

LIGHTWEIGHT SUBMERSIBLE PUMP

# NORUS®

CR/CRS/CRC/CRXP

INSTRUCTION MANUAL

Read This Instruction Manual Before Use!

## Introduction

Thank you for purchasing ShinMaywa's lightweight submersible pump, NORUS®. This Instruction Manual describes how to use and maintain NORUS® pumps. To ensure correct operation, read this Instruction Manual carefully before using the pump and keep this Instruction Manual close at hand for future reference. When transferring the pump to others, ensure that this Instruction Manual is also included. In the event of any breakdown or malfunction of the pump, please contact the distributor from which you purchased the pump.

## Unpacking

When receiving the pump, please check that there has been no damage during transportation and that the quantity and type of accessories, and the description on the nameplate, are all correct. In the case of damage or missing parts, please contact the distributor from which you purchased the pump.












Contents:	Pump .....	1 unit
	Instruction Manual .....	1 copy
	Spare Nameplate .....	1
	Pipe (for Float Switch) .....	1(D:W type only)

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## — Important Safety Precautions —

Safety symbols in this Instruction Manual are defined as follows.

Panel or Symbol	Definition	Symbol	Definition
 	A warning that incorrect operation will result in death or serious injury		A mandatory or required action
 	A warning that incorrect operation may result in death or serious injury		Mandatory or required grounding
 	A caution that incorrect operation may result in minor injury or property damage		Mandatory or required unplugging
	A warning or caution related to electric shocks		A forbidden action

a. AVOID FIRE OR EXPLOSION;

** DANGER**



**Do not use the pump for pumping liquids other than those specified in this Manual.**

Use this pump only for pumping water or wastewater as specified in 2. Restrictions on Use, a) Applicable Fluids. **Do not use the pump for any flammable or explosive liquid, such as oil, organic solvents, or chemicals as this may cause an explosion, fire,** or a breakdown of the pump. And, if intending to use the pump for pumping water other than specified above, contact the distributor from which you purchased the pump beforehand.

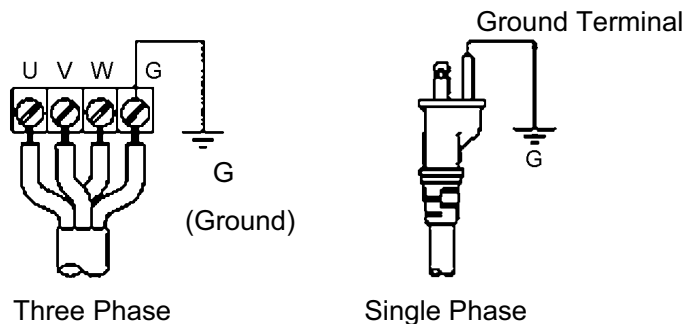
b. AVOID ELECTRICAL SHOCK;

** WARNING**



**Ground the pump properly.**

Before using the pump, ensure that it has been grounded by a qualified electrician in compliance with the National Electrical Code (NEC) and local codes in order to reduce the risk of an electric shock. (Consult a nearby electrical contractor.)



  **Do not ground the pump to a gas pipe, water pipe, lightning rod, or telephone line.**

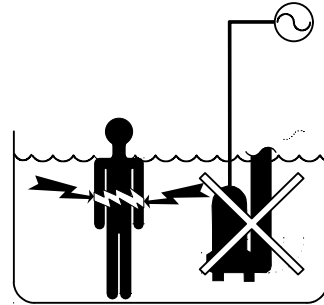
Never ground the pump to a gas pipe, water pipe, lightning rod or telephone line because it is extremely dangerous.

  **Install a ground fault interrupter (GFI)**

To reduce the risk of electric shock, install a ground fault interrupter (GFI) on the power supply to which the pump is connected in compliance with the National Electrical Code (NEC) and local codes.

  **Never use the pump in swimming pool area.**

To reduce risk of electric shock, this pump has not been investigated for use in swimming pool area.



  **Do not use the pump where someone is present in the water.**

To avoid the risk of electric shock, never use the pump if someone is present in the water.

  **Do not touch the power supply and its surroundings with wet hands.**

Never touch the power supply and its surroundings with wet hands because it may cause an electric shock.

  **Risk of Electrical Shock**

Do not remove cord and strain relief.

Do not connect conduit to pump.

  **Use the pump at the normal voltage and frequency**

Use the pump at the normal voltage and frequency as specified on the nameplate of the pump in order to avoid electric shocks and failures of the pump.

**c. AVOID INJURY HANDS, ARMS OR OTHER EXTREMITIES;**

**⚠ DANGER**

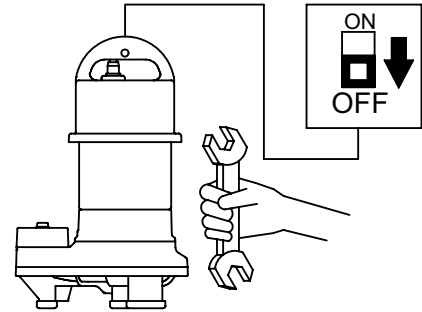


Turn off the pump before inspection or repair.

**DO NOT PLACE HANDS OTHER BODY PARTS CLOSE TO PUMP WHILE IT IS TURNED ON, AS THIS MAY RESULT IN ELECTRICAL SHOCK, DROWNING OR HANDS/BODY PARTS BEING FORCED INTO PUMP;**

Before inspection or repair, turn off the power supply even if the pump is not in operation. The pump is equipped with a built-in motor protector which automatically stops/starts the pump and this may result in injury during inspection or repair.

When the pump is not being used, or in the event of a blackout, turn the power supply off.



**AVOIDING DAMAGE TO THE PUMP**



If you notice any abnormality during operation, stop the pump immediately and get it inspected or repaired.



Use a proper lead to extend the length of the power supply cable.

Use a proper extension lead that conforms to the National Electrical Code (NEC) and local codes in order to avoid a voltage drop that may cause performance degradation or other pump failures.



Do not use the pump to pump seawater as this will damage the pump.

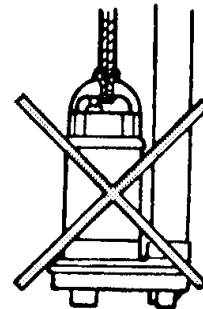


Do not change or modify the pump or its accessories because it may cause a failure of the pump.



Do not suspend the pump during operation.

To prevent the pump from rotating and damaging the cable, do not suspend it from a rope or suchlike. Ensure that the pump and its connections are not supporting the weight of the pipes.



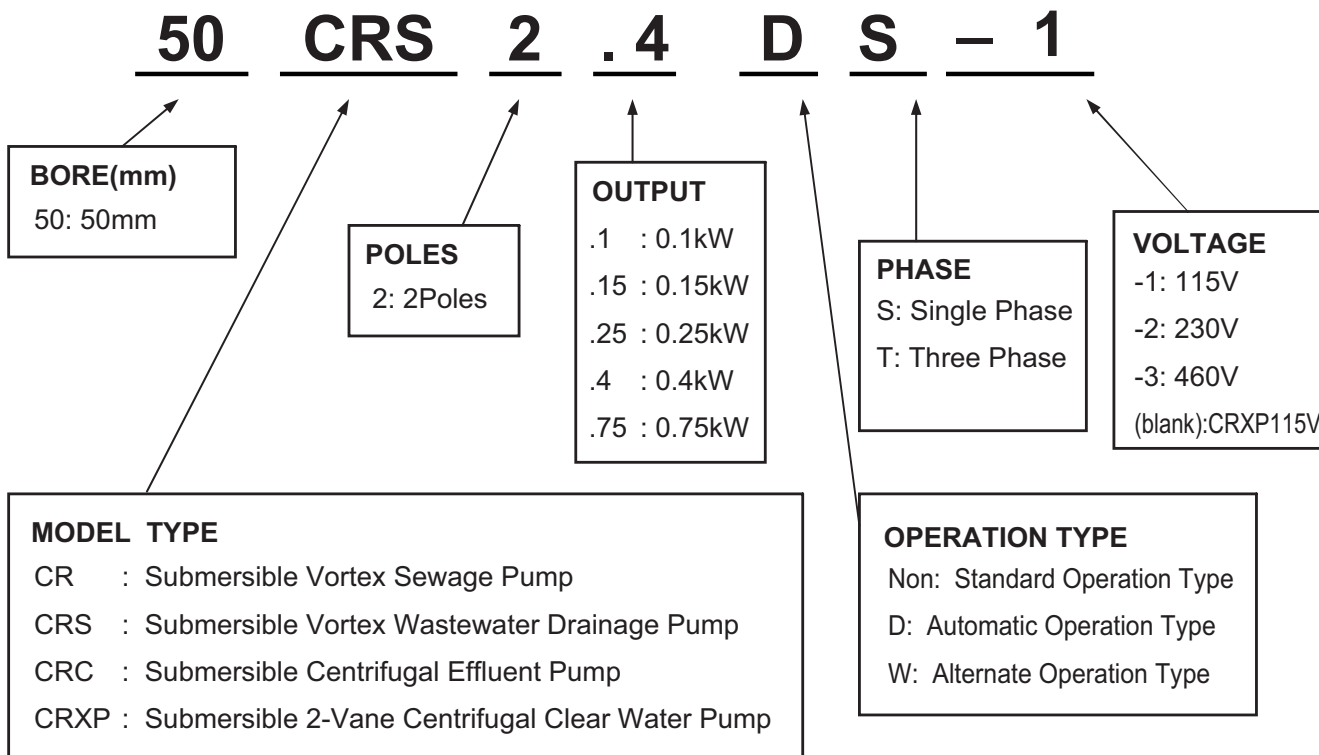
Do not use the pump when the water level is below the minimum water level (A). Do not use the pump for more than 30 minutes when water level is below the minimum water level for continuous operation (B). See 2 f) below for details on minimum water levels.

# 1 Product Information

## a) Features of the Pump

ShinMaywa's lightweight submersible pumps, NORUS® use stainless steel and high-performance resin for those parts that come in contact with liquid so that they are corrosion resistant.

### ◆MODEL



## b) Major Standard Specification

Pump	Impeller	CR/CRS: Vortex Type, CRC/CRXP: Closed Type
	Shaft Seal	Double Mechanical Seal
	Bearing	Sealed Ball Bearing
Motor	Specification	Dry Submersible Induction Motor, 2Pole, Class E
	Protection System	THERMALLY PROTECTED
Connection		Screw Flange
Enclosure		Enclosure marking for drip proof, waterproof, and watertight enclosure. ENCLOSURE TYPE 3

c) Methods of Operation

Model	Operation control	Summary
CR CRS CRC CRXP	Non-automatic operation	With no special control system, the pump starts when the power supply is turned on and stops when the power supply is turned off.
CR-D CRS-D CRC-D	Automatic operation (with an automatic drain)	The pump operates automatically, with water levels for starting/stopping the pump set by two float switches.
CR-W CRS-W	Automatic alternate operation	The pump, with three float switches, performs automatic alternate operation combined with CR-D/CRS-D.

d) Types of Connection

【2" NPT Flange Type】

With the use of built-in companion flanges (connection type F50) which come as standard equipment, the pump can be used as a fixed, flange connection type pump suitable for installation in a limited space.

【Guide Rail System Type】

With the use of a guide rail system (connection type P50RL or P50RH), the pump can be detached by just sliding it up or down along the guide pipe.

## 2 Restrictions on Use



**DANGER**



**Do not pump any oil, organic solvents, or chemicals as any other flammable or explosive liquids as they can cause a fire or explosion.**

a) Applicable Fluids

Use the pump for water that complies with the conditions described on the right. **Do not use the pump for seawater as this will damage the pump.** When intending to use the pump for water that does not comply with the conditions specified in the table, consult with the distributor from which you purchased the pump beforehand.

Temperature	0 – 40 °C (32-104 °F)
pH	6.0 – 9.0
Electrical conductivity	100 mS/m or less
DO (Dissolved Oxygen)	1 – 4 mgO <sub>2</sub> /l
Chloride ion concentration	1,000 mg/l or less
SS	3,000 mg/l or less
BOD, COD	1,000 mg/l or less

b) Applicable Operating Environment



**⊘ This pump is not explosion-proof. To avoid fire or explosion, do not use the pump in a flammable or explosive atmosphere.**

c) Operation Time

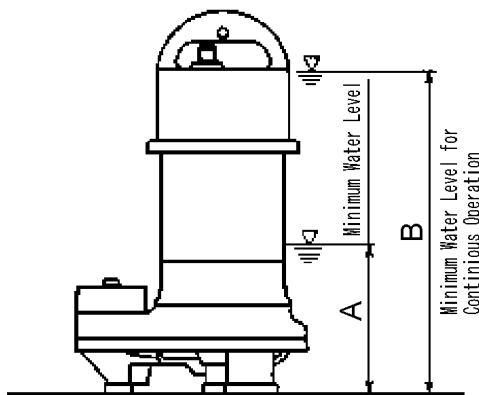
- The pump may be operated continuously for 24 hours per day as long as the pump is completely submerged and the water level is above the minimum water level for continuous operation (dim. "B").
- If the pump is to be operated below the minimum water level for continuous operation (dim. "B") the maximum run time is 30 minutes in any one hour period.
- In all situations the pump casing must be kept clear of any build up of debris or algae that could prevent proper motor cooling to occur.
- The pump should not be started more than 10 times in any one hour period.

d) Maximum Water Depth

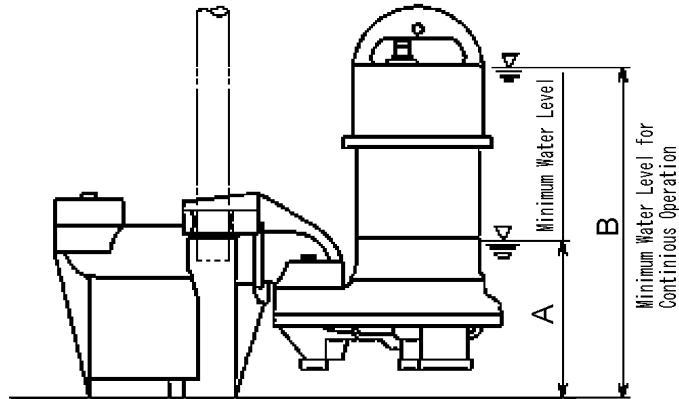
The pump can be used at a maximum depth of 5 m. If it is to be used at greater depths, consult with the distributor from which you purchased the pump beforehand.

e) Minimum Water Levels

Do not use the pump when the water level is below the minimum water level (A). Do not use the pump for more than 30 minutes when the water level is below the minimum water level for continuous operation (B).



**2" NPT Flange Type**



**Guide Rail System Type**

**[2" NPT Flange Type]**

MODEL		CR		CRS			CRC		CRXP
OUTPUT (kW)	0.15/0.25	0.4/0.75	0.1/0.15	0.25	0.4/0.75	0.4	0.75	0.75	
[HP]	[1/5,1/3]	[1/2,1]	[1/8,1/5]	[1/3]	[1/2,1]	[1/2]	[1]	[1]	
Flange Model		F50		F50			F50		F50
A	Metric (mm)	150	155	105	125	135	130	130	180
	Inch	5.91	6.10	4.13	4.92	5.31	5.12	5.12	7.1
B	Metric (mm)	330	335	305	305	315	330	350	401
	inch	12.99	13.19	12.01	12.01	12.40	12.99	13.78	15.8


**【Guide Rail System Type】**


MODEL		CR	CRS	CRC		CRXP
OUTPUT (kW)		0.15/0.25/0.4/0.75	0.1/0.15/0.25/0.4/0.75	0.4	0.75	0.75
【HP】		【1/5,1/3,1/2,1】	【1/8,1/5,1/3,1/2,1】	【1/2】	【1】	【1】
Connection Model		P50RL	P50RL	P50RH		P50RL
A	Metric (mm)	165	165	160	160	220
	inch	6½	6½	6.30	6.30	8.70
B	Metric (mm)	345	345	360	380	441
	inch	13.58	13.58	14.17	14.96	17.4


### 3 Setup

a) Grounding




 Before using the pump, ensure that it has been grounded and wired by a qualified electrician in compliance with the National Electrical Code (NEC) and local codes in order to reduce the risk of electric shock. (Consult a nearby electrical contractor.)

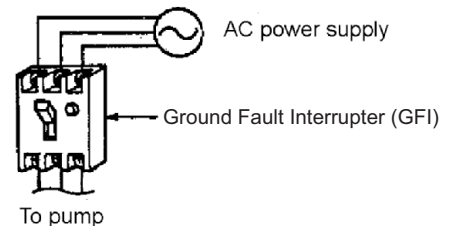
 This pump is supplied with a grounding conductor and a grounding-type attachment plug.  
To reduce the risk of electric shock, ensure that it is connected only to a properly grounded, grounding-type receptacle.

 Never ground the pump to a gas pipe, water pipe, lightning rod or telephone line as this is extremely dangerous.

b) Installation of a Ground Fault Interrupter (GFI)



 To reduce the risk of electric shock, install a ground fault interrupter (GFI) on the power supply to which the pump is connected, in compliance with the National Electrical Code (NEC) and local codes.



c) Location of the Pump

To prevent damage to the cables and float switch and air lock, install the pump where it is not directly in the path of the water flow and where it does not suck in bubbles generated by the influx of water. If the pump is equipped with a float switch, it is especially important to locate the pump far enough away from the water intake to prevent influent water from hitting the float switch or disturbing the water surface and causing a malfunction of the float switch.




d) Checking the Direction of Impeller Rotation (when using three-phase AC power)

Check the direction of reaction immediately after starting the pump to see if the impeller rotates in the normal direction. Especially when using 2" NPT flange type pump, check the direction of impeller rotation before installing the pump because it is difficult to check it once it has already been installed.

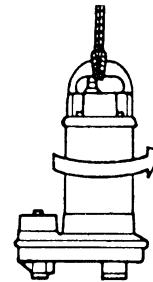
**How to Check the Direction of Impeller Rotation**

- 1) Turn off the circuit breaker to prevent any current passing through the terminal to which the power supply cable of the pump is connected.
- 2) Connect the power supply cable of the pump to the terminal.
- 3) Start the pump by turning on the circuit breaker with attention paid to the reaction of the pump.

 **CAUTION**

 Do not start the pump when the pump is suspended as the reaction force of the rotation may cause an accident.

- 4) When the pump reacts counterclockwise when seen from above (as shown in the figure on the right), the direction of impeller rotation is normal. When the pump reacts clockwise, turn off the circuit breaker and interchange any two non-grounded wires connected to the three-phase power source, and check the direction again. If the direction of impeller rotation is normal, record the wiring connected to the three-phase power source.
- 5) After checking the direction of impeller rotation, turn off the circuit breaker, and disconnect the wires.



Normal direction of reaction


e) Temporary Adjustment of the Float Switch (D/W type only)

Before installing the pump, temporarily adjust the operating water level (for the D/W type) and the maximum operating water level (for the W type) by sliding the supports of the float switches up and down. Slide the support of each float switch to the desired height. The water level needed to turn each float switch on is nearly identical to the height of the support of each float switch.

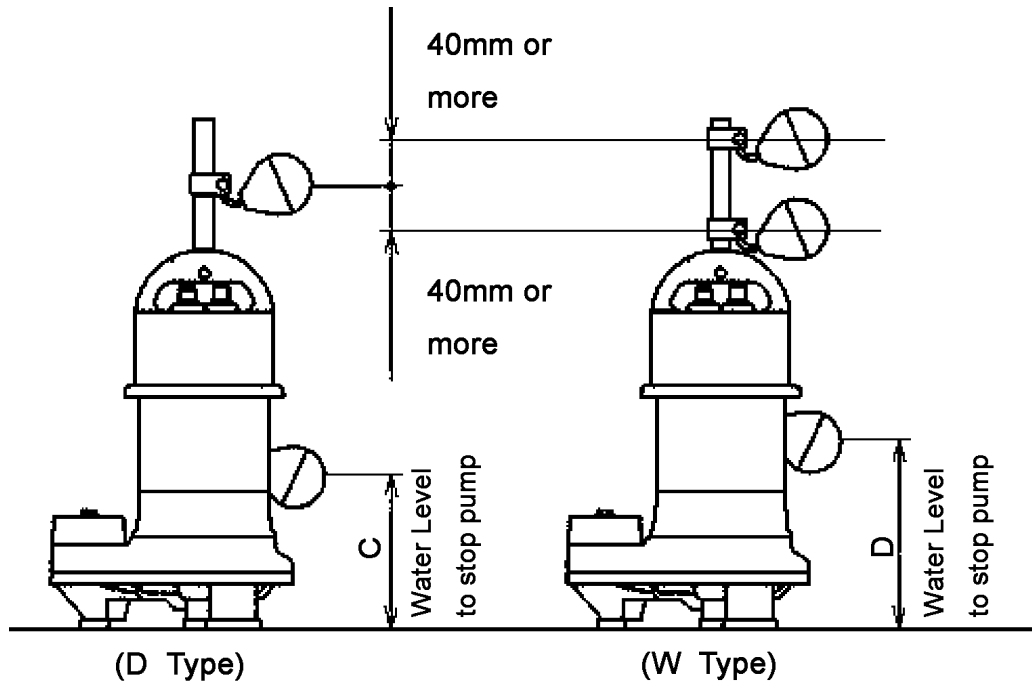
To change the height of each support, loosen the screw holding the support in place and slide the support up or down along the pipe before tightening the screw again to fix the support.

Do not change water level C and D (where the pump stops) because they have already been set at the factory before the pump was shipped.

**NOTICE**

 Be sure to check the operating water level when the pump is in operation, as the height of each float switch provides only a rough indication of the operating water level.

The height settings for the float switches must be adjusted within the ranges specified in “f) Minimum Water Levels, 2. Restrictions on Use.”



**【2" NPT Flange Type】**

MODEL		CR		CRS			CRC
OUTPUT(kW) 【HP】		0.15/0.25 【1/5,1/3】	0.4/0.75 【1/2,1】	0.1/0.15 【1/8,1/5】	0.25 【1/3】	0.4/0.75 【1/2,1】	0.4/0.75 【1/2,1】
Flange Model		F50		F50			F50
C	Metric (mm)	150	155	105	125	135	140
	inch	5.91	6.10	4.13	4.92	5.31	5.51
D	Metric (mm)	185	190	140	160	170	—
	inch	7.28	7.48	5.51	5.43	6.69	—

**【Guide Rail System Type】**

MODEL		CR	CRS	CRC
OUTPUT(kW) 【HP】		0.15/0.25/0.4/0.75 【1/5,1/3,1/2,1】	0.1/0.15/0.25/0.4/0.75 【1/8,1/5,1/3,1/2,1】	0.4/0.75 【1/2,1】
Connection Model		P50RL	P50RL	P50RH
C	Metric (mm)	165	165	170
	Inch	6 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>	6.69
D	Metric (mm)	200	200	—
	Inch	7.87	7.87	—

## 4 Installation

Examples of installation

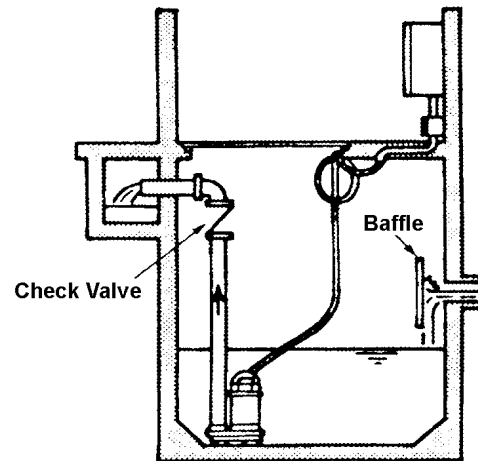
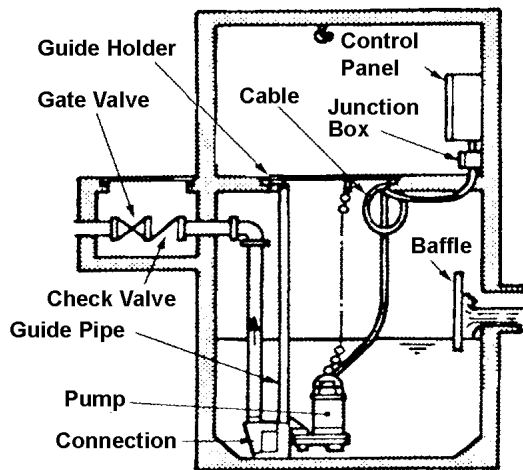


Fig.1 An example of the guide rail system type

Fig. 2 An example of the 2" NPT flange type

### 【Guide Rail System Type】

1. Attach the Guide Holder and the Connection, taking the positions of the pump and its piping into consideration.
2. Install a Guide Pipe. (A Guide Pipe is not included in the accessories.) (See Fig3)  
Guide Pipe should be 1" schedule 40 PVC.  
If the pipe length is over 4' in height, Intermediate Guide Holder should be installed.  
Otherwise, Guide Pipe may remove from Connection when the pump is being pulled out of the Tank.
3. Detach the companion flange from the pump, attach the flange packing to the Connection, and connect the pipe to the Connection using the companion flange. (See Fig3)
4. Attach the flange packing to the pump, and attach the slide to the pump.
5. Attach the chain to the hole in the handle of the pump. (See the manual included with the guide rail system type pump.)
6. Pass the Guide Pipe along the groove in the slide, and lower the pump into position using the chain.
7. When the slide reaches the Connection, the pump is connected automatically and its installation is completed.

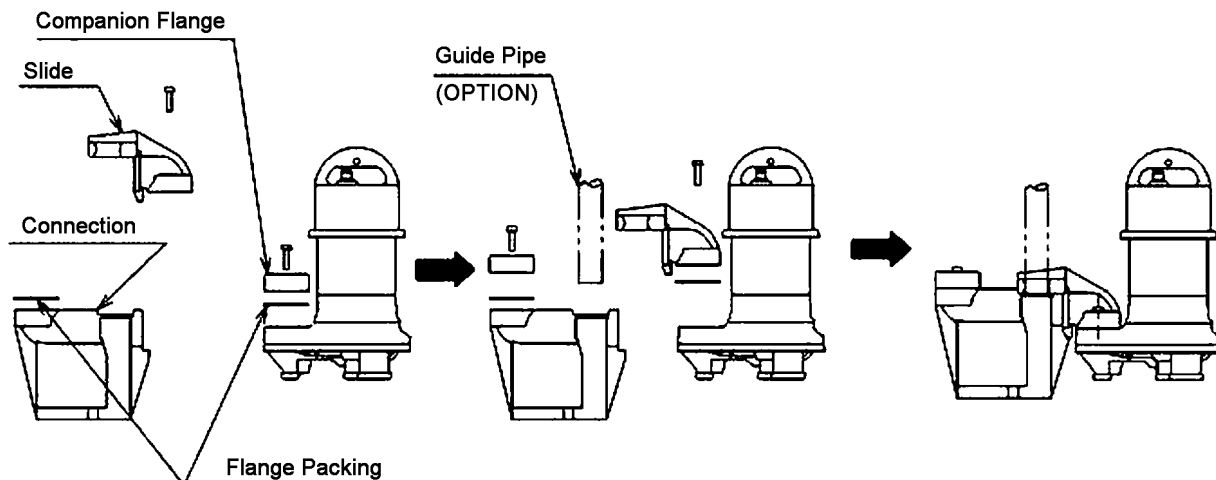



Fig3. Illustration of caption2&3


## 【2” NPT Flange Type】

Install the pump and connect it to the piping as shown in Fig. 2.


### NOTICE


 To avoid the risk of impeller lock and abrasive, do not install the pump on the sandy soil directly. Especially, installing the pump inside the pond is prohibited. The pump must be installed in the tank which takes water through the intake channel from the pond.


### WARNING


 To avoid the risk of electric shock, do not touch the power supply plug and its surroundings with wet hands.

### NOTICE

 Avoid any pulling or excessive bending of the power supply cable or the float switch, as this may cause a water leak and abnormal heat generation.

 Avoid using the pump while it is placed on its side or suspended, as this may reduce service life or result in a breakdown of the pump.

 Avoid installing the pump where the wall or other obstacles interferes with the float switches.


 Check if there is any abnormal sound or any other abnormality immediately after starting the pump. If any abnormality is noted, turn off the pump immediately and follow the instructions specified in “9. Troubleshooting.”


#### **Note: 【 For the sewage pump: CR Series 】**

*The tank is to be vented in accordance with local plumbing codes. The pump is not to be installed in locations classified as hazardous in accordance with National Electrical Code ANSI/NFPA70.*

## 5 Electrical wiring

### CAUTION

 Before inserting the power plug or connecting the wires to the terminal board, make sure that the power supply (i.e. circuit breaker) is properly disconnected.

 All electrical work must be performed by an authorized electrician. Never allow an unauthorized person to perform electrical work.

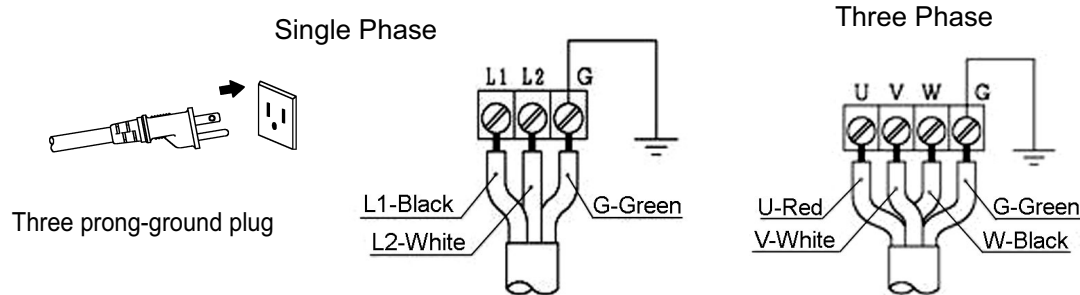


Improper wiring can lead to current leakage, electrical shock, or fire.

When using a three-prong grounded plug, connect it as shown in the drawing.

When a single-phase power source is used, connect the leads to the control panel terminals as shown in the drawing, making sure they do not become entangled.

When a three-phase power source is used, connect the leads to the control panel terminals as shown in the drawing, making sure they do not become entangled.



To extend the power supply cable, select an extension lead that conforms to the National Electrical Code (NEC) and local codes. Otherwise, a voltage drop may occur and cause performance degradation or other failures.



**CAUTION**



Avoid any bending or excessive pressure on the power supply cable.

Do not lay the cable where it may be damaged by heat or chemicals.

Place the extended and connected areas of the power supply cable in a junction box outside the tank to prevent exposure to direct water splashes.

## 6 Operation

■ Check the following points before using the pump.

- 1) The pump has been properly installed, set up, and wired in accordance with the instructions in this Manual.
- 2) The water level is higher than the minimum water level specified in 2. Restrictions on Use, f) "Minimum Water Levels".
- 3) The power supply voltage and frequency are as specified on the nameplate.

● Power supply voltage tolerance=within  $\pm 5\%$  of the rated voltage.

- 4) When the power supply is three-phase AC and the direction of impeller rotation has not been confirmed, check the direction of impeller rotation in accordance with the instructions specified in "d) Checking the Direction of Impeller Rotation, 3. Setup."


■ Test operation

- 1) Turn the power on and start the pump. (Note that the automatic operation type and automatic alternate operation type do not start until the water level rises higher than the operating water level.)
- 2) Check if there is any abnormality with regard to the pumping capacity, current, voltage, noise, or vibration, etc.
- 3) If any abnormality is noted, correct it in accordance with “9. Troubleshooting.”

■ Actual operation


If no abnormality is noted during the test operation, continue the operation of the pump.

**NOTICE**

 When the pump is equipped with float switches (a pump with an automatic drain switch or the automatic alternate operation type), check the performance of the float switches and their respective water levels.

**7 Maintenance and Inspection**

**NOTICE**

 Do not disassemble the pump for any purpose other than those specified in “1) Inspection and Replacement of Lubricating Oil” and “3) Inspection and Replacement of the Impeller” of this chapter.

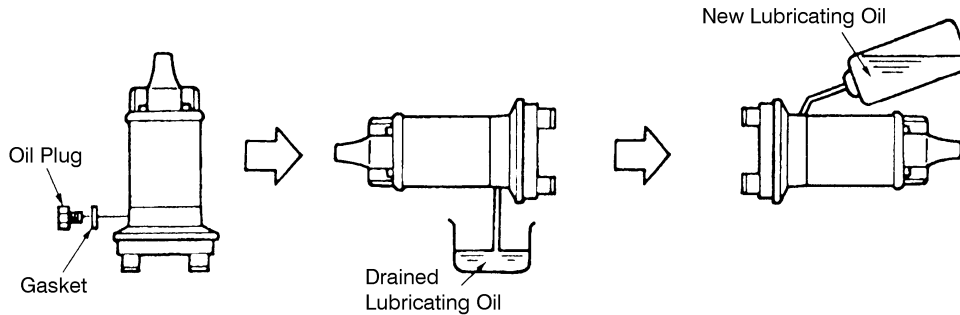
1) Inspection and Replacement of Lubricating Oil

Inspect the lubrication oil every 2,000 hours (or 6 months), and replace the lubricating oil every 4,000 hours (or 12 months). If the lubricating oil is cloudy or contaminated with wastewater, replace the mechanical seal. Even if the lubricating oil is not cloudy, replacing the mechanical seal every 6,000 hours (or 24 months), or 4,000 hours (or 12 months) for the 150 W type, extends the service life of the pump. When replacing the mechanical seal, contact the distributor from which you purchased the pump.

Use the correct type of lubricating oil listed in the table below. When replacing the lubricating oil, be sure to drain all the old lubricating oil and refill the tank with the correct volume of lubricating oil, as specified in the table below. Too much or too little lubricating oil may cause a breakdown of the pump.

MODEL	OUTPUT (kW) 【HP】	OIL VOLUME (ℓ)	OIL TYPE
CR/CRS	0.1, 0.15 【1/8, 1/5】	0.155	Turbine Oil # 32
	0.25, 0.4, 0.75 【1/3, 1/2, 1】	0.37	
CRC	0.4, 0.75 【1/2, 1】	0.24	
CRXP	0.75 【1】	0.30	

When checking and replacing the lubricating oil, turn the pump on its side and remove the lubricating oil plug. Before removing the lubricating oil plug, check to see if the plug has been tightened securely so that if water is contained in the oil you can later identify the cause - whether the water seeped in from the loosened lubricating oil plug or from other sealed area(s). Be sure to replace the old gasket with a new one.



## 2) Measurement of Insulation Resistance

Measure insulation resistance at the following points using a mega-ohm meter suitable for 500 V:

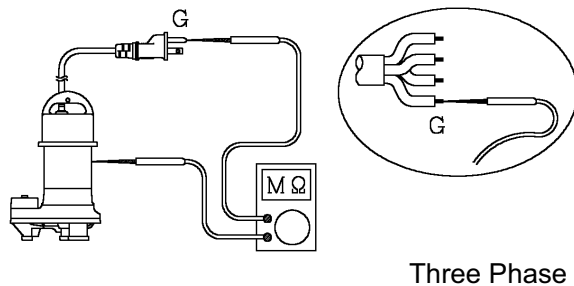
- Between the pump and the ground terminal (for single-phase power) or the ground wire (for three-phase power) (Fig. a):  $0 \Omega$

- Between the power supply plug and the ground terminal (for single-phase power) or between the ground wire and each phase of U, V, and W (for three-phase power) (Fig. b):

I. Above  $20 M\Omega$  ---- The pump can be operated continuously.

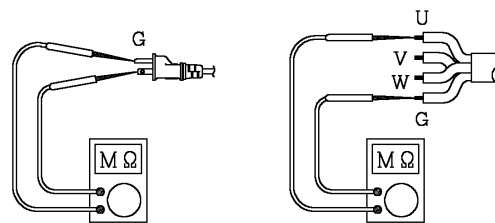
II.  $1 M\Omega - 20 M\Omega$  ---- The pump can be operated continuously, but inspect the motor and the cable as soon as possible.

III. Below  $1 M\Omega$  ---- Do not operate the pump. The pump needs servicing.



Single Phase

Fig. a



Single Phase

Three Phase

Fig. b

## 3) Inspection and Replacement of the Impeller

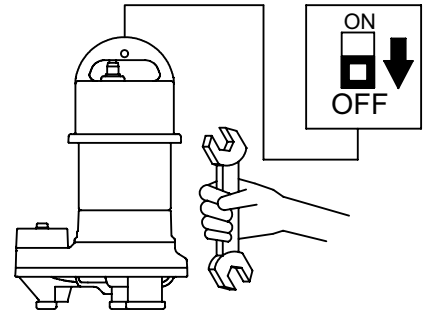
If the pumping capacity decreased, the impeller may be jammed or worn out. Inspect the impeller and replace it when it is worn out or severely damaged.

# ! WARNING



Before inspection or repair, turn off the power supply even if the pump is not in operation. The pump is equipped with a built-in motor protector which automatically stops/starts the pump and this may result in injury during inspection or repair.

When the pump is not being used, or in the case of a blackout, turn the power supply off.

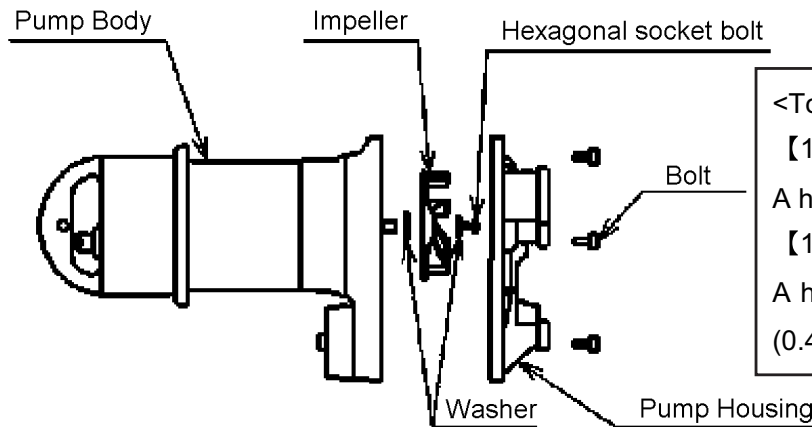


A) Unscrew the bolts at the bottom of the pump and remove the pump casing.

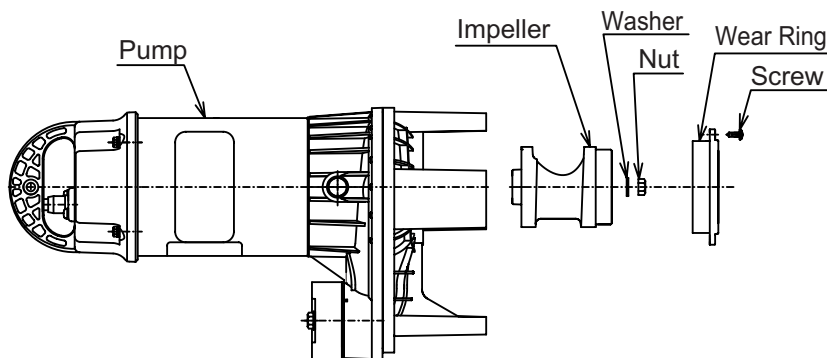
(Tool: A Phillips screwdriver)

B) After the impeller is exposed, check whether it is jammed or worn out. If the impeller is jammed, remove any foreign matter. If the impeller is severely worn out, replace it with a new one. To replace the impeller, loosen the hexagonal socket bolt in the center of the impeller, as shown in the figure below.

【CR/CRS/CRC Type】



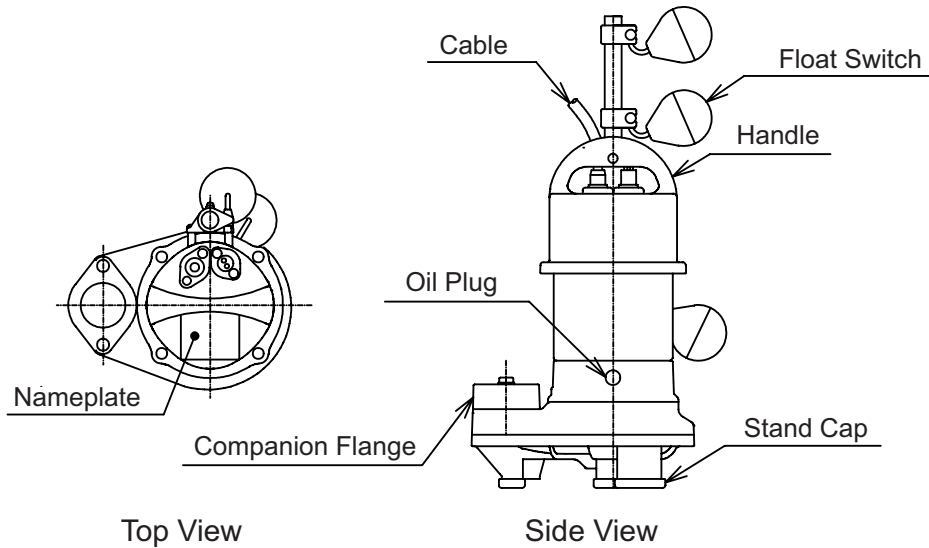
【CRXP Type】





## 8 Part Names and Specifications

### 【 Part Names 】



### 【 Standard Accessories 】

Standard Accessories	Quantity	Standard Accessories	Quantity
Cable <b>【Single Phase】</b> STW × 3Core × 16AWG × 20ft <b>【Three Phase】</b> STW × 4Core × 16AWG × 20ft	1	Flange Connection	1
		Float Switch (D-W type only)	1
		Extra Nameplate	1
		Warning Label	1
		Instruction Manual	1

- The weight of the product does not include the weight of the cable.
- With respect to any accessory that was customized at your request, refer to the nameplate or purchase specifications of the pump to confirm the relevant details.
- The specifications, design, etc. of the pump are subject to change without prior notice.

## 【Specifications】

【MODEL : CR】

MODEL	OUTPUT kW 【HP】	PHASE φ	VOLTAGE V	CURRENT A	WEIGHT kg 【lb】
50CR2.15S-1	0.15 【1/5】	Single	115	3.0	5.5[12.1]
50CR2.15DS-1					6.0[13.2]
50CR2.15WS-1					
50CR2.15T-2		Three	230	1.1	4.9[10.8]
50CR2.15DT-2					5.4[11.9]
50CR2.15WT-2					
50CR2.25S-1	0.25 【1/3】	Single	115	4.4	7.0[15.4]
50CR2.25DS-1					7.5[16.5]
50CR2.25WS-1					
50CR2.25T-2		Three	230	1.4	6.3[13.9]
50CR2.25DT-2					6.8[15.0]
50CR2.25WT-2					
50CR2.4S-1	0.4 【1/2】	Single	115	5.5	8.2[18.1]
50CR2.4DS-1					8.7[19.2]
50CR2.4WS-1					
50CR2.4T-2					Three
50CR2.4DT-2	7.9[17.4]				
50CR2.4WT-2					
50CR2.75S-1	0.75 【1】	Single	115	10.0	9.5[21.0]
50CR2.75T-2					8.8[19.4]
50CR2.75DT-2		Three	230	3.3	9.3[20.5]
50CR2.75WT-2					

【MODEL : CRC】

MODEL	OUTPUT kW 【HP】	PHASE φ	VOLTAGE V	CURRENT A	WEIGHT Kg 【lb】
50CRC2.4S-1	0.4 【1/2】	Single	115	6.0	8.9[19.6]
50CRC2.4DS-1					9.4[20.7]
50CRC2.4T-2		Three	230	2.5	8.8[19.4]
50CRC2.4DT-2					9.3[20.5]
50CRC2.75T-2	0.75 【1】	Three	230	3.8	10.2[22.5]
50CRC2.75DT-2					10.7[23.6]

【MODEL : CRS】

MODEL	OUTPUT kW 【HP】	PHASE φ	VOLTAGE V	CURRENT A	WEIGHT Kg 【lb】
50CRS2.1S-1	0.1 【1/8】	Single	115	2.2	4.5[9.9]
50CRS2.1DS-1					5.0[11.0]
50CRS2.1WS-1					
50CRS2.15S-1	0.15 【1/5】	Single	115	3.0	5.4[11.9]
50CRS2.15DS-1					5.9[13.0]
50CRS2.15WS-1					
50CRS2.15T-2		Three	230	1.1	4.8[10.6]
50CRS2.15DT-2					5.3[11.7]
50CRS2.15WT-2					
50CRS2.25S-1	0.25 【1/3】	Single	115	4.4	6.9[15.2]
50CRS2.25DS-1					7.4[16.3]
50CRS2.25WS-1					
50CRS2.25T-2		Three	230	1.4	6.2[13.7]
50CRS2.25DT-2					6.7[14.8]
50CRS2.25WT-2					
50CRS2.4S-1	0.4 【1/2】	Single	115	5.5	8.1[17.6]
50CRS2.4DS-1					8.6[19.0]
50CRS2.4WS-1		Three	230	2.0	7.3[16.1]
50CRS2.4T-2					7.8[17.2]
50CRS2.4DT-2					
50CRS2.4WT-2					
50CRS2.75S-1	0.75 【1】	Single	115	10.0	9.4[20.7]
50CRS2.75T-2					8.7[19.2]
50CRS2.75DT-2		Three	230	3.3	9.2[20.3]
50CRS2.75WT-2					

【MODEL : CRXP】

MODEL	OUTPUT kW 【HP】	PHASE φ	VOLTAGE V	CURRENT A	WEIGHT Kg 【lb】
50CRXP2.75S	0.75【1】	Single	115	11.0	9.2【20.3】

## 9 Troubleshooting

Symptom	Cause	Solution
1. The pump does not start, or it starts but soon stops again.	<ul style="list-style-type: none"> <li>• Disturbed electric transmission such as a power outage or low voltage</li> <li>• Poor connection of the power supply circuit or control circuit</li> <li>• Disconnection or poor connection of the cable</li> <li>• Open phase</li> <li>• Ground Fault Interrupter (GFI) is activated</li> <li>• Malfunction of a float switch</li> <li>• The protector is activated because foreign matter is jamming the pump or for other reasons.</li> <li>• Burnout of the motor</li> </ul>	<ul style="list-style-type: none"> <li>• Contact the utility company or an electrical contractor.</li> <li>• Inspect/correct the circuit.</li> <li>• Replace the cable, or correct the wire connection.</li> <li>• Inspect/ Correct the wire connection and magnetic switch.</li> <li>• Repair the leakage point.</li> <li>• Remove obstacles, and repair or replace the float switch.</li> <li>• Inspect the pump, and remove any foreign matter.</li> <li>• Repair or replace the motor.</li> </ul>
2. The pump stops after working for a while	<ul style="list-style-type: none"> <li>• The protector is activated because the pump has been operated for too long with its motor exposed.</li> <li>• The protector is activated due to high liquid temperature.</li> <li>• Overcurrent</li> </ul>	<ul style="list-style-type: none"> <li>• Raise the water level for stopping the pump.</li> <li>• Lower the liquid temperature.</li> <li>• Refer to the section on overcurrent.</li> </ul>
3. The power supply protector is working.	<ul style="list-style-type: none"> <li>• A setting value is incorrect.</li> <li>• A motor abnormality has occurred (burnout of the motor, a water leak, etc.)</li> <li>• A 50-Hz pump is operating at 60 Hz.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the protector or input a correct value.</li> <li>• Repair/Replace the motor.</li> <li>• Check the nameplate, and replace the pump or the impeller.</li> </ul>

Symptom	Cause	Solution
4. The pumping capacity is reduced or no water is discharged.	<ul style="list-style-type: none"> <li>• The direction of rotation of the pump is incorrect (when three-phase power is used).</li> <li>• An air lock has occurred.</li> <li>• The pump or piping is clogged.</li> <li>• The impeller or the pump casing is worn out.</li> <li>• The pump head is too high, or there is a large loss of pressure in the piping.</li> <li>• A 60-Hz pump is operating at 50 Hz.</li> </ul>	<ul style="list-style-type: none"> <li>• Interchange two phases of the wiring of the power supply.</li> <li>• Check the air vent valve or water level for stopping the pump.</li> <li>• Remove any obstructing object.</li> <li>• Replace the impeller or the pump casing.</li> <li>• Review the plan, including pump selection.</li> <li>• Check the nameplate, and replace the pump or the impeller.</li> </ul>
5. Overcurrent.	<ul style="list-style-type: none"> <li>• A significant voltage drop</li> <li>• A 50-Hz pump is operating at 60 Hz.</li> <li>• The direction of rotation of the pump is incorrect (when three-phase power is used).</li> <li>• The pump is choked with foreign matter.</li> <li>• Bearings are damaged.</li> <li>• The pump head is too low.</li> </ul>	<ul style="list-style-type: none"> <li>• Contact the utility company or an electrical contractor.</li> <li>• Check the nameplate, and replace the pump or the impeller.</li> <li>• Interchange two phases of the wiring of the power supply.</li> <li>• Inspect the pump, and remove any foreign matter.</li> <li>• Replace the bearings.</li> <li>• Throttle the gate valve, or replace the existing pump with a low-head pump.</li> </ul>
6. Vibration or abnormal noise	<ul style="list-style-type: none"> <li>• The direction of rotation of the pump is incorrect (when three-phase power is used).</li> <li>• The pump is choked with foreign matter.</li> <li>• The support of the piping is loose.</li> <li>• The piping is resonating.</li> <li>• Bearings are damaged.</li> <li>• The gate valve is excessively throttled.</li> </ul>	<ul style="list-style-type: none"> <li>• Interchange two phases of the wiring of the power supply.</li> <li>• Inspect the pump, and remove any foreign matter.</li> <li>• Fix the piping securely.</li> <li>• Modify the piping.</li> <li>• Replace the bearings.</li> <li>• Adjust the valve travel of the gate valve.</li> </ul>

## 10 After-Sales Service

To request repairs, order a spare part or inquire about any other service, contact the distributor from which you purchased the pump after confirming the model, serial number, frequency and month/year of manufacture specified on the nameplate or inscribed label attached to the pump.

Spare parts are available for seven years after the manufacture of the pump has been discontinued.

When unpacking the product, copy the required information from the pump nameplate and the inscribed label onto the table below, and keep it in a safe place.

Manufacture Number	
Model	
Output	KW (HP)
Voltage	V
Phase	$\phi$
Current	A
Purchased Date (m.d.y.)	
Purchased Location	

## 11 Limited Warranty

### Product Warranty

**Product Warranty:** ShinMaywa warrants that the NORUS<sup>®</sup> brand submersible pump and all original parts of the pump (the "Product") will be free from defects in materials and workmanship when used for the intended uses identified in the Product operations manual. The warranty period starts on the date you purchase the Product and ends twenty-four (24) months after the date of purchase. ShinMaywa shall, at its election, replace or repair any when notice of defect in the Product is given within the warranty period and when ShinMaywa determines the Product to be defective in materials or workmanship.

This Limited Warranty is subject to your compliance with the following conditions and procedures:

- a. If the Product becomes defective during the warranty period, you must promptly send ShinMaywa the "Request for Warranty Repair" attached in the Product operations manual or notify the dealer that sold Product to you in writing of the defect and the date of purchase.
- b. You must return the defective Product to ShinMaywa or the dealer that sold Product to you in accordance with the relevant instructions. You will be given instructions for returning the Product directly to ShinMaywa after you send to ShinMaywa the "Request for Warranty Repair" mentioned in a. above. Your dealer will instruct you on the proper method for returning the Product to the dealer. You will be reimbursed for shipping charges provided ShinMaywa or the dealer determines the returned Product is defective.
- c. If Product alleged by you to be defective is (i) not under warranty, or (ii) determined not to be defective, or (iii) defective due to any cause not covered under the warranty provided herein, you must reimburse ShinMaywa for all reasonable expenses incurred in shipping, handling and inspection of such Product.

**Exclusions from Warranty:** ShinMaywa shall not be liable under the warranties set forth above to the extent a Product defect or failure is caused by (i) use of the Product to pump any flammable, volatile or explosive materials, or for any other unintended uses; (ii) failure to follow the most current instructions supplied by ShinMaywa for use and operation of the Product; (iii) improper maintenance or repair; (iv) unforeseeable circumstances or external factors beyond the control of ShinMaywa including, but not limited to, the presence of pollutants or flammable, volatile or explosive materials, voltage fluctuations, fires, floods, unusually severe weather or other acts of God; (v) unauthorized alteration of the Product; (vi) use of components or subassemblies other than those supplied or approved by ShinMaywa; (vii) use, storage or transportation of the Product in an unsuitable environment; or (viii) normal wear and tear. Also, ShinMaywa makes no warranty as to the suitability or performance of its Products for use in combination with other electrical or electronic components, systems or assemblies.

**Component Parts Manufactured by Third Parties:** Any component parts of Products sold by ShinMaywa but manufactured by a third party will be subject to the warranty (if any) issued by such third party. ShinMaywa's only obligation shall be to assign to you, to the extent possible, any warranty ShinMaywa receives from the manufacturer.

**Limitation of Warranties/Liabilities:**

**THE EXPRESS WARRANTIES STATED ABOVE SHALL BE THE SOLE WARRANTIES FOR THE PRODUCT. SHINMAYWA MAKES NO OTHER WARRANTY, EXPRESS, IMPLIED OR STATUTORY, AS TO ANY MATTER WHATSOEVER, INCLUDING, WITHOUT LIMITATION, THE DESIGN OR CONDITION OF THE PRODUCT, ITS MERCHANTABILITY OR FITNESS OR CAPACITY OR DURABILITY FOR ANY PARTICULAR PURPOSE. SHINMAYWA EXPRESSLY DISCLAIMS ANY WARRANTY ARISING OUT OF COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE.**

**EXCEPT AS SET FORTH HEREIN, SHINMAYWA SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO YOU OR TO ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY CLAIM, LOSS, DAMAGE OR EXPENSE OF ANY KIND OR NATURE (INCLUDING NEGLIGENCE OR STRICT LIABILITY IN TORT) ARISING OUT OF OR RELATED TO THE MANUFACTURE, SALE OR USE OF THE PRODUCT, INCLUDING BUT NOT LIMITED TO INTERRUPTION OR LOSS OF SERVICE OR USE OF THE PRODUCT, OR FOR ANY LOSS OF BUSINESS, LOSS OF ANTICIPATED PROFITS OR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL OR EXEMPLARY DAMAGE WHATSOEVER AND HOWSOEVER CAUSED.**

Notwithstanding anything contained in this Limited Warranty to the contrary, ShinMaywa's total liability, whether arising in tort or contract (including, but not limited to, claims for indemnity, negligence, strict liability, property damage, breach of warranty or breach of contract), or arising out of the design, manufacture, application, or use of the Product, shall be strictly limited to the purchase price of the Product.

If the defect is found within the warranty period, please fill in and mail or fax the sheet below to: ShinMaywa Industries, Ltd., \*\*Street Address, City, Country, FAX, etc. Upon receipt of the sheet you will be informed on how to return the defective product.

## Request for Warranty Repair

Purchaser:		
Address:		
Phone No.:	Fax No.:	
<b>Product Information</b>		
Model:	Serial No.:	
Output:	Voltage:	Phase:
Distributor:	Date of purchase:	
Month and year of starting operation:		
Month and year in which defect is discovered:		
Description of use		
Description of defect		

ShinMaywa Industries, Ltd

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