mm       | 227.5 mm       | 227.5 mm       |
| B | 200 mm         | 230 mm         | 230 mm         | 230 mm         |
| C | 128.5 mm       | 128.5 mm       | 128.5 mm       | 128.5 mm       |
| D | 111.2 mm       | 111.2 mm       | 111.2 mm       | 111.2 mm       |
| E | 106 mm         | 106 mm         | 106 mm         | 106 mm         |
| F | 106.4 mm       | 106.4 mm       | 106.4 mm       | 106.4 mm       |

| <b>Technical data</b>                | <b>DCU 110</b>           | <b>DCU 180</b>           | <b>DCU 310</b>           | <b>DCU 400</b>           |
|--------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Output voltage                       | 24 +/-2% V DC            | 24 +/-2% V DC            | 24 +/-2% V DC            | 48 +/-2% V DC            |
| Output current                       | 4.6 A                    | 7.5 A                    | 12.5 A                   | 8.4 A                    |
| Weight                               | 1.2 kg                   | 1.7 kg                   | 1.85 kg                  | 2.3 kg                   |
| Mains requirement: frequency (range) | 50/60 Hz                 | 50/60 Hz                 | 50/60 Hz                 | 50/60 Hz                 |
| Mains requirement: power consumption | 130 VA                   | 210 VA                   | 340 VA                   | 450 VA                   |
| Mains requirement: voltage (range)   | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC | 115-230<br>-20/+15% V AC |
| Protection category                  | IP 20                    | IP 20                    | IP 20                    | IP 20                    |
| Ambient temperature                  | 5-50 °C                  | 5-50 °C                  | 5-50 °C                  | 5-50 °C                  |

| <b>Order number</b>              | <b>DCU 110</b>    | <b>DCU 180</b>    | <b>DCU 310</b>    | <b>DCU 400</b>    |
|----------------------------------|-------------------|-------------------|-------------------|-------------------|
| DCU with integrated power supply | <b>PM C01 820</b> | <b>PM C01 821</b> | <b>PM C01 822</b> | <b>PM C01 823</b> |

| <b>Accessories</b>   |                      |                      |                      |                      |
|--|----------------------|----------------------|----------------------|----------------------|
| 230 V AC mains cable with Euro-style safety plug, IEC power socket (straight), 3 m | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> |
| 115 V AC mains cable with UL plug, IEC power socket (straight), 3 m                | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> |
| 208 V AC mains cable with UL plug, 3 m   | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> |

## Control and display units

### Control and display units for setting and monitoring the operating parameters of the turbopumps.



#### HPU 001, handheld programming unit

- ▶ The ideal assistant for controlling and monitoring the pump parameters
- ▶ Administration of complete pump configurations / parameter records
- ▶ Connects to the pump's drive electronics via RS-485 interface
- ▶ Connection cable (3 m) for drive electronics included in scope of delivery
- ▶ Multilingual menus
- ▶ For loading and copying parameter records
- ▶ Graphical display

| Technical data         | HPU 001          |
|------------------------|------------------|
| Dimensions (l x w x h) | 150 x 80 x 30 mm |
| Connection             | 9 - 24 V DC      |
| Weight                 | 0.25 kg          |
| Power consumption      | 2 W              |
| Protection category    | IP 20            |
| Ambient temperature    | 5-40 °C          |

| Order number              | HPU 001             |
|---------------------------|---------------------|
| Control and display units | <b>PM 051 510-T</b> |

| Accessories   |                     |
|---|---------------------|
| Connection cable, plug M12, RJ 45                                 | <b>PM 051 726-T</b> |
| Accessories package for HPU - Power supply, software and PC cable | <b>PM 061 005-T</b> |



- ▶ Scope of delivery: CD (with HPU Communicator software), HPU-PC connection cable, power supply for HPU, 3 power cord plug adapters (America, UK, Southern Europe)
- ▶ The HPU Communicator software enables the pump parameter records to be displayed and administered on the PC and/or sent via e-mail
- ▶ The HPU-PC connection cable is used to exchange data between PC and HPU

| Order number  |                     |
|---|---------------------|
| Accessories package for HPU - Power supply, software and PC cable | <b>PM 061 005-T</b> |

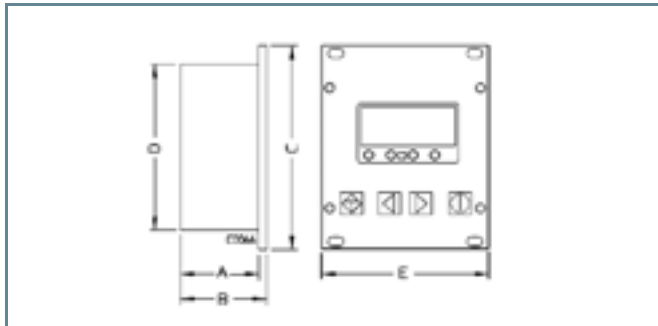
## DCU 002



### DCU 002, Display control unit

- ▶ For operating and monitoring all parameters of the drive electronics
- ▶ Power supplied exclusively from the drive electronics
- ▶ Suitable for all HiPace turbopumps
- ▶ 19" rack module, 3 RU
- ▶ Connects to the pump's drive electronics via RS-485 interface
- ▶ Connection cable (3 m) for drive electronics included in scope of delivery
- ▶ Various Pfeiffer Vacuum gauges can be connected and read

### Dimensions



DCU 002, Display control unit

|   | DCU 002  |
|---|----------|
| A | 50 mm    |
| B | 52.5 mm  |
| C | 128.5 mm |
| D | 106 mm   |
| E | 106.3 mm |

| Technical data      | DCU 002    |
|---------------------|------------|
| Connection          | 12-30 V DC |
| Weight              | 0.4 kg     |
| Power consumption   | 5 VA       |
| Protection category | IP 20      |
| Ambient temperature | 5-40 °C    |

| Order number              | DCU 002      |
|---------------------------|--------------|
| Control and display units | PM 061 348-T |

| Accessories                       |              |
|-----------------------------------|--------------|
| Connection cable, plug M12, RJ 45 | PM 051 726-T |

## External drive units

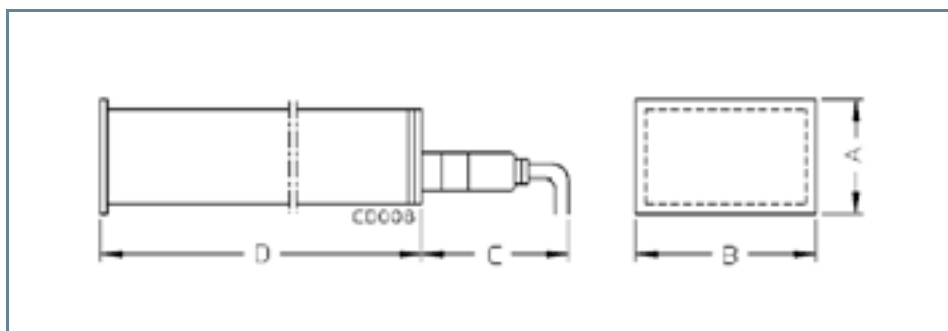
External drives for HiPace pumps via connection cables.

### External drive units



- ▶ The TCP 350 drive electronics unit is employed for driving and monitoring the HiPace 80, 300, 400 and 700
- ▶ Complete electronics in a single unit
- ▶ Mating plug for "Remote" connector included in scope of delivery

### Dimensions



|   | TCP 350<br>drive electronics | TCP 350 PB,<br>drive electronics | TCP 350 DN,<br>drive electronics |
|---|------------------------------|----------------------------------|----------------------------------|
| A | 128.5 mm                     | 128.5 mm                         | 128.5 mm                         |
| B | 141.9 mm                     | 141.9 mm                         | 141.9 mm                         |
| C | 120 mm                       | 120 mm                           | 120 mm                           |
| D | 232 mm                       | 232 mm                           | 232 mm                           |

| <b>Technical data</b>                | <b>TCP 350 drive electronics</b>          | <b>TCP 350 PB, drive electronics - Profibus</b>    | <b>TCP 350 DN, drive electronics - DeviceNet</b> |
|--------------------------------------|---|--|--|
| Frequency                            | 50-60 Hz                                  | 50-60 Hz   | 50-60 Hz   |
| Weight                               | 2.8 kg                                    | 2.8 kg   | 2.8 kg   |
| Cable length Turbo-TCP-max.          | 100 m                                     | 100 m  | 100 m  |
| Mains requirement: power consumption | 400 VA                                    | 400 VA   | 400 VA   |
| Mains requirement: voltage (range)   | 95-265 V AC                               | 95-265 V AC  | 95-265 V AC                                      |
| Interface                            | RS-485 / RS-232 / Remote (SPS-compatible) | RS-485 / RS-232 / Remote (SPS-compatible) Profibus | RS-485 / RS-232 / Remote and DeviceNet           |
| Protection category                  | IP 20                                     | IP 20  | IP 20  |
| Ambient temperature                  | 5-40 °C                                   | 5-40 °C  | 5-40 °C  |

| <b>Order number</b>  | <b>TCP 350 drive electronics</b> | <b>TCP 350 PB, drive electronics - Profibus</b> | <b>TCP 350 DN, drive electronics - DeviceNet</b> |
|----------------------|----------------------------------|---|--|
| External drive units | <b>PM C01 740</b>                | <b>PM C01 741</b>                               | <b>PM C01 742</b>                                |

| <b>Accessories</b>   |                      |                      |                      |
|--|----------------------|----------------------|----------------------|
| 115 V AC mains cable with UL plug, IEC power socket (straight), 3 m                | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> | <b>P 4564 309 ZE</b> |
| 208 V AC mains cable with UL plug, 3 m   | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> | <b>P 4564 309 ZF</b> |
| 230 V AC mains cable with Euro-style safety plug, IEC power socket (straight), 3 m | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> | <b>P 4564 309 ZA</b> |

## Venting accessories

**Accessories for safe and secure venting of the HiPace turbopumps. For secure processes and maximum reliability.**

### Venting accessories



#### 24 V DC venting valve, G 1/8", for connection to TC 110

- ▶ Cable with M8 plug for connection to TC 110 included in scope of delivery
- ▶ Venting mode, venting time and venting duration set by means of drive electronics and DCU/HPU
- ▶ G 1/8" connection
- ▶ Normally closed valve
- ▶ Connects directly to connection cable PM061351-T

#### 24 V DC venting valve, G 1/8", for connection to TC 400

- ▶ Cable with M12 plug for connection to TC 400 included in scope of delivery
- ▶ Venting mode, venting time and venting duration set by means of drive electronics and DCU/HPU
- ▶ G 1/8" connection
- ▶ Normally closed valve

| Technical data                    | 24 V DC venting valve, G 1/8", for connection to TC 110 | 24 V DC venting valve, G 1/8", for connection to TC 400 |
|-----------------------------------|---|---|
| Flange (in)                       | G 1/8"  | G 1/8"  |
| Flange (out)                      | G 1/8"  | G 1/8"  |
| Venting gas excess pressure, max. | 1.5 bar (absolute)                                      | 1.5 bar (absolute)                                      |
| Gas flow at atmospheric pressure  | 130 mbar l/s  | 130 mbar l/s  |
| Weight                            | 100 g   | 100 g   |
| Leak rate                         | $<1 \cdot 10^{-8}$ mbar l/s                             | $<1 \cdot 10^{-8}$ mbar l/s                             |
| Control voltage                   | 24 V DC   | 24 V DC   |

| Order number        | 24 V DC venting valve, G 1/8", for connection to TC 110 | 24 V DC venting valve, G 1/8", for connection to TC 400 |
|---------------------|---|---|
| Venting accessories | <b>PM Z01 290</b>                                       | <b>PM Z01 291</b>                                       |

| Accessories                               |                   |                   |
|---|-------------------|-------------------|
| TTV 001, air drier for venting turbopumps | <b>PM Z00 121</b> | <b>PM Z00 121</b> |

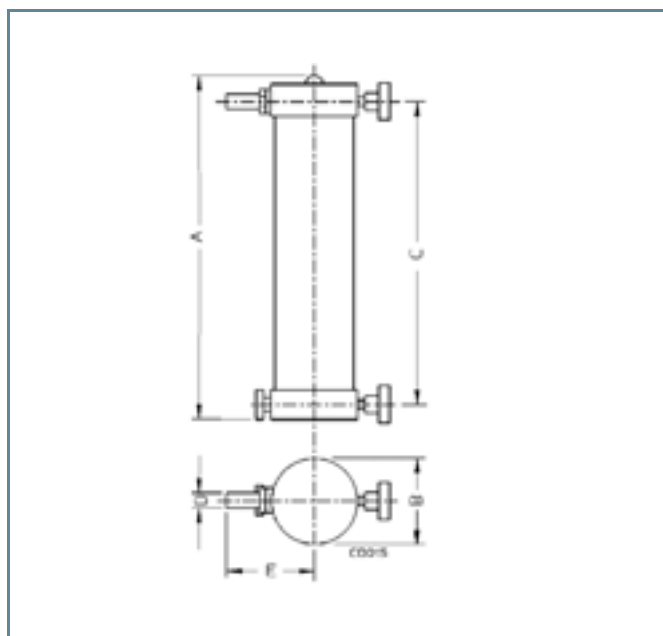
## TTV 001



### TTV 001, air drier for venting turbopumps

- ▶ Dries air securely when venting the turbopumps
- ▶ Shortens pump-down time
- ▶ Color indicator shows saturation of drying agent
- ▶ Simple connection to venting valves

### Dimensions



TTV 001

|   | TTV 001 |
|---|---------|
| A | 235 mm  |
| B | 59 mm   |
| C | 206 mm  |
| D | 9 mm    |
| E | 57 mm   |

### Order number

**TTV 001,  
air drier for  
venting  
turbopumps**

Venting accessories

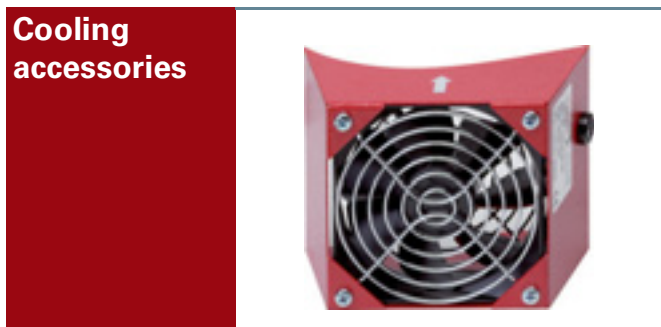
**PM Z00 121**

### Accessories

Filling for air drier, TTV 001, approx. 260 cm<sup>3</sup>

**PM 006 786-T**

**Cooling accessories**      **Accessories for cooling. For maximum reliability and process flexibility.**



**Air cooling**

**Ideal for systems integration, does not require additional water supply.**

| <b>Air cooling</b>                                    | Control voltage | <b>Order number</b> |
|---|-----------------|---------------------|
| Air cooling for HiPace 80 with TC 110                 | 24 V DC         | <b>PM Z01 300</b>   |
| Air cooling for HiPace 300 with TC 110                | 24 V DC         | <b>PM Z01 301</b>   |
| Air cooling for HiPace 300 with TC 400                | 24 V DC         | <b>PM Z01 302</b>   |
| Air cooling for HiPace 400 and HiPace 700 with TC 400 | 24 V DC         | <b>PM Z01 303</b>   |

**Water cooling**

**For maximum performance and additional process flexibility.  
Required for maximum performance and fast cycling.  
Indispensable for UHV applications when pump is heated.**

| <b>Water cooling</b>                 | <b>Order number</b> |
|--------------------------------------|---------------------|
| Water cooling for HiPace 80, TC 110  | <b>PM 016 623-T</b> |
| Water cooling for HiPace 300, TC 110 | <b>PM 016 624-T</b> |

## Heating accessories

In many cases, it is necessary to condition the turbopump for cleaning in UHV operation or for process adaptation. Matching heating elements are available. Automatic control by means of integrated TC 110 and TC 400 drive electronics.

### Heating accessories



| Heating accessories   | Order number |
|---|--------------|
| Heating jacket for HiPace 80 with TC 110/TCP 350, 230 V AC, Euro-style safety plug      | PM 061 360-T |
| Heating jacket for HiPace 80 with TC 110/TCP 350, 208 V AC, UL plug                     | PM 061 361-T |
| Heating jacket for HiPace 80 with TC 110/TCP 350, 115 V AC, UL plug                     | PM 061 362-T |
| Heating jacket for HiPace 300 with TC 110/TCP 350, 230 V AC, Euro-style safety plug     | PM 061 363-T |
| Heating jacket for HiPace 300 with TC 110/TCP 350, 208 V AC, UL plug                    | PM 061 364-T |
| Heating jacket for HiPace 300 with TC 110/TCP 350, 115 V AC, UL plug                    | PM 061 365-T |
| Heating jacket for HiPace 300 with TC 400/TCP 350, 230 V AC, Euro-style safety plug     | PM 061 366-T |
| Heating jacket for HiPace 300 with TC 400/TCP 350, 208 V AC, UL plug                    | PM 061 367-T |
| Heating jacket for HiPace 300 with TC 400/TCP 350, 115 V AC, UL plug                    | PM 061 368-T |
| Heating jacket for HiPace 400/700 with TC 400/TCP 350, 230 V AC, Euro-style safety plug | PM 061 369-T |
| Heating jacket for HiPace 400/700 with TC 400/TCP 350, 208 V AC, UL plug                | PM 061 370-T |
| Heating jacket for HiPace 400/700 with TC 400/TCP 350, 115 V AC, UL plug                | PM 061 371-T |
| Heating jacket for HiPace 1200/1500 with TC 1200, 230 V AC, Euro-style safety plug      | PM 061 560-T |
| Heating jacket for HiPace 1200/1500 with TC 1200, 208 V AC, UL plug                     | PM 061 561-T |
| Heating jacket for HiPace 1200/1500 with TC 1200, 115 V AC, UL plug                     | PM 061 562-T |
| Heating jacket for HiPace 1800/2300 with TC 1200, 230 V AC, Euro-style safety plug      | PM 061 563-T |
| Heating jacket for HiPace 1800/2300 with TC 1200, 208 V AC, UL plug                     | PM 061 564-T |
| Heating jacket for HiPace 1800/2300 with TC 1200, 115 V AC, UL plug                     | PM 061 565-T |
| Heating jacket for HiPace 2400 MC with TM 3000, 230 V AC, Euro-style safety plug        | PM 061 154-T |
| Heating jacket for HiPace 2400 MC with TM 3000, 208 V AC, UL plug                       | PM 061 155-T |

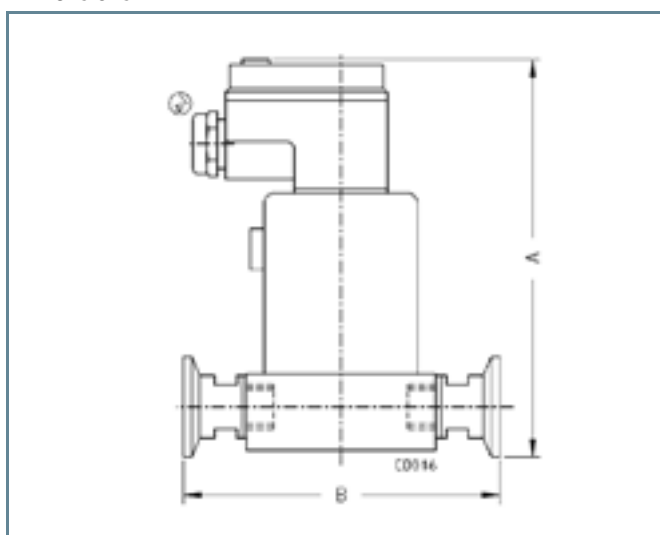
## Backing pump control

HiPace turbopumps afford meaningful control of backing pumps. Pumping station control is effected via TC 110 and TC 400 and TC 1200. Parameter setting with DCU. Process adaptation performed in interval mode.

### Backing pump control



### Dimensions



TVV 001

|   | TVV 001 backing vacuum safety valve, 230 V AC | TVV 001 backing vacuum safety valve, 115 V AC |
|---|---|---|
| A | 117 mm  | 117 mm  |
| B | 83 mm   | 83 mm   |

| <b>Technical data</b>      | <b>TVV 001 backing vacuum safety valve, 230 V AC</b> | <b>TVV 001 backing vacuum safety valve, 115 V AC</b> |
|----------------------------|--|--|
| Flange (in)                | DN 16 ISO-KF   | DN 16 ISO-KF   |
| Flange (out)               | DN 16 ISO-KF   | DN 16 ISO-KF   |
| Permanent current          | 0.64 A   | 0.6 A  |
| Weight                     | 0.4 kg   | 0.4 kg   |
| Leak rate                  | 1·10 <sup>-4</sup> mbar l/s                          | 1·10 <sup>-4</sup> mbar l/s                          |
| Mains requirement: voltage | 230 V AC, 50/60 Hz                                   | 115 V AC, 50/60 Hz                                   |
| Protection category        | IP 65  | IP 65  |
| Ambient temperature        | 0-55 °C  | 0-55 °C  |
| Time delay                 | 0.5-35 s   | 0.5 - 35 s   |

| <b>Order number</b>  | <b>TVV 001 backing vacuum safety valve, 230 V AC</b> | <b>TVV 001 backing vacuum safety valve, 115 V AC</b> |
|----------------------|--|--|
| Backing pump control | <b>PM Z01 205</b>                                    | <b>PM Z01 206</b>                                    |

| <b>Technical data</b>              | <b>Backing pump relay box, single phase 5 A, for TC 110/TCP 350</b> | <b>Backing pump relay box, single phase 20 A, for TC 110/TCP 350</b> | <b>Backing pump relay box, single phase 5 A, for TC 400/TCP 350</b> | <b>Backing pump relay box, single phase 20 A, for TC 400/TCP 350 and TM 3000</b> |
|------------------------------------|---|--|---|--|
| Contact rating                     | 5.0 A   | 20 A   | 5.0 A   | 20 A   |
| Mains requirement: voltage (range) | 100-240 V AC, ±10%, 50/60 Hz  | 100-240 V AC, ±10%, 50/60 Hz   | 100-240 V AC, ±10%, 50/60 Hz  | 100-240 V AC, ±10%, 50/60 Hz   |
| Control voltage                    | 24 V DC   | 24 V DC  | 24 V DC   | 24 V DC  |

| <b>Order number</b>  | <b>Backing pump relay box, single phase 5 A, for TC 110/TCP 350</b> | <b>Backing pump relay box, single phase 20 A, for TC 110/TCP 350</b> | <b>Backing pump relay box, single phase 5 A, for TC 400/TCP 350</b> | <b>Backing pump relay box, single phase 20 A, for TC 400/TCP 350 and TM 3000</b> |
|----------------------|---|--|---|--|
| Backing pump control | <b>PM 061 372-T</b>   | <b>PM 061 373-T</b>  | <b>PM 061 374-T</b>   | <b>PM 061 375-T</b>  |

| <b>Accessories</b>                                       |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|
| Connection cable from M8 socket on relay box to TCP 350  | <b>PM 061 376-T</b> | <b>PM 061 376-T</b> |                     |                     |
| Connection cable from M12 socket on relay box to TCP 350 |                     |                     | <b>PM 061 377-T</b> |                     |
| Connection cable from M12 socket on relay box to TM 3000 |                     |                     |                     | <b>PM 061 630-X</b> |

## Mounting materials



### Mounting kits

Installation materials for the safest possible mounting of turbopumps.

| Mounting kits  | Order number        |
|--|---------------------|
| Mounting kit for HiPace 10, DN 25 ISO-KF, including centering ring with 4 claws, screws and U-washers              | <b>PM 016 627-T</b> |
| Mounting kit for HiPace 80, DN 40 ISO-KF, including centering ring and clamping ring                               | <b>PM 016 625-T</b> |
| Mounting kit for HiPace 80, DN 63 ISO-K, including coated centering ring, bracket screws                           | <b>PM 016 360-T</b> |
| Mounting kit for HiPace 300, DN 100 ISO-K, including coated centering ring, bracket screws                         | <b>PM 016 365-T</b> |
| Mounting kit for HiPace 400, DN 100 ISO-K, including coated centering ring   | <b>PM 016 380-T</b> |
| Mounting kit for HiPace 700, DN 160 ISO-K, including coated centering ring, bracket screws                         | <b>PM 016 375-T</b> |
| Mounting kit for HiPace 1200, DN 200 ISO-K, including coated centering ring, bracket screws                        | <b>PM 016 390-T</b> |
| Mounting kit for HiPace 1500, DN 250 ISO-K, including coated centering ring, bracket screws                        | <b>PM 016 395-T</b> |
| Mounting kit for HiPace 1800, DN 200 ISO-K, including coated centering ring, bracket screws                        | <b>PM 016 410-T</b> |
| Mounting kit for HiPace 2300, DN 250 ISO-K, including coated centering ring, bracket screws                        | <b>PM 016 415-T</b> |
| Mounting kit for HiPace 2400 MC, DN 250 ISO-K, including coated centering ring, bracket screws                     | <b>PM 016 420-T</b> |
| Mounting kit for HiPace 80, DN 63 ISO-K, including coated centering ring, protection screen, clamping screws       | <b>PM 016 362-T</b> |
| Mounting kit for HiPace 300, DN 100 ISO-K, including coated centering ring, protection screen, clamping screws     | <b>PM 016 367-T</b> |
| Mounting kit for HiPace 400, DN 100 ISO-K, including coated centering ring, protection screen, clamping screws     | <b>PM 016 382-T</b> |
| Mounting kit for HiPace 700, DN 160 ISO-K, including coated centering ring, protection screen, clamping screws     | <b>PM 016 377-T</b> |
| Mounting kit for HiPace 1200, DN 200 ISO-K, including coated centering ring, protection screen, clamping screws    | <b>PM 016 392-T</b> |
| Mounting kit for HiPace 1500, DN 250 ISO-K, including coated centering ring, protection screen, clamping screws    | <b>PM 016 397-T</b> |
| Mounting kit for HiPace 1800, DN 200 ISO-K, including coated centering ring, protection screen, clamping screws    | <b>PM 016 412-T</b> |
| Mounting kit for HiPace 2300, DN 250 ISO-K, including coated centering ring, protection screen, clamping screws    | <b>PM 016 417-T</b> |
| Mounting kit for HiPace 2400 MC, DN 250 ISO-K, including coated centering ring, protection screen, clamping screws | <b>PM 016 422-T</b> |
| Mounting kit for HiPace 80, DN 40 ISO-KF, splinter shield, clamping ring   | <b>PM 016 626-T</b> |
| Mounting kit for HiPace 80, DN 63 ISO-K, including coated centering ring, splinter shield, bracket screws          | <b>PM 016 361-T</b> |
| Mounting kit for HiPace 300, DN 100 ISO-K, including coated centering ring, splinter shield, bracket screws        | <b>PM 016 366-T</b> |
| Mounting kit for HiPace 400, DN 100 ISO-K, including coated centering ring, splinter shield, bracket screws        | <b>PM 016 381-T</b> |
| Mounting kit for HiPace 700, DN 160 ISO-K, including coated centering ring, splinter shield, bracket screws        | <b>PM 016 376-T</b> |
| Mounting kit for HiPace 1200, DN 200 ISO-K, including coated centering ring, splinter shield, bracket screws       | <b>PM 016 391-T</b> |
| Mounting kit for HiPace 1500, DN 250 ISO-K, including coated centering ring, splinter shield, bracket screws       | <b>PM 016 396-T</b> |
| Mounting kit for HiPace 1800, DN 200 ISO-K, including coated centering ring, splinter shield, bracket screws       | <b>PM 016 411-T</b> |
| Mounting kit for HiPace 2300, DN 250 ISO-K, including coated centering ring, splinter shield, bracket screws       | <b>PM 016 416-T</b> |
| Mounting kit for HiPace 2400 MC, DN 250 ISO-K, including coated centering ring, splinter shield, bracket screws    | <b>PM 016 421-T</b> |

| Mounting kits   | Order number  |
|---|---------------|
| Mounting kit for HiPace 80, DN 63 ISO-K to DN 63 ISO-F, including coated centering ring, claws  | PM 016 510-T  |
| Mounting kit for HiPace 300 and HiPace 400, DN 100 ISO-F, including coated centering ring, hexagon screws                                     | PM 016 450-T  |
| Mounting kit for HiPace 700, DN 160 ISO-F, including coated centering ring, hexagon screws  | PM 016 460-T  |
| Mounting kit for HiPace 1200 and HiPace 1800, DN 200 ISO-F, including coated centering ring, hexagon screws                                   | PM 016 470-T  |
| Mounting kit for HiPace 1500, HiPace 2300 and HiPace 2400 MC, DN 250 ISO-F, including coated centering ring, hexagon screws                   | PM 016 480-T  |
| Mounting kit for HiPace 3400 MC, DN 320 ISO-F, including coated centering ring, hexagon screws  | PM 016 490-T  |
| Mounting kit for HiPace 80, DN 63 ISO-K to DN 63 ISO-F, including coating centering ring, protection screen, claws                            | PM 016 512-T  |
| Mounting kit for HiPace 300 und HiPace 400, DN 100 ISO-F, including coated centering ring, protection screen, hexagon screws                  | PM 016 452-T  |
| Mounting kit for HiPace 700, DN 160 ISO-F, including coated centering ring, protection screen, hexagon screws                                 | PM 016 462-T  |
| Mounting kit for HiPace 1200 and HiPace 1800, DN 200 ISO-F, including coated centering ring, protection screen, hexagon screws                | PM 016 472-T  |
| Mounting kit for HiPace 1500, HiPace 2300 and HiPace 2400MC, DN 250 ISO-F, including coated centering ring, protection screen, hexagon screws | PM 016 482-T  |
| Mounting kit for HiPace 3400 MC, DN 320 ISO-F, including coated centering ring, protection screen, hexagon screws                             | PM 016 492-T  |
| Mounting kit for HiPace 80, from DN 63 ISO-K to DN 63 ISO-F, including coated centering ring, splinter and claws                              | PM 016 511-T  |
| Mounting kit for HiPace 300 and HiPace 400, DN 100 ISO-F, including coated centering ring, splinter shield, hexagon screws                    | PM 016 451-T  |
| Mounting kit for HiPace 700, DN 160 ISO-F, including coated centering ring, splinter shield, hexagon screws                                   | PM 016 461-T  |
| Mounting kit for HiPace 1200 and HiPace 1800, DN 200 ISO-F, including coated centering ring, splinter shield, hexagon screws                  | PM 016 471-T  |
| Mounting kit for HiPace 1500, HiPace 2300 and HiPace 2400 MC, DN 250 ISO-F, including coated centering ring, splinter shield, hexagon screws  | PM 016 481-T  |
| Mounting kit for HiPace 3400 MC, DN 320 ISO-F, including coated centering ring, splinter shield, hexagon screws                               | PM 016 491 -T |
| Mounting kit for HiPace 300 and HiPace 400, DN 100 ISO-F, including coated centering ring, stud screws  | PM 016 455-T  |
| Mounting kit for HiPace 700, DN 160 ISO-F, including coated centering ring, stud screws   | PM 016 465-T  |
| Mounting kit for HiPace 1200 and HiPace 1800, DN 200 ISO-F, including coated centering ring, stud screws                                      | PM 016 475-T  |
| Mounting kit for HiPace 1500, HiPace 2300 and HiPace 2400 MC, DN 250 ISO-F, including coated centering ring, stud screws                      | PM 016 485-T  |
| Mounting kit for HiPace 3400 MC, DN 320 ISO-F, including coated centering ring, stud screws   | PM 016 495-T  |
| Mounting kit for HiPace 300 and HiPace 400, DN 100 ISO-F, including coated centering ring, protection screen, stud screws                     | PM 016 457-T  |
| Mounting kit for HiPace 700, DN 160 ISO-F, including coated centering ring, protection screen, stud screws                                    | PM 016 467-T  |
| Mounting kit for HiPace 1200 and HiPace 1800, DN 200 ISO-F, including coated centering ring, protection screen, stud screws                   | PM 016 477-T  |
| Mounting kit for HiPace 1500, HiPace 2300 and HiPace 2400 MC, DN 250 ISO-F, including coated centering ring, protection screen, stud screws   | PM 016 487-T  |
| Mounting kit for HiPace 3400 MC, DN 320 ISO-F, including coated centering ring, protection screen, stud screws                                | PM 016 497-T  |
| Mounting kit for HiPace 300 and HiPace 400, DN 100 ISO-F, including coated centering ring, splinter shield, stud screws                       | PM 016 456-T  |
| Mounting kit for HiPace 700, DN 160 ISO-F, including coated centering ring, splinter shield, stud screws                                      | PM 016 466-T  |
| Mounting kit for HiPace 1200 and HiPace 1800, DN 200 ISO-F, including coated centering ring, splinter shield, stud screws                     | PM 016 476-T  |
| Mounting kit for HiPace 1500, HiPace 2300 and HiPace 2400 MC, DN 250 ISO-F, including coated centering ring, splinter shield, stud screws     | PM 016 486-T  |
| Mounting kit for HiPace 3400 MC, DN 320 ISO-F, including coated centering ring, splinter shield, stud screws                                  | PM 016 496-T  |

## Mounting materials



### Set of hexagon screws

Required torque 22 Nm

| Dimensions | Material        | Nominal diameter | A  | B  | C  | Order number |
|------------|-----------------|------------------|----|----|----|--------------|
|            | Stainless steel | DN 63 CF         | 45 | M8 | 8  | PM 016 683-T |
|            | Stainless steel | DN 100 CF        | 50 | M8 | 16 | PM 016 690-T |
|            | Stainless steel | DN 160 CF        | 55 | M8 | 20 | PM 016 691-T |
|            | Stainless steel | DN 200 CF        | 60 | M8 | 24 | PM 016 687-T |
|            | Stainless steel | DN 250 CF        | 60 | M8 | 32 | PM 016 694-T |

C = quantity delivered

### Set of stud screws

Required torque 22 Nm

| Dimensions | Material        | Nominal diameter | A  | B  | C  | Order number |
|------------|-----------------|------------------|----|----|----|--------------|
|            | Stainless steel | DN 63 CF         | 39 | M8 | 8  | PM 016 684-T |
|            | Stainless steel | DN 100 CF        | 39 | M8 | 16 | PM 016 692-T |
|            | Stainless steel | DN 160 CF        | 44 | M8 | 20 | PM 016 693-T |
|            | Stainless steel | DN 200 CF        | 47 | M8 | 24 | PM 016 688-T |
|            | Stainless steel | DN 250 CF        | 47 | M8 | 32 | PM 016 695-T |

C = quantity delivered

## General accessories

These accessories broaden the range of potential applications and offer maximum reliability.



A maximum of 4 controllable accessories can be connected to HiPace turbopumps with TC 400 and TC 1200 drive electronics.

A maximum of 2 controllable accessories can be connected to HiPace turbopumps with TC 110 drive electronics.

Connection cable PM061351-T is required for connecting accessories.

| General accessories                                       | Order number |
|---|--------------|
| Sealing gas valve for HiPace 80                           | PM Z01 310   |
| Sealing gas valve for HiPace 300 with TC 110              | PM Z01 311   |
| Sealing gas valve for HiPace 300, 400 and 700 with TC 400 | PM Z01 312   |
| Sealing gas valve for HiPace 1200,1500,1800,2300          | PM Z01 313   |
| Sealing gas throttle for HiPace 80                        | PM Z01 316   |
| Sealing gas throttle for HiPace 300,400 and 700           | PM Z01 317   |
| Sealing gas throttle for HiPace 1200,1500,1800,2300       | PM Z01 318   |
| Connecting adapter TPD 011 - DN 25 ISO-KF                 | PM 093 315-T |
| USB Converter to RS-485 interface                         | PM 061 207-T |
| TIC 001, Serial Interface Converter RS-232/RS-485         | PM 051 054-T |
| Connection cable, plug M12, RJ 45                         | PM 051 726-T |
| Interface cable, 3 m, M 12                                | PM 061 283-T |
| Y-connector, M12, for RS-485                              | P 4723 010   |
| Y-connector, M12 for accessories                          | P 4723 012   |

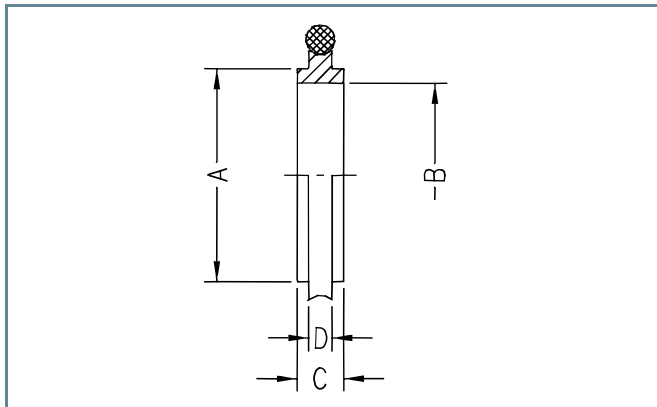
**Centering rings, protection screens, splinter shields**

These elements offer maximum protection against foreign objects with the lowest conductivity losses. Optimally matched to the respective pump size, engineered in accordance with the latest containment analysis findings.

**Centering rings, protection screens, splinter shields**



**Dimensions**



Centering ring

**Centering ring**

| Centering ring                     | Material            | Nominal diameter | A  | B  | C | D   | Order number |
|------------------------------------|---------------------|------------------|----|----|---|-----|--------------|
| Centering ring, DN 25 ISO-KF pumps | FPM/ aluminium      | DN 25 ISO-KF     | 26 | 25 | 8 | 3.9 | PF 110 125-T |
| Centering ring, DN 40 ISO-KF pumps | Neoprene/ aluminium | DN 40 ISO-KF     | 41 | 40 | 8 | 3.9 | PF 110 140-T |

**Centering ring, with integrated mesh screen**

| Centering ring, with integrated mesh screen               | Material            | Nominal diameter | A  | B    | C | D   | Order number |
|---|---------------------|------------------|----|------|---|-----|--------------|
| Centering ring, with integrated mesh screen, DN 25 ISO-KF | FPM/stainless steel | DN 25 ISO-KF     | 26 | 19.5 | 8 | 3.9 | PF 113 225-T |
| Centering ring, with integrated mesh screen, DN 40 ISO-KF | FPM/stainless steel | DN 40 ISO-KF     | 41 | 32   | 8 | 3.9 | PF 113 240-T |

## Centering rings, protection screens, splinter shields

| Centering rings, protection screens, splinter shields  | Screen conductance l/s for N <sub>2</sub> | Order number        |
|--|---|---------------------|
| Centering ring, with multifunction coating, DN 63 ISO-K/-F pumps                             |   | <b>PM 016 206-U</b> |
| Centering ring, with multifunction coating, DN 100 ISO-K/-F pumps                            |   | <b>PM 016 210-U</b> |
| Centering ring, with multifunction coating, DN 160 ISO-K/-F pumps                            |   | <b>PM 016 216-U</b> |
| Centering ring, with multifunction coating, DN 200 ISO-K/-F pumps                            |   | <b>PM 016 220-U</b> |
| Centering ring, with multifunction coating, DN 250 ISO-K/-F pumps                            |   | <b>PM 016 225-U</b> |
| Centering ring, with multifunction coating, DN 250 ISO-K/-F pumps                            |   | <b>PM 016 232-U</b> |
| Centering ring, with multifunction coating and integrated protection screen, DN 63 ISO-K/-F  | 303                                       | <b>PM 016 208-U</b> |
| Centering ring, with multifunction coating and integrated protection screen, DN 100 ISO-K/-F | 763                                       | <b>PM 016 212-U</b> |
| Centering ring, with multifunction coating and integrated protection screen, DN 160 ISO-K/-F | 1952                                      | <b>PM 016 218-U</b> |
| Centering ring, with multifunction coating and integrated protection screen, DN 200 ISO-K/-F | 3051                                      | <b>PM 016 222-U</b> |
| Centering ring, with multifunction coating and integrated protection screen, DN 250 ISO-K/-F | 4767                                      | <b>PM 016 227-U</b> |
| Zentrierring, mit Multifunktionsbeschichtung und integriertem Schutzgitter, DN 320 ISO-K/-F  | 1250                                      | <b>PM 016 234-U</b> |
| Centering ring, with integrated splinter shield, DN 40 ISO-KF                                | 41  | <b>PM 006 375-X</b> |
| Centering ring, with multifunction coating and integrated splinter shield, DN 63 ISO-K/-F    | 194                                       | <b>PM 016 207-U</b> |
| Centering ring, with multifunction coating and integrated splinter shield, DN 100 ISO-K/-F   | 488                                       | <b>PM 016 211-U</b> |
| Centering ring, with multifunction coating and integrated splinter shield, DN 160 ISO-K/-F   | 1250                                      | <b>PM 016 217-U</b> |
| Centering ring, with multifunction coating and integrated splinter shield, DN 200 ISO-K/-F   | 1952                                      | <b>PM 016 221-U</b> |
| Centering ring, with multifunction coating and integrated splinter shield, DN 250 ISO-K/-F   | 3051                                      | <b>PM 016 226-U</b> |
| Centering ring, with multifunction coating and integrated splinter shield, DN 320 ISO-K/-F   | 3051                                      | <b>PM 016 333-U</b> |
| Protection screen, DN 63 CF-F  | 303                                       | <b>PM 016 333</b>   |
| Protection screen, DN 100 CF-F   | 763                                       | <b>PM 016 336</b>   |
| Protection screen, DN 160 CF-F   | 1952                                      | <b>PM 016 339</b>   |
| Protection screen, DN 200 CF-F   | 3051                                      | <b>PM 016 342</b>   |
| Protection screen, DN 250 CF-F   | 4767                                      | <b>PM 016 345</b>   |
| Splinter screen, DN 63 CF-F  | 194                                       | <b>PM 016 312</b>   |
| Splinter screen, DN 100 CF-F   | 488                                       | <b>PM 016 315</b>   |
| Splinter screen, DN 160 CF-F   | 1250                                      | <b>PM 016 318</b>   |
| Splinter screen, DN 200 CF-F   | 1952                                      | <b>PM 016 321</b>   |
| Splinter screen, DN 250 CF-F   | 3051                                      | <b>PM 016 324</b>   |

## Vibration dampers

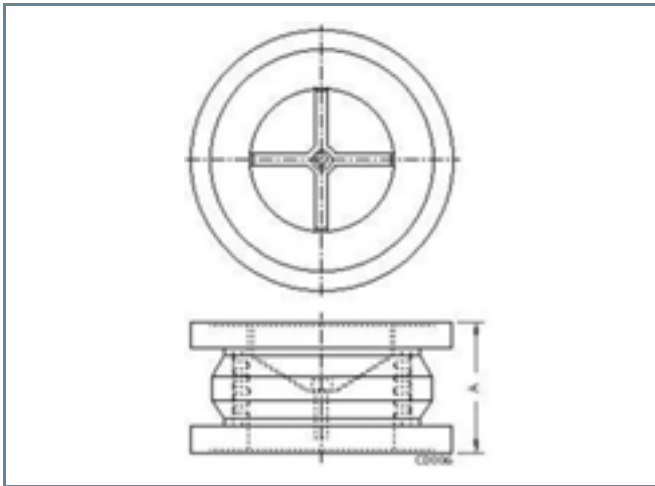
**For employment of turbopumps on systems and plants that are extremely sensitive to vibration. Reliable damping in vertical attitude. Integral securing means eliminate the need for support.**

### Vibration dampers



- ▶ For the employment of turbopumps on systems and plants that are extremely sensitive to vibration
- ▶ The reduced conductivity must be taken into consideration in dimensioning the pump system

### Dimensions



Vibration dampers

| Vibration dampers  | A      | Order number        |
|--|--------|---------------------|
| Vibration damper for HiPace 80, DN 63 ISO-K                    | 87 mm  | <b>PM 006 800-X</b> |
| Vibration damper for HiPace 80, DN 63 CF-F                     | 98 mm  | <b>PM 006 801-X</b> |
| Vibration damper for HiPace 80, DN 40 ISO-KF                   | 85 mm  | <b>PM 006 799-X</b> |
| Vibration damper for HiPace 300 and HiPace 400, DN 100 ISO-K   | 84 mm  | <b>PM 006 459-X</b> |
| Vibration damper for HiPace 300 and HiPace 400, DN 100 CF-F    | 99 mm  | <b>PM 006 488-X</b> |
| Vibration damper for HiPace 700, DN 160 ISO-K                  | 84 mm  | <b>PM 006 492-X</b> |
| Vibration damper for HiPace 700, DN 160 CF-F                   | 104 mm | <b>PM 006 493-X</b> |
| Vibration damper for HiPace 1200 and HiPace 1800, DN 200 ISO-K | 83 mm  | <b>PM 006 668-X</b> |
| Vibration damper for HiPace 1200, DN 200 CF-F                  | 108 mm | <b>PM 006 669-X</b> |
| Vibration damper for HiPace 1500 and HiPace 2300, DN 250 ISO-K | 84 mm  | <b>PM 006 670-X</b> |
| Vibration damper for HiPace 1500 and HiPace 2300, DN 250 CF-F  | 112 mm | <b>PM 006 671-X</b> |