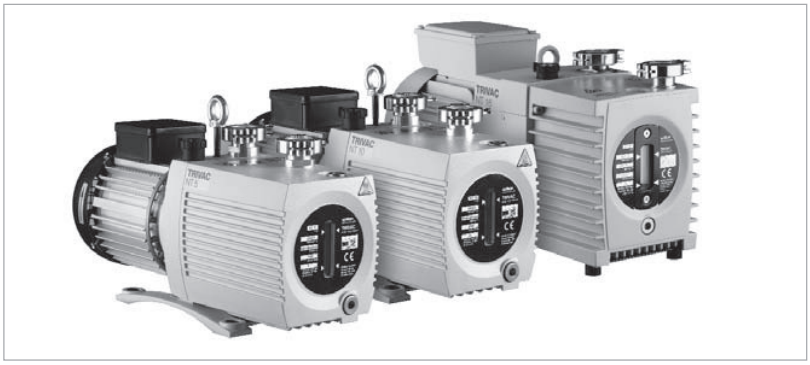
TRIVAC NT, Two-Stage Rotary Vane Vacuum Pumps TRIVAC NT 5 to NT 25



The TRIVAC NT is the latest generation of well-proven rotary vane pumps. The performance and handling characteristics of the TRIVAC NT-series have been optimized and adapted to the increasing market requirements.

Beyond the accustomed quality and reliability of the previous TRIVAC B pumps, the TRIVAC NT has improved features regarding lower temperature, low noise operation.
The lower pump temperature of the TRIVAC NT ensures a longer service life for the oil and longer service intervals. The NT pumps have been designed for reduced oil backstreaming and also low oil discharge levels on the exhaust side. The proven intake port valve of the TRIVAC B series has been optimised protecting the vacuum application against venting in the event of a power breakdown.

All pumps from the TRIVAC NT 5 to the TRIVAC NT 25 model are equipped either with a single-phase or three-phase motor. In the TRIVAC NT, the pump unit and the motor are linked by an elastic coupling.

Advantages to the User

TRIVAC NT 5/10

- High pumping speed
- Low noise operation
- Compact Design
- Plug & Play (oil-filled and with ISO-KF connection at delivery)
- Process Quality (low oil back streaming)
- Continuous operation at 1000 mbar
- Motors for all standard supply voltages and frequencies
- Low power consumption
- High water vapour tolerance
- Simplified customizing ability
- Service-friendly

TRIVAC NT 16/25

- High pumping speed
- Low working temperature for longer lifetime
- Low noise operation
- Plug & Play (oil-filled and with ISO-KF connection at delivery)
- Continuous operation at 1000 mbar
- Anti-suck back valve controlled via the oil pressure
- Reduced oil consumption
- Low oil back streaming
- High water vapor tolerance
- Service-friendly

Typical Applications

- Research & Development
- Lamps and tubes manufacture
- Cooling and air-conditioning
- Freeze-drying systems
- Coating
- Electron beam microscopes
- Metallurgy
- Leak detection
- Gas analysis
- Vacuum degassing

For further typical applications refer to the section “General, Applications and Accessories”.

Supplied Equipment

TRIVAC NT 5/10

- Small flanges
- Centering and clamping rings
- Dirt trap
- Oil filling
- For single phase regional motor: Mains cord with the specific plug for EURO, US and Japan motors
- Optional: Mains cord with country specific plug for the dual voltage motor
- Optional: Horizontal inlet and exhaust flange

TRIVAC NT 16/25

- Small flanges
- Centering and clamping rings
- Dirt trap
- Oil filling
- Attachment port for oil filter
- Optional: Mains cord with country specific plug for single phase motors
- Optional: Horizontal inlet and exhaust flange

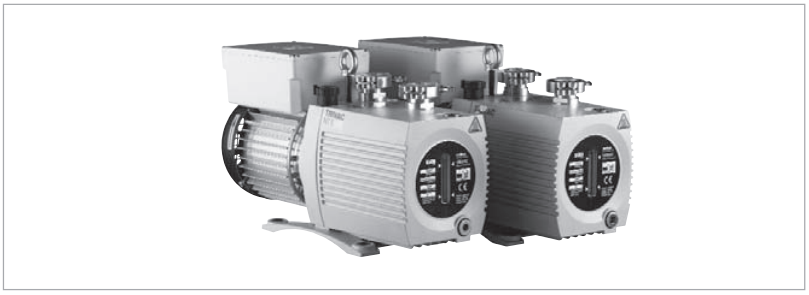
Standard TRIVAC NT pumps come with a filling of oil N 62.
Special oil fillings can be specified.

All pumps are 100% subjected to a vacuum test before delivery!

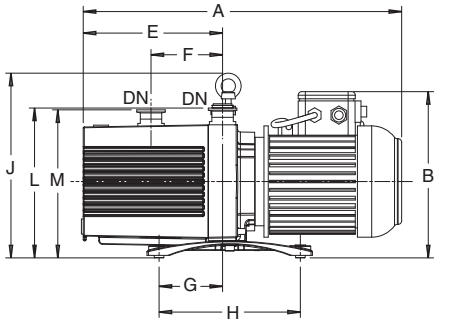
Custom Models

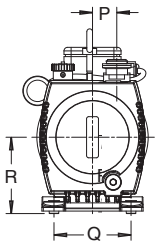
- Brake fluid
- Oils for refrigerating machines, e.g. ester oils for refrigerant circuits with R 134 a
- Special motors

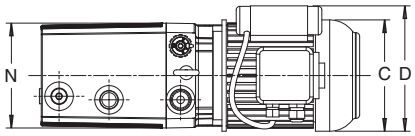
TRIVAC NT 5 and NT 10



TRIVAC NT 5 and 10







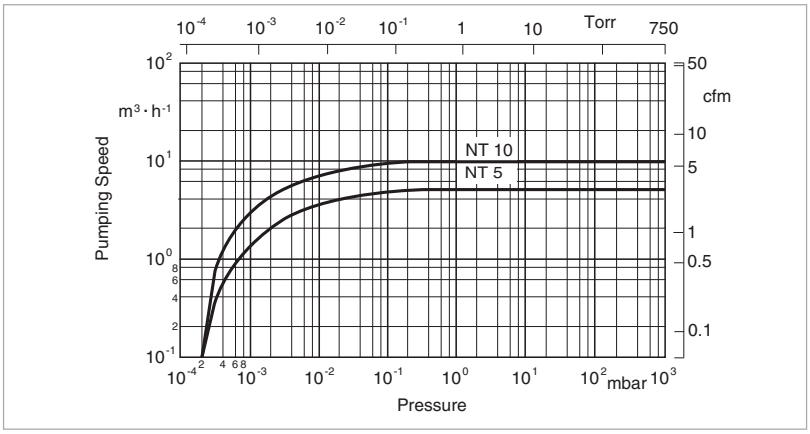
[1] DV = Dual voltage motor

Type		A		B		
		1~ EURO, 1~ DV [1] 3~ World, 1~ Japan	1~ EURO	1~ DV [*]	3~ World	1~ Japan
NT 5	mm	427	233	251	214	233
	in.	9.17	9.88	8.43	9.17	16.81
NT 10	mm	446	233	251	214	233
	in.	17.56	9.88	8.43	9.17	16.81

Type		C	D			
		1~ EURO, 1~ DV [*] 3~ World, 1~ Japan	1~ EURO	1~ DV [*]	3~ World	1~ Japan
NT 5 and NT 10	mm	156	174	156	156	178
	in.	6.14	6.85	6.14	6.14	7.01

Type		E	F	G	H	J	L	M	N	P	Q	R	DN
NT 5 and NT 10	mm	195	100	95	198	259	210	208	147	34	108	107	25 KF
	in.	7.48	3.94	3.74	7.80	10.20	8.27	8.19	5.79	1.44	4.25	4.21	25 KF

Dimensional drawing for the TRIVAC NT 5 and NT 10



Pumping speed characteristics at 50 Hz

Technical Data

		TRIVAC NT 5 two-stage		TRIVAC NT 10 two-stage	
		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed [1]	m^3/h (cfm)	6.0 (3.5)	7.3 (4.3)	12.0 (7.1)	14.6 (8.6)
Pumping speed [1]	m^3/h (cfm)	5.2 (3.1)	6.0 (3.5)	9.9 (5.8)	11.3 (6.7)
Ultimate partial pressure without gas ballast [2]	mbar (Torr)	$\leq 5 \times 10^{-4}$ ($\leq 3.8 \times 10^{-4}$)	$\leq 5 \times 10^{-4}$ $\leq (3.8 \times 10^{-4})$	$\leq 5 \times 10^{-4}$ ($\leq 3.8 \times 10^{-4}$)	$\leq 5 \times 10^{-4}$ ($\leq 3.8 \times 10^{-4}$)
Ultimate total pressure without gas ballast [2]	mbar (Torr)	$\leq 2 \times 10^{-3}$ ($\leq 1.5 \times 10^{-3}$)	$\leq 2 \times 10^{-3}$ ($\leq 1.5 \times 10^{-3}$)	$\leq 2 \times 10^{-3}$ ($\leq 1.5 \times 10^{-3}$)	$\leq 2 \times 10^{-3}$ ($\leq 1.5 \times 10^{-3}$)
Ultimate total pressure with gas ballast (stage 2) [2]	mbar (Torr)	$\leq 3 \times 10^{-2}$ ($\leq 2.25 \times 10^{-2}$)	$\leq 3 \times 10^{-2}$ ($\leq 2.25 \times 10^{-2}$)	$\leq 3 \times 10^{-2}$ ($\leq 2.25 \times 10^{-2}$)	$\leq 3 \times 10^{-2}$ ($\leq 2.25 \times 10^{-2}$)
Water vapor tolerance					
stage 1	mbar (Torr)	10.0 (7.5)	10.0 (7.5)	10.0 (7.5)	10.0 (7.5)
stage 2	mbar (Torr)	30.0 (22.5)	20.0 (15.5)	20.0 (15.5)	20.0 (15.5)
stage 3	mbar (Torr)	40.0 (31.0)	30.0 (22.5)	40.0 (31.0)	30.0 (22.5)
Max. Water vapor capacity (stage 3)	g/h	150	150	210	210
Oil filling, min. / max.	l	0.75 / 1.25	0.75 / 1.25	0.75 / 1.25	0.75 / 1.25
	(qt)	(0.79 / 1.32)	(0.79 / 1.32)	(0.79 / 1.32)	(0.79 / 1.32)
Noise level [1] to DIN 45 635 without / with gas ballast	dB(A)	≤ 49	≤ 49	≤ 49	≤ 49
Admissible ambient temperature					
EURO motor	°C	+12 to +50	+12 to +50	+12 to +50	+12 to +50
	(°F)	(+54 to +122)	(+54 to +122)	(+54 to +122)	(+54 to +122)
US/Japan motor	°C	+12 to +40	+12 to +40	+12 to +40	+12 to +40
	(°F)	(+54 to +104)	(+54 to +104)	(+54 to +104)	(+54 to +104)
Motor rating	W (HP)	450 (0.61)	550 (0.75)	450 (0.61)	550 (0.75)
Nominal speed	rpm	1350	1650	1350	1650
Type of protection	IP	54	54	54	54
Weight with oil filling	kg (lbs)	22.1 (48.8)	22.1 (48.8)	24.2 (53.4)	24.2 (53.4)
Connections, Intake and Exhaust	DN	25 KF	25 KF	25 KF	25 KF

[1] To DIN 28 426 T1
[1] To DIN 28 400 ff

We can only guarantee that the pump will meet its specifications when using the type of lubricant which has been specified by us.

Technical Data	TRIVAC NT 5 two-stage	TRIVAC NT 10 two-stage
TRIVAC NT		
1-phase dual voltage motor [1]		
110-120 V / 208-240 V, 50/60 Hz	**Part No. 140 212** [1]	**Part No. 140 312** [1]
3-phase world motor		
△ 200-240 V / Y 346/415 V, 50 Hz;		
△ 200-266 V / Y 346-460 V, 60 Hz	**Part No. 140 213**	**Part No. 140 313**
1-phase EURO motor		
220-240 / 230 V, 50/60 Hz	**Part No. 140 214**	**Part No. 140 314**
1-phase Japan motor		
100 V, 50/60 Hz	**Part No. 140 216**	**Part No. 140 316**
Mains cord for dual voltage motor [1]		
230 V earthed plug	**Part No. 200 81 091**	**Part No. 200 81 091**
230 V UK plug	**Part No. 200 81 097**	**Part No. 200 81 097**
230 V CH plug	**Part No. 200 81 099**	**Part No. 200 81 099**
230 V NEMA plug (200-240 V)	**Part No. 200 81 141**	**Part No. 200 81 141**
115 V NEMA plug (100-120 V)	**Part No. 200 81 090**	**Part No. 200 81 090**
100 V Japan plug	**upon request**	**upon request**
Accessories		
Exhaust filter		
AF 8 [2]	**Part No. 190 50** [2]	–
AF 10	–	**Part No. 190 51** [4]
Exhaust filter		
AF 4-8 [2]	**Part No. 189 06** [2]	**Part No. 189 06** [2]
Condensate trap		
AK 8 [2]	**Part No. 190 60** [2]	–
AK 10	–	**Part No. 190 61** [4]
Condensate trap		
AK 4-8 [2]	**Part No. 188 06** [2]	**Part No. 188 06** [2]
Fine vacuum adsorption trap [5]		
FA 2-4 [2]	**Part No. 187 05** [2]	**Part No. 187 05** [2]
Manually operated oil suction facility AR-M	**Part No. 190 93**	**Part No. 190 93**
Oil suction facility AR-V		
controlled by solenoid valve	**Part No. 190 92**	**Part No. 190 92**
Dust filter		
FS 2-4 [2]	**Part No. 186 05** [2]	–
FS 8-16	–	**Part No. 186 10** [4]
Exhaust filter drain tap	**Part No. 190 95**	**Part No. 190 95**
Oil drain tap M 16 x 1.5	**Part No. 190 90**	**Part No. 190 90**
Oil drain kit	**Part No. 190 94**	**Part No. 190 94**
Inlet flange, horizontal		
DN 16 KF [3]	**Part No. 140 102** [3]	**Part No. 140 102**
Exhaust flange, horizontal		
DN 16 KF [3]	**Part No. 140 103** [3]	**Part No. 140 103**
Pipe bend DN 25 KF (stainless steel)	**Part No. 884 62**	**Part No. 884 62**
Mitred elbow DN 25 KF (aluminum)	**Part No. 184 37**	**Part No. 184 37**
Spare Parts		
Major maintenance kit	**Part No. EK 110 002 816**	**Part No. EK 110 002 817**
Minor maintenance kit	**Part No. EK 110 002 815**	**Part No. EK 110 002 815**
Shaft sealing replacement kit	**Part No. EK 110 002 814**	**Part No. EK 110 002 814**

[1] A mains cord needs to be ordered additionally
[2] Since a DN 25 KF connection is present, a horizontal flange must be used.
[3] The horizontal connection flange has a DN 16 KF connection
[4] Use only together with a DN 25 KF elbow
[5] For vertical installation, reducer 183 86 is necessary for changing from DN 25 KF to DN 16 KF

Motor Dependent Data for the TRIVAC NT

Ordering Information

	NT 5	NT 10
TRIVAC NT 5 + NT 10	Part No. 140 214	Part No. 140 314
	Part No. 140 213	Part No. 140 313
	Part No. 140 212	Part No. 140 312
	Part No. 140 216	Part No. 140 316

	NT 16	NT 25
TRIVAC NT 16 + NT 25	Part No. 140 220	Part No. 140 330
	Part No. 140 231 Part No. 140 232 Part No. 140 233, Part No. 140 234, Part No. 140 235	Part No. 140 336 Part No. 140 337 Part No. 140 338 Part No. 140 339 Part No. 140 340
	Part No. 140 241	Part No. 140 341
	Part No. 140 221 Part No. 140 222 Part No. 140 223 Part No. 140 224 Part No. 140 225	Part No. 140 331 Part No. 140 332 Part No. 140 333, Part No. 140 334 Part No. 140 335

Ref. No. 1- or 3-ph	Motor voltage (V)	Frequency (Hz) ± 5%	Voltage range (V)	Power ((kW) / (HP))	Nominal current (A)	Size	Region
200 15 418 1 ~	220-240/230	50/60	± 5%	0.45/0.54	2.5/2.4	80	EURO
200 15 424 3 ~	Δ 200-240 / Y 346/415 Δ 200-266 / Y 346-460	50 60	± 5% ± 5%	0.55 0.65	2.8 / 1.6 2.8 / 1.6	80 80	World World
200 15 423 [1] 1 ~	110-120 / 208-240	50/60	± 5%	0.49/0.55	6.8/5.6 3.4/2.8	80	Dual- Voltage
110 003 389 1 ~	100	50/60	± 5%	0.54/0.63	8.4/7.2	80	Japan

Ref. No. 1- or 3-ph	Motor voltage (V)	Frequency (Hz) ± 5%	Voltage range (V)	Power ((kW) / (HP))	Nominal current (A)	Size	Region
E 110 002 715 [2] 1 ~	95-120 / 190-252 95-120 / 190-242	50/60	± 5%	0.55 0.66	13.0 / 7.5 10.0 / 5.0	90	World
E 110 002 716 [2] 1 ~	218-242	50/60	± 5%	0,45/0,55	5.0 / 5.5	90	EURO
E 110 002 717 [2] 1 ~	95-105 / 95-120	50 60	± 5% ± 5%	0.55 0.66	9.5 10.0	90	US/ Japan
E 110 002 712 3 ~	200-240 / 380-415 200-240 / 380-460	50 60	± 10% ± 10%	0.55 0.66	3.1-4.0 /1.5-1.6 3.1 /1.6	90	World

[1] A mains cord needs to be ordered additionally

[2] For single phase models of the TRIVAC NT 16/25 a connector for the connection line is included in the delivery. Power supply cables with regional plugs need to be ordered separately