FAMCO
هایپرصنعت

DUOLINE™

Rotary vane pumps for all applications in the low and medium vacuum range

PFEIFFER VACUUM

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تهران، کیلومتر۲۱ بزرگراه لشگری (جاده مخصوص کرج)
روبروی پالایشگاه نفت پارس، پلاک ۱۲

DUOLINE™

Rotary vane pumps for all applications in the low and medium vacuum range

The two-stage high-performance rotary vane pumps cover all low and medium vacuum applications, achieving pumping speeds of 1.25 to 300 m^3/h. Applications range from mass spectrometry or optical coating to critical industrial applications such as drying processes, metallurgical processes or resin casting systems.

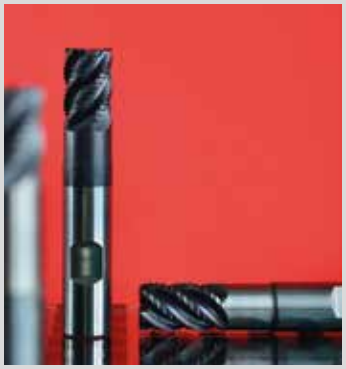
The pumps ensure high operational safety – preferred as a backing pump in a Roots or turbo pumping station. The integrated, hydraulically controlled high-vacuum safety valve ensures high operational safety. An integrated connection point for oil return simplifies retrofitting of an oil mist filter.

Thanks to the reduced oil mist discharge, the innovative drive concept and the optional magnetic coupling, the rotary vane pumps are clean and environmentally friendly.

The DuoLine has a long service life and a pumping speed that is independent of the type of gas. Thanks to their compact design and optimized cooling, the pumps are very well suited for system integration.

Flywheel system, Industry

Analytics



Coating

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Applications

- All applications in low and medium vacuum
- Ideal backing pump for turbopumps and Roots pumps
- General laboratory use
- Analytics
- Chemical laboratory
- Freeze drying
- Process engineering

DUOLINE™

Rotary vane pumps for all applications in the low and medium vacuum range

Standard

Our standard rotary vane pumps are generally filled with mineral oil and cover a broad range of uses in practically all fields of vacuum technology.

Magnetically coupled

In contrast to the standard pump, these products have a frictionless magnetic coupling. Oil leakage from a wear-prone conventional shaft seal is ruled out in these models.

- No Maintenance at the shaft feedthrough – lower maintenance costs
- No oil leaks – environment-friendly

Corrosive

These corrosive versions of our rotary vane pumps are prepared for operation with Pfeiffer Vacuum perfluoropolyether (PFPE) operating fluids. Due to the inert operating fluid, these pumps can be used in highly corrosive processes.[1)]

[1)] PFPE operating fluids must be ordered separately.

■ recommended ■ possible

	Analytics						Semiconductor										Coating										Industry												R&D									
	Electron microscopy	Leak detection	Mass spectrometry	Surface analysis	Plasma monitoring	Residual gas analysis	Lithography	PVD (Physical Vapor Deposition)	CVD (Chemical Vapor Deposition)	Plasma etching	Implantation – Source	Implantation – Beamline	Inspection	Bonding	MBE (Molecular Beam Epitaxy)	Load-locks, transfer chambers, handling systems	Flat Panel Display (FPD)	LED / OLED	Hard disk coating	Photovoltaics	Glass coating (PVD)	CD- / DVD- / Blu-Ray production (PVD)	Optical coating (PVD)	Wear protection (PVD, CVD)	Web coating	Medical technology	Industrial leak detection	Electron beam welding	Isolation vacuums	Lamp and tube manufacturing	Heat treatment	Vakuumtrocknung	Vacuum drying	Flywheels	Gas circulation processes	Refrigeration and air conditioning technology	Nuclear research	Fusion technology	Plasma research	Particle accelerators	Space simulation	Cryogenic research	Elementary particle physics	Nanotechnology	Biotechnology
Standard	■				■			■								■	■		■	■	■	■	■			■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	
Magnetically coupled	■	■	■	■	■	■		■								■	■			■	■	■	■			■	■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Corrosive									■	■								■						■	■	■																			
Corrosive/ Magnetically coupled									■	■								■						■	■									■		■	■	■	■	■	■	■	■	■	■
DC drive	■	■	■			■																										■												
ATEX version			■			■																											■											■

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Corrosive magnetically coupled

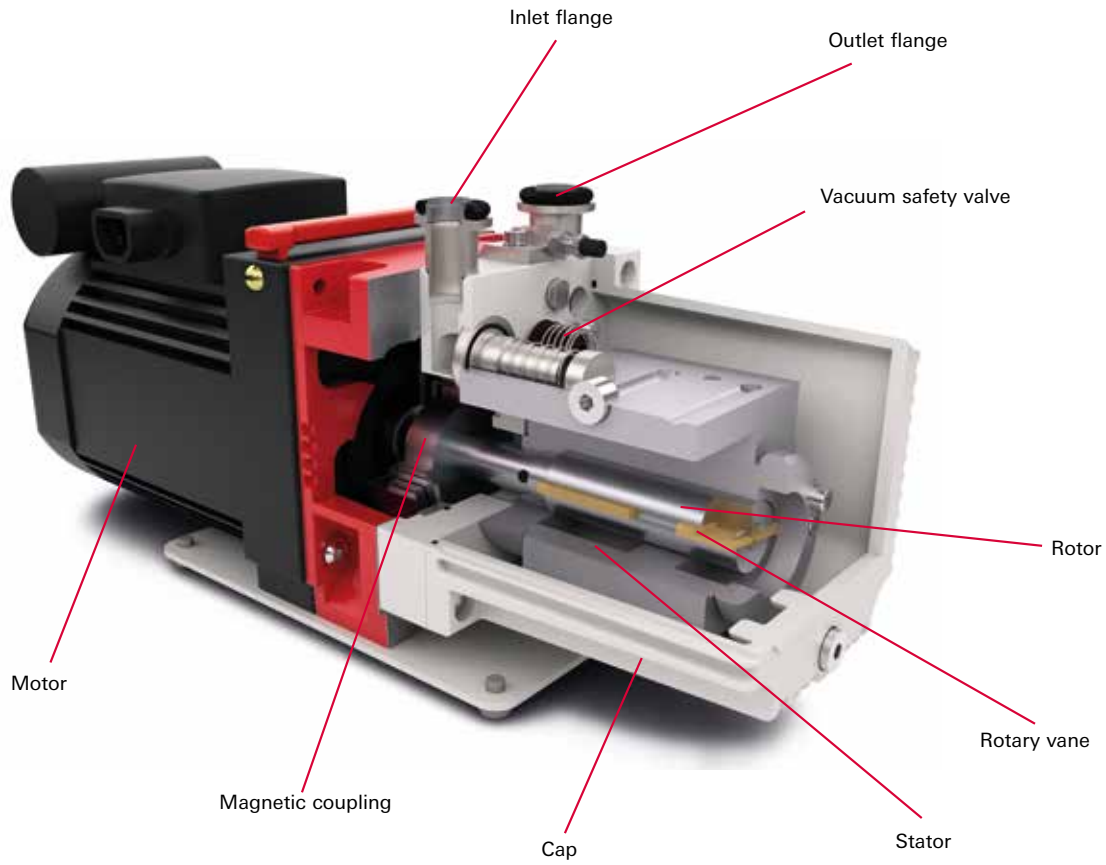
By using the magnetic ...gral leak rate of these pumps is less tha... . This maximizes the operating reliability in corrosive applications.[1)]

DC drive

Due to the state-of-the-art drive, the DC version is even more energy-saving and lighter. With its brushless 24 V DC drive, the pump is perfectly suited for mobile applications, for example, in analytical applications. Furthermore, the temperature range is extended in comparison to common rotary vane pumps. The DC drive operates at -20°C; therefore it can be operated in vehicles.

ATEX version

Especially for processes that take place in explosive environments or for evacuating explosive gases and vapors, Pfeiffer Vacuum has developed the Duo 11 ATEX rotary vane pump. It is certified in accordance with ATEX directive 2014/34/EU and meets the high requirements for explosion protection.



Customer benefits

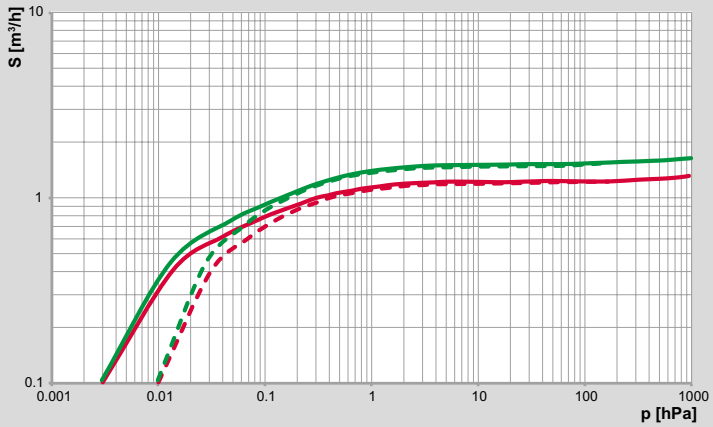
- Wide range of pumps with pumping speed of 1.3 up to 300 m^3/h
- Space-saving and ideal for systems integration
- High pumping speeds with small dimensions
- High operating reliability through integrated high vacuum safety valve
- Non-ferrous metal version ensures additional operational safety
- Also available as corrosve gas version
- Long life and low maintenance thanks to magnetic coupling

DUOLINE™ – PUMPING SPEED 1.25–30 M³/H

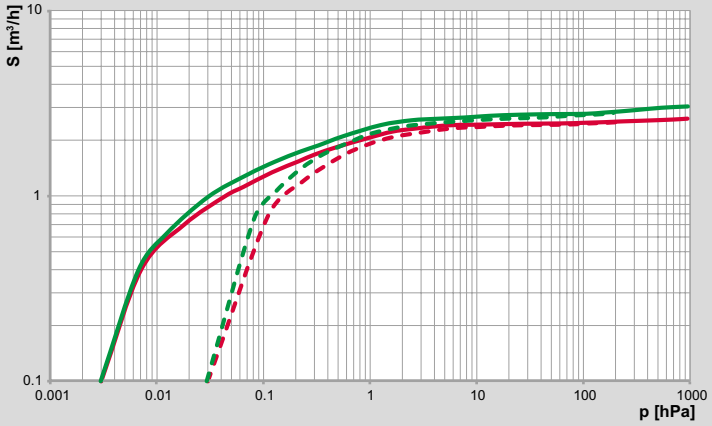
Pumping speed and dimensions

Pumping speed

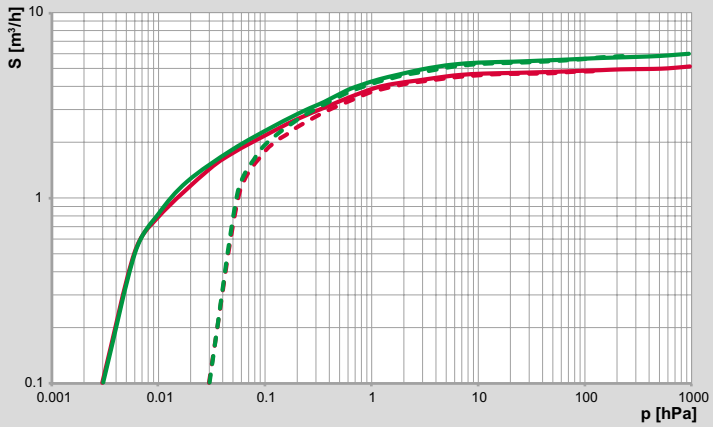
Duo 1.6 / Duo 1.6 M



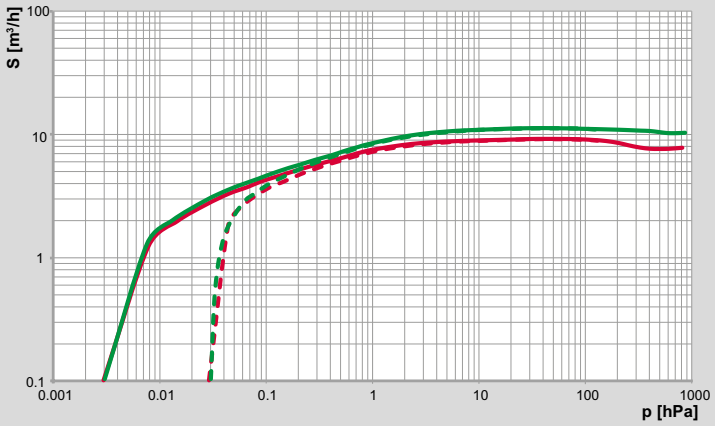
Duo 3 / Duo 3 M / Duo 3 MC



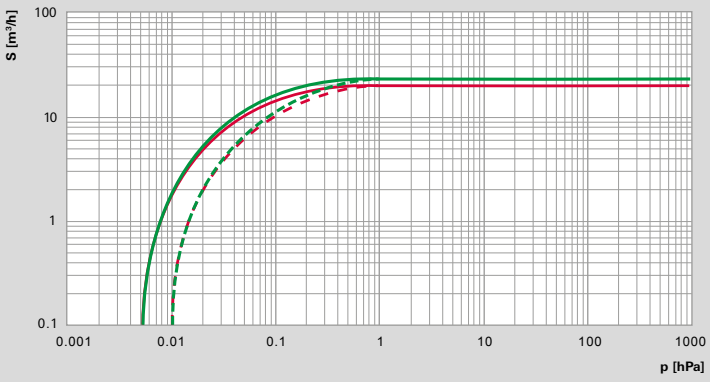
Duo 6 / Duo 6 M / Duo 6 MC



Duo 11 / Duo 11 M / Duo 11 MC



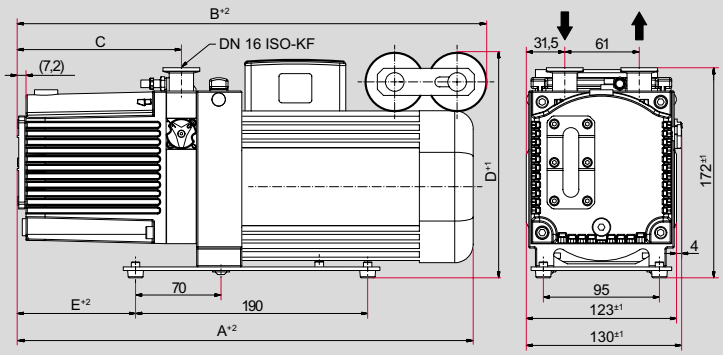
Duo 20 M / Duo 20 MC



without gas ballast – 50 Hz
with gas ballast – 50 Hz
without gas ballast – 60 Hz
with gas ballast – 60 Hz

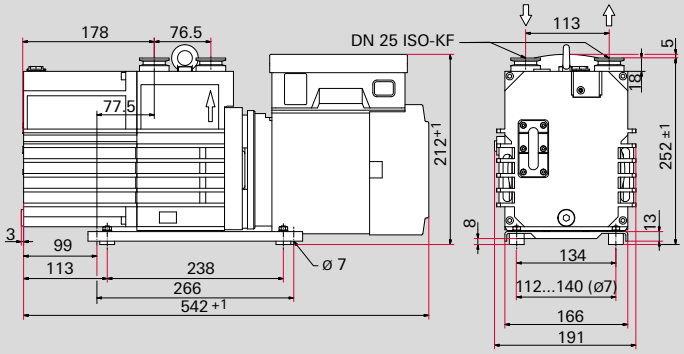
Dimensions

Duo 1.6, Duo 3, Duo 6, Duo 11



	Duo 1.6	Duo 1.6 M / Duo 1.6 MC	Duo 3	Duo 3 M / Duo 3 MC	Duo 6	Duo 6 M / Duo 6 MC	Duo 11	Duo 11 M / Duo 11 MC
A	315.5	357.5	309	351	381	423	424.5	466.5
B	334.5	376.5	335	377.5	391	433	414.5	456.5
C	123	123	123	123	145	145	185	185
D	192	192.5	187	187.5	182	182.5	216.5	216.5
E	85.5	85.5	85.5	85.5	108.5	108.5	148	148

Duo 20 M / Duo 20 MC



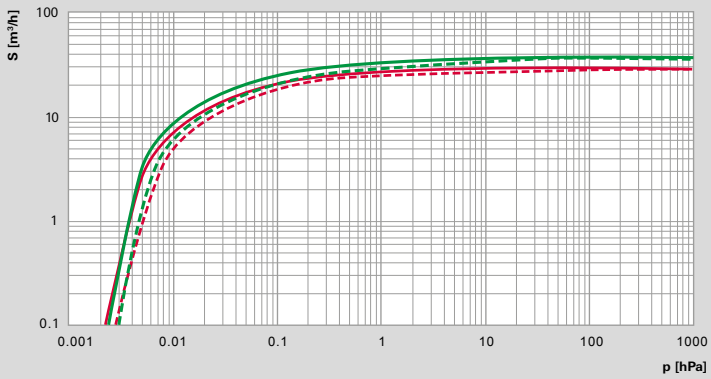
Dimensions in mm

DUOLINE™ – PUMPING SPEED 32–300 M³/H

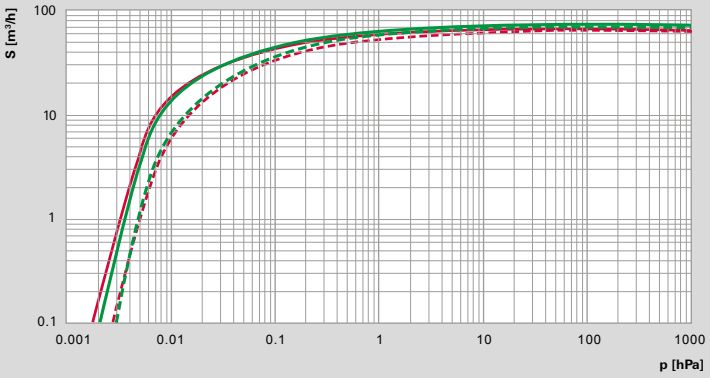
Pumping speed and dimensions

Pumping speed

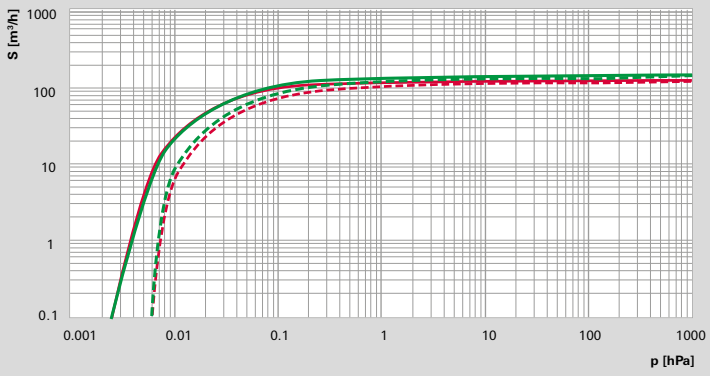
Duo 35 / Duo 35 M / Duo 35 C / Duo 35 MC



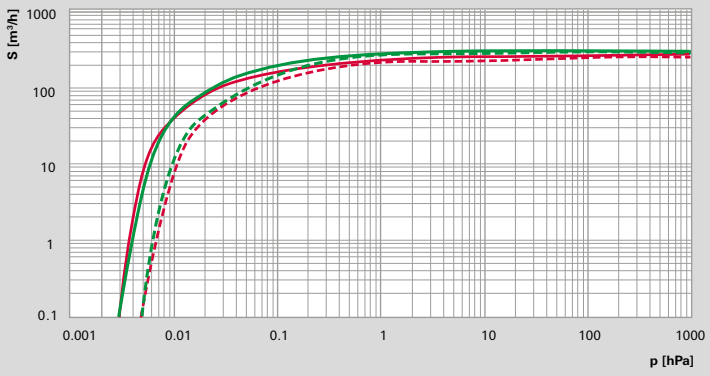
Duo 65 / Duo 65 M / Duo 65 C / Duo 65 MC



Duo 125 / Duo 125 M



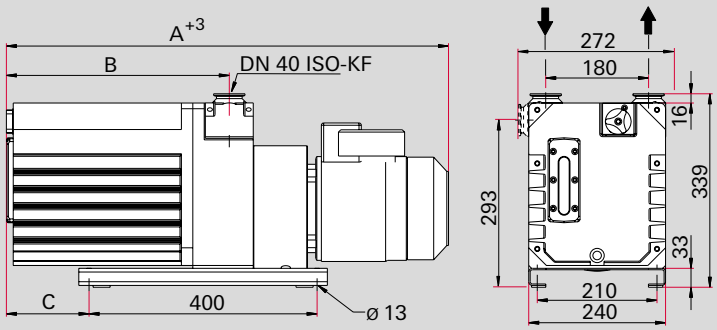
Duo 255 / Duo 255 M



without gas ballast – 50 Hz
with gas ballast – 50 Hz
without gas ballast – 60 Hz
with gas ballast – 60 Hz

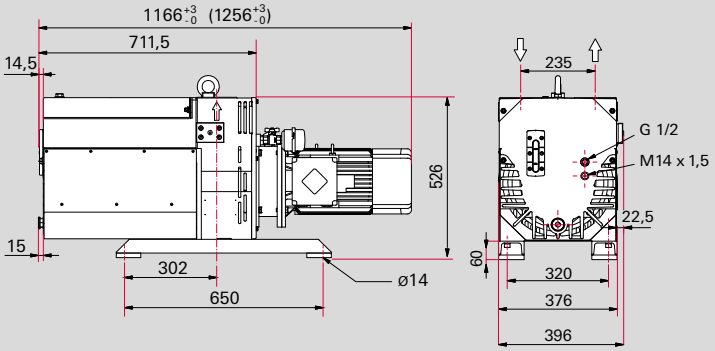
Dimensions

Duo 35, Duo 65

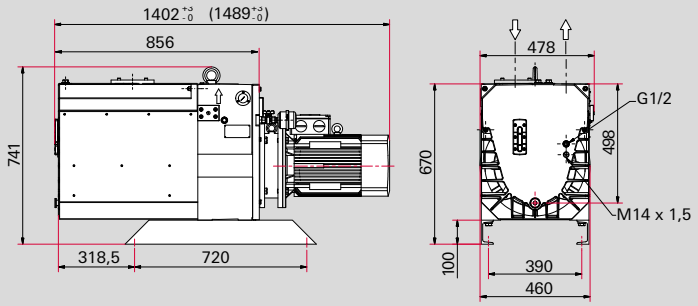


	Duo 35 / Duo 35 C	Duo 35 M	Duo 35 MC	Duo 65 / Duo 65 C	Duo 65 M	Duo 65 MC
A	658	704	739	744	784	819
B	312	312	312	392	392	392
C	66	66	66	146	146	146

Duo 125 / Duo 125 M



Duo 255 / Duo 255 M



(...) = M version

Dimensions in mm

DUOLINE™ – STANDARD, CORROSIVE

Technical data and order numbers

Technical data

	Duo 1.6	Duo 3	Duo 6	Duo 11
Flange (out)	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF
Flange (in)	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF
Exhaust pressure. max.	1500 hPa	1500 hPa	1500 hPa	1500 hPa
Operating fluid filling	0.4 l	0.4 l	0.5 l	0.5 l
Rotation speed at 50 Hz	1,500 min^{-1}	3,000 min^{-1}	3,000 min^{-1}	3,000 min^{-1}
Rotation speed at 60 Hz	1,800 min^{-1}	3,600 min^{-1}	3,600 min^{-1}	3,600 min^{-1}
Emission sound pressure level without gas ballast at 50 Hz	42 dB (A)	50 dB (A)	51 dB (A)	54 dB (A)
Ultimate pressure with gas ballast	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-2}$ hPa	$3 \cdot 10^{-2}$ hPa	$3 \cdot 10^{-2}$ hPa
Ultimate pressure without gas ballast	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa
Weight	9.6 kg	11.5 kg	16 kg	17 kg
Cooling method. standard	Air	Air	Air	Air
Leak rate safety valve	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s
Rated power 50 Hz	0.075 kW	0.15 kW	0.20 kW	0.25 kW
Rated power 60 Hz	0.090 kW	0.18 kW	0.24 kW	0.30 kW
Pumping speed at 50 Hz	1.25 m^3/h	2.5 m^3/h	5 m^3/h	9.0 m^3/h
Pumping speed at 60 Hz	1.50 m^3/h	2.9 m^3/h	6 m^3/h	10.5 m^3/h
Switch	Yes	Yes	Yes	Yes
Protection category	IP 40	IP 40	IP 40	IP 40
Ambient temperature	12–40 °C	12–40 °C	12–40 °C	12–40 °C

Sound pressure level according to ISO 3744. class 2; Typical ultimate pressure according to PNEUROP

Order numbers

Pump/Motor version	Duo 1.6	Duo 3	Duo 6	Duo 11
1-phase, Worldwide	**PK D56 711**	**PK D57 711**	**PK D58 711**	**PK D59 711**
1-phase, Europe/Asia	**PK D56 712**	**PK D57 712**	**PK D58 712**	**PK D59 712**
1-phase, USA	**PK D56 707**	**PK D57 707**	**PK D58 707**	**PK D59 707**
1-phase, Japan	**PK D56 710**	**PK D57 710**	**PK D58 710**	**PK D59 710**
DC drive		**PK D57 553**		
3-phase, Europe/Asia			**PK D58 602**	**PK D59 602**
3-phase, Brazil/Korean				
3-phase, Japan				

Pump/Motor version
3-phase, Europe/Asia
3-phase, Brazil/Korean
3-phase, Japan

Duo 35	Duo 65	Duo 125	Duo 255
DN 40 ISO-KF	DN 40 ISO-KF	DN 63 ISO-F	DN 100 ISO-F
DN 40 ISO-KF	DN 40 ISO-KF	DN 63 ISO-F	DN 100 ISO-F
1500 hPa	1500 hPa	1500 hPa	1500 hPa
3.2 l	4.2 l	14 l	25 l
1,500 min^{-1}	1,500 min^{-1}	1,000 min^{-1}	1,000 min^{-1}
1,800 min^{-1}	1,800 min^{-1}	1,200 min^{-1}	1,200 min^{-1}
61 dB (A)	61 dB (A)	75 dB (A)	75 dB (A)
$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa	$4 \cdot 10^{-3}$ hPa	$4 \cdot 10^{-3}$ hPa
$2 \cdot 10^{-3}$ hPa	$2 \cdot 10^{-3}$ hPa	$2 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa
68 kg	75 kg	225 kg	360 kg
Air	Air	Air	Air
$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s
1.5 kW	1.5 kW	4.0 kW	7.5 kW
1.5 kW	1.8 kW	4.5 kW	9.0 kW
32 m^3/h	62 m^3/h	115 m^3/h	250 m^3/h
36 m^3/h	70 m^3/h	135 m^3/h	300 m^3/h
No	No	No	No
IP 55	IP 55	IP 55	IP 55
12–40 °C	12–40 °C	12–40 °C	12–40 °C

Duo 35	Duo 65	Duo 125	Duo 255
PK D45 602	**PK D46 602**	**PK D47 602**	**PK D48 602**
PK D45 642	**PK D46 642**	**PK D47 652**	**PK D48 652**
PK D45 630	**PK D46 630**		

Duo 35 C	Duo 65C
PK D45 202	**PK D46 202**
PK D45 242	**PK D46 242**
PK D45 230	**PK D46 230**

DUOLINE™ – MAGNETICALLY COUPLED, CORROSIVE MAGNETICALLY COUPLED

Technical data and order numbers

Technical data

	Duo 1.6 M	Duo 3 M	Duo 6 M	Duo 11 M
Flange (out)	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF
Flange (in)	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF	DN 16 ISO-KF
Exhaust pressure. max.	1500 hPa	1500 hPa	1500 hPa	1500 hPa
Operating fluid filling	0.4 l	0.4 l	0.5 l	0.5 l
Rotation speed at 50 Hz	1,500 min^{-1}	3,000 min^{-1}	3,000 min^{-1}	3,000 min^{-1}
Rotation speed at 60 Hz	1,800 min^{-1}	3,600 min^{-1}	3,600 min^{-1}	3,600 min^{-1}
Emission sound pressure level without gas ballast at 50 Hz	42 dB (A)	50 dB (A)	51 dB (A)	54 dB (A)
Ultimate pressure with gas ballast	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-2}$ hPa	$3 \cdot 10^{-2}$ hPa	$3 \cdot 10^{-2}$ hPa
Ultimate pressure without gas ballast	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa
Weight	10.5 kg	12 kg	17.5 kg	19 kg
Cooling method. standard	Air	Air	Air	Air
Leak rate magnetic coupling (MC version)	$\leq 1 \cdot 10^{-7}$ Pa m^3/s	$\leq 1 \cdot 10^{-7}$ Pa m^3/s	$\leq 1 \cdot 10^{-7}$ Pa m^3/s	$\leq 1 \cdot 10^{-7}$ Pa m^3/s
Leak rate safety valve	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s
Rated power 50 Hz	0.075 kW	0.15 kW	0.20 kW	0.25 kW
Rated power 60 Hz	0.090 kW	0.18 kW	0.24 kW	0.30 kW
Pumping speed at 50 Hz	1.25 m^3/h	2.5 m^3/h	5 m^3/h	9.0 m^3/h
Pumping speed at 60 Hz	1.50 m^3/h	2.9 m^3/h	6 m^3/h	10.5 m^3/h
Switch	Yes	Yes	Yes	Yes
Protection category	IP 40	IP 40	IP 40	IP 40
Ambient temperature	12–40 °C	12–40 °C	12–40 °C	12–40 °C

Sound pressure level according to ISO 3744. class 2; Typical ultimate pressure according to PNEUROP

Order numbers

Pump/Motor version	Duo 1.6 M	Duo 3 M	Duo 6 M	Duo 11 M
1-phase, Worldwide	**PK D56 111**	**PK D57 111**	**PK D58 111**	**PK D59 111**
1-phase, Europe/Asia	**PK D56 112**	**PK D57 112**	**PK D58 112**	**PK D59 112**
1-phase, USA	**PK D56 107**	**PK D57 107**	**PK D58 107**	**PK D59 107**
1-phase, Japan	**PK D56 110**	**PK D57 110**	**PK D58 110**	**PK D59 110**
DC drive		**PK D57 563**		
3-phase, Europe/Asia			**PK D58 152**	**PK D59 152**
3-phase, Brazil/Korean				
3-phase, Japan				

Pump/Motor version	Duo 3 MC	Duo 6 MC	Duo 11 MC
1-phase, Worldwide	**PK D57 211**	**PK D58 211**	**PK D59 211**
1-phase, Europe/Asia	**PK D57 212**	**PK D58 212**	**PK D59 212**
1-phase, USA			
3-phase, Europa/Asien			
3-phase, Brazil/Korean			
3-phase, Japan			

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روبروی پالایشگاه نفت پارس، پلاک ۱۲

Duo 11 ATEX	Duo 20 M	Duo 35 M	Duo 65 M	Duo 125 M	Duo 255 M
DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF	DN 40 ISO-KF	DN 63 ISO-F	DN 100 ISO-F
DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF	DN 40 ISO-KF	DN 63 ISO-F	DN 100 ISO-F
1500 hPa	1500 hPa	1500 hPa	1500 hPa	1500 hPa	1500 hPa
0.5 l	1.1 l	3.2 l	4.2 l	14 l	25 l
3,000 min^{-1}	1,500 min^{-1}	1,500 min^{-1}	1,500 min^{-1}	1,000 min^{-1}	1,000 min^{-1}
3,600 min^{-1}	1,800 min^{-1}	1,800 min^{-1}	1,800 min^{-1}	1,200 min^{-1}	1,200 min^{-1}
53 dB (A)	55–57 dB (A)	61 dB (A)	61 dB (A)	75 dB (A)	75 dB (A)
$3 \cdot 10^{-3}$ hPa	$4 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa	$4 \cdot 10^{-3}$ hPa	$4 \cdot 10^{-3}$ hPa
$3 \cdot 10^{-3}$ hPa	$2 \cdot 10^{-3}$ hPa	$2 \cdot 10^{-3}$ hPa	$2 \cdot 10^{-3}$ hPa	$2 \cdot 10^{-3}$ hPa	$3 \cdot 10^{-3}$ hPa
15.5 kg	44 kg	70 kg	78 kg	245 kg	397 kg
Air	Air	Air	Air	Air	Air
$\leq 1 \cdot 10^{-7}$ Pa m^3/s	$\leq 1 \cdot 10^{-7}$ Pa m^3/s	$\leq 1 \cdot 10^{-7}$ Pa m^3/s	$\leq 1 \cdot 10^{-7}$ Pa m^3/s		
$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s	$\leq 1 \cdot 10^{-5}$ Pa m^3/s
0.25 kW	0.75 kW	1.5 kW	1.5 kW	4.0 kW	7.5 kW
0.30 kW	0.90 kW	1.5 kW	1.8 kW	4.5 kW	9.0 kW
9.0 m^3/h	20 m^3/h	32 m^3/h	62 m^3/h	115 m^3/h	250 m^3/h
10.5 m^3/h	24 m^3/h	36 m^3/h	70 m^3/h	135 m^3/h	300 m^3/h
No	Yes, 1-phase	No	No	No	No
IP 55	IP 54–55	IP 55	IP 55	IP 55	IP 55
12–40 °C	12–40 °C	12–40 °C	12–40 °C	12–40 °C	12–40 °C

Duo 11 ATEX	Duo 20 M	Duo 35 M	Duo 65 M	Duo 125 M	Duo 255 M
	PK D63 712				
	PK D63 707				
PK D59 905	**PK D63 105**	**PK D45 028**	**PK D46 028**	**PK D47 152**	**PK D48 152**
	PK D63 115	**PK D45 023**	**PK D46 023**		
	PK D63 110				

	Duo 20 MC	Duo 35 MC	Duo 65 MC
	PK D63 732		
	PK D63 727		
	PK D63 125	**PK D45 027**	**PK D46 036**
			PK D46 025

Additional models available

Duo 5 M	Duo 10 M
PK D61 105	PK D62 105
PK D61 707	PK D62 707
PK D61 712	PK D62 712
Duo 5 MC	**Duo 10 MC**
PK D61 727	PK D62 727
PK D61 732	PK D62 732

Accessories

Order numbers accessories

	Duo 1.6 / M	Duo 3 / M	Duo 6 / M	Duo 11 / M
KAS, condensate separator	PK Z10 003	PK Z10 003	PK Z10 003	PK Z10 003
OME S, oil mist filter, simple version	PK Z40 000	PK Z40 000	PK Z40 000	PK Z40 000
OME M, oil mist filter high gas throughput	PK Z40 003	PK Z40 003	PK Z40 003	PK Z40 003
ODK, oil return unit from OME S to pump	PK 005 968 -T	PK 005 968 -T	PK 005 968 -T	PK 005 968 -T
ODK, oil return unit from OME M to pump	PK 006 080 -T	PK 006 080 -T	PK 006 080 -T	PK 006 080 -T
SAS, dust separator	PK Z60 506	PK Z60 506	PK Z60 506	PK Z60 506
KLF, cold trap	–	–	–	–
URB, catalytic trap	–	–	–	–
ST, sorption trap	PK Z70 011	PK Z70 011	PK Z70 011	PK Z70 011
Operations monitoring unit 1 (oil niveau)	PK 196 148 -T	PK 196 148 -T	PK 196 148 -T	PK 196 148 -T
Operations monitoring unit 2 (oil niveau, oil temperature)	PK 196 147 -T	PK 196 147 -T	PK 196 147 -T	PK 196 147 -T
Operations monitoring unit 3 (oil niveau, oil temperature, exhaust pressure)	PK 196 146 -T	PK 196 146 -T	PK 196 146 -T	PK 196 146 -T
Operating fluid level monitoring	–	–	–	–
Temperature sensor for operating fluid	–	–	–	–
Oil pressure switch	–	–	–	–
OFM, mechanical oil filter	–	–	–	–
Gas ballast valve with magnet valve	PK 194 343 -U	PK 194 343 -U	PK 194 343 -U	PK 194 343 -U
Gas ballast valve C version	PK 194 144 -U	PK 194 144 -U	PK 194 144 -U	PK 194 144 -U
Resistor tripping unit (PTC) for 3-ph motor	–	–	P 4768 052 FQ	P 4768 052 FQ
Mains cable 2 m with safety plug	PK 050 109	PK 050 109	PK 050 109	PK 050 109
Mains cable 2 m with NEMA-plug	PK 050 110	PK 050 110	PK 050 110	PK 050 110
Mains cable 3 m without plug	PK 050 111	PK 050 111	PK 050 111	PK 050 111
Operating fluid P3, mineral oil, 1 l	PK 001 106 -T	PK 001 106 -T	PK 001 106 -T	PK 001 106 -T
Operating fluid P3, mineral oil, 5 l	PK 001 107 -T	PK 001 107 -T	PK 001 107 -T	PK 001 107 -T
Operating fluid P3, mineral oil, 20 l	PK 001 108 -T	PK 001 108 -T	PK 001 108 -T	PK 001 108 -T
Operating fluid D1, synthetic diester based oil, 1 l	PK 005 875 -T	PK 005 875 -T	PK 005 875 -T	PK 005 875 -T
Operating fluid D1, synthetic diester based oil, 5 l	PK 005 876 -T	PK 005 876 -T	PK 005 876 -T	PK 005 876 -T
Operating fluid D1, synthetic diester based oil, 20 l	PK 005 877 -T	PK 005 877 -T	PK 005 877 -T	PK 005 877 -T

	Duo 20 M		Duo 65 / M	Duo 125 / M	Duo 255 / M
KAS, condensate separator	**PK Z10 033**		**PK Z10 008**	**PK Z10 010**	**PK Z10 012**
OME S, oil mist filter, simple version	**104200**	**104887**	**104887**	–	–
OME M, oil mist filter high gas throughput	**PK Z40 158**	**PK Z40 150**	**PK Z40 150**	**PK Z40 010**	**PK Z40 012**
ODK, oil return unit from OME S to pump	–	–	–	–	–
ODK, oil return unit from OME M to pump	**PK 196 172 -T**	**PK 005 950 -T**	**PK 005 950 -T**	**PK Z90 065**	**PK Z90 065**
SAS, dust separator	**PK Z60 508**	**PK Z60 510**	**PK Z60 510**	**PK Z60 511**	**PK Z60 512**
KLF, cold trap	**PK Z80 006**	**PK Z80 008**	**PK Z80 008**	**PK Z80 010**	–
URB, catalytic trap, 115 V	**PT U10 761**	**PT U10 261**	**PT U10 261**	–	–
URB, catalytic trap, 230 V	**PT U10 760**	**PT U10 260**	**PT U10 260**	–	–
ST, sorption trap	**104107**	115 V: **104371** 230 V: **053380**	115 V: **104371** 230 V: **053380**	–	–
Operations monitoring unit 1 (oil niveau)	**PK 196 148 -T**	**PK 223 718 AU**	**PK 223 718 AU**	–	–
Operations monitoring unit 2 (oil niveau, oil temperature)	**PK 196 147 -T**	–	–	–	–
Operations monitoring unit 3 (oil niveau, oil temperature, exhaust pressure)	**PK 196 146 -T**	**PK 223 739 AU**	**PK 223 739 AU**	–	–
Operating fluid level monitoring	–	–	–	**PK 006 001 -T**	**PK 006 001 -T**
Temperature sensor for operating fluid	–	–	–	**PK 006 040 -T**	**PK 006 040 -T**
Oil pressure switch	**PK 196 484 -T**	**PK 223 720 -U**	**PK 223 720 -U**	**PK 223 806 -T**	**PK 223 806 -T**
Oil pressure switch for pumps with OFM		**PK 223 741 -U**	**PK 223 741 -U**		
OFM, mechanical oil filter	–	**PK Z90 321**	**PK Z90 321**	**PK Z90 340**	**PK Z90 341**
Gas ballast valve with magnet valve	–	**PK 223 717 -U**	**PK 223 717 -U**	**PK 215 795 -T**	**PK 215 795 -T**
Gas ballast valve C version	–	**PK 223 713 -U**	**PK 223 713 -U**	-	-
Resistor tripping unit (PTC) for 3-ph motor	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**
Mains cable 2 m with safety plug	–	–	–	–	–
Mains cable 2 m with NEMA-plug	–	–	–	–	–
Mains cable 3 m without plug	–	–	–	–	–
Operating fluid P3, mineral oil, 1 l	**PK 001 106 -T**	**PK 001 106 -T**	**PK 001 106 -T**	**PK 001 106 -T**	**PK 001 106 -T**
Operating fluid P3, mineral oil, 5 l	**PK 001 107 -T**	**PK 001 107 -T**	**PK 001 107 -T**	**PK 001 107 -T**	**PK 001 107 -T**
Operating fluid P3, mineral oil, 20 l	**PK 001 108 -T**	**PK 001 108 -T**	**PK 001 108 -T**	**PK 001 108 -T**	**PK 001 108 -T**
Operating fluid D1, synthetic diester based oil, 1 l	**PK 005 875 -T**	**PK 005 875 -T**	**PK 005 875 -T**	**PK 005 875 -T**	**PK 005 875 -T**
Operating fluid D1, synthetic diester based oil, 5 l	**PK 005 876 -T**	**PK 005 876 -T**	**PK 005 876 -T**	**PK 005 876 -T**	**PK 005 876 -T**
Operating fluid D1, synthetic diester based oil, 20 l	**PK 005 877 -T**	**PK 005 877 -T**	**PK 005 877 -T**	**PK 005 877 -T**	**PK 005 877 -T**

	Duo 3 MC	Duo 6 MC	Duo 11 MC	Duo 20 MC	Duo 35/65 C/MC
KAS C, condensate separator, C version	–	–	–	**PK Z10 406**	**PK Z10 408**
OME C, oil mist filter, C version	**PK Z40 400**	**PK Z40 400**	**PK Z40 400**	**066849**	**PK Z40 152**
ODK, oil return unit from OME C to pump	**PK 005 968 -T**	**PK 005 968 -T**	**PK 005 968 -T**	–	**PK 005 950 -T**
KLF, cold trap	–	–	–	**PK Z80 006**	**PK Z40 008**
ST, sorption trap	–	–	–	115 V: **066845** 230 V: **066841**	115 V: **104371** 230 V: **053380**
Oil pressure switch	–	–	–	–	**PK 223 720 -U**
Oil pressure switch for pumps with OFM	–	–	–	–	**PK 223 741 -U**
OFM, mechanical oil filter	–	–	–	–	**PK Z90 321**
OFC, chemical oil filter	–	–	–	–	**PK Z90 320**
Gas ballast valve with magnet valve	**PK 194 343 -U**	**PK 194 343 -U**	**PK 194 343 -U**	–	**PK 223 717 -U**
Resistor tripping unit (PTC) for 3-ph motor	–	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**
Mains cable 2 m with safety plug	**PK 050 109**	**PK 050 109**	**PK 050 109**	–	–
Mains cable 2 m with NEMA-plug	**PK 050 110**	**PK 050 110**	**PK 050 110**	–	–
Mains cable 3 m without plug	**PK 050 111**	**PK 050 111**	**PK 050 111**	–	–
Operating fluid F4, Perfluorpolyether, 0.25 l	**PK 005 885 -T**	**PK 005 885 -T**	**PK 005 885 -T**	**PK 005 885 -T**	–
Operating fluid F4, Perfluorpolyether, 0.5 l	**PK 005 886 -T**	**PK 005 886 -T**	**PK 005 886 -T**	**PK 005 886 -T**	–
Operating fluid F4, Perfluorpolyether, 1 l	**PK 005 887 -T**	**PK 005 887 -T**	**PK 005 887 -T**	**PK 005 887 -T**	–
Operating fluid A113, Perfluorpolyether, 0.5 l	–	–	–	–	**064657**
Operating fluid A113, Perfluorpolyether, 2.5 l	–	–	–	–	**064659**

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DUO 3 DC

Rotary vane pump with innovative DC drive.
The ideal solution for automotive and analytical applications.

125 YEARS
NOTHING IS BETTER

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تهران، کیلومتر۲۱ بزرگراه لشگری (جاده مخصوص کرج)
روبروی پالایشگاه نفت پارس، پلاک ۱۲

DUO 3 DC

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Rotary vane pump with innovative DC drive. The ideal solution for automotive and analytical applications.

Unique 24 VD C rotary vane pump

With the new Duo 3 DC, Pfeiffer Vacuum presents a 2-stage rotary vane pump that was developed especially for 24 VDC applications. It is the only rotary vane pump in the market that operates in a temperature range from -20 °C to +60 °C. Due to its consumption of less than 100 W in continuous operation, it is extremely energy efficient. The brushless motor and optional magnetic coupling make the Duo 3 DC a very low-maintenance pump.

Adjustable pumping speed

The Duo 3 DC offers a pumping speed of 2.7 m^3/h and an ultimate pressure of $3 \cdot 10^{-3}$ hPa. Due to its innovative speed regulation, it is possible to achieve faster or slower pumping speeds.

Innovative product for the automotive industry

This pump is the solution for developers and suppliers of new, technologies in the automotive sector that need a vacuum pump with a 24 V power supply. The concepts currently being developed in this field will play an important role in the reduction of energy consumption and costs in vehicles. The Duo 3 DC generates the necessary low or fine vacuum to meet the specific requirements of this application.

Low noise level for analytical applications

The analytical industry also offers a wide range of applications for this pump. The quiet operation allows for an installation close to a work space where a 24 V power supply is often readily available.

Customer benefits

- Suitable for operation with the wide range of temperature from -20 to +60 °C
- Specifically designed for automotive and other mobile applications
- Very low noise level < 50 dB (A) allows installation close to a work space
- Low cost of ownership due to power consumption < 100 W
- Low maintenance due to brushless drive and optional magnetic coupling
- Variable speed for use in various applications
- Easy installation and small footprint

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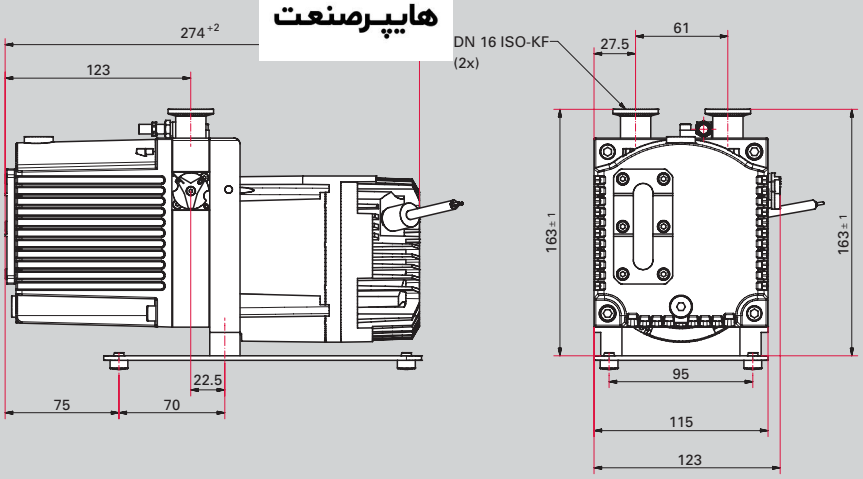
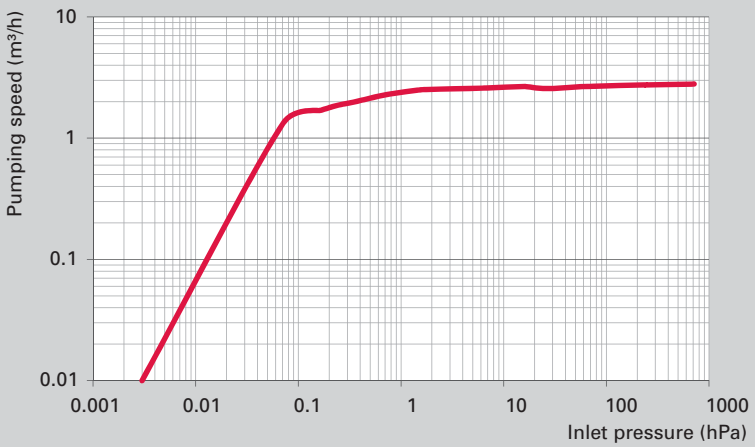
روبروی پالایشگاه نفت پارس، پلاک ۱۲

Dimensions



Dimensions in mm

Pumping speed



Technical data

	Duo 3 DC
Pumping Speed	2.7 m^3/h
Ultimate pressure without gas ballast	$3 \cdot 10^{-3}$ hPa
Ultimate pressure with gas ballast	$3 \cdot 10^{-3}$ hPa
Emission sound pressure level without gas ballast at 50 Hz	< 50 dB(A)
Flange (in)	DN 16 KF
Flange (out)	DN 16 KF
Magnetic coupling	Optionally
Leak rate safety valve	$< 10^{-5}$ Pa m^3/s
Rated power (at ultimate vacuum)	< 100 W
Operating fluid (others available on request)	Inland 45
Operating fluid filling	0.4 l
Rotation speed	3,000 min^{-1}
Ambient temperature	-20 to +60 °C
Weight	7 kg
Cooling method, standard	Air
Exhaust pressure, max	1,500 hPa
Exhaust pressure, min	250 hPa
Mains	24 V DC

Order number

	Order number
Duo 3 DC	**PK D57 553**

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تهران، کیلومتر۲۱ بزرگراه لشگری (جاده مخصوص کرج)
روبروی پالایشگاه نفت پارس، پلاک ۱۲

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DUO 11 ATEX

Magnetically coupled rotary vane pumps with ATEX certification.
Meet highest requirements for explosion protection.

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تهران، کیلومتر۲۱ بزرگراه لشگری (جاده مخصوص کرج)
روبروی پالایشگاه نفت پارس، پلاک ۱۲

DUO 11 ATEX

Magnetically coupled rotary vane pumps with ATEX certification. Meet highest requirements for explosion protection.

Explosion protected

Pfeiffer Vacuum has developed the Duo 11 ATEX rotary vane pump especially for processes that take place in explosive environments or for evacuating explosive gases and vapors. It is certified in accordance with ATEX directive 2014/34/EU and meets the high requirements for explosion protection.

The ATEX certification is valid for the interior and exterior of the pump. The pump corresponds to equipment category 3G and temperature class T3. All gases up to explosive group IIC can be pumped.

Magnetically coupled

The pumping speed is 9 m^3/h at 50 Hz and 10.5 m^3/h at 60 Hz. The Duo 11 ATEX is equipped with a frictionless magnetic coupling. Thus, the shaft seals that are usually installed in rotary vane pumps can be omitted. The magnetic coupling provides additional safety that is particularly important when the pump is used in potentially explosive atmospheres: No gases can leak through defective seals from the interior of the pump to the exterior.

Safe

For the operation of the pump, the terms of the operating instructions apply. We are pleased to provide you with the right solution for your specific application!

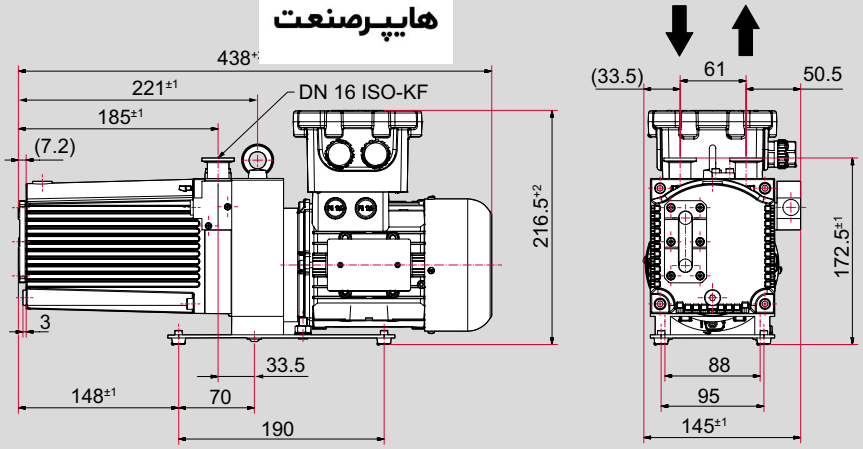
Customer benefits

- Installation without additional flame arresters possible
- Pump is hermetically sealed – no zone entrainment of explosive gases
- Explosion proof internally and externally – flexible operation
- Ex-proof three-phase motor with low noise and vibration
- Most compact pump in class for easy integration

Applications

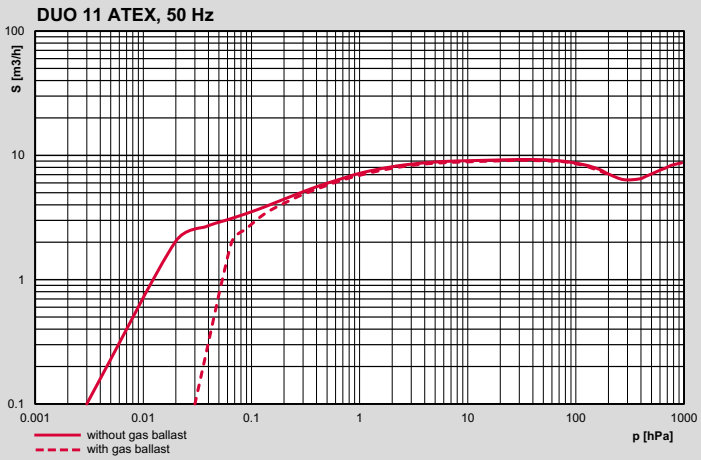
- Analytics
- Chemical laboratories
- Gas handling
- Biotechnology

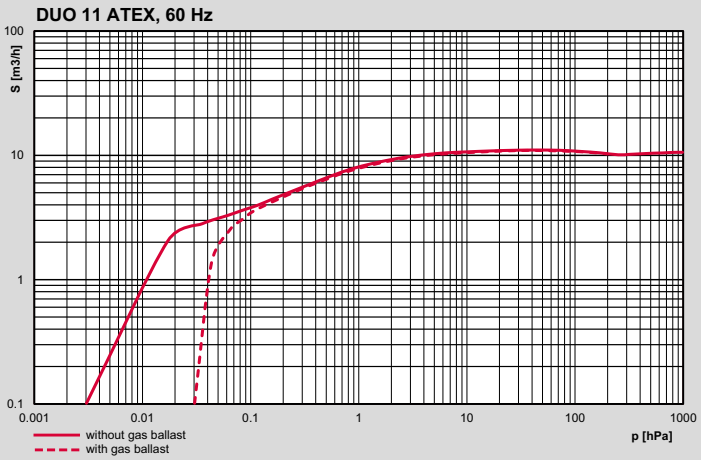
Dimensions



Dimensions in mm

Pumping speed





Technical data

	Duo 11 ATEX
Dimensions (L x W x H)	440 x 146 x 219 mm
Flange (in)	DN 16 ISO-KF
Flange (out)	DN 16 ISO-KF
Pumping speed at 50 Hz	9 m^3/h
Pumping speed at 60 Hz	10.5 m^3/h
Ultimate pressure with gas ballast	$3 \cdot 10^{-2}$ hPa
Ultimate pressure without gas ballast	$3 \cdot 10^{-3}$ hPa
Exhaust pressure, min	250 hPa
Exhaust pressure, max	1,500 hPa
Rotation speed at 50 Hz	3,000 min^{-1}
Rotation speed at 60 Hz	3,600 min^{-1}
Leak rate safety valve	$\leq 1 \cdot 10^{-5}$ Pa m^3/s
Emission sound pressure level without gas ballast at 50 Hz	54 dB (A)
Ambient temperature	12–40 °C
Protection category	IP66
Rated power 50 Hz	0.25 kW
Rated power 60 Hz	0.3 kW
Transport-und Lagertemperatur	-10 – +40 °C
Operating fluid	P3
Operating fluid filling	0.5 l
Weight	15.3 kg
Cooling method, standard	Air

Typical ultimate pressure according to PNEUROP

Order number

	Order number
Duo 11 ATEX	**PK D59 905**

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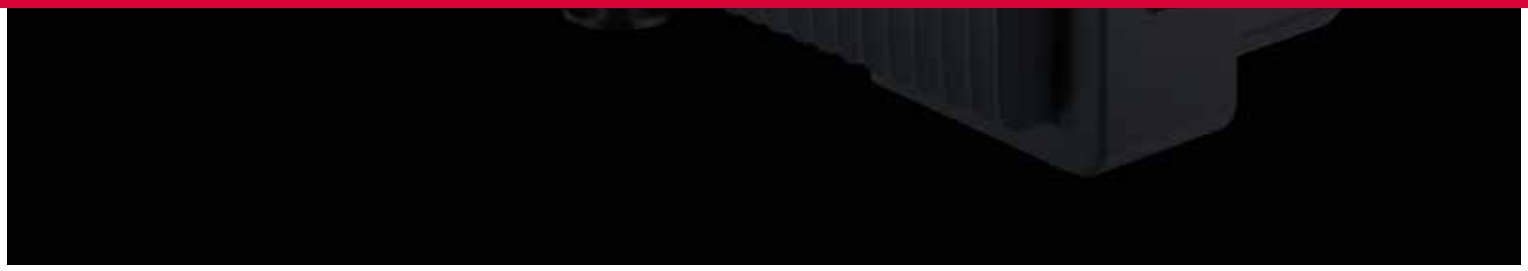
PASCAL

Two-stage rotary vane pumps for low and medium vacuum



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روبروی پالایشگاه نفت پارس، پلاک ۱۲

PASCAL

Two-stage rotary vane pumps for low and medium vacuum

Two-stage Pascal rotary vane pumps are the result of decades of experience in the design and industrial production of vacuum pumps. The number of pumps used worldwide exceeds 500,000 units.

Pumps of the Pascal series with a pumping speed between 5 and 22 m^3/h are used in the most demanding applications in industry, analytics and research & development.

They are distinguished by their high quality and reliability. Four versions of oil-lubricated Pascal pumps allow for optimal adjustment to different requirements. The following versions are available:

- SD version for all vacuum applications with non-corrosive gases in the medium vacuum range
- I version for the requirements of instrumental analytics and high gas throughput
- C1 version for applications with aggressive or corrosive gases
- C2 version for harsh duty applications with the most aggressive pumping environment

All pumps from I, C1 and C2 series contain a forced lubrication system, that ensures highest reliability in processes with high gas throughput.

Customer benefits

- High process reliability
- Worldwide application due to universal motor
- Easy process integration due to various operation fluids
- Low noise level, typically 49 dB for I version
- Low oil back streaming
- Low cost of ownership

Typical applications

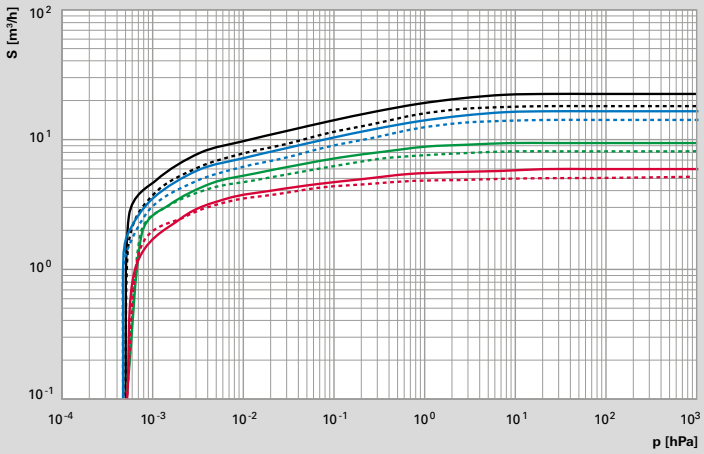
- Electron microscopy
- Residual gas analysis
- Hard disk coating
- Wear protection
- CD, DVD, Blu-ray production
- Optical coatings
- Vacuum drying
- Space simulation
- Medical applications

PASCAL

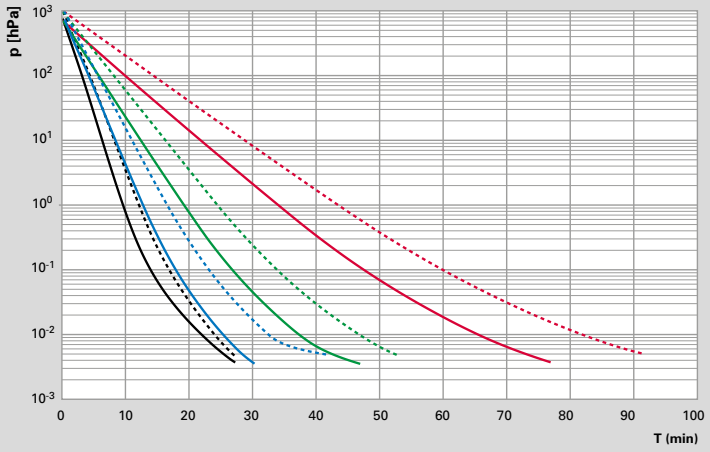
Pumping speed and dimensions

Pumping speed

Pascal 2005–2021

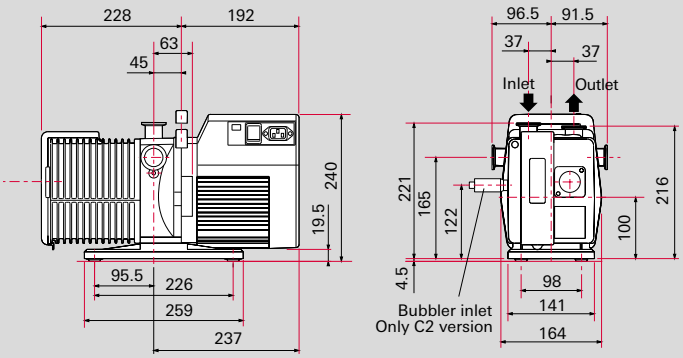


Pascal 2005–2021, inlet pressure drop (volume 500 l)

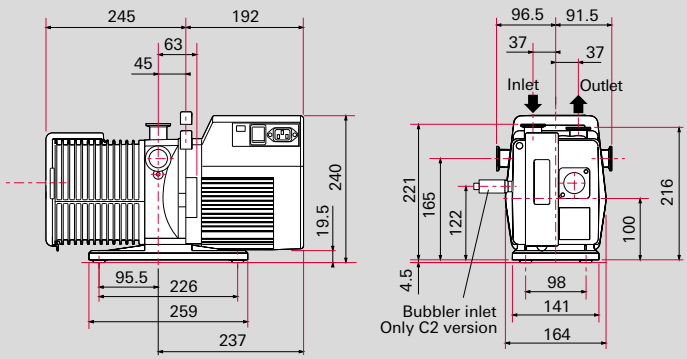


Pascal 2005, 50 Hz
Pascal 2005, 60 Hz
Pascal 2010, 50 Hz
Pascal 2010, 60 Hz
Pascal 2015, 50 Hz
Pascal 2015, 60 Hz
Pascal 2021, 50 Hz
Pascal 2021, 60 Hz

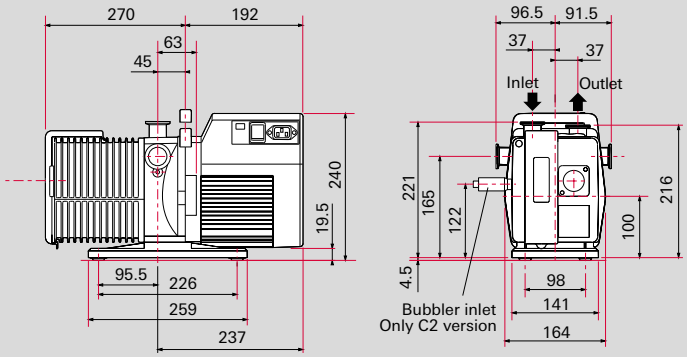
Pascal 2005



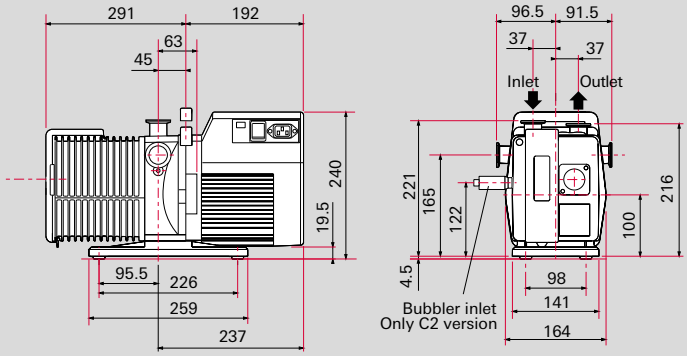
Pascal 2010



Pascal 2015



Pascal 2021



Dimensions in mm

PASCAL

Technical data, order numbers and accessories

Technical data

	Pascal 2005	Pascal 2010	Pascal 2015	Pascal 2021
Flange (in)	DN 25 ISO-KF	DN 25 ISO-KF	DN 25 ISO-KF	DN 25 ISO-KF
Flange (out)	DN 25 ISO-KF	DN 25 ISO-KF	DN 25 ISO-KF	DN 25 ISO-KF
Pumping speed at 50 Hz	5 m^3/h	9 m^3/h	14 m^3/h	18 m^3/h
Pumping speed at 60 Hz	6 m^3/h	10.5 m^3/h	16.5 m^3/h	22 m^3/h
Ultimate pressure without gas ballast	$5 \cdot 10^{-4}$ hPa	$5 \cdot 10^{-4}$ hPa	$5 \cdot 10^{-4}$ hPa	$5 \cdot 10^{-4}$ hPa
Ultimate pressure with gas ballast	10^{-2} hPa	10^{-2} hPa	10^{-2} hPa	10^{-2} hPa
Operating fluid filling	0.83	0.95	0.95	0.98
Protection category	IP43	IP43	IP43	IP43
Mains requirement 50 Hz	0.45 kW	0.45 kW	0.45 kW	0.45 kW
Mains requirement 60 Hz	0.55 kW	0.55 kW	0.55 kW	0.55 kW
Rotation speed at 50 Hz	1,500 rpm	1,500 rpm	1,500 rpm	1,500 rpm
Rotation speed at 60 Hz	1,800 rpm	1,800 rpm	1,800 rpm	1,800 rpm
Ambient temperature	12–45 °C	12–45 °C	12–45 °C	12–45 °C
Weight	25 kg	26 kg	27 kg	28 kg
Cooling method, standard	Air	Air	Air	Air

Order numbers

	Number of stages	Pumping speed	Series	Type of motor	Voltage[1]	Cable (2 m long)	Oil[2]
	2: Two	**05:** 5 m^3/h **10:** 10 m^3/h **15:** 15 m^3/h **21:** 21 m^3/h	**AE:** I series **SD:** SD series **C1:** C1 series **C2:** C2 series	**M:** 1 ph w. switch **S:** 1 ph w/o switch **T:** 3 ph	**L:** Low voltage **H:** High voltage	**A:** USA **E:** Europe **K:** UK **J:** Japan **S:** Switzerland	**M:** Mineral oil (A120) **N:** Without mineral oil
Order number	**2**	**05**	**AE**	**M**	**L**	**A**	**M**

Example: 205AEMLAM

1)

1 ph (M, S); L (Low voltage)	90–132 V, 50 Hz;	90–132 V, 60 Hz
1 ph (M, S); H (High voltage)	180–254 V, 50 Hz;	180–254 V, 60 Hz
3 ph (T); L (Low voltage)	170–254 V, 50 Hz;	170–300 V, 60 Hz
3 ph (T); H (High voltage)	342–460 V, 50 Hz;	342–520 V, 60 Hz

2) For C2 series, Code N is the only choice: the pump is prepared with A113 synthetic fluid, oil has to be ordered separately

Oil types	Description	Achievable ultimate pressure	Appli	Size	Order number USA	Other countries
A120	General purpose mineral oil, all-purpose oil for 50 Hz	< 3 · 10^{-3} hPa	Air, non-corrosive gases, noble gases; high viscosity	2 liters 5 x 2 liters 56 liters		**068099** **068844** **010991**
A113	Perfluoropolyether synthetic oil	< 5 · 10^{-3} hPa	Oxygen, ozone, halogens, organic and inorganic solvents, high resistance to corrosive gases, suitable for plasma etching, non-flammable	1 kg 2 kg 8 kg 0.5 liter 2.5 liters	**98703** **98704** **98705**	 **064657** **064659**
A119	General purpose mineral oil, all-purpose oil for 60 Hz	< 3 · 10^{-3} hPa	Air, non-corrosive gases, noble gases; low viscosity, therefore good start-up properties at low temperatures	1 liter 1 gallon 55 gallons	**98101** **98102** **98103**	**103855**
A121	Double-distilled mineral synthetic oil with antioxidant additive	< 3 · 10^{-3} hPa	Cyclic pumping at atmospheric pressure, for high temperatures and pressures, resistant to acidic and organic vapors; not suitable for plasma etching	1 liter	**14128**	**102724**
A102	Mineral oil with anti-emulsifier	< 3 · 10^{-2} hPa	Oil and water separation (anti-emulsion), water vapor drying and pumping, freeze-drying	2 liters 5 x 2 liters 56 liters	**010996**	**010996** **068853** **010987**
A111	Additivated hydro-carbon anti-emulsion mineral oil	< 1 · 10^{-2} hPa	Gas circulation and gas return; oxidation-sensitive (not suitable for frequent cycles at atmospheric pressure), high pressure, high temperature	1 liter 2 liters 5 x 2 liters	**064656**	 **064655** **068854**
A200	Temperature-stable, mineral synthetic oil, double distilled	< 2 · 10^{-3} hPa	Resistant to corrosive gases and ionizing plasma; low backstreaming	1 liter 1 gallon 55 gallons 3.8 liters 19 liters	**98201** **98202** **98203**	**068694** **068695** **068696**
A300	Double-distilled white mineral oil without additives, CAS Nr 8042-47-5	< 5 · 10^{-3} hPa	High resistance to corrosive gases and ionizing plasma; resistant to halogens and Lewis acids; low backstreaming	1 liter 1 gallon 55 gallons 3.8 liters 19 liters	**98301** **98302** **98303**	**068890** **068891** **068892**

A200 & A300: Low viscosity, good start up properties at low temperatures

Ordering information maintenance kits

Model	Major kit	Minor kit	Shaft seal kit
2005 I	**103906**	**103912**	**65612**
2010 I	**103907**	**103912**	**65612**
2015 I	**103908**	**103912**	**65612**
2021 I	**103909**	**103912**	**65612**
2005 SD	**103902**	**103911**	**65875**
2010 SD	**103903**	**103911**	**65875**
2015 SD	**103904**	**103911**	**65875**
2021 SD	**103905**	**103911**	**65875**
2005 C1	**104976**	**104975**	**65612**
2010 C1	**104977**	**104975**	**65612**
2015 C1	**104978**	**104975**	**65612**
2021 C1	**104979**	**104975**	**65612**
2010 C2	**104614**	**104975**	**65612**
2015 C2	**104615**	**104975**	**65612**
2021 C2	**104616**	**104975**	**65612**
1005 SD	**104622**	**103911**	**65875**
1015 SD	**104643**	**105515**	**65875**

In order to simplify maintenance performed on-site, Pfeiffer Vacuum offers maintenance kits including interchangeable components:

- Minor kit includes all necessary seals (shaft seals, o-rings, valves...).
- Major kit includes minor kit plus vanes, springs, plugs...
- Shaft seal kit includes lip seals necessary for fast periodic renewal of external shaft sealing.
- Shaft sleeves of 5 – 21 m^3/h pumps are not included in the kits. These Cr_2O_3 coated sleeves are very resistant and do not require replacement.
- If the sleeve shows signs of wear, it needs to be ordered separately with the following part number: **Order number 065823**.

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HenaLine

Complete range of single-stage rotary vane pumps in various designs for low and medium vacuum applications. Robust. Flexible. High performance.

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روبروی پالایشگاه نفت پارس، پلاک ۱۲

HenaLine

Complete range of single-stage rotary vane pumps in various designs for low and medium vacuum applications. Robust. Flexible. High performance.

HenaLine

The HenaLine is a complete series of oil-sealed rotary vane pumps that are suitable for industrial applications, coating as well as for Research & Development. The exhaust air remains clean and oil-free thanks to the built-in oil mist separator. The HenaLine pumps are available with a pumping speed of 25 to 760 m^3/h.

The HenaLine is available in different versions:
Basic version: It is characterized by the use of extremely robust slides and bearings, which guarantee maximum availability and operational safety.
K version: The pumping station version of the HenaLine. It has a special inlet flange and base frame so that OktaLine or HiLobe Roots pumps can be mounted directly on the Hena.

What are the advantages?

Whether as a single pump or as a backing pump for our OktaLine and HiLobe in medium vacuum applications: The HenaLine stands for maximum flexibility and cost-efficiency at all times. As a backing pump in our CombiLine Roots pumping stations, it is the ideal solution for your applications in metallurgy, helium leak detection or vacuum drying and degassing.

Efficient

Hena 202 and 302, in particular, are designed to be extremely efficient. They are characterized by a 20% lower power consumption compared to comparable products. Thanks to the optional water cooling, up to 50% of the waste heat can be used as process or heating energy. This also reduces the CO_2 emissions of the overall system.

Safe

Oil mist separators, oil return and safety valve are integrated as standard in this series. They prevent pollution of the ambient air and protect both the pump and your system. The gas ballast device also ensures the pumping of water vapor and other process vapors. The HenaLine delivers top performance in every way!

Customer benefits

- Clean exhaust air through the integrated oil mist separator with unparalleled high separation
- High energy efficiency thanks to intelligent design and optional energy recovery through cooling water
- Maximum reliability as well as process reliability thanks to oil-lubricated roller bearings and robust gate valves
- Worldwide network coverage with only two motor variants due to specially developed OEM motors
- Low maintenance costs thanks to direct drive and long oil change intervals

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روبروی پالایشگاه نفت پارس، پلاک ۱۲

Applications

Industry
- Electron beam welding
- Lithium ion batteries
- Surface coating
- Vacuum drying and degassing
- Leak detection
- Metallurgy
- Gas recovery
- Locks/transfer chambers
- General process technology

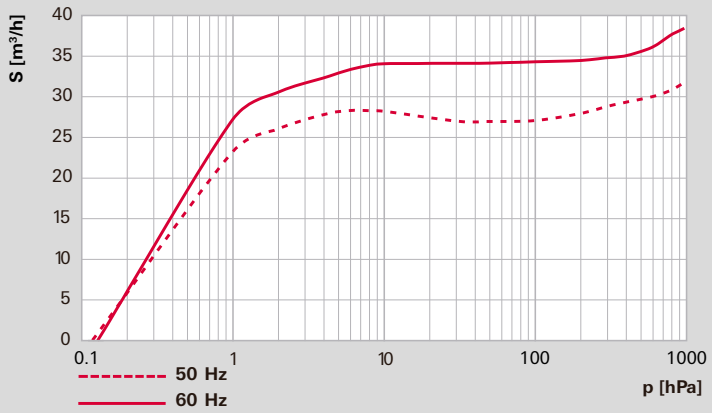
Research & Development
- Simulation chambers (air conditioning & refrigeration technology, aerospace)

Coating
- Optical coating
- Wear protection

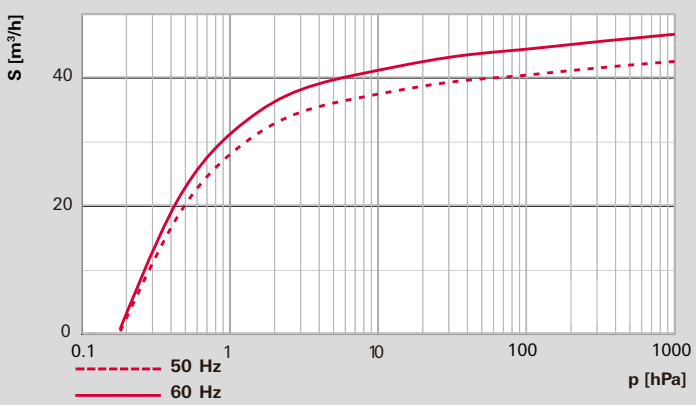
HenaLine

Nominal pumping speed

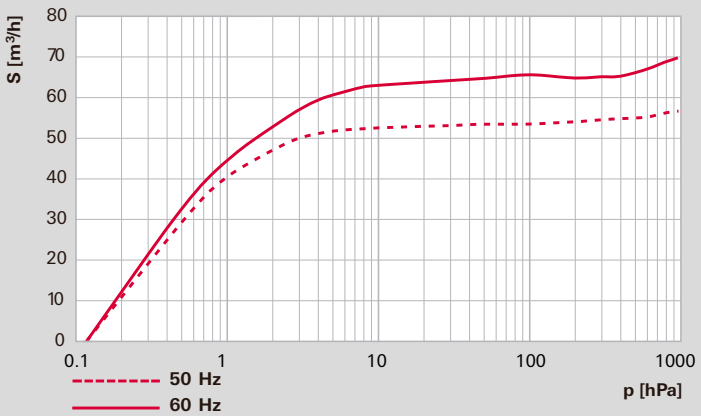
Hena 26



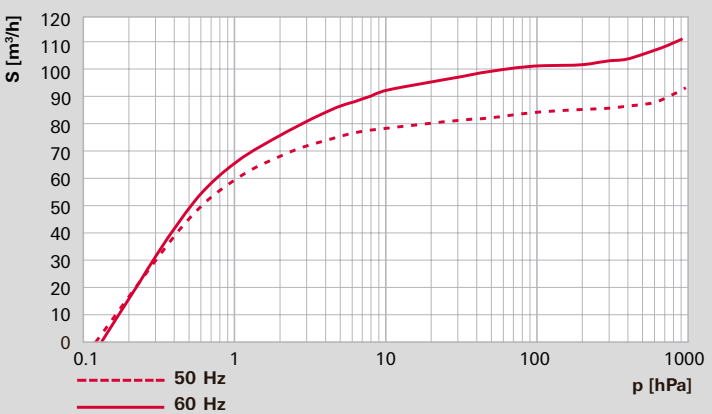
Hena 41



Hena 61



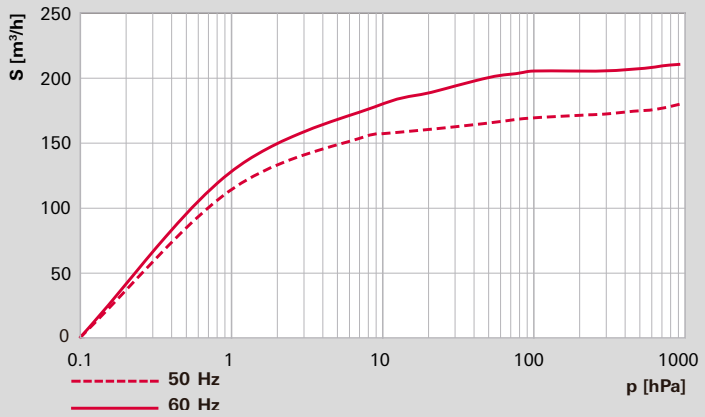
Hena 101



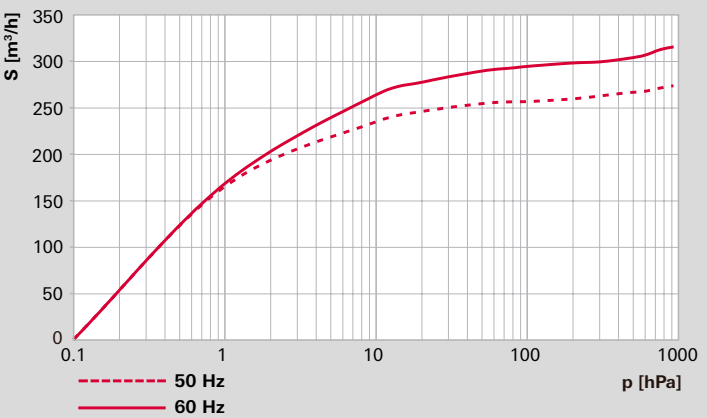
Carbide tool (turning tool), manufactured by sintering

Leak detection

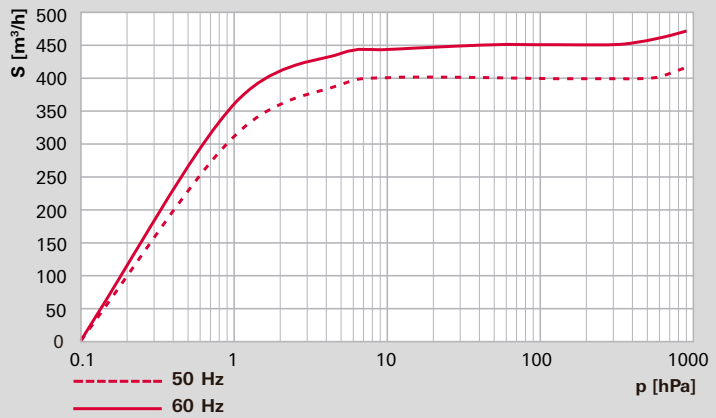
Hena 201 R / Hena 202 / Hena 202 K



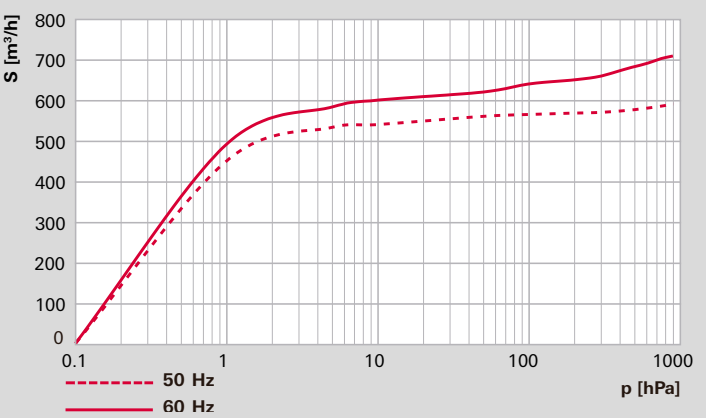
Hena 301 R / Hena 302 / Hena 302 K



Hena 401 / Hena 401 K



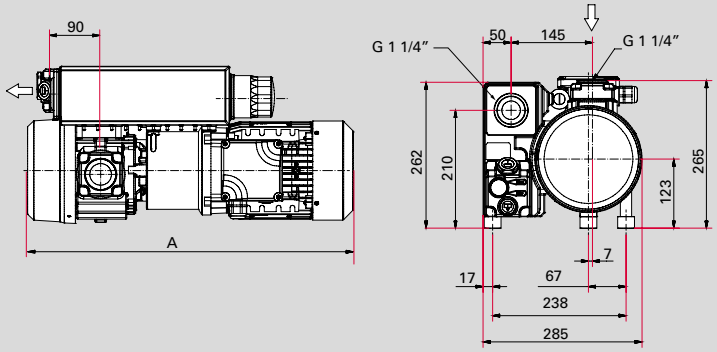
Hena 631 / Hena 631 K



HenaLine

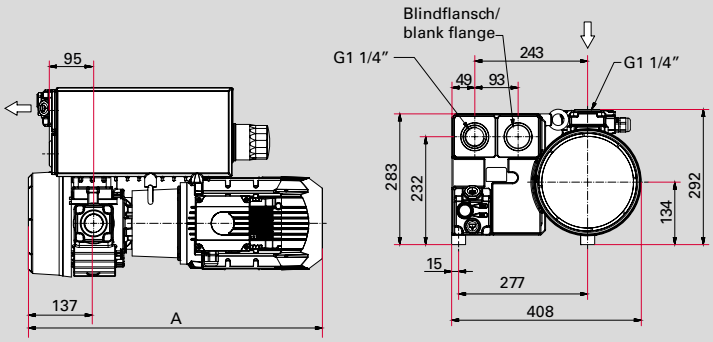
Dimensions

Hena 26 / Hena 41



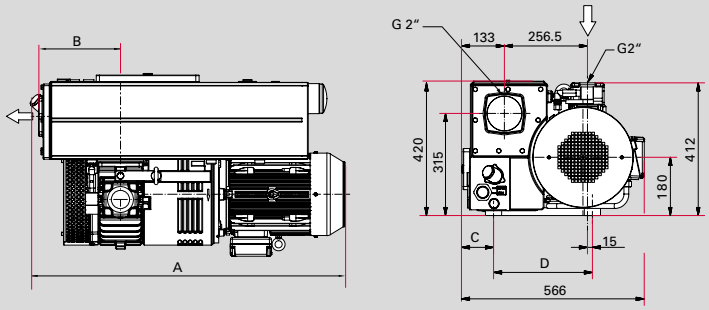
	Hena 26	Hena 41
A	589	629

Hena 61 / Hena 101



	Hena 61	Hena 101
A	633	695

Hena 201 R / Hena 301 R



	Hena 201 R	Hena 301 R
A	974	1075
B	253	298
C	99	49
D	253	298

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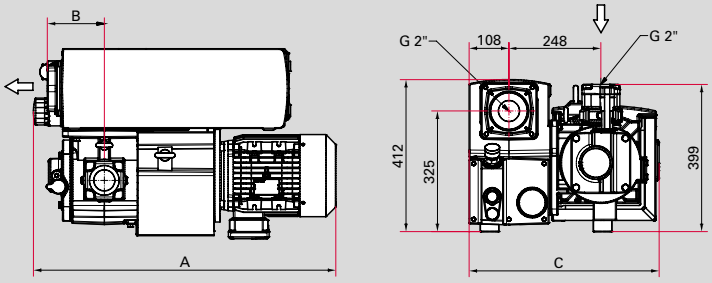
روبروی پالایشگاه نفت پارس، پلاک ۱۲

Optical coating

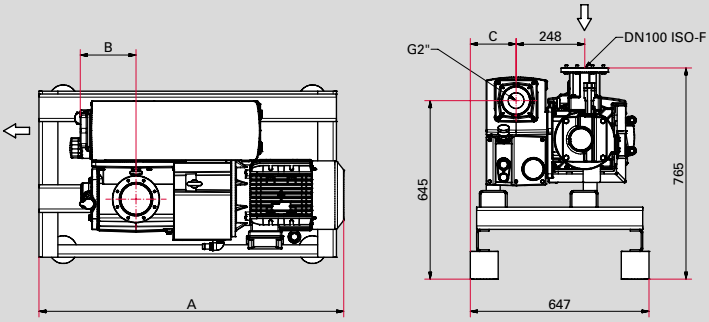
Wear protection

Hena 202 / Hena 302



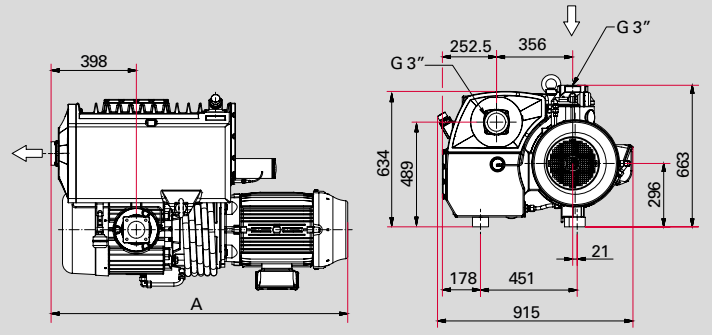
	Hena 202	Hena 302
A	817	990
B	153	201
C	514	537

Hena 202 K / Hena 302 K



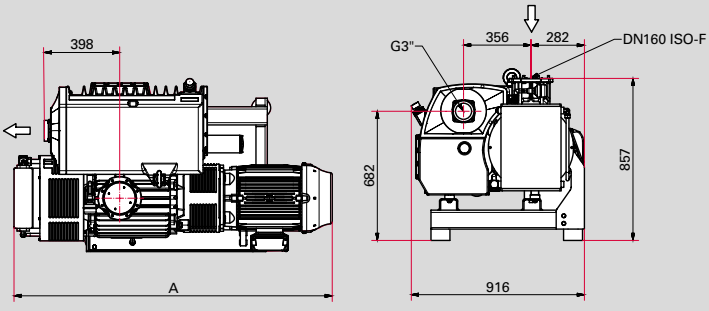
	Hena 202 K	Hena 302 K
A	1076	1102
B	153	201
C	135	165

Hena 401 / Hena 631



	Hena 401	Hena 631
A	1387	1684

Hena 401 K / Hena 631 K



	Hena 401 K	Hena 631 K
A	1387	1682

Dimensions in mm

HenaLine

Technical data

	Hena 26	Hena 41	Hena 61	Hena 101	Hena 201 R
Nominal pumping speed 50 Hz	25 m^3/h	40 m^3/h	63 m^3/h	100 m^3/h	200 m^3/h
Nominal pumping speed 60 Hz	30 m^3/h	48 m^3/h	76 m^3/h	120 m^3/h	240 m^3/h
Final pressure with gas ballast (P3)	≤1.5 hPa	≤1.5 hPa	≤1.5 hPa	≤1.5 hPa	≤0.5 hPa
Final pressure without gas ballast (P3)	≤0.15 hPa	≤0.15 hPa	≤0.15 hPa	≤0.15 hPa	≤0.1 hPa
Rated power 50 Hz	1 kW	1.4 kW	2 kW	2.7 kW	5.5 kW
Rated power 60 Hz	1.2 kW	1.7 kW	2.4 kW	3.4 kW	6.6 kW
RPM at 50 Hz	1,500 min^{-1}	1,500 min^{-1}	1,500 min^{-1}	1,500 min^{-1}	1,500 min^{-1}
RPM at 60 Hz	1,800 min^{-1}	1,800 min^{-1}	1,800 min^{-1}	1,800 min^{-1}	1,800 min^{-1}
Gas ballast	Yes, without shut-off valve				Yes
Inlet pressure in continuous operation, max.	< 800 hPa	< 800 hPa	< 800 hPa	< 800 hPa	< 800 hPa
Emission sound pressure level without gas ballast at 50 Hz	≤ 60 dB (A)	≤ 63 dB (A)	≤ 64 dB (A)	≤ 65 dB (A)	≤ 72 dB (A)
Emission sound pressure level without gas ballast at 60 Hz	≤ 63 dB (A)	≤ 66 dB (A)	≤ 67 dB (A)	≤ 68 dB (A)	≤ 74 dB (A)
Operating fluid quantity	1 l	1 l	2 l	2 l	6.5 l

Hena 26 / Hena 41

Hena 61 / Hena 101

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روبروی پالایشگاه نفت پارس، پلاک ۱۲

Hena 202 / Hena 202 K	Hena 301 R	Hena 302 / Hena 302 K	Hena 401 / Hena 401 K	Hena 631 / Hena 631 K
200 m^3/h	300 m^3/h	300 m^3/h	410 m^3/h	630 m^3/h
240 m^3/h	360 m^3/h	360 m^3/h	480 m^3/h	760 m^3/h
≤0.5 hPa	≤0.5 hPa	≤0.5 hPa	≤0.5 hPa	≤0.5 hPa
≤0.1 hPa	≤0.1 hPa	≤0.1 hPa	≤0.1 hPa	≤0.1 hPa
4.0 kW	7.5 kW	5.5 kW	13.5 kW	15 kW
4.2 kW	9.2 kW	6.6 kW	15 kW	18.5 kW
1,500 min^{-1}	1,500 min^{-1}	1,500 min^{-1}	1,000 min^{-1}	1,000 min^{-1}
1,800 min^{-1}	1,800 min^{-1}	1,800 min^{-1}	1,200 min^{-1}	1,200 min^{-1}
Yes	Yes	Yes	Yes	Yes
< 100 hPa	< 800 hPa	< 100 hPa	< 800 hPa	< 800 hPa
≤ 68 dB (A)	≤ 74 dB (A)	≤ 70 dB (A)	≤ 77 dB (A)	≤ 77 dB (A)
≤ 72 dB (A)	≤ 76 dB (A)	≤ 72 dB (A)	≤ 79 dB (A)	≤ 79 dB (A)
7 l	6.5 l	7 l	12 l	15 l

Hena 201 R / Hena 301 R

Hena 401 / Hena 631

HenaLine

Order number matrix, accessories

HenaLine order matrix

PO number

PK D04 XXa bcd

Size	XX
Hena 26	10
Hena 41	11
Hena 61	12
Hena 101	13
Hena 201/202	14
Hena 301/302	16
Hena 401	17
Hena 631	18

Version	a
Standard[4]	1
Rough Vacuum (R)[1]	6
Combi Version (K)[2]	7
No gas ballast[5]	9

Cooling method	b
Air cooling	1
Water cooling[2]	2

Motor	c
Three-phase world motor	1
Three-phase Brazil/Japan/Korea motor	2
NEMA Motor	3
without motor	4
Without motor, NEMA flange	5
Single-phase motor[3]	6

Oil	d
D1	1
P3	2
H1	3

[1] Not for Hena 201/301
[2] Not available for Hena 26-101
[3] Not for Hena 26
[4] Open gas ballast for Hena 26 and 41
[5] Only available for Hena 26 and 41

Accessories

Type	Hena 26	Hena 41	Hena 61	Hena 101
Screw-in flange for inlet and outlet	DN 40 ISO-KF **PK 300 525**	DN 40 ISO-KF **PK 300 525**	DN 40 ISO-KF **PK 300 525**	DN 40 ISO-KF **PK 300 525**
Dust separators	SAS 40 **PK Z60 510**	SAS 40 **PK Z60 510**	SAS 40 **PK Z60 510**	SAS 40 **PK Z60 510**
Condensate separator	KAS 40 **PK Z10 008**	KAS 40 **PK Z10 008**	KAS 40 **PK Z10 008**	KAS 40 **PK Z10 008**
Manual gas ballast valve manually	–	–	**PK 100 150**	**PK 100 150**
24 V gas ballast solenoid valve	–	–	**PK 100 143 -U**	**PK 100 144 -U**
Gas ballast screw plug	–	–	**N 3191 431 5P**	**N 3191 431 5P**
Manometer for air deoiling element	**PK 100 126**	**PK 100 126**	**PK 100 126**	**PK 100 126**
PTC-resistor tripping device 24 V AC/DC	**P 4768 052 FE**	**P 4768 052 FE**	**P 4768 052 FE**	**P 4768 052 FE**
PTC-resistor tripping device 220–240V AC	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**
Oil level switch/unit	**PK 100 138 -T**	**PK 100 138 -T**	**PK 100 138 -T**	**PK 100 138 -T**
Oil temperature switch	–	–	–	–
Oil level/temperature combination switch for operating fluid D1	–	–	–	–

Type	Hena 202 / Hena 201 R	Hena 302 / Hena 301 R	Hena 401	Hena 631
Screw-in flange for inlet and outlet	DN 63 ISO-K **PK 100 059**	DN 63 ISO-K **PK 100 059**	–	–
Screw-in flange for inlet and outlet	DN 100 ISO-K **PK 100 058**	DN 100 ISO-K **PK 100 058**	DN 100 ISO-K **PK 100 061**	DN 100 ISO-K **PK 100 061**
Dust separators	SAS 63 **PK Z60 511**	SAS 63 **PK Z60 511**	SAS 100 **PK Z60 512**	SAS 100 **PK Z60 512**
Condensate separator	KAS 63 **PK Z10 010**	KAS 63 **PK Z10 010**	KAS 100 **PK Z10 012**	KAS 100 **PK Z10 012**
Manual gas ballast valve	Series	Series	Series	Series
24 V gas ballast solenoid valve	**PK 100 145 -U**	**PK 100 145 -U**	**PK 100 141 -U**	**PK 100 141 -U**
Gas ballast screw plug	–	–	–	–
Manometer for air deoiling element	Series	Series	Series	Series
PTC-resistor tripping device 24 V AC/DC	**P 4768 052 FE**	**P 4768 052 FE**	**P 4768 052 FE**	**P 4768 052 FE**
PTC-resistor tripping device 220–240V AC	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**	**P 4768 052 FQ**
Oil level switch	**PK 100 116**	**PK 100 116**	**PK 100 116**	**PK 100 116**
Oil temperature switch	**PK 100 125**	**PK 100 125**	**PK 100 125**	**PK 100 125**
Oil level/temperature combination switch for operating fluid D1	**PK 100 137 -T**	**PK 100 137 -T**	**PK 100 137 -T**	**PK 100 137 -T**

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