

Technical data

Type		MD 1C MD 1C + AK + EK	MD 1C 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 50/60 Hz (ISO 21360)	cfm (m ³ /h)	0.77 / 0.88 ^(a) (1.3/ 1.5 ^(a))	1.1 (1.8)
Ultimate vacuum (absolute) without gas ballast	Torr (mbar)	1.5 (2)	1.5 ^(b) (2 ^(b))
Ultimate vacuum (absolute) with gas ballast	Torr (mbar)	3 (4)	3 ^(b) (4 ^(b))
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)	
Maximum permissible pressure (absolute) at gas ballast valve	psi (mbar)	17.5 (1.2)	
Permissible ambient tempera- ture storage / operation	°F (°C)	14 to 140 / 50 to 104 (-10 to +60 / +10 to +40)	
Permissible relative atmospher- ic 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)	0.01 (0.08)	0.086 (0.064)
No-load speed	rpm	1500 / 1800 ^(a)	0 - 2400 ^(c)
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 vol- tage (SELV) ^(d)

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Maximum rated current at:			
100-115 V~ 50/60 Hz	A	1.6 / 1.7	-
220-230 V~ 50/60 Hz	A	0.8 / 0.85	-
120 V~ 60 Hz	A	1.7	-
24 V DC	A	-	7
Motor protection		thermal cutout, manual reset ^(e) MD 1C 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	
Pollution degree		2	
Inlet		hose nozzle for tubing I.D. 3/8" (hose nozzle DN 10 mm)	
Outlet		hose nozzle for tubing I.D. 5/16" (hose nozzle DN 8 mm) MD 1C + AK + EK: hose nozzle for tubing I.D. 3/8" (hose nozzle DN 10 mm)	
Coolant connection (waste vapor condenser, only "AK + EK")		hose nozzle for tubing I.D. 1/4" - 5/16" (hose nozzle DN 6-8 mm)	
Maximum permissible pres- sure of coolant at waste vapor condenser (only "AK + EK")	psi (bar)	87 (absolute) (6 (absolute))	
Permissible range of coolant temperature (waste vapor condenser, only "AK + EK")	°F (°C)	5 to 68 (-15 to +20)	
Volume of catchpot (only "AK + EK")	quarts (ml)	0.52 (500)	
A-weighted emission sound pressure level ^(f) (uncertainty K_{pA} : 3 dB(A))		45	42
Weight approx. MD 1C	lbs. (kg)	17.4 (7.9)	9.3 (4.2)
MD 1C + AK + EK	lbs. (kg)	24.3 (11.0)	-

Type		MD 1C MD 1C + AK + EK	MD 1C VARIO-SP
Dimensions L x W x H approx.			
MD 1C	in (mm)	13.3 x 5.6 x 8.8 (338 x 142 x 223)	9.3 x 5.6 x 6.9 (235 x 143 x 175)
MD 1C + AK + EK	in (mm)	12.4 x 9.4 x 15.9 (316 x 239 x 405)	- -
Dimensions L x W x H without handle approx.			
MD 1C	in (mm)	13.3 x 5.6 x 6.9 (338 x 142 x 175)	- -

- (a) at 50/60 Hz
- (b) at 1500 rpm
- (c) running smoothly only at motor speeds higher than 200 rpm
- (d) 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.
- (e) In case of supply voltage below 115 V, the lock of the cutout might be restricted.
- (f) Measurement according to EN ISO 2151:2004 and EN ISO 3744:1995 at 230 V / 50Hz or 1500 rpm (MD 1C VARIO-SP) and at ultimate vacuum with exhaust tube at outlet

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)

We reserve the right for technical modification without prior notice!

Wetted parts

Components	Wetted materials
Pump	
Housing cover insert	PTFE carbon reinforced
Head cover	ETFE
Diaphragm clamping disc	ETFE carbon fiber reinforced
Diaphragm	PTFE
Valves	FFKM
Inlet / outlet	ETFE
Fittings	ETFE
Tubing	PTFE
Pumping unit	
Inlet pumping unit	PP
Outlet pumping unit	PET
Distribution head (inlet)	PPS glass fiber reinforced
Tubing	PTFE
Fittings	ETFE
O-ring at catchpot	Fluoroelastomer
Blind plug (inlet)	PP
Overpressure safety relief device	PTFE / silicone rubber
Exhaust waste vapor condenser / catchpot	Borosilicate glass

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