

Dry Compressing Vacuum Pumps

Scroll Vacuum Pumps SCROLLVAC SC - D

Piston Vacuum Pumps ECODRY M

171.04.02

Excerpt from the Oerlikon Leybold Vacuum Full Line Catalog

Product Section C03

Edition 2010

Contents

General

Applications and Accessories C03.03

Products

Oil-free Scroll Vacuum Pumps
 SCROLLVAC SC 5 D to SC 60 D C03.04

Dry Compressing Piston Vacuum Pumps
 ECODRY M C03.08

Accessories ECODRY M

Universal Silencing Hood (Retrofit Kit) C03.16

Exhaust Silencer C03.17

Vibration Absorbing Feet C03.17

Vibration Absorbing Kit C03.18

Solenoid Gas Ballast Valve C03.19

Miscellaneous

60 Hz Curves C03.20

General

Applications and Accessories

Pumps	SC 5 D	SC 15 D	SC 30 D	SC 60 D
Applications				
Electron beam melting	■	■	■	■
Lasers	■	■	■	■
Leak detection systems	■		■	
Accelerators / Synchrotrons	■	■	■	■
Surface analysis instruments	■			
Scanning electron microscopy	■	■	■	■
Loadlock		■	■	■
Spectroscopy	■			
Lamps manufacture	■	■	■	■
As backing pump for turbomolecular pump systems	■	■	■	■

Pumps	ECODRY M 15/20/30
Applications	
Applications in physics	■
Applications in loadlock	■
Vacuum locks	■
Mass spectrometers	■
Electron microscope	■
Lamps and bulbs manufacture	■
Coating systems	■

Accessories

	Page	
Universal silencing hood (retrofit kit)	C03.16	■
Exhaust silencer	C03.17	■
Vibration absorbing feet	C03.17	■
Vibration absorbing kit	C03.18	■
Solenoid gas ballast valve	C03.19	■

Products

Oil-free Scroll Vacuum Pumps SCROLLVAC SC 5 to SC 60 D



Scroll vacuum pump SCROLLVAC, from left to right: SC 60 D, SC 30 D, SC 15 D, SC 5 D

Advantage for the User

- Absolutely oil-free
- High effective pumping speed
- Low ultimate pressure
- Low noise level
- Low vibration operation
- Atmospheric inlet pressure allowable
- Low weight
- Air cooling
- Low power consumption
- Integrated operating hours counter

Typical Applications

- Electron beam welding
- Lasers
- Leak detection systems
- Accelerators / synchrotrons
- Surface analysis instruments
- Scanning electron microscopes
- Load lock
- Spectroscopy
- Lamp manufacturing
- As a backing pump for turbomolecular pump systems

In 1905 the principle of the scroll compressor was developed by the Frenchman Leon Creux. The scroll pump is now being used as an oil-free vacuum pump. Every scroll pump consists of two Archimedes spirals engaging each other with an offset of 180°. Thus several crescent-shaped pockets of differing sizes are created. By means of an eccentric drive, a second spiral is made to orbit about a fixed spiral, thus reducing the volume of the pockets and compressing gases from the outside towards the inside thereby pumping the gases.

Important to the quality of a scroll pump is that precise manufacturing tolerances are maintained and that suitable materials are selected.

Maintenance Intervals

In order to maintain the performance of the pump, a standard maintenance is required after a certain number of operating hours.

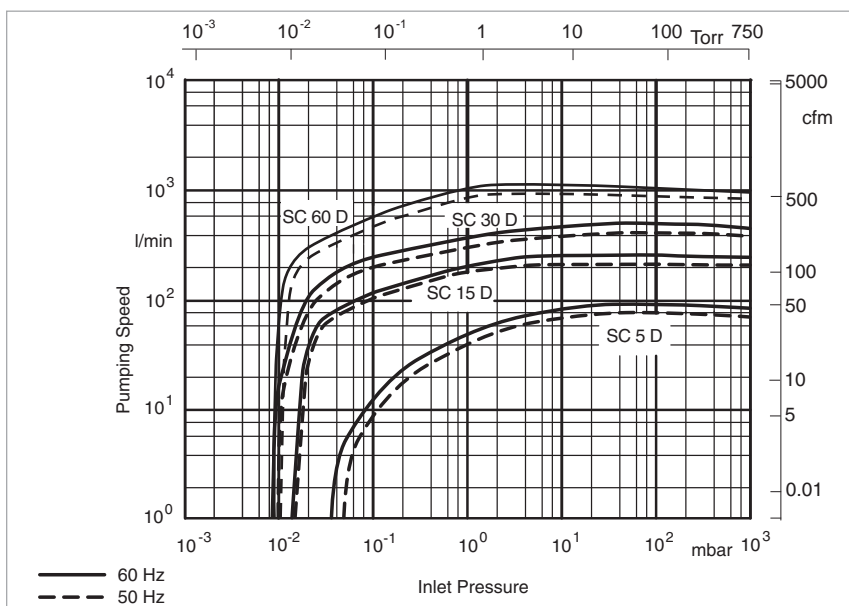
For this we are offering complete maintenance kits

- Small maintenance kit (Minor Kit) after 8,000 h or at latest after an operating time of 12 months
- Large maintenance kit (Major Kit) after 16,000 hours or at latest after an operating time of 24 months

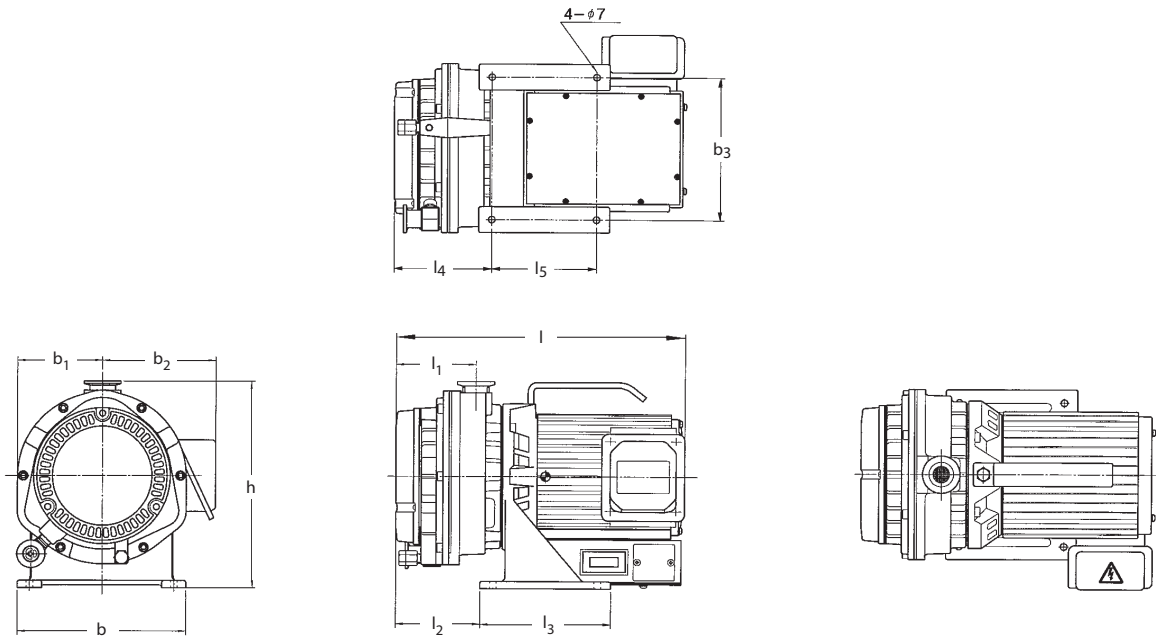
Warranty

Upon signing a warranty contract, we will grant a two-year warranty for faulty material when complying with the required maintenance intervals.

Excluded are wearing parts as well as well wear due to the process.



Pumping speed curves for the scroll vacuum pumps SCROLLVAC SC - D

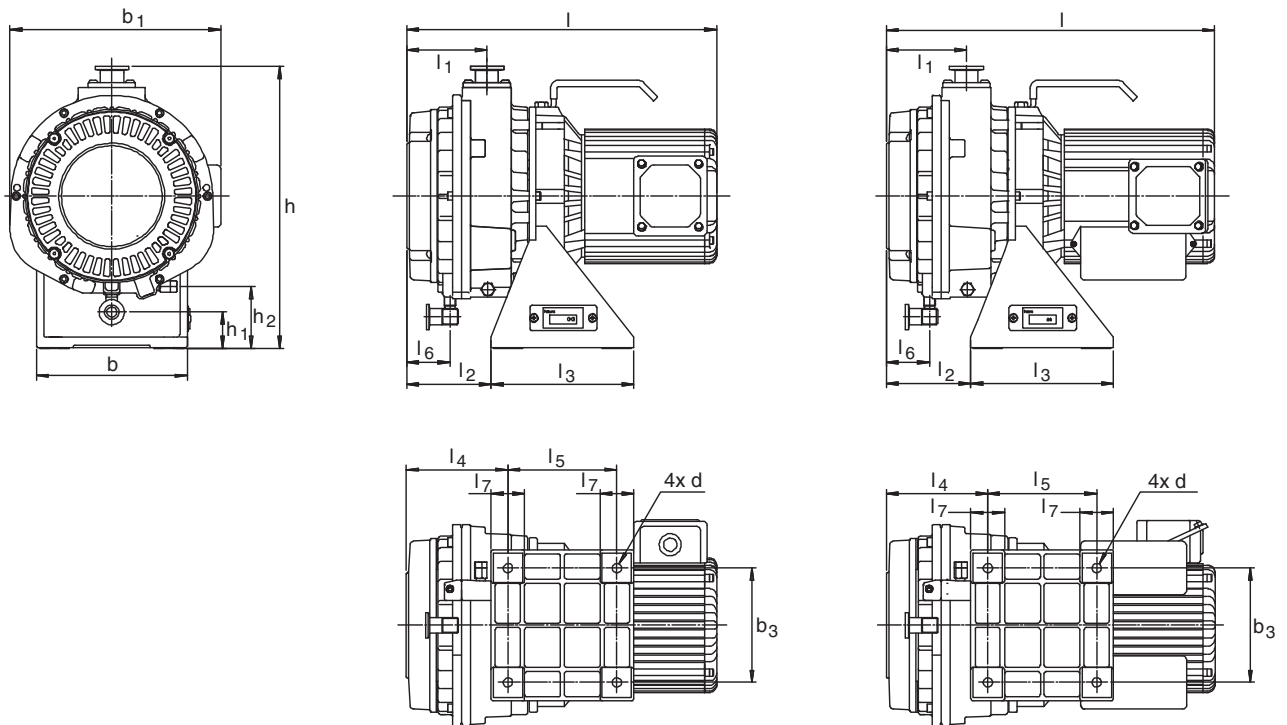


Type		b	b ₁	b ₂	b ₃	∅ d	h	h ₁	h ₂	l	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇
SC 05 D	mm	180	91	123	154	7	225	-	-	308	85	90	140	104	112	-	-
	in.	7.09	3.58	4.84	6.06	0.28	8.86	-	-	12.13	3.35	3.54	5.51	40.95	4.41	-	-
SC 15 D	mm	180	222	-	136	11	336	38	73.5	400 ¹⁾	96	101	170	121	130	52	40
	in.	7.09	8.74	-	5.35	0.43	13.23	1.50	2.89	15.75 ¹⁾	3.78	3.98	6.69	4.76	5.12	2.05	1.58

¹⁾ 370 (14.57 in.) for 3 ~ version

3 phase

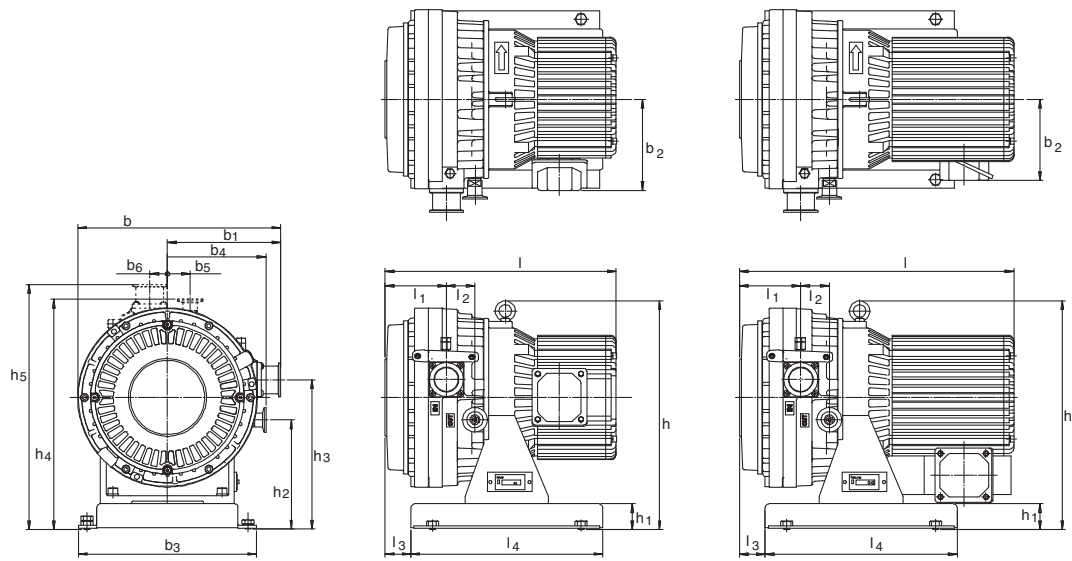
1 phase



Dimensional drawing for the scroll vacuum pump SCROLLVAC SC 5 D (above) and SC 15 D (below)

3 phase

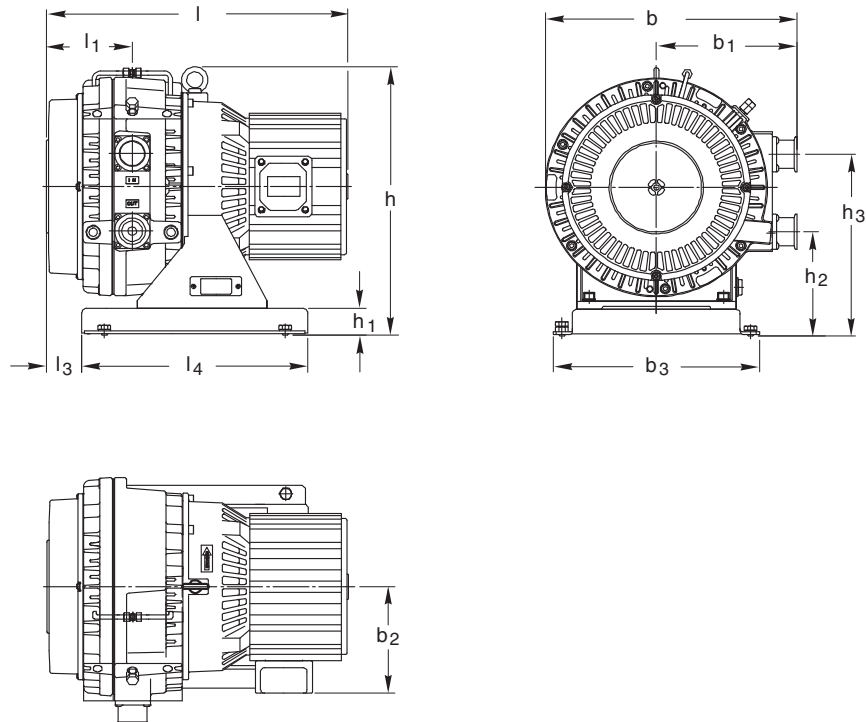
1 phase



Type		b	b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	∅ d	h	h ₁	h ₂	h ₃	h ₄	h ₅	l	l ₁	l ₂	l ₃	l ₄
SC 30 D	mm	328	183	131 ¹⁾	288	159	36	29	M 10	372	42	178	243	373	397	443 ²⁾	99	46	42	310
	in.	12.91	7.20	5.16 ¹⁾	11.34	6.26	1.42	1.14	M 10	14.65	1.65	7.01	9.57	14.69	15.63	17.44 ²⁾	3.90	1.81	1.65	12.20
SC 60 D	mm	390	218	168	320	-	-	-	M 10	421	42	163	285	-	-	467	133	-	55	350
	in.	13.35	8.58	6.61	12.60	-	-	-	M 10	16.58	1.65	6.42	11.22	-	-	18.39	5.24	-	2.17	13.78

¹⁾ 147 (5.79 in.) for 3 ~ version

²⁾ 372 (14.65 in.) for 3 ~ version



Dimensional drawing for the scroll vacuum pump SCROLLVAC SC 30 D (above) and SC 60 D (below)

Technical Data

SCROLLVAC

		SC 5 D	SC 15 D	SC 30 D	SC 60 D	
Nominal pumping speed ¹⁾	50 Hz	m ³ /h (cfm)	5.4 (3.2)	15.0 (8.8)	30.0 (17.7)	60.0 (35.4)
	60 Hz	m ³ /h (cfm)	6.4 (3.8)	18.0 (10.6)	36.0 (21.2)	72.0 (42.4)
Pumping speed ¹⁾	50 Hz	m ³ /h (cfm)	4.8 (2.8)	13.0 (7.7)	26.0 (13.3)	52.0 (30.6)
	60 Hz	m ³ /h (cfm)	6.0 (3.5)	15.5 (9.1)	31.0 (18.3)	62.0 (36.5)
Attainable ultimate pressure	mbar (Torr)	≤ 0.05 (≤ 0.038)	≤ 0.016 (≤ 0.012)	≤ 0.01 (≤ 0.008)	≤ 0.01 (≤ 0.008)	
Leak rate	mbar l/s	1 x 10 ⁻⁶	1 x 10 ⁻⁶	1 x 10 ⁻⁶	1 x 10 ⁻⁶	
Maximum inlet pressure		Atmosphere	Atmosphere	Atmosphere	Atmosphere	
Permissible ambient temperature	°C (°F)	+5 to +40 (+41 to +104)	+5 to +40 (+41 to +104)	+5 to +40 (+41 to +104)	+5 to +40 (+41 to +104)	
Connections						
Inlet	DN	25	25	40	40	
Exhaust	DN	16	16	25	40	
Cooling		Air	Air	Air	Air	
Water vapor capacity with purge, max.	g/h	0.2	1.04	1.04	1.04	
	l/min	9	10	10	10	
Protection class	IP	20	20	20	20	
Motor power	W (hp)	150 (0.20)	400 (0.54)	600 (0.82)	1400 (1.90)	
Motor speed	50 Hz	min ⁻¹ (rpm)	1440 (1440)	1450 (1450)	1450 (1450)	1460 (1460)
	60 Hz	min ⁻¹ (rpm)	1740 (1740)	1730 (1730)	1730 (1730)	1760 (1760)
Motor voltage	1 ph. ²⁾	100 V / 50 Hz 100 - 115 V / 60 Hz 200 - 230 V / 50/60 Hz	100 V / 50 Hz 100 - 115 V / 60 Hz 200 - 230 V / 50/60 Hz	100 V / 50 Hz 100 - 115 V / 60 Hz 200 - 230 V / 50/60 Hz	100 V / 50 Hz 100 - 115 V / 60 Hz 200 - 230 V / 50/60 Hz	
	3 ph.		200 V, 380 - 415 V / 50 Hz 200 - 380 V, 460 V / 60 Hz	200 V, 380 - 415 V / 50 Hz 200 - 380 V, 460 V / 60 Hz	200 V, 380 - 400 - 415 V / 50 Hz 200 - 220 - 230 V, 460 V, 60 Hz	
Noise level at 1 m (3.5 ft), free field measurement	dB(A)	≤ 52	≤ 58	≤ 62	≤ 67	
Dimensions (W x H x D)	mm (in.)	308 x 214 x 225 (12.13 x 8.43 x 8.86)	400 x 252 x 336 (15.75 x 9.92 x 13.23)	443 x 328 x 372 (17.44 x 12.91 x 14.65)	467 x 390 x 421 (18.39 x 15.35 x 16.57)	
Weight	Single-phase motor	kg (lbs)	14 (30.9)	25 (55.2)	44 (97.1)	-
	Three-phase motor	kg (lbs)	-	23 (50.8)	38 (83.9)	60 (132.5)

Ordering Information

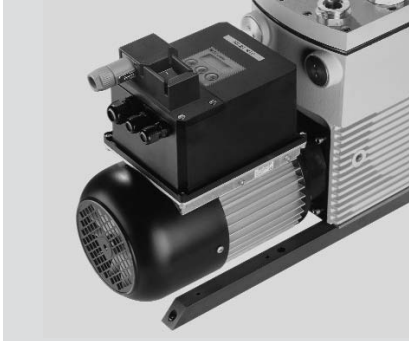
SCROLLVAC

		SC 5 D	SC 15 D	SC 30 D	SC 60 D
Oil-free scroll vacuum pump Single-phase motor, with cable and plug	Europe (Schuko plug, 230 V)	Part No. 133 000	Part No. 133 001	Part No. 133 002	-
	US / Japan (NEMA plug, 115 V)	Part No. 133 100	Part No. 133 101	Part No. 133 102	-
	Three-phase motor, without cable	-	Part No. 133 003	Part No. 133 004	Part No. 133 008
Maintenance kits	Small maintenance kit (after 8,000 h)	Minor Kit Part No. EK 870000496	Part No. EK 870000497	Part No. EK 870000498	Part No. EK 870000519
	Large maintenance kit (after 16,000 h)	Major Kit Part No. EK 870000499	Part No. EK 870000500	Part No. EK 870000501	Part No. EK 870000520
Tool kit SC 5/15/30/60 D		Part No. EK 870000502	Part No. EK 870000503	Part No. EK 870000503	Part No. EK 870000521
Scroll profile gasket (Tip Seal)		Part No. E 870000510	Part No. E 870000511	Part No. E 870000512	Part No. E 870000522
Shaft installation kit (Pin Crank Kit)		Part No. EK 870000507	Part No. EK 870000508	Part No. EK 870000509	Part No. EK 870000523

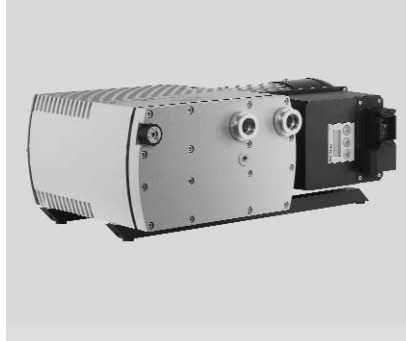
¹⁾ In accordance with DIN 28 400 and subsequent numbers

²⁾ The Part No. for single-phase pumps will determine the voltage range at delivery

Dry Compressing Piston Vacuum Pumps ECODRY M



ECODRY M vertical (as delivered)



ECODRY M horizontal

The ECODRY M incorporates a dry sliding mechanism without the need for oil or hydrocarbons.

Through the further developed and optimised compression processes, the ECODRY M 15/30 attains with three compression stages a base pressure (total) in the low 10^{-2} mbar range.

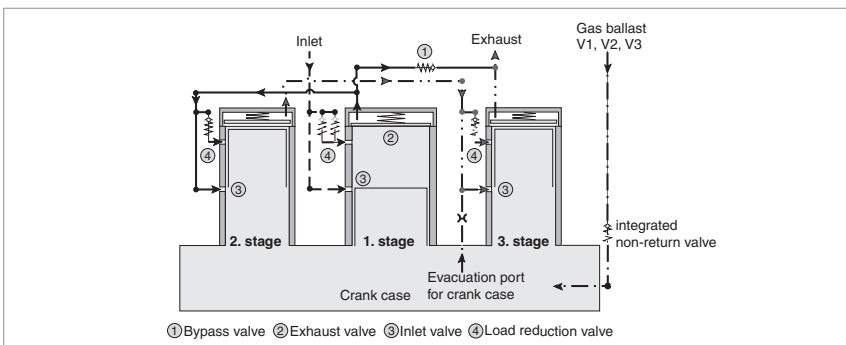
Since the ECODRY M 15/20/30 may be operated either vertically (as normally delivered) or horizontally, this pump is highly flexible when it has to be integrated into the customer's system.

The ECODRY M 15/20/30 is equipped with the well-proven inlet slits, and also with pressure controlled inlet valves. These cut the power requirement during the intake phase of the individual compression stages. This results in a lower overall power requirement of the pump, thereby making operation of the pump more cost-effective.

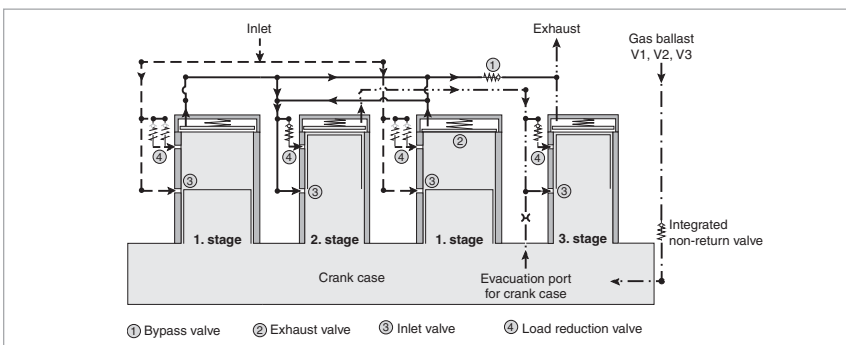
The ECODRY M 15/20/30 does not require any external cooling media like cooling water, for example.

The ECODRY M 15/20/30 is offered with different motor versions allowing operation of the pump off almost any mains voltage and frequency in the world (see Technical Data).

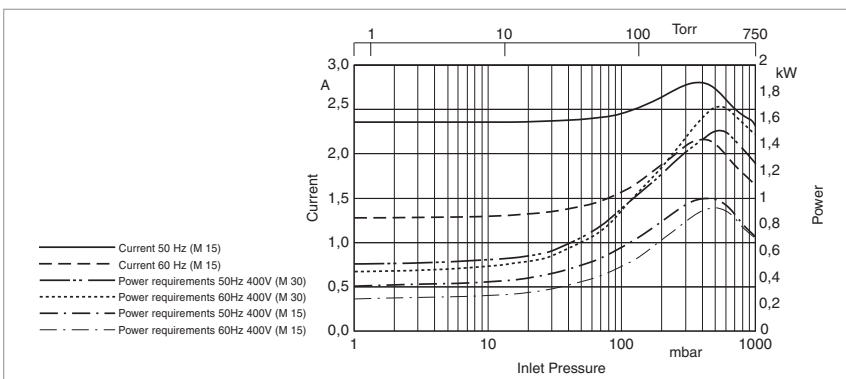
Also new is the universal frequency controlled motor which may be operated off all single-phase mains world-wide (90 to 264 V, 50/60 Hz).



Gasflow diagram for the ECODRY M 15 (three compressing stages)



Gasflow diagram for the ECODRY M 30



Current/power consumption vs. inlet pressure for the ECODRY M 15 and 30 with 400 V, 50/60 Hz 3-phase motor

ECODRY M

Modular Line of Piston Vacuum Pump



ECODRY M line

The ECODRY M incorporates a dry sliding mechanism, and thus the pump contains neither oil nor lubricants containing hydrocarbons.

The allowable low speed (750 rpm; FC motor ¹⁾) and the reliance the on well proven components allow for maintenance intervals of up to 2 years (application dependent).

The modular design of the ECODRY M allows us to offer the following pumping speed:

S_{eff}	m^3/h	cfm
M 15	15	8.8
M 20	20	11.8
M 30	30	17.8

Advantages to the User

- Low maintenance, free of oil and bearing lubrication, free of hydrocarbons
- Extremely low particle emissions on the intake and exhaust sides
- Rugged and most reliable
- Low power consumption
- Service friendly
- Air cooling
- Plug & play
- Good pumping speed at low base pressure
- High water vapour tolerance (gas ballast standard)
- No grease lubricated bearings in the vacuum section
- Leak tight
- Compact size
- Runs at 750/1000/1200 rpm (50/60 Hz mains) with FC motor
- Rugged full cross section exhaust valves
- For both horizontal and vertical operation

Typical Applications

- Applications in physics
- Loadlock chambers
- Transfer chambers
- Mass spectrometers
- Electron microscopes
- Lighting
- Thinfilm coaters
- Freeze drying
- Forevacuum pump for dry high-vacuum systems
- Pumping of oxygen concentrations over 21 percent by volume upon request

These pumps basically differ by the way in which the third stage of the pump is arranged.

In the ECODRY M 15 the three compression stages are connected in series.

In the ECODRY M 20 the 1st and 2nd stage are connected in parallel and the 3rd stage in series. In the M 30 all stages operate like those of the M 15 in 3 compressing stages whereby the 2nd and the 4th stage form the single compressing stage (1st stage).

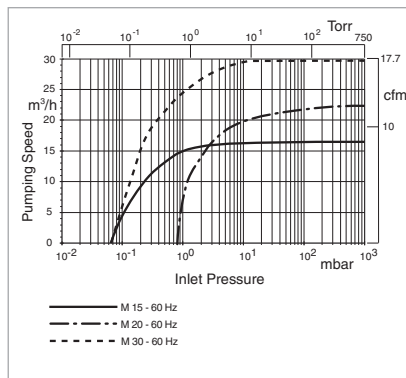
This results in the higher pumping speed of about 20 m^3/h (11.8 cfm) and a base pressure (total) in the middle of the 10^{-1} mbar range for the ECODRY M 20.

The ECODRY M is available as a plug and play system, complete with fitted silencing hood (including castors).

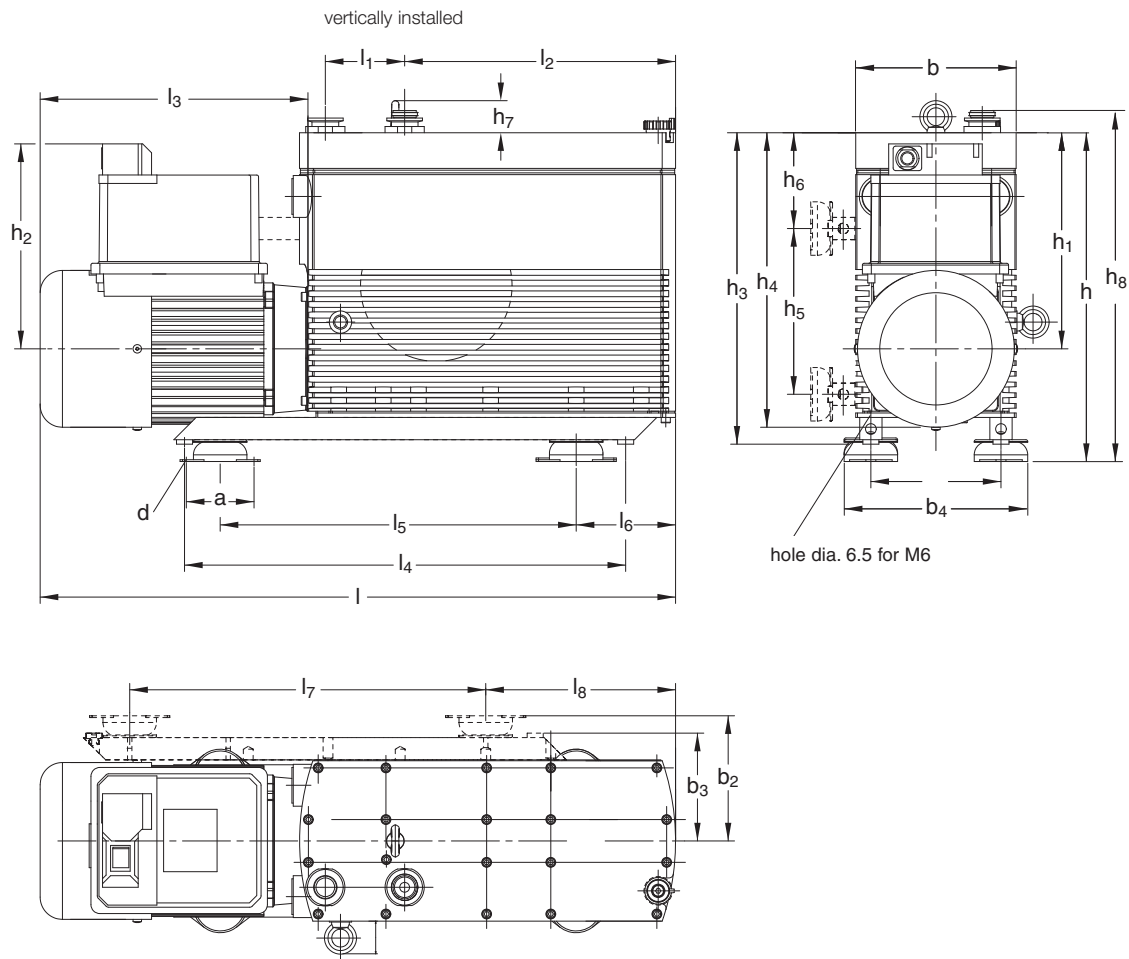
Thus the noise level is reduced to significantly lower levels (see Technical Data).

Excluded from the warranty are the piston seals and the piston coatings.

¹⁾ FC motor = Frequency Controlled Motor



Pumping speed vs. inlet pressure for the ECODRY M 15 to M 30

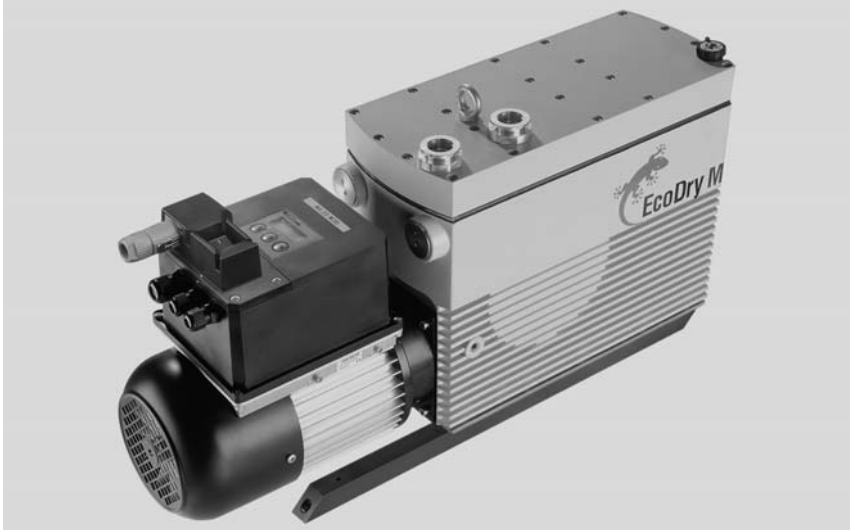


Type		a	b	b ₁	b ₂	b ₃	b ₄	∅ d	h	h ₁	h ₂	h ₃	h ₄	h ₅
M 15/20 FC motor	mm	76.0	180.0	146.0	138.0	121.0	216.0	6.5	352.5	228.0	230.0	335.0	316.0	186.0
	in.	2.99	7.09	5.75	5.43	4.76	8.50	0.26	13.88	8.98	9.06	13.19	12.44	7.32
M 30 FC motor	mm	76.0	180.0	146.0	140.5	121.0	216.0	6.5	369.0	242.5	230.0	349.5	330.5	186.0
	in.	2.99	7.09	5.75	5.53	4.76	8.50	0.26	14.53	9.55	9.06	13.76	13.01	7.32
M 15/20 3-ph. motor	mm	76.0	180.0	146.0	138.0	121.0	216.0	6.5	352.5	228.0	148.0	335.0	316.0	186.0
	in.	2.99	7.09	5.75	5.43	4.76	8.50	0.26	13.88	8.98	5.83	13.19	12.44	7.32
M 30 3-ph. motor	mm	76.0	180.0	146.0	140.5	121.0	216.0	6.5	369.0	242.5	148.0	344.5	330.5	186.0
	in.	2.99	7.09	5.75	5.53	4.76	8.50	0.26	14.53	9.55	5.83	13.56	13.01	7.32

Type		h ₆	h ₇	h ₈	l	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈
M 15/20 FC motor	mm	93.0	37.5	373.5	598.0	89.0	191.0	300.5	495.0	289.0	105.5	289.0	101.0
	in.	3.66	1.48	14.7	23.54	3.5	7.52	11.83	19.49	11.28	4.15	11.28	3.98
M 30 FC motor	mm	107.5	36.0	390.0	713.0	89.0	304.0	300.5	495.0	399.5	111.5	399.5	213.0
	in.	4.23	1.42	15.35	28.07	3.5	11.97	11.83	19.49	15.73	4.39	15.73	8.39
M 15/20 3-ph. motor	mm	93.0	37.5	373.5	594.0	89.0	191.0	269.5	495.0	289.0	105.5	289.0	101.0
	in.	3.66	1.48	14.7	23.39	3.5	7.52	10.61	19.49	11.28	4.15	11.28	3.98
M 30 3-ph. motor	mm	107.5	36.0	390.0	709.0	89.0	304.0	269.5	495.0	399.5	111.5	399.5	213.0
	in.	4.23	1.42	15.35	27.91	3.5	11.97	10.61	19.49	15.73	4.39	15.73	8.39

Dimensional drawing for the ECODRY M 15/20 and M 30 with world motor; 3-phase motor without drawing (dimensions related to the version with standard feet)

Smart Drive Technology for a Tailor-Made Vacuum



EcoDry M with FC motor

To increase the performance of the ECODRY M piston vacuum pumps, a frequency converter integrated within the motor has been provided.

Oerlikon Leybold Vacuum is now offering this universal voltage/frequency feature for the entire ECODRY M line (ECODRY M 15, M 20 and M 30).

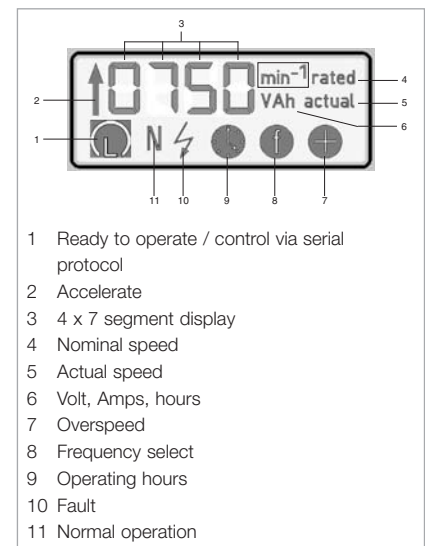
Advantages to the User

- Universal – can be run off all single-phase AC mains world-wide (50 and 60 Hz)
- Cost-effective to purchase and operate
- Increased pumping speed by up to 18% compared to standard 50 Hz AC mains powered versions
- Menu controlled two key operation for selecting the required speed range of 750, 1000 or 1200 rpm
- Infinitely variable speed control from 750 to 1200 rpm via analog interface
- Process and application control is possible by connecting vacuum gauges with an analog output (0 - 10 V); THERMOVAC TM 21, for example
- “Economy” operation (load optimised operation) can be set up in a well-defined manner to reduce power consumption, vibration and noise levels
- Conserving, low-wear operation through well-defined speed control

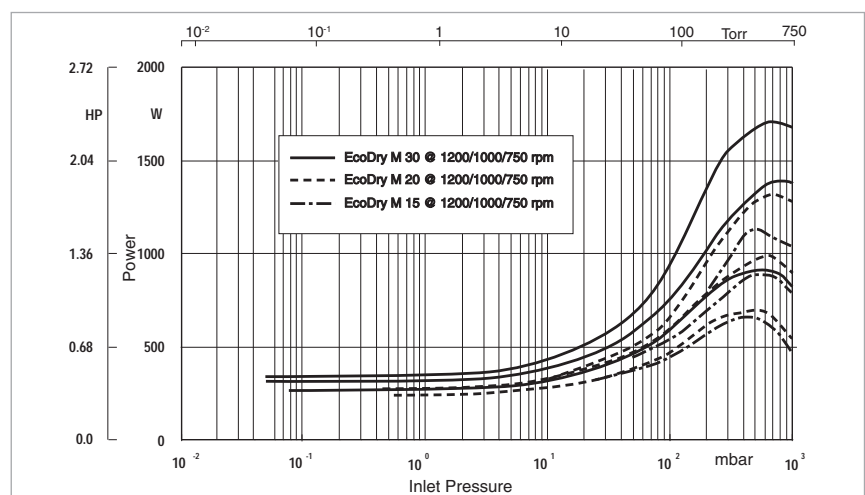
- LC display for indicating operational information like speed, operating hours, current
- CE and NRTL compliant

Technical Data

- Mains supply voltage range 90 to 264 V (13 A - 7 A) at 50/60 Hz
- Motor speed manually adjustable in three steps to 750, 1000 and 1200 rpm
- RS 485 C and analog interface (0 - 10 V)



LC display on the operating unit



Power uptake vs. inlet pressure for the ECODRY M 15 to M 30

Technical Data

ECODRY M 15

ECODRY M 20

3-phase motor FC motor ¹⁾ 3-phase motor FC motor ¹⁾

No. of cylinders		3	3	3	3
No. of stages		3	3	2	2
Max. pumping speed					
50 Hz ²⁾	m ³ x h ⁻¹ (cfm)	14 (8.2)	–	19 (11.2)	–
60 Hz ²⁾	m ³ x h ⁻¹ (cfm)	16 (9.4)	–	22 (12.9)	–
at 0750 rpm	50/60 Hz ²⁾	–	11 (6.5)	–	14 (8.2)
at 1000 rpm	50/60 Hz ²⁾	–	15 (8.8)	–	18 (10.5)
at 1200 rpm	50/60 Hz ²⁾	–	16 (9.4)	–	22 (12.9)
Ultimate total pressure ³⁾					
3-phase motor	60 Hz mbar (Torr)	5.5 x 10 ⁻² (4.1 x 10 ⁻²)	–	8.0 x 10 ⁻¹ (6.0 x 10 ⁻¹)	–
FC motor ¹⁾ at 1000 rpm	50/60 Hz mbar (Torr)	–	5.5 x 10 ⁻² (4.1 x 10 ⁻²)	–	8.0 x 10 ⁻¹ (6.0 x 10 ⁻¹)
Max. permissible inlet pressure		Atmosphere	Atmosphere	Atmosphere	Atmosphere
Max. permissible permanent inlet pressure	mbar (Torr)	100 (75)	100 (75)	100 (75)	100 (75)
Water vapor tolerance (with gas ballast)	mbar (Torr)	25 (18.8)	25 (18.8)	25 (18.8)	25 (18.8)
Leak rate (integral)	mbar x l x s ⁻¹	≤ 1 x 10 ⁻⁴	≤ 1 x 10 ⁻⁴	≤ 1 x 10 ⁻⁴	≤ 1 x 10 ⁻⁴
Power consumption at < 10 mbar (7.5 Torr) inlet pressure	W (hp)	300 (0.41)	280 (0.38)	300 (0.41)	280 (0.38)
Motors		- 5% to + 5%		- 5% to + 5%	
3-phase (IP 54)					
50 Hz	V	220-240/346-415	–	220-240/346-415	–
60 Hz	V	200-277/380-480	–	200-277/380-480	–
FC motor, 50/60 Hz (IP 44)	V	–	90-264	–	90-264
Rotational speed					
with 3-phase motor	50 / 60 Hz rpm	1000 / 1200	–	1000 / 1200	–
with FC motor	50 / 60 Hz rpm	–	750/1000/1200	–	750/1000/1200
via analog interface 0 - 10 V	50 / 60 Hz rpm	–	750-1200, variable	–	750-1200, variable
Noise level at ultimate pressure without gas ballast (50 Hz at 3-phase and 750 rpm with FC motor)	dB(A)	≤ 59	≤ 59	≤ 59	≤ 59
Ambient temperature	°C (°F)	0 to +50 (32 to +122)	0 to +50 (32 to +122)	0 to +50 (32 to +122)	0 to +50 (32 to +122)
Connection					
Inlet port fitting	DN	25 KF	25 KF	25 KF	25 KF
Exhaust port fitting	DN	25 KF	25 KF	25 KF	25 KF
Dimensions, approx. (L x W x H) standard, flanges at motor side					
vertically installed	mm (in.)	545 x 182 x 356 (21.5 x 7.17 x 14.0)	598 x 182 x 356 (23.5 x 7.17 x 14.0)	545 x 182 x 356 (21.5 x 7.17 x 14.0)	598 x 182 x 356 (23.5 x 7.17 x 14.0)
horizontal installed	mm (in.)	545 x 356 x 211 (21.5 x 14.0 x 8.3)	598 x 356 x 211 (23.5 x 14.0 x 8.3)	545 x 356 x 211 (21.5 x 14.0 x 8.3)	598 x 356 x 211 (23.5 x 14.0 x 8.3)
Weight, approx.	kg (lbs)	40.5 (89.4)	47.0 (103.8)	40.5 (89.4)	47.0 (103.8)

¹⁾ FC motor = Frequency Controlled Motor

²⁾ According to DIN 28400 and subsequent numbers

³⁾ At delivery

Technical Data, 50 Hz

ECODRY M 30

	3-phase motor		FC motor ¹⁾	
No. of cylinders	4		4	
No. of stages	3		3	
Max. pumping speed				
50 Hz ²⁾ m ³ x h ⁻¹ (cfm)	27 (15.9)		-	
60 Hz ²⁾ m ³ x h ⁻¹ (cfm)	30 (17.7)		-	
at 0750 rpm 50/60 Hz ²⁾ m ³ x h ⁻¹ (cfm)	-		19 (11.2)	
at 1000 rpm 50/60 Hz ²⁾ m ³ x h ⁻¹ (cfm)	-		25 (14.7)	
at 1200 rpm 50/60 Hz ²⁾ m ³ x h ⁻¹ (cfm)	-		30 (17.7)	
Ultimate total pressure ³⁾				
3-phase motor 60 Hz mbar (Torr)	5.5 x 10 ⁻² (4.1 x 10 ⁻²)		-	
FC motor ¹⁾ at 1000 rpm 50/60 Hz mbar (Torr)	-		5.5 x 10 ⁻² (4.1 x 10 ⁻²)	
Max. permissible inlet pressure	Atmosphere		Atmosphere	
Max. permissible permanent inlet pressure mbar (Torr)	100 (75)		100 (75)	
Water vapor tolerance (with gas ballast) mbar (Torr)	25 (18.8)		25 (18.8)	
Leak rate (integral) mbar x l x s ⁻¹	≤ 1 x 10 ⁻⁴		≤ 1 x 10 ⁻⁴	
Power consumption at < 10 mbar (7.5 Torr) inlet pressure W (hp)	450 (0.6)		330 (0.45)	
Motors	- 5% to + 5%			
3-phase (IP 54)				
50 Hz V	220-240/346-400		-	
60 Hz V	200-277/380-480		-	
FC motor, 50/60 Hz (IP 44) V	-		90-264	
Rotational speed				
with 3-phase motor 50 / 60 Hz rpm	1000 / 1200		-	
with FC motor 50 / 60 Hz rpm	-		750/1000/1200	
via analog interface 0-10 V 50 / 60 Hz rpm	-		750-1200, variable	
Noise level at ultimate pressure without gas ballast (50 Hz at 3-phase and 750 rpm with FC motor) dB(A)	≤ 59		≤ 59	
Ambient temperature °C (°F)	0 to +50 (32 to +122)		0 to +50 (32 to +122)	
Connection				
Inlet port fitting DN	25 KF		25 KF	
Exhaust port fitting DN	25 KF		25 KF	
Dimensions, approx. (L x W x H) standard, flanges at motor side				
vertically installed mm	709 x 182 x 369		713 x 182 x 369	
(in.)	(27.9 x 7.17 x 14.5)		(28.1 x 7.17 x 14.5)	
horizontal installed mm	709 x 369 x 211		713 x 369 x 211	
(in.)	(27.9 x 14.5 x 8.3)		(28.1 x 14.5 x 8.3)	
Weight, approx. kg (lbs)	53 (117)		59 (130.2)	

¹⁾ FC motor = Frequency Controlled Motor

²⁾ According to DIN 28400 and subsequent numbers

³⁾ At delivery

Ordering Information**ECODRY M 15**

	3-phase motor	FC motor ¹⁾
ECODRY M 15		
3-phase motor	Part No. 130 000	-
FC motor, 90 - 264 V	-	Part No. 130 005
FC motor, 90 - 264 V and silencing hood	-	Part No. 130 006
Exhaust silencer	Part No. 130 050	Part No. 130 050
Vibration absorber (set of 4 pieces)	Part No. 130 051	Part No. 130 051
Vibration absorbing kit	Part No. 130 052	Part No. 130 052
Solenoid gas ballast valve	Part No. 169 50	Part No. 169 50

Ordering Information**ECODRY M 20**

	3-phase motor	FC motor ¹⁾
ECODRY M 20		
3-phase motor	Part No. 130 010	-
FC motor, 90 - 264 V	-	Part No. 130 015
FC motor, 90 - 264 V and silencing hood	-	Part No. 130 016
Exhaust silencer	Part No. 130 050	Part No. 130 050
Vibration absorber (set of 4 pieces)	Part No. 130 051	Part No. 130 051
Vibration absorbing kit	Part No. 130 052	Part No. 130 052
Solenoid gas ballast valve	Part No. 169 50	Part No. 169 50

Ordering Information**ECODRY M 30**

	3-phase motor	FC motor ¹⁾
ECODRY M 30		
3-phase motor	Part No. 130 030	-
FC motor, 90 - 264 V	-	Part No. 130 033
FC motor, 90 - 264 V and silencing hood	-	Part No. 130 034
Exhaust silencer	Part No. 130 050	Part No. 130 050
Vibration absorber (set of 4 pieces)	Part No. 130 051	Part No. 130 051
Vibration absorbing kit	Part No. 130 052	Part No. 130 052
Solenoid gas ballast valve	Part No. 169 50	Part No. 169 50

¹⁾ FC motor = Frequency Controlled Motor

Accessories ECODRY M

Universal Silencing Hood (Retrofit Kit)



Universal silencing hood

Avantages to the User

- Reduction of noise level by up to 9 dB(A), independently of the operating mode
 - < 50 dB(A) at M 15 with 750 U/min ¹⁾
 - < 53 dB(A) at M 30 with 750 U/min ¹⁾
 - < 59 dB(A) at M 30 with 1200 U/min ¹⁾
- Universal – suited for all models, also for those equipped with a world motor
- Integrated vibration absorbers
- Integrated additional fan - the improved temperature conditions increase the “between service” life-time until service of the unit
- Equipped with castors and feet for mobility and stability
- Also available as a mounting kit for retrofitting to existing pumps
- User-friendly - all controls are accessible from the outside, accessories can be connected from the outside

Technical Data

Universal Silencing Hood

Dimensions (W x H x D)	mm (in.)	828 x 280 x 474 (32.60 x 11.02 x 18.66)
Weight (only universal silencing hood)	kg (lbs)	10 (22.08)

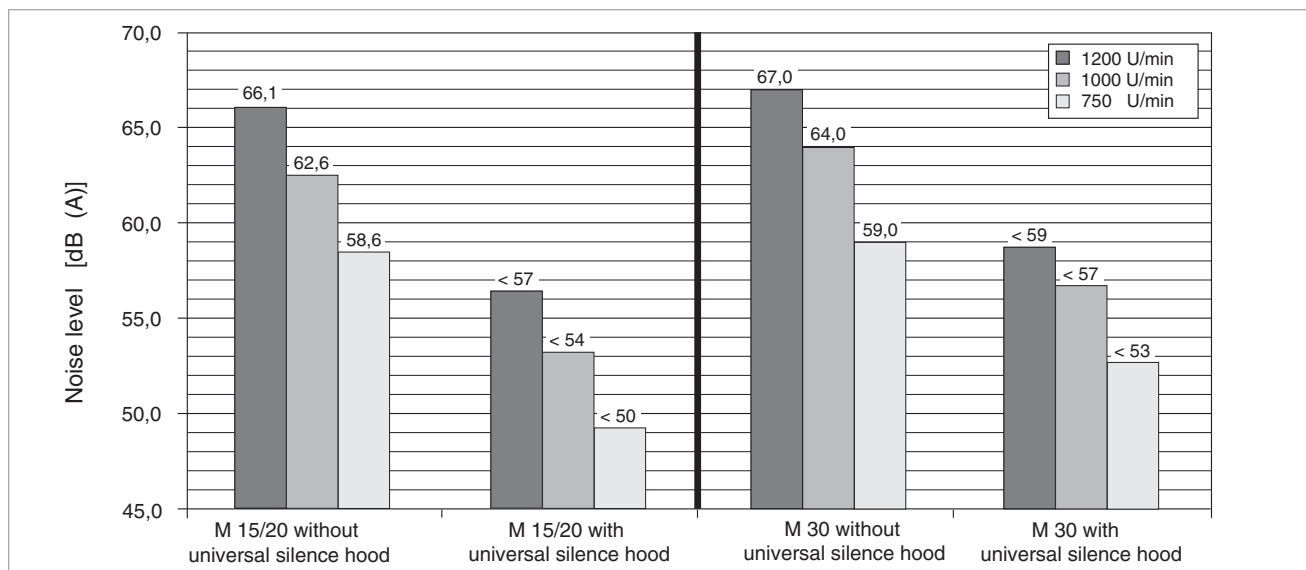
Ordering Information

Universal Silencing Hood

Universal silencing hood ²⁾	Part No. 130 056 ²⁾
Cable set for universal silencing hood for FC motor for 3-phase motor for 1-phase motor	Part No. 130 057 Part No. 130 058 Part No. 130 059

¹⁾ Operating at ultimate pressure

²⁾ **Caution:** Additional cable set is required (depending on the motor)



Noise level of ECODRY M 15, M 20 and M 30 with and without universal silencing hood (operating at ultimate pressure)

Exhaust Silencer



Exhaust silencer

The noise level of the ECODRY M is similar to that of oil-sealed rotary vane vacuum pumps and is setting new standards for dry-compressing vacuum pumps. If no exhaust line is required, this simple exhaust silencer may be fitted when pumping only non-hazardous permanent gases.

The silencer is fitted simply by exchanging the exhaust port on the pump against the exhaust silencer.

Technical Data

Exhaust Silencer

Dimensions (dia. x h)	mm (in.)	48 x 122 (1.89 x 4.80)
-----------------------	----------	------------------------

Ordering Information

Exhaust Silencer

Exhaust silencer	Part No. 130 050
------------------	-------------------------

Vibration Absorbing Feet



Vibration absorbing foot

Owing to the innovative arrangement of the pistons within the ECODRY M, the vibration levels are basically low. However, for most vibration sensitive applications these vibration absorbing feet are needed to decouple the vibrations from the surface supporting the pump.

Technical Data

Vibration Absorbing Feet

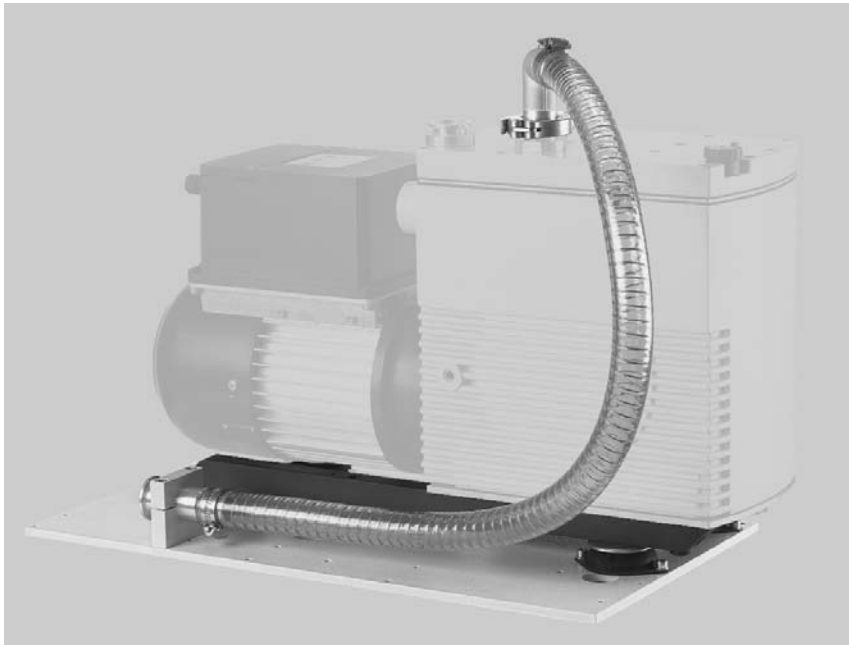
Mounting hole diameter	mm (in.)	6.5 (0.26)
Distance between the mounting holes	mm (in.)	76 (2.99)

Ordering Information

Vibration Absorbing Feet

Vibration absorbing feet, set of 4	Part No. 130 051
------------------------------------	-------------------------

Vibration Absorbing Kit



Vibration absorbing kit

This vibration absorbing kit was specifically developed for those applications which are most demanding vibration-wise, like some analytical applications.

The vibration absorbing kit reduces the vibrations transferred to the pump supporting surface and the intake line to a level significantly below the vibration levels produced by a rotary vane vacuum pump.

Technical Data

Vibration Absorbing Kit

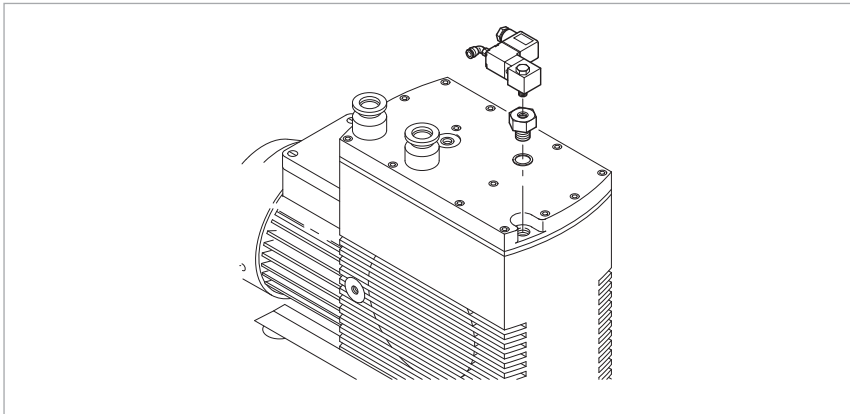
Dimensions (W x H x D)	mm (in.)	440 x 315 x 70 (17.32 x 12.40 x 2.76)
Weight, approx.	kg (lbs)	4.7 (10.38)

Ordering Information

Vibration Absorbing Kit

Vibration absorbing kit	Part No. 130 052
-------------------------	-------------------------

Solenoid Gas Ballast Valve



Fitting the solenoid gas ballast valve

The solenoid gas ballast valve allows preventive operation with gas ballast when pumping condensable media.

The gas ballast may be operated either with ambient air or an inert gas like nitrogen, for example. A coupling for connecting a PVC hose of 6 mm dia. x 1 (0.24 in. dia. x 0.04 in.) is provided.

This valve is of the normally open type and may thus be used as a permanent gas ballast. When wanting to cyclically supply the gas ballast into the pump, a voltage of 24 V DC is required to drive the gas ballast valve.

Avantages to the User

- Protection against condensation within the pump
- No contamination by the ambient air (when using inert gas)
- Low consumption of inert gas
- Can be used on all ECODRY M versions

Technical Data

Solenoid Gas Ballast Valve

Control voltage	V DC	24
Permissible inert gas pressure, absolute bar (psi, gauge)		1 to 4 (0 to 44)
Inert gas connection		Hose connection for PVC hose 6 mm dia. x 1 (0.24 in. dia. x 0.04 in.)
Inert gas flow	m ³ x h ⁻¹ (cfm)	0.10 to 0.55 (0.06 x 0.32)

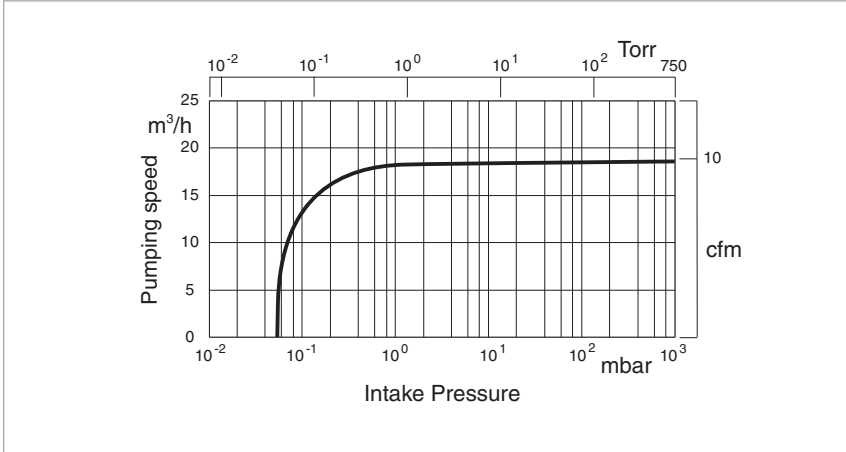
Ordering Information

Solenoid Gas Ballast Valve

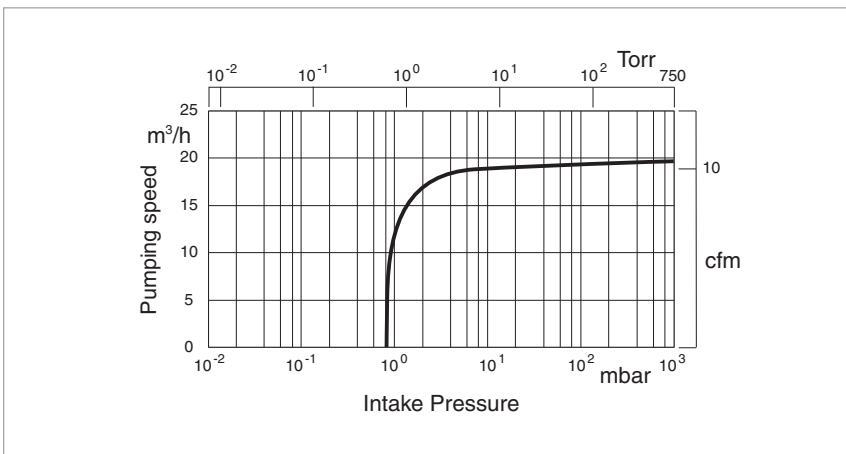
Solenoid gas ballast valve	Part No. 169 50
----------------------------	------------------------

Miscellaneous

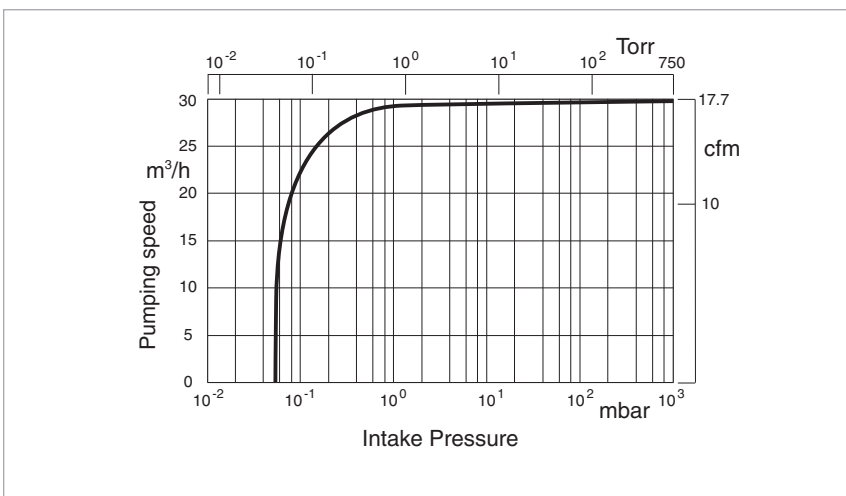
60 Hz Curves



Pumping speed vs. inlet pressure for the ECODRY M 15 at 60 Hz



Pumping speed vs. inlet pressure for the ECODRY M 20 at 60 Hz



Pumping speed vs. inlet pressure for the ECODRY M 30 at 60 Hz

Sales and Service

Germany

Oerlikon
Leybold Vacuum GmbH
Bonner Strasse 498
D-50968 Cologne
Phone: +49-(0)221-347 1234
Fax: +49-(0)221-347 1245
sales.vacuum@oerlikon.com
www.oerlikon.com

Oerlikon
Leybold Vacuum GmbH
Sales Area North/Northeast
Branch Office Berlin
Industriestrasse 10b
D-12099 Berlin
Phone: +49-(0)30-435 609 0
Fax: +49-(0)30-435 609 10
sales.vacuum.bn@oerlikon.com

Oerlikon
Leybold Vacuum GmbH
Sales Area South/Southwest
Branch Office Munich
Karl-Hammerschmidt-Strasse 34
D-85609 Aschheim-Dornach
Phone: +49-(0)89-357 33 9-10
Fax: +49-(0)89-357 33 9-33
sales.vacuum.mn@oerlikon.com
service.vacuum.mn@oerlikon.com

Oerlikon
Leybold Vacuum GmbH
Sales Area West & Benelux
Branch Office Cologne
Bonner Strasse 498
D-50968 Cologne
Phone: +49-(0)221-347 1270
Fax: +49-(0)221-347 1291
sales.vacuum.kn@oerlikon.com

Oerlikon
Leybold Vacuum GmbH
Service Competence Center
Emil-Hoffmann-Strasse 43
D-50996 Cologne-Suerth
Phone: +49-(0)221-347 1439
Fax: +49-(0)221-347 1945
service.vacuum.kn@oerlikon.com

Oerlikon
Leybold Vacuum GmbH
Mobil Customer Service
Emil-Hoffmann-Strasse 43
D-50996 Cologne-Suerth
Phone: +49-(0)221-347 1765
Fax: +49-(0)221-347 1944
service.vacuum.kn@oerlikon.com

Oerlikon
Leybold Vacuum
Dresden GmbH
Service Competence Center
Zur Wetterwarte 50, Haus 304
D-01109 Dresden
Service:
Phone: +49-(0)351-88 55 00
Fax: +49-(0)351-88 55 041
info.vacuum.dr@oerlikon.com

Europe

Belgium
Oerlikon
Leybold Vacuum Nederland B.V.
Belgisch bijkantoor
Leuvensesteenweg 542-9A
B-1930 Zaventem
Sales:
Phone: +32-2-711 00 83
Fax: +32-2-720 83 38
sales.vacuum.zv@oerlikon.com
Service:
Phone: +32-2-711 00 82
Fax: +32-2-720 83 38
service.vacuum.zv@oerlikon.com

France
Oerlikon
Leybold Vacuum France S.A.
7, Avenue du Québec
Z.A. de Courtaboeuf 1 - B.P. 42
F-91942 Courtaboeuf Cedex
Sales and Service:
Phone: +33-1-69 82 48 00
Fax: +33-1-69 07 57 38
info.vacuum.ctb@oerlikon.com
sales.vacuum.ctb@oerlikon.com

Oerlikon
Leybold Vacuum France S.A.
Valence Factory
640, Rue A. Bergès
B.P. 107 640
F-26501 Bourg-lès-Valence Cedex
Service:
Phone: +33-4-75 82 33 00
Fax: +33-4-75 82 92 69
marketing.vacuum.vc@oerlikon.com

Great Britain
Oerlikon
Leybold Vacuum UK LTD.
Silverglade Business Park
Leatherhead Road Unit 2
KT9 2QL Chessington, Surrey
(London)
Sales:
Phone: +44-13-7273 7300
Fax: +44-13-7273 7301
sales.vacuum.ln@oerlikon.com
Service:
Phone: +44-20-8971 7030
Fax: +44-20-8971 7003
service.vacuum.ln@oerlikon.com

Italy
Oerlikon
Leybold Vacuum Italia S.r.l.
Via Trasimeno 8
I-20128 Milano
Sales:
Phone: +39-02-27 22 31
Fax: +39-02-27 20 96 41
sales.vacuum.mi@oerlikon.com
Service:
Phone: +39-02-27 22 31
Fax: +39-02-27 22 32 17
service.vacuum.mi@oerlikon.com

Netherlands
Oerlikon
Leybold Vacuum Nederland B.V.
Proostwetering 24N
NL-3543 AE Utrecht
Sales and Service:
Phone: +31-(30) 242 6330
Fax: +31-(30) 242 6331
sales.vacuum.ut@oerlikon.com
service.vacuum.ut@oerlikon.com

Spain
Oerlikon
Leybold Vacuum Spain, S.A.
C/ Huelva 7
E-08940 Cornellà de Llobregat
(Barcelona)
Sales:
Phone: +34-93-666 43 11
Fax: +34-93-666 43 70
sales.vacuum.ba@oerlikon.com
Service:
Phone: +34-93-666 46 16
Fax: +34-93-685 43 70
service.vacuum.ba@oerlikon.com

Sweden
Oerlikon
Leybold Vacuum Scandinavia AB
Box 9084
SE-40092 Göteborg
Sales and Service:
Phone: +46-31-68 84 70
Fax: +46-31-68 39 39
info.vacuum.gt@oerlikon.com
sales.vacuum.gt@oerlikon.com
Visiting/delivery address:
Datavägen 57B
SE-43632 Askim

Switzerland
Oerlikon
Leybold Vacuum Schweiz AG
Leutschenbachstrasse 55
CH-8050 Zürich
Sales:
Phone: +41-44-308 40 50
Fax: +41-44-302 43 73
sales.vacuum.zh@oerlikon.com
Service:
Phone: +41-44-308 40 62
Fax: +41-44-308 40 60
service.vacuum.zh@oerlikon.com

America

USA
Oerlikon
Leybold Vacuum USA Inc.
5700 Mellon Road
USA-Export, PA 15632
Phone: +1-724-327-5700
Fax: +1-724-325-3577
info.vacuum.ex@oerlikon.com
Sales:
Eastern & Central time zones
Phone: +1-724-327-5700
Fax: +1-724-333-1217
Pacific, Mountain, Alaskan &
Hawaiian time zones
Phone: +1-408-436-2828
Fax: +1-408-436-2849
Service:
Phone: +1-724-327-5700
Fax: +1-724-325-3577

Latin America
Oerlikon
Leybold Vacuum USA Inc.
Brazilian Office
Av. Dória 360 cj. 12 Campo Belo
04635-070 São Paulo SP BRAZIL
Sales:
Phone: +55 11-3554 3117
Fax: +55 11-3554 3117
nelson.batistucci@oerlikon.com

Oerlikon
Leybold Vacuum GmbH
Bonner Strasse 498
D-50968 Cologne
Phone: +49-(0)221-347 0
Fax: +49-(0)221-347 1250
info.vacuum@oerlikon.com

Asia

P.R. China
Oerlikon
Leybold Vacuum (Tianjin)
International Trade Co. Ltd.
Beichen Economic
Development Area (BEDA),
No.8 Western Shuangchen Road
Tianjin 300400
China
Sales and Service:
Phone: +86-22-2697 0808
Fax: +86-22-2697 4061
Fax: +86-22-2697 2017
info.vacuum.tj@oerlikon.com
sales.vacuum.tj@oerlikon.com
service.vacuum.tj@oerlikon.com

Oerlikon
Leybold Vacuum
(Tianjin) Co. Ltd.
Beichen Economic
Development Area (BEDA),
No.8 Western Shuangchen Road
Tianjin 300400
China
Sales and Service:
Phone: +86-22-2697 0808
Fax: +86-22-2697 4061
info.vacuum.tj@oerlikon.com
sales.vacuum.tj@oerlikon.com
service.vacuum.tj@oerlikon.com

Oerlikon
Leybold Vacuum (Tianjin)
International Trade Co. Ltd.
Shanghai Branch:
No.33
76 Fu Te Dong San Road
Waigaoqiao Free Trade Zone
Shanghai 200131
China
Sales and Service:
Phone: +86-21-5064-4666
Fax: +86-21-5064-4668
info.vacuum.sh@oerlikon.com
sales.vacuum.sh@oerlikon.com
service.vacuum.sh@oerlikon.com

Oerlikon
Leybold Vacuum (Tianjin)
International Trade Co. Ltd.
Guangzhou Office and
Service Center
1st F, Main Building
Science City Plaza,
No.111 Science Revenue,
Guangzhou Science City
(GZSC) 510663, Guangzhou,
China
Sales:
Phone: +86-20-223 23 980
Fax: +86-20-223 23 990
info.vacuum.gz@oerlikon.com
sales.vacuum.gz@oerlikon.com
service.vacuum.gz@oerlikon.com

Oerlikon
Leybold Vacuum (Tianjin)
International Trade Co. Ltd.
Beijing Branch:
1-908, Beijing Landmark Towers
8 North Dongsanhuan Road
Beijing 100004
China
Sales:
Phone: +86-10-6590-7622
Fax: +86-10-6590-7607
sales.vacuum.bj@oerlikon.com
service.vacuum.bj@oerlikon.com

India
Oerlikon
Leybold Vacuum India Pvt Ltd.
EL 22, J-Block
MIDC Bhosari
Pune 411026
India
Sales and Service:
Phone: +91-20-3061 6000
Fax: +91-20-2712 1571
sales.vacuum.pu@oerlikon.com
service.vacuum.pu@oerlikon.com

Japan
Oerlikon
Leybold Vacuum
Japan Co., Ltd.
Headquarter
23-3, Shin-Yokohama
3-chome
Tobu A.K. Bldg. 4th Floor
Kohoku-ku
Yokohama-shi 222-0033
Sales:
Phone: +81-45-471-3330
Fax: +81-45-471-3323
info.vacuum.yh@oerlikon.com
sales.vacuum.yh@oerlikon.com

Oerlikon
Leybold Vacuum
Japan Co., Ltd.
Osaka Sales Office
3F, Shin-Osaka Terasaki
No.3 Bldg.
1-5-28 Nishi-Miyahara
Yodogawa-ku, Osaka-shi
Osaka 532-0004
Phone: +81-6-6399-6271
Fax: +81-6-6399-6273
info.vacuum.os@oerlikon.com
sales.vacuum.os@oerlikon.com

Oerlikon
Leybold Vacuum
Japan Co., Ltd.
Tsukuba Technical Service Center
Kogyo Danchi
21, Kasuminosato,
Ami-machi, Inashiki-gun
Ibaraki-ken, 300-0315
Service:
Phone: +81-298 89 2841
Fax: +81-298 89 2838
info.vacuum.iik@oerlikon.com
sales.vacuum.iik@oerlikon.com

South Korea
Oerlikon
Leybold Vacuum Korea Ltd.
3F, Jellzone 2 Tower
Jeongja-dong 159-4
Bundang-gu Sungnam-si
Gyeonggi-do
Bundang 463-384, Korea
Sales:
Phone: +82-31 785 1367
Fax: +82-31 785 1359
sales.vacuum.bd@oerlikon.com

Service:
623-7, Upsung-Dong
Cheonan-Si
Chungcheongnam-Do
Korea 330-290
Phone: +82-41 589 3035
Fax: +82-41 588 0166
service.vacuum.cn@oerlikon.com

Singapore
Oerlikon
Leybold Vacuum
Singapore Pte Ltd.
1 Science Park Road
Singapore Science Park 2
#02-12, Capricorn Building
Singapore 117528
Sales and Service:
Phone: +65-6303 7000
Fax: +65-6773 0039
sales.vacuum.sg@oerlikon.com
service.vacuum.sg@oerlikon.com

Taiwan
Oerlikon
Leybold Vacuum Taiwan Ltd.
No 416-1, Sec. 3
Chungshin Road., Chutung
Hsinchu County 310
Taiwan, R.O.C.
Sales and Service:
Phone: +886-3-500 1688
Fax: +886-3-583 3999
sales.vacuum.hc@oerlikon.com
service.vacuum.hc@oerlikon.com

oerlikon
leybold vacuum
www.oerlikon.com/leyboldvacuum