TSURUMI PUMP

KRDX Series

Submersible Explosion-Proof Slurry Pumps

certified with

ATEX " Ⓔx I M2 Ex db I Mb (0ºC ≤ Ta ≤ +40ºC)"

OPERATION MANUAL

INTRODUCTION

Thank you for choosing our KRDX series of submersible pumps for dewatering purposes.

This manual will instruct you on the general usage of this product and will provide details and precautions, in order for you to be able to use this pump under a secure and safe conditions.

To be able to use this product to its fullest capacity and performance it is of utmost importance to read this manual carefully. In case of defects or accidents, TSURUMI and its distributors cannot be held responsible for any damages. We advise you to keep this manual with the pump unit, so that it can be consulted in case of doubt on the usage.

In case this product is to be rented to a third party, please kindly ensure that this manual is supplied together with the product and that the user has read this manual before putting this product into operation.

Should this manual be lost or destroyed, please kindly contact your nearest TSURUMI distributor, who will be able to supply you a back-up copy of the manual.

This manual has been prepared with care, however should you find any discrepancies or mistakes in the manual or have any questions regarding the operation of the product, please kindly contact your nearest TSURUMI dealer immediately.

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TSURUMI MANUFACTURING CO., LTD.
16-40, 4-Chome, Tsurumi, Tsurumi-Ku, Osaka, 538-8585, Japan
Phone: 81-6-6911-7271

TSURUMI PUMP TAIWAN CO., LTD.
No.118, Lane 1191, Donglong St. Pingzhen Dist., Taoyuan City 32466, Taiwan (R.O.C.)
Phone: 886-3-450-1335

Tsurumi (Europe) GmbH
Wahlerstraße 10, 40472 Düsseldorf, Germany
Phone: 49-211-4179373 Email: sales@tsurumi.eu www.tsurumi.eu

Special Conditions for Safety Use:

1. Never lift of handle the pump by pulling the power cable during test-running, installation, and handling of the motor. The action may result in a short circuit, electric shock, or fire.

2. When installing and operating the pump, make sure the pump casing is fully submerged in the water.

3. Pipes and hoses are not standard accessories delivered together with this pump, so the end user need to install the pipes and hoses according to clause "Installation" which is specified in this manual.

4. The external earthing shall be connected to appropriate devices or control panel separately. However, when moving pump during operation, it is important that the power cable shall never be stretched.

5. Please do not extend the power cable, unless this extension is carried out by a certified Tsurumi distributor.

6. Do not use the pump in any other application or condition than specified in this manual.

7. Do not run the motor without cooling by pumped water.

8. The voltage may vary a maximum of ± 5% of the nominal voltage mentioned on the nameplate.

9. The pump can only be used in an environment with a water temperature of 0°C and 40°C.

10. The pump can only be used for pumping water. Do not use for pumping liquids such as oil, sea-water or organic solvents.

11. Do not run the motor when the motor with the cable assembly is partially or completely dismantled.

Warranty:

TSURUMI will provide warranty on its products only if the following conditions have been met:

- The defect is a direct result of a fault in design, material or assembly.
- The defect has been reported to TSURUMI or a certified TSURUMI dealer within the warranty period (which is 1 year after the date of purchase).
- The products has been used in accordance to the conditions stated in the user manual and has been used in applications for which the products was intended by TSURUMI.
- All modifications and repairs have been carried out by TSURUMI or a certified TSURUMI' dealer.
- That the pumps have been serviced and repaired with genuine TSURUMI' spare parts.

TSURUMI warranty does not cover faults which can be retraced to lack of maintenance, wrong installation, inadequate repairs or faults which are to be considered normal wear and tear of parts.

TSURUMI cannot be held responsible for physical damage to persons, material or economic damages in whatever form or size.

The KRDX series pumps are explosion proof pumps. The pumps are built with other parts as pumps to put into use. Thus, the pump parts (including external parts) must meet the relevant mechanical standards.

Application and Technical Data:

Application:

KRDX explosion proof pumps are designed for heavy duty dewatering in hazardous areas in which explosion atmosphere could present, such as mining, construction, dredging, and others.

Technical data:

Product name:	Submersible Pump				
Pump model	KRDX33.7-50	KRDX35.5H-50	KRDX45.5-50	KRDX47.5H-50	KRDX47.5-50
Phase:	3				
Time rating:	CONT. (with cooling by pumped water)				
Rated Input Voltage:	380 ~ 1000 Vac				
Rated Output:	3.7kW	5.5kW		7.5kW	
Insulation:	H (standard) or F (option for 380~690V)				
Frequency:	50 Hz				
Rated full load speed:	1450 min^{-1}				
Certificate No.:	ATEX: TÜV 19 ATEX 8398 X				
Certification Marking:	ATEX: Ex I M2 Ex db I Mb				
Ambient temperature:	0 ~ 40 °C				
Approval of the production Quality assurance:	QAN certificate number: 01 220 1909024				
Fasteners:	All external fasteners stainless steel				

Applicable Standards related to Explosion-proof:

EN IEC 60079-0:2018 Explosive atmospheres - Part 0:
Equipment - General requirements

EN 60079-1:2014 Explosive atmospheres - Part 1:
Equipment protection by flame proof enclosures "d"

The pumps are designed, constructed and tested in accordance to EN IEC 60079-0 and EN 60079-1 standards.

EN 60079-14:2014 Explosive atmospheres - Part 14:
Electrical installations design, selection and erection

This standard contains the specific requirements for the design, selection and erection of electrical installations in hazardous areas associated with explosive atmospheres. The pumps must be correctly installed based on principles from EN 60079-14 to reduce explosion risk from flammable materials.

EN 60079-17:2014 Explosive atmosphere - Part 17:
Electrical installations, inspection and maintenance

This standard covers the aspects of the inspection and maintenance of electrical installations within hazardous areas only. The pumps, when installed in hazardous areas, require regular periodic inspection and continuous supervision by skilled personnel in accordance to EN 60079-17 standards.

1 BE SURE TO READ FOR YOUR SAFETY

Be sure to thoroughly read and understand the SAFETY PRECAUTIONS given in this section before using the equipment in order to operate the equipment correctly.
The precautionary measures described in this section are intended to prevent danger or damage to you or to others. The contents of this manual that could possibly be performed improperly are classified into two categories: ⚠**WARNING**, and ⚠**CAUTION**. The categories indicate the extent of possible damage or the urgency of the precaution. Note however, that what is included under ⚠**CAUTION** may at times lead to a more serious problem. In either case, the categories pertain to safety-related items, and as such, must be observed carefully.

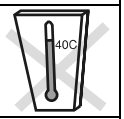
- ⚠ **WARNING** : Operating the equipment improperly by failing to observe this precaution may possibly lead to death or injury to humans.
- ⚠ **CAUTION** : Operating the equipment improperly by failing to observe this precaution may possibly cause injury to humans and other physical damage.
- **NOTE** : Gives information that does not fall in the WARNING or CAUTION categories.
- **Explanation of Symbols** :

: The △mark indicates a WARNING or CAUTION item. The symbol inside the mark describes the precaution in more detail ("electrical shock", in the case of the example on the left).

: The ⃠mark indicates a prohibited action. The symbol inside the mark, or a notation in the vicinity of the mark describes the precaution in more detail ("disassembly prohibited", in the case of the example on the left).

: The ●mark indicates an action that must be taken, or instructs how to perform a task. The symbol inside the mark describes the precaution in more detail ("provide ground work", in the case of the examle on the left).

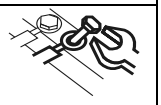
PRECAUTIONS TO THE PRODUCT SPECIFICATIONS

⚠**WARNING**	
⃠	● Do not operate the product under any conditions other than those for which it is specified. **Failure to observe the precaution can lead to electrical leakage, electrical shock, fire, explosion, water overflow or other problems.**
⃠	● Do not operate the product under any voltage other than described on the nameplate with the voltage tolerance limit within ±5%. If it is operated with a generator, it is strongly suggested not to operate other equipment with the same generator. **Failure to observe this may cause malfunction and breakdown of the product, which may lead to electrical leakage, electrical shock, or explosion.**
⃠	● Do not use the product in a liquid other than water. **Any explosive/flammable/highly-corrosive liquids other than water, such as gasoline, oil, salt water, or organic solvents will damage the product, which may lead to electrical leakage, electrical shock, or explosion.**
⃠	● Do not use the product for hot or warm liquid over 40°C, as **doing so will damage the product, which may lead to electrical leakage, electrical shock, or explosion.** 
●	● Be sure to install suitable Ground-Check control device and circuit on the control panel. The miniature thermal protectors built-in this product are connected with the diode in series into the Ground-Check circuit in the motor. **If the control device and circuit are not installed on the control panel, the Ground-Check protection and the thermal protection do not work, so it can lead to electrical shock or explosion by cable damage, and it can also lead to burn of the product, fire, or explosion by motor overheating.**
⃠	● Do not operate the pump blow the Continuous running Water Level (C.W.L.) on which the pump casing is fully submerged. Do not run motor without cooling by pumped water. **Failure to observe these conditions may result in damage to the pump, electrical leakage, electrical shock, or explosion.**
⃠	● The maximum immersion depth of KRDX series shown on the nameplate is defined by the assembled cable length minus 3m. Do not use at greater than the water pressure 0.3MPa (3kgf/cm^2) even if the cable length is enough, **which can damage the pump resulting in electrical leakage, electrical shock, or explosion.**

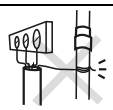
PRECAUTIONS DURING TRANSPORT AND INSTALLATION

⚠WARNING

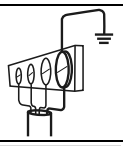
- When transporting the product, pay close attention to its center of gravity and weight. Use an appropriate lifting equipment to lift the unit. **Improper lifting may result in the fall of the product which could cause damage of the product or human injury.**
- Install the product properly in accordance with this instruction manual. **Improper installation may result in electrical leakage, electrical shock, fire, water leakage, injury, or explosion.**
- Use only in fully assembled state. **The flameproof enclosure is not allowed to be open for installation.**
- Electrical installations should be carried out under the supervision of a certified electrical engineer and according to the local rules and regulations. **Installations prepared by an uncertified person, may be against the law and can be very dangerous. Incorrect wiring can lead to electrical leakage, electrical shock, fire, or explosion.**



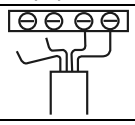
- Be sure to provide a ground wire securely. Do not connect the ground wire to a gas pipe, water pipe, lightening rod, or telephone ground wire. **Improper grounding could cause electrical shock or explosion.**



- The grounding shall be connected to appropriate devices or control panel separately. However, when moving pump during operation, it is important that the power cable shall never be stretched.
- Provide a secure grounding dedicated for the product. Never fail to provide an earth leakage circuit breaker and a thermal overload relay in your starter or control panel (Both available on the market). **If an electrical leakage occurs by due to a product failure, it may cause electrical shock or explosion.**



- Connect every conductor of the power cable securely to the terminals. **Failure to observe this can lead to electrical shock, short-circuit, fire, or explosion.**



- Do not use the power cable if it is damaged. Do not scratch, fold, twist, make alterations, or bundle the cable, or use it as a lifting device. **The cable may be damaged, which may cause electrical leakage, short-circuit, electrical shock, fire, or explosion.**

- Never use the cable to carry the product or to suspend it. **Doing so may damage the cable which could cause electrical leakage, short-circuit, fire, or explosion. When lifting the unit, attach a rope or chain securely to the eyebolts.**
- **Do not extend the power cable, unless this extension is carried out by a certified TSURUMI distributor.**

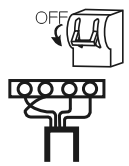
⚠CAUTION

- When lifting up the product, do not attempt to do it by simply bowing from the waist. **Use the knees, too, to protect your back.**
- Attach a hose securely to the hose coupling. **Imperfect connection of hose could cause water leakage which may result in the damage of nearby walls, floors, and other equipment.**
- If a hose is used for the discharge line, take a measure to prevent the hose from shaking. **If the hose shakes, you may be wet or injured.**

PRECAUTIONS DURING TEST OPERATION AND OPERATION

⚠WARNING

- Never try to operate the product if somebody is present in the pump sump.
  If an electrical leakage occurs, it can cause electrical shock.
- Never try to operate the product while it is suspended, as **the unit may jerk and could lead to injury.**
- Do not allow a finger to enter the suction inlet of the pump. **Failure to observe this could lead to injury or electrical shock.**
- When changing power connection is needed to correct the direction of rotation, be sure to turn off the power supply (earth leakage circuit breaker, etc.), and perform the work after making sure that the impeller has stopped completely.



Failure to do so may lead to electrical shock, short-circuit, injury, or explosion.

- When the product will not be used for an extended period, be sure to turn off the power supply (earth leakage circuit breaker, etc.). **Deterioration of the insulation may lead to electrical leakage, electrical shock, fire, or explosion.**

⚠CAUTION

- Do not touch the product with bare hands during or immediate after the operation, as the product may become very hot during operation. **Failure to observe this may lead to be burned.**

PRECAUTIONS DURING MAINTENANCE AND INSPECTION

⚠WARNING	
	● Do not open the flameproof enclosure when an explosive atmosphere may be present. **Failure to observe this may lead to explosion.**
	● The flameproof enclosure is not allowed to be open for regular maintenance. ● Do not disassemble or repair any parts other than those designated in the operation manual. ● If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard. If repairs are necessary in any other than the designated parts, consult with the dealer where it was purchased or Tsurumi representative. **Improper repairs can result in electrical leakage, electrical shock, fire, water leakage, or explosion.**
	● Absolutely turn off the power supply or disconnect the plug before starting maintenance or inspection. Do not work with wet hands. **Failure to observe these may lead to electrical shock, injury, or explosion.**
	● In case any abnormality (excessive vibration, unusual noise or odor) is found in the operation, turn the power off immediately and consult with the dealer where it was purchased or Tsurumi representative. **Continuing to operate the product under abnormal conditions may result in electrical shock, fire, water leakage, or explosion.**
	● **Do not operate the motor when the motor with the cable assembly is partially or completely dismantled.** ● After reassembly, always perform a test operation before resuming use of the product. **Improper assembly can result in electrical leakage, electrical shock, fire, water leakage, or explosion.**

PRECAUTION TO POWER OUTAGE

⚠WARNING	
	● In case of power outage, turn off the power supply. **The product will resume operation when the power is restored, which presents serious danger to people in the vicinity.**

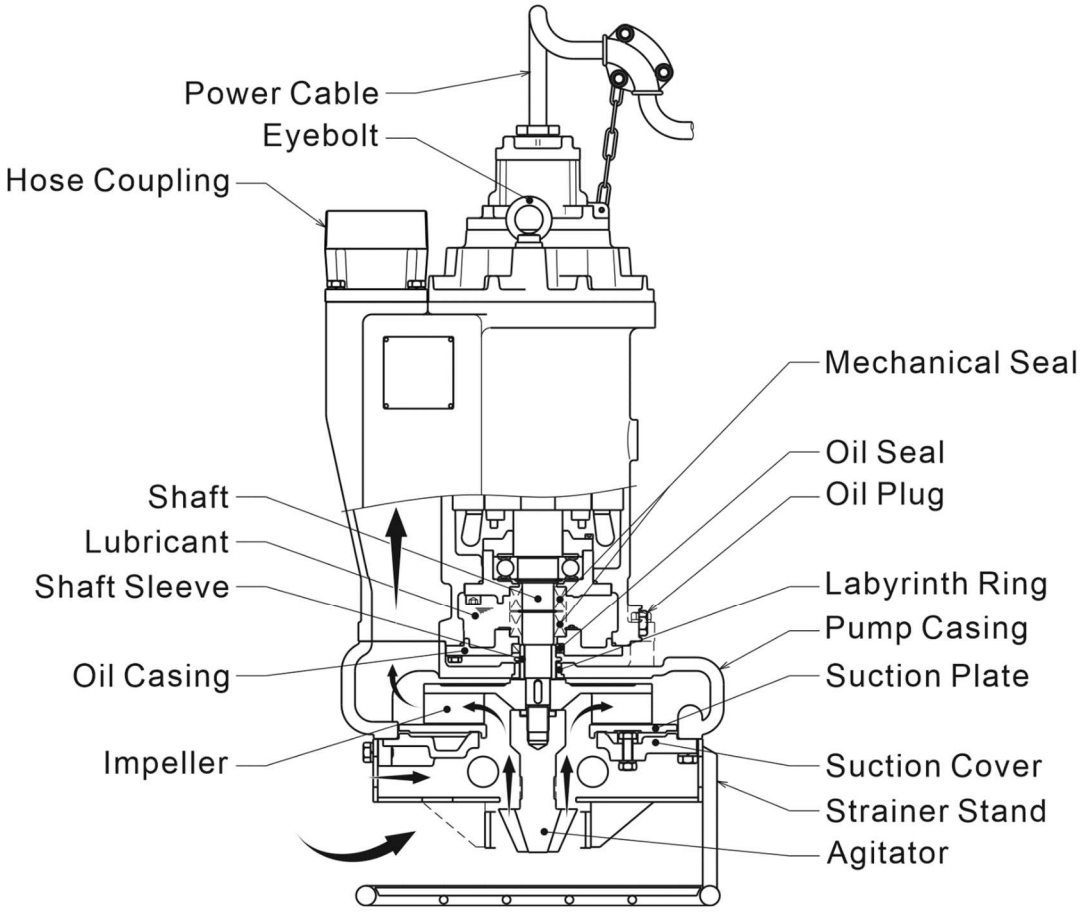
OTHER PRECAUTION

⚠CAUTION	
	● Never use the product for potable water. **It may present a danger to human health.**

⚠CAUTION	
	● This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. ● Children should be supervised to ensure that they do not play with the appliance. ● Pollution of the liquid could occur due to leakage of lubricants. ● The pump must be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.

2 NAME OF PARTS

■ **Example : KRDX47.5-50**



Note: *The above diagram is typical of the KRDX47.5-50, but some models may vary slightly in appearance or internal structure.*

3 PRIOR TO OPERATION

When the pump is delivered, first perform the following checks.

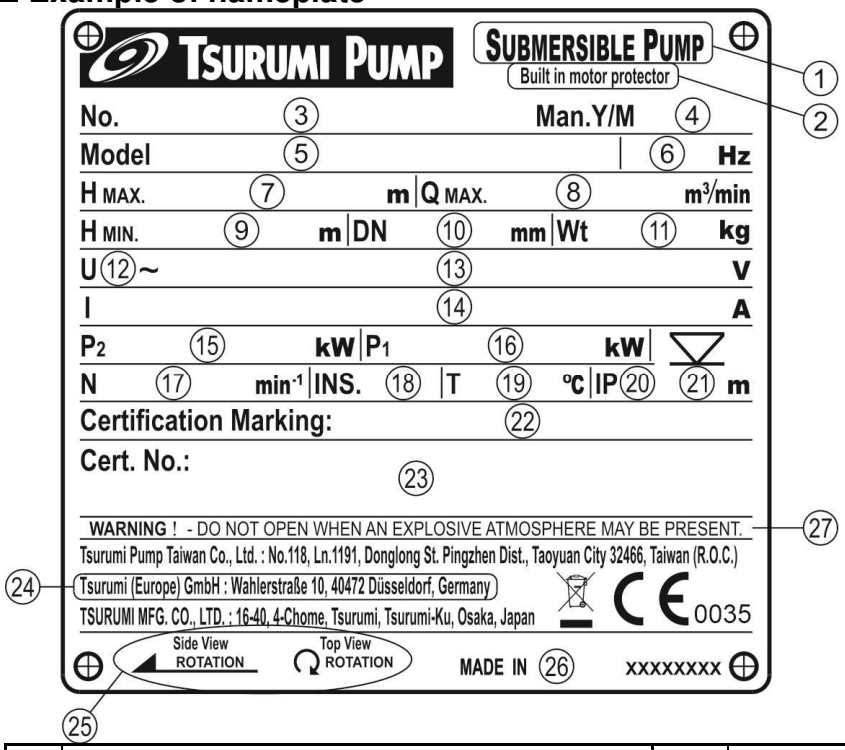
Inspection

While unpacking, inspect the product for damage during shipment, and make sure all bolts and nuts are tightened properly.

Specification Check

Check the model number to make sure it is the product that was ordered. Be certain it is the correct voltage and frequency.

■ Example of nameplate



1	Submersible pump	15	Rated output power
2	Built in motor protector	16	Rated input power
3	Serial number	17	Speed of rotation
4	Code of manufacture Year/Month	18	Insulation class
5	Model	19	Temperature range of ambient and liquid
6	Frequency	20	IP degree of protection
7	Max. total head	21	Max. immersion depth
8	Max. flow rate	22	Certification marking of explosion-proof
9	Min. total head	23	Certification number(s) of explosion-proof
10	Discharge bore	24	Representative
11	Weight without cable	25	Direction of rotation
12	Phase	26	Country of origin
13	Rated voltage	27	WARNING! - Do not open when an explosive atmosphere may be present.
14	Rated current		

Note: *If you discover any damage or discrepancy, please contact with the Tsurumi dealer from you purchased the product or the nearest Tsurumi representative office.*

Accessory Check

Verify that all accessory items are included in the package.

- Operation Manual …….. 1

Note: *If you discover any damage or discrepancy in the product, please contact the dealer where this equipment was purchased or the Tsurumi sales office in your area.*

Product Specifications

⚠ WARNING **Do not operate the product under any conditions other than those for which it is specified. Failure to observe the precaution can lead to electrical leakage, electrical shock, fire, explosion, water overflow or other problems.**

■ Standard Specifications for 50Hz - 380 ~ 1000V

Fluid	Property	Rain water, Ground water, Mud and Sand carrying Water, Slurry ; 0 ~ 40°C, Specific Gravity 1.0 ~ 1.1 (less than 15% Wt. of sand)
Pump	Impeller	Semi-open Type
	Shaft Seal	Two Mechanical Seals (separated in the oil chamber)
	Bearing	Non-contact sealed type Ball Bearings
Motor	Specifications	Dry type Submersible Induction Motor, 4-Pole
	Insulation	Class H (standard) or Class F (option for 380~690V)
	Protection System (Built-in)	Miniature Thermal Protector (MTP, standard) : 9700K-46-1748Z5AB x3 or Circle Thermal Protector (CTP, option for 380~550V) Ground-Check Diode : (standard) 1N5408 (3A-1000V) or N/A (option) *(These are connected in series into the GC circuit.)*
	Lubricant	Turbine Oil VG32 (non-additive)
Power Cable	NSSHÖU, 3x2.5 + 3x2.5/3E + 3x1.5ST x20m (approx. OD.17.1~19.1mm)	
Discharge Connection	BSPT male threaded Hose coupling (Hose nipple type is available.)	

Model	Discharge Bore (mm) / (inch)	Output (kW)	Max. Total Head (m)	Max. Flow Rate (m^3/min)	Starting Method	Weight (kg)
KRDX33.7-50	80 / 3”	3.7	14.8	1.47	Direct-on-Line	155
KRDX35.5H-50	80 / 3”	5.5	17.4	1.65	Direct-on-Line	175
KRDX45.5-50	100 / 4”	5.5	16.5	2.04	Direct-on-Line	175
KRDX47.5H-50	100 / 4”	7.5	19.3	1.95	Direct-on-Line	186
KRDX47.5-50	100 / 4”	7.5	17.3	2.22	Direct-on-Line	186

Note: *The weight (mass) given above is the operating weight of the pump itself, not including the cable.*

⚠ WARNING

- **Do not operate the product under any voltage other than described on the nameplate with the voltage tolerance limit within ±5%. If it is operated with a generator, it is strongly suggested not to operate other equipment with the same generator. Failure to observe this may cause malfunction and breakdown of the product, which may lead to electrical leakage, electrical shock, or explosion.**
- **Do not use the product in a liquid other than water.**
  Any explosive/flammable/highly-corrosive liquids other than water, such as gasoline, oil, salt water, or organic solvents will damage the product, which may lead to electrical leakage, electrical shock, or explosion.
- **Do not use the product for hot or warm liquid over 40ºC, as doing so will damage the product, which may lead to electrical leakage, electrical shock, or explosion.**
- **Be sure to install suitable Ground-Check control device and circuit on the control panel. The miniature thermal protectors built-in this product are connected with the diode in series into the Ground-Check circuit in the motor. If the control device and circuit are not installed on the control panel, the Ground-Check protection and the thermal protection do not work, so it can lead to electrical shock or explosion by cable damage, and it can also lead to burn of the product, fire, or explosion by motor overheating.**
- **Do not operate the pump blow the Continuous running Water Level (C.W.L.) on which the pump casing is fully submerged. Do not run motor without cooling by pumped water.**
  Failure to observe these conditions may result in damage to the pump, electrical leakage, electrical shock, or explosion.

4 INSTALLATION

⚠ WARNING

- **Do not use the product in a liquid other than water.**
  Any explosive/flammable/highly-corrosive liquids other than water, such as gasoline, oil, salt water, or organic solvents will damage the product, which may lead to electrical leakage, electrical shock, or explosion.
- **Do not operate the product under any voltage other than described on the nameplate with the voltage tolerance limit within ±5%. If it is operated with a generator, it is strongly suggested not to operate other equipment with the same generator. Failure to observe this may cause malfunction and breakdown of the product, which may lead to electrical leakage, electrical shock, or explosion.**
- **Do not use the product for hot or warm liquid over 40ºC, as doing so will damage the product, which may lead to electrical leakage, electrical shock, or explosion.**
- **Use only in fully assembled state.**
  The flameproof enclosure is not allowed to be open for installation.

Note: *Consult your local dealer or Tsurumi representative before using with any liquids other than those indicated in this document.*

Maximum allowable water pressure

⚠ WARNING **The maximum immersion depth of KRDX series shown on the nameplate is defined by the assembled cable length minus 3m.**
Do not use at greater than the water pressure shown below even if the cable length is enough, which can damage the pump resulting in electrical leakage, electrical shock, or explosion.

Maximum allowable water pressure
0.3 MPa (3 kgf/cm^2)

Preparing for installation

Before installing the pump at a work site, you will need to have the following tools and instruments ready:

- Multitester (or insulation resistance tester) with a “Diode Testing” function
- AC voltmeter
- AC ammeter (clamp-on type)
- Bolt and nut tighteners
- Power supply connection tools (screwdriver or box wrench)

Note: *Please read also the instructions that come with each of the test instruments.*

Check to make before installation

Use the multitester (or insulation resistance tester) to measure the motor insulation resistance between power leads (U, V, W) and ground lead (Green/Yellow) at the cable end. See the Electrical circuit diagram at section “5. Electrical wiring”.

■ Insulation resistance reference value = 20 MΩ min.

Note: *The reference insulation resistance (20 MΩ or greater) is the value when the pump is new or has been repaired. For the reference value after installation, see below at section “7. Maintenance and Inspection”.*

Diode Testing

By contacting the 2 probes of the multitester with a “Diode Testing” function according to the following instruction, make sure that the built-in diode has conductivity in “Anode >> Cathode” direction. Also, make sure that the displayed voltage drop is less than the max. forward voltage of the diode.

“ + ” Probe : “GC” Ground-Check lead of cable end
“ - ” Probe : Ground lead (Green/Yellow) of cable end, or unpainted metal surface of motor
(See the Electrical circuit diagram at section “5. Electrical wiring”.)

Diode type	Max. Forward Voltage
1N5408 (3A-1000V)	1.23 V

Then next, by contacting opposite probes to the same points as the above, make sure that the built-in Diode has no conductivity in “Cathode >> Anode” direction.

Precautions in installation

⚠ WARNING

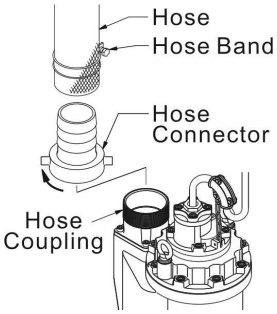
- **When installing the product, pay close attention to its center of gravity and weight. Use an appropriate lifting equipment to lift the unit. Improper lifting may result in the fall of the product which could cause damage of the product or human injury.**
- **Never use the cable to carry the product or to suspend it. Doing so may damage the cable which could cause electrical leakage, short-circuit, fire, or explosion.**
  When lifting the unit, attach a rope or chain securely to the eyebolts.

⚠ CAUTION

- **When the product will be carried by hand, decide the number of persons considering the mass of the product. When lifting up the product, do not attempt to do it by simply bowing from the waist. Use the knees, too, to protect your back.**

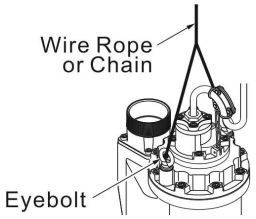
(1) Attach and fasten the hose securely to the male threaded hose coupling.

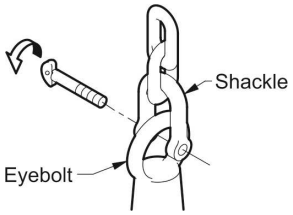
Note: *The nipple type hose coupling is available as an option. In this case*, attach the hose to the hose coupling as far as it will go, then fasten it securely with the hose band.



(2) Avoid dropping the pump or other strong impact. Lift the pump by attaching a rope or chain to the eyebolts.

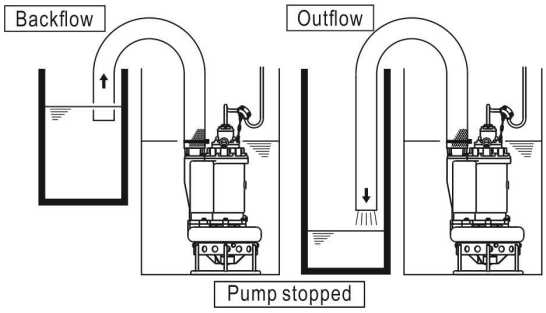
Note: *On Power cable handling, see below at section "5. Electrical Wiring".*



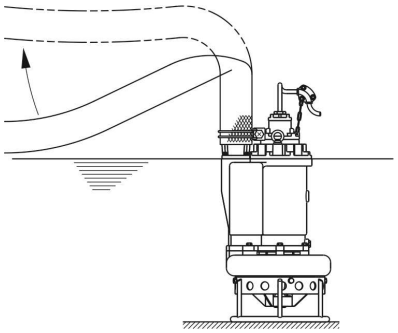


(3) When installing and operating the pump, make sure the pump casing is fully submerged in the water.

Note: *The "Operation water level" chart below shows the water level necessary for operation. The tip of the hose (discharge end) should be located higher than the water surface. If the end of the hose is submerged, water may flow back to the pump when the pump is stopped; and if the hose end is lower than the water surface, water may overflow when the pump is turned off.*



(4) The hose should be run as straight as possible, since excessive bending will hinder the water flow, preventing sufficient lift, and can even cause the hose to become clogged with earth. If the hose is crimped near the pump, air can become trapped in the pump and cause idle running.



⚠ CAUTION

- **If large quantities of sand are sucked up, damage resulting from friction in the pump can lead to electrical leakage and shock.**

⚠ CAUTION

- **When the pump is installed at a work site, make sure the hose is connected in such a way as to ensure proper drainage. Otherwise water may leak out and cause damage to surrounding walls or flooring, or to equipment.**

(5) Use the pump in the upright position. To prevent the pump from becoming submerged in mud, mount it on a block or other firm base if necessary.

5 ELECTRICAL WIRING

EN 60079-14:2014 Explosive atmospheres - Part 14:
Electrical installations design, selection and erection

This standard contains the specific requirements for the design, selection and erection of electrical installations in hazardous areas associated with explosive atmospheres. The pumps must be correctly installed based on principles from EN 60079-14 to reduce explosion risk from flammable materials.

Performing electrical wiring

⚠ WARNING

- **Electrical installations should be carried out under the supervision of a certified electrical engineer and according to the local rules and regulations. Installations prepared by an uncertified person, may be against the law and can be very dangerous. Incorrect wiring can lead to electrical leakage, electrical shock, fire, or explosion.**

Operate well within the capacity of the power supply and wiring.

Grounding

⚠ WARNING

- **Be sure to provide a ground wire securely. Do not connect the ground wire to a gas pipe, water pipe, lightening rod, or telephone ground wire. Improper grounding could cause electrical shock or explosion.**
- **Provide a secure grounding dedicated for the product. Never fail to provide an earth leakage circuit breaker and a thermal overload relay in your starter or control panel (Both available on the market). If an electrical leakage occurs by due to a product failure, it may cause electrical shock or explosion.**
- The grounding shall be connected to appropriate devices or control panel separately. However, when moving pump during operation, it is important that the power cable shall never be stretched.

Power cable

⚠ WARNING

- **Do not use the power cable if it is damaged. Do not scratch, fold, twist, make alterations, or bundle the cable, or use it as a lifting device. The cable may be damaged, which may cause electrical leakage, short-circuit, electrical shock, fire, or explosion.**
- **If a cable with cut insulation or other damage is submerged in the water, there is a danger of water seeping into the motor causing a short. This may result in damage to the pump, electrical leakage, electrical shock, fire, or explosion.**
- **Do not extend the power cord, unless this extension is carried out by a certified TSURUMI distributor.**

⚠ CAUTION

- **Please refrain from driving over the cable, to avoid any possible damage.**
  Cable spec: See “Standard Specifications” at section “3. Prior to Operation”.
  Cable Gland spec: M36 * 4mm-6H/6g - ISO965-3

Do not allow the power cable leads to become wet.
Make sure the cable does not become excessively bent or twisted, and does not rub against a structure in a way that might damage it.

Connecting the power cable

⚠ WARNING

- **Before connecting leads to the terminals, make certain the power supply is turned off (circuit breaker, etc.), to avoid electrical shock, shorting, or unexpected starting of the pump, leading to injury.**
- **Connect every conductor of the power cable securely to the terminals. Failure to observe this can lead to electrical shock, short-circuit, fire, or explosion.**
- **Be sure to install suitable Ground-Check control device and circuit on the control panel. The miniature thermal protectors built-in this product are connected with the diode in series into the Ground-Check circuit in the motor. If the control device and circuit are not installed on the control panel, the Ground-Check protection and the thermal protection do not work, so it can lead to electrical shock by cable damage, and it can also lead to burn of the product or fire by motor overheating.**

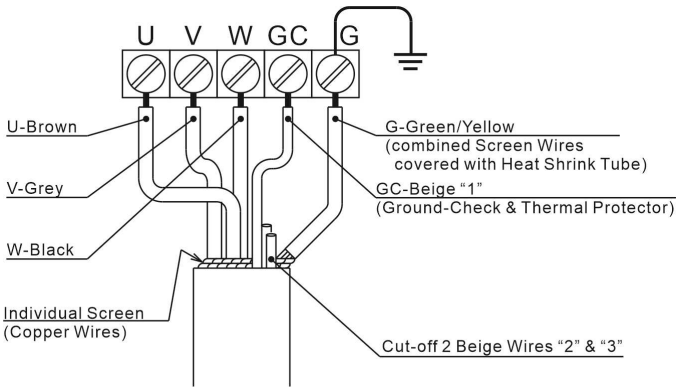
⚠WARNING

- **In the case of using a plug (available in the market) to connect with the power source, please select it which is suitable for the cable's outer diameter and the rated current of this product, and install it in accordance with its manufacturer's instructions. Improper plug selection or installation may result in electrical leakage, short-circuit, electrical shock, fire, or explosion.**

Connect the leads of power cable to the control panel terminals as shown in the diagram, being careful not to let the leads become twisted together.

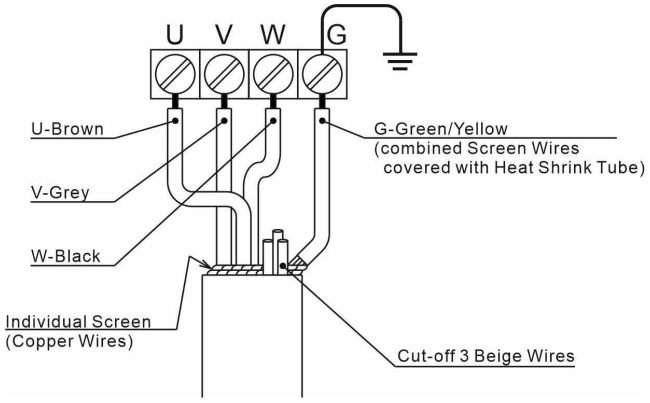
Direct on line, 3.7~7.5kW

(standard, 50Hz-380~1000V)



Applicable Cable:
NSSHÖU, 0.6/1.1kV,
3x2.5 + 3x2.5/3E + 3x1.5ST,
approx. OD.17.1~19.1mm

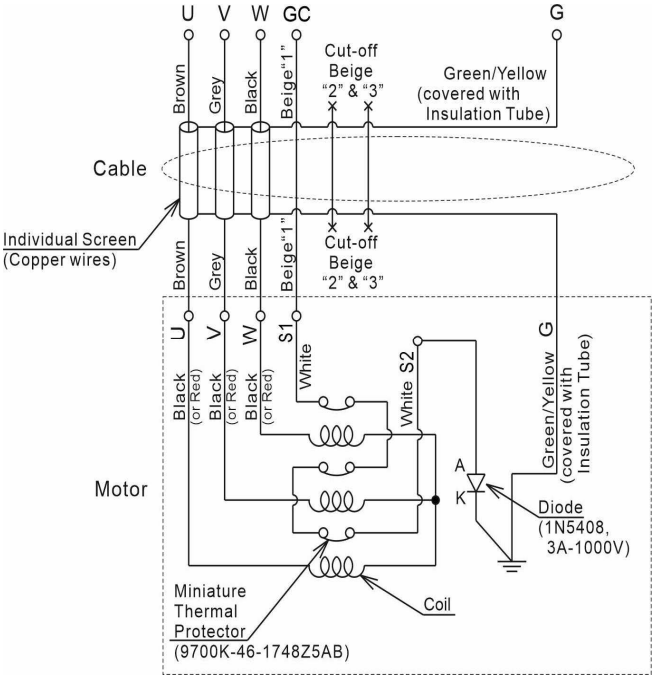
(option, 50Hz-380~550V with Circle Thermal Protector)



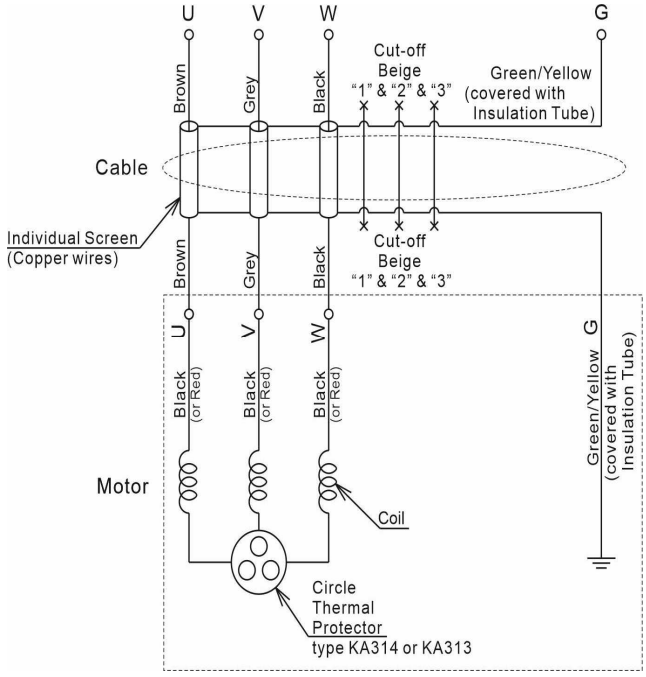
Applicable Cable:
NSSHÖU, 0.6/1.1kV,
3x2.5 + 3x2.5/3E + 3x1.5ST,
approx. OD.17.1~19.1mm

Electrical circuit diagram

Direct on line, 3.7~7.5kW
(standard, 50Hz-380~1000V)



(option, 50Hz-380~550V with CTP protector)



6 OPERATION

Before starting

(1) Make sure once again that the product is of the correct voltage and frequency rating.

⚠ CAUTION **Using the product at other than rated voltage and frequency will not only lower its performance but may damage the product.**

Note: *Confirm the rated voltage and frequency on the model name plate.*

(2) Confirm the wiring, supply voltage, circuit breaker capacity, and motor insulation resistance.

Reference insulation resistance = 20 MΩ or greater

Note: *The reference insulation resistance (20MΩ or greater) is the value when the pump is new or has been repaired. For the reference value after installation, see below at section "7.Maintenance and Inspection".*

(3) The setting on the circuit breaker or other overload protector should be made in accord with the rated currency of the pump.

Note: *See the model name plate on the pump for its rated current.*

(4) When powering the pump with a generator, do not share the generator with other equipment.

Test operation

⚠ WARNING

- **Before connecting leads to the terminals, make certain the power supply is turned off (circuit breaker, etc.), to avoid electrical shock, shorting, or unexpected starting of the pump, leading to injury.**
- **Never start the pump when people are standing next to it. If an electrical leakage occurs, it can cause electrical shock.**

(1) Run the pump for a short time(1~2 seconds) to check the direction of rotation. The rotation is correct if the pump recoil direction is counter-clockwise.

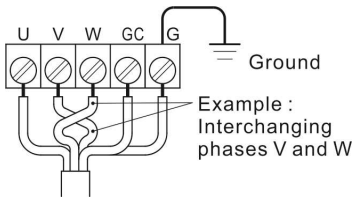
⚠ CAUTION **Always perform the rotation check in air, not while the pump is submersed. Running the pump in reverse direction while submersed may damage the pump, resulting in electrical leakage or electrical shock.**

(2) If the direction is reversed, correct it using the countermeasure shown below.

⚠ WARNING **Before changing the connections to correct the rotation, be sure to turn off the power supply (circuit breaker), and make sure the impeller has stopped completely, to avoid electrical shock or shorting.**

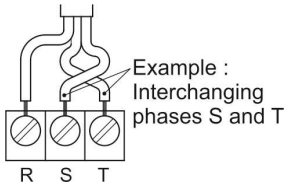
COUNTERMEASURE

(Direct-on-line start models):
Interchange connections between any two of the three leads U, V, or W.



COUNTERMEASURE

or:
Interchange connections between any two of the three leads R, S, or T.



(3) Run the pump for a short time (3~10minutes) and confirm the following.
Using an ammeter(clamp-on type), measure the operating current at the U, V, and W phase leads on the terminal strip.

COUNTERMEASURE

If the operating current exceeds the rated value, pump motor overload may be a cause. Make sure the pump has been installed under proper conditions as described in the section on Installation.

Using an AC voltmeter(tester), measure voltage at the terminal strip.

■ Power supply voltage tolerance = within ± 5% of the rated voltage.

COUNTERMEASURE

If the supply voltage is outside the variation, possible causes are the power supply capacity or an inadequate extension cable. Look again at Electrical Wiring and make sure the conditions are proper.

⚠ CAUTION **In case of very excessive vibration, unusual noise or odor, turn off the power immediately and consult with your nearest dealer or Tsurumi representative. Continuing to operate the pump under abnormal conditions may result in electrical shock, fire, or electrical leakage.**

(4) If the test operation turns up no problems, continue with full operation.

Operation

⚠ WARNING

- **Never try to operate the product if somebody is present in the pump sump. If an electrical leakage occurs, it can cause electrical shock.**
- **The pump may become very hot during operation. Be careful not to contact the pump accidentally to avoid being burned.**
- **To avoid serious injury, do not insert a finger or any other object in the pump inlet holes.**
- **When the pump is not used for an extended period, be sure to turn off the power (circuit breaker, etc.). Deterioration of the insulation may lead to electrical leakage, electrical shock, or fire.**
- **In case of a power outage, turn off the power to the pump to avoid having it start unexpectedly when the power is restored, presenting serious danger to people in the vicinity.**

Pay careful attention to the water level while the pump is operating.

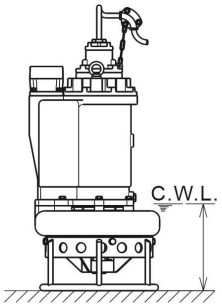
Note: *See below "Operation water level" for the water level necessary for operation.*

Operation water level

⚠ WARNING **Do not operate the pump below the C.W.L. (Continuous Running Water Level). Failure to observe this condition may result in damage to the pump, electrical leakage, electrical shock, or explosion.**

Model	C.W.L. (mm)
KRDX33.7-50	290
KRDX35.5H-50	300
KRDX45.5-50	300
KRDX47.5H-50	300
KRDX47.5-50	300

The table shows the C.W.L. for different output classes.
Be careful not to allow the water level to drop below the applicable limit.



Motor protection system

⚠ WARNING **Be sure to install suitable Ground-Check control device and circuit on the control panel. The miniature thermal protectors built-in this product are connected with the diode in series into the Ground-Check circuit in the motor. If the control device and circuit are not installed on the control panel, the Ground-Check protection and the thermal protection do not work, so it can lead to electrical shock by cable damage, and it can also lead to burn of the product or fire by motor overheating.**

⚠ CAUTION

- **Always determine the cause of the problem and resolve it before resuming operation. Simply repeating cycles of stopping and restarting will end up damaging the pump.**
- **Do not continue operation while the strainer stand is clogged with debris. Not only will performance suffer, but such conditions may cause noise, heavy vibration, and malfunctioning.**

Miniature Thermal Protector (MTP, standard)

This protector is embedded inside the motor coil. If the coil should overheat for any reason, bending of the bimetal of the miniature thermal protector triggers a signal, which in turn causes a dedicated circuit in the starting console or control panel to be furnished by the user to shut off the motor current. When the temperature returns to normal, the protector is automatically reset, but restarting is controlled from the starting console or control panel.

Note: *A b-contact miniature protector is adopted, which is normally "closed" and goes to "open" upon overheating. To protect the motor from current surges, be sure to install a motor breaker thermal relay or similar device in the external starting console or control panel. A 3E relay is able to protect the motor from overload, openphase or reverse-phase operation.*

Circle Thermal Protector (CTP, option for 380~550V)

If a current overload or overheating occurs, the motor will stop automatically. In this type of motor protector, the motor will automatically restart after cooling down.
Turn off the power supply first, detach the cable next, then, eliminate the cause of the problem.

7 MAINTENANCE AND INSPECTION

EN 60079-17:2014 Explosive atmosphere - Part 17:
Electrical installations, inspection and maintenance

This standard covers the aspects of the inspection and maintenance of electrical installations within hazardous areas only. The pumps, when installed in hazardous areas, require regular periodic inspection and continuous supervision by skilled personnel in accordance to EN 60079-17 standards.

⚠ WARNING

Regular maintenance and inspections are a necessity for continued efficient functioning of the pump.
The flameproof enclosure is not allowed to be open for regular maintenance.
If any abnormal conditions are noticed, refer to the section "9. Troubleshooting" and take corrective measures immediately. It is recommended that a spare pump be kept ready in case of any problems.
Please contact your nearest TSURUMI dealer to provide details on service and parts.

Prior to inspection

⚠ WARNING **Detach the power cable from the receptacle or terminals, after making certain the power supply (circuit breaker, etc.) is turned off. Failure to follow this precaution may result in a serious accident from electrical shock or unexpected starting of the pump motor.**

(1) Washing the pump
Remove accumulated matter from the surface of the pump and wash it with clean water. Take special care to remove any debris from the impeller.

(2) Inspecting the pump exterior
Look for any peeling or chipped paint, and make sure the nuts and bolts are fastened tightly. Any cracks in the surface should be repaired by cleaning that area, drying it and then applying a touchup coating.

Note: *Touchup is not supplied. Note that some kinds of damage or looseness may require that the unit be disassembled for repairs. Please consult with your nearest dealer or Tsurumi representative.*

Regular Inspection

Interval	Inspection Item
Daily	■Measuring the operating current ●To be below the rated current ■Measuring the power voltage ●Power supply voltage tolerance = within ±5% of the rated voltage
Monthly	■Measure insulation resistance ●Reference insulation resistance = 1 MΩ or greater *Note: If the insulation resistance has become notably lower than the previous inspection, an inspection of the motor will be necessary.* ■Pump inspection ●A noticeable drop in performance may indicate wear in the impeller or else clogging of the strainer stand, etc. Remove the clogged debris,and replace the parts if worm.
Half-yearly	■Oil inspection ●Check the oil every six months or after 2,000 hours of use, whichever comes first. ■Inspection of lifting chain or rope ●Replace if damage, corrosion, or wear has occurred to the wire rope or the chain. Remove if foreign object is attaching to it.
Yearly	■Change oil ● Change the oil every 12 months or after 4,000 hours of use, whichever comes first. ■Designated oil : Turbine Oil VG32 *Note: See below for details of oil inspection and oil change.* ■Change mechanical seal *Note: Specialized know-how is required for inspecting and replacing the mechanical seal. Consult with your nearest dealer or Tsurumi representative.*
Every 2 to 5 years	■Overhaul ● This should be carried out even if there are no problems with the pump. The frequency depends on how continuously the pump is in use. *Note: To overhaul the pump, contact the dealer where it was purchased, or the Tsurumi sales office in your area.*

Strage

When the pump is out of use for an extended period, wash it and dry it thoroughly, then store it indoors.

Note: *Always run a test operation before putting the pump back into service.*

When the pump is left installed in water, it should be run at regular intervals (about once a week).

Oil inspection and Oil change

⚠ WARNING **When the pump is tilted for inspecting or changing the oil, pay careful attention to the center of gravity and weight of the pump. When lowering the pump, fasten the wire rope or the chain to the eyebolts provided for this purpose. Failing to lower the pump completely may result in damage or injury if the pump is dropped.**

Inspecting Oil

Remove the oil plug and tilt the pump to drain a small amount of oil. If the oil is milky white or has water mixed in with it, the mechanical seal may be faulty. In this case the pump will need to be disassembled and repaired.

Replacing Oil

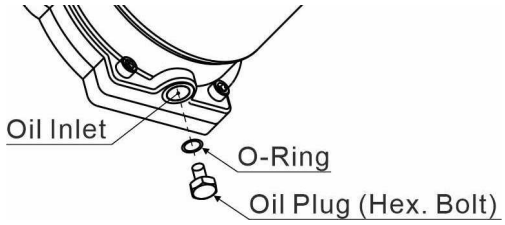
Remove the oil plug and drain all the oil, then replace it with the specified amount.

Note: *Worn oil and other waste products should be disposed of by a qualified agent, in accord with applicable local laws. The oil plug packing and O-ring should be replaced each time the oil is inspected or changed.*

Specified Oil :
Turbine Oil VG32 (non-additive)

Unit : *mℓ*

Applicable Model	Specified Volume
KRDX33.7-50	1050
KRDX35.5H-50	
KRDX45.5-50	
KRDX47.5H-50	
KRDX47.5-50	



Replacement Parts

The table lists the parts that need to be replaced periodically. Replace these using the recommended frequency as a guideline.

Part	Replacement Frequency
Mechanical Seal	When oil is discolored.
Lubricant; Turbine Oil VG32	See above “Regular Inspection”.
Packing, O-Ring	Each time pump is disassembled or inspected.
Oil Seal	When ring is worn, and each time pump is disassembled or inspected
Shaft Sleeve	When it becomes worn
Labyrinth Ring	When it becomes worn

8 DISASSEMBLY AND REASSEMBLY

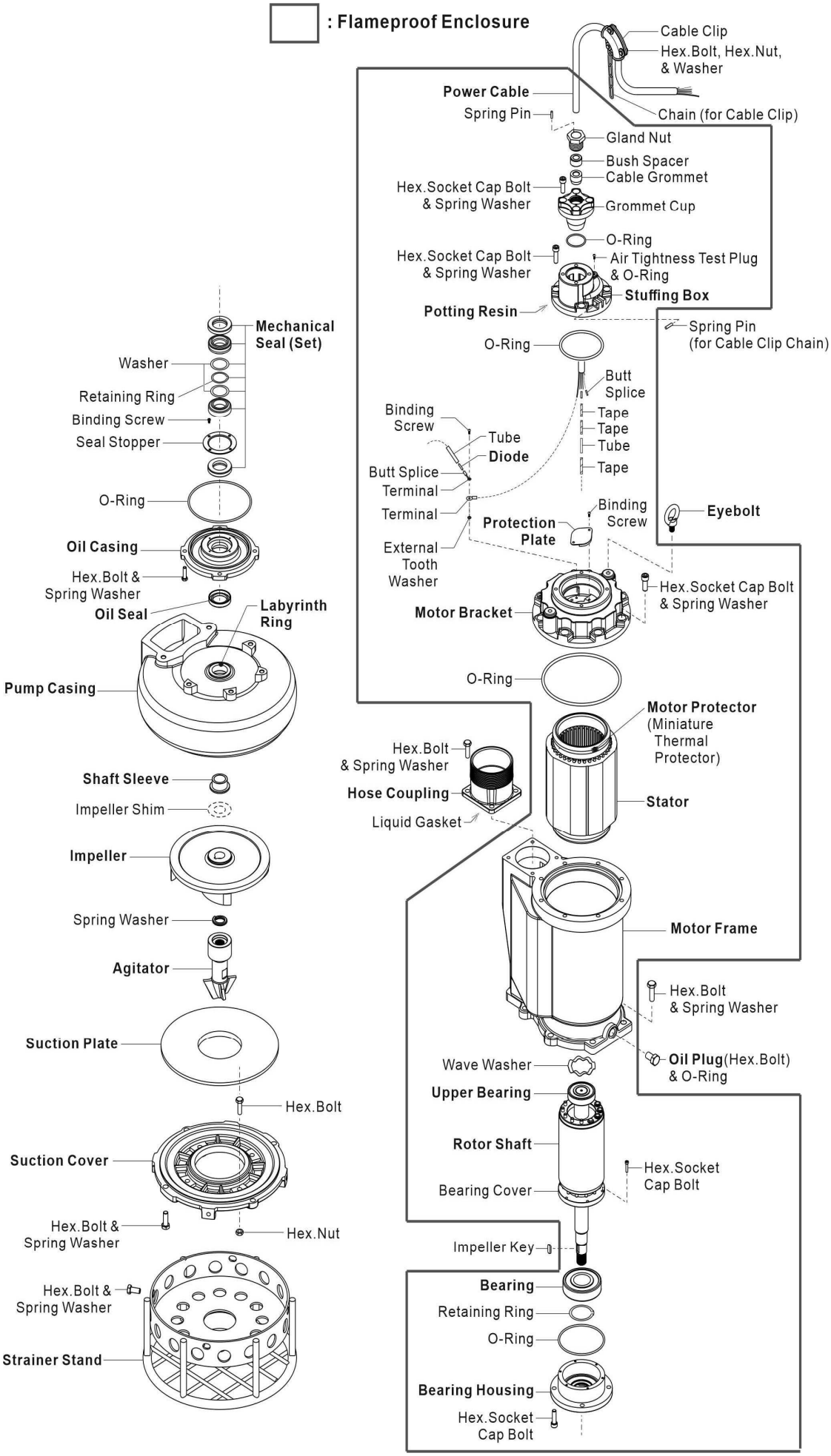
⚠ WARNING

- **Before disassembling the pump, first detach the Power Cable from the receptacle, after making certain the power supply (circuit breaker, etc.) is turned off.** To avoid electrical shock, do not work with wet hands. Never check the operation of any parts (impeller rotation, etc.) by turning on the power while the unit is partially assembled. Failure to observe these precautions may result in serious accident.
- **Do not disassemble or repair any parts other than those designated here. If repairs are necessary in any other than the designated parts, consult with your nearest dealer or Tsurumi representative.** Improper repairs can result in electrical leakage, electrical shock, fire, or water leaks.
- Do not operate the motor when the motor with the cable assembly is partially or completely dismantled.
- After reassembly, always perform a test operation before resuming use of the pump. Improper assembly will cause the pump to malfunction, resulting in electrical shock or water leaks.

The procedure for disassembly and reassembly is shown here to the extent necessary for impeller replacement. A specialized environment and facilities are necessary for work in the mechanical seal and motor parts. **The flameproof enclosure is not allowed to be open for regular maintenance.**
Contact your nearest dealer or Tsurumi representative in the event such repairs are necessary.

Exploded View

■ **Example : KRDX47.5-50 for General** (standard, with Miniature Thermal Protector and Diode)



Disassembly

Note: *Remove the oil prior to disassembly.*

⚠ CAUTION **A worn impeller may have sharp edges that can cause injury, and should be handled with care.**

(1) Remove the strainer stand.
Remove the hex. bolts and spring washers by the side of the strainer stand, then detach the strainer stand from the pump.

(2) Remove the suction cover.
Remove the hex. bolts and spring washers, then remove the suction cover and suction plate from the pump casing.

(3) Remove the agitator and impeller.
With a 36mm open-end spanner (or pipe wrench) and hammer, remove the agitator and spring washer from the shaft, then remove the impeller, key, impeller shim (if applicable), and shaft sleeve from the shaft.

Reassembly

Reassembly can be performed by reversing the steps for disassembly, paying attention to the following precautions.

Note: *After assembling the pump, do not forget to fill it with oil up to the required amount. Replace the packing and O-ring each time this operation is performed. Replace any other worn or damaged parts as well.*

After attaching the impeller, and again after completing assembly, check to make sure the impeller rotates smoothly.

■ Impeller gap adjustment

If the impeller, suction cover, and/or suction plate are replaced, check the gap between the impeller and the suction plate by using a feeler gauge, then adjust the gap by inserting the impeller shims between the impeller and the shaft sleeve.

Applicable Model	Specified Gap	
	mm	inch
KRDX33.7-50	0.9 ~ 2.0	0.035 ~ 0.079
KRDX35.5H-50		
KRDX45.5-50		
KRDX47.5H-50		
KRDX47.5-50		

The above values are specified in measuring while the motor is turned upside down.

9 TROUBLESHOOTING

⚠ WARNING **Always turn off the power before inspecting the pump. Failure to observe this precaution can result in serious accident.**

Before ordering repairs, carefully read through this instruction manual, than repeat the inspection. If the problem remains, contact your nearest dealer or Tsurumi representative.

Problem	Possible Causes	Countermeasure
Pump will not start	(1) Power is off. (2) Power cable is cut or not connected properly. (3) Impeller is clogged.	(1) Restore power. (2) Repair/replace the cable or fix the connection. (3) Inspect the pump and remove any debris.
Pump stops soon after starting (Motor protection system operates)	(1) Impeller is clogged. (2) Ground fault (Ground-Check control works) (3) Low voltage. (4) Wrong power frequency. (5) Extended operation with a clogged strainer stand. (6) Faulty motor (burning, water infiltration, etc.). (7) Excessive sand is discharged.	(1) Remove any debris. (2) Inspect the cable and its grounding. (3) Provide the rated voltage, or make sure the power cable extension is the proper standard. (4) Check the name plate, and replace the pump. (5) Remove debris from the strainer stand. (6) Repair or replace the motor. (7) Place the pump on a block or other base to prevent sand from being sucked into it.
Poor lift or discharge capacity	(1) Worn out impeller. (2) Sharply bent or clogged hose. (3) Motor direction is reversed. (4) Wrong power frequency.	(1) Replace the worn impeller. (2) Straighten out any sharp bends. Enclose the pump with a screen to keep away debris. (3) Interchange power supply leads (page 14). (4) Check the name plate, and replace the pump.
Heavy vibration or noise	(1) Damaged motor bearing.	(1) Contact dealer and replace motor bearing.

Disposal Product

Properly dispose of the product by disassembling it, presorting the contents, and sending them to the waste material treatment site.

The following information is required when ordering repairs or making other inquiries.

Product model	
Serial number	
Purchase date	
Remarks	

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Declaration of Conformity (EN) | **Deklaracja Zgodności** (PL)
Konformitätserklärung (DE) | **Декларация за Съответствие** (BG)
Déclaration de Conformité (FR) | **Uygunluk Beyanı** (TR)
Dichiarazione di Conformità (IT) | **Izjava o usaglašenosti** (RS)
Declaración de Conformidad (ES) | **Декларація про відповідність** (UA)

1.

EN Product Model (Serial Number) :
DE Produktmodell (Seriennummer) :
FR Modèle de Produit (Numéro de Série) :
IT Modello di Prodotto (Numero di Serie) :
ES Modelo de Producto (Número de Serie) :
PL Model Produktu (Numer Seryjny) :
BG Модел на Продукта (Сериен Номер) :
TR Ürün Modeli (Seri Numarası) :
RS Model proizvoda (serijski broj):
UA Модель Продукту (Серійний Номер) :

KRDX33.7-50 (Txxxxx-xxxx) **, KRDX45.5-50** (Txxxxx-xxxx) **, KRDX47.5-50** (Txxxxx-xxxx) **,**
KRDX35.5H-50 (Txxxxx-xxxx) **, KRDX47.5H-50** (Txxxxx-xxxx)

2.

EN Name and Address of the Manufacturer:
DE Name und Anschrift des Herstellers:
FR Nom et Adresse du Fabricant:
IT Nome e Indirizzo del Fabbricante:
ES Nombre y Dirección del Fabricante:
PL Nazwa i Adres Producenta:
BG Име и Адрес на Производителя:
TR Üreticinin Adı ve Adresi:
RS Naziv i adresa proizvođača:
UA Найменування та Адреса Виробника:

Tsurumi Manufacturing Co., Ltd.
16-40, 4-chome, Tsurumi, Tsurumi-ku, Osaka 538-8585, Japan

EN Name and Address of the authorised Representative:
DE Name und Anschrift des Bevollmächtigten:
FR Nom et Adresse du Mandataire autorisé:
IT Nome e indirizzo del Rappresentante autorizzato:
ES Nombre y Dirección del Representante autorizado:
PL Nazwa i Adres upoważnionego Przedstawiciela:
BG Име и Адрес на упълномощен Представител:
TR Yetkili Temsilcinin Adı ve Adresi:
RS Naziv i adresa ovlašćenog zastupnika:
UA Найменування та Адреса уповноваженого Представника:

Tsurumi (Europe) GmbH
Wahlerstraße 10, D-40472 Düsseldorf, Germany
Tel.:+49-211-4179373 Fax: +49-211-417937-480
Email: sales@tsurumi.eu www.tsurumi.eu

3.

EN This declaration of conformity is issued under the sole responsibility of the manufacturer.
DE Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
FR La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
IT La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
ES La presente declaración de conformidad se expide bajo la exclusiva responsabilidad del fabricante.
PL Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta.
BG Настоящата декларация за съответствие е издадена на отговорността на производителя.
TR Bu uygunluk beyanı tamamen üreticinin sorumluluğu altında yayınlanmıştır.
RS Ova deklaracija o usaglašenosti je izdata na isključivu odgovornost proizvođača.
UA Ця декларація про відповідність видана під виключну відповідальність виробника.

4.

EN	Object of the Declaration:	KRDX-series	Submersible Pumps for Slurry - Explosion-proof :
DE	Gegenstand der Erklärung:	KRDX-serie	Tauchpumpen für Schlamm - Explosionsgeschützt :
FR	Objet de la Déclaration:	Série KRDX	Pompes à boue submersibles - Antidéflagrantes :
IT	Oggetto della Dichiarazione:	Serie KRDX	Pompe Sommergibile per Fanghi - Antideflagrante :
ES	Objeto de la Declaración:	Serie KRDX	Bombas Sumergibles para Lodos - A prueba de explosión :
PL	Przedmiot Deklaracji:	Seria KRDX	Pompy Zatapialne szlamowe - wykonanie przeciwwybuchowe:
BG	Предмет на Декларацията:	KRDX-серия	Потопяеми Помпи за Шлам - Взривозащитен :
TR	Beyanın kapsadığı Ürün:	KRDX-serisi	Çamur için Dalgıç Pompalar - Patlamaya-dayanıklı :
RS	Proizvod obuhvaćen deklaracijom:	KRDX-serija	Potapajuće pumpe za mulj - otporne na eksploziju :
UA	Об'єкт Декларації:	KRDX-серія	Занурювальні Насоси для Шламу - Вибухозахищені :

ATEX Ⓔx **I M2 Ex db I Mb** (0°C ≤ Ta ≤ +40°C)

EN	Type Designation	(1) Discharge Diameter (Inch)	(2) Rated Output (kW)	(3) Affixed "H": High Head
DE	Typenbezeichnung	(1) Durchmesser Druckabgang (Zoll)	(2) Nennleistung (kW)	(3) Angefügtes „H“: Hohe Förderhöhe
FR	Désignation de Type	(1) Diamètre de Sortie (Pouces)	(2) Puissance nominale (kW)	(3) Mention "H": Haute Pression
IT	Designazione del Tipo	(1) Diametro di Scarico (Pollici)	(2) Potenza nominale (kW)	(3) Apposta "H": Alta Pressione
ES	Designación de Tipo	(1) Diámetro de Descarga (Pulgada)	(2) Potencia nominal (kW)	(3) "H" asignada: Alta Presión
PL	Oznaczenie Typu	(1) Średnica Wylotu (Cal)	(2) Moc Wyjściowa (kW)	(3) Oznaczenie "H": Wysokie Podnoszenie
BG	Типово Обозначение	(1) Изходящ Отвор (Инч)	(2) Изходяща Мощност (kW)	(3) Обозначение „H“: Висок Напор
TR	Tip Tanımı	(1) Basma ağzı çapı (inç)	(2) Anma gücü (kW)	(3) "H" eki: Yüksek basınç
RS	Oznaka tipa	(1) Prečnik potisa (inč)	(2) Nazivna izlazna snaga (kW)	(3) Dodato „H“: Velika visina dizanja
UA	Типове Позначення	(1) Діаметр Напірного Патрубка (Дюйм)	(2) Номінальна Потужність (кВт)	(3) Позначкою "H": Високий Напір

ex) KRDX 3 5.5 H -50
(1) (2) (3)

5.

EN The object of the declaration described above is in conformity with the relevant Union harmonization legislation:
DE Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union:
FR L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation de l'Union applicable:
IT L'oggetto della dichiarazione di cui sopra è conforme alla pertinente normativa di armonizzazione dell'Unione:
ES El objeto de la declaración descrita anteriormente es en conformidad con la legislación de armonización pertinente de la Unión:
PL Wymieniony powyżej przedmiot niniejszej deklaracji stoi w zgodności z odpowiednimi unijnymi legislacjami harmonizującymi:
BG Предметът на декларацията, описан по-горе, отговаря на съответното законодателство на Съюза за хармонизация:
TR Yukarıda açıklanan ve beyanın kapsamına giren ürün, ilgili AB uyumlaştırılmış mevzuatına uygundur:
RS Gore opisani proizvod obuhvaćen deklaracijom je u skladu sa relevantnim harmonizovanim zakonodavstvom EU:
UA Об'єкт декларації, описаний вище, відповідає відповідному законодавству Союзу про гармонізацію:

2014/34/EU, 2006/42/EC, 2014/30/EU, 2011/65/EU + (EU)2017/2102

6.

EN References to the relevant harmonized standards used to which conformity is declared:
DE Angabe der einschlägigen harmonisierten Normen die der Konformitätserklärung zugrunde gelegt wurden:
FR Références aux normes harmonisées pertinentes appliquées à la conformité déclarée:
IT Riferimento alle pertinenti norme armonizzate utilizzate alle quali è dichiarata la conformità:
ES Referencias a las normas armonizadas pertinentes utilizadas a las cuales se declara la conformidad:
PL Odniesienia do odnośnych norm zharmonizowanych, w stosunku do których deklarowana jest zgodność:
BG Позоваване на използваните хармонизирани стандарти, по отношение на които се декларира съответствие:
TR Kullanılan ilgili uyumlaştırılmış standartlara yapılan uygunluğunu beyan edildiği yapılan atıflar:
RS Reference na relevantne harmonizovane standarde koji se koriste sa kojima je usaglašenost deklarisana:
UA Посилання на відповідні використані гармонізовані стандарти, щодо яких заявлено про відповідність:

EN IEC 60079-0:2018 **, EN 60079-1**:2014 **, EN 809**:1998+A1:2009/AC:2010 **, EN ISO 12100**:2010 **, EN 60204-1**:2018 **, EN IEC 61000-6-2**:2019 **, EN IEC 61000-6-4**:2019 **, EN IEC 63000**:2018

7.

EN	Notified Body (ATEX EU-type examination):	Certificate issued:
DE	Notifizierte Stelle (ATEX EU-Baumusterprüfung):	Bescheinigung ausgestellt:
FR	L'organisme notifié (Examen de type ATEX UE):	Attestation délivrée :
IT	l'organismo Notificato (Esame di tipo ATEX UE):	Certificato rilasciato:
ES	Organismo Notificado (Examen de tipo ATEX UE):	Certificado emitido:
PL	Jednostka Notyfikowana (Badanie typu ATEX UE):	Certyfikat wydany:
BG	Нотифицираният Орган (ATEX EU-типов преглед):	Сертификат издаден:
TR	Onaylanmış kuruluş (ATEX AB tipi inceleme):	Sertifika verilen:
RS	Obavešteno telo (ATEX EU tip ispitivanja):	Izdati sertifikat:
UA	Нотифікований Орган (Експертиза типу ATEX ЄС)	Сертифікат виданий:

TÜV Rheinland Industrie Service GmbH (NB. 0035)
Am Grauen Stein, 51105 Köln, Germany

ATEX: TÜV 19 ATEX 8398 X
QAN: 01 220 1909024

8.

EN Additional information: Special Conditions for Safe Use:

1) Do not use the pump in any other application or condition than specified in the manual.
2) The voltage may vary a maximum of ± 5% of the nominal voltage mentioned on the nameplate.
3) Do not use for pumping liquids such as oil, sea-water or organic solvents.
4) The pump can only be used in an environment with a water temperature of 0°C and 40°C.
5) When installing and operating the pump, make sure the pump casing is fully submerged in the water. Do not run the motor without cooling by pumped water.
6) The external earthing shall be connected to appropriate devices or control panel separately.
7) Never lift the pump by pulling the power cable during test-running, installation, and handling.
8) When moving pump during operation, the power cable shall never be stretched.
9) Do not extend the power cable, unless this extension is carried out by a certified Tsurumi distributor.
10) Do not run the motor when the motor with the cable assembly is partially or completely dismantled.
11) Pipes and hoses are not standard accessories delivered together with this pump, so the end user need to install the pipes and hoses according to clause "Installation" which is specified in this manual.

DE Zusatzangaben: Besondere Bedingungen für die Sichere Nutzung:

1) Verwenden Sie die Pumpe nicht für andere Anwendungen oder Bedingungen als im Handbuch angegeben.
2) Die Spannung darf maximal ± 5% von der auf dem Typenschild angegebenen Nennspannung abweichen.
3) Nicht zum Pumpen von Flüssigkeiten wie Öl, Meerwasser oder organischen Lösungsmitteln verwenden.
4) Die Pumpe kann nur in einer Umgebung mit einer Wassertemperatur von 0 °C und 40 °C verwendet werden.
5) Stellen Sie beim Installieren und Betreiben der Pumpe sicher, dass das Pumpengehäuse vollständig im Wasser eingetaucht ist. Betreiben Sie den Motor nicht ohne Kühlung durch gepumptes Wasser.
6) Die externe Erdung muss separat an entsprechende Geräte oder Schalttafeln angeschlossen werden.
7) Heben Sie die Pumpe während des Testlaufs, der Installation und der Handhabung niemals durch Ziehen am Netzkabel an.
8) Ziehen Sie niemals am Netzkabel, wenn Sie die Pumpe während des Betriebs bewegen.
9) Verlängern Sie das Netzkabel nicht, es sei denn, diese Verlängerung wird von einer zertifizierten Tsurumi-Vertretung durchgeführt.
10) Lassen Sie den Motor nicht laufen, wenn der Motor mit der Kabelbaugruppe teilweise oder vollständig demontiert ist.
11) Rohre und Schläuche sind kein Standardzubehör, das mit dieser Pumpe geliefert wird. Der Endbenutzer muss die Rohre und Schläuche gemäß dem in diesem Handbuch angegebenen Abschnitt „Installation" installieren.

8.

FR Informations complémentaires: Conditions Particulières pour une Utilisation en toute Sécurité:

1) N'utilisez pas la pompe dans d'autres applications ou conditions que celles spécifiées dans le manuel.
2) La tension peut varier au maximum de ± 5% de la tension nominale mentionnée sur la plaque signalétique.
3) Ne pas utiliser pour pomper des liquides tels que de l'huile, de l'eau de mer ou des solvants organiques.
4) La pompe ne peut être utilisée que dans un environnement avec une température d'eau comprise entre 0°C et 40°C.
5) Lors de l'installation et du fonctionnement de la pompe, assurez-vous que sa volute est complètement immergée dans l'eau. Ne faites pas fonctionner le moteur sans refroidissement par l'eau pompée.
6) La mise à la terre externe doit être connectée aux appareils appropriés ou au panneau de commande séparément.
7) Ne soulevez jamais la pompe en tirant sur le câble d'alimentation pendant le test de fonctionnement, l'installation et la manipulation.
8) Ne tirez jamais sur le câble d'alimentation lorsque vous déplacez la pompe pendant le fonctionnement.
9) Ne rallongez pas le câble d'alimentation, à moins que cette rallonge soit installée par un distributeur certifié Tsurumi.
10) Ne faites pas fonctionner le moteur lorsque le moteur avec l'ensemble de câbles est partiellement ou complètement démonté.
11) Les tuyaux et flexibles ne sont pas des accessoires standards livrés avec cette pompe. L'utilisateur final doit installer les tuyaux et les flexibles conformément à la clause « Installation » spécifiée dans ce manuel.

IT Informazioni aggiuntive: Condizioni Speciali per un Uso Sicuro:

1) Non utilizzare la pompa in applicazioni o condizioni diverse da quelle specificate nel manuale.
2) La tensione può variare al massimo del ± 5% rispetto alla tensione nominale indicata sulla targhetta.
3) Non utilizzare per il pompaggio di liquidi come olio, acqua di mare o solventi organici.
4) La pompa può essere utilizzata solo in un ambiente con una temperatura dell'acqua compresa tra 0°C e 40°C.
5) Durante l'installazione e il funzionamento della pompa, assicurarsi che la voluta della pompa sia completamente immerso nell'acqua. Non far funzionare il motore senza che sia raffreddato dall'acqua pompata.
6) La messa a terra esterna dovrà essere collegata separatamente ai dispositivi appropriati o al pannello di controllo.
7) Non sollevare mai la pompa tirando il cavo di alimentazione durante il funzionamento di prova, l'installazione e la movimentazione.
8) Non tirare mai il cavo di alimentazione quando si sposta la pompa durante le attività.
9) Non prolungare il cavo di alimentazione, a meno che tale prolunga non venga eseguita da un distributore Tsurumi certificato.
10) Non far funzionare il motore quando il motore collegato al cavo è parzialmente o completamente smontato.
11) Tubi rigidi e tubi flessibili non sono accessori standard forniti insieme a questa pompa. L'utente finale deve installare i tubi e i tubi flessibili secondo la clausola "Installazione" specificata nel presente manuale.

ES Información adicional: Condiciones Especiales para un Uso Seguro:

1) No utilice la bomba en ninguna otra aplicación o condición que no sea la especificada en el manual.
2) El voltaje podrá variar como máximo ± 5% del voltaje nominal mencionado en la placa de características.
3) No utilizar para bombear líquidos como aceite, agua de mar o disolventes orgánicos.
4) La bomba solo se puede utilizar en un entorno con una temperatura del agua entre 0°C y 40°C.
5) Al instalar y operar la bomba, asegúrese de que la voluta de la bomba esté completamente sumergida en el agua. No opere el motor sin garantizar su correcta refrigeración mediante el agua bombeada.
6) La puesta a tierra externa debe estar conectada a los dispositivos apropiados o al panel de control por separado.
7) Nunca levante la bomba tirando del cable de alimentación durante la prueba de funcionamiento, instalación y manipulación.
8) Nunca tire del cable de alimentación cuando mueva la bomba durante el funcionamiento.
9) No extienda el cable de alimentación, a menos que esta extensión la realice un distribuidor certificado de Tsurumi.
10) No opere el motor cuando el motor con el conjunto de cables esté parcial o completamente desmantelado.
11) Las tuberías y mangueras no son accesorios estándar que se entregan junto con esta bomba. El usuario final debe instalar las tuberías y mangueras según la cláusula "Instalación" que se especifica en este manual.

PL Informacje dodatkowe: Specjalne Warunki Bezpiecznego Stosowania:

1) Nie używaj pompy w żadnym innym zastosowaniu lub w innych warunkach niż określone w instrukcji.
2) Napięcie może różnić się maksymalnie o ± 5% napięcia znamionowego podanego na tabliczce znamionowej.
3) Nie używać do pompowania cieczy takich jak: olej, woda morska lub rozpuszczalniki organiczne.
4) Pompę można używać wyłącznie w środowisku o temperaturze wody od 0°C do 40°C.
5) Podczas instalowania i obsługi pompy należy upewnić się, że obudowa pompy jest całkowicie zanurzona w wodzie. Nie uruchamiaj silnika bez chłodzenia pompowaną wodą.
6) Uziemienie zewnętrzne należy podłączyć oddzielnie do odpowiednich urządzeń lub centrali.
7) Nigdy nie podnosić pompy, ciągnąc za kabel zasilający podczas uruchomienia próbnego, instalacji i obsługi.
8) Nigdy nie ciągnij za kabel zasilający podczas przenoszenia pompy podczas pracy.
9) Nie przedłużaj kabla zasilającego, chyba że przedłużenie to zostanie wykonane przez certyfikowanego dystrybutora Tsurumi.
10) Nie uruchamiaj silnika, gdy silnik wraz z zespołem kabli jest częściowo lub całkowicie zdemontowany.
11) Rury i węże nie stanowią standardowych akcesoriów dostarczanych razem z tą pompą. Użytkownik końcowy musi zainstalować rury i węże zgodnie z punktem „Instalacja” określonym w niniejszej instrukcji.

BG Допълнителна информация: Специални Условия за Безопасна Употреба:

1) Не използвайте помпата в друго приложение или състояние, освен указаното в ръководството.
2) Напрежението може да варира максимум ± 5% от номиналното напрежение, посочено на табелката с данни.
3) Не използвайте за изпомпване на течности като масло, морска вода или органични разтворители.
4) Помпата може да се използва само в среда с температура на водата от 0°C до 40°C.
5) Когато инсталирате и работите с помпата, уверете се, че корпуса на помпата е напълно потопен във водата. Не пускайте двигателя без охлаждане с изпомпвана вода.
6) Външното заземяване трябва да бъде свързано към съответните устройства или контролен панел отделно.
7) Никога не повдигайте помпата, като дърпате захранващия кабел по време на пробно пускане, монтаж и работа.
8) Никога не дърпайте захранващия кабел, когато местите помпата по време на работа.
9) Не удължавайте захранващия кабел, освен ако това удължаване не е извършено от сертифициран дистрибутор на Tsurumi.
10) Не пускайте двигателя, когато двигателят с кабелния възел е частично или напълно демонтиран.
11) Тръбите и маркучите не са стандартни принадлежности, доставени заедно с тази помпа. Крайният потребител трябва да монтира тръбите и маркучите съгласно клауза "Инсталиране", която е посочена в това ръководство.

8.

TR İlave bilgiler: Güvenli Kullanım için Özel Koşullar:

1) Pompayı kılavuzda belirtilenin dışında herhangi bir uygulama veya koşulda kullanmayın.
2) Gerilim, isim plakasında belirtilen nominal gerilimin maksimum ± %5'i kadar değişebilir.
3) Yağ, deniz suyu veya organik solventler gibi sıvıların pompalanmasında kullanmayın.
4) Pompa yalnızca su sıcaklığının 0°C ile 40°C olduğu ortamlarda kullanılabilir.
5) Pompayı kurarken ve çalıştırırken pompa kıvrımı tamamen suya batırılmış olduğundan emin olun. Pompalanan su ile soğutma yapmadan motoru çalıştırmayın.
6) Harici topraklama uygun cihazlara veya kontrol paneline ayrı ayrı bağlanacaktır.
7) Test çalıştırması, kurulum ve kullanım sırasında pompayı asla güç kablosunu çekerek kaldırmayın.
8) Pompayı çalışma sırasında hareket ettirirken asla elektrik kablosundan çekmeyin.
9) Uzatma işlemi sertifikalı bir Tsurumi distribütörü tarafından yapılmadıkça güç kablosunu uzatmayın.
10) Kablo tertibatıyla birlikte motor kısmen veya tamamen sökülmüş durumdayken motoru çalıştırmayın.
11) Borular ve hortumlar bu pompayla birlikte teslim edilen standart aksesuarlar değildir. Son kullanıcının boruları ve hortumları bu kılavuzda belirtilen "Kurulum" maddesine göre kurması gerekir.

RS Dodatne informacije: Posebni uslovi za bezbednu upotrebu:

1) Nemojte koristiti pumpu u bilo kojoj drugoj primeni ili stanju osim onog što je navedeno u priručniku.
2) Napon može da varira najviše ± 5% od nazivnog napona navedenog na pločici.
3) Ne koristiti za pumpanje tečnosti kao što su ulje, morska voda ili organski rastvarači.
4) Pumpa može da se koristi samo u okruženju sa vodom temperature od 0°C do 40°C.
5) Kada instalirate i koristite pumpu, uverite se da je kućište pumpe potpuno potopljeno u vodu. Nemojte pokretati motor bez hlađenja pumpanom vodom.
6) Eksterno uzemljenje treba posebno da se poveže sa odgovarajućim uređajem ili kontrolnim ormanom.
7) Nikada ne podizati pumpu povlačenjem napojnog kabla tokom probnog rada, instalacije ili rukovanja.
8) Nikada ne povlačite kabal za napajanje kada pomerate pumpu tokom rada.
9) Nemojte produžavati napojni kabal, osim ako ovo produženje ne izvrši sertifikovani Tsurumi distributer.
10) Nemojte pokretati motor kada je motor sa sklopom kabla delimično ili potpuno demontiran.
11) Cevi i creva nisu standardni dodaci koji se isporučuju zajedno sa ovom pumpom. Krajnji korisnik treba da montira cevi i creva prema klauzuli „instalacija“ koja je specificirana u ovom priručniku.

UA Додаткова інформація: Особливі Умови Безпечного Використання:

1) Не використовуйте насос в будь-якому іншому застосуванні або в інших умовах, ніж зазначено в посібнику.
2) Напруга може змінюватися максимум на ± 5% від номінальної напруги, зазначеної на заводській табличці.
3) Не використовуйте для перекачування рідин, таких як нафта, морська вода або органічні розчинники.
4) Насос можна використовувати лише в середовищі з температурою води від 0°C до 40°C.
5) Під час встановлення та експлуатації насоса переконайтесь, що корпус насоса повністю занурений у воду Не запускайте двигун без охолодження водою, що перекачується.
6) Зовнішнє заземлення підключається до відповідних пристроїв або панелі керування окремо.
7) Ніколи не піднімайте насос, тягнучи за кабель живлення під час тестового запуску, встановлення та транспортування.
8) Ніколи не тягніть за кабель живлення, пересуваючи насос під час роботи.
9) Не подовжуйте кабель живлення, якщо це подовження виконує не сертифікований дистриб'ютор Tsurumi.
10) Не запускайте двигун, якщо двигун із кабельним вузлом частково або повністю розібрано.
11) Труби та шланги не є стандартними аксесуарами, що постачаються разом із цим насосом. Кінцевий користувач повинен встановити труби та шланги відповідно до пункту «Встановлення», який зазначено в цьому посібнику.

EN Signed for and on behalf of:
DE Unterzeichnet für und im Namen von:
FR Signé par et au nom de:
IT Firmato a nome e per conto di:
ES Firmado para y en nombre de:
PL Podpisano w imieniu:
BG Подписано за и от името на:
TR Şunun adına ve adına imzalanmıştır:
RS Potpisano za i u ime:
UA Підписано за та від імені:

Tsurumi Manufacturing Co., Ltd.
Osaka, Japan
June 21, 2024

Masatsugu Mariyama
Executive Officer,
General Manager of International Sales Div.