

# HiPace™ Turbopumps



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**The HiPace™ Innovation.**

**Picking Up the Pace in Vacuum Technology!  
Faster. Higher. Stronger.**

**PFEIFFER**  **VACUUM**



# HiPace™ Turbopumps

## The HiPace™ innovation

Ever wonder why all turbopumps are called turbopumps today? It's because Pfeiffer Vacuum coined that name when it invented this versatile, pace-setting class of vacuum pumps some 50 years ago: Marking a definitive milestone in vacuum technology!

And now we take pride in presenting to you the latest generation of forward-looking pump technology for a broad range of applications: HiPace. In addition to analytical, vacuum-process and semiconductor technology, these pumps also cover the needs of coating, research & development and industrial applications.



*Dry high-vacuum pumping station with HiPace™, XtraDry™ and TurboCube™*



*Calibrating pumping station with HiPace™ and OnTool DryPump™*



*Residual gas analysis with HiPace™ and PrismaPlus™*

### What is HiPace?

HiPace stands for a complete line of compact yet powerful turbopumps featuring pumping speeds that range from 10–700 liters per second. It offers a cost-effective yet flexible installation in any orientation<sup>1)</sup>. The proven bearing system affords unrivaled dependability. The improved rotor design makes for higher pumping speeds, higher backing pump compatibility and higher gas throughputs coupled with very good compression for light gases.

### Where are the advantages?

The new, integrated drive electronics reduce the need for cumbersome and costly cabling. Moreover, a variety of drive versions – including Profibus or DeviceNet – are available without any increase in physical size. Innovative materials have enabled us to double the service life of these powerful drive systems. And we have also significantly reduced run-up time for the HiPace pumps, which means that your process can start much earlier: An invaluable advantage in manufacturing environments!

We additionally provide you with expanded remote and monitoring functionalities that allow you to analyze pump data, such as temperatures, for example. Improved diagnostics will give you maximum uptime at lowest cost of ownership and support the service process.

<sup>1)</sup> Mounting orientation: HiPace 10, only horizontal; HiPace 300 C, 0°–90°

### Are there additional advantages?

With improvements on our proven and optimized bearing technology, we offer you both, better product performance as well as longer service life than comparable competitive products. A sealing gas connection safeguards the bearings in all of the pumps in this series against particulate matter or oxidizing gases. In addition to its compact design, it also makes HiPace extremely rugged and suitable for industrial environments, which translates into optimal integration options. Time is money – so extended service intervals and easy, on-site bearing changes are advantages that speak for themselves.

### And last but not least!

With the rigorously thorough engineering of the HiPace pumps, we are setting new trends in the industry. As exemplified not only by the functional housings that make these pumps extremely light and broaden their range of applications. Their innovative rotor geometry makes for quieter operation and significantly improved gas loads are also setting new standards. An integral water cooling<sup>2)</sup> additionally demonstrates how turbopump performance can be enhanced even more, without “overpacing” them.

**HiPace – These turbos are picking up the pace! Faster. Higher. Stronger.**

<sup>2)</sup> integrated for pumps with TC 400 as a standard feature



## Advantages at a glance

- ▶ Compact series of pumps with pumping speeds of from 10–700 l/s
- ▶ Robust engineering and proven bearing system offer maximum reliability
- ▶ Compact design makes for minimum footprint
- ▶ High gas throughputs and high pumping speeds
- ▶ Installation possible in any orientation<sup>1)</sup>
- ▶ Suitable for industrial environments thanks to Protection Class IP 54
- ▶ Corrosive-gas version available
- ▶ Semi S2 and UL certification
- ▶ Complete line of accessories expands the range of potential applications
- ▶ Extended maintenance intervals
- ▶ On-site bearing change

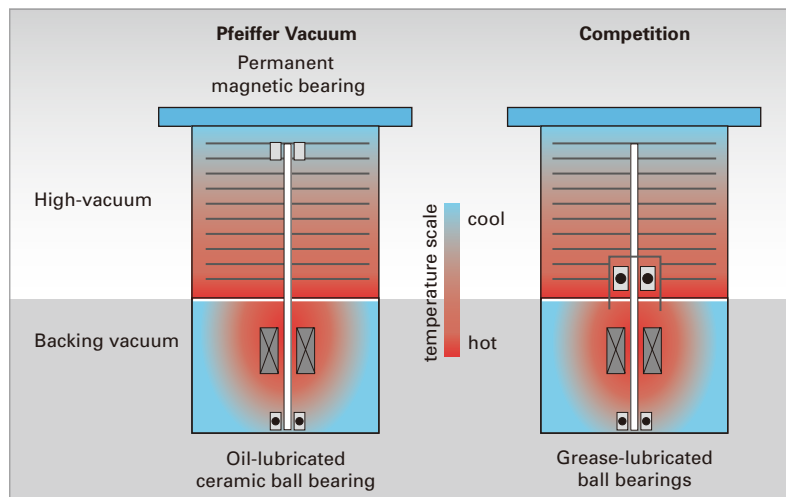


<sup>1)</sup> Mounting orientation: HiPace 10, only horizontal; HiPace 300 C, 0°–90°

## Series of pumps and applications at a glance

	Analytics					Electronics and Semiconductor					Coating				Industry				Research & Development								
	Electron microscopy	Leak detection	Mass spectrometry	Surface analysis	Residual gas analysis	Coating (PVD/CVD)	Implantation - Beamline	Inspection	Bonding	Transfer chambers / Load-locks	Handling systems	Harddisc coating	Photovoltaics	CD / DVD / Blu Ray manufacturing (PVD)	Optical coating (PVD)	Wear protection (PVD, CVD)	Medical technology	Leak detection systems	Electron beam welding	Lamp / tube manufacturing	Nuclear research	Plasma research	Particle accelerators	Cryo technology	Nano technology	Bio technology	
● Recommended																											
HiPace™ 10	●	●	●	●	●												●	●								●	●
HiPace™ 80	●	●	●	●	●					●	●						●	●		●	●	●	●	●	●	●	●
HiPace™ 300	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
HiPace™ 300 C	●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
HiPace™ 400			●		●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	●	●	●	●	●
HiPace™ 700			●		●	●	●			●	●	●	●	●	●	●	●		●		●	●	●	●	●	●	●

## Reliability of bearing system



### Highly reliable:

- ▶ Robust bearing system
- ▶ Smoother running
- ▶ Extremely low vibration
- ▶ Lower heat influence
- ▶ Minimum wear
- ▶ Mean time to failure > 200,000 hours
- ▶ Extended service intervals

## Drive concepts

- ▶ Integrated – no cumbersome and costly cabling
- ▶ Small physical size – easy integration
- ▶ Expanded remote functions – higher flexibility
- ▶ Shorter run-up time – instantly ready
- ▶ Advanced pump management – operating parameter monitoring
- ▶ Designed for industrial applications – Protection Class IP 54
- ▶ Extremely low power consumption – conserves energy
- ▶ Innovative electronics – maximum reliability

Drive	TC 110	TC 110 / TCP 350	TC 110 / TC 400 / TCP 350	TC 400 / TCP 350	
Pump model	HiPace™ 10	HiPace™ 80	HiPace™ 300*	HiPace™ 400	HiPace™ 700
Nominal connection diameter	DN 25	DN 40 ISO-KF	DN 100 ISO-K	DN 100 ISO-K	DN 160 ISO-K
		DN 63 ISO-K	DN 100 CF-F	DN 100 CF-F	DN 160 CF-F
		DN 63 CF-F	DN 100 ISO-F	DN 100 ISO-F	DN 160 ISO-F

\* HiPace 300 C only available with TC 400



TC 110



TC 400

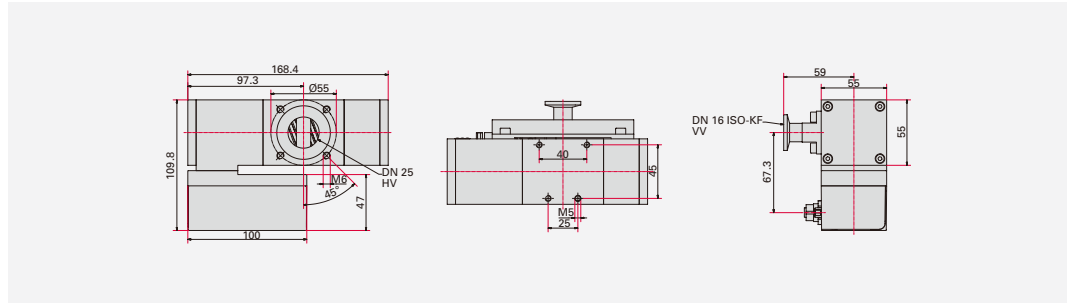


TCP 350

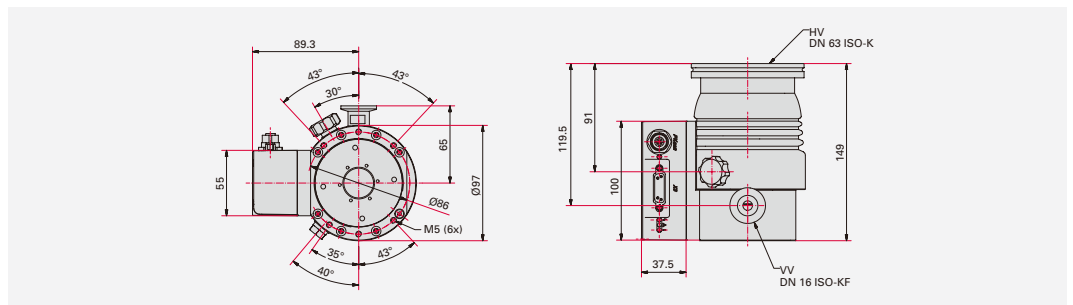
# HiPace™ Turbopumps

## Dimensions

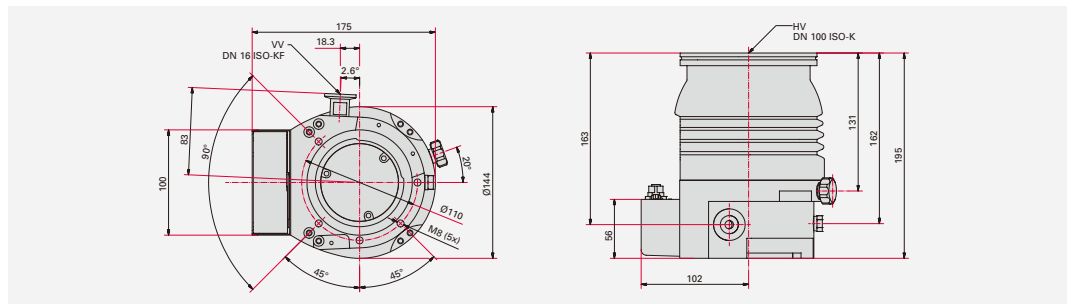
**HiPace™ 10,  
DN 25  
with TC 110**



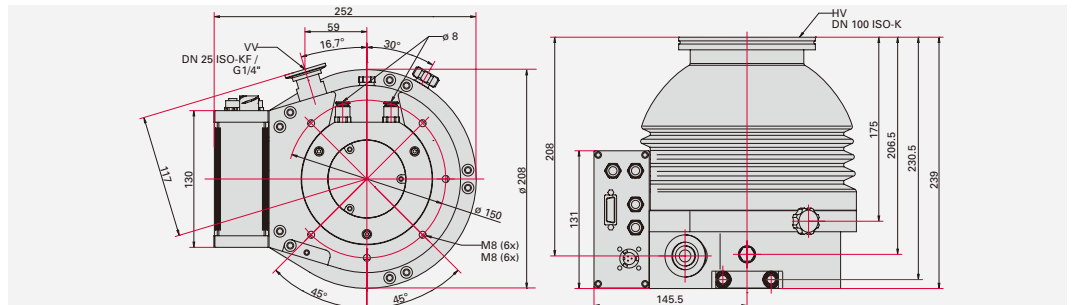
**HiPace™ 80,  
DN 63 ISO-K  
with TC 110**



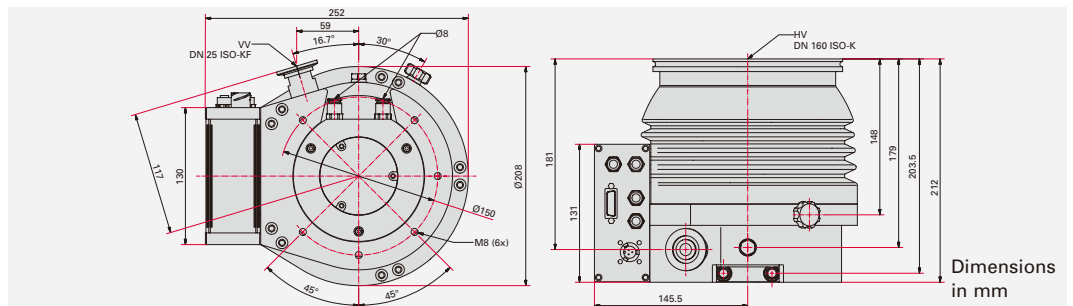
**HiPace™ 300,  
DN 100 ISO-K  
with TC 110**



**HiPace™ 400,  
DN 100 ISO-K  
with TC 400**



**HiPace™ 700,  
DN 160 ISO-K  
with TC 400**

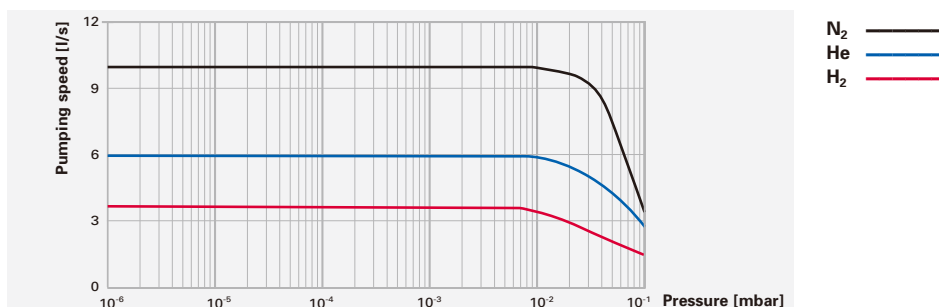


Dimensions  
in mm

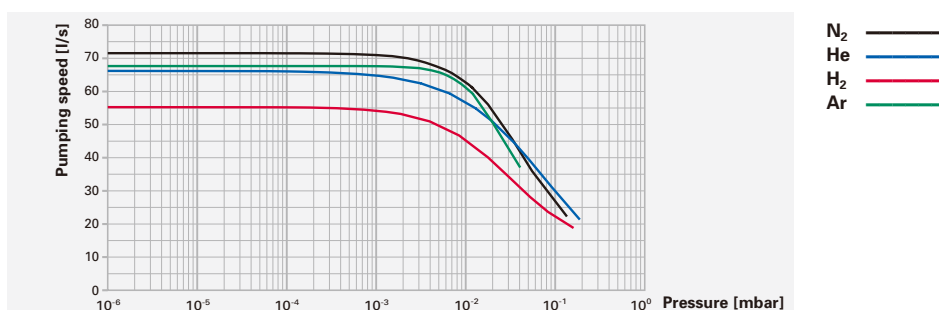
HV: High-vacuum / VV: Backing vacuum

# Pumping speed

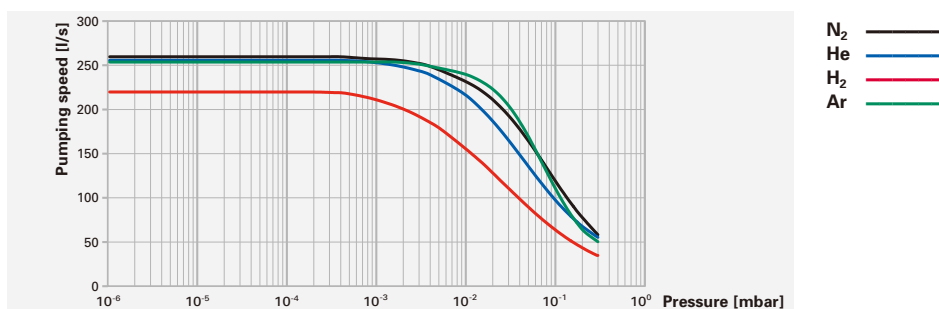
## HiPace™ 10



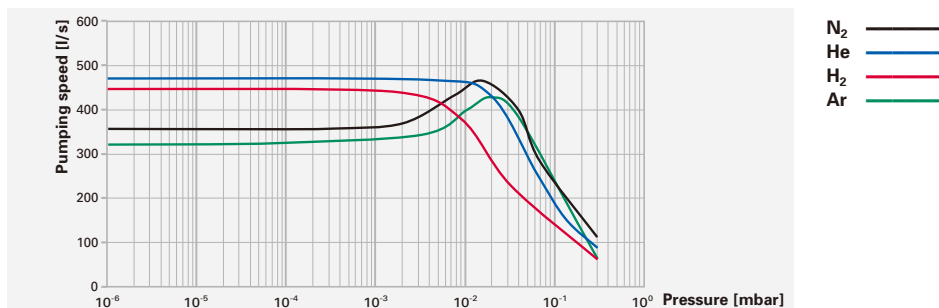
## HiPace™ 80



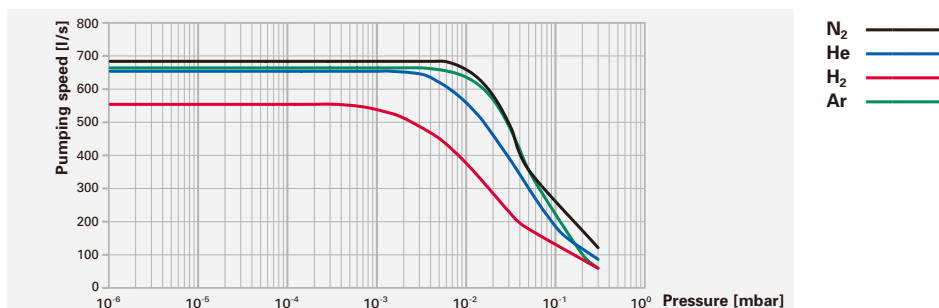
## HiPace™ 300



## HiPace™ 400



## HiPace™ 700



## Technical data

Pump model	Unit	HiPace™ 10	HiPace™ 80
Nominal connection diameter			
Inlet		DN 25	DN 63
Outlet		DN 16 ISO-KF / G 1/8"	DN 16 ISO-KF / G 1/4"
Venting connection		–	G 1/8"
Run-up time	min	0.9	1.75
Pumping speed for:			
Nitrogen (N <sub>2</sub> )	l/s	10	67
Helium (He)	l/s	6	58
Hydrogen (H <sub>2</sub> )	l/s	3.7	48
Argon (Ar)	l/s	11.5	66
Tetrafluoromethane (CF <sub>4</sub> )	l/s	–	–
Compression ratio for:			
Nitrogen (N <sub>2</sub> )		3 · 10 <sup>6</sup>	> 10 <sup>11</sup>
Helium (He)		3 · 10 <sup>3</sup>	1.3 · 10 <sup>7</sup>
Hydrogen (H <sub>2</sub> )		3 · 10 <sup>2</sup>	1.4 · 10 <sup>5</sup>
Argon (Ar)		3 · 10 <sup>7</sup>	> 10 <sup>11</sup>
Tetrafluoromethane (CF <sub>4</sub> )		–	–
Max. backing vacuum pressure			
Nitrogen (N <sub>2</sub> )	mbar	25	20
Max. gas throughput at rated speed			
Nitrogen (N <sub>2</sub> )	mbar l/s	0	2
Input voltage with controller	V DC	24 ± 5%	24 ± 5%
Max. power consumption	W	30	110
Weight	kg	1.9	2.4

## Order numbers – Pumps

Pump Model	HiPace™ 10	HiPace™ 80			HiPace™ 300		
Drive \ Flange	DN 25	DN 40 ISO-KF	DN 63 ISO-K	DN 63 CF-F	DN 100 ISO-K	DN 100 ISO-F	DN 100 CF-F
TC 110	PM P03 960	PM P03 942	PM P03 940	PM P03 941	PM P03 990	PM P03 992	PM P03 991
TC 400	–	–	–	–	PM P03 900	PM P03 902	PM P03 901
TCP 350	–	PM P03 945	PM P03 943	PM P03 944	PM P03 993	PM P03 995	PM P03 994



HiPace™ 300 / TC 110	HiPace™ 300 / TC 400	HiPace™ 300 C / TC 400	HiPace™ 400	HiPace™ 700
DN 100	DN 100	DN 100	DN 100	DN 160
DN 16 KF / G 1/4"	DN 16 KF / G 1/4"	DN 16 KF / G 1/4"	DN 25 KF / G 1/4"	DN 25 KF / G 1/4"
G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"
3.5	1.8	1.2	2	2
260	260	245	355	685
255	255	220	470	655
220	220	125	445	555
255	255	250	320	665
–	–	195	–	–
> 10 <sup>11</sup>	> 10 <sup>11</sup>	> 10 <sup>6</sup>	> 10 <sup>11</sup>	> 10 <sup>11</sup>
> 10 <sup>8</sup>	> 10 <sup>8</sup>	2.2 · 10 <sup>3</sup>	3 · 10 <sup>7</sup>	3 · 10 <sup>7</sup>
9 · 10 <sup>5</sup>	9 · 10 <sup>5</sup>	3 · 10 <sup>2</sup>	4 · 10 <sup>5</sup>	4 · 10 <sup>5</sup>
> 10 <sup>11</sup>	> 10 <sup>11</sup>	> · 10 <sup>7</sup>	> 10 <sup>11</sup>	> 10 <sup>11</sup>
–	–	> · 10 <sup>7</sup>	–	–
15	20	1	11	11
5	14	17	6.5	6.5
24 ± 5%	24 ± 5%	24 ± 5%	48 ± 5%	48 ± 5%
180	300	300	420	420
6.2 - 8.2	6.7 - 8.7	6.4	11.6 - 17.5	11.5 - 17.4

HiPace™ 300 C			HiPace™ 400			HiPace™ 700		
DN 100 ISO-K	DN 100 ISO-F	DN 100 CF-F	DN 100 ISO-K	DN 100 ISO-F	DN 100 CF-F	DN 160 ISO-K	DN 160 ISO-F	DN 160 CF-F
–	–	–	–	–	–	–	–	–
PM P03 906	PM P03 907	PM P03 996	PM P04 023	PM P04 025	PM P04 024	PM P03 933	PM P03 935	PM P03 934
–	–	–	PM P04 026	PM P04 028	PM P04 027	PM P04 080	PM P04 082	PM P04 081



## Accessories HiPace™ 10 and HiPace™ 80

Pump model	HiPace™ 10	HiPace™ 80	
Drive	TC 110	TC 110	TCP 350
Voltage	24 Volt	24 Volt	24 Volt
<b>Power supplies</b>			
TPS wall rail fitting TPS 110	PM 061 340 -T	PM 061 340 -T	
TPS 19" rack module TPS 111	PM 061 344 -T	PM 061 344 -T	
DCU with integrated power supply DCU 110	PM C01 820	PM C01 820	
Control and display units DCU 002 <sup>1)</sup>	PM 061 348 -T	PM 061 348 -T	PM 061 348 -T
HPU 001	PM 051 510 -T	PM 051 510 -T	PM 051 510 -T
Accessories for HPU (power supply, software and PC cable)	PM 061 005 -T	PM 061 005 -T	PM 061 005 -T
<b>Cables</b>			
Mains cable, 3 m with Euro-style safety plug (230 V AC)	P 4564 309 ZA	P 4564 309 ZA	P 4564 309 ZA
with UL plug (115 V AC)	P 4564 309 ZE	P 4564 309 ZE	P 4564 309 ZE
with UL plug (208 V AC)	P 4564 309 ZF	P 4564 309 ZF	P 4564 309 ZF
Connection cable, 3 m			
TC 110 - TPS/DCU 110/180 with accessory ports, RS-485	PM 061 351 -T	PM 061 351 -T	
TC 110 - TPS/DCU 110/180 with bridges, RS-485	PM 061 350 -T	PM 061 350 -T	
TCP 350 - HiPace (für TC 110) M8			PM 061 353 -T
<b>External drive unit<sup>1)</sup></b>			
TCP 350			PM C01 740
TCP 350 PB (Profibus)			PM C01 741
TCP 350 DN (DeviceNet)			PM C01 742
<b>Venting accessories</b>			
Venting valve, G1/8"; with cable, M8 plug		PM Z01 290	PM Z01 290
Air drier TTV 001		PM Z00 121	PM Z00 121
<b>Cooling accessories</b>			
Air cooling		PM Z01 300	PM Z01 300
Water cooling		PM 016 623 -T	PM 016 623 -T
<b>Heating accessories (Only for CF-F flange)</b>			
Heating jacket 230 V AC, Euro-style safety plug, M8 plug		PM 061 360 -T	PM 061 360 -T
Heating jacket 208 V AC, UL plug, M8 plug		PM 061 361 -T	PM 061 361 -T
Heating jacket 115 V AC, UL plug, M8 plug		PM 061 362 -T	PM 061 362 -T
<b>Backing pump control</b>			
5 A relay box, single-phase (diaphragm pump), M8 plug	PM 061 372 -T	PM 061 372 -T	PM 061 372 -T
20 A mechanical relay box, single-phase (rotary vane pump), M8 plug	PM 061 373 -T	PM 061 373 -T	PM 061 373 -T
Connection cable for relay box TCP 350, M8 socket			PM 061 376 -T
Backing vacuum safety valve TVV 001; 230 V DC	PM Z01 205	PM Z01 205	PM Z01 205
Backing vacuum safety valve TVV 001; 115 V DC	PM Z01 206	PM Z01 206	PM Z01 206

<sup>1)</sup> The usage of the DCU 002 or the USB/RS-485 converter with TCP 350 is only possible with the connection cable PM 051 726-T.

Pump model	HiPace™ 10	HiPace™ 80	
		TC 110	TCP 350
Drive	TC 110	TC 110	TCP 350
Voltage	24 Volt	24 Volt	24 Volt
<b>General accessories</b>			
Sealing gas valve		PM Z01 310	PM Z01 310
Sealing gas throttle		PM Z01 316	PM Z01 316
Connection adapter DN 25 ISO-KF	PM 093 315 -T		
Coated centering ring (only ISO-K; ISO-F pumps), DN 63 ISO-K		PM 016 206 -U	PM 016 206 -U
Centering ring, DN 25 ISO-KF	PF 110 125 -T		
Centering ring, DN 40 ISO-KF		PF 110 140 -T	PF 110 140 -T
Centering ring with integrated mesh screen, DN 25 ISO-KF	PF 113 225 -T		
Centering ring with integrated mesh screen, DN 40 ISO-KF		PF 113 240 -T	PF 113 240 -T
Coated centering ring with protection screen (only ISO-K; ISO-F), DN 63 ISO-K		PM 016 208 -U	PM 016 208 -U
Protection screen (only for pumps with CF-F flange), DN 63 CF-F		PM 016 333	PM 016 333
Coated centering ring with protection screen		PM 016 207 -U	PM 016 207 -U
Splinter shield		PM 016 312	PM 016 312
Centering ring with integrated splinter shield		PM 006 375 -X	PM 006 375 -X
Vibration damper, DN 40 ISO-KF		PM 006 799 -X	PM 006 799 -X
Vibration damper, DN 63 ISO-K		PM 006 800 -X	PM 006 800 -X
Vibration damper, DN 63 CF-F		PM 006 801 -X	PM 006 801 -X
USB/RS-485 converter <sup>1)</sup>	PM 061 207 -T	PM 061 207 -T	PM 061 207 -T
Interface cable, 3 m, M12	PM 061 283 -T	PM 061 283 -T	
Y-Connector M12 für RS-485	P 4723 010	P 4723 010	
Interface cable RJ45 on M12 for HiPace	PM 051 726 -T	PM 051 726 -T	PM 051 726 -T
<b>Mounting materials</b>			
Coated centering ring with 4 claws, screws and washers	PM 016 627 -T		
Coated centering ring, bracket screws, DN 63 ISO-K		PM 016 360 -T	PM 016 360 -T
Coated centering ring, protection screen, bracket screws, DN 63 ISO-K		PM 016 362 -T	PM 016 362 -T
Coated centering ring, splinter shield, bracket screws, DN 63 ISO-K		PM 016 361 -T	PM 016 361 -T
Set of hexagon screws for CF-F flanges		PM 016 683 -T	PM 016 683 -T
Set of stud screws for CF-F flanges		PM 016 684 -T	PM 016 684 -T
Clamping ring with centering ring, DN 40 ISO-KF		PM 016 625 -T	PM 016 625 -T
Clamping ring with centering ring/splinter shield, DN 40 ISO-KF		PM 016 626 -T	PM 016 626 -T
Coated centering ring DN 63 ISO-K, 4 claws M8		PM 016 510 -T	PM 016 510 -T
Coated centering ring DN 63 ISO-K, protection screen, 4 claws M8		PM 016 512 -T	PM 016 512 -T
Coated centering ring DN 63 ISO-K, splinter shield, 4 claws M10		PM 016 511 -T	PM 016 511 -T

<sup>1)</sup> The usage of the DCU 002 or the USB/RS-485 converter with TCP 350 is only possible with the connection cable PM 051 726-T.

## Accessories HiPace™ 300

Pump model	HiPace™ 300		
	TC 110	TC 400	TCP 350
Drive	TC 110	TC 400	TCP 350
Voltage	24 Volt	24 Volt	48 Volt
<b>Power supplies</b>			
TPS wall rail fitting			
TPS 180	PM 061 341 -T		
TPS 310		PM 061 342 -T	
TPS 19" rack module			
TPS 181	PM 061 345 -T		
TPS 311		PM 061 346 -T	
DCU with integrated power supply			
DCU 180	PM C01 821		
DCU 310		PM C01 822	
Control and display units			
DCU 002 <sup>1)</sup>	PM 061 348 -T	PM 061 348 -T	PM 061 348 -T
HPU 001	PM 051 510 -T	PM 051 510 -T	PM 051 510 -T
Accessories for HPU (power supply, software and PC cable)	PM 061 005 -T	PM 061 005 -T	PM 061 005 -T
<b>Cables</b>			
Mains cable, 3 m			
with Euro-style safety plug (230 V AC)	P 4564 309 ZA	P 4564 309 ZA	P 4564 309 ZA
with UL plug (115 V AC)	P 4564 309 ZE	P 4564 309 ZE	P 4564 309 ZE
with UL plug (208 V AC)	P 4564 309 ZF	P 4564 309 ZF	P 4564 309 ZF
Connection cable, 3 m			
TC 110 - TPS/DCU 110/180 with accessory ports, RS-485	PM 061 351 -T		
TC 110 - TPS/DCU 110/180 with bridges, RS-485	PM 061 350 -T		
TC 400 - TPS/DCU 310/400		PM 061 352 -T	
TCP 350 - HiPace (for TC 400) M12			PM 061 356 -T
<b>External drive unit<sup>1)</sup></b>			
TCP 350			PM C01 740
TCP 350 PB (Profibus)			PM C01 741
TCP 350 DN (DeviceNet)			PM C01 742
<b>Venting accessories</b>			
Venting valve, G1/8"; with cable, M8 plug	PM Z01 290		
Venting valve, G1/8"; with cable, M12 plug		PM Z01 291	PM Z01 291
Air drier TTV 001	PM Z00 121	PM Z00 121	PM Z00 121
<b>Cooling accessories</b>			
Air cooling	PM Z01 301	PM Z01 302	PM Z01 302
Water cooling	PM 016 624 -T		
<b>Heating accessories (Only for CF-F flange)</b>			
Heating jacket 230 V AC, Euro-style safety plug, M8 plug	PM 061 363 -T		
Heating jacket 208 V AC, UL plug, M8 plug	PM 061 364 -T		
Heating jacket 115 V AC, UL plug, M8 plug	PM 061 365 -T		
Heating jacket 230 V AC, Euro-style safety plug, M12 plug		PM 061 366 -T	PM 061 366 -T
Heating jacket 208 V AC, UL plug, M12 plug		PM 061 367 -T	PM 061 367 -T
Heating jacket 115 V AC, UL plug, M12 plug		PM 061 368 -T	PM 061 368 -T
<b>Backing pump control</b>			
5 A relay box, single-phase (diaphragm pump), M8 plug	PM 061 372 -T		
20 A mechanical relay box, single-phase (rotary vane pump), M8 plug	PM 061 373 -T		
5 A relay box, single-phase (diaphragm pump), M12 plug		PM 061 374 -T	PM 061 374 -T
20 A mechanical relay box, single-phase (rotary vane pump), M12 plug		PM 061 375 -T	PM 061 375 -T
Connection cable for relay box TCP 350, M12 socket			PM 061 377 -T
Backing vacuum safety valve TVV 001; 230 V DC	PM Z01 205	PM Z01 205	PM Z01 205
Backing vacuum safety valve TVV 001; 115 V DC	PM Z01 206	PM Z01 206	PM Z01 206

<sup>1)</sup>The usage of the DCU 002 or the USB/RS-485 converter with TCP 350 is only possible with the connection cable PM 051 726-T.

Pump model	HiPace™ 300		
	TC 110	TC 400	TCP 350
Drive	TC 110	TC 400	TCP 350
Voltage	24 Volt	24 Volt	48 Volt
<b>General accessories</b>			
Sealing gas valve	PM Z01 311	PM Z01 312	PM Z01 312
Sealing gas throttle	PM Z01 317	PM Z01 317	PM Z01 317
Coated centering ring (only ISO-K; ISO-F pumps), DN 100 ISO-K	PM 016 210 -U	PM 016 210 -U	PM 016 210 -U
Coated centering ring with protection screen (only ISO-K; ISO-F), DN 100 ISO-K	PM 016 212 -U	PM 016 212 -U	PM 016 212 -U
Protection screen (only for pumps with CF-F flange), DN 100 CF-F	PM 016 336	PM 016 336	PM 016 336
Coated centering ring with splinter shield	PM 016 211 -U	PM 016 211 -U	PM 016 211 -U
Splinter shield	PM 016 315	PM 016 315	PM 016 315
Vibration damper, DN 100 ISO-K	PM 006 459 -X	PM 006 459 -X	PM 006 459 -X
Vibration damper, DN 100 CF-F	PM 006 488 -X	PM 006 488 -X	PM 006 488 -X
USB/RS-485 converter <sup>1)</sup>	PM 061 207 -T	PM 061 207 -T	PM 061 207 -T
Interface cable, 3 m, M12	PM 061 283 -T	PM 061 283 -T	PM 061 283 -T
Y-Connector M12 to RS-485	P 4723 010	P 4723 010	
Y-connector M12 accessory		P 4723 012	
Interface cable RJ45 on M12 for HiPace	PM 051 726 -T	PM 051 726 -T	PM 051 726 -T
<b>Mounting materials</b>			
Coated centering ring, bracket screws 6 x M10, DN 100 ISO-K	PM 016 365 -T	PM 016 365 -T	PM 016 365 -T
Coated centering ring, protection screen, bracket screws 6 x M10, DN 100 ISO-K	PM 016 367 -T	PM 016 367 -T	PM 016 367 -T
Coated centering ring, splinter shield, bracket screws 6 x M10, DN 100 ISO-K	PM 016 366 -T	PM 016 366 -T	PM 016 366 -T
Set of hexagon screws for CF-F flanges	PM 016 690 -T	PM 016 690 -T	PM 016 690 -T
Set of stud screws for CF-F flanges	PM 016 692 -T	PM 016 692 -T	PM 016 692 -T
Coated centering ring, hexagon screws	PM 016 450 -T	PM 016 450 -T	PM 016 450 -T
Coated centering ring, protection screen, hexagon screws	PM 016 452 -T	PM 016 452 -T	PM 016 452 -T
Coated centering ring, splinter shield, hexagon screws	PM 016 451 -T	PM 016 451 -T	PM 016 451 -T
Coated centering ring, stud screws	PM 016 455 -T	PM 016 455 -T	PM 016 455 -T
Coated centering ring, protection screen, stud screws	PM 016 457 -T	PM 016 457 -T	PM 016 457 -T
Coated centering ring, splinter shield, stud screws	PM 016 456 -T	PM 016 456 -T	PM 016 456 -T

<sup>1)</sup> The usage of the DCU 002 or the USB/RS-485 converter with TCP 350 is only possible with the connection cable PM 051 726-T.

## Accessories HiPace™ 400 and HiPace™ 700

Pump model	HiPace™ 400		HiPace™ 700	
	TC 400	TCP 350	TC 400	TCP 350
Drive	TC 400	TCP 350	TC 400	TCP 350
Voltage	48 Volt	48 Volt	48 Volt	48 Volt
<b>Power supplies</b>				
TPS wall rail fitting TPS 400	PM 061 343 -T		PM 061 343 -T	
TPS 19" rack module TPS 401	PM 061 347 -T		PM 061 347 -T	
DCU with integrated power supply DCU 400	PM C01 823		PM C01 823	
Control and display units DCU 002 <sup>1)</sup>	PM 061 348 -T	PM 061 348 -T	PM 061 348 -T	PM 061 348 -T
HPU 001	PM 051 510 -T	PM 051 510 -T	PM 051 510 -T	PM 051 510 -T
Accessories for HPU (power supply, software and PC cable)	PM 061 005 -T	PM 061 005 -T	PM 061 005 -T	PM 061 005 -T
<b>Cables</b>				
Mains cable, 3 m with Euro-style safety plug (230 V AC)	P 4564 309 ZA	P 4564 309 ZA	P 4564 309 ZA	P 4564 309 ZA
with UL plug (115 V AC)	P 4564 309 ZE	P 4564 309 ZE	P 4564 309 ZE	P 4564 309 ZE
with UL plug (208 V AC)	P 4564 309 ZF	P 4564 309 ZF	P 4564 309 ZF	P 4564 309 ZF
Connection cable, 3 m TC 400 - TPS/DCU 310/400	PM 061 352 -T		PM 061 352 -T	
TCP 350 - HiPace (for TC 400) M12		PM 061 356 -T		PM 061 356 -T
<b>External drive unit<sup>1)</sup></b>				
TCP 350		PM C01 740		PM C01 740
TCP 350 PB (Profibus)		PM C01 741		PM C01 741
TCP 350 DN (DeviceNet)		PM C01 742		PM C01 742
<b>Venting accessories</b>				
Venting valve, G1/8"; with cable, M12 plug	PM Z01 291	PM Z01 291	PM Z01 291	PM Z01 291
Air drier TTV 001	PM Z00 121	PM Z00 121	PM Z00 121	PM Z00 121
<b>Cooling accessories</b>				
Air cooling	PM Z01 303	PM Z01 303	PM Z01 303	PM Z01 303
<b>Heating accessories (Only for CF-F flange)</b>				
Heating jacket 230 V AC, Euro-style safety plug, M12 plug	PM 061 369 -T	PM 061 369 -T	PM 061 369 -T	PM 061 369 -T
Heating jacket 208 V AC, UL plug, M12 plug	PM 061 370 -T	PM 061 370 -T	PM 061 370 -T	PM 061 370 -T
Heating jacket 115 V AC, UL plug, M12 plug	PM 061 371 -T	PM 061 371 -T	PM 061 371 -T	PM 061 371 -T
<b>Backing pump control</b>				
5 A relay box, single-phase (diaphragm pump), M12 plug	PM 061 374 -T	PM 061 374 -T	PM 061 374 -T	PM 061 374 -T
20 A mechanical relay box, single-phase (rotary vane pump), M12 plug	PM 061 375 -T	PM 061 375 -T	PM 061 375 -T	PM 061 375 -T
Connection cable for relay box TCP 350, M12 socket		PM 061 377 -T		PM 061 377 -T
Backing vacuum safety valve TVV 001; 230 V DC	PM Z01 205	PM Z01 205	PM Z01 205	PM Z01 205
Backing vacuum safety valve TVV 001; 115 V DC	PM Z01 206	PM Z01 206	PM Z01 206	PM Z01 206

<sup>1)</sup>The usage of the DCU 002 or the USB/RS-485 converter with TCP 350 is only possible with the connection cable PM 051 726-T.

<b>Pump model</b>	<b>HiPace™ 400</b>			<b>HiPace™ 700</b>
Drive	TC 400	TCP 350	TC 400	TCP 350
Voltage	48 Volt	48 Volt	48 Volt	48 Volt
<b>General accessories</b>				
Sealing gas valve	PM Z01 312	PM Z01 312	PM Z01 312	PM Z01 312
Sealing gas throttle	PM Z01 317	PM Z01 317	PM Z01 317	PM Z01 317
Coated centering ring (only ISO-K; ISO-F pumps), DN 100 ISO-K	PM 016 210 -U	PM 016 210 -U		
Coated centering ring (only ISO-K; ISO-F pumps), DN 160 ISO-K			PM 016 216 -U	PM 016 216 -U
Coated centering ring with protection screen (only ISO-K; ISO-F), DN 100 ISO-K	PM 016 212 -U	PM 016 212 -U		
Coated centering ring with protection screen (only ISO-K; ISO-F), DN 160 ISO-K			PM 016 218 -U	PM 016 218 -U
Protection screen (only for pumps with CF-F flange), DN 100 CF-F	PM 016 336	PM 016 336		
Protection screen (only for pumps with CF-F flange), DN 160 CF-F			PM 016 339	PM 016 339
Coated centering ring with splinter shield	PM 016 211 -U	PM 016 211 -U	PM 016 217 -U	PM 016 217 -U
Splinter shield	PM 016 315	PM 016 315	PM 016 318	PM 016 318
Vibration damper, DN 100 ISO-K	PM 006 459 -X	PM 006 459 -X		
Vibration damper, DN 100 CF-F	PM 006 488 -X	PM 006 488 -X		
Vibration damper, DN 160 ISO-K			PM 006 492 -X	PM 006 492 -X
Vibration damper, DN 160 CF-F			PM 006 493 -X	PM 006 493 -X
USB/RS-485 converter <sup>1)</sup>	PM 061 207 -T	PM 061 207 -T	PM 061 207 -T	PM 061 207 -T
Interface cable, 3 m, M12	PM 061 283 -T	PM 061 283 -T	PM 061 283 -T	PM 061 283 -T
Y-Connector M12 to RS-485	P 4723 010		P 4723 010	
Interface cable RJ45 on M12 for HiPace	PM 051 726 -T	PM 051 726 -T	PM 051 726 -T	PM 051 726 -T
<b>Mounting materials</b>				
Coated centering ring, bracket screws 16 x M10, DN 100 ISO-K	PM 016 380 -T	PM 016 380 -T		
Coated centering ring, protection screen, bracket screws 16 x M10, DN 100 ISO-K	PM 016 382 -T	PM 016 382 -T		
Coated centering ring, splinter shield, bracket screws 16 x M10, DN 100 ISO-K	PM 016 381 -T	PM 016 381 -T		
Coated centering ring, bracket screws 10 x M10, DN 160 ISO-K			PM 016 375 -T	PM 016 375 -T
Coated centering ring, protection screen, bracket screws 10 x M10, DN 160 ISO-K			PM 016 377 -T	PM 016 377 -T
Coated centering ring, splinter shield, bracket screws 10 x M10, DN 160 ISO-K			PM 016 376 -T	PM 016 376 -T
Set of hexagon screws for CF-F flanges	PM 016 690 -T	PM 016 690 -T	PM 016 691 -T	PM 016 691 -T
Set of stud screws for CF-F flanges	PM 016 692 -T	PM 016 692 -T	PM 016 693 -T	PM 016 693 -T
Coated centering ring, hexagon screws	PM 016 450 -T	PM 016 450 -T	PM 016 460 -T	PM 016 460 -T
Coated centering ring, protection screen, hexagon screws	PM 016 452 -T	PM 016 452 -T	PM 016 462 -T	PM 016 462 -T
Coated centering ring, splinter shield, hexagon screws	PM 016 451 -T	PM 016 451 -T	PM 016 461 -T	PM 016 461 -T
Coated centering ring, stud screws	PM 016 455 -T	PM 016 455 -T	PM 016 465 -T	PM 016 465 -T
Coated centering ring, protection screen, stud screws	PM 016 457 -T	PM 016 457 -T	PM 016 467 -T	PM 016 467 -T
Coated centering ring, splinter shield, stud screws	PM 016 456 -T	PM 016 456 -T	PM 016 466 -T	PM 016 466 -T

<sup>1)</sup> The usage of the DCU 002 or the USB/RS-485 converter with TCP 350 is only possible with the connection cable PM 051 726-T.

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