

BE THINK INNOVATE

Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

PACO[®]
PUMPS
A Grundfos Company



CHEMICAL PUMP

PACO CL

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Outline of CL Series Chemical Pump



PACO has over 90 years of experience in centrifugal pump design, manufacture and application. PACO pumps have always pursued state-of-art design in order to ensure customer benefits by offering the lowest life cycle cost. With many years of experience, PACO has been providing innovative pump solutions for a wide range of industrial applications.

Technical Data:

- Max Flow: 1200m³/h
- Max Head: 210m
- Operat Temp: -40°C ~250°C
- Max Operat Pres: 2.0MPa



PACO CL chemical pumps are designed to be a single-stage, single-suction, and radial split volute centrifugal pump in accordance with ANSI/ASME B73.1, which enables direct replacement of any pump whose performance and dimensions meet ANSI/ASME B73.1 without moving pedestal and motor and adjusting pipe-lines. This brings more freedom and convenience for selection of different brands by customers.

ANSI 150 pound/inch and PN16 flanges are available for PACO CL chemical pumps. Other standards are also available given customers' requirements.

Quality Assurance

PACO CL chemical pumps use 3D CAD design to ensure accuracy and reliability of products. The application of CFD technology in hydraulic design provides powerful analytical basis for improved hydraulic performance and increased efficiency. Therefore, PACO CL chemical pumps feature high reliability, stable operation, high efficiency, long life, and easy installation & maintenance.

Quality control and assurance is most imperative to ensure reliability of products. Each PACO CL chemical pump has passed strict quality control before shipment. To ensure reliable operation, all rotor units for pumps have undergone strict dynamic balancing test.

Applications

PACO CL chemical pumps are most suitable for transporting clean or contaminated, low or high temperature, and chemically neutral or corrosive liquids. They are widely used in chemical processes, pharmacy and petrochemical processing, food industry, paper making, metallurgical industry, general industries, sewage and water treatment, etc.

Sales Support

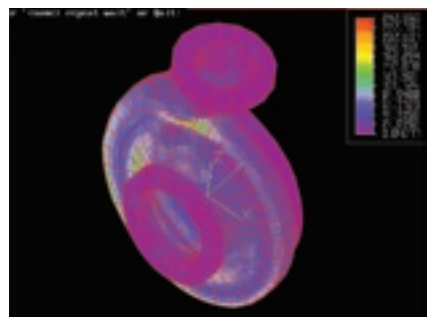
Grundfos has a worldwide sales network where each facility owns experienced sales and technical forces. To ensure optimal fit for actual applications, we recommend you to contact your local Grundfos Company or distributors for sharing our abundant expertise, application experiences and technical materials.

Spare Parts Service

PACO CL chemical pumps adopt advanced modular design for reduced types and quantities of spare parts to minimize the overhaul time. We offer whole sets of rotor parts and spare parts package for all CL chemical pumps to allow faster and more convenient maintenance for our users and hence shortening their downtime.

After-sales Service

The worldwide market and service network of Grundfos provides full quality and service assurance for PACO CL chemical pumps. Well-trained technical personnel will assist users in initial operation, troubleshooting, equipment repair and system analysis.



World-renowned brand bearings

Heavy load design, grease lubricating, and no less than 50,000 hours lifetime under normal conditions. Oil bath lubrication and oil mist lubrication are also available given customer's requirements.

Heavy load solid pump shaft

Heavy load solid pump shaft of lower cantilever ratio allows shaft radial deflection to be less than 0.002" (0.05mm), extending the lifetime of mechanical seal and bearing and ensuring stable operation. Replaceable shaft sleeve made of identical or better material than that of pump body is available given customer's requirements.

Heavy-duty bearing bracket

The design of high capacity oil sump ensures fast heat radiation for prolonged bearing lifetime.

Labyrinth seal prevents moisture and dirt in air from entering into bearing body to ensure lubrication performance of bearing lubricating oil.

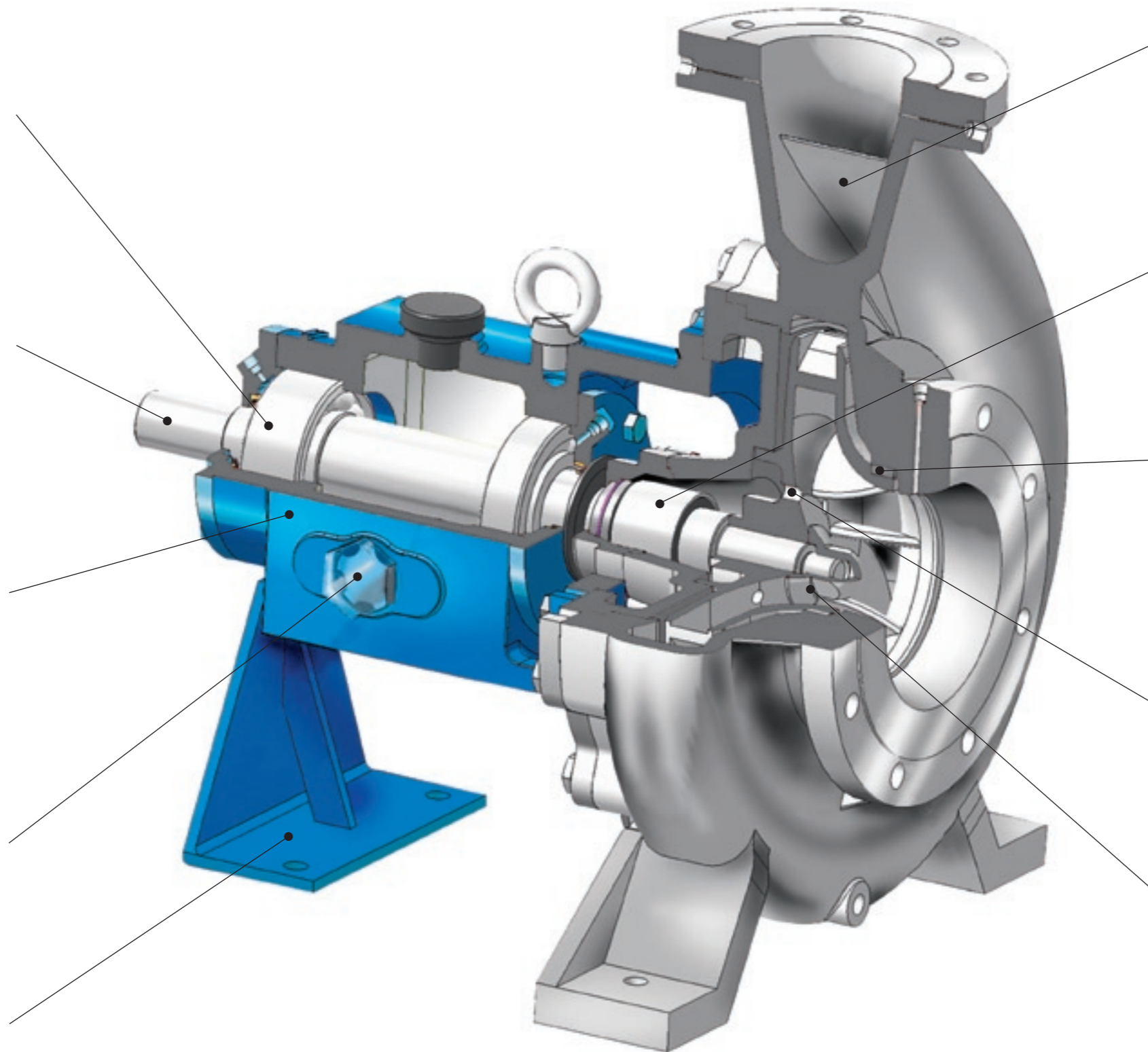
The posttensioning design of bearing body saves moving pump body during maintenance.

Oil level monitoring

Constant level oil cup is available given customers' requirements.

Solid bearing bracket

Provides reliable support, enhances installation stability and increases bearing lifetime by ensuring very little deflection at shaft end (where coupling is located) in case of external force applied.



Compensatory double volute design

Effectively eliminates radial load on pump shaft and prolongs the lifetime of mechanical seal and bearing. Balanced radial load and controlled axial hydraulic thrust combines to deliver quiet and steady operation throughout.

Available multiform seals

Single mechanical seal, cartridge mechanical seal, mechanical double seals and packing seal.

Replaceable wear ring

Reduces maintenance cost maximally while ensuring operating gap and higher work efficiency.

Balancing hole design

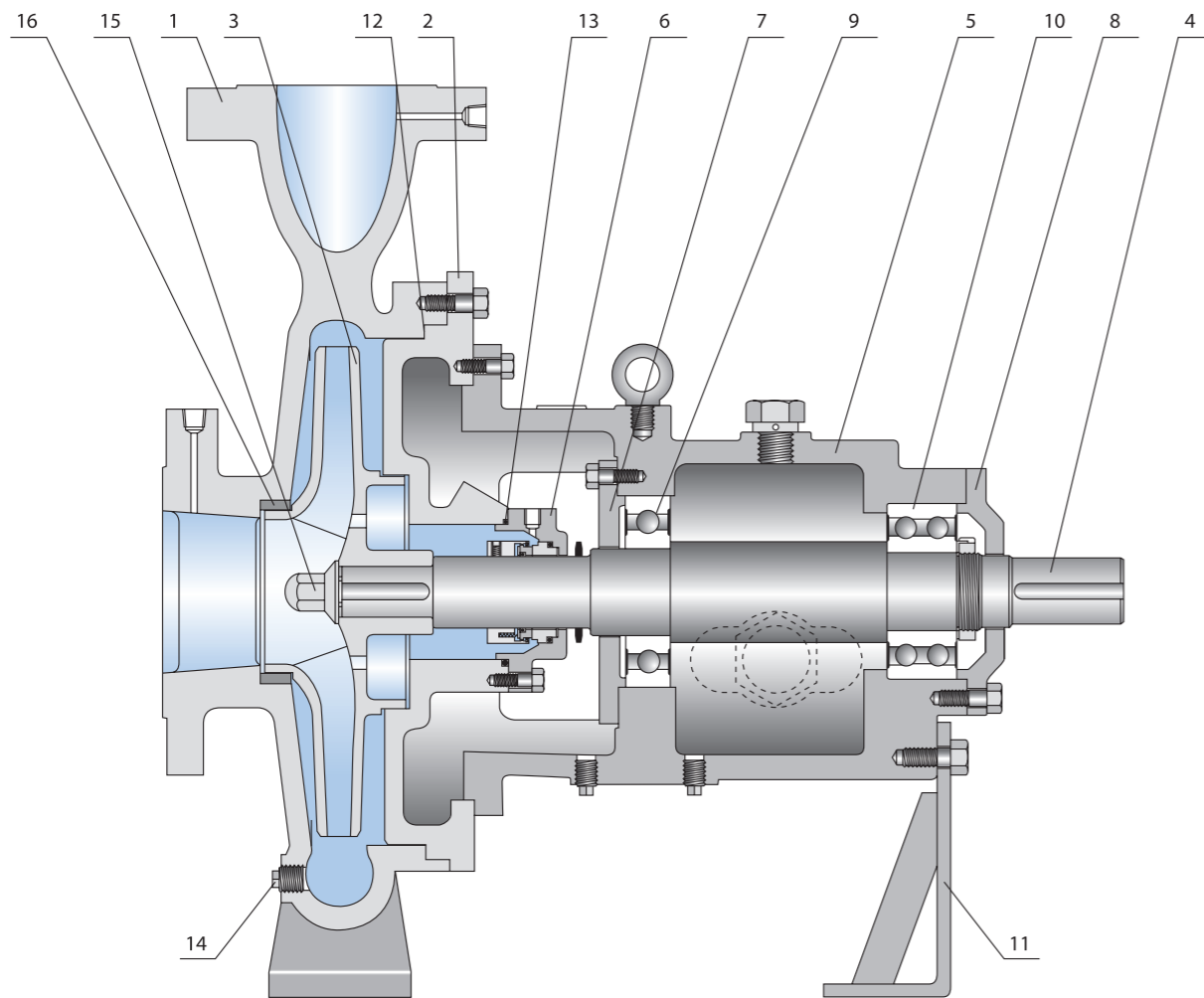
Balances axial force, reduces pressure in mechanical seal chamber, and increases the lifetime of bearing and mechanical seal to deliver quieter and more steady system operation.

Two impeller structural designs

Semi-open Impeller (Optional)	Closed Impeller (Standard)
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High-efficiency operation based on advanced American hydraulic model.

- The design of center support and external circulating water or heat preservation chamber meets requirements of high temperature or heat preservation.



Main Materials of Parts

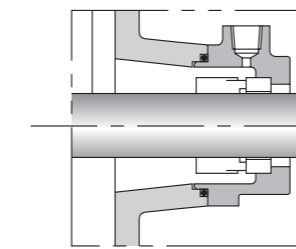
Item	Name	Material								
		Ductile Iron	Ni-Resist	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
1	Volute	Ductile Iron	Ni-Resist	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
2	Backplate	Ductile Iron	Ni-Resist	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
3	Impeller	304SS	316SS	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
4	Shaft	420SS	316SS	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
5	BearingHousing	Cast Iron or Cast steel								
6	Seal Gland	Ductile Iron	Ni-Resist	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
7	Bearing Cover, Inboard	Cast Iron or Cast steel								
8	Bearing Cover, Outboard	Cast Iron or Cast steel								
9	Bearing	Ball Bearing								
10	Bearing	Thrust Bearing								
11	Bearing Bracket Foot	Carbon Steel								
12	Gasket	Viton or PTFE								
13	O Ring	Viton or PTFE								
14	Plug	304SS	316SS	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
15	Impeller Nut	304SS	316SS	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy
16	Wear Ring	304SS	316SS	Cast Stee	304SS	316SS	316L	Duplex SS	Alloy 20	Hastelloy

I Various Seals Style

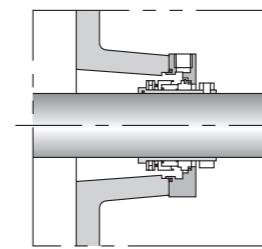
1. Standard seal style: Single mechanical seal (Figure 1) and cartridge single mechanical seal (Figure 2) They are suitable for clean water or clean medium similar to clean water and standard configuration of fiction lining is carborundum - plumbago.

2. Special seal style: Double mechanical seal (Figure 3) It is suitable for easy crystallizable and high viscosity medium containing solid particles and corrosive medium such as acid or alkali. According to the characteristics of different mediums, please choose different materials of fiction linings.

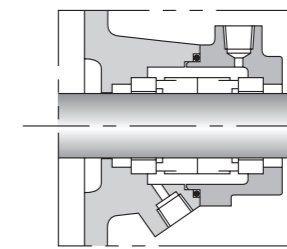
3. Non-mechanical seal style: Stuffing seal (Figure 3) Stuffing seal is suitable for medium containing solid particles and applications which require undemanding seal. Running cost is lower and it is easier to install and maintain.



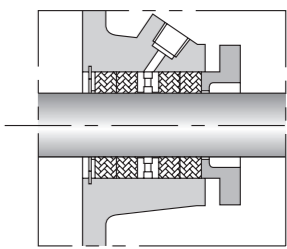
(Figure 1)



(Figure 2)



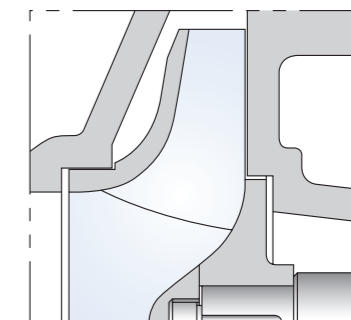
(Figure 3)



(Figure 4)

II Various Configuration Style

- Standard configuration style of CL pump: horizontal with foundation, closed impeller, suitable for transmitting clean medium.
- Special configuration style: horizontal with foundation, open or semi-open impeller (Figure 5), suitable for medium containing solid particles or long fiber.
- For the temperature of medium transmitted is more than 150°, pump will be designed to be center support and bearing body will be cooled at the same time.



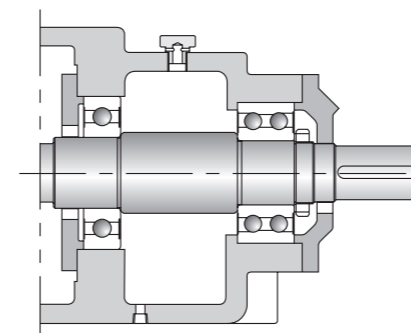
(Figure 5)

III Various Lubricating Style

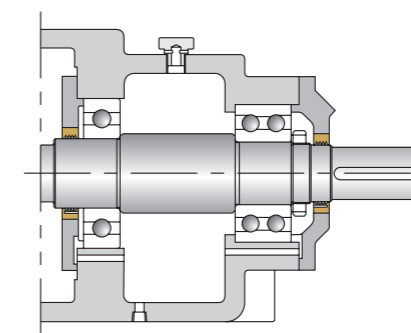
1. Grease lubrication
Standard grease lubrication uses closed inlet bearing without filling oil periodically. It is easier to maintained and suitable for such applications as the temperature of medium is not high.(Figure 5)

2. Oil bath lubrication
This lubrication style can be chosen on customer's request. It uses open inlet bearing fitting labyrinth seal and is suitable for such applications as the temperature of medium is higher.(Figure 6)

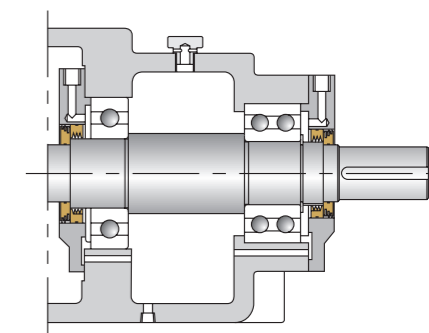
3. Oil mist lubrication
Oil mist lubrication is available on customer's request. It uses open inlet bearing fitting labyrinth seal and is suitable for such applications as the temperature of medium is higher.(Figure 8)



(Figure 6)

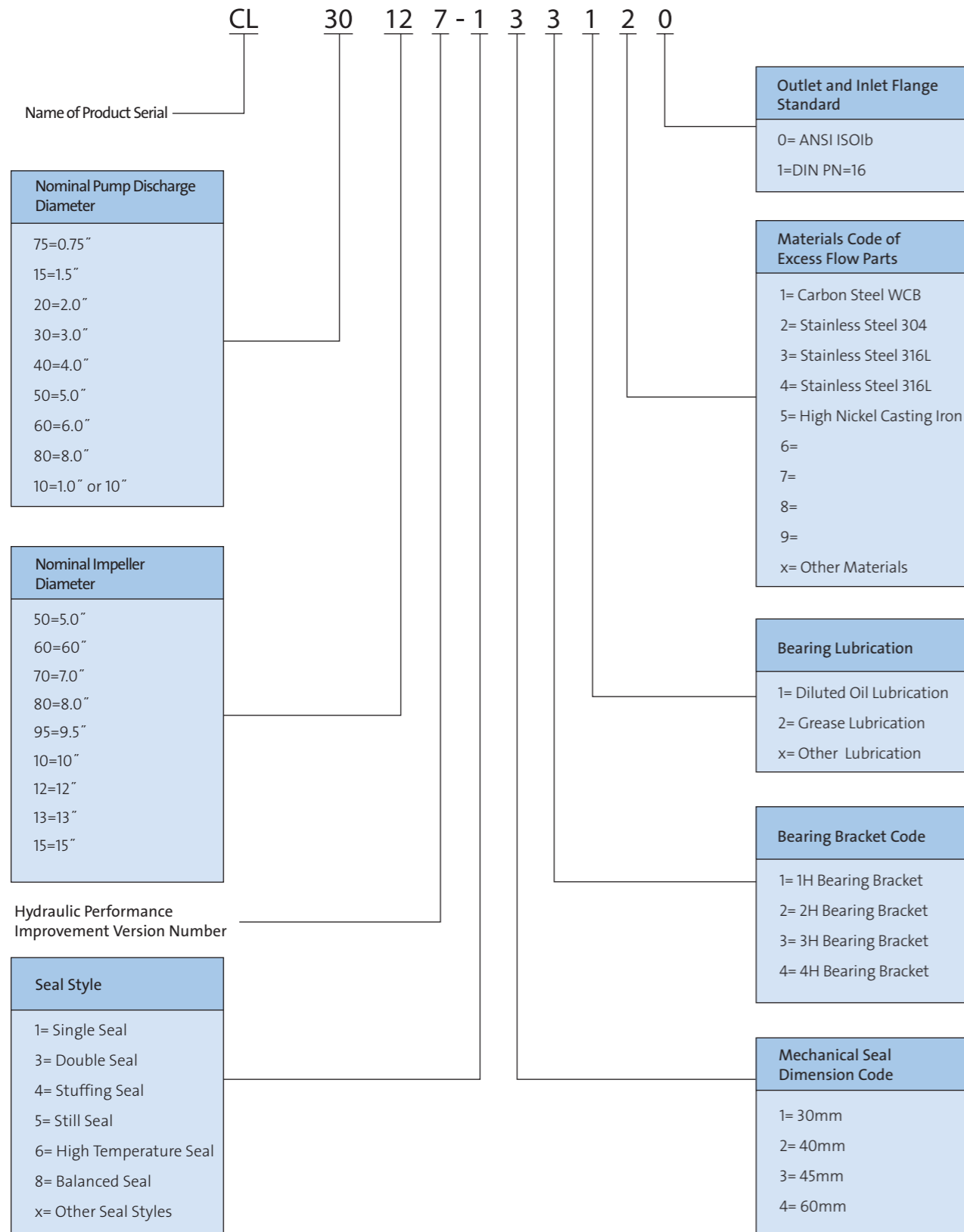


(Figure 7)



(Figure 8)

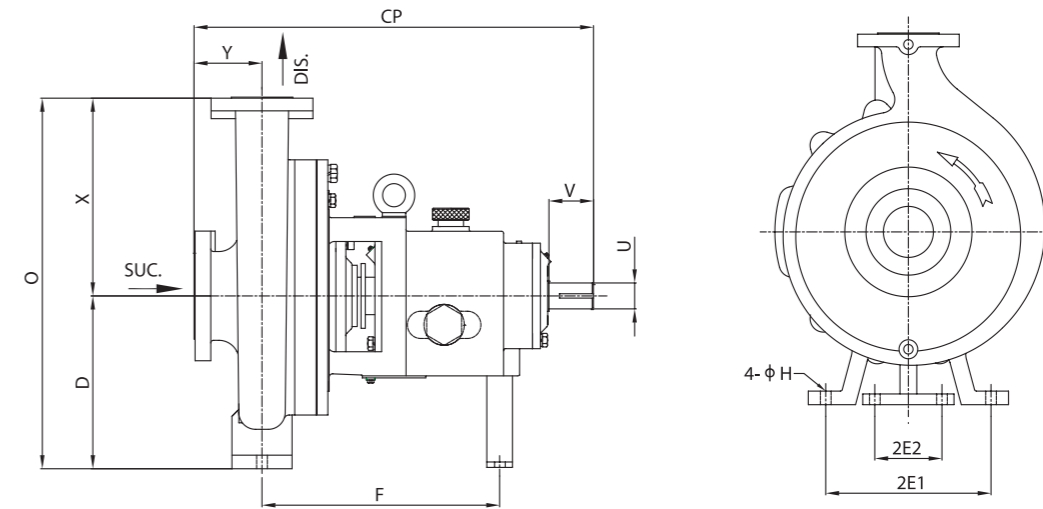
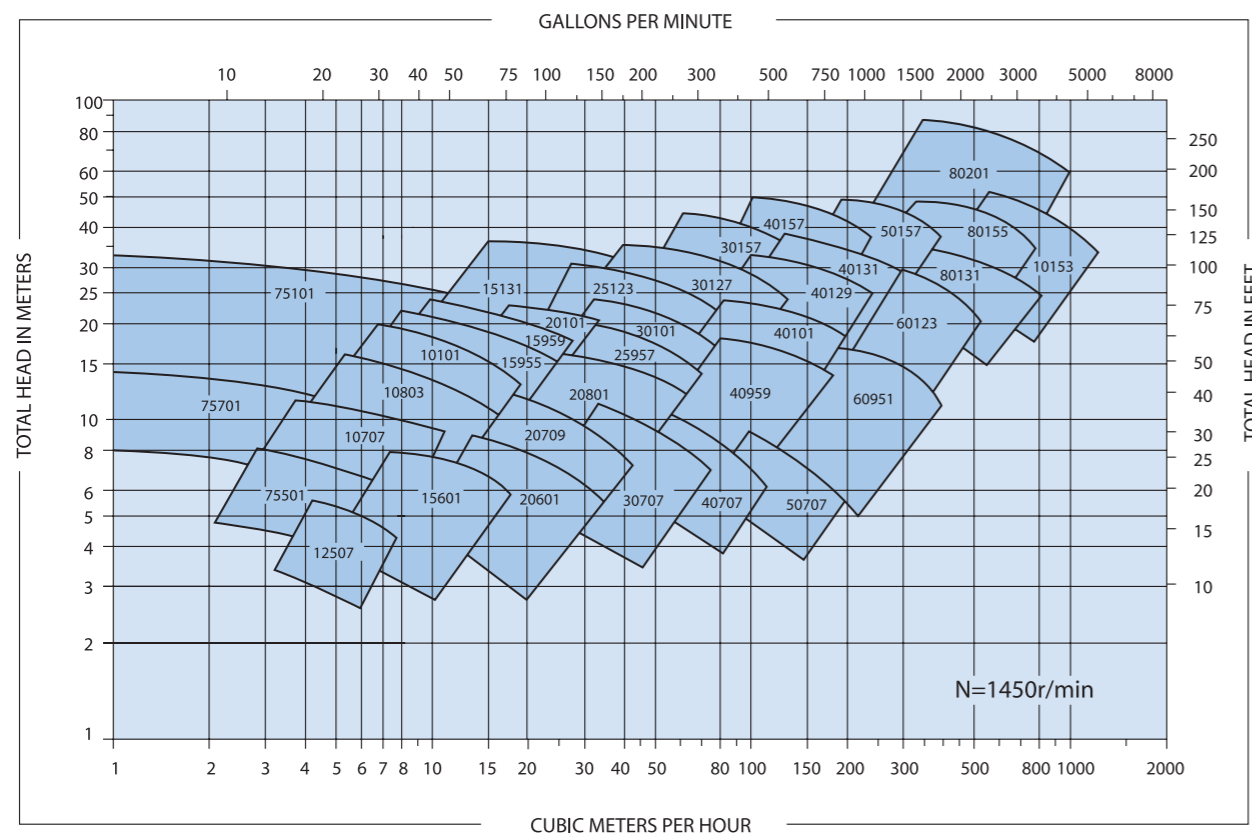
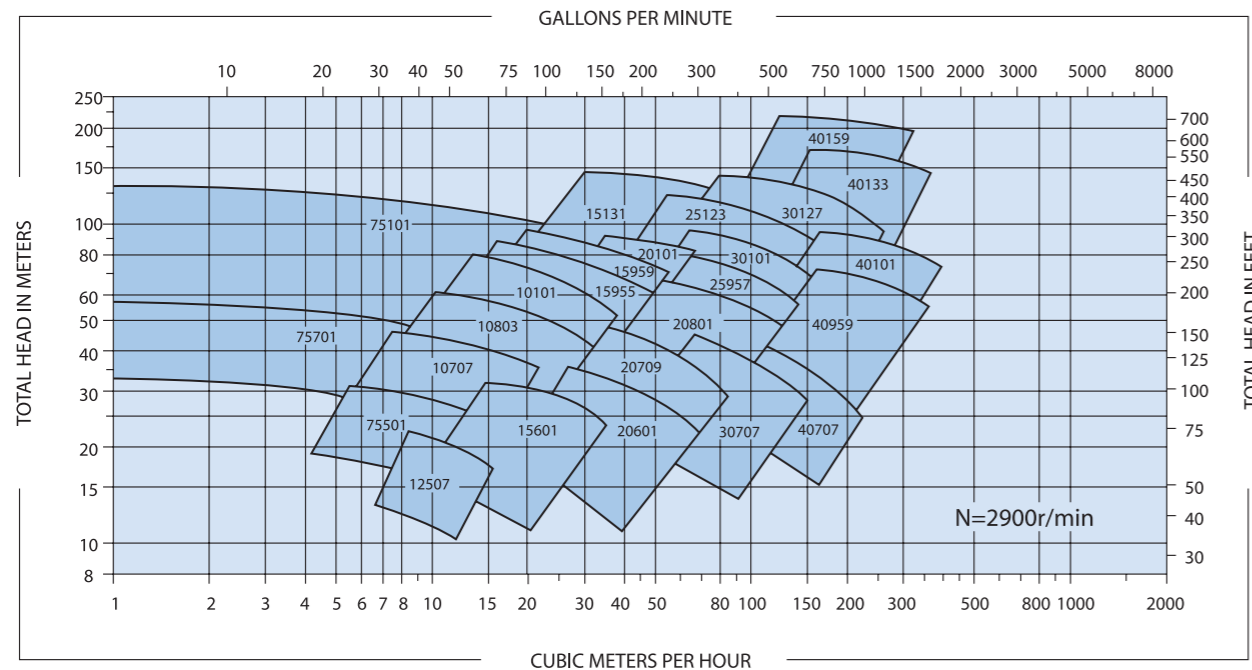
CL Chemical Pump Model Definition



Module Parts of CL Chemical Pump

Model	Pump Housing	Impeller	Pump Cover	Seal Cover	Bearing Chamber
CL75701	█	█	█	█	█
CL75101	█	█	█	█	█
CL75501	█	█	█	█	█
CL10707	█	█	█	█	█
CL10803	█	█	█	█	█
CL12507	█	█	█	█	█
CL15601	█	█	█	█	█
CL10101	█	█	█	█	█
CL15955	█	█	█	█	█
CL15959	█	█	█	█	█
CL25957	█	█	█	█	█
CL30101	█	█	█	█	█
CL20101	█	█	█	█	█
CL20801	█	█	█	█	█
CL20601	█	█	█	█	█
CL20709	█	█	█	█	█
CL30707	█	█	█	█	█
CL40707	█	█	█	█	█
CL50707	█	█	█	█	█
CL15131	█	█	█	█	█
CL25123	█	█	█	█	█
CL30127	█	█	█	█	█
CL40129	█	█	█	█	█
CL40131	█	█	█	█	█
CL40101	█	█	█	█	█
CL40959	█	█	█	█	█
CL60951	█	█	█	█	█
CL30157	█	█	█	█	█
CL60123	█	█	█	█	█
CL80131	█	█	█	█	█
CL40157	█	█	█	█	█
CL50157	█	█	█	█	█
CL80155	█	█	█	█	█
CL80201	█	█	█	█	█
CL10153	█	█	█	█	█

CL Pump Selection Chart (50Hz)



Model ASME	B73.1M Dimension Code	Inlet	Outlet	CP	D	2E1	2E2	F	H	O	U Shaft Diameter	U Key Groove (Wide x deep)	V	D	Y
CL-75501		40	25	445	133	152	0	184	16	298	22.23	4.76×2.38	51	165	102
CL-10707	AA	40	25	445	133	152	0	184	16	298	22.23	4.76×2.38	51	165	102
CL-10803	AA	40	25	445	133	152	0	184	16	298	22.23	4.76×2.38	51	165	102
CL-12507	AA	40	25	445	133	152	0	184	16	298	22.23	4.76×2.38	51	165	102
CL-15601	AB	75	40	445	133	152	0	184	16	298	22.23	4.76×2.38	51	165	102
CL-10101	A05	50	25	597	210	248	184	318	16	425	28.58	6.35×3.18	67	216	102
CL-15955	A50	75	40	597	210	248	184	318	16	425	28.58	6.35×3.18	67	216	102
CL-15959	A50	75	40	597	210	248	184	318	16	425	28.58	6.35×3.18	67	216	102
CL-20101	A60	75	50	597	210	248	184	318	16	450	28.58	6.35×3.18	67	242	102
CL-20601	A10	75	50	597	210	248	184	318	16	420	28.58	6.35×3.18	67	210	102
CL-20709		75	50	597	210	248	184	318	16	425	28.58	6.35×3.18	67	216	102
CL-20801	A60	75	50	597	210	248	184	318	16	450	28.58	6.35×3.18	67	242	102
CL-25957		100	75	597	210	248	184	318	16	490	28.58	6.35×3.18	67	280	102
CL-30707	A70	100	75	597	210	248	184	318	16	490	28.58	6.35×3.18	67	280	102
CL-30101	A70	100	75	597	210	248	184	318	16	490	28.58	6.35×3.18	67	280	102
CL-50707	A40	125	125	597	254	248	184	318	16	572	28.58	6.35×3.18	67	318	102
CL-40707	A70	150	100	597	210	248	184	318	16	490	28.58	6.35×3.18	67	280	102
CL-15131	A20	75	40	597	254	248	184	318	16	520	28.58	6.35×3.18	67	266	102
CL-25123	A30	75	50	597	254	248	184	318	16	546	41.28	9.53×4.77	67	292	102
CL-30127	A40	100	75	597	254	248	184	318	16	572	41.28	9.53×4.77	67	318	102
CL-30157	A85	100	75	597	254	406	184	318	16	597	41.28	9.53×4.77	67	343	102
CL-40959	A80	150	100	597	254	248	184	318	16	597	41.28	9.53×4.77	67	343	102
CL-40101	A80	150	100	597	254	248	184	318	16	597	41.28	9.53×4.77	67	343	102
CL-40129		150	100	597	254	406	184	318	16	597	41.28	9.53×4.77	67	343	102
CL-40131	A80	150	100	597	254	248	184	318	16	597	41.28	9.53×4.77	67	343	102
CL-60951		200	150	647	254	406	184	318	16	597	41.28	9.53×4.77	67	343	152
CL-40157	A90	150	100	860	368	406	229	476	22	775	60.33	15.88×7.94	102	406	152
CL-50157	A110	200	150	860	368	406	229	476	22	826	60.33	15.88×7.94	102	457	152
CL-60123	A90	200	150	860	368	406	229	476	22	775	60.33	15.88×7.94	102	406	152
CL-80131	A100	250	200	860	368	406	229	476	22	826	60.33	15.88×7.94	102	457	152
CL-80155	A120	250	200	860	368	406	229	476	22	851	60.33	15.88×7.94	102	483	152
CL-80201		250	200	860	400	406	229	476	22	851	60.33	15.88×7.94	102	600	152
CL-10153		300	250	893	450	500	229	486	22	980	60.33	15.88×7.94	102	530	175

Note:
 1. Flange standard: ANSI150# (Max. working pressure of male flange is up to 2.0MPa), also you can select flange GB/T911.3-2000 PN1.6MPa (16 bar) (or DIN PN16, 1.6MPa). Comments: unit of above dimensions is mm if there is no special explanation.