

OktaLine™



The Power Pump Portfolio.

**Roots Pumps for Every
Low and Medium Vacuum Application.**

PFEIFFER  **VACUUM**

A complete line of powerful pumps

Our Roots pumps offer pumping speeds ranging from 250 to 25,000 m³/h. They can be safely employed for low and medium vacuum applications in the coating or semiconductor industry, in research & development, metallurgy or in chemistry and process technology.

The gear box and bearing area in our Roots pumps are separated from the gas pumping chamber. Because the rotors operate contact-free, dry, hydrocarbon-free operation is assured.

A further advantage: Thanks to air cooling, operating costs are significantly lower than with water cooling. The pumps can be universally utilized.

The design principle of our proven Roots pumps has also been expanded to include magnetic couplings. These hermetically sealed pumps make oil leaks a thing of the past. We have also developed ATEX certified pumps for processes that take place in explosive environments or for evacuating explosive gases.

Proven in any number of fields



Metallurgy



Air recovery

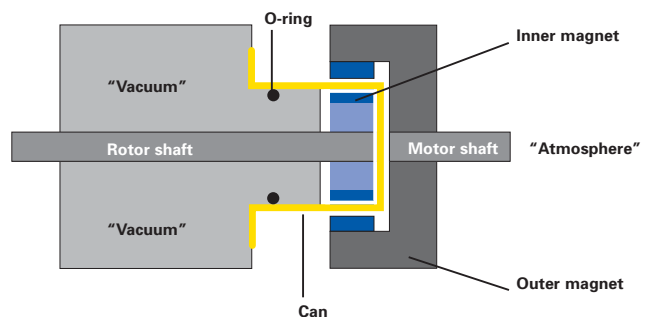


Glass coating

With our CombiLine™, we design and manufacture standard pumping stations for you, as well as custom solutions for your specific application. Our specialists would be pleased to assist you in designing your vacuum system.

With our reliable products, our decades of experience and our know-how, we stand ready to provide you with the optimum solution for your low and medium vacuum needs.

**Pfeiffer Vacuum Roots pumps –
Just right for your application!**



Integral magnetic coupling

Advantages at a glance

- ▶ Complete line of Roots pumps offers optimum flexibility and maximum process suitability
- ▶ Broad range of pumping speeds: 250 to 25,000 m³/h
- ▶ Rugged, compact design
- ▶ Fast evacuation thanks to high compression ratio and overflow valve
- ▶ Maintenance free, maximum reliability and highest uptime thanks to magnetic coupling
- ▶ Low operating costs thanks to air cooling and magnetic coupling
- ▶ No thermal overload thanks to integral overflow valve
- ▶ Long service intervals and simple on-site maintenance
- ▶ On-site service worldwide
- ▶ Over 50 years of experience and competence



Okta 500 AM

Applications

- ▶ Metallurgy
- ▶ Simulation chambers
- ▶ Packaging industry
- ▶ Freeze/vacuum-drying
- ▶ Thin-film technology
- ▶ Electron beam welding
- ▶ Load-locks
- ▶ Chemistry and process technology
- ▶ Industrial leak detection systems
- ▶ Steel degassing

Wide variety of applications

	Roots pumps, sealed with shaft sealing ring		Roots pumps, hermetically sealed		Roots pumps, ATEX series	
	Standard pump (1 bar), gray cast iron (GG), ISO-F flange A Series	Pressure-surge resistant pump (16 bar), nodular graphite cast iron (GGG 40.3), DIN PN 16 flange AD Series	Standard pump (1 bar), gray cast iron (GG), ISO-F flange AM Series	Pressure-surge resistant pump (16 bar), nodular graphite cast iron (GGG 40.3),DIN PN 16 flange ADM Series	Pressure-surge resistant pump (16 bar), nodular graphite cast iron (GGG 40.3), DIN PN 16 flange ADx Series	Pump without otor, PTFE-sealed, Explosion-hazard protected ADEX Series
Semiconductor						
EUV lithography			●	●		
CVD			●	●		
PVD			●	●		
Ion implantation			●	●		
Load-locks/transfer chambers			●	●		
Flat-panel displays			●	●		
Research & development						
Fusion reactors	▲	●	▲	●		
Space simulation chambers	●	▲	●	▲		
Accelerators	●	▲	●	▲		
High-purity gas applications			●	▲		
Coating						
Ophthalmics	●	▲	●	▲	▲	▲
Wear protection	●	▲	●	▲	▲	▲
Large-surface coating	●	▲	●	▲	▲	▲
Decorative coating	●	▲	●	▲	▲	▲
Photovoltaics	●	▲	●	▲		
Industry / chemistry						
Processes involving toxic gases			●	●	*	*
Processes involving aggressive gases		●		●	*	*
Processes in explosive environments – involving explosive gases					●	●
Electron beam welding	●	▲	●	▲		
Packaging industry	●	▲	●	▲		
Central vacuum supply systems	●	▲	●	▲		
Bottling industry/bottling systems	●	▲	●	▲		
Metallurgy	●	▲	●	▲	▲	▲
Leak detection systems	●	▲	●	▲		
Lamp/tube manufacturing	●	▲	●	▲		
Freeze-drying systems	●	▲	●	▲		
Metal degassing	●	▲	●	▲		
Transformer drying	●	▲	●	▲		
Oil regeneration	●	▲	●	▲	▲	▲

● Recommended ▲ Possible * Upon request

Overview of series

A Series:

- ▶ Standard pumps (1 bar)
- ▶ Pumping speeds of 250 to 25,000 m³/h
- ▶ Shaft seals
- ▶ Gray cast iron (GG)

AD Series:

- ▶ Pressure-surge resistant (16 bar)
- ▶ Pumping speeds of 500 to 6,000 m³/h
- ▶ Shaft seals
- ▶ Nodular graphite cast iron (GGG 40.3)

AM Series:

- ▶ Standard pumps (1 bar)
- ▶ Pumping speeds of 250 to 6,000 m³/h
- ▶ Hermetically sealed thanks to magnetic coupling
- ▶ Gray cast iron (GG)

ADM Series:

- ▶ Pressure-surge resistant (16 bar)
- ▶ Pumping speeds of 500 to 6,000 m³/h
- ▶ Hermetically sealed thanks to magnetic coupling
- ▶ Nodular graphite cast iron (GGG 40.3)

ADx Series:

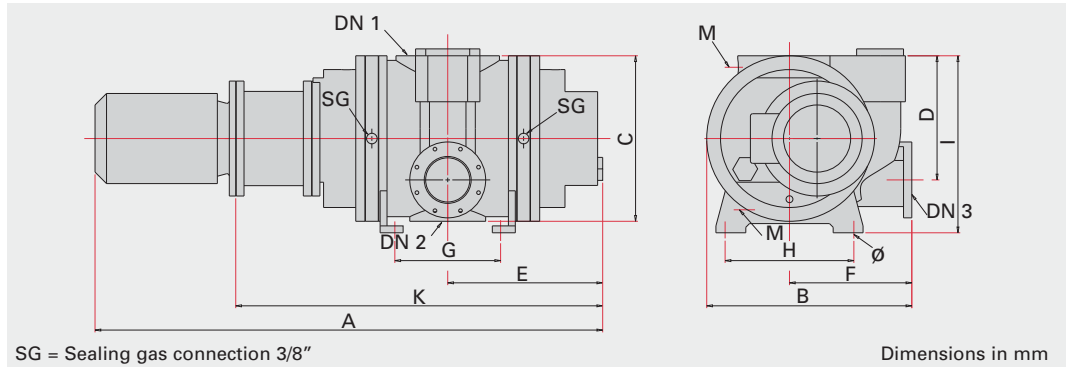
- ▶ Satisfies the explosion protection requirements under European Union Directive 94/9/EC (–(i) / II 3G IIB T3 (o))
- ▶ Pumping speeds of 500 to 4,000 m³/h
- ▶ With and without ATEX-certified motor
- ▶ Nodular graphite cast iron (GGG 40.3)
- ▶ ATEX-certified coupling

ADEx Series:

- ▶ Satisfies the explosion protection requirements under European Union Directive 94/9/EC (II 2G IIB T3 (i) (o))
- ▶ Pumping speeds of 500 to 4,000 m³/h
- ▶ With and without ATEX-certified motor
- ▶ PTFE-sealed
- ▶ Integrated ATEX-certified temperature sensor
- ▶ Nodular graphite cast iron (GGG 40.3)
- ▶ ATEX-certified coupling
- ▶ Can be switched on at 800 mbar without bypass – no need for additional valves



Dimensions

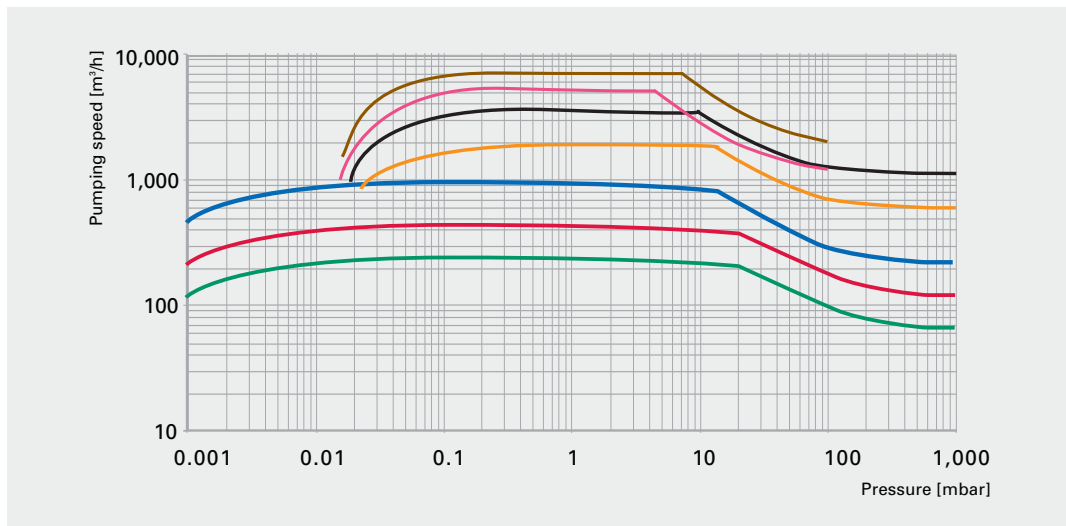


Pump type	Okta 250 ¹⁾	Okta 500	Okta 1000	Okta 2000	Okta 4000		Okta 6000
					50 Hz	60 Hz	
A (A/AD)	770	920	1,126	1,310	1,570	1,630	1,860
A (AM/ADM)	800	950	1,140	1,330	1,630	1,710	1,960
B	323	323	446	502	655	655	655
C	280	280	360	420	510	510	510
D	–	–	270	325	390	390	390
E	220	275	337	373	453	453	578
F	–	–	266	292	400	400	400
G	170	170	230	250	400	400	400
H	220	220	280	360	450	450	450
I	285	285	385	440	542	542	542
K (A/AD)	517	627	784	886	1,069	1,069	1,319
K (AM/ADM)	547	657	798	906	1,131	1,156	1,406
∅	12	12	11	18	18	18	18
DN 1	DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 250 ISO-F	DN 250 ISO-F	DN 250 ISO-F
DN 2	DN 63 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F
DN 3	–	–	DN 100 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F

¹⁾Okta 250 not available in AD or ADM version

Pumping speed

- **Okta 250**
(Dual-stage backing pump 65 m³/h)
- **Okta 500**
(Dual-stage backing pump 120 m³/h)
- **Okta 1000**
(Dual-stage backing pump 250 m³/h)
- **Okta 2000**
(Single-stage backing pump 630 m³/h)
- **Okta 4000**
(Backing pump 1,100 m³/h)
- **Okta 6000**
(Backing pump 1,100 m³/h)
- **Okta 8000**
(Backing pump 1,600 m³/h)



Pumping speeds measured in combination with backing pumps:
 Okta 250 A – 1000 A in combination with two-stage backing pumps
 Okta 2000 A – 8000 in combination with single-stage backing pumps

Accessories

The scope of delivery of our Roots pumps includes the bolts, nuts and seals for the connection flanges. If the pumps are supplied without a motor, the motor lantern, coupling and connection kit for mounting the motor will be included. An initial charge of P3 mineral oil will be included for standard applications in the scope of delivery.

Lubricant

For lubricating the gears and bearings.

Sealing gas supply kit

To protect the operating fluid and components in the oil chambers.

Gear chamber evacuation kit

To save time in connection with high-speed evacuation in less than one minute.

Flushing kit

Suitable for processes that tend to form deposits in the pump chambers.

The design and composition of this kit will be customized for your specific application. In our standard pumps, flushing necessitates the employment of a sealing gas to prevent fluids from reaching the oil chambers.

PTFE sealing material

Especially resistant to aggressive media.

Accessories	Order number
Splinter shield, for Okta 250 A/AM	PK 300 010-X
Splinter shield, for Okta 500 A/AM	PP 030 149 AX
Splinter shield, for Okta 500 AD/ADM	PP 042 350-X
Splinter shield, for Okta 1000/2000 A/AM	PP 031 114-X
Splinter shield, for Okta 1000 AD/2000 AD/ADM	PP 031 115-X
Splinter shield, for Okta 4000/6000 A/AM	PP 031 136-X
Splinter shield, for Okta 4000 AD/6000 AD/ADM	PP 031 137-X
Splinter shield, for Okta 8000/12000	PP 030 152-X
Splinter shield, for Okta 18000/25000	PP 030 336-T

Consumables	Order number
0.5 l P3 Mineral oil	PK 001 136-T
1 l P3 Mineral oil	PK 001 106-T
5 l P3 Mineral oil	PK 001 107-T
20 l P3 Mineral oil	PK 001 108-T
50 l P3 Mineral oil	PK 001 109-T
200 l P3 Mineral oil	PK 001 110-T

0.5 l F5 Perfluoropolyether	PK 001 851-T
1 l F5 Perfluoropolyether	PK 001 852-T
5 l F5 Perfluoropolyether	PK 001 853-T
20 l F5 Perfluoropolyether	PK 001 854-T
50 l F5 Perfluoropolyether	PK 001 855-T

0.5 l D1 Oil	PK 005 881-T
1 l D1 Oil	PK 005 875-T
5 l D1 Oil	PK 005 876-T
20 l D1 Oil	PK 005 877-T
50 l D1 Oil	PK 005 878-T
200 l D1 Oil	PK 005 879-T

More accessories on request

Technical data and order numbers

Pump type	Okta 250 A			Okta 500 A	
	Motor with 50 Hz	Motor with 60 Hz	without motor	Motor with 50 Hz	Motor with 60 Hz
Connection flange* (inlet)	DN 63 ISO-F	DN 63 ISO-F	DN 63 ISO-F	DN 100 ISO-F	DN 100 ISO-F
Connection flange* (outlet)	DN 63 ISO-F	DN 63 ISO-F	DN 63 ISO-F	DN 100 ISO-F	DN 100 ISO-F
Connection flange* (outlet, on the side)	–	–	–	DN 100 ISO-F	DN 100 ISO-F
Nominal pumping speed	270 m³/h	324 m³/h	–	490 m³/h	588 m³/h
Differential pressure at the overflow valve	75 mbar	75 mbar	75 mbar	75 mbar	75 mbar
Differential pressure at the overflow valve ADEx	–	–	–	53 mbar	–
Emission sound pressure level (EN ISO 2151) at intake pressure 1 mbar	70 dB(A)	70 dB(A)	70 dB(A)	70 dB(A)	70 dB(A)
Emission sound pressure level (EN ISO 2151) at intake pressure 10 mbar	75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)
Leak rate: Pumps with shaft sealing	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s
Leak rate: Magnetic coupled pumps	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s
Pump fluid filling	1.5 l	1.5 l	1.5 l	1.5 l	1.5 l
Motor rating	0.75 kW	1.1 kW	–	1.5 kW	2.2 kW
Rotational speed	3,000 RPM	3,600 RPM	–	3,000 RPM	3,600 RPM
Power supply: Voltage**	230/400 V, 50 Hz	230/400 V, 60 Hz	–	230/400 V, 50 Hz	230/400 V, 60 Hz
Weight	95 kg	95 kg	85 kg	125 kg	125 kg

Order numbers					
A Series	PP W21 000	PP W21 002	PP W21 001	PP W31 000	PP W31 002
AD Series	–	–	–	PP W31 700	PP W31 702
AM Series	PP W22 000	PP W22 002	PP W22 001	PP W32 000	PP W32 002
ADM Series	–	–	–	PP W32 700	PP W32 702
ADx-Series	–	–	–	PP W33 200	PP W33 202
ADEx Series	–	–	–	PP W33 000	–

* Connection flanges of series AD, ADM, ADx and ADEx according to EN1092-1/DIN2633, PN 16; raised face according to DIN2526, Form A
 ** Range: ± 10 %

Pump type	Okta 4000 A			Okta 6000 A	
	Motor with 50 Hz	Motor with 60 Hz	without motor	Motor with 50 Hz	Motor with 60 Hz
Connection flange* (inlet)	DN 250 ISO-F	DN 250 ISO-F	DN 250 ISO-F	DN 250 ISO-F	DN 250 ISO-F
Connection flange* (outlet)	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F
Connection flange* (outlet, on the side)	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F
Nominal pumping speed	4,050 m³/h	4,860 m³/h	–	6,075 m³/h	7,290 m³/h
Differential pressure at the overflow valve	25 mbar	25 mbar	25 mbar	20 mbar	20 mbar
Differential pressure at the overflow valve ADEx	20 mbar	–	20 mbar	–	–
Emission sound pressure level (EN ISO 2151) at intake pressure 1 mbar	74 dB(A)	74 dB(A)	74 dB(A)	74 dB(A)	74 dB(A)
Emission sound pressure level (EN ISO 2151) at intake pressure 10 mbar	79 dB(A)	79 dB(A)	79 dB(A)	79 dB(A)	79 dB(A)
Leak rate: Pumps with shaft sealing	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s
Leak rate: Magnetic coupled pumps	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s
Pump fluid filling	6.8 l	6.8 l	6.8 l	6.8 l	6.8 l
Motor rating	11 kW	15 kW	–	15 kW	18.5 kW
Rotational speed	3,000 RPM	3,600 RPM	–	3,000 RPM	3,600 RPM
Power supply: Voltage**	400 V, 50 Hz	400 V, 60 Hz	–	400 V, 50 Hz	400 V, 60 Hz
Weight	600 kg	600 kg	520 kg	850 kg	850 kg

Order numbers					
A Series	PP W71 000	PP W71 004	PP W71 001	PP W76 000	PP W76 004
AD Series	PP W71 700	PP W71 704	PP W71 701	PP W76 700	PP W76 704
AM Series	PP W72 000	PP W72 002	PP W72 001	PP W77 000	PP W77 002
ADM Series	PP W72 700	PP W72 702	PP W72 701	PP W77 700	PP W77 702
ADx-Series	PP W73 200	PP W73 202	PP W73 201	–	–
ADEx Series	PP W73 000	–	PP W71 990	–	–

* Connection flanges of series AD, ADM, ADx and ADEx according to EN1092-1/DIN2633, PN 16; raised face according to DIN2526, Form A
 ** Range: ± 10 %

		Okta 1000 A		Okta 2000 A		
without motor	Motor with 50 Hz	Motor with 60 Hz	without motor	Motor with 50 Hz	Motor with 60 Hz	without motor
DN 100 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F	DN 160 ISO-F
DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F
DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F	DN 100 ISO-F
–	1,070 m³/h	1,284 m³/h	–	2,065 m³/h	2,478 m³/h	–
75 mbar	45 mbar	45 mbar	45 mbar	35 mbar	35 mbar	35 mbar
53 mbar	30 mbar	–	30 mbar	20 mbar	–	20 mbar
70 dB(A)	72 dB(A)	72 dB(A)	72 dB(A)	72 dB(A)	72 dB(A)	72 dB(A)
75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)
1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s
1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s	1 · 10 ⁻⁵ mbar l/s
1.5 l	2.9 l	2.9 l	2.9 l	5 l	5 l	5 l
–	3 kW	4 kW	–	5.5 kW	7.5 kW	–
–	3,000 RPM	3,600 RPM	–	3,000 RPM	3,600 RPM	–
–	230/400 V, 50 Hz	230/400 V, 60 Hz	–	230/400 V, 50 Hz	230/400 V, 60 Hz	–
100 kg	250 kg	250 kg	220 kg	370 kg	370 kg	310 kg

PP W31 001	PP W41 000	PP W41 002	PP W41 001	PP W61 000	PP W61 002	PP W61 001
PP W31 701	PP W41 700	PP W41 702	PP W41 701	PP W61 700	PP W61 702	PP W61 701
PP W32 001	PP W42 000	PP W42 002	PP W42 001	PP W62 000	PP W62 002	PP W62 001
PP W32 701	PP W42 700	PP W42 702	PP W42 701	PP W62 700	PP W62 702	PP W62 701
PP W33 201	PP W43 200	PP W43 202	PP W43 201	PP W63 200	PP W63 202	PP W63 201
PP W31 840	PP W43 000	–	PP W41 950	PP W63 000	–	PP W61 800

		Okta 8000		Okta 18000		
without motor	Motor with 50 Hz	Motor with 60 Hz	without motor	Motor with 50 Hz	Motor with 60 Hz	without motor
DN 250 ISO-F	DN 320 ISO-F	DN 320 ISO-F	DN 320 ISO-F	DN 400 PN 10	DN 400 PN 10	DN 400 PN 10
DN 160 ISO-F	DN 320 ISO-F	DN 320 ISO-F	DN 320 ISO-F	DN 400 PN 10	DN 400 PN 10	DN 400 PN 10
DN 160 ISO-F	DN 250 ISO-F	DN 250 ISO-F	DN 250 ISO-F	DN 320 ISO-F	DN 320 ISO-F	DN 320 ISO-F
–	8,000 m³/h	9,600 m³/h	–	17,850 m³/h	21,420 m³/h	–
20 mbar	27 mbar	27 mbar	27 mbar	10 mbar	10 mbar	10 mbar
–	–	–	–	–	–	–
74 dB(A)	74 dB(A)	74 dB(A)	74 dB(A)	75 dB(A)	75 dB(A)	75 dB(A)
79 dB(A)	78 dB(A)	78 dB(A)	78 dB(A)	79 dB(A)	79 dB(A)	79 dB(A)
1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s	1 · 10 ⁻² mbar l/s
1 · 10 ⁻⁵ mbar l/s	–	–	–	–	–	–
6.8 l	21 l	21 l	21 l	68 l	68 l	68 l
–	22 kW	30 kW	–	45 kW	55 kW	–
–	1,500 RPM	1,800 RPM	–	1,500 RPM	1,800 RPM	–
–	400 V, 50 Hz	400 V, 60 Hz	–	400 V, 50 Hz	400 V, 60 Hz	–
750 kg	1,550 kg	1,600 kg	1,400 kg	3,300 kg	3,300 kg	2,800 kg

PP W76 001	PP W80 000	PP W80 060	PP W80 001	PP W90 000	PP W90 060	PP W90 001
PP W76 701	–	–	–	–	–	–
PP W77 001	–	–	–	–	–	–
PP W77 701	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–

Pfeiffer Vacuum

Leading innovations. Too fast to be copied.

Pfeiffer Vacuum – A name that stands for reliable high-tech products and innovative solutions that support our customers in their applications and pave the way to their success.

Our vacuum technology developments always keep us a step ahead!



All data subject to change without prior notice. PW 0029 PE (September 2008/10)

Sales, service and consulting

- ▶ Worldwide on-site service
- ▶ Comprehensive in-factory and on-site training programs
- ▶ Modular service concept ranging from spare parts to maintenance contracts

PFEIFFER  **VACUUM**

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