



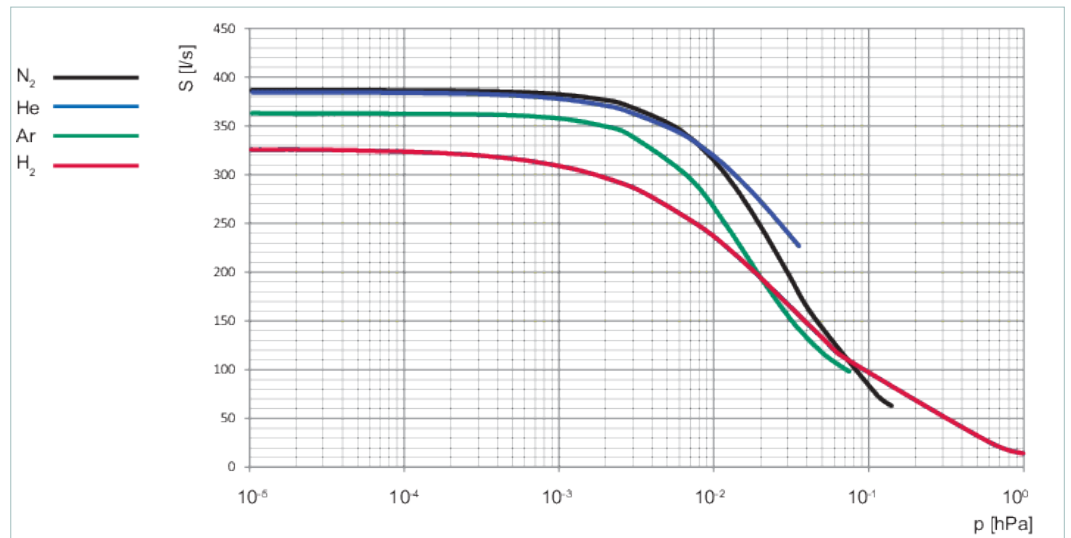
HiPace[®] 450



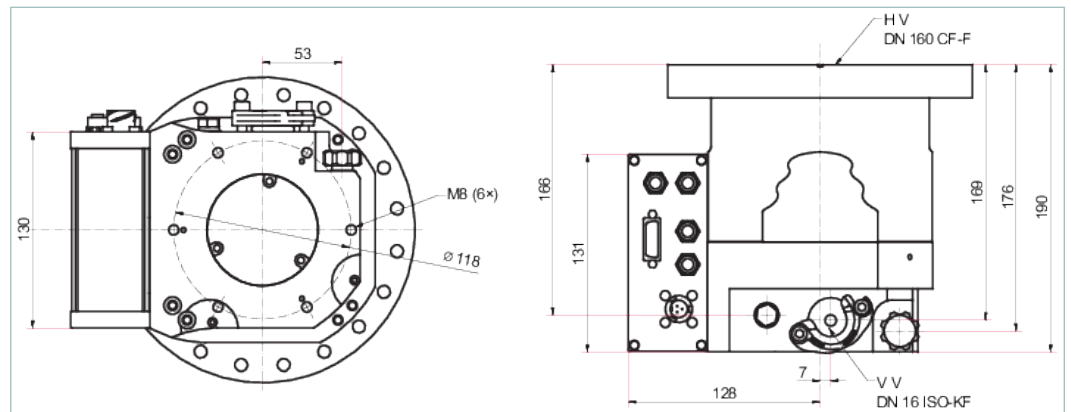
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HiPace® 450 with TC 400, DN 160 CF-F

- Robust, high-performance turbopump with a pumping speed of up to 380 l/s for N₂
- Compact and powerful
- Exceptional pumping speed for light gases
- Laser balancing technology
- For installation in any orientation
- TC 400 integrated electronic drive unit
- Comprehensive accessories extend the range of applications



Dimensions



Technical Data	HiPace® 450 with TC 400, DN 160 CF-F
Bearing	Hybrid
Compression ratio for Ar	$> 1 \cdot 10^{11}$
Compression ratio for H ₂	$2 \cdot 10^6$
Compression ratio for He	$> 1 \cdot 10^8$
Compression ratio for N ₂	$> 1 \cdot 10^{11}$
Connection flange (in)	DN 160 CF-F
Connection flange (out)	DN 16 ISO-KF / G 3/8"
Cooling method	Convection
Cooling method, optional	Air Water
Cooling water flow	100 l/h

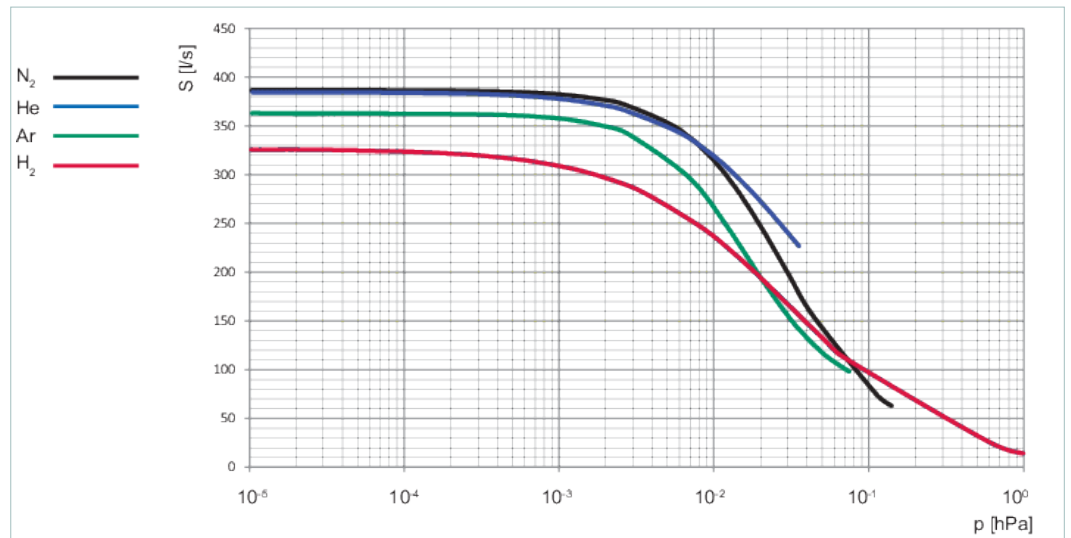
Technical Data	HiPace® 450 with TC 400, DN 160 CF-F
Cooling water flow, max.	100 l/h
Cooling water flow, min.	100 l/h
Cooling water temperature	15-25 °C 59-77 °F 288-298 K
Current, max.	8,4 A
Electronic drive unit	with TC 400
Final pressure without gas ballast	$\leq 5 \cdot 10^{-10}$ hPa $\leq 3.75 \cdot 10^{-10}$ Torr $\leq 5 \cdot 10^{-10}$ mbar
Fore-vacuum max. for N ₂	10 mbar
Gas throughput at final rotation speed for Ar	0.7 mbar l/s
Gas throughput at final rotation speed for H ₂	11 mbar l/s
Gas throughput at final rotation speed for He	7 mbar l/s
Gas throughput at final rotation speed for N ₂	2 mbar l/s
I/O interfaces	RS-485, Remote
Mounting orientation	Arbitrary
Permissible axial magnetic field max.	20 mT
Permissible radial magnetic field max.	4.5 mT
Power consumption max.	420 W
Protection degree	IP54; Type 12
Pumping speed for Ar	350 l/s
Pumping speed for H ₂	330 l/s
Pumping speed for He	380 l/s
Pumping speed for N ₂	380 l/s
Rotation speed ± 2 %	66,000 rpm 66,000 min ⁻¹
Rotation speed variable	60 – 100 %
Run-up time	2 min
Sound pressure level	≤ 50 dB(A)
Venting connection	G 1/8"
Weight	11.5 kg 25.35 lb
Order number	
HiPace® 450	PM P070 511 50



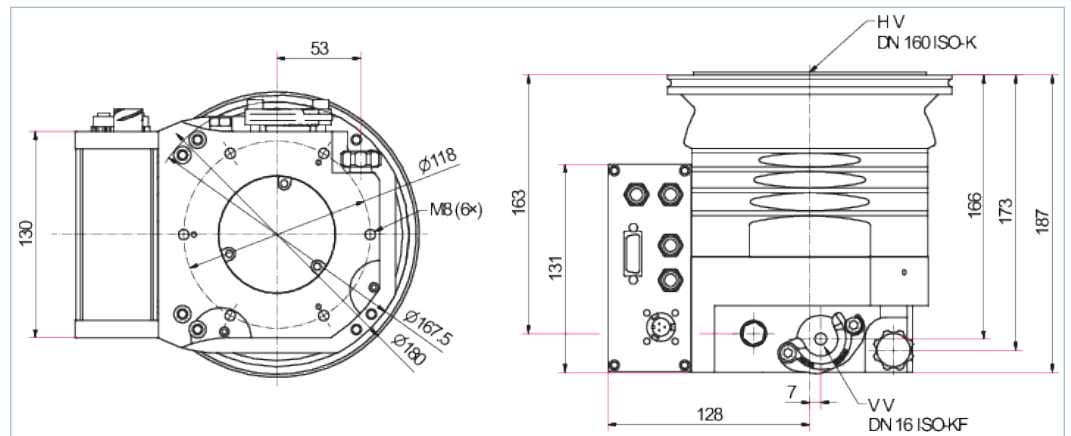
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HiPace® 450 with TC 400, DN 160 ISO-K

- Robust, high-performance turbopump with a pumping speed of up to 380 l/s for N₂
- Compact and powerful
- Exceptional pumping speed for light gases
- Laser balancing technology
- For installation in any orientation
- TC 400 integrated electronic drive unit
- Comprehensive accessories extend the range of applications



Dimensions



Technical Data	HiPace® 450 with TC 400, DN 160 ISO-K
Bearing	Hybrid
Compression ratio for Ar	$> 1 \cdot 10^{11}$
Compression ratio for H ₂	$2 \cdot 10^6$
Compression ratio for He	$> 1 \cdot 10^8$
Compression ratio for N ₂	$> 1 \cdot 10^{11}$
Connection flange (in)	DN 160 ISO-K
Connection flange (out)	DN 16 ISO-KF / G 3/8"
Cooling method	Convection
Cooling method, optional	Air Water

Technical Data	HiPace® 450 with TC 400, DN 160 ISO-K
Cooling water flow	100 l/h
Cooling water flow, max.	100 l/h
Cooling water flow, min.	100 l/h
Cooling water temperature	15-25 °C 59-77 °F 288-298 K
Current, max.	8,4 A
Electronic drive unit	with TC 400
Final pressure without gas ballast	$\leq 1 \cdot 10^{-7}$ hPa $\leq 7.5 \cdot 10^{-8}$ Torr $\leq 1 \cdot 10^{-7}$ mbar
Fore-vacuum max. for N ₂	10 mbar
Gas throughput at final rotation speed for Ar	0.7 mbar l/s
Gas throughput at final rotation speed for H ₂	11 mbar l/s
Gas throughput at final rotation speed for He	7 mbar l/s
Gas throughput at final rotation speed for N ₂	2 mbar l/s
I/O interfaces	RS-485, Remote
Mounting orientation	Arbitrary
Permissible axial magnetic field max.	20 mT
Permissible radial magnetic field max.	4.5 mT
Power consumption max.	420 W
Protection degree	IP54; Type 12
Pumping speed for Ar	350 l/s
Pumping speed for H ₂	330 l/s
Pumping speed for He	380 l/s
Pumping speed for N ₂	380 l/s
Rotation speed ± 2 %	66,000 rpm 66,000 min ⁻¹
Rotation speed variable	60 – 100 %
Run-up time	2 min
Sound pressure level	≤ 50 dB(A)
Venting connection	G 1/8"
Weight	7.6 kg 16.75 lb

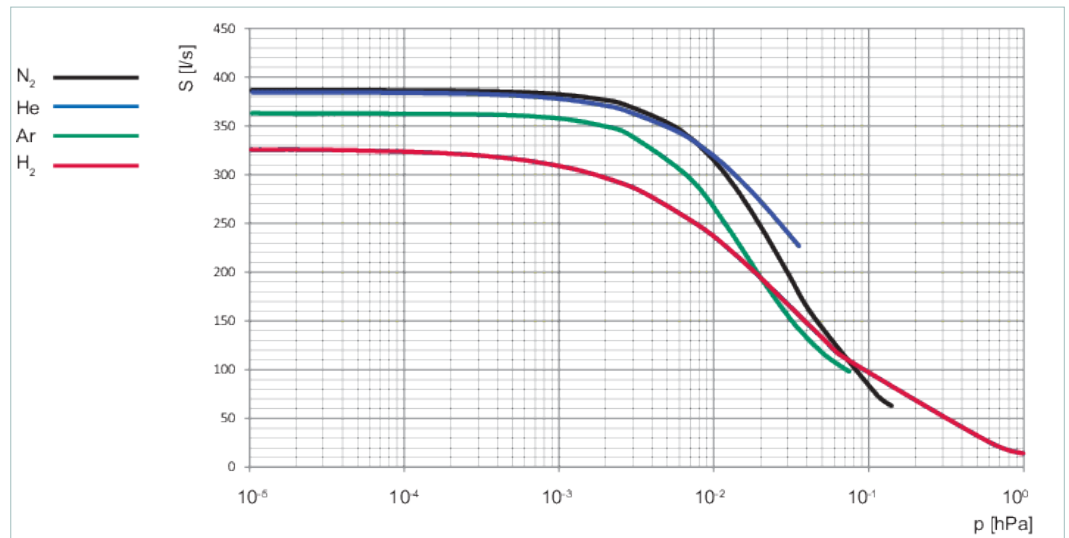
Order number	
HiPace® 450	PM P070 501 50



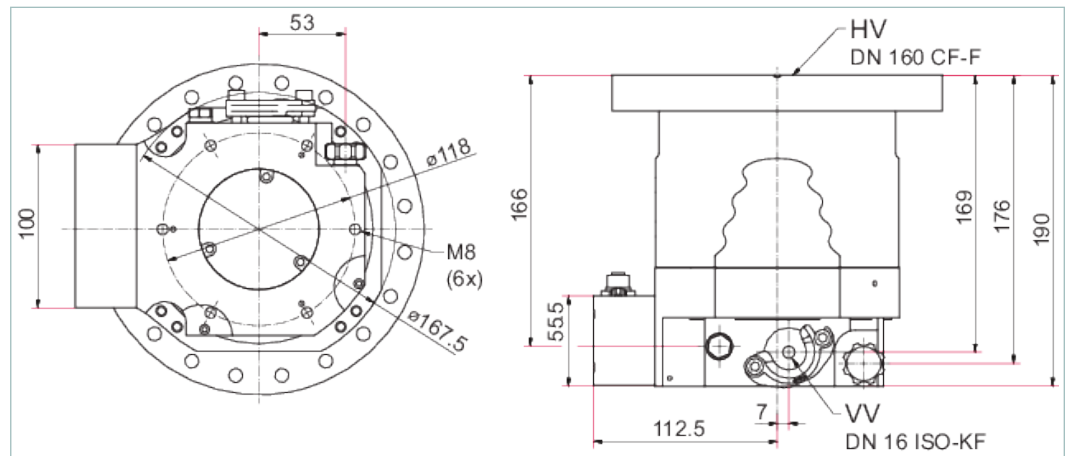
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HiPace® 450 with TC 120, DN 160 CF-F

- Robust, high-performance turbopump with a pumping speed of up to 380 l/s for N₂
- Compact and powerful
- Exceptional pumping speed for light gases
- Laser balancing technology
- For installation in any orientation
- TC 120 integrated electronic drive unit
- Comprehensive accessories extend the range of applications



Dimensions



Technical Data	HiPace® 450 with TC 120, DN 160 CF-F
Bearing	Hybrid
Compression ratio for Ar	$> 1 \cdot 10^{11}$
Compression ratio for H ₂	$2 \cdot 10^6$
Compression ratio for He	$> 1 \cdot 10^8$
Compression ratio for N ₂	$> 1 \cdot 10^{11}$
Connection flange (in)	DN 160 CF-F
Connection flange (out)	DN 16 ISO-KF / G 3/8"
Cooling method	Convection
Cooling method, optional	Air Water

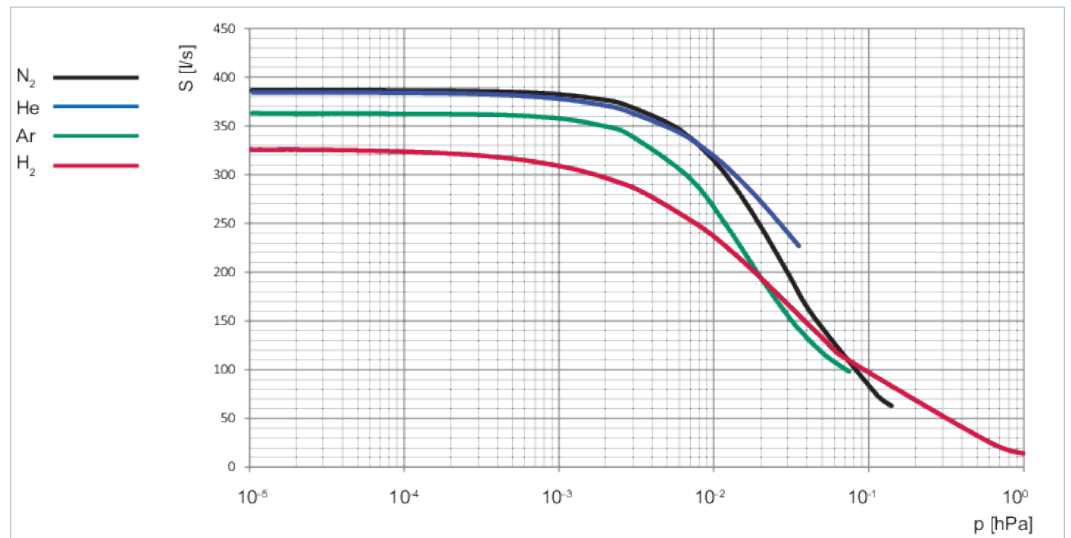
Technical Data	HiPace® 450 with TC 120, DN 160 CF-F
Cooling water flow	100 l/h
Cooling water flow, max.	100 l/h
Cooling water flow, min.	100 l/h
Cooling water temperature	15-25 °C 59-77 °F 288-298 K
Current, max.	3,75 A
Electronic drive unit	with TC 120
Final pressure without gas ballast	$\leq 5 \cdot 10^{-10}$ hPa $\leq 3.75 \cdot 10^{-10}$ Torr $\leq 5 \cdot 10^{-10}$ mbar
Fore-vacuum max. for N ₂	10 mbar
Gas throughput at final rotation speed for Ar	0.7 mbar l/s
Gas throughput at final rotation speed for H ₂	11 mbar l/s
Gas throughput at final rotation speed for He	7 mbar l/s
Gas throughput at final rotation speed for N ₂	2 mbar l/s
I/O interfaces	RS-485, Remote
Mounting orientation	Arbitrary
Permissible axial magnetic field max.	20 mT
Permissible radial magnetic field max.	4.5 mT
Power consumption max.	180 W
Protection degree	IP54; Type 12
Pumping speed for Ar	350 l/s
Pumping speed for H ₂	330 l/s
Pumping speed for He	380 l/s
Pumping speed for N ₂	380 l/s
Rotation speed ± 2 %	66,000 rpm 66,000 min ⁻¹
Rotation speed variable	60 – 100 %
Run-up time	4 min
Sound pressure level	≤ 50 dB(A)
Venting connection	G 1/8"
Weight	10.9 kg 24.03 lb
Order number	
HiPace® 450	PM P070 511 30



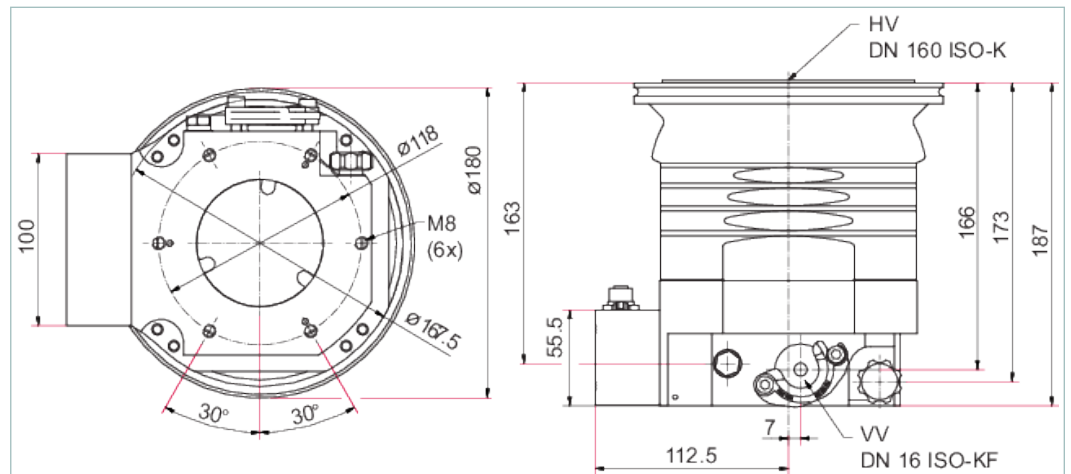
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HiPace® 450 with TC 120, DN 160 ISO-K

- Robust, high-performance turbopump with a pumping speed of up to 380 l/s for N₂
- Compact and powerful
- Exceptional pumping speed for light gases
- Laser balancing technology
- For installation in any orientation
- TC 120 integrated electronic drive unit
- Comprehensive accessories extend the range of applications



Dimensions



Technical Data	HiPace® 450 with TC 120, DN 160 ISO-K
Bearing	Hybrid
Compression ratio for Ar	$> 1 \cdot 10^{11}$
Compression ratio for H ₂	$2 \cdot 10^6$
Compression ratio for He	$> 1 \cdot 10^8$
Compression ratio for N ₂	$> 1 \cdot 10^{11}$
Connection flange (in)	DN 160 ISO-K
Connection flange (out)	DN 16 ISO-KF / G 3/8"
Cooling method	Convection

Technical Data	HiPace® 450 with TC 120, DN 160 ISO-K
Cooling method, optional	Air Water
Cooling water flow	100 l/h
Cooling water flow, max.	100 l/h
Cooling water flow, min.	100 l/h
Cooling water temperature	15-25 °C 59-77 °F 288-298 K
Current, max.	3,75 A
Electronic drive unit	with TC 120
Final pressure without gas ballast	$\leq 1 \cdot 10^{-7}$ hPa $\leq 7.5 \cdot 10^{-8}$ Torr $\leq 1 \cdot 10^{-7}$ mbar
Fore-vacuum max. for N ₂	10 mbar
Gas throughput at final rotation speed for Ar	0.7 mbar l/s
Gas throughput at final rotation speed for H ₂	11 mbar l/s
Gas throughput at final rotation speed for He	7 mbar l/s
Gas throughput at final rotation speed for N ₂	2 mbar l/s
I/O interfaces	RS-485, Remote
Mounting orientation	Arbitrary
Permissible axial magnetic field max.	20 mT
Permissible radial magnetic field max.	4.5 mT
Power consumption max.	180 W
Protection degree	IP54; Type 12
Pumping speed for Ar	350 l/s
Pumping speed for H ₂	330 l/s
Pumping speed for He	380 l/s
Pumping speed for N ₂	380 l/s
Rotation speed ± 2 %	66,000 rpm 66,000 min ⁻¹
Rotation speed variable	60 – 100 %
Run-up time	4 min
Sound pressure level	≤ 50 dB(A)
Venting connection	G 1/8"
Weight	7 kg 15.43 lb

Order number	
HiPace® 450	PM P070 501 30

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