



HiCube™ Turbo Pumping Stations

**The complete solution for high vacuum applications:
The modular pumping station for clean vacuum.**

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**Flexible. Compact.
Versatile.**

With the HiCube turbopumping stations, we have developed the perfect vacuum solution for your applications in the fields of research and development, accelerators, analytics and surface physics, as well as vacuum process technology and general vacuum applications.

Thanks to the modular design principle, we can offer you never-before-seen versatility with the new HiCube series that satisfies the widest range of requirements in the pumping speed range from 35 l/s to 685 l/s. Turbopump and backing pump are matched perfectly to one another: "Plug and Play" the way you want it.

What is HiCube?

What's so special about the HiCube vacuum solution: The combination of a turbopump from the HiPace series and a backing pump designed for the user's specific application needs. We offer you the new HiCube in Pro and Classic versions; available with dry compressing or oil-sealed backing pump and an ultimate pressure of up to $5 \cdot 10^{-10}$ mbar.

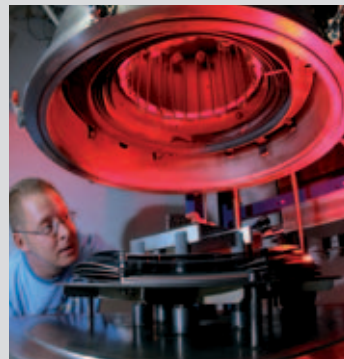
Thanks to their mobility, all HiCube pumping stations are the easiest way to generate high vacuum right where it's needed. Its robust engineering and the ready-to-connect, fully automated pump unit assure the utmost in dependability.

Where are the advantages?

With HiPace, we offer you the latest turbopump technology in a compact pumping station. Your advantages include flexibility, high performance, long service life and trouble-free integration into your application. And with ISO-KF, ISO-K or CF-F options, we can offer you the matching flange versions.



Accelerators



Vacuum furnaces



Glass coater



Customer benefits

- Optimally inter-coordinated combination of turbopump and backing pump; for the widest range of applications
- Modular design affords simple customization for the application in question
- Service friendly, due to good accessibility of the individual components
- Integrated drive electronics; no additional control system needed
- "Plug and Play" – no installation or cabling required
- Robust engineering makes for long service life and high reliability
- Fore-vacuum safety valve (optional) prevents the recipient from venting in the event of a power failure
- Direct connection of vacuum gauges possible

HiCube™ Turbo Pumping Stations

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Are there additional advantages?

And for the most demanding requirements we can offer the HiCube Pro, a professional grade turbopumping station that is characterized by its fast pump-down times.

All connections are consolidated at the rear. In addition, the turbopump can easily be removed from the housing and connected¹⁾ to a chamber or system, as all of the individual components are easily accessible. And oil changes are simple to perform on the rotary vane pumps, without the need for any special tools or disassembly.

Moreover, with our rotary vane pumps PentaLine and the multi-stage Roots pumps ACP as well as the diaphragm pumps MVP we employ backing pumps that also afford you standby or interval mode operation. With this function, our pumping stations offer an energy-saving, quiet operation and a longer service life.

Last but not least!

The right solution for your application: The HiCube's modular concept stands for optimally inter-coordinated components and with the modular design principle we are able to satisfy even the most specific needs. Depending upon the application, all HiCube Classic and HiCube Pro pumping stations are also optionally available with water cooling and heating jacket.

Available as a version within the HiCube series that offers especially compact dimensions is the HiCube Eco with pumping speeds of 35 l/s to 67 l/s.

¹⁾ Cable set and fore-vacuum line optionally available in 3, 5 and 10 m lengths



HiCube™ Classic



HiCube™ Pro



Scope of delivery

- Sturdy frame featuring modern design
- Turbopump with integrated drive
- Backing pump on vibration-isolated intermediate frame
- Modern worldwide power supply in accordance with applicable standards
- Backing pump control
- Electromagnetic venting valve
- DCU control unit
- Air cooling standard
- Oil filling (for rotary vane pumps)

HiCube™ Turbo pumping stations

The complete solution for high vacuum applications:
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Comparison of pump-down times HiCube™ Classic

Pump-down time from 1,000 mbar to $1 \cdot 10^{-5}$ for vacuum chamber sizes of 10, 100 or 1,000 l.
(Calculated values at 50 Hz, run-up time not taken into account)

| Turbopump | Backing pump | 10 l | 100 l | 1,000 l |
|---------------------------|--------------|------|-------|---------|
| HiCube 80 Classic | | | | |
| HiPace 80, DN 63 | MVP 040 | 98 s | 978 s | 9,778 s |
| | MVP 070 | 59 s | 594 s | 5,941 s |
| | Duo 3 | 77 s | 774 s | 7,737 s |
| | Duo 5 M | 43 s | 426 s | 4,257 s |
| HiCube 300 Classic | | | | |
| HiPace 300 | MVP 040 | 87 s | 867 s | 8,670 s |
| | MVP 070 | 50 s | 499 s | 4,992 s |
| | Duo 3 | 68 s | 682 s | 6,820 s |
| | Duo 5 M | 35 s | 350 s | 3,500 s |
| HiCube 400 Classic | | | | |
| HiPace 400 | MVP 040 | 83 s | – | – |
| | MVP 070 | 48 s | 485 s | 4,847 s |
| | Duo 3 | 67 s | 669 s | 6,691 s |
| | Duo 5 M | 34 s | 342 s | 3,416 s |
| HiCube 700 Classic | | | | |
| HiPace 700 | MVP 040 | 82 s | – | – |
| | MVP 070 | 47 s | 474 s | 4,743 s |
| | Duo 3 | 65 s | 653 s | 6,534 s |
| | Duo 5 M | 33 s | 332 s | 3,317 s |

Comparison of pump-down times HiCube™ Pro

Pump-down time from 1,000 mbar to $1 \cdot 10^{-5}$ for vacuum chamber sizes of 10, 100 or 1,000 l.
(Calculated values at 50 Hz, run-up time not taken into account)

| Turbopump | Backing pump | 10 l | 100 l | 1,000 l |
|-----------------------|--------------|------|-------|---------|
| HiCube 80 Pro | | | | |
| HiPace 80, DN 63 | ACP 15 | 21 s | 208 s | 2,079 s |
| | ACP 28 | 12 s | 116 s | 1,161 s |
| | Penta 20 | 13 s | 134 s | 1,339 s |
| | Penta 35 | 10 s | 99 s | 990 s |
| HiCube 300 Pro | | | | |
| HiPace 300 | ACP 15 | 18 s | 178 s | 1,780 s |
| | ACP 28 | 9 s | 91 s | 913 s |
| | Penta 20 | 9 s | 93 s | 934 s |
| | Penta 35 | 7 s | 66 s | 663 s |
| HiCube 400 Pro | | | | |
| HiPace 400 | ACP 15 | 18 s | 175 s | 1,751 s |
| | ACP 28 | 9 s | 89 s | 892 s |
| | Penta 20 | 9 s | 90 s | 898 s |
| | Penta 35 | 6 s | 64 s | 644 s |
| HiCube 700 Pro | | | | |
| HiPace 700 | ACP 15 | 17 s | 169 s | 1,692 s |
| | ACP 28 | 8 s | 84 s | 836 s |
| | Penta 20 | 8 s | 84 s | 838 s |
| | Penta 35 | 6 s | 58 s | 582 s |

HiCube™ Classic

The complete solution for high vacuum applications:
The modular pumping station for clean vacuum.

Technical data

| Pumping station | | HiCube 80 Classic | | |
|---|-------------------|------------------------|------------------------|-------------------------|
| Flange (in) | | DN 40 ISO-KF | DN 63 ISO-K | DN 63 CF-F |
| Pumping speed for nitrogen N ₂ | l/s | 35 | 67 | 67 |
| Ultimate pressure | | | | |
| with Rotary vane pump DuoLine | mbar | < 1 · 10 ⁻⁷ | < 1 · 10 ⁻⁷ | < 5 · 10 ⁻¹⁰ |
| with Diaphragm pump MVP | mbar | < 1 · 10 ⁻⁷ | < 1 · 10 ⁻⁷ | < 1 · 10 ⁻⁸ |
| Pumping speed backing pump at 50 Hz | | | | |
| Diaphragm pump MVP 040 | m ³ /h | 2.3 | 2.3 | 2.3 |
| Diaphragm pump MVP 070 | m ³ /h | 3.8 | 3.8 | 3.8 |
| Rotary vane pump Duo 3 | m ³ /h | 2.5 | 2.5 | 2.5 |
| Rotary vane pump Duo 5 M | m ³ /h | 5 | 5 | 5 |
| Weight pumping station: ¹⁾ | | | | |
| with Diaphragm pump MVP 040 | kg | 36.4 | 36.4 | 37.8 |
| with Diaphragm pump MVP 070 | kg | 41.4 | 41.4 | 42.8 |
| with Rotary vane pump Duo 3 | kg | 35.5 | 35.5 | 36.9 |
| with Rotary vane pump Duo 5 M | kg | 44.0 | 44.0 | 45.4 |
| Power consumption | | | | |
| with Diaphragm pump MVP 040 | W | 290 | 290 | 290 |
| with Diaphragm pump MVP 070 | W | 360 | 360 | 360 |
| with Rotary vane pump Duo 3 | W | 270 | 270 | 270 |
| with Rotary vane pump Duo 5 M | W | 360 | 360 | 360 |

Ultimate pressure in a measuring dome 48 hours after bake-out, can be attained only with metallic seal of the high vacuum flange. (Ultimate pressure with elastomer seal (standard, not bakeable): < 1 · 10⁻⁷ mbar.)

¹⁾ without fore-vacuum safety valve

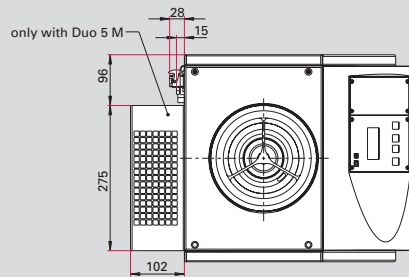
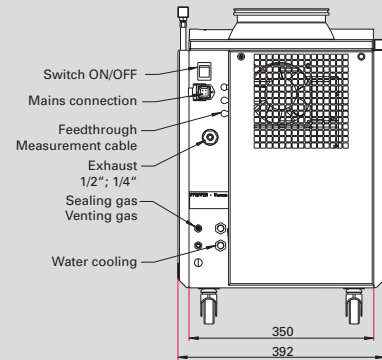
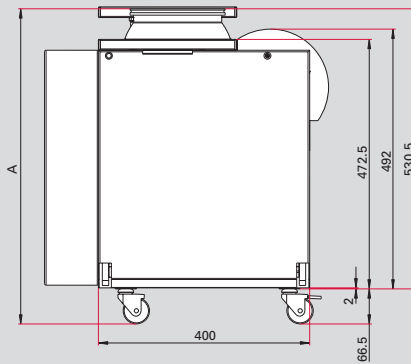


| HiCube 300 Classic | | HiCube 400 Classic | | HiCube 700 Classic | |
|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| DN 100 ISO-K | DN 100 CF-F | DN 100 ISO-K | DN 100 CF-F | DN 160 ISO-K | DN 160 CF-F |
| 260 | 260 | 355 | 355 | 685 | 685 |
| $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ | $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ | $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ |
| $< 1 \cdot 10^{-7}$ | $< 1 \cdot 10^{-8}$ | $< 1 \cdot 10^{-7}$ | $< 1 \cdot 10^{-8}$ | $< 1 \cdot 10^{-7}$ | $< 1 \cdot 10^{-8}$ |
| 2.3 | 2.3 | – | – | – | – |
| 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 |
| 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 5 | 5 | 5 | 5 | 5 | 5 |
| 41.2 | 43.2 | – | – | – | – |
| 46.2 | 48.2 | 51.6 | 57.5 | 52.0 | 57.9 |
| 40.3 | 42.3 | 45.7 | 51.6 | 46.1 | 52.0 |
| 48.8 | 50.8 | 54.2 | 60.1 | 54.6 | 60.5 |
| 480 | 480 | – | – | – | – |
| 550 | 550 | 670 | 670 | 670 | 670 |
| 460 | 460 | 580 | 580 | 580 | 580 |
| 550 | 550 | 670 | 670 | 670 | 670 |

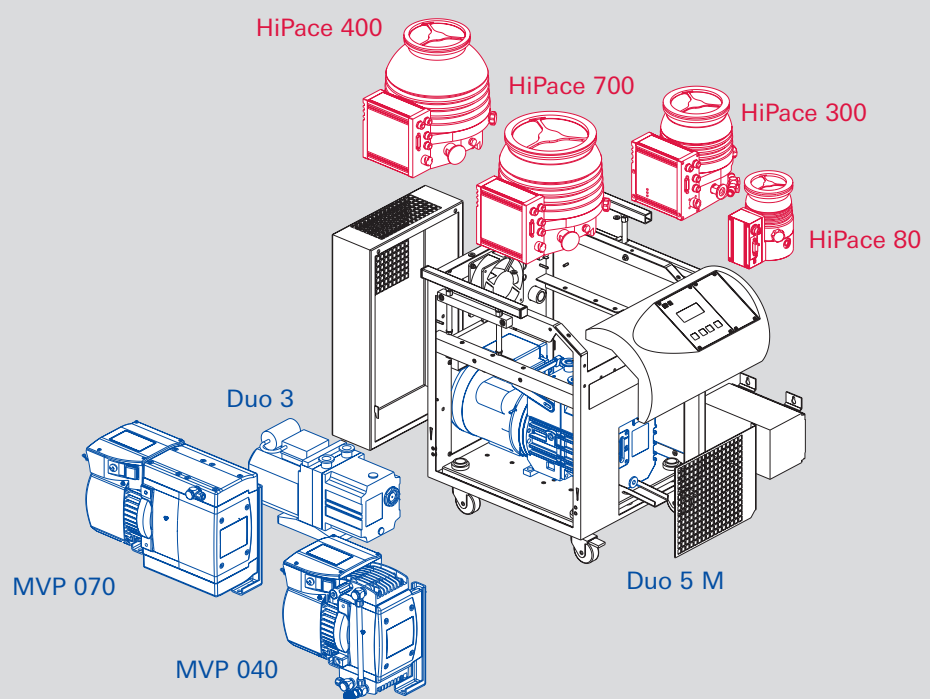
HiCube™ Classic

The complete solution for high vacuum applications:
The modular pumping station for clean vacuum.

Dimensions



| Turbopump | A |
|--------------------------|-----|
| HiPace 80 DN 40 ISO-KF | 590 |
| HiPace 80 DN 63 ISO-K | 581 |
| HiPace 80 DN 63 CF-F | 587 |
| HiPace 300 DN 100 ISO-KF | 580 |
| HiPace 300 DN 100 CF-F | 592 |
| HiPace 400 DN 100 ISO-KF | 624 |
| HiPace 400 DN 100 CF-F | 624 |
| HiPace 700 DN 160 ISO-KF | 597 |
| HiPace 700 DN 160 CF-F | 609 |



| Turbopump | | | aa |
|-----------|------------|--------------|----|
| TC 110 | HiPace 80 | DN 40 ISO-KF | 20 |
| | HiPace 80 | DN 63 ISO-K | 21 |
| | HiPace 80 | DN 63 CF-F | 22 |
| TC 400 | HiPace 300 | DN 100 ISO-K | 23 |
| | HiPace 300 | DN 100 CF-F | 24 |
| | HiPace 400 | DN 100 ISO-K | 25 |
| | HiPace 400 | DN 100 CF-F | 26 |
| | HiPace 700 | DN 160 ISO-K | 27 |
| | HiPace 700 | DN 160 CF-F | 28 |

| Backing pump | | | | bb | |
|------------------|---------|----------|----------|----------------------------|----|
| Diaphragm pump | MVP 040 | 110 V AC | 60 Hz | 22 | |
| | MVP 040 | 230 V AC | 50/60 Hz | 23 | |
| | MVP 070 | 110 V AC | 60 Hz | 24 | |
| | MVP 070 | 230 V AC | 50/60 Hz | 25 | |
| | MVP 040 | 110 V AC | 60 Hz | with TVV 001 ¹⁾ | 28 |
| | MVP 040 | 230 V AC | 50/60 Hz | with TVV 001 ¹⁾ | 29 |
| | MVP 070 | 110 V AC | 60 Hz | with TVV 001 ¹⁾ | 30 |
| | MVP 070 | 230 V AC | 50/60 Hz | with TVV 001 ¹⁾ | 31 |
| Rotary vane pump | Duo 3 | 110 V AC | 50/60 Hz | 32 | |
| | Duo 3 | 230 V AC | 50/60 Hz | 33 | |
| | Duo 5 M | 110 V AC | 50/60 Hz | 34 | |
| | Duo 5 M | 230 V AC | 50/60 Hz | 35 | |
| | Duo 3 | 110 V AC | 50/60 Hz | with AVC 016 ¹⁾ | 36 |
| | Duo 3 | 230 V AC | 50/60 Hz | with AVC 016 ¹⁾ | 37 |
| | Duo 5 M | 110 V AC | 50/60 Hz | with AVC 016 ¹⁾ | 38 |
| | Duo 5 M | 230 V AC | 50/60 Hz | with AVC 016 ¹⁾ | 39 |

¹⁾ Fore-vacuum safety valve

| Options | | c/d/e |
|---------|---|-------|
| General | Standard, on rubber feet | 0 |
| | On rollers, 4 guiding rollers, 2 brakes | 1 |
| | Air drier TTV 001, with connectin to the venting valve | 2 |
| | On rollers + air drier TTV 001 | 3 |
| Cable | Standard (without cable set for external use) | 0 |
| | Cable set and fore-vacuum line 3 m (for external use of the turbopump) | 1 |
| | Cable set and fore-vacuum line 5 m (for external use of the turbopump) | 2 |
| | Cable set and fore-vacuum line 10 m (for external use of the turbopump) | 3 |
| Cooling | Standard, air cooling | 0 |
| | Water cooling | 1 |
| | Water cooling + heating jacket | 2 |

HiCube™ Classic

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Order numbers

| Backing pump | Turbopump | HiPace 80 | | |
|--|-----------|--------------|-------------|------------|
| | | DN 40 ISO-KF | DN 63 ISO-K | DN 63 CF-F |
| MVP 040; 110 V AC, 60 Hz | PM S | 20 22 000 | 21 22 000 | 22 22 000 |
| MVP 040; 230 V AC, 50/60 Hz | PM S | 20 23 000 | 21 23 000 | 22 23 000 |
| MVP 070; 110 V AC, 60 Hz | PM S | 20 24 000 | 21 24 000 | 22 24 000 |
| MVP 070; 230 V AC, 50/60 Hz | PM S | 20 25 000 | 21 25 000 | 22 25 000 |
| MVP 040; with TVV 001; 110 V AC, 60 Hz | PM S | 20 28 000 | 21 28 000 | 22 28 000 |
| MVP 040; with TVV 001; 230 V AC, 50/60 Hz | PM S | 20 29 000 | 21 29 000 | 22 29 000 |
| MVP 070; with TVV 001; 110 V AC, 60 Hz | PM S | 20 30 000 | 21 30 000 | 22 30 000 |
| MVP 070; with TVV 001; 230 V AC, 50/60 Hz | PM S | 20 31 000 | 21 31 000 | 22 31 000 |
| Duo 3; 110 V AC, 50/60 Hz | PM S | 20 32 000 | 21 32 000 | 22 32 000 |
| Duo 3; 230 V AC, 50/60 Hz | PM S | 20 33 000 | 21 33 000 | 22 33 000 |
| Duo 5 M; 110 V AC, 50/60 Hz | PM S | 20 34 000 | 21 34 000 | 22 34 000 |
| Duo 5 M; 230 V AC, 50/60 Hz | PM S | 20 35 000 | 21 35 000 | 22 35 000 |
| Duo 3; with AVC 016 MA; 110 V AC, 50/60 Hz | PM S | 20 36 000 | 21 36 000 | 22 36 000 |
| Duo 3; with AVC 016 MA; 230 V AC, 50/60 Hz | PM S | 20 37 000 | 21 37 000 | 22 37 000 |
| Duo 5 M; with AVC 016 MA; 110 V AC, 50/60 Hz | PM S | 20 38 000 | 21 38 000 | 22 38 000 |
| Duo 5 M; with AVC 016 MA; 230 V AC, 50/60 Hz | PM S | 20 39 000 | 21 39 000 | 22 39 000 |

| Options | Order numbers |
|---|----------------|
| Standard, on rubber feet | PM S aa bb 0de |
| On rollers, 4 guiding rollers, 2 brakes | PM S aa bb 1de |
| Air drier TTV 001, with connectin to the venting valve | PM S aa bb 2de |
| On rollers + air drier TTV 001 | PM S aa bb 3de |
| Standard (without cable set for external use) | PM S aa bb c0e |
| Cable set and fore-vacuum line 3 m (for external use of the turbopump) | PM S aa bb c1e |
| Cable set and fore-vacuum line 5 m (for external use of the turbopump) | PM S aa bb c2e |
| Cable set and fore-vacuum line 10 m (for external use of the turbopump) | PM S aa bb c3e |
| Standard, air cooling | PM S aa bb cd0 |
| Water cooling | PM S aa bb cd1 |
| Water cooling + heating jacket | PM S aa bb cd2 |

| HiPace 300 | | HiPace 400 | | HiPace 700 | |
|--------------|-------------|--------------|-------------|--------------|-------------|
| DN 100 ISO-K | DN 100 CF-F | DN 100 ISO-K | DN 100 CF-F | DN 160 ISO-K | DN 160 CF-F |
| 23 22 000 | 24 22 000 | - | - | - | - |
| 23 23 000 | 24 23 000 | - | - | - | - |
| 23 24 000 | 24 24 000 | 25 24 000 | 26 24 000 | 27 24 000 | 28 24 000 |
| 23 25 000 | 24 25 000 | 25 25 000 | 26 25 000 | 27 25 000 | 28 25 000 |
| 23 28 000 | 24 28 000 | - | - | - | - |
| 23 29 000 | 24 29 000 | - | - | - | - |
| 23 30 000 | 24 30 000 | 25 30 000 | 26 30 000 | 27 30 000 | 28 30 000 |
| 23 31 000 | 24 31 000 | 25 31 000 | 26 31 000 | 27 31 000 | 28 31 000 |
| 23 32 000 | 24 32 000 | 25 32 000 | 26 32 000 | 27 32 000 | 28 32 000 |
| 23 33 000 | 24 33 000 | 25 33 000 | 26 33 000 | 27 33 000 | 28 33 000 |
| 23 34 000 | 24 34 000 | 25 34 000 | 26 34 000 | 27 34 000 | 28 34 000 |
| 23 35 000 | 24 35 000 | 25 35 000 | 26 35 000 | 27 35 000 | 28 35 000 |
| 23 36 000 | 24 36 000 | 25 36 000 | 26 36 000 | 27 36 000 | 28 36 000 |
| 23 37 000 | 24 37 000 | 25 37 000 | 26 37 000 | 27 37 000 | 28 37 000 |
| 23 38 000 | 24 38 000 | 25 38 000 | 26 38 000 | 27 38 000 | 28 38 000 |
| 23 39 000 | 24 39 000 | 25 39 000 | 26 39 000 | 27 39 000 | 28 39 000 |

The complete solution for high vacuum applications:
The modular pumping station for clean vacuum.

Technical data

| Pumping station | | HiCube 80 Pro | | |
|---|-------------------|------------------------|------------------------|-------------------------|
| Flange (in) | | DN 40 ISO-KF | DN 63 ISO-K | DN 63 CF-F |
| Pumping speed for nitrogen N ₂ | | l/s | 35 | 67 |
| Ultimate pressure | | | | |
| with Multi-stage Roots pump ACP | mbar | < 1 · 10 ⁻⁷ | < 1 · 10 ⁻⁷ | < 5 · 10 ⁻¹⁰ |
| with Rotary vane pump PentaLine | mbar | < 1 · 10 ⁻⁷ | < 1 · 10 ⁻⁷ | < 5 · 10 ⁻¹⁰ |
| Pumping speed backing pump at 50 Hz | | | | |
| Multi-stage Roots pump ACP 15 | m ³ /h | 14 | 14 | 14 |
| Multi-stage Roots pump ACP 28 | m ³ /h | 27 | 27 | 27 |
| Rotary vane pump Penta 20 | m ³ /h | 22 | 22 | 22 |
| Rotary vane pump Penta 35 | m ³ /h | 34 | 34 | 34 |
| Weight pumping station: ¹⁾ | | | | |
| with Multi-stage Roots pump ACP 15 | kg | 60.2 | 60.2 | 61.1 |
| with Multi-stage Roots pump ACP 28 | kg | 69.2 | 69.2 | 70.6 |
| with Rotary vane pump Penta 20 | kg | 82.2 | 82.2 | 83.6 |
| with Rotary vane pump Penta 35 | kg | 84.2 | 84.2 | 85.6 |
| Power consumption | | | | |
| with Multi-stage Roots pump ACP 15 | W | 660 | 660 | 660 |
| with Multi-stage Roots pump ACP 28 | W | 1,160 | 1,160 | 1,160 |
| with Rotary vane pump Penta 20 | W | 1,100 | 1,100 | 1,100 |
| with Rotary vane pump Penta 35 | W | 1,585 | 1,585 | 1,585 |

Ultimate pressure in a measuring dome 48 hours after bake-out, can be attained only with metallic seal of the high vacuum flange. (Ultimate pressure with elastomer seal (standard, not bakeable): < 1 · 10⁻⁷ mbar.)

¹⁾ without fore-vacuum safety valve

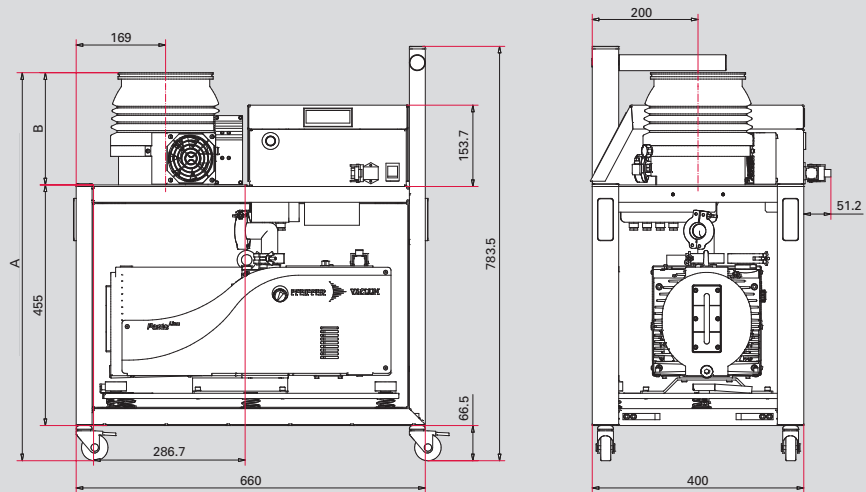


| HiCube 300 Pro | | HiCube 400 Pro | | HiCube 700 Pro | |
|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| DN 100 ISO-K | DN 100 CF-F | DN 100 ISO-K | DN 100 CF-F | DN 160 ISO-K | DN 160 CF-F |
| 260 | 260 | 355 | 355 | 685 | 685 |
| $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ | $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ | $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ |
| $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ | $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ | $< 1 \cdot 10^{-7}$ | $< 5 \cdot 10^{-10}$ |
| 14 | 14 | 14 | 14 | 14 | 14 |
| 27 | 27 | 27 | 27 | 27 | 27 |
| 22 | 22 | 22 | 22 | 22 | 22 |
| 34 | 34 | 34 | 34 | 34 | 34 |
| 65.0 | 67.0 | 70.4 | 76.3 | 70.8 | 76.7 |
| 74.0 | 76.0 | 79.4 | 85.3 | 79.8 | 85.7 |
| 87.0 | 89.0 | 92.4 | 98.3 | 92.8 | 98.7 |
| 89.0 | 91.0 | 92.4 | 100.3 | 94.8 | 100.7 |
| 850 | 850 | 970 | 970 | 970 | 970 |
| 1,350 | 1,350 | 1,910 | 1,910 | 1,910 | 1,910 |
| 1,290 | 1,290 | 1,410 | 1,410 | 1,410 | 1,410 |
| 1,775 | 1,775 | 1,895 | 1,895 | 1,895 | 1,895 |

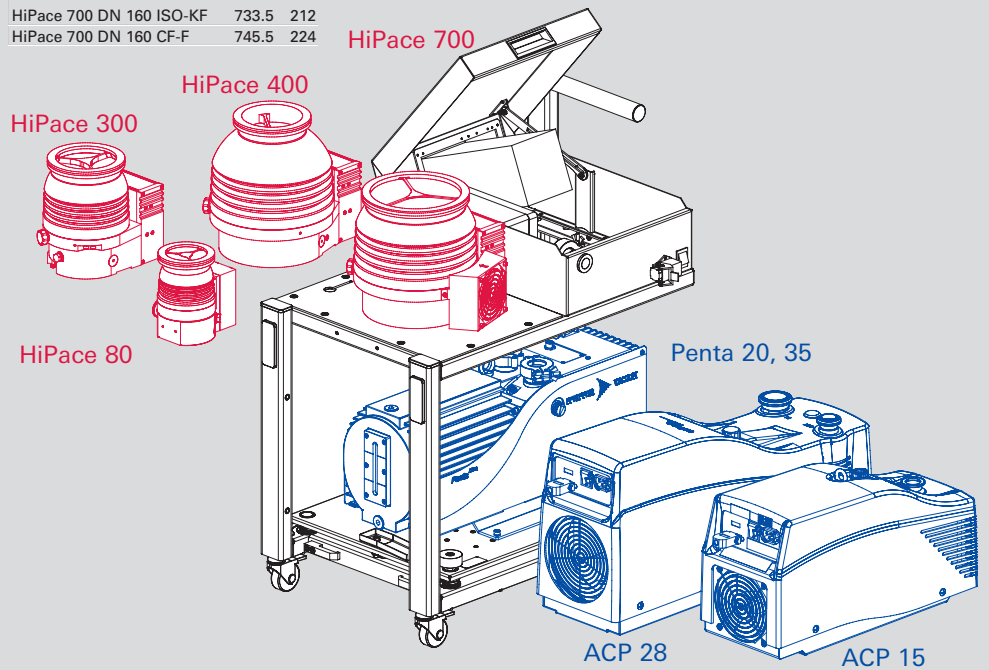
HiCube™ Pro

The complete solution for high vacuum applications:
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Dimensions



| Turbopump | A | B |
|--------------------------|-------|-----|
| HiPace 80 DN 40 ISO-KF | 679.5 | 158 |
| HiPace 80 DN 63 ISO-K | 670.5 | 149 |
| HiPace 80 DN 63 CF-F | 676.5 | 155 |
| HiPace 300 DN 100 ISO-KF | 716.5 | 195 |
| HiPace 300 DN 100 CF-F | 728.5 | 207 |
| HiPace 400 DN 100 ISO-KF | 760.5 | 239 |
| HiPace 400 DN 100 CF-F | 760.5 | 239 |
| HiPace 700 DN 160 ISO-KF | 733.5 | 212 |
| HiPace 700 DN 160 CF-F | 745.5 | 224 |



Order matrix HiCube Pro

Order number

PM S aa bb c d e

| Turbopump | | | aa |
|-----------|------------|--------------|----|
| TC 110 | HiPace 80 | DN 40 ISO-KF | 40 |
| | HiPace 80 | DN 63 ISO-K | 41 |
| | HiPace 80 | DN 63 CF-F | 42 |
| TC 400 | HiPace 300 | DN 100 ISO-K | 43 |
| | HiPace 300 | DN 100 CF-F | 44 |
| | HiPace 400 | DN 100 ISO-K | 45 |
| | HiPace 400 | DN 100 CF-F | 46 |
| | HiPace 700 | DN 160 ISO-K | 47 |
| | HiPace 700 | DN 160 CF-F | 48 |

| Backing pump | | | | | bb |
|------------------------|----------|----------|----------|-------------------------------|----|
| Rotary vane pump | Penta 20 | 110 V AC | 50/60 Hz | | 48 |
| | Penta 20 | 230 V AC | 50/60 Hz | | 49 |
| | Penta 35 | 110 V AC | 50/60 Hz | | 50 |
| | Penta 35 | 230 V AC | 50/60 Hz | | 51 |
| | Penta 20 | 110 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 54 |
| | Penta 20 | 230 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 55 |
| | Penta 35 | 110 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 56 |
| | Penta 35 | 230 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 57 |
| Multi-stage Roots pump | ACP 15 | 230 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 58 |
| | ACP 15 | 110 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 59 |
| | ACP 28 | 230 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 60 |
| | ACP 28 | 110 V AC | 50/60 Hz | with AVC 025 MA ¹⁾ | 61 |

¹⁾ Fore-vacuum safety valve

| Options | | c/d/e |
|---|--|---|
| General | Standard, 4 rollers | 0 |
| | 4 rollers, venting valve | 1 |
| | 4 rollers, venting valve, air drier TTV 001, with connection to the venting valve | 2 |
| | 4 rollers, oil mit filter (ONF) | 3 |
| | 4 rollers, venting valve, oil mist filter (ONF) | 4 |
| | 4 rollers, venting valve, air drier TTV 001, with connection to the venting valve, oil mist filter (ONF) | 5 |
| | Cable | Standard (without cable set for external use) |
| Cable set and fore-vacuum line 3 m (for external use of the turbopump) | | 1 |
| Cable set and fore-vacuum line 5 m (for external use of the turbopump) | | 2 |
| Cable set and fore-vacuum line 10 m (for external use of the turbopump) | | 3 |
| Cooling | Standard, air cooling | 0 |
| | Water cooling | 1 |
| | Water cooling + heating jacket | 2 |

The complete solution for high vacuum applications:
The modular pumping station for clean vacuum.

Order numbers

| Backing pump | Turbopump | HiPace 80 | | |
|---|-----------|--------------|-------------|------------|
| | | DN 40 ISO-KF | DN 63 ISO-K | DN 63 CF-F |
| Penta 20; 110 V AC, 50/60 Hz | PM S | 40 48 000 | 41 48 000 | 42 48 000 |
| Penta 20; 230 V AC, 50/60 Hz | PM S | 40 49 000 | 41 49 000 | 42 49 000 |
| Penta 35; 110 V AC, 50/60 Hz | PM S | 40 50 000 | 41 50 000 | 42 50 000 |
| Penta 35; 230 V AC, 50/60 Hz | PM S | 40 51 000 | 41 51 000 | 42 51 000 |
| Penta 20; with AVC 025 MA; 110 V AC, 50/60 Hz | PM S | 40 54 000 | 41 54 000 | 42 54 000 |
| Penta 20; with AVC 025 MA; 230 V AC, 50/60 Hz | PM S | 40 55 000 | 41 55 000 | 42 55 000 |
| Penta 35; with AVC 025 MA; 110 V AC, 50/60 Hz | PM S | 40 56 000 | 41 56 000 | 42 56 000 |
| Penta 35; with AVC 025 MA; 230 V AC, 50/60 Hz | PM S | 40 57 000 | 41 57 000 | 42 57 000 |
| ACP 15; with AVC 025 MA; 230 V AC, 50/60 Hz | PM S | 40 58 000 | 41 58 000 | 42 58 000 |
| ACP 15; with AVC 025 MA; 110 V AC, 50/60 Hz | PM S | 40 59 000 | 41 59 000 | 42 59 000 |
| ACP 28; with AVC 025 MA; 230 V AC, 50/60 Hz | PM S | 40 60 000 | 41 60 000 | 42 60 000 |
| ACP 28; with AVC 025 MA; 110 V AC, 50/60 Hz | PM S | 40 61 000 | 41 61 000 | 42 61 000 |

| Options | Order numbers |
|--|----------------|
| Standard, 4 rollers | PM S aa bb 0de |
| 4 rollers, venting valve | PM S aa bb 1de |
| 4 rollers, venting valve, air drier TTV 001, with connection to the venting valve | PM S aa bb 2de |
| 4 rollers, oil mist filter (ONF) | PM S aa bb 3de |
| 4 rollers, venting valve, oil mist filter (ONF) | PM S aa bb 4de |
| 4 rollers, venting valve, air drier TTV 001, with connection to the venting valve, oil mist filter (ONF) | PM S aa bb 5de |
| Standard (without cable set for external use) | PM S aa bb c0e |
| Cable set and fore-vacuum line 3 m (for external use of the turbopump) | PM S aa bb c1e |
| Cable set and fore-vacuum line 5 m (for external use of the turbopump) | PM S aa bb c2e |
| Cable set and fore-vacuum line 10 m (for external use of the turbopump) | PM S aa bb c3e |
| Standard, air cooling | PM S aa bb cd0 |
| Water cooling | PM S aa bb cd1 |
| Water cooling + heating jacket | PM S aa bb cd2 |

| HiPace 300 | | HiPace 400 | | HiPace 700 | |
|--------------|-------------|--------------|-------------|--------------|-------------|
| DN 100 ISO-K | DN 100 CF-F | DN 100 ISO-K | DN 100 CF-F | DN 160 ISO-K | DN 160 CF-F |
| 43 48 000 | 44 48 000 | 45 48 000 | 46 48 000 | 47 48 000 | 48 48 000 |
| 43 49 000 | 44 49 000 | 45 49 000 | 46 49 000 | 47 49 000 | 48 49 000 |
| 43 50 000 | 44 50 000 | 45 50 000 | 46 50 000 | 47 50 000 | 48 50 000 |
| 43 51 000 | 44 51 000 | 45 51 000 | 46 51 000 | 47 51 000 | 48 51 000 |
| 43 54 000 | 44 54 000 | 45 54 000 | 46 54 000 | 47 54 000 | 48 54 000 |
| 43 55 000 | 44 55 000 | 45 55 000 | 46 55 000 | 47 55 000 | 48 55 000 |
| 43 56 000 | 44 56 000 | 45 56 000 | 46 56 000 | 47 56 000 | 48 56 000 |
| 43 57 000 | 44 57 000 | 45 57 000 | 46 57 000 | 47 57 000 | 48 57 000 |
| 43 58 000 | 44 58 000 | 45 58 000 | 46 58 000 | 47 58 000 | 48 58 000 |
| 43 59 000 | 44 59 000 | 45 59 000 | 46 59 000 | 47 59 000 | 48 59 000 |
| 43 60 000 | 44 60 000 | 45 60 000 | 46 60 000 | 47 60 000 | 48 60 000 |
| 43 61 000 | 44 61 000 | 45 61 000 | 46 61 000 | 47 61 000 | 48 61 000 |

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