



**VACUUM SOLUTIONS**



**VACUUM AND OVER-  
PRESSURE**  
for the Oil and Gas  
Industry

# Your Partner. For All Your Vacuum Needs.



## **The future of vacuum. Since 1963.**

Busch Vacuum Solutions offers vacuum and overpressure solutions for all industries. From individual vacuum pumps, blowers, and compressors to tailor-made vacuum systems. More than 50 years ago, Dr.-Ing. Karl and Ayhan Busch developed the ideal vacuum pump for the food packaging industry. Today, the family business from Maulburg in the Black Forest is the market leader in all areas of industrial vacuum. With over 3500 employees in more than 40 countries. Thanks to our great experience and highly qualified specialists, we are driving innovation. And working on the vacuum world of the future.

## **The first overseas subsidiary. In the UK.**

Busch (UK) Ltd was established in 1971 as the first overseas subsidiary within the global Busch Group. The Busch (UK) Ltd headquarters, national service center and systems building department are located in Telford, Shropshire. Additionally, we have a dedicated medium/high vacuum service center based in East Kilbride, which also provides support to our customers in Scotland. Our dedicated systems department designs and builds standard and individual vacuum and low overpressure systems to meet the requirements of our customers and their processes. Vacuum pumps and systems are

fully supported by our established and comprehensive range of service products. Customers can rely on expert advice, repair, vacuum pump and system audits and maintenance capability, either at our UK service centers, or on-site via our extensive network of field-based Busch service engineers.

## **Safe and reliable technology. Upstream, midstream and downstream.**

Many processes in the oil and gas industry rely on vacuum and overpressure. To ensure safe operations. Busch is known for its broad product portfolio. In various process compatible materials. Our vacuum



pumps and compressors are used in upstream, midstream and downstream applications. For example, sea water deoxygenation, vent gas recovery and vacuum distillation. When it comes to vacuum and overpressure, we are your partner of choice.

**Our extensive product portfolio draws on the widest range of vacuum and overpressure technologies.**



Our vacuum and overpressure solutions are installed in all areas of the oil and gas industry. From exploration and extraction to refinement and distribution. All around the globe.

# The Perfect Solution. For All Applications.

- **R5** Oil-lubricated rotary vane vacuum pumps
- **COBRA** Dry screw vacuum pumps
- **SECO** Dry-running rotary vane vacuum pumps
- **TYR** Rotary lobe blowers
- **HUCKEPACK** Once-through oil-lubricated rotary vane vacuum pumps
- **DOLPHIN** Liquid ring vacuum pumps
- **MINK** Dry claw vacuum pumps and compressors
- **VACTEST** Vacuum measurement equipment
- **TAPIR** Leak detectors

	R5	COBRA	SECO	TYR	HUCKEPACK	DOLPHIN	MINK	VACTEST	TAPIR
Seawater deoxygenation / de-aeration		●				●		●	●
Crude oil distillation / fractionation						●		●	●
Petrol production		●	●			●		●	●
Solvent extraction	●	●			●			●	●
Monoethylene glycol (MEG) regeneration		●				●		●	●
Triethylene glycol (TEG) regeneration						●		●	●
Oil purification	●	●			●			●	●
Priming water pumps						●		●	●
Water de-gassing						●		●	●
Vent gas recovery						●	●	●	●
Mud transfer						●		●	●

	R5	COBRA	SECO	TYR	HUCKEPAC K	DOLPHIN	MINK	VACTEST	TAPIR
<b>Pipeline drying</b>	●	●						●	●
<b>Filtration</b>				●				●	●

● perfectly suited

◐ possible

# R5 RA 0025/0040 F

## Oil-lubricated rotary vane vacuum pumps



### Reliable

Robust construction, highly durable fiber-reinforced epoxy resin vanes, proven rotary vane technology, long service life

### High performance

High pumping speed at low pressures, designed for continuous operation

### Flexible

Various design options available, easy adaption to individual customer requirements and processes

	R5 RA 0025 F	R5 RA 0040 F
Nominal pumping speed	25 / 30 m <sup>3</sup> /h (50 / 60 Hz)	40 / 48 m <sup>3</sup> /h (50 / 60 Hz)
Ultimate pressure	0.1 hPa (mbar) (50 / 60 Hz)	0.1 hPa (mbar) (50 / 60 Hz)
Nominal motor rating	1.0 / 1.2 kW (50 / 60 Hz)	1.4 / 1.7 kW (50 / 60 Hz)
Nominal motor speed	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)
Power consumption at 100 mbar	0.8 / 0.9 kW (50 / 60 Hz)	1.1 / 1.2 kW (50 / 60 Hz)
Power consumption at ultimate pressure	0.5 / 0.6 kW (50 / 60 Hz)	0.6 / 0.7 kW (50 / 60 Hz)
Noise level (ISO 2151)	60 / 63 dB(A) (50 / 60 Hz)	63 / 66 dB(A) (50 / 60 Hz)
Oil capacity	1 l	1 l
Weight approx.	36 kg	42 kg
Dimensions (L x W x H)	585 x 284 x 263 mm	625 x 284 x 263 mm
Gas inlet / outlet	G 1¼" / G 1¼"	G 1¼" / G 1¼"

# Accessories and spare parts – R5 RA 0025/0040 F

	R5 RA 0025 F	R5 RA 0040 F
Service kit R5 RA 0025/0040 C/ E/F	0992101463	0992101463
Inlet filter cartridge paper	0532000002	0532000002
Inlet filter cartridge polyester	0532121862	0532121862
Oil VSC 100 1l	0831168356	0831168356
Oil VSC 100 5l	0831168357	0831168357
Gas-ballast valve	0916154155	0916154155
Gas-ballast valve with shut-off valve	0916142106	0916142106
Manometer, measurement range 0 to 1 bar(g)	0946134753	0946134753
Vacuum regulating unit incl. hose nipple Ø 39.5 mm	0947000449	0947000449
Vacuum regulating unit incl. hose nipple Ø 31.9 mm	0947000461	0947000461
Oil level switch, G1	0947143199	0947143199
Activated carbon filter for exhaust gases	0945000251	0945000251
Replacement insert for activated carbon filter	0530000150	0530000150
Hose nipple, R 1, Ø 31.9 mm	0574000104	0574000104
Hose nipple, R 1¼, Ø 39.5 mm	0574000105	0574000105



# R5 RA 0063/0100 F

## Oil-lubricated rotary vane vacuum pumps



### Reliable

Robust construction, highly durable fiber-reinforced epoxy resin vanes, proven rotary vane technology, long service life

### High performance

High pumping speed at low pressures, designed for continuous operation

### Flexible

Various design options available, easy adaption to individual customer requirements and processes

	R5 RA 0063 F	R5 RA 0100 F
Nominal pumping speed	63 / 76 m <sup>3</sup> /h (50 / 60 Hz)	100 / 120 m <sup>3</sup> /h (50 / 60 Hz)
Ultimate pressure	0.1 hPa (mbar) (50 / 60 Hz)	0.1 hPa (mbar) (50 / 60 Hz)
Nominal motor rating	2.0 / 2.4 kW (50 / 60 Hz)	2.7 / 3.4 kW (50 / 60 Hz)
Nominal motor speed	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)
Power consumption at 100 mbar	1.3 / 1.5 kW (50 / 60 Hz)	1.9 / 2.4 kW (50 / 60 Hz)
Power consumption at ultimate pressure	0.7 / 0.8 kW (50 / 60 Hz)	1.2 / 1.5 kW (50 / 60 Hz)
Noise level (ISO 2151)	64 / 67 dB(A) (50 / 60 Hz)	65 / 68 dB(A) (50 / 60 Hz)
Oil capacity	2 l	2 l
Weight approx.	55 kg	73 kg
Dimensions (L x W x H)	627 x 406 x 290 mm	701 x 406 x 290 mm
Gas inlet / outlet	G 1¼" / G 1¼"	G 1¼" / G 1¼"

# Accessories and spare parts – R5 RA 0063/0100 F

	R5 RA 0063 F	R5 RA 0100 F
Service kit R5 RA 0063/0100 C/ E/F	0992106214	0992106214
Inlet filter cartridge paper	0532000002 0532000003	0532000002 0532000003
Inlet filter cartridge polyester	0532121862 0532121863	0532121862 0532121863
Oil VSC 100 1 l	0831168356	0831168356
Oil VSC 100 5 l	0831168357	0831168357
Inlet filter FIL 0063 with paper insert, horizontal orientation	0945000133	0945000133
Inlet filter FIL 0063 with paper insert, vertical orientation	0945000132	0945000132
Inlet filter FIL 0063 with polyester insert, horizontal orientation	0945121874	0945121874
Inlet filter FIL 0063 with polyester insert, vertical orientation	0945121873	0945121873
Inlet filter FIL 0100 with paper insert, horizontal orientation	0945000135	0945000135
Inlet filter FIL 0100 with paper insert, vertical orientation	0945000134	0945000134
Inlet filter FIL 0100 with polyester insert, horizontal orientation	0945121876	0945121876
Inlet filter FIL 0100 with polyester insert, vertical orientation	0945121875	0945121875
Inlet filter FIL 0100 screengrid, vertical orientation	0945000136	0945000136
Gas-ballast valve	0916154155	0916154155
Gas-ballast valve with shut-off valve	0916142106	0916142106
Vacuum regulating unit incl. hose nipple Ø 39.5 mm	0947000449	0947000449
Vacuum regulating unit incl. hose nipple Ø 31.9 mm	0947000461	0947000461
Oil level switch, G 1	0947143199	0947143199
Activated carbon filter for exhaust gases	0945000251	0945000251

	R5 RA 0063 F	R5 RA 0100 F
<b>Replacement insert for activated carbon filter</b>	0530000150	0530000150
<b>Hose nipple, R 1, Ø 31.9 mm</b>	0574000104	0574000104
<b>Hose nipple, R 1¼, Ø 39.5 mm</b>	0574000105	0574000105

# R5 RA 0155 A

## Oil-lubricated rotary vane vacuum pump



### Flexible

Easy adaption to individual customer requirements and processes, level and temperature switch as standard

### High performance

High pumping speed at low pressures, designed for continuous operation in the rough vacuum range

### Reliable

Robust construction, highly durable fiber-reinforced epoxy resin vanes, proven rotary vane technology, long service life

R5 RA 0155 A	
Nominal pumping speed	150 / 175 m <sup>3</sup> /h (50 / 60 Hz)
Ultimate pressure	0.1 hPa (mbar) (50 / 60 Hz)
Nominal motor rating	4.0 / 4.2 kW (50 / 60 Hz)
Nominal motor speed	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)
Power consumption at 100 mbar	3.2 / 3.8 kW (50 / 60 Hz)
Power consumption at ultimate pressure	2.1 / 2.5 kW (50 / 60 Hz)
Noise level (ISO 2151)	70 / 72 dB(A) (50 / 60 Hz)
Oil capacity	3.5 l
Weight approx.	110 kg
Dimensions (L x W x H)	765 x 470 x 340 mm
Gas inlet / outlet	G 2" / G 2"

# Accessories and spare parts – R5 RA 0155 A

R5 RA 0155 A	
<b>Inlet filter with paper cartridge, vertical orientation</b>	0945 215 248
<b>Inlet filter with paper cartridge, horizontal orientation</b>	0945 215 249
<b>Inlet filter with polyester cartridge, vertical orientation</b>	0945 215 251
<b>Inlet filter with polyester cartridge, horizontal orientation</b>	0945 215 252
<b>Replacement paper cartridge</b>	0532 000 004
<b>Replacement polyester cartridge</b>	0532 121 864
<b>Gas-ballast valve, fan cover side</b>	0916 563 690
<b>Gas-ballast valve</b>	0947 568 872
<b>Exhaust pressure gauge</b>	0946 504 734
<b>Level switch</b>	0652 566 788

# R5 RA 0165-0305 D

## Oil-lubricated rotary vane vacuum pumps



### Reliable

Robust construction, highly resilient carbon fiber vanes, proven rotary vane technology, long service life

### High performance

High pumping speed at low pressures, designed for continuous operation in the rough vacuum range

### Flexible

Various design options available, easy adaption to individual customer requirements and processes

	R5 RA 0165 D	R5 RA 0205 D	R5 RA 0255 D	R5 RA 0305 D
<b>Nominal pumping speed</b>	160 / 190 m <sup>3</sup> /h (50 / 60 Hz)	200 / 240 m <sup>3</sup> /h (50 / 60 Hz)	250 / 300 m <sup>3</sup> /h (50 / 60 Hz)	300 / 360 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure (gas-ballast valve closed)</b>	0.1 hPa (mbar) (50 / 60 Hz)	0.1 hPa (mbar) (50 / 60 Hz)	0.1 hPa (mbar) (50 / 60 Hz)	0.1 hPa (mbar) (50 / 60 Hz)
<b>Ultimate pressure (gas-ballast valve open)</b>	0.5 hPa (mbar) (50 / 60 Hz)	0.5 hPa (mbar) (50 / 60 Hz)	0.5 hPa (mbar) (50 / 60 Hz)	0.5 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	5.5 / 6.6 kW (50 / 60 Hz)	5.5 / 6.6 kW (50 / 60 Hz)	7.5 / 9.2 kW (50 / 60 Hz)	8.3 / 10.0 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)
<b>Power consumption at 100 mbar</b>	3.7 / 4.7 kW (50 / 60 Hz)	4.2 / 5.2 kW (50 / 60 Hz)	5.5 / 6.6 kW (50 / 60 Hz)	6.1 / 7.2 kW (50 / 60 Hz)
<b>Power consumption at ultimate pressure</b>	2.4 / 2.9 kW (50 / 60 Hz)	3.3 / 4.0 kW (50 / 60 Hz)	4.1 / 4.5 kW (50 / 60 Hz)	4.7 / 5.1 kW (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	70 / 72 dB(A) (50 / 60 Hz)	72 / 74 dB(A) (50 / 60 Hz)	72 / 74 dB(A) (50 / 60 Hz)	74 / 76 dB(A) (50 / 60 Hz)
<b>Oil capacity</b>	6.5 l	6.5 l	6.5 l	6.5 l
<b>Weight approx.</b>	160 kg	160 kg	195 kg	195 kg
<b>Dimensions (L x W x H)</b>	977 x 583 x 418 mm	977 x 583 x 418 mm	1056 x 583 x 418 mm	1057 x 583 x 418 mm
<b>Gas inlet / outlet</b>	G 2" / G 2"	G 2" / G 2"	G 2" / G 2"	G 2" / G 2"

# Accessories and spare parts – R5 RA 0165–0305 D

	R5 RA 0165 D	R5 RA 0205 D	R5 RA 0255 D	R5 RA 0305 D
<b>Service kit R5 RA 0165–0305 D</b>	0992525287	0992525287	0992525287	0992525287
<b>Inlet filter cartridge paper with impact plate</b>	0532107987	0532107987	0532107987	0532107987
<b>Inlet filter cartridge paper</b>	0532000004	0532000004	0532000004	0532000004
<b>Inlet filter cartridge polyester</b>	0532121864	0532121864	0532121864	0532121864
<b>Oil VSC 100 1 l</b>	0831168356	0831168356	0831168356	0831168356
<b>Oil VSC 100 5 l</b>	0831168357	0831168357	0831168357	0831168357
<b>Inlet filter FIL 0250 with paper insert, vertical orientation</b>	0945215248	0945215248	0945215248	0945215248
<b>Inlet filter FIL 0250 with paper insert, horizontal orientation</b>	0945215249	0945215249	0945215249	0945215249
<b>Inlet filter FIL 0250 with polyester insert, vertical orientation</b>	0945215251	0945215251	0945215251	0945215251
<b>Inlet filter FIL 0250 with polyester insert, horizontal orientation</b>	0945215252	0945215252	0945215252	0945215252
<b>Direct starter unit</b>	0985568619	0985568619	0985568619	0985568619
<b>Soft starter</b>	0985571089	0985571089	0985571089	0985571089
<b>Gas-ballast valve in B cover plate</b>	0916516610	0916516610	0916516610	0916516610
<b>Gas-ballast valve in A and B cover plate</b>	0916517460	0916517460	0916517460	0916517460
<b>Gas-ballast valve in B cover plate, with solenoid valve 24 VDC</b>	0916518385	0916518385	0916518385	0916518385
<b>Oil level/temperature switch ≤ 230 VAC / 100 VDC</b>	0652566788	0652566788	0652566788	0652566788
<b>Temperature switch ≤ 250 VAC / V DC</b>	0651566632	0651566632	0651566632	0651566632
<b>Temperature transmitter 0–150°C, Ex, 4 – 20 mA</b>	0651566842	0651566842	0651566842	0651566842
<b>Pressure switch ≤ 230 VDC / VAC</b>	0653566736	0653566736	0653566736	0653566736
<b>Pressure transmitter, 0–1 bar(g) Ex, 4–20 mA</b>	0653567425	0653567425	0653567425	0653567425
<b>Manometer</b>	0946504734	0946504734	0946504734	0946504734
<b>Vacuum regulating unit</b>	0947000482	0947000482	0947000481	0947000481

	R5 RA 0165 D	R5 RA 0205 D	R5 RA 0255 D	R5 RA 0305 D
<b>Oil separator with automatic oil return</b>	0947522025	0947522025	0947522025	0947522025
<b>Hose nipple, R 2, Ø 59.6 mm</b>	0574000014	0574000014	0574000014	0574000014
<b>Reducing nipple, type 241, 2½"-2"</b>	0945000135	0945000135	0945000135	0945000135
<b>Water regulating unit for heat exchanger (thermostatic valve, pressure switch, dirt trap)</b>	0918558131	0918558131	0918558131	0918558131
<b>Water regulating unit for heat exchanger (2/2 solenoid valve, thermostatic valve, pressure switch, dirt trap)</b>	0918205658	0918205658	0918205658	0918205658
<b>Activated carbon filter for exhaust gases, vertical orientation</b>	0945527592	0945527592	0945527592	0945527592
<b>Activated carbon filter for exhaust gases, horizontal orientation</b>	0945569488	0945569488	0945569488	0945569488



# R5 RA 0400–0630 C

## Oil-lubricated rotary vane vacuum pumps



### Reliable

Robust construction, highly resilient carbon fiber vanes, proven rotary vane technology, long service life

### High performance

High pumping speed at low pressures, designed for continuous operation

### Flexible

Various design options available, easy adaption to individual customer requirements and processes, variable speed drive available

	R5 RA 0400 C	R5 RA 0502 C	R5 RA 0630 C
<b>Nominal pumping speed</b>	410 / 480 m <sup>3</sup> /h (50 / 60 Hz)	510 / 590 m <sup>3</sup> /h (50 / 60 Hz)	630 / 760 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	0.1 hPa (mbar) (50 / 60 Hz)	0.1 hPa (mbar) (50 / 60 Hz)	0.1 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	11 / 15 kW (50 / 60 Hz)	11 / 15 kW (50 / 60 Hz)	15 / 18.5 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1000 / 1200 min <sup>-1</sup> (50 / 60 Hz)	1000 / 1200 min <sup>-1</sup> (50 / 60 Hz)	1000 / 1200 min <sup>-1</sup> (50 / 60 Hz)
<b>Power consumption at 100 mbar</b>	8.2 / 10.0 kW (50 / 60 Hz)	9.9 / 12.0 kW (50 / 60 Hz)	11.6 / 14.4 kW (50 / 60 Hz)
<b>Power consumption at ultimate pressure</b>	4.7 / 5.6 kW (50 / 60 Hz)	5.8 / 6.4 kW (50 / 60 Hz)	6.5 / 8.0 kW (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	77 / 79 dB(A) (50 / 60 Hz)	77 / 79 dB(A) (50 / 60 Hz)	77 / 79 dB(A) (50 / 60 Hz)
<b>Oil capacity</b>	12 l	12 l	15 l
<b>Weight approx.</b>	435 kg	530 kg	550 kg
<b>Dimensions (L x W x H)</b>	1309 x 862 x 711 mm	1374 x 864 x 712 mm	1723 x 912 x 712 mm
<b>Gas inlet / outlet</b>	G 3" / G 3"	G 3" / G 3"	G 3" / G 3"

# R5 RA 1000/1600 B

## Oil-lubricated rotary vane vacuum pumps



### Reliable

Robust construction, highly resilient carbon fiber vanes, proven rotary vane technology, long service life

### High performance

High pumping speed at low pressures, designed for continuous operation

### Flexible

Various design options available, easy adaption to individual customer requirements and processes, level and temperature switch as standard

	R5 RA 1000 B	R5 RA 1600 B
Nominal pumping speed	1000 / 1200 m <sup>3</sup> /h (50 / 60 Hz)	1600 / 1800 m <sup>3</sup> /h (50 / 60 Hz)
Ultimate pressure	0.3 hPa (mbar) (50 / 60 Hz)	0.3 hPa (mbar) (50 / 60 Hz)
Nominal motor rating	22.0 / 30.0 kW (50 / 60 Hz)	30.0 / 37.0 kW (50 / 60 Hz)
Nominal motor speed	1000 / 1200 min <sup>-1</sup> (50 / 60 Hz)	1000 / 1200 min <sup>-1</sup> (50 / 60 Hz)
Power consumption at 100 mbar	17.3 / 22.4 kW (50 / 60 Hz)	26.8 / 33.0 kW (50 / 60 Hz)
Power consumption at ultimate pressure	9.3 / 12.1 kW (50 / 60 Hz)	13.8 / 17.9 kW (50 / 60 Hz)
Noise level (ISO 2151)	82 dB(A) (50 / 60 Hz)	83 dB(A) (50 / 60 Hz)
Oil capacity	30 l	30 l
Weight approx.	1000 / 1060 kg	1330 / 1350 kg
Dimensions (L x W x H)	1894 x 1003 x 936 mm	2234 x 1040 x 936 mm
Gas inlet / outlet	DN 150 / DN 125	DN 150 / DN 125

# Accessories and spare parts – R5 RA 1000/1600 B

	R5 RA 1000 B	R5 RA 1600 B
<b>Inlet filter with paper cartridge, horizontal orientation</b>	0945 502 545	0945 502 545
<b>Inlet filter with polyester cartridge, horizontal orientation</b>	0945 516 558	0945 516 558
<b>Replacement paper cartridge</b>	0532 000 007	0532 000 007
<b>Replacement polyester cartridge</b>	0532 516 239	0532 516 239
<b>Gas-ballast valve, fan cover side</b>	0916 000 307	0916 000 307
<b>Gas-ballast valve, motor side</b>	0916 000 307	0916 000 307
<b>Gas-ballast with 24V solenoid valve, fan cover side</b>	0916 533 281	0916 533 281
<b>Gas-ballast with 24V solenoid valve, motor side</b>	0916 533 281	0916 533 281
<b>Exhaust pressure gauge</b>	0946 000 102	0946 000 102
<b>Water-oil heat exchanger</b>	On request	On request
<b>Level switch</b>	0652 566 788	0652 566 788
<b>Pressure switch</b>	0653 566 736	0653 566 736
<b>Pressure transmitter</b>	0653 567 425	0653 567 425

# R5 RE 0040/0063 B

## Oil-lubricated rotary vane vacuum pumps



### Explosion-proof

ATEX-certified to directive 2014/34/EU: II 1/2G Ex h IIB3 T4 Ga/Gb, specially designed to extract explosion endangered gas/air and vapor/air mixtures, suitable for the extraction of almost all materials in the IIB3 explosion group as well as petrol vapor

### Reliable

Robust construction, highly durable fiber-reinforced epoxy resin vanes, proven rotary vane technology, long service life

### Flexible

Various design options available, easy adaption to individual customer requirements and processes, level and temperature switch as standard

	R5 RE 0040 B	R5 RE 0063 B
Nominal pumping speed	40 / 48 m <sup>3</sup> /h (50 / 60 Hz)	63 / 76 m <sup>3</sup> /h (50 / 60 Hz)
Ultimate pressure	0.5 hPa (mbar) (50 / 60 Hz)	0.5 hPa (mbar) (50 / 60 Hz)
Nominal motor rating	1.5 / 2.2 kW (50 / 60 Hz)	2.2 kW (50 / 60 Hz)
Nominal motor speed	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)
Noise level (ISO 2151)	63 / 66 dB(A) (50 / 60 Hz)	65 / 68 dB(A) (50 / 60 Hz)
Oil capacity	2 l	2 l
Weight approx.	87 kg	91 kg
Dimensions (L x W x H)	696 x 405 x 381 mm (50 / 60 Hz)	721 x 405 x 381 mm (50 / 60 Hz)
Gas inlet / outlet	G 1¼" / G 1¼"	G 1¼" / G 1¼"

# COBRA NC 0100–0300 B

## Dry screw vacuum pumps



### High performance

Advanced screw design, patented self-balancing screws, perfectly suited for chemical processes, distillation and vacuum drying

### Efficient

Low cost of ownership, minimal maintenance, long service intervals, high uptime, efficient water cooling

### Flexible

Air cooling, various sealing and coating configurations as well as ATEX-certified versions available

	COBRA NC 0100 B	COBRA NC 0200 B	COBRA NC 0300 B
<b>Pumping speed</b>	110 / 130 m <sup>3</sup> /h (50 / 60 Hz)	220 / 265 m <sup>3</sup> /h (50 / 60 Hz)	320 / 385 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	≤ 0.05 / ≤ 0.01 hPa (mbar) (50 / 60 Hz)	≤ 0.05 / ≤ 0.01 hPa (mbar) (50 / 60 Hz)	≤ 0.05 / ≤ 0.01 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	3.5 / 4.8 kW (50 / 60 Hz)	6.0 / 7.6 kW (50 / 60 Hz)	7.5 / 9.5 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	≤ 70 / ≤ 74 dB(A) (50 / 60 Hz)	≤ 71 / ≤ 76 dB(A) (50 / 60 Hz)	≤ 72 / ≤ 77 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	300 kg	350 kg	400 kg
<b>Dimensions (L x W x H)</b>	1127 x 520 x 595 mm	1264 x 520 x 607 mm	1334 x 520 x 607 mm
<b>Gas inlet / outlet</b>	DN 40 PN 16 / DN 40 PN 16	DN 50 PN 16 / DN 50 PN 16	DN 50 PN 16 / DN 50 PN 16

# COBRA NC 0600 C

## Dry screw vacuum pump



### High performance

Advanced screw design, patented self-balancing screws, perfectly suited for chemical processes, distillation and vacuum drying

### Flexible

Air cooling, various sealing and coating configurations as well as ATEX-certified versions available

### Efficient

Low cost of ownership, minimal maintenance, long service intervals, high uptime, efficient water cooling

COBRA NC 0600 C	
Pumping speed	600 m <sup>3</sup> /h (50 / 60 Hz)
Ultimate pressure	≤ 0.01 hPa (mbar) (50 / 60 Hz)
Nominal motor rating	18.5 kW
Power consumption at ultimate pressure	9 kW
Nominal motor speed	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)
Noise level (ISO 2151)	≤ 74 / ≤ 76 dB(A) (50 / 60 Hz)
Weight approx.	600 kg
Dimensions (L x W x H)	1502 x 602 x 640 mm
Gas inlet / outlet	DN 100 ISO-K / DN 100 ISO-K

# COBRA NC 0400–1000 B/C

## Dry screw vacuum pumps



### High performance

Advanced screw design, patented self-balancing screws, perfectly suited for chemical processes, distillation and vacuum drying

### Efficient

Low cost of ownership, minimal maintenance, long service intervals, high uptime, efficient water cooling

### Flexible

Air cooling, various sealing and coating configurations as well as ATEX-certified versions available

	COBRA NC 0400 B	COBRA NC 0630 C	COBRA NC 1000 B
<b>Nominal pumping speed</b>	350 / 420 m <sup>3</sup> /h (50 / 60 Hz)	630 m <sup>3</sup> /h (50 / 60 Hz)	840 / 1000 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	≤ 0.05 / ≤ 0.01 hPa (mbar) (50 / 60 Hz)	≤ 0.01 hPa (mbar) (50 / 60 Hz)	≤ 0.5 / ≤ 0.1 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	7.5 / 9.5 kW (50 / 60 Hz)	15.0 / 17.0 kW (50 / 60 Hz)	22.0 / 25.0 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	66 / 69 dB(A) (50 / 60 Hz)	70 / 75 dB(A) (50 / 60 Hz)	74 / 81 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	500 kg	600 kg	1500 kg
<b>Dimensions (L x W x H)</b>	1367 x 480 x 700 mm	1502 x 602 x 640 mm	1928 x 620 x 974 mm
<b>Gas inlet / outlet</b>	DN 80 PN 6 / DN 63 ISO-K	DN 100 ISO-K / DN 100 ISO-K	DN 125 PN 16 / DN 125 PN 16

# COBRA NC 2500 B

## Dry screw vacuum pump



### High performance

Advanced screw design, patented self-balancing screws, perfectly suited for steel degassing, space simulation or vacuum drying

### Flexible

Various sealing configurations and ATEX-certified versions available

### Efficient

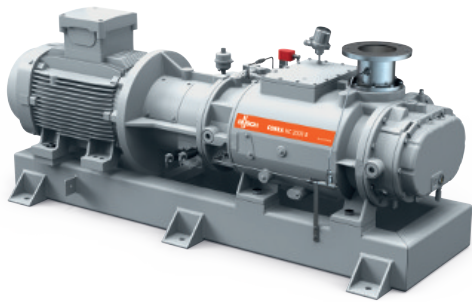
Low cost of ownership, minimal maintenance, long service intervals, high uptime, efficient water cooling

COBRA NC 2500 B	
Nominal pumping speed	2000 / 2500 m <sup>3</sup> /h (50 / 60 Hz)
Ultimate pressure	≤ 1.0 hPa (mbar) (50 / 60 Hz)
Nominal motor rating	55.0 / 63.0 kW (50 / 60 Hz)
Nominal motor speed	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)
Noise level (ISO 2151)	82 / 84 dB(A) (50 / 60 Hz)
Weight approx.	2000 kg
Dimensions (L x W x H)	2243 x 1053 x 1437 mm
Gas inlet / outlet	DN 150 PN 16 / DN 100 PN 16



# COBRA NC 0630–2000 B/C VR

## Dry screw vacuum pumps



### High performance

Advanced screw design, patented self-balancing screws

### Efficient

Low cost of ownership, minimal maintenance, long service intervals, high uptime

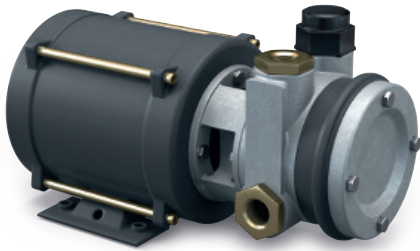
### ATEX-certified

Low gas temperatures within the compression chamber, special cooling system for the extraction of petrol vapor, perfectly suited for the stage I recovery of petrol and other hydrocarbon vapors in the petrochemical industry

	COBRA NC 0630 C VR	COBRA NC 1500 B VR	COBRA NC 2000 B VR
<b>Pumping speed</b>	580 / 680 m <sup>3</sup> /h (50 / 60 Hz)	1160 / 1400 m <sup>3</sup> /h (50 / 60 Hz)	2100 / 2600 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	< 25 / < 20 hPa (mbar) (50 / 60 Hz)	< 20 hPa (mbar) (50 / 60 Hz)	< 20 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	22 kW (50 / 60 Hz)	30 / 36 kW (50 / 60 Hz)	55 / 63 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)	3000 / 3600 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	73 / 78 dB(A) (50 / 60 Hz)	79 / 81 dB(A) (50 / 60 Hz)	79 / 84 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	880 kg	1250 kg	2000 kg
<b>Dimensions (L x W x H)</b>	1683 x 720 x 855 mm	1960 x 738 x 855 mm	2226 x 880 x 898 mm
<b>Gas inlet / outlet</b>	DN 100 PN 16, ANSI 4" B16.5 / DN 80 PN 16, ANSI 3" B16.5	DN 100 PN 16, ANSI 4" B16.5 / DN 80 PN 16, ANSI 3" B16.5	DN 150 PN 16, ANSI 6" B16.5 / DN 100 PN 16, ANSI 4" B16.5

# SECO SG 0008 A

## Dry-running rotary vane vacuum pump – vapor recovery stage II



### Reliable

Robust construction, high petrol vapor tolerance

### Explosion-proof

ATEX-certified, integrated flame arrester, specially designed for vapor recovery

### High performance

High pumping speed, connection to up to two petrol pump nozzles simultaneously

	SECO SG 0008 A
Nominal pumping speed	130 l/min
Pressure differential	100–250 hPa (mbar)
Nominal motor rating	0.12 kW
Nominal motor speed	3000 min <sup>-1</sup>
Noise level (ISO 2151)	52 dB(A)
Max. temperature of inlet gas stream	50 °C
Weight approx.	10 kg
Dimensions (L x W x H)	300 x 143 x 178 mm
Gas inlet / outlet	G ½

# TYR WT 0100–0390 CV

## Rotary lobe blowers



### Efficient

Effective compression and gas transport, flow-optimized blower stages, low energy consumption, minimized operating costs, minimal maintenance

### Quiet

Innovative acoustic insulation concept, integrated inlet and outlet silencers

### Robust

Durable construction, contact-free operating principle, fixed bearings on drive side for perfect belt alignment, variable speed gearing

	TYR WT 0100 CV	TYR WT 0150 CV	TYRWT 0280 CV	TYR WT 0390 CV
<b>Volume flow</b>	2.5 – 10.0 m <sup>3</sup> /min	3.7 – 15.0 m <sup>3</sup> /min	5.1 – 28.0 m <sup>3</sup> /min	7.1 – 39.0 m <sup>3</sup> /min
<b>Max. differential pressure</b>	-500 hPa (mbar)	-500 hPa (mbar)	-500 hPa (mbar)	-500 hPa (mbar)
<b>Nominal motor rating</b>	1.5 – 22.0 kW	3.0 – 37.0 kW	3.0 – 55.0 kW	3.0 – 55.0 kW
<b>Blower speed</b>	1150 – 4700 min <sup>-1</sup>	1150 – 4700 min <sup>-1</sup>	850 – 4700 min <sup>-1</sup>	850 – 4700 min <sup>-1</sup>
<b>Weight approx. (without/with acoustic enclosure)</b>	180 / 295 kg	197 / 312 kg	346 / 535 kg	372 / 561 kg
<b>Dimensions (L x W x H) (without/with acoustic enclosure)</b>	690 x 1080 x 1028 / 800 x 1157 x 1082 mm	690 x 1080 x 1028 / 800 x 1157 x 1082 mm	920 x 1218 x 1251 / 1050 x 1269 x 1302 mm	920 x 1218 x 1251 / 1050 x 1269 x 1302 mm
<b>Gas inlet / outlet</b>	Ø 114 mm	Ø 114 mm	Ø 159 mm	Ø 159 mm

# TYR WT 0100–0390 CP

## Rotary lobe blowers



### Efficient

Effective compression and gas transport, flow-optimized blower stages, low energy consumption, minimized operating costs, minimal maintenance

### Quiet

Innovative acoustic insulation concept, integrated inlet and outlet silencers

### Robust

Durable construction, contact-free operating principle, fixed bearings on drive side for perfect belt alignment, variable speed gearing

	TYR WT 0100 CP	TYR WT 0150 CP	TYR WT 0280 CP	TYR WT 0390 CP
<b>Volume flow</b>	2.5 – 10.0 m <sup>3</sup> /min	3.7 – 15.0 m <sup>3</sup> /min	5.1 – 28.0 m <sup>3</sup> /min	7.1 – 39.0 m <sup>3</sup> /min
<b>Max. differential pressure</b>	+1000 hPa (mbar)	+1000 hPa (mbar)	+1000 hPa (mbar)	+1000 hPa (mbar)
<b>Nominal motor rating</b>	1.5 – 22.0 kW	3.0 – 37.0 kW	3.0 – 55.0 kW	3.0 – 55.0 kW
<b>Blower speed</b>	1150 – 4700 min <sup>-1</sup>	1150 – 4700 min <sup>-1</sup>	850 – 4700 min <sup>-1</sup>	850 – 4700 min <sup>-1</sup>
<b>Weight approx. (without/with acoustic enclosure)</b>	180 / 295 kg	197 / 312 kg	346 / 535 kg	372 / 561 kg
<b>Dimensions (L x W x H) (without/with acoustic enclosure)</b>	690 x 1080 x 1028 / 800 x 1157 x 1082 mm	690 x 1080 x 1028 / 800 x 1157 x 1082 mm	920 x 1218 x 1251 / 1050 x 1269 x 1302 mm	920 x 1218 x 1251 / 1050 x 1269 x 1302 mm
<b>Gas inlet / outlet</b>	Ø 114 mm	Ø 114 mm	Ø 159 mm	Ø 159 mm

# TYR WT 0600/0730 CV

## Rotary lobe blowers



### Efficient

Effective compression and gas transport, flow-optimized blower stages, low energy consumption, minimized operating costs, minimal maintenance

### Quiet

Innovative acoustic insulation concept, integrated inlet and outlet silencers

### Robust

Durable construction, contact-free operating principle, fixed bearings on drive side for perfect belt alignment, variable speed gearing

	TYR WT 0600 CV	TYR WT 0730 CV
<b>Volume flow</b>	12.0 – 60.0 m <sup>3</sup> /min	15.4 – 73.0 m <sup>3</sup> /min
<b>Max. differential pressure</b>	-500 hPa (mbar)	-500 hPa (mbar)
<b>Nominal motor rating</b>	11.0 – 90.0 kW	11.0 – 90.0 kW
<b>Blower speed</b>	750 – 4050 min <sup>-1</sup>	750 – 3550 min <sup>-1</sup>
<b>Weight approx. (without/with acoustic enclosure)</b>	711 / 1014 kg	750 / 1053 kg
<b>Dimensions (L x W x H) (without/with acoustic enclosure)</b>	1250 x 1705 x 1660 / 1450 x 1760 x 1732 mm	1250 x 1705 x 1660 / 1450 x 1760 x 1732 mm
<b>Gas inlet / outlet</b>	Ø 219 mm	Ø 219 mm

# TYR WT 0600/0730 CP

## Rotary lobe blowers



### Efficient

Effective compression and gas transport, flow-optimized blower stages, low energy consumption, minimized operating costs, minimal maintenance

### Quiet

Innovative acoustic insulation concept, integrated inlet and outlet silencers

### Robust

Durable construction, contact-free operating principle, fixed bearings on drive side for perfect belt alignment, variable speed gearing

	TYR WT 0600 CP	TYR WT 0730 CP
<b>Volume flow</b>	12.0 – 60.0 m <sup>3</sup> /min	15.4 – 73.0 m <sup>3</sup> /min
<b>Max. differential pressure</b>	+1000 hPa (mbar)	+1000 hPa (mbar)
<b>Nominal motor rating</b>	11.0 – 90.0 kW	11.0 – 90.0 kW
<b>Blower speed</b>	750 – 4050 min <sup>-1</sup>	750 – 3550 min <sup>-1</sup>
<b>Weight approx. (without/with acoustic enclosure)</b>	711 / 1014 kg	750 / 1053 kg
<b>Dimensions (L x W x H) (without/with acoustic enclosure)</b>	1250 x 1705 x 1660 / 1450 x 1760 x 1732 mm	1250 x 1705 x 1660 / 1450 x 1760 x 1732 mm
<b>Gas inlet / outlet</b>	Ø 219 mm	Ø 219 mm

# HUCKEPACK HO 0429–0441 F

## Once-through oil-lubricated rotary vane vacuum pumps



### Robust

Reliable operation, proven performance, high vapor and particle tolerance, resistant to sticky and very aggressive substances, fresh oil lubrication for outstanding running qualities, highly resistant carbon fiber composite vanes

### Flexible

Specially designed for particularly complex processes, for example in the chemical, pharmaceutical and special food packaging industries, easy adaption to individual customer requirements and processes, ATEX-version available

### Easy servicing

Minimal maintenance, no special tools necessary, modular design for rapid exchange of stages

	HUCKEPACK HO 0429 F	HUCKEPACK HO 0433 F	HUCKEPACK HO 0437 F	HUCKEPACK HO 0441 F
<b>Nominal pumping speed</b>	160 / 190 m <sup>3</sup> /h (50 / 60 Hz)	250 / 300 m <sup>3</sup> /h (50 / 60 Hz)	400 / 480 m <sup>3</sup> /h (50 / 60 Hz)	630 / 760 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	0.5 hPa (mbar) (50 / 60 Hz)	0.5 hPa (mbar) (50 / 60 Hz)	0.5 hPa (mbar) (50 / 60 Hz)	0.5 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	5.5 / 9.2 kW (50 / 60 Hz)	7.5 / 9.2 kW (50 / 60 Hz)	11.0 / 15.0 kW (50 / 60 Hz)	15.0 / 18.5 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1000 / 1200 min <sup>-1</sup> (50 / 60 Hz)	1000 / 1200 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	72 dB(A) (50 / 60 Hz)	73 dB(A) (50 / 60 Hz)	73 dB(A) (50 / 60 Hz)	74 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	385 kg	440 kg	930 kg	1000 kg
<b>Dimensions (L x W x H)</b>	1320 x 740 x 1160 mm	1320 x 740 x 1160 mm	1640 x 950 x 1240 mm	1640 x 950 x 1240 mm
<b>Gas inlet / outlet</b>	DN 80 / DN 50	DN 80 / DN 50	DN 80 / DN 80	DN 80 / DN 80

# Accessories and spare parts – HUCKEPACK HO 0429–0441 F

	HUCKEPACK HO 0429 F	HUCKEPACK HO 0433 F	HUCKEPACK HO 0437 F	HUCKEPACK HO 0441 F
Thermostat for water circulation, 70° C	0546 000 053	0546 000 053	0546 000 053	0546 000 053
Thermostat for water circulation, 80° C	0546 000 054	0546 000 054	0546 000 054	0546 000 054
Thermostat for water circulation, 90° C	0546 000 055	0546 000 055	0546 000 055	0546 000 055
Temperature switch, 85° C	0947 000 110	0947 000 110	0947 000 110	0947 000 110
Temperature switch, 95° C	0947 000 111	0947 000 111	0947 000 111	0947 000 111
Temperature switch, 106° C	0947 000 112	0947 000 112	0947 000 112	0947 000 112
Temperature switch, 112° C	0947 000 113	0947 000 113	0947 000 113	0947 000 113
Temperature switch, 85° C, ATEX	0947 511 110	0947 511 110	0947 511 110	0947 511 110
Temperature switch, 95° C, ATEX	0947 511 111	0947 511 111	0947 511 111	0947 511 111
Temperature switch, 106° C, ATEX	0947 511 112	0947 511 112	0947 511 112	0947 511 112
Temperature switch, 112° C, ATEX	0947 511 113	0947 511 113	0947 511 113	0947 511 113
Temperature switch, 112° C, ATEX 20° . . . 150° C, dual set point	0651 000 042	0651 000 042	0651 000 042	0651 000 042
MCS4 water pressure switch, for water inlet device with thermostatic valve, unit includes a bypass	0947 000 043	0947 000 043	0947 000 043	0947 000 043
MCS4 water pressure switch, for water inlet device with thermostatic valve, without bypass	0947 000 045	0947 000 045	0947 000 045	0947 000 045
Revolution control device, 220-240 VAC, 50 / 60 Hz	0947 511 820	0947 511 820	0947 511 820	0947 511 820
Revolution control device, 24 VDC, ATEX conformity	0947 511 807	0947 511 807	0947 511 807	0947 511 807
Level switch, 1.4571, 24 to 230 VAC / VDC, max. 0.5 A, NC, including cable, for seal fluid vessel	0652 571 351	0652 571 351	0652 571 351	0652 571 351



	HUCKEPACK HO 0429 F	HUCKEPACK HO 0433 F	HUCKEPACK HO 0437 F	HUCKEPACK HO 0441 F
Level switch, FTL 31, G 1", 1.4404 / 316 L, 10-30 VDC, process temperature -40° to +150° C, CSA, for Duosec or seal fluid separator made of aluminum or stainless steel	0652 211 965	0652 211 965	0652 211 965	0652 211 965
Level switch, FTL 51, G 1", 1.4571 / 316 L, IP 66, ATEX conformity, for Duosec or seal fluid separator made of stainless steel	0652 567 843	0652 567 843	0652 567 843	0652 567 843
Level switch, type FTL 70, G 1", 1.4435 / 316 L, IP 66, ATEX conformity, process temperature max. +230°C, for Duosec or seal fluid separator made of stainless steel	0652 534 724	0652 534 724	0652 534 724	0652 534 724
Pressure switch, 1.4305, IP 65, range 0.2 to 2.0 bar(g), ≤ 230 VDC / VAC, 4 A, for gas discharge of vacuum pump	0653 563 750	0653 563 750	0653 563 750	0653 563 750
Pressure transmitter, G ½", IP 67, 0 . . . 1.6 bar (abs.), 10-30 VDC 4-20 mA, ATEX conformity, for gas discharge of vacuum pump	0653 204 444	0653 204 444	0653 204 444	0653 204 444
Pt 100 with connecting head, 1.4571, G ½", 4 wire, lg 80 mm, ATEX	0651 536 445	0651 536 445	0651 536 445	0651 536 445
Pt 100 with connecting head, 1.4571, G ½", 4 wire, lg 170 mm, ATEX-suitable for lower stage of HO 0437/0441 F only	0651 536 446	0651 536 446	0651 536 446	0651 536 446
Pt 100 without connecting head, 1.4571, G ½", 4 wire, lg 80 mm, ATEX	0651 543 955	0651 543 955	0651 543 955	0651 543 955
Transmitter for Pt 100, 8-30 VDC, 4-20 mA, 0-250° C, ATEX	0643 543 960	0643 543 960	0643 543 960	0643 543 960
Inlet filter, type FIL 0250, G 2½", steel 1.0037, with paper cartridge	0945 000 093	0945 000 093	-	-
Duosec, type DUO 0250, housing of 1.4571, suction connection DN 50 PN 16, with PTFE filter elements	0963 519 226	0963 519 226	-	-
Inlet filter, type FIL 0630, G 3", aluminum, with paper cartridge	-	-	0945 501 239	0945 501 239
Duosec, type DUO 0630, housing of 1.4571, suction connection DN 80 PN 16, with PTFE filter elements	-	-	0963 520 872	0963 520 872

	<b>HUCKEPACK HO 0429 F</b>	<b>HUCKEPACK HO 0433 F</b>	<b>HUCKEPACK HO 0437 F</b>	<b>HUCKEPACK HO 0441 F</b>
<b>Inlet flange, G 2" female thread, ductile cast</b>	0240 000 002	0240 000 002	-	-
<b>Inlet flange, G 3" female thread, ductile cast</b>	-	-	0240 000 004	0240 000 004
<b>Inlet flange of 1.4571, DN 80 PN 6, DIN 2631</b>	0454 000 059	0454 000 059	0454 000 059	0454 000 059
<b>Gas-ballast valve for lower stage</b>	0947 515 981	0947 515 981	0947 515 981	0947 515 981
<b>Intermediate suction device, including non-return valve</b>	0947 501 676	0947 501 676	-	-
<b>Intermediate suction device, including non-return valve</b>	-	-	0947 501 675	0947 501 675
<b>Terminal box for max. 7 control / safety devices</b>	0985 516 100	0985 516 100	0985 516 100	0985 516 100
<b>Terminal box E[Ex] i, for max. 6 control devices</b>	0985 516 102	0985 516 102	0985 516 102	0985 516 102
<b>Terminal box E[Ex] i, for max. 11 control devices</b>	0985 516 101	0985 516 101	0985 516 101	0985 516 101
<b>Terminal box according to ATEX for max. 18 control devices</b>	0645 540 538	0645 540 538	0645 540 538	0645 540 538
<b>Direct starter unit, (D.O.L.) three-phase motor with nominal amperage 5 . . . 25</b>	0985 211 913	0985 211 913	-	-
<b>Direct starter unit, (D.O.L.) three-phase motor with nominal amperage 20 . . . 38</b>	-	-	0985 211 914	0985 211 914
<b>Soft starter unit, three-phase motor with nominal amperage 5 . . . 25 A</b>	0985 571 089	0985 571 089	-	-
<b>Soft starter unit, three-phase motors with nominal amperage 24 . . . 32 A</b>	-	-	0985 211 911	-
<b>Soft starter unit, three-phase motors with nominal amperage 30 . . . 40 A</b>	-	-	0985 211 912	0985 211 912
<b>Soft starter unit, three-phase motors with nominal amperage 5 . . . 17 A</b>	0985 211 915	-	-	-
<b>Soft starter unit, three-phase motors with nominal amperage 17 . . . 32 A</b>	-	0985 211 916	0985 211 916	-
<b>Soft starter unit, three-phase motors with nominal amperage 32 . . . 47 A</b>	-	-	0985 571 087	0985 571 087
<b>Inlet flange, G 2" female thread, ductile cast</b>	0240 000 002	0240 000 002	-	-

	<b>HUCKEPACK HO 0429 F</b>	<b>HUCKEPACK HO 0433 F</b>	<b>HUCKEPACK HO 0437 F</b>	<b>HUCKEPACK HO 0441 F</b>
<b>Inlet flange, G 3" female thread, ductile cast</b>	-	-	0240 000 004	0240 000 004
<b>Inlet flange of 1.4571, DN 80 PN 6, DIN 2631</b>	0454 000 059	0454 000 059	0454 000 059	0454 000 059
<b>Gas-ballast valve for lower stage</b>	0947 515 981	0947 515 981	0947 515 981	0947 515 981
<b>Intermediate suction device, including non-return valve</b>	0947 501 676	0947 501 676	-	-
<b>Intermediate suction device, including non-return valve</b>	-	-	0947 501 675	0947 501 675

# DOLPHIN LA 0053-0143 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable single-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), different operating fluids possible, operation as compressor possible

	DOLPHIN LA 0053 A	DOLPHIN LA 0103 A	DOLPHIN LA 0143 A
<b>Nominal pumping speed</b>	50 m <sup>3</sup> /h (50 / 60 Hz)	100 m <sup>3</sup> /h (50 / 60 Hz)	140 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	130 hPa (mbar) (50 / 60 Hz)	130 hPa (mbar) (50 / 60 Hz)	130 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	1.5 kW (50 / 60 Hz)	4 kW (50 / 60 Hz)	4 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	72 dB(A) (50 / 60 Hz)	72 dB(A) (50 / 60 Hz)	72 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	47 kg	52 kg	57 kg
<b>Dimensions (L x W x H)</b>	( 399 – 574 ) x 250 x 320 mm	( 439 – 614 ) x 250 x 320 mm	( 479 – 654 ) x 250 x 320 mm
<b>Gas inlet / outlet</b>	DN 40 PN 10 / DN 40 PN 10	DN 40 PN 10 / DN 40 PN 10	DN 40 PN 10 / DN 40 PN 10

# DOLPHIN LA 0224-0475 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable single-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), different operating fluids possible, operation as compressor possible

	DOLPHIN LA 0224 A	DOLPHIN LA 0325 A	DOLPHIN LA 0435 A	DOLPHIN LA 0475 A
<b>Nominal pumping speed</b>	220 m <sup>3</sup> /h (50 / 60 Hz)	320 m <sup>3</sup> /h (50 / 60 Hz)	430 m <sup>3</sup> /h (50 / 60 Hz)	470 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	130 hPa (mbar) (50 / 60 Hz)	150 hPa (mbar) (50 / 60 Hz)	150 hPa (mbar) (50 / 60 Hz)	130 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	5.5 kW (50 / 60 Hz)	11 kW (50 / 60 Hz)	11 kW (50 / 60 Hz)	18.5 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	72 dB(A) (50 / 60 Hz)	75 dB(A) (50 / 60 Hz)	75 dB(A) (50 / 60 Hz)	74 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	94 kg	159 kg	159 kg	210 kg
<b>Dimensions (L x W x H)</b>	( 547 – 713 ) x 270 x 450 mm	( 626 – 817 ) x 300 x 387 mm	( 667 – 857 ) x 300 x 520 mm	( 797 – 787 ) x 300 x 520 mm
<b>Gas inlet / outlet</b>	DN 50 PN 10 / DN 50 PN 10	DN 50 PN 10 / DN 50 PN 10	DN 65 PN 10 / DN 65 PN 10	DN 65 PN 10 / DN 65 PN 10

# DOLPHIN LA 0756/0906 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable single-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), different operating fluids possible, operation as compressor possible

	DOLPHIN LA 0756 A	DOLPHIN LA 0906 A
Nominal pumping speed	750 m <sup>3</sup> /h	900 m <sup>3</sup> /h
Ultimate pressure	130 hPa (mbar)	130 hPa (mbar)
Nominal motor rating	22 kW	30 kW
Nominal motor speed	1450 min <sup>-1</sup>	1450 min <sup>-1</sup>
Noise level (ISO 2151)	75 dB(A)	75 dB(A)
Weight approx.	306 kg	338 kg
Dimensions (L x W x H)	( 840 – 1000 ) x 400 x 630 mm	( 920 – 1080 ) x 400 x 630 mm
Gas inlet / outlet	DN 100 PN 10 / DN 100 PN 10	DN 100 PN 10 / DN 100 PN 10

# DOLPHIN LA 1157-1807 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable single-stage construction

### Reliable

Extremely high vapor and particle tolerance

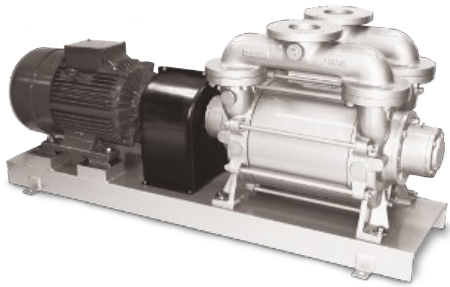
### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), different operating fluids possible, operation as compressor possible

	DOLPHIN LA 1157 A	DOLPHIN LA 1507 A	DOLPHIN LA 1807 A
<b>Nominal pumping speed</b>	1150 m <sup>3</sup> /h	1500 m <sup>3</sup> /h	1800 m <sup>3</sup> /h
<b>Ultimate pressure</b>	130 hPa (mbar)	130 hPa (mbar)	130 hPa (mbar)
<b>Nominal motor rating</b>	30 kW	45 kW	50 kW
<b>Nominal motor speed</b>	980 min <sup>-1</sup>	980 min <sup>-1</sup>	980 min <sup>-1</sup>
<b>Noise level (ISO 2151)</b>	77 dB(A)	77 dB(A)	77 dB(A)
<b>Weight approx.</b>	575 kg	638 kg	701 kg
<b>Dimensions (L x W x H)</b>	( 1046 – 1231 ) x 480 x 800 mm	( 1146 – 1331 ) x 480 x 800 mm	( 1246 – 1431 ) x 480 x 800 mm
<b>Gas inlet / outlet</b>	DN 125 PN 10 / DN 125 PN 10	DN 125 PN 10 / DN 125 PN 10	DN 125 PN 10 / DN 125 PN 10

# DOLPHIN LA 1908–2808 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable single-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), different operating fluids possible, operation as compressor possible

	DOLPHIN LA 1908 A	DOLPHIN LA 2408 A	DOLPHIN LA 2808 A
<b>Nominal pumping speed</b>	1900 m <sup>3</sup> /h (50 / 60 Hz)	2400 m <sup>3</sup> /h (50 / 60 Hz)	2800 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	130 hPa (mbar) (50 / 60 Hz)	130 hPa (mbar) (50 / 60 Hz)	130 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	75 kW (50 / 60 Hz)	75 kW (50 / 60 Hz)	90 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	735 min <sup>-1</sup> (50 / 60 Hz)	735 min <sup>-1</sup> (50 / 60 Hz)	735 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	79 dB(A) (50 / 60 Hz)	79 dB(A) (50 / 60 Hz)	79 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	1445 kg	1610 kg	1770 kg
<b>Dimensions (L x W x H)</b>	( 1418 – 1698 ) x 650 x 1060 mm	( 1518 – 1798 ) x 650 x 1060 mm	( 1618 – 1898 ) x 650 x 1060 mm
<b>Gas inlet / outlet</b>	DN 200 PN 10 / DN 200 PN 10	DN 200 PN 10 / DN 200 PN 10	DN 200 PN 10 / DN 200 PN 10



# DOLPHIN LA 3809/5109 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable single-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), different operating fluids possible, operation as compressor possible

	DOLPHIN LA 3809 A	DOLPHIN LA 5109 A
<b>Nominal pumping speed</b>	2600 – 3600 m <sup>3</sup> /h (50 / 60 Hz)	3600 – 4700 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	130 hPa (mbar)	130 hPa (mbar)
<b>Nominal motor rating</b>	75 – 110 kW	90 – 132 kW
<b>Nominal motor speed</b>	465 – 650 min <sup>-1</sup> (50 / 60 Hz)	465 – 650 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	85 dB(A)	85 dB(A)
<b>Weight approx.</b>	2030 kg	2150 kg
<b>Dimensions (L x W x H)</b>	1665 x 800 x 1400 mm	1790 x 800 x 1400 mm
<b>Gas inlet / outlet</b>	DN 250 PN 10 / DN 250 PN 10	DN 250 PN 10 / DN 250 PN 10

# DOLPHIN LB 0063-0184 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable two-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), operating fluids other than water possible, operation as compressor possible

	DOLPHIN LB 0063 A	DOLPHIN LB 0113 A	DOLPHIN LB 0144 A	DOLPHIN LB 0184 A
<b>Nominal pumping speed</b>	60 m <sup>3</sup> /h (50 / 60 Hz)	110 m <sup>3</sup> /h (50 / 60 Hz)	140 m <sup>3</sup> /h (50 / 60 Hz)	180 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	3 kW (50 / 60 Hz)	4 kW (50 / 60 Hz)	4 kW (50 / 60 Hz)	5.5 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	72 dB(A) (50 / 60 Hz)	72 dB(A) (50 / 60 Hz)	72 dB(A) (50 / 60 Hz)	72 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	77 kg	78 kg	103 kg	119 kg
<b>Dimensions (L x W x H)</b>	( 489 – 664 ) x 250 x 320 mm	( 529 – 704 ) x 250 x 320 mm	( 596 – 762 ) x 270 x 405 mm	( 656 – 822 ) x 270 x 405 mm
<b>Gas inlet / outlet</b>	DN 40 PN 10 / DN 40 PN 10	DN 40 PN 10 / DN 40 PN 10	DN 40 PN 10 / DN 40 PN 10	DN 40 PN 10 / DN 40 PN 10

# DOLPHIN LB 0265-0425 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable two-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), operating fluids other than water possible, operation as compressor possible

	DOLPHIN LB 0265 A	DOLPHIN LB 0355 A	DOLPHIN LB 0425 A
<b>Nominal pumping speed</b>	260 m <sup>3</sup> /h (50 / 60 Hz)	350 m <sup>3</sup> /h (50 / 60 Hz)	420 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	7.5 kW (50 / 60 Hz)	11 kW (50 / 60 Hz)	15 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)	1450 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	75 dB(A) (50 / 60 Hz)	75 dB(A) (50 / 60 Hz)	75 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	165 kg	183 kg	194 kg
<b>Dimensions (L x W x H)</b>	( 707 – 898 ) x 300 x 472 mm	( 767 – 958 ) x 300 x 472 mm	( 807 – 998 ) x 300 x 472 mm
<b>Gas inlet / outlet</b>	DN 50 PN 10 / DN 50 PN 10	DN 50 PN 10 / DN 50 PN 10	DN 50 PN 10 / DN 50 PN 10

# DOLPHIN LB 0526/0726 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable two-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), operating fluids other than water possible, operation as compressor possible

	DOLPHIN LB 0526 A	DOLPHIN LB 0726 A
<b>Nominal pumping speed</b>	520 / 580 m <sup>3</sup> /h (50 / 60 Hz)	720 / 770 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)
<b>Max. overpressure</b>	2 bar(g) (50 / 60 Hz)	2 bar(g) (50 / 60 Hz)
<b>Nominal motor rating</b>	22 / 30 kW (50 / 60 Hz)	30 / 37 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	1450 / 1750 min <sup>-1</sup> (50 / 60 Hz)	1450 / 1750 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	74 / 75 dB(A) (50 / 60 Hz)	74 / 75 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	264 kg	278 kg
<b>Dimensions (L x W x H)</b>	( 886 – 1046 ) x 400 x 470 mm	( 1006 – 1166 ) x 400 x 470 mm
<b>Gas inlet / outlet</b>	DN 80 PN 10 / DN 80 PN 10	DN 80 PN 10 / DN 80 PN 10

# DOLPHIN LB 0857-1757 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable two-stage construction

### Reliable

Extremely high vapor and particle tolerance

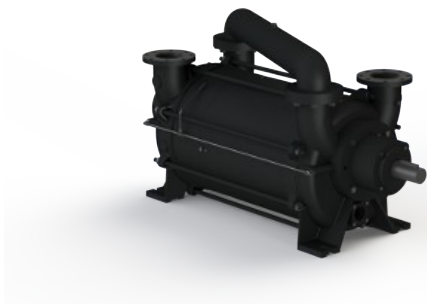
### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), operating fluids other than water possible, operation as compressor possible

	DOLPHIN LB 0857 A	DOLPHIN LB 1207 A	DOLPHIN LB 1507 A	DOLPHIN LB 1757 A
<b>Nominal pumping speed</b>	850 / 1000 m <sup>3</sup> /h (50 / 60 Hz)	1200 / 1380 m <sup>3</sup> /h (50 / 60 Hz)	1500 / 1690 m <sup>3</sup> /h (50 / 60 Hz)	1750 / 2000 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)
<b>Max. overpressure</b>	2 bar(g) (50 / 60 Hz)	2 bar(g) (50 / 60 Hz)	2 bar(g) (50 / 60 Hz)	2 bar(g) (50 / 60 Hz)
<b>Nominal motor rating</b>	30 / 37 kW (50 / 60 Hz)	37 / 55 kW (50 / 60 Hz)	45 / 75 kW (50 / 60 Hz)	75 / 90 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	960 / 1150 min <sup>-1</sup> (50 / 60 Hz)	960 / 1150 min <sup>-1</sup> (50 / 60 Hz)	960 / 1150 min <sup>-1</sup> (50 / 60 Hz)	960 / 1150 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	76 / 77 dB(A) (50 / 60 Hz)	76 / 77 dB(A) (50 / 60 Hz)	76 / 77 dB(A) (50 / 60 Hz)	76 / 77 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	510 kg	600 kg	685 kg	770 kg
<b>Dimensions (L x W x H)</b>	( 1096 – 1282 ) x 610 x 750 mm	( 1246 – 1432 ) x 610 x 750 mm	( 1346 – 1532 ) x 610 x 750 mm	( 1496 – 1682 ) x 610 x 750 mm
<b>Gas inlet / outlet</b>	DN 100 PN 10 / DN 100 PN 10	DN 100 PN 10 / DN 100 PN 10	DN 100 PN 10 / DN 100 PN 10	DN 100 PN 10 / DN 100 PN 10

# DOLPHIN LB 2108-3108 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable two-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), operating fluids other than water possible, operation as compressor possible

	DOLPHIN LB 2108 A	DOLPHIN LB 2508 A	DOLPHIN LB 3008 A	DOLPHIN LB 3108 A
<b>Nominal pumping speed</b>	2100 m <sup>3</sup> /h (50 / 60 Hz)	2500 m <sup>3</sup> /h (50 / 60 Hz)	3000 m <sup>3</sup> /h (50 / 60 Hz)	3100 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	55 kW (50 / 60 Hz)	75 kW (50 / 60 Hz)	90 kW (50 / 60 Hz)	110 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	735 min <sup>-1</sup> (50 / 60 Hz)	735 min <sup>-1</sup> (50 / 60 Hz)	735 min <sup>-1</sup> (50 / 60 Hz)	735 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	79 dB(A) (50 / 60 Hz)	79 dB(A) (50 / 60 Hz)	79 dB(A) (50 / 60 Hz)	79 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	1526 kg	1664 kg	1800 kg	2090 kg
<b>Dimensions (L x W x H)</b>	( 1658 – 1938 ) x 650 x 800 mm	( 1808 – 2088 ) x 650 x 800 mm	( 1908 – 2188 ) x 650 x 800 mm	( 1943 – 2223 ) x 650 x 800 mm
<b>Gas inlet / outlet</b>	DN 150 PN 10 / DN 150 PN 10	DN 150 PN 10 / DN 150 PN 10	DN 150 PN 10 / DN 150 PN 10	DN 150 PN 10 / DN 150 PN 10

# DOLPHIN LB 3809/4409 A

## Liquid ring vacuum pumps



### Robust

Proven technology, durable two-stage construction

### Reliable

Extremely high vapor and particle tolerance

### Flexible

Wide range of construction materials, including cast iron (EN-GJL-200), many grades of stainless steel and even titanium, ATEX-certified version available (Cat 1(i)/2(o) IIC T5), operating fluids other than water possible, operation as compressor possible

	DOLPHIN LB 3809 A	DOLPHIN LB 4409 A
<b>Nominal pumping speed</b>	2500 – 3800 m <sup>3</sup> /h (50 / 60 Hz)	2600 – 4400 m <sup>3</sup> /h (50 / 60 Hz)
<b>Ultimate pressure</b>	33 hPa (mbar) (50 / 60 Hz)	33 hPa (mbar) (50 / 60 Hz)
<b>Nominal motor rating</b>	90 – 150 kW (50 / 60 Hz)	90 – 185 kW (50 / 60 Hz)
<b>Nominal motor speed</b>	465 – 700 min <sup>-1</sup> (50 / 60 Hz)	465 – 700 min <sup>-1</sup> (50 / 60 Hz)
<b>Noise level (ISO 2151)</b>	85 dB(A) (50 / 60 Hz)	85 dB(A) (50 / 60 Hz)
<b>Weight approx.</b>	2200 kg	2340 kg
<b>Dimensions (L x W x H)</b>	2025 x 950 x 1410 mm	2150 x 950 x 1410 mm
<b>Gas inlet / outlet</b>	DN 200 PN 10 / DN 200 PN 10	DN 200 PN 10 / DN 200 PN 10

# DOLPHIN LG 0890/1200 A

## Liquid ring vacuum pumps



### Robust

Proven technology, reliable operation, extremely high vapor and particle tolerance, specially designed for challenging environments like mining, power plants, sugar production, pulp and paper industry, steel production etc.

### High performance

High-capacity, high pumping speeds

### Flexible

Modular design, choice of cast iron (EN-GJL-200) housing with ductile cast iron impeller or all 316 grade corrosion-free stainless steel material, operating fluids other than water possible, operation as compressor possible

	DOLPHIN LG 0890 A	DOLPHIN LG 1200 A
Nominal pumping speed	6000 – 8900 m <sup>3</sup> /h	7650 – 12000 m <sup>3</sup> /h
Ultimate pressure	160 hPa (mbar)	160 hPa (mbar)
Nominal motor rating	132 – 220 kW	160 – 280 kW
Nominal motor speed	330 – 490 min <sup>-1</sup>	266 – 420 min <sup>-1</sup>
Noise level (ISO 2151)	< 85 dB(A)	< 85 dB(A)
Weight approx.	3880 kg	5760 kg
Dimensions (L x W x H)	2370 x 1330 x 1865 mm	2500 x 1550 x 2160 mm
Gas inlet / outlet	DN 300 PN 10 / DN 300 PN 10	DN 350 PN 10 / DN 350 PN 10



# DOLPHIN LG 1910/2680 A

## Liquid ring vacuum pumps



### Robust

Proven technology, reliable operation, extremely high vapor and particle tolerance, specially designed for challenging environments like mining, power plants, sugar production, pulp and paper industry, steel production etc.

### High performance

High-capacity, high pumping speeds

### Flexible

Modular design, choice of cast iron (EN-GJL-200) housing with ductile cast iron impeller or all 316 grade corrosion-free stainless steel material, operating fluids other than water possible, operation as compressor possible

	DOLPHIN LG 1910 A	DOLPHIN LG 2680 A
Nominal pumping speed	11550 – 19100 m <sup>3</sup> /h	16160 – 26800 m <sup>3</sup> /h
Ultimate pressure	160 hPa (mbar)	160 hPa (mbar)
Nominal motor rating	220 – 500 kW	355 – 650 kW
Nominal motor speed	236 – 398 min <sup>-1</sup>	197 – 330 min <sup>-1</sup>
Noise level (ISO 2151)	< 85 dB(A)	< 85 dB(A)
Weight approx.	8930 kg	12750 kg
Dimensions (L x W x H)	2732 x 1785 x 2560 mm	3191 x 2065 x 2965 mm
Gas inlet / outlet	DN 400 PN 10 / DN 400 PN 10	DN 500 PN 10 / DN 500 PN 10

# DOLPHIN LR 0700/1190 A

## Liquid ring vacuum pumps



### Robust

Proven technology, reliable operation, extremely high vapor and particle tolerance, specially designed for challenging environments like mining, power plants, sugar production, pulp and paper industry, steel production etc.

### High performance

High-capacity, high pumping speeds

### Flexible

Modular design, choice of cast iron (EN-GJL-200) housing with ductile cast iron impeller or all 304 grade, or 316L grade corrosion-free stainless steel material, operating fluids other than water possible, operation as compressor possible

	DOLPHIN LR 0700 A	DOLPHIN LR 1190 A
Nominal pumping speed	4920 – 7000 m <sup>3</sup> /h	6700 – 11900 m <sup>3</sup> /h
Ultimate pressure	33 hPa (mbar)	33 hPa (mbar)
Nominal motor rating	110 – 200 kW	160 – 355 kW
Nominal motor speed	330 – 490 min <sup>-1</sup>	266 – 472 min <sup>-1</sup>
Noise level (ISO 2151)	< 85 dB(A)	< 85 dB(A)
Weight approx.	3750 kg	5390 kg
Dimensions (L x W x H)	2020 x 1350 x 1865 mm	2258 x 1550 x 2160 mm
Gas inlet / outlet	DN 300 PN 10 / DN 300 PN 10	DN 350 PN 10 / DN 350 PN 10

# DOLPHIN LR 1560/2200 A

## Liquid ring vacuum pumps



### Robust

Proven technology, reliable operation, extremely high vapor and particle tolerance, specially designed for challenging environments like mining, power plants, sugar production, pulp and paper industry, steel production etc.

### High performance

High-capacity, high pumping speeds

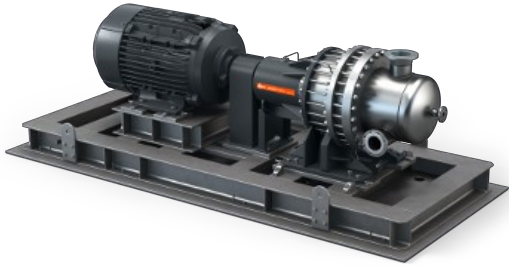
### Flexible

Modular design, choice of cast iron (EN-GJL-200) housing with ductile cast iron impeller or all 304 grade, or 316L grade corrosion-free stainless steel material, operating fluids other than water possible, operation as compressor possible

	DOLPHIN LR 1560 A	DOLPHIN LR 2200 A
<b>Nominal pumping speed</b>	9500 – 15600 m <sup>3</sup> /h	14100 – 22000 m <sup>3</sup> /h
<b>Ultimate pressure</b>	33 hPa (mbar)	33hPa (mbar)
<b>Nominal motor rating</b>	220 – 450 kW	355 – 600 kW
<b>Nominal motor speed</b>	236 – 398 min <sup>-1</sup>	210 – 330 min <sup>-1</sup>
<b>Noise level (ISO 2151)</b>	< 85 dB(A)	< 85 dB(A)
<b>Weight approx.</b>	8340 kg	12000 kg
<b>Dimensions (L x W x H)</b>	2512 x 1785 x 2560 mm	2891 x 2065 x 2965 mm
<b>Gas inlet / outlet</b>	DN 400 PN 10 / DN 400 PN 10	DN 500 PN 10 / DN 500 PN 10

# DOLPHIN LN 3001/3002 A (Former NSB SB 1.25/2.25)

## Liquid ring compressors



### Robust

API standard, ATEX-certified, test run without operating fluids possible, extremely high vapor and particle tolerance

### Easy servicing

Quick replacement of bearings and mechanical seals, no impeller adjustment needed, cleaning in place (CIP) with hot steam possible

### Simple operation

Direct start function under full discharge pressure, reaches full performance after ten seconds

	DOLPHIN LN 3001 A	DOLPHIN LN 3002 A Preliminary
Volume flow	2300 / 2700 m <sup>3</sup> /h	2500 / 3200 m <sup>3</sup> /h
Overpressure	3 bar(a)	10 bar(a)
Nominal motor rating	260 / 370 kW	590 / 800 kW
Nominal motor speed	990 / 1185 min <sup>-1</sup>	990 / 1185 min <sup>-1</sup>
Noise level (ISO 2151)	85 / 88 dB(A)	87 / 90 dB(A)
Max. temperature of inlet gas stream	90 °C	90 °C
Weight approx.	3600 kg	3720 kg
Dimensions (L x W x H)	2285 x 1075 x 1300 mm	2384 x 1075 x 1300 mm
Gas inlet / outlet	DN 200 PN 16 / DN 150 PN 16	DN 200 PN 16 / DN 150 PN 16

# MINK MM 1104 BP

## Dry claw compressors



### Flexible

Designed for numerous industrial applications of up to 2.0 bar(g), inlet filter and pressure relief valve as standard

### Reliable

Effective air cooling, constantly high volume flow throughout the entire life cycle

### Nearly maintenance-free

Dry and contact-free compression

	MINK MM 1104 BP	MINK MM 1104 BP	MINK MM 1104 BP
Volume flow (at inlet)	62 / 75 m <sup>3</sup> /h (50 / 60 Hz)	62 / 75 m <sup>3</sup> /h (50 / 60 Hz)	62 / 75 m <sup>3</sup> /h (50 / 60 Hz)
Overpressure	1.2 / 0.8 bar(g) (50 / 60 Hz)	1.8 / 1.4 bar(g) (50 / 60 Hz)	2.0 bar(g) (50 / 60 Hz)
Nominal motor rating	2.2 kW (50 / 60 Hz)	2.9 / 3.0 kW (50 / 60 Hz)	3.2 / 3.8 kW (50 / 60 Hz)
Nominal motor speed	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)	1500 / 1800 min <sup>-1</sup> (50 / 60 Hz)
Noise level (ISO 2151)	71 / 73 dB(A) (50 / 60 Hz)	71 / 73 dB(A) (50 / 60 Hz)	71 / 73 dB(A) (50 / 60 Hz)
Weight approx.	155 kg	155 kg	155 kg
Dimensions (L x W x H)	1080 x 430 x 590 mm	1080 x 430 x 590 mm	1080 x 430 x 590 mm
Gas outlet	G 1¼"	G 1¼"	G 1¼"

## Accessories and spare parts – MINK MM 1104 BP

MINK MM 1104 BP	
Inlet filter FIL 0100 with paper insert, horizontal orientation, connection G 1¼"	0945138865

<b>MINK MM 1104 BP</b>	
<b>Inlet filter FIL 0100 with polyester insert, horizontal orientation, connection G 1¼ "</b>	0945131949
<b>Inlet filter FIL 0100, gas-tight, horizontal orientation, connection G 1¼" (option for ATEX version, category 2)</b>	On request
<b>Hose nipple, R 1¼ ", Ø 39.5mm</b>	0574000105
<b>Dipstick</b>	0543138141
<b>Condensate drain on silencer</b>	On request

# VACTEST TRP 900

## Mobile Gauge



### Intelligent

Extended measurement range (1600 to 1 mbar), state-of-the-art microcontroller technology, recording of 2000 measurement points

### Reliable

High industrial standards, robust construction, insensitive against shock venting, robust sensor

### Efficient

Excellent measurement accuracy, up to 2500 h operating time, battery and power supply

#### VACTEST TRP 900

<b>Article number</b>	0656160980
<b>Measurement principle</b>	Piezoresistive
<b>Materials exposed to vacuum</b>	Stainless steel 1.4305, Al <sub>2</sub> O <sub>3</sub> ceramic, FKM
<b>Measurement range</b>	1600–1 mbar
<b>Overpressure limit</b>	4 bar abs.
<b>Measurement uncertainty</b>	< 0.3% full scale (linearity, hysteresis, repeatability)
<b>Resolution</b>	1 mbar
<b>Measuring rate</b>	0.05–6000 s
<b>Serial interface</b>	USB
<b>Electrical connection</b>	2.5 mm mini-jack for external power supply
<b>Supply voltage</b>	9 V block battery or 15 VDC external
<b>Max. battery operating time</b>	2500 h
<b>Power consumption</b>	2 mW
<b>Operating temperature</b>	0 ... +50 °C
<b>Protection class</b>	IP40
<b>Weight approx.</b>	200 g

	VACTEST TRP 900
<b>Dimensions (L x W x H)</b>	120 × 60 × 47 mm
<b>Vacuum connection</b>	DN 16 ISO-KF, G ¼ female thread

## Accessories and spare parts – VACTEST TRP 900

	VACTEST TRP 900
<b>Accessories kit:</b> <ul style="list-style-type: none"> <li>• 9 V alkaline block battery</li> <li>• Protective case</li> <li>• 100–240 VAC electrical power supply, AC with EU/US/UK/AUS plugs</li> <li>• Software: VACTEST Explorer, Pro version</li> <li>• USB interface cable for PC, 2 m</li> </ul>	0947204607
<b>USB interface cable for PC</b>	0671204565
<b>VACTEST Explorer Pro</b>	0870203191
<b>Calibration certificate, from 1000 to <math>1 \cdot 10^{-4}</math> mbar</b>	0656204608



# VACTEST TTP 900

## Mobile Gauge



### Intelligent

Measurement range (100 to  $1 \cdot 10^{-3}$  mbar), state-of-the-art microcontroller technology, recording of 2000 measurement points

### Reliable

High industrial standards, robust construction, insensitive against shock venting, robust sensor

### Efficient

Excellent measurement accuracy, up to 100 h operating time, battery and power supply

#### VACTEST TTP 900

<b>Article number</b>	0656202951
<b>Measurement principle</b>	Pirani
<b>Materials exposed to vacuum</b>	Stainless steel 1.4305, tungsten, nickel, glass
<b>Filament material</b>	Tungsten
<b>Measurement range</b>	$100-1 \cdot 10^{-3}$ mbar
<b>Overpressure limit</b>	4 bar abs.
<b>Measurement uncertainty</b>	< 30% of reading (100–20 mbar), < 10% of reading ( $20-1 \cdot 10^{-2}$ ), < factor 2 ( $< 1 \cdot 10^{-2}$ mbar)
<b>Resolution</b>	1 mbar (100–10 mbar), 2 significant digits ( $< 10$ mbar)
<b>Measuring rate</b>	1–6000 s
<b>Serial interface</b>	USB
<b>Electrical connection</b>	2.5 mm mini-jack for external power supply
<b>Supply voltage</b>	9 V block battery or 15 VDC external
<b>Max. battery operating time</b>	100 h
<b>Power consumption</b>	110 mW
<b>Operating temperature</b>	+5 ... +50 °C
<b>Protection class</b>	IP40

VACTEST TTP 900	
<b>Weight approx.</b>	200 g
<b>Dimensions (L x W x H)</b>	120 × 60 × 25 mm
<b>Vacuum connection</b>	DN 16 ISO-KF

## Accessories and spare parts – VACTEST TTP 900

VACTEST TTP 900	
<b>Accessories kit:</b> <ul style="list-style-type: none"> <li>• 9 V alkaline block battery</li> <li>• Protective case</li> <li>• 100–240 VAC electrical power supply, AC with EU/US/UK/AUS plugs</li> <li>• Software: VACTEST Explorer, Pro version</li> <li>• USB interface cable for PC, 2 m</li> </ul>	0947204607
<b>USB interface cable for PC</b>	0671204565
<b>VACTEST explorer, Pro version</b>	0870203191
<b>Calibration certificate, from 1000 to <math>1 \cdot 10^{-4}</math> mbar</b>	0656204608

# VACTEST TPP 900

## Mobile Gauge



### Intelligent

Measurement range (1200 to  $5 \cdot 10^{-4}$  mbar), state-of-the-art microcontroller technology, recording of 2000 measurement points

### Reliable

High industrial standards, robust construction

### Efficient

Excellent measurement accuracy, up to 100 h operating time, battery and power supply

VACTEST TPP 900	
Article number	0656202952
Measurement principle	Piezoresistive / Pirani
Materials exposed to vacuum	Stainless steel 1.4305, tungsten, nickel, glass
Filament material	Tungsten
Measurement range	1200– $5 \cdot 10^{-4}$ mbar
Overpressure limit	2 bar abs.
Measurement uncertainty	< 0.3% full scale (1200–40 mbar)
Measurement uncertainty	< 10% of reading ( $40$ – $2 \cdot 10^{-3}$ mbar), < factor 2 ( $< 2 \cdot 10^{-3}$ mbar)
Resolution	1 mbar (1200–1000 mbar), 0.1 mbar (1000–1 mbar), 2 significant digits ( $< 1$ mbar)
Measuring rate	1–6000 s
Serial interface	USB
Electrical connection	2.5 mm mini-jack for external power supply
Supply voltage	9 V block battery or 15 VDC external
Max. battery operating time	100 h
Power consumption	110 mW
Operating temperature	+5 ... +50 °C

	VACTEST TPP 900
<b>Protection class</b>	IP40
<b>Weight approx.</b>	230 g
<b>Dimensions (L x W x H)</b>	120 × 60 × 62.5 mm
<b>Vacuum connection</b>	DN 16 ISO-KF

## Accessories and spare parts – VACTEST TPP 900

	VACTEST TPP 900
<b>Accessories kit:</b> <ul style="list-style-type: none"> <li>• 9 V alkaline block battery</li> <li>• Protective case</li> <li>• 100–240 VAC electrical power supply, AC with EU/US/UK/AUS plugs</li> <li>• Software: VACTEST Explorer, Pro version</li> <li>• USB interface cable for PC, 2 m</li> </ul>	0947204607
<b>USB interface cable for PC</b>	0671204565
<b>VACTEST Explorer Pro</b>	0870203191
<b>Calibration certificate, from 1000 to <math>1 \cdot 10^{-4}</math> mbar</b>	0656204608

# VACTEST DTP 400/DTP 400 D

## Digital Transmitters



### Intelligent

Measurement range (1000 to  $1 \cdot 10^{-4}$  mbar), state-of-the-art microcontroller technology, fully customizable parameters

### Reliable

High industrial standards, robust construction, protected and robust spiral coil filament

### Efficient

Modular design, plug and play sensor for maximum uptime

	VACTEST DTP 400	VACTEST DTP 400 D
Article number	0656202932	0656202933
Measurement principle	Pirani	Pirani
Materials exposed to vacuum	Stainless steel 1.4307, nickel, tungsten, glass	Stainless steel 1.4307, nickel, tungsten, glass
Filament material	Tungsten	Tungsten
Measurement range	1000- $1 \cdot 10^{-4}$ mbar	1000- $1 \cdot 10^{-4}$ mbar
Overpressure limit	10 bar abs.	10 bar abs.
Measurement uncertainty	< 30% of reading (1000-20 mbar), < 10% of reading ( $20-2 \cdot 10^{-3}$ mbar), < factor 2 ( $< 2 \cdot 10^{-3}$ mbar)	< 30% of reading (1000-20 mbar), < 10% of reading ( $20-2 \cdot 10^{-3}$ mbar), < factor 2 ( $< 2 \cdot 10^{-3}$ mbar)
Repeatability of measurement	$\pm 2\%$ of reading ( $20-2 \cdot 10^{-3}$ mbar)	$\pm 2\%$ of reading ( $20-2 \cdot 10^{-3}$ mbar)
Leakage rate	$< 5 \cdot 10^{-10}$ mbar · l/s	$< 5 \cdot 10^{-10}$ mbar · l/s
Reaction time	< 40 ms	< 40 ms
Serial interface	RS485	RS485
Electrical connection	D-Sub, 15 poles, male	D-Sub, 15 poles, male
Supply voltage	20-30 V	20-30 V
Max. power consumption	2.5 W (relays)	2.5 / 0.8 W (relays / display)
Output signal	0-10 V, RS485	0-10 V, RS485
Setpoint relay	2 dry contacts	2 dry contacts

	VACTEST DTP 400	VACTEST DTP 400 D
<b>Relay contact rating</b>	2A, 50 VAC / 2A, 30 VDC, max. 60 VA	2A, 50 VAC / 2A, 30 VDC, max. 60 VA
<b>Operating temperature</b>	+5 ... +60 °C	+5 ... +60 °C
<b>Max. bake-out temperature</b>	150 °C	150 °C
<b>Protection class</b>	IP40 (IP54 with appropriate D-Sub connector)	IP40 (IP54 with appropriate D-Sub connector)
<b>Weight approx.</b>	190 g	190 g
<b>Dimensions (L x W x H)</b>	45 × 66 × 99 mm	45 × 66 × 99 mm
<b>Vacuum connection</b>	DN 16 ISO-KF	DN 16 ISO-KF
<b>Display</b>	Without display	With display

## Accessories and spare parts – VACTEST DTP 400/DTP 400 D

	VACTEST DTP 400	VACTEST DTP 400 D
<b>Replacement sensor, DN 16 ISO-KF</b>	0680204596	0680204596
<b>Active Sensor Controller CTR 002, 2 channels</b>	0656202928	0656202928
<b>Active Sensor Controller CTR 004, 4 channels</b>	0656202929	0656202929
<b>Connecting cable 2 x D-Sub 15 poles, 2 m</b>	0671204577	0671204577
<b>Connecting cable 2 x D-Sub 15 poles, 6 m</b>	0671204578	0671204578
<b>Connecting cable 2 x D-Sub 15 poles, 10 m</b>	0671204580	0671204580
<b>Connecting cable 2 x D-Sub 15 poles, 20 m</b>	0671204581	0671204581
<b>RS485 interface converter to Bluetooth</b>	0680204592	0680204592
<b>RS485 interface converter to USB</b>	0671204593	0671204593
<b>Electrical power supply 100–240 VAC / 50–60 Hz, with EU/US/UK/AUS plugs</b>	0671204594	0671204594
<b>Calibration certificate, from 1000 to <math>1 \cdot 10^{-4}</math> mbar</b>	0656204608	0656204608
<b>VACTEST Explorer Pro</b>	0870203191	0870203191

# VACTEST DTP 400 C/DTP 400 DC

## Digital Transmitters



### Intelligent

Measurement range (1000 to  $5 \cdot 10^{-4}$  mbar), state-of-the-art microcontroller technology, fully customizable parameters

### Reliable

High industrial standards, robust construction, optional platinum / rhodium filament for corrosive applications

### Efficient

Modular design, plug and play sensor for maximum uptime

	VACTEST DTP 400 C	VACTEST DTP 400 DC
Article number	0656202934	0656202935
Measurement principle	Pirani	Pirani
Materials exposed to vacuum	Stainless steel 1.4307, nickel, platinum / rhodium, glass	Stainless steel 1.4307, nickel, platinum / rhodium, glass
Filament material	Platinum / Rhodium	Platinum / Rhodium
Measurement range	1000- $5 \cdot 10^{-4}$ mbar	1000- $5 \cdot 10^{-4}$ mbar
Overpressure limit	10 bar abs.	10 bar abs.
Measurement uncertainty	< 30% of reading (1000-10 mbar), < 10% of reading ( $10^{-1} \cdot 10^{-2}$ mbar), < factor 2 ( $< 1 \cdot 10^{-2}$ mbar)	< 30% of reading (1000-10 mbar), < 10% of reading ( $10^{-1} \cdot 10^{-2}$ mbar), < factor 2 ( $< 1 \cdot 10^{-2}$ mbar)
Repeatability of measurement	$\pm 5\%$ of reading ( $10^{-1} \cdot 10^{-2}$ mbar)	$\pm 5\%$ of reading ( $10^{-1} \cdot 10^{-2}$ mbar)
Leakage rate	$< 5 \cdot 10^{-10}$ mbar · l/s	$< 5 \cdot 10^{-10}$ mbar · l/s
Reaction time	< 40 ms	< 40 ms
Serial interface	RS485	RS485
Electrical connection	D-Sub, 15 poles, male	D-Sub, 15 poles, male
Supply voltage	20-30 V	20-30 V
Max. power consumption	2.5 W (relays)	2.5 / 0.8 W (relays / display)
Output signal	0-10 V, RS485	0-10 V, RS485

	VACTEST DTP 400 C	VACTEST DTP 400 DC
<b>Setpoint relay</b>	2 dry contacts	2 dry contacts
<b>Relay contact rating</b>	2A, 50 VAC / 2A, 30 VDC, max. 60 VA	2A, 50 VAC / 2A, 30 VDC, max. 60 VA
<b>Operating temperature</b>	+5 ... +60 °C	+5 ... +60 °C
<b>Max. bake-out temperature</b>	150 °C	150 °C
<b>Protection class</b>	IP40 (IP54 with appropriate D-Sub connector)	IP40 (IP54 with appropriate D-Sub connector)
<b>Weight approx.</b>	190 g	190 g
<b>Dimensions (L x W x H)</b>	45 × 66 × 99 mm	45 × 66 × 99 mm
<b>Vacuum connection</b>	DN 16 ISO-KF	DN 16 ISO-KF
<b>Display</b>	Without display	With display

## Accessories and spare parts - VACTEST DTP 400 C/DTP 400 DC

	VACTEST DTP 400 C	VACTEST DTP 400 DC
<b>Replacement sensor, DN 16 ISO-KF</b>	0680204597	0680204597
<b>Active Sensor Controller CTR 002, 2 channels</b>	0656202928	0656202928
<b>Active Sensor Controller CTR 004, 4 channels</b>	0656202929	0656202929
<b>Connecting cable 2 x D-Sub 15 poles, 2 m</b>	0671204577	0671204577
<b>Connecting cable 2 x D-Sub 15 poles, 6 m</b>	0671204578	0671204578
<b>Connecting cable 2 x D-Sub 15 poles, 10 m</b>	0671204580	0671204580
<b>Connecting cable 2 x D-Sub 15 poles, 20 m</b>	0671204581	0671204581
<b>RS485 interface converter to Bluetooth</b>	0680204592	0680204592
<b>RS485 interface converter to USB</b>	0671204593	0671204593
<b>Electrical power supply 100- 240 VAC / 50-60 Hz, with EU/ US/UK/AUS plugs</b>	0671204594	0671204594
<b>Calibration certificate, from 1000 to 1 · 10<sup>-4</sup> mbar</b>	0656204608	0656204608
<b>VACTEST Explorer Pro</b>	0870203191	0870203191



# VACTEST DPP 400/DPP 400 D

## Digital Transmitters



### Intelligent

Extended measurement range (1200 to  $1 \cdot 10^{-4}$  mbar), state-of-the-art microcontroller technology, fully customizable parameters, combination of Piezo and Pirani sensor

### Reliable

High industrial standards, robust construction

### Efficient

Modular design, plug and play sensor for maximum uptime

	VACTEST DPP 400	VACTEST DPP 400 D
Article number	0656202930	0656202931
Measurement principle	Piezoresistive / Pirani	Piezoresistive / Pirani
Materials exposed to vacuum	Stainless steel 1.4307, nickel, gold, silicon oxide, tungsten, glass	Stainless steel 1.4307, nickel, gold, silicon oxide, tungsten, glass
Filament material	Tungsten	Tungsten
Measurement range	1200– $1 \cdot 10^{-4}$ mbar	1200– $1 \cdot 10^{-4}$ mbar
Overpressure limit	4 bar abs.	4 bar abs.
Measurement uncertainty	< 0.3% full scale (1200–40 mbar)	< 0.3% full scale (1200–40 mbar)
Measurement uncertainty	< 10% of reading ( $40-2 \cdot 10^{-3}$ mbar)	< 10% of reading ( $40-2 \cdot 10^{-3}$ mbar)
Repeatability of measurement	$\pm 0.1\%$ full scale (1200–40 mbar)	$\pm 0.1\%$ full scale (1200–40 mbar)
Repeatability of measurement	$\pm 2\%$ of reading ( $40-2 \cdot 10^{-3}$ mbar)	$\pm 2\%$ of reading ( $40-2 \cdot 10^{-3}$ mbar)
Leakage rate	$< 5 \cdot 10^{-10}$ mbar · l/s	$< 5 \cdot 10^{-10}$ mbar · l/s
Reaction time	< 40 ms	< 40 ms
Serial interface	RS485	RS485
Electrical connection	D-Sub, 15 poles, male	D-Sub, 15 poles, male
Supply voltage	20–30 V	20–30 V
Max. power consumption	2.5 W (relays)	2.5 / 0.8 W (relays / display)

	VACTEST DPP 400	VACTEST DPP 400 D
Output signal	0-10 V, RS485	0-10 V, RS485
Setpoint relay	2 dry contacts	2 dry contacts
Relay contact rating	2A, 50 VAC / 2A, 30 VDC, max. 60 VA	2A, 50 VAC / 2A, 30 VDC, max. 60 VA
Operating temperature	+5 ... +60 °C	+5 ... +60 °C
Max. bake-out temperature	150 °C	150 °C
Protection class	IP40 (IP54 with appropriate D-Sub connector)	IP40 (IP54 with appropriate D-Sub connector)
Weight approx.	195 g	195 g
Dimensions (L x W x H)	45 × 66 × 99 mm	45 × 66 × 99 mm
Vacuum connection	DN 16 ISO-KF	DN 16 ISO-KF
Display	Without display	With display

## Accessories and spare parts – VACTEST DPP 400/DPP 400 D

	VACTEST DPP 400	VACTEST DPP 400 D
DPP 400, DN 16 ISO-KF	0656202930	-
DPP 400 D, with display, DN 16 ISO-KF	-	0656202931
Spare sensor, DN 16 ISO-KF	0680204595	0680204595
Active Sensor Controller CTR 002, 2 channels	0656202928	0656202928
Active Sensor Controller CTR 004, 4 channels	0656202929	0656202929
Connecting cable 2 x D-Sub 15 poles, 2 m	0671204577	0671204577
Connecting cable 2 x D-Sub 15 poles, 6 m	0671204578	0671204578
Connecting cable 2 x D-Sub 15 poles, 10 m	0671204580	0671204580
Connecting cable 2 x D-Sub 15 poles, 20 m	0671204581	0671204581
RS485 Interface converter to Bluetooth	0680204592	0680204592
RS485 Interface converter to USB	0671204593	0671204593
Power supply 100 – 240 VAC / 50 – 60Hz, with EU/US/UK/AUS plugs	0671204594	0671204594

	VACTEST DPP 400	VACTEST DPP 400 D
VACTEST Explorer Pro	0870203191	0870203191
Calibration certificate, 1000 to $1 \cdot 10^{-4}$ mbar	0656204608	0656204608

# VACTEST GCD 200

## Analog Transmitter



### Intelligent

Measurement range (200 to 0.1 mbar), state-of-the-art microcontroller technology

### Reliable

High industrial standards, insensitive against shock venting, chemically resistant ceramic sensor, robust stainless steel case, gas type independent

### Efficient

Excellent measurement accuracy, ultra-low leakage rate  $< 5 \cdot 10^{-10}$  mbar · l/s

	VACTEST GCD 200
Article number	0656202947
Measurement principle	Capacitive
Materials exposed to vacuum	Stainless steel 1.4305, Al <sub>2</sub> O <sub>3</sub> ceramic, FKM
Measurement range	200–0.1 mbar
Overpressure limit	6 bar abs.
Measurement uncertainty	< 0.25% full scale
Leakage rate	< $5 \cdot 10^{-10}$ mbar · l/s
Reaction time	< 120 ms
Electrical connection	M12 A, 5 poles
Supply voltage	9–30 V
Max. power consumption	0.6 W
Output signal	4–20 mA
Operating temperature	+5 ... +60 °C
Protection class	IP54
Weight approx.	170 g
Dimensions (L x W x H)	40 × 40 × 71 mm
Vacuum connection	DN 16 ISO-KF, G ¼ female thread

# Accessories and spare parts – VACTEST GCD 200

VACTEST GCD 200	
Calibration certificate, from 1000 to $1 \cdot 10^{-4}$ mbar	0656204608
Hose nozzle-G ¼ male adapter	0574204602

# VACTEST GRP 100/GRP 200

## Analog Transmitters



### Intelligent

Measurement range (1400 to 1 mbar), state-of-the-art microcontroller technology, flexible analog output signals (4–20 mA or 0–10 V depending on the model)

### Reliable

High industrial standards, robust stainless steel case, insensitive against shock venting, protected and robust spiral coil filament, gas type independent

### Efficient

Ultra-low leakage rate  $< 5 \cdot 10^{-10}$  mbar · l/s

	VACTEST GRP 100	VACTEST GRP 200
Article number	0656202944	0656202948
Measurement principle	Piezoresistive	Piezoresistive
Materials exposed to vacuum	Stainless steel 1.4305, Al <sub>2</sub> O <sub>3</sub> ceramic, FKM	Stainless steel 1.4305, Al <sub>2</sub> O <sub>3</sub> ceramic, FKM
Measurement range	1400–1 mbar	1400–1 mbar
Overpressure limit	4 bar abs.	4 bar abs.
Measurement uncertainty	< 0.3% full scale	< 0.3% full scale
Leakage rate	< $5 \cdot 10^{-10}$ mbar · l/s	< $5 \cdot 10^{-10}$ mbar · l/s
Reaction time	< 20 ms	< 20 ms
Electrical connection	Hirschmann, 6 poles	M12 A, 5 poles
Supply voltage	15–30 V	9–30 V
Max. power consumption	0.6 W	0.6 W
Output signal	0–10 V	4–20 mA
Operating temperature	+5 ... +60 °C	+5 ... +60 °C
Protection class	IP40	IP54
Weight approx.	120 g	120 g
Dimensions (L x W x H)	32 × 32 × 66 mm	32 × 32 × 81 mm
Vacuum connection	DN 16 ISO-KF, G ¼ female thread	DN 16 ISO-KF, G ¼ female thread

# Accessories and spare parts – VACTEST GRP 100/200

	VACTEST GRP 100	VACTEST GRP 200
GRP 100	0656202944	-
GRP 200	-	0656202948
Active Sensor Controller CTR 002, 2 channels	0656202928	0656202928
0 – 10 V Connecting cable, 2m, for CTR 002	0671204566	
0 – 10 V Connecting cable, 6m, for CTR 002	0671204567	0671204567
0 – 10 V Connecting cable, 10m, for CTR 002	0671204568	0671204568
0 – 10 V Connecting cable, 20m, for CTR 002	0671204569	0671204569
0 – 10 V Connecting cable, 2m, with open ends	0671204570	0671204570
0 – 10 V Connecting cable, 6m, with open ends	0671204571	0671204571
0 – 10 V Connecting cable, 10m, with open ends	0671204572	0671204572
0 – 10 V Mating plug	0680204574	0680204574
4 – 20 mA Mating plug	0680204573	0680204573
Calibration certificate, 1000 to $1 \cdot 10^{-4}$ mbar	0656204608	0656204608
Hose nozzle-G $\frac{1}{4}$ male adapter	0574204602	0574204602

# VACTEST GTP 100/GTP 200

## Analog Transmitters



### Intelligent

Measurement range (1000 to  $1 \cdot 10^{-4}$  mbar), state-of-the-art microcontroller technology, flexible analog output signals (4–20 mA or 0–10 V depending on the model)

### Reliable

High industrial standards, robust stainless steel case, insensitive against shock venting, protected and robust spiral coil filament

### Efficient

Ultra-low leakage rate  $< 5 \cdot 10^{-10}$  mbar · l/s

	VACTEST GTP 100	VACTEST GTP 200
Article number	0656202945	0656202949
Measurement principle	Pirani	Pirani
Materials exposed to vacuum	Stainless steel 1.4307, nickel, tungsten, glass	Stainless steel 1.4307, nickel, tungsten, glass
Filament material	Tungsten	Tungsten
Measurement range	1000– $1 \cdot 10^{-4}$ mbar	1000– $1 \cdot 10^{-4}$ mbar
Overpressure limit	10 bar abs.	10 bar abs.
Measurement uncertainty	< 30% of reading (1000–20 mbar), < 10% of reading ( $20$ – $2 \cdot 10^{-3}$ mbar), < factor 2 ( $< 2 \cdot 10^{-3}$ mbar)	< 30% of reading (1000–20 mbar), < 10% of reading ( $20$ – $2 \cdot 10^{-3}$ mbar), < factor 2 ( $< 2 \cdot 10^{-3}$ mbar)
Repeatability of measurement	$\pm 2\%$ of reading ( $20$ – $2 \cdot 10^{-3}$ mbar)	$\pm 2\%$ of reading ( $20$ – $2 \cdot 10^{-3}$ mbar)
Leakage rate	$< 5 \cdot 10^{-10}$ mbar · l/s	$< 5 \cdot 10^{-10}$ mbar · l/s
Reaction time	< 200 ms	< 200 ms
Electrical connection	Hirschmann, 6 poles	M12 A, 5 poles
Supply voltage	15–30 V	15–30 V
Max. power consumption	1 W	1 W
Output signal	0–10 V	4–20 mA
Operating temperature	+5 ... +60 °C	+5 ... +60 °C
Protection class	IP40	IP54



	VACTEST GTP 100	VACTEST GTP 200
<b>Weight approx.</b>	120 g	120 g
<b>Dimensions (L x W x H)</b>	32 × 32 × 66 mm	32 × 32 × 81 mm
<b>Vacuum connection</b>	DN 16 ISO-KF	DN 16 ISO-KF

## Accessories and spare parts – VACTEST GTP 100/GTP 200

	VACTEST GTP 100	VACTEST GTP 200
<b>Connecting cable 0–10 V, 2 m, for CTR 002</b>	0671204566	0671204566
<b>Connecting cable 0–10 V, 6 m, for CTR 002</b>	0671204567	0671204567
<b>Connecting cable 0–10 V, 10 m, for CTR 002</b>	0671204568	0671204568
<b>Connecting cable 0–10 V, 20 m, for CTR 002</b>	0671204569	0671204569
<b>Connecting cable 0–10 V, 2 m, with open ends</b>	0671204570	0671204570
<b>Connecting cable 0–10 V, 6 m, with open ends</b>	0671204571	0671204571
<b>Connecting cable 0–10 V, 10 m, with open ends</b>	0671204572	0671204572
<b>Connector for 0–10 V transmitter</b>	0680204574	0680204574
<b>Connector for 4–20 mA transmitter</b>	0680204573	0680204573
<b>Active Sensor Controller CTR 002, 2 channels</b>	0656202928	0656202928
<b>Calibration certificate, from 1000 to <math>1 \cdot 10^{-4}</math> mbar</b>	0656204608	0656204608

# VACTEST GTP 100 C

## Analog Transmitter



### Intelligent

Measurement range (1000 to  $5 \cdot 10^{-4}$  mbar), state-of-the-art microcontroller technology

### Reliable

High industrial standards, robust stainless steel case, optional platinum / rhodium filament for corrosive applications, insensitive against shock venting

### Efficient

Ultra-low leakage rate  $< 5 \cdot 10^{-10}$  mbar · l/s

	VACTEST GTP 100 C
Article number	0656202946
Measurement principle	Pirani
Materials exposed to vacuum	Stainless steel 1.4307, nickel, platinum / rhodium, glass
Filament material	Platinum / Rhodium
Measurement range	1000– $5 \cdot 10^{-4}$ mbar
Overpressure limit	10 bar abs.
Measurement uncertainty	< 30% of reading (1000–10 mbar) , < 10% of reading ( $10^{-1} \cdot 10^{-2}$ mbar), < factor 2 ( $< 1 \cdot 10^{-2}$ mbar)
Repeatability of measurement	±5% of reading ( $10^{-1} \cdot 10^{-2}$ mbar)
Leakage rate	$< 5 \cdot 10^{-10}$ mbar · l/s
Reaction time	< 200 ms
Electrical connection	Hirschmann, 6 poles
Supply voltage	15–30 V
Max. power consumption	1.5 W
Output signal	0–10 V
Operating temperature	+5 ... +60 °C

<b>VACTEST GTP 100 C</b>	
<b>Max. bake-out temperature</b>	150 °C
<b>Protection class</b>	IP40
<b>Weight approx.</b>	120 g
<b>Dimensions (L x W x H)</b>	32 × 32 × 66 mm
<b>Vacuum connection</b>	DN 16 ISO-KF

## Accessories and spare parts – VACTEST GTP 100 C

<b>VACTEST GTP 100 C</b>	
<b>0–10 V connecting cable, 2 m, for CTR 002</b>	0671204566
<b>0–10 V connecting cable, 6 m, for CTR 002</b>	0671204567
<b>0–10 V connecting cable, 10 m, for CTR 002</b>	0671204568
<b>0–10 V connecting cable, 20 m, for CTR 002</b>	0671204569
<b>0–10 V connecting cable, 2 m, with open ends</b>	0671204570
<b>0–10 V connecting cable, 6 m, with open ends</b>	0671204571
<b>0–10 V connecting cable, 10 m, with open ends</b>	0671204572
<b>Connector for 0–10 V transmitter</b>	0680204574
<b>Active Sensor Controller CTR 002, 2 channels</b>	0656202928
<b>Calibration certificate, from 1000 to <math>1 \cdot 10^{-4}</math> mbar</b>	0656204608

# VACTEST CTR 002/CTR 004 Controllers



## Intelligent

Automatic identification of active vacuum gauges

## Reliable

Full control of each transmitter

## Efficient

Worldwide compatibility

	VACTEST CTR 002	VACTEST CTR 004
Article number	0656202928	0656202929
Measurement channels	2	4
Compatibility	CTR 002	CTR 004
Display	LCD graphic display, background illumination, resolution 128 x 64	LCD graphic display, background illumination, resolution 128 x 64
Display refresh rate	2 Hz	2 Hz
Measurement units	mbar, bar, mTorr, Torr, Pa, hPa	mbar, bar, mTorr, Torr, Pa, hPa
Inputs	0-10 V, RS485	RS485
Sample rate	RS485: 12.5 Hz, 0-10 V: 50 Hz	RS485: 12.5 Hz
Serial interface	USB type B, RS232 (3.5 mm jack)	USB type B, RS232 (3.5 mm jack)
Power supply	95-265 VAC, 50/60 Hz	95-265 VAC, 50/60 Hz
Electrical connection	IEC-320 C14	IEC-320 C14
Max. power consumption	25 W	45 W
Setpoint relay	2 dry contacts, Phoenix strip terminal 6 poles, lifetime > 300,000 cycles	4 dry contacts, Phoenix strip terminal 6 poles, lifetime > 300,000 cycles
Relay contact rating	4A, 250 VAC / 2A, 45 VDC	4A, 250 VAC / 2A, 45 VDC
Operating temperature	+5 ... +50 °C	+5 ... +50 °C
Protection class	IP20	IP20

	VACTEST CTR 002	VACTEST CTR 004
<b>Weight approx.</b>	750 g	800 g
<b>Dimensions (L x W x H)</b>	70.8 × 128.4 × 178 mm	70.8 × 128.4 × 178 mm

## Accessories and spare parts – VACTEST CTR 002/CTR 004

	VACTEST CTR 002	VACTEST CTR 004
<b>USB interface cable for PC</b>	0671204565	0671204565
<b>VACTEST Explorer Pro</b>	0870203191	0870203191

# TAPIR HL 1102 A

## Leak detector



### Portable

Compact, retractable handle, lightweight, integrated detachable control panel, can be operated at any position

### High performance

Highly sensitive leak detection, minimum detectable leakage rate of  $5 \cdot 10^{-13} \text{ Pa} \cdot \text{m}^3/\text{s}$ , for almost all applications, spray test and sniffing leak detection with helium or hydrogen

### Control and monitoring

High definition color display for maximum readability, intuitive menu navigation, SD memory card for saving and downloading all relevant data, customizable parameter settings

	TAPIR HL 1102 A
Pumping speed for helium	1.1 l/s
Response time (sniffing leak detection)	< 1 s
Minimum detectable leakage rate for helium (spray test)	$5 \cdot 10^{-13} \text{ Pa} \cdot \text{m}^3/\text{s}$
Minimum detectable leakage rate for helium (sniffing leak detection)	$1 \cdot 10^{-8} \text{ Pa} \cdot \text{m}^3/\text{s}$
Detectable gases	$^4\text{He}$ ; $^3\text{He}$ ; $\text{H}_2$
Test method	Spray test and sniffing leak detection
Start-up time (20 °C) with calibration	< 3.5 min
Start-up time (20 °C) without calibration	< 2 min
Backing pump	Diaphragm vacuum pump
Pumping speed of backing pump (50 Hz)	1.7 m <sup>3</sup> /h
Max. power consumption	300 W
Power supply	90–240 V (50/60 Hz)
I/O interfaces	RS-232; standard 15 pins I/O
Operating temperature (sniffing test)	10–40 °C

<b>TAPIR HL 1102 A</b>	
<b>Operating temperature (spray test)</b>	10–40 °C
<b>Noise level (ISO 2151)</b>	< 45 dB(A)
<b>Weight approx.</b>	21 kg
<b>User interface</b>	Color touch screen (detachable)
<b>Dimensions (L x W x H)</b>	350 x 254 x 415 mm
<b>Connecting flange</b>	DN 25 ISO-KF

## Accessories and spare parts – TAPIR HL 1102 A

<b>TAPIR HL 1102 A</b>	
<b>Helium spray gun kit</b>	0995230816
<b>Sniffing probe</b>	0659230817
<b>Transport trolley</b>	0943230818
<b>Transport box</b>	0855230820
<b>Power connection, 2.5 m, UK</b>	0985230815

# TAPIR HL 2216 A

## Leak detector



### High performance

Highly sensitive leak detection, minimum detectable leakage rate of  $5 \cdot 10^{-10}$  Pa · m<sup>3</sup>/s in sniffing mode, rapid response time due to high pumping speeds, for almost all applications, spray test and sniffing leak detection with helium or hydrogen

### Control and monitoring

High definition color display for maximum readability, intuitive menu navigation, SD memory card for saving and downloading all relevant data, customizable parameter settings

### Reliable

Dependable operation due to redundancy of two long-life yttrium-coated iridium filaments

	TAPIR HL 2216 A
Pumping speed for helium	2.5 l/s
Response time (sniffing leak detection)	< 1.5 s
Minimum detectable leakage rate for helium (spray test)	$5 \cdot 10^{-13}$ Pa · m <sup>3</sup> /s
Minimum detectable leakage rate for helium (sniffing leak detection)	$5 \cdot 10^{-10}$ Pa · m <sup>3</sup> /s
Detectable gases	<sup>4</sup> He; <sup>3</sup> He; H <sub>2</sub>
Test method	Spray test and sniffing leak detection
Start-up time (20 °C) with calibration	< 4.5 min
Start-up time (20 °C) without calibration	~ 3 min
Backing pump	Oil-lubricated rotary vane vacuum pump
Pumping speed of backing pump (50 Hz)	15 m <sup>3</sup> /h
Max. power consumption	850 W
Power supply	200–240 V (50/60 Hz)   100–110 V (50/60 Hz)   90–130 V (50/60 Hz)
I/O interfaces	RS-232; USB; configurable 37 pins I/O



<b>TAPIR HL 2216 A</b>	
<b>Operating temperature (sniffing test)</b>	0–40 °C
<b>Operating temperature (spray test)</b>	0–45 °C
<b>Noise level (ISO 2151)</b>	54 dB(A)
<b>Weight approx.</b>	56 kg
<b>User interface</b>	Color touch screen (detachable)
<b>Dimensions (L x W x H)</b>	547 x 375 x 393 mm
<b>Connecting flange</b>	DN 25 ISO-KF

## Accessories and spare parts – TAPIR HL 2216 A

<b>TAPIR HL 2216 A</b>	
<b>Helium spray gun kit</b>	0995230816
<b>Sniffing probe</b>	0659230817
<b>Inlet filter 5 um</b>	0943232413
<b>Inlet filter 40 um</b>	0943232414
<b>Transport Trolley</b>	0943232412
<b>Power connection, 2.5 m, UK</b>	0985230815



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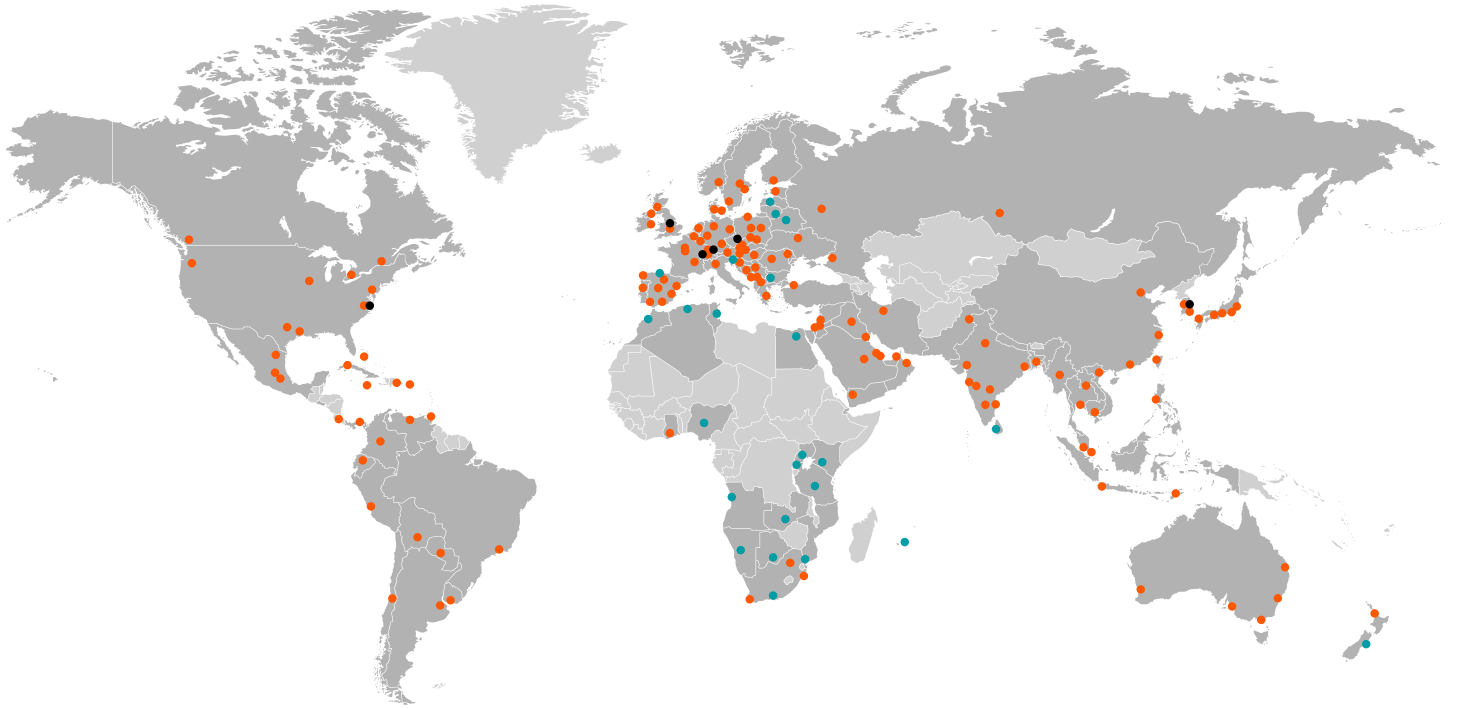
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