

VERTICAL SEALLESS PUMP

VK/VP series

Vertical Sealless Pump DRYFREE



Our vertical sealless pump has a number of advantages !

● Less aeration

The adopted convex ring on the back of the impeller reduces aeration as much as possible. Production equipment is ensured by being resolved pump troubles caused by air lock.

● No trouble by heat & abrasion

It is a sealless structure and safety design which is not affected by a little amount of slurry.

● Measures against gas

Dry seal is attached as standard and seal off the gas generated from chemical liquid in the pump. It prevents the motor corrosion and make it have a long life.

● No liquid leakage

Welded parts at the suction inlet & discharge outlet of the casing are eliminated and integrally molded. No need to worry about liquid leakage and use it with ease.

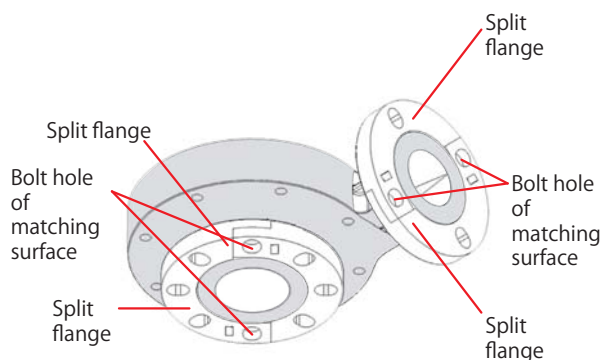
● Easy to pipe

Piping is easy by the loose flange and It increases the work efficiency.

● Light and easy maintenance

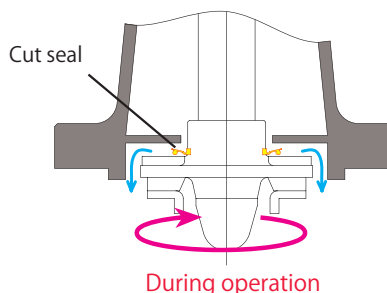
Light original motor, aluminium frame and plastic base are adopted for weight saving. It dramatically increases the work efficiency when installing or maintaining.

Split flange
for integrally molded casing

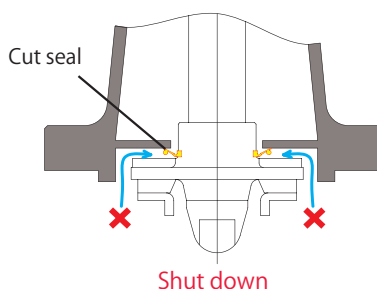


Agency of cut seal

It prevents temporary liquie leakage by backflow after shut-down.



During operation, the cut seal centrifugally opens by the rotation of the pump shaft and be contactless with the back plate. Liquid is prevented to enter into the connecting pipe by the agency of the back blade.



When a pump stops, the agency of the back blade has no effect and instantly the cut seal closes to the back plate for sealing to prevent the backflow enters into the connecting pipe.

※ The pump whose discharge bore is 50mm or less does not have a cut seal.

Line up

VK series . . . available until S.G. 1.1

Available to use the pump in and out of tank.

It is suitable to circulate liquid in a scrubber.

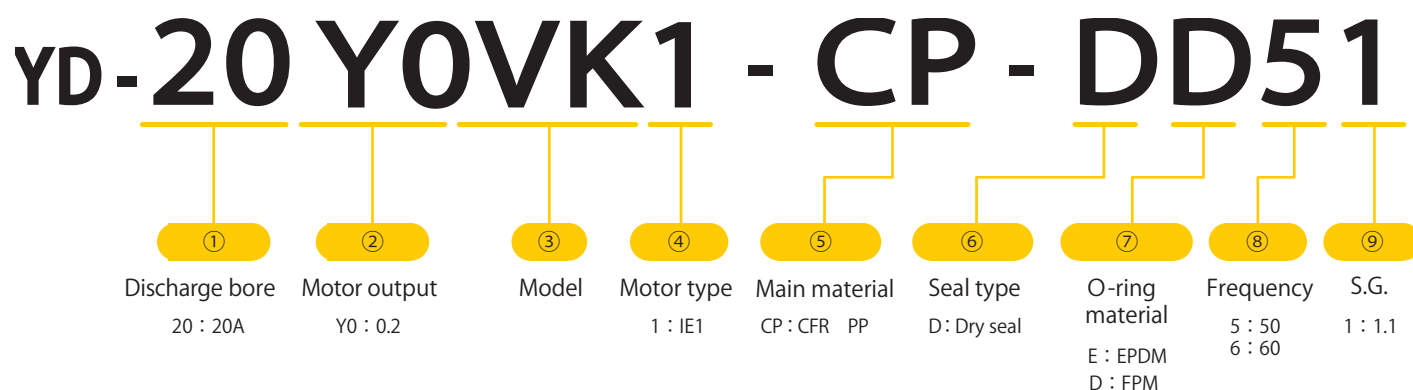
Frequency	Model	Bore(mm)		Standard performance (m - L/min)	Specific gravity	Output (kW)	Weight (kg)
		Suc.	Dis.				
50Hz	YD-20Y0VK1-CP-D □51	25	20	4-60	1.1	0.2	15
	YD-2500VK1-CP-D □51	40	25	8-80	1.1	0.4	17.5
	YD-2500VK1-CP-D □51-L	40	25	8-80	1.1	0.4	18.5
	YD-2500VK1-CP-D □51-I	40	25	8.2-82	1.1	0.4	17.5
	YD-2500VK1-CP-D □51-IL	40	25	8.2-82	1.1	0.4	18.5
	YD-4001VK3-CP-D □51-M	50	40	9-150	1.1	0.75	28
	YD-4002VK3-CP-D □51-M	50	40	10-300	1.1	1.5	28
	YD-5003VK3-CP-W □51-M	65	50	12-350	1.1	2.2	33
	YD-6505VK3-CP-W □51-M	80	65	15-550	1.1	3.7	47
	YD-6507VK3-CP-W □51-M	80	65	18-700	1.1	5.5	74
60Hz	YD-20Y0VK1-CP-D □61	25	20	4-60	1.1	0.2	15
	YD-2500VK1-CP-D □61	40	25	8-80	1.1	0.4	17.5
	YD-2500VK1-CP-D □61-L	40	25	8-80	1.1	0.4	18.5
	YD-2500VK1-CP-D □61-I	40	25	8.2-82	1.1	0.4	17.5
	YD-2500VK1-CP-D □61-IL	40	25	8.2-82	1.1	0.4	18.5
	YD-4001VK3-CP-D □61-M	50	40	8-120	1.1	0.75	28
	YD-4002VK3-CP-D □61-M	50	40	8-300	1.1	1.5	28
	YD-4003VK3-CP-D □61-M	50	40	12-350	1.1	2.2	31
	YD-5005VK3-CP-W □61-M	65	50	15-550	1.1	3.7	46
	YD-6507VK3-CP-W □61-M	80	65	18-700	1.1	5.5	74
	YD-6510VK3-CP-W □61-M	80	65	25-850	1.1	7.5	77

VP series . . . available until S.G.1.4

It is a high pressure pump and much used for etching in a PCB manufacturing equipment.

Frequency	Model	Bore (mm)		Standard performance (m - L/min)	Specific gravity	Output (kW)	Weight (kg)
		Suc.	Dis.				
50Hz	YD-5003VP3-CP-W □54-M	65	50	12-300	1.4	2.2	33
	YD-5005VP3-CP-W □54-M	65	50	15-430	1.4	3.7	46
	YD-6507VP3-CP-W □54-M	80	65	17-600	1.4	5.5	74
	YD-6510VP3-CP-W □54-M	80	65	18-750	1.4	7.5	77
60Hz	YD-5003VP3-CP-W □64-M	65	50	11-300	1.4	2.2	33
	YD-5005VP3-CP-W □64-M	65	50	15-430	1.4	3.7	46
	YD-6507VP3-CP-W □64-M	80	65	22-400	1.4	5.5	74
	YD-6510VP3-CP-W □64-M	80	65	20-750	1.4	7.5	77

<Model description>



< Specification >

Model	Bore (mm)		Hz	Standard performance (m - L/min)	Specific gravity	Output (kW)	Weight (kg)	Heatresistant tem. (°C)
	Suc.	Dis.						
YD-20Y0VK1-CP-D □△1	25	20	50/60	4-60	1.1	0.2	15	70

Use

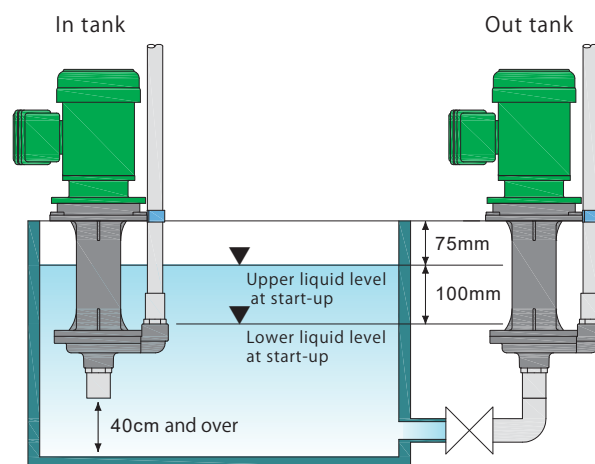
- To circulate liquid in Gold plating equipment
- To circulate liquid in various type of plating equipment
- To circulate liquid in a small scrubber
- To agitate chemical liquid
- To circulate / transfer liquid in a reaction / mix tank

Feature

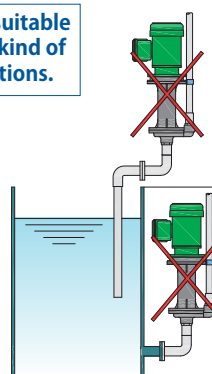
- It is fully compatible with our YD-20LO-E model.
- Highly corrosion and heat resistance to adopt CFR PP as main material.
- Sealles structure reduces heat & abrasion troubles.
It is available for a little amount of slurry in liquid !
- It is easily changed to be a in-tank pump by removing a discharge loose flange!
- When installing a pump in a tank, it is available to change to plastic bolts.

Example of Installation

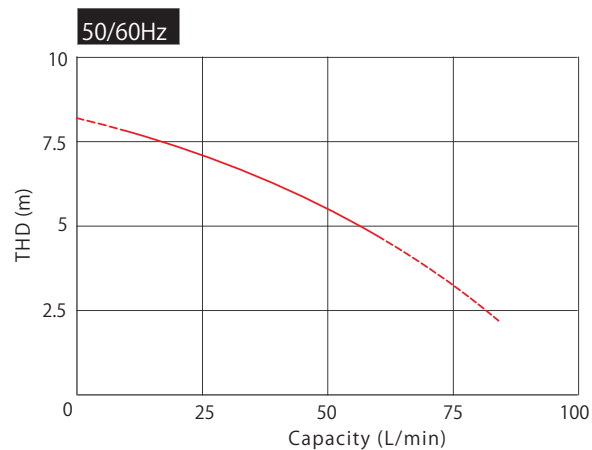
Installation liquid level



It is not suitable for such kind of applications.

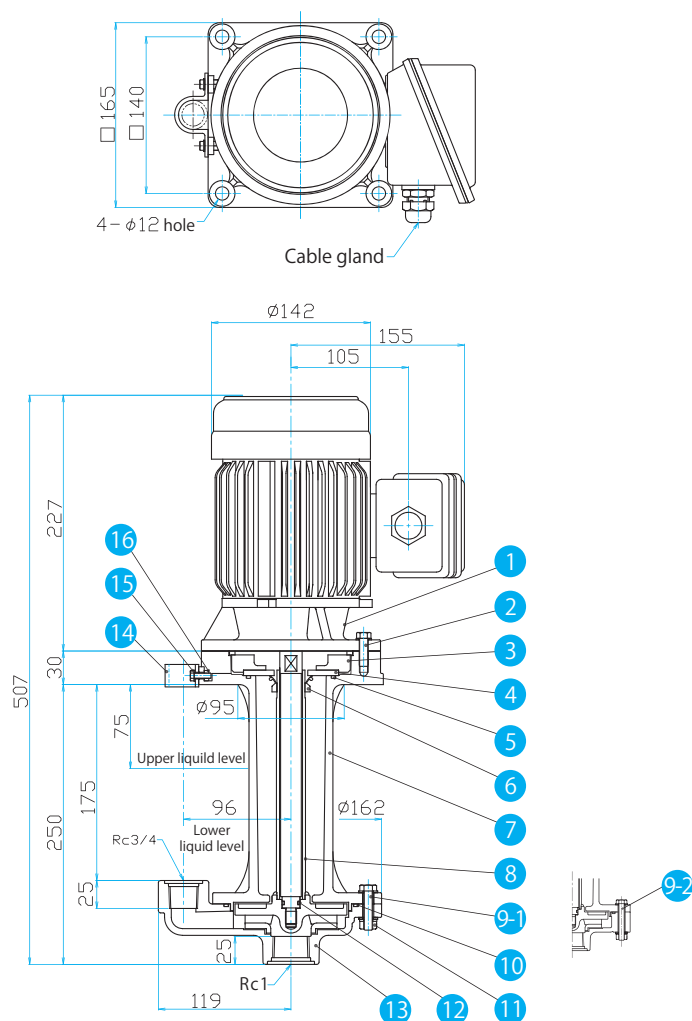


<Performance>



Suitable for
Gold plating equipment

<Outline dimension>



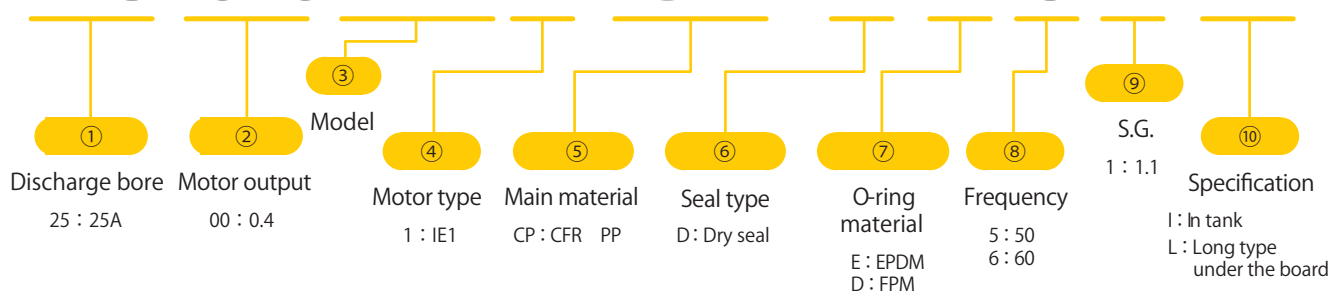
<Parts list>

No.	Parts name	Qty	Material
1	Motor	1	FC
2	Hex. bolt M8 x 25	4	SUS304
3	Seal case	1	PP
4	Counter face ring	1	Alumina ceramics
5	O-ring for counter face ring	1	EPDM / FPM
6	Dry seal	1	FPM
7	Connecting pipe	1	CFR•PP
8	Impeller	1	CFR•PP
9-1	Hex. bolt M8 x 35	5	SUS304
9-2	Hex. bolt M8 x 50	1	SUS304
10	O-ring for casing	1	EPDM / FPM
11	Hex. nut M8	6	SUS304
12	O-ring for impeller	1	EPDM / FPM
13	Casing	1	CFR•PP
14	Handle	1	PVC
15	Hex. bolt M5 x 15	2	SUS304
16	Hex. bolt M5	2	SUS304

※ When installing a pump in a tank, it is available to select titanium bolts as an option.

<Model description>

YD-2500VK1-CP-DD51-IL



<Specification>

Model	Bore (mm)		Hz	Standard performance (m - L/min)	Specific gravity	Output (kW)	Weight (kg)	Heatresistant tem. (°C)
	Suc.	Dis.						
YD-2500VK1-CP-D □△1	40	25	50/60	8-70	1.1	0.4	17.5	70
YD-2500VK1-CP-D □△1-L	40	25	50/60	8-70	1.1	0.4	18.5	
YD-2500VK1-CP-D □△1-I	40	25	50/60	8-70	1.1	0.4	17.5	
YD-2500VK1-CP-D □△1-IL	40	25	50/60	8-70	1.1	0.4	18.5	

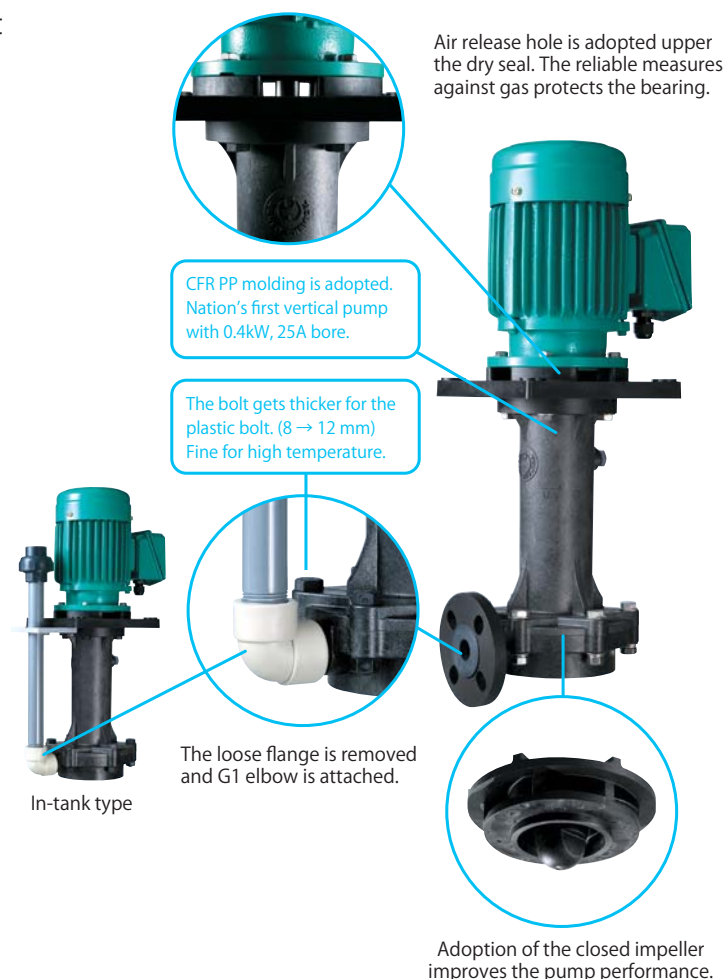
Use

- To circulate liquid in Gold plating equipment
- To circulate liquid in various type of plating equipment
- To circulate liquid in a small scrubber
- To agitate chemical liquid
- To circulate / transfer liquid in a reaction / mix tank

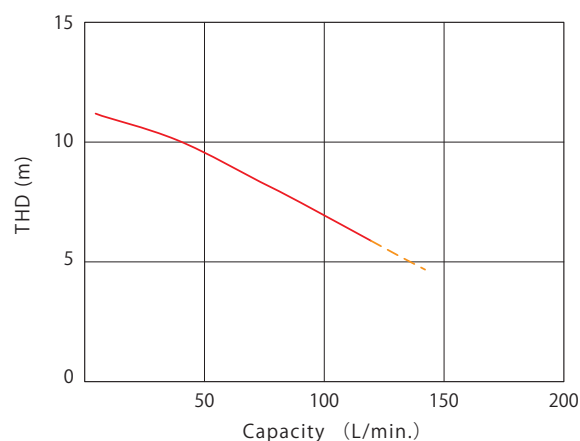
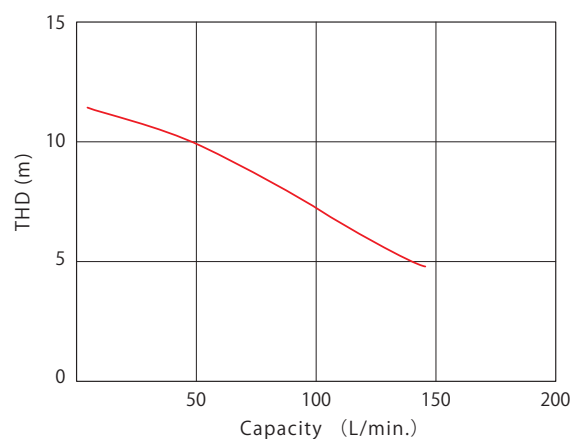
Feature

- It is fully compatible with our YD-25LO-E model.
- Highly corrosion and heat resistance to adopt CFR PP as main material.
- Seals structure reduces heat & abrasion troubles. It is available for a little amount of slurry in liquid!
- It is easily changed to be a in-tank pump by removing a discharge loose flange!
- When installing a pump in a tank, it is available to change to plastic bolts.

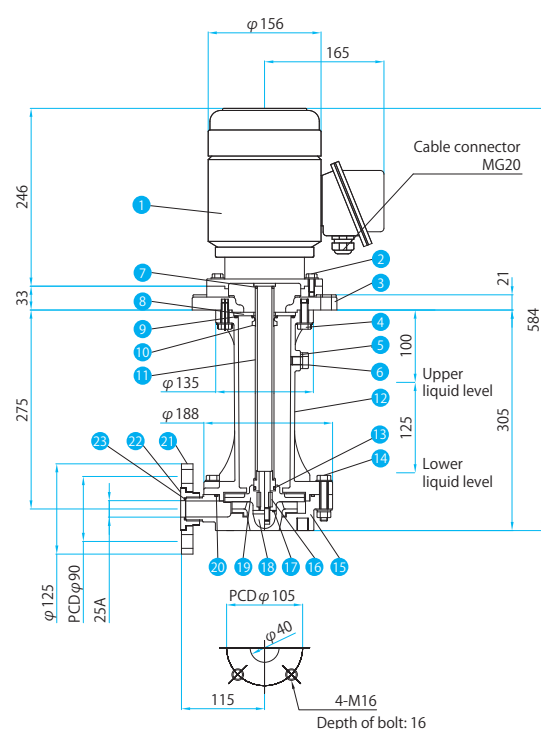
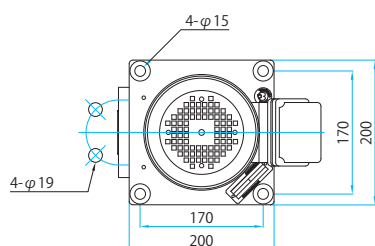
Suitable for gold plating for free metal ion!
Safety & durability are improved !



<Performance>



<Outline dimension>



<Parts list>

No.	Parts name	Qty	Material
①	Motor	1	FC
②	Bolt	4	SUS304
③	Pump base	1	GFR•PP
④	Bolt	4	SUS304
⑤	Packing	1	NBR
⑥	Air release bolt	1	PVC
⑦	O-ring	1	EPDM
⑧	Counter face ring	1	Alumina ceramics
⑨	O-ring	1	EPDM
⑩	Dry seal	1	FPM
⑪	Shaft sleeve	1	PP
⑫	Connecting pipe	1	CFR•PP
⑬	O-ring	1	EPDM/FPM
⑭	Bolt	6	SUS304
⑮	Casing	1	CFR•PP
⑯	Key	2	SUS304
⑰	O-ring	1	EPDM/FPM
⑱	Impeller nut	1	CFR•PP
⑲	Impeller	1	CFR•PP
⑳	O-ring	1	EPDM/FPM
㉑	Discharge flange	1	GFR•PP
㉒	Lap joint	1	GFR•PP
㉓	O-ring	1	EPDM/FPM

※ ④ ⑩: It is available to select titanium or PPS (plastic) bolts as an option.

<Model description>

YD-4002VK1-CP-DD51-M

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
Discharge bore	Motor output	Model	Motor type	Main material	Seal type	O-ring material	Frequency	S.G.	Exclusive motor is adopted.
40 : 40A 50 : 50A 65 : 65A	01 : 0.75 02 : 1.5 03 : 2.2 05 : 3.7 07 : 5.5 10 : 7.5	VK VP	1 : Other than IE3 motor 3 : IE3	CP : CFR PP	D : Dry seal W : Dry seal + Cut seal	E : EPDM D : FPM	5 : 50 6 : 60	1 : 1.1 4 : 1.4	

<Specification>

VK3

Frequency	Model	Bore (mm)		Standard performance (m - L/min)	Output (kW)	Weight (kg)	Specific gravity	Heatresistant tem. (°C)
		Suc.	Dis.					
50Hz	YD-4001VK3-CP-D □ 51-M	50	40	9-150	0.75	28	1.1	70
	YD-4002VK3-CP-D □ 51-M	50	40	10-300	1.5	28		
	YD-5003VK3-CP-W □ 51-M	65	50	12-350	2.2	33		
	YD-6505VK3-CP-W □ 51-M	80	65	15-550	3.7	47		
	YD-6507VK3-CP-W □ 51-M	80	65	18-700	5.5	74		
60Hz	YD-4001VK3-CP-D □ 61-M	50	40	8-120	0.75	28		
	YD-4002VK3-CP-D □ 61-M	50	40	8-300	1.5	28		
	YD-4003VK3-CP-D □ 61-M	50	40	12-350	2.2	31		
	YD-5005VK3-CP-W □ 61-M	65	50	15-550	3.7	46		
	YD-6507VK3-CP-W □ 61-M	80	65	18-700	5.5	74		
	YD-6510VK3-CP-W □ 61-M	80	65	25-850	7.5	77		

VP3

Frequency	Model	Bore (mm)		Standard performance (m - L/min)	Output (kW)	Weight (kg)	Specific gravity	Heatresistant tem. (°C)
		Suc.	Dis.					
50Hz	YD-5003VP3-CP-W □ 54-M	65	50	12-300	2.2	33	1.4	70
	YD-5005VP3-CP-W □ 54-M	65	50	15-430	3.7	46		
	YD-6507VP3-CP-W □ 54-M	80	65	17-600	5.5	74		
	YD-6510VP3-CP-W □ 54-M	80	65	18-750	7.5	77		
60Hz	YD-5003VP3-CP-W □ 64-M	65	50	11-300	2.2	33		
	YD-5005VP3-CP-W □ 64-M	65	50	15-430	3.7	46		
	YD-6507VP3-CP-W □ 64-M	80	65	22-400	5.5	74		
	YD-6510VP3-CP-W □ 64-M	80	65	20-750	7.5	77		

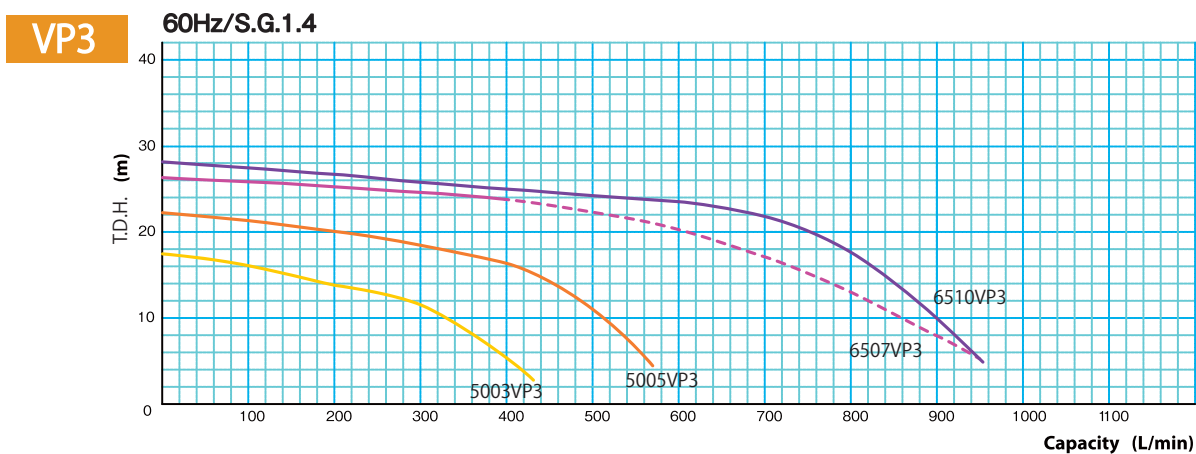
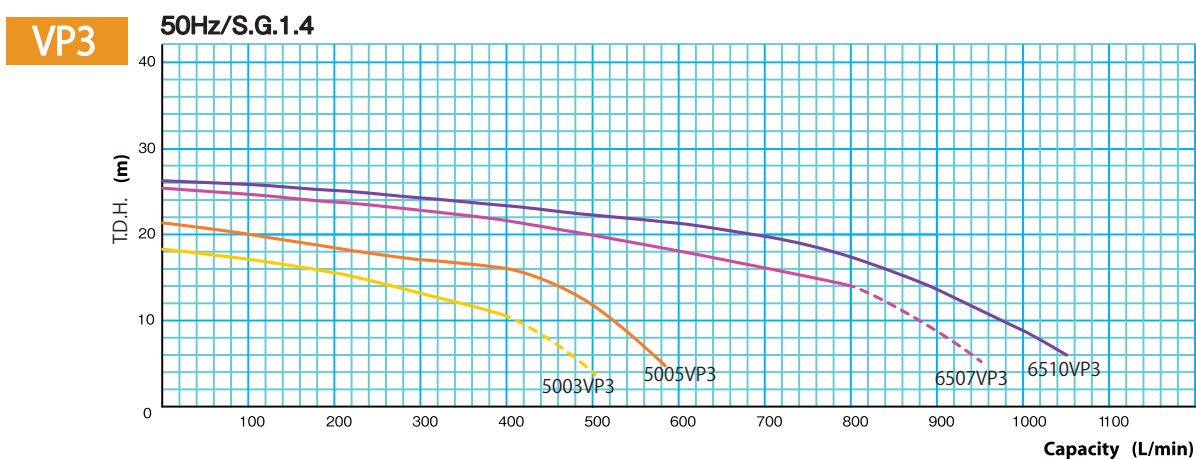
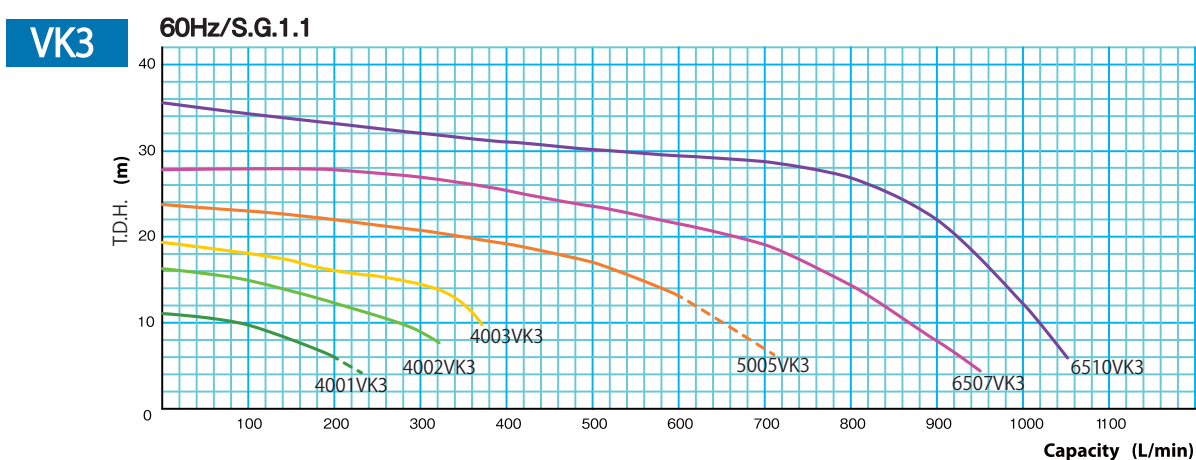
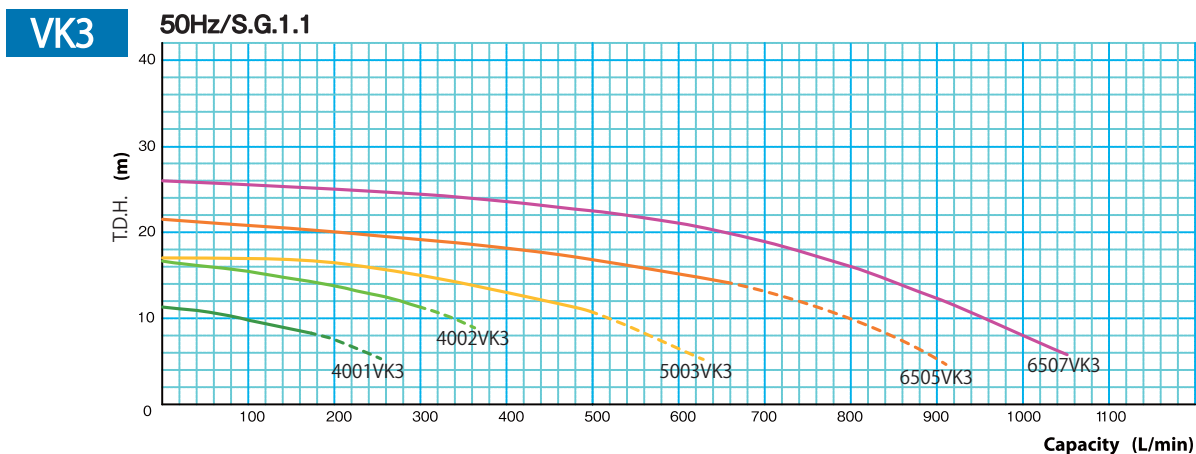
Use

- For etching (spray)
- In a scrubber
- In a reaction / mix tank
- To circulate plating liquid
- To transfer chemical liquid

Feature

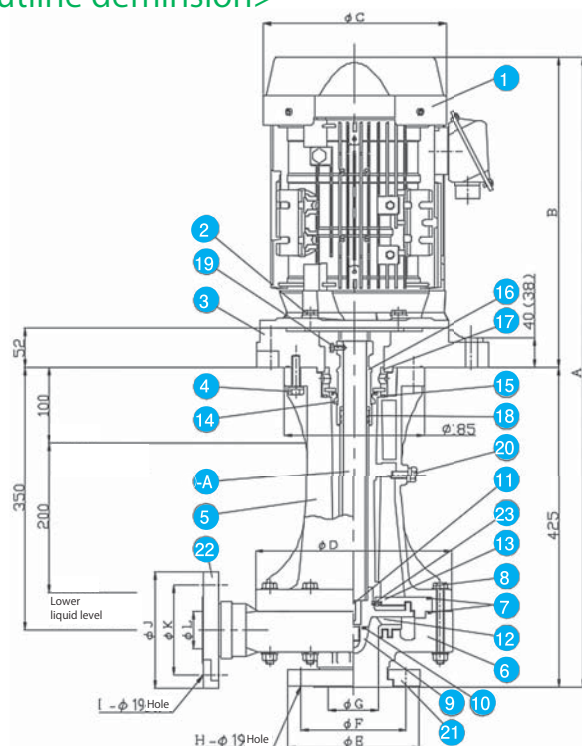
- No welded parts and liquid leakage, because the casing is integrally molded.
- When installing the pump in a tank, it is available to change to plastic bolts.
- Highly corrosion and heat resistance to adopt CFR PP as main material.
- Sealles structure reduces heat & abrasion troubles.
It is available to use the pump for a little amount of slurry in liquid!
- Light original motor, aluminium frame and plastic base are adopted for weight saving.
- Dry seal is adopted as standard for measures against gas.

<Performance curve>

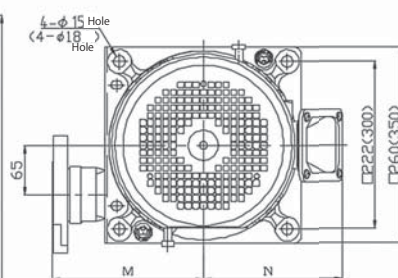


* This performance test is based on JIS B 8301,8302. The specific gravity of test liquid is 1.0.

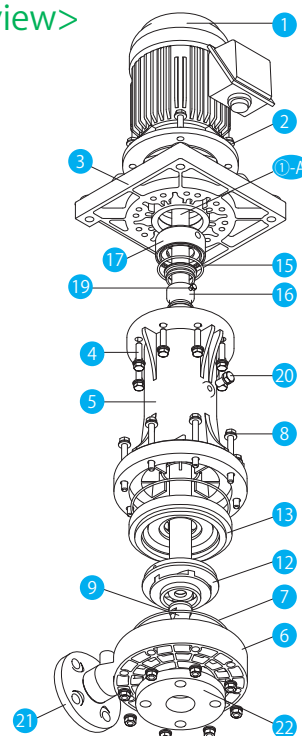
<Outline deminsion>



<Exploded view>



The dimation () is foe the pump with the motor. (5.5kW & 7.5kW and over)



<Parts list>

No.	Parts name	Material	Qty
①	Motor		1
①-A	Shaft	SUS304	1
②	Hex. bolt	SUS304/Titanium	4
③	Base	GFRPP	1
④	Hex. bolt	SUS304/Titanium	8
⑤	Connecting pipe	CFRPP	1
⑥	Casing	CFRPP	1
⑦	O-ring for casing	EPDM/FPM	2
⑧	Hex. bolt & nut	SUS304/Titanium	8
⑨	Impeller nut	CFRPP	1
⑩	O-ring for impeller nut	EPDM/FPM	1
⑪	Key	SUS316	1

No.	Parts name	Material	Qty
⑫	Impeller	CFRPP • C3604B	1
⑬	Back plate	CFRPP/PP	1
⑭	Dry seal	FPM	1
⑮	O-ring for seal case	EPDM/FPM	1
⑯ ※1	Dry seal holder	GFRPP • SUS304	1
⑰	Seal case	GFRPP • Ceramics	1
⑱	O-ring for shaft sleeve	EPDM/FPM	2
⑲ ※2	Hex. bolt	SUS304	1
⑳	Hex. bolt	PVC	1
㉑	Split flange	CFRPP	1
㉒	Split flange	CFRPP	2
㉓ ※3	Cut seal	FPM	2

※1 When the motor is 5.5kW and over, it does not have a dry seal holder.

※2 When the motor is 5.5kW and over, it does not have bolts for dry seal holder.

※3 40□□VK3 does not have a cut seal.

<Dimension>

Model	Type	A	B	φC	φD	φE	φF	φG	H	I	φJ	φK	φL	M	N
VK	YD-4001VK3 (50/60Hz)	760	335	170	230	155	120	58	4	4	145	105	42	170	152
	YD-4002VK3 (50/60Hz)	789	364	202	230	155	120	58	4	4	145	105	42	170	168
	YD-4003VK3 (60Hz)	789	364	202	230	155	120	58	4	4	145	105	42	170	168
	YD-5003VK3 (50Hz)	789	364	202	260	175	140	66	4	4	155	120	50	200	168
	YD-5005VK3 (60Hz)	836	411	243	260	175	140	66	4	4	155	120	50	200	187
	YD-6505VK3 (50Hz)	836	411	243	260	190	150	78	8	4	175	140	63	200	187
	YD-6507VK3 (50/60Hz)	874	449	285	260	190	150	78	8	4	175	140	63	200	263
	YD-6510VK3 (60Hz)	874	449	285	260	190	150	78	8	4	175	140	63	200	263
VP	YD-5003VP3 (50/60Hz)	789	364	202	260	175	140	66	4	4	155	120	50	200	168
	YD-5005VP3 (50/60Hz)	836	411	243	260	175	140	66	4	4	155	120	50	200	187
	YD-6507VP3 (50/60Hz)	874	449	285	260	190	150	78	8	4	175	140	63	200	263
	YD-6510VP3 (50/60Hz)	874	449	285	260	190	150	78	8	4	175	140	63	200	263

The dimension and parts are subject to change without notice.

<Installing & piping precautions>

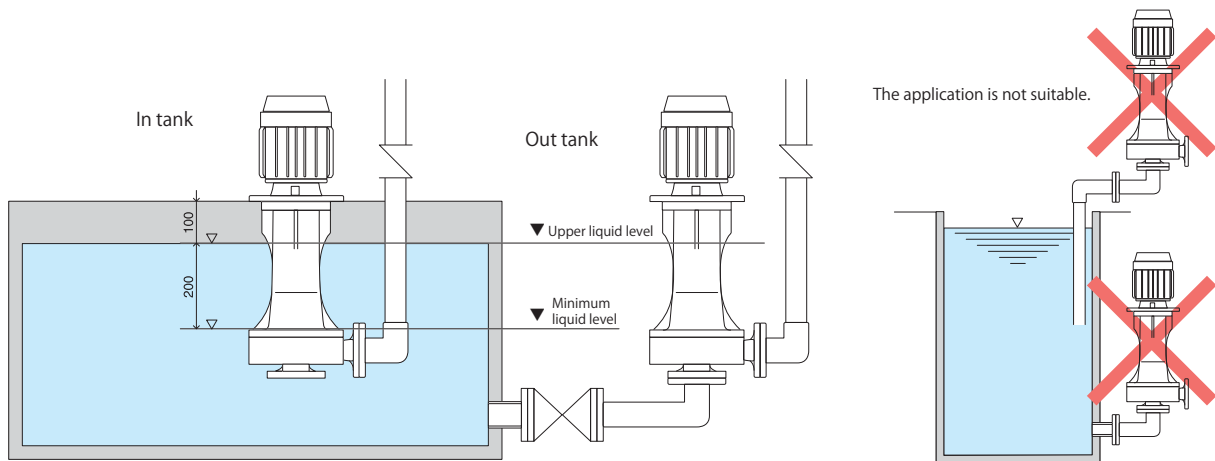
1. Installing level and liquid level in a tank

This pump does not have any seals such as mechanical seal or gland packing to stop liquid.

Refer to the following examples about the installing height and install the pump mount.

The standard range of the liquid level in a tank is from the upper liquid level to the minimum liquid level. However, if the upper liquid level is set, increase of the liquid to the top may lead to liquid leakage at the pump start or stop according to the piping and the conditions of accessory equipment.

If there are pipes or the accessory equipment with many liquid pools at the discharge outlet, install a check valve to prevent backflow.



2. Check for joints & sealing

When using a pump for the first time or re-assembling after installing the pump, check priming liquid in and air release.

Also make sure to check the sealing condition of the pump and the joints at the suction/discharge port before operation.

Operate the pump without liquid leakage and air suction.

3. Installation location

- The installation location is as near as a tank and set the liquid level is in range of the standard range (End suction). Both indoor use and outdoor use are available (If using it indoor, it is only indoor use.), but take safety measures for the motor or wiring not to suffer a negative effect at a time of disaster like flood.
- Install and fix a pump on flat place which is not affected by vibration from other machines. Also make an enough space around not to obstruct maintenance or cooling of the motor fan. Fix the motor mounting not to vibrate.

4. Piping

- Tightening pipes
When connecting the suction/discharge flange, use the M16 bolts and tighten them evenly with our recommended torque.
M16 bolt recommended torque : $19.6\text{N} \cdot \text{m}$ ($200\text{kgf} \cdot \text{cm}$)
The flange is a separated type. Tighten bolts from the matching surface and evenly.
- The suction pipe is end suction. Shorten pipes and lessen bending. Place piping supports not apply a pipe load or heat stress to the pump.
- Do not make projection portions where air stays. It causes air lock.
- When using the pump for high temperature liquid, increasing of the saturated vapor pressure decreases the suction ability. It is recommended to install bigger bore pipes, shorten pipes or lessen bending to prevent cavitation.
- Place piping supports not to apply a load of the discharge pipe.
- When setting a strainer at the suction inlet, clean it periodically. If it is clogged, the pump ability and performance may be failure.
- If pipes are long, the pipe loss increases and it may not have an expected performance. Decide the pipe bore by calculating the pipe loss.
- Install valves with less pressure loss on the suction & discharge pipes in consideration of pipe maintenance.



Comprehensive Manufacturer of Environmental Equipment
Challenging the Liquid Transfer Technology,

World Chemical Co., Ltd.

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