

# Drum Pumps

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## DR Series

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### Instruction Manual

Thank you very much for purchasing KEMPION DR Series.

Before beginning operation, please read this instruction manual carefully. Correct handling, repair, & maintenance are described easily.

Please use this pumps safely to be guaranteed performance & long life of the pump after reading this instruction manual.

Please keep this instruction manual at the place where you can find it easily.

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# 1 Notice for Safety

## 1-1 Introduction

- To use the products safely, the signs are showed on the manual as below.
- As it is a matter of safety, please be sure to keep the directions in manual.
- The sign and indications are as follows.

### Warning

Person death or serious injury will be occurred, if warning is not kept by wrong handling.

### Caution

Person injury or property damage will be occurred, if cautions is not kept by wrong handling.

## 1-2 Cautions for Operating Condition

### Warning

- The motor of this pump is not explosion proof motor. Do not use it at dangerous place of explosion or never use flammable liquids.(Air motor and electric explosion proof motor are used in explosion district.)

### Caution

- Do not use this pump for other purposes except liquid transportation, decanting or refill.
- Please keep the followings, otherwise it may cause trouble.  
Ambient temperature : 0~40°C  
Temperature of handling liquid : PP 0~50°C, PVDF 0~80°C,  
SS316 0~100°C  
Viscosity & Specific Gravity : below the maximum limit indicated on the Specifications.
- Do not use this pump to transfer the liquids containing slurry and pollutant.
- Check if Lubricator is filled with oil and the oil is supplied to motor before supplying compressed air(Supply quantity of oil is 2~3 drops per a minute and oil quantity in the Lubricator is optimized at Max. status)(Air Motor)
- Install Muffler & Breathing Hole in the direction which can avoid person or equipment because compressed air & oil are discharged through Muffler & Breathing Hole.(Air Motor)
- Moisture is accumulated at the Filter in Air Unit during operation of Air Motor. Check the Filter and remove moisture.(Air Motor)

### 1-3 Cautions for Installation

#### Warning

- Install this pump beyond the reach of children and/ or unauthorized person.
- Do not touch with wetted hand. Electric shock may be occurred.
- The plug of electric explosion proof motor is not for explosion, so please exchange it with explosion type in explosion hazard area.

#### Caution

- Check if fittings & connections are properly tightened.
- The pump has to be used in vertical position only.
- The pump should be immersed into the liquid not deeper than the outlet connector.
- Check voltage, phase, & frequency of motor and connect the pump with correct power.  
It may cause trouble and fire, if connecting with incorrect power.(Electric Motor)
- Before connecting with power, ensure that the On/Off switch is set to OFF("O").(Electric Motor)
- Please check if the power code is damaged whenever using the electric motor.
- Please check if you need Low Voltage Relay(LVR) for using the electric motor safely.

### 1-4 Cautions of Operation

#### Caution

- Wear suitable protective clothing(gloves, mask, goggles, working clothes, & etc.) when pumping hazardous liquids.
- Some water may be remained in the pump after final performance test.  
In case of use for some liquids reacted to water, remove water in the pump and dry the pump necessarily.
- Do not operate the pump without connecting hose(pipe) to the outlet of the pump.
- Do not leave the pump unattended during operation.
- Do not stop the pump by using speed control device. It may cause problem when re-operating the pump.(Electric Motor)
- Check if Muffler is correctly attached.(Air Motor)
- Check if Air Unit(Filter, Regulator, & Lubricator) is installed in the supply line of air.(Air Motor)
- Check if Ball Valve of Air Motor is OFF status before attaching the supply hose of air to the Air Motor.(Air Motor)

### 1-5 Caution of Storage

#### Caution

- Before storage pump, the pump must be emptied and cleaned by flushing proper cleaning agent.
- Store the pump on Wall Bracket in order to prevent the pump from falling down and protect pipe.
- Keep out of the direct rays of light, high temperature, rain, etc. when storing the pump.

## 1-6 Caution of Repair and Maintenance

### Warning

- Isolate the pump from power before repair & maintenance, otherwise it may cause electric shock. (Electric Motor)

### Caution

- Wear suitable protective clothing during assemble and disassemble work.
- The pump must be completely emptied, before starting repair or maintenance work.

## 1-7 Caution of Warranty and Repair Service

### Warning

- If the pump is reconstructed arbitrarily or the undesignated parts are used into the pump, CHEONSEI will not warrant and CHEONSEI is not responsible for any expense caused by accident or trouble.

### Caution

- When the pump is sent to factory for repair service, clean out inside of pump.
- Do not send the pump, if the pump has been used for harmful & fatal liquid to health.

## 1-8 Etc.

### Caution

- Do not use damaged pump. it may cause accident.
- Dispose of waste pump in accordance with related national law.

# 2 Confirmation of Product

## 2-1 Check point when unpacking

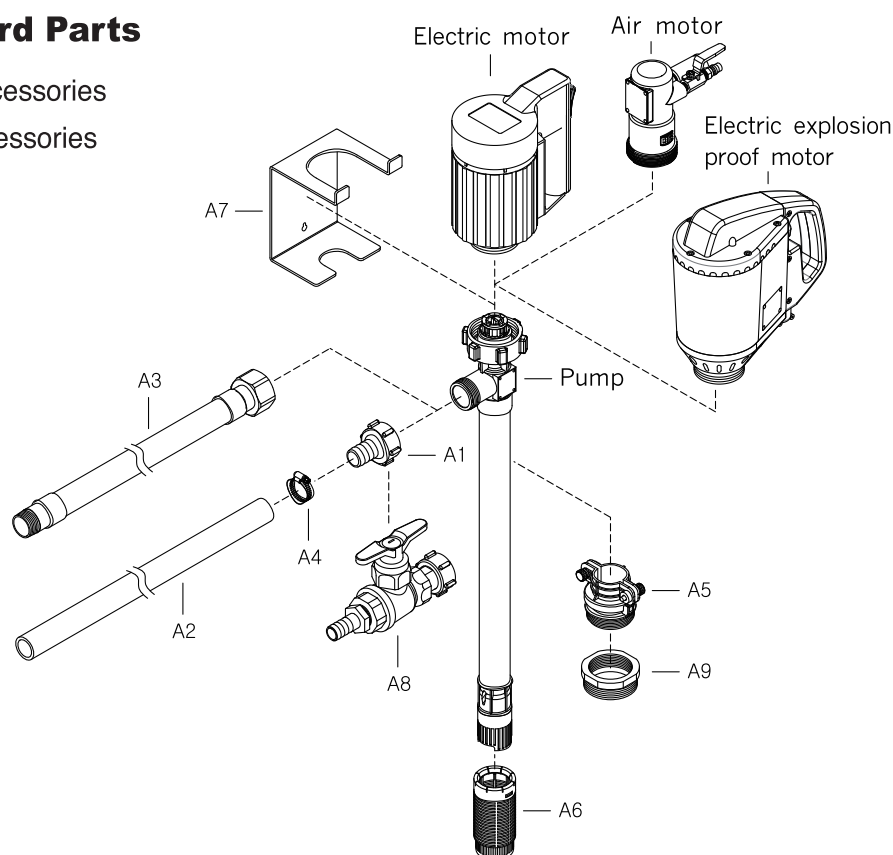
Please check following points immediately after receiving the pump.

- ① Is specification correct as ordered?
- ② Is there any missing parts?
- ③ Is there any visible damage caused by vibration or shock during transport?

## 2-2 Standard Parts

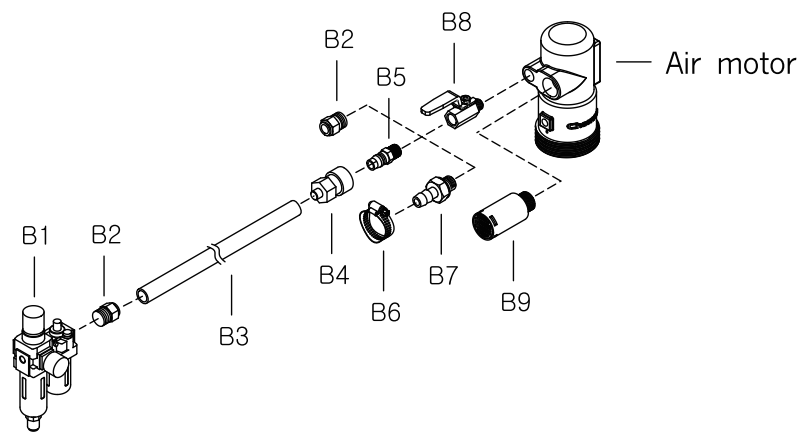
● Standard Accessories

○ Optional Accessories



NO.	Part Name	DR-P□□	DR-F□□	DR-S□□
A1	Hose Connection	●	●	●
A2	PVC Spring Hose (1.5m)	●		●(○) <sup>(1)</sup>
	PTFE Flexible Hose (1.5m)		○	
A3	SS Flexible Hose (1.5m)			○
A4	Hose Clamp (Ø19~Ø40)	●	●	●
A5	Drum Adapter	○	○	○
A6	Strainer	○	○	○
A7	Wall Bracket	○	○	○
A8	Ball Valve Set	○	○	○
—	Instruction Manual	●	●	●

1) Option when using electric explosion proof motor



No.	Part Name	Classification
B1	Air Unit(Filter, Regulator, & Lubricator)	○
B2	One Touch Fitting	○
B3	Hose (Ø12~Ø9)	○
B4	Air Coupler(Socket Nut)	○
B5	Air Coupler(Plug)	●
B6	Hose Clamp	●
B7	Hose Nipple	●
B8	Ball Valve	●
B9	Muffler	●

# 3 General

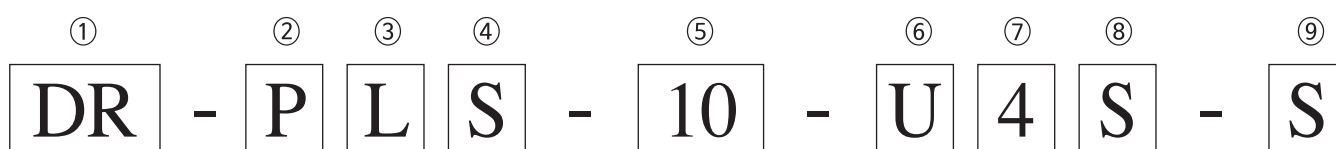
## 3-1 Features

- ① Removing unstable elements of pump performance with Sealless structure.
- ② Maintenance cost can be reduced remarkably due to the robust design against the indeliberate dry run for a short period(max. 15 minutes).
- ③ Preventing motor damage by installing of dual safety device in the motor.
- ④ Easy operation and simple part replacement.
- ⑤ Excellent chemical resistant and high strength material for impact prevention is used for motor casing.
- ⑥ It is possible to transport strong corrosive liquid by using pipe material among PP, PVDF and SS316.

## 3-2 Application

- ① To transfer from plating facility, chemical plant or chemical warehouse, or to decant into small units.
- ② To transfer or refill chemicals in metal factory or waste processing facilities.
- ③ To refill chemicals in research centers or hospitals
- ④ To transfer chemicals in power plants and public institutes.
- ⑤ To decant organic/inorganic chemicals and high viscosity chemicals into small units from drum, container or can.

# 4 Model Code



- |                     |   |                     |                                    |
|---------------------|---|---------------------|------------------------------------|
| ① Pump Model        | DR : KEMPION DRUM PUMP  |                     |                                    |
| ② Pipe Material     | P : PP  | F : PVDF            | S : STS316                         |
| ③ Capacity Features | L : Low Head    H : High Head   |                     |                                    |
| ④ Shaft Material    | S : STS316  | H : HASTELLOY C-276 | T : TITANIUM                       |
| ⑤ Pipe Length       | 07 : 700 mm   | 10 : 1000 mm        | 12 : 1200 mm                       |
| ⑥ Motor Type        | U : Electric Motor  | A : Air Motor       | E : Electric Explosion Proof Motor |
| ⑦ Motor Power       | 4 : 400W class  | 5 : 500W class      | 8 : 800W class                     |
| ⑧ Motor Option      | S : Standard    A : Speed Control    B : Speed Control+Low Voltage Release<br>C : Low Voltage Release |                     |                                    |
| ⑨ Motor Voltage     | S : 1Phase, 220~230V 50/60Hz<br>1 : Ball Valve Type   |                     |                                    |

# 5 Specifications

## 5-1 Pump Specification(Electric Motor)

Motor	Model		DR-PL	DR-PH	DR-FL	DR-FH	DR-SL	DR-SH
U5	Max.Flow Rate(L/min)		130	80	130	80	160	90
	Max. Head(m)		8	21	8	21	7.5	17
	Max. Viscosity(cP)		200	800	200	800	150	600
	Max. Specific Gravity		1.3	1.6	1.3	1.6	1.3	1.6
	Weight (kg)	700mm	4.0		4.2		5.9	
		1000mm	4.2		4.5		6.6	
		1200mm	4.4		4.7		7.2	
Noise(dB)		75(10,000RPM)						
U8	Max.Flow Rate(L/min)		160	95	160	95	185	105
	Max. Head(m)		10	24	10	24	8.5	22
	Max. Viscosity(cP)		350	1200	350	1200	600	1400
	Max. Specific Gravity		1.7	1.9	1.7	1.9	1.7	1.9
	Weight (kg)	700mm	4.9		5.1		6.8	
		1000mm	5.1		5.4		7.5	
		1200mm	5.3		5.6		8.1	
Noise(dB)		80(11,000RPM)						
Dia. of Insertion(mm)			44		44		45	
Dia. of Hose Connection(mm)			25		32	25	25	
Limit of Liquid Temp.(°C)			50		80		100	

Motor	Power	Voltage	Frequency	Current	RPM	Protection Class	Insulation	Weight
U5	560W	220~230	50/60Hz	2.8A	10,000rpm	IP44	F	3.0kg
U8	840W	VAC		4.2A	9,000rpm			3.9kg

Note 1) Built-in Thermal Protection Switch & Over-current Breaker

Note 2) 5m power cable is equipped with plug

## 5-2 Pump Specification(Air Motor)

Spec		Motor	DR-PL	DR-PH	DR-FL	DR-FH	DR-SL	DR-SH
Max. Flow Rate(L/min)			135	85	135	85	165	95
Max. Head(m)			8.5	22	8.5	22	8	18
Max. Viscosity(cP)			1000	1200	1000	1200	400	800
Max. Specific Gravity			1.4	1.8	1.4	1.8	1.4	1.8
Dia. of Insertion(mm)			44		44		45	
Dia. of Hose Connection(mm)			25		32	25	25	
Limit of Liquid Temp.(°C)			50		80		100	
Noise(dB)			80(at 6bar of air pressure)					
Weight(kg)	700mm		2.1		2.3		4.0	
	1000mm		2.3		2.6		4.8	
	1200mm		2.5		2.8		5.3	

### ■ Air Motor Specification

Air Pressure	Power	RPM	Air Consumption	
3~6bar	460W	10,000RPM	920L/min	
Explosion Proof Class	Ex    2 G cp    C T6		Weight	1.2~1.3kg

Note ) Explosion-proof Certificate No. : 0425 ATEX 2535

※ The Specification may be revised for improvement without prior notice.

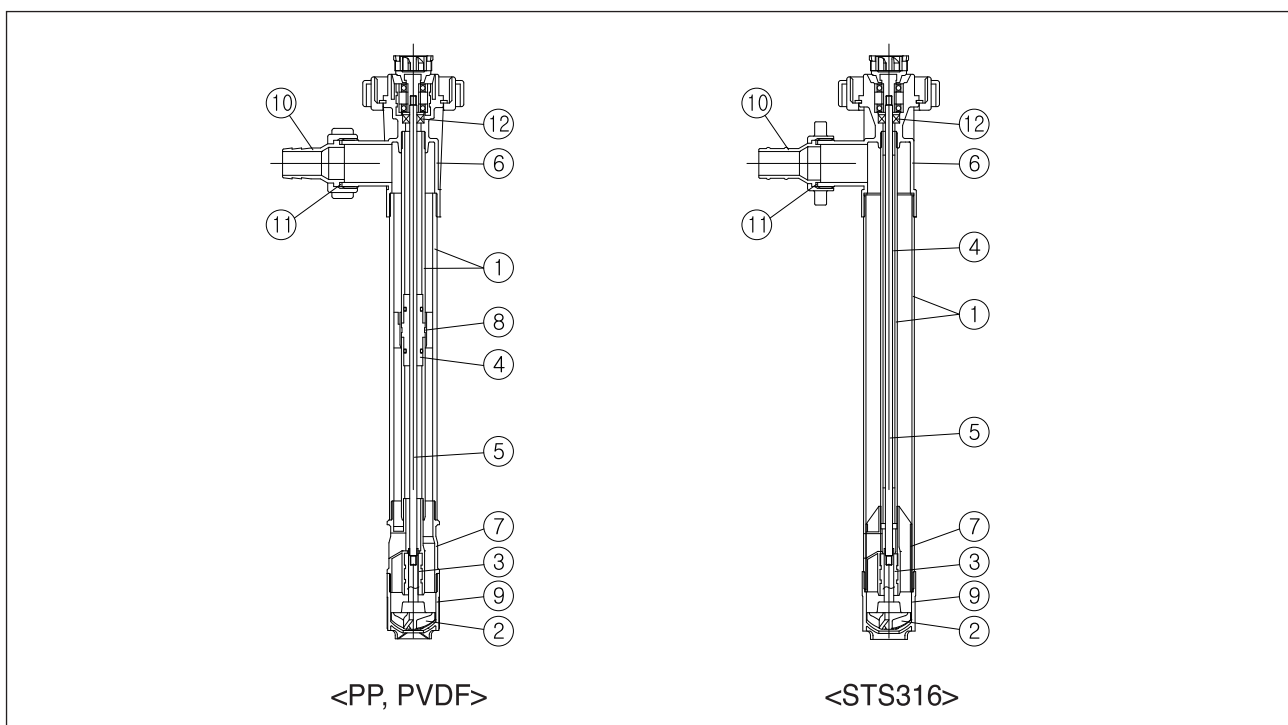
### 5-3 Pump Specification(Electric Explosion Proof Motor)

Spec	Model	DR-SL	DR-SH
Max. Flow Rate(L/min)		160	90
Max. Head(m)		7.5	17
Max. Viscosity(cP)		150	600
Max. Specific Gravity		1.3	1.6
Dia. of Insertion(mm)		45	
Dia. of Hose Connection(mm)		25	
Limit of Liquid Temp.(°C)		100	
Noise(dB)		75(10,000 RPM)	
Weight(kg)	700 mm	8.1	
	1000 mm	8.9	
	1200 mm	9.4	

Power	Voltage	Frequency
420~430W	220~230VAC	50/60Hz
Current	RPM	Protection Grade
2.8A	10,000RPM	IP54
Insulation Grade	Explosion Proof Type	Weight
F	Ex de IIC T6	5.2kg

- 1) The certificate number of explosion proof: 18-GA28O-0494X
- 2) Built in temperature switch and over current blocking
- 3) 5m power code including plug is supplied as standard.

## 6 Liquid End Materials

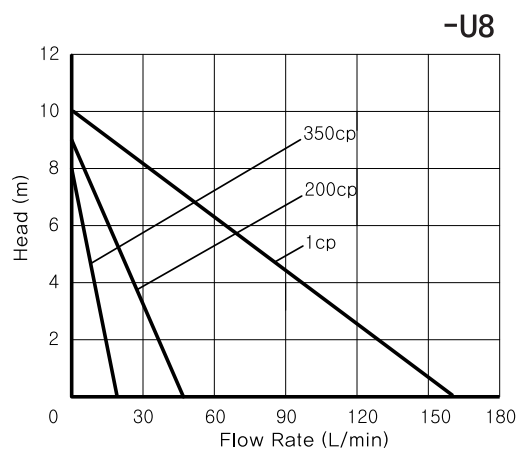
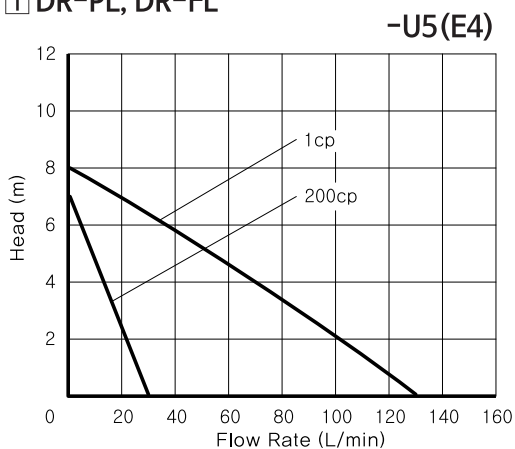


NO.	Model	DR-P□H(T)	DR-P□S	DR-F□H(T)	DR-S□S
①	Pipe	PP		PVDF	STS316
②	Impeller	ETFE			
③	Bearing	CARBON		CARBON(PTFE)	CARBON
④	Guide Bearing(Bushing)	PTFE			
⑤	Drive Shaft	HASTELLOY (TITANIUM)	STS316	HASTELLOY (TITANIUM)	STS316
⑥	Discharge Housing	PP		PVDF	SSC14A
⑦	Bearing Housing	PP		PVDF	ETFE
⑧	Guide Ring	PP		PVDF	-
⑨	Foot	PP		PVDF	SSC14A
⑩	Hose Connector	PP		PVDF	SSC14A
⑪	Packing	FKM		PTFE	
⑫	Oil Seal	FKM			

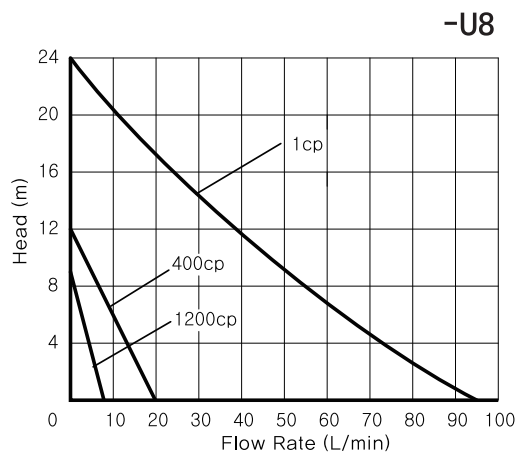
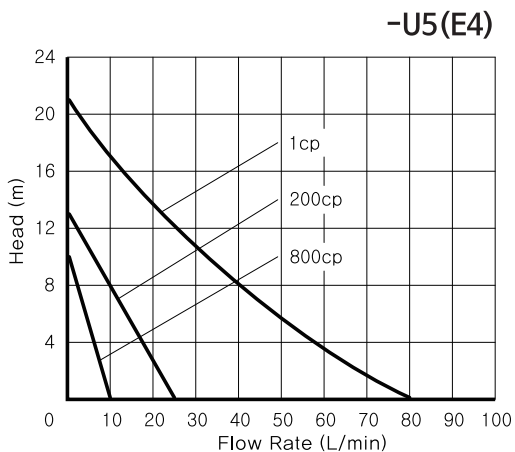
# 7 Performance Curves

## 7-1 Performance Curves of Electric Motor

### ① DR-PL, DR-FL

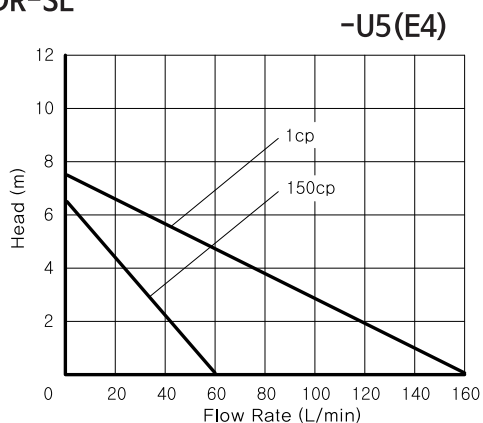


### ② DR-PH, DR-FH

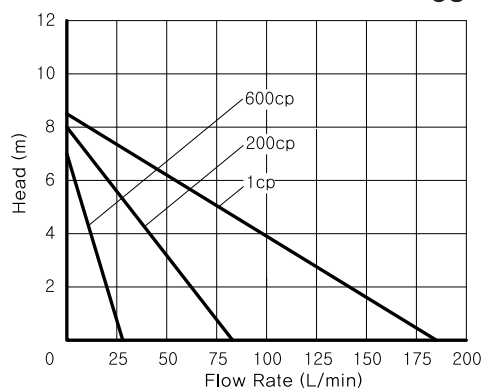


Note) Performance curves can be somewhat different in accordance with application of job site.

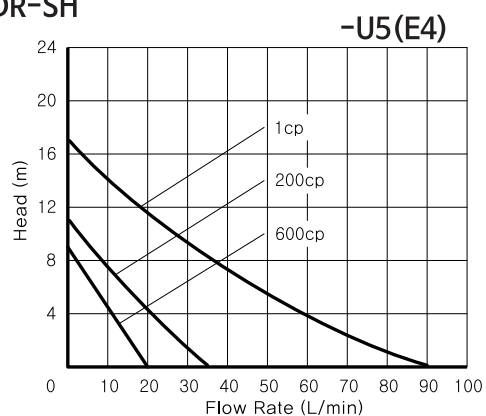
### ③ DR-SL



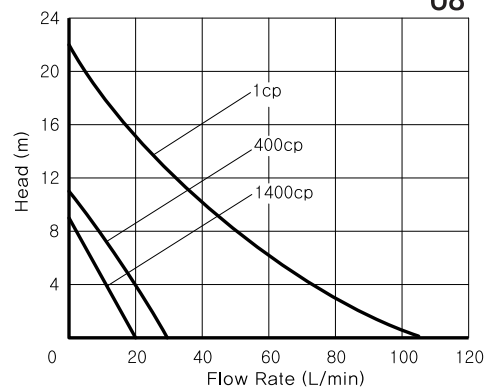
### -U8



### ④ DR-SH



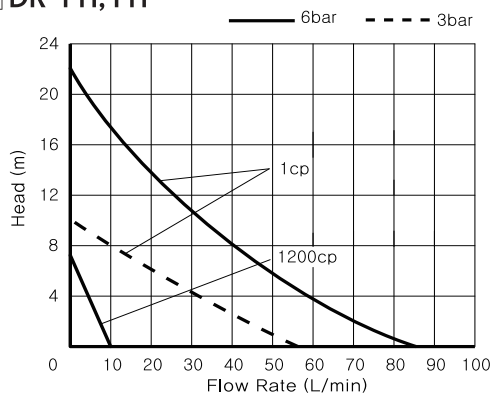
### -U8



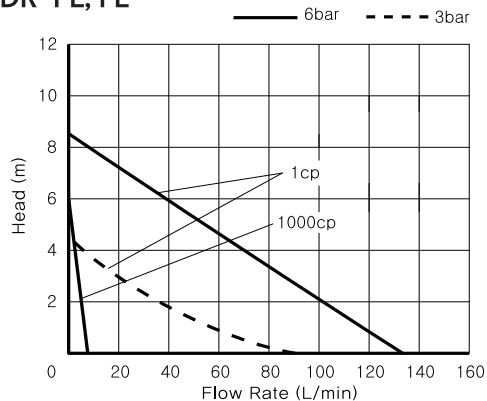
Note) Performance curves can be somewhat different in accordance with application of job site.

## 7-2 Performance Curves of Air Motor

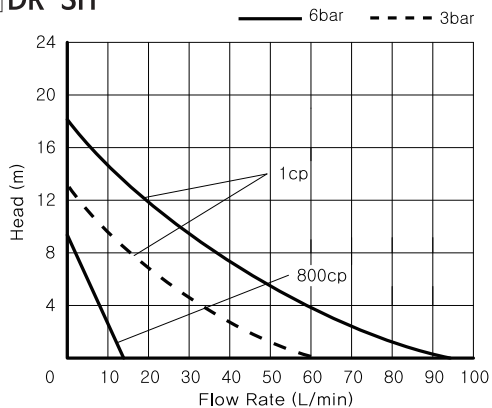
### ① DR-PH, FH



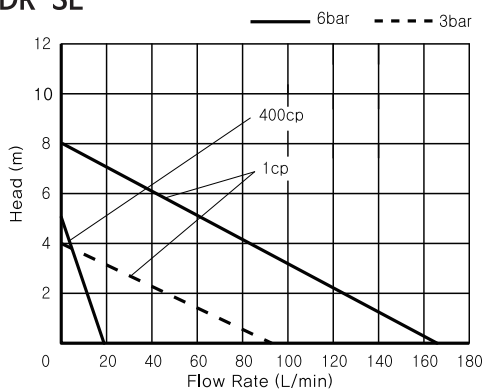
### ② DR-PL, FL



### ③ DR-SH



### ④ DR-SL



Note) Performance curves can be somewhat different in accordance with application of job site.

# 8 Installation

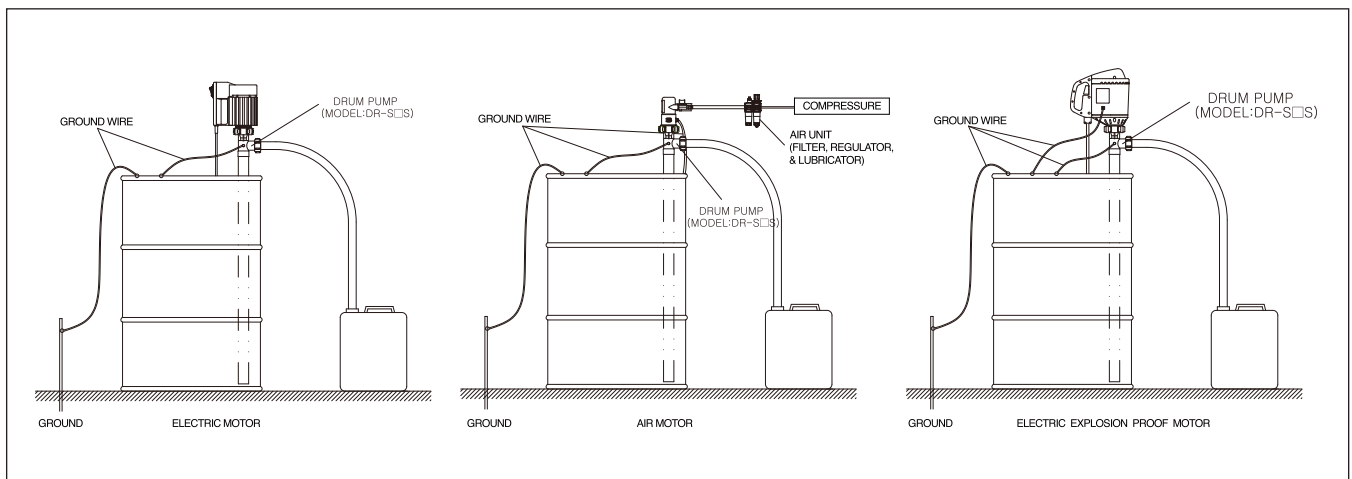
## ⚠ Warning

- Install this pump beyond the reach of children and/ or unauthorized person.
- Do not touch with wetted hand. Electric shock may be occurred.
- The plug of electric explosion proof motor must be used in outside of explosion district.  
If it is used in explosion district, plug and socket for explosion proof must be used.

## ⚠ Caution

- Check if fittings & connections are properly tightened.
- The pump has to be used in vertical position only.
- The pump should be immersed into the liquid not deeper than the outlet connector.
- Check voltage, phase, & frequency of motor and connect the pump with correct power.  
It may cause trouble and fire, if connecting with incorrect power.(Electric Motor)
- Before connecting with power, ensure that the On/Off switch is set to OFF("O").(Electric Motor)
- Please check if the power code is damaged whenever using the electric motor.

- 1 If purchasing partly assembled product, tighten the Motor and the Pump with Union Nut.
  - 2 Attach Drum Adapter to make pump be installed as vertical position to drum or liquid container.
  - 3 Constant use with the pump being placed directly onto the bottom of the drum or container may cause wear the bottom of the drum or container. Use the Clamp of Drum Adopter to fix the pump and make sure that it will not touch the bottom of the drum or container.
  - 4 Use a strainer when pumping liquids containing solid particles in suspension & contaminating liquids.  
Can not be used for Liquid containing fiber which may damage rotation part.
  - 5 Tighten the hose with Hose Clamp after inserting the hose into Hose Connector.
  - 6 If you use it not to earth, you can get a electric shocked. So, Please connect to a ground wire as like below picture.
- Before using electric explosion proof motor in explosion district, please check lists below.
    - Please check if pump and motor are connected with equipotential bonding(ground wire)
    - Please check if conductive hose and connector is used
    - Please check if plug and socket for explosion proof are used



# 9 Operation

## Caution

- Wear suitable protective clothing(gloves, mask, goggles, working clothes, & etc.) when pumping hazardous liquids.
- Some water may be remained in the pump after final performance test.  
In case of use for some liquids reacted to water, remove water in the pump and dry the pump necessarily.
- Do not operate the pump without connecting hose(pipe) to the outlet of the pump.
- Do not leave the pump unattended during operation.
- Do not stop the pump by using speed control device. It may cause problem when re-operating the pump.  
(Electric Motor)
- Do not use this pump to transfer the liquids containing slurry and pollutant.
- If LVR switch is not installed, the motor can automatically work again after power supply is lost, so be careful.

## 9-1 Electric Motor

- 1 After inserting the electrical plug of the motor into the socket, operate the pump by setting the switch to ON("I").
- 2 The drum can be emptied utmostly by tilting the drum.
- 3 If the motor is stopped with overload, re-start the motor after cooling.
- 4 If power is suddenly shut off during operation then the motor switch is ON("I") position, make sure to turn OFF("O") the motor switch to avoid unintended start caused by restoration of power.  
In case of motor built-in Low Voltage Release, motor switch will be in OFF("O") position automatically, if power is shut off or voltage is low(below 100V).
- 5 The motor which LVR switch is installed can't use remote control. The motor can work again only if ON/OFF switch is handled.
- 6 In case of motor built-in Speed Control Device, stability can be increased by controlling flow rate through turning dial for motor speed control, when transferring corrosive liquids.  
Dial scale don't signify proportional control scale.
- 7 Before shut off the power, ensure that the On/Off switch is set to OFF("O"),
- 8 The pump must carefully be taken out of the drum, considering the liquids, which is in the hose connected with the pump & pump pipe, flowing back into the drum.

## 9-2 Air Motor

- 1 Check if Air Unit(Filter, Regulator, & Lubricator) is installed before attaching the Air Motor.
- 2 Check oil quantity in the Lubricator(Max. status is optimum).
- 3 Check if oil is supplied from the Lubricator.(2~3 drops per a minute)
- 4 Use the hose of internal dia. 8mm~9mm.
- 5 Check if Muffler is attached to the Air Motor.(Install Muffler in the direction which can avoid person or equipment because compressed air & oil are discharged through Muffler)
- 6 Check if Ball Valve of Air Motor is OFF(Lever & Valve are cross status) before attaching the air hose.
- 7 Set air pressure by Air Unit after attaching air hose.(3~6 bar)
- 8 Turn Ball Valve to ON and operate motor after setting air pressure by Air Unit.

# 10 Storage

## Caution

- Before storage pump, the pump must be emptied and cleaned by flushing proper cleaning agent.
- Store the pump on Wall Bracket in order to prevent the pump from falling down and protect pipe.
- Keep out of the direct rays of light, high temperature, rain, etc. when storing the pump.

# 11 Repair and Maintenance

## Warning

- Isolate the pump from power before repair & maintenance, otherwise it may cause electric shock. (Electric Motor)

## Caution

- Wear suitable protective clothing during assemble and disassemble work.
- The pump must be completely emptied, before starting repair or maintenance work.
- The exchange of power code must be performed only by electric engineers.
- The repair of electric explosion proof motor must be performed only by Cheonseil.

- 1 Check if there is any vibration and noise and current and flow rate is correct.
- 2 If there is problem in above check, shut off the power and solve the problem with referring to 'Cause of Trouble and Troubleshooting' section.
- 3 If there is leakage at air hole of discharge housing under Union Nut (motor), turn off the switch and inspect & repair.
- 4 Outlets on both sides of bearing housing located at the top of Foot have an important part for pump operation. Check the outlets if there is any problem like clogging.
- 5 If the power code of the motor is worn or damaged, please exchange it with H05RN-F wire. If it is electric explosion proof motor, it is H07RN-F wire.
- 6 Replacement period of Vane in Air Motor and Bearing are 2,000 hours.
- 7 Disassembly of DR-P□□ & DR-F□□
  - ① Disassemble motor from the pump by loosening Union Nut (motor) between pump and the motor in clockwise.
  - ② Disassemble Foot by gripping Bearing Housing & loosening Foot from bearing Housing in clockwise.
  - ③ Disassemble Impeller by gripping bundle of Coupling & loosening Impeller from bundle of Coupling in counterclockwise.
  - ④ Disassemble Bearing Housing by gripping External Pipe & loosening Bearing Housing from External Pipe.
  - ⑤ Disassemble bundle of Drive Shaft including Coupling by pushing bundle of Drive Shaft to Discharge Housing side.
  - ⑥ Disassemble Drive Shaft by gripping bundle of Coupling & loosening Drive Shaft from bundle of Coupling in counterclockwise.
  - ⑦ Disassemble Internal & External Pipe by gripping Discharge Housing & loosening it from Discharge Housing in clockwise.

## 10 Disassembly of DR-S□□

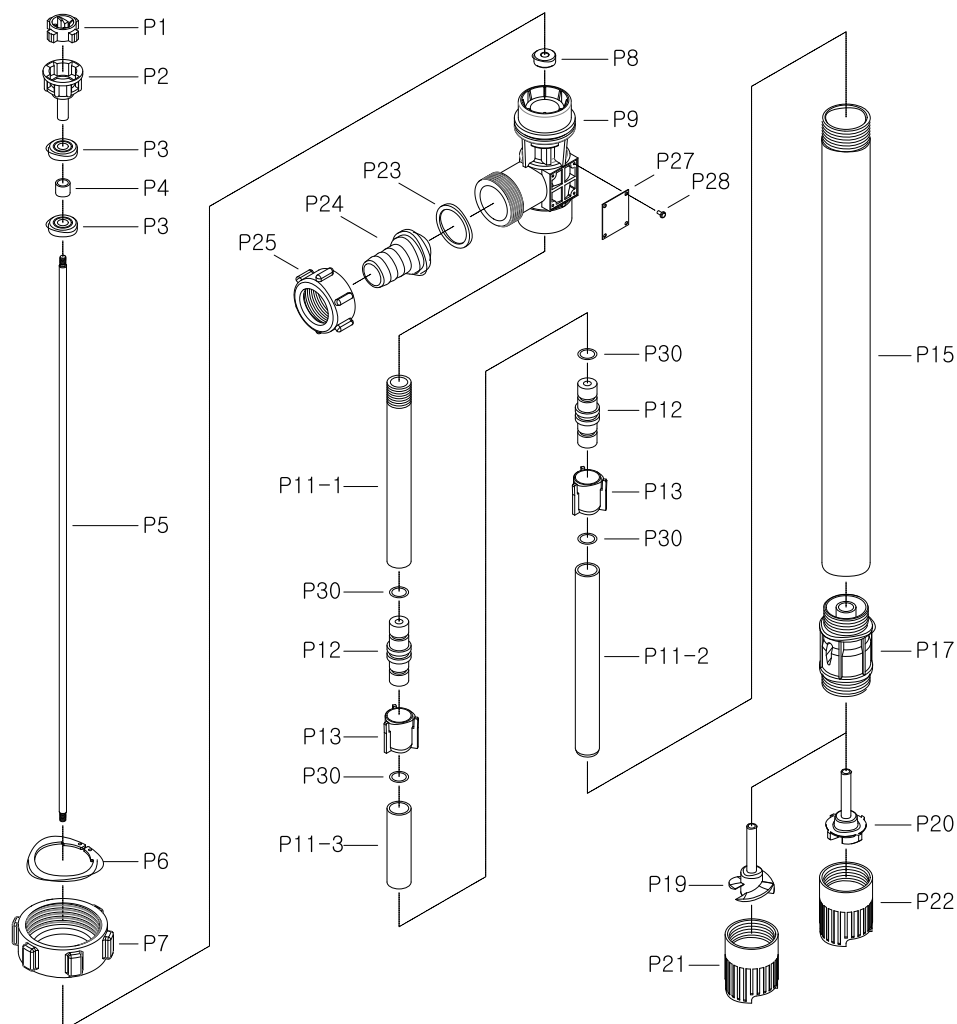
- ① Disassemble motor from the pump by loosening Union Nut (motor) between pump and the motor in clockwise.
- ② Disassemble Foot by gripping External Pipe & loosening Foot from bearing house in clockwise.
- ③ Disassemble Impeller by gripping bundle of Coupling & loosening Impeller from bundle of Coupling in counterclockwise.
- ④ Disassemble Bearing Housing by pushing thin stick between External pipe and Discharge Outlet.
- ⑤ Disassemble bundle of Drive Shaft including Coupling by pushing bundle of Drive Shaft to Discharge Housing side.
- ⑥ Disassemble Drive Shaft by gripping bundle of Coupling & loosening Drive Shaft from bundle of Coupling in counterclockwise.
- ⑦ Disassemble External Pipe by gripping Discharge Housing & loosening External Pipe from Discharge Housing in clockwise with turning the thin stick after inserting thin stick between outlets of External Pipe.
- ⑧ Disassemble Internal Pipe by gripping Discharge Housing & loosening the internal Pipe from Discharge Housing with pipe wrench in clockwise.

# 12 Cause of Trouble and Troubleshooting

Trouble	Cause	Troubleshooting
Motor dose not run	Contact error of plug(Electric Motor)	Inspection
	Disconnection of power cable(Electric Motor)	Repair or replace
	Motor damage	Repair or replace
	Motor overload (Electric Motor)	Inspect and replace with proper pump
	Abrasion of carbon brush (Electric Motor)	Replace
	Damage of Motor speed control device(Electric Motor)	Replace
	Operation of Motor LVR switch(Electric Motor)	Check and raise voltage
	Clog with foreign substances at the Vane (Air Motor)	Disassemble and clean
	fixing or terminated life time of Bearing(Air Motor)	Disassemble and clean
No pumping	Clog of discharge outlet	Disassemble and clean
	Clog of strainer	Disassemble and clean
	Impeller damage	Inspect and replace
	Dry run	Check and replace drum
	Air inhalation into suction side	Inspect Pipe connection part and replace
Pumping but small amount	Clog with foreign substances	Disassemble and clean
	Impeller abrasion or damage	Inspect and replace
	Lower voltage(Electric Motor)	Inspect and attach voltage compensator
	Vane abrasion (Air Motor)	Inspection and replace
	Clogging of Muffler(Air Motor)	Replace
	Drop of air pressure(Air Motor)	Check air line
Big noise or vibration	Bearing abrasion	Inspect and replace
	Inhalation of foreign substances	Disassembly and clean
	Motor malfunction	Repair or replacement
	Dry run	Check and replace drum
Leakage of liquid	Oil seal damage	Inspection and replace
	Loosened pipe screw	Inspection and replace

# 13 Structure and Name of Each Parts

## 13-1 DR-P□□, DR-F□□



NO.	Part Name	Q'ty
P1	Coupling(Star)	1
P2	Coupling(Pump)	1
P3	Bearing(Ball)	2
P4	Sleeve	1
P5	Drive Shaft	1
P6	Snap Ring	1
P7	Union Nut(Motor)	1
P8	Oil Seal	1
P9	Discharge Housing	1

NO.	Part Name	Q'ty
P11-1	Internal Pipe(1)	1
P11-2	Internal Pipe(2)	1
P11-3 <sup>(3)</sup>	Internal Pipe(3)	0(1)
P12 <sup>(3)</sup>	Guide Bearing	1(2)
P13 <sup>(3)</sup>	Guide Ring	1(2)
P15	External Pipe	1
P17	Bearing Housing	1
P19 <sup>(1)</sup>	Impeller(Low Head)	1
P20 <sup>(2)</sup>	Impeller(High Head)	1

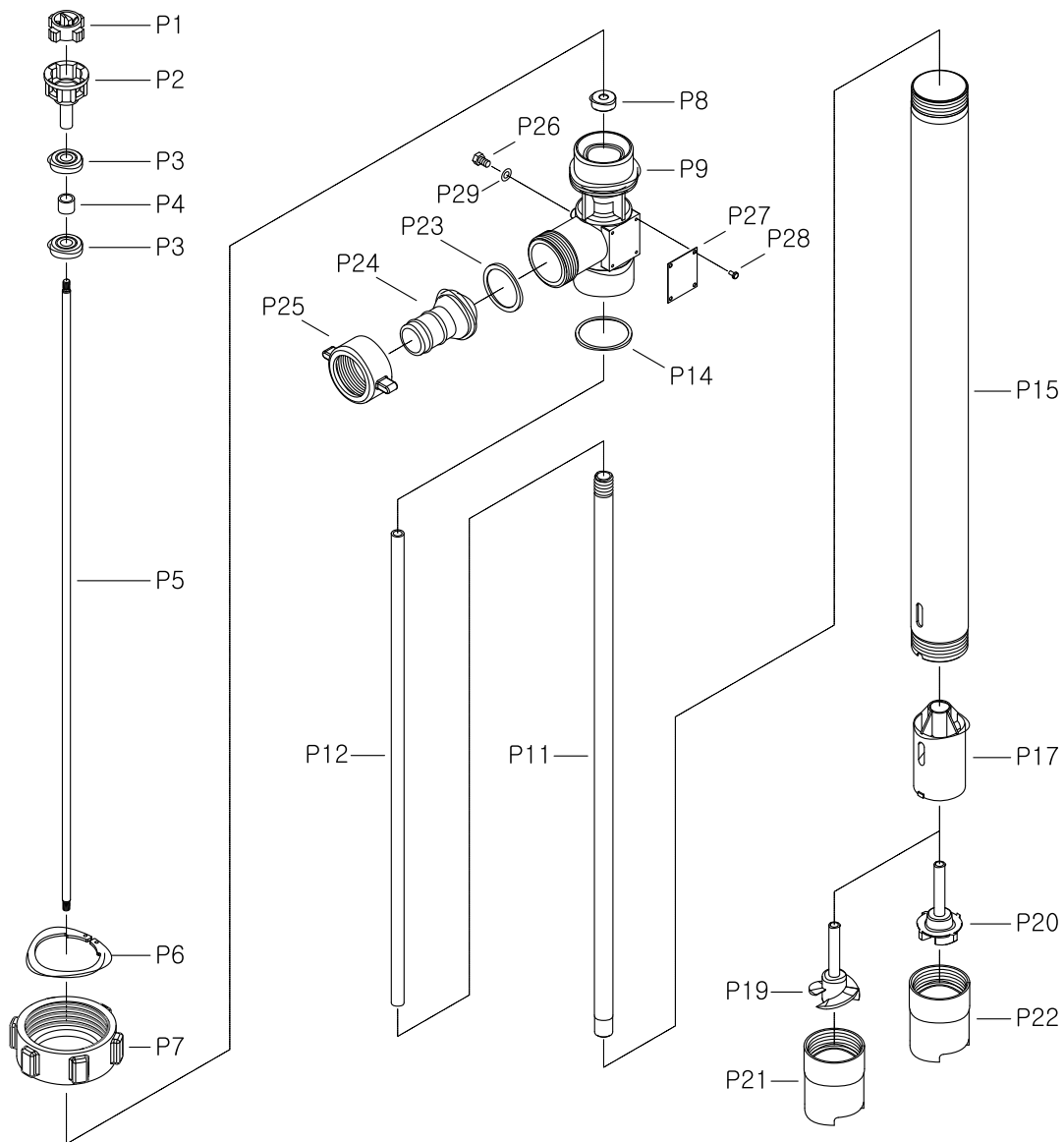
NO.	Part Name	Q'ty
P21 <sup>(1)</sup>	Foot(Low Head)	1
P22 <sup>(2)</sup>	Foot(High Head)	1
P23	Packing	1
P24	Hose Connector	1
P25	Union Nut(Pump)	1
P27	Nameplate	1
P28	Tapping Screw	4
P30 <sup>(3)</sup>	O - Ring	2(4)

Note 1) Only for DR-PL□, DR-FL□

Note 2) Only for DR-PH□, DR-FH□

Note 3) In case of 1200mm of Pipe length, quantity in ( ) is applied.

## 13-2 DR-S ☐ ☐



NO.	Part Name	Q'ty
P1	Coupling(Star)	1
P2	Coupling(Pump)	1
P3	Bearing(Ball)	2
P4	Sleeve	1
P5	Drive Shaft	1
P6	Snap Ring	1
P7	Union Nut(Motor)	1
P8	Oil Seal	1
P9	Discharge Housing	1

NO.	Part Name	Q'ty
P11	Internal Pipe	1
P12	Guide Bushing	1
P14	Packing(Pipe)	1
P15	External Pipe	1
P17	Bearing Housing	1
P19 <sup>(1)</sup>	Impeller(Low Head)	1
P20 <sup>(2)</sup>	Impeller(High Head)	1
P21 <sup>(1)</sup>	Foot(Low Head)	1
P22 <sup>(2)</sup>	Foot(High Head)	1

NO.	Part Name	Q'ty
P23	Packing	1
P24	Hose Connector	1
P25	Union Nut(Pump)	1
P26	Bolt(Hex.head)	1
P27	Nameplate	1
P28	Rivet	4
P29	Washer(Flat)	1

Note 1) Only for DR-SL ☐

Note 2) Only for DR-SH ☐

# 14 Warranty

## Warning

- If the pump is reconstructed arbitrarily or the undesignated parts are used into the pump, CHEONSEI will not warrant and CHEONSEI is not responsible for any expense caused by accident or trouble.

- ① Warranty period is one year from purchase date.
- ② During warranty period, repair or change of pump is free of charge, if trouble or damage of pump due to design or manufacturing of CHEONSEI.
- ③ Repair or change product due to following reasons will be charged regardless the warranty period.
  - ① Trouble or damage of pump expired warranty period.
  - ② Trouble of using by careless handling.
  - ③ Trouble or damage due to using non-designated part & reconstructing the pump arbitrarily.
  - ④ Trouble by fire or natural disaster

# 15 Repair Service

## Caution

- When the pump is sent to factory for repair service, clean out inside of pump.
- Do not send the pump, if the pump has been used for harmful & fatal liquid to health.

- ① Contact to CHEONSEI or local distributor as shown on back of the manual, if you have any problem or questions.
- ② If you want to repair, please inform the following.
  - ① Model Name & manufacture number written in name plate
  - ② Used period, operation condition, operation status, and transfer liquid
- ③ If warranty period is over, it may charge according to repair part. Please contact with sales agent for more information.
- ④ Minimum retention period of parts for repair is 5 years from the date of production.



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