

CDL

CDL VERTICAL MULTISTAGE PUMP

INTERNATIONAL TRADE

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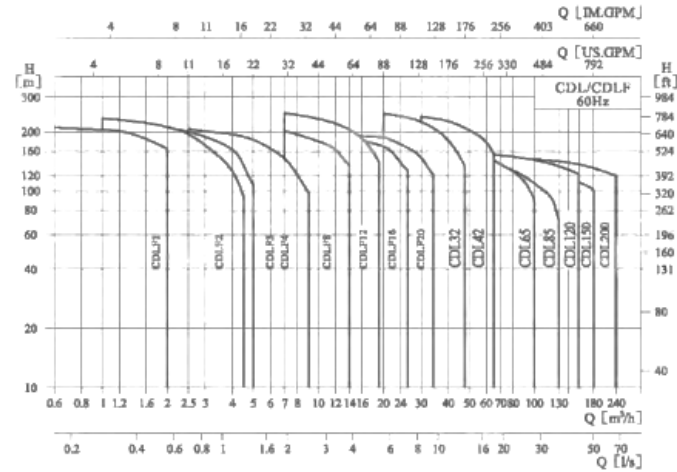
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■ Performance scope



■ Product range

Description	CDLF1	CDLF2	CDLF3	CDLF4	CDLF8	CDLF12	CDLF16	CDLF20	CDL32	CDL42	CDL65	CDL85	CDL120	CDL150	CDL200
Rated flow [m³/h]	1	2	3	4	8	12	16	20	32	42	65	85	120	150	200
Rated flow [l/s]	0.28	0.56	0.83	1.1	2.2	3.3	4.4	5.6	8.9	11.7	18	24	33	41.6	55.6
Flow range [m³/h]	0.6-2	1-4.5	1.5-5	2.5-8	7-14	7-19	10-26	12-34	20-48	30-65	40-100	60-130	60-160	80-180	100-240
Flow range [l/s]	0.17-0.56	0.28-1.25	0.42-1.4	0.7-2.2	1.9-3.9	1.9-5.3	2.8-7.2	3.3-9.4	5.5-13.3	8.3-18	11.1-27.7	16.7-36.1	16.7-44.4	22-50	27.8-66.7
Max. pressure [bar]	22	23.5	23	21	20	25	20	20	25	26	18	15	15	14	15
Motor power [kW]	0.37-3	0.55-4	0.37-4	0.75-5.5	0.75-11	1.1-15	2.2-18.5	2.2-18.5	3-30	5.5-45	7.5-45	11-45	18.5-75	15-75	30-110
Temperature range [°C]	-15~+120														
Max. efficiency [%]	44	46	54	57	62	63	66	69	73	75	76	77	74	73	78
Type															
CDL									●	●	●	●	●	●	●
CDLF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CDL Pipe connection															
DIN Flange	DN25	DN25	DN25	DN32	DN40	DN50	DN50	DN50	DN65	DN80	DN100	DN100	DN125	DN125	DN150
Oval Flange	G1	G1	G1	G1 1/4	G1 1/2										
CDLF Pipe connection															
DIN Flange	DN25	DN25	DN25	DN32	DN40	DN50	DN50	DN50	DN65	DN80	DN100	DN100	DN125	DN125	DN150
Cutting ferrule joint	●	●	●	●	●	●	●	●							
Pipe thread	●	●	●	●	●	●	●	●							

■ Pump

CDL / CDLF is a kind of vertical non-self priming multistage centrifugal pump, which is driven by a standard electric motor. The motor output shaft directly connects with the pump shaft through a coupling. The pressure-resistant cylinder and flow passage components are fixed between pump head and inlet & outlet section with stay bolts. The inlet and outlet are located at the pump bottom at the same plane. This kind of pump can be equipped with an intelligent protector to effectively prevent it from dry-running, out-of-phase and overload.

■ Motor

Full-enclosed air-blast two-pole standard motor
Protection class: IP55
Insulation class: F
Standard voltage 60Hz

3 × 220-255 / 380-440V
3 × 220-277 / 380-480V

■ Application

CDL / CDLF is a kind of multifunctional products. It can be used to convey various medium from tap water to industrial liquid at different temperature and with different flow rate and pressure. CDL type is applicable to conveying non-corrosive liquid, while CDLF is suitable for slightly corrosive liquid.

Water supply: Water filter and transport in Waterworks, boosting of main pipeline, boosting in high-rise buildings.

Industrial boosting: Process flow water system, cleaning system, high-pressure washing system, fire fighting system.

Industrial liquid conveying: Cooling and air-conditioning system, boiler water supply and condensing system, machine-associated purpose, acids and alkali.

Water treatment: Ultrafiltration system, reverse osmosis system, distillation system, separator, swimming pool.

Irrigation: Farmland irrigation, spray irrigation, dripping irrigation.

■ Operation conditions

Thin, clean, non-flammable and non-explosive liquid containing no solid granules and fibers.

Liquid temperature:

Normal temperature type: -15°C~+70°C,

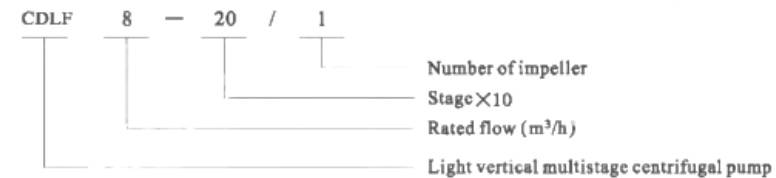
Hot water type: -15°C~+120°C

Ambient temperature: up to +40

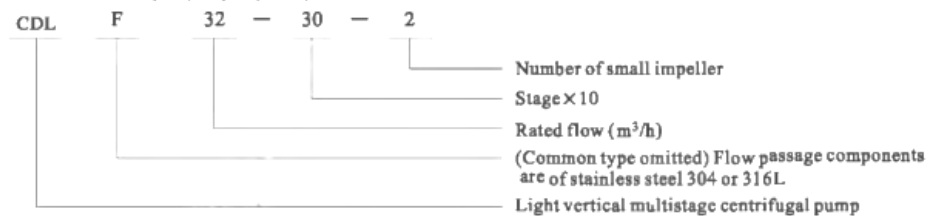
Altitude: up to 1000m

■ Definition of Model

CDLF1,2,3,4,8,12,16 and 20



CDL/CDLF32,42,65,85,120,150 and 200



CDL/CDLF200

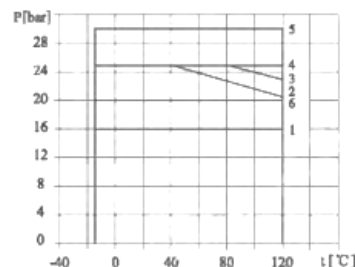
CDL F 200 — 30 — 2A — B

- One small impeller B
- Two small impellers A
- Stage × 10
- Rated flow (m³/h)
- (Common type omitted) Flow passage components are of stainless steel 304 or 316L
- Light vertical multistage centrifugal pump

■ Max working pressure

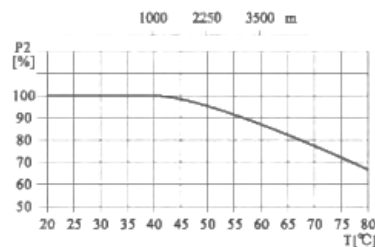
Model	Curve number
CDLF1,2,3,4 Flange	2
CDLF1,2,3,4 Oval Flange	1
CDLF1,2,3,4	2
CDLF8,12,16,20 Flange	3
CDLF8 Oval Flange	1
CDLF8,12 16,20	3
CDL,CDLF32	
32-10-1~32-50-2	1
32-50~32-90-2	4
32-90~32-100-2	5
CDL,CDLF42	
42-10-1~42-30	1
42-40-2~42-60	4
42-70-2~42-70	5
CDL,CDLF65	
65-10-1~65-30	1
65-40-2~65-50-2	4
CDL,CDLF85	
85-10-1~85-30	1
85-40-2	4
CDL,CDLF120,150,200	6

The following figure shows the limitation of pressure and temperature, which shall be in the scope as shown in the figure.



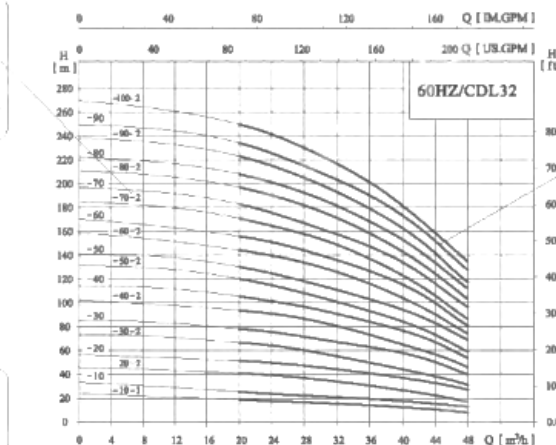
Max. Ambient temperature

When the pump operates under ambient temperature higher than 40°C or under altitude higher than 1000m, because of low air density and poor cooling effects, the motor output power P2 will be decreased to certain extent. If the pump is operated under the above-said conditions, it should be equipped with motor of higher power.



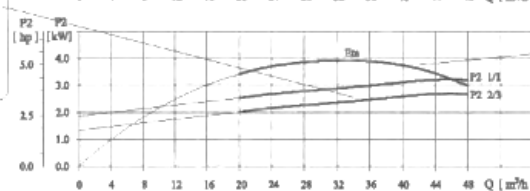
■ Curve illustration

Stage
First number:
Stage × 10
Second number:
Number of small impeller

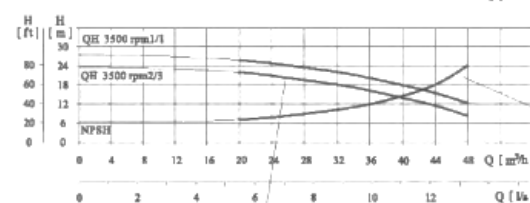


Pump Q-H curve, the thickened line presents recommended performance region

The power curve presents the input power of each stage, which is divided into integrate impeller type (1/1) and the type with small impeller (2/3)



Eta curve presents efficiency of the pump. For the pump equipped with small impeller, its efficiency will be 2% lower than that shown by the curve.



NPSH curve expresses the average value of all curves of this series. A safety margin of 0.5m shall be taken into consideration when making selection.

The Q-H curve of each stage, presenting integrate impeller type (1/1) and the type equipped with small impeller (2/3).

■ Performance curve

Following conditions are suitable for the performance curves shown below:

1. All curves are based on the measured values of 60Hz: constant motor speed 3500 rpm or 3540rpm.
2. Curve tolerance in conformity with ISO9906 Annex A.
3. Measurement is done with 20°C air-free water, kinematic viscosity of 1mm²/sec.

4. The operation of pump shall refer to the performance region indicated by the thickened curve to prevent overheating due to too small flow rate or overload of motor due to too large flow rate.

■ Minimum inlet pressure NPSH

In case that the pressure in pump is lower than the steam pressure used to convey liquid, the cavitations will occur. To avoid cavitations, a minimum pressure at the inlet side of the pump shall be guaranteed. The maximum suction stroke can be calculated with following formula:

$$H = P_b \times 10.2 - NPSH - H_f - H_v - H_s$$

P_b =atmosphere pressure [bar]

(can be set as 1 bar)

In a closed system, P_b means system pressure [bar]

NPSH=Net positive suction head [m]

(It can be read out from the point of possible max.

flow rate shown on NPSH curve)

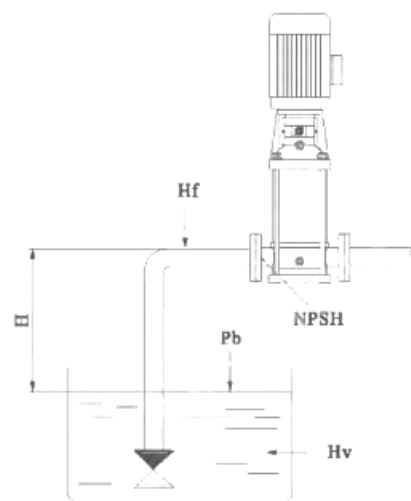
H_f =Pipeline loss at the inlet [m]

H_v =Steam pressure [m]

H_s =Safety margin=Minimum 0.5m delivery head

If the calculated result H is positive, the pump may run under the max. Suction stroke H.

In case the calculated result H is negative, a delivery head of min. Inlet pressure is necessary.

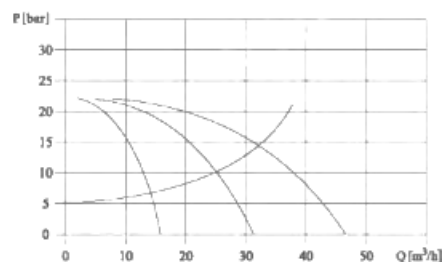


■ Operation in parallel

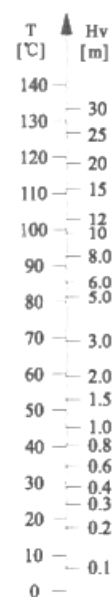
Connecting several pumps in parallel running will benefit much more than running a single large pump.

●Applicable to different working states necessary in a variable flow system.

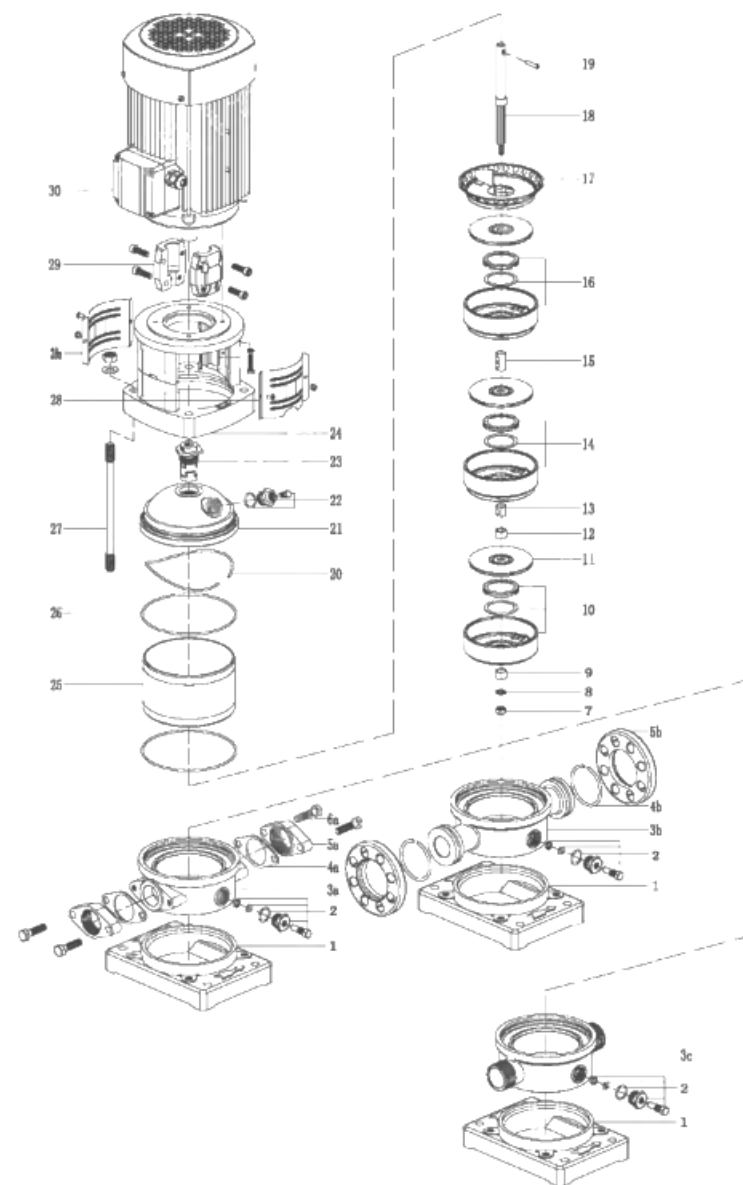
●Increasing the possibility of water supply when the pump is in failure. Because in case of pump failure, only part of the system flow is effected.



Two pumps or more can be connected in parallel running if necessary.



■ CDLF1,2,3,4,5

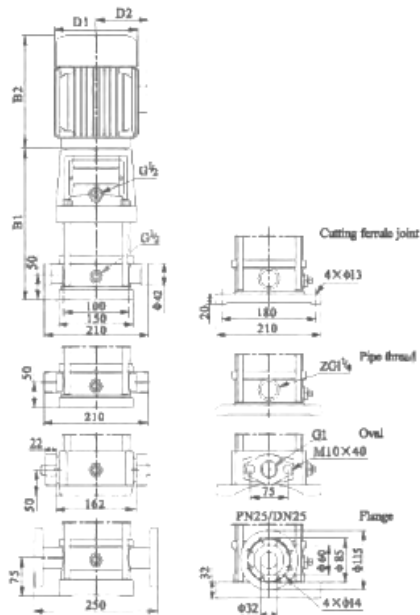


- 1 Base frame
- 2 By-pass Valve
- 3a Oval type inlet/outlet section
- 3b Flange type inlet/outlet section
- 3c Thread type inlet/outlet section
- 4a Gasket
- 4b Snap ring
- 5a Oval flange
- 5b Flange
- 6a Bolt
- 7 Lock nut
- 8 Gasket
- 9 Gland
- 10 Inducer
- 11 Impeller
- 12 Bearing
- 13 Bearing spacing pipe
- 14 Bearing diffuser
- 15 Impeller spacing pipe
- 16 Diffuser
- 17 Top diffuser
- 18 Shaft
- 19 Pin
- 20 Waveshape spring
- 21 Pump head
- 22 Air vent valve
- 23 Mechanical seal
- 24 Bracket
- 25 Out cylinder
- 26 O-ring
- 27 Stay bolt
- 28 Coupling guard
- 28a Coupling guard (No gap)
- 29 Coupling
- 30 Motor

■ Performance table

Model	Driving motor		Q (m ³ /h)	1	1.5	2	2.5	3	3.5	4	4.5
	(kW)	(hp)									
CDLF2-20	0.55	0.75	H (m)	26	24	22	21	18	16	12	9
CDLF2-30	0.75	1		39	36	33	31	27	24	19	15
CDLF2-40	1.1	1.5		52	48	45	42	36	32	26	20
CDLF2-50	1.1	1.5		65	60	57	52	46	41	32	25
CDLF2-60	1.1	1.5		78	74	69	63	56	49	40	30
CDLF2-70	1.5	2		91	86	81	74	66	57	47	35
CDLF2-90	2.2	3		117	111	104	95	86	75	61	45
CDLF2-110	2.2	3		143	136	128	116	104	90	75	56
CDLF2-130	3	4		171	163	152	139	126	108	90	66
CDLF2-150	3	4		195	186	176	160	142	125	103	77
CDLF2-180	4	5.5		234	228	212	195	171	151	126	94

Installation sketch

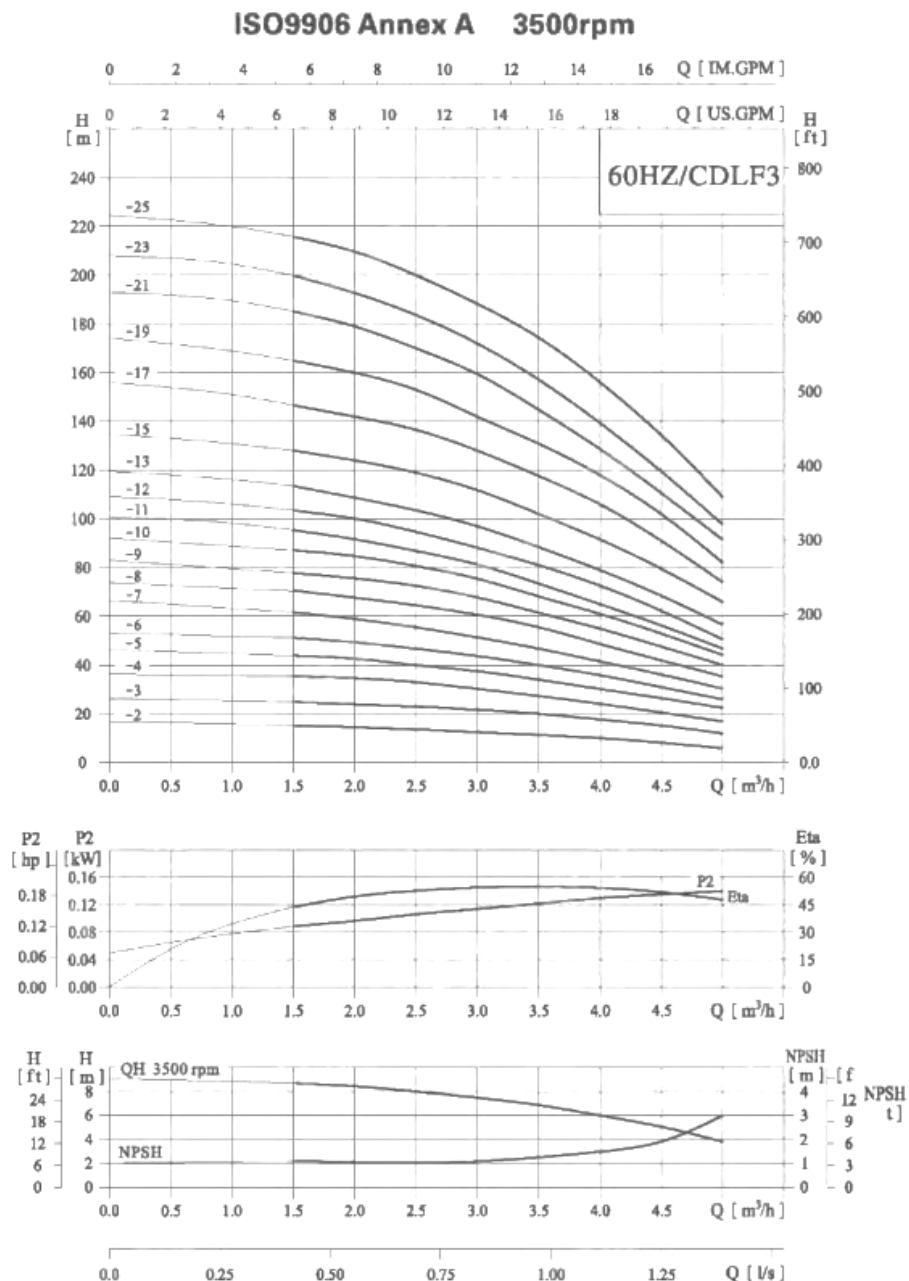


Size and weight

Model	Size (mm)					Weight (kg)
	B1	B2	B1+B2	D1	D2	
CDLF2-20	258	210	468	148	117	21
CDLF2-30	286	245	531	170	142	24
CDLF2-40	304	245	549	170	142	25
CDLF2-50	322	245	567	170	142	26
CDLF2-60	340	245	585	170	142	26
CDLF2-70	368	290	658	190	155	32
CDLF2-90	404	290	694	190	155	36
CDLF2-110	440	290	730	190	155	37
CDLF2-130	486	315	801	197	165	44
CDLF2-150	522	315	837	197	165	45
CDLF2-180	576	335	911	230	188	54

The overall dimensions of the single-phase motor and explosion-proof motor are a little different. Pls contact us for details.

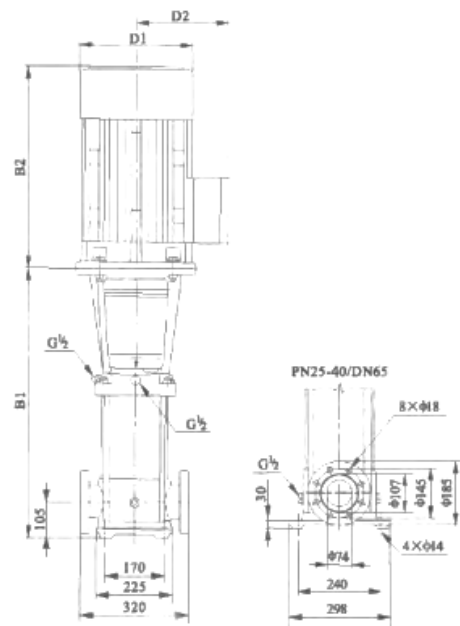
■ Performance curve



■ Performance table

Model	Driving motor		Q (m ³ /h)	20	24	28	32	36	40	44	48
	(kW)	(hp)									
CDL32-10-1	3.0	4	H (m)	20	19	18	17	15	13	10	7
CDL32-10	4.0	5.5		26	25	24	23	21	19	17	14
CDL32-20-2	5.5	7.5		41	40	38	35	31	27	22	17
CDL32-20	7.5	10		52	50	48	45	41	37	33	27
CDL32-30-2	7.5	10		67	64	61	57	52	46	39	31
CDL32-30	11	15		78	75	71	67	62	56	50	40
CDL32-40-2	11	15		94	91	87	81	73	65	56	45
CDL32-40	15	20		104	101	96	91	83	75	66	55
CDL32-50-2	15	20		119	115	109	102	94	84	73	59
CDL32-50	18.5	25		130	125	119	112	104	94	83	69
CDL32-60-2	18.5	25		145	140	134	126	116	104	90	74
CDL32-60	18.5	25		155	150	144	136	126	114	100	81
CDL32-70-2	22	30		172	166	158	149	137	123	106	86
CDL32-70	22	30		182	176	168	159	148	133	118	97
CDL32-80-2	22	30		196	190	182	172	159	143	124	102
CDL32-80	30	40		208	201	192	181	167	152	132	111
CDL32-90-2	30	40		223	216	206	194	179	162	142	117
CDL32-90	30	40		234	226	216	204	189	172	152	127
CDL32-100-2	30	40		248	241	231	217	201	181	159	133

Installation sketch



The overall dimensions of explosion-proof motor is a little different. Pls contact us for details.

Size and weight

Model	Size (mm)					Weight (kg)
	B1	B2	B1+B2	D1	D2	
CDL32-10-1	505	315	820	197	165	73
CDL32-10	505	335	840	230	188	81
CDL32-20-2	575	430	1005	260	208	95
CDL32-20	575	430	1005	260	208	101
CDL32-30-2	645	490	1135	330	255	104
CDL32-30	750	490	1240	330	255	172
CDL32-40-2	820	490	1310	330	255	176
CDL32-40	820	490	1310	330	255	186
CDL32-50-2	890	490	1380	330	255	191
CDL32-50	890	550	1440	330	255	211
CDL32-60-2	960	550	1510	330	255	216
CDL32-60	960	550	1510	330	255	216
CDL32-70-2	1030	590	1620	360	285	255
CDL32-70	1030	590	1620	360	285	255
CDL32-80-2	1100	590	1690	400	310	259
CDL32-80	1100	660	1760	400	310	315
CDL32-90-2	1170	660	1830	400	310	319
CDL32-90	1170	660	1830	400	310	319
CDL32-100-2	1240	660	1900	400	310	324

■ Performance curve

ISO9906 Annex A 3500rpm

