

DuoLine™ – Magnetically Coupled



**Two-Stage Rotary Vane Pumps
with Magnetically Coupled Drive.**

**Cleaner and More Dependable
for your Process and the Environment.**

PFEIFFER  **VACUUM**

Oil leaks are now a thing of the past!

DuoLine™ rotary vane pumps cover all applications in the low and medium vacuum range of up to 10^{-3} mbar. These pumps offer reliable operation even for such critical industrial applications as drying processes, metallurgical processes or resin potting and casting systems – either as a stand-alone pump or as a backing pump in our CombiLine™ or turbo pumping stations.

Thanks to their innovative drive concept, these pumps are hermetically sealed, making them clean and environmentally compatible. Because our magnetically coupled rotary vane pumps do not have radial shaft seals, there is no oil leak.

The use of a magnetic coupling minimizes maintenance requirements and leads to considerable cost savings per pump and maintenance interval.

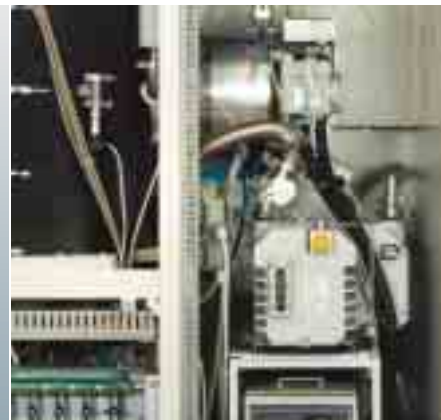
Proven in any number of fields



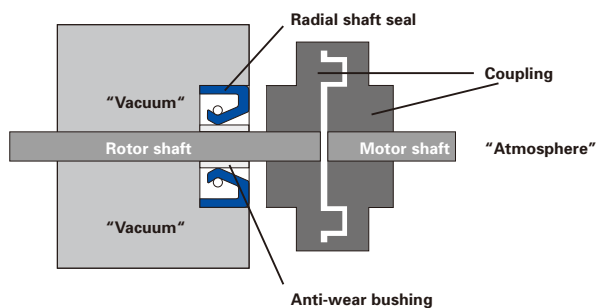
Freeze-drying system



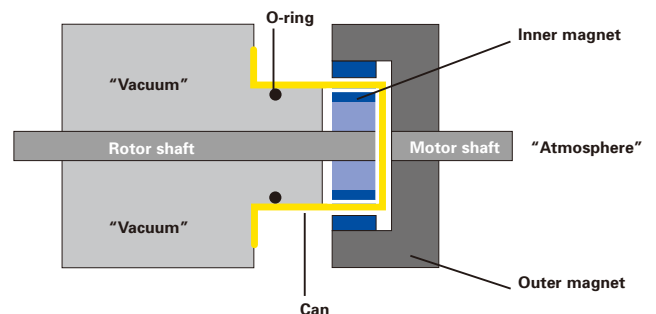
Vacuum furnace



Eyeglass lens coating



Conventional drive system



New drive system with wear-free magnetic coupling

Applications

- ▶ Analytical industry
- ▶ Coating
- ▶ Research and development
- ▶ Industry
- ▶ Vacuum chemistry
- ▶ Vacuum metallurgy
- ▶ Vacuum drying
- ▶ General vacuum technology

Advantages at a glance

- ▶ Environmentally friendly → no oil leaks
- ▶ Minimum operating costs → no shaft seal maintenance
- ▶ No exchange between process gas and the environment
- ▶ Corrosion-proof → no non-ferrous metals
- ▶ Integral safety and gas ballast valve
- ▶ Extensive monitoring and system integration accessories
- ▶ Corrosive gas version available (C-models)



Production of LCD displays



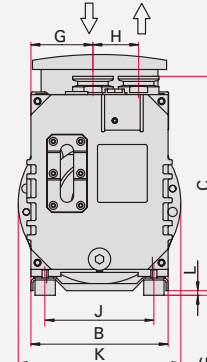
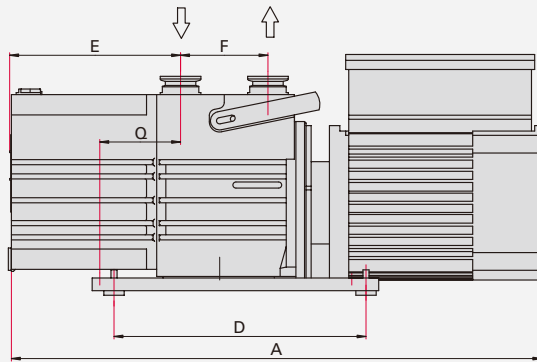
Leak detection

CombiLine™ pumping station with magnetically coupled WKP 500 AM and two-stage magnetically coupled DUO 65 M rotary vane pump



Dimensions

DUO 5 M to DUO 65 M



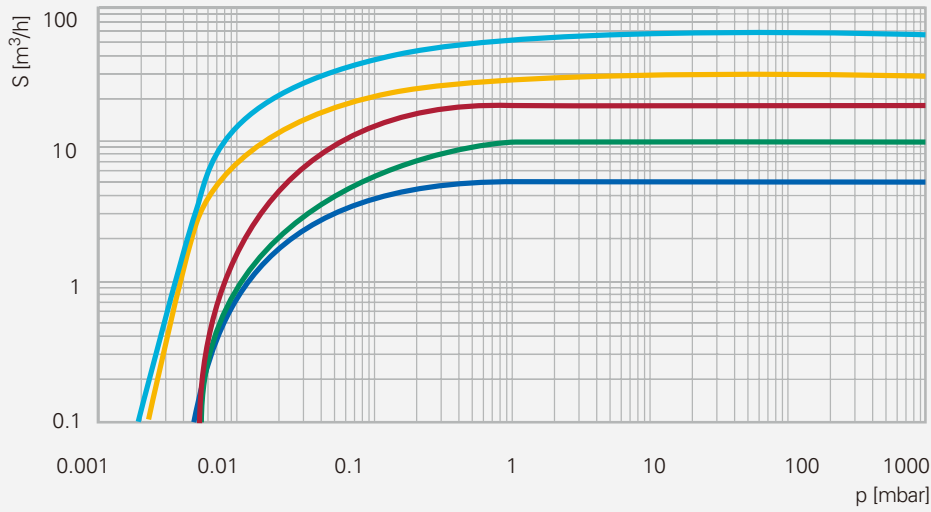
(Dimensions in mm)

	DUO 5 M, 1-ph*	DUO 10 M, 1-ph*	DUO 20 M, 1-ph*	DUO 35 M, 3-ph*	DUO 65 M, 3-ph*
A	432	522	587	690	769
B	135	135	166	240	240
C	215	215.5	251.5	339	339
D	248	248	238	–	–
E	145	168	178	311	391
F	58	86	76.5	–	–
G	61	61	–	–	–
H	47	45	113	180	180
J	107	107	112–140	210	210
K	160	160	188	240	240
L	–	4.5	12.5	33	33

* 1-ph = Single-phase motor; 3-ph = 3-phase motor

Pumping speed, without gas ballast

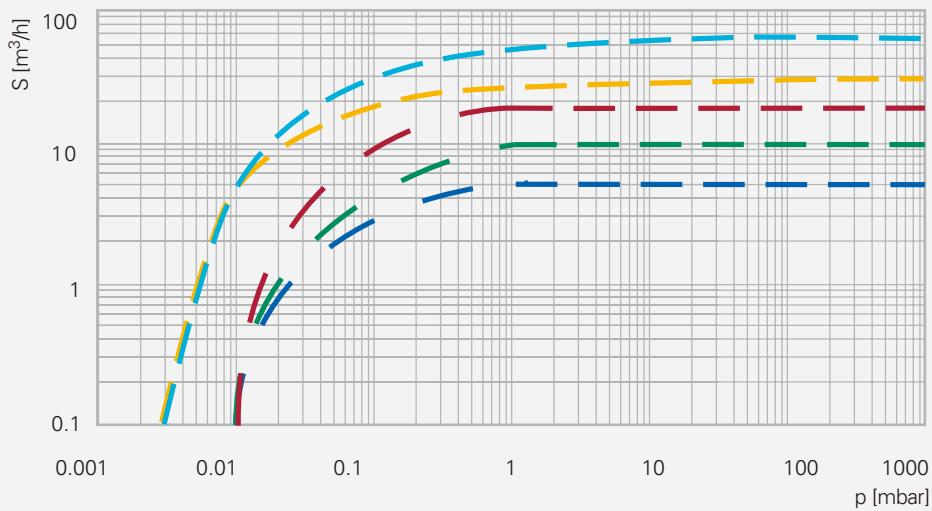
DUO 5 M to DUO 65 M



- DUO 65 M
- DUO 35 M
- DUO 20 M
- DUO 10 M
- DUO 5 M

Pumping speed, with gas ballast

DUO 5 M to DUO 65 M



- - - DUO 65 M
- - - DUO 35 M
- - - DUO 20 M
- - - DUO 10 M
- - - DUO 5 M

Accessories

Inlet

Application: For protecting the pump and the operating fluid

STP, STR, STZ Dust Separators

- ▶ Prevents the ingress of dust into the pump
- ▶ STP – single-stage filter with paper element, for light contamination
- ▶ STR – two-stage filter with cyclone and oil wetted packing, for medium contamination
- ▶ STZ – two-stage filter with cyclone and paper element, for heavy contamination

URB Catalytic Trap

- ▶ Prevents pump oil backstreaming into the vacuum chamber
- ▶ Operation based on catalytic combustion

ZFO Zeolite Trap

- ▶ Prevents oil from backstreaming
- ▶ Zeolite materials bind backflowing pump oil
- ▶ Suitable for regeneration with optional heating rod

Outlet

Application: To prevent oil mists from the pump from escaping into the environment and exhaust line

KAS Condensate Separator

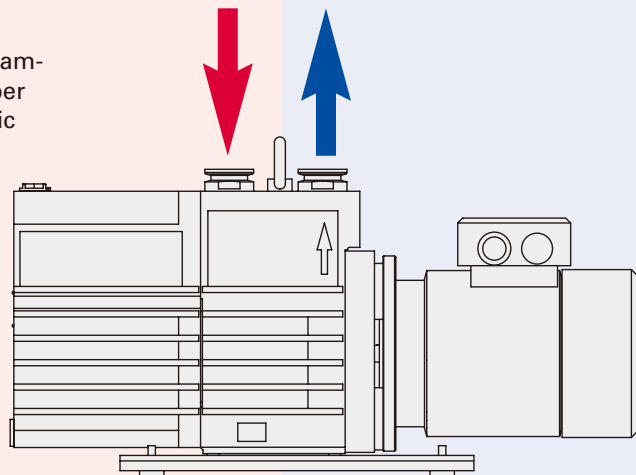
- ▶ At the inlet and outlet: Prevents the ingress of condensate into the pump
- ▶ Separator for condensed vapors
- ▶ Sight glass for determining the filling level
- ▶ Drain screw for draining the condensate

ONF Oil Mist Filter

- ▶ Prevents oil vapors from escaping into the atmosphere
- ▶ Degree of filtration with a clean filter > 99.98%

ORF Oil Return Unit

- ▶ Returns oil from the ONF oil mist filter back to the pump
- ▶ Suitable at higher inlet pressures



Oil Filter:

OFM 35/65 Mechanical Oil Filter

OFC 35/65 Chemical Oil Filter

- ▶ For use within the pump's oil circulation system
- ▶ Filters dust and particles from the operating fluid
- ▶ Increases service intervals and reduces cost

Selection guide

	General Vacuum Technology			Vacuum Drying		Vacuum Metallurgy		Vacuum Chemistry		
	Backing pump HV pumping station	Backing pump UHV pumping station	Backing pump for Roots pump	High level of H ₂ O vapors	Low level of H ₂ O vapors	Sintering, melting, casting	Soldering, welding, annealing	Aggressive gases/vapors	Reactive gases/vapors with operating fluid	Gas mixtures with a high level of oxygen
Rotary vane pump										
DuoLine™ two-stage rotary vane pump	●	●	▲	▲	●	▲	▲		▲	▲
DuoLine™ (corrosive gas version) two-stage rotary vane pump	●	●	▲	▲	●	▲	▲	●	●	●
Accessories										
Inlet Separators and traps										
STP Dust Separator	▲	▲	▲		▲	●	●	▲	▲	▲
FAK Activated Carbon Filter	▲	▲	▲			▲	▲	▲	▲	
FBL Fuller's Earth Filter	▲	▲	▲	▲						
ZFO Zeolite Trap	●	▲	▲							
URB Catalytic Trap	▲	●								
KAS Condensate Separator			▲	●	▲	▲	▲	▲	▲	▲
Outlet Separators										
ONF Oil Mist Filter	●	●	●	●	●	●	●	●	●	●
ORF Oil Return Unit	▲	▲	▲			▲	▲	▲	▲	▲
KAS Condensate Separator	▲	▲	▲	●	●	▲	▲	▲	▲	▲
Oil filters										
OFC Chemical Oil Filter for DUO 35/65	▲	▲	▲			▲	▲	●	●	▲
OFC Mechanical Oil Filter for DUO 35/65	▲	▲	▲			●	●	●	●	▲
Monitoring units										
Oil pressure switch for monitoring operation	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲

● Recommended ▲ Possible

Technical data

Rotary vane pump		DUO 5 M	DUO 10 M	DUO 20 M	DUO 35 M	DUO 65 M
Flange (in)		DN 16 ISO-KF	DN 25 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF	DN 40 ISO-KF
Flange (out)		DN 16 ISO-KF	DN 25 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF	DN 40 ISO-KF
Pumping speed at 50 Hz	m ³ /h	5	10	20	32	62
Pumping speed at 60 Hz	m ³ /h	6	12	24	36	70
Ultimate pressure: Total without gas ballast	mbar	5 · 10 ⁻³	5 · 10 ⁻³	5 · 10 ⁻³	3 · 10 ⁻³	3 · 10 ⁻³
Ultimate pressure: Total with gas ballast	mbar	2 · 10 ⁻²	1 · 10 ⁻²	1 · 10 ⁻²	5 · 10 ⁻³	5 · 10 ⁻³
Water vapor tolerance at 50 Hz	mbar	25	30	30	20	20
Water vapor tolerance at 60 Hz	mbar	28	36	36	20	20
Water vapor capacity at 50 Hz	g/h	90	210	400	500	1000
Water vapor capacity at 60 Hz	g/h	120	300	550	560	1120
Rated power 50 Hz	kW	0.25	0.37	0.55	1.1	1.5
Rated power 60 Hz	kW	0.3	0.43	0.65	1.3	1.8
Emission noise level (50 Hz)	dB (A)	55	57	55	61	61
Operating fluid charge	l	0.75	1	1	3.2	4.2
Weight	kg	19	27	33	56	65

Order numbers – Pumps

Rotary vane pumps	DUO 5 M	DUO 10 M	DUO 20 M	DUO 35 M	DUO 65 M
Single-phase motor for 100–110 V, 50 Hz; 100–120 V, 60 Hz	–	PK D62 707 ¹	PK D63 707 ¹	–	–
Single-phase motor for 200–230 V, 50 Hz; 200–240 V, 60 Hz	–	PK D62 712 ¹	PK D63 712 ¹	–	–
Single-phase motor for 115 V, 60 Hz	PK D61 707 ¹	–	–	–	–
Single-phase motor for 230 V, 50 / 60 Hz	PK D61 712 ¹	–	–	–	–
3-phase motor for 200–400 V, 50 Hz; 250–440 V, 60 Hz	–	–	–	PK D45 013	PK D46 013

¹Optional: Corrosive gas version available



Order numbers – Accessories

Rotary vane pump		DUO 5 M	DUO 10 M	DUO 20 M	DUO 35 M	DUO 65 M
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
	5 l	PK 001 107-T	PK 001 107-T	PK 001 107-T	PK 001 107-T	PK 001 107-T
STP* Dust Separator						
	STP 016	PK Z60 203	–	–	–	–
	STP 025	–	PK Z60 206	PK Z60 206	–	–
	STP 040	–	–	–	PK Z60 208	PK Z60 208
STR* Dust Separator						
	STR 025	–	PK Z60 106	PK Z60 106	–	–
	STR 040	–	–	–	PK Z60 108	PK Z60 108
STZ* Dust Separator						
	STZ 025	–	PK Z60 006	PK Z60 006	–	–
	STZ 040	–	–	–	PK Z60 008	PK Z60 008
Condensate Separator						
	KAS 16	PK Z10 003	–	–	–	–
	KAS 25	–	PK Z10 032	–	–	–
	KAS 25 L	–	–	PK Z10 033	–	–
	KAS 40	–	–	–	PK Z10 008	PK Z10 008
Oil Mist Separator						
	ONF 16	PK Z40 003	–	–	–	–
	ONF 25	–	PK Z40 157	–	–	–
	ONF 25 L	–	–	PK Z40 158	–	–
	ONF 35/65	–	–	–	PK Z40 150	PK Z40 150
Oil Mist Separator with Return Unit						
	ONFR 35/65	–	–	–	PK Z40 151	PK Z40 151
Oil Return Device from Oil Mist Separator						
		PK 196 172-T	PK 196 172-T	PK 196 172-T	PK 005 710-T	PK 005 710-T
Chemical Oil Filter						
	OFC 35/65	–	–	–	PK Z90 320	PK Z90 320
Mechanical Oil Filter						
	OFM 35/65	–	–	–	PK Z90 321	PK Z90 321
Zeoline Trap						
	ZFO 025	–	PK Z70 006	PK Z70 006	–	–
	ZFO 040	–	–	–	PK Z70 008	PK Z70 008
Catalytic Trap						
	URB 025	–	PT U10 760	PT U10 760	–	–
	URB 040	–	–	–	PT U10 260	PT U10 260

*STP: Single-stage for light contamination; STR: Two-stage for medium contamination; STZ: Two-stage for heavy contamination

Vacuum is nothing, but everything to us!

Pfeiffer Vacuum has been setting technological milestones for creating, measuring and analyzing vacuum for over 100 years. Our comprehensive product range covers individual components to complex vacuum systems.

Quality and service worldwide from the inventor of the turbopump: Pfeiffer is the international market leader with more than 250,000 turbopumps sold to date.

Do you have questions about your application? Please ask us.



All data subject to change without prior notice. PD 0035 PE (October 2005)

Sales, consulting and service

- ▶ Worldwide on-site service
- ▶ Comprehensive training programs including at customer sites
- ▶ Modular service system ranging from spare parts to maintenance contracts



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