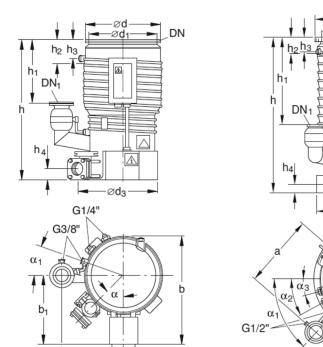
Leybold DIP Series Technical Specifications

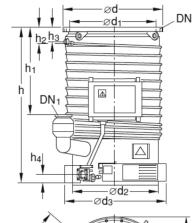
-	DIP 3 000	DIP 8 000	DIP 12 000	
High vacuum / forevacuum connection DN	250 ISO-K / 63 ISO-K	400 ISO-K / 63 ISO-K	500 ISO-K / 100 ISO-K	
Pumping speed for air ¹) below 1 x 10 ⁻⁴ mbar I/s	3 000	8 000	12 000	
Operating range mbar (Torr)	< 10 ⁻² to 10 ⁻⁷ (0.75 x 10 ⁻² to 0.75 x 10 ⁻⁷)	< 10 ⁻² to 10 ⁻⁷ (0.75 x 10 ⁻² to 0.75 x 10 ⁻⁷)	< 10 ⁻² to 10 ⁻⁷ (0.75 x 10 ⁻² to 0.75 x 10 ⁻⁷)	
Ultimate total pressure 1) mbar (Torr)	< 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻⁷)	< 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻⁷)	< 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻⁷)	
Max. permissible forevacuum pressure mbar (Torr)	6.0 x 10 ⁻² (4.5 x 10 ⁻²)	6.0 x 10 ⁻² (4.5 x 10 ⁻²)	6.0 x 10 ⁻² (4.5 x 10 ⁻²)	
Pump fluid filling, min. / max. I (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 Standard Americas, 50/60 Hz V Special, 50/60 Hz V	230 ~ 1 Ph 230 ~ 1 Ph -	400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ	400 ~ 3 Ph Y 460 ~ 3 Ph Y 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⁾ I/h (gal/min) for cold cap baffle max. supply pressure bar (psig)	20 (0.09)	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 G (BPS) for cold cap baffle G (BPS)		1/2" 3/8"	1/2" 3/8"	
Weight, approx. kg (lbs)	29 (64)	70 (154)	102 (225)	
at operating pressures > 10 ⁻⁴ mbar (> 0.75 x 10 ⁻⁴ Torr) at operating pressures < 10 ⁻⁴ mbar (< 0.75 x 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	
	DID 20 000	DID 30 000	DIP 50 000	
High and the District Police of the District	DIP 20 000	DIP 30 000	DIP 50 000	
High vacuum / forevacuum connection DI Pumping speed for air 1)	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 x 10-⁴ mbar	s 20 000 r < 10 ² to 10 ⁷	800 ISO-F / 160 ISO-K 30 000 < 10°2 to 10°7	1000 ISO-F / 160 ISO-K 50 000 < 10 ⁻² to 10 ⁻⁷	
Pumping speed for air ¹¹ below 1 x 10 ⁴ mbar	630 ISO-F / 100 ISO-K s 20 000 r < 10 ² to 10 ⁷) (0.75 x 10 ² to 0.75 x 10 ⁷)	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷)	1000 ISO-F / 160 ISO-K 50 000 < 10°2 to 10°7 (0.75 x 10°2 to 0.75 x 10°	
Pumping speed for air ¹) below 1 x 10-⁴ mbar	630 ISO-F / 100 ISO-K 5 20 000 1 < 10 ² to 10 ⁷ 1 (0.75 x 10 ² to 0.75 x 10 ⁷)	800 ISO-F / 160 ISO-K 30 000 < 10°2 to 10°7	1000 ISO-F / 160 ISO-K 50 000 < 10°2 to 10°7 (0.75 x 10°2 to 0.75 x 10°	
Pumping speed for air ¹¹ below 1 x 10-⁴ mbar	(a) 630 ISO-F / 100 ISO-K (b) 20 000 (c) 7 (0.75 x 10 ² to 0.75 x 10 ⁷) (c) 75 x 10 ² to 0.75 x 10 ⁷) (c) 75 x 10 ² (4.5 x 10 ²)	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁻⁷ (0.75 x 10 ⁻² to 0.75 x 10 ⁻⁷) < 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻⁷) 6.0 x 10 ⁻² (4.5 x 10 ⁻²)	1000 ISO-F / 160 ISO-K 50 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ²) < 5.0 x 10 ⁷ (3.75 x 10 ²) 6.0 x 10 ² (4.5 x 10 ²)	
Pumping speed for air 1) below 1 x 10-4 mbar	(a) 630 ISO-F / 100 ISO-K (b) 20 000 (c) 7 (0.75 × 10 ² to 0.75 × 10 ⁷) (c) 75 × 10 ² to 0.75 × 10 ⁷) (c) 75 × 10 ² (4.5 × 10 ²)	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁻⁷ (0.75 x 10 ⁻² to 0.75 x 10 ⁻⁷) < 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻⁷)	1000 ISO-F / 160 ISO-K 50 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ² < 5.0 x 10 ⁷ (3.75 x 10 ²) 6.0 x 10 ² (4.5 x 10 ²)	
Pumping speed for air ¹¹ below 1 x 10⁴ mbar	(a) 630 ISO-F / 100 ISO-K (b) 20 000 (c) 7 (0.75 x 10 ² to 0.75 x 10 ⁷) (c) 75 x 10 ² to 0.75 x 10 ⁷) (c) 75 x 10 ² (4.5 x 10 ²)	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁻⁷ (0.75 x 10 ⁻² to 0.75 x 10 ⁻⁷) < 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻⁷) 6.0 x 10 ⁻² (4.5 x 10 ⁻²)	1000 ISO-F / 160 ISO-K 50 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ²) < 5.0 x 10 ⁷ (3.75 x 10 ²) 6.0 x 10 ² (4.5 x 10 ²)	
Pumping speed for air ¹¹ below 1 x 10-⁴ mbar	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10.7 to 10.75 x 10.7) (0.75 x 10.2 to 0.75 x 10.7) (5.0 x 10.2 (4.5 x 10.2) 7.0 / 11.0 (7.4 / 11.6) 400 ~ 3 Ph Y 400 ~ 3 Ph Y 230 ~ 3 Ph Δ	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁻⁷ (0.75 x 10 ² to 0.75 x 10 ⁻⁷) < 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻⁷) 6.0 x 10 ⁻² (4.5 x 10 ⁻²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y	1000 ISO-F / 160 ISO-K 50 000 < 10 ⁻² to 10 ⁻⁷ (0.75 x 10 ⁻² to 0.75 x 10 ⁻² < 5.0 x 10 ⁻⁷ (3.75 x 10 ⁻²) 6.0 x 10 ⁻² (4.5 x 10 ⁻²) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 460 ~ 3 Ph Y	
Pumping speed for air ¹¹ below 1 x 10⁴ mbar	N 630 ISO-F / 100 ISO-K S 20 000 r < 10° to 10° to 10°) (0.75 × 10° to 0.75 × 10°) r < 5.0 × 10° (3.75 × 10°) r < 5.0 × 10° (4.5 × 10°) r < 5.0 × 10° (4.5 × 10°) r < 400 – 3 Ph Y r < 400 – 3 Ph Y r < 300 – 3 Ph Δ r < 8.4 r < 12	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷) < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ	50 000 <10°2 to 10°7 (0.75 x 10° to 0.75 x 10°1 <5.0 x 10° (3.75 x 10°1) 6.0 x 10° (4.5 x 10°2) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ	
Pumping speed for air 1) below 1 x 10-4 mbar Operating range Ultimate total pressure 1) Max. permissible forevacuum pressure mbar (Tori Pump fluid filling, min. / max. I (qts Mains connection Standard EURO, 50/60 Hz Standard Americas, 50/60 Hz Special, 50/60 Hz Reduced power consumption through power controller (saves up 30%) Heating power KV Number of heating cartridges	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10.7 to 1.75 x 10.7) (0.75 x 10.2 to 0.75 x 10.7) (5.0 x 10.2 (4.5 x 10.2) (7.0 / 11.0 (7.4 / 11.6) (8.4	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷) < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ 12.6 18 18	50 000 < 10 ² to 10 ⁷ (0.75 x 10 ⁹ to 0.75 x 10 ⁹ < 5.0 x 10 ⁷ (3.75 x 10 ²) 6.0 x 10 ² (4.5 x 10 ²) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 230 ~ 3 Ph Δ 16.8 24 24	
Pumping speed for air ¹¹ below 1 x 10-⁴ mbar	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷) < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ	50 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷ < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ	
Pumping speed for air 1) below 1 x 10-4 mbar Operating range Ultimate total pressure 1) Max. permissible forevacuum pressure mbar (Tori Pump fluid filling, min. / max. I (qts Mains connection Standard EURO, 50/60 Hz Standard Americas, 50/60 Hz Special, 50/60 Hz Reduced power consumption through power controller (saves up 30%) Heating power KV Number of heating cartridges	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷) < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ 12.6 18 18	50 000 < 10 ² to 10 ⁷ (0.75 x 10 ⁹ to 0.75 x 10 ⁹ < 5.0 x 10 ⁷ (3.75 x 10 ²) 6.0 x 10 ² (4.5 x 10 ²) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 230 ~ 3 Ph Δ 16.8 24 24	
Pumping speed for air 1) below 1 x 10-4 mbar Operating range mba (Ton Ultimate total pressure 1) mbar (Ton Max. permissible forevacuum pressure mbar (Ton Pump fluid filling, min. / max. I (qts Mains connection Standard EURO, 50/60 Hz Standard Americas, 50/60 Hz Special, 50/60 Hz Reduced power consumption through power controller (saves up 30%) kW Heating power Number of heating cartridges Heating up time mi Cooling water (minimum) for pump 2) for cold cap baffle	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷) < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ 12.6 18 18 < 30 900 (4.0) 80 (0.35)	50 000 <10°2 to 10°7 (0.75 x 10° to 0.75 x 10°3 <5.0 x 10° (3.75 x 10°3) 6.0 x 10° (4.5 x 10°3) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 230 ~ 3 Ph Δ 16.8 24 24 <30 1500 (6.6) 150 (0.66)	
Pumping speed for air 1) below 1 x 10 ⁻⁴ mbar Operating range (Ton Ultimate total pressure 1) Max. permissible forevacuum pressure mbar (Ton Pump fluid filling, min. / max. I (qts Mains connection Standard EURO, 50/60 Hz Standard Americas, 50/60 Hz Special, 50/60 Hz Reduced power consumption through power controller (saves up 30%) kV Heating power Number of heating cartridges Heating up time Cooling water (minimum) for pump 20 for cold cap baffle max. supply pressure Number of cooling circuits	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10.	800 ISO-F / 160 ISO-K 30 000 < 10² to 10² (0.75 x 10² to 0.75 x 10²) < 5.0 x 10² (3.75 x 10²) 6.0 x 10² (4.5 x 10²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ 12.6 18 18 < 30 900 (4.0) 80 (0.35) 6 (87)	50 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ³ < 5.0 x 10 ⁷ (3.75 x 10 ²) 6.0 x 10 ² (4.5 x 10 ²) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 230 ~ 3 Ph Δ 16.8 24 24 < 30 1500 (6.6) 150 (0.66) 6 (87)	
Pumping speed for air ¹¹¹ below 1 x 10-⁴ mbar Operating range mba (Torn Ultimate total pressure ¹¹ mbar (Torn Max. permissible forevacuum pressure mbar (Torn Pump fluid filling, min. / max. I (qts Mains connection Standard EURO, 50/60 Hz Standard Americas, 50/60 Hz Special, 50/60 Hz Reduced power consumption through power controller (saves up 30%) kV Heating power kV Number of heating cartridges Heating up time mi Cooling water (minimum) for pump ²¹ l/h (gal/mir for cold cap baffle max. supply pressure Number of cooling circuits (including cold cap baffle) Cooling water connection for pump G (BPS)	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷) < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ 12.6 18 18 < 30 900 (4.0) 80 (0.35) 6 (87) 3 1/2"	1000 ISO-F / 160 ISO-K 50 000 <10°2 to 10°7 (0.75 x 10° to 0.75 x 10°7 <5.0 x 10° (3.75 x 10°1) 6.0 x 10° (4.5 x 10°2) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 230 ~ 3 Ph Δ 16.8 24 24 <30 1500 (6.6) 150 (0.66) 6 (87) 3 1/2"	
Pumping speed for air 1) below 1 x 10-4 mbar Operating range mba (Ton Ultimate total pressure 1) mbar (Ton Max. permissible forevacuum pressure mbar (Ton Pump fluid filling, min. / max. I (qts Mains connection Standard EURO, 50/60 Hz Standard Americas, 50/60 Hz Special, 50/60 Hz Reduced power consumption through power controller (saves up 30%) kW Heating power Number of heating cartridges Heating up time mi Cooling water (minimum) for pump 20 max. supply pressure Number of cooling circuits (including cold cap baffle) Cooling water connection for pump G (BPS for cold cap baffle) Cooling water connection for pump G (BPS for cold cap baffle) G (BPS for cold cap baffle) G (BPS for cold cap baffle)	N 630 ISO-F / 100 ISO-K S 20 000 (10.7 to 10.7 to 10	800 ISO-F / 160 ISO-K 30 000 < 10 ² to 10 ⁷ (0.75 x 10 ² to 0.75 x 10 ⁷) < 5.0 x 10 ⁷ (3.75 x 10 ⁷) 6.0 x 10 ² (4.5 x 10 ²) 10.0 / 15.0 (10.6 / 15.9) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ 12.6 18 18 < 30 900 (4.0) 80 (0.35) 6 (87) 3 1/2" 3/8"	1000 ISO-F / 160 ISO-K 50 000 <10°2 to 10°7 (0.75 x 10° to 0.75 x 10°) <5.0 x 10° (3.75 x 10°) 6.0 x 10° (4.5 x 10°) 15.0 / 25.0 (15.9 / 26.4) 400 ~ 3 Ph Y 460 ~ 3 Ph Y 230 ~ 3 Ph Δ 16.8 24 24 <30 1500 (6.6) 150 (0.66) 6 (87) 3 1/2" 3/8"	

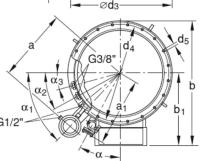
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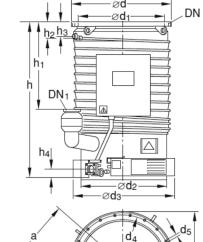
Leybold DIP Series

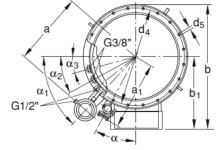
Dimensions











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
а	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)	50119.72)	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°
$lpha_{_3}$	_	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

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Leybold DIP Series Features & Benefits

- rugged design
- no wearing or moving components
- prolonged maintenance intervals
- rapid & simple replacement of heating elements
- stable, high vacuum
- · high forevacuum tolerance & pumping speed
- safe & economical
- simple to operate
- flexible electrical wiring for worldwide depolyment

Applications

- indsutrial high vacuum applications vacuum coating metallurgy
- vacuum furnacesvacuum dryingspace simulationresearch development · mechanical engineering · steel production processes

Pumping Curves

