

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!

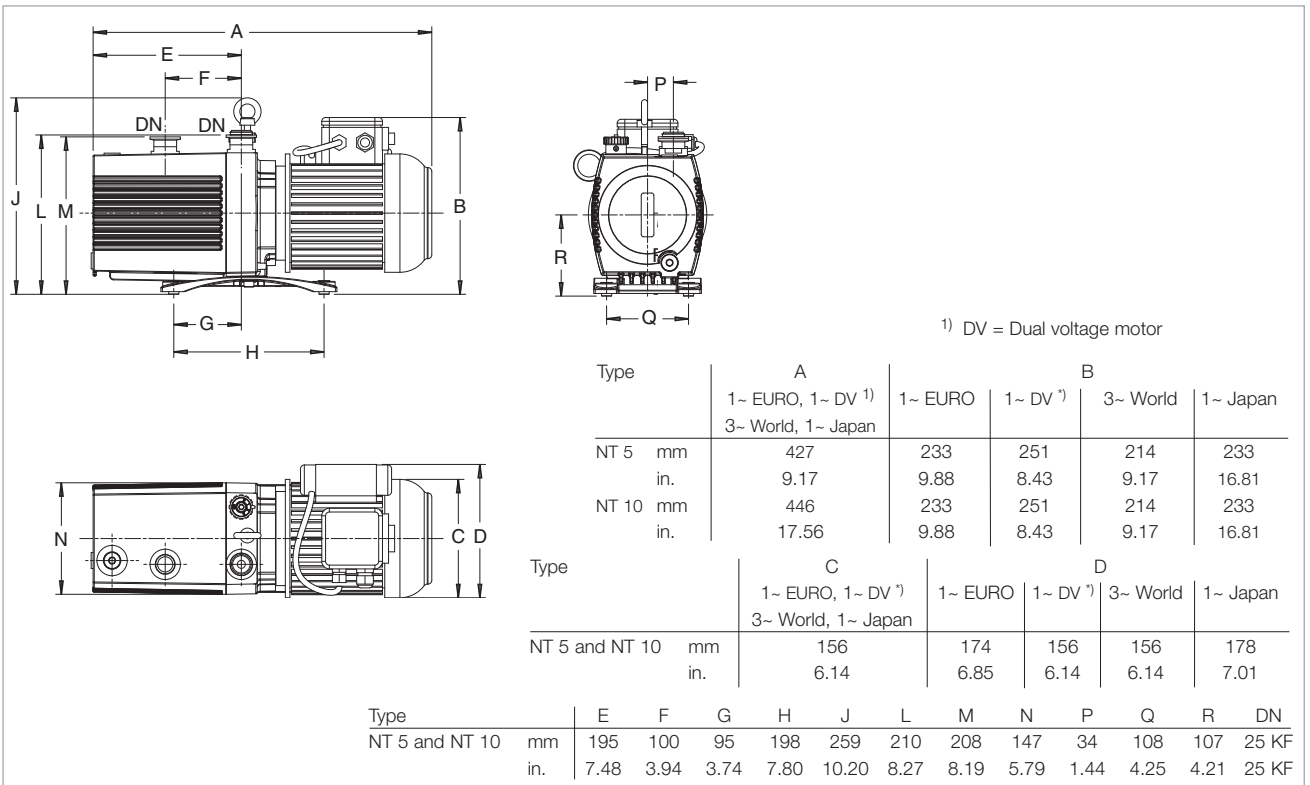
Custom Models

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

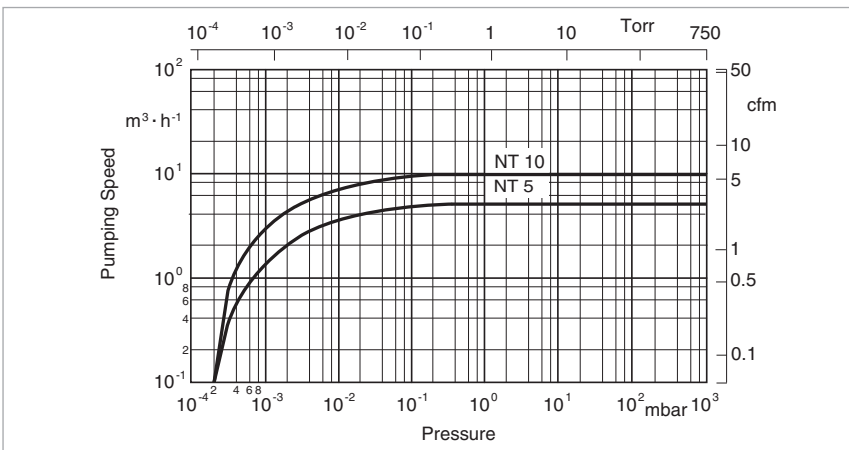
TRIVAC NT 5 and NT 10



TRIVAC NT 5 and 10



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)	≤ 5 × 10 ⁻⁴ (≤ 3.8 × 10 ⁻⁴)	≤ 5 × 10 ⁻⁴ (≤ 3.8 × 10 ⁻⁴)	≤ 5 × 10 ⁻⁴ (≤ 3.8 × 10 ⁻⁴)	≤ 5 × 10 ⁻⁴ (≤ 3.8 × 10 ⁻⁴)
Ultimate total pressure without gas ballast ²⁾	mbar (Torr)	≤ 2 × 10 ⁻³ (≤ 1.5 × 10 ⁻³)	≤ 2 × 10 ⁻³ (≤ 1.5 × 10 ⁻³)	≤ 2 × 10 ⁻³ (≤ 1.5 × 10 ⁻³)	≤ 2 × 10 ⁻³ (≤ 1.5 × 10 ⁻³)
Ultimate total pressure with gas ballast (stage 2) ²⁾	mbar (Torr)	≤ 3 × 10 ⁻² (≤ 2.25 × 10 ⁻²)	≤ 3 × 10 ⁻² (≤ 2.25 × 10 ⁻²)	≤ 3 × 10 ⁻² (≤ 2.25 × 10 ⁻²)	≤ 3 × 10 ⁻² (≤ 2.25 × 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 (qt)	0.75 / 1.25 (0.79 / 1.32)	0.75 / 1.25 (0.79 / 1.32)	0.75 / 1.25 (0.79 / 1.32)	0.75 / 1.25 (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 (°F)	+12 to +50 (+54 to +122)	+12 to +50 (+54 to +122)	+12 to +50 (+54 to +122)	+12 to +50 (+54 to +122)
US/Japan motor	°C (°F)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)	+12 to +40 (+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 230 V UK plug 230 V CH plug 230 V NEMA plug (200-240 V) 115 V NEMA plug (100-120 V) 100 V Japan plug	Part No. 200 81 091 Part No. 200 81 097 Part No. 200 81 099 Part No. 200 81 141 Part No. 200 81 090 upon request	Part No. 200 81 091 Part No. 200 81 097 Part No. 200 81 099 Part No. 200 81 141 Part No. 200 81 090 upon request
Accessories		
Exhaust filter AF 8 ²⁾ AF 10	Part No. 190 50 ²⁾ -	- 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⁾ AK 10	Part No. 190 60 ²⁾ -	- 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⁾ FS 8-16	Part No. 186 05 ²⁾ -	- 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

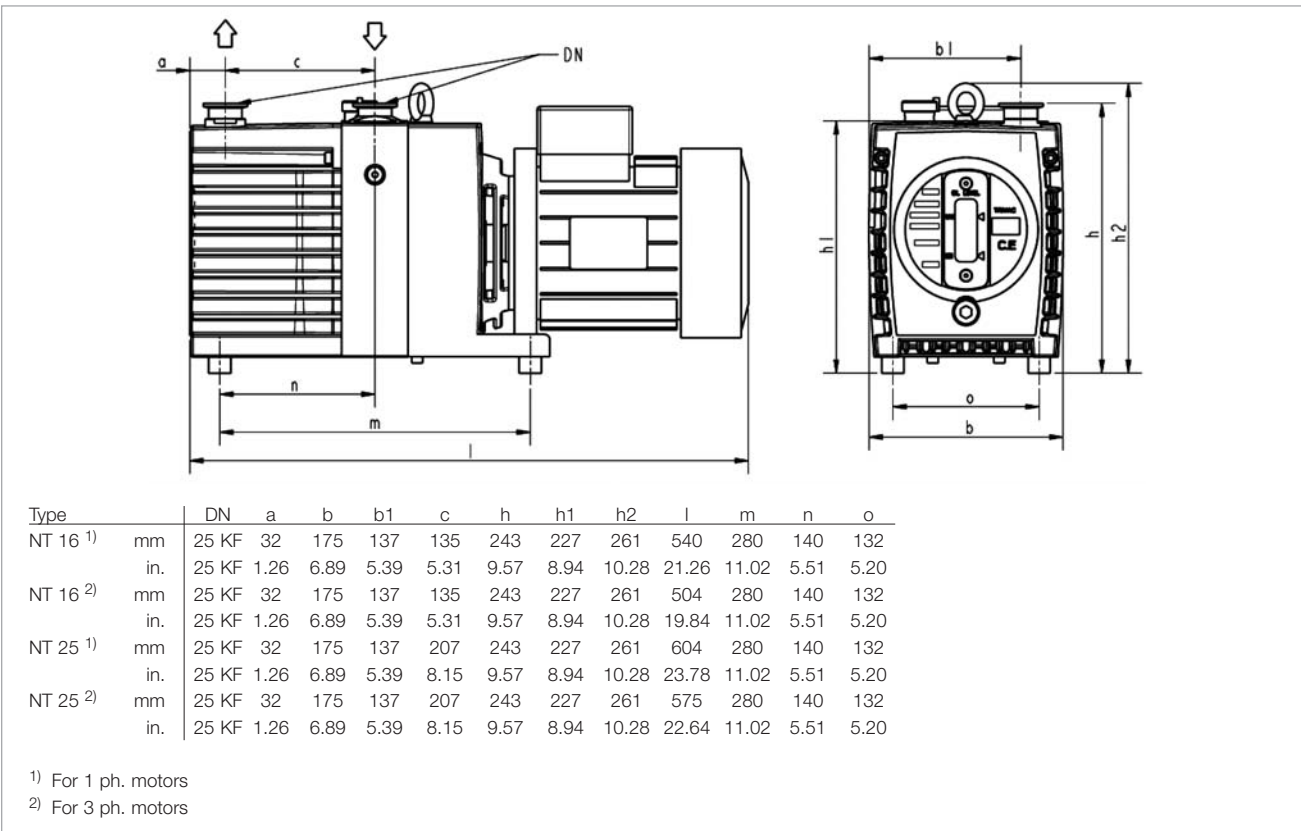
⁴⁾ Use only together with a DN 25 KF elbow

⁵⁾ For vertical installation, reducer 183 86 is necessary for changing from DN 25 KF to DN 16 KF

TRIVAC NT 16 and NT 25



TRIVAC NT 16



Dimensional drawing for the TRIVAC NT 16 and NT 25

Technical Data

TRIVAC NT 16 two-stage

TRIVAC NT 25 two-stage

		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	18.9 (11.1)	22.7 (13.4)	29.9 (17.6)	29.9 (17.6)
Pumping speed ¹⁾	m ³ /h (cfm)	16.5 (9.7)	19.8 (11.7)	25.7 (15.1)	25.7 (15.1)
Ultimate partial pressure without gas ballast ²⁾					
with N 62	mbar (Torr)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)
with PFPE	mbar (Torr)	8 x 10 ⁻⁴ (6 x 10 ⁻⁴)	8 x 10 ⁻⁴ (6 x 10 ⁻⁴)	8 x 10 ⁻⁴ (6 x 10 ⁻⁴)	8 x 10 ⁻⁴ (6 x 10 ⁻⁴)
Ultimate total pressure without gas ballast ²⁾					
with N 62	mbar (Torr)	< 2 x 10 ⁻³ (< 1.5 x 10 ⁻³)	< 2 x 10 ⁻³ (< 1.5 x 10 ⁻³)	< 2 x 10 ⁻³ (< 1.5 x 10 ⁻³)	< 2 x 10 ⁻³ (< 1.5 x 10 ⁻³)
with DOT	mbar (Torr)	0.6 (0.5)	0.6 (0.5)	0.6 (0.5)	0.6 (0.5)
Ultimate total pressure ²⁾					
with N 62	mbar (Torr)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)
with PFPE	mbar (Torr)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)
with DOT	mbar (Torr)	0.9 (0.7)	0.9 (0.7)	0.9 (0.7)	0.9 (0.7)
Water vapor tolerance ²⁾	mbar (Torr)	25 (18.8)	25 (18.8)	25 (18.8)	25 (18.8)
Water vapor capacity	g/h	305	305	476	476
Oil filling, min. / max.	l (qt)	0.70 / 1.00 (0.74 / 1.10)	0.70 / 1.00 (0.74 / 1.10)	1.1 / 1.5 (1.16 / 1.59)	1.1 / 1.5 (1.16 / 1.59)
Noise level to DIN 45 635 without gas ballast at 50 Hz	dB(A)	< 54	< 54	< 54	< 54
Admissible ambient temperature	°C (°F)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)
Motor rating	W (HP)	550 (0.75)	660 (0.9)	550 (0.75)	660 (0.9)
Nominal speed	rpm	1500	1800	1500	1800
Type of protection	IP	44	44	44	44
Weight with oil filling					
3 phase motor	kg (lbs)	35.0 (77.3)	35.0 (77.3)	41.0 (90.5)	41.0 (90.5)
1 phase motor	kg (lbs)	40.0 (88.3)	40.0 (88.3)	46.0 (101.5)	46.0 (101.5)
Connections, Intake and Exhaust	DN	25 KF	25 KF	25 KF	25 KF

¹⁾ To DIN 28 426 T1

²⁾ To DIN 28 400 ff

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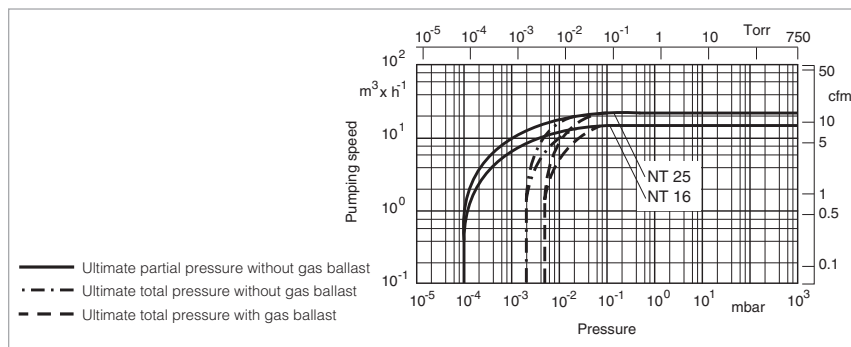
Ordering Information

TRIVAC NT 16 two-stage

TRIVAC NT 25 two-stage

TRIVAC NT 16 1-phase world motor filling with N 62 ¹⁾	Part No. 140 220	Part No. 140 330
1-phase EU motor filling with N 62 ¹⁾ filling with ANDEROL 555 ¹⁾ filling with PFPE ¹⁾ filling with DOT 4 ¹⁾ filling with RCF E 68N ¹⁾	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
1-phase US/Japan motor filling with N 62 ¹⁾	Part No. 140 241	Part No. 140 341
3-phase world motor filling with N 62 filling with ANDEROL 555 filling with PFPE filling with DOT 4 filling with RCF E 68N	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
Power supply cable for 1-phase motor 100-120 V, 50/60 Hz; NEMA plug, US plug 200-240 V, 50/60 Hz; NEMA plug 200-240 V, 50/60 Hz; Schuko plug 200-240 V, 50/60 Hz; UK plug 100 V, 50/60 Hz; Japan plug	Part No. 140 304 Part No. 140 305 Part No. 140 306 Part No. 140 307 Part No. 140 304V	Part No. 140 304 Part No. 140 305 Part No. 140 306 Part No. 140 307 Part No. 140 304V

¹⁾ Pumps with a single phase motor are equipped with a connector for connecting the mains cord.
Optionally fully pre-assembled regional mains cords can be used.



Pumping speed characteristics for the TRIVAC NT 16 and NT 25 at 50 Hz

Ordering Information

TRIVAC NT 16 two-stage

TRIVAC NT 25 two-stage

Accessories		
Exhaust filter AF 25	Part No. 190 53 ¹⁾	Part No. 190 53 ¹⁾
Exhaust filter AF 16-25 AF 16-25 DOT	Part No. 189 11 ¹⁾ Part No. 124 16 ¹⁾	Part No. 189 11 ¹⁾ Part No. 124 16 ¹⁾
Exhaust filter with lubricant return AR 16-25	Part No. 189 21 ^{1), 5)}	Part No. 189 21 ^{1), 5)}
Exhaust filter with lubricant return ARS 16-25	Part No. 189 56 ^{1), 5)}	Part No. 189 56 ^{1), 5)}
Condensate trap AK 25	Part No. 190 63	Part No. 190 63
Condensate trap AK 16-25	Part No. 188 11 ²⁾	Part No. 188 11 ²⁾
Fine vacuum adsorption trap FA 8-16	Part No. 187 10	Part No. 187 10
Adsorption trap with aluminum oxide insert	Part No. 854 15	Part No. 854 15
Manually operated oil suction facility AR-M	Part No. 190 93 ⁴⁾	Part No. 190 93 ⁴⁾
Oil suction facility AR-V controlled by solenoid valve	Part No. 190 92 ⁴⁾	Part No. 190 92 ⁴⁾
Dust filter FS 8-16	Part No. 186 10	Part No. 186 10
Dust separators AS 8-16	Part No. 186 11	Part No. 186 11
Mechanical oil filter OF 4-25	Part No. 101 91 ³⁾	Part No. 101 91 ³⁾
Chemical oil filter CF 4-25	Part No. 101 96 ³⁾	Part No. 101 96 ³⁾
Chemical oil filter with safety isolation valve CFS 16-25	Part No. 101 76 ³⁾	Part No. 101 76 ³⁾
Exhaust filter drain tap	Part No. 190 95	Part No. 190 95
Oil drain tap M 16 x 1.5 vacuum-tight	Part No. 190 90	Part No. 190 90
Oil drain kit	Part No. 190 94	Part No. 190 94
Inlet flange, horizontal, DN 25 KF	Part No. 140 300	Part No. 140 300
Exhaust flange, horizontal, DN 25 KF	Part No. 140 301	Part No. 140 301
Oil pressure switch	Part No. 140 302	Part No. 140 302
Oil level switch	Part No. 140 303	Part No. 140 303
Adapter set for oil suction	Part No. 140 298	Part No. 140 298
Adapter set for oil filter	Part No. 140 299	Part No. 140 299
Major maintenance kit PFPE DOT 4	Part No. EK 110 002 702 Part No. EK 110 002 745 Part No. EK 110 002 739	upon request upon request upon request
Minor maintenance kit PFPE DOT 4	Part No. EK 110 002 701 Part No. EK 110 002 744 Part No. EK 110 002 740	upon request upon request upon request
Small parts kit PFPE DOT 4	Part No. EK 110 002 703 Part No. EK 110 002 746 Part No. EK 110 002 738	upon request upon request upon request
Replacement pump module PFPE DOT 4	Part No. EK 110 002 704 Part No. EK 110 002 747 Part No. EK 110 002 737	upon request upon request upon request
Shaft sealing replacement kit PFPE DOT 4	Part No. EK 110 002 700 Part No. EK 110 002 743 Part No. EK 110 002 741	upon request upon request upon request

¹⁾ Use only together with the horizontal exhaust flange (Part No. 140 301) (FPM ((FKM)) O-ring)
Caution: For DOT use 2x EPDM-rings (Part No. 971 471 362)

²⁾ Use only together with the horizontal inlet flange (Part No. 140 300)

³⁾ Can only be installed together with adapter 140 299

⁴⁾ Can only be installed together with adapter 140 298

⁵⁾ Can only be installed together with adapter set for oil suction Part No. 140 308

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	± 5%	0.55	2.8 / 1.6	80	World
		60	± 5%	0.65	2.8 / 1.6	80	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	± 5%	0.55	9.5	90	US/ Japan
		60	± 5%	0.66	10.0		
E 110 002 712 3 ~	200-240 / 380-415 200-240 / 380-460	50	± 10%	0.55	3.1-4.0 / 1.5-1.6	90	World
		60	± 10%	0.66	3.1 / 1.6		

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