

## **KLEIN series**

0.5, 1 & 2 HP  
@ 3450 RPM



**IMPORTANT!** - Read all instructions in this manual before operating or servicing a pump.

Before installation, read the following instructions carefully. Failure to follow instruction and safety information could cause serious bodily injury, death and/or property damage. Each Barmesa product is carefully inspected to insure proper performance. Closely following these instructions will eliminate potential operating problems, assuring years of trouble-free service.

**⚠ DANGER** Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

**⚠ WARNING** Indicates an imminently hazardous situation which, if not avoided, MAY result in death or serious injury.

**⚠ CAUTION** Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.

**IMPORTANT! - Barmesa Pumps is not responsible for losses, injury or death resulting from failure to observe these safety precautions, misuse, abuse or misapplication of pumps or equipment.**



**ALL RETURNED PRODUCTS MUST BE CLEANED, SANITIZED, OR DECONTAMINATED PRIOR TO SHIPMENT, TO INSURE EMPLOYEES WILL NOT BE EXPOSED TO HEALTH HAZARDS IN HANDLING SAID MATERIAL. ALL APPLICABLE LAWS AND REGULATIONS SHALL APPLY.**

**⚠ WARNING** Installation, wiring, and junction connections must be in accordance with the National Electric Code and all applicable state and local codes. Requirements may vary depending on usage and location.

**⚠ WARNING** Installation and servicing is to be conducted by qualified personnel only.



Keep clear of suction and discharge openings. Do not insert fingers in pump with power connected; the rotating cutter and/or impeller can cause serious injury.



Always wear eye protection when working on pumps. Do not wear loose clothing that may become entangled in moving parts.



**⚠ DANGER** Pumps build up heat and pressure during operation. Allow time for pumps to cool before handling or servicing the pump or any accessory items associated with or near the pump.



**⚠ DANGER** This pump is not intended for use in swimming pools or water installations where there is human contact with pumped fluid.



**⚠ DANGER** Risk of electric shock. To reduce risk of electric shock, always disconnect pump from power source before handling any aspect of the pumping system. **Lock out power & tag.**

**⚠ WARNING** Do not use these pumps in water over 104 °F. Do not exceed manufactures recommended maximum performance, as this could cause the motor to overheat.



**⚠ DANGER** Do not lift, carry or hang pump by the electrical cables. Damage to the electrical cables can cause shock, burns or death. **Never** handle connected power cords with wet hands. Use appropriate lifting device.

**⚠ WARNING** Ground Fault Circuit Interrupter (GFCI) to be used with plug-in type power cord.



**⚠ DANGER** Failure to permanently ground the pump, motor and controls before connecting to power can cause shock, burns or death.



**⚠ DANGER** These pumps are not to be installed in locations classified as hazardous in accordance with the National Electric Code, ANSI/NFPA 70.

**⚠ WARNING** The Uniform Plumbing Code (UPC) states that sewage systems shall have an audio and visual alarm that signals a malfunction of the systems, that are required to reduce the potential for property damage.

**IMPORTANT! - Prior to installation, record Model Number, Serial, Amps, Voltage, Phase and HP from pump name plate for the future reference. Also record the Voltage and Current Readings at Startup:**

Model Number: \_\_\_\_\_

Serial: \_\_\_\_\_

Amps: \_\_\_\_\_ Volts: \_\_\_\_\_

Phase: \_\_\_\_\_ HP: \_\_\_\_\_

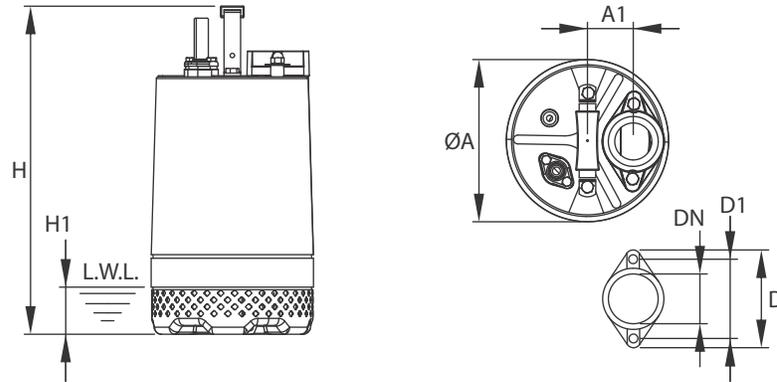
## ► Specifications

<b>DISCHARGE:</b>	2" (5.08 cm) NPT female, vertical, bolt on flange. Lost-wax casting 304 AISI stainless steel.
<b>LIQUID TEMPERATURE:</b>	104 °F (40 °C) .
<b>PUMP CASING:</b>	304 AISI stainless steel.
<b>MOTOR HOUSING:</b>	304 AISI stainless steel.
<b>OIL CHAMBER:</b>	304 AISI stainless steel.
<b>IMPELLER:</b>	8 vane, semi-open. 304 AISI stainless steel.
<b>SHAFT:</b>	304 AISI stainless steel.
<b>HARDWARE:</b>	304 AISI stainless steel.
<b>O-RINGS:</b>	Buna-N®.
<b>SEAL:</b>	Dual, mechanical, oil filled chamber. Upper part of carbon-ceramic, lower part of silicon carbide. Stainless steel hardware.
<b>CORD ENTRY:</b>	32 ft of neoprene cord , sealed against moisture.
<b>BEARINGS:</b>	Ball, single row, permanently oil lubricated.
<b>MOTOR:</b>	Dry type submersible motor, 1 & 3 phase, 115 & 230 V, 60 Hz, 3450 RPM. Insulation class B and IP68 protection class.
<b>SHAFT-SEAL</b>	
<b>LUBRICATION OIL:</b>	Turbine No. 32 ISOVG-32.
<b>HANDLE:</b>	304 AISI stainless steel and Buna-N®.

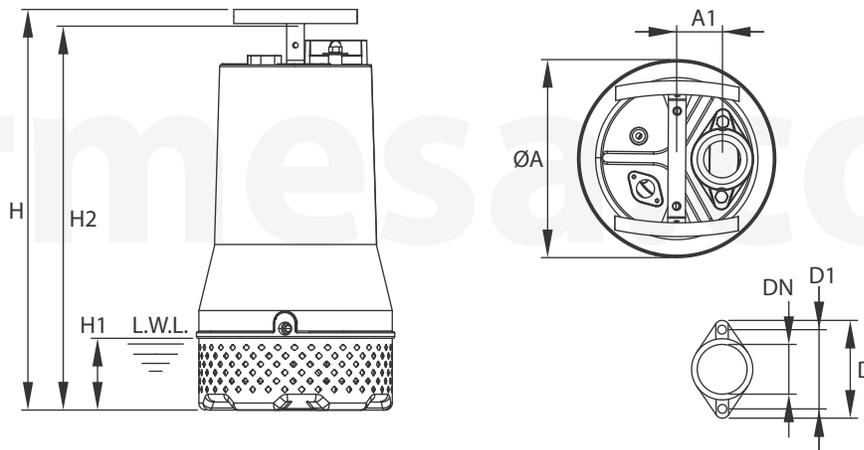
MODEL	PART No.	HP	VOLTS	PH	AMPS	RATED RPM	RATED		MAX.	
							ft	GPM	ft	GPM
2KLEIN-051	70090121	0.5	115	1	6.6	3450	26	30	33	61
2KLEIN-101	70090123	1	115	1	12	3450	33	55	62.4	82
2KLEIN-102	70090124	1	230	1	6	3450	33	55	62.4	82
2KLEIN-202	70090125	2	230	1	13	3450	43	80	65.5	153
2KLEIN-203	70090127	2	230	3	8	3450	43	80	65.5	153
2KLEIN-204	70090128	2	460	3	4	3450	43	80	65.5	153

## ► Dimensional drawings

### ► 0.5 - 1 HP



### ► 2 HP



HP	A	A1	D	D1	DN	H	H1	H2	WEIGHT (lb)
0.5	7.4	2.05	4.13	3.35	2"	13.58	2.05	-	31
1	7.4	2.05	4.13	3.35	2"	14.57	2.05	-	38
2	8.86	2.05	4.13	3.35	2"	17.91	3.19	17.17	55

- \* Weight without cord.
- Dimensions in inches.
- L.W.L.: lowest running water level.

# 1. Introduction

## Purpose of this manual

The purpose of this manual is to provide necessary information for:

- Installation
- Operation
- Maintenance



### CAUTION

Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.

### NOTICE

Save this manual for future reference, and keep it readily available at the location of the unit.

## 1.1 Safety terminology and symbols

### About safety messages

It is extremely important that you read, understand, and follow the safety messages and regulations carefully before handling the product. They are published to help prevent these hazards:

- Personal accidents and health problems
- Damage to the product
- Product malfunction

### Hazard levels

Hazard level	Indication
 <b>DANGER</b>	A hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	A hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	A hazardous situation which, if not avoided, could result in minor or moderate injury.
<b>NOTICE</b>	<ul style="list-style-type: none"><li>• A potential situation which, if not avoided, could result in undesirable conditions.</li><li>• A practice not related to personal injury.</li></ul>

### Hazard categories

Hazard categories can either fall under Hazard levels or let specific symbols replace the ordinary hazard level symbols. Electrical hazards are indicated by the following specific symbol:



### ELECTRICAL HAZARD

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## 1.2 Product warranty

### Coverage

BARMESA undertakes to remedy the following faults in products sold by the manufacturer under the following conditions:

- The faults are due to defects in design, materials or workmanship.
- The faults are reported to the manufacturer representative within the warranty period.
- The product is used only under the conditions described in this manual.
- The monitoring equipment incorporated in the product is correctly connected and in use.
- All service and repair work is done by personnel authorized by the manufacturer.
- Genuine manufacturer parts are used.

### Limitations

The warranty does not cover faults caused by the following:

- Deficient maintenance.
- Improper installation.
- Modifications or changes to the product and installation carried out without consulting the manufacturer.
- Incorrectly executed repair work.
- Normal wear and tear.

BARMESA assumes no liability for the following:

- Bodily injuries.
- Material damages.
- Economic losses.

### Warranty claim

BARMESA products are high-quality products with expected reliable operation and long life. However, should the need arise for a warranty claim, please contact a BARMESA representative.

### Spare parts

We guarantee that spare parts will be available for 10 years after the manufacture of this product has been discontinued.



#### **NOTICE**

When purchasing pump parts, please provide product code showed at the nameplate.

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## 1.3 Safety



### WARNING

- The operator must be aware of safety precautions to prevent physical injury.
  - Any pressure-containing device can explode, rupture or discharge its contents if it is over-pressurized. Take all necessary measures to avoid over-pressurization.
  - Operating, installing or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment. This includes any modification to the equipment or use of parts not provided by the manufacturer. If there is a question regarding the intended use of the equipment, please contact a BARMESA representative before proceeding.
  - This manual clearly identifies accepted methods for disassembling units. These methods must be adhered to. Trapped liquid can rapidly expand and result in a violent explosion and injury. Never apply heat to impellers, propellers or their retaining devices to aid in their removal.
  - Do not change the service application without the approval of an authorized BARMESA representative.
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### CAUTION

You must observe the instructions contained in this manual. Failure to do so could result in physical injury, damage, or delays.

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## 1.4 User safety

### General safety rules

- Always keep the work area clean.
  - Pay attention to the risks presented by gas and vapors in the work area.
  - Avoid all electrical dangers. Pay attention to the risks of electric shock or arc flash hazards.
  - Always bear in mind the risk of drowning, electrical accidents, and burn injuries.
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### NOTICE

Never operate a unit unless safety devices are installed. Also see specific information about safety devices in other chapters of this manual.

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### Electrical connections

These must be made by certified electricians in compliance with all international, national, state, and local regulations. For more information about requirements, see sections dealing specifically with electrical connections.

## 1.5 Environmental safety

### The work area

Always keep the station clean to avoid and/or discover emissions.

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## Waste and emissions regulations

Observe these safety regulations regarding waste and emissions:

- Dispose appropriately of all waste.
- Handle and dispose of the processed liquid in compliance with applicable environmental regulations.
- Clean up all spills in accordance with safety and environmental procedures.
- Report all environmental emissions to the appropriate authorities.

## Electrical installation

For electrical installation recycling requirements, consult your local electric utility.

## Recycling guidelines

Always recycle according to the guidelines listed below:

- Follow local laws and regulations regarding recycling if the unit or parts are accepted by an authorized recycling company.
- If the first guideline is not applicable, then return the unit or parts to the nearest BARMESA representative.

## 2. Prior to operation

Check the following points upon receipt of your pump.

- Is it the pump you ordered? Check nameplate. It is especially important that you check whether the pump is to be used with 50 or 60 Hz.
- Has any damage occurred during shipment? Are any bolts or nuts loose?
- Have all necessary accessories been supplied? For a list of standard accessories see drawing and parts list.

## 3. Installation

Check the following before beginning installation:

### 3.1 Insulation resistance measurement

With the motor and cable (excluding the power supply cable) immersed in water, use a megger to measure the insulation resistance between ground and each phase of the motor, and again between each phase of the motor.

The megger should indicate an insulation resistance of **not less than 20 megaohms**. While making the measurement, keep the power supply cable off the ground.



### NOTICE

We recommend that an auxiliary pump be kept on hand in case of emergency.

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## 3.2 Installation



### WARNING

Under no circumstances should cable be pulled while the pump is being transported or installed.

### Attach a chain or rope to the grip and install the pump.

This pump must not be installed on its side or operated a dry condition. Ensure that it is installed upright on a secure base.

### Install the pump at a location in the tank where there is the least turbulence.

If there is a flow of liquid inside the tank, support the piping where appropriate. Install piping so that air will not be entrapped. If piping must be installed in such a way that air pockets are unavoidable, install an air release valve wherever such air pockets are most likely to develop.

### Do not permit end of discharge piping to be submerged, as backflow will result when the pump is shut down.

Non-automatic pumps do not have an automatic operating system. Do not operate the pump for a long time with the water level near the minimum operating level (L.W.L.) as shown in Fig.1, as the automatic cut-off switch incorporated inside the motor will be activated. To avoid dry operation, install an automatic operating system so that this will not happen, as shown in Fig.2, and maintain a safe operating water level.

Figure 1

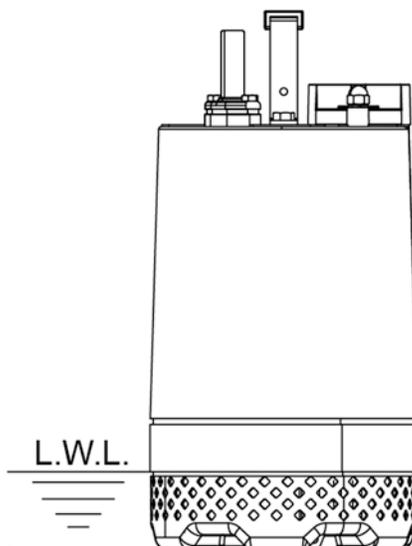
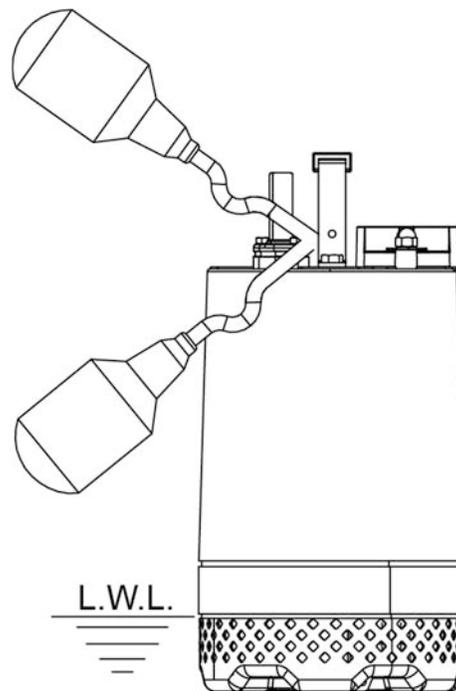


Figure 2



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## 4. Electrical wiring

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### WARNING

- Electrical shock hazard. Check that the cable and cable entry have not been damaged during transport before installing the pump.
  - Never let the end of the cable touch water.
  - Use short circuit breakers to prevent danger of electrical shock.
  - Never start the pump while it is suspended, as the pump may jerk and cause serious accident involving injury.
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### 4.1 Wiring

1. Wire as indicated for the appropriate start system as shown in Fig-3 & 4 for single phase version and Fig-5 for three phase.
2. Loose connections will stop the pump. Make sure all electrical connections are secure.
3. For three phase motors, operate the pump for a short time (1 or 2 seconds) to verify the impeller's direction of rotation: if its recoil is in counterclockwise direction, then it is correct. If not please switch two of the three power cords to correct the rotation of direction of the impeller.
4. Make sure to check the pump's direction of rotation with the pump exposed to the atmosphere.
5. Operating the pump with reversed rotation while in submerged condition under water will most likely damage the pump, which may lead to leakage and electrical shock.

### 4.2 Cable

1. If the cable is extended, do not immerse the splice in water.
2. Do not pull the cable.
3. Install the cable so that it will not overheat. Overheating is caused by coiling the cable and exposing it to direct sunlight.

### 4.3 Grounding



### ELECTRICAL HAZARD

- You must ground all electrical equipment. This applies to the pump equipment, the driver and any monitoring equipment. Test the ground lead to verify that it is connected correctly.
  - If the motor cable is jerked loose by mistake, the ground conductor should be the last conductor to come loose from its terminal. Make sure that the ground conductor is longer than the phase conductors. This applies to both ends of the motor cable.
  - Risk of electrical shock or burn. You must connect an additional ground fault protection device to the grounded connectors if persons are likely to come into physical contact with the pump or pumped liquids.
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### WARNING

To prevent damaging the pump and causing current leakage, which may lead to electrical shock, be sure to install the ground wire securely.

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### CAUTION

To prevent electrical shock caused by improper grounding, do not connect the ground wire to a gas pipe, water pipe, lightning rod, or telephone ground wire.

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Electric circuit diagrams

Figure 3

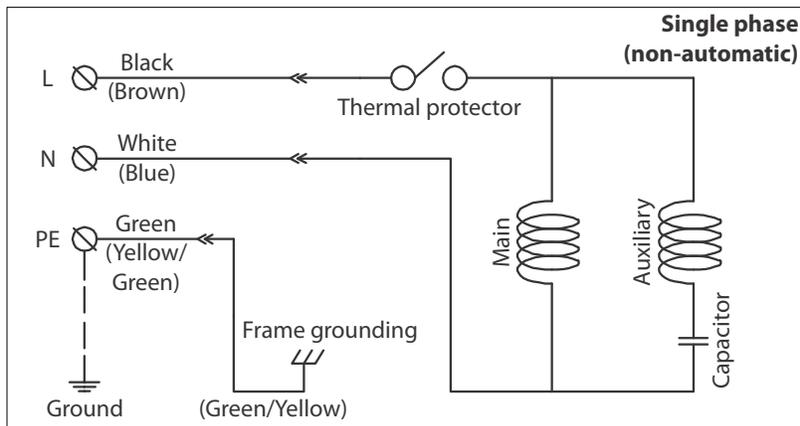


Figure 4

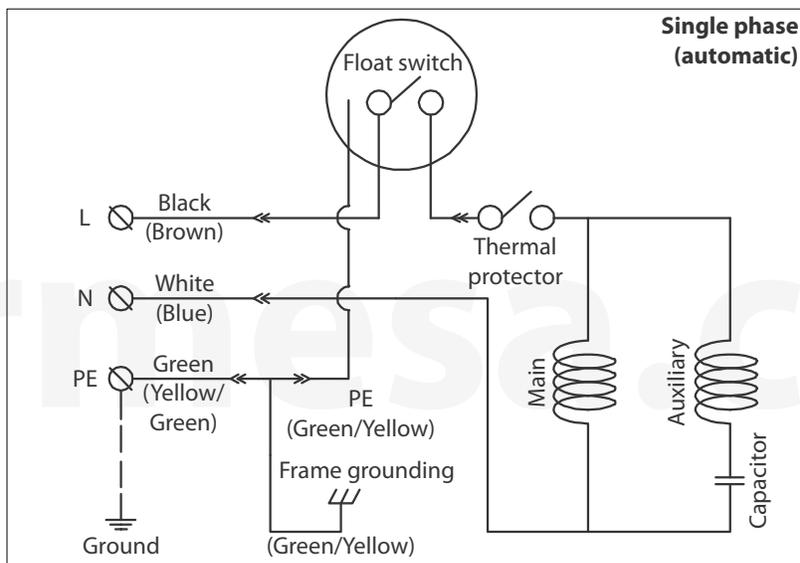
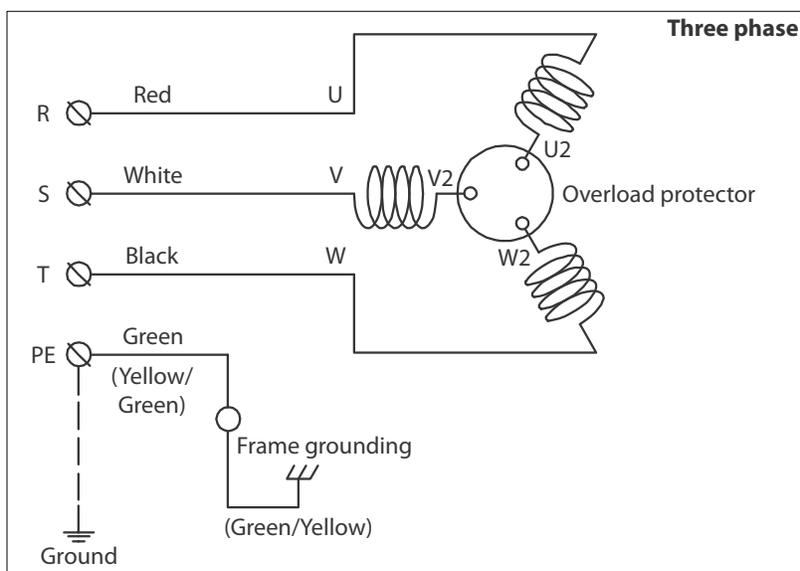


Figure 5



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## 5. Operation

### 5.1 Before starting the pump

1. After completing installation, measure the insulation resistance again as described in **Installation** section.
2. If the pump is operated continuously for an extended period of time in a dry condition or at the lowest water level, the motor protector will be activated. Constant repetition of this action will shorten pump service life. Do not start the pump again in such a situation until after the motor has completely cooled.

### 5.2 Operation test

1. Turn the operating switch on and off a couple of times to check for normal pump start.

## 6. Maintenance

Check pressure, output, voltage, current and other specifications. Unusual readings may indicate a pump failure. Refer to **Troubleshooting** and correct as soon as possible.

### 6.1 Daily inspections

Check current and ammeter fluctuation daily. If ammeter fluctuation is high, even though within the limits of pump rating, foreign matter may be clogging the pump. If the discharged amount of liquid suddenly falls, foreign matter may be blocking the inlet suction.

### 6.2 Regular inspections

#### a. Monthly inspections

Measure the insulation resistance. The value should be more than 1 megaohm. If resistance starts to fall rapidly even with an initial indication of over 1 MΩ, this may be an indication of a pump failure and repair work is required.

#### b. Annual inspections

To prolong the service life of the mechanical seal by replacing the oil in the mechanical seal chamber once a year. Water mixed the oil or cloudy textures are indications of a defective mechanical seal requiring replacement. When replacing the oil, lay the pump on its side with filler plug on top. Fill suitable amount lubricating oil No. 32.

#### c. Inspections at 3-5 year intervals

Conduct an overhaul of the pump. These intervals will help to avoid possible failures in the future.

### 6.3 Parts need to be replaced

Replace the appropriate part when the following conditions appear:

REPLACEABLE PART	Mechanical seal	Oil filler plug gasket	Lubricating oil	O-ring
REPLACEMENT GUIDE	Whenever oil in mechanical seal chamber is clouded	Whenever oil is replaced or inspected	Whenever clouded or dirty	Whenever pump is overhauled
FREQUENCY	Annually	Every 6 months	Every 6 months	Annually

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## 7. Disassembly and reassembly procedure

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### **DANGER**

Disconnect and lock out electrical power before installing or servicing the unit.

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### **WARNING**

A worn impeller and/or pump housing can have very sharp edges. Wear protective gloves.

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### **CAUTION**

Make sure to perform a trial operation when starting the pump after a reassembly. If the pump was assembled improperly, it may lead to abnormal operation, electrical shock or water damage.

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### 7.1 Disassembly

When disassembling the pump, have a piece of cardboard or wooden board ready to place the different parts on as you work. Do not pile parts on top of each other, they should be laid out neatly in rows.

The "O" ring and gasket cannot be used again once they are removed. Have replacement parts ready.

Disassemble in the following order, referring to the exploded view drawings.

1. Remove pump casing bolts, raise the motor section and remove pump casing.
2. Remove shaft head bolt and impeller.
3. Remove oil filler plug and drain lubricating oil.
4. Remove intermediate casing bolts and oil chamber. Remember that any lubricating oil remaining in the mechanical seal chamber will flow out.
5. Carefully remove mechanical seal, beware of not to scratch sliding surface of motor shaft.

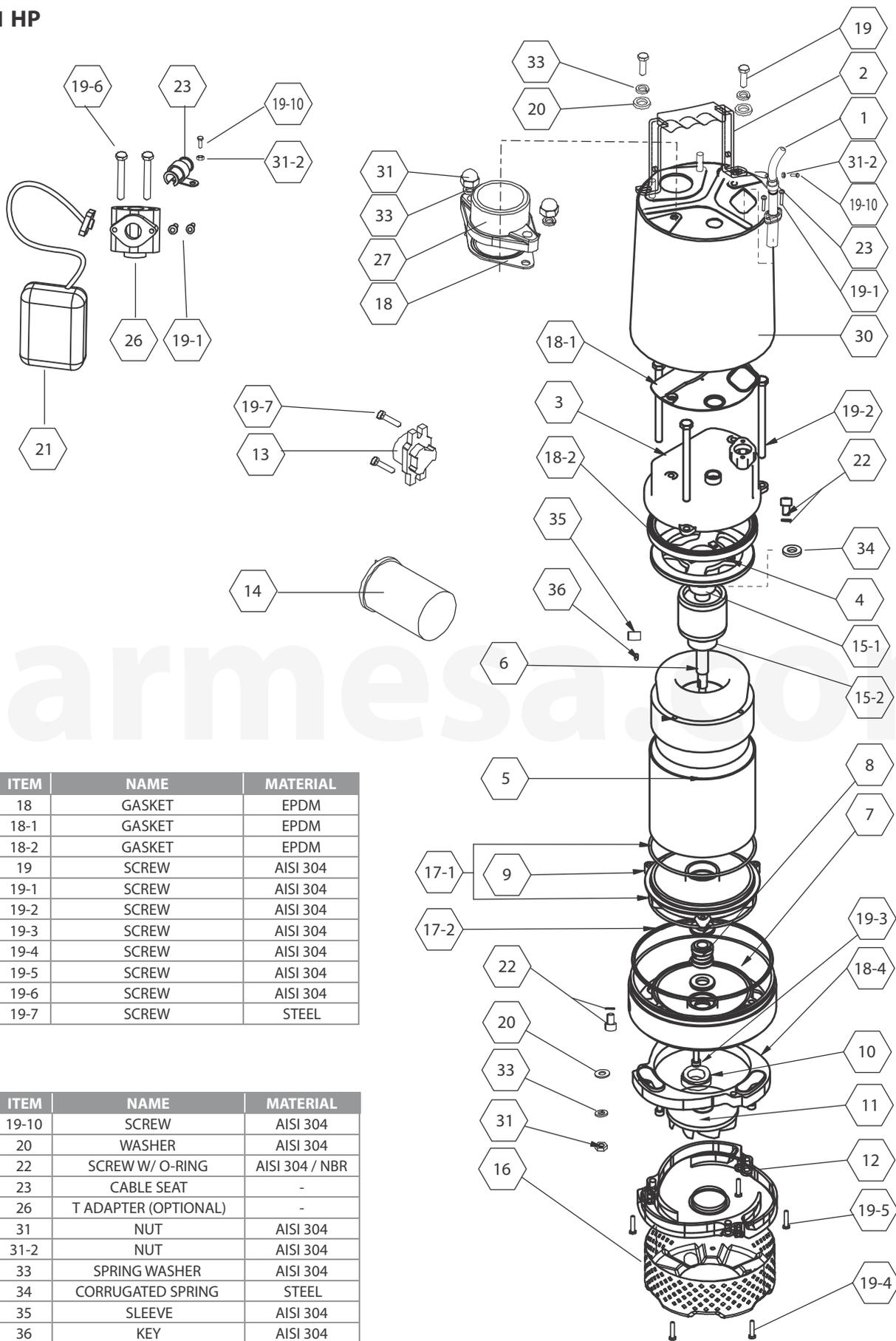
### 7.2 Assembly

**Re-assemble in reverse order of disassembly.** Be careful of the following points:

- a. During re-assembly, rotate the impeller by hand and check for smooth rotation. If rotation is not smooth, perform steps 3 through 5 again.
- b. Upon completion of re-assembly, rotate the impeller by hand from the suction inlet and check that it rotates smoothly without touching the suction cover before operating the pump.

**Please order "O" rings, packing, shaft seals and other parts from your dealer.**

► 0.5 - 1 HP



ITEM	NAME	MATERIAL
18	GASKET	EPDM
18-1	GASKET	EPDM
18-2	GASKET	EPDM
19	SCREW	AISI 304
19-1	SCREW	AISI 304
19-2	SCREW	AISI 304
19-3	SCREW	AISI 304
19-4	SCREW	AISI 304
19-5	SCREW	AISI 304
19-6	SCREW	AISI 304
19-7	SCREW	STEEL

ITEM	NAME	MATERIAL
19-10	SCREW	AISI 304
20	WASHER	AISI 304
22	SCREW W/ O-RING	AISI 304 / NBR
23	CABLE SEAT	-
26	T ADAPTER (OPTIONAL)	-
31	NUT	AISI 304
31-2	NUT	AISI 304
33	SPRING WASHER	AISI 304
34	CORRUGATED SPRING	STEEL
35	SLEEVE	AISI 304
36	KEY	AISI 304

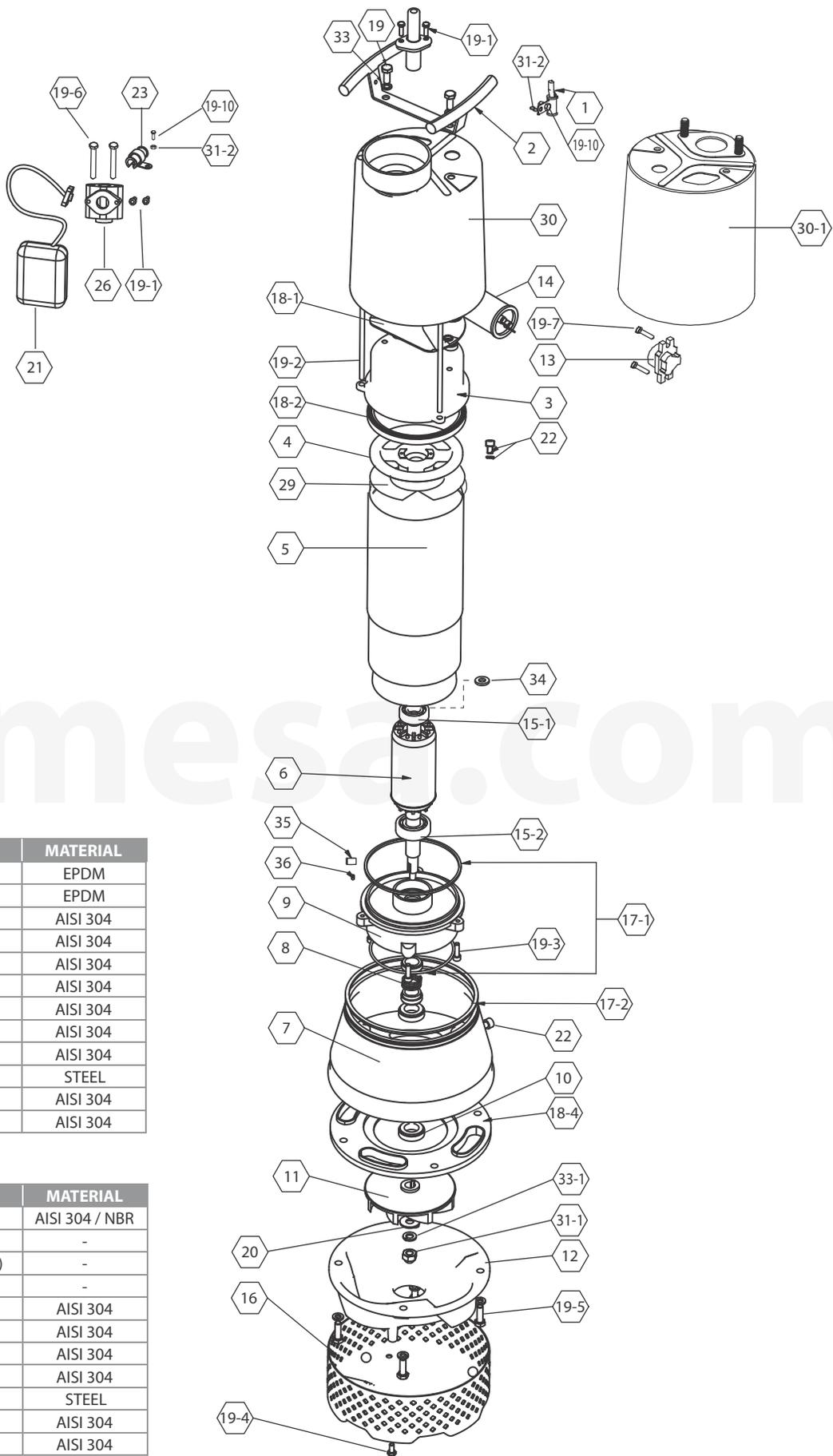
► 0.5 - 1 HP

ITEM	NAME	MATERIAL	PHOTO
1	CABLE	H07RN-F/ SJTOW/ STOW	
2	HANDLE	AISI 304 + NBR	
3	MOTOR COVER	AISI 304	
4	BRACKET	EN-GJL-200	
5	MOTOR HOUSING + STATOR	AISI 304	
6	SHAFT WITH ROTOR	AISI 304	
7	OIL CHAMBER	AISI 304	
8	MECHANICAL SEAL	CA/CE + SIC/SIC	
9	SEAL HOUSING	AISI 304	
10	LIP SEAL	NBR	
11	IMPELLER	AISI 304	

ITEM	NAME	MATERIAL	PHOTO
12	PUMP CASING	AISI 304	
13	PROTECTOR (1 PHASE)	KLIXON	 (OPTIONAL)
13	PROTECTOR (3 PHASE)	KLIXON	
14	CAPACITOR	-	
15-1 15-2	BEARINGS	-	
16	STRAINER	AISI 304	
17-1 17-2	O-RING	NBR	
18-4	VOLUTE LINER	EPDM	
21	FLOAT SWITCH (OPTIONAL)	-	
27	FLANGE	AISI 304	
30	OUTER HOUSING	AISI 304	

For repair part please supply: Model Number and Serial as shown on Name Plate, and Part Description and Part Number as shown on Parts List.

► 2 HP

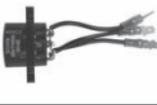
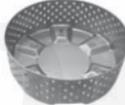


ITEM	NAME	MATERIAL
18-1	GASKET	EPDM
18-2	GASKET	EPDM
19	SCREW	AISI 304
19-1	SCREW	AISI 304
19-2	SCREW	AISI 304
19-3	SCREW	AISI 304
19-4	SCREW	AISI 304
19-5	SCREW	AISI 304
19-6	SCREW	AISI 304
19-7	SCREW	STEEL
19-10	SCREW	AISI 304
20	WASHER	AISI 304

ITEM	NAME	MATERIAL
22	SCREW W/ O-RING	AISI 304 / NBR
23	CABLE SEAT	-
26	T ADAPTER (OPTIONAL)	-
29	INSULATION PAPER	-
31-1	NUT	AISI 304
31-2	NUT	AISI 304
33	SPRING WASHER	AISI 304
33-1	SPRING WASHER	AISI 304
34	CORRUGATED SPRING	STEEL
35	SLEEVE	AISI 304
36	KEY	AISI 304

► 2 HP

ITEM	NAME	MATERIAL	PHOTO
1	CABLE	H07RN-F/ SJTOW/ STOW	
2	HANDLE	AISI 304	
3	MOTOR COVER	AISI 304	
4	BRACKET	EN-GJL-200	
5	MOTOR HOUSING + STATOR	AISI 304	
6	SHAFT WITH ROTOR	AISI 304	
7	OIL CHAMBER	AISI 304	
8	MECHANICAL SEAL	CA/CE + SIC/SIC	
9	SEAL HOUSING	AISI 304	
10	LIP SEAL	NBR	
11	IMPELLER	AISI 304	

ITEM	NAME	MATERIAL	PHOTO
12	PUMP CASING	AISI 304	
13	PROTECTOR (1 PHASE)	KLIXON	 (OPTIONAL)
13	PROTECTOR (3 PHASE)	KLIXON	
14	CAPACITOR	-	
15-1 15-2	BEARINGS	-	
16	STRAINER	AISI 304	
17-1 17-2	O-RING	NBR	
18-4	VOLUTE LINER	EPDM	
21	FLOAT SWITCH (OPTIONAL)	-	
30	OUTER HOUSING 2"	AISI 304	
30	OUTER HOUSING 3"	AISI 304	

For repair part please supply: Model Number and Serial as shown on Name Plate, and Part Description and Part Number as shown on Parts List.

## 8. Troubleshooting



**Risk of electric shock. Always disconnect the pump from the power source before handling inspections or repairs.**

Symptom	Possible Cause(s)	Corrective Action
Does not start. Starts, but immediately stops.	<ol style="list-style-type: none"> <li>(1) Power failure</li> <li>(2) Large discrepancy between power source and voltage</li> <li>(3) Significant drop in voltage</li> <li>(4) Motor phase malfunction</li> <li>(5) Electric circuit connection faulty</li> <li>(6) Faulty connection of control circuit</li> <li>(7) Fuses is blown</li> <li>(8) Faulty magnetic switch</li> <li>(9) Water is not at level indicated by float</li> <li>(10) Float is not in appropriate level</li> <li>(11) Float is not effective</li> <li>(12) Short circuit breaker is functioning</li> <li>(13) Foreign matter clogging pump</li> <li>(14) Motor burned out</li> <li>(15) Motor bearing broken</li> </ol>	<ol style="list-style-type: none"> <li>(1)~(3) Contact electric power company and devise counter-measures</li> <li>(4) Inspect electric circuit</li> <li>(5) Correct wiring</li> <li>(6) Inspect connections and magnetic coil</li> <li>(7) Check circuit then replace fuse</li> <li>(8) Replace with correct one</li> <li>(9) Raise water level</li> <li>(10) Adjust the position of float</li> <li>(11) Repair or replace</li> <li>(12) Repair location of short circuit</li> <li>(13) Remove foreign matter</li> <li>(14) Repair or replace</li> <li>(15) Repair or replace</li> </ol>
Operates, but stops after a while.	<ol style="list-style-type: none"> <li>(1) Prolonged dry operation has activated motor protector and caused pump to stop</li> <li>(2) High liquid temperature has activated motor protector and caused pump to stop</li> <li>(3) Reverse rotation</li> </ol>	<ol style="list-style-type: none"> <li>(1) Raise water level to C.W.L.</li> <li>(2) Lower liquid temperature</li> <li>(3) Correct rotation</li> </ol>
Does not pump. Inadequate volume.	<ol style="list-style-type: none"> <li>(1) Reverse rotation</li> <li>(2) Significant drop in voltage</li> <li>(3) Operating a 60 Hz pump with 50 Hz</li> <li>(4) Discharge head is high</li> <li>(5) Large piping loss</li> <li>(6) Low operating water level causes air suction</li> <li>(7) Leaking from discharge piping</li> <li>(8) Clogging of discharge piping</li> <li>(9) Foreign matter in suction inlet</li> <li>(10) Foreign matter clogging pump</li> <li>(11) Worn impeller</li> </ol>	<ol style="list-style-type: none"> <li>(1) Correct rotation (see Operation)</li> <li>(2) Contact electric power company</li> <li>(3) Check nameplate</li> <li>(4) Recalculate and adjust</li> <li>(5) Recalculate and adjust</li> <li>(6) Raise water level or lower pump</li> <li>(7) Inspect, repair</li> <li>(8) Remove foreign matter</li> <li>(9) Remove foreign matter</li> <li>(10) Remove foreign matter</li> <li>(11) Replace impeller</li> </ol>
Over current.	<ol style="list-style-type: none"> <li>(1) Unbalanced current and voltage</li> <li>(2) Significant voltage drop</li> <li>(3) Motor phase malfunction</li> <li>(4) Operating 50 Hz pump on 60 Hz</li> <li>(5) Reverse rotation</li> <li>(6) Low head. Excessive volume of water</li> <li>(7) Foreign matter clogging pump</li> <li>(8) Motor bearing is worn out or damaged</li> </ol>	<ol style="list-style-type: none"> <li>(1) Contact electric power company</li> <li>(2) Contact electric power company and devise counter-measure</li> <li>(3) Inspect connections and magnetic switch</li> <li>(4) Check nameplate</li> <li>(5) Correct rotation (see Operation 2)</li> <li>(6) Replace pump with high head pump</li> <li>(7) Remove foreign matter</li> <li>(8) Replace bearing</li> </ol>
Pump vibrates; excessive operating noise.	<ol style="list-style-type: none"> <li>(1) Reverse rotation</li> <li>(2) Pump clogged with foreign matter</li> <li>(3) Piping resonates</li> <li>(4) Strainer is closed too far</li> </ol>	<ol style="list-style-type: none"> <li>(1) Correct rotation</li> <li>(2) Disassemble and remove foreign matter</li> <li>(3) Improve piping</li> <li>(4) Open strainer</li> </ol>

**NOTE:** Barmesa Pumps assumes no responsibility for damage or injury due to disassembly in the field. Disassembly of the pumps or supplied accessories other than at Barmesa Pumps or its authorized service centers, automatically voids warranty.

# BARMESA PUMPS FACTORY WARRANTY

Barmesa Pumps warrants that products of our manufacture will be free of defects in material and workmanship under normal use and service for 18 months from date of manufacture or 12 months from installation date whichever occurs first. This warranty gives you specific legal rights, which vary from state to state.

This warranty is a limited warranty, and no warranty related claims of any nature whatsoever shall be made against Barmesa Pumps, until the ultimate consumer or his/her successor notifies us in writing of the defect and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station as instructed by Barmesa Pumps. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE. PRODUCT SHALL BE EITHER REPLACED OR REPAIRED AT THE ELECTION OF BARMESA PUMPS. Guarantees relating to performance specifications provided in addition to the foregoing material and workmanship warranties on a product manufactured by Barmesa Pumps, if any, are subject to possible factory testing. Any additional guarantees, in the nature of certified performance specifications or time frame must be in writing and such writing must be signed by our authorized factory manager at time of order placement and/or at time of quotation. Due to inaccuracies in field testing and should a conflict arises between the results of field testing conducted by or for the user, Barmesa Pumps reserves the right to have the product returned to our factory for additional testing.

This warranty shall not apply when damage is caused by (1) improper installation, (2) improper voltage, (3) lightning, (4) excessive sand or other abrasive material, (5) corrosion build-up due to excessive chemical content or (6) uncontrollable acts of god. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective pumps, parts or systems. Barmesa Pumps will not accept charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and/or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO TRAVEL EXPENSES, CONTRACTOR FEES, UNAUTHORIZED REPAIR SHOP EXPENSES, LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND/OR WORKMANSHIP AND/OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY. No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.

## IMPORTANT!

If you have a claim under the provision of the warranty, contact Barmesa Pumps or your authorized Barmesa Pumps Distributor:  
[warranty@barmesapumps.com](mailto:warranty@barmesapumps.com)  
[www.barmesapumps.com](http://www.barmesapumps.com)

