

ROTOR

DRFY LIQUID PUMP



DRFY Liquid pump

Brief introduction and features

DRFY series are vertical single-stage under-water centrifugal pumps, which are designed and manufactured by our company, on the basis of foreign developed technology.

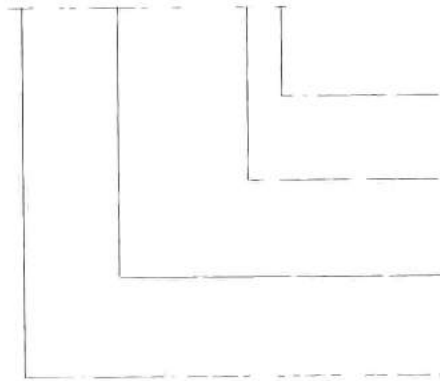
DRFY series are canceled mechanical seal, so they won't make for problems because of mechanical seal like other pumps, and resolved the troubles of maintain. They have many advantages, such as non-leakage, long using life, saving cost, improved the work efficiency and so on.

DRFY series adopt special centrifugal impeller, which are used to transport the clean medium without solid grain, so they are provided with lightly librate, low noise and high efficiency.



Model sense

50 DRF(H)Y(S) — 32 A



A: Cutting for impeller diameter no mark means common type

32: (mm) Head at designed point

FYS:

FY: Under-water vertical chemical pump

HY:

50:(mm)Inlet diameter

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Applications

They can be widely used in oil, chemical industry, medicine, paper making, metallurgy and so on

Operating conditions

Medium Temperature: $-20 \sim +140^{\circ}\text{C}$

Ambient Temperature: $\leq +40^{\circ}\text{C}$

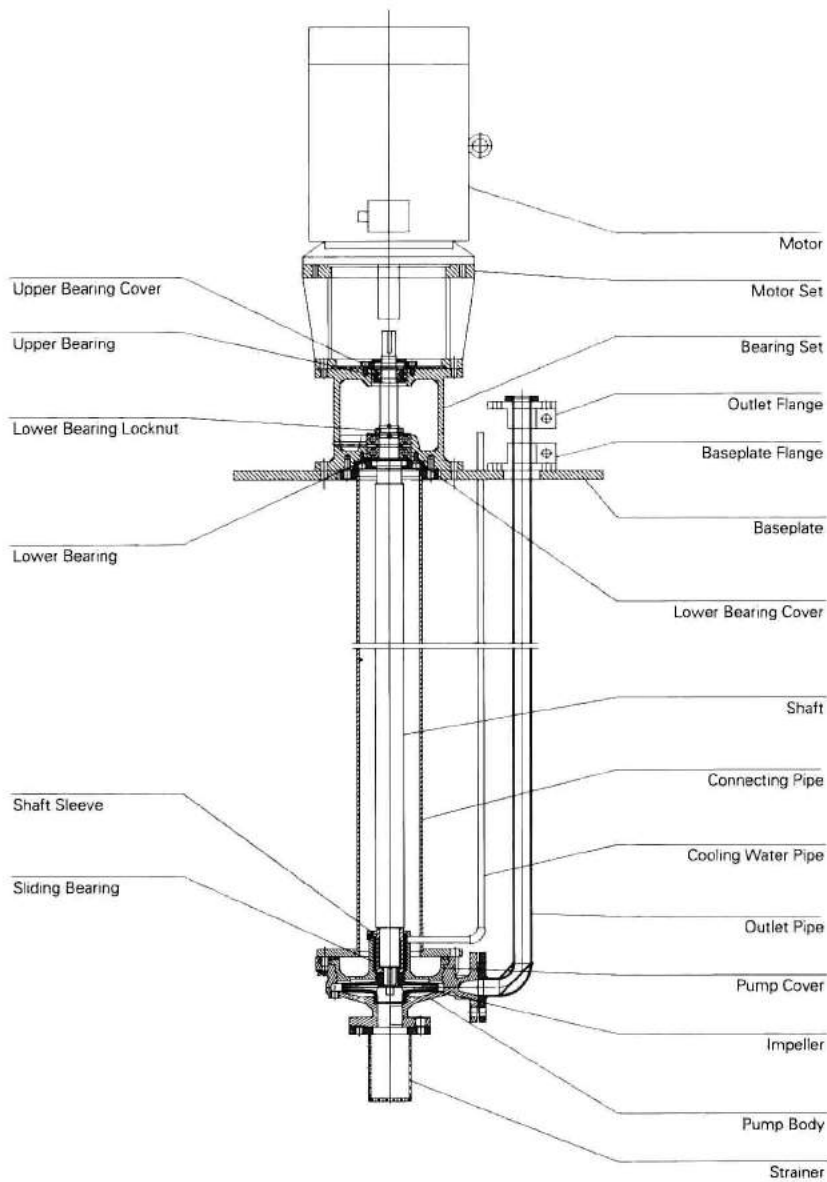
Capacity: $2 \sim 240\text{m}^3/\text{h}$

Head : 6~50m

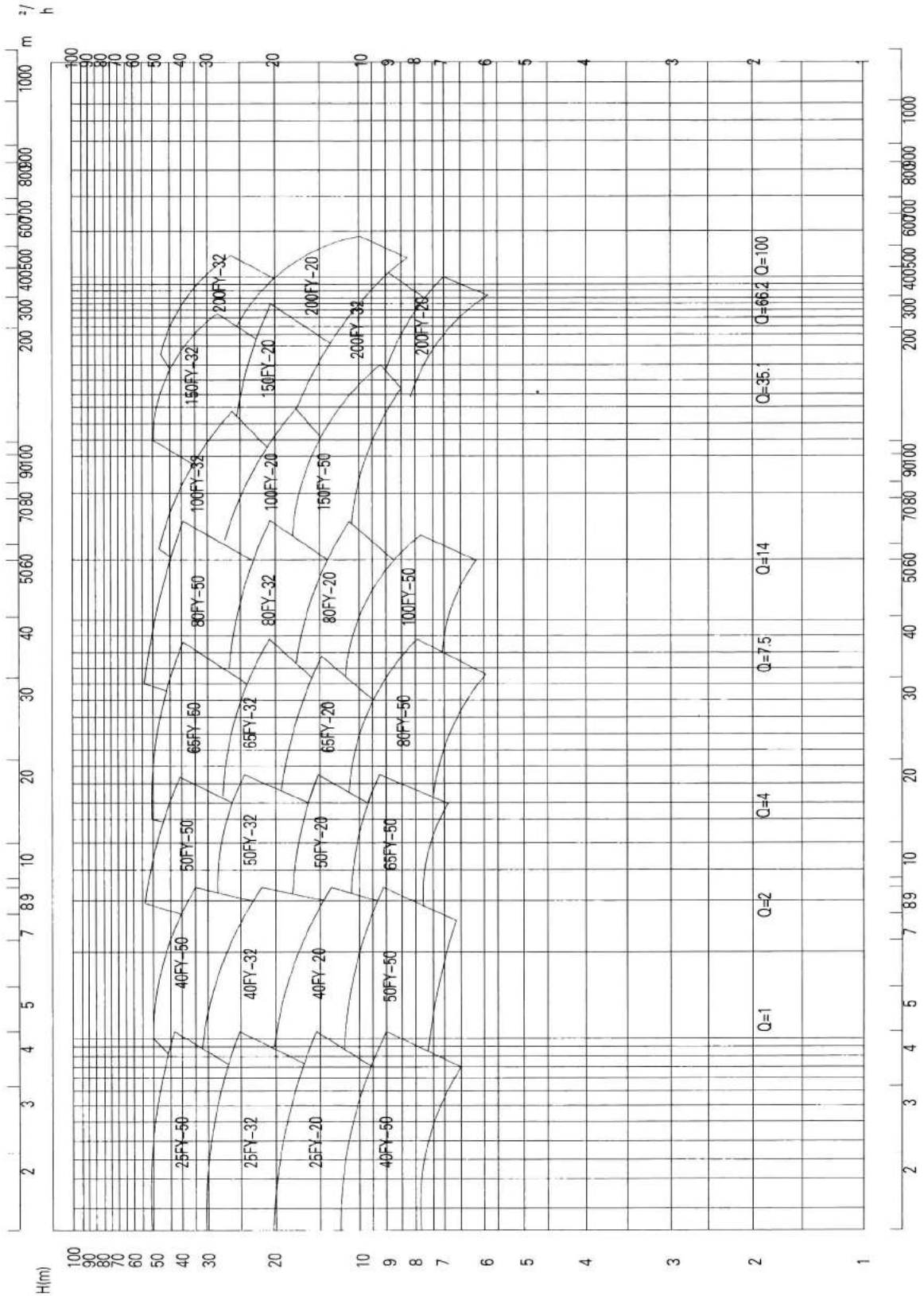
Caliber : 25~200mm

System Max Operating Pressure: $\leq 1.6\text{mpa}$

Type F (H)Y structural drawing



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Performance parameters

type	impeller type	n=1450r/min speed							
		Q	H	Relative density<1.0		Relative density<1.35		Relative density<1.86	
		capacity	head	power	Motor	power	Motor	power	Motor
		m3/h	m	KW	model	KW	model	KW	model
25DRFY-20		1.6	b	0.75	Y802-4	0.75	Y802-4	1.1	Y90S-4
	A	1.4	4						
25DRFY-32		1.6	8	1.1	Y90S-4	1.1	Y90S-2	1.5	Y90L-4
	A	1.4	6.5						
25DRFY-50		1.6	12.5	1.1	Y90S-4	1.5	Y90L-4	2.2	Y110L-4
	A	1.4	10						
25DRFY-80		1.6	20	1.1	Y90S-4	1.5	Y90L-4	2.2	Y110L-4
	A	1.5	17						
	B	1.4	15						
40DRFY-20		3.2	5	0.75	Y802-4	0.75	Y802-4	1.1	Y90S-4
	A	2.8	4						
40DRFY-32		3.2	8	1.1	Y90S-4	1.1	Y90S-2	1.5	Y90L-4
	A	2.8	6.5						
40DRFY-50		3.2	12.5	1.1	Y90S-4	1.5	Y90L-4	2.2	Y100L1-4
	A	2.8	10						
40DRFY-80		3.2	20	1.5	Y90L-4	2.2	Y100L1-4	3	Y100L2-4
	A	2.9	17						
	B	2.8	15						
50DRFY-20		6.3	5	0.75	Y802-4	0.75	Y802-4	1.1	Y90S-4
	A	5.7	4.1						
50DRFY-32		6.3	8	1.1	Y90S-4	1.1	Y90S-4	1.5	Y90L-4
	A	5.7	6.6						
50DRFY-50		6.3	12.5	1.1	Y90S-4	0.75	Y802-4	1.1	Y90S-4
	A	5.7	10.3						
50DRFY-80		6.3	20	1.5	Y90L-4	2.2	Y80L-4	2.2	Y100L1-4
	A	5.7	17.5						
	B	5.7	17.5						
65DRFY-20		12.5	5	0.75	Y802-4	0.75	Y802-4	0.75	Y802-4
	A	11.3	4.1						
65DRFY-32		12.5	8	0.75	Y802-4	0.75	Y802-4	1.1	Y90S-4
	A	11.3	6.6						

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type	impeller type	n=1450r/min speed							
		Q	H	Relative density<1.0		Relative density<1.35		Relative density<1.86	
		capacity	head	power	Motor	power	Motor	power	Motor
		m3/h	m	KW	model	KW	model	KW	model
65DRFY-50		12.5	12.5	1.1	Y90S-4	1.5	Y90L-4	2.2	Y100L1-4
	A	11.3	10.3	1.1	Y90S-4	1.1	Y90S-4	1.5	Y90L1-4
65DRFY-80		12.5	20	2.2	Y100L1-4	3	Y100L2-4	4	Y112M-4
	A	11.7	17.5			2.2	Y100L1-4	3	Y100L2-4
	B								
80DRFY-20		25	5	0.75	Y802-4	0.75	Y802-4	1.1	Y90S-4
	A	22.6	4.1					0.75	Y802-4
80DRFY-32		25	8	1.5	Y90S-4	1.5	Y90L-4	2.2	Y100L1-4
	A	25	6.6	1.1	Y100L1-4	1.1	Y90S-4	1.5	Y90L-4
80DRFY-50		22.7	12.5	2.2	Y100L1-4	2.2	Y100L1-4	3	Y100L2-4
	A	1.4	10.3	1.5	Y90L-4			2.2	Y100L1-4
80DRFY-80		25	20	3	Y100L2-4	4	Y112M-4	5.5	Y132S-4
	A	23.4	17.6	3	Y100L2-4	4	Y112M-4	5.5	Y132S-4
100DRFY-20		50	5	1.5	Y90L-4	2.2	Y100L1-4	3	Y100L2-4
	A	45.4	4.1	1.1	Y90S-4	1.5	Y90L-4	2.2	Y100L1-4
100DRFY-32		50	8	2.2	Y100L1-4	3	Y100L2-4	4	Y112M-4
	A	45.5	6.6	1.5	Y90L-4	2.2	Y100L1-4	3	Y100L2-4
100DRFY-50		50	12.5	4	Y112M-4	4	Y112M-4	5.5	Y132S-4
	A	45.5	10.3	3	Y100L2-4	3	Y100L2-4	4	Y112M-4
100DRFY-80		50	20	5.5	Y132S-4	7.5	Y132S-4	11	Y160M-4
	A	45.5	17.4	4	Y112M-4	5.5	Y132S-4	7.5	Y132M-4
125DRFY-12.5		100	12.5	5.5	Y132S-2	7.5	Y132S-4	11	Y160M-4
	A	91	10.3			5.5	Y132S-4	7.5	Y132M-4
125DRFY-20		100	20	11	Y160M-4	11	Y160M-4	15	Y160L-4
	A	91	16.5	7.5	Y132M-4				
125DRFY-32		100	32	18.5	Y180M-4	22	Y180L-4	30	Y200L-4
	A	91	25.5	15	Y160M-4	18.5	Y180M-4	30	Y200L-4
125DRFY-50		100	50	30	Y200L-4	37	Y225S-4	55	Y250M-4
	A	91	41			30	Y200L-4	45	Y225M-4
150DRFY-20		200	20	18.5	Y180M-4	22	Y180L-4	30	Y200L-4
	A	182	16.5	15	Y160L-4	18.5	Y180M-4	30	Y200L-4

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Performance parameters

type	impeller type	n=2900r/min speed							
		Q	H	Relative density <1.0		Relative density <1.35		Relative density <1.86	
		capacity	head	power	Motor	power	Motor	power	Motor
		m3/h	m	KW	model	KW	model	KW	model
25DRFY-20		3.2	20	1.1	Y802-2	1.5	Y90S-2	2.2	Y90L-2
	A	2.8	16						
25DRFY-32		3.2	32	3	Y100L-2	3	Y100L-2	4	Y112M-2
	A	2.8	26						
25DRFY-50		3.2	50	5.5	Y132S1-2	7.5	Y132S2-2	11	Y160M1-2
	A	2.8	41						
25DRFY-80		3.2	80	7.5	Y132S2-2	11	Y160M1-2	15	Y160M2-2
	A	3	70	5.5	Y132S1-2	7.5	Y132S2-2	11	Y160M1-2
	B	2.8	62	4	Y112M-2	5.5	Y132S1-2	11	
40DRFY-20		6.3	20	1.5	Y90S-2	2.2	Y90L-2	3	Y100L-2
	A	5.5	16						
40DRFY-32		6.3	32	3	Y100L-2	3	Y100L-2	4	Y112M-2
	A	5.5	26						
40DRFY-50		6.3	50	5.5	Y132S1-2	7.5	Y132S-2	11	Y160M1-2
	A	5.5	41						
40DRFY-80		6.3	80	7.5	Y132S2-2	11	Y160M1-2	15	Y160M2-2
	A	5.9	70	5.5	Y132S1-2	7.5	Y132S2-2	11	Y160M1-2
	B	5.6	62						
50DRFY-20		12.5	20	1.5	Y90S-2	2.2	Y90L-2	3	Y100L-2
	A	11.3	16.4						
50DRFY-32		12.5	32	3	Y100L-2	4	Y112M-2	5.5	Y132S1-2
	A	11.3	26.4	2.2	Y90L-2	3	Y100L-2	4	Y112M-2
50DRFY-50		12.5	50	5.5	Y132S1-2	7.5	Y132S2-2	11	Y160M1-2
	A	11.3	41	4	Y112M-2	5.5	Y132S1-2	7.5	Y132S2-2
50DRFY-80		12.5	80	11	Y160M1-2	15	Y160M2-2	18.5	Y160L-2
	A	11.7	70						
	B	11	62	7.5	Y132S2-2	11	Y160M1-2	15	Y160M1-2

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Performance parameters

type	impeller type	n=2900r/min speed							
		Q	H	Relative density <1.0		Relative density <1.35		Relative density <1.86	
		capacity	head	power	Motor	power	Motor	power	Motor
		m3/h	m	KW	model	KW	model	KW	model
65DRFY-20		25	20	3	Y100L-2	4	Y112M-2	5.5	Y132S2-2
	A	22.7	16.5	2.2	Y90L-2	3	Y100L-2	4	Y112M-2
65DRFY-32		25	32	5.5	Y132S1-2	5.5	Y132S1-2	7.5	Y132S2-2
	A	22.7	26.5	4	Y112M-2	4	Y112M-2	5.5	Y132S1-2
65DRFY-50		25	50	11	Y160M1-2	11	Y160M1-2	15	Y160M2-2
	A	22.7	41	7.5	Y132S2-2	7.5	Y132S2-2	11	Y160M1-2
65DRFY-80		25	80	15	Y160M2-2	18.5	Y160L-2	22	Y180M-2
	A	23.4	74.8			15	Y160M2-2		
	B	22	61.8	11	Y160M1-2	18.5	Y160L-2		
80DRFY-20		50	20	5.5	Y132S1-2	5.5	Y132S1-2	7.5	Y132S2-2
	A	45.3	16.5						
80DRFY-32		50	32	7.5	Y132S2-2	11	Y160M1-2	15	Y160M2-2
	A	45.4	26.4			7.5	Y132S2-2	11	Y160M2-2
80DRFY-50		50	50	15	Y160M2-2	15	Y160M2-2	22	Y180M-2
	A	45.4	41	11	Y160M1-2			18.5	Y160L-2
80DRFY-80		50	80	22	Y180M-2	30	Y200L1-2	45	Y225M-2
	A	46.8	70	18.5	Y160L-2	22	Y180M-2	30	Y200L1-2
	B	44	62.2	15	Y160M2-2				
100DRFY-20		100	20	11	Y160M1-2	11	Y160M1-2	15	Y160M2-2
	A	91.8	16.8	7.5	Y132M2-2			11	Y160M1-2
100DRFY-32		100	32	15	Y180M2-2	18.5	Y160L-2	22	Y180M-2
	A	91	26.5	11	Y160M2-2	15	Y160M2-2	18.5	Y160L-2
100DRFY-50		100	50	22	Y180M2-2	30	Y200L1-2	37	Y200L2-2
	A	91	40.5	18.5	Y160L-2	22	Y180M-2	30	Y200L1-2
100DRFY-80		100	80	45	Y225M-2	45	Y225M-2	75	280S-2
	A	93.5	70	37	Y200L2-2			55	Y250M-2
	B	87.8	61.7	30	Y200L1-2	37	Y200L2-2	45	Y225M-2

DRFY Liquid pump instructions for use

Washing method

Introduce the clean liquid washing plain bearing to guarantee the pump rotate safety. Two methods can be selected to the different medium.

Self-washing

When the medium conveyed by the pump is clean, adopt this method to carry out the washing. Lead a pipeline from the pump outlet flange, make the washing liquid flow to various plain bearings, lubricate the plain bearing, bring the heat produced by friction and play a temperature dropping function.

Out -washing

When the medium conveyed by the pump contains the small grain, adopt this method to carry out the washing. Connect a pipeline from the exterior, lead the clean washing liquid to wash the various plain bearings, lubricate the plain bearing, bring the heat produced by friction set, play a temperature dropping function, meanwhile, avoid the solid grain entering the friction set.

Installation

After installing the pump, check whether the coupling runs flexibly and check whether there are some metal friction sounds.

Check the concentricity of the pump shaft and motor shaft. The difference on the outer round of the two couplings can't exceed 0.3mm.

The bearing bush should soak into the liquid. Otherwise you should lead to appropriate liquid from the self-outlet pipeline(or joint from the outside), lubricate bearing bush and prevent the dry mill damaging.

In chemical process system, if there are some odds to drop into the container, in order to prevent the odds from damaging the pump body, you can install a proper conservancy trash-rack at the suck pipe place.

The distance from the pump suck entrance to the bottom of the container is 1.5-2 times of the suck bore. Four rounds can't be less 2.5 times. The small bore gets the large value and large bore gets the small value.

The liquid-out pipeline of the pump should separately set up the support frame and its weight can't be allowed to add the pump outlet flange.

After finishing installation, check whether the nuts of all parts are tightened and then install the pump and motor on the container after the coupling runs flexibly. After installation, check it again.

Start and stop

Check the bearing cavity and let it keep a ration clean butter. Usually it's appropriate to fill with the empty cavity capacity 1/2-1/3, avoid the bearing temperature rising while running.

Check whether the coupling is even on weight, otherwise you should find out the reason and get rid of it and then run it.

If adopting the exterior washing lubricating bearing bush, before starting the motor, lead the exterior liquid to wash the bearing bush.

Check the motor running direction and left it same as the ruled rotary direction of pump.

Close the gate valve and pressure meter on the outlet pipeline.

First start the motor and then open the pressure meter, slowly open the gate valve on the outlet pipeline to the desired position and then put into the normal running .

Normally stop, first close the outlet gate valve slowly and then stop the motor and close the pressure meter.

Stop or no use for long time, please remove the pump from the container, clean, reassemble and add oil to be stored.

Running

The bearing temperature can't be high 80°C and there should be appropriate butter in bearing box.

Keep and guarantee the butter pure and clean at any time.

Stop machine and carry out the check if finding the following breakdowns in the course of running.

Cause of the fault and solving methods

Possible factors of fault	Cause of the fault	Solving methods
1、 The pump can't give liquid	a. The motor running direction is not correct. b. The close impeller flow channel or suction and outlet Pipeline are blocked c. The liquid hasn't soaked the impeller central shaft	a. Correct the direction. b. Remove the block part c. Adjust the soak height
2、 The pump has insufficient flux	a. The impeller is corrosive seriously b. The speed is insufficient c. Suction or outlet part are blocked	a. Replace the impeller b. Increase the speed c. Remove the block part
3、 The pump total head is insufficient	a. The conveyed liquid contains gas b. The impeller is corrosive seriously c. The speed is insufficient	A. Reduce the liquid temperature and expel the gas B. Replace the impeller C. Increase the speed
4、 The power is too large	a. The flux exceeds the using range b. The medium specific gravity is too large c. Mechanical friction d. The bearing bush dry mill or lubrication liquid is insufficient	A. Running according to the pump using range B. Replace the large power motor C. Check the friction reason and solve it D. Soak the bearing bush into the liquid
5、 The bearing is hot	a. The pump shaft and motor shaft are not concentric b. Lack of grease or the grease is bad in bering box c. Shaft vibration is too large	a. Adjust the concentricity b. Add grease or replace it c. Replace bearing
6、 Noise and vibration	A. The pump shaft and motor shaft is not concentric B. The conveyed liquid contains gas C. The rotor is unbalance D. The bearing bush and shaft sleeve are damaged E. The nut is loosen	a. Adjust the concentricity b. Reduce the liquid temperature and expel the gas c. Replace the parts d. Replace the bearing bush and repair the shaft sleeve e. Lock various nuts

Table for selection of anti-corrosive alloy materials

No.	Material rating number	Code	Suitable media
1	F30%CrMo	Cr30	Leading the pack in the domestic market, it is an ideal material for corrosive media containing up to 35% of solid, such as phosphoric acid extract slurry or similar corrosive medium.
2	1Cr18Ni9Ti	18-8	Alkali liquid, acetic acid, diluted nitric acid.
3	00Cr20Ni25Mo4	UB6	Phosphoric acid, sulfuric acid and high temperature acetic acid containing certain amount of Cl ⁻ , F ⁻ , SO ₄ ²⁻ . Resistant to pitting and intergranular corrosion.
4	00Cr14Ni14Si4	C4	Full concentration nitric acid, especially concentrated nitric acid. It is the best cast steel in comprehensive performance for concentrated nitric acid available at present.
5	0Cr12Ni25Mo3Cu3Si2Nb	941	Full concentration constant temperature sulfuric acid, especially middle concentrated (ca.50%) sulfuric acid below 100°C
6	00Cr10Ni20Mo1.5Si6Cu	SS920	High temperature sulfuric acid, t ≤ 130°C, concentration 93~98%.
7	0Cr21Ni32Mo2Cu3	20# Alloy	High temperature sulfuric acid t ≤ 130°C, concentration ca.40%.
8	Z180C13	DF2	Corrosive medium containing up to 70% of solid.
9	0Cr26Ni5Mo2Cu3	CD-4MCu	Suitable for diluted sulfuric acid and phosphoric acid containing solid. It is anti-abrasive and anti-corrosive.
10	0Cr24Ni20Mo2Cu3	KAlloy	Sulfuric acid of various concentrations at ≤ 60°C.
11	00Cr25Ni6Mo2	MM-4	Special steel for nitric acid and phosphoric fertilizer.
12	0Cr18Ni9	304	Diluted nitric acid and organic acids.
13	00Cr18Ni9	304L	Diluted nitric acid and organic acids. Resistant to intergranular corrosion.
14	0Cr18Ni12Mo2Ti	Mo2Ti	Diluted nitric acid, phosphoric acid and organic acids.
15	0Cr18Ni12Mo2	316	Diluted nitric acid, phosphoric acid and organic acids.
16	00Cr18Ni12Mo2	316L	Diluted nitric acid, phosphoric acid and organic acids. Resistant to intergranular corrosion.
17	0Cr20Ni25Mo5Cu2	904	Sulfuric acid of various concentrations at ≤ 70°C. Resistant to intergranular corrosion.
18	0Cr30Ni42Mo3Cu2	804	Evaporation of caustic soda, and those media whose corrosiveness is beyond the capability of 904.
19	0Cr20Ni42Mo3Cu2	824	Those media whose corrosiveness is beyond the capability of 904.
20	0Cr18Ni5Mo5	NH55	Sea water.
21	0Cr20Ni33Mo3Cu3Nb	20Cb3	Corrosion of sulfuric acid of various concentrations.
22	0Cr24Ni33Mo2.5Cu3Ti	3#4#	Abrasion and corrosion of diluted sulfuric acid containing 20% solid phase.
23	0Cr16Ni4Cu3Nb	CB-7Cu	Corrosion of sand slurry, abrasion and corrosion of halogen liquid in the production of potassium fertilizer.
24	00Cr30Ni40Mo4Cu3	Lewmet55	Corrosion of ≤ 125°C high temperature fuming sulfuric acid.
25	00Ni65Cu28	Monel	Hydrofluoric acid, silicofluoric acid, high temperature caustic soda.
26	00Ni65Mo28	(Hastelloy) B-2	Full concentration hydrochloric acid.
27	TA ₂ , TA ₃ , TA ₉		Cast titanium, Titanium palladium, Soda, high temperature Calcium chloride, Seawater.
28	FEP	F46	Various acids, alkalis, salts, oxidants, etc.
29	UHMWPE		Acids, alkalis, and salts, containing suspended solid granules below 80°C.
30	F4+45#		Strong corrosive media below 120°C.