

IWAKI Magnetic Drive Pump

MDM Series (Long coupling type)

Instruction Manual

⚠ Read this manual before use of product

This is patent pending product.

Thank you for selecting IWAKI Magnetic Drive Pump MDM Series. This instruction manual, which is divided into five sections, namely "Safety", "Outline of Product", "Installation", "Operation" and "Maintenance", deals with the correct handling and operation procedures for the pump. To make maximum use of the pump and to ensure safe and long time operation of the pump, please read this manual thoroughly and carefully prior to operating the pump.

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Safety Section



For the Safe and Correct Handling of the Pump

- Before use of the pump, read carefully this "Safety Section" to prevent accidents and to avoid the damage or loss of other assets.
- Observe and abide by the instructions described in this "Safety Section". These instructions are very important for protecting pump users or other persons from hazard or from loss of assets.
- Meaning of symbols

Following two symbols describe the extent of hazards and loss which may brought if the instructions are not observed or if the pump is wrongly used.

 Warning	Nonobservance or misapplication of the contents of the "Warning" could lead to a death or heavy injury of person.
 Caution	Nonobservance or misapplication of the contents of the "Caution" could lead to a injury of person or damage of assets.

Following two symbols describe the content to be observed.

	Prohibited action or procedure is indicated. Inside or near this circle, a concrete activity to be prohibited is depicted.
	Action or procedure which must be performed without fail is indicated. Inside this circle, a concrete activity to be performed is depicted.

For Use of Our ATEX-Certified Models in Explosive Environments

Use the attached additional instructions as well as this standard manual.

Export Restrictions

Technical information contained in this instruction manual might be treated as controlled technology in your countries, due to agreements in international regime for export control.

Please be reminded that export license/permission could be required when this manual is provided, due to export control regulations of your country.

Safety Section

WARNING

● Access limitation

The magnet drive pump has a pair of strong magnets (the magnet capsule unit and drive magnet). The strong magnet field could adversely affect the persons who are assisted by electronic devices such as the pacemaker.



● Turn off power before work

Be sure to turn off power to stop the pump and related devices before work. Make sure no one turns on power by mistake while working on the pump, otherwise it may result in a serious accident. If your working area is noisy or dark, let other people know about the situation by displaying a notice such as "POWER OFF (Maintenance)" near a power switch.



● Wear protective clothing

Always wear protective clothing such as an eye protection, chemical resistant gloves, a mask and a face shield during disassembly, assembly or maintenance work.



● Use the eye bolt or lifting holes

Use the eye bolt when lifting the pump unit only or use lifting holes on the base if the pump unit is mounted on it. In the latter case, do not use the eye bolt. Use an overhead crane or any other proper transporting machine. Two or more operators may be needed for ensuring safe transport depending on the pump size and weight.



● Do not modify the pump

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



● When handling harmful liquid

When a harmful liquid as mentioned below is used, be sure to conduct daily inspection and maintenance for the prevention of liquid/gas leakage.

1. Explosive or flammable liquid
2. Corrosive chemicals
3. Harmful liquid or gas



● Ventilation

Fumes or vapours can be hazardous with certain solutions. Ensure proper ventilation at the operation site.



Safety Section

CAUTION

- **Do not catch the finger**

Magnetic force of the pump is powerful. Take care not to catch the finger in the bracket. Observe the instructions on the later pages for disassembly and assembly.



- **Do not run pump dry**

Do not run pump dry (operation without priming water or with a suction valve closed). Internal parts are excessively worn by friction heat and fatal pump damage results.



Prohibition

- **Qualified personnel only**

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



- **Do not use the pump/motor in any condition other than its intended purpose**

The use of the pump/motor in any conditions other than those clearly specified may result in failure or injury. Use this product in specified conditions only.



Prohibition

- **Static electricity**

When low electric conductivity liquids such as ultra-pure water and fluor inactive liquid (e.g. Fluorinert™) are handled, static electricity may generate in the pump and may cause static discharge. Take countermeasures to remove static electricity.



- **Commissioning**

Friction heat builds up and damages the internal parts. Break in the pump to expel gas from the pump and piping, especially when handling liquids that generate gas bubbles (sodium hypochlorite or hydrogen peroxide).



- **Spill precautions**

Ensure protection and containment of solution in the event of plumbing or pump damage (secondary containment).



- **Disposal of a used pump**

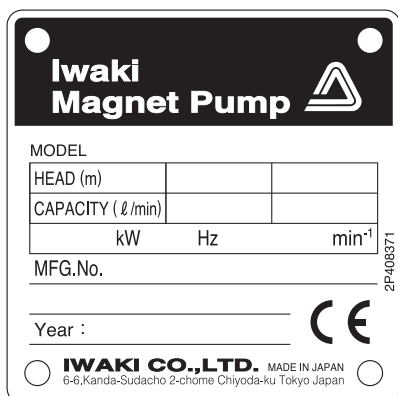
Remove a chemical and flush it out before the pump is disconnected from piping. Dispose of any used or damaged pump in accordance with local rules and regulations. If necessary, consult a licensed industrial waste disposal company.



OUTLINE OF PRODUCT

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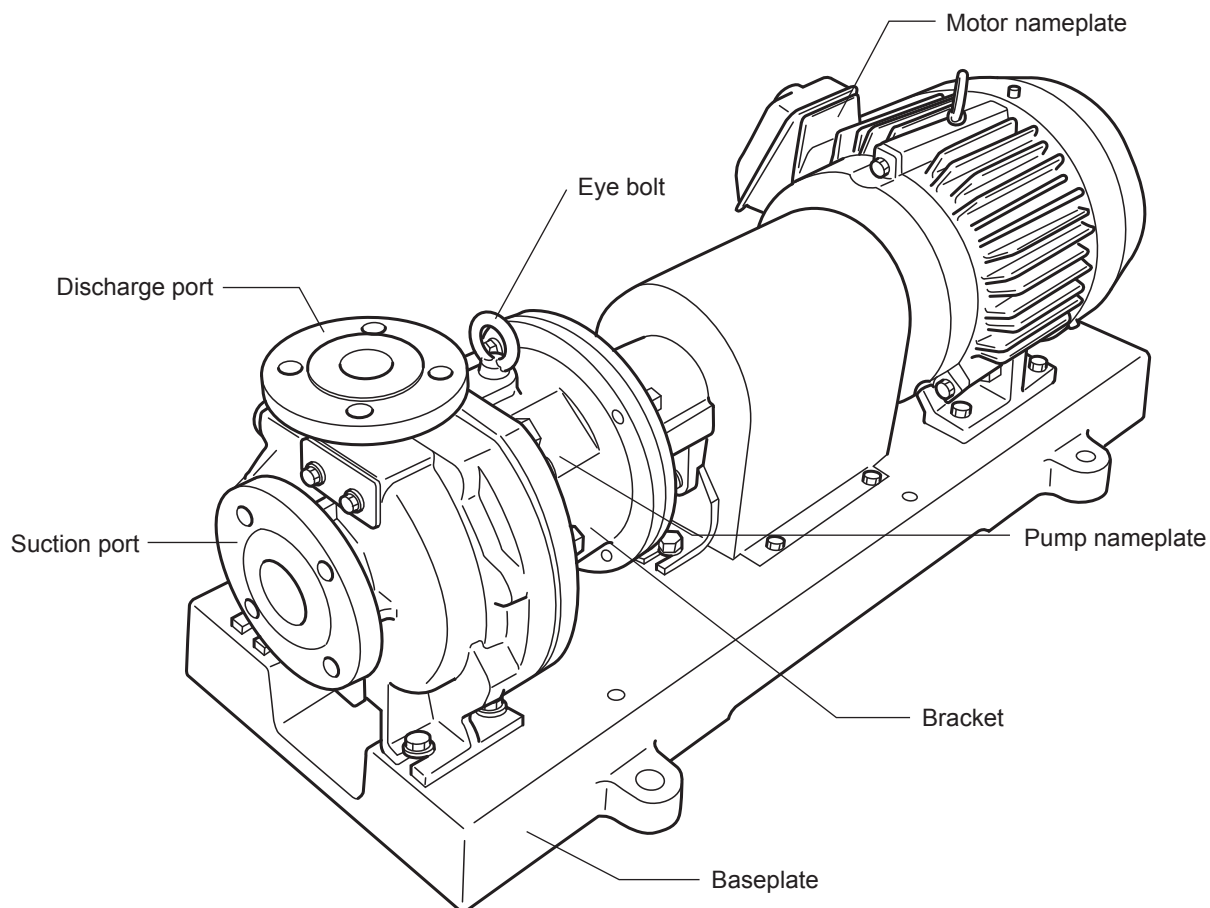
1. Unpacking and inspection



*The CE marking on our product(s) is for us to market the product(s) into the European market, however, the CE marking does not ensure any safety or conformity of the product(s) outside the European market. When the pump is incorporated into the equipment marketed in the European market, such equipment must meet all the requirements of applicable directives. In such a case, any person who places the equipment on the market must carry a CE mark on the equipment as a manufacturer.

After unpacking of the pump, check the following points.

- (1) If the product is ordered one.
Check model code, discharge capacity, discharge pressure, voltage which are written on nameplate of pump and motor to see if they conform to your order.
- (2) If the product is not damaged or bolts are not loosened during transportation. Tighten especially the bolts which are holding a rear casing support to the specific tightening torque subsequent to the first tightening. Refer to the "13. Disassembling & assembling" for the specific torque value.
- (3) If accessories are attached.
Standard accessories:
Bolts for back pull-out M12 × 90: 2pcs
Optional accessories if ordered.



2. Model code

MDM 80-50-160 P KK C 075 I - D 2 H

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Pump sizes

Suction	Discharge	Nominal impeller diameter
50	× 32	160/200
65	× 40	160
80	× 50	160

② Casing material P: PFA
 ③ Bearing/spindle material KK: SiC/SiC
 ④ Type of motor to be mounted C: Foot mounted motor type
 ⑤ Motor output

022: 2.2 kW, 040: 4.0 kW, 055: 5.5 kW,
 075: 7.5 kW, 110: 11 kW, 150: 15kW

⑥ Standard for connection flange/motor
 I: ISO pump flange + IEC motor

⑦ Drain/special version

	Drain	Baseplate	Standard or Special version
A	Without drain	With baseplate	Standard
S			Special version
D	With drain		Standard
X			Special version
B	Without drain	Without baseplate	Standard
Y			Special version
E	With drain		Standard
Z			Special version

Note: For PFA material type, air vent is always equipped for "with drain" type.

⑧ Motor pole 2 : 2 pole motor
 4 : 4 pole motor
 ⑨ High temperature type: No code : Standard
 H : High temperature type (80 to 120 deg.C)
 T : High temperature type (120 to 150 deg.C)

Note: See the nameplate for the actual impeller outer diameter.

3. Conditions to be used

1. Permissible pressure

Permissible pressure of the pump is 1.6 MPa. Pay attention so that the pump discharge pressure does not exceed this figure.

2. Slurry containing liquid

Basically slurry containing liquid can not be handled but SiC bearing type (KK type) can handle it in the following conditions:

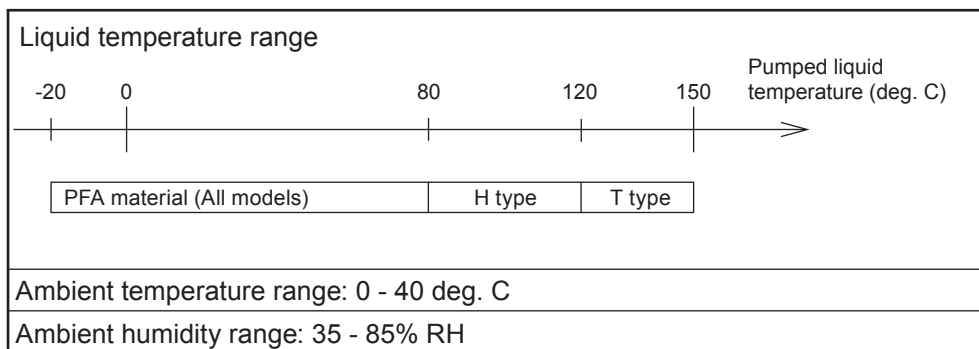
- Slurry concentration up to 5 wt%
- Slurry hardness up to 80 Hs
- Slurry size up to 50 μm

3. Performance change caused by specific gravity and viscosity of liquid

When specific gravity and viscosity are larger than water, shaft power, discharge capacity and discharge head will change depending on specific gravity and viscosity of pumped liquid. The pump was made and shipped according to the information given to IWAKI. If the liquid condition is changed, ask and confirm IWAKI to use the pump without problem.

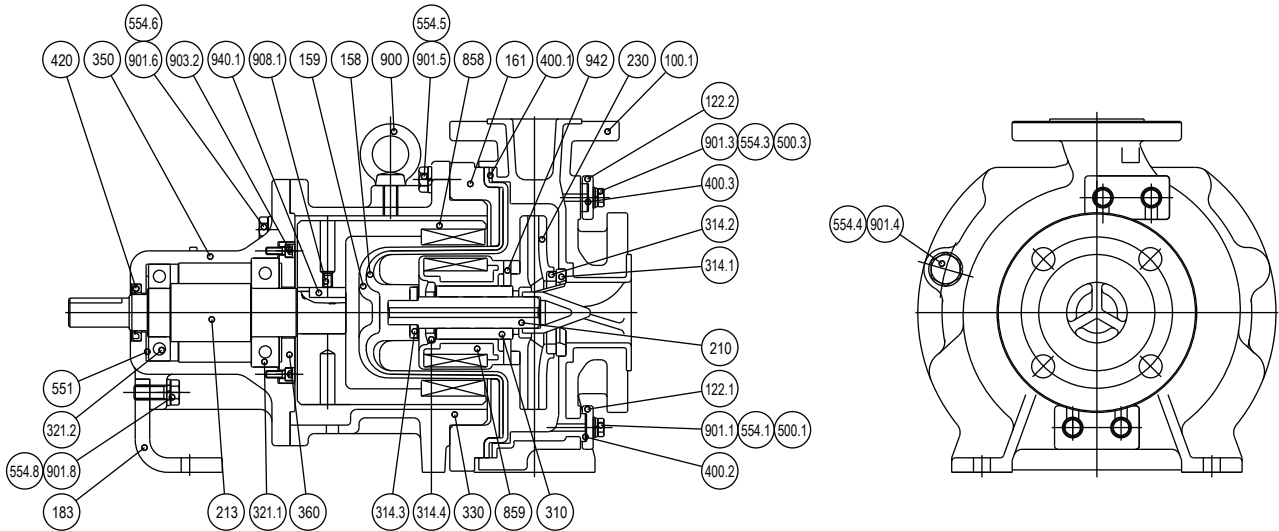
4. Influence by liquid temperature

The chemical liquid changes its viscosity, vapour pressure and corrosively according to the temperature change. Pay attention to the change of liquid characteristics.



Note: For liquid temperature below zero deg. C and above 120 deg. C, please contact IWAKI because detailed operating condition must be considered for these temperature ranges.

4. Structure and names of parts



NO.	Parts name	Q'ty	NO.	Parts name	Q'ty
100.1	Front casing	1	420	Shaft seal	1
122.1	Drain plate	1	500.1	Plain washer	2
122.2	Air vent plate	1	500.3	Plain washer	2
158	Rear casing	1	551	Wave washer	1
159	Rear casing cover	1	554.1	Spring washer	2
161	Rear casing support	1	554.3	Spring washer	2
183	Support	1	554.4	Spring washer	8(10)
210	Spindle	1	554.5	Spring washer	4
213	Drive shaft	1	554.6	Spring washer	4
230	Impeller	1	554.8	Spring washer	2
310	Bearing	1	858	Drive magnet unit	1
314.1	Liner ring	1	859	Magnet capsule unit	1
314.2	Mouth ring	1	900	Eye bolt	1
314.3	Rear thrust ring	1	901.1	Hex. head bolt	2
314.4	Rear ring	1	901.3	Hex. head bolt	2
321.1	Ball bearing	1	901.4	Hex. head bolt	8(10)
321.2	Ball bearing	1	901.5	Hex. head bolt	4
330	Bracket	1	901.6	Hex. head bolt	4
350	Bearing housing	1	901.8	Hex. head bolt	2
360	Bearing cover	1	903.2	Hex. soch head bolt	6
400.1	Gasket, casing	1	908.1	Hex. soch set screw	2
400.2	Gasket, drain	1	940.1	Key	1
400.3	Gasket, air vent	1	942	Pin impeller	2

Note 1: Q'ty in parentheses (10) is for MDM50-32-200 & MDM80-50-160.

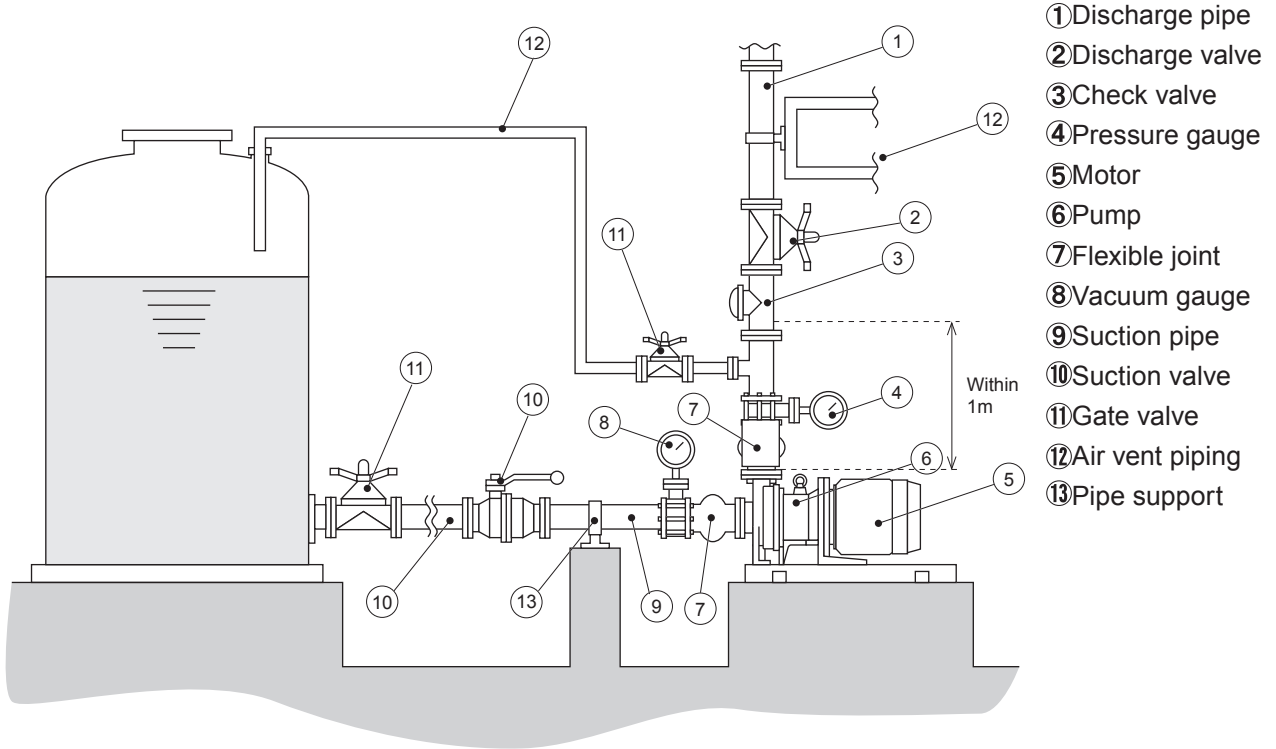
2: H type and T type have different structure in a part of the component parts. Refer to the dimension of H type and T type for further information.

INSTALLATION

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5. Installation

Example of recommended piping



1. Installed position

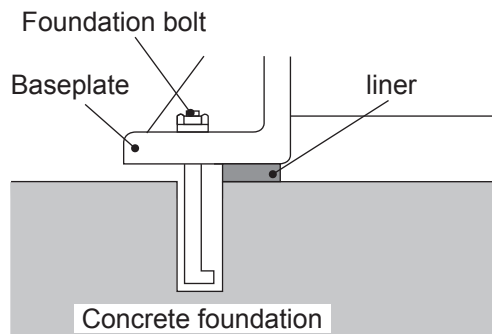
- Install and fix the pump on the foundation which is not affected by vibration generated by other machines.
- Keep enough space around the pump for the back pull-out of motor, assembly and disassembly of the pump.
- Foundation area must be larger than pump base plate.

2. Location

- Install the pump as close to the tank as possible and at lower position than the tank (flooded suction).
- If the pump is installed at the location that the pump suction port comes higher position than the liquid level of tank (suction lift style), install the priming piping and foot valve at the end.

3. Foundation

- Refer to illustration below.



6. Piping

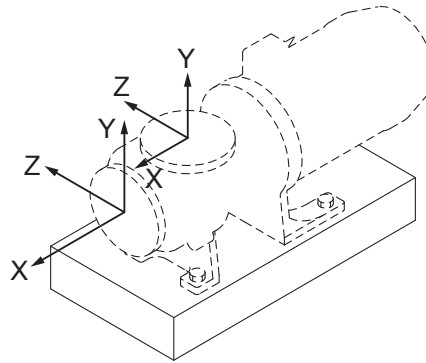
1. Tightening of pipe flange

Table below shows the bolt size and tightening torque for the connection of pipe flange to pump flange. Tightening torque is the figure when metallic flange and rubber gasket are used.

Bolt size	Tightening torque
M16	78.4 N · m

2. Pipe load and moment

Pipe load and moment put on the pump should not exceed the figures shown below.



Allowable pipe load on pump flange

Direction of load	Load kN			
	Discharge flange		Suction flange	
	MDM50-32-160 MDM50-32-200 MDM65-40-160	MDM80-50-160	MDM50-32-160 MDM50-32-200 MDM65-40-160	MDM80-50-160
F _x	0.71	1.07	0.89	1.33
F _y (Pression/Tension)	0.89/0.44	1.33/0.67	0.58	0.89
F _z	0.58	0.89	0.71	1.07

Allowable moment on pump flange

Direction of load	Load kN·m			
	Discharge flange		Suction flange	
	MDM50-32-160 MDM50-32-200 MDM65-40-160	MDM80-50-160	MDM50-32-160 MDM50-32-200 MDM65-40-160	MDM80-50-160
M _x	0.35	0.72	0.46	0.95
M _y	0.46	0.95	0.35	0.72
M _z	0.23	0.47	0.23	0.47

3. Suction piping

(1) Flooded suction

Flooded suction is recommended.

(2) Pipe diameter

Pipe diameter should be larger than pump inlet bore.

(3) Shortest piping

Employ less bends and shortest piping length.

(4) Straight piping

Employ straight pipe just before pump inlet port.

Pump inlet bore 50A or smaller : Straight pipe of 500 mm or longer

Pump inlet bore 65A or larger : Straight pipe of 8 times as larger than inlet port

For the easy pump dismantling and maintenance, install a removable short length pipe of 300mm or so in straight piping.

(5) Air pocket in piping

Do not allow any projection in piping where air may be trapped along the suction pipe.

Suction pipe should have an ascending gradient of 1/100 toward the pump.

(6) Different diameter of pipes

If diameter of pump suction port is different from that of suction pipe, use the eccentric reducer pipe. Connect the eccentric reducer pipe so that upper side is level. Residual air may not go out if it is mounted in reverse.

(7) Gate valve in suction side

In case of flooded suction, install gate valve in suction piping. It is needed when the pump is disassembled and inspected.

(8) Piping for flushing

Install pump flushing piping in case that the dangerous liquid will be handled.

(9) End of suction piping

The end of suction pipe always should be located 500 mm or more below the liquid level. Take care so that air can not be sucked in suction piping.

(10) In case of suction lift piping

- The end of suction piping should be 1 to 1.5 times of pipe diameter or more away from the bottom of suction tank.
- Install foot valve or check valve in suction piping.

(11) Pipe support

Install the pipe support so that the weight of pipe can not be directly loaded to the pump.

(12) Pipe connection

Pipes must be connected securely so that the air can not be sucked in. If the sealing is not perfect, air is sucked in, which causes pump damage.

4. Discharge piping

(1) Pipe diameter

In case the discharge piping is long, the specified performance may not be obtained because of unexpected pipe resistance if the pipe diameter is the same as pump bore. Calculate the pipe resistance in advance to decide proper diameter of pipe.

(2) Position of the first valve

Take 1m or so distance between pump and the valve located the nearest to pump and install air eliminating piping at the place close to the nearest valve to the pump so that air can not remain in pump. Refer to "Example of recommended piping" on page 10.

(3) Gate valve

Install the gate valve in discharge piping to adjust flow rate and to protect motor from over loading. If the check valve is also installed, recommended arrangement is : Pump → Check valve → Gate valve

(4) Pressure gauge

Install a pressure gauge in discharge piping to check the operating conditions such as discharge head etc.

(5) Check valve

Check valve must be installed in the following cases.

- Discharge piping is longer than 15 to 20 meters.
- Actual head exceeds 15 meters.
- Height difference between liquid level and discharge pipe end exceeds 9 meters.
- When two pumps are used in parallel.

(6) Air vent

If horizontal discharge piping is longer than 15 to 20 meters, install air vent on the way.

(7) Drain

If the liquid must be drained to protect from freezing, install the drain valve.

(8) Pipe support

Install the pipe support so that the pipe weight can not be loaded to pump.

(9) Priming piping

Install piping for priming in case of suction lift.

7. Electrical wiring

Electrical works or wiring must be carried out by qualified and authorized person according to local law or regulation.

- Use the electromagnetic switch which conforms to motor specifications such as voltage and capacity etc.
 - If pump is installed outdoor, wiring must be done so that water can not get into switch.
 - Electromagnetic switch and push-button switch must securely installed apart from the pump.
 - Star-delta starter, inverter or soft starter is recommended to start the motor of 5.5 kW or more power which drives the pump.
- * See the instruction manual of the motor manufacturer for the handling of the motor.

8. Protection

It is recommended to install the following monitoring devices to protect the pump.

- | | |
|--------------------------------|---|
| 1. Current sensor/Power sensor | The sensors monitor the motor load and stop the pump on the detection of load change. |
| 2. Pressure sensor | The sensor monitors the starting pressure and stops the pump on the detection of pressure change. |
| 3. Flow sensor | The sensor monitors the discharge flow and stops the pump on the detection of flow change. |
| 4. Level sensor | The sensor monitors the liquid level and stops the pump when it falls below the specified level. |

It is recommended to install two or more monitoring devices. The more monitoring devices are installed, the more possibility of protecting the pump.

The DRN series pump protector (an electric current sensing type abnormal operation preventive device) is also available as an option. Contact us for detail.

OPERATION

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9. Precautions on operation

CAUTION

- Never operate pump dry or with suction side valve closed.
- Do not run pump dry (operation without priming water or with a suction valve closed). Otherwise, internal parts are excessively worn by friction heat and fatal pump damage results.
 - * If the pump runs dry by mistake, turn off power and leave it for more than one hour to cool it down. Quick cooling can give rise to cracks on parts.
 - * An Iwaki dry run protector, the DR, is recommended for the prevention of dry running.
- Check the direction of rotation of pump. Clockwise seen from motor fan is correct direction. If operated in reverse, pump may be damaged.
- Stop the pump within one minute if it is operated in cavitation.
- Do not run pump with air sucking in.
- If magnet coupling is disconnected, pump can not transfer liquid. Stop pump within a minute and settle the cause of disconnection before pump is started again.
- Intermittent operation
Frequent repetition of stop/start is not recommended. Stop/start repetition must be limited to six times an hour. Frequent stop/run more than six times an hour may cause accelerated damage of parts and lowered durability.
- Temperature change at starting, stopping and operating of pump must be within 80 deg. C.
- Fully close the discharge valve when pump is started to avoid water hammer.
- If the pump is operated with discharge valve closed for a long time, the liquid temperature inside the pump rises, which may cause pump damage. Do not run the pump for more than one minute with discharge valve closed.
- If power is interrupted while pump is running, switch off pump and close discharge valve.
- Pay attention so that discharge pressure can not exceed pump allowable pressure of 1 MPa.
Check that there is no looseness on each bolt before operating pump. Tighten especially the bolts which are holding a rear casing support to the specific tightening torque subsequent to the first tightening. Refer to the "13. Disassembling & assembling" for the specific torque value.
- Observe the allowable minimum flow rate. If the pump is operated below the allowable minimum flow rate, bearing or rubbing parts may be seized due to lack of lubrication and cooling.
Allowable min. flow rate All pump sizes : 50 l/min.
- When high temperature liquid is transferred, pump surface becomes very hot. Take protective measure against burn.

Liquid temp.	Max. pump surface temp. (Amb. temp. 40 deg.C)
100 deg. C	90 deg. C
120 deg. C	110 deg. C
150 deg. C	135 deg. C
- Pump noise
85 dB(A) for MDM50-32-160, MDM65-40-160
95 dB(A) for MDM50-32-200, MDM80-50-160

10. Operation (Starting)

1. Fully close discharge valve and fully open suction valve.
2. Fill liquid into pump
 - In case of flooded suction, confirm if suction valve is fully opened.
 - In case of suction lift, prime to fill liquid into suction piping.
3. Check rotating direction of motor.
 - Start motor momentarily (within a second) to check direction. Direction is shown on "arrow" mark on pump. (Clockwise seen from motor fan side)
 - Also check if motor fan smoothly stops when switched off. If it does not stop smoothly, pump rotating parts may be locked. Check the rotating parts.
4. Air vent operation
 - Before pump operation, vent the air in the pump.
 - Fully open the valve in air vent piping and repeat one second running for three to five times.
 - After the air vent running, fully close the discharge valve.
Note: In case air vent piping is not equipped, open the discharge valve to repeat momentary run several times.
5. Starting pump
 - Start pump with discharge valve fully closed. (Maximum one minute)
 - Confirm that discharge pressure rises to shut-down pressure.
 - Gradually open discharge valve to get specified pressure (capacity).
Note: Pay attention to over-load caused by excessively opened valve.
Keep minimum allowable capacity to avoid seizure of bearing or rubbing parts.

	2P	4P
All pump sizes	50 l/min	20 l/min

11. Pump stopping

1. Slowly close the discharge valve
Quick closing of valve may cause water hammer and pump damage.
2. Switch off and stop the pump
Confirm if pump stops smoothly. If pump stops suddenly and not smoothly, inspection is needed.
3. When the pump is stopped for a long period, anti freezing measure must be taken so that the liquid can not be frozen in the pump or piping.

MAINTENANCE

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12. Troubleshooting

Troubles	Symptom on pump		Cause	Check & countermeasures	
	When disch. valve closed	When disch. valve opened			
Liquid can not be sucked		Press. gauge & vacuum gauge indicate zero.	<ul style="list-style-type: none"> Lack of priming liquid Dry running 	<ul style="list-style-type: none"> Stop pump and replenish pump with liquid to re-start. 	
	Primed liquid drops quickly		<ul style="list-style-type: none"> Foot valve is clogged by foreign matters. 	<ul style="list-style-type: none"> Clean foot valve Check if foreign matters are not adhered to valve seat. 	
	After starting, pressure drops as soon as discharge valve is opened.		Pressure gauge vibrates and drops to zero.	<ul style="list-style-type: none"> Air is sucked from suction pipe or gasket. 	<ul style="list-style-type: none"> Check if connected flanges are completely sealed. Check if liquid level of tank is not excessively lowered.
				<ul style="list-style-type: none"> Disconnected magnet coupling 	<ul style="list-style-type: none"> Check amperage to see if motor is not overloaded. Check if foreign matters do not lock impeller or magnet capsule Check if voltage is normal.
	Press. gauge shows low pressure		<ul style="list-style-type: none"> Low pump speed Reverse rotation 	<ul style="list-style-type: none"> Check wiring or motor. Interchange wiring connection. 	
Discharge capacity is small.	Pressure gauge & vacuum gauge indicates normal figure.	Vacuum gauge indicates high figure.	<ul style="list-style-type: none"> Strainer is clogged by foreign matters. 	<ul style="list-style-type: none"> Remove foreign matters. 	
		Vacuum gauge indicates very high figure.	<ul style="list-style-type: none"> Air pocket in suction piping 	<ul style="list-style-type: none"> Check and remedy suction piping. 	
			<ul style="list-style-type: none"> Foreign matters are clogged at impeller inlet. 	<ul style="list-style-type: none"> Remove foreign matters. 	
		Pressure gauge & vacuum gauge vibrate.	<ul style="list-style-type: none"> Air is sucked in from suction pipe or gasket. 	<ul style="list-style-type: none"> Check connection part of pipes and retighten it. 	
			<ul style="list-style-type: none"> Foreign matters clog at discharge side. 	<ul style="list-style-type: none"> Remove foreign matters. Remove foreign matters or scales in piping. 	
	Vacuum gauge indicates high but pressure gauge indicates normal.	<ul style="list-style-type: none"> There are resistance such as air pocket etc. in suction piping. 	<ul style="list-style-type: none"> Check if there is not protruded section in suction piping. 		

Troubles	Symptom on pump		Cause	Check & countermeasures
	When disch. valve closed	When disch. valve opened		
Discharge capacity is small.	Pressure gauge & vacuum gauge indicates normal figure.	Pressure is high but vacuum is normal.	<ul style="list-style-type: none"> • Too high actual head or too large pipe resistance 	<ul style="list-style-type: none"> • Check actual head of discharge piping and loss of pipe resistance.
	Pressure is low and vacuum is very low.	Pressure is low and vacuum is low.	<ul style="list-style-type: none"> • Motor rotates in reverse 	<ul style="list-style-type: none"> • Interchange motor wiring.
Motor is overheated.			<ul style="list-style-type: none"> • Lowered power voltage 	<ul style="list-style-type: none"> • Check voltage or frequency.
			<ul style="list-style-type: none"> • Overload 	<ul style="list-style-type: none"> • Check density and viscosity of liquid
			<ul style="list-style-type: none"> • Too high ambient temperature 	<ul style="list-style-type: none"> • Ventilate
Discharge capacity is rapidly reduced.		Vacuum gauge indicates high figure.	<ul style="list-style-type: none"> • Foreign matters clog suction piping. 	<ul style="list-style-type: none"> • Remove foreign matters.
Pump vibrates.			<ul style="list-style-type: none"> • Foundation is not perfect. 	<ul style="list-style-type: none"> • Re-install the pump.
			<ul style="list-style-type: none"> • Loosened mounting bolts. 	<ul style="list-style-type: none"> • Re-tighten
			<ul style="list-style-type: none"> • Cavitation occurs. 	<ul style="list-style-type: none"> • Resolve the reason of cavitation.
			<ul style="list-style-type: none"> • Worn or melted bearing 	<ul style="list-style-type: none"> • Replace
			<ul style="list-style-type: none"> • Broken magnet capsule or spindle 	<ul style="list-style-type: none"> • Replace
			<ul style="list-style-type: none"> • Bad dynamic balance of drive magnet 	<ul style="list-style-type: none"> • Resolve the reason or replace
			<ul style="list-style-type: none"> • Worn bearing of motor 	<ul style="list-style-type: none"> • Replace bearing or motor
			<ul style="list-style-type: none"> • Worn bearing of bearing housing 	<ul style="list-style-type: none"> • Replace bearing or bearing housing ASSY.

13. Maintenance & inspection

Warning

- Magnetic force is very strong. Pay attention when you handle the magnet capsule or driving magnet so that fingers can not be injured by attraction of magnets.
- The persons who are assisted by electronic devices such as pacemakers etc. are prohibited to approach the magnet capsule and drive magnet.
- Fumes or vapours can be hazardous with certain solutions. Also, a harmful fluorine gas is given off when a fluoroplastic part of this product is heated to a high temperature and eventually decomposed. Ensure proper ventilation at the operation site.

Caution

- Magnetic force is very strong. Pay attention iron pieces or powder can not be attracted to the magnet capsule or drive magnet.
- Do not approach the magnetic card to the pump not to break the data.
- Risk of burning. Pump and pipe surface temperature rise high along with liquid temperature. Do not touch the pump or pipe surface directly in or right after operation.

1. Periodical inspection (Once a six months)

Parts name	Inspection items	Countermeasures
Drive magnet	• If there is no rubbed trace.	• If abnormality is found, consult dealer.
	• If drive magnet housing is correctly mounted or if hex. bolts are not loosened.	• Re-mount the drive magnet to motor shaft or re-tighten the bolt.
	• Decentering of magnet and motor shaft. (Max. 0.1 mm)	• Re-tighten bolts or replace drive magnet. (Consult dealer if replacement is needed.)
Rear casing	• Rubbed trace in inner surface.	• If abnormality is found, consult dealer.
	• If there is no cracks.	• If crack is found, replace.
	• Wear of thrust ring.	• If worn abnormally, consult dealer.
	• Dirty inside.	• Cleaning
Magnet capsule	• If there is no rubbed trace.	• If abnormality is found, consult dealer.
	• If there is no cracks.	• If abnormality is found, consult dealer.
	• Measure the bearing inner diameter.	• Replace if worn excessively.
	• If impeller is securely fixed to magnet capsule.	• If loosened, replace or consult dealer.
Impeller	• Measure the mouth ring thickness.	• Replace if excessively worn.
	• If there is no cracks.	• Replace if cracked.
	• If there is no trace of cavitation. (Abnormal wear, seizure etc.)	• Resolve the reason.
	• Dirt or clog inside impeller.	• Clean
	• Change of dimension.	• Replace if abnormality is found.
Front casing	• Dirty wet-end.	• Clean
	• If there is no cracks.	• Replace if abnormality is found.
	• If there is no abnormal wear, cracks, rubbed traces in liner ring.	• Consult dealer if abnormality is found.
	• Clogged drain.	• Clean
	• If there is no swelling or cracks in gasket.	• Replace if abnormality is found.
	• If there is no rubbed trace.	• Consult if abnormality is found.
Spindle	• If there is no crack.	• Replace if abnormality is found.
	• Wear against bearing	• Replace if excessively worn.

2. Wear limit of bearing and spindle (Time to be replaced)

Unit: mm

Model	Bearing inner dia.		Spindle outer dia.	
	New one	Wear limit	New one	Wear limit
MDM50-32-160, MDM65-40-160	26	27	26	25
MDM50-32-200, MDM80-50-160	30	31	30	29

Note1. When the clearance between bearing inner dia. and spindle outer dia. exceeds 1 mm, replace by new ones.

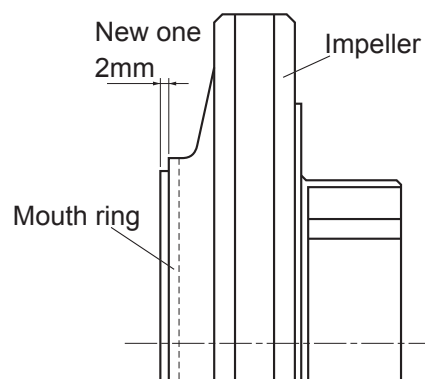
SiC bearing (KK) type: Replace by new ones both bearing and spindle.

2. It may possible that rubbing parts are worn a little in a short time after the pump is started first time, but it is not abnormal.

3. Wear limit of mouth ring (Time to be replaced)

Step between mouth ring and impeller is 2 mm when the pump is shipped. Replace mouth ring when this step becomes zero.

Model	Thickness of mouth ring	
	New one	Wear limit
MDM50-32-160	8 mm	6 mm
MDM50-32-200 MDM65-40-160 MDM80-50-160	9 mm	7 mm



4. Ball bearing

The life span of ball bearing is various depending on working temperature. The continuous working temperature of outer ball of the bearing must be below 70 deg.C.

If the working temperature exceeds 70 deg.C, the deterioration of grease on bearing progresses. Secure the working condition within 70 deg.C of working temperature. Vibration tends to increase as bearing wears. Make daily inspections on vibration to know when to make a replacement.

Standard ball bearing is grease-packed double shielded type (ZZ type). The grease is a lithium and its working temperature is between -40 and 150 deg.C. Do not re-pack grease into ball bearing. Replace bearing at the end of life.

5. Replace the parts shown as below according to "the time to be replaced" and "Note".

Parts No.	Parts name	Time to be replaced
310	Bearing	10,000 hours
210	Spindle	10,000 hours
314.2	Mouth ring	10,000 hours
321.1	Ball bearing	15,000 hours (Note 5)
321.2	Ball bearing	15,000 hours (Note 5)
400.1	Gasket	At the time of periodical inspection
400.2	Drain gasket	At the time of periodical inspection
400.3	Air vent gasket	At the time of periodical inspection
420	Shaft seal	Replace at the time of ball bearing replacement

Note1. Time to be replaced mentioned above is based on pumping clear water at ambient temperature. The time to be replaced depends on the characteristics, temperature and other condition of pumped liquid.

2. Bearing, spindle and mouth ring must be replaced at the time of the wear limit shown on above items 2 and 3 regardless of the time to be replaced shown on above table.

3. Gasket must be replaced when pump is disassembled regardless of the time of periodical inspection.

4. Refer to item 14 "Repair parts list" for the parts no. on above table.

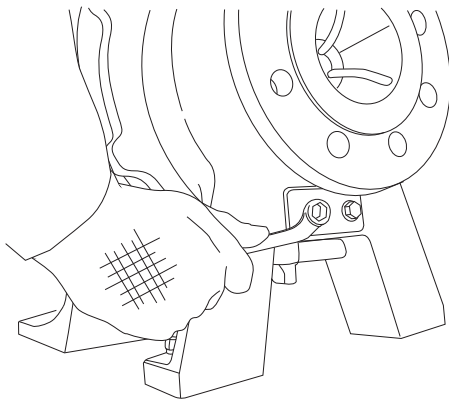
5. 15,000 hours is an indication when the working temperature of bearing is below 50 deg.C. The indication becomes 7,500 hours for the working temperature between 50 and 70 deg.C. The life span of ball bearing will be shorter in corrosive atmosphere or when pump is subject to external vibration.

14. Disassembling & assembling

Tool list

Following tools are necessary to disassemble and assemble the pump.

Tool	MDM50-32-160/-200 /MDM65-40-160 /MDM80-50-160	Remarks
Spanner	13mm /19mm /24mm	1 pc/each
Hex wrench	4mm and 5mm	
Plastic round bar	34 mm dia. × 100 L	To remove/mount the bearing
Plastic welder or industrial dryer	1 unit	
Hand press	1 unit	



1. Disassembly of pump casing

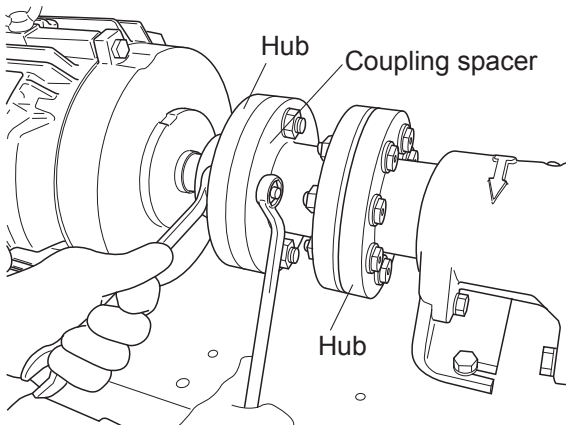
- (1) Remove hex. bolts (901.1) of drain plate (122.1) to drain liquid inside.
For the type without drain, disassemble the pump after the liquid inside is neutralized or the pump is cleaned by water.

⚠ Warning

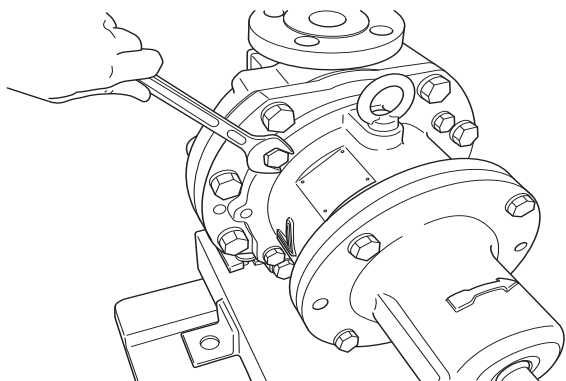
If all the hex. bolts are loosened simultaneously, liquid will splash and will result in injury.

⚠ Caution

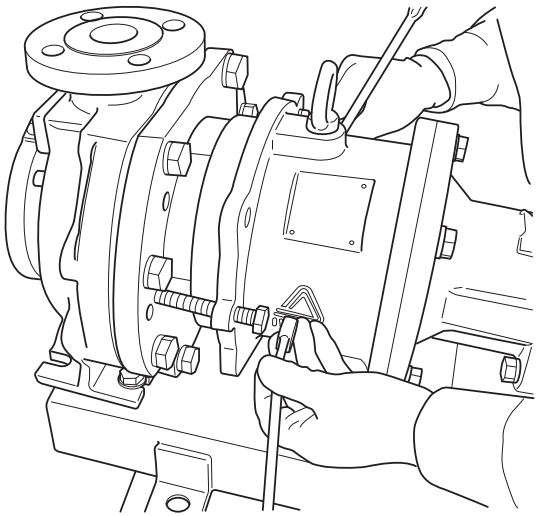
Solution in the discharge line may be under pressure. Release the pressure from the discharge line before disconnecting plumbing or disassembly of the pump to avoid solution spray.



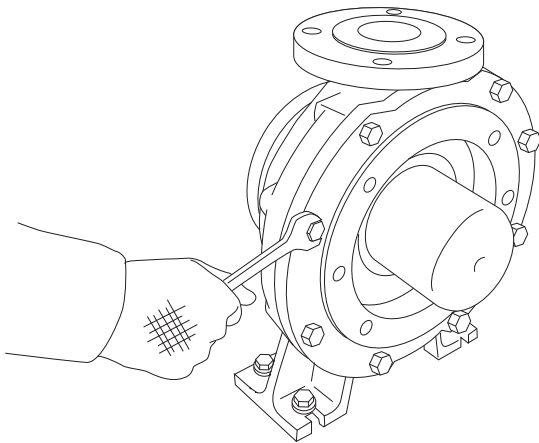
- (2) Remove coupling cover
- (3) Remove mechanical coupling spacer.
Remove hubs as well because it occasionally prevents dismantlement work.



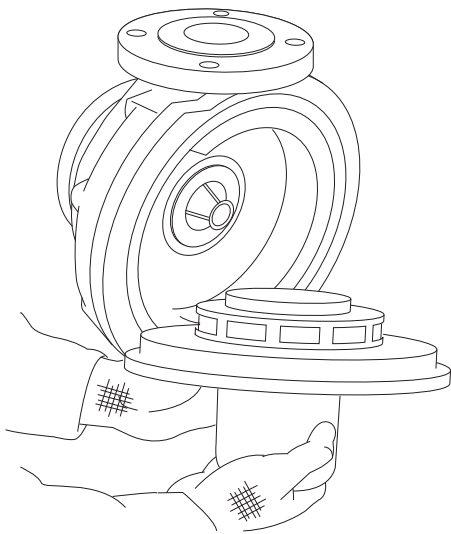
- (4) Remove hex. bolts (901.7) of support (183).
- (5) Remove hex. bolts (901.5) of pump side.



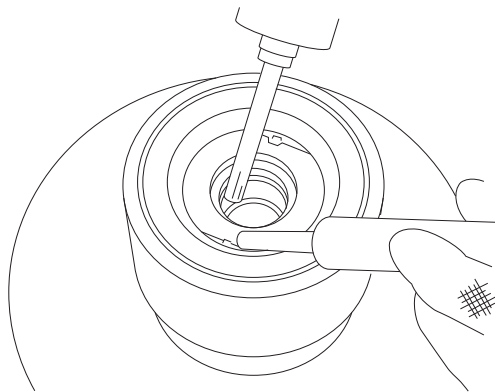
- (6) Separate pump body from foot support by screwing two bolts (M12 × 90) from motor side through bolt threads holes of foot support. Screw in bolts alternatively to remove foot support backward. (Screw in bolts by approx. 75 mm).
- (7) Pull out backward bearing housing and bracket by lifting them by crane or so. Take care so that the bearing housing and bracket are pulled out straight to backward. Otherwise, drive magnet (858) touches the rear casing (158).



- (8) Remove hex. bolts (901.4) of front casing (100.1) to pull out rear casing support.

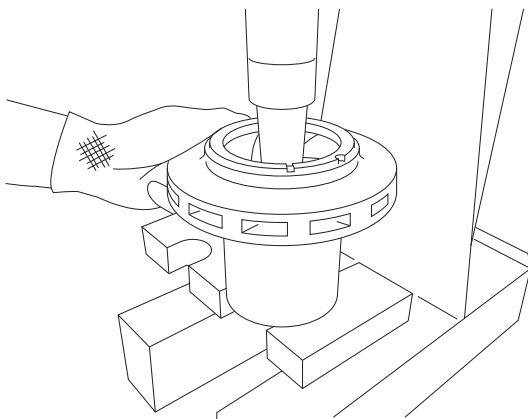


- (9) Then, remove rear casing (158) from rear casing cover (159). If rear casing is hard to remove, remove it by turning. Pay attention not to drop the impeller (230)/magnet capsule (859) unit which is located in the rear casing.

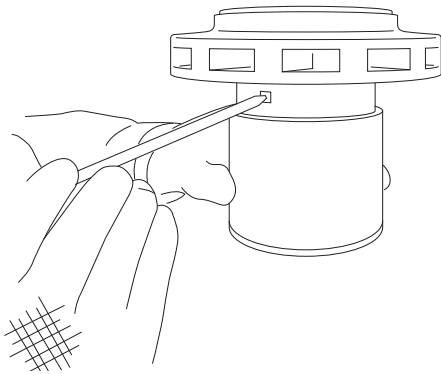


2. Removal of impeller and bearing

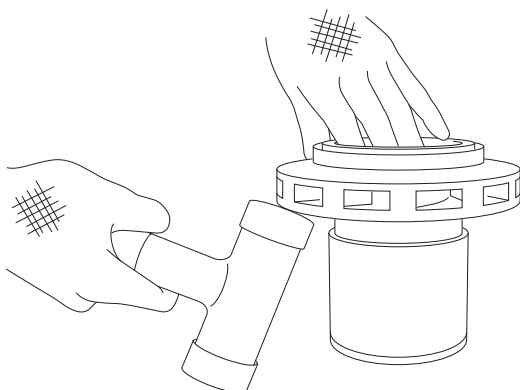
- (1) Stand up the claw of rear ring (314.4) after it was heated by plastic welder or industrial dryer.



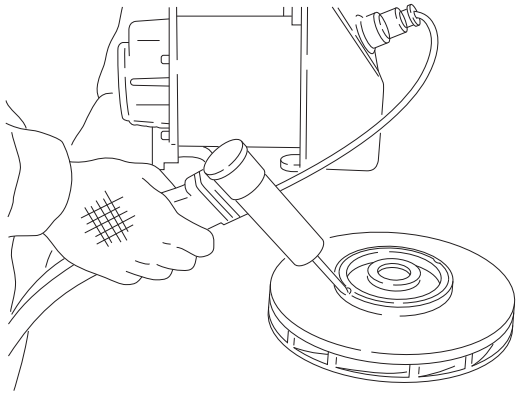
- (2) Apply plastic made round bar of 34 mm dia. × 100L on the bearing end through impeller side and remove bearing (310) and rear ring (314.4) using hand press etc.



- (3) Remove impeller fixing pin (942) of upper part of magnet capsule by pushing it by screw driver or like.

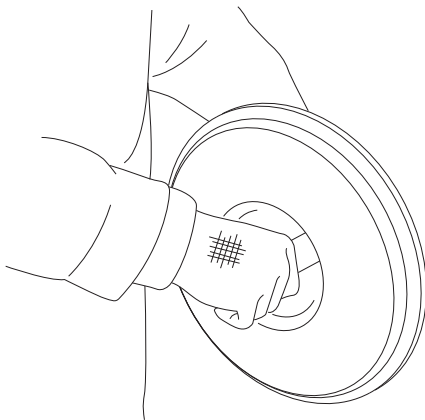


- (4) Remove impeller (230) from magnet capsule (859). If it is hard to remove, slightly strike the impeller back side with plastic hammer.
Impeller (230) and magnet capsule (859) of high temp. type can not be separated because they are unified by welding.



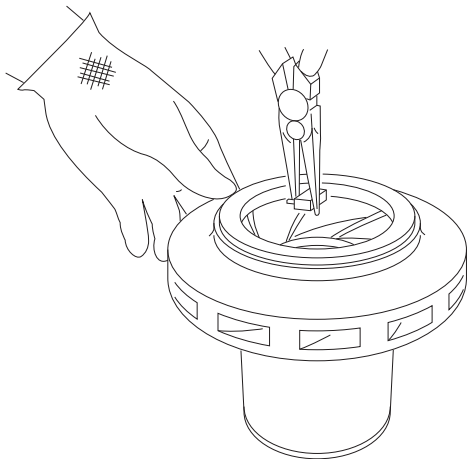
3. Replacement of mouth ring

- (1) Stand up the claw of impeller after it was heated by plastic welder or industrial dryer.
- (2) Replace the mouth ring (314.2), and fix it by heating the claw with plastic welder or industrial dryer and push the claw down.



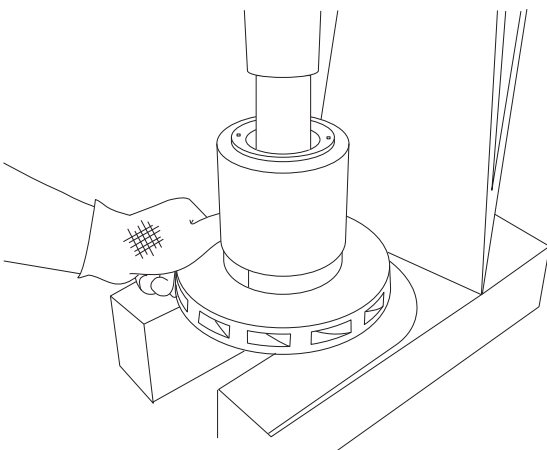
4. Replacement of spindle

- (1) Spindle (210) is slightly pressed into rear casing (158). Pull out the spindle by a hand. If it is hard to pull it out, pull it out by shaking it right and left.
- (2) Wipe off the stain at spindle inserted part of rear casing and insert the spindle. Use hand press or like if it is hard to insert.

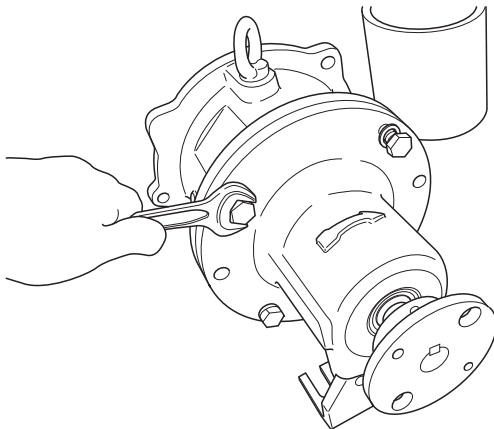


5. Mounting impeller and bearing

- (1) Put together the depressed and hollowed parts of impeller and magnet capsule and insert the impeller into magnet capsule. At the same time, align the insert ports of impeller pin.
- (2) Insert the impeller pin. Pliers are useful for easy insertion.

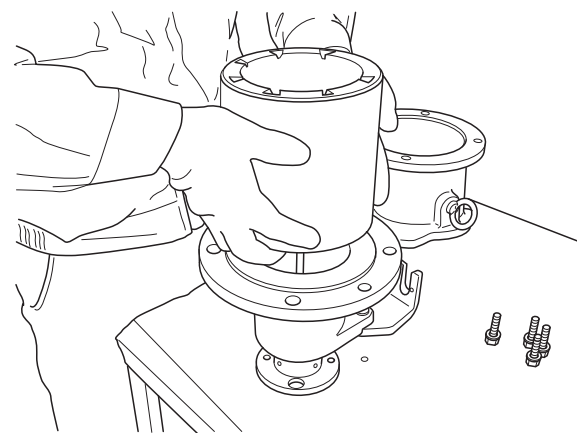


- (3) Put the magnet capsule on top and insert the bearing into magnet capsule by using hand press. Before starting the works, warm the magnet capsule putting it in water of 90 deg. C.
- (4) Then, insert the rear ring and fix it by heating the claw with plastic welder or industrial dryer to weld it and push it to rear ring.



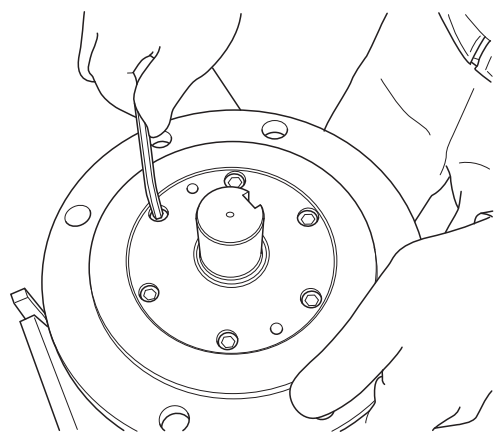
6. Bearing housing dismantlement

(1) Remove hex. head bolts (901.6). Be careful no to hit drive magnet unit with bracket when removing bracket.

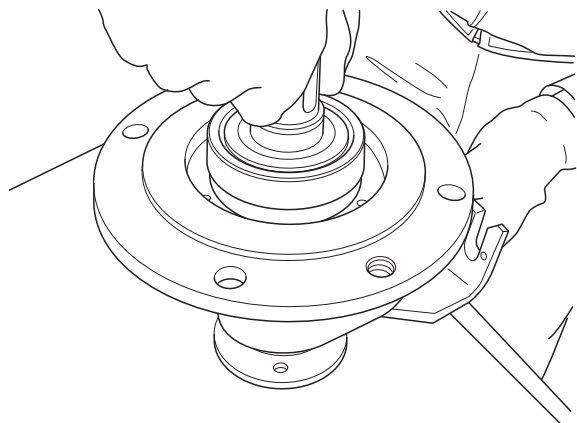


(2) Loosen hex. set screws (908.1) which are holding drive magnet unit. Remove the drive magnet unit from drive shaft. In doing so, be careful not to bring impact on the drive magnet unit.

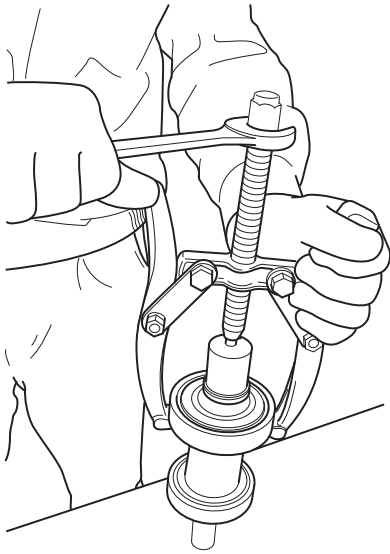
(3) Remove key.



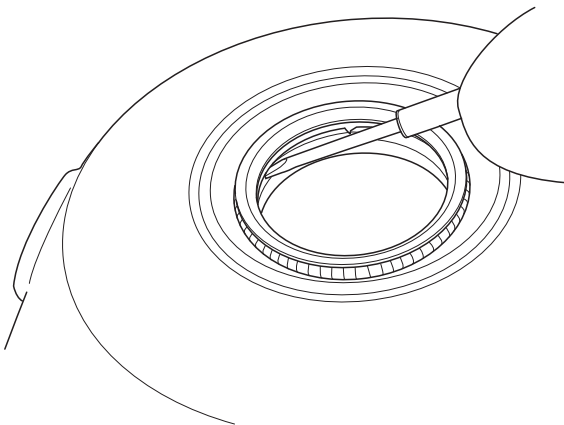
(4) Remove hex. head bolts (903.2) and bearing cover (360).



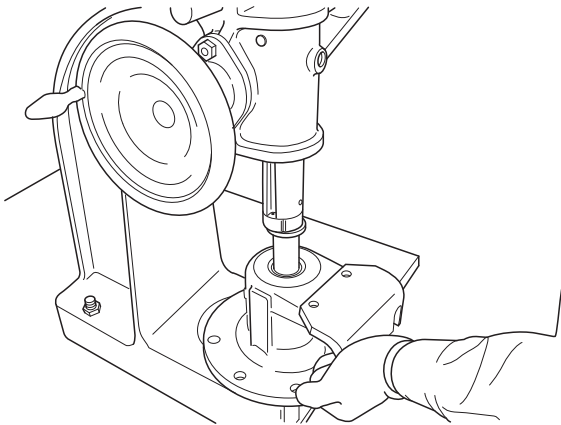
(5) Pull drive shaft (213) out from bearing housing. In case the drive shaft can not be removed, use a press to push the drive shaft. Remove wave washer (551) as well.



- (6) Use a puller to remove ball bearing (321.1)(321.2) from drive shaft. Be careful not to scratch the sliding surface between drive shaft and shaft seal (420).

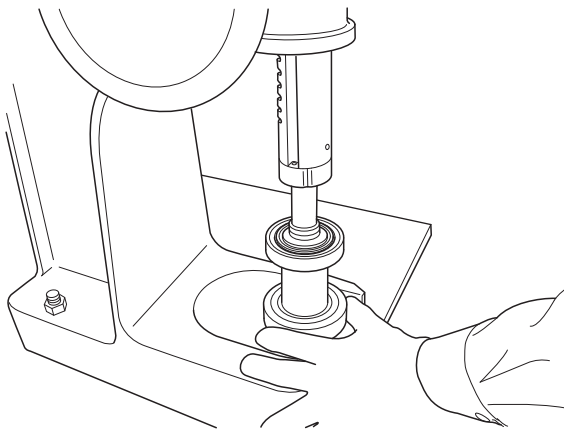


- (7) Insert a flat head of screw driver between bearing housing and shaft seal to remove shaft seal (420). In case bearing housing is scratched, sandpaper it.



7. Bearing housing assembly

- (1) Fit shaft seal (420) to bearing housing. Apply grease on the periphery of shaft seal and fit it with a press. In doing so, try not to scratch seal lip.



- (2) Fit ball bearing to drive shaft with a press. There is a difference in size between front ball bearing and rear ball bearing.

Pump side: 6308

Motor side: 6208

Be careful not to scratch the sliding surface between shaft seal and drive shaft.

- (3) Put wave washer in bearing housing. Replace wave washer with new one each time of dismantlement.
- (4) Apply grease on shaft seal lip.
- (5) Insert drive shaft into bearing housing. Be careful not to damage ball bearing when the insertion.
- (6) Fit bearing cover to bearing housing. Screw hex. head bolts diagonally and apply constant tightening on each bolt.

Tightening torque: 5.5 N•m

- (7) Fit key to drive shaft.
- (8) Mount drive magnet unit in drive shaft. Do not bring any impacts on the drive magnet unit to mount it.
- (9) Tighten two hex. soch screws to fix the drive magnet unit.

Tightening torque: 12 N•m

8. Assembling

Assemble the pump in reverse procedures paying attention to the following points.

- Replacement of gasket

Do not fail to replace the gasket by new one. Pay attention so that it cannot be forgotten to be put or it can be mounted correctly without twist or bite. Clean the sealing surface before mounting the gasket.

- Tightening of bolts

Tighten the bolts diagonally and evenly.

- Cleaning of magnet capsule

Powdered iron or like can be attracted to the magnet capsule. Remove the foreign matters before assembling.

(1) Mount the gasket on front casing (100.1).

(2) Mount impeller/magnet capsule unit on rear casing and mount them on front casing by rotating the rear casing right and left.

(3) Then mount the rear casing cover and securely fix the rear casing support by tightening hex. bolts diagonally and evenly.

- Tightening torque of rear casing support is 85 N•m

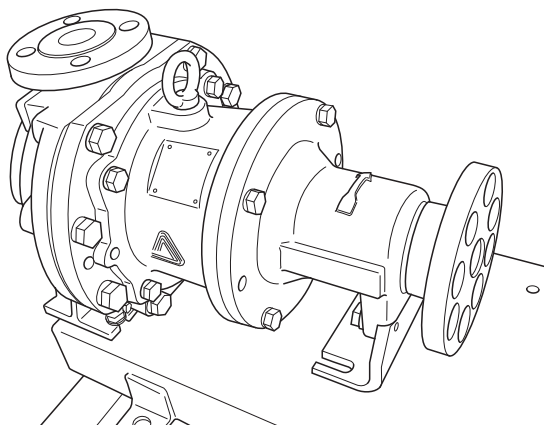
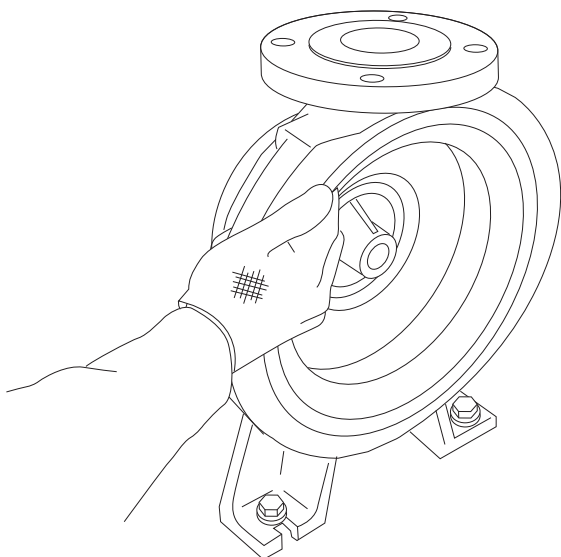
(4) Remove foreign matters from the drive magnet.

(5) Lift the bracket/bearing housing and insert the faucet part of bracket into the rear casing support by unscrewing the bolts alternatively. (Before the works, attached bolts (M12 × 90) are screwed by half into the foot support.

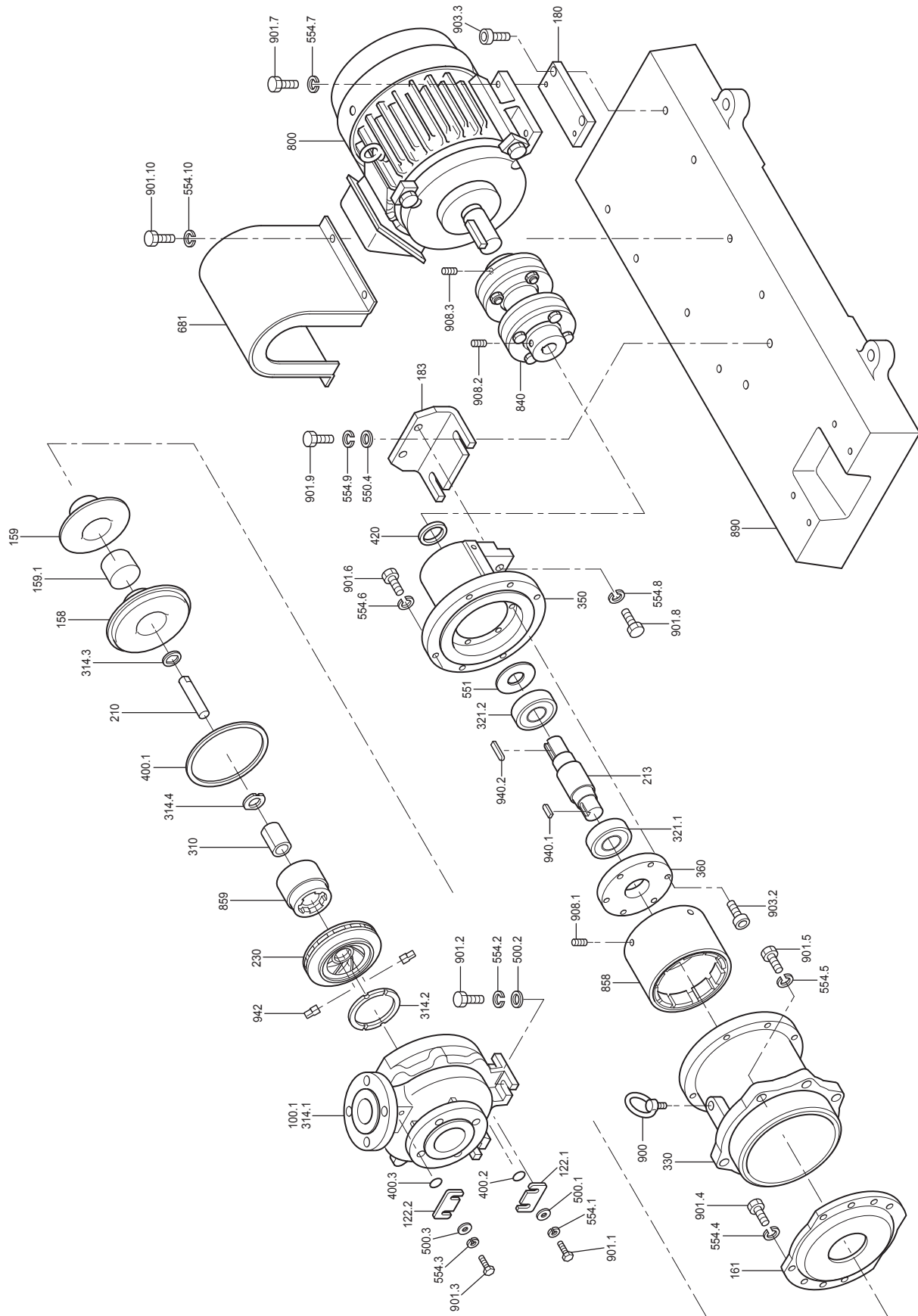
(6) Then, fix the bracket and rear casing support by hex. bolts. Bracket must be inserted straight, otherwise, drive magnet will touch the rear casing cover.

(7) Assemble the spacer of mechanical coupling. Ensure centring of the coupling for the prevention of misalignment. The centring accuracy depends on the allowable range of each coupling in use.

(8) Mount coupling cover.



15. Repair parts list



Pump parts list

NO.	Parts name	Material code	Q'ty	50-32-160	50-32-200	65-40-160	80-50-160	Remarks				
				Code No.	Code No.	Code No.	Code No.					
100.1+	Front casing	PKK	1	MDM1007	MDM1013	MDM1009	MDM1011	With drain hole				
314.1		PKK	1	MDM1006	MDM1012	MDM1008	MDM1010	Without drain hole				
122.1	Drain plate		1	MDM0009	MDM0009	MDM0009	MDM0009					
122.2	Air vent plate		1	MDM0009	MDM0009	MDM0009	MDM0009					
158	Rear casing	PKK	1	MDM0210	MDM0370	MDM0210	MDM0370					
		PKK	1	MDM1014	MDM0877	MDM1014	MDM0877	For H type & T type				
159	Rear casing cover		1	MDM0212	MDM0119	MDM0212	MDM0119					
159.1	Rear casing cover UNIT		1	MDM1032	MDM0908	MDM1032	MDM0908	For H type & T type				
161	Rear casing support		1	MDM1015	MDM1016	MDM1015	MDM1016					
183	Support		1	MDM1017	MDM1018	MDM1017	MDM1018					
210	Spindle	PKK	1	MDM0121	MDM0372	MDM0121	MDM0372					
213	Drive shaft		1	MDM1031	MDM1031	MDM1031	MDM1031					
230	Impeller		1	Refer to impeller parts list								
			1									
230+	Impeller ass'y		1									
			1									
	Impeller/Magnet capsule ass'y		1									
			1									
310	Bearing	PKK	1					MDM0123	MDM0735	MDM0123	MDM0374	
314.2	Mount ring	PKK	1					MDM0018	MDM0488	MDM0488	MDM0376	
314.3	Rear thrust	PKK	1	MDM0614	MDM0615	MDM0614	MDM0615					
314.4	Rear ring	PKK	1	MDM0126	MDM0126	MDM0126	MDM0126					
321.1	Ball bearing	6308ZZ	1	MDM1020	MDM1020	MDM1020	MDM1020					
321.2	Ball bearing	6208ZZ	1	MDM1019	MDM1019	MDM1019	MDM1019					
330	Bracket		1	MDM1021	MDM1022	MDM1021	MDM1022					
350	Bearing housing		1	MDM1023	MDM1023	MDM1023	MDM1023					
360	Bearing cover		1	MDM1024	MDM1024	MDM1024	MDM1024					
400.1	Gasket, casing		1	MDM0214	MDM0130	MDM0214	MDM0130					
400.2	Gasket, drain		1	MDM0025	MDM0025	MDM0025	MDM0025	With drain type				
400.3	Gasket, air vent		1	MDM0025	MDM0025	MDM0025	MDM0025	With drain type				
500.1	Plain washer		2	MDM0026	MDM0026	MDM0026	MDM0026					
500.3	Plain washer		2	MDM0026	MDM0026	MDM0026	MDM0026					
551	Wave washer		1	MDM1025	MDM1025	MDM1025	MDM1025					
554.1	Spring washer		2	MDM0028	MDM0028	MDM0028	MDM0028					
554.3	Spring washer		2	MDM0028	MDM0028	MDM0028	MDM0028					
554.4	Spring washer		8or10	MDM0490	MDM0490	MDM0490	MDM0490	32-1/40-1:8EA,32-2/50-1:10EA				
554.5	Spring washer		4	MDM0029	MDM0029	MDM0029	MDM0029					
554.6	Spring washer		4	MDM0029	MDM0029	MDM0029	MDM0029					
554.7	Spring washer		2	MDM0029	MDM0029	MDM0029	MDM0029					
554.8	Spring washer		2	MDM0029	MDM0029	MDM0029	MDM0029					
858	Drive magnet unit	C040/C055/C075	1	MDM1026	MDM1026	MDM1026	MDM1026					
		C110/C150	1		MDM1028		MDM1028					
		C040-C150	1	MDM1027	MDM1027	MDM1027	MDM1027	For T-type				
859	Magnet capsule unit	C040/C055/C075	1	MDM0287	MDM0287	MDM0287	MDM0287	Excluded H-type & T-type				
		C110/C150	1		MDM0469		MDM0469	Excluded H-type & T-type				
900	Eye bolt		1	MDM0036	MDM0036	MDM0036	MDM0036					
901.1	Hex. head bolt		2	MDM0037	MDM0037	MDM0037	MDM0037					
901.3	Hex. head bolt		2	MDM0037	MDM0037	MDM0037	MDM0037					
901.4	Hex. head bolt		8or10	MDM0491	MDM0491	MDM0491	MDM0491	32-1/40-1:8EA,32-2/50-1:10EA				
901.5	Hex. head bolt		4	MDM0136	MDM0136	MDM0136	MDM0136					
901.6	Hex. head bolt		4	MDM0136	MDM0136	MDM0136	MDM0136					
901.8	Hex head bolt		2	MDM0042	MDM0042	MDM0042	MDM0042					
903.2	Hex. soch head bolt		6	MDM0043	MDM0043	MDM0043	MDM0043					
908.1	Hex. soch set screw		2	MDM0044	MDM0044	MDM0044	MDM0044					
940.1	Key		1	MDM1030	MDM1030	MDM1030	MDM1030					
942	Pin impeller		2	MDM0138	MDM0138	MDM0138	MDM0138					

Impeller parts list (Standard model)

NO.	Parts name	Impeller size	Motor power	Q'ty	50-32-160	50-32-200	65-40-160	80-50-160	Remarks	
					Code No.	Code No.	Code No.	Code No.		
230	Impeller	225		1		MDM0740				
		220		1		MDM0741				
		210		1		MDM0742				
		200		1		MDM0743				
		190		1		MDM0744				
		180		1		MDM0745				
		170		1	MDM0654	MDM0746	MDM0669	MDM0683		
		165		1	MDM0215		MDM0379	MDM0289		
		160		1	MDM1033	MDM0747	MDM1035	MDM0290		
		150		1	MDM0217		MDM0476	MDM0291		
		140		1	MDM0219		MDM0477	MDM0292		
		130		1	MDM0220		MDM0478	MDM0293		
		120		1	MDM0221		MDM0479	MDM0294		
		110		1			MDM0480	MDM0295		
		230+ 314.2	Impeller ass'y	225		1		MDM0853		
220				1		MDM0854				
210				1		MDM0855				
200				1		MDM0856				
190				1		MDM0857				
180				1		MDM0858				
170				1	MDM0655	MDM0859	MDM0670	MDM0684		
165				1	MDM0223		MDM0296	MDM0380		
160				1	MDM1034	MDM0860	MDM1036	MDM0381		
150				1	MDM0225		MDM0298	MDM0382		
140				1	MDM0227		MDM0299	MDM0383		
130				1	MDM0228		MDM0300	MDM0384		
120				1	MDM0229		MDM0301	MDM0385		
110				1			MDM0302	MDM0386		
230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y			225	4.0/5.5/7.5kw	1		MDM0756		
		220	4.0/5.5/7.5kw	1		MDM0757				
		210	4.0/5.5/7.5kw	1		MDM0758				
		200	4.0/5.5/7.5kw	1		MDM0759				
		190	4.0/5.5/7.5kw	1		MDM0760				
		180	4.0/5.5/7.5kw	1		MDM0761				
		170	4.0/5.5/7.5kw	1		MDM0762				
		165	4.0/5.5/7.5kw	1	MDM0580		MDM0310	MDM0394		
		160	4.0/5.5/7.5kw	1	MDM1077	MDM0763	MDM1078	MDM0395		
		150	4.0/5.5/7.5kw	1	MDM0582		MDM0312	MDM0396		
		140	4.0/5.5/7.5kw	1	MDM0584		MDM0313	MDM0397		
		130	4.0/5.5/7.5kw	1	MDM0585		MDM0314	MDM0398		
		120	4.0/5.5/7.5kw	1	MDM0586		MDM0315	MDM0399		
		110	4.0/5.5/7.5kw	1			MDM0316	MDM0400		
		225	11/15kw	1			MDM0861			
		220	11/15kw	1			MDM0862			
		210	11/15kw	1			MDM0863			
		200	11/15kw	1			MDM0864			
		190	11/15kw	1			MDM0865			
		180	11/15kw	1			MDM0866			
		170	11/15kw	1			MDM0867			
		165	11/15kw	1					MDM0401	
		160	11/15kw	1			MDM0868		MDM0402	
		150	11/15kw	1					MDM0403	
		140	11/15kw	1					MDM0404	
		130	11/15kw	1					MDM0405	
		120	11/15kw	1					MDM0406	
		110	11/15kw	1					MDM0407	

Note1: Tell us pump model code and Mfg.number when impeller is ordered because actual impeller size may not be the same as shown here.

Note2: Impeller and magnet capsule can not be separated because they are welded each other.

Impeller parts list (H-type)

NO.	Parts name	Impeller size	Motor power	Q'ty	50-32-200	Remarks
					Code No.	
230+ 314.2	Impeller/magnet capsule ass'y	225	4.0/5.5/7.5kw	1	MDM0812	For H -type
		220	4.0/5.5/7.5kw	1	MDM0813	For H -type
		210	4.0/5.5/7.5kw	1	MDM0814	For H -type
		200	4.0/5.5/7.5kw	1	MDM0815	For H -type
		190	4.0/5.5/7.5kw	1	MDM0816	For H -type
		180	4.0/5.5/7.5kw	1	MDM0817	For H -type
		170	4.0/5.5/7.5kw	1	MDM0818	For H -type
		160	4.0/5.5/7.5kw	1	MDM0819	For H -type
		225	11/15kw	1	MDM0820	For H -type
		220	11/15kw	1	MDM0821	For H -type
		210	11/15kw	1	MDM0822	For H -type
		200	11/15kw	1	MDM0823	For H -type
		190	11/15kw	1	MDM0824	For H -type
		180	11/15kw	1	MDM0825	For H -type
		170	11/15kw	1	MDM0826	For H -type
		160	11/15kw	1	MDM0827	For H -type
		230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	225	4.0/5.5/7.5kw	1
220	4.0/5.5/7.5kw			1	MDM0837	For H -type
210	4.0/5.5/7.5kw			1	MDM0838	For H -type
200	4.0/5.5/7.5kw			1	MDM0839	For H -type
190	4.0/5.5/7.5kw			1	MDM0840	For H -type
180	4.0/5.5/7.5kw			1	MDM0841	For H -type
170	4.0/5.5/7.5kw			1	MDM0842	For H -type
160	4.0/5.5/7.5kw			1	MDM0843	For H -type
225	11/15kw			1	MDM0844	For H -type
220	11/15kw			1	MDM0845	For H -type
210	11/15kw			1	MDM0846	For H -type
200	11/15kw			1	MDM0847	For H -type
190	11/15kw			1	MDM0848	For H -type
180	11/15kw			1	MDM0849	For H -type
170	11/15kw			1	MDM0850	For H -type
160	11/15kw	1	MDM0851	For H -type		

Note1: Tell us pump model code and Mfg.number when impeller is ordered because actual impeller size may not be the same as shown here.

Note2: Impeller and magnet capsule can not be separated because they are welded each other.

Note3: The H type impeller of the MDM50-32-160, MDM65-40-160 and MDM80-50-160 are sharing with the standard model.

Impeller parts list (T-type)

NO	Parts name	Impeller size	Motor power	Q'ty	50-32-160	50-32-200	65-40-160	80-50-160	Remarks
					Code No.	Code No.	Code No.	Code No.	
230+ 314.2	Impeller/magnet capsule ass'y	225	All outputs	1		MDM0820			For T -type
		220	All outputs	1		MDM0821			For T -type
		210	All outputs	1		MDM0822			For T -type
		200	All outputs	1		MDM0823			For T -type
		190	All outputs	1		MDM0824			For T -type
		180	All outputs	1		MDM0825			For T -type
		170	All outputs	1		MDM0826			For T -type
		165	All outputs	1	MDM1037		MDM1043	MDM1050	For T -type
		160	All outputs	1	MDM1038	MDM0827	MDM1044	MDM1051	For T -type
		150	All outputs	1	MDM1039		MDM1045	MDM1052	For T -type
		140	All outputs	1	MDM1040		MDM1046	MDM1053	For T -type
		130	All outputs	1	MDM1041		MDM1047	MDM1054	For T -type
		120	All outputs	1	MDM1042		MDM1048	MDM1055	For T -type
		110	All outputs	1			MDM1049	MDM1056	For T -type
230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	225	All outputs	1		MDM0844			For T -type
		220	All outputs	1		MDM0845			For T -type
		210	All outputs	1		MDM0846			For T -type
		200	All outputs	1		MDM0847			For T -type
		190	All outputs	1		MDM0848			For T -type
		180	All outputs	1		MDM0849			For T -type
		170	All outputs	1		MDM0850			For T -type
		165	All outputs	1	MDM1057		MDM1063	MDM1070	For T -type
		160	All outputs	1	MDM1058	MDM0851	MDM1064	MDM1071	For T -type
		150	All outputs	1	MDM1059		MDM1065	MDM1072	For T -type
		140	All outputs	1	MDM1060		MDM1066	MDM1073	For T -type
		130	All outputs	1	MDM1061		MDM1067	MDM1074	For T -type
		120	All outputs	1	MDM1062		MDM1068	MDM1075	For T -type
		110	All outputs	1			MDM1069	MDM1076	For T -type

Note1: Tell us pump model code and Mfg.number when impeller is ordered because actual impeller size may not be the same as shown here.

Note2: Impeller and magnet capsule can not be separated because they are welded each other.

EC DECLARATION OF CONFORMITY

ORIGINAL VERSION

(SUPPLIER'S NAME)

WE

IWAKI CO.,LTD.

(ADDRESS)

6-6 2-CHOME KANDA-SUDACHO CHIYODA-KU TOKYO JAPAN

(PRODUCT)

DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE PRODUCTS

MAGNETIC DRIVE PUMP

(MODEL NAME)

MDM SERIES

TO WHICH THIS DECLARATION RELATES ARE IN CONFORMITY WITH THE FOLLOWING
STANDARDS OR DIRECTIVES AS FAR AS APPLICABLE

(DIRECTIVES)

MACHINERY DIRECTIVE 2006/42/EC (ANNEX IIA)

RoHS DIRECTIVE 2011/65/EU

(STANDARDS)

EN ISO12100

EN809

EN50581

(A PERSON WHO IS AUTHORISED TO COMPILE THE TECHNICAL FILE
IN THE COMMUNITY)

IWAKI EUROPE GMBH

SIEMENSRING 115 D-47877 WILLICH GERMANY

NOTE: THIS DECLARATION BECOMES INVALID IF TECHNICAL OR OPERATIONAL
MODIFICATIONS ARE INTRODUCED WITHOUT THE MANUFACTURER'S CONSENT.



KAZUNARI NISHIKUBO

SENIOR GENERAL MANAGER, QUALITY ASSURANCE HEAD OFFICE

(PLACE AND DATE OF ISSUE)

(NAME AND SIGNATURE OR EQUIVALENT MARKING OF AUTHORIZED PERSON)

DOCUMENT NO. IS-51K-493-4

Information on CE conformity

■ Information on CE conformity of pump units when the motor is fitted by the customer (dealer/operator)

We hereby confirm the CE conformity of our pump unit provided that the following criteria about intended use are satisfied as described in this instruction manual:

- Motor conformity in accordance with any relevant EC directives which are currently effective.
- The dimensions of a required motor flange and shaft must fit the specified pump.
- The motor must be installed to the pump according to this instruction manual.
- Guaranteed grounding
- The pump must not be repainted over our original upper coating.

Any reseller or dealer who connects the pump with a motor and markets it as a complete unit must conform to all relevant EC directives. In such cases, the reseller or dealer then becomes the manufacturer.

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