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■ Note:



VALVELESS VERTICAL SELF-PRIMING PUMP

# NSF/SF series

Vertical Sealless Self-priming Pump SELFREE Taf

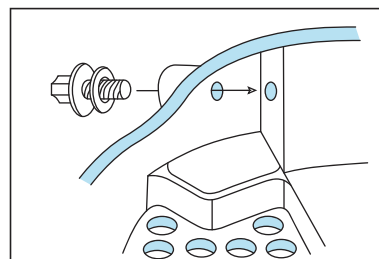


# Reliable long seller pump by the tough body

## A Siphon cut hole

The siphon cut hole leads to the self-priming chamber and suction chamber, and keeps air proof by sealing with the discharged liquid. The suction chamber is always evacuated during self-priming. At the time of suspension, the backflow negative pressure in the suction chamber makes the air enter through the siphon cut hole and it leaves self-priming liquid surely.

When the siphon cut hole is clogged by foreign objects or crystals, self-priming liquid is decreased. In this regard, open the cleaning plug and clean the clogging off.



## B Separation board

It is the part which separates mixed liquid with the air by specific gravity and be attached in the self-priming chamber.

## C Balance hole

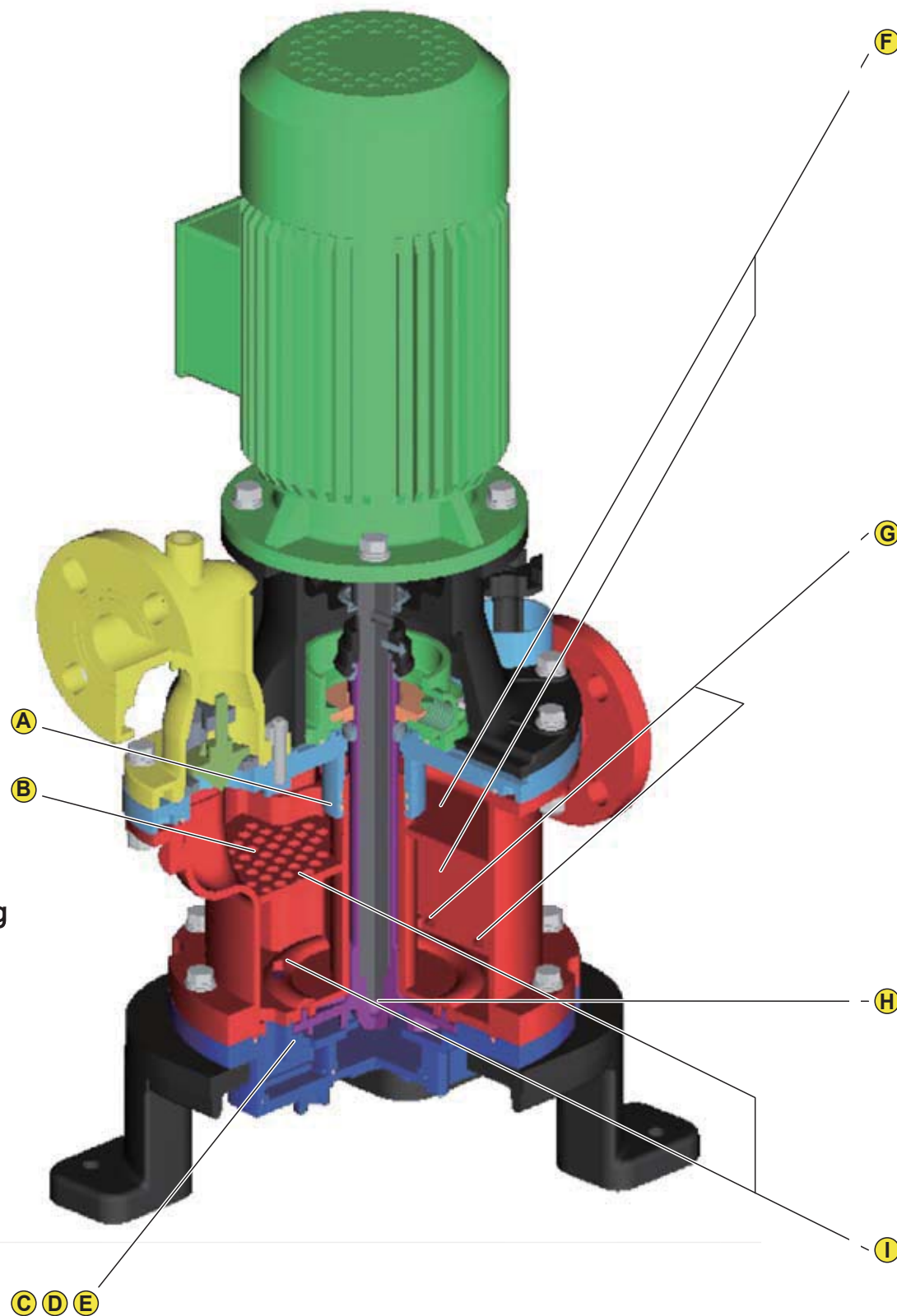
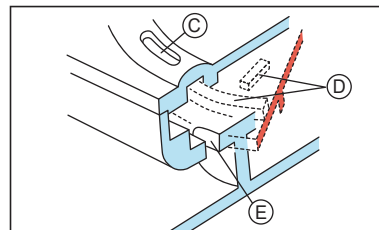
The absorbed air is guided by the projection ring and goes to the self-priming chamber through this balance hole. Therefore, the center of the impeller during self-priming is maintained as a vacuum.

## D Sealing blade & projection ring

The back blade seals liquid inside of the pump and the projection ring guides the absorbed air from the shaft during self-priming to the balance hole.

## E Self-priming hole

Liquid separated from the air in the self-priming chamber is sprayed to the impeller through the self-priming hole and the pump is evacuated.

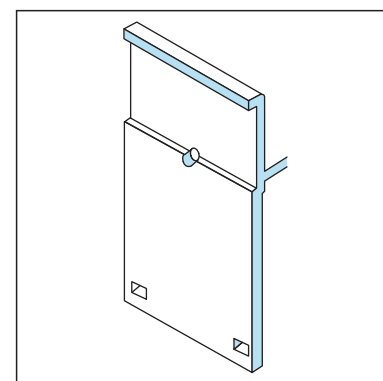


## F Suction chamber

The suction chamber is separated a path and residual chamber. When pumps stop, liquid in the path flows back rapidly, but liquid in the residual chamber is cut by the air from the siphon cut hole and the priming liquid remains for the next operation.

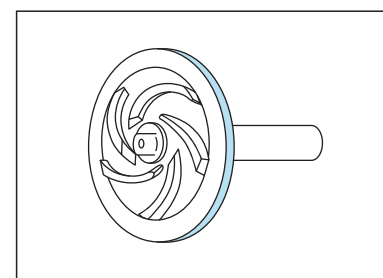
## G Suction cut hole

It is the hole for which liquid remains for the next operation against the backflow when pumps stop. For this reason, it is on the wall of the suction chamber.



## H Shaft sleeve & impeller

The impeller and the shaft sleeve is integrated and the shaft is completely blocked from liquid. The open impeller can go through liquid with slurry.



## I Self-priming chamber

Liquid from the volute chamber is separated the air and liquid in this chamber by specific gravity. The air is sent to the discharge outlet and liquid is sent to the self-priming inlet.

## 4 advantages of NSF / SF series

### 1 Reduce the running cost

- Long life valveless self-priming pump

There is no valve structure in the pump and the siphon cut function remains self-priming liquid. Leaving self-priming liquid at the beginning makes pumps do self-priming operation again and again.

- Sealless vertical pump without consumable parts

There is no consumable parts and easy maintenance, because sealing and sliding parts are not installed between the motor and pump. No sliding parts during operation lead to no trouble caused by heat and abrasion.

### 2 Suitable to transfer waste liquid

If self-priming pumps are necessary to transfer waste liquid with a few slurry and sludge, this pump is suitable due to no sliding parts.

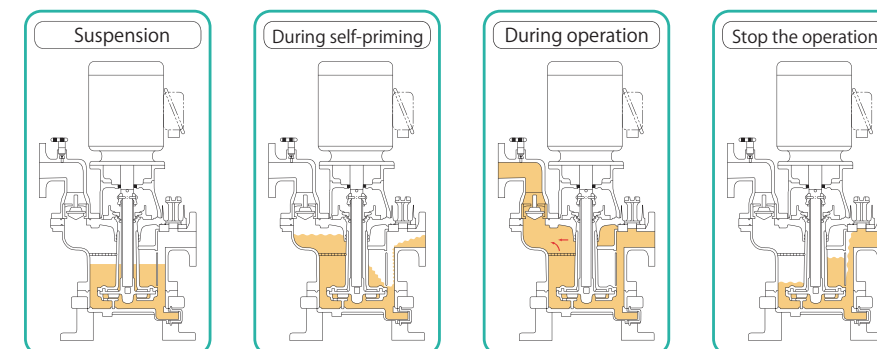
### 3 Suitable to take liquid up from raw water tanks

This is suitable for raw water tanks which waste liquid and floor waste water are mixed in. The open impeller and sealless structure are strong against dry running and foreign matter inclusion.

### 4 Adopt CFR PP and well chemical resistant

CFR PP (Carbon fiber reinforced PP) is strong against waste liquid with hydrofluoric acid unlike Glass fiber reinforced PP.

## Self-priming principle



After pumps stop, self-priming liquid for next operation remains in the suction chamber by siphon cut.

The liquid in the suction chamber moves to the self-priming chamber as soon as the operation starts. Vacuum by activity of the circulation makes liquid take up.

All inside air is exhausted and the normal operation is continued. If a little air enters, it is discharged without any difficulty.

When pumps stop, liquid flows back, but liquid remains in the suction chamber by siphon cut.

<Model description>

# YD-2501NSF3-CP-DD61-J-N

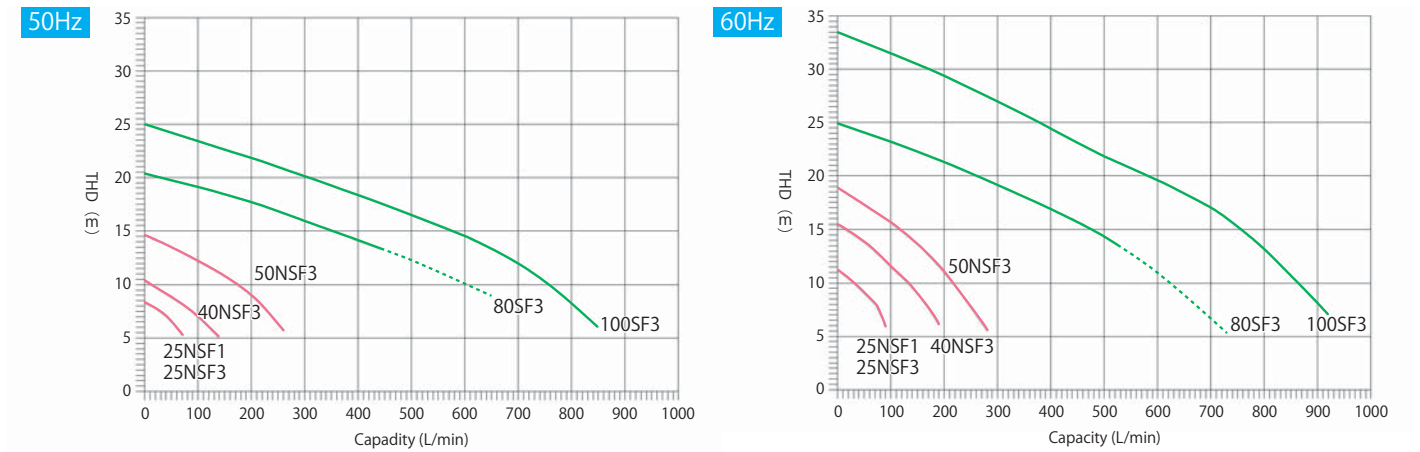
<b>Discharge bore</b> 25 : 25A 40 : 40A 50 : 50A 80 : 80A 100 : 100A	<b>Motor output</b> 00 : 0.4kW 01 : 0.75kW 02 : 1.5kW 03 : 2.2kW 05 : 3.7kW 07 : 5.5kW 10 : 7.5kW 15 : 11kW	<b>Model</b> NSF SF	<b>Motor type</b> 1 : IE1 3 : IE3	<b>Seal type</b> D : Sealless L : Linear seal (Only NSF)	<b>Frequency</b> 5 : 50Hz 6 : 60Hz	<b>Spec.2</b> N : Our id code
<b>Main material</b> CP : CFR-PP EP : Epoxy	<b>O-ring material</b> D : FPM E : EPDM	<b>Limit of S.G.</b> 1 : 1.05 3 : 1.35 4 : 1.45 5 : 1.5 6 : 1.6 7 : 1.7 8 : 1.8 G : 2.0 and over		<b>Spec.1</b> J : Joint shaft		

<Specification>

NSF series = Material:CFR PP  
SF series = Material:Epoxy

Frequency	Model	Bore (mm)		Standard performance (m - L/min)	Power (kW)	S.G.	Weight (kg)	Heatproof temp. (°C)	
		Suc.	Dis.						
50Hz	NSF	YD-2500NSF1-CP-D □51	25	25	6-60	0.4	1.05	24	90
		YD-2501NSF3-CP-D □57				0.75	1.7	44	
		YD-2502NSF3-CP-D □5G-J				1.5	2	41	
		YD-4001NSF3-CP-D □51	40	40	7-100	0.75	1.05	48	
		YD-4002NSF3-CP-D □58				1.5	1.8	50.5	
		YD-4003NSF3-CP-D □5G-J				2.2	2	58	
	SF	YD-5002NSF3-CP-D □51-N	50	50	9-200	1.5	1.05	55.5	
		YD-5003NSF3-CP-D □54-N				2.2	1.45	56	
		YD-5005NSF3-CP-D □5G-J-N	3.7	2	72				
		YD-8005SF3-EP-D □51	80	80	15-350	3.7	1.05	150	
YD-8007SF3-EP-D □55	5.5	1.5				178			
YD-10007SF3-EP-D □51	100	100				12-700	5.5	1.05	203
YD-10010SF3-EP-D □54							7.5	1.4	203
60Hz	NSF	YD-2501NSF3-CP-D □61	25	25	8-70	0.75	1.05	44	90
		YD-2502NSF3-CP-D □68-J				1.5	1.8	41	
		YD-4002NSF3-CP-D □61				40	40	9-150	
		YD-4003NSF3-CP-D □64-J	2.2	1.45	58				
		YD-5003NSF3-CP-D □61-N	50	50	11-200				
		YD-5005NSF3-CP-D □66-J-N				3.7	1.6	72	
	SF	YD-8007SF3-EP-D □61	80	80	18-350	5.5	1.05	178	
		YD-8010SF3-EP-D □63				7.5	1.35	178	
		YD-10010SF3-EP-D □61	7.5	1.05	203				

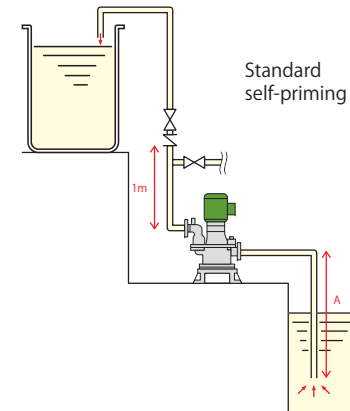
<Performance curve>



<Example of use / Installing • Piping>

The adequacy of installing and piping makes pumps deliver a prescribed performance. In the case of self-priming pumps, it is necessary that the air entered during self-priming operation is smoothly exhausted and self-priming liquid for next operation thoroughly remain in the pump. Therefore, install pumps for smooth operation in accordance with the following instruction.

- Pumping up from wastewater pits.
- Pumping up from chemical tanks.
- Taking up liquid from various tanks.



● The limit of the suction height (Self-priming ability) is shown as clear water is at ordinary temperature and the suction pipe falls vertically from pumps to liquid level. The actual self-priming ability is reduced depending on the liquid type, temperature, viscosity, S.G., shape of the suction pipe, length, bore, quantity of valve, aeration from flanges and valves. Use pumps under the condition with consideration of them.

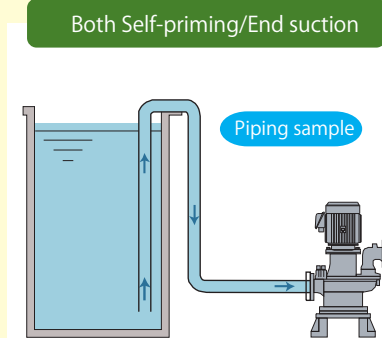
● Pumps are deformed and damaged by pipe expansion due to liquid temperature. When high temperature liquid is transferred, install two and more bends or expansion joints with piping as a safeguard.

- ① Place check valves with the discharge pipe.
- ② Raise the discharge pipe one meter and more and place air release pipes with valves.
- ③ Make sure to install pumps that the suction head is in performance of the right table. (These figures are for ambient clear water.)
- ④ Do not place food valves with suction piping, causing liquid leakage at the time of stoppage. (Dry seal type pump)

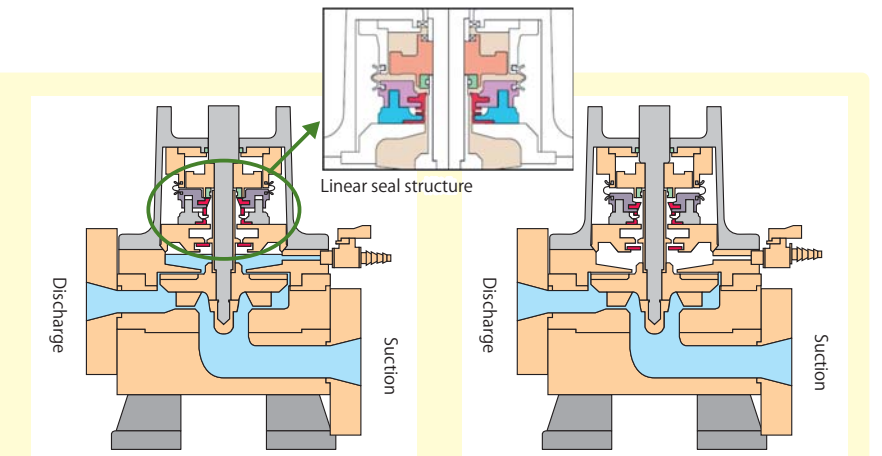
	A (Suction height)
YD-25 ** NSF	2.5 meter or less (※LR:2.0 meter or less)
YD-40 ** NSF	3.0 meter or less
YD-50 ** NSF	3.5 meter or less

Linear seal type

Linear seal type is also available. Please contact us in detail.



※ Limit of End suction head : 2 m  
If the pump is used that is is 2 m and more, contact us.



Stopped state

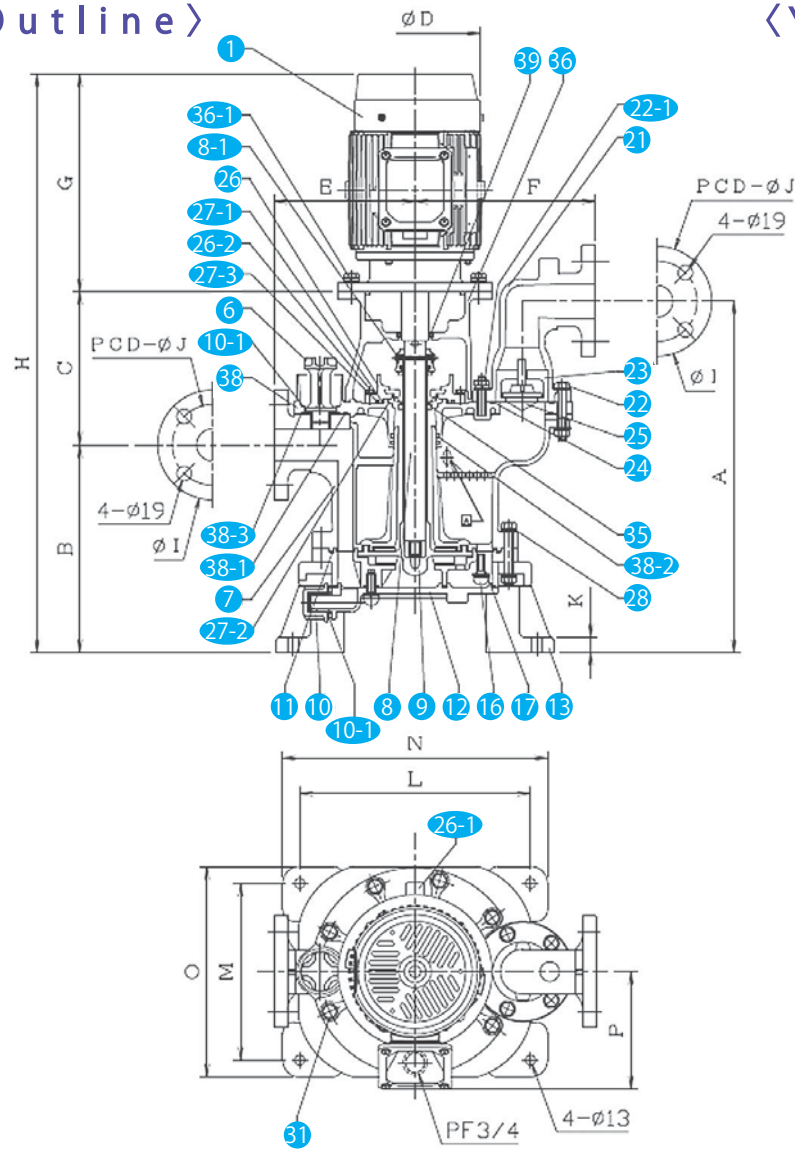
Liquid balanced by the back blade is climbed upward by back flow liquid from the discharge outlet and pressure from the suction side, but firstly the pressure is reduced by the cut seal. Additionally, magnets in the rotating disk stick to the magnets in the movable seal. The air up to the liquid surface is packed by their contact, so the liquid does not raise to the seal.

During operation

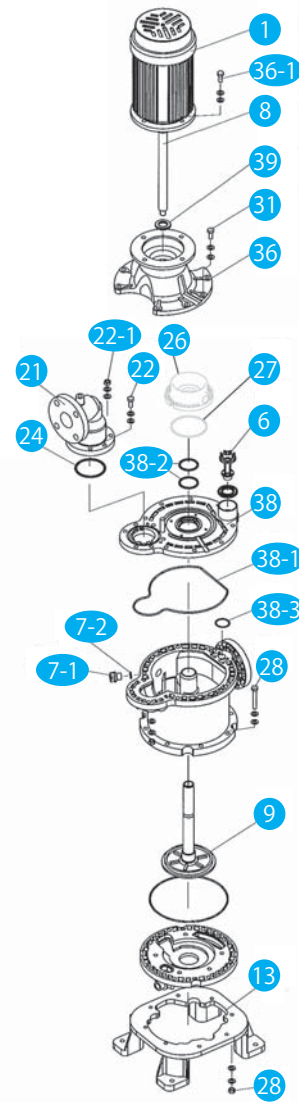
The magnetic pole of the magnets in the rotating disk is changed along with rotation. magnetic repulsion occurs for it and the seal opens. There is only the air above the back blade, because liquid is balace sealed by the action of the back blade of the turning impeller. For this reason, each part does not contact and slide with other parts.

NSF series

< Outline >



< YD-NSF Exploded view >



< Parts list >

No.	Parts name	Material	Q'ty
1	Motor		1
6	Priming water plug	CFR-PP	1
7	Pump body	CFR-PP	1
8	Shaft	SUS	1
8-1	Locking sleeve	Diallyl	2
9	Impeller	CFR-PP	1
10	Drain cap	CFR-PP	1
10-1	Packing for drain cap	EPDM/FPM	1
11	O-ring for casing	EPDM/FPM	1
12	Casing	CFR-PP	1
13	Pump base	Polyester	1
16	Bolt for casing	SUS	5

No.	Parts name	Material	Q'ty
17	O-ring for pump body	EPDM/FPM	5
21	Discharge elbow	CFR-PP	1
22	Bolt for discharge elbow	SUS	4
22-1	Bolt for discharge elbow	SUS	1
23	Valve retainer	CFR-PP	1
24	O-ring for discharge elbow	EPDM/FPM	1
25	Check valve	CFR-PP	1
26	Seal case	CFR-PP	1
26-1	Overflow pipe	HT.PVC	1
26-2	Bolt for seal case	SUS	4
27-1	O-ring for seal case	EPDM/FPM	1
27-2	O-ring for seal case	EPDM/FPM	1

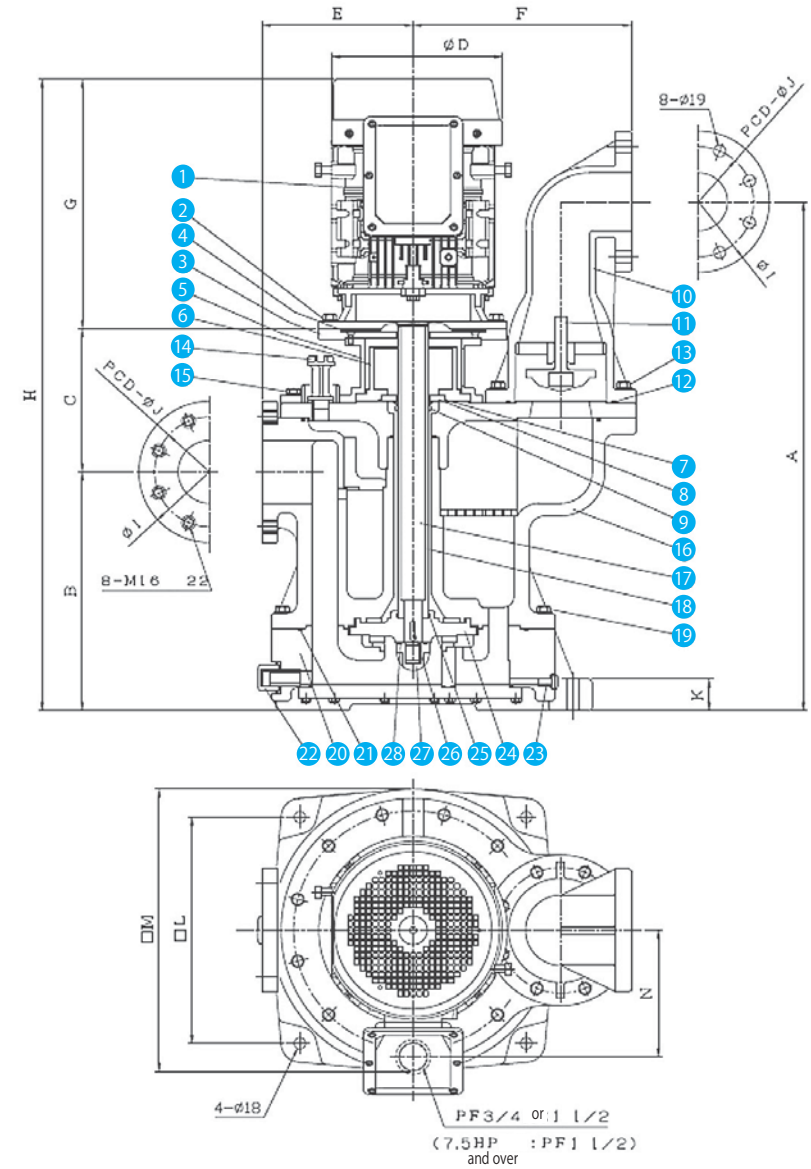
No.	Parts name	Material	Q'ty
27-3	O-ring for seal case	EPDM/FPM	1
28	Bolt for pump body	SUS	8
31	Bolt for bracket	SUS	8
35	Dry seal	FPM	1
36	Bracket	Polyester	1
36-1	Bolt for motor	SUS	4
38	Upper flange	CFR-PP	1
38-1	O-ring for upper flange	EPDM/FPM	1
38-2	O-ring for inner pipe	EPDM/FPM	2
38-3	O-ring for priming water plug	EPDM/FPM	1
39	Oil seal	NBR	1

< Dimension >

Model	Output	A	B	C	φD	E	F	G	H	φI	J	K	L	M	N	O	P
YD-2500NSF1	0.4kW	435	256	177	136	175	202	250	683	125	90	20	280	200	340	244	142
YD-2501NSF3	0.75kW	435	256	214	170	175	202	283	753	125	90	20	280	200	340	244	153.5
YD-2502NSF3	1.5kW	435	256	214	202	175	202	273	743	125	90	20	280	200	340	244	168
YD-4001NSF3	0.75kW	460	272	199	170	185	238	283	754	145	105	20	300	230	360	274	153.5
YD-4002NSF3	1.5kW	460	272	199	202	185	238	312	783	145	105	20	300	230	360	274	168
YD-4003NSF3	2.2kW	460	272	199	202	185	238	302	773	145	105	20	300	230	360	274	168
YD-5002NSF3	1.5kW	489	294	206	202	194	264	312	812	155	120	20	320	260	380	304	168
YD-5003NSF3	2.2kW	489	294	206	202	194	264	312	812	155	120	20	320	260	380	304	168
YD-5005NSF3	3.7kW	489	294	206	243	194	264	326	863	155	120	20	320	260	380	304	187

SF series

< Outline >



< Parts list >

No.	Parts name	Material	Q'ty
1	Motor		1
2	Bolt for motor	SUS	4
3	Motor flange	SS400	1
4	Bolt for motor flange	SUS	6
5	Motor mounting	SS400	1
6	Seal case	HT.PVC	1
7	O-ring for seal case	EPDM/FPM	1
8	Counter face ring	Carbon	1
9	Dry seal	FPM	1
10	Discharge elbow	Epoxy	1
11	Check valve	HT.PVC	1
12	O-ring for discharge elbow	EPDM/FPM	1

No.	Parts name	Material	Q'ty
13	Bolt for discharge elbow	SUS	8
14	Priming water plug	CFR-PP	1
15	Bolt for motor base	SUS	10
16	Pump body	Epoxy	1
17	Shaft	S45C+stainless	1
18	Shaft sleeve	HT.PVC	1
19	Bolt for pump body	SUS	12
20	Casing	Epoxy	1
21	O-ring for casing	EPDM/FPM	1
22	Drain cap	CFR-PP	1
23	Auxiliary drain bolt	CFR-PP	1
24	Impeller	HT.PVC	1

No.	Parts name	Material	Q'ty
25	O-ring for impeller	EPDM/FPM	1
26	Impeller key	Titanium	2
27	Impeller nut	HT.PVC	1
28	O-ring for impeller nut	EPDM/FPM	1

< Dimension >

Model	Output	A	B	C	φD	E	F	G	H	φI	J	K	□L	□M	□N
YD-8005SF3	3.7kW	810	380	228	243	240	347	359	967	195	150	50	360	450	151.5
YD-8007SF3	5.5kW	810	380	228	285	240	347	397	1005	195	150	50	360	450	201.5
YD-8010SF3	5.5kW	810	380	228	285	240	347	397	1005	195	150	50	360	450	201.5
YD-10007SF3	5.5kW	810	380	228	285	240	347	397	1005	225	175	50	360	450	201.5
YD-10010SF3	7.5kW	810	380	228	285	240	347	397	1005	225	175	50	360	450	201.5