



## FIPA Rotary vane vacuum pumps



### Rotary vane vacuum pumps - oil-free

- > Handling of dense workpieces in dry areas
- > Suitable for load alternation and continuous operation
- > Available in single-phase and three-phase designs
- > Any installation position
- > Very low maintenance

> See page 582



### Piston pumps

- > Small output at compact design
- > Suitable for dry and wet areas
- > Long-life and low maintenance thanks to the permanently lubricated piston seals
- > Oil-free operation
- > Also suitable as compressors

> See page 592



### Rotary vane vacuum pumps - oil-lubricated

- > Handling dense and porous workpieces
- > Partially suitable for applications in wet areas
- > Suitable for continuous operation in product-dependent vacuum levels
- > Available in single-phase and three-phase designs
- > Horizontal installation position

> See page 594



### Centralised vacuum units

- > Supply of several modules via a central station
- > Made up of one to three oil-lubricated vacuum pumps
- > Incl. vacuum tank and electronic control

> See page 606



## FIPA rotary vane vacuum pumps



### Accessories

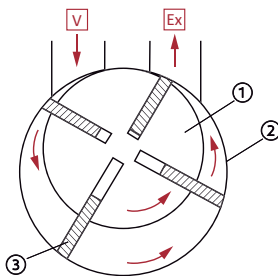
#### Vacuum tanks

- > As storage device for compressed air, vacuums and non-aggressive liquids
- > Efficient compressed air/vacuum usage (energy saving, protection of the unit)
- > For compressed air/vacuum systems with highly fluctuating consumption

> See page 617

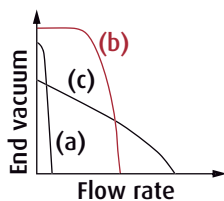
### Vacuum generation according to the displacement principle

- > A cylindrical rotor ① rotates eccentrically in a circular cavity ②.
- > The rotary vanes ③ are pushed against the outer walls of the cavity by centrifugal force, sealing the chambers that are created by this motion.
- > During rotation, the expanding chambers draw in air on the vacuum side **V**.
- > The suctioned aspirated air is then released via the exhaust **Ex**.



### Performance characteristics

- (a) Characteristic of ejectors
- (b) Rotary vane vacuum pumps achieve a very good ultimate vacuum along with a high flow volume
- (c) Characteristic of side channel blowers





### Rotary vane vacuum pumps - oil-free

Handling in dry areas



#### Product Description

- > High reliability and low maintenance costs owing to simple design
- > Universal application: Continuous operation at different vacuum levels
- > Compact design and low weight

#### Ordering notes

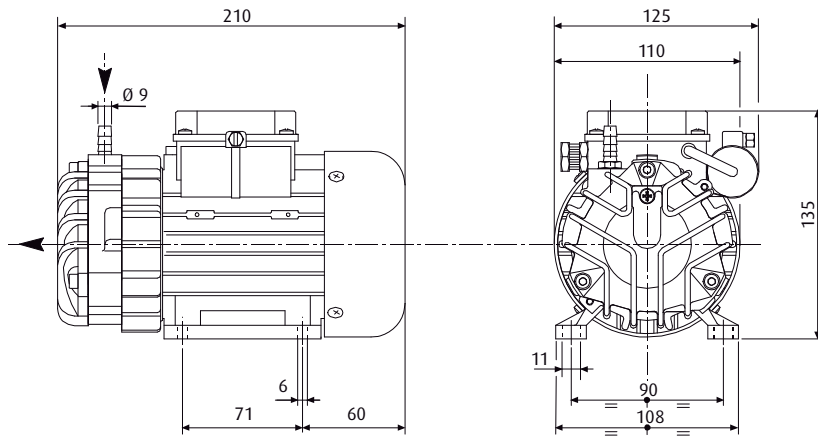
- > Available in single-phase and three-phase designs (Index -1 or -3)
- > Included in scope of delivery:
  - Silencer on suction side
  - DT.3C-1: Thermal protection 130 °C
  - DT.6, DT.10: Safety filter on suction side
- > Delivery without electric cables

#### Technical data

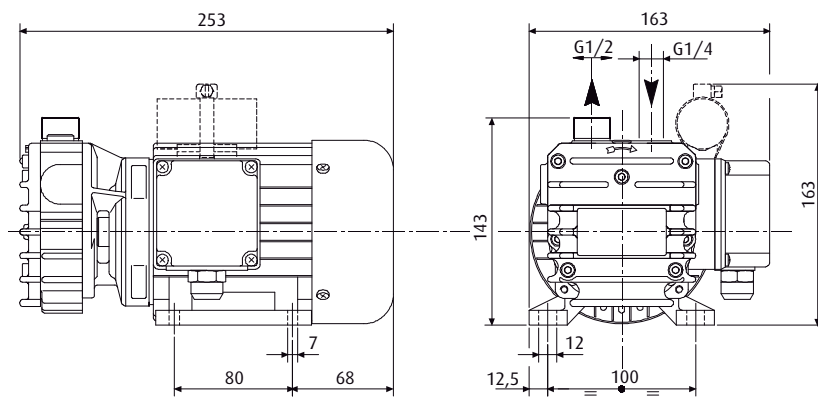
Item no.	DT.3A-1	DT.3A-3	DT.6B-1	DT.6B-3	DT.10B-1	DT.10B-3
Suction power at 50 Hz [m <sup>3</sup> /h]	3	3	6	6	10	10
Suction power at 60 Hz [m <sup>3</sup> /h]	3.3	3.3	7	7	12	12
Final vacuum [%]	88	88	88	88	88	88
Power supply at 50 (60) Hz [V]	220 - 240	Delta: 220-255 (220-266) Star: 380-440 (380-460)	220 - 240	Delta: 220-255 (220-266) Star: 380-440 (380-460)	220 - 240	Delta: 220-255 (220-266) Star: 380-440 (380-460)
Current consumption at 50 (60) Hz [A]	1 (1.1)	Delta: 0.7-0.8 (0.7) Star: 0.4-0.46 (0.38-0.42)	2.3 (2.5)	Delta: 1.4-1.5 (1.5-1.4) Star: 0.8-0.86 (0.86-0.8)	2.9 (2.7)	Delta: 1.8-2.3 (1.6-2.3) Star: 1-1.3 (0.9-1.3)
Rated power at 50 Hz [kW]	0.12	0.12	0.25	0.25	0.37	0.37
Rated power at 60 Hz [kW]	0.15	0.14	0.3	0.3	0.45	0.45
Noise level at 50 Hz [dB(A)]	62	62	60	60	64	64
Noise level at 60 Hz [dB(A)]	65	65	65	65	66	66
Operating temperature at 50 Hz [°C]	65 - 70	65 - 70	65 - 70	65 - 70	70 - 75	70 - 75
Operating temperature at 60 Hz [°C]	70 - 75	70 - 75	70 - 75	70 - 75	80 - 85	80 - 85
Weight [kg]	5	5	8.5	7.5	15.5	14
Suitable accessories	Spare part kit KIT-DT.3A* Vacuum regulator 73.002 (p.640) Pre-filter FC 10F (p.624) Pre-filter 71.032 (p.625)		Spare part kit KIT-DT.6B** Vacuum regulator 73.002 (p.640) Pre-filter FC 10F (p.624) Pre-filter 71.032 (p.625)		Spare part kit KIT-DT.10B*** Vacuum regulator 73.002 (p.640) Pre-filter FC 20F (p.624) Pre-filter 71.034 (p.625)	



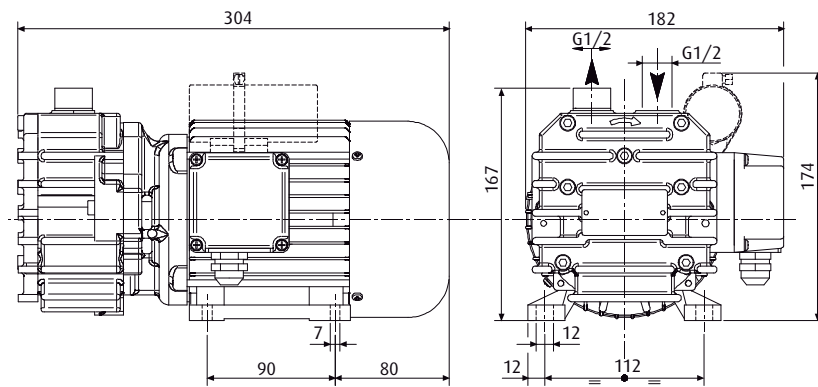
### Dimensions



DT.3A-1 | DT.3A-3



DT.6B-1 | DT.6B-3



DT.10B-1 | DT.10B-3

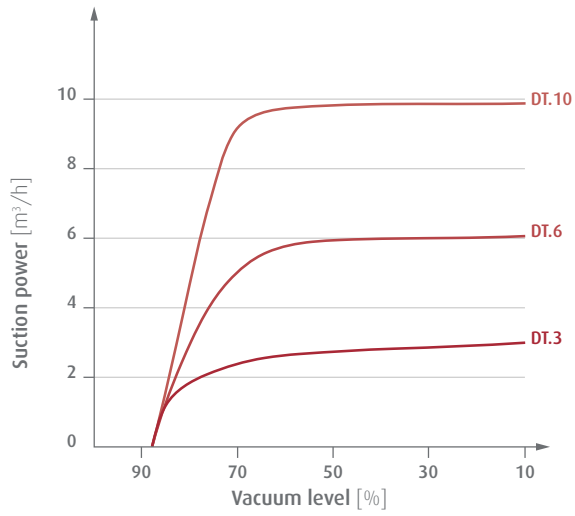
\* = 3 vanes, rotor    \*\* = 4 vanes, rotor    \*\*\* = 6 vanes, rotor

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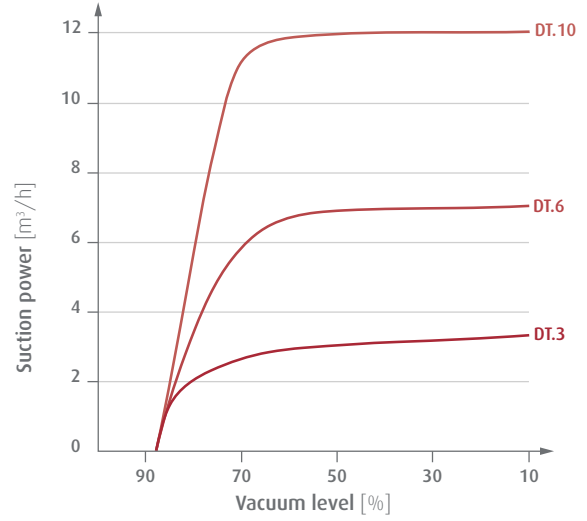


### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz





### Rotary vane vacuum pumps - oil-free

Handling in dry areas



#### Product Description

- > High reliability and low maintenance costs owing to simple design
- > Universal application: Continuous operation at different vacuum levels
- > Cooling with powerful fan at the rear of the motor
- > Compact design and low weight

#### Ordering notes

- > Available in single-phase and three-phase designs (Index -1 or -3)
- > Included in scope of delivery:
  - Safety filter on suction side
  - Silencer on pressure side
- > Electric cables not included

#### Technical data

Item no.	DT.16B-1	DT.16B-3	DT.25B-1	DT.25B-3	DT.40B-1	DT.40B-3
Suction power at 50 Hz [m <sup>3</sup> /h]	16	16	25	25	40	40
Suction power at 60 Hz [m <sup>3</sup> /h]	19	19	29	29	46	46
Final vacuum [%]	88	88	88	88	88	88
Power supply at 50 (60) Hz [V]	220 - 240	Delta: 220-255 220-266 Star: 380-440 (380-460)	220 - 240	Delta: 220-255 220-266 Star: 380-440 (380-460)	220 - 240	Delta: 220-255 220-266 Star: 380-440 (380-460)
Current consumption at 50 (60) Hz [A]	5.6 (5)	Delta: 2,8-3 (3.8-3.2) Star: 1.6-1.7 (2.2-1.8)	5.8 (6.2)	Delta: 3.8-4.2 (4.4-4.2) Star: 2.2-2.4 (2.5-2.4)	9.8 (9)	Delta: 7 (7.1-7) Star: 4 (4.1-4.0)
Rated power at 50 Hz [kW]	0.66	0.55	0.75	0.75	1.5	1.5
Rated power at 60 Hz [kW]	0.72	0.66	0.9	0.9	1.8	1.8
Noise level at 50 Hz [dB(A)]	63	63	65	65	68	68
Noise level at 60 Hz [dB(A)]	65	65	67	67	70	70
Operating temperature at 50 Hz [°C]	55 - 60	55 - 60	65 - 70	65 - 70	75 - 80	75 - 80
Operating temperature at 60 Hz [°C]	60 - 65	60 - 65	70 - 75	70 - 75	80 - 85	80 - 85
Weight [kg]	29.5	27.5	29	28.5	40	37.5
Suitable accessories	Spare part kit KIT-DT.16B* Vacuum regulator 73.002 (p.640) Pre-filter FC 20F (p.624)		Spare part kit KIT-DT.25B* Vacuum regulator 73.003 (p.640) Pre-filter FC 25F (p.624)		Spare part kit KIT-DT.40B* Vacuum regulator 73.003 (p.640) Pre-filter FC 30F (p.624)	

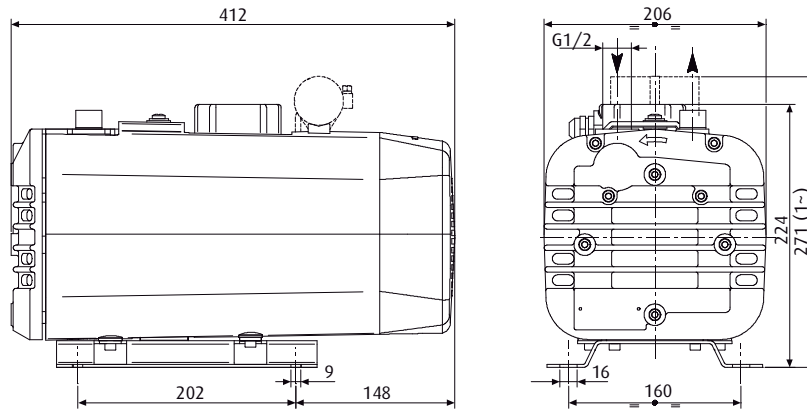
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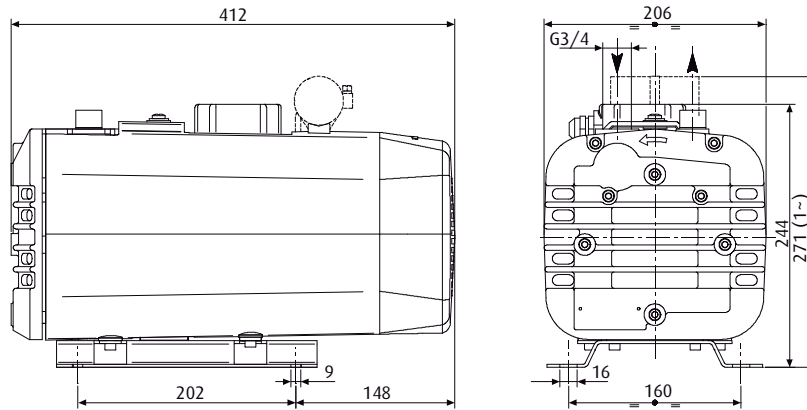
# Vacuum generation | Oil-free vacuum pumps

Rotary vane vacuum pumps - oil-free

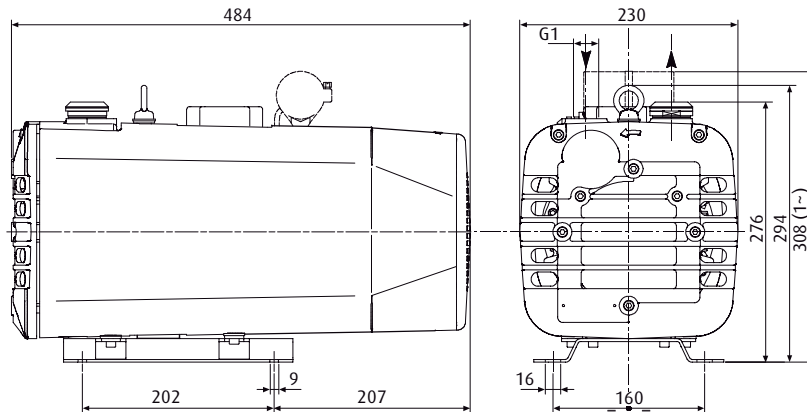
## Dimensions



DT.16B-1 | DT.16B-3



DT.25B-1 | DT.25B-3



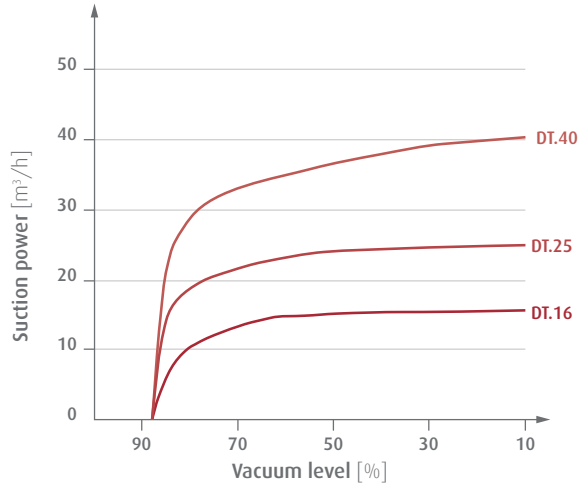
DT.40B-1 | DT.40B-3

\* = 4 vanes, filter cartridge

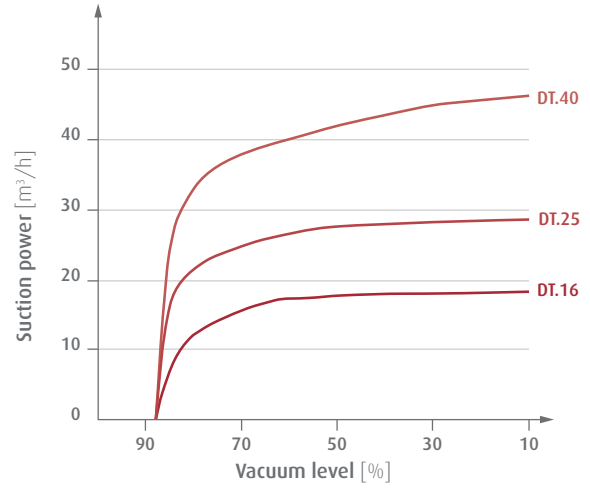


### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz







### Rotary vane vacuum pumps - oil-free

Handling in dry areas



#### Product Description

- > High reliability and low maintenance costs owing to simple design
- > Universal application: Continuous operation at different vacuum levels
- > Compact design due to robust protective housing that also reduces the sound level
- > DT.60C-3: Universal motor according to IE class 2 with wide voltage spectrum for worldwide use

#### Ordering notes

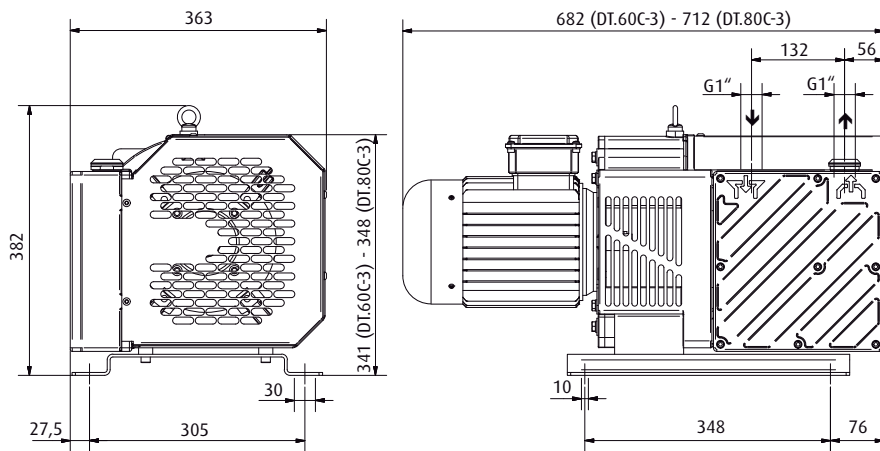
- > Included in scope of delivery:
  - Safety filter on suction side
  - Silencer on pressure side
- > Electric cables not included

#### Technical data

Item no.	DT.60C-3	DT.80C-3
Suction power at 50 Hz [m <sup>3</sup> /h]	60	80
Suction power at 60 Hz [m <sup>3</sup> /h]	70	90
Final vacuum [%]	88	88
Power supply at 50 (60) Hz [V]	Delta: 230 (265) Star: 400 (460)	Delta: 230 (265) Star: 400 (460)
Current consumption at 50 (60) Hz [A]	Delta: 5.91 (5.6) Star: 3.4 (3.23)	Delta: 8.8 (9) Star: 5.1 (5.2)
Rated power at 50 Hz [kW]	1.5	2.2
Rated power at 60 Hz [kW]	1.8	2.7
Noise level at 50 Hz [dB(A)]	70	72
Noise level at 60 Hz [dB(A)]	72	74
Operating temperature at 50 Hz [°C]	70 - 73	72 - 78
Operating temperature at 60 Hz [°C]	72 - 75	75 - 80
Weight [kg]	66	71
Suitable accessories	Spare part kit KIT-DT.60C Silencer 72.003 (p.578) Pre-filter FC 30F (p.624)	Spare part kit KIT-DT.80C Silencer 72.003 (p.578) Pre-filter FC 35F (p.624)

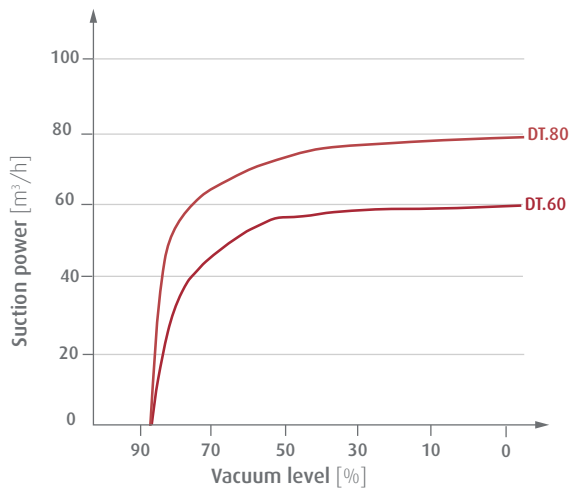


## Dimensions

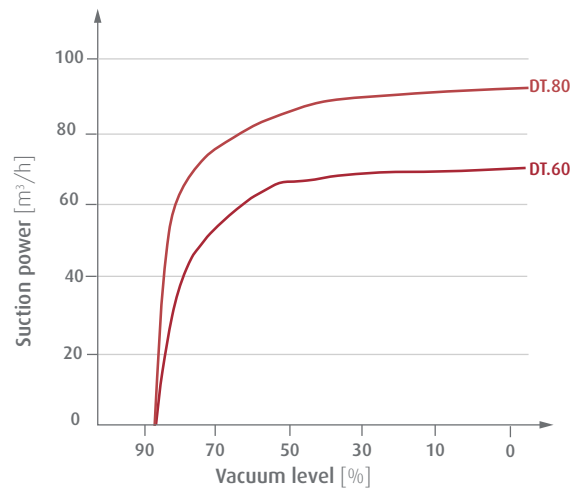


## Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz





### Rotary vane vacuum pumps - oil-free

Handling in dry areas



#### Product Description

- > High reliability and low maintenance costs owing to simple assembly
- > Universal application: Continuous operation at different vacuum levels
- > Compact design due to robust protective housing that also reduces the sound level
- > Universal motor according to IE class 2 with wide voltage spectrum for worldwide use

#### Ordering notes

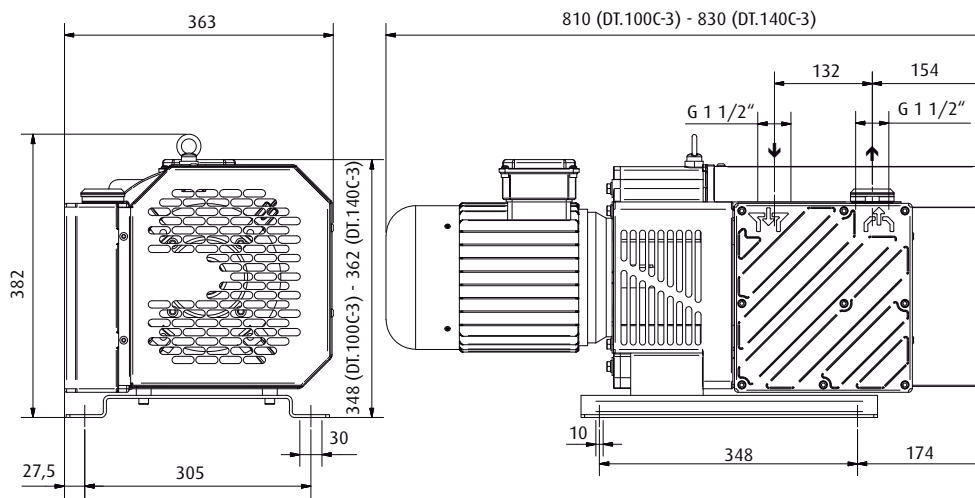
- > Included in scope of delivery:
  - Safety filter on suction side
  - Silencer on pressure side
- > Electric cables not included

#### Technical data

Item no.	DT.100C-3	DT.140C-3
Suction power at 50 Hz [m <sup>3</sup> /h]	100	130
Suction power at 60 Hz [m <sup>3</sup> /h]	115	150
Final vacuum [%]	88	88
Power supply at 50 (60) Hz [V]	Delta: 230 (265) Star: 400 (460)	Delta: 230 (265) Star: 400 (460)
Current consumption at 50 (60) Hz [A]	Delta: 11.8 (11.4) Star: 6.8 (6.6)	Delta: 14.7 (13.5) Star: 8.5 (7.8)
Rated power at 50 Hz [kW]	3	4
Rated power at 60 Hz [kW]	3.6	4.8
Noise level at 50 Hz [dB(A)]	75	76
Noise level at 60 Hz [dB(A)]	77	78
Operating temperature at 50 Hz [°C]	78 - 82	80 - 83
Operating temperature at 60 Hz [°C]	80 - 85	85 - 90
Weight [kg]	87	95
Suitable accessories	Spare part kit KIT-DT.100C Pre-filter FC 40F (p.624)	Spare part kit KIT-DT.140C Pre-filter FC 50F (p.624)

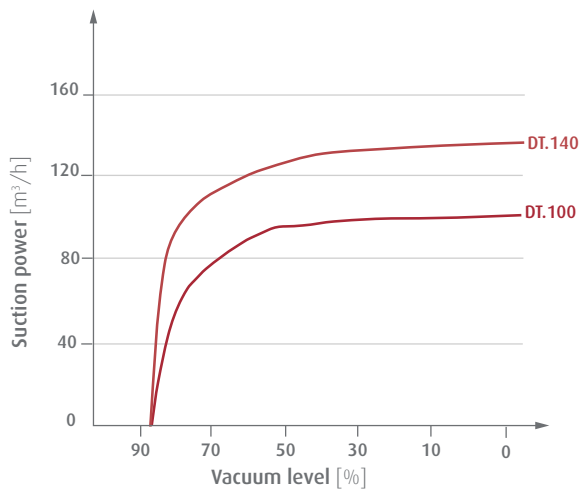


## Dimensions

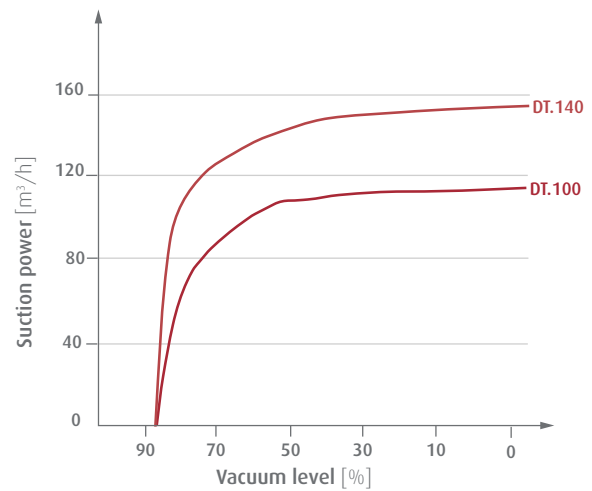


## Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz





### Piston pumps



#### Product Description

- > High volume flow and high vacuum level at low installation space
- > Can also be used as compressor
- > Low-vibration operation
- > Robust design
- > Long service life and maintenance-free operation due to permanently lubricated piston seals
- > Suitable for dry and moist air

#### Notes

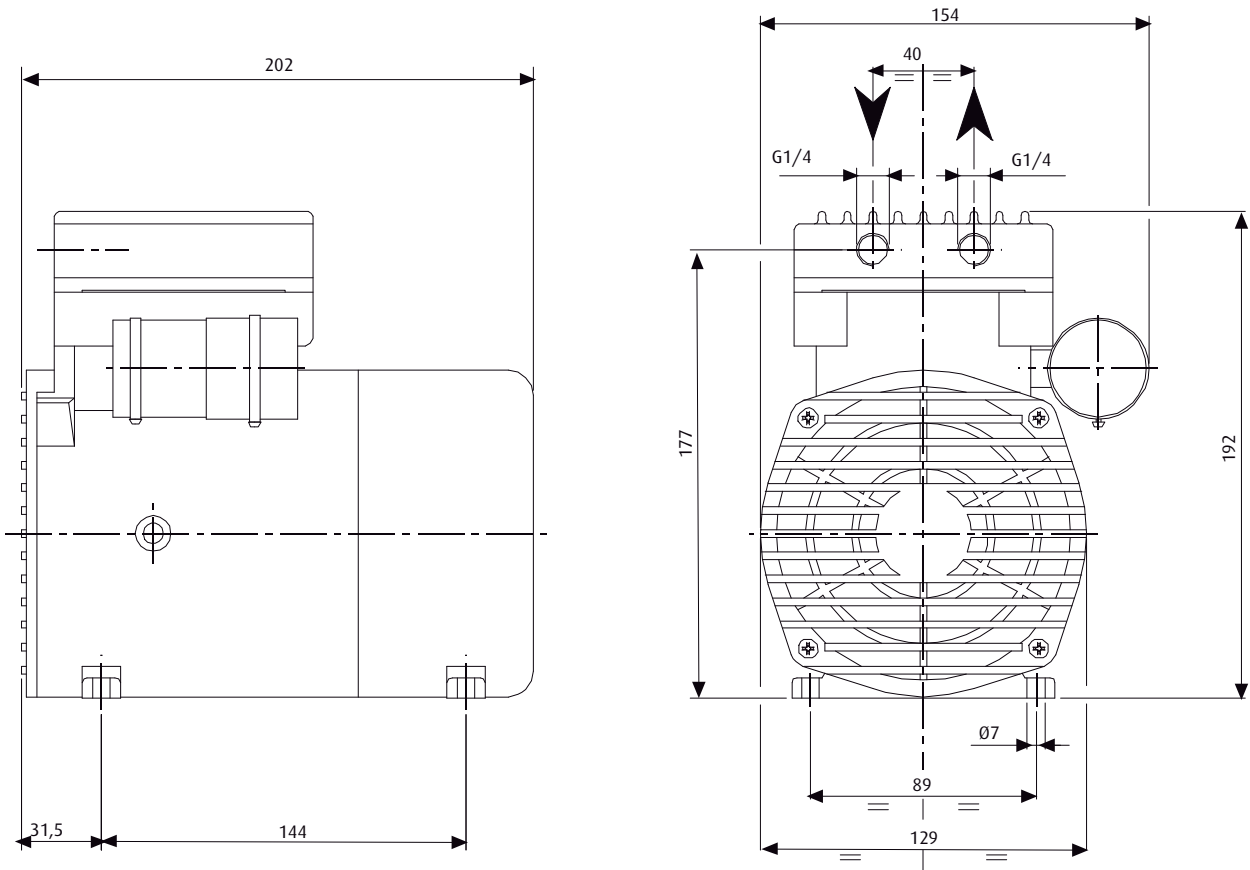
- > A 3/2-way valve must be installed at the inlet in case of pressure-vacuum alternating operation

#### Technical data

<b>Item no.</b>	<b>KE.1.9A-1</b>
Suction power at 50 Hz [m <sup>3</sup> /h]	1.9
Suction power at 60 Hz [m <sup>3</sup> /h]	2.2
Final vacuum [%]	89
Power supply [V]	220 - 240
Rated power at 50 Hz [kW]	0.2
Noise level at 50 Hz [dB(A)]	50
Noise level at 60 Hz [dB(A)]	52
Operating temperature [°C]	40 - 45
Weight [kg]	7.1
Suitable Pre-filters	FB 5 (p.626)

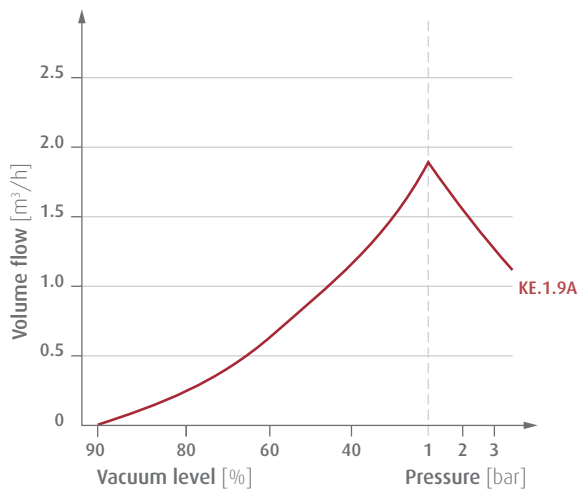


## Dimensions



## Diagrams

> Volume flow against pressure





# Vacuum generation | Oil-lubricated vacuum pumps

## Rotary vane vacuum pumps - oil-lubricated

### Rotary vane vacuum pumps - oil-lubricated



#### Product Description

- > Very high final vacuum level
- > Drives with multi-range voltages
- > Especially suited for the evacuation of small closed containers
- > Efficient damping and oil recovery system prevents oil mist and reduces sound level
- > Compact and lightweight design for low space requirements or installation on moving devices (sufficient ventilation needs to be ensured)
- > Pump is cooled via mounting fan
- > Horizontal mounting position

#### Notes

- > Continuous operation only under full load (min. 99.8 % vacuum), otherwise, risk of oil discharge, no gas ballast
- > For operation under moist conditions please consult FIPA

#### Ordering notes

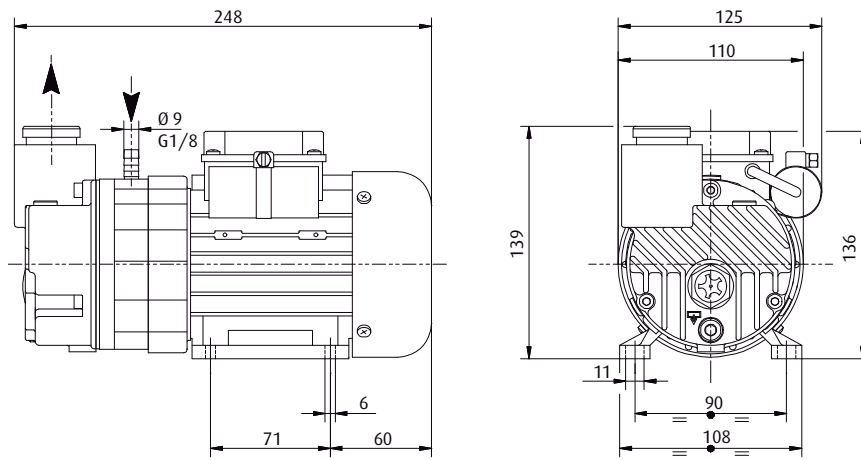
- > Available in single-phase and three-phase designs (Index -1 to -3)
- > Included in scope of delivery: Condensate exhaust filter oil SW 40, thermal protection 130 °C (with single-phase motor)

#### Technical data

Item no.	DO.3B-1	DO.3B-3	DO.4B-1	DO.4B-3
Suction power at 50 Hz [m <sup>3</sup> /h]	3	3	4	4
Suction power at 60 Hz [m <sup>3</sup> /h]	3.2	3.2	4.4	4.4
Final vacuum [%]	99.8	99.8	99.8	99.8
Power supply +/- 5 % at 50 Hz [V]	220 - 240	Delta: 220-255 Star: 380-440	220 - 240	Delta: 220-255 Star: 380-440
Power supply +/- 5 % at 60 Hz [V]	220 - 240	Delta: 220-266 Star: 380-460	220 - 240	Delta: 220-266 Star: 380-460
Current consumption at 50 Hz [A]	1	Delta: 0.7-0.8 Star: 0.4-0.46	1	Delta: 0.7-0.8 Star: 0.4-0.46
Current consumption at 60 Hz [A]	1.1	Delta: 0.7 Star: 0.38-0.42	1.1	Delta: 0.7 Star: 0.38-0.42
Rated power at 50 (60) Hz [kW]	0.12 (0.15)	0.12 (0.14)	0.12 (0.15)	0.12 (0.14)
Noise level at 50 Hz [dB(A)]	56	56	57	57
Noise level at 60 Hz [dB(A)]	58	58	59	59
Operating temperature at 50 Hz [°C]	60 - 65	60 - 65	60 - 65	60 - 65
Operating temperature at 60 Hz [°C]	65 - 70	65 - 70	65 - 70	65 - 70
Weight [kg]	5.4	5.4	5.4	5.4
Suitable accessories	Spare part kit KIT-DO.3B/K*** Spare part kit KIT-DO.3B/G* Pre-filter FB 5 (p.626)		Spare part kit KIT-DO.4B/K*** Spare part kit KIT-DO.4B/G** Pre-filter FB 5 (p.626)	



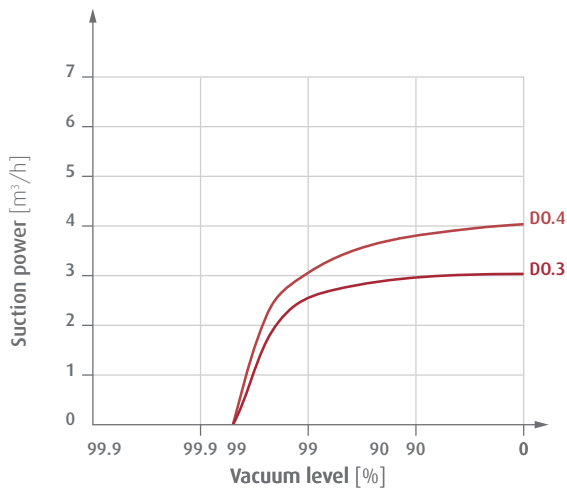
### Dimensions



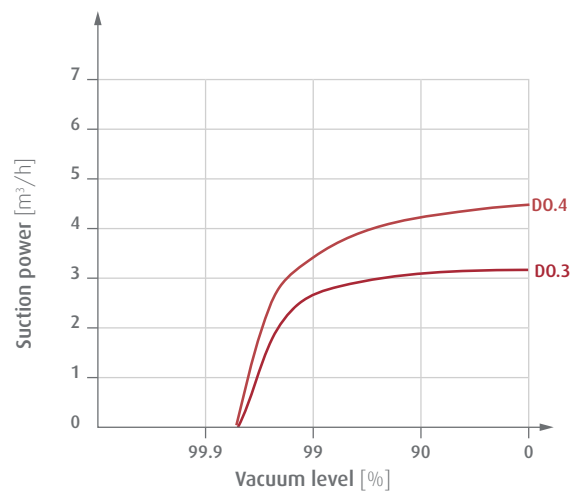
- \* = 6 x vanes, FKM O-Rings, oil recirculation valve, oil mist separator, filter
- \*\* = 6 x vanes, FKM O-Rings, seal, oil recirculation valve, oil mist separator, filter
- \*\*\* = Oil mist separator, rubber washer, follower, 1 x filter cartridge, 1 x O-ring FKM

### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz







# Vacuum generation | Oil-lubricated vacuum pumps

## Rotary vane vacuum pumps - oil-lubricated

### Rotary vane vacuum pumps - oil-lubricated



#### Product Description

- > Very high final vacuum level
- > Suitable for moist environments
- > Effective damping and recovery system prevents oil mist and reduces sound level
- > Innovative sealing system prevents oil recirculation at standstill under vacuum
- > Compact design and low weight
- > Horizontal mounting position

#### Notes

- > Designed for continuous operation under vacuum levels of 60 % to 99 %, integrated gas ballast, water vapor tolerance

#### Ordering notes

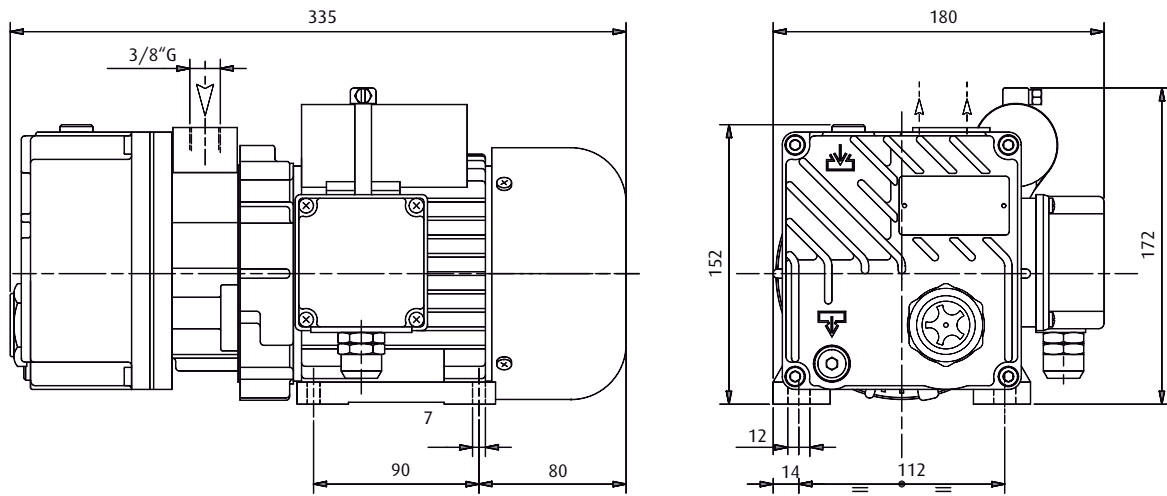
- > Available in single-phase and three-phase designs (Index -1 to -3)
- > Included in scope of delivery: Condensate exhaust filter, gas ballast, oil SW 60, oil non-return valve

#### Technical data

Item no.	DO.5B-1	DO.5B-3
Suction power at 50 Hz [m <sup>3</sup> /h]	5	5
Suction power at 60 Hz [m <sup>3</sup> /h]	6	6
Final vacuum [%]	99	99
Gas ballast	Yes	Yes
Max. inlet pressure for water vapour [mbar]	30	30
Steam capacity [l/h]	0.11	0.11
Check valve	Yes	Yes
Power supply at 50 (60) Hz [V]	220 - 240	Delta: 220-255 (220-266) Star: 380-440 (380-460)
Current consumption at 50 (60) Hz [A]	1.7 - 2.1	Delta: 1.8-2.3 (1.6-2.3) Star: 1-1.3 (0.9-1.3)
Rated power at 50 (60) Hz [kW]	0.25 (0.25)	0.37 (0.45)
Noise level at 50 (60) Hz [dB(A)]	58 (60)	58 (60)
Operating temperature [°C]	65 - 75	65 - 75
Weight [kg]	13	11.5
Suitable Spare-part-kits	KIT-DO.5B/G** KIT-DO.5B/K*	KIT-DO.5B/G** KIT-DO.5B/K*



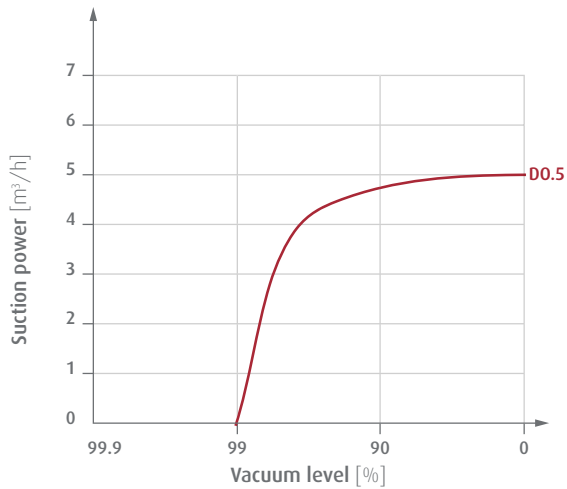
### Dimensions



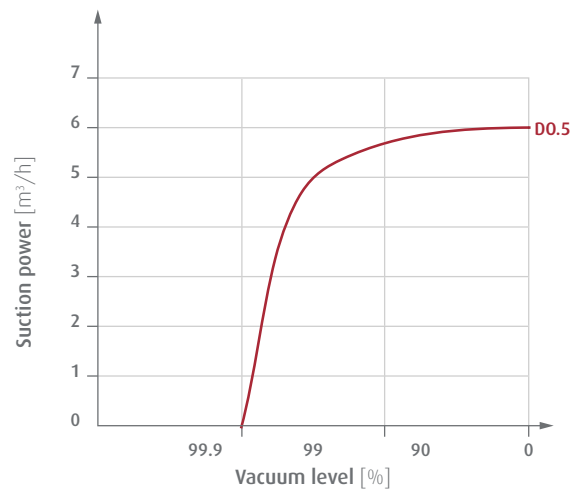
⊗ = O-Ring 121 FKM, filter element    ⊗⊗ = Shaft seal, 2 x O-Ring 3300 NBR, 3 x vanes, 2 x ejector, inlet shield, inlet rubber NBR, filter disk, NBR rubber for exhaust valve, 3 x copper washer, O-Ring 121 FKM, filter element, gasket, sintered filter G1/8

### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz





# Vacuum generation | Oil-lubricated vacuum pumps

Rotary vane vacuum pumps - oil-lubricated

## Rotary vane vacuum pumps - oil-lubricated



### Product Description

- > Very high final vacuum level
- > Effective damping and recovery system prevents oil mist and reduces sound level
- > Innovative sealing system prevents oil recirculation at standstill under vacuum
- > Compact design and low weight
- > Horizontal mounting position

### Notes

- > DO.8: Continuous operation only under full load (min. 99.8 % vacuum), otherwise, risk of oil discharge, no gas ballast
- > DO.8: For operation under moist conditions please consult FIPA
- > DO.12: Designed for continuous operation for vacuum levels between 60 and 99.9 %, gas ballast available, can tolerate water vapor

### Ordering notes

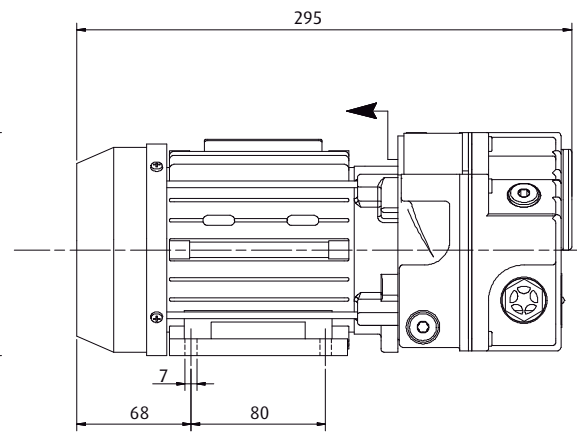
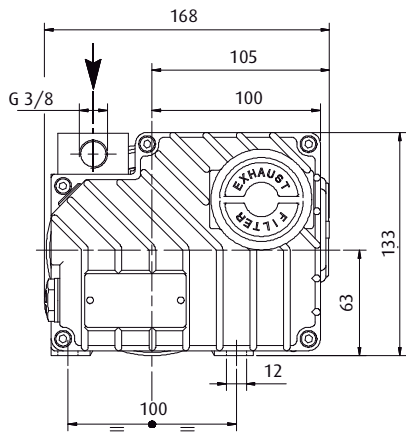
- > Available in single-phase and three-phase designs (Index -1 or -3)
- > Included in scope of delivery: Condensate exhaust filter, gas ballast (with DO.12C-3), oil SW 40, oil non-return valve

### Technical data

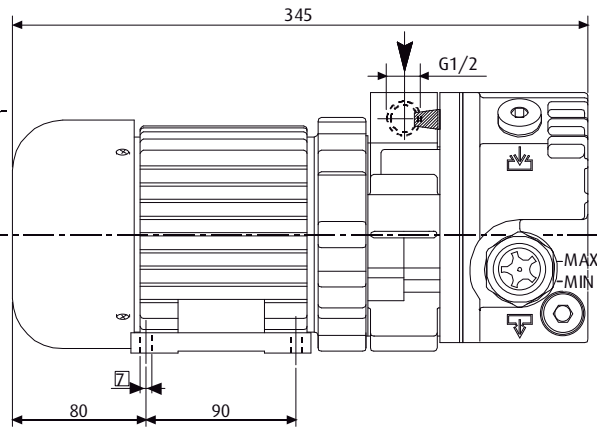
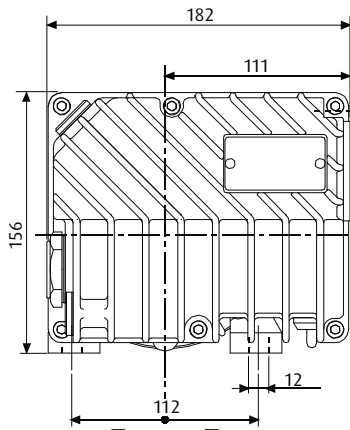
Item no.	DO.8B-1	DO.8B-3	DO.12C-1	DO.12C-3
Suction power at 50 Hz [m <sup>3</sup> /h]	8	8	12	12
Suction power at 60 Hz [m <sup>3</sup> /h]	9	9	14	14
Final vacuum [%]	99.8	99.8	99.8	99.8
Gas ballast	--	--	Yes	Yes
Max. inlet pressure for water vapour [mbar]	--	--	40	40
Steam capacity [l/h]	--	--	0.3	0.3
Check valve	Yes	Yes	Yes	Yes
Power supply at 50 (60) Hz [V]	220 - 240	Delta: 220-255 (220-266) Star: 380-440 (380-460)	220 - 240	Delta: 220-255 (220-266) Star: 380-440 (380-460)
Current consumption at 50 (60) Hz [A]	2.3 (2.5)	Delta: 1.4-1.5 (1.5-1.4) Star: 0.8-0.86 (0.86-0.8)	3-3.6 (3.3-3.1)	Delta: 1.4-1.5 (1.5-1.4) Star: 0.8-0.86 (0.86-0.8)
Rated power at 50 (60) Hz [kW]	0.37 (0.45)	0.25 (0.3)	0.45 (0.55)	0.37 (0.45)
Noise level at 50 (60) Hz [dB(A)]	58 (60)	58 (60)	60 (62)	60 (62)
Operating temperature [°C]	65 - 75	65 - 75	65 - 75	65 - 75
Weight [kg]	10	9	14	12.5
Suitable accessories	Spare part kit KIT-DO.8B/G** Spare part kit KIT-DO.8B/K* Pre-filter FB 10 (p.626)	Spare part kit KIT-DO.8B/G** Spare part kit KIT-DO.8B/K* Pre-filter FB 10 (p.626)	Spare part kit KIT-DO.12C/G**** Spare part kit KIT-DO.12C/K*** Pre-filter FB 20 (p.626)	Spare part kit KIT-DO.12C/G**** Spare part kit KIT-DO.12C/K*** Pre-filter FB 20 (p.626)



### Dimensions



DO.8B-1 | DO.8B-3

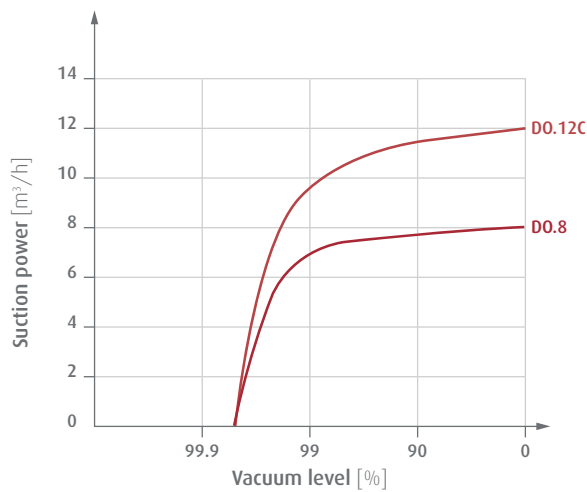


DO.12C-1 | DO.12C-3

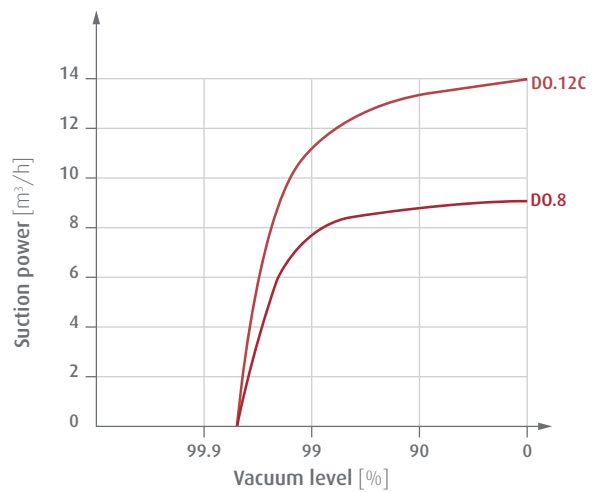
\* = FKM O-Rings, outlet filter    \*\* = 3 vanes, FKM-O rings, seal, valve, inlet and outlet filter, oil recirculation valve  
 \*\*\* = FKM O-rings, oil mist separator    \*\*\*\* = 3 vanes, FKM o-rings, seal, filter, oil mist separator, spring

### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz





# Vacuum generation | Oil-lubricated vacuum pumps

## Rotary vane vacuum pumps - oil-lubricated

### Rotary vane vacuum pumps - oil-lubricated



#### Product Description

- > Very high level of final vacuum
- > Suitable for moist environments
- > Effective damping and recovery system prevents oil mist and reduces sound level
- > Innovative sealing system prevents oil recirculation at standstill under vacuum
- > DO.20C-3 und DO.25C-3: Universal motor according to IE class 2 with wide voltage spectrum for worldwide use
- > Horizontal mounting position

#### Notes

- > DO.20: Designed for continuous operation for vacuum level between 60 % and 99.8 %, gas ballast available, can tolerate water vapor
- > DO.25: Designed for continuous operation for vacuum level between 60 % and 99.95 %, gas ballast available, can tolerate water vapor

#### Ordering notes

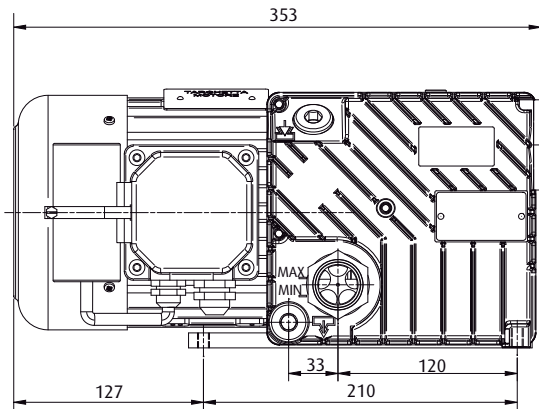
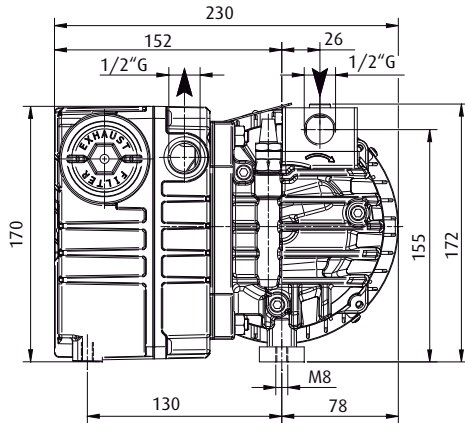
- > Available in single-phase and three-phase designs (Index -1 or -3)
- > Included in scope of delivery: Gas ballast, oil non-return valve, oil SW 40 (with DO.20), oil SW 60 (with DO.25)

#### Technical data

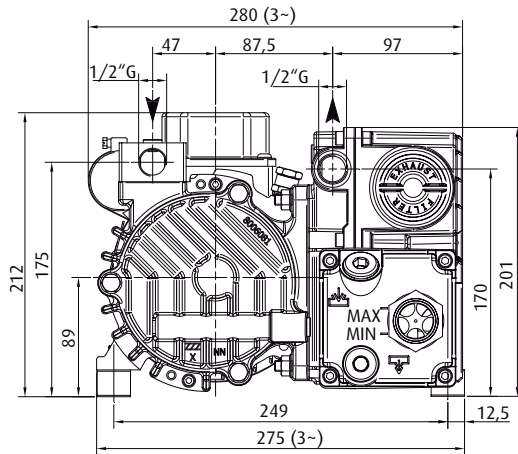
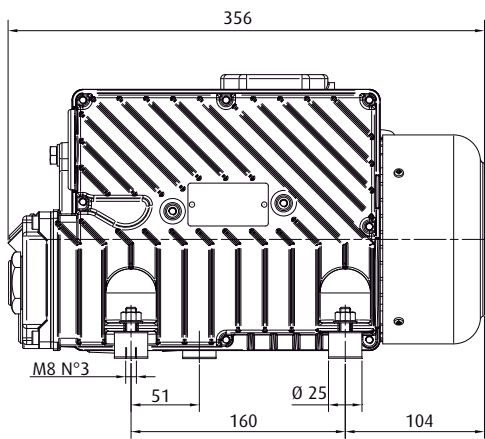
Item no.	DO.20C-1	DO.20C-3	DO.25C-1	DO.25C-3
Suction power at 50 Hz [m <sup>3</sup> /h]	20	20	25	25
Suction power at 60 Hz [m <sup>3</sup> /h]	24	24	29	29
Final vacuum [%]	99.8	99.8	99.95	99.95
Gas ballast	Yes	Yes	Yes	Yes
Max. inlet pressure for water vapour [mbar]	15	15	40	40
Steam capacity [l/h]	0.25	0.25	0.7	0.7
Check valve	Yes	Yes	Yes	Yes
Power supply at 50 (60) Hz [V]	220 - 240	Delta: 175-260 (200-300) Star: 300-450 (346-520)	220 - 240	Delta: 230 (265) Star: 400 (460)
Current consumption at 50 (60) Hz [A]	4-4.1 (5.7-5.6)	Delta: 3.4-3.3 (4.1-3.3) Star: 2.0-1.9 (2.4-1.9)	3 (3)	Delta: 3.0 (3.0) Star: 1.7 (1.7)
Rated power at 50 (60) Hz [kW]	0.75 (0.90)	0.75 (0.90)	0.75 (0.90)	0.75 (0.90)
Noise level at 50 (60) Hz [dB(A)]	64 (67)	64 (67)	62 (65)	62 (65)
Operating temperature [°C]	60 - 70	60 - 70	80 - 90	80 - 90
Weight [kg]	19	17	26	25
Suitable accessories	Spare part kit KIT-DO.20C/G** Spare part kit KIT-DO.20C/K* Pre-filter FB 20 (p.626)		Spare part kit KIT-DO.25C/G**** Spare part kit KIT-DO.25C/K*** Pre-filter FB 25 (p.626)	



### Dimensions



DO.20C-1 | DO.20C-3

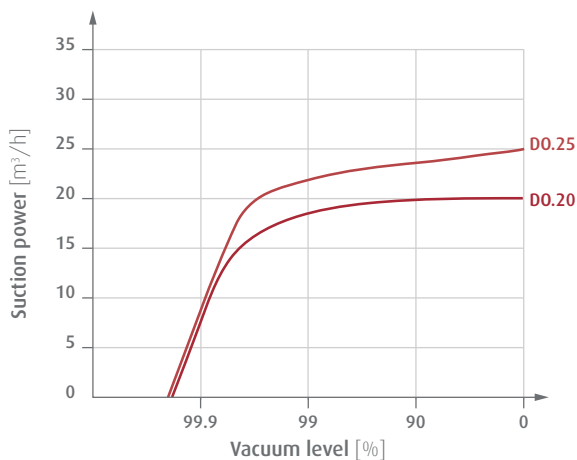


DO.25C-1 | DO.25C-3

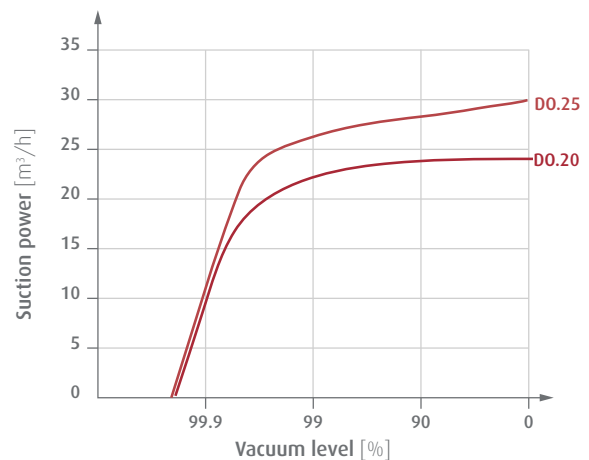
\* = FKM O-rings, oil mist separator    \*\* = 3 x vanes, FKM O-rings, valve, filter, copper washer G1/8"    \*\*\* = FKM and NBR O-rings, outlet filter  
 \*\*\*\* = 2x FKM shaft seals, FKM O-rings, filter, valve, 3 vanes

### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz





# Vacuum generation | Oil-lubricated vacuum pumps

Rotary vane vacuum pumps - oil-lubricated

## Rotary vane vacuum pumps - oil-lubricated



### Product Description

- > Very high level of final vacuum
- > Suitable for moist environments
- > Effective damping and recovery system with by-pass and novel float valve guarantees oil-free exhaust air
- > Innovative sealing system prevents oil recirculation at standstill under vacuum
- > DO.40B-3 und DO.60B-3: Universal motor according to IE class 2 with wide voltage spectrum for worldwide use
- > Horizontal mounting position

### Notes

- > Designed for continuous operation for vacuum level between 60 % to 99,95 %, gas ballast available, can tolerate water vapor

### Ordering notes

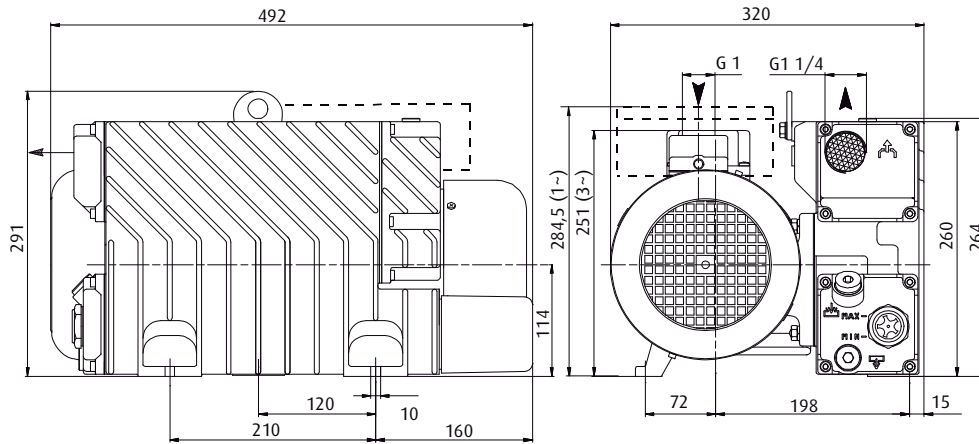
- > Available in single-phase and three-phase designs (Index -1 or -3)
- > Included in scope of delivery: Condensate exhaust filter, gas ballast, oil SW 60, oil non-return valve

### Technical data

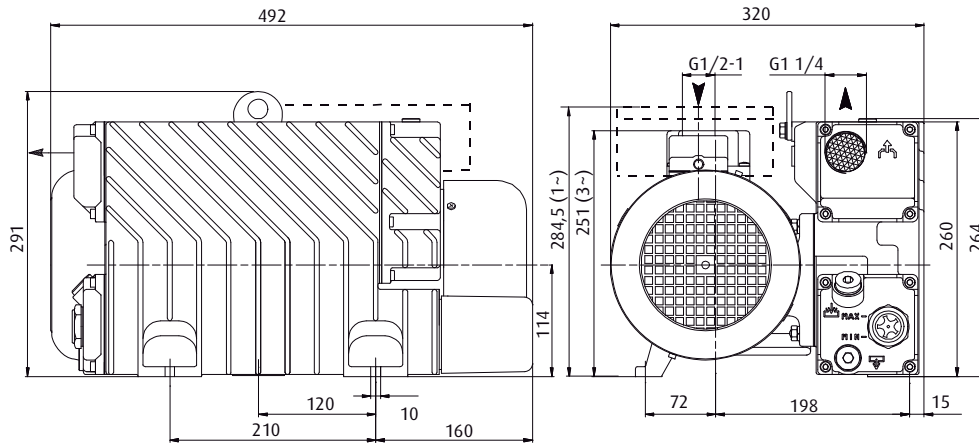
Item no.	DO.40B-1	DO.40B-3	DO.60B-1	DO.60B-3
Suction power at 50 Hz [m <sup>3</sup> /h]	40	40	60	60
Suction power at 60 Hz [m <sup>3</sup> /h]	48	48	72	72
Final vacuum [%]	99.95	99.95	99.95	99.95
Gas ballast	Yes	Yes	Yes	Yes
Max. inlet pressure for water vapour [mbar]	30	30	40	40
Steam capacity [l/h]	0.9	0.9	1.8	1.8
Check valve	Yes	Yes	Yes	Yes
Power supply at 50 (60) Hz [V]	220 - 240	Delta: 230 (265) Star: 400 (460)	220 - 240	Delta: 230 (265) Star: 400 (460)
Current consumption at 50 (60) Hz [A]	4.1 (2.37)	Delta: 4.1 (4.3) Star: 2.37 (2,49)	5.76 (3.33)	Delta: 5.76 (5.72) Star: 3.33 (3.31)
Rated power at 50 (60) Hz [kW]	1.1 (1.35)	1.1 (1.35)	1.5 (1.8)	1.5 (1.8)
Noise level at 50 (60) Hz [dB(A)]	66 (68)	66 (68)	68 (70)	68 (70)
Operating temperature [°C]	70 - 80	70 - 80	75 - 85	75 - 85
Weight [kg]	49.5	43.5	50	44.5
Suitable accessories	Spare part kit KIT-DO.40B/G** Spare part kit KIT-DO.40B/K* Pre-filter FB 30 (p.626)		Spare part kit KIT-DO.60B/G** Spare part kit KIT-DO.60B/K* Pre-filter FB 30 (p.626)	



### Dimensions



DO.40B-1 | DO.40B-3

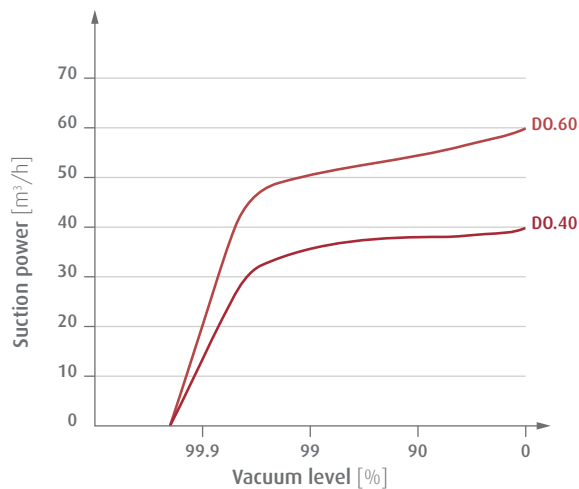


DO.60B-1 | DO.60B-3

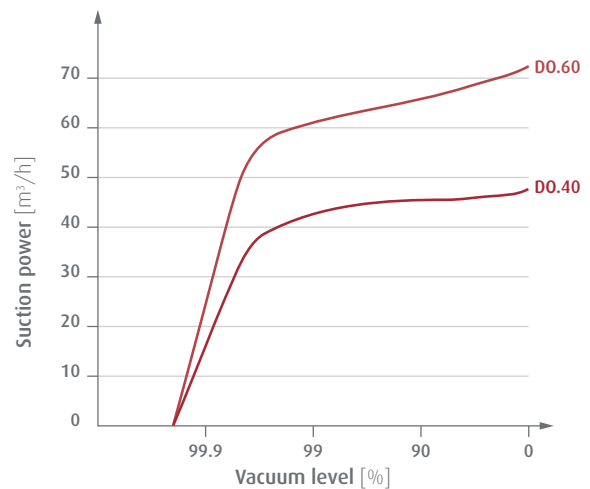
\* = Seal, Oil mist separator, Oil filter    \*\* = 2 x FKM shaft seals, FKM O-rings, seals, filter, 3 x vanes

### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz







# Vacuum generation | Oil-lubricated vacuum pumps

## Rotary vane vacuum pumps - oil-lubricated

### Rotary vane vacuum pumps - oil-lubricated



#### Product Description

- > Very high final vacuum
- > Suitable for moist environments
- > Effective damping and recovery system with by-pass and novel float valve guarantees oil-free exhaust air
- > Innovative sealing system prevents oil recirculation at standstill under vacuum
- > Elastic motor coupling effectively absorbs shocks
- > Universal motor according to IE class 2 with wide voltage spectrum for worldwide use
- > Horizontal mounting position

#### Notes

- > Designed for continuous operation for vacuum level between 60 % to 99.95 %, gas ballast available, can tolerate water vapor

#### Ordering notes

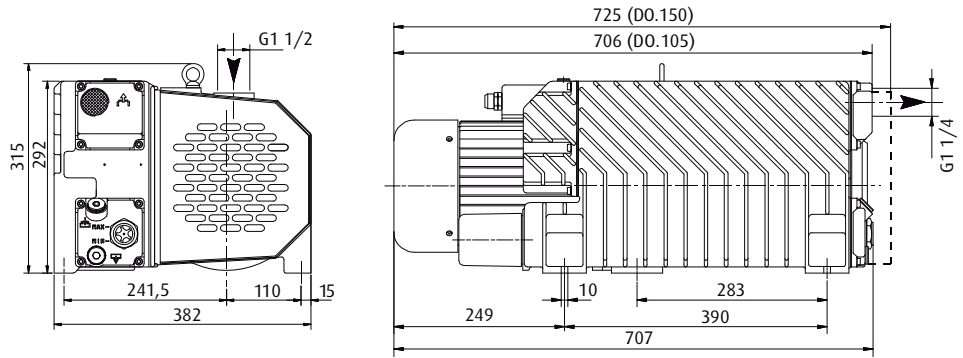
- > Scope of supply: Condensate exhaust filter, gas ballast, oil non-return valve, oil SW 100

#### Technical data

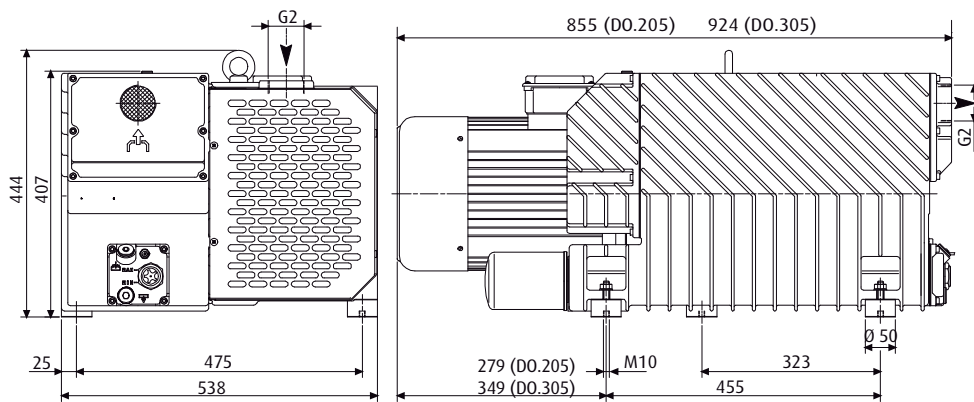
Item no.	DO.105C-3	DO.150C-3	DO.205C-3	DO.305C-3
Suction power at 50 Hz [m <sup>3</sup> /h]	105	150	205	305
Suction power at 60 Hz [m <sup>3</sup> /h]	125	180	245	365
Final vacuum [%]	99.95	99.95	99.95	99.95
Gas ballast	Yes	Yes	Yes	Yes
Max. inlet pressure for water vapour [mbar]	30	25	25	25
Steam capacity [l/h]	2.2	2.5	3.5	5
Check valve	Yes	Yes	Yes	Yes
Power supply at 50 (60) Hz [V]	Delta: 230 (265) Star: 400 (460)	Delta: 230 (265) Star: 400 (460)	Delta: 230 (265) Star: 400 (460)	Delta: 230 (265) Star: 400 (460)
Current consumption at 50 (60) Hz [A]	Delta: 8.8 (9.0) Star: 5.1 (5.2)	Delta: 8.8 (9.0) Star: 5.1 (5.2)	Delta: 20 (20.3) Star: 11.6 (11.7)	Delta: 27.7 (26.8) Star: 16 (15.5)
Rated power at 50 (60) Hz [kW]	2.2 (2.7)	3 (3.6)	4 (4.8)	7.5 (8.6)
Noise level at 50 (60) Hz [dB(A)]	68 (70)	70 (72)	72 (74)	74 (76)
Operating temperature [°C]	75 - 85	75 - 85	70 - 80	75 - 85
Weight [kg]	70	82	154	164
Suitable accessories	Spare part kit KIT-DO.105C/K*** Spare part kit KIT-DO.105C/G* Pre-filter FB 40 (p.626)	Spare part kit KIT-DO.150C/K*** Spare part kit KIT-DO.150C/G* Pre-filter FB 50 (p.626) Pre-filter FB 60 (p.626)	Spare part kit KIT-DO.205C/K*** Spare part kit KIT-DO.205C/G** Pre-filter FB 50 (p.626) Pre-filter FB 60 (p.626)	Spare part kit KIT-DO.305C/K*** Spare part kit KIT-DO.305C/G** Pre-filter FB 60 (p.626)



### Dimensions



DO.105C-3 | DO.150C-3



DO.205C-3 | DO.305C-3

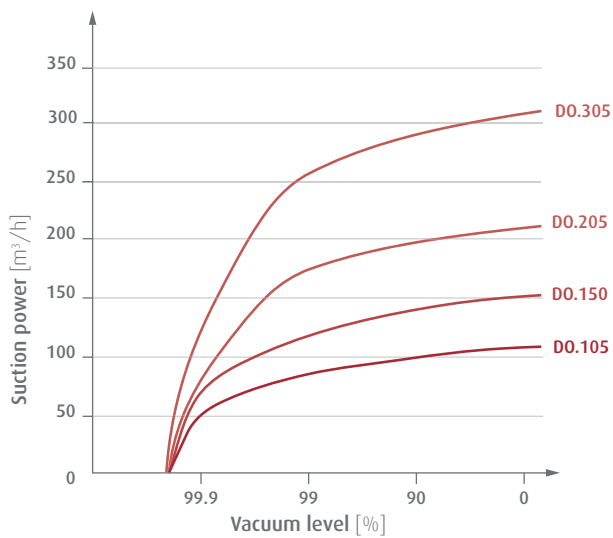
\* = Rubber link, seals, 3 vanes, FKM shaft seal, FKM O-rings, oil filter with bypass

\*\* = Rubber link, FKM and NBR O-rings, 3 x vanes, oil recirculation pipe, gas ballast pipe, filters, oil inspection glass

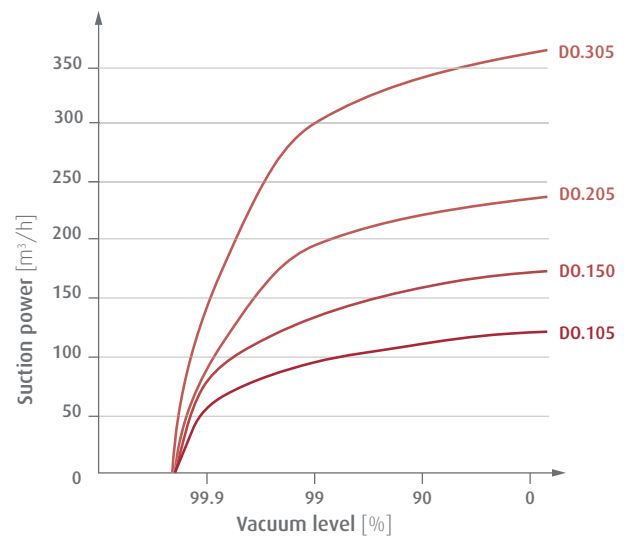
\*\*\* = Oil filter with bypass valve, exhaust filter, gasket

### Diagrams

> Suction power against vacuum level at 50 Hz



> Suction power against vacuum level at 60 Hz

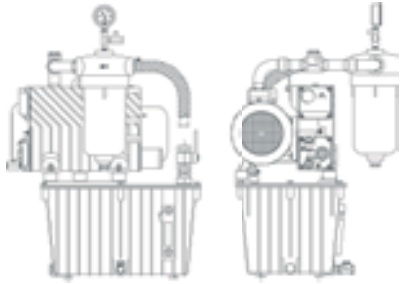




## Vacuum generation | Vacuum units

Portable vacuum units with condensate discharge for liquids

### Portable vacuum units with condensate discharge for liquids



#### Product Description

- > Portable system for vacuum supply for i.e. suction cups or fixing tools
- > Specially developed for the extraction of non-aggressive liquids such as e.g. cooling lubricants in the glass, marble and CNC machine markets

#### Ordering notes

Included in scope of delivery:

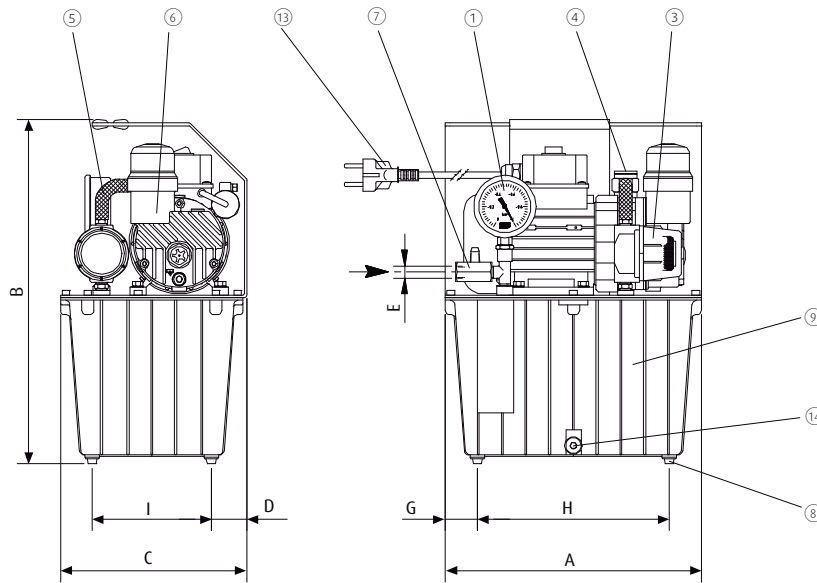
- > Vacuum tank
- > Oil-lubricated vacuum pump
- > Vacuum gauge
- > Condensate trap filter
- > Non-return valve at the tank inlet to separate the pump for maintenance
- > Float level control for automatic discharge of the collected liquid
- > Condensate discharge
- > Non-return valve and gas ballast for trapping and discharge the condensed water from the oil at standstill

#### Technical data

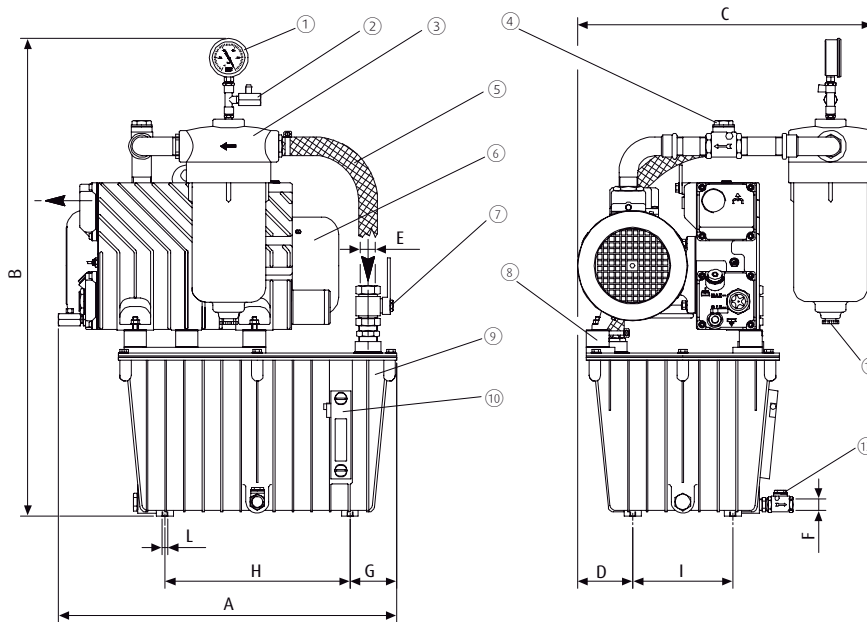
Item no.	Safety tank volume of vacuum tank [l]	Suction power at 50 Hz [m <sup>3</sup> /h]	Suction power at 60 Hz [m <sup>3</sup> /h]	Final vacuum [%]	Rated power at 50 Hz [kW]	Rated power at 60 Hz [kW]	Weight [kg]
VZ.DO.4B-1/8L	8	4	4.4	99.8	0.12	0.15	11
VZ.DO.5B-1/25L	25	5	6	99	0.25	0.25	31
VZ.DO.25C-3/25L	25	25	29	99.5	0.75	0.9	55
VZ.DO.40C-3/25L	25	40	48	99.5	1.1	1.35	71
VZ.DO.60C-3/25L	25	60	75	99.5	1.5	1.8	72



## Dimensions



VZ.DO.4B-1/8L



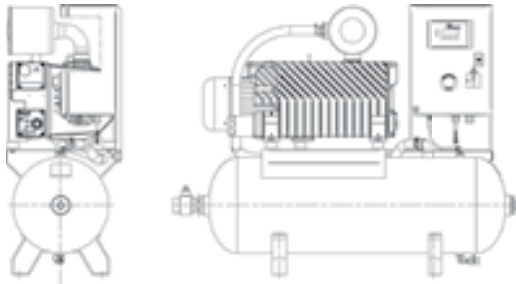
VZ.DO.5B-1/25L | VZ.DO.25C-3/25L | VZ.DO.40C-3/25L | VZ.DO.60C-3/25L

- ① = Vacuum gauge ② = Blow-off valve ③ = Filter ④ = Check valve ⑤ = Reinforced PVC tubing ⑥ = Vacuum pump  
 ⑦ = Connection valve of the system ⑧ = Vibration absorber ⑨ = Vacuum tank ⑩ = Liquid display ⑪ = Condensate blow-off valve  
 ⑫ = Automatic blow-off valve ⑬ = Power cable ⑭ = Blow-off vacuum tank

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E	F	G [mm]	H [mm]	I [mm]	L
VZ.DO.4B-1/8L	280	371	204	39	G1/4	--	35	210	130	--
VZ.DO.5B-1/25L	490	712	362	82	G1	G1/2	82	326	176	4xM10
VZ.DO.25C-3/25L	526	703	437	82	G1	G1/2	82	326	176	4xM10
VZ.DO.40C-3/25L	595	831	520	98	G1	G1/2	82	326	176	4xM10
VZ.DO.60C-3/25L	595	841	520	98	G1	G1/2	82	326	176	4xM10



### Vacuum units with one pump



#### Product Description

- > Centralised vacuum supply with horizontal buffer tank

#### Ordering notes

Included in scope of delivery:

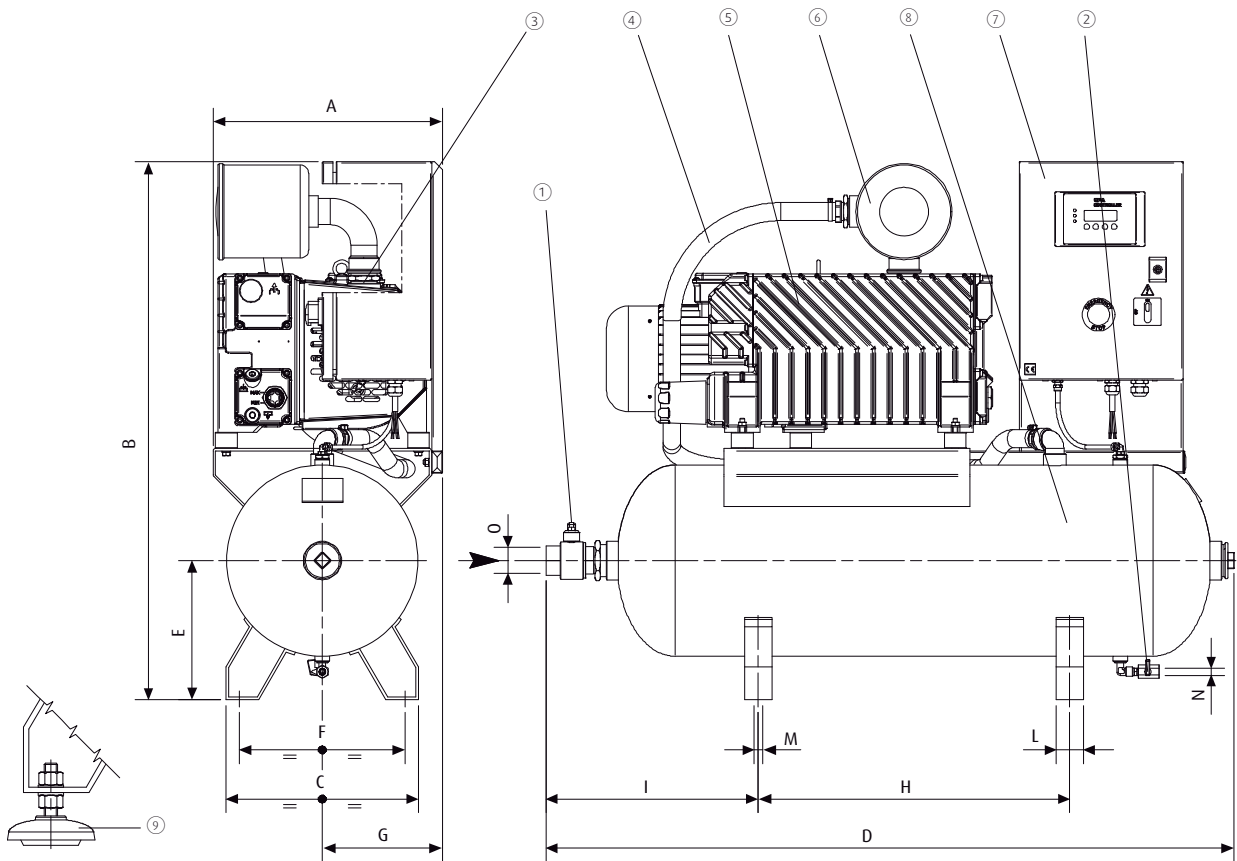
- > Oil-lubricated rotary vane pump with integrated oil mist separator at the outlet
- > Horizontal vacuum tank with condensate discharge valve
- > Particle filter to protect the pump
- > Non-return valve to maintain the vacuum when the pump is at standstill
- > Control panel (400 VAC, 50/60 Hz) with current protection, pressure sensor and PLC for manual and automatic operation
- > Switching cabinet IP 55
- > On request: Optional filter between the non-return valve and the vacuum system

#### Technical data

Item no.	Safety tank volume of vacuum tank [l]	Suction power at 50 Hz [m <sup>3</sup> /h]	Suction power at 60 Hz [m <sup>3</sup> /h]	Final vacuum [%]	Rated power at 50 Hz [kW]	Rated power at 60 Hz [kW]	Weight [kg]
VZ.1xDO.25C-3/100L	100	25	29	99	0.75	0.9	88
VZ.1xDO.25C-3/300L	300	25	29	99	0.75	0.9	133
VZ.1xDO.40B-3/100L	100	40	48	99	1.1	1.35	109
VZ.1xDO.40B-3/300L	300	40	48	99	1.1	1.35	154
VZ.1xDO.40B-3/500L	500	40	48	99	1.1	1.35	214
VZ.1xDO.60B-3/100L	100	60	75	99	1.5	1.8	112
VZ.1xDO.60B-3/300L	300	60	75	99	1.5	1.8	157
VZ.1xDO.60B-3/500L	500	60	75	99	1.5	1.8	217
VZ.1xDO.105C-3/100L	100	105	125	99	2.2	2.7	137
VZ.1xDO.105C-3/300L	300	105	125	99	2.2	2.7	182
VZ.1xDO.105C-3/500L	500	105	125	99	2.2	2.7	242
VZ.1xDO.205C-3/500L	500	205	245	99	4	4.8	400
VZ.1xDO.305C-3/500L	500	305	365	99	5.5	6.5	410



## Dimensions

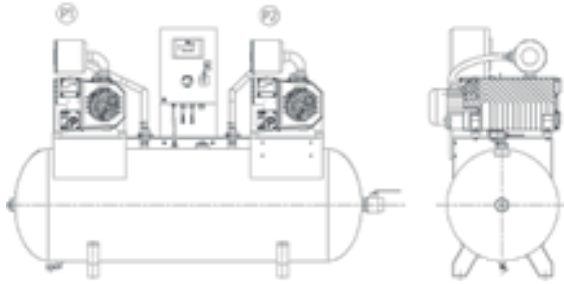


① = Connection valve of the system ② = Condensate blow-off valve ③ = Check valve ④ = Reinforced PVC tubing ⑤ = Vacuum pump  
 ⑥ = Filter ⑦ = Switchbox ⑧ = Vacuum tank ⑨ = Vibration absorber (on request)

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	L [mm]	M	N	O
VZ.1xDO.25C-3/100L	488	985	353	1,235	255	295	220	570	364	50	4xØ13	G1/4	G1
VZ.1xDO.25C-3/300L	493	1,220	512	1,626	330	454	245	895	410	50	4xØ13	G1/4	G1 1/2
VZ.1xDO.40B-3/100L	493	985	353	1,260	255	295	236	570	389	50	4xØ13	G1/4	G1 1/2
VZ.1xDO.40B-3/300L	502	1,220	512	1,620	330	454	245	895	404	50	4xØ13	G1/4	G1 1/2
VZ.1xDO.40B-3/500L	624	1,329	540	2,020	385	480	300	1,020	541	60	4xØ13	G1/4	G2
VZ.1xDO.60B-3/100L	493	985	353	1,260	255	295	236	570	389	50	4xØ13	G1/4	G1 1/2
VZ.1xDO.60B-3/300L	502	1,220	512	1,620	330	454	245	895	404	50	4xØ13	G1/4	G1 1/2
VZ.1xDO.60B-3/500L	624	1,329	540	2,025	385	480	300	1,020	541	60	4xØ13	G1/4	G2
VZ.1xDO.105C-3/100L	420	985	353	1,260	255	295	220	570	389	50	4xØ13	G1/4	G1 1/2
VZ.1xDO.105C-3/300L	450	1,220	512	1,620	330	454	245	895	404	50	4xØ13	G1/4	G1 1/2
VZ.1xDO.105C-3/500L	707	1,329	540	2,025	385	480	396	1,020	548	60	4xØ13	G1/4	G1 1/2
VZ.1xDO.205C-3/500L	600	1,412	540	2,020	385	480	300	1,020	543	60	4xØ13	G1/4	G2
VZ.1xDO.305C-3/500L	600	1,412	540	2,020	385	480	300	1,020	543	60	4xØ13	G1/4	G2



### Vacuum units with two pumps



#### Product Description

- > Centralised vacuum supply with two pumps and horizontal buffer tank
- > Redundant system that enables maintenance work to be done during operation

#### Ordering notes

Included in scope of delivery:

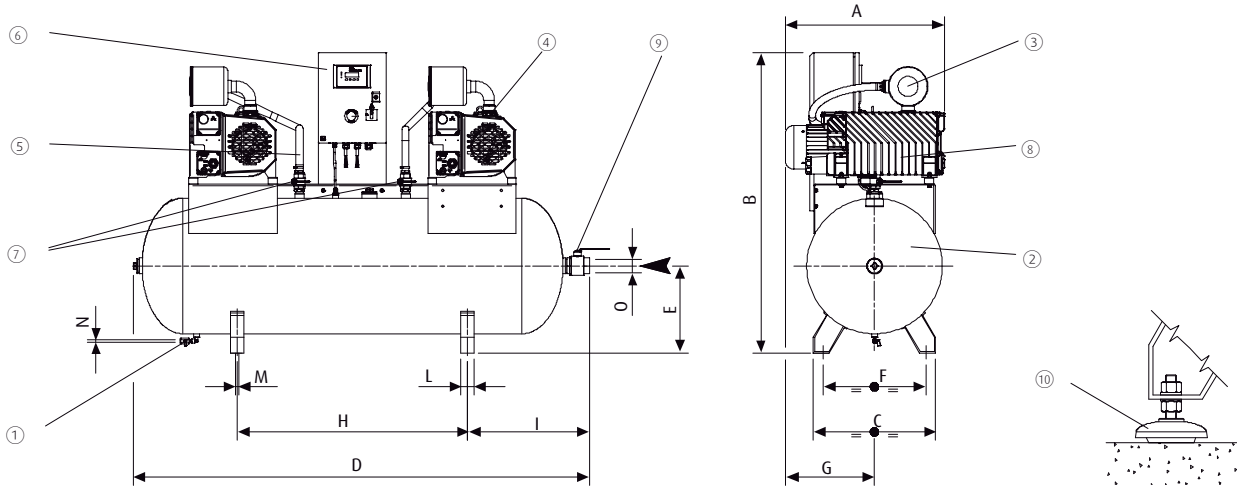
- > Two oil-lubricated rotary vane pumps with integrated oil mist separator at the outlet
- > Integrated non-return valve at the suction inlet to maintain the vacuum at standstill
- > Horizontal vacuum tank with condensate discharge valve
- > Two manual valves at the tank inlet to separate the pump from the system for maintenance
- > Particle filter to protect the pump
- > Control panel (400 VAC, 50/60 Hz) with current protection, pressure sensor and PLC for manual and automatic operation
- > Switching cabinet IP 55
- > On request: Optional filter between non-return valve and load end

#### Technical data

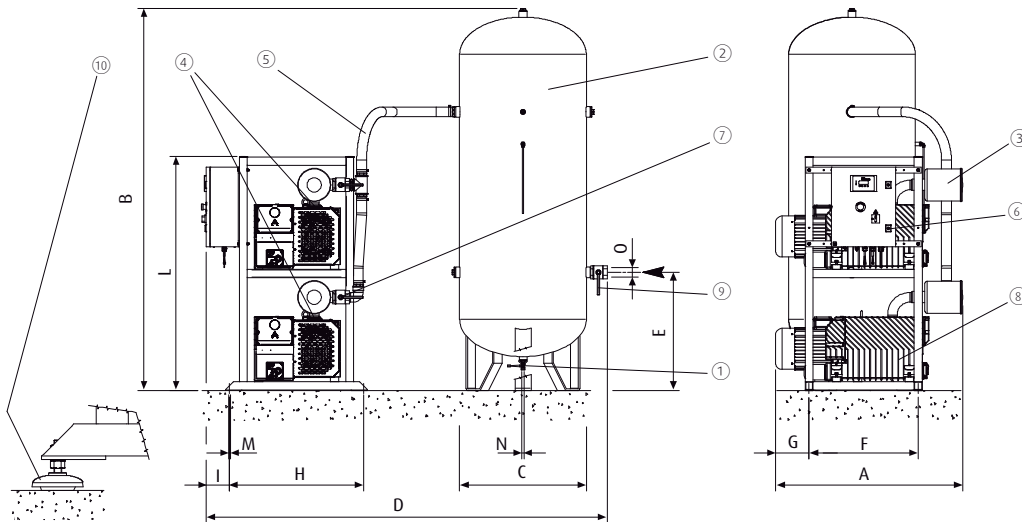
Item no.	Safety tank volume of vacuum tank [l]	Suction power at 50 Hz [m <sup>3</sup> /h]	Suction power at 60 Hz [m <sup>3</sup> /h]	Final vacuum [%]	Rated power at 50 Hz [kW]	Rated power at 60 Hz [kW]	Weight [kg]
VZ.2xDO.25C-3/300L	300	50	58	99	2x0.75	2x0.90	165
VZ.2xDO.40B-3/300L	300	80	96	99	2x1.1	2x1.35	195
VZ.2xDO.40B-3/500L	500	80	96	99	2x1.1	2x1.35	280
VZ.2xDO.60B-3/300L	300	120	150	99	2x1.5	2x1.8	200
VZ.2xDO.60B-3/500L	500	120	150	99	2x1.5	2x1.8	285
VZ.2xDO.105C-3/500L	500	210	250	99	2x2.2	2x2.7	340
VZ.2xDO.205C-3/1000L	1,000	410	490	99	2x4	2x4.8	580
VZ.2xDO.305C-3/1000L	1,000	610	730	99	2x7.5	2x9	600



## Dimensions



VZ.2xDO.25C-3/300L | VZ.2xDO.40B-3/300L | VZ.2xDO.40B-3/500L | VZ.2xDO.60B-3/300L | VZ.2xDO.60B-3/500L | VZ.2xDO.105C-3/500L



VZ.2xDO.205C-3/1000L | VZ.2xDO.305C-3/1000L

① = Condensate blow-off valve ② = Vacuum tank ③ = Filter ④ = Check valve ⑤ = Reinforced PVC tubing ⑥ = Switchbox  
 ⑦ = Vacuum pump blocking valve ⑧ = Vacuum pump ⑨ = Connection valve of the system ⑩ = Vibration absorber

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	L [mm]	M	N	O
VZ.2xDO.25C-3/300L	498	1,322	512	1,626	330	454	245	895	410	50	4xØ13	G1/4	G1 1/2
VZ.2xDO.40B-3/300L	502	1,320	512	1,620	330	454	245	895	404	50	4xØ13	G1/4	G1 1/2
VZ.2xDO.40B-3/500L	624	1,329	540	2,020	385	480	300	1,020	543	60	4xØ13	G1/4	G2
VZ.2xDO.60B-3/300L	502	1,320	512	1,620	330	454	245	895	404	50	4xØ13	G1/4	G1 1/2
VZ.2xDO.60B-3/500L	624	1,429	540	2,020	385	480	300	1,020	541	60	4xØ13	G1/4	G2
VZ.2xDO.105C-3/500L	707	1,429	540	2,020	385	480	396	1,020	541	60	4xØ13	G1/4	G2
VZ.2xDO.205C-3/1000L	1,068	2,381	790	2,500	738	680	109	835	145	1,460	4xØ13	G1/2	G2
VZ.2xDO.305C-3/1000L	1,138	2,381	790	2,500	738	680	179	835	145	1,460	4xØ13	G1/2	G2





### Vacuum units with three pumps



#### Product Description

- > Centralised vacuum supply with three pumps and vertical buffer tank
- > Redundant system that enables maintenance work to be done during operation

#### Ordering notes

Included in scope of delivery:

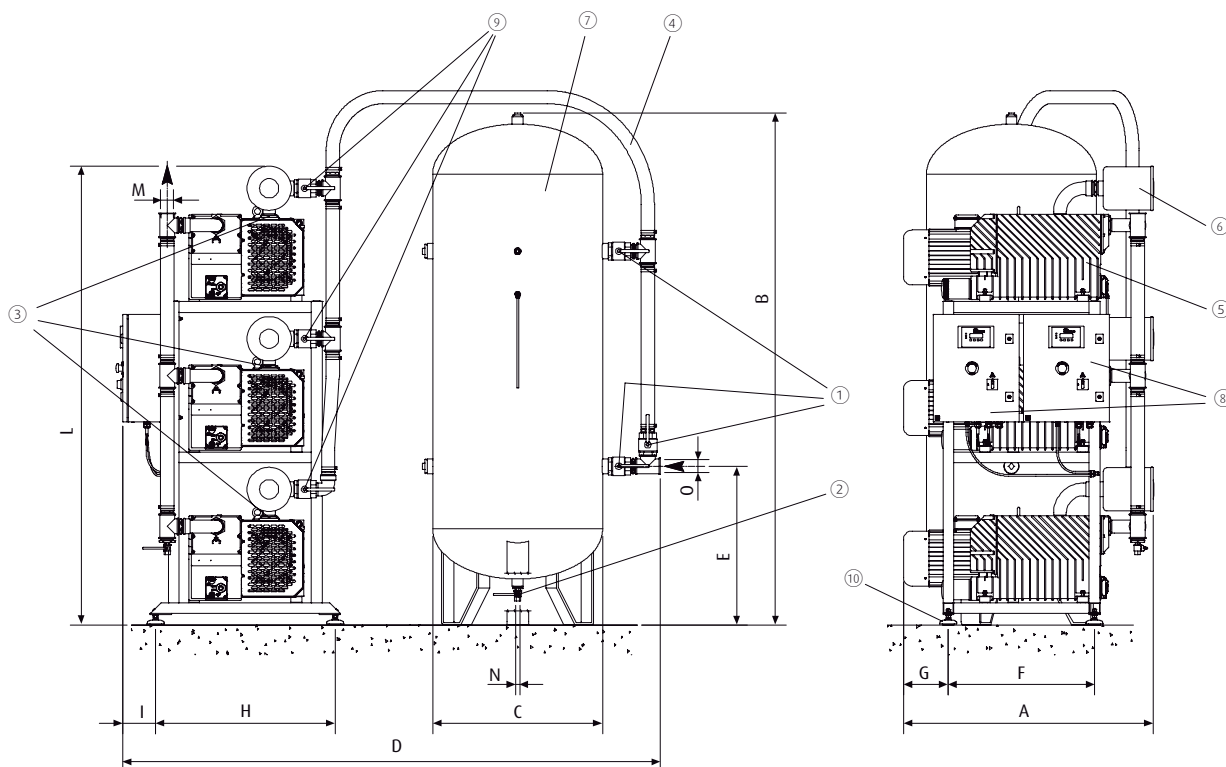
- > Three oil-lubricated rotary vane pumps mounted on one frame to conserve space
- > One vertical vacuum tank with condensate discharge valve and additional bypass system to separate the system
- > Three non-return valves integrated in the suction line of the pumps to maintain vacuum at standstill
- > Three particle filter elements to protect the pumps
- > Two independent control panels (400 VAC, 50/60 Hz) with current protection, pressure sensor and PLC for manual and automatic operation
- > Switching cabinet IP 55
- > Optional GFB hygiene filter element (Standard EN 773/3) with bypass system between the non-return valve and the load

#### Technical data

Item no.	Safety tank volume of vacuum tank [l]	Suction power at 50 Hz [m <sup>3</sup> /h]	Suction power at 60 Hz [m <sup>3</sup> /h]	Final vacuum [%]	Rated power at 50 Hz [kW]	Rated power at 60 Hz [kW]	Weight [kg]
VZ.3xDO.25C-3/300L	300	75	87	99	3x0.75	3x0.90	240
VZ.3xDO.25C-3/500L	500	75	87	99	3x0.75	3x0.90	300
VZ.3xDO.40B-3/500L	500	120	144	99	3x1.1	3x1.35	395
VZ.3xDO.60B-3/500L	500	180	125	99	3x1.5	3x1.8	410
VZ.3xDO.105C-3/500L	500	315	375	99	3x2.2	3x2.7	520
VZ.3xDO.105C-3/1000L	1,000	315	375	99	3x2.2	3x2.7	580
VZ.3xDO.150C-3/1000L	1,000	450	540	99	3x3	3x3.6	620
VZ.3xDO.205C-3/1000L	1,000	615	735	99	3x4	3x4.8	850
VZ.3xDO.305C-3/1000L	1,000	915	1,095	99	3x7.5	3x9	880



### Dimensions

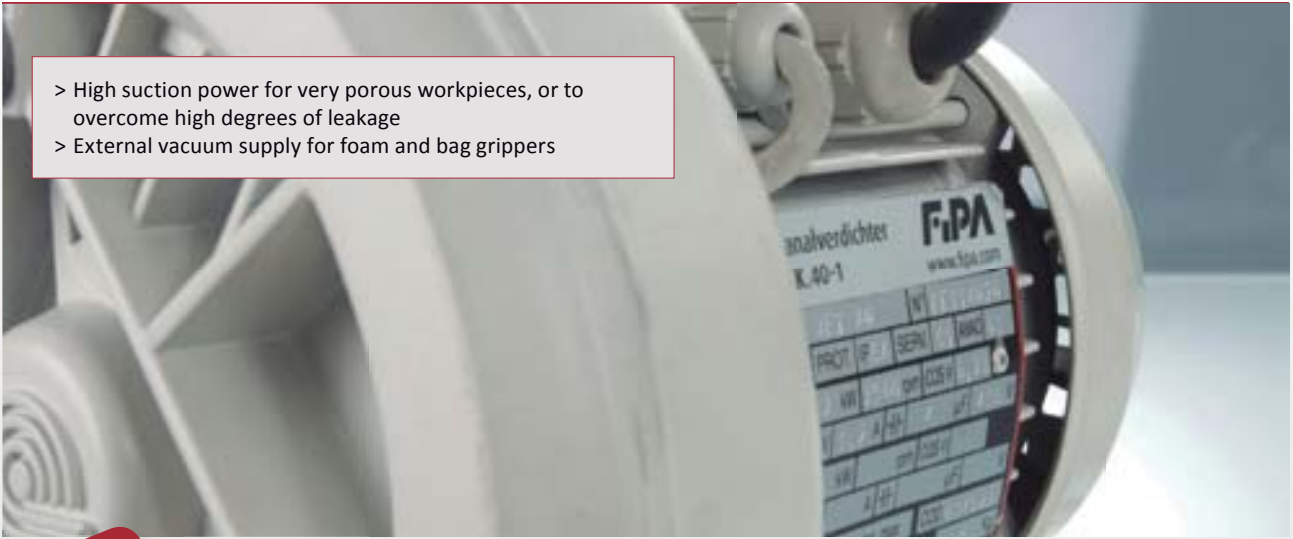


① = Vacuum tank bypass valve ② = Condensate blow-off valve ③ = Check valve ④ = Reinforced PVC tubing ⑤ = Vacuum pump  
 ⑥ = Filter ⑦ = Vacuum tank ⑧ = Switchbox ⑨ = Vacuum pump blocking valve ⑩ = Vibration absorber

Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	L [mm]	M	N	O
VZ.3xDO.25C-3/300L	750	1,677	500	1,821	612	670	40	550	245	1,407	G1	G1/2	G1
VZ.3xDO.25C-3/500L	750	2,139	600	1,810	708	670	40	550	245	1,407	G1	G1/2	G1
VZ.3xDO.40B-3/500L	750	2,142	600	2,071	708	670	40	550	245	1,567	G1	G1/2	G1 1/2
VZ.3xDO.60B-3/500L	796	2,142	600	2,045	708	670	40	550	245	1,592	G1	G1/2	G1 1/2
VZ.3xDO.105C-3/500L	874	2,142	600	2,515	708	670	109	550	245	1,643	G1 1/2	G1/2	G1 1/2
VZ.3xDO.105C-3/1000L	874	2,381	790	2,509	738	670	109	550	245	1,643	G1 1/2	G1/2	G1 1/2
VZ.3xDO.150C-3/1000L	897	2,381	790	2,453	738	670	129	550	245	1,643	G1 1/2	G1/2	G2
VZ.3xDO.205C-3/1000L	1,068	2,381	790	2,504	738	680	109	835	145	2,133	G2	G1/2	G2
VZ.3xDO.305C-3/1000L	1,138	2,381	790	2,500	738	680	179	835	145	2,133	G2	G1/2	G2



## FIPA Side channel blowers



- > High suction power for very porous workpieces, or to overcome high degrees of leakage
- > External vacuum supply for foam and bag grippers

On request



### Side channel blowers - single-stage and double-stage

- > Handling of porous workpieces, such as cardboard boxes or untreated wooden plates
- > Double-stage design offers higher suction power at the same vacuum level for effective leak compensation
- > Suitable for use in wet and dry areas
- > Suitable for continuous operation
- > Horizontal and vertical installation
- > Practically maintenance free



### Accessories

#### Additional silencer for side channel blowers

- > Open silencer for "further processing" of the exhaust air

> See page 618



#### Vacuum pressure changeover valve

- > Fast switching between vacuum mode (vacuum) and pressure mode (blow-off)
- > Enables short cycle times
- > Installation of a vacuum relief valve at the suction inlet is recommended

> See page 619



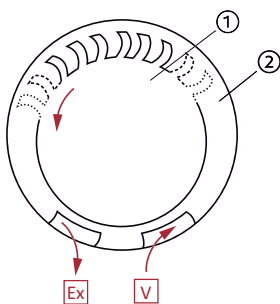
## FIPA Side channel blowers

### Examples of use

- > Vacuum generation for the TC/TL series foam grippers or TG series bag grippers
- > Handling of cardboard packaging with vacuum cups
- > Pneumatic conveying
- > Extraction of particles which are not too coarse, such as wood dust in woodworking

### Principle of operation

- > Side channel blowers use the momentum principle for generating vacuums or compressed air
- > The rapidly rotating blade wheel ① accelerates the air within the annular housing ②
- > In addition, a swirling motion is created in the side channels which increases efficiency
- > The shape of the inlet channel  V or the outlet channel  Ex allows air to be suctioned in or expelled



### Performance characteristics

- (a) Characteristic of ejectors
- (b) Characteristic of vacuum pumps
- (c) Side channel blowers have an extremely high output, but achieve only a low ultimate vacuum

