Contents

1.3 Technical Data

		50Hz	60Hz
Nominal speed [1]	$m^3.h^{-1}$	280	340
Pumping speed [1]	$m^3.h^{-1}$	240	290
Ultimate partial pressure without gas ballast	mbar	≤ 8.10^{-2}	≤ 8.10^{-2}
Ultimate total pressure with small gas ballast 4 Nm^3/h	mbar	≤ 0,5	≤ 0,5
Ultimate total pressure with standard gas ballast 7.5 Nm^3/h also for EM gas ballast 10 Nm^3/h	mbar	≤ 0,7	≤ 0,7
Ultimate total pressure with big gas ballast 15 Nm^3/h	mbar	≤ 2,0	≤ 2,0
Ultimate total pressure with two big gas ballasts 28 Nm^3/h	mbar	≤ 3,0	≤ 3,0
Water vapour tolerance with small gas ballast 4 Nm^3/h	mbar	4 with turbine 220 mm	5 with turbine 220 mm
Water vapour capacity with small gas ballast 4 Nm^3/h	$kg.h^{-1}$	0,4 with turbine 220 mm	0,6 with turbine 220 mm
Water vapour tolerance with standard gas ballast 7.5 Nm^3/h also for EM gas ballast 10 Nm^3/h	mbar	10 with turbine 220 mm 40 with turbine 150 mm	12 with turbine 220 mm 50 with turbine 150 mm
Water vapour capacity with standard gas ballast 7.5 Nm^3/h also for EM gas ballast 10 Nm^3/h	$kg.h^{-1}$	1,3 with turbine 220 mm 6,0 with turbine 150 mm	1,8 with turbine 220 mm 8,0 with turbine 150 mm
Water vapour tolerance with big gas ballast 15 Nm^3/h	mbar	70 with turbine 150 mm	70 with turbine 150 mm
Water vapour capacity with big gas ballast 15 Nm^3/h	$kg.h^{-1}$	11 with turbine 150 mm	14 with turbine 150 mm
Water vapour tolerance with two big gas ballasts 28 Nm^3/h	mbar	95 with turbine 150 mm	95 with turbine 150 mm
Water vapour capacity with two big gas ballasts 28 Nm^3/h	$kg.h^{-1}$	15 with turbine 150 mm	17 with turbine 150 mm
Noise level [2]	dB(A)	72	76
Leak rate	$mbar.l.s^{-1}$	≤ 1.10^{-3}	≤ 1.10^{-3}
Mains voltage (std) - for other voltages please contact Leybold	V	See Ordering data	
Motor power	kW	See Ordering data	
Type of protection		IP55	IP55
Rated rotational speed	min.-1	1450	1750
Weight (with oil filling)	kg	200	200
Oil capacity (min./max.)	l	8,5/11,5	8,5/11,5
Intake connection		G2	G2 NPT2 [3]nN
Exhaust connection		G2	G2 NPT2 [3]

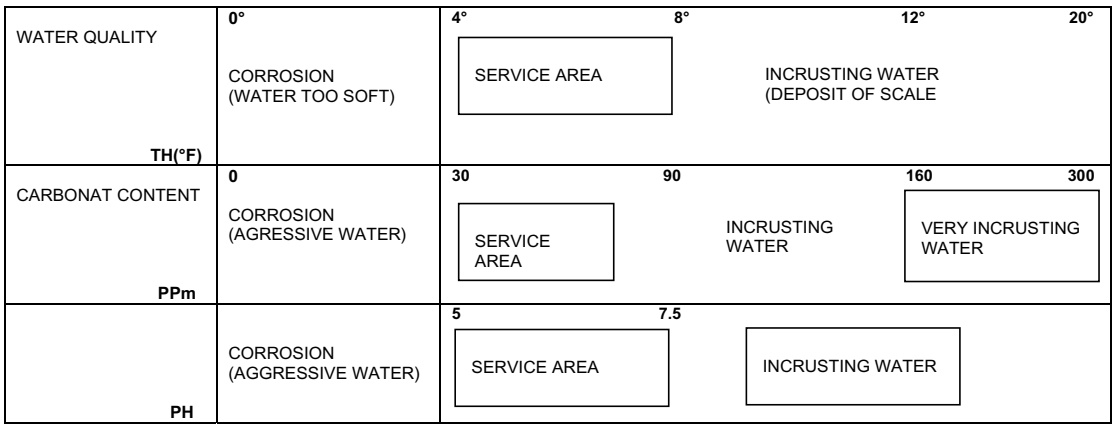
1) according to DIN28400 and following numbers, with standard gas ballast
2) operated at ultimate pressure without gas ballast, free-field measurements at a distance of 1m
3) please contact Leybold

Ordering data Ref. No.	SV300 B
Pump with three-phase motor CEI w/o gas ballast 230 V/400 V, +/-10% , 50 Hz, 5,5kW 460 V, +/-10% , 60Hz, 6,3 kW	960 700
Pump with three-phase motor CEI and integrated gas ballast valve 230 V/400 V, +/-10% , 50 Hz, 5,5kW 460 V, +/-10% , 60Hz, 6,3 kW	960 702
Pump with three-phase motor NEMA and integrated gas ballast 208V +/-10% and 230/460 +/-10%, 60Hz, 10 hp 400V +/-10% 50Hz, 10 hp	960 707
Pump with three-phase motor JIS and integrated gas ballast valve 200V +10% -15%, 50/60Hz, 7,5 kW	960 712
Pump with wide range motor and integrated gas ballast valve 200V -15% ... 230V +10% / 380 ... 400 V +/-10%, 50Hz, 5,5 kW 200V -15% ... 230V +10% / 380 ... 400 V +/-10% & 460 +/-10%, 60Hz, 6,6 kW	960 717

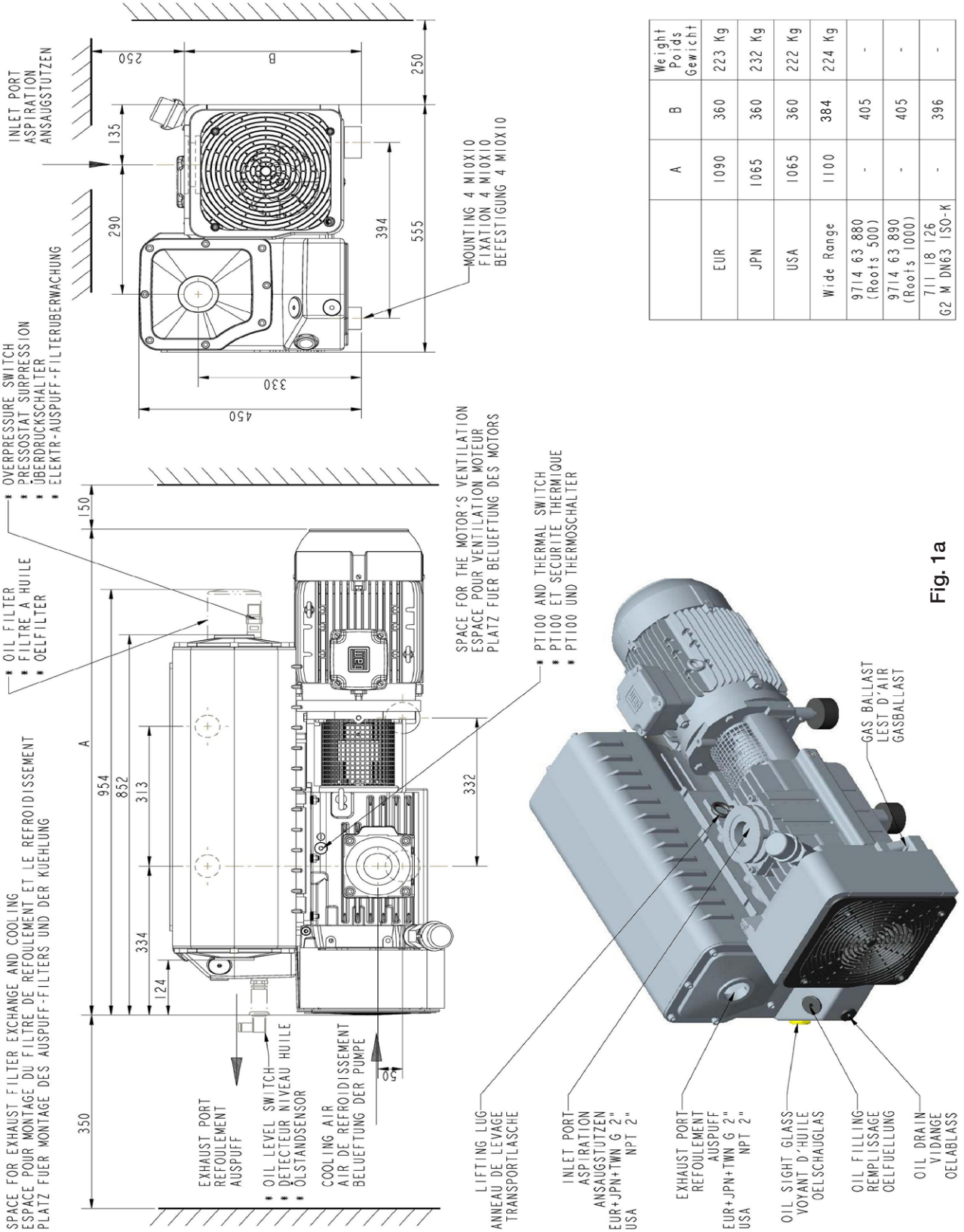
Other gasballast variants available. Please contact us.

WATER COOLING

PRESSURE OF WATER NETWORK : 2 Bar MINI / 8 Bar MAXI
MINIMUM WATER SUPPLY : 600 L/H FOR WATER TEMPERATURE 15°C
VALVE REGULATION ON 2 FOR WARM AMBIANCES 40°C
MAX . WATER TEMPERATURE : 30°C



Description



	A	B	Weight Poids Gewicht
EUR	1090	360	223 Kg
JPN	1065	360	232 Kg
USA	1065	360	222 Kg
Wide Range	1100	384	224 Kg
9714 63 880 (Roots 500)	-	405	-
9714 63 890 (Roots 1000)	-	405	-
711 18 126 G2 M DN63 ISO-K	-	396	-

971464209

Fig. 1a

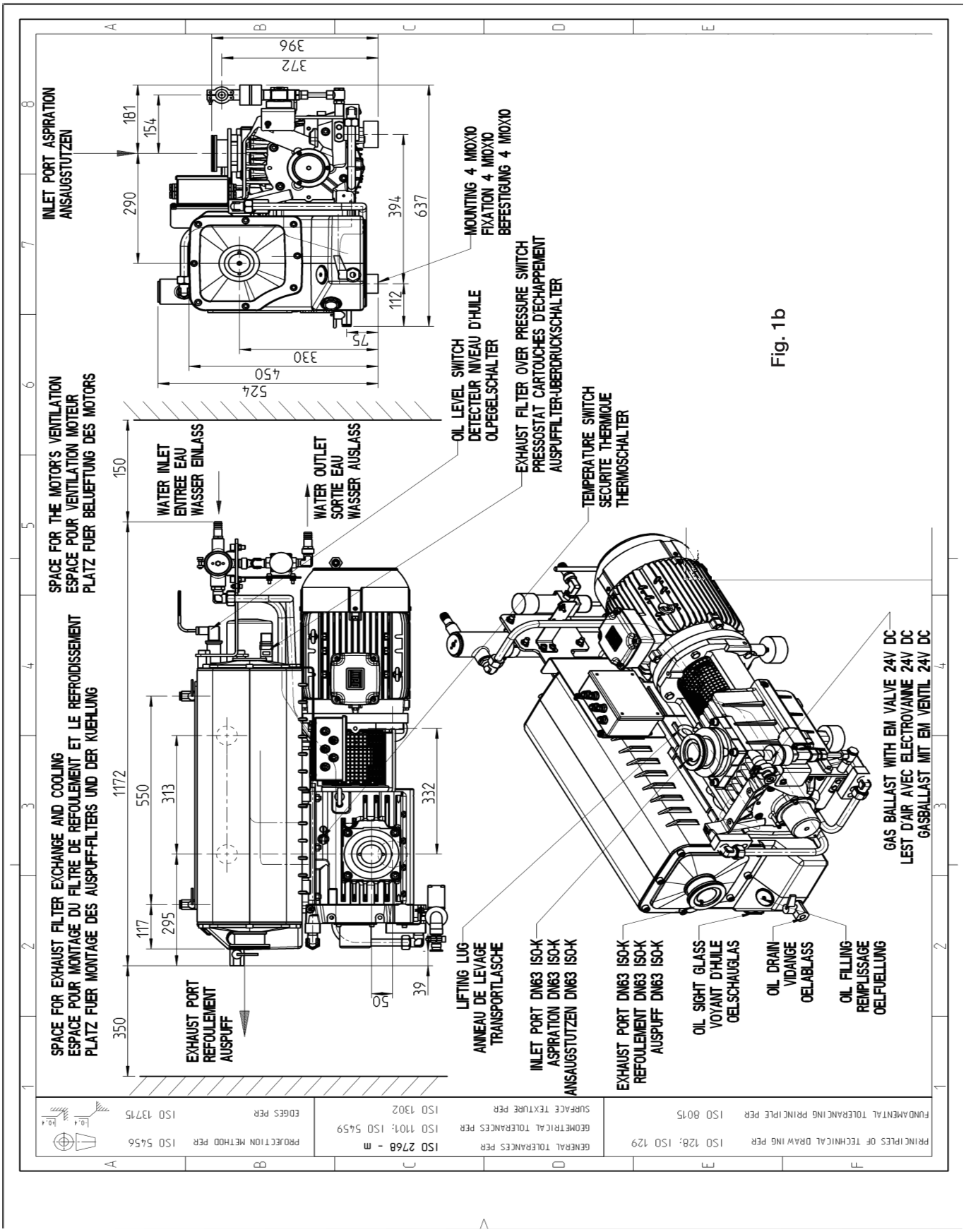

INLET PORT ASPIRATION
ANSAUGSTUTZEN
MOUNTING 4 M10X10
FIXATION 4 M10X10
BEFESTIGUNG 4 M10X10
OIL LEVEL SWITCH
DETECTEUR NIVEAU D'HUILE
OLPEGELSCHALTER
EXHAUST FILTER OVER PRESSURE SWITCH
PRESSOSTAT CARTOUCHES D'ECHAPPEMENT
AUSPUFFILTER-UBERDRUCKSCHALTER
TEMPERATURE SWITCH
SECURITE THERMIQUE
THERMOSCHALTER
SPACE FOR THE MOTOR'S VENTILATION
ESPACE POUR VENTILATION MOTEUR
PLATZ FUER BELUEFTUNG DES MOTORS
WATER INLET
ENTREE EAU
WASSER EINLASS
WATER OUTLET
SORTIE EAU
WASSER AUSLASS
SPACE FOR EXHAUST FILTER EXCHANGE AND COOLING
ESPACE POUR MONTAGE DU FILTRE DE REFOULEMENT ET LE REFROIDISSEMENT
PLATZ FUER MONTAGE DES AUSPUFF-FILTERS UND DER KUEHLUNG
EXHAUST PORT
REFOULEMENT
AUSPUFF
LIFTING LUG
ANNEAU DE LEVAGE
TRANSPORTLASCHE
INLET PORT DN63 ISO-K
ASPIRATION DN63 ISO-K
ANSAUGSTUTZEN DN63 ISO-K
EXHAUST PORT DN63 ISO-K
REFOULEMENT DN63 ISO-K
AUSPUFF DN63 ISO-K
OIL SIGHT GLASS
VOYANT D'HUILE
OELSCHAUGLAS
OIL DRAIN
VIDANGE
OELABLASS
OIL FILLING
REMPLISSAGE
OELFUELLUNG
GAS BALLAST WITH EM VALVE 24V DC
LEST D'AIR AVEC ELECTROVANNE 24V DC
GASBALLAST MIT EM VENTIL 24V DC
396
372
181
154
290
394
637
112
75
330
450
524
150
1172
550
313
117
295
350
332
50
39

Fig. 1b

Description

Conversion factors

Different pressure units

	mbar (millibar)	torr	inches Hg vacuum
1lb = 0.453 kg	1013	760	0
1 qt = 0.946 l	400	300	18.12
1 hp = 0.735 kW	133	100	25.98
1 inch = 25.4 mm	4	3	29.80
1 r.p.m. = 1 min -	1	0,75	29.89
	0,1	0,75	29.92

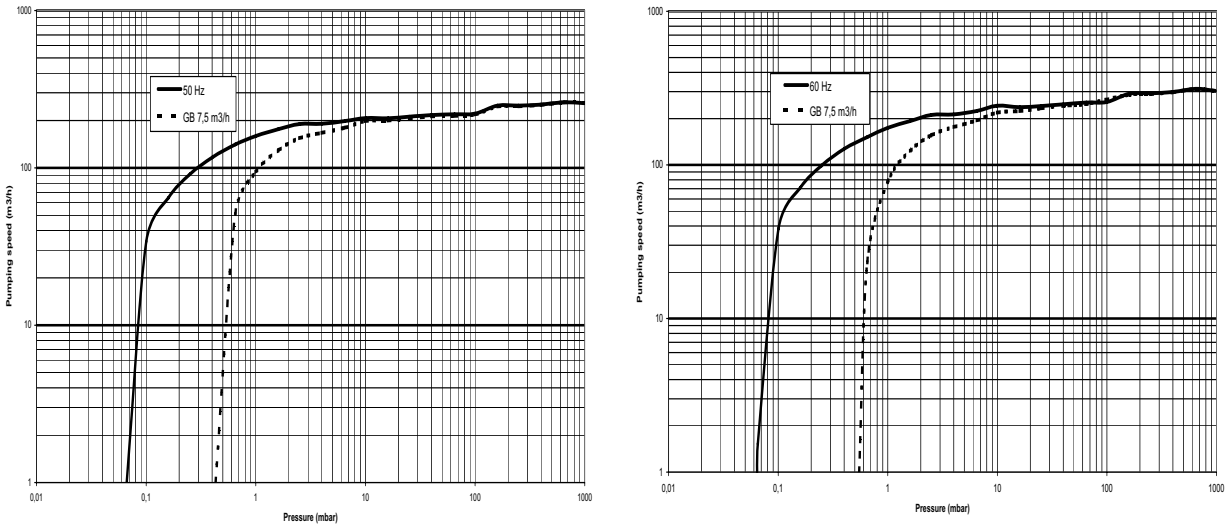
1 atm (atmosphere) = 1013 mbar
1 Pa (pascal) = 0.01 mbar =10-2 mbar
1 bar = 1000 mbar
1 torr = 1.33 mbar

Different pumping speed units

	$m^3.h-1$	$l.s^{-1}$	cfm
$m^3. h^{-1} = m^3/h$ 1	1	0.278	0.589
$l.s^{-1} = l/s$	3.60	1	2.12
cfm (cubic feet per minute)	1.699	0.472	1

Example : $1m^3.h^{-1} = 0.589$ cfm
Note : the nominal pumping speed of a pump at 60Hz is 20% higher than at 50Hz

		60Hz
Nominal speed [1)]	cfm	200
Pumping speed [1)]	cfm	171
Ultimate partial pressure without gas ballast	Torr	6.10^{-2}
Ultimate total pressure with gas ballast	Torrr	0.5
Water vapour tolerance with standard gas ballast standard[1)]	Torr	≤ 30
Motor power	hp	10.5
Rated rotational speed	rpm	1750
Weight (with oil filling)	lb	430
Oil capacity (min./max.)	qt	9/12.2
Intake connection NPT (F)	inches	NPT2
Exhaust connection NPT (F)	inches	NPT2



at 50Hz **at 60Hz**

without gas ballast — — with gas ballast

Fig. 2

1.4 Connection fittings

Item	Description	Size	Cat. Nr.
1	Union coupling + seal	G2 F/M	711 18 025
2	Nipple	G2 M/M - 150 mm long	711 18 035
3	Threaded flange adapter	G2 M - DN 63 ISO-K	711 18 126
4	Centering ring	63 ISO-K AL/NBR	268 07
5	Set of 4 clamps for	M10 x 24	267 01
	ISO-K flanges		
6	Adapter for tubing	G2 DN 50	711 18 015
7	PVC tubing	50 mm, 1 m long	711 18 325
8	Adapter for tubing	G2 DN 60	711 18 016
9	PVC tubing	60 mm, 1 m long	711 18 326
10	Right-angle bend 90°	63 ISO K	887 25
11	Dust filter, paper Dust filter, charcoal Dust filter metal Dust filter polyester	63 ISO K	951 68 711 27 125 711 27 126 711 27 127
12	Ball valve	G2 F/F	711 30 107
13	Tee reducer bush	G2-G2-G1/2 F/F/F	711 18 265
14	Elbow 90°	G2 F/F	711 18 215
15	Dust filter, paper Dust filter, charcoal Dust filter, metal Dust filter polyester	G2 M/F	951 65 711 27 122 711 27 123 711 27 124
16	Vacuum gauge	G1/2 M	951 92
17	Ball valve	G1/2 M/F	711 30 113
18	Threaded flange adapter	G1/2 M - DN 16 KF	711 18 120
19	Regulation valve with isolation valve	G1/2 M	951 87
20	Regulation valve	G1/2 M	951 86
21	Condensate Trap	G2 F -G2 F	951 44

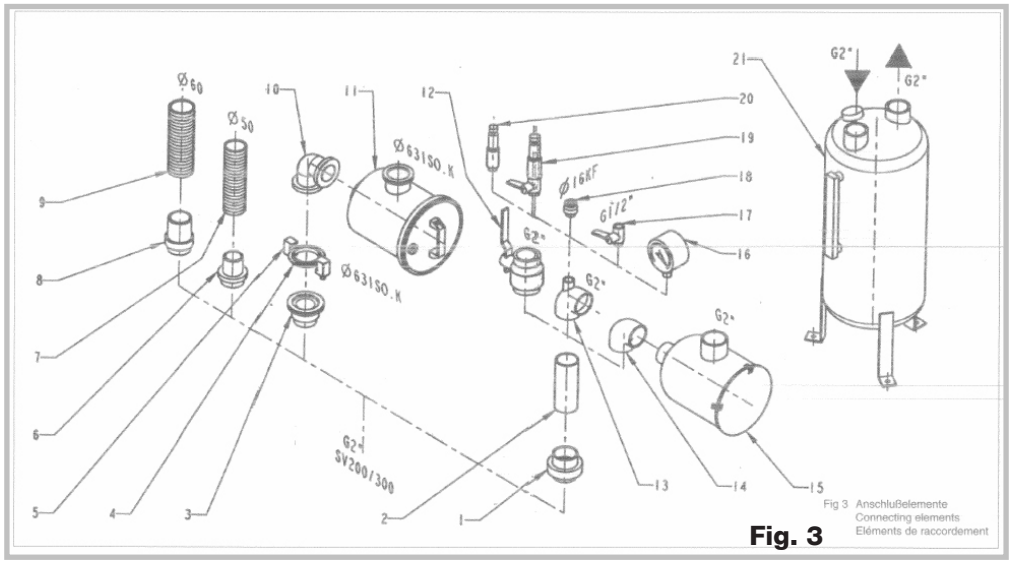


Fig. 3

1.5 Accessories

Description	Size	Cat. Nr.
Oil filter by-pass		712 30 570
Oil drain tap	G" ¾	711 30 114
Gas ballast kit manual ("small", "standard", "big")		9 714 64 130
Gas ballast standard with EM valve 24 V DC (retrofit kit) with end-plate without end-plate		 9714 65 380 * 9714 65 680 *
Exhaust filter gauge		951 94
Exhaust filter overpressure switch		712 22 360 *
Oil level monitor (only with all option oil casing)		712 21 992V * or 9714 58 110 *
Thermal switch (105°C)		9 714 63 930
PT100		9 714 64 020
Adapter Roots 500		9 714 63 880
Adapter Roots 1000		9 714 63 890
Base frame for pump only		711 19 208
Base frame for Roots direct mounting		9 714 56 590
Water cooling with thermostatic valve (only with all option oil casing)		EK971449111 *
Turbine kit 150 mm		EK6503195
Separator SEP 63		953 56
Separator SEP 63 stainless steel		953 57
Separator - Condenser SEPC 63		953 66
Separator - Condenser SEPC 63 stainless steel		953 67

*** Please consult us for retrofit. Our Service can carry out these upgrades.**

Stability of pump is insured with accessories of Leybold; mounting of any other accessory will engage the responsibility of user concerning stability of pump.

1.6 Spare parts

Description	Size	Cat.Nr.
Oil filter standard		710 18 850
Exhaust filter		9 714 31 120
Set of seals	FKM	9 714 64 950
Repair set		9 714 64 960
Module kit	G2"	9 714 47 390
Module kit	NPT2"	9 714 58 970

1.7 Lubricants & grease

Unless otherwise specified on the pump, we recommend to run the Sogevac pumps with Leybonol from Oerlikon Leybold Vacuum which meets following requirements and is approved by OLV:

- low vapor pressure, even at high temperatures ;
- flat viscosity curve ;
- minimum water content and absorption ;
- good lubricating properties ;
- resistant to aging under mechanical strain.

If you use a non-approved oil, we cannot guarantee that our pumps will meet their operating specifications (ultimate pressure, pumping speed, noise, operating temperature, etc). However, the warranty is voided only if the nonapproved oil adversely affects the operation or reliability of the pump.

When using other oil brands, employ nondetergent mineral oils of viscosity class ISO VG68 to ISO VG 100.

Use of other special-grade lubricants for specific applications is possible. Please consult us.

Only use lubricants and grease which have been fully qualified by Leybold.

Pump oil	Ref. No	Grease	Ref. No.
5 liters	711 17 774 / L13005	400 gr	711 17 700
20 liters	711 17 775 / L13020		
200 liters	711 17 779 / L13099		

1.8 Manipulation and stock

Caution

Pumps which have been filled with operating agent must only be moved in the upright position (horizontally). The angle of slope may not be over 10° max. Otherwise oil may escape. Avoid any other orientations during transportation.

Operation

Warning

Check the pump for the presence of any oil leaks, because there is the danger that someone may slip on the oil which has leaked from the pump. Only use the lifting lugs which are provided on the pump to lift the pump with the specified lifting devices.

Caution

Until the pump is put back into service again, the pump should be stored in a dry place, preferably at room temperature (20 °C) but not below 0°C. Before taking the pump out of service, it should be properly disconnected from the vacuum system, purged with dry nitrogen and oil should be exchanged too. The inlet and exhaust ports of the pump must be blanked off using the shipping seals which are included upon delivery of the pump. The gas ballast must be closed and if the pump is to be shelved for a longer period of time it should be sealed in a plastic bag together with a desiccant (Silicagel).

If the pump has been shelved for more than one year, standard maintenance must be run and oil must be exchanged too before the pump is put into service again. We recommend that you contact the service from Leybold.

2 Operation

2.1 Installation

It is essential to observe the following instructions step by step to ensure a safe start-up. Start-up may only be conducted by trained specialists.

Caution

The SOGEVACs can be set up on any flat, horizontal surface. Under the four feet, there are metric threaded holes for securing the pump.

The oil level cannot be read properly if the pump is tilted. Pump risks to run dry. The ambient temperature should be between 12°C (55°F) and 40°C (104°F) depending on oil type. By modifying the pump or changing the oil type, the pump can be run at a lower ambient temperature. Please consult us about this.

To ensure adequate cooling of the pump, leave enough space at the air intake and exhaust points, so as for access and maintenance. Make sure to keep the air intake of motor clear.

2.2 Connection to system

The standard pump is not suitable for installation in explosion hazard areas. Please contact us, when you are planning such an application. Before installing the pump you must reliably disconnect it from the electrical power supply and prevent the pump from running up inadvertently. The pump must only be installed by suitably qualified and trained personnel.

Observe all safety regulations.

2.2.1 Intake Side

The pump has an internally-threaded intake flange. Using suitable connecting elements (see Fig. 3 and Section 1.4), the pump can be connected to the vacuum system. The cross-section of the intake line should be at least the same as the intake port. If the intake line is too narrow, it reduces the pumping speed. We recommend to apply either LOCTITE or TEFLON tape to the screwed unions so that they are vacuum-tight (especially if gases are dangerous).

Warning

- Pump should be connected to inlet line without any tension. Use flex lines or pipe unions in your inlet and exhaust lines so that they can be easily removed for pump maintenance.

- The maximum pressure at the inlet may not exceed atmospheric pressure (about 1013 mbar). Never operate the pump in the presence of over pressures at its intake.

- Type of materials used for mounting of canalisations should take care of pumped gases. It is the same for its tightness.

If the process gas contains dust or particles, it is absolutely essential to install a dust filter in addition to the dust trap supplied (see Section 1.4). We recommend to install the dust filter horizontally using the T-piece (3/13) or the elbow (3/14). This ensures that when removing the filter, no particle falls into the intake port.

You have a choice of four cartridges for the optional inlet filters. The metal cartridge prevents solid particles such as paper or plastics from entering the pump ; the paper and polyester cartridges remove small particles such as dust and powder down to one micron ; the activated carbon cartridge absorbs chemical vapors of acids, solvents, etc. If the carbon cartridge was stored in a damp place, bake it for 2 hours at 212°F (100°C) before use.

When pumping vapors, we recommend to install condensate traps or condensers on the intake side (see Section 1.4).

By pumping of dangerous gases, inlet line must be tight.

No particles or liquids may enter in the pump.

2.2.2 Exhaust Side

The SOGEVACs have integrated exhaust filters which, even at a high gas throughput, trap the oil mist and guarantee exhaust gas free of oil mist. If the exhaust filters are clogged, pressure relief valve opens and the filters are bypassed. As a result, the proportion of oil in the exhaust gas as well as the pump's oil consumption rise. Installing new exhaust filters will correct this problem. (See Section 3.9)

Warning

This situation must be resolved by changing the exhaust filters. It is under utiliser's responsability to assure maintenance on materiel to avoid any tres-passement of the limits autorised by regulations.

Check in the individual case whether an exhaust line is necessary and/or prescribed. Volatile substances can pass through the filter. Depending on the processed gas, we recommend to connect an exhaust line ; this is always necessary when the exhaust gases are dangerous.

Observe the safety precautions that apply to your application and process gases. The pump's exhaust port also has an internal thread (ET3/18). A hose can be connected via a suitable screw-in nipple (see Fig. 3 and Section 1.4).

The cross-section of the exhaust line should be at least the same as the pump's exhaust port. If the exhaust line is too narrow, overpressure may occur in the pump.

Before installing the exhaust line, remove the exhaust-flange plate and ensure that the exhaust demister(s) are secured tightly in place. They sometimes loosen during shipping and installation. A loose demister results in exhaust smoke during start-up and operation.

Warning

Install the exhaust line with a downward slope to prevent condensate from flowing back into the pump. If this is not possible, we strongly recommend to install a condensate trap (see Section 1.5). if several pumps are connected to one exhaust line, ensure an adequate cross-section and a non-return valve at the exhaust of each pump.

Never operate the pump with a blocked or restricted exhaust line. Before start-up ensure, that any blinds or similar shut-off devices in the exhaust line on the pressure side are opened and that the exhaust line is not obstructed. Such restrictions reduce the pumping speed, increase the temperature, and could overload the motor or cause a dangerous overpressure in the pump. Excessive pressure in the pump could damage the seals, blow out the sight glass, or destroy the pump housing. In addition to this explosion hazard, excessive backpressure can result in hazardous process gases leaking out of the pump. If you are purging the oil casing with inert gas, limit the inert-gas flow. Contact Leybold for recommendations.

When pumping dangerous gases, exhaust line must be tight.

Warning

The maximum exhaust pressure must not exceed 1,15 bar (absolute). Also reliably prevent the occurrence of any blockage in the exhaust line. Exhaust filter, accessories and the tubing must be rated according to the maximum throughput. The maximum throughput is equivalent to the pumping speed of the pumps.