

150-CDB, 200-CDB
Multi-stage centrifugal pumps

MULTI-STAGE CENTRIFUGAL PUMPS

PUMP DESIGNATION

Discharge branch diameter	150
Type line	CDB
Impeller diameter	400
Impeller canal diameter	22
Number of stages	/12
Material version	OU
Change number	002

OPERATIONAL-TECHNICAL DATA

Pump	150-CDB	200-CDB
Flow Q	50–90 l/s	70–115 l/s
Head H	max. 1250 m	max. 900 m
Water temperature t	max. 80 °C	max. 80 °C
Suction pressure p_s	0,1 MPa	0,1 MPa
Speed n	1480 min ⁻¹	1480 min ⁻¹

APPLICATION

Pumps 150-CDB and 200-CDB represent the line of high-pressure centrifugal pumps for pumping of polluted water (typical application is pumping of mine underground water to surface) or as the source of pressure water in various industry applications and oil extraction.

In cases when one 150-CDB pump unit is not able to achieve desired head (14 stages version), two pumps installed in a line may be used (double-unit). For very special contracts a „low pressure“ pump 150-CDB in atypical design of 16 stages may be delivered.

DESIGN

Horizontal, radially split split multi-stage pump with radial impeller design. Sealing of envelope pressure parts through „O“ rings.

Bearings

The pump rotor is double-sided laid in plain journal bearings.

Axial force balancing

A typical feature of CDB pump is the way how rotor axial force is balanced. Impellers of both pump halves are placed „back to back“, achieving theoretical balance of axial forces inside the pump. Residual axial force caused by imperfections of castings, rotor setting or start and stop of the pump is absorbed in roller thrust bearing.

Bearing type, lubrication

Journal bearings	Thrust bearings	Lubrication
plain	rolling	through ring

Sealing

The pumps may be equipped with rope seals, plastic packing U-PAK or mechanical seals.







Drive

The pump way of drive is direct one-side by electric motor.

Sense of rotation

Regarding the sense of rotation, low-pressure pumps 150-CDB and 200-CDB rotate in principle clockwise from the drive's side view. High-pressure pump 150-CDB-082 rotate anti-clockwise from the drive's side view.

Branches dimensions and orientation

Pump type	Branch	Orientation (coupling view)			
		DN	PN	0°	90°
				↑	→
150-CDB-002	suction DN1	200	20		
	discharge DN2	150	100		
150-CDB-082	suction DN1	150	100		
	discharge DN2	150	160		
200-CDB-000	suction DN1	250	10		
	discharge DN2	200	100		

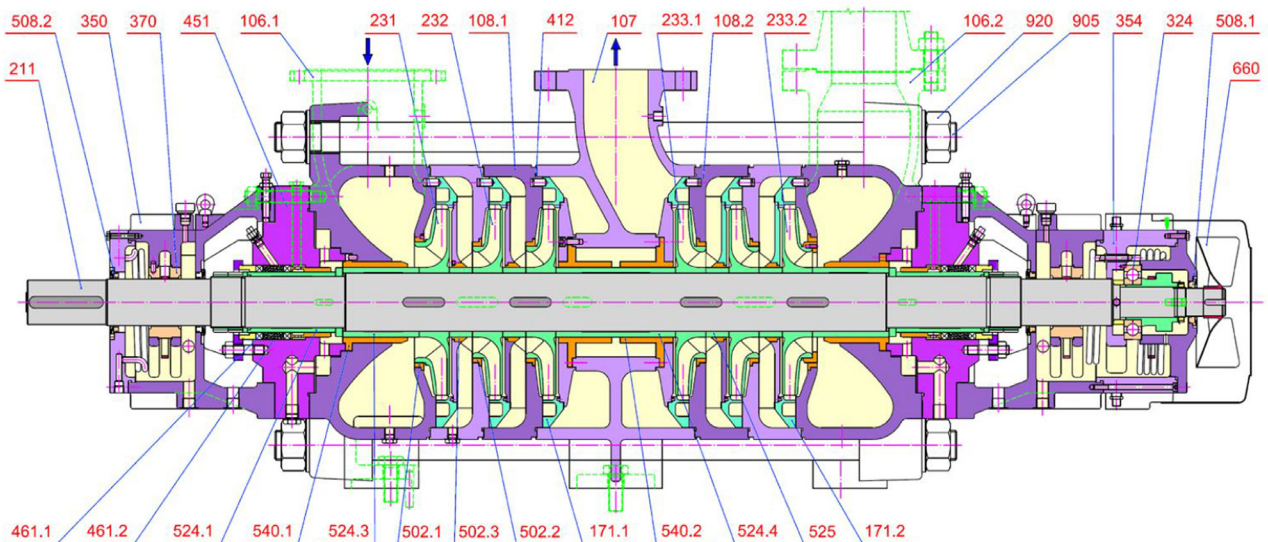
FLANGES

Preferably according to EN 1092-1 standard. Flanges following other standards have to be specified in the order.

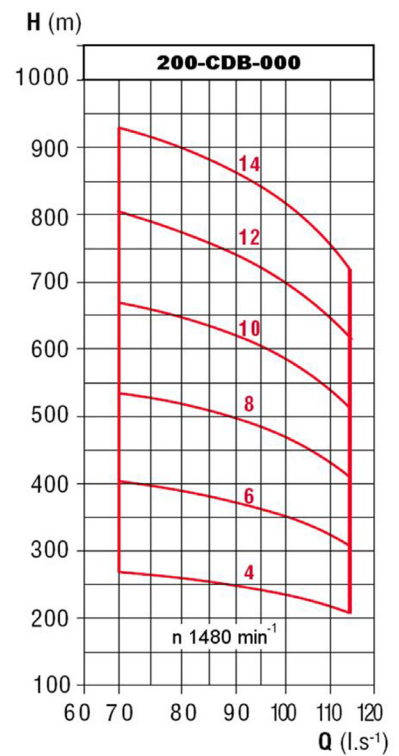
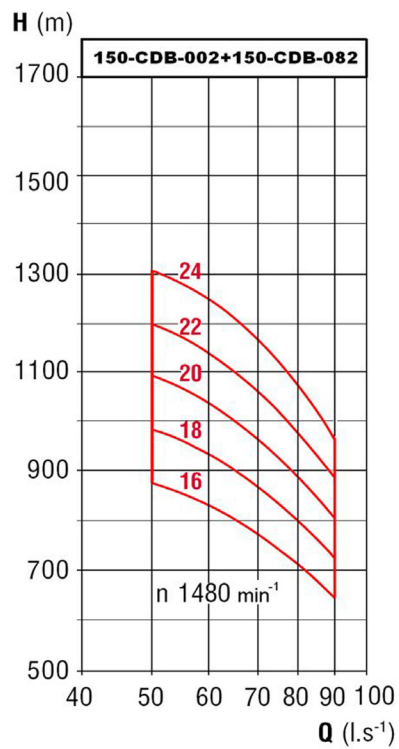
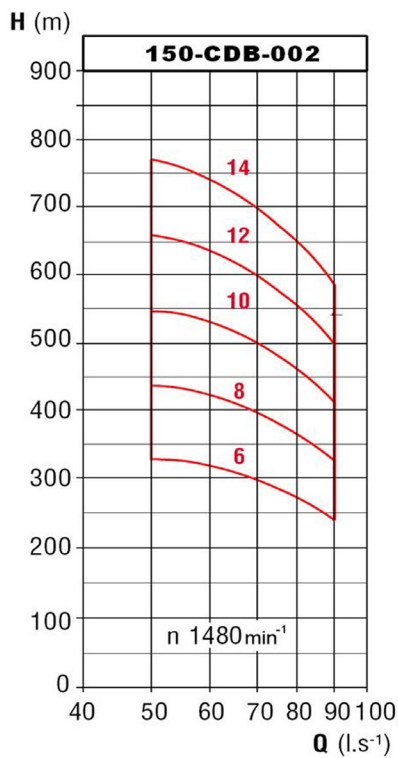
CERTIFICATION

The pumps are certified following EN ISO 9001, QA: 041005278.

CBD PUMP CROSS-SECTION



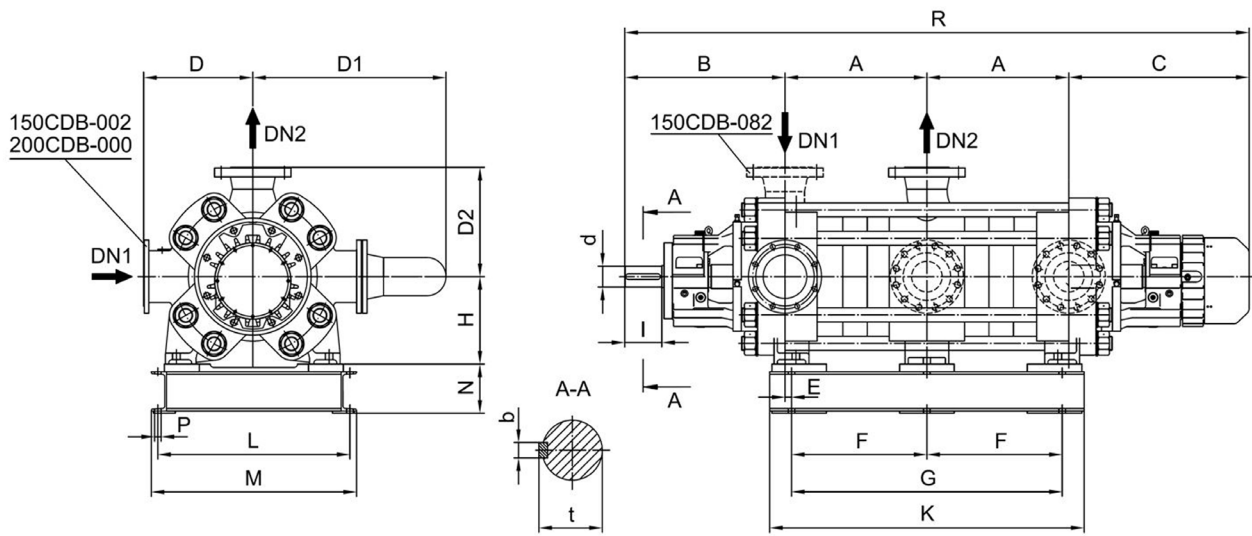
PUMP WORKING RANGE



PUMP MATERIAL VERSION

Position	Part name	Standard material	Special material
106.1, 106.2	Suction casing	1.0619	1.4411
107	Discharge casing	1.0619	1.4411
108.1, 108.2	Left stage, right stage	1.4008	1.4411
171.1, 171.2	Diffuser right, diffuser left	1.4008	1.4581
211	Shaft	E 335	1.4313
231	Suction impeller right	1.4008	1.4581
232	Impeller right	1.4008	1.4581
233.1, 233.2	Impeller left	1.4008	1.4581
324	Thrust bearing	ocel	ocel
350	Journal bearing housing	1.0619	1.0619
354	Thrust bearing housing	1.0619	1.0619
370	Journal bearing	1.0050	1.0050
412	Gasket	622446.07	622446.07
451	Sealing housing	1.0570	1.4418
461.1	Sealing packing	SIGMAPACK UNI	SIGMAPACK UNI
461.2	Sealing material	PPS STYLE1400	PPS STYLE1400
502.1, 502.2	Sealing ring	3346.9	3346.9
502.3	Converter housing	3346.9	3349.9
508.1, 508.2	PRO-TECH sealing	Carbon	Carbon
524.1	Sealing bushing	17029.4	17029.4
524.3, 524.4	Throttling housing	1.4571	1.4571
540.1, 540.2	Casing bushing	1.4571	1.4571
525	Distance bushing	1.4571	1.4571
660	Fan propeller	PP	PP
905	Connecting bolt	1.5122	1.5122
920	Nut	1.0060	1.0060

PUMP DIMENSIONS



Typ	150-CDB-002					150-CDB-082					200-CDB-000				
Number of stages	6	8	10	12	14	8	10	12	14	4	6	8	10	12	14
A	535	650	765	880	995	625	740	855	970	515	645	775	905	1035	1165
B	734	734	734	734	734	826	826	826	826	923	923	923	923	923	923
C	826	826	826	826	826	924	924	924	924	980	980	980	980	980	980
D	500	500	500	500	500	500	500	500	500	600	600	600	600	600	600
D1	885	885	885	885	885	885	885	885	885	1042	1042	1042	1042	1042	1042
D2	500	500	500	500	500	500	500	500	500	600	600	600	600	600	600
E	-	-	30	20	35	-	30	20	35	65	65	75	70	15	20
F	-	-	735	860	960	-	735	860	960	-	-	-	975	1050	1185
G	900	1200	-	-	-	1200	-	-	-	1160	1420	1700	1950	2100	2370
H	400	400	400	400	400	400	400	400	400	500	500	500	500	500	500
K	1280	1630	1670	1920	2120	1630	1670	1920	2120	1360	1620	1900	2150	2300	2570
L	870	870	880	880	880	870	880	880	880	1030	1030	1030	1030	1030	1030
M	926	926	940	940	940	926	940	940	940	1090	1090	1090	1090	1090	1090
N	150	150	225	225	225	150	225	225	225	215	215	215	215	215	215
P	4x ø 23	4x ø 23	6x ø 30	6x ø 30	6x ø 30	4x ø 23	6x ø 30	6x ø 30	6x ø 30	4x ø 27	4x ø 27	4x ø 27	6x ø 30	6x ø 30	6x ø 30
R	2630	2860	3090	3320	3550	3000	3230	3460	3690	2933	3193	3453	3713	3973	4233
ø d	95m6	95m6	95m6	95m6	95m6	95m6	95m6	95m6	95m6	110k6	110k6	110k6	110k6	110k6	110k6
I	170	170	170	170	170	170	170	170	170	200	200	200	200	200	200
bh9	25	25	25	25	25	25	25	25	25	28	28	28	28	28	28
t ^{0.2}	100,3	100,3	100,3	100,3	100,3	100,3	100,3	100,3	100,3	116,1	116,1	116,1	116,1	116,1	116,1

BASIC DATA NEEDED FOR OFFER PREPARATION

1	Number of stages				
2	Pumped liquid				
	Type (description)				
	Temperature t [°C]				
3	Guaranteed parameters				
	Flow Q _r [l/s]				
	Head H _r [m]				
	Suction branch pressure p _s [MPa] (a) or (g)				
	Discharge branch pressure p _v [MPa] (a) or (g)				
4	Pump operation mode	Operator		Operator-free	
5	Pump branches	DN	PN	Standard	Position (coupling view)
	Suction				
	Discharge				
6	Seal	Rope		Mechanic	
7	Cooling	Free outlet		Back pressure outlet	
8	Base frame	Pump		Unit	Drive
	Base frame design	Standard		Acc. API 610	
	Accessories	Base bolts			
		Bottomed hole		Floor-through	
9	Type of drive	Electric motor			
10	Special requirements (measuring device, diagnostics, inspection and accompanying documentation documents etc.)				



Praha

Ostrava

Brno

SIGMA GROUP a. s.

Jana Sigmunda 79

783 49 Lutín, Česká republika

+420 585 652 011, +420 585 652 060

+420 585 652 051, +420 585 944 294

info@sigma.cz

2014

www.sigma.cz