The assembly quality of the pump will result in a notable affection to the performance and the running stability of it and can not be guaranteed unless the technical requirements in the drawings are strictly followed in the assembly, such as on the alignment between the centers of the impeller's outlet and the guide vane's inlet, the uniform values of the sealing intervals of both rotor and stator portions etc.

1.Rotor

It takes two bearings as the support and measure the circle jumping values of the oral ring of the impeller, the impeller's baffling sleeve (or rear navel), the balancing baffling sleeve and the muff, respectively, and the jumping value of the balancing disk's end-face, which should conform the requirements in the figure of the jointed parts of rotor (Fig. 4)

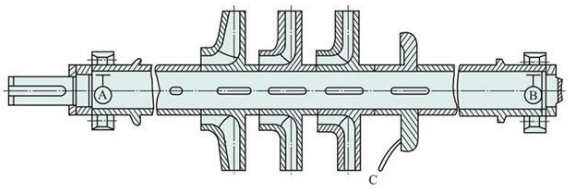


Fig. 4

For the nominal radial intervals of the seal rings of both pump casing and impeller, upon the table below:

Nominal size (mm)	30~90	>90~120	>120~180	>180~250	>250~500	>500~800	>800~1250	>1250
Diameter interval (mm)	0.3~0.4	0.4~0.5	0.5~0.6	0.6~0.7	0.7~0.85	0.85~1.2	1.2~1.6	1.6~2.0

For the allowed radial jumping error of each part of the assembled rotor, upon the table below:

Part / Nominal diameter	≤50	>50~120	>120~260	>260~500	>500~800
Seal ring of impeller (A-B)	0.08	0.10	0.10	0.12	0.15
End-face jumping of disk C (A-B)	0.05	0.05	0.06	0.08	0.08

2.Stator

Measure the axial serial amount of the rotor and the end-face jumping value of the balancing ring (sleeve), which should conform the requirements in the overall assembly drawing.

3. At the end of assembly, move the rotor with hand to check if there is frictional sound, non flexible movement etc. abnormal condition inside of the pump

Installation of pump

1.Installation steps

Generally covering the placement of the pump on the foundation, leveling, adjustment and connection of the pump's pipeline.

2.Facilities necessary for installation

The following common facilities and tools are required in installation:

a.Safe lifters available with a proper loading capacity.

b.Set a steel horn or wedge horn on every foot screw for leveling foundation.

c.The grouting material must be a non-shrinking one and it is necessary to prepare a wood case for grouting, which has to be fitted with a hopper.

d.To mount and remove the packing, a set of special tools is required, such as the clamp with hooks.

3.Pump transportation

When to transport the pump, take care of safety to prevent any accident from occurring and the following cautions:

a.Place the hook of the lift er under the foundation or use a folk lift er, do not lift it with the hook in the pump, the prime mover and bolt holes or on the bearing, furthermore, on the pump shaft.

b.Make the lifted load even and balanced, take care about the lifting capacity and not to let the pump parts collided with each other, especial ly the processed fitting-surface of the shaft on the pump clutch, not to let it damaged.

c.Prohibited foreign matters or dust from getting into both pump and motor during transportation.

4.Unpacking and check of pump

Unpack and check, when the pump arrives, if any part is lost and if there is any damage, report it to the transporter and the pump manufacturer at once if any.

5.Temporary storage

If the pump is to be stored for a period of time before installation, pack it and place it on a dry, rain-proof and dust-proof ground with both spitting and suck-in mouths covered to prevent foreign matters in.Pay attention not to let the shaft, bearing and other precisely processed parts of the pump getting wet and coat them with a protective oil layer.

6.Basis for the pump

6.1 The basis should be a concrete one of sufficient strength and size, with the mass of it 3~5 times that of the unit one, and 50~70mm longer than that of the pump foundation,plus the foot bolt holes (a steel pipe's diameter 3~4 times that of the foot bolt).

6.2 The job to set the basis covers: locating the foot bolt hole,grouting and leave the place for the pipeline connection,then grouting into the other space.

6.3 The rougher the surface of the basis, the better the grouting effect.

6.4 Do not install any equipment until the basis gets completely solidified.

7.Movement, placement and leveling

7.1 Place steel and wedge horns or regulating iron at the foot bolts under the pump foundation, in general, place a horn in between two bolts in case of a longer foundation.

7.2 Check the basis under the pump foundation and clear dust,oil and other foreign matters.

7.3 Place lifting hooks on the four corners of the foundation to lift it above the basis and then slowly put it on the position with the bolt holes aligned.

7.4 Place a knife edge flat ruler and a mechanical leveler under the processed planes of both pump and motor's foundations and use the thickness of a regulating wedge iron or pad to decide the levelness of the foundation on every respect,for which, non-flatness less than 0.25m m per 100 mm is recommended.Then tighten the nut of the foot bolt to a proper extent (not over-tightened) and secure the wedge iron or regulating pad.

7.5 Level the foundation, do not grout until it is more closely fitted with the basis.

8.Grout the foundation

8.1 Make sure the air inside of each space is completely exhausted when to grout.

8.2 Tighten the nut of the foot bolt when the grouted material is solidified and then coat the material with pa int for wet resisting.

8.3 After grouting, adjust both pump and motor.

9.Adjustment of equipments

Covering angle and central line position adjustment. Check the equipments at least in the fol lowing three periods and take adjustment:The first time, both pump and foundation are secured while the motor is not.The second time, both pump and motor are secured while the bolts on the suck-in and spitting pipeline flanges are not.The third time is in 24 hours after the pump starts running,then secure both pump and motor.

Pay attention to the following cautions in the adjustment:

a. Before adjusting, check all pipelines to make sure they will not produce any action or moment on the pump foundation.

b.Put the pad under the motor while to adjust both pump and motor.Angle adjustment is to guarantee the parallelism of the two planes of the clutches. Use a dial gauge to check four points on the end-face of the clutch flange, the reading on the gauge is 0.02~0.03, and use a feeler to check the parallelism, the difference (a-b) between the two planes is <=0.06 (see Fig. 5).Central line alignment means the aligned degree between the central lines of both pump and motor's shafts,

c should be <=0.08 (see Fig. 5)

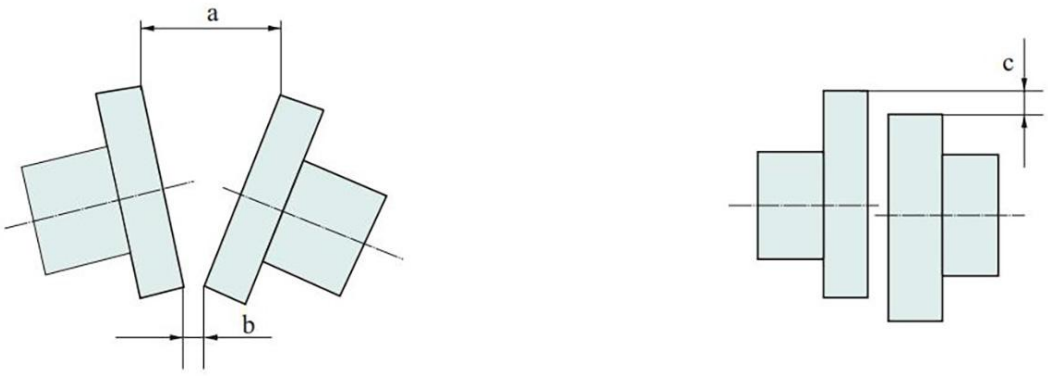


Fig. 5

10.Link the main pipelines

After grouting and securing the pump on the basis, align and link the flanges of both pump and pipeline without subject to an external force, i.e. the force from the flange bolt.For the pipeline support (additional), it should be able to avoid the pipeline vibration and reduce the cleaning to the pipeline.

Cautions in the installation of the pipeline:

a.The pipeline used should be of a proper norm and length and a sufficient bearing capacity, reducing both bends and fittings of the pipeline as can as possible.

b.The suck-in pipeline of the pump should be short and straight, the diameter of it should be equal or more than that of the pump's suction inlet and the bent radius of the suck-in pipeline should be made as big as possible.

11.Link the additional equipments

11.1 Pressure gauge

The pressure gauges used on both suck-in and spitting pipelines must be good quality and certified performance. It is better for the spitting pressure gauge to be mounted at the distance

2 times of the diameter of the spitting flange of both pump and main pipeline while not by both elbow and valve so as to prevent the disturbance from unstable flowing.

11.2 Clutch

Recheck the alignment before linking the clutches of both pump and motor; check if the motor moves in the correct direction, and the pump shaft as well; viewing from the clutch, the pump moves clockwise and adjust it if the motor moves in a direction not in line with the pump's.

11.3 Shaft seal

Readjust or reassemble the shaft seal before the pump starts moving if necessary

Removal of pump

Cautions in the removal

a.Stop the pump upon the pump stopping procedure in 5.

b.Drain the liquid inside of the pump casing out (for the cooling water sleeve too if it is available).

c.Drain out the thinned oil if it is used for lubricating the bearings.

d.Remove the additional pipelines obstructing the removal,such as the balancing pipe, water sealed water pipe etc.

e.Remove the clutches by way of heating (for the motor's clutch too if necessary to remove it).

Sequence of removal

Start the pump removal from the bearing on the spitting side, the sequence comes as below:

a.Screw out the bolts on the bearing gland on the spitting side and the linking nut s between the spitting section, packing and bearing to remove

the bearing.

b.Screw out the circular nut on the shaft, then in turn remove the inner ring of the bearing, gland and baffling sleeve,then the spitting section (including the packing gland, packing ring, packing etc.).

c.Remove the O-seal ring, muff, balancing disk and key on the shaft in turn, then the spitting section (including the guide vane on the last stage, balancing board etc.).

d.After removing the last-stage impeller and key, remove the middle section (including the guide vane), then the impeller, middle sect ion, guide vane on the rest stages in the same way till the impeller on the first stage.

e.Screw out the linking nuts between the suck-in section and the bearing and the bolt on the bearing gland to remove the bearing (remove the pump clutch prior to this).

f.Draw out the shaft from the suck-in section, screw out the fixing nut on it, then remove the inner ring of the bearing,O-seal ring, muff, baffling sleeve etc. in turn).The removal has then been finished generally. However some parts are still linked together during the removal and can be removed once the linking nuts are screwed out, in general.

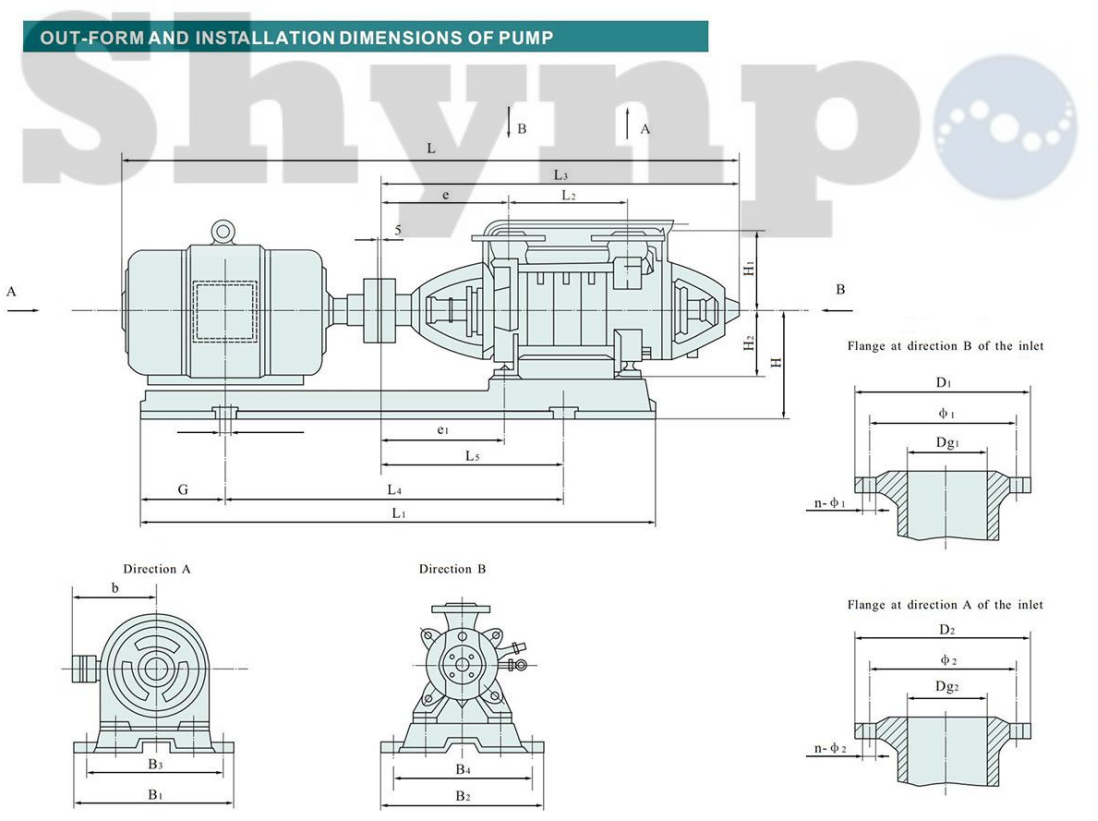
Clean and check

1. Clean all the parts with coal oil and let them dried in the air or with a cloth.

2. Check the worn-out condition s on the all parts and replace those unable to make sure of normal work.

3. Check if there is dust or rust on the shaft and use a dial gauge to check the non-straightness of it (the radial jumping valve of it not more than the 8-class accuracy).

4. Replace the sealing element when the sealing interval is over the maximum value of the recommended one by 50%.



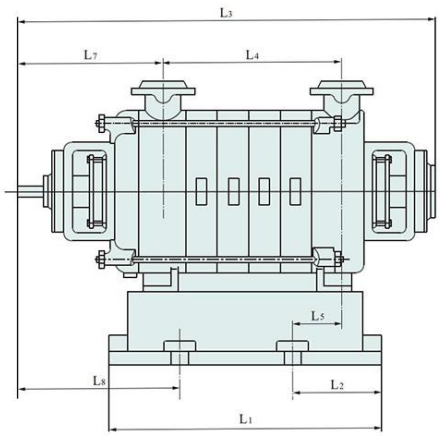
THE DIMENSION OF MODEL CG-D MODEL MIDDLE AND LOW PRESSURE, HYPO-HIGH-PRESSURE BOILER WATER SUPPLY PUMP

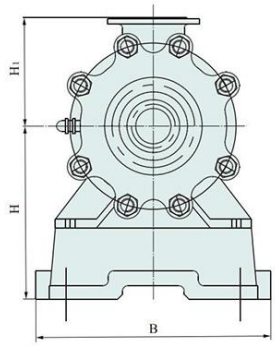
Model	No.of stage	Installation dimension of pump(mm)																								
		L	L_1	L_2	L_3	L_4	L_5	e	e_1	B_1	B_2	B_3	B_4	b	H	H_1	H_2	G	n-d	Flange at inlet				Flange at outlet			
																				Dg_1	ϕ_1	D_1	n-ϕ_1	Dg_2	ϕ_2	D_2	n-ϕ_2
CG-D6-25	3	1198	885	180	718	600	358	261	266	440	440	390	390	210	230	170	150	148.5	4-ϕ25	40	100	130	4-ϕ13.5	40	110	150	4-ϕ17.5
	4	1248	985	230	768	650	408																				
	5	1298		280	818																						
	6	1350	1206	330	868	785	459			485	485	435	435	255	240			176									
	7	1400		380	918																						
	8	1573	1306	430	968	835	509																				
	9	1623		480	1018																						
	10	1673	1500	530	1068	935	584											195									
	11	1723		580	1118																						
	12	1773		630	1168																						
CG-D12-25	3	1192	965	180	695	645	355	275	275	420	420	370	370	210	250	170	150	130	4-ϕ24	50	110	140	4-ϕ13.5	40	110	150	4-ϕ17.5
	4	1378	1120	230	745	745	403			490	410	440	360		255			170									
	5	1428		280	795																						
	6	1478	1215	330	845	820	458			480	410	430	360	235				165									
	7	1528		380	895																						
	8	1623	1430	430	945	920	501			530	460	480	410		270			210									
	9	1673		480	995																						
	10	1743	1490	530	1045	975	520			530	415	470	365	285	280			160									
	11	1793		580	1095																						
	12	1952	1640	630	1145	965	578			550	400	500	350	310	350			230									
CG-D25-30	3	1450	1110	230	845	760	432	330	315	530	530	460	460	255	250	210	170	165	4-ϕ30	65	130	160	4-ϕ17.5	65	145	185	8-ϕ17.5
	4	1560	1219	295	910	850	478																				
	5	1650	1297	360	975	880	510							285	260			180									
	6	1825	1432	425	1045	970	553			575		505		310	280			200									
	7	1890	1497	490	1105	1000	583																				
	8	1955	1562	555	1170	1030	613																				
	9	2020	1627	620	1235	1080	663																				
	10	2120	1728	685	1300	1120	680			610		545		345	305			210									
CG-D46-30	3	1520	1167	230	845	845	487	330	315	530	530	460	460	285	260	210	170	192	4-ϕ30	80	150	190	4-ϕ17.5	65	145	185	8-ϕ17.5
	4	1690	1312	295	910	850	443																				
	5	1755	1367	360	975	910	503			575		505		315	280			210									
	6	1820	1432	425	1040	935	528																				
	7	1925	1532	490	1105	1010	580			615		545		345	305			220									
	8	2105	1694	555	1170	1110	600			664		594		385	330			235									
	9	2170	1759	620	1235	1140	630																				
	10	2305	1897	685	1300	1245	679			720		650		410	360			250									

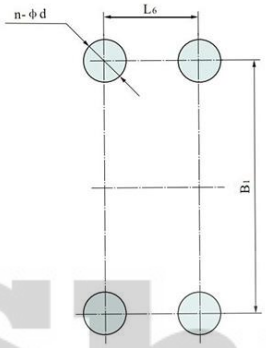
THE DIMENSION OF MODEL CD-G MODEL MIDDLE AND LOW PRESSURE, HYPO-HIGH-PRESSURE BOILER WATER SUPPLY PUMP

Model	No.of stage	Installation dimension of pump(mm)																									
		L	L_1	L_2	L_3	L_4	L_5	e	e_1	B_1	B_2	B_3	B_4	b	H	H_1	H_2	G	n-d	Flange at inlet Dg_1	ϕ_1	D_1	at inlet n-ϕ_1	Flange at outlet Dg_2	ϕ_2	D_2	outlet n-ϕ_2
CG-D12-50	3	1517	1230	248	852	845		319	315		490	490	490		250	230	200	250	4-ϕ27	50	135	175	4-ϕ23	50	135	175	4-ϕ23
	4	1597	1310	301	905	880					545				280			247									
	5	1762	1650	354	958	990																					
	6	1822		407	1011																						
	7	1882		460	1064						610				310			190									
	8	1982	1750	513	1117	1305																					
	9	2042		566	1170																						
	10	2204	1870	619	1223	1200					670				350			350									
	11	2264		672	1276																						
	12	2407	2000	725	1329	1300																					
CG-D25-50	3	1615	1228	245	940	830	506	351	318	550	550	480	480	285	360	270	210	188	4-ϕ24	65	160	205	8-ϕ23	65	160	205	8-ϕ23
	4	1780	1426	305	1000	935	509							315	390			219									
	5	1840		365	1060																						
	6	1940	1517	425	1120	985	547			620		550		345	410			229									
	7	2115	1679	485	1180	1100	581			670		600		385	420			263	6-ϕ24								
	8	2245	1811	545	1240	1180	620											302									
	9	2305	1931	605	1300	1280	625			720		650		410	450			307									
	10	2365		665	1360													307									
	11	2475	2102	725	1420	1420	646											328									
	12	2535		785	1480													328									
CG-D45-50	3	1720	1317	245	940	875	475.5	351	318	570	570	500	500	315	360	270	210	227	4-ϕ24	80	170	215	8-ϕ22	80	170	215	8-ϕ22
	4	1820	1415	305	1000	925	460.5			620		550		345				197									
	5	1995	1571	365	1060	1020	535.5			670		600		385				210									
	6	2125	1758	425	1120	1130	615.5			720		650		410	420			307									
	7	2185		485	1180																						
	8	2295	1869	545	1240	1180	665.5											358	6-ϕ24								
	9	2575	2046	605	1300	1330	770.5			820		750		576	515			355.5									
	10	2665		665	1360																						
	11	2765	2222	725	1420	1480	880.5											371.5									
	12	2825		785	1480																						
CG-D85-45	3	1945	1468	277	1010	1040	473	344	327	675	580	615	520	385	365	250	210	198	4-ϕ25	100	170	210	4-ϕ17.5	100	190	235	8-ϕ22
	4	2089	1615	351	1084	1060	505			730		670		410	395			280	6-ϕ25								
	5	2213	1740	425	1158	1120	549											315									
	6	2507	683	499	1232	303	430												6-ϕ25								
	7	2651	757	573	1306	377								576	345												
	8	2725	831	647	1380	415																					
	9	2799	905	721	1454	525																					

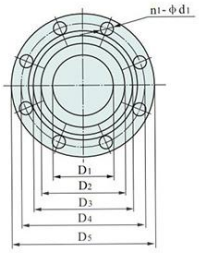
FIGURE OF THE OUT-FORM AND INSTALLATION DIMENSIONS OF MODEL CG-D85-67, CG-D155-67, CG-D280-43 PUMPS







Flange at inlet



Flange at outlet

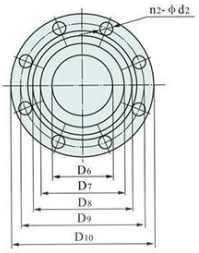
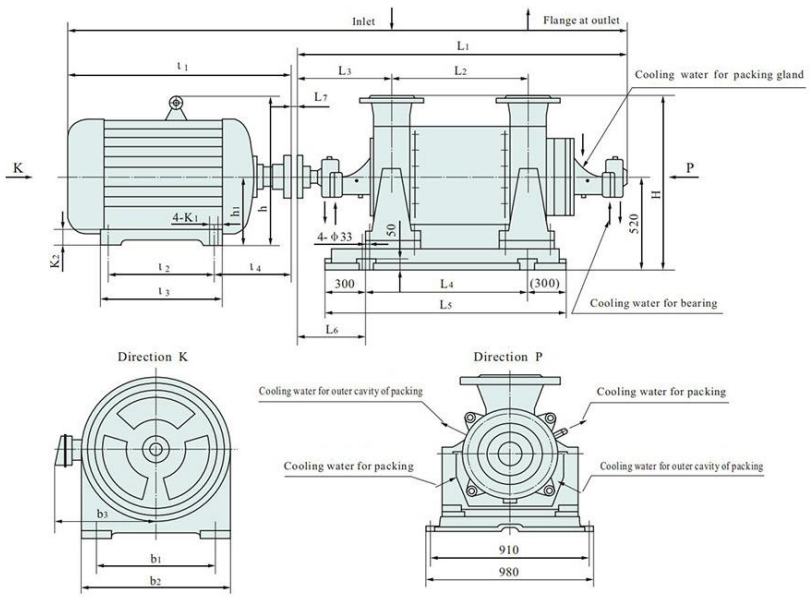


TABLE OF THE OUT-FORM AND INSTALLATION DIMENSIONS OF MODEL CG-D85-67, CG-D155-67 , CG-D280-43 PUMPS

Model of pump	Dimension / No. of stage	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	B	B_1	H	H_1	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	n-φd	n_1-φd_1	n_2-φd_2	Corollary motor		
																											Model	Power (kW)	Voltage (V)
CG-D85-67	3	765	182	1409	371	13	400	557	541	670	600	420	350	100	149	168	200	250	100	149	168	200	250	4-φ30	8-φ26	8-φ26	Y280M-2	90	380
	4	765	182	1497	459	31	400	557	585	670	600	420	350														Y315S-2	110	380
	5	765	182	1585	547	75	400	557	629	670	600	420	350														Y315M-2	132	380
	6	945	182	1673	635	27	580	557	585	670	600	420	350														Y315L1-2	160	380
	7	945	182	1761	723	71	580	557	629	670	600	420	350														Y315L2-2	200	380
	8	1125	182	1849	811	27	760	557	581	670	600	420	350														Y3551-2	220	6000
	9	1125	182	1937	899	71	760	557	625	670	600	420	350														Y3552-2	250	6000
CG-D155-67	3	765	182	1409	371	13	400	557	541	670	600	420	350	150	203	242	280	345	150	203	242	280	345	4-φ30	8-φ33	8-φ33	Y315M-2	132	380
	4	765	182	1497	459	31	400	557	585	670	600	420	350														Y315L2-2	200	380
	5	765	182	1585	547	75	400	557	629	670	600	420	350														Y3551-2	220	6000
	6	945	182	1673	635	27	580	557	585	670	600	420	350														Y3553-2	280	6000
	7	945	182	1761	723	71	580	557	629	670	600	420	350														Y3555-2	355	6000
	8	1125	182	1849	811	27	760	557	581	670	600	420	350														Y3555-2	355	6000
	9	1125	182	1937	899	71	760	557	625	670	600	420	350														Y4001-2	450	6000
CG-D280-43	3	605	152.5	1459	509	62.5	300	491	618.5	810	740	450	400	200	265	-	295	341	200	259	282	320	375	4-φ30	12-φ23	12-φ30	Y315L1-4	160	380
	4	865	182.5	1589	639	27.5	500	491	583.5	810	740	450	400														Y315L2-4	200	380
	5	865	182.5	1719	769	92.5	500	491	648.5	810	740	450	400														Y35541-4	250	6000
	6	1125	207.5	1849	899	52.5	710	491	608.5	810	740	450	400														Y3556-4	315	6000
	7	1125	207.5	1979	1029	117.5	710	491	673.5	810	740	450	400														Y4001-4	355	6000
	8	1385	217.5	2109	1159	62.5	950	491	618.5	810	740	450	400														Y4002-4	400	6000
	9	1385	217.5	2239	1289	127.5	950	491	683.5	810	740	450	400														Y4003-4	450	6000

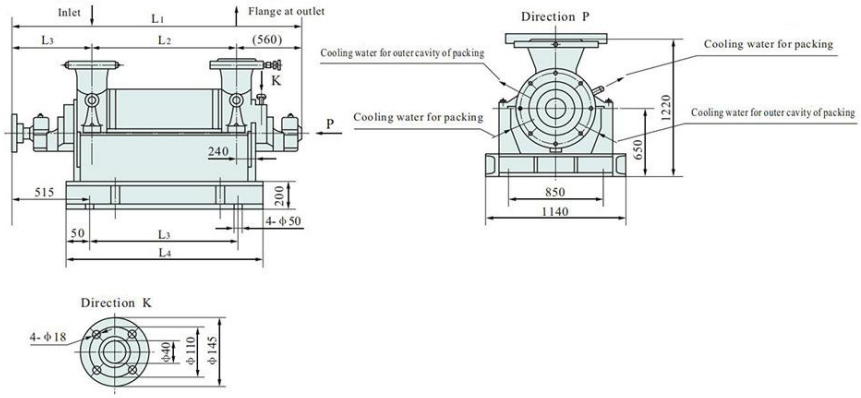
CG-D25-80、CG-D45-80 PUMP INSTALLATION DIMENSIONS



CG-D25-80、CG-D45-80 PUMP INSTALLATION DIMENSIONS TABLE

Model	Pump part									Motor part										
	L	L1	L2	L3	L4	L5	L6	L7	H	l1	l2	l3	l4	b1	b2	b3	h	h1	K1	K2
DG25-80x5	2378	1388	449	447	432	1032	643	5	880	985	368	535	330	457	550	410	680	280	24	38
DG25-80x6	2507	1467	528	447	432	1032	643	5	880	1035	419	586	330	457	550	410	680	280	24	38
DG25-80x7	2736	1546	607	447	432	1032	643	5	880	1185	406	610	356	508	635	530	845	315	28	45
DG25-80x8	2925	1625	686	447	595	1195	643	5	880	1295	457	660	356	508	635	530	845	315	28	45
DG25-80x9	3004	1704	765	447	595	1195	643	5	880	1295	457	660	356	508	635	530	845	315	28	45
DG25-80x10	3083	1783	844	447	827	1427	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG25-80x11	3162	1862	923	447	827	1427	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG25-80x12	3241	1941	1002	447	827	1427	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x7	2846	1546	615	439	432	1032	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x8	2925	1625	694	439	595	1195	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x9	3004	1704	773	439	595	1195	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x10	3288	1783	852	439	827	1427	643	5	880	1500	560	750	394	610	730	655	1010	355	28	52
DG45-80x11	3367	1862	931	439	827	1427	643	5	880	1500	630	750	394	610	730	655	1010	355	28	52
DG45-80x12	3446	1941	1010	439	827	1427	643	5	880	1500	630	750	394	610	730	655	1010	355	28	52

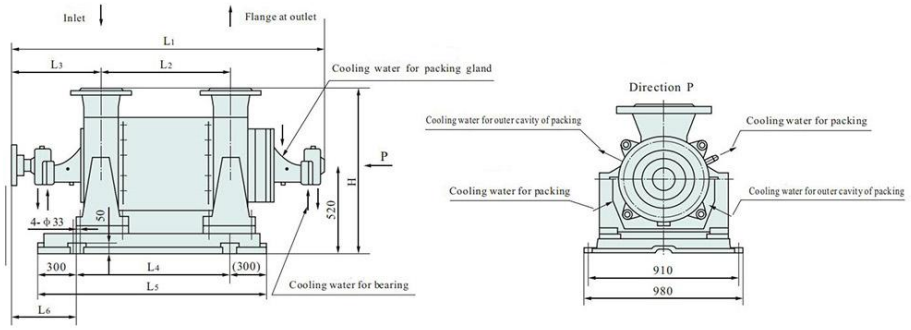
CG-D150-100、CG-D280-100 INSTALLATION DIMENSIONS



CG-D150-100 CG-D280-100 INSTALLATION DIMENSIONS TABLE

Model	L1	L2	L3	L4	L5	L6	H1	H2	B1	B2
CG-D150-100x6	2052	795	642	1085	1185	507	650	1220	850	1140
CG-D150-100x7	2157	900		1190	1290					
CG-D150-100x8	2262	1005		1295	1395					
CG-D150-100x9	2367	1110		1400	1500					
CG-D150-100x10	2472	1215		1505	1605					
CG-D280-100x4	1861	600	663	930	1030	498	585	1085	870	1130
CG-D280-100x5	1981	720		1050	1150					
CG-D280-100x6	2101	840		1170	1270					
CG-D280-100x7	2221	960		1290	1390					
CG-D280-100x8	2341	1080		1410	1510					
CG-D280-100x9	2461	1200		1530	1630					
CG-D280-100x10	2581	1320		1650	1750					

CG-D85-80 INSTALLATION DIMENSIONS



CG-D85-80 INSTALLATION DIMENSIONS TABLE

Model	L1	L2	L3	L4	L5	L6	H1	H2	B1	B2
CG-D85-80x7	1700	630	543	432	1032	643	520	880	910	980
CG-D85-80x8	1780	710		595	1195					
CG-D85-80x9	1860	790								
CG-D85-80x10	1940	870		827	1427					
CG-D85-80x11	2020	950								
CG-D85-80x12	2100	1030								

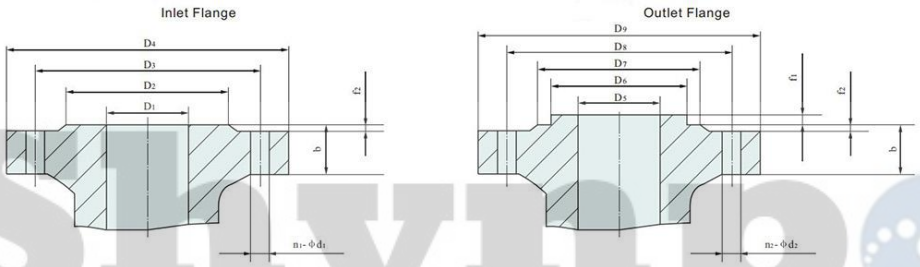


Figure of the inlet and outlet flange dimensions

FLANGE DIMENSIONS TABLE

Model	Inlet Flange							Outlet Flange								
	D1	D2	D3	D4	f2	b	n1-Φd1	D5	D6	D7	D8	D9	f1	f2	b	n2-Φd2
CG-D25-80	65	118	145	185	3	20	4-Φ18	65	110	138	170	220	4	3	32	8-Φ25
CG-D45-80	80	135	160	195	3	22	8-Φ18	65	110	138	170	220	4	3	32	8-Φ25
CG-D85-80	100	155	180	220	3	22	8-Φ18	100	149	172	210	265	4	3	38	8-Φ30
CG-D150-100	200	278	310	360	3	36	12-Φ26	150	203	250	290	355	4	3	50	12-Φ33