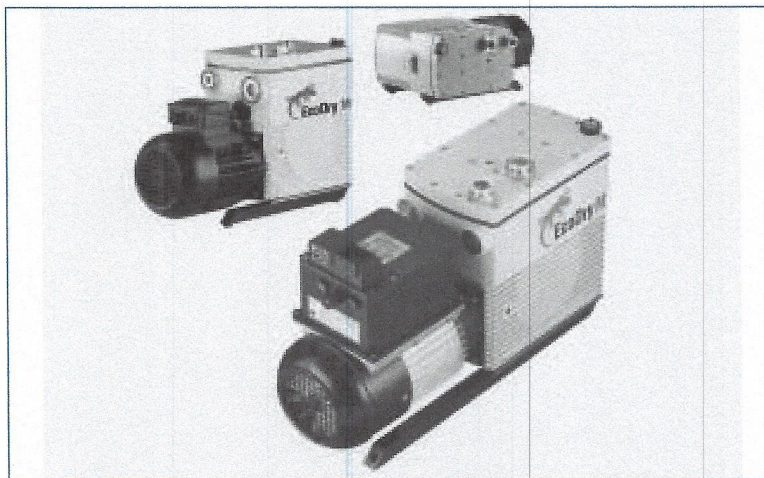


EcoDry M Modular Line of Piston Vacuum Pumps



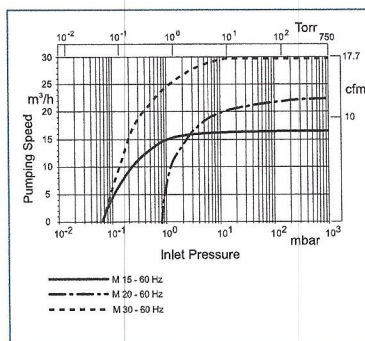
EcoDry M line

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 1000/1200 rpm (50/60 Hz mains)
- 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
- Thinfilr coaters
- Freeze drying
- Forevacuum pump for dry high-vacuum systems
- Pumping of oxygen concentrations over 21 percent by volume upon request



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

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 on the 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

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).

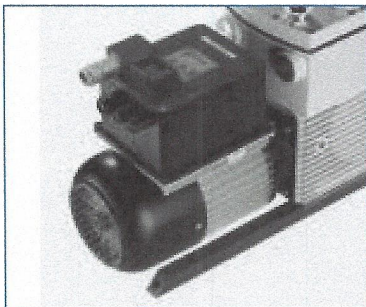
This results in the higher pumping speed of about 20 m³/h (11.8 cfm) and a base pressure (total) in the middle of the 10⁻¹ mbar range for the EcoDry M 20.

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).

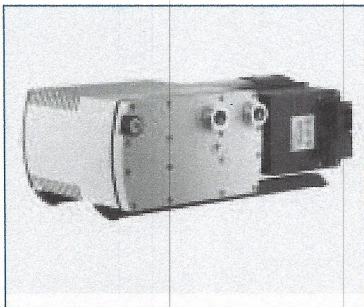
Excluded from the warranty are the piston seals and the piston coatings.

¹⁾ FC motor = Frequency Controlled Motor

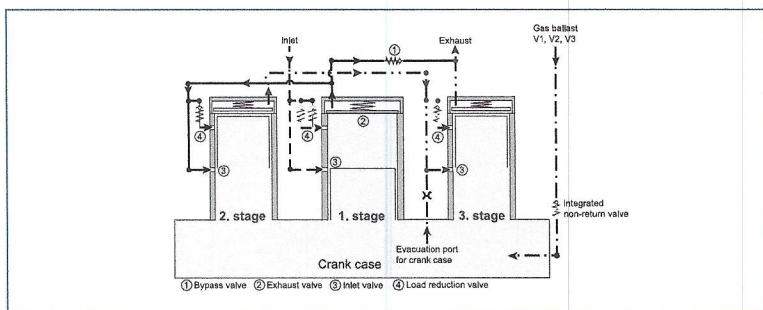
EcoDry M Piston Vacuum Pumps



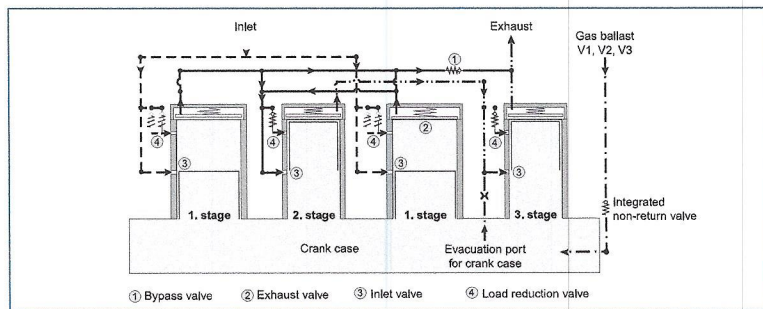
EcoDry M vertical (as delivered)



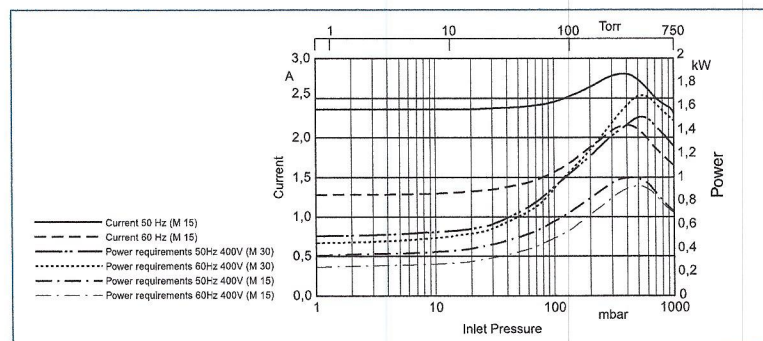
EcoDry M horizontal



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

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.

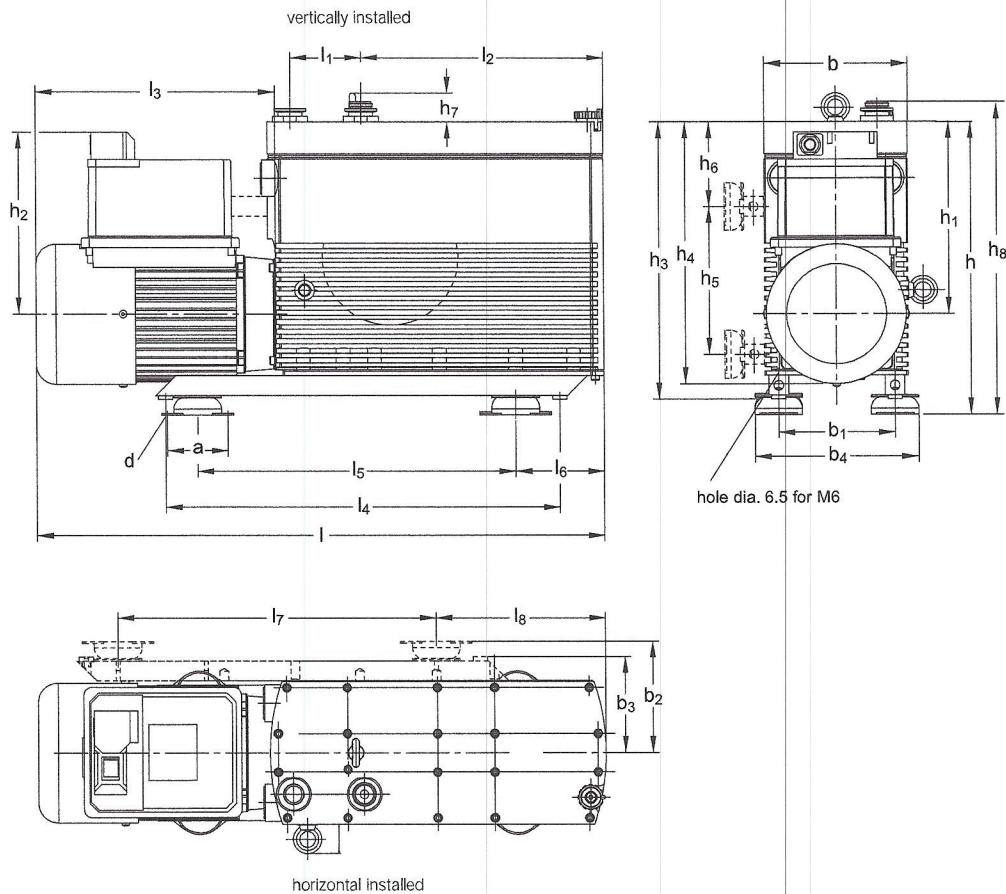
The EcoDry M 15/20/30 is equipped with the well-proven inlet slits, and also with pressure controlled inlet valves. These cut the power requirement during the intake phase of the individual compression stages. This results in a lower overall power requirement of the pump, thereby making operation of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

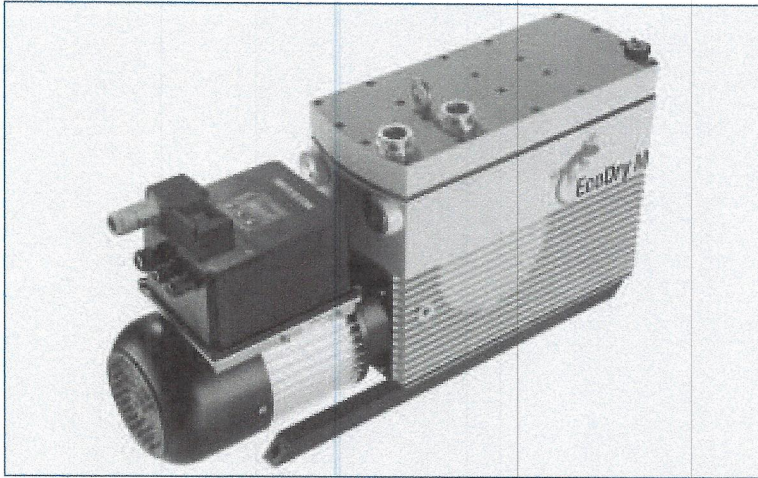
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Type		a	b	b ₁	b ₂	b ₃	b ₄	ø d	h	h ₁	h ₂	h ₃	h ₄	h ₅
M 15/20	FC motor	mm	76	180	146	138	121	216	6.5	352.5	228	230	335	186
		in.	2.99	7.09	5.75	5.43	4.76	8.50	0.26	13.88	8.98	9.06	13.19	7.32
M 30	FC motor	mm	76	180	146	140.5	121	216	6.5	369	242.5	230	349.5	186
		in.	2.99	7.09	5.75	5.53	4.76	8.50	0.26	14.53	9.55	9.06	13.76	7.32
M 15/20	3-ph. motor	mm	76	180	146	138	121	216	6.5	352.5	228	148	335	186
		in.	2.99	7.09	5.75	5.43	4.76	8.50	0.26	13.88	8.98	5.83	13.19	7.32
M 30	3-ph. motor	mm	76	180	146	140.5	121	216	6.5	369	242.5	148	344.5	186
		in.	2.99	7.09	5.75	5.53	4.76	8.50	0.26	14.53	9.55	5.83	13.56	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	37.5	373.5	598	89	191	300.5	495	289	105.5	289	101
		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	390	713	89	304	300.5	495	399.5	111.5	399.5	213
		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	37.5	373.5	594	89	191	269.5	495	289	105.5	289	101
		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	390	709	89	304	269.5	495	399.5	111.5	399.5	213
		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

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

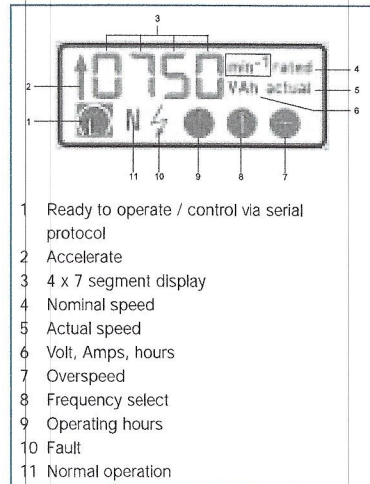
Advantages to the User

- 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); THERMOVACTM 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

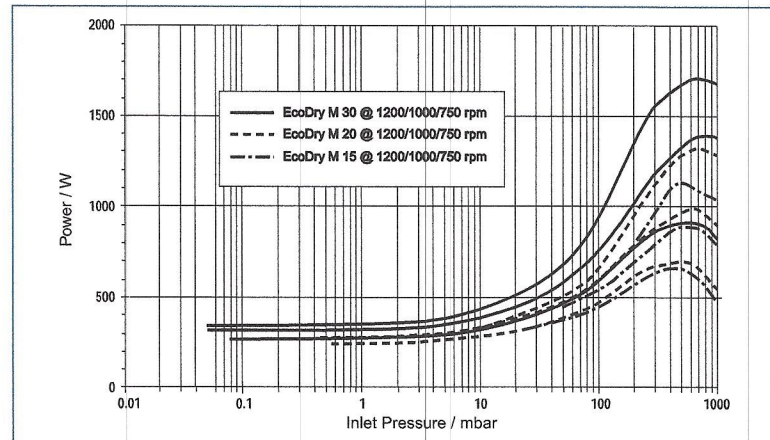
- LC display for indicating operational information like speed, operating hours, current
- CE and NRTL compliant

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 30