

Instruction Manual

TEXEL®

Magnetic Drive Pump

MTA-1516/1518/0326 models



SEIKOW CHEMICAL ENGINEERING & MACHINERY, LTD.




Thank you for purchasing Texel Corrosion Resistant Pump.

The pump is designed and manufactured for applications in which corrosion resistance is a priority. However, modifications in operating conditions or improper operations may result in unexpected incidents.

Please read this operation manual thoroughly before using and use the product in a proper way.

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| Indication | What it means |
|--|---|
|  Warning | A death or a serious injury may occur if the instruction is not followed. |
|  Caution | Minor to moderate injury or property damage may occur if the instruction is not followed. |
|  Information | Strongly recommended procedures to use the product more safely. |

After reading this instruction manual, be sure to store it and keep it for reference at any time.



Export Restrictions

Technical information contained in this instruction manual might be treated as controlled technology in your country, due to agreements in international regime for export control. Please note that export license/permission may be required due to export control regulations of your country.

1. Things to be confirmed upon arrival

Upon arrival of the pump, please check and confirm followings:

- (1) The specifications on the nameplate of the pump match the order specifications.
- (2) All accessories are in place.
- (3) All bolts and screws are securely fastened. Looseness may occur during transportation, so be sure to check the casing and drain bolts for looseness before trial operation.
- (4) The pump has no visible damage during the transportation.
- (5) Remove the motor fan cover and check that the motor fan can be turned easily by hand. If the rotation seems heavy or the fan does not turn, there may be some internal damage. Contact the vendor or supplier immediately.

2. Safety precautions

Like other high-speed or high-pressure machinery, a magnetic drive pump can be very dangerous if it is not used properly. Special attention is required if a corrosive or hazardous chemical is used.

Instructions listed as "Warning" must be followed to avoid property damages or fatal accidents.

2.1. Transportation

The entire pump can be lifted using the eye-bolt provided on the pump. However, ensure to secure the motor part with a suspension rope (nylon sling) prior to the operation for safety.



Warning

- (1) An eye-bolt or a hooking hole provided on the motor is rated only for the motor weight. Avoid suspending the entire pump using the hooking hole on the motor.
- (2) If a special base (not specified in the contract or listed as standard) is set on the pump, do not suspend the pump using the eye-bolt.

2.2. Confirmation

Before a test run after pump installation or a maintenance work, make sure that all bolts including drain bolts and casing bolts are securely fastened.

2.3. Application

The pump is designed and manufactured for the specific application and specifications designated in the contract. If the pump needs to be used for any other application, please consult with the vendor or supplier prior to such use.

2.4. Alteration

Alterations to the pump carry a high degree of risk. It is not the manufacturer's responsibility for any failure or injury resulting from alterations to the pump.

2.5. Ventilation

When handling chemical liquids that may generate harmful gases, install safety equipment such as a ventilation system in case of liquid leakage from the pump.

2.6. Qualified personnel only

The pump should be handled or operated by qualified personnel with a full understanding of the pump. Any person who is not familiar with the product should not take part in the operation or management of the pump.

3. Storage

While in storage, perform maintenance and inspections by following the instructions shown below until pump startup.

3.1. Short-term storage (less than 3 months)

- (1) Do not remove the bore seal.
- (2) Store the pump in a well ventilated location without humidity. Also ensure to avoid wind-blown rainwater, leak from the roof, pool of water, etc.
- (3) Protect the cable holes on the motor terminal box with a duct tape to close the gap and prevent dusts from entering the box.
- (4) Avoid a location where there is a potential risk of pump damage due to surrounding equipments falling on the pump or due to a contact with other devices being transported. If it is not possible to avoid such locations, provide sufficient protections for the pump.
- (5) Do not place heavy objects on the pump.
- (6) In winter, there is a possibility of dew condensation and the dew being frozen inside the pump. Drain the liquid to avoid this.
- (7) In case a pump that had been used needs to be stored, do the followings:
 - ⊙ Clean the interior of the pump with fresh water.
 - ⊙ Provide protections to the pump inlet and outlet to prevent infiltration of foreign materials.
 - ⊙ If the sum of initial operation period and the storage period becomes longer than one year, replace the gasket inspect the interior of the pump before running it again.

3.2. Long-term storage (more than 3 months)

- (1) Follow instructions (1) through (7) for the short-term storage stated above.
- (2) Measure and record the insulation resistance at the time of delivery and check it regularly as the insulator of the motor may absorb moisture and the insulation resistance may drop. If the insulation resistance is dropped, dry the insulator following instructions from the manufacturer and provide protection against moisture. (Refer to the motor instruction manual.)



Warning

If the pump is run with poor insulation of the motor, a leak of electricity or other accident may occur. Ensure to check the insulation resistance regularly.

- (3) Remove the motor fan cover once a month and turn the motor fan manually.
- (4) If the pump is run after a period of one year or longer, ensure to replace the gasket with a new one.

4. Installation and Piping



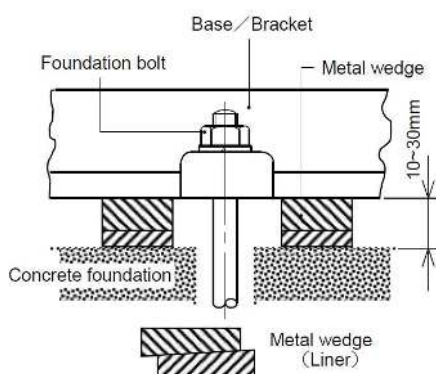
Caution

- Ensure protection and containment of solution in the event of plumbing or pump damage. And, take appropriate spill protection measures to prevent spilled liquid from draining directly to the ground.
- Improve the drainage environment around the pump installation so that the pump will not be submerged due to the rain water.

4.1. Installation

- (1) In principle, the pump should be installed on a concrete foundation. If it is not possible, the pump may be installed on a steel structure provided that the vibration during operation is prevented.
- (2) Insert the foundation bolt into a bolt hole on the pump base or bracket, attach a nut tightly to the bolt head, and suspend it inside the foundation bolt hole.
- (3) In case of a concrete foundation, insert a wedge in between the concrete and the base surfaces at four locations and keep the pump level.
- (4) To check the levelness, use a level gauge on the upper surface of the pump outlet flange and check in all directions.
- (5) After checking the levelness, fill the gaps between the concrete foundation and the base or the main unit with a fine mortar, as well as gaps in the foundation bolt holes. Ensure that everything is evenly bonded. (Fig. 4-1)
- (6) Leave the pump as is for several days to let the mortar harden. Then tighten the nut on the foundation bolt.
- (7) In case the pump is installed on a steel structure, bolts and nuts may be used but ensure to fasten them tightly in a similar manner.

Fig.4-1



4.2. Piping

Prior to connecting piping, confirm that the bore seal has been removed.

4.2.1. Piping load

- (1) Support and secure pipes connected to the pump inlet and outlet at a location close to the pump to avoid undue load on the pump.
- (2) In case metal pipes are used or the pipe length is long, use flexible joints instead of connecting pipes directly.
- (3) Limit the piping load on the pump within the maximum Allowable load specified in [7. Allowable Piping Load].

4.2.2. Suction piping (Fig. 4-2 and 4-3)

- (1) Make the suction piping as short as possible. However, note that a valve and a short pipe (about 0.3m) must be attached to facilitate disassembling of the pump.
- (2) Make the flange joint portion of the suction piping as little as possible.
- (3) Since the suction piping will have a significant effect on $NPSH_{AV}$, give a thorough consideration on the pipe diameter, length and attachments.
- (4) Provide an upward gradient (approx. 1/50~1/100) on the piping from the supply surface of fluid to the pump to avoid air pocket. However, if the fluid is forced into the pump, the gradient on the piping should be downward toward the pump.
- (5) Provide a dust screen on the supply tank.
- (6) Ensure that the tip of the suction pipe is dipped sufficiently deep into the fluid to avoid air to be sucked in during the operation.
- (7) Install the valve on the suction side with its handle positioned horizontally as air pocket may be formed while priming the pump.
- (8) Limit the number of bends as little as possible and avoid providing a bend close to the pump inlet.
- (9) If a reducer is used, use an eccentric type to avoid air pocket.
- (10) If a concentric reducer is used, provide an air release on the larger bore side. If multiple pumps are installed for the same tank, provide an independent suction piping for each pump.

4.2.3. Discharge piping

- (1) Always provide a valve for the discharge piping.
- (2) Since air pocket in the discharge piping may cause harmful effect, provide an air release whenever necessary.
- (3) Even if the discharge piping is in the form of a siphon, ensure to place the highest position below the no-discharge water head.
- (4) A check valve must be provided to prevent a back flow at the time of stopping the pump or, in case the actual water head is very high in order to prevent a water hammer. However, since air can be entrapped below the check valve at the start of the pump, provide an air release. (Fig. 4-2)

4.2.4. Motor wiring

- (1) Electrical works or wiring must be carried out by a qualified and authorized person by local laws or regulations.
- (2) If the pump is installed outdoors, wiring must be protected from rain water.
- (3) Use the electromagnetic switch that conforms to motor specifications such as voltage and capacity etc.
- (4) Securely install the electromagnetic switch and pushbutton switch away from the pump.
- (5) Read the user's manual for the motor thoroughly and perform the work properly.
- (6) As a preventive measure for electric leakage, install a breaker and connect the ground wire.
- (7) Take protective measures to prevent damage to the power cable.

4.3. Protection

It is recommended to install the following monitoring devices to prevent potential damages to the pump. Integrating multiple methods of monitoring systems increases effectiveness of protection against potential pump damages.

(1) Pressure sensor

The sensor monitors the starting pressure and stops the pump upon the detection of pressure change.

(2) Flow sensor

The sensor monitors the discharge flow and stops the pump upon the detection of flow change.

(3) Level sensor

The sensor monitors the liquid level and stops the pump when it falls below the specified level.

(4) Current sensor/Power sensor

The sensor monitors the motor load and stops the pump upon the detection of load change.

Fig.4-2 Example of recommended piping

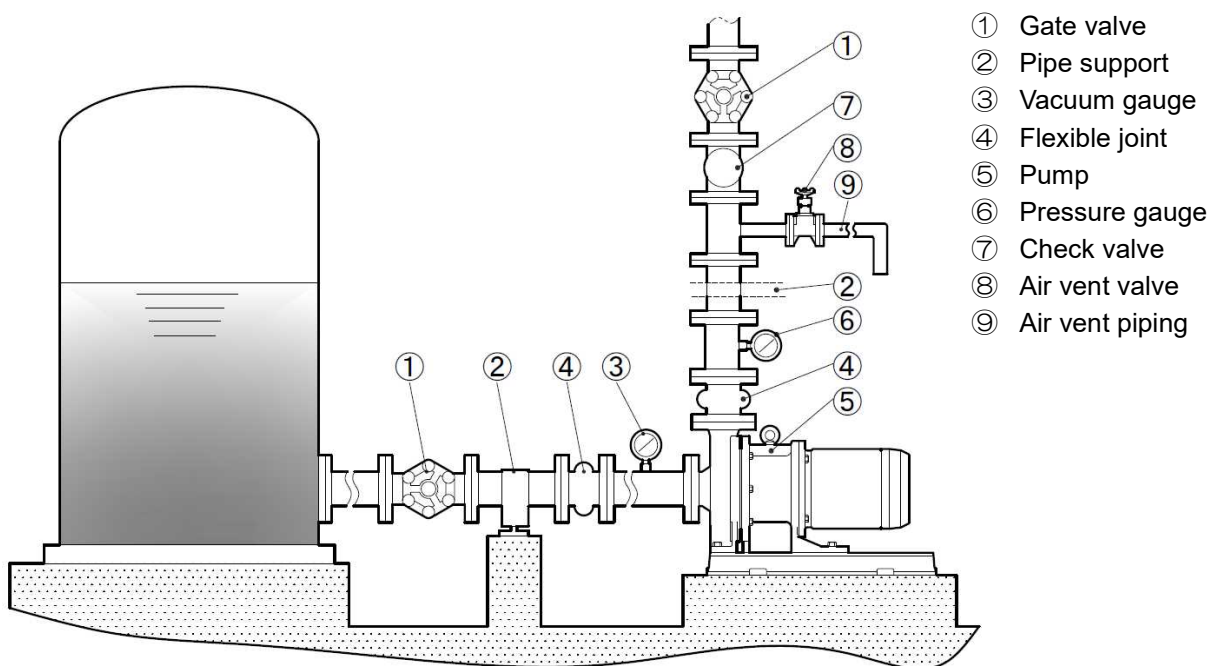


Fig.4-3 Suction piping

| Status | Correct | Incorrect |
|--------------------------------------|--|-------------------------------|
| Vertical horizontal bend | <p>$L \geq 4D$</p> <p>D : Piping diameter</p> | <p>$L < 4D$</p> |
| Inclined pipe | <p>From 1/50 to 1/100</p> | <p>Air</p> |
| Eccentric reducer | | <p>Air</p> |
| Installation direction of gate valve | | <p>Air</p> |

5. Handling precautions



Caution

If the bearing material is SiC, confirm the rotational direction after the priming or after removing the motor. Even an instantaneous operation can cause damage.

5.1. Notes on the Start-up

- (1) Remove the motor fan cover of the motor and confirm that the motor fan can be turned easily.
- (2) Clean the supply tank and suction pipes as trash and/or scales that have entered the suction pipes during the pipe installation can cause a fatal damage.
- (3) Confirm the rotational direction of the motor. (The direction is indicated on the casing.)
- (4) Fully open the valve on the suction piping.
- (5) Perform priming to fill the pump with the fluid completely. Discharge air using the discharge piping, etc. to perform priming. If it is difficult to discharge air, turn the motor fan of the motor in the reverse direction manually three to four times.
- (6) Start the pump with the discharge valve completely closed.
- (7) If the pump is fully primed, the discharge pressure will rise immediately. Then open the discharge valve slowly and set the operational pressure or discharge rate at a desired level.

5.2. Notes on the Operation

(1) Checking the Sound

Sucking in air or objects from the suction pipe often cause an abnormal sound with vibrations. A fluctuation of the needle on the suction gauge is often caused by aeration.

(2) Checking the Vibration

A precaution is necessary for cavitation or vibration due to faulty installation. Always adjust the discharge rate using the discharge valve. Do not close the valve on the suction piping.

(3) Checking the Operation status

Please use the specified discharge flow and head. Do not use with extremely small or large discharge amount. If operated below the minimum discharge flow, the pump may be damaged due to insufficient lubrication and cooling of bearings and sliding parts.

| Pump model | Motor pole | Minimum flow |
|----------------------|------------|------------------------|
| MTA-1516 MTA-1518 | 2 P | 20 L/min (5.3 GPM) |
| | 4 P | 10 L/min (2.7 GPM) |
| MTA-0326 | 2 P | 50 L/min (13.2 GPM) |
| | 4 P | 30 L/min (8 GPM) |

(4) Checking the Rotating direction of motor

Be sure to check the rotation direction of the motor. (Clockwise direction from the motor fan)
If operated in reverse, pump may be damaged.

(5) Checking the Noise

The noise level of the pump will be from 60 to 90 dB (A scale). However, it varies depending on the output and type of the installed motor, installation and operating status.

Provide a noise reduction cover if the pump noise affects human bodies or compromises communications to secure safety.

(6) Others

Pay attention to the discharge and suction pressure, flow rate, electric current value, etc. An abnormal fluctuation and/or a drop in these values often is a result of a solid matter being stuck or air being sucked in on the suction side.

5.3. Notes on the Stopping

- (1) Normally, the pump should be stopped after completely closing the discharge valve. Closing the suction valve first may cause cavitation and may result in a seizure.
- (2) Slowly close the discharge valve. Quick closing of valve may cause water hammer and pump damage.
- (3) In case of flooded suction, close the suction valve after stopping the operation.
- (4) If the pump stops as a result of a power outage during an operation, first turn off the power switch and, at the same time, close the discharge valve manually.

5.4. Notes on the Operational interruption

If the operation is interrupted for a prolonged period, drain the pump. This is especially important in winter, when the fluid inside the pump could freeze and the resulting expansion of the liquid volume could cause a crack or breakage of the piping.

5.5. Notes on the Motor

- (1) For operation in explosive hazardous areas, the maximum permissible temperature of the liquid in the pump depends on the motor as well as the permissible temperature class. In case a flange motor is used, prohibit running the motor exceeding the maximum allowable temperature for the shaft and the flange specified by the supplier.
- (2) The outer magnet is set on the motor shaft. For disassembling/assembling, ensure to tighten the set bolts for the motor shaft and outer magnet at our specified standard torque.

5.6. Notes on the Ambient temperature

The allowable ambient temperature range is from -10°C to 40°C . (However, use the product under the normal room temperature whenever possible.)

5.7. Notes on the Liquid



Caution

- When high temperature liquid is transferred, pump surface becomes very hot. Do not touch the pump or pipe surface directly during or immediately after operation. Take protective measure against burns.
- When a harmful liquid as listed below is used, be sure to conduct daily inspection and maintenance in order to prevent liquid/gas leakage.
 1. Explosive or flammable liquid
 2. Corrosive chemicals
 3. Harmful liquid or gas

- (1) Ensure that there is no air bubbles in the liquid used. If the air-containing operation is performed, the sliding part will generate heat and the pump may be damaged.
- (2) If the specific gravity and viscosity of the liquid to be handled are different from those of fresh water, the shaft power, discharge rate and head will change. The pump is manufactured according to the specifications at the time of purchase. However, if you need to change the planned specifications, please contact us.
- (3) In principle, handling of slurry liquid is not possible. However, under an agreement of the contract, SiC bearing may be used depending on the type of liquid used and operating conditions.

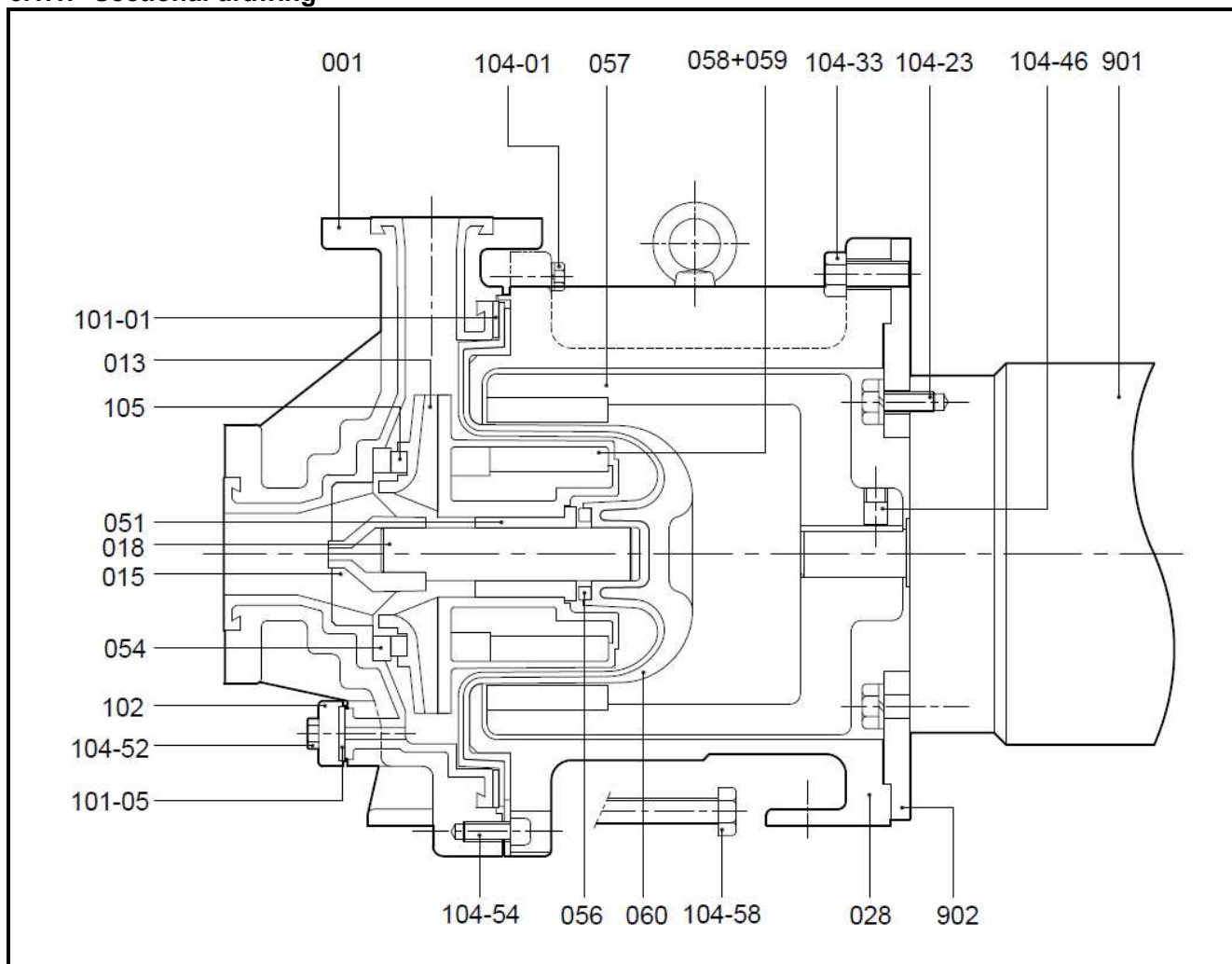
5.8. Others

- (1) Run the auxiliary pump attached to the piping periodically to confirm its readiness for operation.
- (2) A no-load operation of the pump will cause a seizure of the bearing and may result in a fatal accident and therefore, must be avoided at all times.

6. Maintenance and Inspection

6.1. Construction and Parts name

6.1.1. Sectional drawing



| No. | Parts Name | Material | Qty | Remark | No. | Parts Name | Material | Qty | Remark |
|-----|-------------------|-----------------|-----|---------------|--------|------------------------|----------|-----|--------|
| 001 | Casing | PFA+FCD450 | 1 | Wet side: PFA | 101-01 | Casing gasket | PTFE | 1 | |
| 013 | Impeller | PFA | 1 | ※2 | 101-05 | Drain gasket | PTFE | 1 | |
| 015 | Shaft support | PFA | 1 | | 104-01 | Casing bolt | SUS304 | 6 | |
| 018 | Shaft | SiC | 1 | | | | | | |
| 028 | Bracket | FC200 | 1 | | 104-23 | Motor bolt | SUS304 | 4 | |
| 051 | Bushing | C-PTFE/SiC | 1 | Carbon | 104-33 | Motor liner bolt | SUS304 | 4 | |
| 054 | Front thrust ring | SiC | 1 | | 104-46 | Outer magnet set screw | SCM | 2 | |
| 056 | Rear thrust ring | SiC | 1 | | 104-52 | Drain bolt | SUS304 | 2 | |
| 057 | Outer magnet | Rare earth | 1 | | 104-54 | Rear casing bolt | SUS304 | 4 | |
| 058 | Inner magnet | Rare earth | 1 | ※2 | 104-58 | Dis./Assembly bolt | SUS304 | 2 | |
| 059 | Magnet lining | PFA | | | | | | | |
| 060 | Rear casing | PFA+Eng.plastic | 1 | Wet side: PFA | 901 | Motor | | 1 | |
| 102 | Drain flange | FC200 | 1 | ※1 | 902 | Motor liner | SS400 | 1 | |
| 105 | Mouth ring | C/G-PTFE | 1 | Carbon/SiC | | | | | |

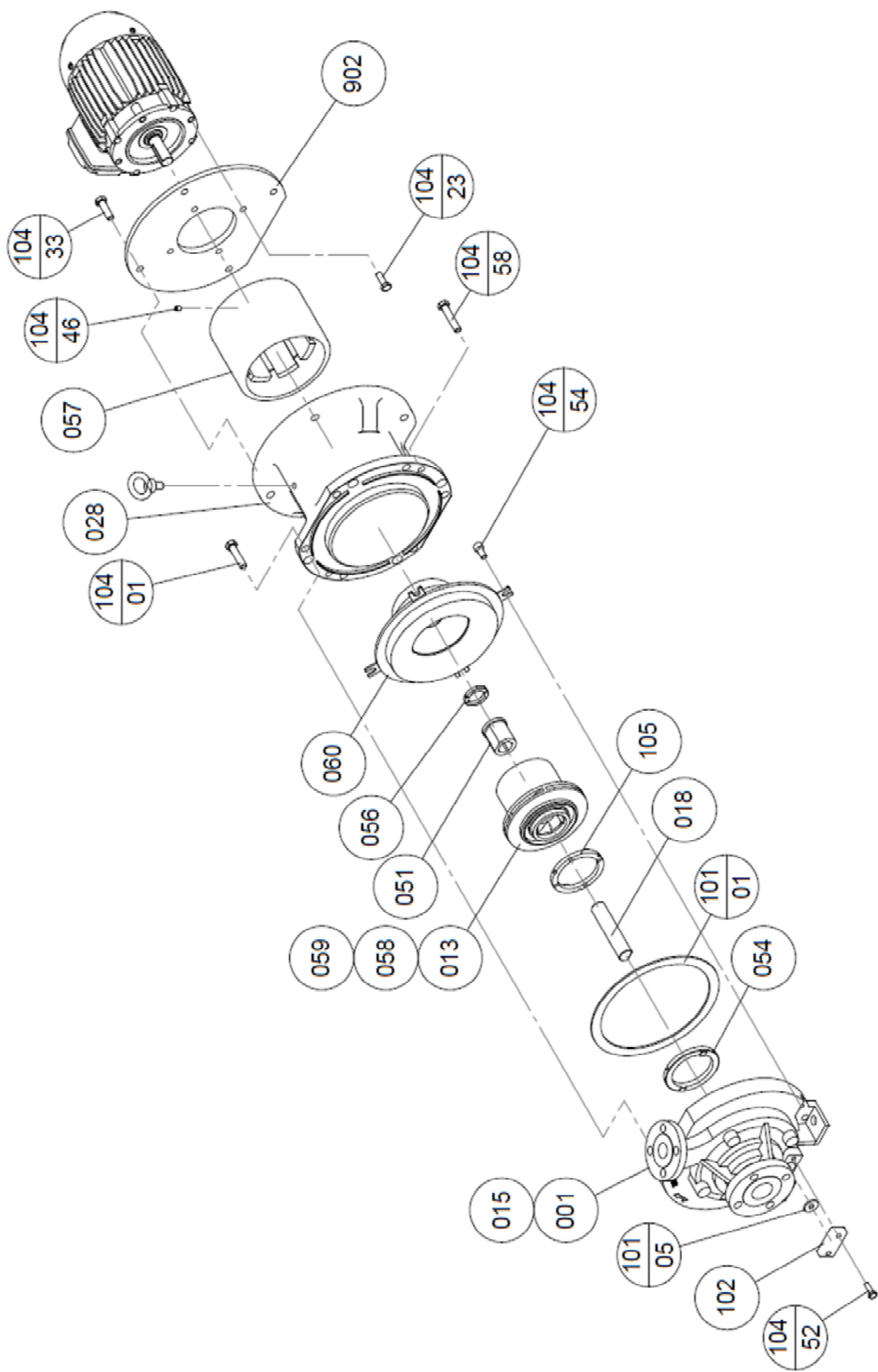
(NOTE)

※1 : The direction of drain depends on the model.

※2 : Solid parts

The part names and part numbers shown in this manual may differ from the delivery specifications.

6.1.2. Exploded view



6.2. Maintenance and Inspection

In order to operate the pump smoothly, it is recommended to implement a regular inspection program and keep the record. Shown below are general points of maintenance.

6.2.1. Routine inspection

Perform the following inspection and record the results.

- (1) The fluid level of the supply tank
- (2) The suction and discharge pressure
- (3) The current of the motor and the bearing temperature
- (4) Abnormal noise and abnormal vibration
- (5) Leaks on flanges and gasket

6.2.2. Regular inspection

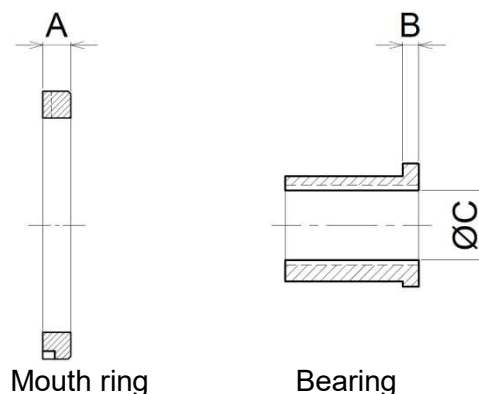
Be careful in handling metals not to squeeze hands or fingers since the outer and inner magnets are very strong (magnetic force).

Also, be extra careful in handling the shaft, bearings, and thrust rings as they have a potential risk of breakage and may cause serious injuries.

6.2.3. Abrasive limit of the Bearing

| Status | A (mm) | B (mm) | C (mm) |
|----------------------------|--------|--------|--------|
| At the time of delivery | 8.0 | 6.0 | 26.0 |
| At the time of replacement | 7.0 | 5.0 | 27.0 |

Fig.6-1



| Components | Inspection item | Action/replacement timing |
|---------------|--|--|
| Casing | Accretion on the interface with the fluid | Wash |
| | Corrosion and swelling on the gasket | Replace if faulty |
| | Presence of cracks | Check the cause if present |
| | Presence of wears, rubbing, or cracks on the front thrust | Check the cause if present |
| Impeller | Accretion on the blades, presence of foreign matters | Wash |
| | Trace of contact | Check the cause if present |
| | Wear on the mouth ring | Check the cause if present |
| Inner magnet | Rubbing against the rear casing | Check the cause if present |
| | Presence of cracks on the edge and cylinder inner surfaces | Check the cause if present |
| | Accretion on the interface with the fluid | Wash |
| | Wear on the bearing | Check the cause if abnormal |
| | Clogged cooling path on the bearing | Wash |
| Rear casing | Rubbing against the inner magnet | Check the cause if present |
| | Accretion on the interface with the fluid | Wash |
| | Presence of wears, rubbing, or cracks on the rear thrust | Check the cause if present |
| Shaft | Presence of cracks | Check the cause if present |
| | Wear on the bearing | Check the cause if abnormal |
| Outer magnet | Rubbing against the rear casing | Check the cause if present |
| | Connection condition of the motor shaft, loose screws | Redo tightening at the proper position |
| Motor bearing | Presence of abnormal noise | Once every two years (※) |

※ Follow the motor manual.

6.3. Disassembly & Assembly

Disassembly and assembly of the pump must be performed following the instructions within the scope of this manual. Do not disassemble anything beyond the point stated in this manual.

Please be aware that if the product is disassembled or the product is modified beyond the scope of the manual, the product cannot be covered by the warranty and we will not be liable for any accident or damage that may occur.

Ensure to have enough work space and work with safety in mind.



Information

Pump parts, especially cast parts and electric motor, are very heavy and it is advisable to work with a chain block or crane.



Information

The pump delivered may differ in appearance and shape from the photos shown in this manual.

6.3.1. Notes on Disassembly



Warning

- There is a danger of injury resulting from the human body getting in contact with the chemical during or after the disassembling operation.
- If a finger gets caught in between the inner or outer magnet and a metal when they attract each other, it may cause a serious injury can be expected.
- The pump is a rotational machine and the worker may suffer a serious injury if the power is turned on with the rotor exposed during the disassembling operation.

- (1) Wear appropriate protective gears (rubber gloves, protective goggles) before disassembling the pump.
- (2) Be careful in handling the shaft and bearings as they are vulnerable to physical damage.
- (3) Since the inner and outer magnets are strongly magnetized, pay attention to attraction of metallic dusts and metallic items.

6.3.2. Preparation for Disassembly

- (1) Ensure the safety of operation such as securing the footing.
- (2) Turn OFF the main power to prevent an accidental operation of the motor and place a sign to clearly indicate that a maintenance work is in progress so that no one would turn on the power.
- (3) Close the valves on the suction/discharge piping completely and place a sign to clearly indicate that a maintenance work is in progress so that no one would release the valves.
- (4) Drain liquid from the pump and piping using the drain provided on the pump.

As for the procedures for draining, refer to the general example explained below and give a thorough consideration to the fluid and working environment involved.

- 1) Release the pump drain.
- 2) Loosen the bolts on the discharge side drain connection slowly and evenly. If the fluid leaks from the drain during this operation, wait for the fluid to stop and retreat to a safe position until the fluid comes to a complete stop.



Warning

- (1) If the bolts on the pump flange on the discharge side were loosened quickly, the fluid may scatter from the drain and cause a serious injury to the worker.
 - (2) It is dangerous to stand in front of the drain during the draining operation. Always check the standing position while proceeding with the operation.
- (5) Repeat the step 2) described above and confirm that the drain operation is complete by lifting the piping with a screwdriver or a similar tool when the bolts are removed.

6.3.3. Disassembly

- (1) Remove the bracket bolts (104-17).



Photo 6- 1

- (2) Remove the casing bolts (104-01).



Photo 6- 2

- (3) While the motor is in place, move the bracket (028) backward until the rear casing (060) becomes visible. In doing so, the bracket can be inched safely by inserting casing bolts or assembling/disassembling bolts into the left and right screw holes on the front surface of the bracket and tightening them evenly. Use this method if it is not possible to apply sufficient safety measures.



Photo 6- 3

- (4) Remove the rear casing bolts (104-54).



Photo 6- 4

- (5) Remove the rear casing (060) by pulling it backward.



Photo 6- 5

- (6) Also remove the inner magnet (058+059) and the impeller (013) by pulling them backward.



Photo 6- 6

6.3.4. Assembly

For assembly of the pump, follow the disassembly procedure in reverse order.

- (1) Insert the motor (with outer magnet) into the bracket (028) and secure it with motor bolts.
- (2) Insert the inner magnet (with impeller) into the shaft of the pump (018), set the casing gasket (101-01) on the rear casing, fit the rear casing into the casing, and secure it by tightening the rear casing bolts. (Hold the tightening torque to the level of manual tightening.)
- (3) Move the bracket forward and tighten the casing bolts with a torque of $41 \text{ N} \cdot \text{m}$ ($\pm 3\%$) onto the casing. If bolts such as assembly/disassembly bolts had been used in disassembly, ensure to remove them here.

Warning

If a finger gets caught in between the inner/outer magnet and a metal when they attract each other, it may cause a serious injury.

- (4) Secure the bracket by tightening the bracket bolts.
- (5) Upon completion of assembling, remove the motor fan cover of the motor and confirm that the motor fan can be turned easily by hand. If the motor fan does not turn or its turn seems heavy, it will be necessary to disassemble the pump and ensure to assemble it properly.

6.3.5. Replacement of the Motor and the Outer magnet

- (1) For dismounting the motor from the bracket, hang the motor by using an eyebolt equipped (or Nylon sling) on it for the safety first.
- (2) Remove the motor bolts (104-23) and possibly the motor liner bolts (104-33) if there are.



Photo 6- 7

- (3) Pull out the motor.



Photo 6- 8

- (4) Place the motor upright on the floor with its motor fan cover, which has been removed from the bracket, facing down.
- (5) Loosen the outer magnet set screws (104-46).



Photo 6- 9

- (6) Pull out the outer magnet (057) from the motor shaft.



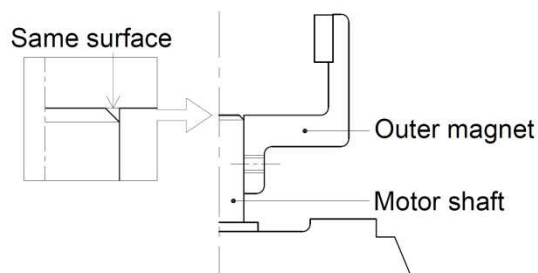
Photo 6- 10

- (7) To install, insert the outer magnet (057) into the motor shaft and tighten the outer magnet set screws (104-46) observing the torque.

| Screw size | Torque (N • m) |
|------------|----------------|
| M8 | 15 (±3%) |
| M10 | 30 (±3%) |

While doing so, align the bottom of outer magnet and the top of the motor shaft. (Fig. 6-2)

Fig.6-2



6.3.6. Replacement of the Shaft

Insert a Phillips screwdriver through the hole on the shaft support section and, with the tip of the screwdriver touching the shaft, tap on its head with a plastic hammer until the shaft becomes free. To put back the shaft in place, align the notch on the shaft support section and the shaft and then tap on the shaft with a plastic hammer to insert it until it is firmly in place.



Photo 6- 11



Photo 6- 12

6.3.7. Replacement of the Bearing

To remove the bearing, insert a round rod (of diameter around 38 mm) from the impeller side and hammer the bearing out little by little with a plastic hammer. To reinstall, align the notch on the bearing and the inner magnet and tap on the bearing with a plastic hammer to insert it slowly. In doing so, cover the points of hammering with a cloth to avoid damaging the bearing.



Photo 6- 13

6.3.8. Replacement of the Mouth ring and the Front/Rear thrust ring

Since these parts are secured by holding tabs, melt those holding tabs with a hot-air welder and raise them before removing the parts. To set new parts, align the notch on respective parts, melt the holding tabs with a hot-air welder, and crush them with a round rod to secure the parts firmly.



Photo 6- 14

6.3.9. Replacement of the Shaft support

The MTA model is designed to allow replacement of the shaft support, which holds the shaft. Since the shaft support is welded onto the casing, the weld must be cut off with a lathe or similar device to remove the shaft support. To replace a new shaft support, check the orientation of the reinforcement rib, insert the shaft support, and then weld the entire circumference.

Note: This working should be suggested to ask the vendor or supplier.

6.4. Placing Parts order

When placing parts order, please have the pump model, serial number, parts name and ID number contact the vendor or supplier. A nameplate is placed on the bracket.



Caution

Do not reuse damaged parts.

6.5. Repair

If any abnormality is found during use, immediately stop the operation and investigate the cause.

- (1) Please read this instruction manual and inspect it again before requesting a repair.
- (2) For repair requests, please contact the vendor or supplier.
- (3) When sending a pump, etc., be sure to thoroughly wash it as it is dangerous if chemical liquid remains inside.
- (4) When requesting repairs, please inform us of the following matters.
 - ① Product type and serial number
 - ② Failure location and its status
 - ③ Period of use and conditions of use (liquid name, concentration, temperature, etc.)

6.6. Warranty period and Coverage

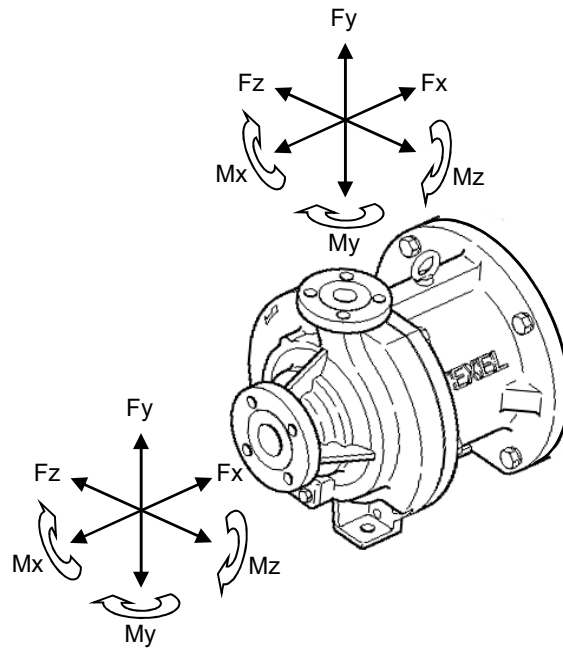
- (1) Warranty period: One year from the date of delivery.
- (2) Free repair: Within the warranty period, we will provide free support for failures and damages caused by defects in our design and manufacturing.
- (3) Paid repair: Repairs for failures/damages due to the following causes.
 - ① Repair of products after warranty period has expired.
 - ② Repair of failures and damages caused by incorrect handling.
 - ③ Repair or modification by anyone other than us or a person designated by us.
 - ④ Use of parts other than those specified by us.
 - ⑤ Damage due to disasters such as earthquakes and fires and force majeure.
- (4) If the product based on the standard or material specified by the customer is broken or damaged, it is not covered by the warranty.
- (5) We are unable to compensate for various expenses resulting from accidents of delivered products, secondary damage such as damage to other equipment, devices and equipment, and expenses required for restoration.

6.7. Disposal of used pump and parts

Remove a chemical and flush it out before the pump is disconnected from piping. Dispose of any used or damaged pump in accordance with local rules and regulations. If necessary, consult a licensed industrial waste disposal company.

7. Allowable Piping Load

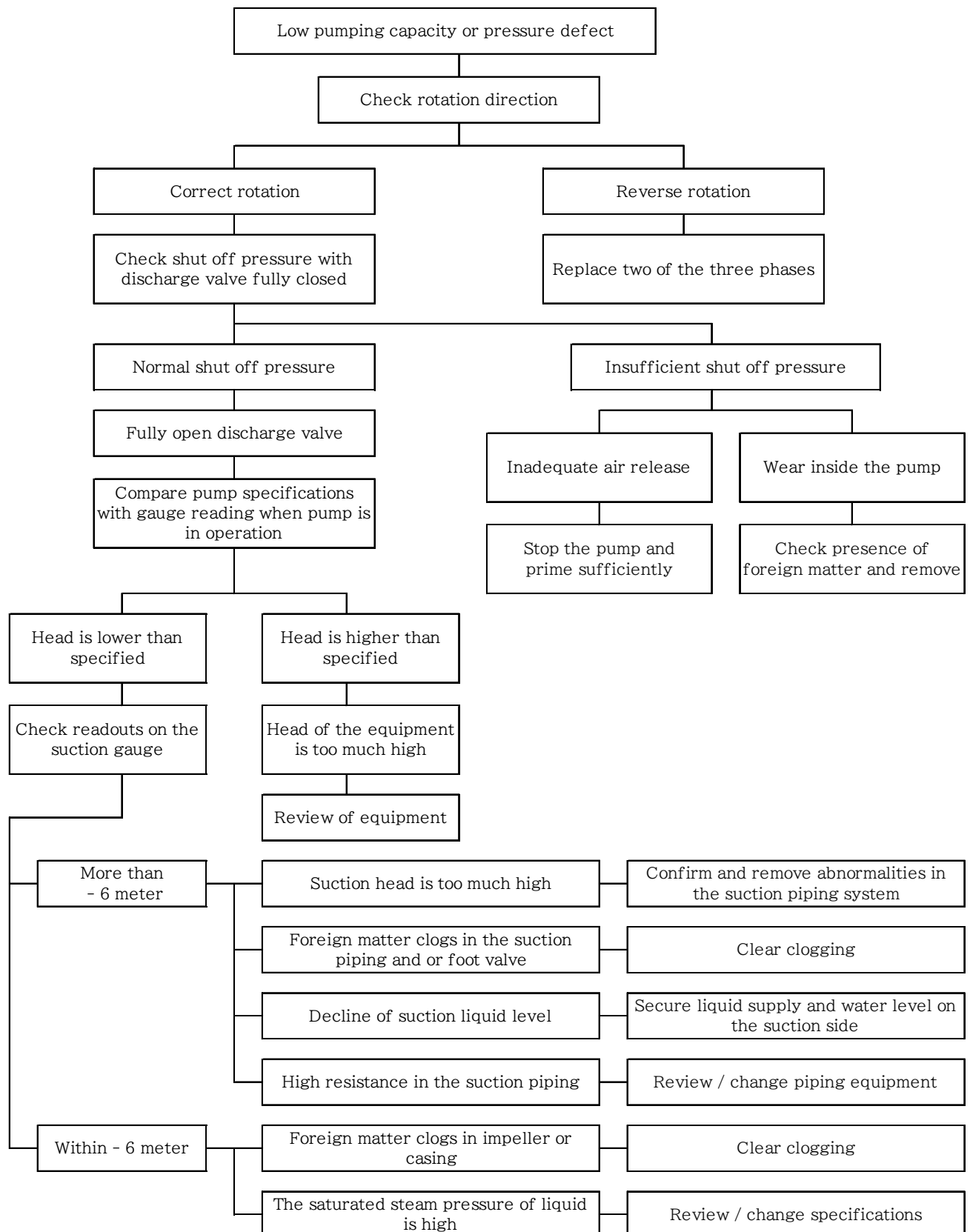
When connecting the pipes, the load and moment of the pipes applied to the pump should not exceed the values in the table below.



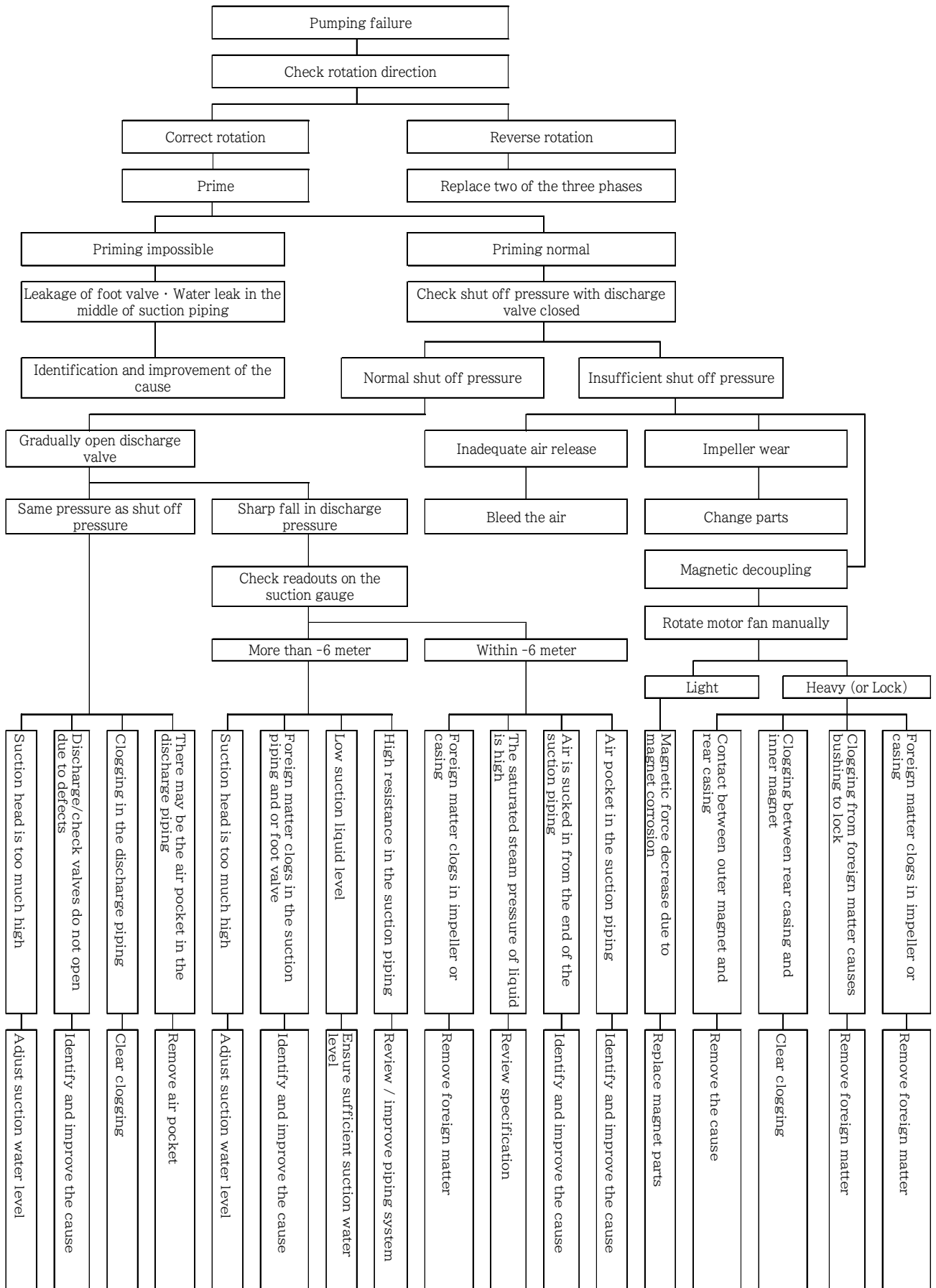
| MODEL | SUCTION | | | | | | DISCHARGE | | | | | |
|----------|-----------|-------|-------|---------------|-------|-------|-----------|-------|-------|---------------|-------|-------|
| | FORCE (N) | | | MOMENTS (N·m) | | | FORCE (N) | | | MOMENTS (N·m) | | |
| | F_x | F_y | F_z | M_x | M_y | M_z | F_x | F_y | F_z | M_x | M_y | M_z |
| MTA-1516 | 774 | 392 | 647 | 588 | 392 | 294 | 617 | 314 | 519 | 470 | 314 | 235 |
| MTA-1518 | | | | | | | | | | | | |
| MTA-0326 | 1588 | 794 | 1323 | 1205 | 804 | 608 | 1274 | 637 | 1058 | 960 | 647 | 490 |

8. Troubleshooting

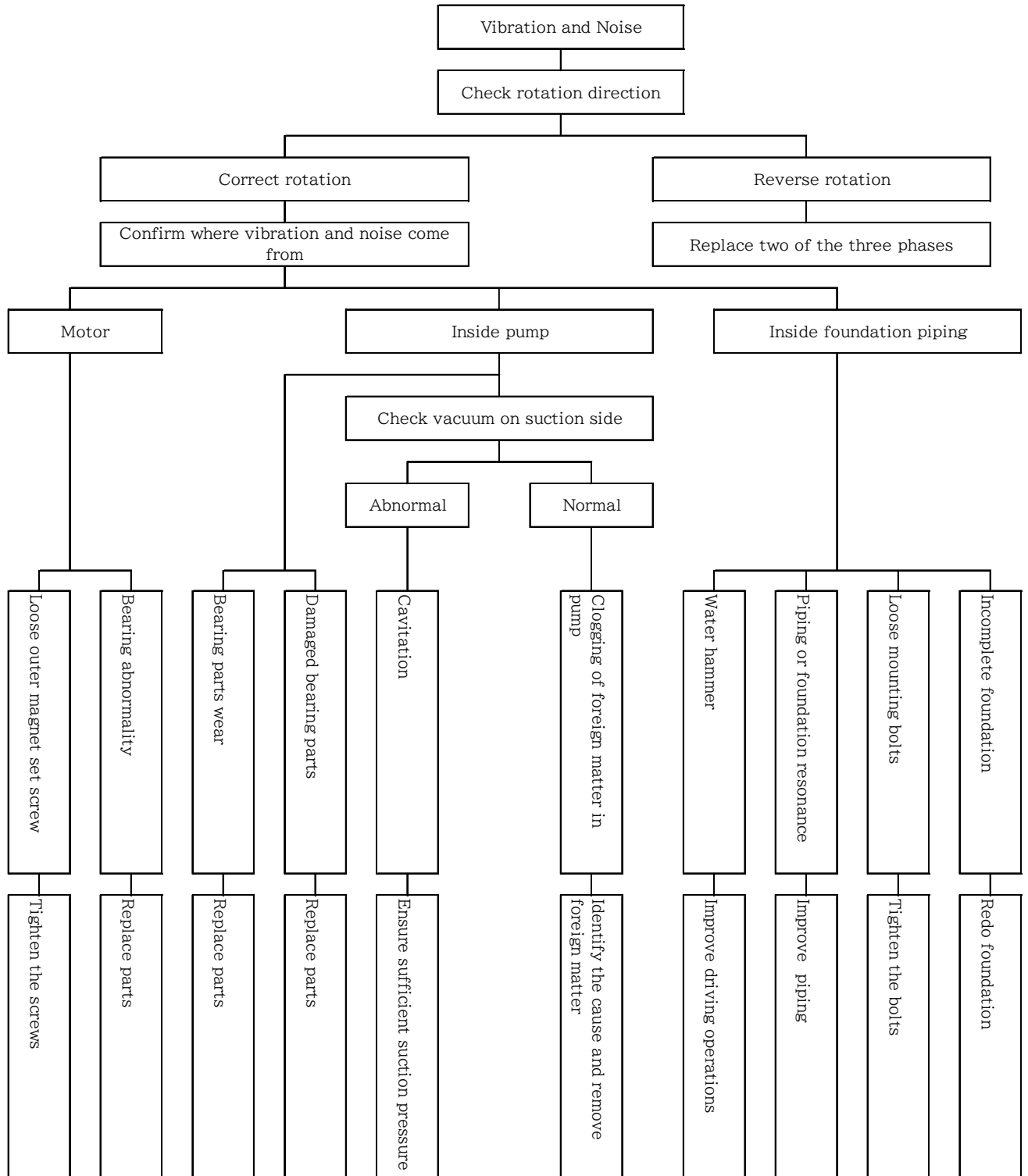
8.1. Insufficient flow/Pressure



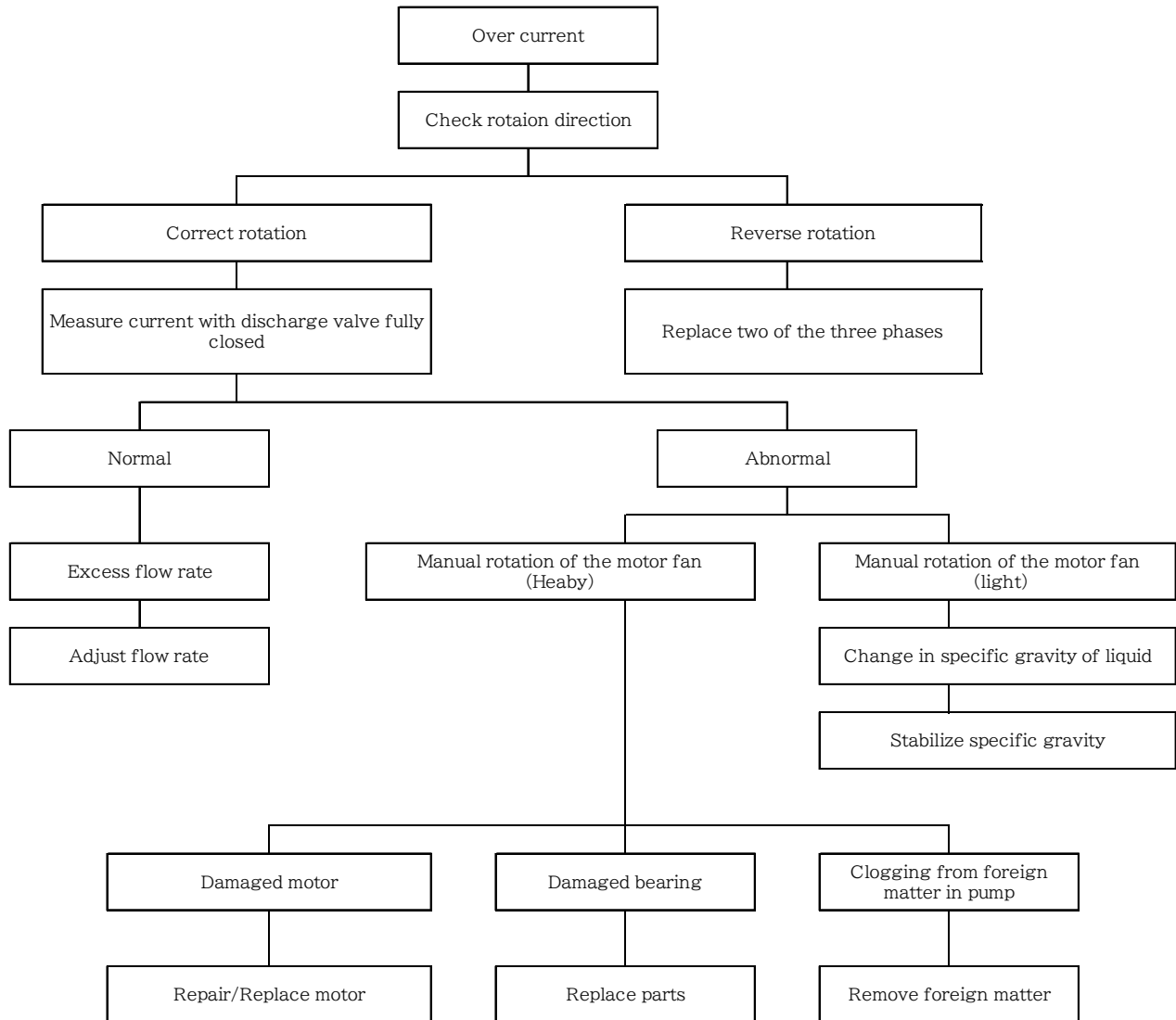
8.2. Pumping failure



8.3. Vibration and Noise



8.4. Over current



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