

Products

DIP Pumps Water-Cooled



DIP 12 000



DIP 20 000 with Power Controller

The DIP range of pumps was developed for operation in industrial systems. Excellent vacuum performance data combined with the inherent ruggedness of this kind of pump, make our diffusion pumps a reliable component in high and medium vacuum applications.

Advantages to the User

- High pumping speeds in the fine and high vacuum ranges
- Low attainable ultimate pressure
- Integrated, water-cooled cold cap baffle guarantees low oil backstreaming rates into the vacuum chamber
- Low oil losses (even at high gas throughputs) by integrated water-cooled forevacuum baffle
- High forevacuum resistance even at reduced heating power
- The heating cartridges are accessible from the outside via heating inserts which are built into the boiler. This ensures a quick exchange of single heating cartridges (even when the pump is hot)
- A separate automatic circuit breaker for each heating cartridge ensures a high level of electrical safety
- A standard built-in thermostat acts as an thermal overload switch and ensures that the heating cartridges can not overheat
- All pumps are prepared for installation with an over-temperature switch (optional) for checking the cooling water circuit, and a contact thermometer (optional) to monitor the operating temperature of the diffusion pump
- Indication of the oil level by sight-glass permits simple checking of the current oil level
- All DIP pumps are delivered with their inside chamber cleaned in such a manner that it is free of oil. The inside is evacuated. In the condition as delivered, the pumps may be also operated with silicone oil
- Utilisation of the DIP power controller cuts power consumption by up to 30% without impairing pump performance (option)

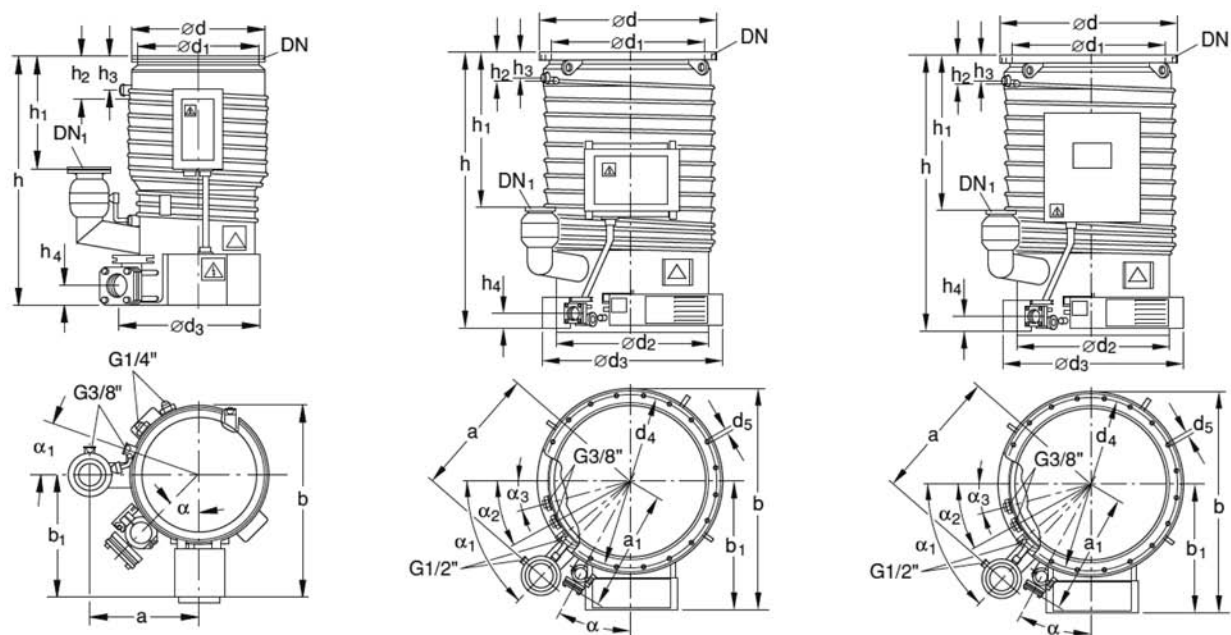
Typical Applications

The diffusion pumps from the DIP range are used in coating systems, vacuum melting and drying systems as well as in vacuum furnaces in the area of metallurgy.

Supplied Equipment

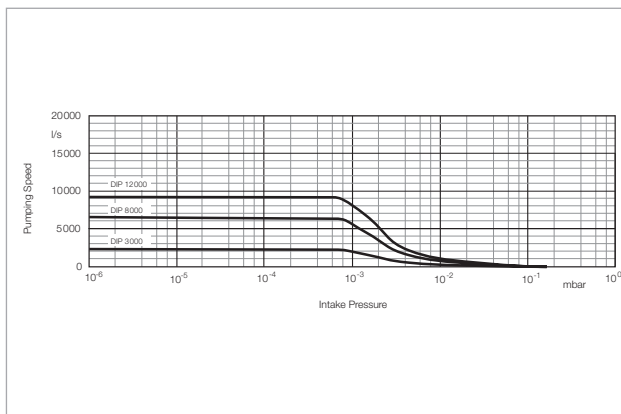
The DIP pumps are supplied ready for connection but without the filling of pump fluid.

The inside of the pump is cleaned before delivery to such an extent that it is free of oil. The inside is evacuated. High and forevacuum flanges are equipped with gaskets and centering rings having shipping flanges and complete with clamping components.

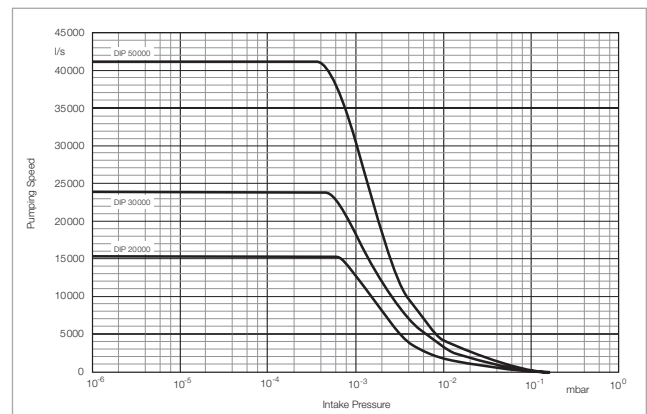


DIP	3 000	8 000	12 000	20 000	30 000	50 000
DN	250 ISO-K	400 ISO-K	500 ISO-K	630 ISO-F	800 ISO-F	1000 ISO-F
DN ₁	63 ISO-K	63 ISO-K	100 ISO-K	100 ISO-K	160 ISO-K	160 ISO-K
a	240 (9.45)	350 (13.78)	420 (16.54)	540 (21.26)	600 (23.62)	800 (31.5)
a ₁	250.5 (9.86)	375.5 (14.78)	432 (17)	496 (19.53)	536 (21.10)	636 (25.04)
b	443 (17.44)	643 (25.31)	775 (30.51)	980 (38.58)	1150 (45.28)	1350 (53.15)
b ₁	276 (10.87)	373 (14.69)	460 (18.11)	600 (23.62)	690 (27.17)	790 (31.10)
d	290 (11.42)	450 (17.72)	550 (21.65)	750 (29.53)	920 (36.22)	1120 (44.09)
d ₁	261 (10.28)	400 (15.75)	501 (19.72)	651 (25.63)	800 (31.5)	1000 (39.37)
d ₂	—	405 (15.94)	506 (19.92)	636 (25.04)	716 (28.19)	916 (36.06)
d ₃	278 (10.94)	530 (20.87)	630 (24.80)	760 (29.92)	840 (33.07)	1040 (40.94)
d ₄	—	—	—	720 (28.35)	890 (35.04)	1090 (42.91)
d ₅	—	—	—	14 (0.55)	14 (0.55)	14 (0.55)
Quantity of holes	—	—	—	20	24	32
h	560 (22.05)	785 (30.91)	940 (37)	1130 (44.49)	1450 (57.09)	1880 (74.02)
h ₁	250 (9.84)	400 (15.75)	470 (18.5)	620 (24.41)	870 (34.25)	1275 (50.2)
h ₂	68 (2.68)	88 (3.46)	92 (3.62)	97 (3.82)	102 (4.02)	102 (4.02)
h ₃	75 (2.95)	102 (4.02)	106 (4.17)	110 (4.33)	116 (4.57)	116 (4.57)
α	45°	30°	30°	30°	20°	25°
α ₁	20°	45°	45°	45°	45°	45°
α ₂	—	30°	30°	30°	30°	25°
α ₃	—	15°	15°	15°	15°	15°

Dimensional drawing for the DIP 3000 [left], DIP 8000 and DIP 12000 [middle], DIP 20 000 to DIP 50 000 [right]; dimensions in brackets () are in inch



Pumping speed characteristics of the DIP 3000 to 12000 pumps as a function of intake pressure



Pumping speed characteristics of the DIP 20000 to 50000 pumps as a function of intake pressure

Technical Data

DIP 3 000

DIP 8 000

DIP 12 000

High vacuum / forevacuum connection	DN	250 ISO-K / 63 ISO-K	400 ISO-K / 63 ISO-K	500 ISO-K / 100 ISO-K
Pumping speed for air ¹⁾ below 1×10^{-4} mbar	l/s	3 000	8 000	12 000
Operating range	mbar (Torr)	$< 10^{-2}$ to 10^{-7} (0.75×10^{-2} to 0.75×10^{-7})	$< 10^{-2}$ to 10^{-7} (0.75×10^{-2} to 0.75×10^{-7})	$< 10^{-2}$ to 10^{-7} (0.75×10^{-2} to 0.75×10^{-7})
Ultimate total pressure ¹⁾	mbar (Torr)	$< 5.0 \times 10^{-7}$ (3.75×10^{-7})	$< 5.0 \times 10^{-7}$ (3.75×10^{-7})	$< 5.0 \times 10^{-7}$ (3.75×10^{-7})
Max. permissible forevacuum pressure	mbar (Torr)	6.0×10^{-2} (4.5×10^{-2})	6.0×10^{-2} (4.5×10^{-2})	6.0×10^{-2} (4.5×10^{-2})
Pump fluid filling, min. / max.	l (qts)	1.0 / 1.4 (1.1 / 1.5)	1.7 / 3.4 (1.8 / 3.6)	2.4 / 5.3 (2.5 / 5.6)
Mains connection				
Standard EURO, 50/60 Hz	V	230 ~ 1 Ph	400 ~ 3 Ph Y	400 ~ 3 Ph Y
Standard Americas, 50/60 Hz	V	230 ~ 1 Ph	460 ~ 3 Ph Y	460 ~ 3 Ph Y
Special, 50/60 Hz	V	–	230 ~ 3 Ph Δ	230 ~ 3 Ph Δ
Heating power	kW	2.4	4.8	7.2
Number of heating cartridges		2	6	9
Heating up time	min	< 25	< 25	< 25
Cooling water (minimum) for pump ²⁾ for cold cap baffle max. supply pressure	l/h (gal/min) l/h (gal/min) bar (psig)	160 (0.7) 20 (0.09) 6 (87)	290 (1.28) 30 (0.13) 6 (87)	500 (2.2) 50 (0.22) 6 (87)
Number of cooling circuits (including cold cap baffle)		2	2	2
Cooling water connection for pump for cold cap baffle	G (BPS) G (BPS)	3/8" 1/4"	1/2" 3/8"	1/2" 3/8"
Weight, approx.	kg (lbs)	29 (64)	70 (154)	102 (225)
Recommended backing pump ³⁾ at operating pressures > 10^{-4} mbar (> 0.75×10^{-4} Torr) at operating pressures < 10^{-4} mbar (< 0.75×10^{-4} Torr)		TRIVAC D 65 B + W 251 –	SV 300 + W 251 TRIVAC D 65 B + W 251	SV 300 + W 501 TRIVAC D 65 B + W 251

Ordering Information

DIP 3 000

DIP 8 000

DIP 12 000

	Part No.	Part No.	Part No.
Oil diffusion pump			
Standard EURO	222 10	222 20	222 25
Standard Americas	222 10	500 670	500 591
Special	–	500 649	22225V003
Astrotorus baffle	227 50	227 60	227 65
Water flow monitor	500006623	500006623	500006623
Over-temperature protection switch	122 84	122 84	122 84
Contact thermometer	218 81	218 81	218 81
Resistance thermometer Pt100 sensor	200 02 958	200 02 958	200 02 958
Pump fluid ⁴⁾	see Catalog Part "Oils / Greases / Lubricants LEYBONOL"		

¹⁾ Measured to DIN 28 427 with LEYBONOL LVO 500 as the pump fluid

²⁾ The required quantity of cooling water refers to $\Delta T = 10^\circ \text{C}$ (50°F). The discharge temperature should not exceed 30°C (86°F)

³⁾ Single- or two-stage rotary vane vacuum pump (TRIVAC; SOGEVAC) from our range of forevacuum pumps jointly with Roots vacuum pumps (RUVAC) in pump systems

⁴⁾ Oil must be purchased separately

Technical Data

DIP 20 000

DIP 30 000

DIP 50 000

High vacuum / forevacuum connection	DN	630 ISO-F / 100 ISO-K	800 ISO-F / 160 ISO-K	1000 ISO-F / 160 ISO-K
Pumping speed for air ¹⁾ below 1×10^{-4} mbar	l/s	20 000	30 000	50 000
Operating range	mbar (Torr)	$< 10^{-2}$ to 10^{-7} (0.75×10^{-2} to 0.75×10^{-7})	$< 10^{-2}$ to 10^{-7} (0.75×10^{-2} to 0.75×10^{-7})	$< 10^{-2}$ to 10^{-7} (0.75×10^{-2} to 0.75×10^{-7})
Ultimate total pressure ¹⁾	mbar (Torr)	$< 5.0 \times 10^{-7}$ (3.75×10^{-7})	$< 5.0 \times 10^{-7}$ (3.75×10^{-7})	$< 5.0 \times 10^{-7}$ (3.75×10^{-7})
Max. permissible forevacuum pressure	mbar (Torr)	6.0×10^{-2} (4.5×10^{-2})	6.0×10^{-2} (4.5×10^{-2})	6.0×10^{-2} (4.5×10^{-2})
Pump fluid filling, min. / max.	l (qts)	7.0 / 11.0 (7.4 / 11.6)	10.0 / 15.0 (10.6 / 15.9)	15.0 / 25.0 (15.9 / 26.4)
Mains connection				
Standard EURO, 50/60 Hz	V	400 ~ 3 Ph Y	400 ~ 3 Ph Y	400 ~ 3 Ph Y
Standard Americas, 50/60 Hz	V	460 ~ 3 Ph Y	460 ~ 3 Ph Y	460 ~ 3 Ph Y
Special, 50/60 Hz	V	230 ~ 3 Ph Δ	230 ~ 3 Ph Δ	230 ~ 3 Ph Δ
Reduced power consumption through power controller (saves up 30%)	kW	8.4	12.6	16.8
Heating power	kW	12	18	24
Number of heating cartridges		12	18	24
Heating up time	min	< 25	< 30	< 30
Cooling water (minimum) for pump ²⁾	l/h (gal/min)	600 (2.6)	900 (4.0)	1500 (6.6)
for cold cap baffle	l/h (gal/min)	60 (0.26)	80 (0.35)	150 (0.66)
max. supply pressure	bar (psig)	6 (87)	6 (87)	6 (87)
Number of cooling circuits (including cold cap baffle)		2	3	3
Cooling water connection for pump	G (BPS)	1/2"	1/2"	1/2"
for cold cap baffle	G (BPS)	3/8"	3/8"	3/8"
Weight, approx.	kg (lbs)	172 (379)	296 (653)	560 (1235)
Recommended backing pump ³⁾ at operating pressures > 10^{-4} mbar (> 0.75×10^{-4} Torr) at operating pressures < 10^{-4} mbar (< 0.75×10^{-4} Torr)		SV 200 + W 501 TRIVAC D 65 B + W 251	SV 300 + W 1001 SV 300 + W 251	SV 630 B + W 2001 SV 300 + W 501

Ordering Information

DIP 20 000

DIP 30 000

DIP 50 000

	Part No.	Part No.	Part No.
Oil diffusion pump			
Standard EURO with control unit	222 30V001	222 35V001	222 40V001
Standard Americas with control unit	222 30V002	222 35V002	222 40V002
Standard EURO	222 30	222 35	222 40
Standard Americas	500 882	500 665	500 728
Special	22230V004	22235V006	500 654
Retrofit kit energy control unit	503 647V001	503 648V001	503 649V001
Retrofit kit energy control unit US	503 647V002	503 648V002	503 649V002
Astrotorus baffle	227 70	227 75	227 80
Water flow monitor	500006623	500006623	500006623
Over-temperature protection switch	122 84	122 84	122 84
Contact thermometer	218 81	218 81	218 81
Resistance thermometer Pt100 sensor	200 02 958	200 02 958	200 02 958
Pump fluid ⁴⁾	see Catalog Part "Oils / Greases / Lubricants LEYBONOL"		

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