Technical data

Type		MD 1	MD 1 VARIO-SP
ATEX approval if the ATEX marking is shown on the rating plate Inner part (pumped gases)		II 3/- G Ex h IIC T3 Gc X Internal Atm. only Tech.File: VAC-EX02	
Maximum pumping speed (ISO 21360)	cfm (m^3/h)	0.7 / 0.8 [(a)] (1.2 / 1.4 [(a)])	1.1 (2400 rpm) (1.8)
Ultimate vacuum (absolute)	Torr (mbar)	1.1 (1.5)	< 0.75 (700 rpm) (< 1.0)
Maximum permissible inlet pressure (absolute)	psi (bar)	16 (1.1)	
Maximum permissible outlet pressure (absolute)	psi (bar)	16 (1.1)	
Maximum pressure difference between inlet and outlet	psi (bar)	16 (1.1)	
Permissible ambient temperature storage / operation	°F (°C)	14 to 140 / 50 to 104 (-10 to +60 / +10 to +40)	
Permissible relative atmospheric moisture during operation (no condensation)	%	30 to 85	
Maximum permissible installation altitude above mean sea level	ft (m)	6500 (2000)	
Rated motor power	hp (kW)	0.11 (0.08)	0.09 (0.064)
No-load speed	rpm	1500 / 1800 [(a)]	0 - 2400 [(b)]
Maximum permissible range of supply voltage (±10%) Attention: Observe specifications of rating plate!		100-115 V~ 50/60 Hz; 220-230 V~ 50/60 Hz; 120 V~ 60 Hz	24 V DC safe extra low voltage (SELV)[(c)]
Maximum rated current at: 100-115 V~ 50/60 Hz 220-230 V~ 50/60 Hz 120 V~ 60 Hz 24 V DC	A A A A	1.6 / 1.7 0.8 / 0.85 1.7 -	- - - 7
Motor protection		thermal cutout, manual reset[(d)]; MD 1 C/US: additional fuse 250 V / 2,5 AT – 5x20	current limitation (temperature sensor on the circuit board) fuse 125 V / F 7 A – 2x7
Overvoltage category		II	-
Degree of protection IEC 60529		IP 40	IP 20
Degree of protection UL 50E		type 1	

Type		MD 1	MD 1 VARIO-SP
Pollution degree		2	
Inlet		hose nozzle for tubing I.D. 1/4” (6 mm) G 1/8”	
Outlet		silencer / G1/8”	
A-weighted emission sound pressure level[(e)] (uncertainty K_{pA}: 3 dB(A))	dB(A)	40	36
Dimensions L x W x H approx.	in (mm)	12.8 x 5.6 x 8.5 (326 x 143 x 215)	8.8 x 5.6 x 6.4 (223 x 143 x 163)
Dimensions L x W x H without handle approx.	in (mm)	12.8 x 5.6 x 6.4 (326 x 143 x 163)	8.8 x 5.6 x 6.4 (223 x 143 x 163)
Weight approx.	lbs. (kg)	16.1 (7.3)	9.0 (4.1)

(a) at 50/60 Hz
(b) running smoothly only at motor speeds higher than 200 rpm
(c) The pump is designed for operation with safe extra low voltage. Accordingly only safe extra low voltage (SELV) may be connected to the voltage supply connections.
(d) In case of supply voltage below 115 V, the lock of the cutout might be restricted.
(e) Measurement according to EN ISO 2151:2004 and EN ISO 3744:1995 at 230 V / 50 Hz respectively at 1500 rpm (MD 1 VARIO-SP) and ultimate vacuum with silencer at outlet.

Wetted parts

Components	Wetted materials
Housing cover	aluminum alloy (AlSi12)
Head cover	aluminum alloy (AlSi12)
Diaphragm clamping disc	aluminum alloy (AlSi12)
Diaphragm	PTFE
Valves	FPM
Inlet (hose nozzle)	aluminum, anodized
Outlet (silencer)	aluminum / silicone rubber
Fittings	aluminum, anodized
Tubing	PE

We reserve the right for technical modification without prior notice!

Gas inlet temperatures

Operating condition	Inlet pressure	Permitted range of gas temperatures at inlet
Continuous operation	> 75 Torr (100 mbar) (high gas load)	➡ 50 °F to 104 °F (+10 °C to +40 °C)
Continuous operation	< 75 Torr (100 mbar) (low gas load)	➡ 32 °F to 140 °F* (0 °C to +60 °C*)
Short-time (< 5 minutes)	< 75 Torr (100 mbar) (low gas load)	➡ 14 °F to 176 °F* (-10 °C to +80 °C*)

* if pumping potentially explosive atmospheres: 50 °F to 104 °F (+10 °C to +40 °C)

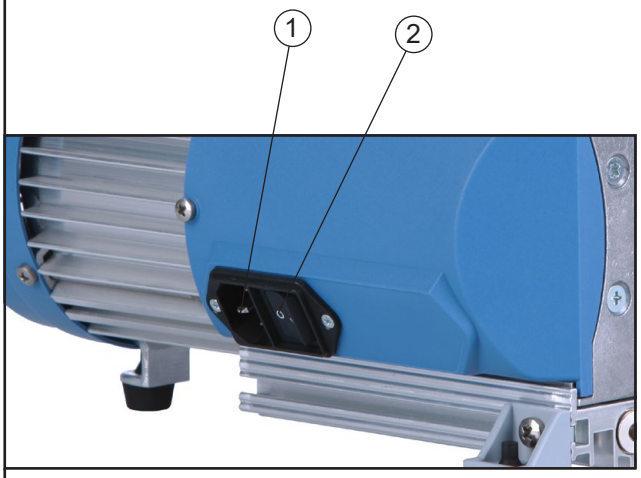
Abbreviations

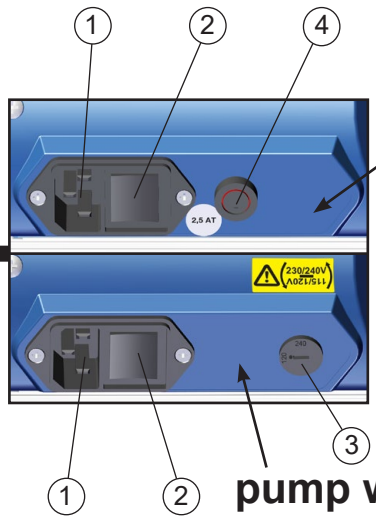
FPM: Fluoroelastomer
GND: Ground
PE: Polyethylene
PTFE: Polytetrafluoroethylene
PWM: Pulse width modulation

Pump parts

Position	Component
1	Power connection
2	ON/OFF switch
3	Voltage selection switch
4	Fuse holder
5	Pump rating plate
6	Inlet
7	Outlet
8	Fan
9	Handle (removable) / recessed grip
10	Control line

MD 1

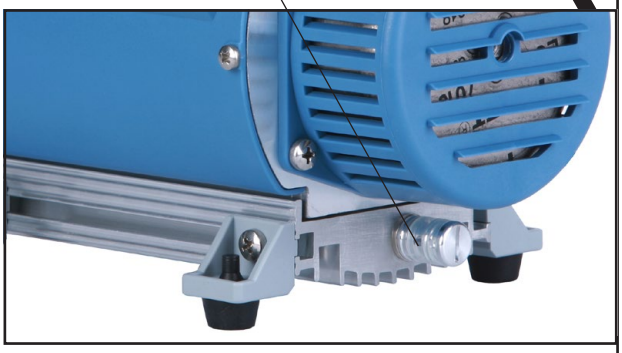




MD 1 C/US

pump with dual-voltage motor

MD 1 VARIO-SP



Ensure sufficient venting of the pump!