



Oil Sealed Vacuum Pumps

TRIVAC

Rotary Vane Vacuum Pumps

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Applications for TRIVAC pumps

Pumps	S 1,5	TRIVAC D 25 E	TRIVAC D 4 B	TRIVAC D 8 B	TRIVAC D 16 B	TRIVAC D 25 B	TRIVAC D 40 B	TRIVAC D 65 B	TRIVAC D 16 B-DOT and D 25 B-DOT	TRIVAC 40 B-DOT	TRIVAC D 65 B ³ He	TRIVAC D 16 B-Ex	TRIVAC D 16 BCS, D 25 BCS	TRIVAC D 65 BCS	TRIVAC D 16 + D 25 BCS-PFPE	TRIVAC D 40 BCS-PFPE	TRIVAC D 65 BCS-PFPE
Applications																	
Production of semiconductors													■	■	■	■	■
Vacuum coating				■	■	■	■						■	■	■	■	■
Research and development	■	■	■	■	■	■	■	■	■				■	■	■	■	■
Chemistry/pharmaceuticals		■		■	■	■	■	■					■	■	■	■	■
Metallurgy/furnaces						■	■										
Lamps and tubes manufacture		■	■	■	■		■	■									
Automotive industry		■		■	■				■	■							
Laser engineering	■																
Space simulation						■	■										
Analytical engineering		■	■	■	■	■											
Environment engineering		■	■	■	■	■	■	■									
Cooling and air-conditioning	■			■	■	■	■	■			■						
Electrical engineering	■	■	■	■	■	■	■	■									
Mechanical engineering	■	■	■	■	■	■	■	■									
Medicine technology		■	■	■	■	■											
Vacuum drying cabinets		■	■	■	■	■											
Chemistry and research labs		■	■	■	■	■							■	■	■		
Freeze drying systems		■	■	■	■	■	■	■									
Backing pump for high vacuum pump systems	■	■	■	■	■	■	■	■					■	■	■	■	■
Leak detectors		■			■	■	■	■									

Accessories for TRIVAC pumps

Pumps	S 1.5	TRIVAC D 2,5 E	TRIVAC D 4 B	TRIVAC D 8 B	TRIVAC D 16 B	TRIVAC D 25 B	TRIVAC D 40 B	TRIVAC D 65 B	TRIVAC D 16 B-DOT + D 25 B-DOT	TRIVAC 40 B-DOT	TRIVAC D 65 B ¹⁾ He	TRIVAC D 16 B-Ex	TRIVAC D 16 BCS + D 25 BCS	TRIVAC D 40 BCS	TRIVAC D 65 BCS	TRIVAC D 16 + D 25 BCS-PPPE	TRIVAC D 40 BCS-PPPE	TRIVAC D 65 BCS-PPPE
Accessories																		
Exhaust filters AF(-DOT)		■	■	■	■	■	■	■	■		■	■	■					
Condensate traps / separators AK	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■
Exhaust filters with lubricant return ARP / AR			■	■	■	■	■	■	■		■	■	■					
Exhaust filters with lubricant return ARS											■	■	■	■	■	■	■	■
Exhaust filter drain tap		■																
Oil drain tap	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Oil drain kit	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Oil suction facility AR-V ¹⁾ , magnetic AR-M ¹⁾ , manual		■	■															
Dustfilter FH/DF DN 16 to 40 KF	■	■	■	■	■	■	■	■			■	■	■	■	■	■	■	■
Adsorption trap FH/RF DN 16 to 40 KF	■	■	■	■	■	■	■	■			■	■	■	■	■	■	■	■
Cold trap TK		■	■	■														
Dust separators AS	■	■	■	■	■	■	■	■			■	■	■	■	■	■	■	■
Molecular filters MF	■	■	■	■	■	■	■	■			■	■	■	■	■	■	■	■
Mechanical oil filters OF			■	■	■	■	■	■										
Chemical oil filters CF			■	■	■	■	■	■			■	■	■	■	■	■	■	■
Chemical filters with safety isolation valve CFS		■	■	■	■	■					■	■	■	■	■	■	■	■
Inert gas system IGS											■	■	■	■	■	■	■	■
Limit switch system LSS											■	■	■	■	■	■	■	■
Roots pump adaptor						■	■				■	■			■	■		
Flange components, valves	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

¹⁾ For pumps with gas ballast only

Oil for TRIVAC pumps for different fields of application

Applications	Semiconductor production	Vacuum coating	Research and development	Chemistry/Pharmaceutical	Metallurgy/Furnaces	Lamps and tubes manufactures	Automotive industry	Laser technology	Space simulation	Analytical engineering	Environment engineering	Oxygen technologies	Cooling and applications	Electrical and air-conditioning	Mechanical engineering	Medicine engineering	Vacuum technology	Chemistry and research labs	Freeze drying cabinets	Backing pump for research labs	Food industry	Backing pump for HV pump systems
LEYBONOL Oils																						
LVO 100	▲	■	■	■	■	■	■	■	■	■	■	■	■	■	■	●	■	■				
LVO 210		■	■	■	■	■		■	■	■		■	■	■	■	●	■	●	●			
LVO 240			■	■																		
LVO 300																					■	
LVO 310			■		■	■	■				■		■								▲	
LVO 400	■	●	■	■						■						▲	●		●			
LVO 600			■	■										■								
DOT 4			●				■															

- = Standard
- = Possible
- ▲ = Please contact Leybold

The table only lists general applications. Your specific requirements might be subject to deeper analysis. For further questions, please contact our technical Sales support.

For information on oil specifications please refer to Catalog Part "Oils / Greases / Lubricants LEYBONOL®".

Oil for TRIVAC pumps for different pump types

Pumps	S 1.5	TRIVAC D 2.5 E	TRIVAC D 4 B	TRIVAC D 8 B	TRIVAC D 16 B	TRIVAC D 25 B	TRIVAC D 40 B	TRIVAC D 65 B	TRIVAC D 16 B-DOT + D 25 B-DOT	TRIVAC 40 B-DOT	TRIVAC D 65 B ³ He	TRIVAC D 16 B Ex	TRIVAC D 16 BCS + D 25 BCS	TRIVAC D 40 BCS	TRIVAC D 65 BCS	TRIVAC D 16 + D 25 BCS-PFPE	TRIVAC D 40 BCS-PFPE	TRIVAC D 65 BCS-PFPE
LEYBONOL Oils																		
LVO 100	■	■	■	■	■	■	■	■		■	■	■	■	■				
LVO 210	●	●	●	●	●	●	●	●			●	●	●	●				
LVO 240	●	●	●	●	●	●	●	●			▲			●				
LVO 300			●	●	●	●	●	●										
LVO 310	●	●	●	●	●	▲					▲							
LVO 400		▲	▲												■	■	■	
LVO 600	●	●	●	●	●	●	●	●			▲	●	●	●				
DOT 4								■	■									

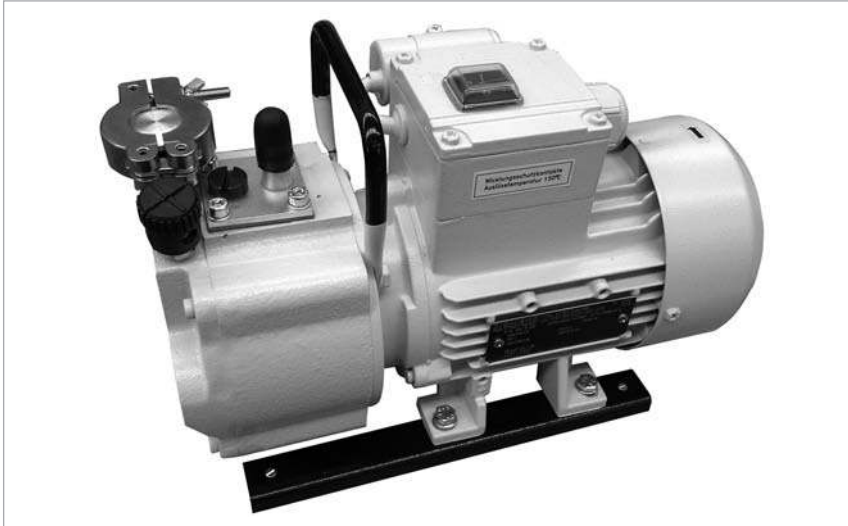
- = Standard
- = Possible
- ▲ = Please contact Leybold

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Products

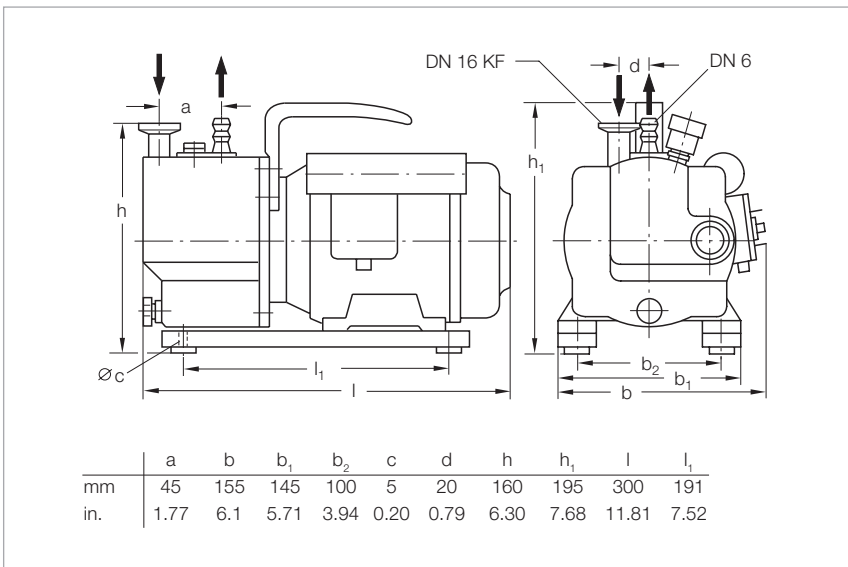
Small Compact Pump S 1,5



The S 1,5 is a single-stage, oil sealed rotary vane pump with a gas ballast valve. It is driven by a flange mounted AC motor. The shaft of the pump and the shaft of the motor are linked by means of a pinned coupling.

Advantages to the User

- Very small and light-weight
- Low ultimate pressure
- High water vapor tolerance
- Low noise operation
- Simple to connect
- Easy to maintain and use



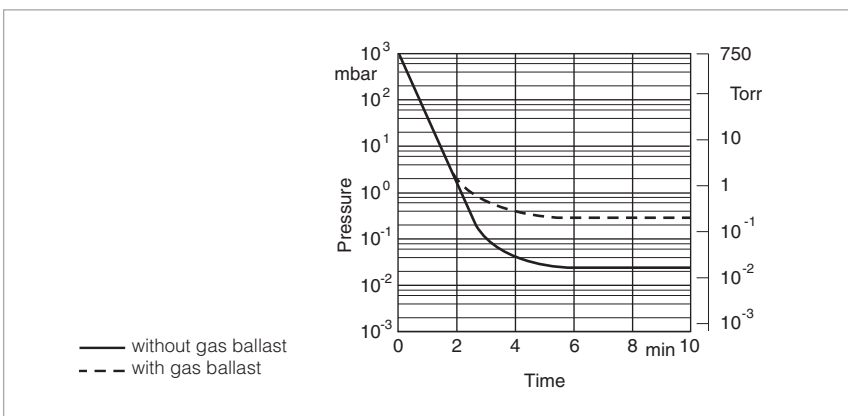
Dimensional drawing for the S 1,5

Typical Applications

- In all areas of vacuum engineering where a low intake pressure is required
- Evacuation of refrigerant circuits
- For suction, lifting, emptying, filling and tensioning
- For installation in mobile instruments

Supplied Equipment

- DN 16 small flange connection on the intake side
- Centering ring and clamping ring
- Exhaust port designed as a DN 6 hose nozzle
- Carrying handle
- Built-in ON/OFF switch and overcurrent circuit breaker
- Oil filling



Pump-down characteristics of a 10 l vessel at 50 Hz

Technical Data

S 1,5

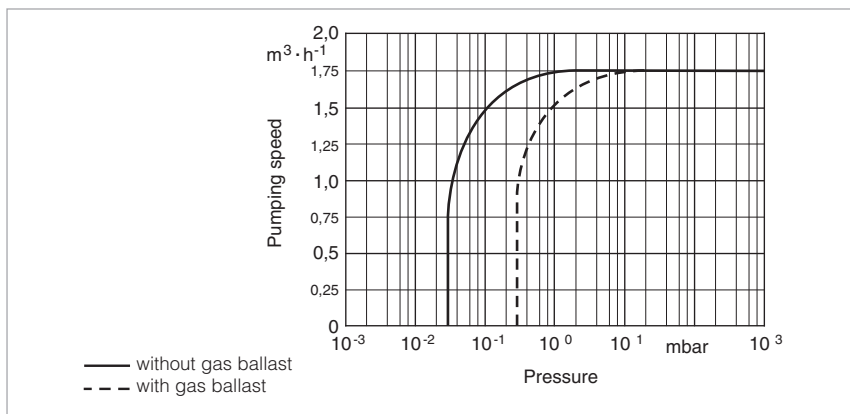
		50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	1.9 (1.1)	2.3 (1.3)
Pumping speed ¹⁾	m ³ /h (cfm)	1.75 (1)	2.1 (1.2)
Ultimate partial pressure without gas ballast ¹⁾	mbar (Torr)	3 x 10 ⁻² (2.3 x 10 ⁻²)	3 x 10 ⁻² (2.3 x 10 ⁻²)
Ultimate total pressure with gas ballast ¹⁾	mbar (Torr)	5 x 10 ⁻¹ (3.8 x 10 ⁻¹)	5 x 10 ⁻¹ (3.8 x 10 ⁻¹)
Water vapor tolerance ¹⁾	mbar (Torr)	> 15 (> 11.3)	> 15 (> 11.3)
Water vapor capacity	g/h (lbs/h)	19 (42)	23 (50)
Oil filling, min. / max.	l (qt)	0.11/0.14 (0.12/0.15)	0.11/0.14 (0.12/0.15)
Noise level to DIN 45 635	dB(A)	50	50
Admissible ambient temperature	°C (°F)	12 – 40 (53.6 – 104)	40 (53.6 – 104)
Max. permanent inlet pressure	mbar (Torr)	30 (22.5)	30 (22.5)
Motor rating	W (hp)	80 (0.11)	80 (0.11)
Nominal speed	rpm	1500	1800
Weight	kg (lbs)	8.8 (19.4)	8.8 (19.4)
Connections			
Intake	DN	16 KF	16 KF
Exhaust		6 mm hose nipple	6 mm hose nipple

Ordering Information

S 1,5

	Part No.
S 1,5 with AC motor, 230 V (208 – 252 V ± 5%), 50/60 Hz, with 2 m long mains cord and EURO plug	101 01
Transition connector (250 V AC, 10 A, L+N+PE) only necessary in Switzerland for 1~ pumps	800 001 274
AK 8 condensate trap	190 60
Exhaust filter drain tap (G 1/4")	190 95
Connection components	
Elbow (1x) DN 16 KF	184 36
Centering ring with O-ring (2x) DN 16 KF	183 26
Clamping ring (2x) DN 16 KF	183 41

¹⁾ To DIN 28 400 and following numbers



Pumping speed characteristics at 50 Hz

TRIVAC E, Two-Stage, Oil Sealed Rotary Vane Vacuum Pump



TRIVAC D 2,5 E

The TRIVAC E pump is an oil sealed vacuum pump operating according to the rotary vane principle. Oil which is injected into the pump chamber is used for sealing, lubrication and cooling purposes.

The result is the TRIVAC E rotary vane vacuum pump.

Beyond the usual quality and reliability of the B series pumps, the TRIVAC E pump offers improvements in the area of quieter operation, smaller size and improved service-friendliness.

The intake and exhaust ports are equipped with small flanges. Besides standard voltages and frequencies, Leybold offers world motors, which are specially required by OEMs.

Advantages to the User

- Highly reliable
- Small and compact
- Quiet operation
- Environmentally compatible (low oil consumption, EMI compatible; IP 54 protection)
- Process quality (low backstreaming of oil)
- Motor for all standard supply voltages and frequencies
- Safe and intelligent vacuum protection (hermetically sealed)
- Free of yellow metals
- Compliance with international standards (CE)
- Suitable for continuous operation at 1000 mbar (750 Torr)
- Low power consumption
- Better individual performance given by 3 stage gas ballast device
- High water vapor tolerance
- Simplified customizing ability

Typical Applications

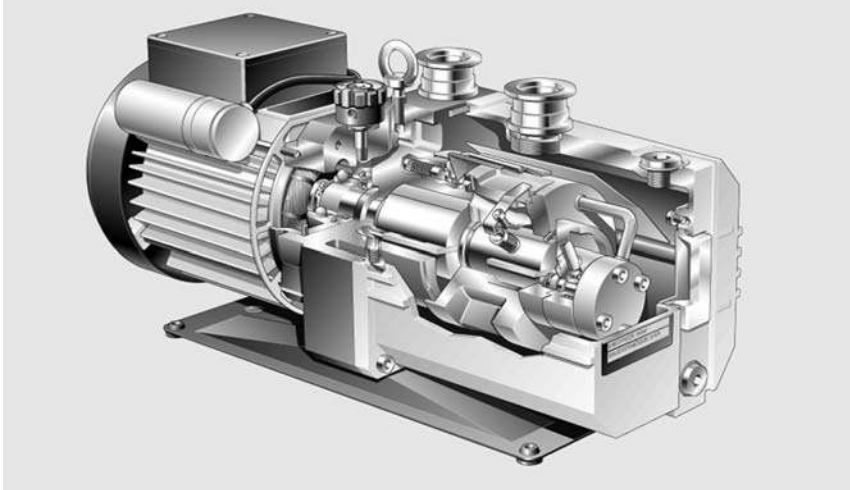
- Mass and X-ray spectrometers
- Electron beam microscopes
- Leak detectors
- Sterilizers
- Freeze-drying systems
- Chemical and research labs
- General vacuum engineering
- Backing pump for high vacuum pump systems

Supplied Equipment

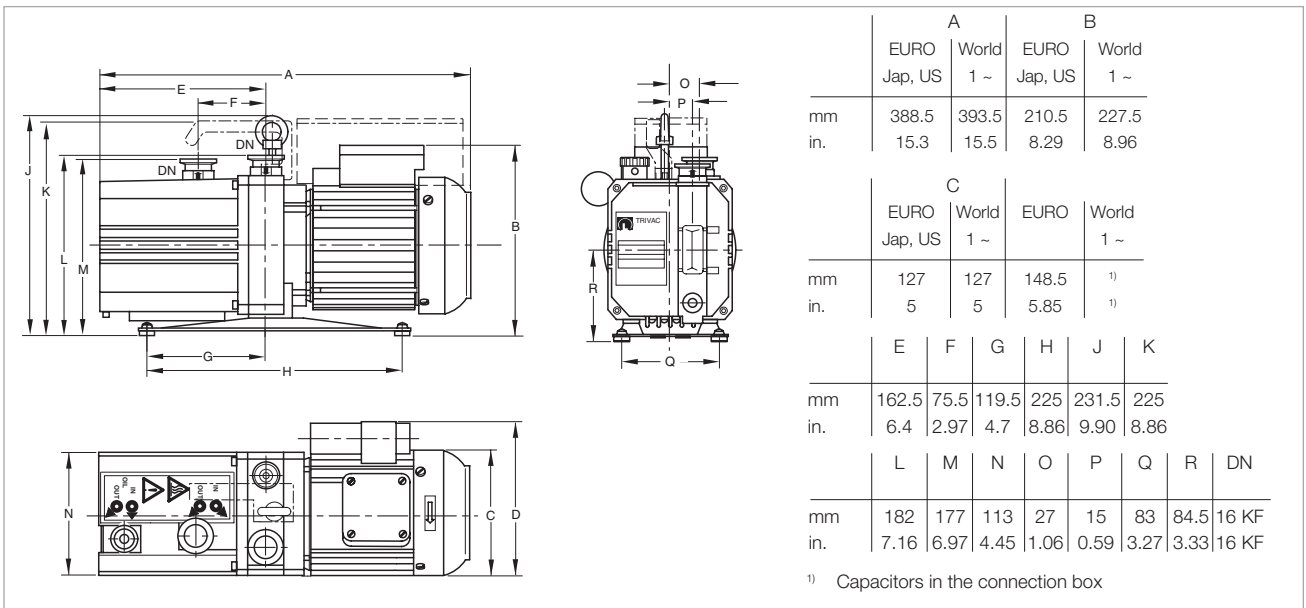
- Dirt trap
- Oil filling included separately (standard LVO 100)
- Gas ballast device
- Mains cord with the specific plug for EURO, US and Japan motors
- Optional: Mains cord with country specific plug for the world motor
- With handle

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

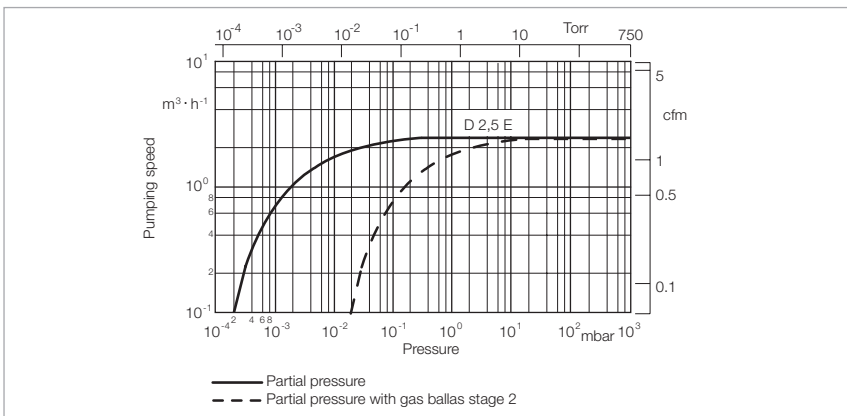
TRIVAC D 2,5 E



TRIVAC E



Dimensional drawing for the TRIVAC D 2,5 E



Pumping speed of the TRIVAC D 2,5 E at 50 Hz (60 Hz curves at the end of the chapter)

Technical Data

TRIVAC D 2,5 E

		50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	3.2 (1.9)	3.6 (2.1)
Pumping speed ¹⁾	m ³ /h (cfm)	2.7 (1.6)	3.3 (1.9)
Ultimate partial pressure without gas ballast	mbar (Torr)	$\leq 5 \times 10^{-4}$ ($\leq 3.8 \times 10^{-4}$)	$\leq 5 \times 10^{-4}$ ($\leq 3.8 \times 10^{-4}$)
Ultimate total pressure without gas ballast ²⁾	mbar (Torr)	$\leq 2 \times 10^{-3}$ ($\leq 1.5 \times 10^{-3}$)	$\leq 2 \times 10^{-3}$ ($\leq 1.5 \times 10^{-3}$)
Ultimate total pressure with gas ballast Stage 2 ²⁾	mbar (Torr)	$\leq 3 \times 10^{-2}$ ($\leq 2.3 \times 10^{-2}$)	$\leq 3 \times 10^{-2}$ ($\leq 2.3 \times 10^{-2}$)
Water vapor tolerance			
Stage 1	mbar (Torr)	10 (7.5)	10 (7.5)
Stage 2	mbar (Torr)	20 (15)	20 (15)
Stage 3	mbar (Torr)	30 (22.5)	30 (22.5)
Water vapor capacity			
Stage 1	g/h (lbs/h)	20 (0.044)	25 (0.055)
Stage 2	g/h (lbs/h)	40 (0.088)	50 (0.110)
Stage 3	g/h (lbs/h)	60 (0.132)	75 (0.165)
Oil filling, min. / max.	l (qt)	0.4 / 0.7 (0.42 / 0.74)	0.4 / 0.7 (0.42 / 0.74)
Noise level	dB(A)	≤ 47	≤ 49
Admissible ambient temperature	°C (°F)	+10 to +50 (+50 to +122) (EURO motor) / +10 to +40 (+50 to +104) (US/Japan motor)	+10 to +50 (+50 to +122) (EURO motor) / +10 to +40 (+50 to +104) (US/Japan motor)
Motor rating	W (HP)	250 (0.34)	300 (0.41)
Nominal speed	rpm	1400	1600
Type of protection	IP	54	54
Weight (with oil filling)	kg (lbs)	16.1 (35.4)	16.1 (35.4)
Connections (Intake and Exhaust)	DN	16 KF	16 KF

¹⁾ To DIN 28 426 T1

²⁾ To DIN 28 400 and following numbers

Motor Dependent Data

Motors for D 2,5 E	Voltage (V)	Frequency (Hz)	Voltage tolerance	Power consumption (W (HP))	Nominal current (A)	Protection	Nominal speed (rpm)
EURO 1 ~	220 – 240/230	50/60	± 5%	250/300 (0.34/0.41)	1.8/1.4	IP 54	1400/1600
World 1 ~	100 – 120 200 – 240	50/60	± 5%	250/300 (0.34/0.41)	4.4/3.0 2.2/1.5	IP 54	1400/1600

Ordering Information

TRIVAC D 2,5 E

	Part No.
TRIVAC E with 1.8 m (6 ft.) long mains cord EURO version, 1-ph., 220 – 240 V, 50 Hz; 230 V, 60 Hz	
Schuko plug	140 000
CH plug	140 005
Single phase world motor, 100 – 120 V, 200 – 240 V 50/60 Hz (without mains cord)	140 001
Further variants upon request	
Accessories	
Connection cable for single phase world motor	
230 V Schuko plug	200 81 091
230 V UK plug	200 81 097
230 V CH plug	200 81 099
230 V NEMA plug (200 – 240 V)	200 81 141
115 V NEMA plug (100 – 120 V)	200 81 090
Exhaust filter AF 8	190 50
Replacement filter elements FE 8 for AF 8 (pack of 5)	190 80
Exhaust filter drain tap (G 1/4")	190 95
Manual oil return AR-M via gas ballast inlet (kit for AF 8-16)	190 93
Oil suction AR-V controlled by a solenoid valve via the gas ballast inlet (kit for AF 8-16)	190 92
Condensate trap AK 8	190 60
Oil drain tap (M 16 x 1.5)	190 90
Oil drain kit (M 16 x 1.5)	190 94
Connection components	
Elbow (1x) DN 16 KF	184 36
Centering ring with O-ring (2x) DN 16 KF	183 26
Clamping ring (2x) DN 16 KF	183 41
Spare Parts	
Maintenance kit 1 (oil demister, oil box seal)	200 40 022
Repair kit 1 (motor side sealing, shaft sealing ring, coupling sleeves, compression spring)	E 100 000 351
Repair kit 2 (valves, oil demister, oil box seal)	200 40 024
Repair kit 3 (oil demister, sealing, wearing parts)	E 100 000 347
For further accessories see Chapter "Accessories for TRIVAC E, B and BCS"	

TRIVAC B, Two-Stage Rotary Vane Vacuum Pumps TRIVAC D 4 B to D 65 B



The TRIVAC B is part of the well-proven TRIVAC concept.

The TRIVAC B pumps with their comprehensive range of accessories have proven themselves time and again as rugged pumps in many and varied applications.

The inner body is assembled from individual parts without sealing components. The parts are pinned in order to ensure easy disassembly and reassembly of the parts.

All pumps from the D 4 B to the D 25 B model are equipped either with single-phase or three-phase motors. D 40 - 65 B models are equipped with three-phase motors. In the TRIVAC B, the pump unit and the motor are linked by an elastic coupling.

The TRIVAC B range is a modular system which divides into three groups:

TRIVAC 4/8 Series
TRIVAC 16/25 Series
TRIVAC 40/65 Series

Advantages to the User

- All basic models (single-phase and three-phase motor) are certified in accordance with 94/9/EG (ATEX) (Category 3 inside)
- High water vapor tolerance
- Continuous operation even at 1000 mbar
- Built-in oil pump; pressure-lubricated sliding bearings
- All controls as well as the oil sight glass are located on the front face
- Either vertical or horizontal intake and exhaust ports
- Exchangeable inner body
- Anti-suckback valve controlled via the oil pressure
- Free of yellow metals
- Service-friendly
- Ideal as backing pump for medium and high vacuum applications, because of low oil backstreaming
- Highly leaktight (⁴He-capable)

Typical Applications

See chapter "General, Applications and Accessories".

Supplied Equipment

Small flanges, centering and clamping rings. The intake flange contains a dirt trap.

A carrying handle is standard for all pumps up to the D 25 B. TRIVAC B pumps with single-phase motors are delivered with ON/OFF switch, mains cord and main plug, ready for immediate operation.

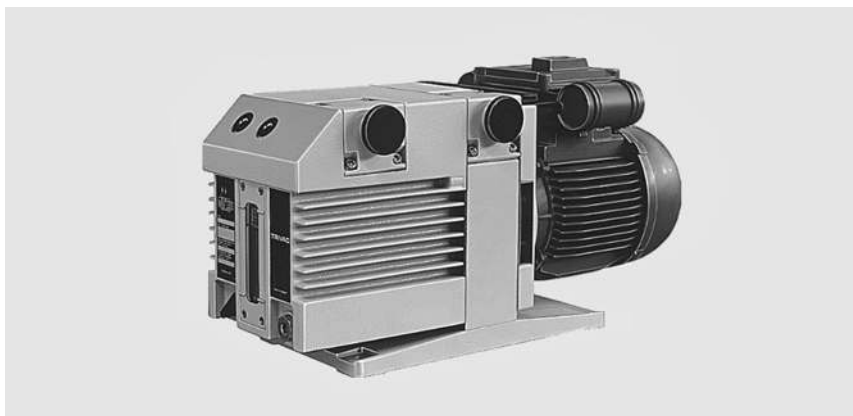
Standard TRIVAC B pumps come with a filling of oil LEYBONOL LVO 100, others with special oil fillings can be specified.

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

Custom Models

- ATEX (Category 3 inside and 3 outside)
- Brake fluid
- Oils for refrigerating machines, e.g. ester oils for refrigerant circuits with R 134 a
- Pressure burst resistant (for the new refrigerants propane and isobutane)
- ³He-tight (for cryostats)
- Special motors

TRIVAC D 16 B-DOT to D 40 B-DOT



The TRIVAC B-DOT pumps operate with brake fluid (DOT 4) as the sealing and lubricating agent. Therefore these pumps are equipped with EPDM seals. EPDM is highly compatible with brake fluid.

Advantages to the User

- Matching exhaust filters with EPDM gaskets (AF-DOT)
- Except for the seals and the fluid the TRIVAC B-DOT pumps are identical to the oil sealed TRIVAC B pumps

Typical Applications

- For filling of brake fluid circuits in the automotive industry

Supplied Equipment

- The brake fluid is inside the pump when shipped

TRIVAC D 65 B ³He



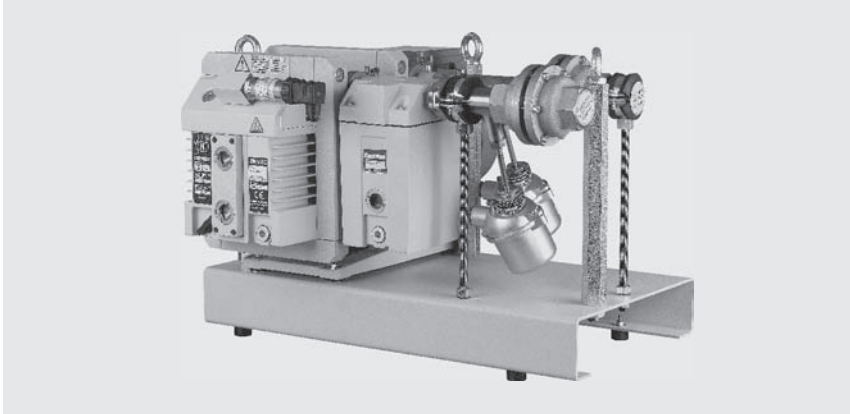
Advantages to the User

- Leak rates below 1×10^{-7} mbar x l/s, also while the pump is running
- Low pressures of 100 mbar in the oil box are permitted during operation
- No gas ballast facility
- Pump is FPM (FKM)-sealed

Typical Applications

- Pumping of continuously or discontinuously ³He operated cryostats, also on ³He and ⁴He mixed cryostats
- In these cryostats the very expensive helium isotope ³He, respectively mixtures consisting of ³He and ⁴He are pumped and this is generally done continuously in cycles running over weeks. The gas must neither be lost nor contaminated. For this reason exhaust lines are frequently operated at low pressures of 100 mbar (absolute)

TRIVAC D 16 B-Ex, Explosion Protected and Pressure Burst Resistant



ATEX

**Category 1 inside and
2 outside**

Typical Applications

- Pumping of gases belonging to Group IIB3 and IIC ¹⁾ from Zone 0

Vacuum pumps TRIVAC D 16 B-Ex meet the requirements of the European Directive 94/9/EG (ATEX Directive). TRIVAC D 16 B-Ex pumps are classified inside as Category 1, outside as Category 2. Thus these pumps are suited for pumping explosive gases from Zone 0, the pump itself may be located in Zone 1.

The vacuum pumps TRIVAC D 16 B-Ex are qualified for gases of Explosion Groups IIC ¹⁾ and IIB3. The temperature class is T4. TRIVAC D 16 B-Ex pumps are explosion resistant and correspond to the state-of-the-art. They are equipped as standard with one each temperature sensor on the intake and delivery side.

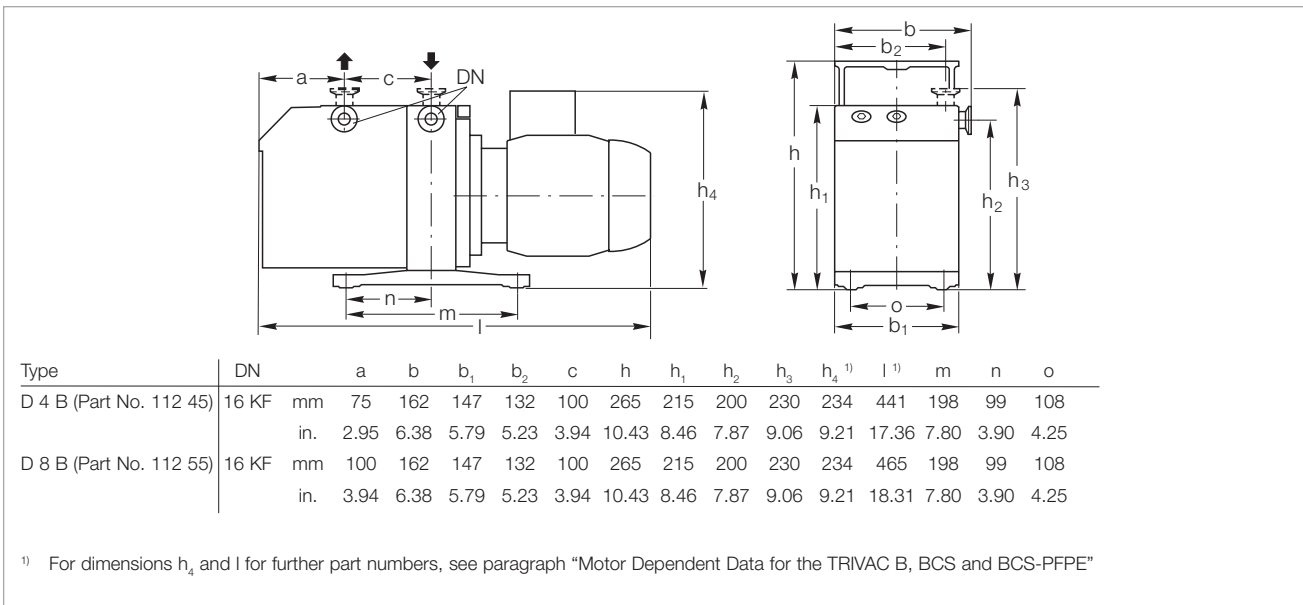
Moreover, the pressure inside the pump is monitored. Flame arresters on the intake and delivery side protect the upstream and downstream system sections. Also provided as standard is an exhaust filter for every pump.

¹⁾ With the exception of acetylene and carbon bisulphide

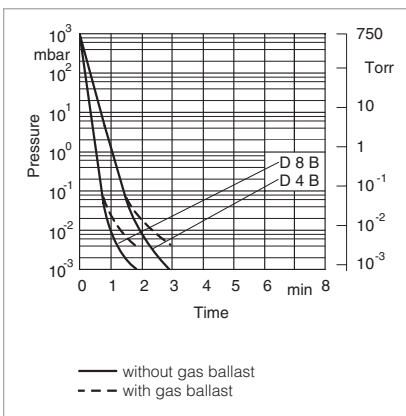
TRIVAC D 4 B and D 8 B



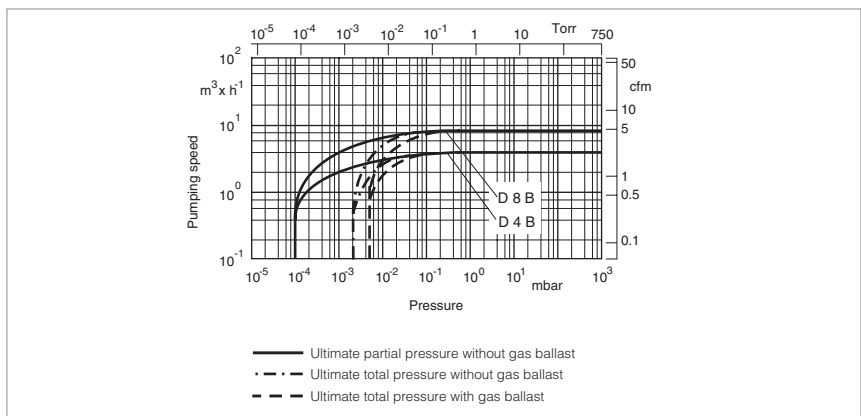
TRIVAC D 4 B (left) and TRIVAC D 8 B (right)



Dimensional drawing for the TRIVAC D 4 B and D 8 B



Pump-down characteristics of a 10 l vessel at 50 Hz



Pumping speed characteristics at 50 Hz (60 Hz curves at the end of the chapter)

Technical Data

TRIVAC D 4 B

two-stage

50 Hz

60 Hz

TRIVAC D 8 B

two-stage

50 Hz

60 Hz

		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	4.8 (2.8)	5.8 (3.4)	9.7 (5.7)	11.6 (6.9)
Pumping speed ¹⁾	m ³ /h (cfm)	4.2 (2.5)	5.0 (3.0)	8.5 (5)	10.2 (6)
Ultimate partial pressure without gas ballast ¹⁾	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)
Ultimate total pressure without gas ballast ¹⁾	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)
Ultimate total pressure with gas ballast ¹⁾	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)
Water vapor tolerance ¹⁾	mbar (Torr)	30.0 (22.5)	30.0 (22.5)	25.0 (18.8)	25.0 (18.8)
Water vapor capacity	g/h (lbs/h)	95 (0.209)	110 (0.243)	160 (0.353)	190 (0.419)
Oil filling, min. / max.	l (qt)	0.3 / 0.8 (0.3 / 0.85)	0.3 / 0.8 (0.3 / 0.85)	0.3 / 0.9 (0.3 / 0.95)	0.3 / 0.9 (0.3 / 0.95)
Noise level ²⁾ to DIN 45 635, without / with gas ballast	dB(A)	50 / 52	50 / 52	50 / 52	50 / 52
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 ²⁾	W (HP)	370 (0.50)	370 (0.50)	370 (0.50)	370 (0.50)
Nominal speed	rpm	1500	1800	1500	1800
Type of protection	IP	³⁾	³⁾	³⁾	³⁾
Weight ²⁾	kg (lbs)	17.9 (39.4)	17.9 (39.4)	18.9 (41.6)	18.9 (46.7)
Connections, Intake and Exhaust	DN	16 KF	16 KF	16 KF	16 KF

¹⁾ To DIN 28 400 and following numbers

²⁾ Motor rating and noise levels for the pumps with AC motor 50 Hz.

Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

Ordering Information

TRIVAC D 4 B two-stage

TRIVAC D 8 B two-stage

	Part No.	Part No.
TRIVAC B		
with 1-phase motor 230 V, 50 Hz ¹⁾	112 45	112 55
with dual voltage motor ²⁾ 110-115/210-230 V, 50/60 Hz	140 081 ²⁾	140 082 ²⁾
with 3-phase motor 200 – 240/380 – 400 V, 50 Hz / 200 – 240/380 – 480 V, 60 Hz ¹⁾	112 46	112 56
230/400 V, 50 Hz, ATEX Category 3 inside and 3 outside inside: II (i) 3G IIC T4 (50 Hz) outside: II (o) 3G IIC T3 (50 Hz)	140 140	140 150
Mains cord for dual voltage motor ²⁾		
230 V Schuko plug	200 81 091	200 81 091
230 V UK plug	200 81 097	200 81 097
230 V CH plug	200 81 099	200 81 099
230 V NEMA plug (200-240 V)	200 81 141	200 81 141
115 V NEMA plug (100-120 V)	200 81 090	200 81 090
Transition connector (250 V AC, 10 A, L+N+PE) only necessary in Switzerland for 1~ pumps	800 001 274	800 001 274
Accessories		
Dust filter		
Filter pot FH 16	140 116 T	140 116 T
Dust filter insert DF 16-25	140 117 S	140 117 S
Adsorption trap		
Filter pot FH 16	140 116 T	140 116 T
Adsorption filter insert RF 16-25	140 118 A	140 118 A
Accessories for dust filter and adsorption trap		
Active charcoal	178 10	178 10
Zeolite	854 20	854 20
Activated aluminium oxide, 1.3 kg (2 l approx.)	854 10	854 10
TK 4-8 cold trap	188 20	188 20
AF 4-8 exhaust filter	189 06	189 06
AR 4-8 exhaust filter with lubricant return	189 20	189 20
AK 4-8 condensate trap	188 06	188 06
OF 4-25 mechanical oil filter	101 91	101 91
CF 4-25 chemical oil filter	101 96	101 96
Connector for gas ballast inlet M 16 x 1.5 – DN 16 KF	168 40V01	168 40V01
Oil drain tap M 16 x 1.5	190 90	190 90
Spare Parts		
Inner body	E 200 10 989	E 200 10 991
Major maintenance kit (without oil)	EK 110 002 622	EK 110 002 620
Minor maintenance kit (without oil)	EK 110 002 628	EK 110 002 627
Shaft sealing replacement kit	EK 110 002 631	EK 110 002 631
Small parts kit	EK 110 002 634	EK 110 002 634
Seal kit	197 20	197 20

For further accessories see section
“Accessories for TRIVAC E, B and BCS”

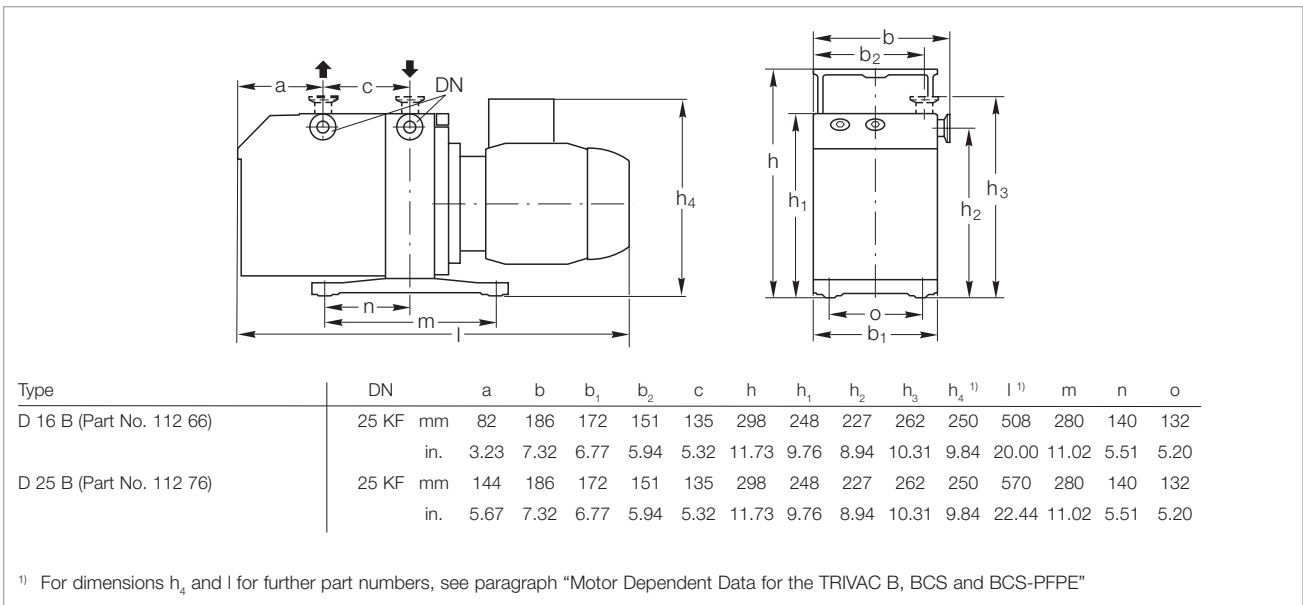
¹⁾ Certification after 94/9/EG (ATEX), Category 3 inside. Inside: II (i) 3G IIC T4 (50 Hz), T3 (60 Hz)

²⁾ Mains cord 20081091 (Schuko) in delivery included. Other mains cords must be ordered additionally

TRIVAC D 16 B and D 25 B



TRIVAC D 16 B (left) and TRIVAC D 25 B (right)



Dimensional drawing for the TRIVAC D 16 and D 25 B

Technical Data

TRIVAC D 16 B
two-stage

TRIVAC D 25 B
two-stage

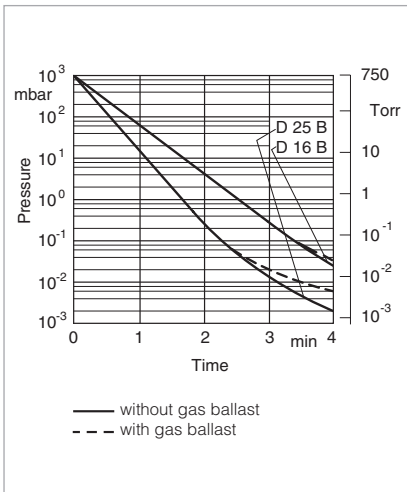
		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	18.9 (11.1)	22.7 (13.4)	29.5 (17.4)	35.4 (20.9)
Pumping speed ¹⁾	m ³ /h (cfm)	16.5 (9.7)	19.8 (11.7)	25.7 (15.1)	30.8 (18.2)
Ultimate partial pressure without gas ballast ¹⁾	mbar (Torr)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)
Ultimate total pressure without gas ballast ¹⁾	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)
Ultimate total pressure with gas ballast ¹⁾	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)
Water vapor tolerance ¹⁾	mbar (Torr)	25.0 (18.8)	25.0 (18.8)	25.0 (18.8)	25.0 (18.8)
Water vapor capacity	g/h (lbs/h)	305 (0.672)	370 (0.816)	480 (1.058)	570 (1.257)
Oil filling, min. / max.	l (qt)	0.5 / 1.0 (0.5 / 1.1)	0.5 / 1.0 (0.5 / 1.1)	0.6 / 1.4 (0.6 / 1.5)	0.6 / 1.4 (0.6 / 1.5)
Noise level ²⁾ to DIN 45 635, without / with gas ballast	dB(A)	54 / 56	54 / 56	54 / 56	54 / 56
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 ²⁾	W (HP)	550 – 750 (0.75 – 1.0)	550 – 750 (0.75 – 1.0)	750 (1)	750 (1)
Nominal speed	rpm	1500	1800	1500	1800
Type of protection	IP	3)	3)	3)	3)
Weight ²⁾	kg (lbs)	28 (61.7)	28 (61.7)	32.3 (71.2)	32.3 (71.2)
Connections, Intake and Exhaust	DN	25 KF	25 KF	25 KF	25 KF

¹⁾ To DIN 28 400 and following numbers

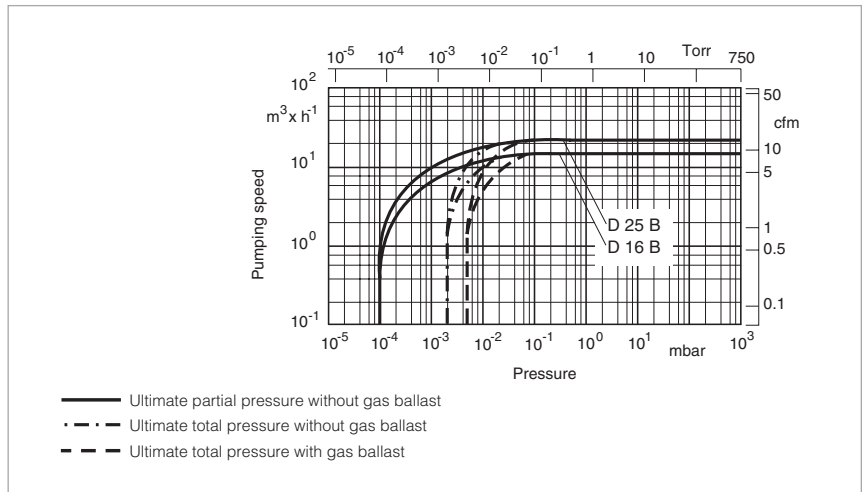
²⁾ Motor rating and noise levels for the pumps with 3-phase motor 50 Hz.

Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"



Pump-down characteristics of a 100 l vessel at 50 Hz



Pumping speed characteristics at 50 Hz (60 Hz curves at the end of the chapter)

Ordering Information

TRIVAC D 16 B two-stage

TRIVAC D 25 B two-stage

	Part No.	Part No.
TRIVAC B		
with 1-phase motor		
230 V, 50 Hz ¹⁾	112 65	112 75
218 – 242 V, 50/60 Hz ¹⁾	113 25 ²⁾	113 35 ²⁾
110/220 V, 50 Hz / 115/208 – 230 V, 60 Hz ³⁾	898 698	-
with 3-phase motor		
200 – 346 V (200 V IE3) /	112 66	112 76
380 – 400 V (380 – 400 V IE3), 50 Hz /	113 33 (LVO 210)	
200 – 240 (208 – 240 V IE3) /		
380 – 480 V (416 – 480 V IE3), 60 Hz ¹⁾		
200 – 240 V (IE3, Japan), 50 Hz /	112 66J (LVO 100)	112 76J (LVO 100)
200 – 380 V (IE3, Japan), 60 Hz	113 33J (LVO 210)	-
230/400 V, 50 Hz, ATEX Category 3 inside and 3 outside inside: II (i) 3G IIC T4 (50 Hz) outside: II (o) 3G IIC T3 (50 Hz)	140 160	140 170
Accessories		
Mains cord for Part No. 898 698		
115 V	E 721 27 874	-
230 V	E 721 27 875	-
Dust filter		
Filter pot FH 16	140 125 T	140 125 T
Dust filter insert DF 16-25	140 117 S	140 117 S
Adsorption trap		
Filter pot FH 25	140 125 T	140 125 T
Adsorption filter insert RF 16-25	140 118 A	140 118 A
Accessories for dust filter and adsorption trap		
Active charcoal	178 10	178 10
Zeolite	854 20	854 20
Activated aluminium oxide, 1.3 kg (2 l approx.)	854 10	854 10
AF 16-25 exhaust filter	189 11	189 11
AR 16-25 exhaust filter with lubricant return	189 21	189 21
AK 16-25 condensate trap	188 11	188 11
OF 4-25 mechanical oil filter	101 91	101 91
CF 4-25 chemical oil filter	101 96	101 96
Connector for gas ballast inlet M 16 x 1.5 – DN 16 KF	168 40V01	168 40V01
Oil drain tap M 16 x 1.5	190 90	190 90
Spare Parts		
Inner body	E 200 10 956	E 200 10 960
Major maintenance kit (without oil)	EK 110 002 618	EK 110 002 616
Minor maintenance kit (without oil)	EK 110 002 626	EK 110 002 625
Shaft sealing ring replacement kit	EK 110 002 630	EK 110 002 630
Small parts kit	EK 110 002 635	EK 110 002 635
Seal kit	197 21	197 21

For further accessories see section “Accessories for TRIVAC E, B and BCS”

¹⁾ Certification after 94/9/EG (ATEX), Category 3 inside. Inside: II (i) 3G IIC T4 (50 Hz), T3 (60 Hz)

²⁾ With cable EURO Schuko. Other cables for wide range motor upon request

³⁾ Mains cord for dual voltage motor see paragraph “Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE”; TRIVAC D 16 B / D 25 B

Only available for purchase in North and South America

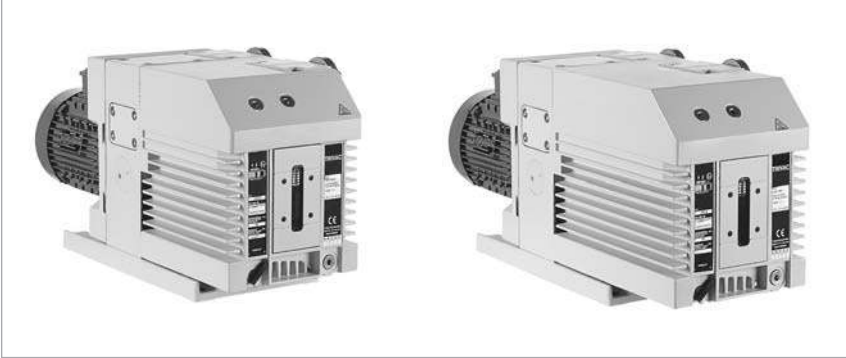
Ordering Information

TRIVAC D 16 B two-stage

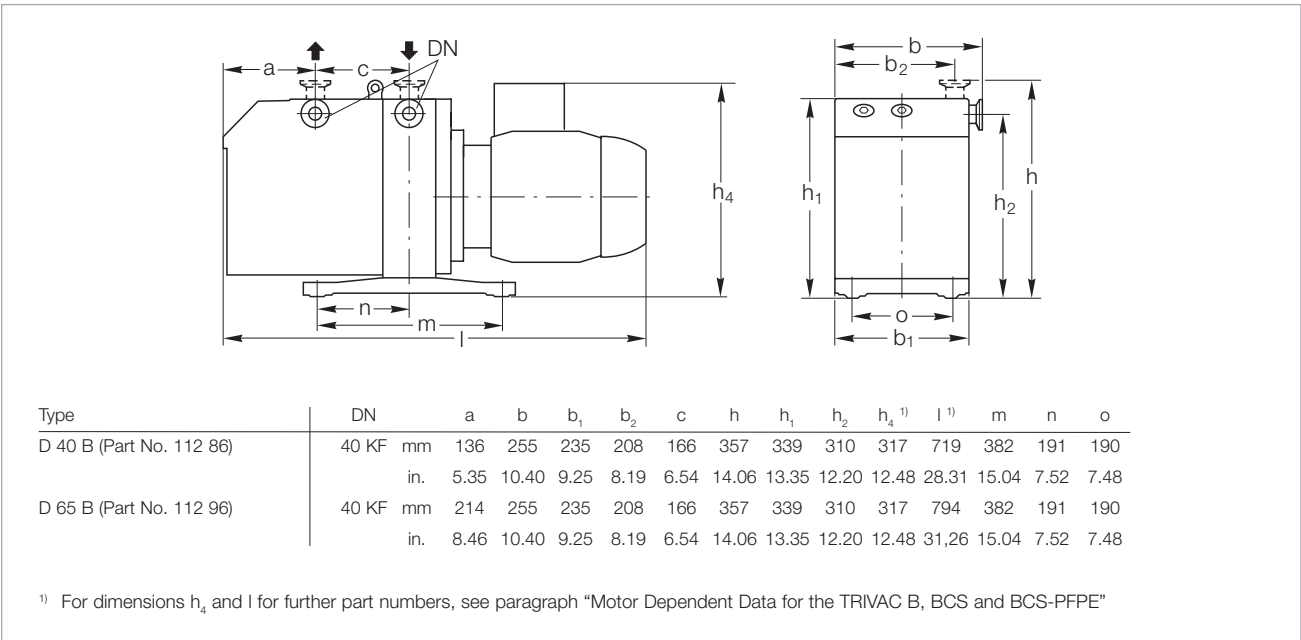
TRIVAC D 25 B two-stage

	Part No.	Part No.
TRIVAC B		
with 1-phase motor		
110 V, 50 Hz, NEMA plug /		
115 V, 60 Hz, NEMA plug	912 65-1	-
208 – 230 V, 60/50 Hz, NEMA plug	912 65-2	-
208 – 230 V, 60/50 Hz, NEMA plug	-	912 75-2

TRIVAC D 40 B and D 65 B



TRIVAC D 40 B (left) and TRIVAC D 65 B (right)



Dimensional drawing for the TRIVAC D 40 and D 65 B

Technical Data

TRIVAC D 40 B

two-stage

TRIVAC D 65 B

two-stage

50 Hz

60 Hz

50 Hz

60 Hz

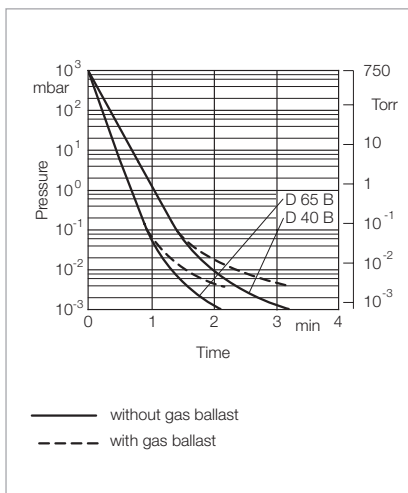
		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	46 (27)	55 (32.5)	75 (44)	90 (53)
Pumping speed ¹⁾	m ³ /h (cfm)	40 (24)	48 (28)	65 (38)	78 (46)
Ultimate partial pressure without gas ballast ¹⁾	mbar (Torr)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)
Ultimate total pressure without gas ballast ¹⁾	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)
Ultimate total pressure with gas ballast ¹⁾	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)
Water vapor tolerance ¹⁾	mbar (Torr)	40 (30)	40 (30)	40 (30)	40 (30)
Water vapor capacity	g/h (lbs/h)	1185 (2.612)	1420 (3.131)	1925 (4.244)	2310 (5.093)
Oil filling, min. / max.	l (qt)	1.7 / 2.6 (1.8 / 2.7)	1.7 / 2.6 (1.8 / 2.7)	2.0 / 3.3 (2.1 / 3.5)	2.0 / 3.3 (2.1 / 3.5)
Noise level ²⁾ to DIN 45 635, without / with gas ballast	dB(A)	57 / 59	57 / 59	57 / 59	57 / 59
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 50/60 Hz ²⁾	W (HP)	2200 (3.0)	2200 (3.0)	2200 (3.0)	2200 (3.0)
Nominal speed ²⁾	rpm	1420	1710	1420	1710
Type of protection	IP	3)	3)	3)	3)
Weight ²⁾	kg (lbs)	75.3 (166)	75.3 (166)	84.5 (186.3)	84.5 (186.3)
Connections, Intake and Exhaust	DN	40 KF	40 KF	40 KF	40 KF

¹⁾ To DIN 28 400 and following numbers

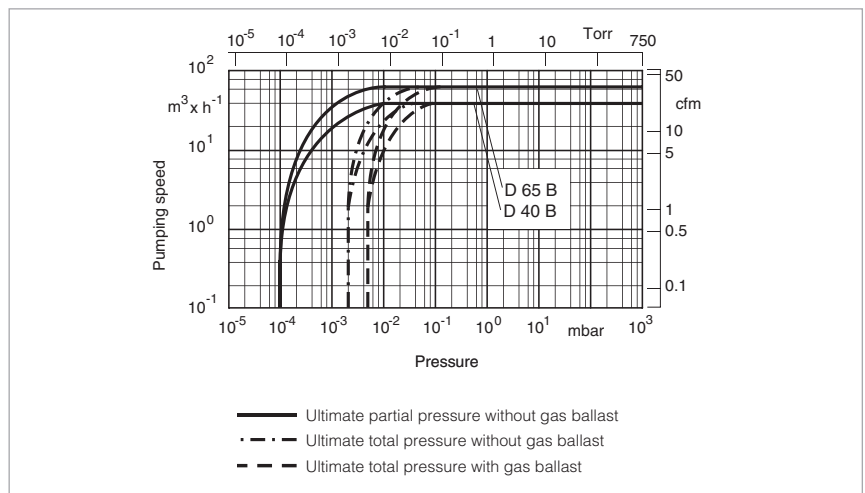
²⁾ Motor rating and noise levels for the pumps with 3-phase motor 50 Hz.

Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"



Pump-down characteristics of a 100 l vessel at 50 Hz



Pumping speed characteristics at 50 Hz (60 Hz curves at the end of the chapter)

Ordering Information

TRIVAC D 40 B two-stage

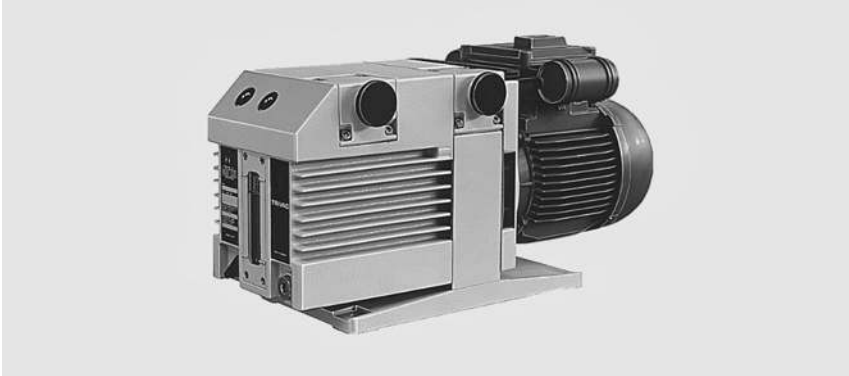
TRIVAC D 65 B two-stage

	Part No.	Part No.
TRIVAC B		
with 3-phase motor		
200 – 240 V (200 V IE3) / 380 – 400 V (380 – 400 V IE3), 50 Hz / 200 – 240 V (208 – 240 V IE3) / 380 – 480 V (416 – 480 V IE3), 60 Hz ¹⁾	112 86	112 96
200 – 346 V (IE3 Japan), 50 Hz 220 – 380 V (IE3 Japan), 60 Hz	112 86J	112 96J
219 – 242/380 – 420 V, 50 Hz ATEX Category 3 inside and 3 outside inside: II (i) 3G IIC T4 (50 Hz) outside: II (o) 3G IIC T3 (50 Hz)	140 180	140 190
Accessories		
Roots pump adaptor	168 30	168 30
AS 30-60 dust separator	186 16	186 16
MF 30-60 molecular filter	186 17	186 17
Dust filter		
Filter pot FH 40-65	140 140 T	140 140 T
Dust filter insert DF 40-65	140 141 S	140 141 S
Adsorption trap		
Filter pot FH 40-65	140 140 T	140 140 T
Adsorption filter insert RF 40-65	140 142 A	140 142 A
Accessories for dust filter and adsorption trap		
Active charcoal	178 10	178 10
Zeolite	854 20	854 20
Activated aluminium oxide, 1.3 kg (2 l approx.)	854 10	854 10
AF 40-65 exhaust filter	189 16	189 16
AR 40-65 exhaust filter with lubricant return	189 22	189 22
AK 40-65 condensate trap	188 16	188 16
OF 40-65 mechanical oil filter	101 92	101 92
CF 40-65 chemical oil filter	101 97	101 97
Connector for gas ballast inlet M 16 x 1.5 – DN 16 KF	168 40V01	168 40V01
Oil drain tap M 16 x 1.5	190 90	190 90
Spare Parts		
Inner body	E 200 10 933	E 200 10 944
Major maintenance kit (without oil)	EK 110 002 613	EK 110 002 612
Minor maintenance kit (without oil)	EK 110 002 624	EK 110 002 624
Shaft sealing ring replacement kit	EK 110 002 629	EK 110 002 629
Small parts kit	EK 110 002 636	EK 110 002 636
Seal kit	197 22	197 22

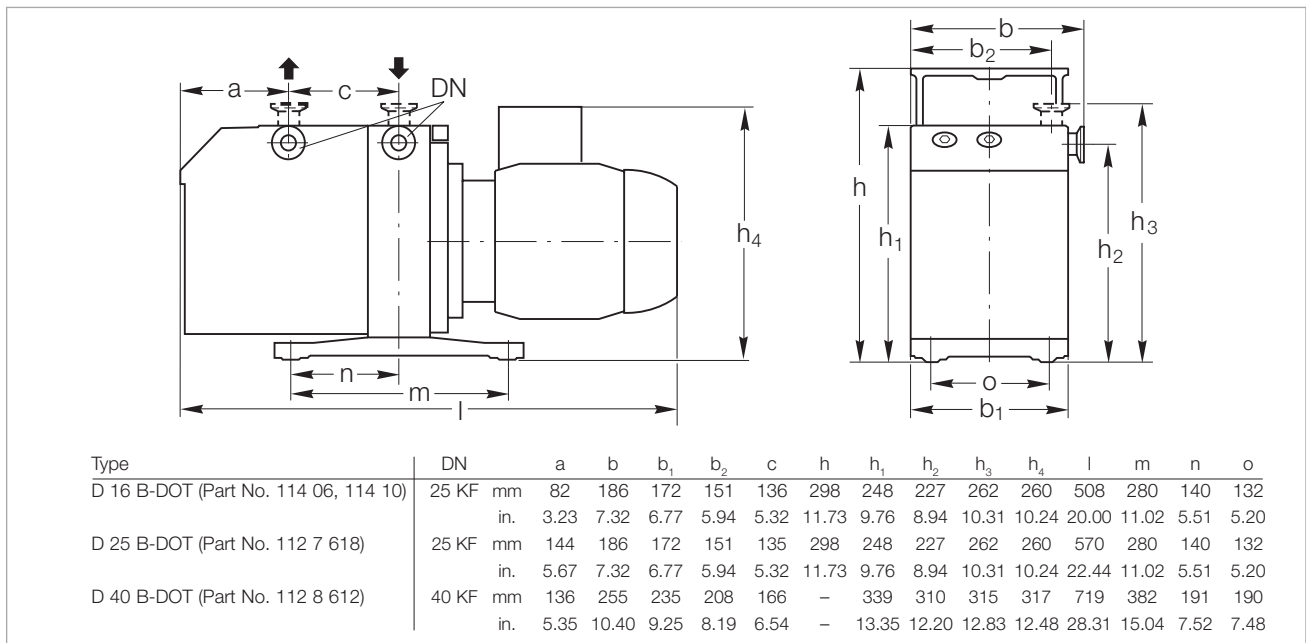
For further accessories see section “Accessories for TRIVAC E, B and BCS”

¹⁾ Certification after 94/9/EG (ATEX), Category 3 inside. Inside: II (i) 3G IIC T4 (50 Hz), T3 (60 Hz)

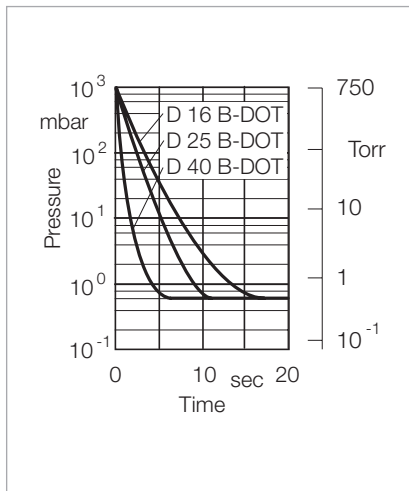
TRIVAC D 16 B-DOT to D 40 B-DOT



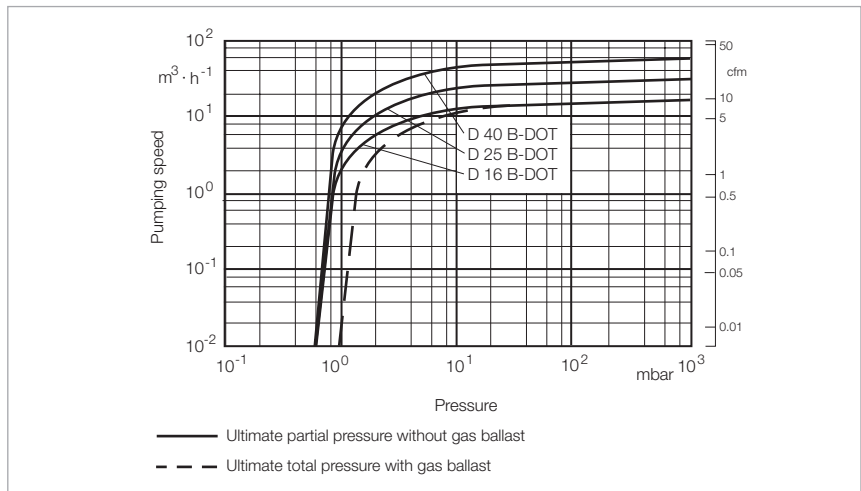
TRIVAC D 16 B-DOT



Dimensional drawing for the TRIVAC D B-DOT pumps



Pump-down characteristics of a 10 l vessel at 50 Hz



Pumping speed characteristics at 50 Hz (60 Hz curves at the end of the chapter)

Technical Data

TRIVAC D 16 B-DOT two-stage

		50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	18.9 (11.1)	22.7 (13.4)
Pumping speed ¹⁾	m ³ /h (cfm)	16.5 (9.7)	19.8 (11.7)
Ultimate total pressure without gas ballast ¹⁾	mbar (Torr)	< 6 x 10 ⁻¹ (< 4.5 x 10 ⁻¹)	< 6 x 10 ⁻¹ (< 4.5 x 10 ⁻¹)
Ultimate total pressure with gas ballast ¹⁾	mbar (Torr)	< 9 x 10 ⁻¹ (< 6.75 x 10 ⁻¹)	< 9 x 10 ⁻¹ (< 6.75 x 10 ⁻¹)
Water vapor tolerance ¹⁾	mbar (Torr)	25 (18.75)	25 (18.75)
Water vapor capacity	g/h (lbs/h)	305 (0.672)	370 (0.815)
Brake fluid filling, min. / max.	l (qt)	0.45 / 1.0 (0.5 / 1.1)	0.45 / 1.0 (0.5 / 1.1)
Noise level to DIN 45 635, without / with gas ballast	dB(A)	54 / 56	54 / 56
Admissible ambient temperature	°C (°F)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)
Motor rating	W (HP)	550 (0.75)	550 (0.75)
Nominal speed	rpm	1500	1800
Type of protection	IP	2)	2)
Weight	kg (lbs)	28.2 (62.2)	28.2 (62.2)
Connections, Intake and Exhaust	DN	25 KF	25 KF

¹⁾ To DIN 28 400 and following numbers

²⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

Ordering Information

TRIVAC D 16 B-DOT two-stage

	Part No.
TRIVAC B-DOT with 3-phase motor 200 – 240 V (200 V IE3) / 380 – 400 V (380 – 400 V IE3), 50 Hz / 200 – 240 (208 – 240 V IE3) / 380 – 480 V (416 – 480 V IE3), 60 Hz	114 06 114 10 (with limit switch system LSS 16-25)
AF 16-25 DOT exhaust filter	124 16
AK DOT condensate trap	110 78
Seal kit DOT	200 39 059

Technical Data

TRIVAC D 25 B-DOT two-stage

		50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	29.5 (17.4)	35.4 (20.9)
Pumping speed ¹⁾	m ³ /h (cfm)	25.7 (17.4)	30.8 (18.2)
Ultimate total pressure without gas ballast ¹⁾	mbar (Torr)	< 6 x 10 ⁻¹ (< 4.5 x 10 ⁻¹)	< 6 x 10 ⁻¹ (< 4.5 x 10 ⁻¹)
Ultimate total pressure with gas ballast ¹⁾	mbar (Torr)	< 9 x 10 ⁻¹ (< 6.75 x 10 ⁻¹)	< 9 x 10 ⁻¹ (< 6.75 x 10 ⁻¹)
Water vapor tolerance ¹⁾	mbar (Torr)	25 (18.75)	25 (18.75)
Water vapor capacity	g/h (lbs/h)	480 (1.058)	570 (1.257)
Brake fluid filling, min. / max.	l (qt)	0.6 / 1.4 (6.3 / 1.5)	0.6 / 1.4 (6.3 / 1.5)
Noise level to DIN 45 635, without / with gas ballast	dB(A)	54 / 56	54 / 56
Admissible ambient temperature	°C (°F)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)
Motor rating	W (HP)	550 (0.75)	550 (0.75)
Nominal speed	rpm	1500	1800
Type of protection	IP	²⁾	²⁾
Weight	kg (lbs)	32.5 (71.7)	32.5 (71.7)
Connections, Intake and Exhaust	DN	25 KF	25 KF

¹⁾ To DIN 28 400 and following numbers

²⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

Ordering Information

TRIVAC D 25 B-DOT two-stage

	Part No.
TRIVAC B-DOT with 3-phase motor 200 – 240 V (200 V IE3) / 380 – 400 V (380 – 400 V IE3), 50 Hz / 200 – 240 (208 – 240 V IE3) / 380 – 480 V (416 – 480 IE3), 60 Hz	112 76 18
200 – 346 V (IE3 Japan), 50 Hz / 200 – 380 V (IE3 Japan), 60 Hz	112 76 18J
AF 16-25 DOT exhaust filter	124 16
AK DOT condensate trap	110 78
Seal kit DOT	200 39 059

Technical Data

TRIVAC D 40 B-DOT two-stage

		50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	46.0 (27.0)	55.0 (32.5)
Pumping speed ¹⁾	m ³ /h (cfm)	40.0 (24.0)	48.0 (28.0)
Ultimate total pressure without gas ballast ¹⁾	mbar (Torr)	< 6 x 10 ⁻¹ (< 4.5 x 10 ⁻¹)	< 6 x 10 ⁻¹ (< 4.5 x 10 ⁻¹)
Ultimate total pressure with gas ballast ¹⁾	mbar (Torr)	< 9 x 10 ⁻¹ (< 6.75 x 10 ⁻¹)	< 9 x 10 ⁻¹ (< 6.75 x 10 ⁻¹)
Water vapor tolerance ¹⁾	mbar (Torr)	40 (30)	40 (30)
Water vapor capacity	g/h (lbs/h)	1185 (2.612)	1420 (3.130)
Brake fluid filling, min. / max.	l (qt)	1.7 / 2.6 (1.8 / 2.7)	1.7 / 2.6 (1.8 / 2.7)
Noise level to DIN 45 635, without / with gas ballast	dB(A)	57 / 59	57 / 59
Admissible ambient temperature	°C (°F)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)
Motor rating	W (HP)	2200 (3.0)	2200 (3.0)
Nominal speed	rpm	1500	1800
Type of protection	IP	²⁾	²⁾
Weight	kg (lbs)	75.8 (167)	75.8 (167)
Connections, Intake and Exhaust	DN	40 KF	40 KF

¹⁾ To DIN 28 400 and following numbers

²⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

Ordering Information

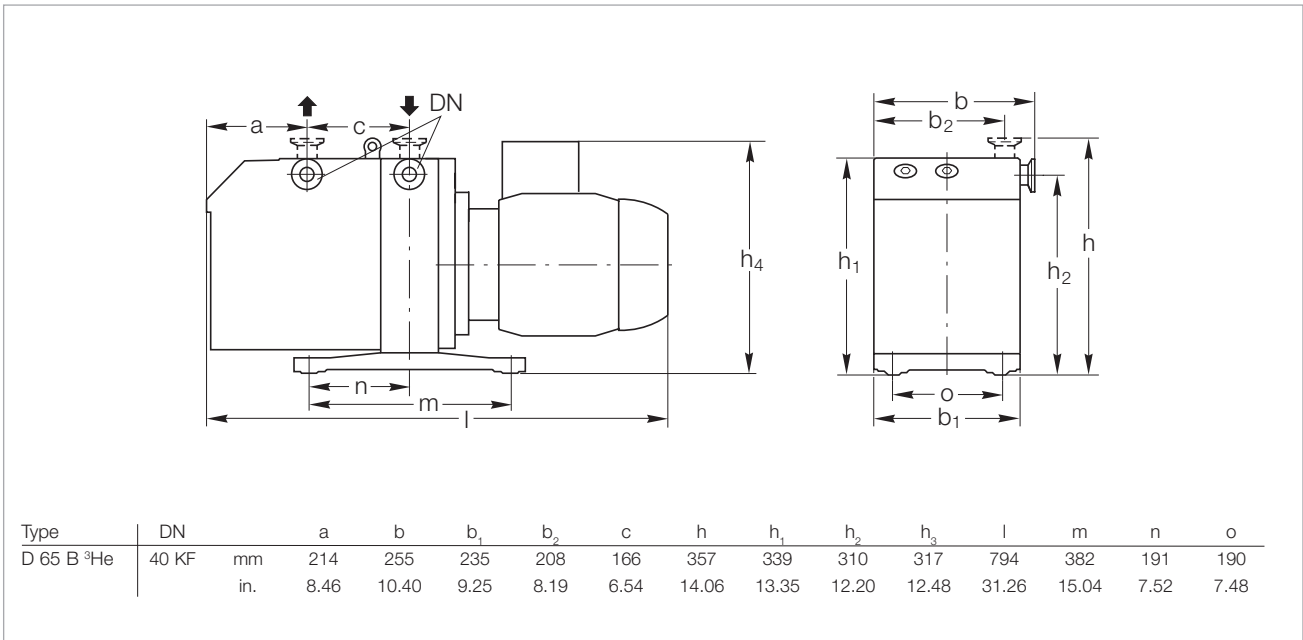
TRIVAC D 40 B-DOT two-stage

	Part No.
TRIVAC B-DOT with 3-phase motor 200 – 240 V (200 V IE3) / 380 – 400 V (380 – 400 V IE3), 50 Hz / 200 – 240 (208 – 240 V IE3) / 380 – 480 V (416 – 480 V IE3), 60 Hz	112 86 12
AF 40-65 DOT exhaust filter	101 15
AK DOT condensate trap	upon request
Seal kit DOT	200 39 707

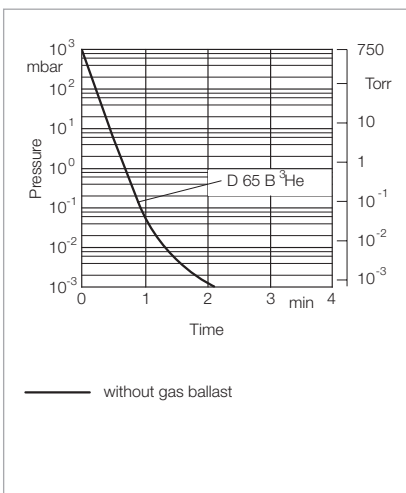
TRIVAC D 65 B ³He



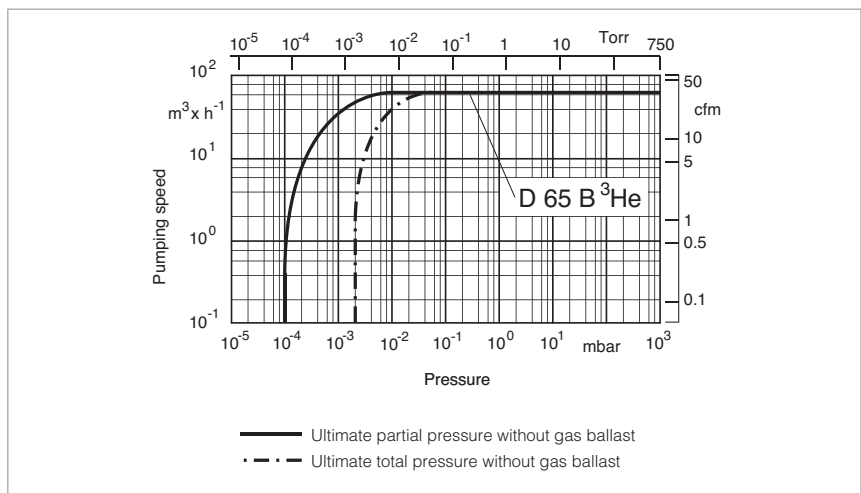
TRIVAC D 65 B ³He



Dimensional drawing for the TRIVAC D 65 B ³He



Pump-down characteristics of a 100 l vessel at 50 Hz



Pumping speed characteristics at 50 Hz (60 Hz curves at the end of the chapter)

Technical Data

TRIVAC D 65 B ³He

		50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	75 (44)	90 (53)
Pumping speed ¹⁾	m ³ /h (cfm)	65 (38)	78 (46)
Ultimate partial pressure without gas ballast ¹⁾	mbar (Torr)	10 ⁻⁴ (0.75 x 10 ⁻⁴)	10 ⁻⁴ (0.75 x 10 ⁻⁴)
Ultimate total pressure without gas ballast ¹⁾	mbar (Torr)	< 2.0 x 10 ⁻³ (< 1.5 x 10 ⁻³)	< 2.0 x 10 ⁻³ (< 1.5 x 10 ⁻³)
Oil filling with LEYBONOL LVO 100, min. / max.	l (qt)	2.0 / 3.3 (2.1 / 3.5)	2.0 / 3.3 (2.1 / 3.5)
Leak rate	mbar x l x sec ⁻¹	< 1.0 x 10 ⁻⁷	< 1.0 x 10 ⁻⁷
Noise level to DIN 45 635, without / with gas ballast	dB(A)	57 / 59	57 / 59
Admissible ambient temperature	°C (°F)	+12 to +40 (+54 to +104)	+12 to +40 (+54 to +104)
Motor rating ²⁾	W (HP)	2200 (3)	2200 (3)
Nominal speed ²⁾	rpm	1500	1800
Type of protection	IP	³⁾	³⁾
Weight	kg (lbs)	84.5 (186.3)	84.5 (186.3)
Connections, Intake and Exhaust	DN	40 KF	40 KF

Ordering Information

TRIVAC D 65 B ³He

	Part No.
TRIVAC B ³ He with 3-phase motor 200 – 240 V (200 V IE3) / 380 – 400 V (380 – 400 V IE3), 50 Hz / 200 – 240 (208 – 240 V IE3) / 380 – 480 V (416 – 480 V IE3), 60 Hz	112 96 46

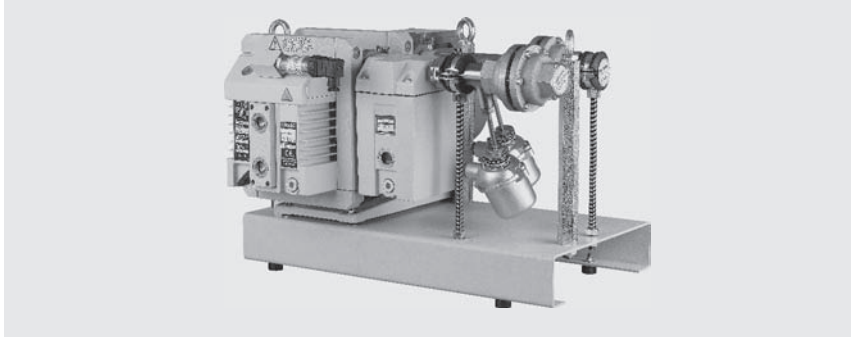
¹⁾ To DIN 28 400 and following numbers

²⁾ Motor rating and noise levels for the pumps with AC motor 50 Hz.

Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

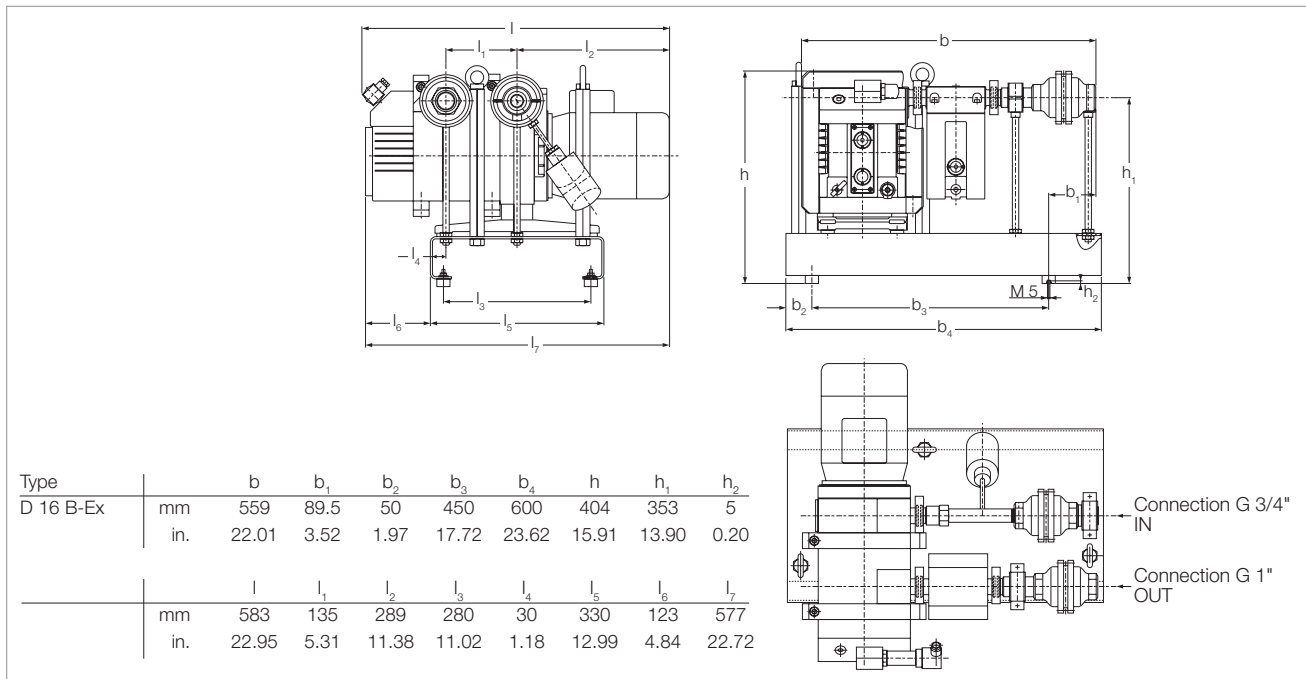
³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

TRIVAC D 16 B-Ex (Explosion Protected and Pressure Burst Resistant)

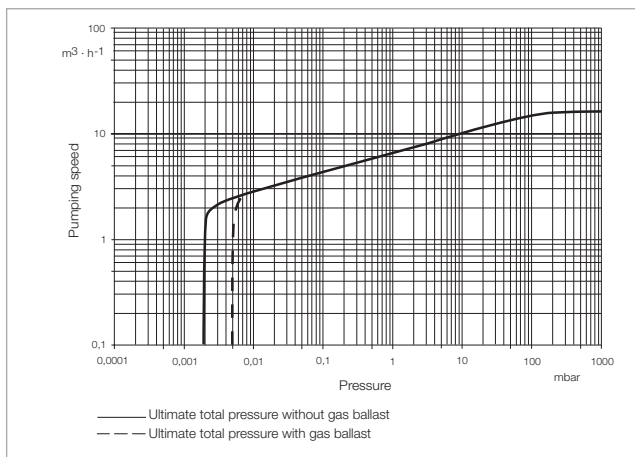


ATEX
Category 1 inside and 2 outside

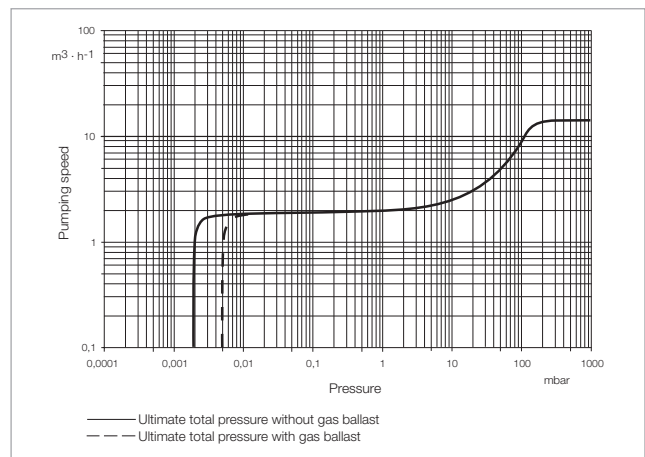
TRIVAC D 16 B-Ex



Dimensional drawing for the TRIVAC D 16 B-Ex (explosion protected and pressure burst resistant)



Pumping speed characteristics of TRIVAC D 16 B-Ex [IIB3 T4]
 (Part No. 140 091)



Pumping speed characteristics of TRIVAC D 16 B-Ex [IIC T4]
 (Part No. 140 092)

Technical Data

TRIVAC D 16 B-Ex



(Explosion Protected and Pressure Burst Resistant) Two-Stage

Nominal pumping speed ¹⁾	m ³ /h (cfm)	18.9 (11.1)
Pumping speed (for Part No. 140 091 / 140 092) ¹⁾	m ³ /h (cfm)	16 / 15 (9.4/8.8)
Ultimate partial pressure without gas ballast ¹⁾	mbar (Torr)	1 x 10 ⁻⁴ (< 0.75 x 10 ⁻³)
Ultimate total pressure with gas ballast ¹⁾	mbar (Torr)	< 5 x 10 ⁻³ (< 3.8 x 10 ⁻³)
Water vapor tolerance ¹⁾	mbar (Torr)	25 (18.75)
Water vapor capacity	g/h (lbs/h)	305 (0.672)
Oil filling, min. / max.	l (qt)	0.55 / 1.3 (0.58 / 1.4)
Motor		3~, 230 V / 400 V, 50 Hz, Ex e II T4
Type of protection	IP	54
Maximum gas inlet temperature	°C (°F)	60 (140)
Highest permissible pressure in the oil box	mbar (Torr)	1500 (1125)
Ambient temperature (t _a)	°C (°F)	+12 to +40 (+46 to +104)
Maximum surface temperature	°C (°F)	135 (275)
Max. Inlet pressure	mbar (Torr)	Atmospheric pressure
Weight (complete system)	kg (lbs)	72 (159)
Materials (materials in contact with the gas)		Steel, hardened steel, spring steel, stainless steel, zinc, aluminium and aluminium alloys, grey cast iron 25, FKM, felt, glass, silicone, polyamide
Connections		
Intake side	Inside thread	G 3/4"
Pressure side	Inside thread	G 1"

Ordering Information

TRIVAC D 16 B-Ex

(Explosion Protected and Pressure Burst Resistant) Two-Stage

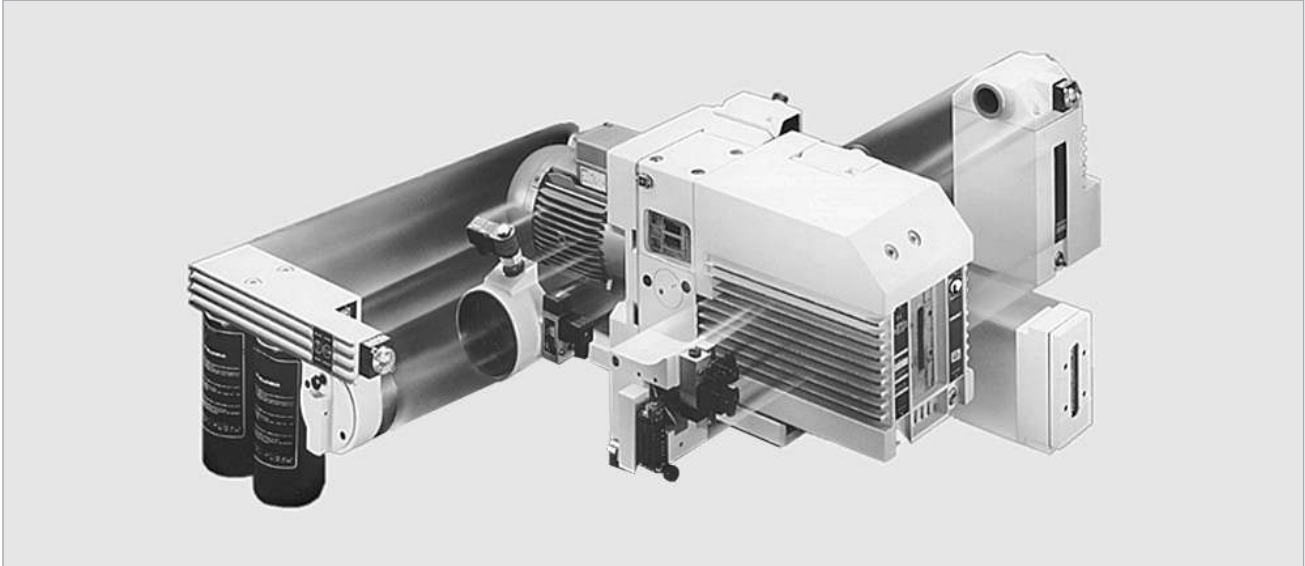
	Part No.
TRIVAC D 16 B-Ex IIB3 T4 in accordance with 94/9/EC [ II inside: 1G IIB3 T4 outside: 2G IIB T4 (12 °C < t _a < 40 °C) X EC Type Examination Certificate: IBExU03ATEX1017 X]	140 091
TRIVAC D 16 B-Ex IIC T4 ²⁾ in accordance with 94/9/EC [ II inside: 1G IIC (no C ₂ H ₂ , CS ₂) T4 outside: 2G IIC T4 (12 °C < t _a < 40 °C) X EC Type Examination Certificate: IBExU03ATEX1016 X]	140 092 ²⁾

¹⁾ To DIN 28 400 and following numbers

²⁾ with the exception of acetylene and carbon bisulphide

For all enquiries and orders relating to category 1 and 2 ATEX products please exclusively use our ATEX questionnaire. You can find this questionnaire at the end of the full-line catalog together with the fax forms or on the Internet under "www.leybold.com" under Download Documents in the area Documentation.

TRIVAC BCS, Two-Stage Rotary Vane Vacuum Pumps



TRIVAC System

The TRIVAC BCS pumps are oil sealed vacuum pumps operating according to the rotary vane principle. Oil which is injected into the pump chamber is used for sealing, lubrication and cooling purposes.

The pump body is assembled from individual parts without sealing components. The parts are pinned in order to ensure easy disassembly and reassembly of the parts.

The motor is connected to the pumping section via an elastic coupling.

In addition, the TRIVAC BCS is ready for system integration (adaptable to different applications).

Advantages to the User

- Compact design
- Low noise operation with hardly any vibrations
- Built-in oil pump
- Continuous operation even at 1000 mbar (750 Torr)
- Pressure-lubricated sliding bearings

- Anti-suckback valve controlled via the oil pressure, no backstreaming of oil, independent of the operating mode, with or without gas ballast
- Low backstreaming of oil within the pump
- High pumping speed down to ultimate pressure
- Either vertical or horizontal intake and exhaust ports
- All controls as well as the oil sight glass are located on the face side
- Low power consumption
- Produces very little heat
- Exchangeable inner section
- Main flow oil filters may be fitted
- Very long service life
- Modular system
- Service-friendly
- Built-in temperature switch for temperature monitoring
- Corrosion protected – the use of yellow metals has been avoided; only grey cast iron, surface treated aluminium, steel and stainless steel is used
- Double shaft seal

Typical Applications

- In all areas of vacuum engineering
- Pumping of corrosive or aggressive media
- Production of semiconductors and in the area of chemistry
- Research and production
- Generation of rough and medium vacuum
- Backing pump in pump sets, i.e. in connection with Roots, diffusion, turbo or cryopumps

Supplied Equipment

- Small flanges
- Centering, sealing and clamping rings
- The intake port includes a dirt trap

BCS pumps are supplied with a filling of standard oil LEYBONOL LVO 100.

All pumps are subjected to a vacuum test before delivery!

TRIVAC SYSTEM

The TRIVAC BCS and its accessories

- CFS, chemical filter with safety isolation valve
- ARS, exhaust filter with lubricant return
- IGS, inert gas system
- LSS, limit switch system

make up the TRIVAC SYSTEM.

TRIVAC BCS-PFPE

In many applications the use of synthetic lubricants like perfluoropolyether (PFPE) offers superior characteristics compared to mineral oils.

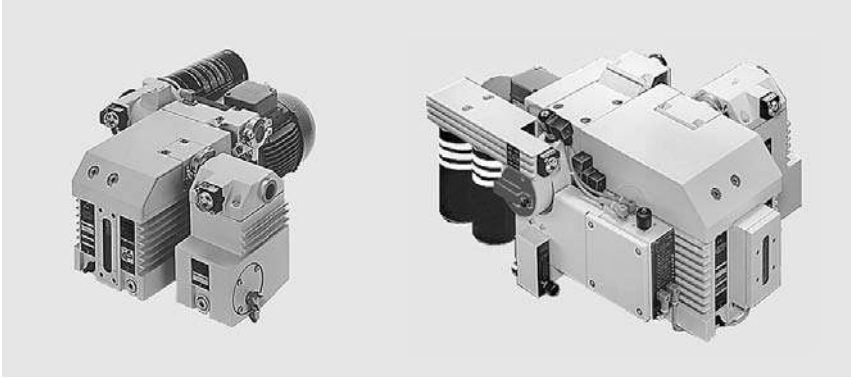
Advantages of perfluoropolyether (PFPE) LEYBONOL LVO 400:

- Practically inert against all chemical and oxidizing influences
- No polymerization under the influence of high energy radiation
- In part significantly increased oil change intervals
- Thermally highly stable. Thermal decomposition will only occur at temperatures over 290 °C (554 °F)

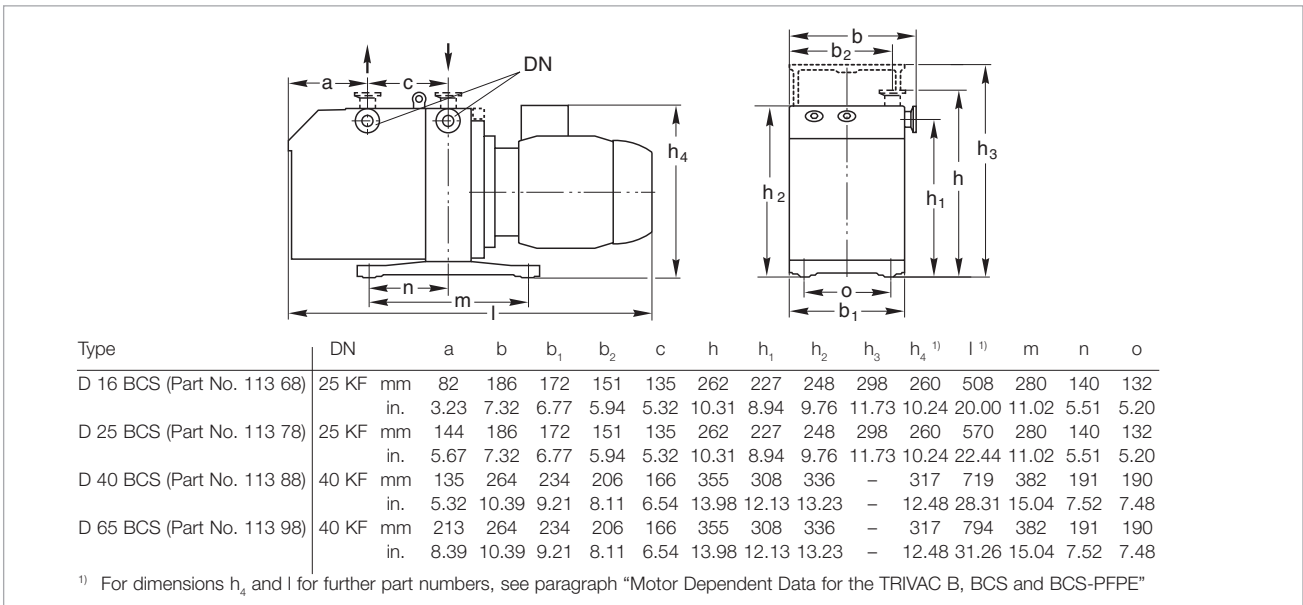
BCS-PFPE pumps have been especially prepared for operation with LEYBONOL LVO 400 and are supplied **without** the oil filling.

We recommend using our operating fluid LEYBONOL LVO 400 and always to install a chemical oil filter CF or CFS.

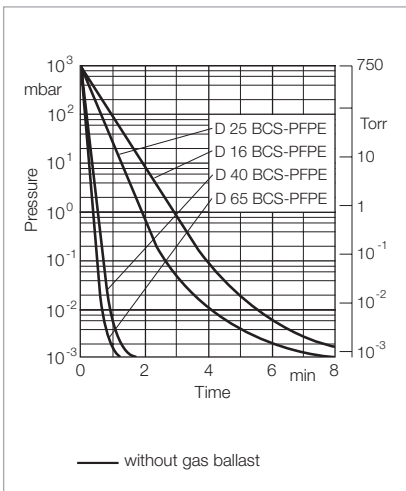
TRIVAC D 16 BCS to D 65 BCS



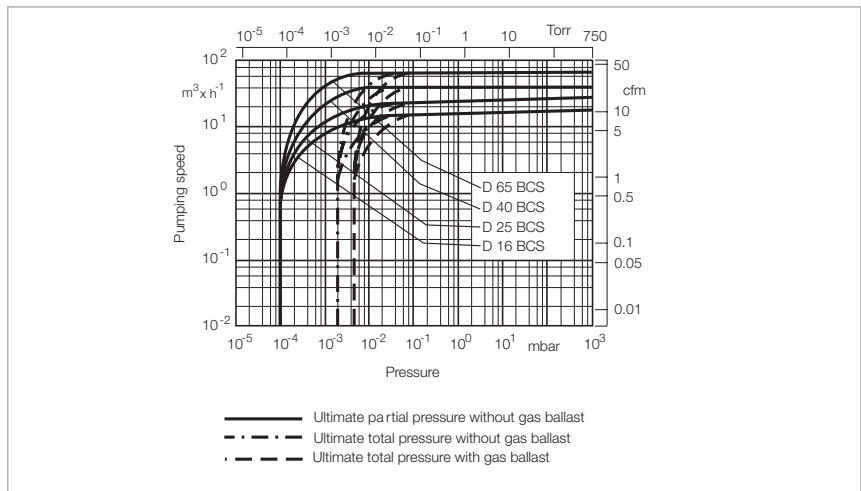
TRIVAC D 25 BCS with ARS and CFS (left)
and TRIVAC D 65 BCS with CFS, ARS, IGS, LSS, EIS – TRIVAC SYSTEM (right)



Dimensional drawing for the TRIVAC D 16 to D 65 BCS



Pump-down characteristics of a 100 l vessel at 50 Hz



Pumping speed characteristics at 50 Hz (60 Hz curves at the end of the chapter)

Technical Data

TRIVAC D 16 BCS two-stage

D 25 BCS 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)	29.5 (17.4)	35.4 (20.9)
Pumping speed ¹⁾	m ³ /h (cfm)	16.5 (9.7)	19.8 (11.7)	25.7 (15.1)	30.8 (18.2)
Ultimate partial pressure without gas ballast ¹⁾	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)
Ultimate total pressure without gas ballast ¹⁾	mbar (Torr)	< 2.5 x 10 ⁻³ (< 1.9 x 10 ⁻³)	< 2.5 x 10 ⁻³ (< 1.9 x 10 ⁻³)	< 2.5 x 10 ⁻³ (< 1.9 x 10 ⁻³)	< 2.5 x 10 ⁻³ (< 1.9 x 10 ⁻³)
Ultimate total pressure with gas ballast ¹⁾	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)
Water vapor tolerance ¹⁾	mbar (Torr)	25 (18.8)	25 (18.8)	25 (18.8)	25 (18.8)
Water vapor capacity	g/h (lbs/h)	305 (0.672)	370 (0.816)	480 (1.058)	570 (1.257)
Oil filling, min. / max.	l (qt)	0.45 / 1.0 (0.5/1.1)	0.45 / 1.0 (0.5/1.1)	0.6 / 1.4 (0.6/1.5)	0.6 / 1.4 (0.6/1.5)
Noise level ²⁾ to DIN 45 635, without / with gas ballast	dB(A)	54 / 56	54 / 56	54 / 56	54 / 56
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 ²⁾	W (HP)	750 (1)	750 (1)	750 (1)	750 (1)
Nominal speed ²⁾	rpm	1500	1800	1500	1800
Type of protection	IP	3)	3)	3)	3)
Weight ²⁾	kg (lbs)	28 (61.7)	28 (61.7)	32.9 (71.2)	32.9 (71.2)
Connections, Intake and Exhaust	DN	25 KF	25 KF	25 KF	25 KF

¹⁾ To DIN 28 400 and following numbers

²⁾ Motor rating and noise levels for the pumps with 3-phase motor 50 Hz.

Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

Technical Data

TRIVAC

D 40 BCS two-stage

D 65 BCS two-stage

		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	46 (27)	55 (32.5)	75 (44)	90 (53)
Pumping speed ¹⁾	m ³ /h (cfm)	40 (24)	48 (28)	65 (38)	78 (46)
Ultimate partial pressure without gas ballast ¹⁾	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)
Ultimate total pressure without gas ballast ¹⁾	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)
Ultimate total pressure with gas ballast ¹⁾	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)
Water vapor tolerance ¹⁾	mbar (Torr)	40 (30)	40 (30)	40 (30)	40 (30)
Water vapor capacity	g/h (lbs/h)	1185 (2.612)	1420 (3.131)	1925 (4.244)	2310 (5.093)
Oil filling, min. / max.	l (qt)	1.7 / 2.6 (1.8/2.7)	1.7 / 2.6 (1.8/2.7)	2.0 / 3.3 (2.1/3.5)	2.0 / 3.3 (2.1/3.5)
Noise level ²⁾ to DIN 45 635, without / with gas ballast	dB(A)	57 / 59	57 / 59	57 / 59	57 / 59
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 ²⁾	W (HP)	2200 (3)	2200 (3)	2200 (3)	2200 (3)
Nominal speed ²⁾	rpm	1500	1800	1500	1800
Type of protection	IP	³⁾	³⁾	³⁾	³⁾
Weight ²⁾	kg (lbs)	75.3 (166)	75.3 (166)	84.5 (186.3)	84.5 (186.3)
Connections, Intake and Exhaust	DN	40 KF	40 KF	40 KF	40 KF

¹⁾ To DIN 28 400 and following numbers

²⁾ Motor rating and noise levels for the pumps with 3-phase motor 50 Hz.

Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

Ordering Information

**TRIVAC
D 16 BCS
two-stage**

**TRIVAC
D 25 BCS
two-stage**

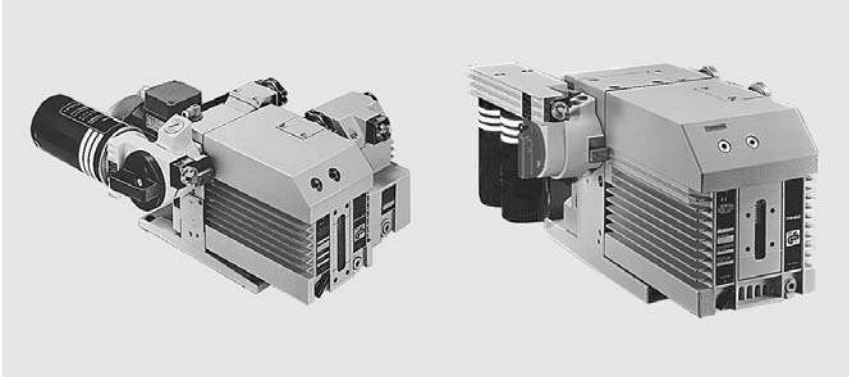
**TRIVAC
D 40 BCS
two-stage**

**TRIVAC
D 65 BCS
two-stage**

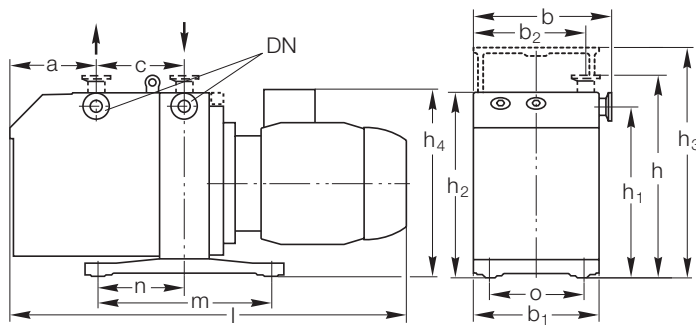
	Part No.	Part No.	Part No.	Part No.
TRIVAC B with 3-phase motor 200 – 240 V (200 V IE3) / 380 – 400 V (380 – 400 V IE 3), 50 Hz / 200 – 240 (208 – 240 V IE3) / 380 – 480 V (416 – 480 V IE3), 60 Hz	113 68	113 78	113 88	113 98
200 – 346 V (IE3 Japan), 50 Hz / 220 – 380 V (IE3 Japan), 60 Hz	-	-	-	113 98J
Accessories				
Roots pump adaptor	-	-	168 30	168 30
Exhaust filter with lubricant return ARS 16-25	189 56	189 56	-	-
ARS 40-65	-	-	189 57	189 57
Condensate separator AK 16-25	188 11	188 11	-	-
AK 40-65	-	-	188 16	188 16
Chemical filter with safety blocking valve CFS 16-25	101 76	101 76	-	-
CFS 40-65	-	-	101 77	101 77
Inert gas system IGS 16-25	161 76	161 76	-	-
IGS 40-65	-	-	161 68V	161 68V
Limit switch system LSS 16-25	161 06	161 06	-	-
LSS 40-65	-	-	161 07	161 07
Spare Parts				
Inner body	200 39 762	200 39 764	200 39 758	200 39 760
Major maintenance kit for LVO 100 (without oil)	EK110002646	EK110002647	EK110002641	EK110002642
Minor maintenance kit for LVO 100 (without oil)	EK110002649	EK110002648	EK110002624	EK110002624
Shaft sealing replacement kit	EK110002650	EK110002650	EK110002643	EK110002643
Small parts kit	-	-	EK110002651	EK110002651
Seal kit	197 31	197 31	197 32	197 32

For further accessories see section “Accessories for TRIVAC E, B and BCS”

TRIVAC D 16 BCS-PFPE to D 65 BCS-PFPE



TRIVAC D 25 BCS-PFPE with CFS 16-25 and ARS 16-25 (left) and TRIVAC D 65 BCS-PFPE with CFS 40-65 (right)



Type	DN	a	b	b ₁	b ₂	c	h	h ₁	h ₂	h ₃	h ₄	l	m	n	o	
D 16 BCS-PFPE (Part No. 113 69)	25 KF	mm	82	190	175	150	135	263	226	250	298	260	508	280	140	132
		in.	3.23	7.48	6.89	5.91	5.32	10.35	8.90	9.84	11.73	10.24	20.00	11.02	5.51	5.20
D 25 BCS-PFPE (Part No. 113 79)	25 KF	mm	142	190	175	150	135	263	226	250	298	260	570	280	140	132
		in.	5.59	7.48	6.89	5.91	5.32	10.35	8.90	9.84	11.73	10.24	22.44	11.02	5.51	5.20
D 40 BCS-PFPE (Part No. 113 89)	40 KF	mm	135	264	234	206	166	355	308	336	-	317	719	382	191	190
		in.	5.32	10.39	9.21	8.11	6.54	13.98	12.13	13.23	-	12.48	28.31	15.04	7.52	7.48
D 65 BCS-PFPE (Part No. 113 99)	40 KF	mm	213	264	234	206	166	355	308	336	-	317	794	382	191	190
		in.	8.39	10.39	9.21	8.11	6.54	13.98	12.13	13.23	-	12.28	31.26	15.04	7.52	7.48

¹⁾ For dimensions h₄ and l for further part numbers, see paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

Dimensional drawing for the TRIVAC D 16 to D 65 BCS-PFPE

Technical Data

TRIVAC

D 16 BCS-PFPE two-stage

D 25 BCS-PFPE 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)	29.5 (17.4)	35.4 (20.9)
Pumping speed ¹⁾	m ³ /h (cfm)	16.5 (9.7)	19.8 (11.7)	25.7 (15.1)	30.8 (18.2)
Ultimate partial pressure without gas ballast ¹⁾	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 with gas ballast ¹⁾	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)
Ultimate total pressure with reduced gas ballast, 200 l/h ¹⁾	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)
Lubricant filling					
min. / max. upon delivery	l (qt)	0.45 / 1.0 (0.5 / 1.1)	0.45 / 1.0 (0.5 / 1.1)	0.6 / 1.4 (0.6 / 1.5)	0.6 / 1.4 (0.6 / 1.5)
	l (qt)	0.2 (0.2)	0.2 (0.2)	0.4 (0.4)	0.4 (0.4)
Noise level ²⁾ to DIN 45 635, without / with gas ballast	dB(A)	54 / 56	54 / 56	54 / 56	54 / 56
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 ²⁾	W (HP)	750 (1)	750 (1)	750 (1)	750 (1)
Nominal speed ²⁾	rpm	1500	1800	1500	1800
Type of protection	IP	³⁾	³⁾	³⁾	³⁾
Weight ²⁾	kg (lbs)	29.3 (64.5) ⁴⁾	29.3 (64.5) ⁴⁾	33.8 (74.4) ⁴⁾	33.8 (74.4) ⁴⁾
Connections, Intake and Exhaust	DN	25 KF	25 KF	25 KF	25 KF

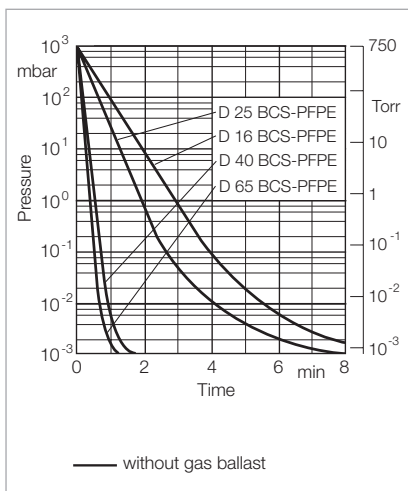
¹⁾ To DIN 28 400 and following numbers

²⁾ Motor rating and noise levels for the pumps with 3-phase motor 50 Hz.

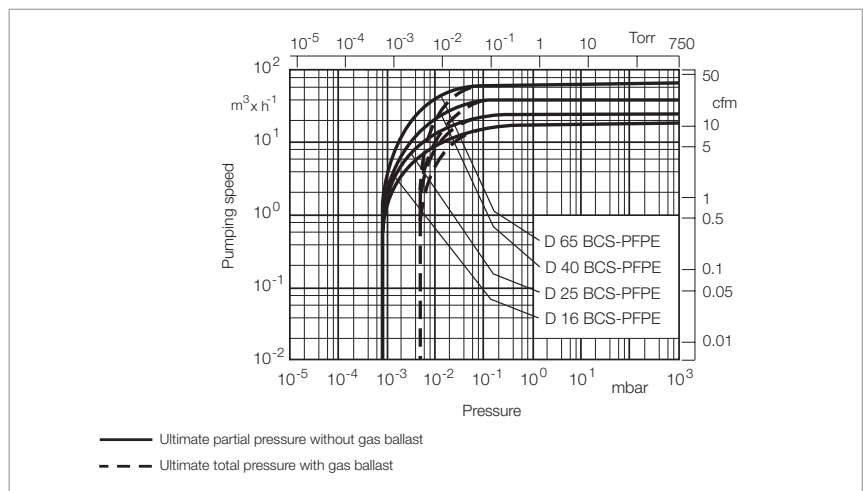
Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

⁴⁾ Upon delivery



Pump-down characteristics of a 100 l vessel at 50 Hz



Pumping speed characteristics at 50 Hz (60 Hz curves at the end of the chapter)

Technical Data

TRIVAC

D 40 BCS-PFPE two-stage

D 65 BCS-PFPE two-stage

		50 Hz	60 Hz	50 Hz	60 Hz
Nominal pumping speed ¹⁾	m ³ /h (cfm)	46 (27)	55 (32.5)	75 (44)	90 (53)
Pumping speed ¹⁾	m ³ /h (cfm)	40 (24)	48 (28)	65 (38)	78 (46)
Ultimate partial pressure without gas ballast ¹⁾	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 with gas ballast ¹⁾	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)
Lubricant filling					
min. / max.	l (qt)	1.7 / 2.6 (1.8 / 2.7)	1.7 / 2.6 (1.8 / 2.7)	2.0 / 3.3 (2.1 / 3.5)	2.0 / 3.3 (2.1 / 3.5)
upon delivery	l (qt)	0.6 (0.6)	0.6 (0.6)	0.75 (0.8)	0.75 (0.8)
Noise level ²⁾ to DIN 45 635, without / with gas ballast	dB(A)	57 / 59	57 / 59	57 / 59	57 / 59
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 ²⁾	W (HP)	2200 (3)	2200 (3)	2200 (3)	2200 (3)
Nominal speed ²⁾	rpm	1500	1800	1500	1800
Type of protection	IP	³⁾	³⁾	³⁾	³⁾
Weight ²⁾	kg (lbs)	77.9 (171.8) ⁴⁾	77.9 (171.8) ⁴⁾	87.9 (193.7) ⁴⁾	87.9 (193.7) ⁴⁾
Connections, Intake and Exhaust	DN	40 KF	40 KF	40 KF	40 KF

¹⁾ To DIN 28 400 and following numbers

²⁾ Motor rating and noise levels for the pumps with 3-phase motor 50 Hz.

Any data that deviate from the above for pumps with other motors, and other motor-dependent data are given in chapter "Products", paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

³⁾ See paragraph "Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE"

⁴⁾ Upon delivery

Ordering Information

TRIVAC
D 16 BCS-PFPE
two-stage

TRIVAC
D 25 BCS-PFPE
two-stage

TRIVAC
D 40 BCS-PFPE
two-stage

TRIVAC
D 65 BCS-PFPE
two-stage

	Part No.	Part No.	Part No.	Part No.
TRIVAC BCS-PFPE with 3-phase motor 200 – 240 V (200 V IE3) / 380 – 400 V (380 – 400 V IE3), 50 Hz / 200 – 240 (208 – 240 V IE3) / 380 – 480 V (416 – 480 V IE3), 60 Hz	113 69	113 79	113 89	113 99
Accessories				
Roots pump adaptor	-	-	168 30	168 30
Exhaust filter with lubricant return ARS 16-25 ARS 40-65	189 56 -	189 56 -	- 189 57	- 189 57
Condensate trap AK 16-25 AK 40-65	188 11 -	188 11 -	- 188 16	- 188 16
Chemical filter with safety isolation valve CFS 16-25 CFS 40-65	101 76 -	101 76 -	- 101 77	- 101 77
Inert gas system IGS 16-25 IGS 40-65	161 76 -	161 76 -	- 161 68V	- 161 68V
Limit switch system LSS 16-25 LSS 40-65	161 06 -	161 06 -	- 161 07	- 161 07
Spare Parts				
Major maintenance kit, LVO 400 (without oil)	EK110002644	EK110002645	EK110002637	EK110002638
Shaft sealing replacement kit	EK110002650	EK110002650	EK110002643	EK110002643
Small parts kit	-	-	EK110002651	EK110002651
Seal kit	197 41	197 41	197 42	197 42

For further accessories see section "Accessories for TRIVAC E, B and BCS"

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Ordering Information

TRIVAC
D 16 BCS-PFPE
two-stage


D 25 BCS-PFPE
two-stage





	Part No.	Part No.
TRIVAC BCS-PFPE with 1-phase motor 220 – 230 V, 50/60 Hz, NEMA plug	-	913 79-2






Motor Dependent Data for the TRIVAC B, BCS and BCS-PFPE

Pump type	D 4 / 8 B		D 4 / 8 B	
Part No. of the pump	140 081, 140 082		112 45, 112 55	
Motor part number	10002292		6507733	
Size	80		71	
Protection class	IP 54		IP 55	
Operating mode in acc. w. IEC 34 / NEMA	S1			
Insulation class	F			
Phases	1~		3~	
Efficiency class	-			
Number of poles	4			
Nominal output power at 50 Hz at 60 Hz	570 W 660 W		370 W -	
Nominal input frequency	50 Hz / 60 Hz		50 Hz / 60 Hz	
Nominal voltage range and nominal current (Mains voltage tolerance $\pm 10\%$) at 50 Hz	100 – 115 V / 7.7 A -		230 V / 3.0 A -	
	210 – 230 V / 4.0 A -		200 – 240 V / 2.15 A -	
	100 – 115 V / 5.6 A -		380 – 400 V / 1.07 A -	
at 60 Hz	210 – 230 V / 2.8 A -		200 – 240 V / 2.15 A -	
			380 – 480 V / 1.07 A -	
Nominal speed 50 Hz 60 Hz	rpm 1420 rpm 1690		1410 -	
Maximum operating altitude above sea level	1000 m			
Max. ambient temperature during operation	$^{\circ}\text{C}$ ($^{\circ}\text{F}$) 40 (104)			
Terminal board / plug	Multi-pin plug at junction box, mains cord 20081091 (1.8 m) with Schuko plug CEE 7/7 (Included in delivery), mains cord 20081097 (1.8 m) with UK plug BS 1363 (optional), mains cord 20081099 (1.8 m) with CH plug SEV 1011 (optional), mains cord 20081141 (1.8 m) with US plug NEMA 6-15P (optional), mains cord 20081090 (1.8 m) with US plug NEMA 5-15P (100 – 120 V) (optional)		mains cord (2 m) with Schuko plug CEE	
			9 pins	
			6 pins	
Certifications				
			 II 2 G Ex e II T3	
Shaft dimension $\varnothing d / l$	mm (in.)		14 / 30 (0.55 / 1.18)	
Size of flange A/B	mm (in.)		140 / 95 (5.51 / 3.74)	
Length of the pump	mm (in.)		480 (18.90) (D 4 B) 504 (19.84) (D 8 B)	
Height up to top edge of junction box h_4	mm (in.)		442 (18.11) (D 4 B) 67 (19.06) (D 8 B)	
			458 (18.62) (D 4 B) 483 (19.57) (D 8 B)	
			467 (18.39) (D 4 B) 491 (19.33) (D 8 B)	



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Pump type	D 4 B		D 8 B	
Part No. of the pump	898 973		898 974	
Motor part number	72260195		72260196	
Size	56C			
Protection class	TEFC			
Operating mode in acc. w. IEC 34 / NEMA	continuous			
Insulation class	B			
Phases	1~			
Efficiency class	-			
Number of poles	4			
Nominal output power at 50 Hz at 60 Hz	180 W 240 W		240 W 370 W	
Nominal input frequency	50 Hz / 60 Hz			
Nominal voltage range and nominal current (Mains voltage tolerance $\pm 10\%$) at 50 Hz	110 V / 6.8 A - 220 V / 3.4 A -		110 V / 9.6 A - 220 V / 4.8 A -	
at 60 Hz	115 V / 6.0 A - 208-230 V / 3.1 A -		115 V / 8.8 A - 208-230 V / 4.5 A -	
Nominal speed 50 Hz 60 Hz	rpm rpm		1425 1725	
Maximum operating altitude above sea level	1000 m			
Max. ambient temperature during operation	°C (°F)		40 (104)	
Terminal board / plug	40 (104) 12 pin plug at the motor, mains cord (1.8 m) 721 27 874 with US plug NEMA 5-15P (115 V) (optional)			
Certifications				
Shaft dimension $\varnothing d / l$	mm (in.)		15.87 / 52.32 (0.625 / 2.06)	
Size of flange A/B	mm (in.)		114.3 (4.5)	
Length of the pump	mm (in.)		464 (18.27) (D 4 B)	
Height up to top edge of junction box h_4	mm (in.)		488 (19.21) (D 8 B)	
			252 (9.92)	
			287 (11.30)	


Pump type	D 16 / 25 B D 16 / 25 BCS D 16 / 25 BCS-PFPE D 16 / 25 B-DOT		D 16 / 25 B	D 16 / 25 B (3i/3o)	D 16 B-Ex
Part No. of the pump	112 66, 112 76, 113 33 914 63-1 112 68, 112 78 112 69, 112 79 114 06, 114 10, 112 76 18	112 66J, 112 76J, 113 33J	140 160, 140 170	140 091, 140 092	
Motor part number	E6506939	6520730	20010409	2100002330	
Size	80	80Z	80L	80L	
Protection class	IP 55				
Operating mode in acc. w. IEC 34 / NEMA	S1				
Insulation class	F				
Phases	3~				
Efficiency class	IE3	IE3 Japan	-	-	
Number of poles	4				
Nominal output power at 50 Hz at 60 Hz	750 W 750 W	750 W 750 W	750 W -	750 W -	
Nominal input frequency	50 Hz / 60 Hz	50 Hz / 60 Hz	-	-	
Nominal voltage range and nominal current (Mains voltage tolerance $\pm 10\%$) at 50 Hz bei 60 Hz	200 – 240 V / 3.6 A 200 V / 3.6 A (IE3) 380 – 400 V / 1.8 A 380 – 400 V / 1.8 A (IE3) 200 – 240 V / 3.4 A 208 – 240 V / 3.2 A (IE3) 380 – 480 V / 1.7 A 416 – 480 V / 1.6 A (IE3)	200 – 346 V (IE3 Japan) - - - 200 – 350 V 220 – 380 V (IE3 Japan) - -	230 V / 3.35 A - 400 V / 1.94 A - - - - -	230 V / 3.4 A - 400 V / 1.95 A - - - - -	
Nominal speed 50 Hz 60 Hz	rpm rpm	1430 1740	1440 1745	1380 -	1405 -
Maximum operating altitude above sea level	1000 m				
Max. ambient temperature during operation	$^{\circ}\text{C}$ ($^{\circ}\text{F}$) 40 (104)				
Terminal board / plug	9 pins	9 pins	6 pins	6 pins	
Certifications					
Shaft dimension $\varnothing d / l$	mm (in.)	19 / 40 (0.75 / 1.58)			
Size of flange A/B	mm (in.)	160 / 110 (6.30 / 4.33)			
Length of the pump	mm (in.)	508 (20.0) (D 16 B) 570 (22.44) (D 25 B)	508 (20.0) (D 16 B) 570 (22.44) (D 25 B)	510 (20.08) (D 16 B) 572 (22.52) (D 25 B)	510 (20.08) (D 16 B) -
Height up to top edge of junction box h_4	mm (in.)	260 (10.24)	260 (10.24)	268 (10.55)	268 (10.55)




Pump type		D 16 / 25 B	D 16 / 25 B	D 16 B
Part No. of the pump		112 65, 112 75	113 25, 113 35	898 698
Motor part number		E38066003	E110001212	72260187
Size		90	90	56C
Protection class		IP 44	IP 54	IP44
Operating mode in acc. w. IEC 34 / NEMA		S1	H	continuous
Insulation class		F	F	F
Phases		1~	1~	1~
Efficiency class		–	–	–
Number of poles		4	4	4
Nominal output power at 50 Hz at 60 Hz		750 W 750 W	750 W 750 W	750 W 750 W
Nominal input frequency		50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz
Nominal voltage range and nominal current (Mains voltage tolerance ±10 %) at 50 Hz ¹⁾		230 V / 5.6 A – – –	230 V / 5.7 A – – –	110 V / 15.0 A – 220 V / 7.5 A –
at 60 Hz ¹⁾		230 V / 5.7 A – – –	230 V / 4.9 A – – –	115 V / 12.4 A – 208 – 230 V / 6.3 – 6.2 A –
Nominal speed 50 Hz 60 Hz	rpm rpm	1460 1750	1420 1680	1500 1800
Maximum operating altitude above sea level		1000 m	1000 m	1000 m
Maximum ambient temperature during operation	°C (°F)	40 (104)	40 (104)	40 (104)
Terminal board		mains cord (2 m) with Schuko plug CEE	Multi-pin plug at junction box, mains cord 20081091 (1.8 m) with Schuko plug CEE 7/7 (Included in delivery), mains cord 20081097 (1.8 m) with UK plug BS 1363 (optional), mains cord 20081099 (1.8 m) with CH plug SEV 1011 (optional), mains cord 20081141 (1.8 m) with US plug NEMA 6-15P (230 V) (optional)	Multi-pin plug at junction box, mains cord (1.8 m) E72127877 with US plug NEMA 5-15P (115 V), mains cord (1.8 m) E72127878 with US plug NEMA 6-15P (230 V)
Certifications				  
Shaft dimension $\varnothing d / l$	mm (in.)	19 / 40 (0.75 / 1.58)	19 / 40 (0.75 / 1.58)	15.87 / 53.32 (0.625 / 2.06)
Size of flange A/B	mm (in.)	160 / 110 (6.30 / 4.33)	160 / 110 (6.30 / 4.33)	114.3 (4.5)
Length of the pump	mm (in.)	521 (20.51) (D 16 B) 583 (22.95) (D 25 B)	505 (19.88) (D 16 B) 567 (22.32) (D 25 B)	582 (22.91) (D 16 B) –
Height up to top edge of junction box h_4	mm (in.)	278 (10.95)	279 (10.98)	263 (10.35)

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Pump type		D 16 B	D 16 B
Part No. of the pump		898 208, 912 65-1	912 65-2
Motor part number		72260117	72260005
Size		56C	56C
Protection class		IP 43	TEFC
Operating mode in acc. w. IEC 34 / NEMA		continuous	continuous
Insulation class		F	B3
Phases		1~	1~
Efficiency class		-	-
Number of poles		4	4
Nominal output power			
at 50 Hz		560	550 W
at 60 Hz		560	550 W
Nominal input frequency		50 Hz / 60 Hz	50 Hz / 60 Hz
Nominal voltage range and nominal current (Mains voltage tolerance $\pm 10\%$)			
at 50 Hz ¹⁾		115 V / 13.0 A - 208 – 230 V / 5.5 – 6.5 A -	208 – 230 V / 5.5 – 6.5 A - - -
at 60 Hz ¹⁾		115 V / 9.4 A - 208 – 230 V / 4.8 – 7.4 A -	208 – 230 V / 4.8 – 4.7 A - - -
Nominal speed			
50 Hz	rpm	1425	1500
60 Hz	rpm	1725	1800
Maximum operating altitude above sea level		1000 m	1000 m
Maximum ambient temperature during operation	°C (°F)	40 (104)	40 (104)
Terminal board		mains cord (1.8 m) with US plug NEMA 5-15P (115 V)	mains cord (1.8 m) with plug NEMA 6-15P (230 V)
Certifications			
Shaft dimension $\varnothing d / l$	mm (in.)	15.87 / 53.32 (0.625 / 2.06)	15.87 / 53.32 (0.625 / 2.06)
Size of flange A/B	mm (in.)	114.3 (4.5)	114.3 (4.5)
Length of the pump	mm (in.)	624 (24.57) (D 16 B)	538 (21.18) (D 16 B)
Height up to top edge of junction box h_4	mm (in.)	265 (10.43)	247 (9.72)

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Pump type	D 25 B		D 25 B - PFPE	
Part No. of the pump	912 75-2, 913 79-2		170 119	
Motor part number	72260022		190260213	
Size	-		56C	
Protection class	IP 44		TEFC	
Operating mode in acc. w. IEC 34 / NEMA	continuous		continuous	
Insulation class	F		F	
Phases	1~		1~	
Efficiency class	-		-	
Number of poles	4		4	
Nominal output power at 50 Hz at 60 Hz	1100 1100		- 1100	
Nominal input frequency	50 Hz / 60 Hz		60 Hz	
Nominal voltage range and nominal current (Mains voltage tolerance $\pm 10\%$) at 50 Hz	220 – 230 V / 9.6 – 9.2 A - - -		- - - -	
at 60 Hz	220 – 230 V / 9.6 – 8.0 A - - -		115 V / 18.0 A - 208 – 230 V / 8.4 – 8.0 A -	
Nominal speed 50 Hz rpm 60 Hz rpm	1425 1725		- 1725	
Maximum operating altitude above sea level	1000 m		1000 m	
Maximum ambient temperature during operation °C (°F)	40 (104)		40 (104)	
Terminal board	mains cord (1.8 m) with plug NEMA 6-15P (230 V)		9 wires	
Certifications				
Shaft dimension $\varnothing d / l$ mm (in.)	15.87 / 53.32 (0.625 / 2.06)		15.87 / 53.32 (0.625 / 2.06)	
Size of flange A/B mm (in.)	114.3 (4.5)		114.3 (4.5)	
Length of the pump mm (in.)	639 (25.16) (D 25 B)		644 (25.35) (D 25 B)	
Height up to top edge of junction box h_4 mm (in.)	265 (10.43)		263 (10.35)	

Pump type	D 40 / 65 B D 40 / 65 BCS D 40 / 65 BCS-PFPE D 40 B-DOT + D 65 B ³ He		D 40 / 65 B	D 40 / 65 B-Ex
Part No. of the pump	112 86, 112 96 113 88, 113 98 113 89, 113 99 112 86 12 / 112 96 46		112 86J, 112 96J, 112 98J	140 180, 140 190
Motor part number	E6506961		6520731	20010411
Size	100L			
Protection class	IP 55			
Operating mode in acc. w. IEC 34 / NEMA	S1			
Insulation class	F			
Phases	3~			
Efficiency class	IE3	IE3 Japan	-	
Number of poles	4			
Nominal output power at 50 Hz at 60 Hz	2200 W 2200 W	2200 W 2200 W	2600 W -	
Nominal input frequency	50 Hz / 60 Hz		50 Hz / 60 Hz	
Nominal voltage range and nominal current (Mains voltage tolerance ±10 %) at 50 Hz bei 60 Hz	200 – 240 V / 15.0 A 200 V / 10.4 A (IE3) 380 – 400 V / 5.2A 380 – 400 V / 5.2A (IE3) 200 – 240 V / 12.0 A 208 – 240 V / 9.2 A (IE3) 380 – 480 V / 5.2 A 416 – 480 V / 4.6 A (IE3)	200 – 346 V (IE3 Japan) - - - - 220 – 380 V (IE3 Japan) - -	230 V / 3.35 A - 400 V / 1.94 A - - - -	
Nominal speed 50 Hz 60 Hz	rpm rpm	1430 1735	1460 1760	1420 -
Maximum operating altitude above sea level	1000 m			
Max. ambient temperature during operation	°C (°F) 40 (104)			
Terminal board / plug	9 pins		9 pins	6 pins
Certifications				
Shaft dimension $\varnothing d / l$	mm (in.)	28 / 60 (1.10 / 2.36)		
Size of flange A/B	mm (in.)	160 / 110 (6.30 / 4.33)		
Length of the pump	mm (in.)	719 (28.31) (D 40 B) 794 (31.26) (D 65 B)		
Height up to top edge of junction box h_4	mm (in.)	317 (12.48)	317 (12.48)	328 (12.91)

Accessories

For TRIVAC E, B and BCS

Exhaust Filters AF 8 to AF 25 Condensate Traps AK 8 to AK 25



Exhaust filter (left) and condensate trap (right)

Exhaust-Filter

Oil mists and aerosols are retained in the exhaust filter.

Advantages to the User

- Filtering of the exhaust gas by removal of entrained lubricant particles
- Emptying via drain screw or exhaust filter drain tap
- Separation efficiency > 99%
- Filter elements (made of glass fiber) are exchangeable

Condensate Trap

Condensate traps prevent the formation of condensate in the pump as well as the backstreaming of fluids.

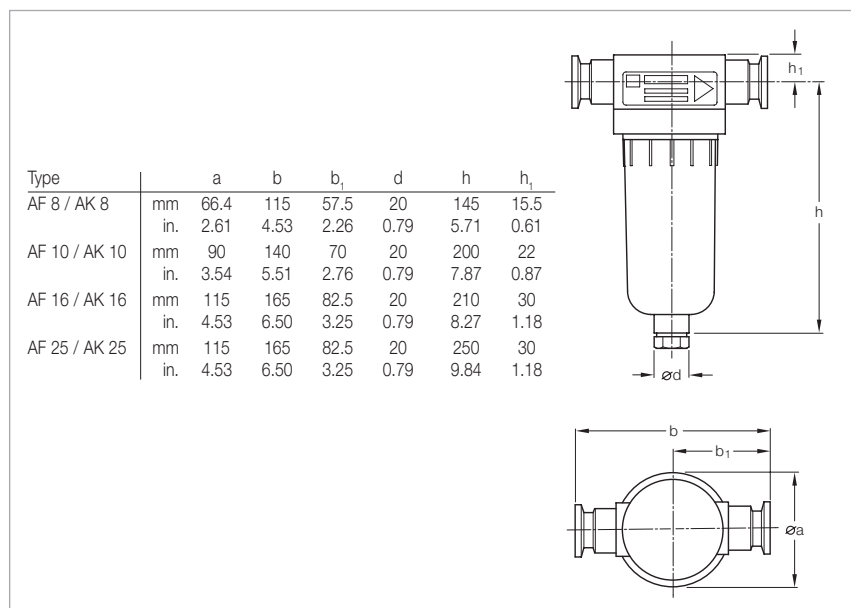
Advantages to the User

- Can be connected to either the intake or the exhaust side
- Protects against condensate forming from sucked in vapors or gases (intake line)
- Protects against backstreaming liquids (exhaust line)
- Emptying via drain screw/drain tap

Technical Information

The exhaust filter is not capable of retaining toxic and/or aggressive gases. For such applications we recommend the use of an exhaust gas line (e.g. a gas washer).

Since the material is not resistant to all gases and solvents, a materials compatibility chart is available upon request.



Dimensional drawing for the AF exhaust filter and AK condensate trap

Technical Data

AF 8 AK 8 AF 10 AK 10 AF 16 AK 16 AF 25 AK 25

Connection to pump (required accessories for TRIVAC E: elbow)	TRIVAC	D 2,5 E D 4 B D 8 B	D 2,5 E D 4 B D 8 B	D 16 B	D 16 B	D 16 B	D 16 B	D 16 B D 25 B	D 16 B D 25 B
Connection flanges	DN	16 KF	16 KF	25 KF	25 KF	25 KF	25 KF	25 KF	25 KF
Max. filling level (for vertical installation)	ml	60	60	145	145	285	285	285	285
Permissible leak rate	mbar x l/s	$\leq 1 \times 10^{-5}$	$\leq 1 \times 10^{-5}$	$\leq 1 \times 10^{-5}$	$\leq 1 \times 10^{-5}$	$\leq 1 \times 10^{-5}$	$\leq 1 \times 10^{-5}$	$\leq 1 \times 10^{-5}$	$\leq 1 \times 10^{-5}$
Max. continuous temperature	°C (°F)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)	90 (194)
Material		Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6	Polyamide 6

Ordering Information

AF 8 AK 8 AF 10 AK 10 AF 16 AK 16 AF 25 AK 25

	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
Exhaust filter	190 50	-	190 51	-	190 52	-	190 53	-
Exhaust filter drain tap	190 95	190 95	190 95	190 95	190 95	190 95	190 95	190 95
Condensate trap	-	190 60	-	190 61	-	190 62	-	190 63
Replacement filter element (pack of 5)								
FE 8	ES 190 80	-	-	-	-	-	-	-
FE 10	-	-	ES 190 81	-	-	-	-	-
FE 16	-	-	-	-	ES 190 82	-	-	-
FE 25	-	-	-	-	-	-	ES 190 83	-
Reducer DN 25/16 KF ¹⁾								
Aluminium (if necessary)	183 86	183 86	183 86	183 86	183 86	183 86	183 86	183 86
Elbow (1x)								
Aluminium	184 36	184 36	184 37	184 37	184 37	184 37	184 37	184 37
Centering ring with O-ring (2x)								
Aluminium / NBR	183 26	183 26	183 27	183 27	183 27	183 27	183 27	183 27
Stainless steel / FPM (FKM)	883 46	883 46	883 47	883 47	883 47	883 47	883 47	883 47
Clamping ring (2x)	183 41	183 41	183 42	183 42	183 42	183 42	183 42	183 42

¹⁾ When using the reducer, an elbow is required

Exhaust Filters

AF 4-8 to AF 40-65

AF 16-25 DOT and AF 40-65 DOT

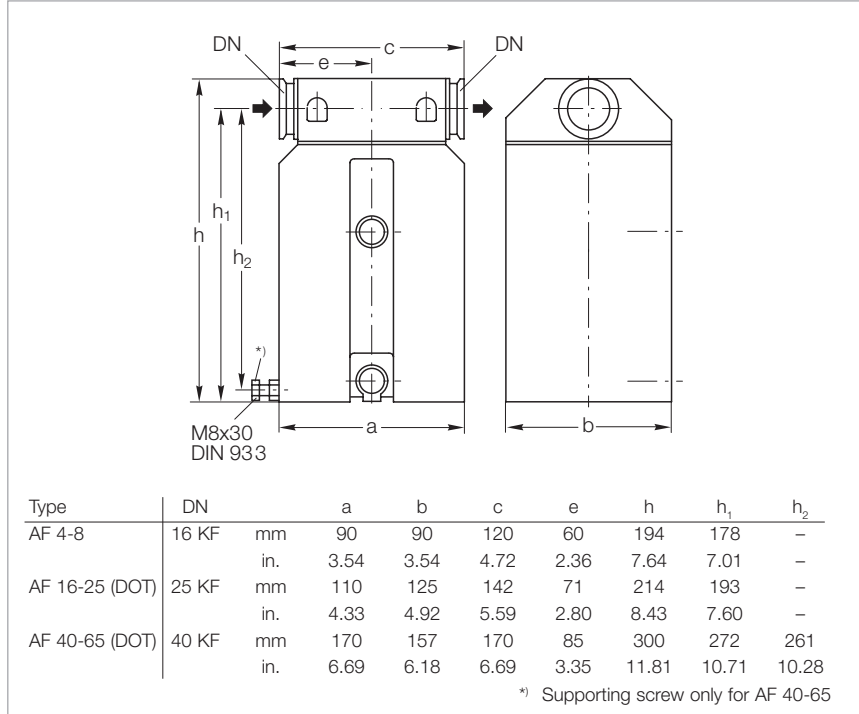


AF 4-8 exhaust filter

Exhaust filters retain oil mists and aerosols.

Advantages to the User

- Can be fitted without additional accessories
- Separation efficiency over 99 %
- Exchangeable filter inserts
- Built-in over-pressure relief valve (threshold at about 1.5 bar (7.2 psi, differential))
- Sight glass for checking of the quantity of collected oil
- Resistant against solvents
- Seals for
 - AF made of FPM (FKM)
 - AF-DOT made of EPDM
- Easy to clean and use
- Retains dirt and cracked products



Dimensional drawing for the AF exhaust filters

Typical Application

- Improvement of oil separating capacity

Technical Information

An exhaust line must be connected in case of hazardous exhaust gases.

Technical Data**AF 4-8****AF 16-25****AF 40-65**

Connection to pump	TRIVAC	D 4/8 B	D 16/25 B/BCS	D 40/65 B/BCS
Max. capacity for condensate, approx.	l (qt)	0.4 (0.45)	0.5 (0.57)	1.0 (1.14)
Weight	kg (lbs)	1.9 (4.1)	3.2 (7.1)	6.5 (14.3)

Ordering Information**AF 4-8****AF 16-25****AF 40-65**

	Part No.	Part No.	Part No.
Exhaust filter	189 06	189 11	189 16
Replacement filter element			
FE 4-8	189 71	-	-
FE 16-25	-	189 72	-
FE 40-65	-	-	189 73
Oil drain tap M 16 x 1.5 (vacuum-tight)	190 90	190 90	190 90

Technical Data**AF 16-25 DOT****AF 40-65 DOT**

Connection to pump	TRIVAC	-	D 16/25 B-DOT	D 40 B-DOT
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Ordering Information**AF 16-25 DOT****AF 40-65 DOT**

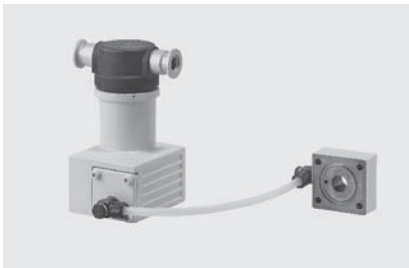
	Part No.	Part No.	Part No.
Exhaust filter DOT	-	124 16	101 15
Replacement filter element			
FE 16-25 DOT	-	200 10 304	-
FE 40-65 DOT	-	-	200 39 840 ¹⁾

¹⁾ 2 pieces are required

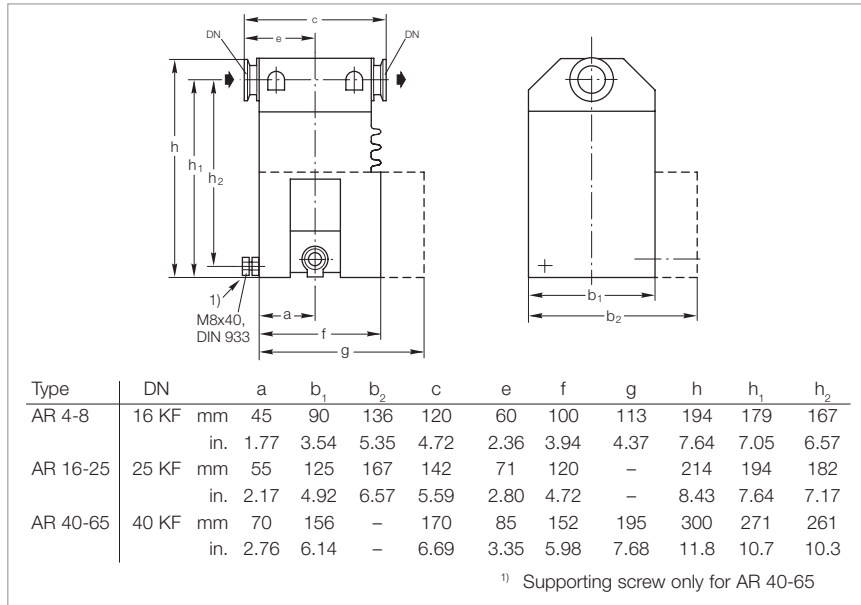
Exhaust Filters with Lubricant Return ARP 4-8 and AR 4-8 to AR 40-65



AR 4-8 exhaust filter with lubricant return



ARP 4-8 exhaust filter with lubricant return



Dimensional drawing for the AR exhaust filters with lubricant return
(dimensions for the ARP exhaust filter with lubricant return upon request)

This combination of an exhaust filter with a float-controlled valve considerably extends the maintenance intervals for the TRIVAC pumps.

Advantages to the User

- Filtering the exhaust air of entrained lubricant particles
- Lubricant return with the aid of a float-controlled valve back into the intake port
- No operating costs caused by lost lubricant
- Hardly any oil consumption
- Standard filter element
- Built-in over-pressure relief valve
- Resists solvents
- All seals made of FPM (FKM)
- Easy change of the return port for horizontal or vertical connection

Typical Application

- Extending the maintenance intervals

Supplied Equipment

Intermediate flange, connecting lines with hollow screws, required gaskets as well as mounting screws for the intake flange.

Technical Data

ARP 4-8 AR 4-8 AR 16-25 AR 40-65

Connection to pump	TRIVAC	D 4/8 B	D 4/8 B	D 16/25 B/BCS	D 40/65 B/BCS
For opening the float-controlled valve required amount of oil					
LEYBONOL LVO 100	cm ³ (qt)	-	430 (0.45)	510 (0.54)	760 (0.80)
LEYBONOL LVO 400	cm ³ (qt)	-	350 (0.37)	430 (0.45)	700 (0.74)
Remaining amount of oil					
LEYBONOL LVO 100	cm ³ (qt)	-	290 (0.31)	340 (0.36)	420 (0.44)
LEYBONOL LVO 400	cm ³ (qt)	-	250 (0.26)	300 (0.32)	390 (0.41)
Weight	kg (lbs)	1.7 (3.8)	3.1 (6.89)	4.7 (10.4)	8.5 (18.7)

Ordering Information

ARP 4-8 AR 4-8 AR 16-25 AR 40-65

	Part No.	Part No.	Part No.	Part No.
Exhaust filter with lubricant return	140 065	189 20	189 21	189 22
Replacement filter element				
FE 8	190 80	-	-	-
FE 4-8	-	189 71	-	-
FE 16-25	-	-	189 72	-
FE 40-65	-	-	-	189 73

Technical Information

The AR is connected to the exhaust port of the TRIVAC B, the return line is connected at the intermediate flange under the intake port. An exhaust line must be connected in case of hazardous exhaust gases.

The ARP and AR filters are factory cleaned to such an extent, that they may be operated either with mineral oil (e.g. LEYBONOL LVO 100) or per-fluoropolyether (PFPE) (e.g. LEYBONOL LVO 400).

Exhaust Filters with Lubricant Return ARS 16-25 and ARS 40-65



ARS 40-65

This combination of an exhaust filter with a float-controlled valve considerably extends the maintenance intervals of the TRIVAC BCS.

The ARS is part of the TRIVAC SYSTEM.

Advantages to the User

- Lubricant return with the aid of a float-controlled valve back into the intake port
- The intake port may be easily exchanged (either vertical or horizontal orientation)
- No operating costs caused by lost lubricant
- Hardly any oil consumption
- Visual indication of the differential pressure
- Standard filter element
- All aluminium parts are surface protected
- Built-in over-pressure relief valve
- Resists solvents
- All seals made of FPM (FKM)

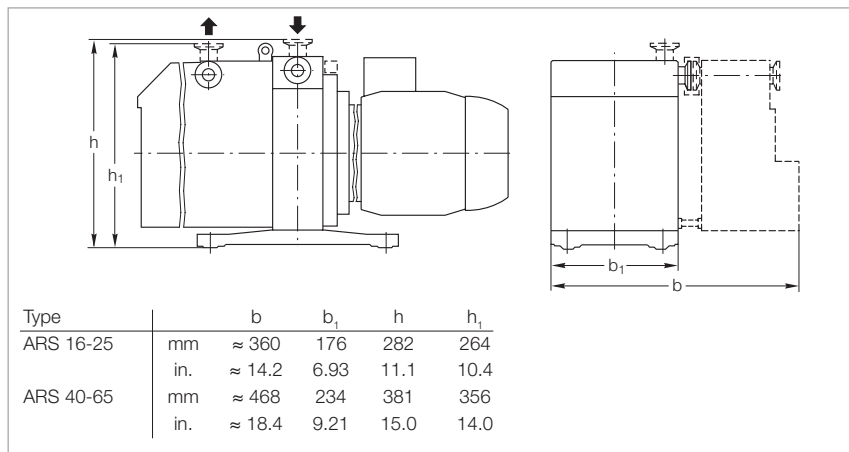
Typical Application

- Filtering the exhaust air of entrained lubricant particles

Supplied Equipment

Intermediate flange, connecting lines with hollow screws, required gaskets as well as mounting screws for the intake flange.

Wrapped in foil for shipping.



Dimensional drawing for the ARS mounted on a TRIVAC BCS

Technical Information

An exhaust line must be connected in case of hazardous exhaust gases. The ARS is connected to the exhaust port of the TRIVAC BCS, the return line is connected at the intermediate flange under the intake port.

The ARS is factory cleaned to such an extent, that it may be operated either with mineral oil (e.g. LEYBONOL LVO 100) or perfluoropolyether (PFPE) (e.g. LEYBONOL LVO 400).

Technical Data

ARS 16-25

ARS 40-65

Connection to pump	TRIVAC	D 16/25 B D 16/25 BCS (-PFPE)	D 40/65 B D 40/65 BCS (-PFPE)
Connection flanges	DN	25 KF	40 KF
Amount of oil required for opening the float-controlled valve			
LEYBONOL LVO 100	cm ³ (qt)	510 (0.54)	760 (0.80)
LEYBONOL LVO 400	cm ³ (qt)	340 (0.36)	420 (0.44)
Remaining amount of oil			
LEYBONOL LVO 100	cm ³ (qt)	430 (0.45)	700 (0.74)
LEYBONOL LVO 400	cm ³ (qt)	300 (0.31)	390 (0.41)
Weight with intermediate flange, tubing and filter, without lubricant	kg (lbs)	4.7 (10.4)	8.5 (16.7)

Ordering Information

ARS 16-25

ARS 40-65

	Part No.	Part No.
Exhaust filter with lubricant return	189 56	189 57
Replacement filter element		
FE 16-25	189 72	-
FE 40-65	-	189 73

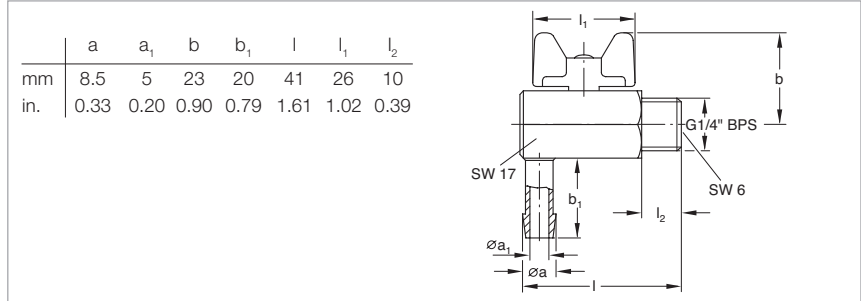
Exhaust Filter Drain Tap



The exhaust filter drain tap simplifies draining of the oil from the exhaust filter.

Technical Note

May also be used in connection with the condensate separator AK.



Dimensional drawing for the exhaust filter drain tap

Technical Data

Leak rate	mbar x l/s	$\leq 10^{-5}$
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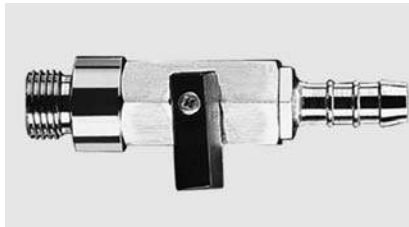
Exhaust Filter Drain Tap

Ordering Information

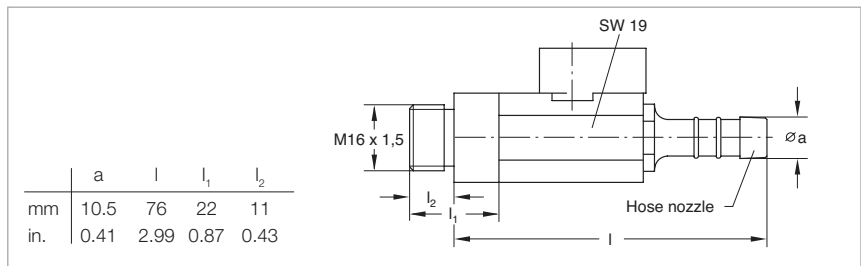
Exhaust Filter Drain Tap

	Part No.
Exhaust filter drain tap	190 95

Oil Drain Tap



This oil drain tap may be screwed into the oil drain when wanting to change the oil in the rotary vane pumps. It is also suited for the condensate separators and exhaust filters of the TRIVAC B series.



Dimensional drawing for the oil drain tap

Technical Data

Leak rate	mbar x l/s	$\leq 10^{-5}$
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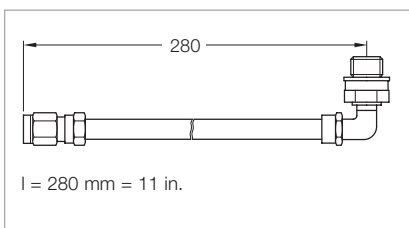
Oil Drain Tap

Ordering Information

Oil Drain Tap

	Part No.
Oil drain tap	190 90

Oil Drain Kit



Dimensional drawing for the oil drain kit

Technical Data

Length	mm (in.)	280 (11)
Leak rate	mbar x l/s	$\leq 10^{-5}$

Oil Drain Kit

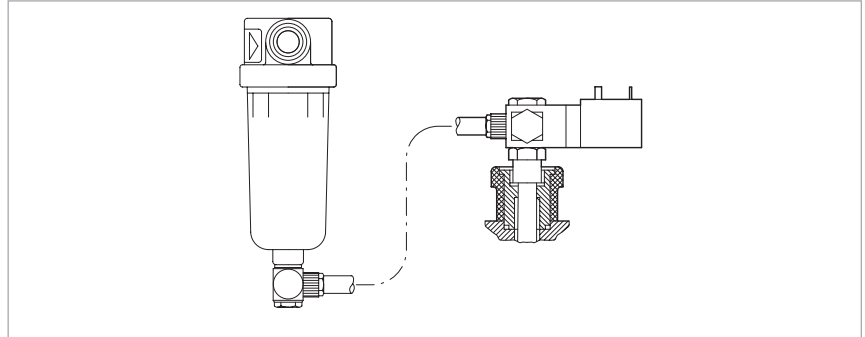
Ordering Information

Oil Drain Kit

	Part No.
Oil drain kit	190 94

Oil Suction Facility AR-V Controlled by Solenoid Valve

Suited for the AF 8 or AK 8 when connected to the D 2.5 E the oil suction facility AR-V with its solenoid valve allows the removal of oil via the gas ballast which has collected in the exhaust filter. When the valve is closed the gas ballast remains fully operational. For this, a hose link is provided between the exhaust filter and the gas ballast.



AR-V oil suction facility controlled by solenoid valve (kit without exhaust filter)

Technical Note

If oil which has collected in the exhaust filter is to be removed, the solenoid valve is opened briefly.

Technical Data

AR-V Oil Suction Facility Controlled by Solenoid Valve

Leak rate	mbar x l/s	$\leq 10^{-5}$
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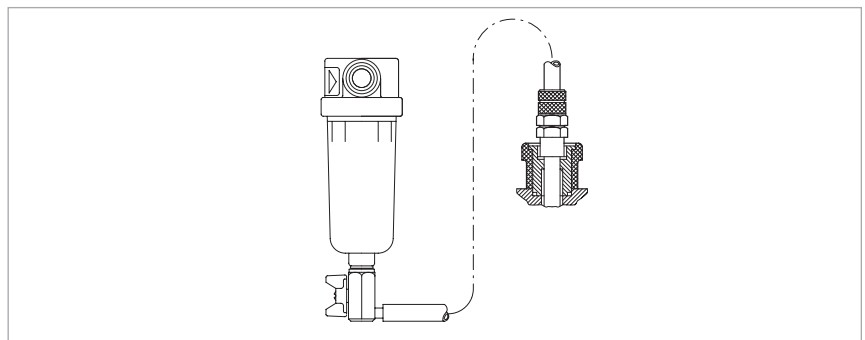
Ordering Information

AR-V Oil Suction Facility Controlled by Solenoid Valve

	Part No.
AR-V oil suction facility controlled by solenoid valve 24 V DC, 4 W, normally closed	190 92

Manually Operated Oil Suction Facility AR-M

Suited for the AF 8 or AK 8 when connected to the D 2,5 E the oil suction facility AR-M allows the removal of oil via the gas ballast which has collected in the exhaust filter, whereby the gas ballast remains fully operational as long as the angled ball valve remains closed. For this, a hose link is provided between the exhaust filter and the gas ballast.



AR-M manually operated oil suction facility (kit without exhaust filter)

Technical Note

If oil which has collected in the exhaust filter is to be removed, the angled ball valve is manually opened briefly.

Technical Data

AR-M Manually Operated Oil Suction Facility

Leak rate	mbar x l/s	$\leq 10^{-5}$
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Ordering Information

AR-M Manually Operated Oil Suction Facility

	Part No.
AR-M manually operated oil suction facility	190 93

Condensate Separators

AK 4-8 to AK 40-65

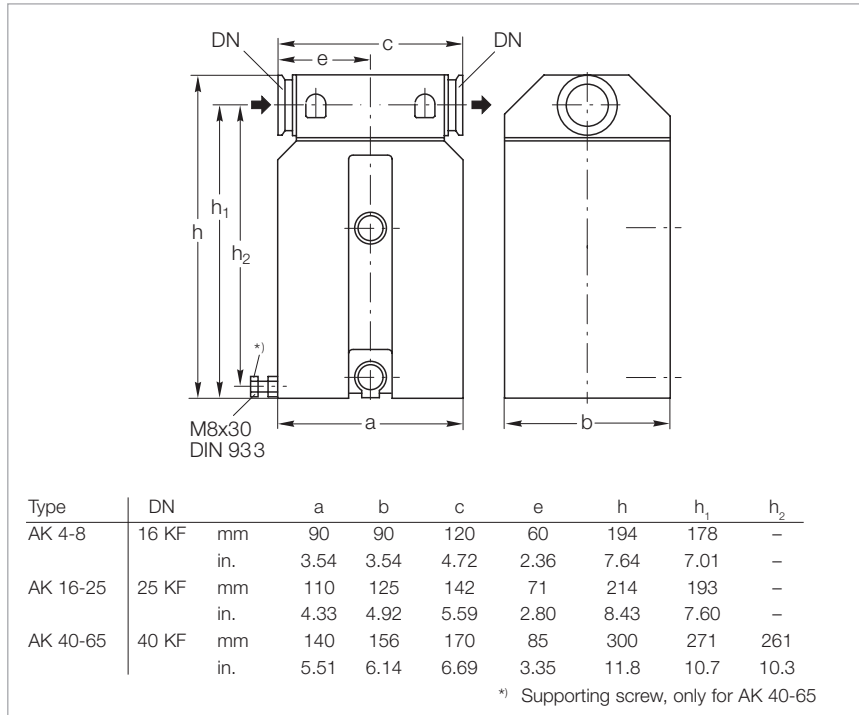


AK 4-8 condensate separator

Separators protect the pump against condensate.

Advantages to the User

- May be installed without accessories
- May be used either on the intake or the exhaust side
- Independent of the direction of flow
- Condensate level check via inspection glass
- Resists solvents
- All seals made of FPM (FKM)
- Simple to clean
- Easy to use
- Drained via drain screw or drain tap



Dimensional drawing for the AK condensate separators

Typical Application

- Prevention of the collection of liquids in the intake line

Technical Information

Depending upon the layout and pipe run of an exhaust line, it may be necessary to install a separator to prevent condensate draining back to the pump.

Technical Data

AK 4-8

AK 16-25

AK 40-65

Connection to pump	TRIVAC	D 4/8 B	D 16/25 B D 16/25 BCS (-PFPE)	D 40/65 B D 40/65 BCS (-PFPE)
Capacity for condensate	l (qt)	0.66 (0.7)	1.2 (1.3)	3.0 (3.2)
Weight	kg (lbs)	1.7 (3.7)	2.4 (5.3)	5.5 (12.1)

Ordering Information

AK 4-8

AK 16-25

AK 40-65

	Part No.	Part No.	Part No.
Condensate separator	188 06	188 11	188 16
Oil drain tap M 16 x 1.5 (vacuum-tight)	190 90	190 90	190 90
Adaptor DN 16 KF – hose nozzle DN 7	182 90	-	-

Dust Filters DN 16 KF to DN 40 KF



Filter housing FH 16 to FH 40 for dust filter insert DF

Dust filters protect the pump against sucked in dust. They are suited for oil sealed and also for dry compressing pumps.

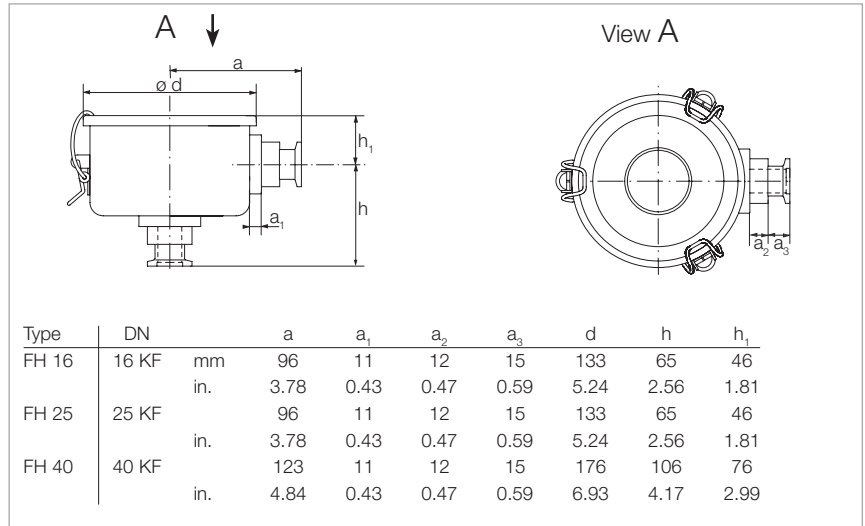
Advantages to the User

- Easy to disassemble
- Vacuum-tight steel housing
- Easily exchangeable replacement filter
- High filter capacity

Technical Information

Installing a dust filter in the intake line of the pump throttles its pumping speed at lower intake pressures much more than at higher intake pressures. Throttling reference values are stated in the Technical Data. These must be taken into account when dimensioning the vacuum system.

Since the collection capacity of dust filters is limited, we recommend the two-stage dust filters AS when larger quantities of dust are involved.



Dimensional drawing for the filter housings FH 16 to FH 40 for dust filter inserts DF

Technical Data

Dust Filter

Use for	TRIVAC	DN 16 KF	DN 25 KF	DN 40 KF
		D 4/8 B	D 16/25 B	D 40/65 B
Share of filtered out particles > 5 µm	%	98	98	98
Throttling of pumping speed at 10 mbar (7.5 Torr)	%	3	3	3
	%	6	6	6
Weight with dust filter insert	kg (lbs)	1.3 (2.9)	1.3 (2.9)	2.3 (5.1)

Ordering Information

Dust Filter

	DN 16 KF	DN 25 KF	DN 40 KF
	Part No.	Part No.	Part No.
Dust filter filter housing FH ¹⁾	140 116T	140 125T	140 140T
dust filter insert DF 16-25	140 117S	140 117S	-
DF 40-65	-	-	140 141S

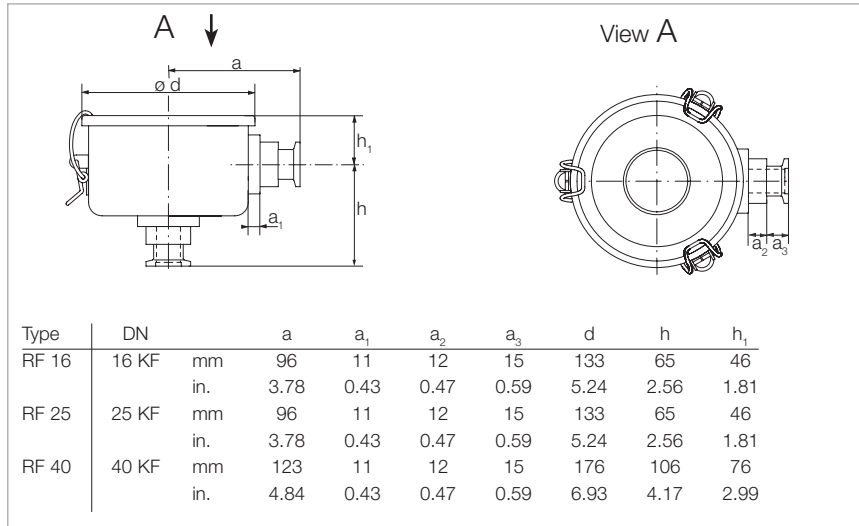
¹⁾ The filter housing is supplied without filter cartridge (dust filter insert) since it may also be used in connection with the adsorption trap or dust filter insert

Adsorption Traps DN 16 KF to DN 40 KF



Filter housing FH 16 to FH 40 for adsorption trap filter inserts RF

Adsorption traps are containers with a stainless steel insert which can be filled with a number of different adsorbents thereby offering a high adsorbing capacity for vapors, water vapor in particular.



Dimensional drawing for the filter housings FH 16 to FH 40 for adsorption trap filter inserts RF

Advantages to the User

- Vacuum-tight steel housing
- Stainless steel, degassable up to 300 °C (572 °F)
- Different adsorbents and separating elements can be used
- Quick to replace
- Easy to disassemble

Technical Information

The adsorption traps have been developed specially for use in connection with oil sealed pumps. They are capable of retaining oil vapors discharged from forevacuum pumps and are at the same time in the position to separate vapors (water vapor) coming from the side of the process. Through the use of adsorption traps and a suitable adsorbent, a vacuum free of hydrocarbons can be produced. The stainless steel inserts with the corresponding adsorbent can be heated in a drying cabinet at 300 °C (572 °F) for regeneration. Depending on the type of adsorbent and operating pressure, the pumping speed of the pumps is reduced.

As to any questions relating to the selection of a suitable adsorbent, please consult us.

Technical Data

Adsorption Trap

Use for	TRIVAC	DN 16 KF	DN 25 KF	DN 40 KF
		D 4/8 B	D 16/25 B	D 40/65 B
Conductance				
at 10 mbar (7.5 Torr) for				
aluminium oxide	l/s	2	6	14
zeolite	l/s	2	6	12
active charcoal filling	l/s	2	6	16
baffle ring filling	l/s	2	7	18
at 1 mbar (0.75 Torr) for				
aluminium oxide	l/s	1	4	5
zeolite	l/s	1	6	5
active charcoal filling	l/s	2	6	6
baffle ring filling	l/s	2	6	16
Filling quantity				
aluminium oxide	kg (lbs)	0.3 (0.7)	0.3 (0.7)	1.0 (2.2)
zeolite	kg (lbs)	0.2 (0.4)	0.2 (0.4)	0.7 (1.5)
active charcoal filling	kg (lbs)	0.1 (0.2)	0.1 (0.2)	0.5 (1.1)
baffle ring filling	kg (lbs)	0.1 (0.2)	0.1 (0.2)	0.3 (0.7)
Filling volume				
	l (qt)	0.3 (0.3)	0.3 (0.3)	1.2 (1.3)
Weight with adsorption trap insert				
	kg (lbs)	1.3 (2.9)	1.3 (2.9)	2.3 (5.1)

Ordering Information

Adsorption Trap

	DN 16 KF	DN 25 KF	DN 40 KF
	Part No.	Part No.	Part No.
Adsorption trap			
filter housing FH ¹⁾	140 116T	140 125T	140 140T
adsorption trap filter insert			
RF 16-25	140 118A	140 118A	-
RF 40-65	-	-	140 142A
Active charcoal, un-dried, 5 kg	178 10	178 10	178 10
Zeolite, 1 kg	854 20	854 20	854 20
Aluminium oxide, 1.2 kg	854 10	854 10	854 10
Baffle ring 15 x 15 x 0.3, 1 liter			
Stainless steel 1.4301	390 26 126	390 26 126	390 26 126

¹⁾ The filter housing is supplied without filter cartridge (dust filter insert) since it may also be used in connection with the adsorption trap or dust filter insert

Cold Trap TK 4-8



TK 4-8 cold trap

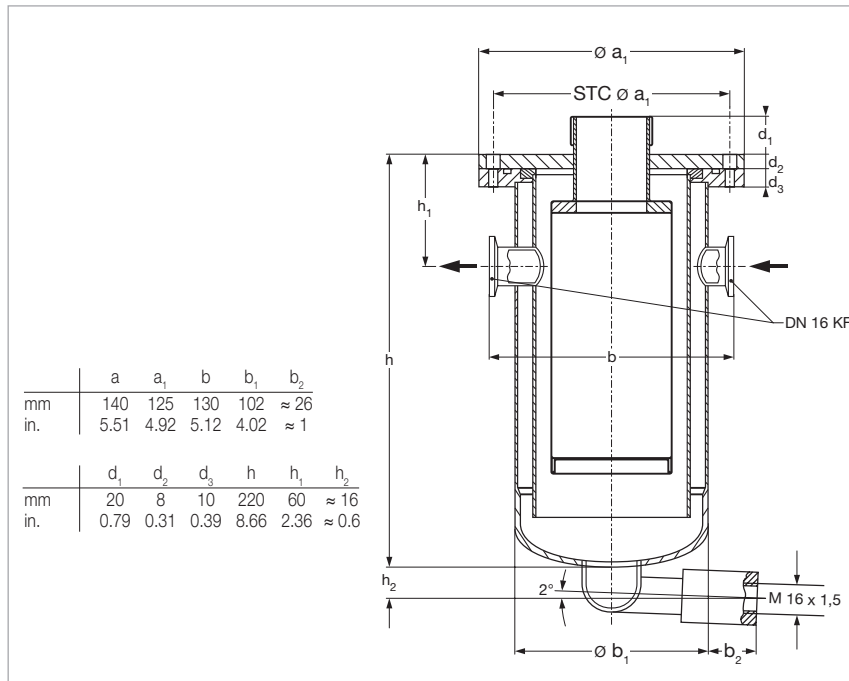
The cold trap protects the pump against damaging vapors.

Advantages to the User

- Rugged and implosion resistant
- May be fitted directly on the flange of the pump
- Safe draining of the condensate without problems
- Casing made of corrosion resistant stainless steel
- Simple filling with refrigerant (liquid nitrogen (LN₂) or a mixture of acetone and carbon di-oxide ice)

Typical Applications

- Prevention of oil from backstreaming into the vacuum system when operating at ultimate pressure
- Freezing of gases and vapors in the laboratory



Dimensional drawing for the TK 4-8 cold trap

Technical Data

TK 4-8

Connection to pump	TRIVAC	D 2,5 E / D 4/8 B
Capacity for refrigerant, approx.	l (qt)	0.4 (0.42)
Connections	DN	16 KF
Weight	kg (lbs)	4 (8.8)

Ordering Information

TK 4-8

	Part No.
Cold trap	188 20
Drain tap for the intake side, vacuum-tight	190 90
Elbow (1x)	184 36
Centering ring aluminium/NBR (2x)	183 26
stainless steel/FPM (FKM) (2x)	883 46
Clamping ring (2x)	183 41

Dust Separators AS 8-16 and AS 30-60 / Molecular Filters MF 8-16 and MF 30-60



AS 30-60 dust separator
(MF 30-60 molecular filter is similar)

Dust separators protect pumps against contamination and damage by sucked-in dust.

Advantages to the User

- Dust separators for large quantities of dust
- Two-stage, thus hardly any throttling
- Cyclone (for coarse dust) and wet filter (for fine dust)
- Dust separator and molecular filter have the same housing (for easy conversion)

Typical Application

- Separation of coarse and medium size dust starting at a grain size of 2 µm

Technical Information

Installing a dust filter in the intake line of the pump will throttle its pumping speed at low intake pressures more than at higher intake pressures. This must be taken into account when designing a vacuum system.

Even when large quantities of dust are deposited, the throttling effect will hardly increase.

Supplied Equipment

Blanked off drain port.

Molecular filters are used to separate vapors of a high molecular weight (i.e. monomers, vapors from resins).

Advantages to the User

- Molecular filter and dust separator have the same housing (for easy conversion)
- Separation of high-molecular weight vapors
- Protection of the pump's oil against damaging vapors

Technical Information

Installing a molecular filter in the intake line of the pump will throttle its pumping speed at low intake pressures more than at higher intake pressures. This must be taken into account when designing a vacuum system.

Supplied Equipment

Blanked off drain port.

Technical Data

AS 8-16

AS 30-60

MF 8-16

MF 30-60

Connection to pump	TRIVAC	D 16 B	D 25 B	D 40 B	D 65 B	D 16 B/BCS	D 25 B/BCS	D 40 B/BCS	D 65 B/BCS
Throttling of the pumping speed at 1 mbar (0.75 Torr) intake pressure, approx.	%	10	15	8	16	10	15	8	16
at 10 mbar (7.5 Torr) intake pressure, approx.	%	5	7	4	9	5	7	4	9
Capacity for dust	l (qt)	0.6 (0.63)	0.6 (0.63)	2.0 (2.11)	2.0 (2.11)	–	–	–	–
Capacity for resin vapors or similar	kg (lbs)	–	–	–	–	0.15 (0.3)	0.15 (0.3)	0.35 (0.8)	0.35 (0.8)
Impact ring filling	l (qt)	0.5 (0.53)	0.5 (0.53)	3.5 (3.70)	3.5 (3.70)	–	–	–	–
Active charcoal filling	kg (lbs)	–	–	–	–	0.6 (1.3)	0.6 (1.3)	1.4 (3.1)	1.4 (3.1)
Weight	kg (lbs)	4.5 (9.9)	4.5 (9.9)	18.4 (40.6)	18.4 (40.6)	4.5 (9.9)	4.5 (9.9)	18.4 (40.6)	18.4 (40.6)

Ordering Information

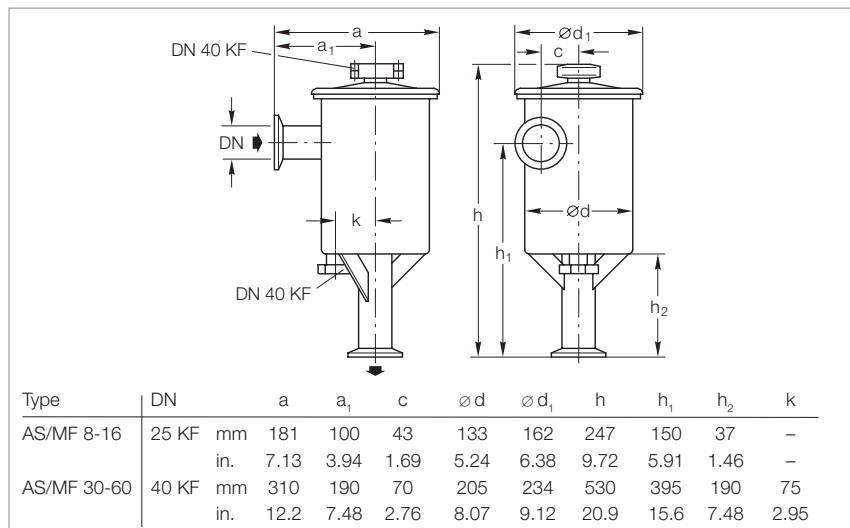
AS 8-16

AS 30-60

MF 8-16

MF 30-60

	Part No.	Part No.	Part No.	Part No.
Dust separator	186 11	186 16	–	–
Molecular filter	–	–	186 12	186 17
Replacement filter insert	–	178 43	–	–
Replacement active charcoal insert	–	–	178 07	178 08
Active charcoal, undried, 5 kg (11 lbs)	–	–	178 10	178 10



Dimensional drawing for the AS dust separators and MF molecular filters

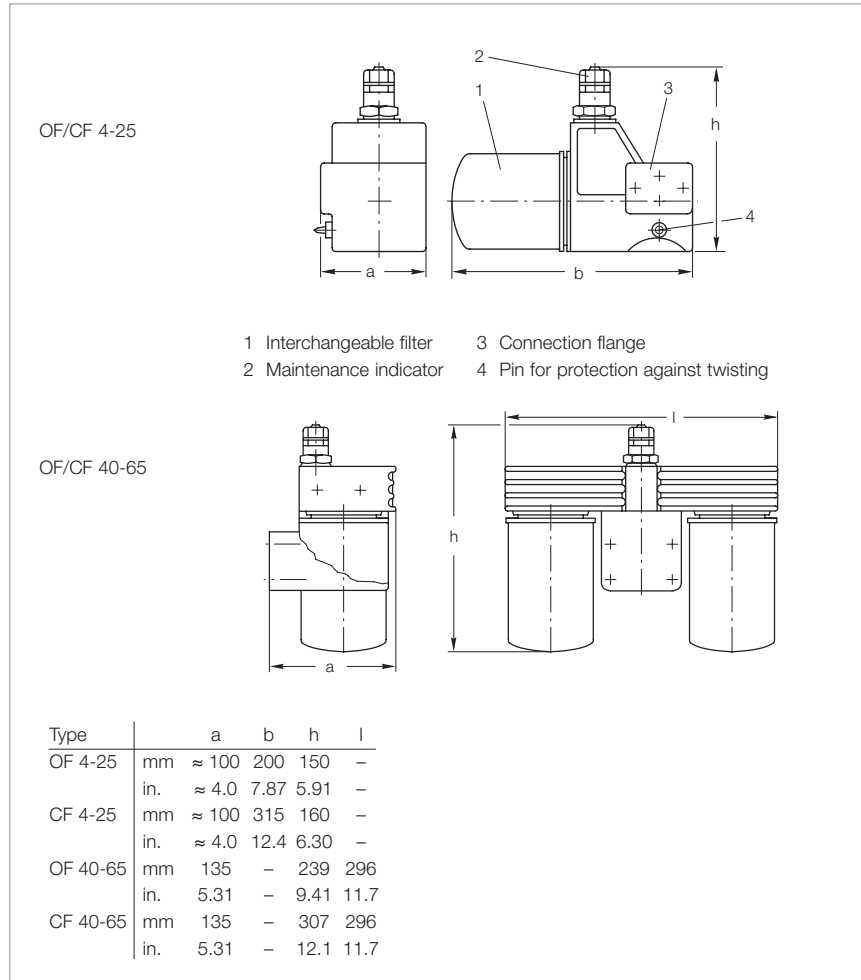
Mechanical Oil Filters OF 4-25 and OF 40-65 / Chemical Oil Filters CF 4-25 and CF 40-65



OF 4-25 mechanical oil filter

Since there is a pressure-lubrication system with an oil pump in every TRIVAC B, it is possible to connect main flow oil filters.

These filters are available either for mechanical filtering (OF types) or combined chemical/mechanical filtering (CF types).



Dimensional drawings for the OF mechanical oil filters and CF chemical oil filters

Advantages to the User

- Main flow oil filter
- Longer service life for the oil depending on the type of application
- Can be installed without problems to the TRIVAC B
- Hose connections are not required
- Easily interchangeable filters
- Only a small amount of oil needs to be added when changing the filters
- Expansion of the range of applications in case of special requirements

Typical Application

- Same casing for OF and CF types
- Greater reliability by standard maintenance indicator
- Built-in bypass valve
- Owing to the highly effective adsorbent for polar substances, an up to ten-fold adsorption effect is attained over normal bleaching earth (CF)
- Prevents mechanical damage to the pump
- Separation of fine particles from the pump's oil (sizes between 5 and 10 μm (OF))

Technical Data**OF 4-25****CF 4-25****OF 40-65****CF 40-65**

Connection to pump	TRIVAC	D 4/8 B, D 16/25 B	D 4/8 B, D 16/25 B	D 40/65 B	D 40/65 B
Nominal throughput	l/h	900	900	2000	2000
Separation					
mechanical oil filter	µm	5 to 10	5 to 10	5 to 10	5 to 10
chemical oil filter	µm	to 3	to 3	to 3	to 3
Permissible operating pressure	bar (psig)	2.5 (21.7)	2.5 (21.7)	2.5 (21.7)	2.5 (21.7)
Opening pressure, non-return valve	bar (psid)	0.12 (1.7)	0.12 (1.7)	0.12 (1.7)	0.12 (1.7)
bypass valve	bar (psid)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)
Topping up amount during first time installation	l (qt)	1.0 (1.1)	1.0 (1.1)	2.5 (2.6)	2.5 (2.6)
filter exchange	l (qt)	1.0 (1.1)	1.0 (1.1)	2.0 (2.1)	2.0 (2.1)
Weight, ready for operation, dry	kg (lbs)	4.0 (8.8)	4.0 (8.8)	10.0 (22.1)	10.0 (22.1)

Ordering Information**OF 4-25****CF 4-25****OF 40-65****CF 40-65**

	Part No.	Part No.	Part No.	Part No.
Mechanical oil filter	101 91	-	101 92	-
Chemical oil filter	-	101 96	-	101 97
WF 4-25 interchangeable filter, paper, 0.5 l (0.5 qt)	189 91	-	-	-
WF 40-65 interchangeable filter, paper 0.75 l (0.8 qt)	-	-	189 92 ¹⁾	189 92 ¹⁾
WF Alu 4-65 interchangeable filter, paper and Al ₂ O ₃ , 1 l (1.1 qt)	-	189 96	-	189 96 ¹⁾

¹⁾ 2 pieces are required

Chemical Filters with Safety Isolation Valve

CFS 16-25 and CFS 40-65



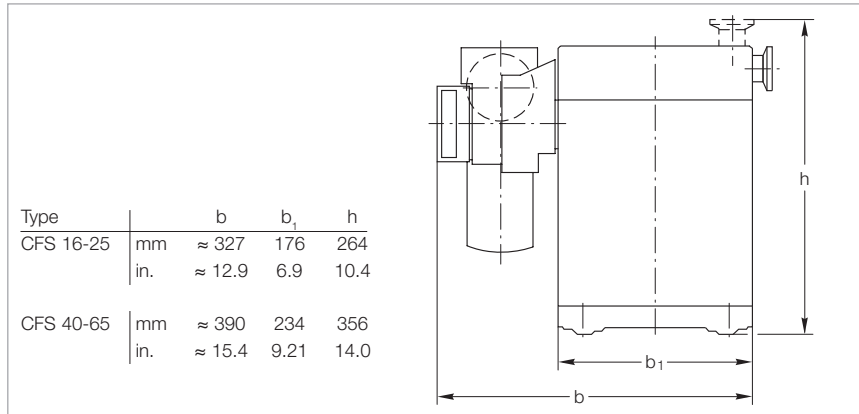
CFS 40-65

The CFS chemical filters with safety isolation valve are main flow oil filters for the TRIVAC B and BCS pumps.

The CFS is part of the TRIVAC SYSTEM.

Advantages to the User

- The CFS is included in the main lubricant flow
- Rapid filter exchange
 - the pump may continue to operate while changing the filters
- Visual indication of the filter's condition through a maintenance indicator
- Aluminium component with isolation valve for one or two interchangeable filters
- All aluminium parts are surface protected
- May be operated with different interchangeable filters
- Over-pressure relief valve in the interchangeable filters
- Prepared for connection of a differential pressure switch and an oil pressure switch
- May also be used on the TRIVAC B pumps



Dimensional drawing for the CFS (mounted on a TRIVAC BCS)

Technical Information

The CFS is cleaned in the factory to such an extent, that it may be operated either with mineral oil (e.g. LEYBONOL LVO 100) or perfluoropolyether (PFPE, e.g. LEYBONOL LVO 400).

Supplied Equipment

All gaskets and mounting parts required for installation.

Aluminium particle filters (WF Alu-Part) sealed for shipping are included separately.

Technical Data

CFS 16-25

CFS 40-65

Connection to pump	TRIVAC	D 16/25 B D 16/25 BCS (-PFPE)	D 40/65 B D 40/65 BCS (-PFPE)
Nominal throughput	l/h	900	2000
Permissible operating pressure	bar (psig)	2.5 (21.7)	2.5 (21.7)
Opening pressure			
Non-return valve	bar (psid)	2.5 (21.7)	2.5 (21.7)
Bypass valve	bar (psid)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)
Filter medium		Al ₂ O ₃	Al ₂ O ₃
Lubricant filling when using WF Alu-Part	l (qt)	1.4 (1.5)	3.3 (3.5)
Weight, ready for operation, dry	kg (lbs)	7.0 (15.4)	15.5 (34.1)

Ordering Information

CFS 16-25

CFS 40-65

	Part No.	Part No.
Chemical filter with safety isolation valve	101 76	101 77
WF Alu-Part combination filter, paper and Al ₂ O ₃ , 1.6 l (1.7 qt)	189 99	189 99 ¹⁾
WFG particle filter, paper with support mesh, 1 l (1.1 qt)	189 90	189 90 ¹⁾

¹⁾ 2 pieces are required

Inert Gas System

IGS 16-25 and IGS 40-65



IGS

This accessory, which is controlled via solenoid valves, permits the controlled admission of special gases into the TRIVAC BCS.

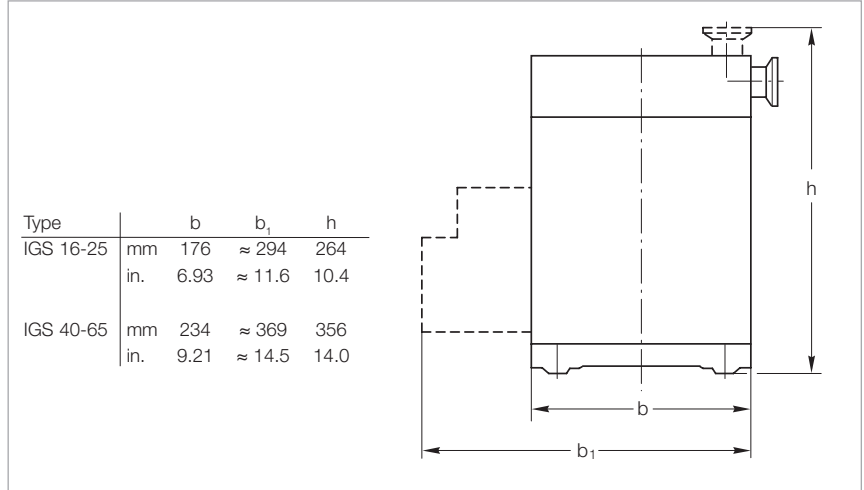
The IGS is part of the TRIVAC SYSTEM.

Advantages to the User

- Ready for connection to an inert gas supply
- Solenoid valve for reduced gas ballast
- Solenoid valve for purging the oil box
- Float throughput gauge with throttling valve adjustable from 200 to 700 l/h
- The flowing quantity can be read directly
- System protection by a non-return valve (requires a reservoir pressure of at least 3 bar (29 psi, gauge)) – this reliably prevents the reservoir vessel from being evacuated
- Connects directly on to the TRIVAC BCS

Typical Applications

- Reduction of the contamination levels in the lubricant
- Reduction in the dwell time of volatile substances within the pump



Dimensional drawing for the IGS (mounted on a TRIVAC BCS)

Technical Information

The amount of inert gas ballast is restricted by a nozzle to 200 l/h. Larger quantities are used for purging.

Supplied Equipment

Solenoid valves with connection cables and plugs, the required connecting pieces, mounting screws and cover panel.

Technical Data

IGS 16-25

IGS 40-65

	TRIVAC	D 16/25 BCS (-PFPE)	D 40/65 BCS (-PFPE)
Connection to pump	TRIVAC	D 16/25 BCS (-PFPE)	D 40/65 BCS (-PFPE)
Min. amount of admitted gas at a reservoir pressure of 3.0 bar (29 psig)	l/h	200	200
Max. amount of admitted gas at a reservoir pressure of 6.0 bar (72.5 psig)	l/h	1450	1450
Supply voltage for the solenoid valves	V DC	24	24
Power consumption	W	10	10
Weight	kg (lbs)	1.0 (2.2)	1.4 (3.1)
Connection thread	G (BPS)	1/8"	1/8"

Ordering Information

IGS 16-25

IGS 40-65

	Part No.	Part No.
Inert gas system	161 76	-
Inert gas system, UL conform	-	161 68V

Limit Switch System

LSS 16-25 and LSS 40-65



LSS

This accessory consists of a package of limit switches. It is used to monitor system functions.

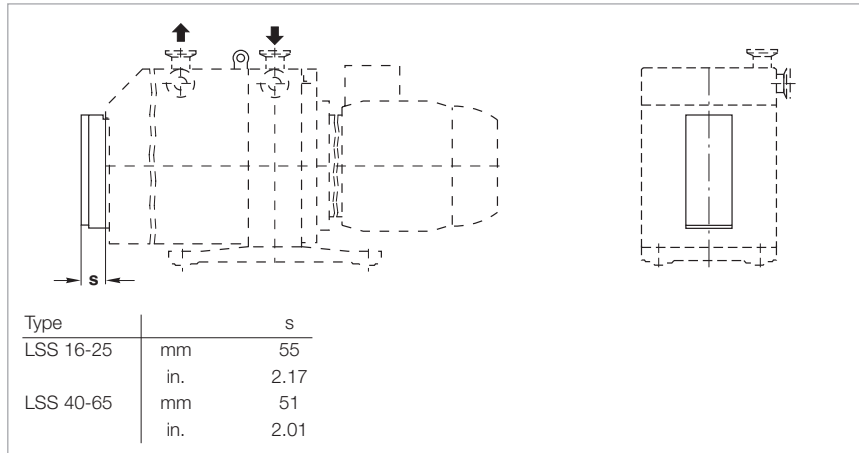
The LSS is part of the TRIVAC SYSTEM.

The package of limit switches includes:

- Differential pressure switch to monitor the CFS
- Oil pressure switch to monitor the operating pressure
- Flow switch to monitor the inert gas flow
- Pressure switch to monitor the pressure in the oil box of the pump
- Connection cable and plug for the temperature switch used for temperature monitoring
- Float switch with housing to monitor the oil level

Advantages to the User

- Errors are indicated well in advance so that it will in most cases be possible to complete the process for the running batch
- The switching action is independent of the optical displays (for optimum reliability)
- The temperature switch is already present in the TRIVAC BCS



Dimensional drawing for the LSS (mounted on a TRIVAC BCS)

Typical Application

- Changing the status in case operating conditions arise which are not permissible

Supplied Equipment

Fully wired-up switches with plugs as well as all required gaskets and mounting parts.

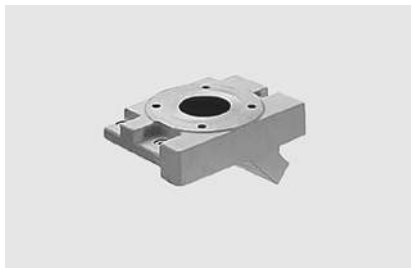
Technical Data

	TRIVAC	LSS 16-25	LSS 40-65
Connection to pump	D 16/25 BCS (-PFPE)	D 16/25 BCS (-PFPE)	D 40/65 BCS (-PFPE)
Operating voltage	V DC	24	24
Switching capacity	W / A	10.0 / 0.4	10.0 / 0.4
Type of protection	IP	54	54
Weight, approx.	kg (lbs)	2.5 (5.5)	2.5 (5.5)

Ordering Information

	LSS 16-25	LSS 40-65
Limit switch system	Part No. 161 06	Part No. 161 07

Roots Pump Adaptor



Roots pump adaptor

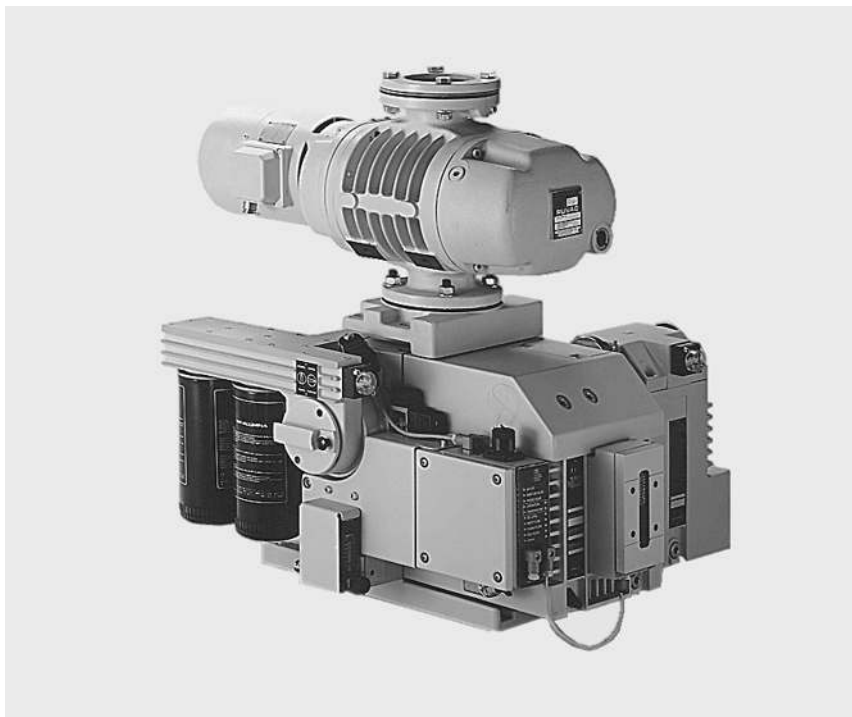
The Roots pump adaptor allows the direct installation of a Roots pump on a TRIVAC D 40/65 B/BCS.

Advantages to the User

- Compact and space-saving
- Short and direct connection between the pumps
- Minimal conductance loss
- Easy installation

Typical Application

- Simple assembly of a small pump system



Pump system consisting of a TRIVAC D 65 BCS and a RUVAC WS 251

Technical Data

Connection to pump	TRIVAC	D 40/65 B/BCS (-PFPE) and RUVAC WAWAU/WS/WSU 251
Weight, approx.	kg (lbs)	11.5 (25.4)

Roots Pump Adaptor

Ordering Information

	Part No.
Roots pump adaptor	168 30

Roots Pump Adaptor

Only available for purchase in North and South America

SE Smoke Eliminator



SE smoke eliminator

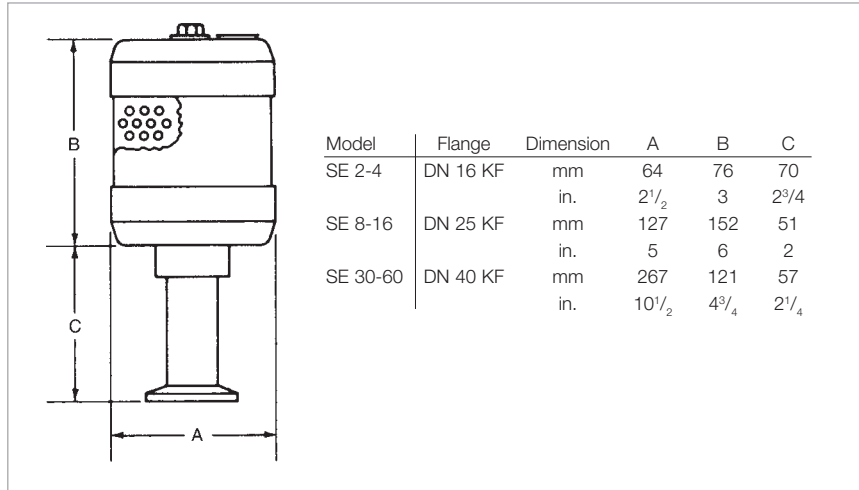
The Leybold SE smoke eliminator can be utilized on all TRIVAC B rotary vane vacuum pumps where pump fluid loss at the exhaust port must be eliminated. These filters consist of a replaceable two-stage coalescing element mounted in a steel housing. For maintenance purposes, the top of the housing can be removed by loosening a single bolt. The filter assembly attaches to the exhaust port of the TRIVAC pump by means of a KF flange. Since three models are available, an SE smoke eliminator is available for each TRIVAC pump model.

Advantages to the User

- Two stage design
- Three sizes for all TRIVAC models
- KF flanges

Applications

When any oil sealed mechanical vacuum pump is used to pump a fixed volume from atmospheric pressure to some lower pressure or when a dynamic gas flow from a process stream is pumped, some mechanical pump fluid loss will occur at the exhaust of the pump. The more often a fixed volume is cycled from atmospheric pressure to a lower pressure or the longer a pump operates at a relatively high inlet pressure in a dynamic flow condition, the greater will be the fluid loss at the exhaust port of the pump.



Dimensional drawing for the SE

Technical Data

SE 2-4 SE 8-16 SE 30-60

Connection to pump	TRIVAC	D 4/8 B	D 16/25 B	D 40/65 B

Ordering Information

SE 2-4 SE 8-16 SE 30-60

	Part No.	Part No.	Part No.
Smoke eliminator	99 171 125	99 171 126	99 171 127
Replacement element			
RE 2-4	99 171 128	-	-
RE 8-16	-	99 171 129	-
RE 30-60	-	-	99 171 130

By utilizing a coalescing exhaust filter for these applications, the fluid and exhaust gases are separated, and in the case of the SE smoke eliminator, the coalesced fluid is allowed to drain back into the pump fluid reservoir. Annoying oil fog to the atmosphere is thus eliminated.

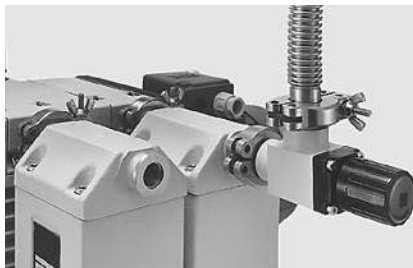
Eventually, after about a year's normal operation, the coalescing element will become totally saturated and oil fog will be apparent when high inlet pressures

are prevailing. The low cost coalescing element can be easily replaced.

Note: For applications where toxic, corrosive, radioactive or precious gases are pumped, we highly recommend the use of our AF coalescing exhaust filters instead of the SE smoke eliminator. The AF is an in-line type coalescing filter and much more suitable for these applications.

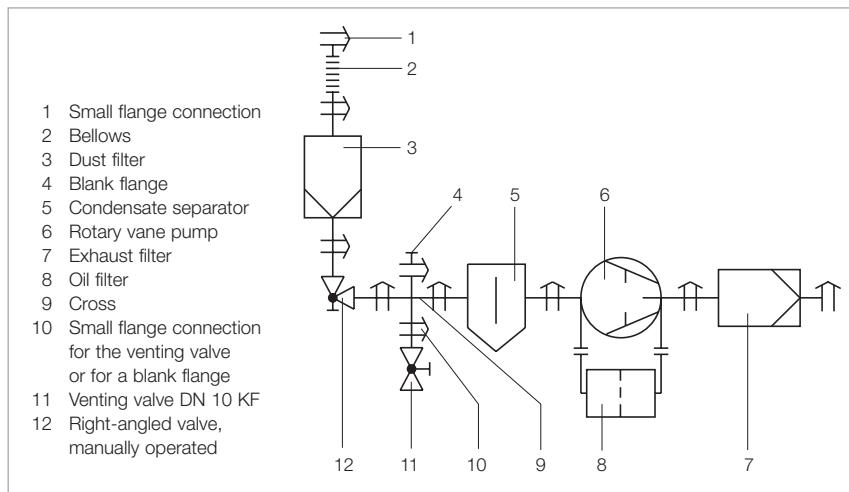
General Accessories

Flange Components, Valves



Our range of flange components and valves is described in detail in the Catalog Parts “Flanges and Fittings” and “Valves”.

Given in the following are only some components which you might find particularly useful when planning your system.



Example of connecting a pump with accessories

Isolation Valve

- The pump is allowed to warm up with the intake line isolated
- The pump may continue to operate in the energy-saving and environmentally compatible ultimate pressure mode when the vacuum chamber is vented briefly
- The pump may be left on after completion of the process so as to regenerate the oil

Branch (Cross)

- Installing a cross in the intake line permits the connection of a vacuum gauge and a venting valve

Flange Connections

Each flange connection requires one each centering and clamping ring.

Ordering Information

DN 16 KF DN 25 KF DN 40 KF

	Part No.	Part No.	Part No.
Small flange connection			
Clamping ring	183 41	183 42	183 43
Centering ring, aluminium/CR	183 26	183 27	183 28
Centering ring, stainless steel/FPM (FKM)	883 46	883 47	883 48
Bellows	872 41	872 43	872 45
Right-angled valve, manually operated			
Aluminium casing	215 375	215 376	215 377
Stainless steel casing	215 383	215 385	215 386
Blank flange for (reducing) cross			
Aluminium	184 46	184 41	184 41
Stainless steel	884 36	884 41	884 41
Reducing cross (to DN 10 KF)			
Aluminium	-	184 17	184 19
Stainless steel	-	884 92	884 94
Cross DN 16 KF			
Aluminium	184 71	-	-
Stainless steel	884 85	-	-
Small flange connection for venting valve or blank flange			
Clamping ring	183 41	183 41	183 41
(Adaptor) centering ring, aluminium/NBR	183 56	183 21	183 21
(Adaptor) centering ring, stainless steel/FPM (FKM)	883 56	883 21	883 21
Venting valve DN 10 KF			
Aluminium	173 24	173 24	173 24
Stainless steel	173 37	173 37	173 37

Miscellaneous

Services

On-site Replacement of the Dynamic Seals (with LEYBONOL LVO 100)

The on-site replacement of the dynamic seals includes the following:

Partial disassembly of the pump, replacement of the complete shaft seal, mounting of the pump including new gaskets and standard oil LEYBONOL LVO 100, electrical safety test, test run including check of the attained ultimate pressure levels.

Ordering Information

On-site Replacement of the Dynamic Seals (with LEYBONOL LVO 100)

	Part No.
For pump	
TRIVAC D 4 B	AS 1130 F
TRIVAC D 8 B	AS 1130 F
TRIVAC D 16/25 B	AS 1129 F
TRIVAC D 40/65 B	AS 1128 F
TRIVAC D 40/65 BCS	AS 1137 F

Small On-site Maintenance (with LEYBONOL LVO 100)

The small on-site maintenance includes the following:

Oil change (standard LEYBONOL LVO 100), filter replacement, visual inspection of the subassemblies, cleaning of the pump module and the oil box, electrical safety test, test run including check of the attained ultimate pressure levels.

Ordering Information

On-site Maintenance (with LEYBONOL LVO 100)

	Part No.
For pump	
TRIVAC D 4 B	AS 1160 F
TRIVAC D 8 B	AS 1159 F
TRIVAC D 16 B + BCS with standard gaskets	AS 1158 F
TRIVAC D 25 B + BCS with standard gaskets	AS 1157 F
TRIVAC D 40/65 B + BCS with standard gaskets	AS 1156 F

Comprehensive On-site Maintenance (with LEYBONOL LVO 100) ¹⁾

Comprehensive on-site maintenance includes the following:

Disassembly of the pump, cleaning of all individual components, replacement of all wearing parts, mounting of the pump including new gaskets and standard oil LEYBONOL LVO 100, electrical safety test, test run including check of the attained ultimate pressure levels.

Ordering Information

Comprehensive On-site Maintenance (with LEYBONOL LVO 100) ¹⁾

	Part No.
For pump	
TRIVAC D 4 B	AS 1125 F
TRIVAC D 8 B	AS 1124 F
TRIVAC D 16 B	AS 1121 F
TRIVAC D 25 B	AS 1120 F
TRIVAC D 40 B	AS 1117 F
TRIVAC D 65 B	AS 1116 F
TRIVAC D 40 BCS with Viton gaskets	AS 1136 F
TRIVAC D 65 BCS with Viton gaskets	AS 1135 F
TRIVAC D 40 BCS with standard gaskets	AS 1132 F
TRIVAC D 65 BCS with standard gaskets	AS 1131 F

¹⁾ Notes on our on-site after sales service

The listed services include the costs for material and working hours on-site for standard TRIVAC pumps. Services for pump variants upon request.

Transportation and travelling expenses are invoiced at cost. All services refer to the repair of freely accessible and not contaminated vacuum components.

As to services for TRIVAC B-DOT, TRIVAC B-Ex and TRIVAC B ³He please ask us for a quotation.

Complete Refurbishing at the Service Center (with LEYBONOL LVO 100)

Complete refurbishing at the service center includes the following:

Disassembly of the pump, visual inspection of the subassemblies, replacement of all wearing parts, machined reworking of the pump module, mounting of the pump including new gaskets and standard oil LEYBONOL LVO 100, electrical safety test, test run including check of the attained ultimate pressure levels.

Ordering Information

Complete Refurbishing at the Service Center (with LEYBONOL LVO 100)

	Part No.
For pump	
TRIVAC D 4 B	AS 1125
TRIVAC D 8 B	AS 1124
TRIVAC D 16 B	AS 1121
TRIVAC D 25 B	AS 1120
TRIVAC D 40 B	AS 1117
TRIVAC D 65 B	AS 1116
TRIVAC D 40 BCS with Viton gaskets	AS 1136
TRIVAC D 65 BCS with Viton gaskets	AS 1135
TRIVAC D 40 BCS with standard gaskets	AS 1132
TRIVAC D 65 BCS with standard gaskets	AS 1131

Complete Refurbishing with Decontamination at the Service Center (with LEYBONOL LVO 100)

Complete refurbishing with decontamination at the service center includes the following:

Disassembly of the pump, decontamination of the individual components, visual inspection of the individual subassemblies, replacement of all wearing parts, machined reworking of the pump module, mounting of the pump including new gaskets and standard oil LEYBONOL LVO 100, electrical safety test, test run including check of the attained ultimate pressure levels.

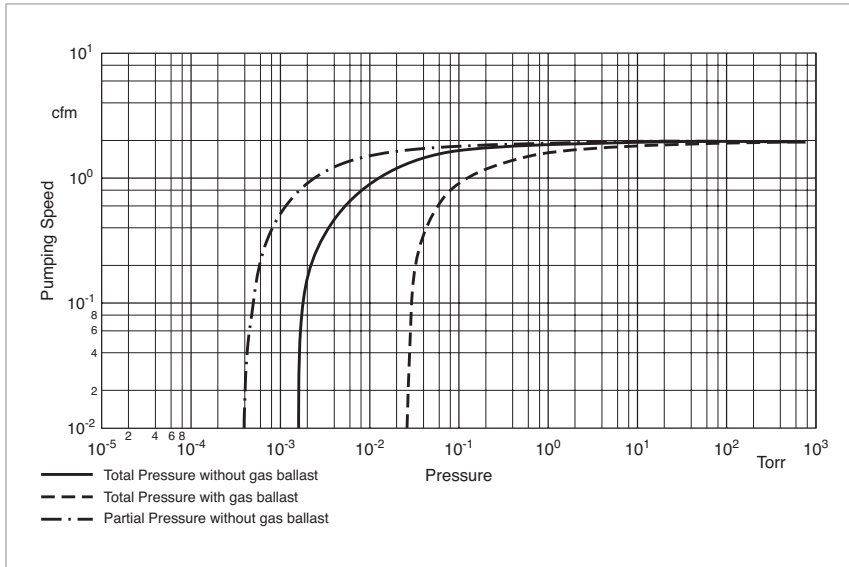
Ordering Information

Complete Refurbishing with Decontamination at the Service Center (with LEYBONOL LVO 100)

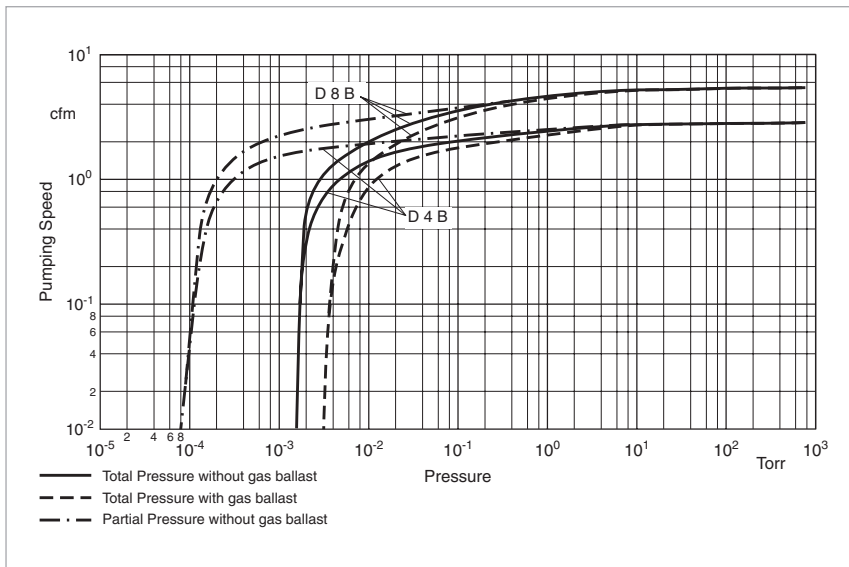
	Part No.
For pump	
TRIVAC D 4 B	AS 1125 D
TRIVAC D 8 B	AS 1124 D
TRIVAC D 16 B	AS 1121 D
TRIVAC D 25 B	AS 1120 D
TRIVAC D 40 B	AS 1117 D
TRIVAC D 65 B	AS 1116 D
TRIVAC D 40 BCS with Viton gaskets	AS 1155 D
TRIVAC D 65 BCS with Viton gaskets	AS 1154 D
TRIVAC D 40 BCS with standard gaskets	AS 1132 D
TRIVAC D 65 BCS with standard gaskets	AS 1131 D

Only available for purchase in North and South America

60 Hz Curves

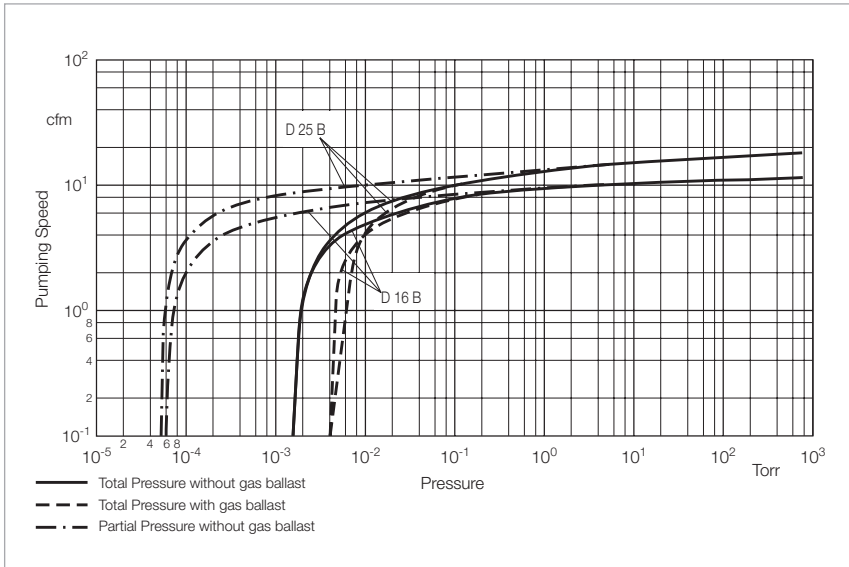


Pumping speed characteristics for the TRIVAC D 2,5 E at 60 Hz

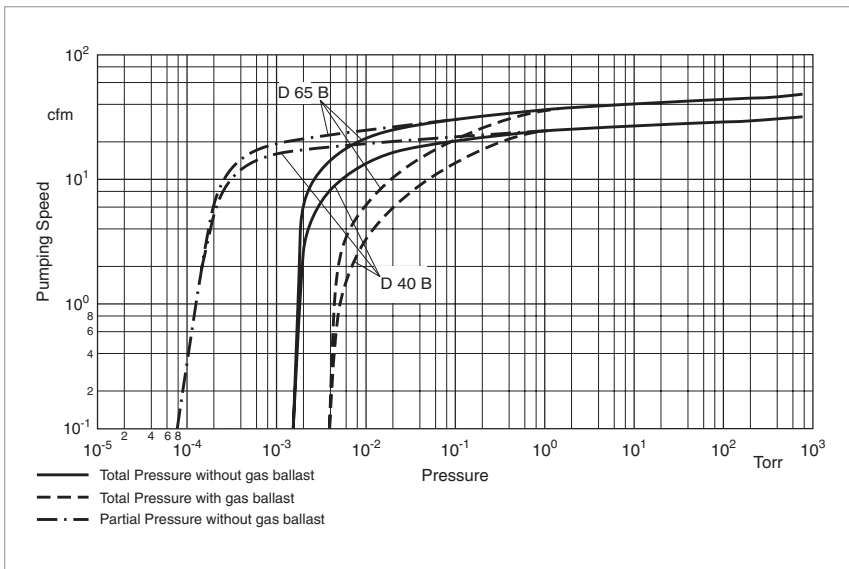


Pumping speed characteristics for the TRIVAC D 4 B and D 8 B at 60 Hz

Only available for purchase in North and South America



Pumping speed characteristics for the TRIVAC D 16 B/BCS and D 25 B/BCS at 60 Hz



Pumping speed characteristics for the TRIVAC D 40 B/BCS and D 65 B/BCS at 60 Hz