

Iwaki Magnetic Drive Pump MDM (Europe)



Thank you for choosing our product.

Please read through this instruction manual before use.

This instruction manual describes important precautions and instructions for the product. Always keep it on hand for quick reference.

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Order confirmation

Open the package and check that the product conforms to your order. If any problem or inconsistency is found, immediately contact your distributor.

a. Check if the delivery is correct.

Check the nameplate to see if the information such as model codes, discharge capacity and discharge pressure are as ordered.

Hz	min ⁻¹
COL1	г <u>р.</u> Д
MADE IN	JAPAN
	Hz

b. Check accessories are complete.

Standard parts:

- Motor back pull-out bolts
 MDM25-1: Two (2) M10×50mm hexagon bolts
 MDM25-2/25-3/32-1/32-2/40-1/50-1: Two (2) M12×100mm hexagon bolts
 MDM40-2/50-2: Two (2) M16×150mm hexagon bolts
- Two guide bolts MDM40-2/50-2: Two (2) M16 bolts

Optional parts:

- Spare parts if ordered
- DRN pump protector if ordered

c. Check if the delivery is damaged or deformed.

Check for transit damage and loose bolts.

*Retighten hex bolts that holding the rear casing support by the rated torque at each model.

Models	Tightening torque	
MDM25-1	58.8N•m	
MDM25-2/25-3/32-1/32-2/40-1/50-1	85N•m	
MDM40-2/50-2	100N•m	

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Safety instructions

Read through this section before use. This section describes important information for you to prevent personal injury or property damage.

Symbols

In this instruction manual, the degree of risk caused by incorrect use is noted with the following symbols. Please pay attention to the information associated with the symbols.

Indicates mishandling could lead to a fatal or serious injury accident.
Indicates mishandling could lead to personal injury or prop- erty damage.

A symbol accompanies each precaution, suggesting the use of "Caution", "Prohibited actions" and specific "Requirement".



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.



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 service

Risk of electrical shock. Be sure to turn off power to stop the pump and related devices before service is performed.



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. The specific solution will dictate the degree of protection. Refer to SDS precautions from the solution supplier.



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.



Use the eye bolt or lifting holes

Use the eye bolt when lifting the pump only. If the pump and the motor are mounted on the baseplate, use lifting holes on the baseplate.



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.

Daily inspection and maintenance



Daily inspection and maintenance are required for the prevention of chemical spray or leakage when handling:

- Explosive or flammable liquid,
- Corrosive liquid, or
- Harmful liquid.



Ventilation

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

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 catch the finger



Magnetic force of the pump is powerful. When taking apart or putting together the pump, take measures not to catch the finger in the foot support. Also, keep the drive magnet and the driven magnet free from iron debris/ powder.



Pay attention to magnet force

The pair of strong magnets in the pump and its magnetic force may adversely affect magnetic disks/cards or wrist watches. Do not bring them close to the pump.



Use specified power only

Do not apply power other than that specified on the nameplate. Otherwise, failure or fire may result. Ensure the pump is properly grounded.



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.

Do not install/store the pump:

In a flammable/corrosive atmosphere.



- in a dusty/humid environment.
- Where ambient temperature can exceed 0-40°C.
- In direct sunlight or wind & rain (except an outdoor type).
- Under mechanical vibrations.



Do not use the pump in any condition other than its intended purpose The use of the pump in any conditions other than those clearly specified may result in failure or injury. Use this product in specified conditions only.



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 (hydrogen peroxide or sodium hypochlorite).



Spill precautions

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



Do not stand on the pump

Injury or damage may result when the pump turns over.



Do not touch the pump or pipe with bare hands

Risk of burning! The surface temperature of the pump or pipe rises high along with liquid temperature in or right after operation.



Grounding

Risk of electrical shock! Always properly ground the pump. Conform to local electric codes.



Install a GFCI (earth leakage breaker)

An electrical failure of the pump may adversely affect other devices on the same line. Purchase and install an earth leakage breaker separately.



The pump itself doesn't have an ON-OFF switch

An external electromagnetic switch is needed to run or stop the pump safely.



Disposal of a used pump

Dispose of any used or damaged pump in accordance with local rules and regulations. If necessary, consult a licensed industrial waste disposal company.

Precautions for use

- Electrical work should be performed by a qualified electrician. Otherwise, personal injury or property damage may result.
- Do not install the pump:
 - -In a flammable/corrosive atmosphere.
 - -In a dusty/humid place.
 - -In direct sunlight or wind & rain (except outdoor type).
 - -Where ambient temperature can exceed 40°C or falls below 0°C.
 - -Where ambient humidity can exceed 85%RH or falls below 35%RH.
 - -Under mechanical vibrations.
- Allow sufficient space around the pump for easy access and maintenance.
- Use care handling the pump. Do not drop. An impact may affect pump performance. Do not use a pump that has been damaged to avoid the risk of electrical damage or shock.
- The pump is not waterproof. Do not operate the pump while wet with solution or water. Failure or injury may result. Immediately dry off the pump if it gets wet.
- Solution may leak. Do not close/block discharge line during operation. Install a relief valve to ensure safety and prevent damaged plumbing.
- 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.
- · Wear protective clothing when handling or working with pumps. Consult solution SDS for appropriate precautions. Do not come into contact with residual solution.
- Do not clean the pump or nameplate with a solvent such as benzine and thinner. This may discolor the pump or erase printing. Use a dry or a damp cloth or a neutral detergent.
- Empty and clean the pump before it is left stopped for a long time.

























Overview

Pump characteristics, features and part names are described in this section.

Introduction

Pump structure & Operating principle

The MDM series is an industrial magnetic drive pump which is designed for handling various chemicals including a strong acid and alkali.

Principle of operation

- The magnetic coupling between the drive magnet and the driven magnet (magnet capsule) transfers the rotation energy of the motor to the impeller in the front casing, where a liquid is transferred from the inlet to outlet.
- When the driven magnet rotates in the front casing, the mouth ring and the liner ring slide over each other as the thrust force pushes the driven magnet forward. Also, the bearing and the spindle slide over each other as the radial force accompany the rotation of the driven magnet.
- The MDM series all have ETFE or PFA corrosive-resistant wet ends and PTFE gaskets. The best combination of the bearing/spindle materials and the mouth ring/liner ring materials varies with chemicals to be delivered.



Conforming standards

Mounting dimensions: ISO 2858 (pumps with baseplate) Flange PCD: JIS 10K/ ISO PN16/ ANSI 150LB

Part names

Pump

The illust below represents the pump on the baseplate.



*The air vent port and the drain port are optionally available.

*Do not clean the pump or nameplate with a solvent such as benzine and thinner. This may discolor the pump or erase printing. Use a dry or a damp cloth or a neutral detergent.

Limitations

Pressure

Observe the maximum allowable discharge pressure that is set differently at pump model of: 1.0MPa: MDM25-1/25-2/32-1/40-1/50-1 1.6MPa: MDM25-3/32-2/40-2/50-2

Liquid

• Slurry

Generally the pump can not send slurry except the KK type (SiC bearing/SiC spindle) that can handle slurry up to 5% (concentration), 50µm (particle size) and 80Hs (hardness). When the KK type is used, you will need shorter maintenance frequency so the internal parts won't wear badly. Contact us for more information.

• Performance change

Shaft power, discharge capacity, and a delivery head vary with liquid specific gravity and liquid viscosity. The pump is designed for use with limited liquid properties. Contact us if any liquid other than that originally planed is used.

• Temperature change

Note that liquid viscosity, vapor pressure, and chemical aggressiveness change with liquid temperature. Monitor the liquid temperature for ensuring good operating conditions.

Allowable liquid temperature range (tap water):				
-	-20 0	80 105 120 150 °C		
E: 25-1/25-2/25-3/32-1/32-2 /40-1/40-2/50-1/50-2				
P: 25-3/32-2				
P: 25-1/25-2/32-1/40-1/50-1				
N: 25-2/32-1/40-1				
N: 50-1				
Allowable ambient temperature: 0 - 40°C				
Allowable ambient humidity: 35 - 85%RH				

*The code "E", "P", and "N" represents the plastic casing materials.

*The allowable liquid temperature range changes with liquid properties. Contact us for detail.

*Use in the gray zone could be possible depending on operating conditions. Contact us for detail.

Each code represents the following information.

Pump

MDM <u>40</u> - <u>150</u> <u>1</u> <u>E</u> <u>KK</u> <u>F</u> <u>075</u> <u>I</u> - <u>D</u> <u>2</u> <u>H</u>

a bcdefghijk

a. Pump inlet/outlet size

Code	Inlet	Outlet
25	40A	25A
32	50A	32A
40	65A	40A
50	80A	50A

b. Impeller O.D. (nominal)

100/ 110/ 120/ 130/ 140/ 150/ 160/ 165/ 170/ 180/ 190/ 195/ 200/ 205/ 210/ 220/ 225 mm

c. Impeller series

1: 1 series 2: 2 series 3: 3 series

d. Casing materials

E: CFRETFE P: PFA N: PFA (MDM25-2/32-1/40-1/50-1)

*There is a structural difference between the "P" and "N" casing material codes. With the "P" type, the casing is overmolded in the cast iron cover, but with the "N" type, the casing is separated. See the wear parts replacement section on page 38 as well.

e. Bearing/Spindle materials

KK: SiC/SiC CF: High density carbon/High purity alumina ceramics

f. Motor

F: Flanged motor

g. Motor output

004: 0.37kW	007: 0.75kW	015: 1.5kW	022: 2.2kW	040: 4.0kW	055: 5.5kW
075: 7.5kW	110: 11kW	150: 15kW	185: 18.5kW	220: 22kW	300: 30kW

h. Flange connection/Motor standard

J: JIS flange + JIS motor I: ISO flange + IEC motor

A: ANSI flange + JIS motor

i. Drain/Special version

Code	Drain port	Baseplate	Special version
A	No		Standard
S	NO	Voc	Customized
D	Voo	165	Standard
Х	Tes		Customized
В	No		Standard
Y	NU	No	Customized
E	Voo	INO	Standard
Z	162		Customized

j. Motor pole

2: Two poles 4: Four poles

k. Liquid temperature

No code: Standard

H: High temperature compatible (MDM25-3/32-2)

Installation

This section describes the installation of the pump, piping and wiring. Read through this section before work.

Points to be observed

Observe the following points when installing the pump.

- Be sure to turn off power to stop the pump and related devices before service is performed.
- If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems.
- Do not place explosive or flammable material near the pump.
- Use of a damaged pump could lead to an electric shock or death.

Pump mounting

Select an installation location and mount the pump.

Installation location

- 1. If the pump unit is not anchored to the foundation and if the motor unit is heavier than the pump unit, the entire pump falls to the motor side. See page 73 and 74 as well.
- 2. Select a flat and firm foundation where is free from mechanical vibration.
- 3. Allow sufficient space around the pump for easy access and maintenance (motor back pull out).
- 4. The concrete foundation should be larger than a pump base footprint.

Pump position

- 1. Install the pump as close to a supply tank and in a flooded suction system.
- 2. In a suction lift system, additionally install a priming line. Also, mount a foot valve at the end of the suction line.

Foundation work

1. See the diagram when mounting the baseplate onto the concrete foundation.



2. If you purchased the pump without the baseplate and mounted the pump directly on the foundation, do not anchor all the "legs". Leave the foot support legs <u>NOT</u> anchored, or the motor won't be pulled back.

Plumbing

Plumbing latitude is often affected by facility size and any other condition like the positional relationship between the tank location and the pump location; however, meet the following requirements to ensure your plumbing system works good.

NOTE -

- Before plumbing, remove the protective cap from the pump inlet and outlet.
- Do not apply adhesive too much or leave a screw or a nut in the plumbing when it is built up. Blow out any small debris from the plumbing. They may cause fatal damage to the pump.
- Use measures to keep the pump connections free from stress. Weight and thermal expansion/contraction of the piping can stress connection points.

Flange connection

Connect the pump to plumbing, fastening the flange tightening bolts evenly to the following torque in diagonal order. No gap is allowed between flanges. Always use a gasket in between metal flanges.

Bolt size	Tightening torque
M16	78.4N∙m

Piping load & Moment

Do not apply excess load to the pump inlet flange and outlet flange. See below for the max allowable force and moment.



Maximum force to inlet & outlet flanges

	Load (kN)			
Direction of load	Outlet flange		Inlet flange	
	MDM25/32/40	MDM50	MDM25/32/40	MDM50
Fx	0.71	1.07	0.89	1.33
Fy (Pressure/Tension)	0.89/0.44	1.33/0.67	0.58	0.89
Fz	0.58	0.89	0.71	1.07

Maximum moments to inlet & outlet flanges

	Moment (kN•m)				
Direction of load	Outlet flange		Inlet flange		
	MDM25/32/40	MDM50	MDM25/32/40	MDM50	
Mx	0.46	0.95	0.46	0.95	
Му	0.35	0.72	0.35	0.72	
Mz	0.23	0.47	0.23	0.47	

System overview



- 1. Discharge line
- 2. Gate valve
- 3. Check valve
- 4. Pressure gauge
- 5. Motor
- 6. Magnetic drive pump
- 7. Expansion joint
- 8. Vacuum (compound) gage
- 9. Straight suction line
- 10. Suction line
- 11. Air vent line
- 12. Pipe support

Suction line

When the suction line of the system is build up, meet the following requirements:

- *Flooded suction:* Establish a flooded suction system. A suction lift system is much less efficient and so it is not recommended.
- Line I.D.: Ensure the suction line I.D. is equal to or larger than the pump inlet and NPSHr is satisfied.
- *Pipe resistance:* Establish the shortest line length and the minimum number of bends so the pipe resistance is minimized.
- *Straight section:* The suction line must be extended straight to the pump inlet. The minimum allowable length of the straight pipe varies with the pump inlet I.D. of:

50A (2B) or smaller: 500mm

65A ($2\frac{1}{2}B$) or wider: 8 times longer than the pump inlet I.D.

- *Eccentric reducer:* If the suction line I.D. is wider than the pump inlet and they can not be connected simply due to the different pipe size, use an eccentric reducer between them. Make sure the flat side of the eccentric reducer comes to its upper side so the air won't be trapped in there.

- *No air/gas entrapment:* Do not allow any arched line where air may be trapped. A suction line should be laid on a rising gradient toward of at least 1/100 toward the tank inlet in a flooded suction system (or a raising gradient toward the pump inlet in a suction lift system). If plumbing latitude is limited in your facility and you can not avoid an arched suction line in the system, mount an air vent device.



- Shut-off valve: Install the shut-off valve (gate valve) in the suction line. Do not install it too close to the pump inlet.
- Flushing line: Install a flushing line for cleaning the pump after handling a harmful liquid.
- *Line end:* The suction line end should always be at 500mm lower than any liquid level for the prevention of entrained air.
- *Foot valve:* In a suction lift system, always install a foot valve to the suction line end or a general back pressure valve in the suction line. The distance between the foot valve and the bottom of a suction tank should be at least equal to the suction line I.D. or wider.
- Piping support: Use metal supports so that the pump is not subject to piping weight or thermal stress directly.
- *Air tightness:* Joints of the suction line must be air tight, or output may be affected or the pump is worn badly by friction heat.
- NPSH: Always check that the NPSHr is satisfied and cavitation won't upset your system.

NPSHa ≥ NPSHr + 0.5m (0.5m is a margin)

NPSHa = $10^6 \times (\underline{Pa - Pv}) \pm hs - hfs$ p g

NPSHa: Net Positive Suction Head available (m) NPSHr: Net Positive Suction Head required (m) Pa: Absolute pressure to the tank liquid surface (MPa) Pv: Vapor pressure of tank liquid (MPa) hs: Suction lift (m) hfs: Suction pipe resistance (m) *p*: Liquid density (kg/m³) *g*: Acceleration of gravity (9.8 m/sec²)

Discharge line

When the discharge line of the system is build up, meet the following requirements.

- *Discharge line I.D.:* If a discharge line is too long and small, its pipe resistance rises too high to obtain an intended flow. Calculate and optimize the best pipe I.D. in advance.
- *Discharge valve:* A discharge valve should be positioned around 1m away from the pump outlet. Mount an air vent line between the discharge valve and the pump outlet so entrained air can be expelled from the system successfully. If the back pressure valve is needed, install it between the discharge valve and the pump outlet as well.
- Pressure gage: Install a pressure gage on a discharge line to monitor a discharge capacity and delivery head.
- Check valve: Install a check valve in the following cases.
 - Discharge line is longer than 15m.
 - A delivery head is higher than 15m.
 - The top end of a discharge line is 9m or higher than the tank liquid level.
 - Several pumps run in parallel.
- *Air vent line:* Provide an air vent line on the discharge line when the horizontal section of the discharge line is longer than 15m.
- Drain valve: Install a drain valve as necessary (to empty the plumbing).
- Piping support: Use metal supports so that the pump is not subject to piping weight or thermal stress directly.
- *Priming line:* If the suction lift system has built up, provide a priming line on the discharge line for the need of priming of the pump.

Wiring for power voltage, earthing and external signals.

Points to be observed

Observe the following points during wiring work.

- Electrical work should be performed by a qualified electrician. Always observe local electric codes.
- Do <u>NOT</u> perform wiring work while electric power is ON. Otherwise, an electrical shock or a short circuit may result. Be sure to turn off the power before wiring work.
- Be careful for electric power <u>NOT</u> to be turned on during work.

Power voltage

Electrical wiring and any work on power source must be performed by qualified persons only. It is not the manufacturer's responsibility for any injury and damage due to noncompliance with this notice. Contact us as necessary.

- *Electromagnetic switch:* Select the optimal specification according to the motor to be used (power voltage, capacity, etc.). Purchase separately.
- Overcurrent protector: Select the optimal specification according to the motor to be used. Purchase separately.
- *Electric device location:* Install an electromagnetic switch and other electric devices such as a stop bottom if any, in a control panel. If the control panel is installed out of doors, protect the electric devices from direct sunlight, wind & rain.
- *Pump/Control panel location:* Select a location where the pump unit or the control panel won't go under the water in the event of flood disaster or so. Also, do not install an indoor use motor out of doors.

Electrical motor

Check/adjust the motor before operation.

- Read through motor manufacturer's instruction manual before operation.
- Check the rotational direction of the motor before electric wiring.
- Ground the electric motor.
- Use a Star-Delta Starter, a motor soft starter, or an inverter for starting the 5.5kW or larger motor.

Starting methods

Use the star-delta starting method or an inverter to start the pump.

- If the full-voltage starting of the motor with a simple electric power circuit is taken, wiring work will be easy; however, the motor and electric devices are subject to a high striking current that will be 5 times, 6 times, or even 7 times larger than the rated current. This leads to a high starting torque and load to the motor so the use of the inverter is recommended for the safe starting.
- Even If the star-delta starting of the motor is taken, the motor is still subject to a sharp rise of acceleration torque that happens as the circuit transforms from the "Star" shape to the "Delta" shape. This sharp rise can be softened effectively if a proper Star-Delta transform time is determined and set.

Use of an inverter (full-voltage starting)

Use of an inverter allows for control of the motor frequency (revolution), energy saving and long life. An inverter is used with the full-voltage starting of the motor.

Set the base frequency, the maximum frequency, and the maximum operating voltage, according to the motor specs. The minimum frequency is 25Hz in general. If it's set too low, the motor will stumble and heat up as cooling efficiency is lost.

*Consult with your inverter manufacture and your motor manufacture to determine the best combination. *If the inverter is used for the motor control, an Iwaki DRN series pump protector can not be used.

Sensors

To protect the pump, monitor:

- A motor power current to detect, alert, and stop a significant load change.
- Pressure to detect, alert, and stop a significant pressure change.
- Flow volume to detect, alert, and stop a significant flow change.
- Liquid level to detect, alert, and stop a significant level change of the tank liquid.

*Monitor two or more items above for ensuring safe operation. An Iwaki DRN series pump protector will be a solution. Contact us for detail.

Operation

This section describes pump operation and programming. Run the pump after plumbing and wiring are completed.

Points to be observed

- To keep good cooling efficiency, clean the pump/motor surface at regular intervals.
- Do not run pump dry. If the suction valve is closed, the pump runs dry.
 - *Having said this, the pumps with the carbon bearing and the ceramic spindle (CF type) would run dry continuously up to one hour without major problems. But then if the time is exceeded or if the next dry running happens before internal parts cool down completely, these parts may be excessively worn by friction heat.
 - *If you notice the pump runs dry, do not open a valve to deliver liquid to the pump. Or heat shock may crack the internal parts of the pump. Leave it for more than one hour to cool them down.
- Check the rotational direction of the pump. Clockwise rotation seen from the motor end is correct.
- Reverse rotation of the motor/pump leads to fatal damage.
- Stop the pump immediately when it is running under cavitation.
- Stop the pump immediately when air is entrained from the suction line.
- Decoupling of the drive magnet and the driven magnet brings about eddy current, Joule heat as the eddy current is lost, and eventually an unacceptable hot motor. Stop the pump immediately and leave it for more than one hour to cool it down. The magnets will be coupled again as the pump is turned ON (or they may not be coupled if they have been demagnetized considerably by the heat.).
- If the motor power is cycled, observe the minimum interval of 10 minutes. Or the internal parts are aged faster or worn excessively.
- Keep liquid temperature change within 80°C (176°F) at any time during operation or stop.
- Close the discharge valve and then start the pump to avoid water hammer (and slowly open the discharge valve to the desired level).
- Closed-discharge operation should be within one minute, or friction heat builds up and damages the internal parts of the pump.
- If power is interrupted while the pump is running, turn off the external switch of the pump immediately and close a discharge valve.
- Do not exceed the maximum operating pressure of the pump.
- The surface temperature of the pump or pipe rises high along with liquid temperature in or right after operation. Take preventive measures.

Surface temperature (at ambent 40°C=104°F)
80°C (176°F)
90°C (194°F)
110°C (230°F)
130°C (266°F)

• In case the pump noise affects human health or communication to secure a safety, provide a noise reduction cover.

Model	Noise level
MDM25-1/25-2/32-1/40-1	85dB
MDM25-3/32-2/40-2/50-1/50-2	95dB

Before operation

Check plumbing and wiring are correct. Prime the pump and remove air.

Points to be checked

Before operation, check if:

- Connection bolts are tight. Tighten connection bolts at regular intervals as they become loose while the pump runs for a long time.
- Liquid level in a supply tank is enough so air won't be entrained into the system.

Priming

1

In a flooded suction system, take the steps below. In a suction lift system, the suction line and the pump need filled with liquid somehow.

Points to be observed

Be sure to turn off power to stop the pump and related devices before service is performed.

Open the suction line.

2 Open the air vent line. Or open the discharge line instead.

Motor rotation check

Check electric wiring is correct and the motor rotates in the correct direction.

Close the discharge valve.
 The suction line and the pump must be filled with liquid.

2 Turn ON the pump.

3 Run the pump for a very short time (0.5 sec.). If the inverter is used, slowly raise the frequency to 10-15Hz and then reduce to 0Hz.

4 Check the motor rotates along with the arrow mark. The correct direction is the CW direction seen from the motor end.

5 Check the motor fan stops smoothly. If necessary, check the rotating parts of the pump.

Degassing

The air/gas in the pump and plumbing is the obstacle to liquid delivery and needs to be expelled before the pump is started.

1	Open the suction line.
2	Open the air vent line. If the air vent line is not provided or if its piping resistance is too high, open the discharge valve instead. NOTE Do not open the discharge valve too much. Or liquid starts to be pumped up before air is completely expelled.
3	Run the pump for a very short time (0.5 sec.). If the inverter is used, slowly raise the frequency to 10-15Hz and then reduce to 0Hz. NOTE Do not run the pump for a long time. If the pump runs with air or gas, friction heat will build up and dam- age rotating/sliding parts of the pump.
4	Check the motor fan stops smoothly. Check the rotating parts of the pump if necessary.
5	Repeat the step 3 and the step 4 until air/gas is expelled completely. When liquids that generate gas bubbles are delivered or when the suction line is too long, it's going to be hard to remove air/gas. Repeat this momentary run 10 times or more.
6	Close the air vent line.

Read this section before operation.

Points to be observed

• Check for a loose bolt on the pump and plumbing. Make sure tighten hex bolts that hold the rear casing support by the rated torque.

Models	Tightening torque
MDM25-1	58.8N•m
MDM25-2/25-3/32-1/32-2/40-1/50-1	85N•m
MDM40-2/50-2	100N•m

- Do not run the motor in reverse. Or the pump may be damaged.
- Closed-discharge operation should be within one minute, or friction heat builds up and the damages the internal parts of the pump.
- Observe the minimum flow rate, or the self-radiation mechanism does not work effectively to cool down the sliding parts (bearing/spindle) and rotating parts (mouth ring/liner ring).

Models	2P	4P
MDM25	20L/min	10L/min
MDM32/40/50	50L/min	20L/min

Starting process

Take the steps below to start up.

1 Open the suction line.

Adjust the discharge valve to the minimum flow rate.

NOTE -

Closed-discharge operation or closed-suction damages the pump. Do not keep a valve closed in operation.

- Run the pump and check for abnormal noise or vibration.
 Stop the pump and determine/remove the root cause of the abnormal noise/vibration.
- **3** Further open the discharge valve to the desired flow rate and pressure. Turn the valve slowly so water hammer won't happen.
- 4 Again, check for abnormal noise or vibration.Stop the pump and determine/remove the root cause of the abnormal noise/vibration.

NOTE -

If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems. See the troubleshooting section as well.

Shut-down process

Take the steps below to shut it down.

Points to be observed

- At a freezing temperature, a frozen liquid may damage the pump and plumbing. Empty the system before it is left unused. If the liquid is harmful, empty and then flush it out. If it's just a short time system suspension and you don't want empty the system, use a band heater to keep liquid unfrozen.
- In the event of a power failure, turn off the main switch and close the discharge valve.

Close the discharge valve slowly to the minimum flow rate. Risk of water hammer. Do not close the discharge valve sharply.

2 Turn off the pump.

1

3 Check the motor fan stops smoothly. Check the rotating parts of the pump if necessary.

Suspension & Restart

When the system is rebooted, special care need to be taken depending on system conditions.

Points to be observed

- Do not turn on the pump before it stops rotating completely, or the drive magnet and the driven magnet will be decoupled.
- If the system is empty, return to the priming section in this manual and take the full steps to reboot the pump and the system.
- When handling liquids that generate gas bubbles (e.g. sodium hypochlorite), repeat the degassing process until gas is completely expelled from the pump and plumbing.
- When handling liquids that crystallizes (e.g. salt water), the pump bearing and the spindle may be caught in crystallization. Before system reboot, manually turn the motor fan to see if it rotates free. If not, take apart the pump and clean the inside of the pump.
- At a freezing temperature, the pump bearing and the spindle may be caught in a frozen liquid. Before system reboot, manually turn the motor fan to see if it rotates free. If not, take measures to melt the frozen liquid.
- Empty and clean the pump before it is left unused for a long time. Also, tighten connection bolts so liquid won't leak before system reboot.

Maintenance

This section describes troubleshooting, maintenance, wear part replacement, exploded views and specifications.

Points to be observed

- Follow instructions in this manual for replacement of wear parts. Do not disassemble the pump beyond the extent of the instructions.
- Always wear protective clothing such as an eye protection, chemical resistant gloves, a mask and a face shield during disassembly, assembly or maintenance work. The specific solution will dictate the degree of protection. Refer to SDS precautions from the solution supplier.
- Risk of electrical shock. Be sure to turn off power to stop the pump and related devices before service is performed.
- Magnetic force of the pump is powerful. When taking apart or putting together the pump, take measures not to catch the finger in the metal parts.
- The magnet drive pump has a pair of strong magnets (the magnet capsule unit and the drive magnet). The strong magnet field could adversely affect the persons who are assisted by electronic devices such as the pacemaker.

NOTE -

- It's not the manufacturer's responsibility for any failure due to corrosion or erosion occurred in your operating condition.
- When repair is needed to our pumps, contact us or the manufacturer of the machine in which our product is built.
- Be sure to drain chemicals and flush the inside of the pump before return. Or harmful chemicals may spill out in transit.

Troubleshooting

First check the following points. If the following measures do not help remove problems, contact your nearest distributor.

Sign	Possible status	Possible causes	Solutions	Possible damage
Unusual vibration/	Pump runs dry.	Pump is not primed.	Prime the pump and	Scratched/cracked slid- ing/rotating parts
		An empty tank	the suction line.	
noise		Closed suction line		 A damaged casing
	Pump runs with en- trained air.	Air was not fully ex- pelled in the degas- sing process.	Make sure air is ex- pelled before opera- tion.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A cracked impeller A damaged casing
		An air pocket in the suction line	Remove an arched suction line.	
		A low liquid level in the tank	Monitor/observe the minimum liquid level.	
		A broken water-/air- tightness	Tighten connection bolts	

Sign	Possible status	Possible causes	Solutions	Possible damage
Unusual vibration/ noise	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A gracked impeller
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	A damaged casing
		A clogged strainer	Clean it at intervals.	
	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A clogged self-radiation path A cracked impeller Foreign matters in the impeller Damaged magnet cap- sule and rear casing A damaged casing
	A closed suction line	A closed valve in the suction line	Observe the correct starting process.	Scratched/cracked slid- ing/rotating parts
		A clogged strainer	Clean it at intervals. Monitor the suction line pressure.	Fused plastic parts A damaged casing
	Too much pump out- put	The discharge valve is opened too much.	Adjust valve opening. Monitor the motor current as well.	
		A flow into a branched line.	Use the main line.	
	Loose connection bolts	Rated torque was not observed.	Tighten by the rated torque.	_
		Bolts are loosened in operation.	Tighten bolts at inter- vals.	-
	Pump is not mounted properly.	Pump-baseplate fix- ing bolts are loose.	Tighten to a higher torque.	-
		No plumbing support	Install plumbing sup- ports.	-
		Pump is stumbling.	Select a level and rigid foundation.	-
Low dis-	Pump runs dry.	Pump is not primed.	Prime the pump and	Scratched/cracked slid-
pressure		An empty tank	ine suction line.	Fused plastic parts
		Closed suction line		• A damaged casing
	Pump runs with en- trained air.	Air was not fully ex- pelled in the degas- sing process.	Make sure air is ex- pelled before opera- tion.	Scratched/cracked slid- ing/rotating partsFused plastic parts
		An air pocket in the suction line	Remove an arched suction line.	A cracked impeller A damaged casing
		A low liquid level in the tank	Monitor/observe the minimum liquid level.	
		A broken water-/air- tightness	Tighten connection bolts	

Sign	Possible status	Possible causes	Solutions	Possible damage
Low dis- charge pressure	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	 A cracked impeller A damaged casing
		A clogged strainer	Clean it at intervals.	
	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A clogged self-radiation path A cracked impeller Foreign matters in the impeller Damaged magnet cap- sule and rear casing A damaged casing
	A closed suction line	A closed valve in the suction line	Observe the correct starting process.	Scratched/cracked slid- ing/rotating parts
		A clogged strainer	Clean it at intervals. Monitor the suction line pressure.	Fused plastic partsA damaged casing
	Too much pump out- put	The discharge valve is opened too much.	Adjust valve opening. Monitor the motor current as well.	_
		A flow into a branched line	Use the main line.	
	Motor runs in reverse.	Wrong electric wiring	Correct wiring.	-
	The drive/driven mag- nets are decoupled.	Overload operation	Observe the rated motor current.	
		Water hummer at start up	Remove air from the pump and the dis- charge line.	-
High dis- charge pressure	The min flow rate is not satisfied.	A closed discharge valve	Adjust the valve to meet the min flow rate.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		Pipe resistance of the discharge line is too high.	Adjust the discharge valve, remove air, and clean the strainer.	 A damaged casing
Unstable discharge	Entrained air	Air is not expelled completely.	Remove air com- pletely.	Scratched/cracked slid- ing/rotating parts
pressure		An air pocket in the suction line	Remove an arched suction line.	 Fused plastic parts A cracked impeller A damaged casing
		A low liquid level in the tank	Monitor/observe the minimum liquid level.	, admaged casing
		A broken water-/air- tightness	Tighten connection bolts.	

Sign	Possible status	Possible causes	Solutions	Possible damage
Unstable discharge pressure	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	A cracked impeller A damaged casing
		A clogged strainer	Clean it at intervals.	
	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A clogged self-radiation path A cracked impeller Foreign matters in the impeller Damaged magnet cap- sule and rear casing A damaged casing
Low suction pressure	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	A cracked impeller A damaged casing
		A clogged strainer	Clean it at intervals.	
	A closed suction line	A closed valve in the suction line	Observe the correct starting process.	• Scratched/cracked slid- ing/rotating parts
		A clogged strainer	Clean it at intervals. Monitor the suction line pressure.	 Fused plastic parts A damaged casing
Low pump output	Entrained air	Air is not expelled completely.	Remove air com- pletely.	• Scratched/cracked slid- ing/rotating parts
		An air pocket in the suction line	Remove an arched suction line.	 Fused plastic parts A cracked impeller A damaged apping
		A low liquid level in the tank	Monitor/observe the minimum liquid level.	• A damaged casing
		A broken water-/air- tightness (suction line)	Tighten connection bolts.	
	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	A cracked impeller A damaged casing
		A clogged strainer	Clean it at intervals.	
	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked sliding/rotating parts Fused plastic parts A clogged self radiation path A cracked impeller Foreign matters in the impeller Damaged magnet capsule and rear casing A damaged casing

Sign	Possible status	Possible causes	Solutions	Possible damage
Low pump output	A closed suction line	A closed valve in the suction line	Observe the correct starting process.	 Scratched/cracked slid- ing/rotating parts
		A clogged strainer	Clean it at intervals. Monitor the suction line pressure.	 Fused plastic parts A damaged casing
	Motor runs in reverse.	Wrong electric wiring	Correct wiring.	-
	The drive/driven mag- nets are decoupled.	Overload operation	Observe the rated motor current.	
		Water hummer at start up	Remove air from the pump and the dis- charge line.	-
No pump	Pump runs dry.	Pump is not primed.	Prime the pump and	Scratched/cracked slid-
output		An empty tank	the suction line.	Ing/rotating parts
		Closed suction line		A damaged casing
	Pump runs with en- trained air.	Air was not fully ex- pelled in the degas- sing process.	Make sure air is ex- pelled before opera- tion.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		An air pocket in the suction line	Remove an arched suction line.	 A cracked impeller A damaged casing
		A low liquid level in the tank	Monitor/observe the minimum liquid level.	
		A broken water-/air- tightness	Tighten connection bolts	
	The min flow rate is not satisfied.	A closed discharge valve	Adjust the valve to meet the min flow rate.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A damaged casing
		Pipe resistance of the discharge line is too high.	Adjust the discharge valve, remove air, and clean the strainer.	
	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A clogged self-radiation path A cracked impeller Foreign matters in the impeller Damaged magnet cap- sule and rear casing A damaged casing
	A closed suction line	A closed valve in the suction line	Observe the correct starting process.	Scratched/cracked slid- ing/rotating parts
		A clogged strainer	Clean it at intervals. Monitor the suction line pressure.	 Fused plastic parts A damaged casing
	The drive/driven mag- nets are decoupled.	Overload operation	Observe the rated motor current.	
		Water hummer at start up	Remove air from the pump and the dis- charge line.	-

Sign	Possible status	Possible causes	Solutions	Possible damage
High motor power cur- rent	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A clogged self-radiation path A cracked impeller Foreign matters in the impeller Damaged magnet cap- sule and rear casing A damaged casing
	Too much pump out- put	The discharge valve is opened too much.	Adjust valve opening. Monitor the motor current as well.	-
		A flow into a branched line.	Use the main line.	
Low motor	Pump runs dry.	Pump is not primed.	Prime the pump and	 Scratched/cracked slid-
power cur-		An empty tank	the suction line.	ing/rotating parts
Tent		Closed suction line		A damaged casing
	Pump runs with en- trained air.	Air was not fully ex- pelled in the degas- sing process.	Make sure air is ex- pelled before opera- tion.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		An air pocket in the suction line	Remove an arched suction line.	• A damaged casing
		A low liquid level in the tank	Monitor/observe the minimum liquid level.	
		A broken water-/air- tightness	Tighten connection bolts	
	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	A cracked impeller A damaged casing
		A clogged strainer	Clean it at intervals.	
	The min flow rate is not satisfied.	A closed discharge valve	Adjust the valve to meet the min flow rate.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts
		Pipe resistance of the discharge line is too high.	Adjust the discharge valve, remove air, and clean the strainer.	A damaged casing
	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A clogged self-radiation path A cracked impeller Foreign matters in the impeller Damaged magnet cap- sule and rear casing A damaged casing
	A closed suction line	A closed valve in the suction line	Observe the correct starting process.	Scratched/cracked slid- ing/rotating parts
		A clogged strainer	Clean it at intervals. Monitor the suction line pressure.	A damaged casing

Sign	Possible status	Possible causes	Solutions	Possible damage	
Low motor	Motor runs in reverse.	Wrong electric wiring	Correct wiring.	-	
power cur- rent	The drive/driven mag- nets are decoupled.	Overload operation	Observe the rated motor current.	_	
		Water hummer at start up	Remove air from the pump and the dis- charge line.	-	
Unstable motor power current	Entrained air	Air is not expelled completely.	Remove air com- pletely.	Scratched/cracked slid- ing/rotating parts	
		An air pocket in the suction line	Remove an arched suction line.	 Fused plastic parts A cracked impeller 	
		A low liquid level in the tank	Monitor/observe the minimum liquid level.	• A damaged casing	
		A broken water-/air- tightness	Tighten connection bolts.		
	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts 	
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	A cracked impeller A damaged casing	
		A clogged strainer	Clean it at intervals.		
Hot pump surface	The min flow rate is not satisfied.	A closed discharge valve	Adjust the valve to meet the min flow rate.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A damaged casing 	
		Pipe resistance of the discharge line is too high.	Adjust the discharge valve, remove air, and clean the strainer.		
Hot motor surface	Too much pump out- put	The discharge valve is opened too much.	Adjust valve opening. Monitor the motor current as well.	_	
		A flow into a branched line.	Use the main line.		
A leak from a connec- tion point	Loose connection bolts	Rated torque was not observed.	Tighten by the rated torque,	Gaskets becomes inelas- tic if liquid temperature is too high.	
		Bolts are loosened in operation.	Tighten bolts at inter- vals.		
A leak from the foot sup- port	Pump runs dry.	Pump is not primed.	Prime the pump and		
		An empty tank	the suction line.	-	
		Closed suction line			
	Entrained air	Air is not expelled completely.	Remove air com- pletely.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A cracked impeller A damaged casing The rear casing hits against the drive mag- 	
		An air pocket in the suction line	Remove an arched suction line.		
		A low liquid level in the tank	Monitor/observe the minimum liquid level.		
		A broken water-/air- tightness	Tighten connection bolts.	net.	

Sign	Possible status	Possible causes	Solutions	Possible damage	
A leak from the foot sup- port	Cavitation	Pipe resistance of the suction line is too high.	Use a wider/shorter/ straighter pipe.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts 	
		Foreign matters in the suction line	Install a screen baffle in the supply tank.	 A cracked impeller A damaged casing 	
		A clogged strainer	Clean it at intervals.	• The rear casing hits against the drive mag- net.	
	The min flow rate is not satisfied.	A closed discharge valve	Adjust the valve to meet the min flow rate.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts 	
		Pipe resistance of the discharge line is too high.	Adjust the discharge valve, remove air, and clean the strainer.	 A damaged casing The rear casing hits against the drive magnet. 	
	Clogged with foreign matters or slurry par- ticles	Foreign matters or slurry particles from the supply tank.	Install a screen baffle in the supply tank.	 Scratched/cracked slid- ing/rotating parts Fused plastic parts A clogged self-radiation path A cracked impeller Foreign matters in the impeller Damaged magnet cap- sule and rear casing A damaged casing The rear casing hits against the drive mag- net. 	
	A closed suction line	A closed valve in the suction line	Observe the correct starting process.	 Scratched/cracked slid ing/rotating parts 	
		A clogged strainer	Clean it at intervals. Monitor the suction line pressure.	 Fused plastic parts A damaged casing The rear casing hits against the drive magnet. 	
	Water hummer	Sharp valve opera- tion (discharge line)	Slowly operate the valve.	 A damaged casing The rear casing hits 	
		An air pocket in the suction line	Remove an arched suction line.	against the drive mag- net.	

Inspection

Perform daily and periodic inspection to keep the best pump performance and safety.

Daily inspection

Check the following points. If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems. See the troubleshooting section as necessary.

When wear parts come to the life limit, replace them with new ones. Contact your distributor for detail.

No.	States	Points to be checked
1	Evidence of a leak	 A leak point. D not go without solving problems.
2	Pumping	If liquid is pumped. Use the flow meter.
		• If the suction pressure and the discharge pressure are at the rated level.
		If the liquid level in the tank is not too low.
		If liquid has deteriorated, crystallized or settled.
3	Noise and vibration	• If abnormal noise or vibration occurs. They are signs of abnormal operation.
4	Air ingress from the pump head joints and the suction line	 If a leak occurs. If pumped liquid includes air bubbles, check lines for leakage and retighten as necessary.
5	Motor power current	• If the motor power current is too high. That's the sign of overpressure. See the motor spec for the rated current.
6	Parameters	• If pressure, a flow rate, or the motor power current is greatly changed. They are signs of abnormal operation. See the troubleshooting section and take effective measures.
7	A spare pump	• If a spare pump is stored, run it from time to time to keep it ready for operation at any time when needed.

Periodic inspection

To ensure efficient and smooth operation, take apart the pump and check the internal conditions at regular intervals (6 months). Be careful not to have a big impact on internal sliding parts and plastic parts. Also, the magnetic force of a drive and a driven magnet is strong. Be careful not to catch the finger or put electrical devices close to those magnets.

Part names	Points to be checked	Measures	
	Wear tracks	Contact us.	
Drive magnet	If the drive magnet is correctly mounted by hex. socket set screws and they are not loose.	Remount the drive magnet to the motor shaft and tighten the screws.	
	Decentering of magnet and motor shaft (Max.1/10mm)	Retighten the hex. socket set screws or check the motor. Contact us as necessary.	
	Wear tracks	-Contact us.	
	Cracked wet ends		
Rear casing	Worn-out rear thrust		
	Worn-out spindle	_	
	Dirty parts	Clean parts.	
	Wear tracks		
Magnet capsule	Cracks	Contact us.	
(driven magnet)	Worn-out bearing. See next page.		
	Loose impeller		
	Worn-out mouth ring. See later page.	Contact up	
Impollor	Cracks	Contact us.	
Impeller	Clogged impeller	Clean the impeller.	
	Deformation	Contact us.	
	Dirty wet ends	Clean parts.	
	Cracks	Contact us.	
Front opping	Cracked/Worn-out liner ring		
Front casing	Cracked gasket		
	Wear tracks		
	Clogged drain port or air vent port	Clean the port. If necessary, contact us.	
Spindlo	Cracks	Contact us.	
Spindle	Worn-out spindle. See next page.		

Wear limits of bearing and spindle

U				
Madal	Bearing I.D.		Spindle O.D.	
INIOdei	Before use	Wear limit	Before use	Wear limit
MDM25-1	20mm	21mm	20mm	19mm
MDM25-2/32-1/40-1	26mm	27mm	26mm	25m
MDM25-3/32-2/40-2/50-1/50-2	30mm	31mm	30mm	29mm

Check wear degree of the bearing and spindle.

- Above values show wear limit of the bearing and the spindle.

- For the pumps with the carbon bearing and the alumina ceramic spindle (CF type), if the clearance between the bearing and the spindle exceeds 1 mm, either of them, whichever has greater wear, should be replaced regardless of the wear limit.

- For the pumps with the SiC bearing and the SiC spindle (KK type), if the clearance between the bearing and the spindle exceeds 1 mm, replace the bearing and spindle at the same time.

- In the nature of things, sliding parts may suffer initial (/greater) wear when used for the first time.
Wear limits of mouth ring

Check wear degree of the mouth ring.

Medel	Mouth ring	thickness
Nidei	Initial thickness	Wear limit
MDM25-1/25-2/32-1	8mm	6mm
MDM25-3/32-2/40-1/50-1	9mm	7mm
MDM40-2/50-2	10mm	8mm

The mouth ring is 2 mm forward from the impeller when shipped from our factory. Before the step has reduced to 0 mm, replace the impeller unit.



Wear part replacement

To run the pump for a long period, wear parts need to be replaced periodically. It is recommended that wear parts are always stocked for immediate replacement. Contact your nearest distributor with the following information.

- 1. Part names and part number (see the diagram below.)
- 2. Pump model identification code and manufacturing number (see the pump nameplate.)
- 3. Drawing number (if you have)

Precautions

- 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.
- Rinse and clean wet ends thoroughly with tap water.

Wear part list





						PARTS CODE		
No.	PARTS NAME	WET END CODES	Q'ty	MDM25-1	MDM25-2	MDM25-3 7.5kW or below	MDM25-3 11/15kW	MDM32-1
		PKK	1	MDM0001				
		EKK	1	MDM0002	MDM0110	MDM0722	MDM0722	MDM0203
		ECF	1	MDM0003	MDM0111	MDM1003	MDM1003	MDM0204
100.1+	Front opping	NKK	1		MDM1118			MDM1101
314.1	FIGHT Casing	PKK	1	MDM0004				
		EKK	1	MDM0005	MDM0112	MDM0723	MDM0723	MDM0205
		ECF	1	MDM0006	MDM0113	MDM1001	MDM1001	MDM0206
		NKK	1		MDM1115			MDM1102
100.1+	Frank and in provide	PKK	1		MDM0499	MDM0879	MDM0882	MDM0503
314.1	Front casing unit	РКК	1		MDM0509	MDM0880	MDM0883	MDM0504
100.2+		PKK/NKK	1	MDM0501	MDM1120			MDM1104
903.1	Cover unit	EKK/ECF	1	MDM0502	MDM0500	MDM0881	MDM0884	MDM0505
122.1	Drain plate		1	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009
		PKK	1	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009
122.2	Air vent plate	NKK	1		MDM0009			
		EKK/ECF	1					
		PKK/NKK	1	MDM0010	MDM0117	MDM0730	MDM0730	MDM0210
158	Rear casing	PKK/EKK/ECF	1			MDM0731	MDM0731	
	5	EKK/ECF	1	MDM0011	MDM0118	MDM0732	MDM0732	MDM0211
159	Rear casing cover	FRP	1	MDM0012	MDM0119	MDM0733	MDM0733	MDM0212
159.1	Reinforce ring	FRP	1			MDM0734	MDM0734	
159+ 159.1	Rear casing cover unit	н	1			MDM0907	MDM0907	
161	Rear casing support		1	MDM0013	MDM0120	MDM0852	MDM0852	MDM0213
040		PKK/NKK/EKK	1	MDM0014	MDM0121	MDM0372	MDM0372	MDM0121
210	Spindle	ECF	1	MDM0015	MDM0122	MDM0373	MDM0373	MDM0122
230	Impeller					1		
230+ 314.2	Impeller assembly							-
230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller-Magnet capsule assembly	See the Imp	eller F	Parts List pa	ges.		1	-
310	Bearing	PKK/NKK/EKK	1	MDM0016	MDM0123	MDM0735	MDM0735	MDM0123
	Boaring	ECF	1	MDM0017	MDM0124	MDM0950	MDM0950	MDM0124
314.2	Mouth ring	PKK/NKK/EKK	1	MDM0018	MDM0018	MDM0488	MDM0488	MDM0018
	in out in ing	ECF	1	MDM0019	MDM0019	MDM0951	MDM0951	MDM0019
31/1 3	Rear thrust	EKK/ECF	1	MDM0020	MDM0125	MDM0378	MDM0378	MDM0125
		PKK/NKK	1	MDM0613	MDM0614	MDM0615	MDM0615	MDM0614
31/ /	Pear ring	PKK/NKK/EKK	1	MDM0021	MDM0126	MDM0126	MDM0126	MDM0126
514.4	inedi illiy	ECF	1	MDM0022	MDM0127	MDM0127	MDM0127	MDM0127

		F	PARTS COD	E				
MDM32-2 7.5kW or below	MDM32-2 11/15kW	MDM40-1	MDM40-2	MDM50-1 5.5/7.5kW	MDM50-1 11/15kW	MDM50-2	WET END CODES	NOTES
							PKK	
MDM0869	MDM0869	MDM0279	MDM1187	MDM0366	MDM0366	MDM1180	EKK	
MDM1002	MDM1002	MDM0280	MDM1188	MDM0367	MDM0367	MDM1181	ECF	-w/ Drain noies
		MDM1160		MDM1165	MDM1165		NKK	-
							РКК	
MDM0870	MDM0870	MDM0281	MDM1189	MDM0368	MDM0368	MDM1182	EKK	1,
MDM1000	MDM1000	MDM0282	MDM1190	MDM0369	MDM0369	MDM1183	ECF	-w/o Drain noies
		MDM1159		MDM1164	MDM1164		NKK	
MDM0885	MDM0888	MDM0506		MDM0493	MDM0496		РКК	w/ Drain holes
MDM0886	MDM0889	MDM0507		MDM0494	MDM0497		РКК	w/o Drain holes
		MDM1161		MDM1166	MDM1169		PKK/NKK	
MDM0887	MDM0890	MDM0508	MDM1192	MDM1110	MDM1111	MDM1185	EKK/ECF	
MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009		
MDM0009	MDM0009	MDM0009		MDM0009	MDM0009		РКК	
							NKK	
			MDM0009			MDM0009	EKK/ECF	
MDM0370	MDM0370	MDM0210		MDM0370	MDM0370		PKK/NKK	
MDM0877	MDM0877						PKK/EKK/ECF	High temp type
MDM0371	MDM0371	MDM0211	MDM1322	MDM0371	MDM0371	MDM1322	EKK/ECF	
MDM0119	MDM0119	MDM0212	MDM1323	MDM0119	MDM0119	MDM1323	FRP	
MDM0734	MDM0734						FRP	High temp type
MDM0908	MDM0908						н	
MDM0878	MDM0878	MDM0213	MDM1326	MDM0120	MDM0120	MDM1326		
MDM0372	MDM0372	MDM0121	MDM1324	MDM0372	MDM0372	MDM1324	PKK/NKK/EKK	
MDM0373	MDM0373	MDM0122	MDM1325	MDM0373	MDM0373	MDM1325	ECF	
H								-
H								
H								-
See the	e Impeller Pa	arts List pa	ades.					-
			0					-
H								-
								-
MDM0735	MDM0735	MDM0123	MDM1312	MDM0374	MDM0374	MDM1312	PKK/NKK/EKK	
MDM0950	MDM0950	MDM0124	MDM1313	MDM0375	MDM0375	MDM1313	ECF	
MDM0488	MDM0488	MDM0488	MDM1251	MDM0376	MDM0376	MDM1251	PKK/NKK/EKK	
MDM0951	MDM0951	MDM0489	MDM1252	MDM0377	MDM0377	MDM1252	ECF	
MDM0378	MDM0378	MDM0125	MDM0378	MDM0378	MDM0378	MDM0378	EKK/ECF	
MDM0615	MDM0615	MDM0614		MDM0615	MDM0615		PKK/NKK	
MDM0126	MDM0126	MDM0126		MDM0126	MDM0126		PKK/NKK/EKK	

MDM0127

MDM0127

MDM0127

MDM0127

MDM0127

ECF

						PARTS CODE		
No.	PARTS NAME	WET END CODES	Q'ty	MDM25-1	MDM25-2	MDM25-3 7.5kW or below	MDM25-3 11/15kW	MDM32-1
		F015/F022	1	MDM0023				
		F040	1		MDM0128			MDM0128
		F055/F075	1		MDM0129	MDM0129		MDM0129
		F110/F150/F185	1				MDM0467	
		F220/F300	1					
330+	Foot support	F004-4P	1	MDM0616				
900		F007-4P	1	MDM0023				
		F015-4P	1		MDM0620	MDM0620		MDM0620
		F022/F040-4P	1		MDM0128	MDM0128		MDM0128
		F055-4P	1			MDM0129		
		F075/F110/F150- 4P						
		F055/F075	1					
		F300	1					
330.1	Motor adapter	F004-4P	1	MDM0617				
		F015-4P	1		MDM0621	MDM0621		MDM0621
		F055/F075-4P	1					
400.1	Gasket	PTFE	1	MDM0024	MDM0130	MDM0736	MDM0736	MDM0214
400.2	Drain gasket	PTFE	1	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025
		PKK/PTFE	1	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025
400.3	Air vent gasket	NKK	1		MDM0025			
500.1	Plain washer		2	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026
500.2	Plain washer		2	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027
500.3	Plain washer		2	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026
500.4	Plain washer		10					
554.1	Spring washer		2	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028
554.2	Spring washer		2	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029
554.3	Spring washer		2	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028
554.4	Spring washer		6/8/10	MDM0030	MDM0029	MDM0490	MDM0490	MDM0029
554.5	Spring washer		4	MDM0030	MDM0029	MDM0029	MDM0029	MDM0029
		F015/F022	4	MDM0030				
		F040/F055/F075	4		MDM0029	MDM0029		MDM0029
		F055/F075	4					
		F110/F150/F185	4				MDM0490	
		F220/F300	4					
		F004-4P	4	MDM0028				
554.6	Spring washer	F007-4P	4	MDM0030				
		F015-4P	4		MDM0030	MDM0030		MDM0030
		F022/F040-4P	4		MDM0029	MDM0029		MDM0029
		F055-4P	4			MDM0029		
		F075-4P	4					
		F110/F150-4P	4					

		F	PARTS COD	E				
MDM32-2 7.5kW or below	MDM32-2 11/15kW	MDM40-1	MDM40-2	MDM50-1 5.5/7.5kW	MDM50-1 11/15kW	MDM50-2	WET END CODES	NOTES
							F015/F022	
		MDM0128					F040	
MDM0129		MDM0129	MDM1327	MDM0129		MDM1327	F055/F075	
	MDM0467		MDM1327		MDM0467	MDM1327	F110/F150/*F185	*MDM40-2/-50-2 only
			MDM1327			MDM1327	F220/F300	
							F004-4P	
							F007-4P	
MDM0620		MDM0620		MDM0620			F015-4P	
MDM0128		MDM0128		MDM0128			F022/F040-4P	
MDM0129			MDM1327	MDM0129		MDM1327	F055-4P	
			MDM1327			MDM1327	F075/F110/F150- 4P	
			MDM1329			MDM1329	F055/F075	
			MDM1330			MDM1330	F300	
							F004-4P	
MDM0621		MDM0621		MDM0621			F015-4P	
			MDM1329			MDM1329	F055/F075-4P	
MDM0130	MDM0130	MDM0214	MDM1194	MDM0130	MDM0130	MDM1194	PTFE	
MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	PTFE	
MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	PKK/PTFE	
							NKK	
MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026		
MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027		
MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026		
			MDM1195			MDM1195		
MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028		
MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029		
MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028		
MDM0490	MDM0490	MDM0029	MDM0490	MDM0290	MDM0029	MDM0490		MDM25-1: 6 MDM25-3/32-2/40- 2/50-2: 10
MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029		
							F015/F022	
MDM0029		MDM0029		MDM0029			F040/F055/F075	
			MDM0029			MDM0029	F055/F075	
	MDM0490		MDM0490		MDM0490	MDM0490	F110/F150/*F185	*MDM40-2/-50-2 only
			MDM0490			MDM0490	F220/F300	
							F004-4P	
							F007-4P	
MDM0030		MDM0030		MDM0030			F015-4P	
MDM0029		MDM0029		MDM0029			F022/F040-4P	
MDM0029			MDM0029	MDM0029		MDM0029	F055-4P	
			MDM0029			MDM0029	F075-4P	
			MDM0490			MDM0490	F110/F150-4P	
			-	1			1	1

						PARTS CODE		
No.	PARTS NAME	WET END CODES	Q'ty	MDM25-1	MDM25-2	MDM25-3 7.5kW or below	MDM25-3 11/15kW	MDM32-1
554.7	Spring washer		2	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029
		F004-4P	4	MDM0028				
554.8	Spring washer	F015-4P	4		MDM0030	MDM0030		MDM0030
			4					
801	Motor		1					
		F015	1	MDM0031				
		F022	1	MDM0032				
		F040	1		MDM0131			MDM0131
		F055	1		MDM0132	MDM0286		MDM0132
		F075	1		MDM0286	MDM0286		MDM0286
		F110	1				MDM0738	
		F150	1				MDM0738	
		F185	1					
050.		F220	1					
858+ 908 1	Drive magnet unit	F300	1					
000.1		F004-4P	1	MDM0618				
		F007-4P	1	MDM0627				
		F015-4P	1		MDM0622	MDM0622		MDM0622
		F022-4P	1		MDM0623	MDM0623		MDM0623
		F040-4P	1		MDM0624	MDM0624		MDM0624
		F055-4P	1			MDM0737		
		F075-4P	1			Image: Market		
		F110-4P	1					
		F150-4P	1					
		PKK-F015	1	MDM0033				
		PKK-F022	1	MDM0033				
		PKK/NKK-F040	1		MDM0133			MDM0133
		PKK/NKK-F055	1		MDM0133	MDM0287		MDM0133
		PKK/NKK-F075	1		MDM0287	MDM0287		MDM0287
		PKK/NKK-F110	1				MDM0469	
		PKK/NKK-F150	1		AMDM0029MDM0029MDM0029MDM0029AMDM0030MDM0030MDM0030MDM0030MDM0030MDM0030MDM0030MDM0030MDM0030MDM0130MDM030MDM0030MDM0131MDM0130MDM0131MDM0132MDM0286MDM0132MDM0132MDM0286MDM038MDM0132MDM0286MDM038MDM0286MDM0286MDM0286MDM0286MDM0286MDM0286MDM0286MDM0286MDM0738MDM0286MDM0286MDM0738MDM0287MDM0622MDM0622MDM0622MDM0622MDM0622MDM0623MDM0623MDM0623MDM0624MDM0624MDM0623MDM0625MDM0624MDM0624MDM0624MDM0624MDM0624MDM0625MDM0624MDM0624MDM0624MDM0624MDM0623MDM0625MDM0627MDM0633MDM0133MDM0287MDM0133MDM0133MDM0287MDM0133MDM0287MDM0469MDM0287MDM0469MDM0133MDM0133MDM0133MDM0133MDM0133MDM0133MDM0133MDM0133MDM0133MDM0133MDM0133MDM0133MDM0287MDM0287MDM0288MDM0288MDM0134MDM0288MDM0134MDM0288MDM0134MDM0288MDM038MDM038			
		PKK-F004-4P	1	MDM0033		MDM25-2 MDM25-3 7.5kW or below MDM25-3 11/15kW MDM32-1 M0029 MDM0029 MDM0029 MDM0029 M0030 MDM0030 MDM0030 MDM0030 M030 MDM0030 MDM0030 MDM0030 M030 MDM0030 MDM0030 MDM0030 M031 MDM0286 MDM0131 M0131 MDM0286 MDM0132 M0132 MDM0286 MDM0132 M0286 MDM0738 MDM0286 MDM0286 MDM0738 MDM0286 MDM0281 MDM0738 MDM0286 MDM0282 MDM0738 MDM0287 MDM0623 MDM0623 MDM0624 MDM0624 MDM0624 MDM0624 MDM0737 Immediate Immediate MDM0737 Immediate Immediate MDM0737 Immediate Immediate MDM0737 Immediate Immediate MDM0738 Immediate Immediate MDM033 MDM0287 Immediate		
050	Magnet eenaule unit	PKK-F007-4P	1	MDM0033				
039	Magnet capsule unit	PKK/NKK-F015-4P	1		MDM0133	MDM25-2 7.5kW or below MDM025-3 11/15kW MDM029 MDM0029 MDM0029 MDM0029 MDM0029 MDM0029 MDM030 MDM0030 MDM0030 MDM0030 MDM030 MDM0030 MDM0030 MDM0030 MDM031 Import Import Import MDM0131 Import Import Import MDM0132 MDM0286 MDM0738 Import MDM0286 MDM0738 Import Import MDM0286 MDM0738 Import Import Import Import Import Import Import		
		PKK/NKK-F022-4P	1		MDM0133	MDM0133		MDM0133
		PKK/NKK-F040-4P	1		MDM0287	MDM0287		MDM0287
		PKK/NKK-F055-4P	1			MDM0469		
		EKK/ECF-F015	1	MDM0034				
		EKK/ECF-F022	1	MDM0034				
		EKK/ECF-F040	1		MDM0134			MDM0134
		EKK/ECF-F055	1		MDM0134	MDM0288		MDM0134
		EKK/ECF-F075	1		MDM0288	MDM0288		MDM0288

		F	PARTS COD	E				
MDM32-2 7.5kW or below	MDM32-2 11/15kW	MDM40-1	MDM40-2	MDM50-1 5.5/7.5kW	MDM50-1 11/15kW	MDM50-2	WET END CODES	NOTES
MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029		
							F004-4P	
MDM0030		MDM0030		MDM0030			F015-4P	
			MDM0029			MDM0029		
							F015	
							F022	
		MDM0131					F040	
MDM0286		MDM0132	MDM1317	MDM0286		MDM1317	F055	
MDM0286		MDM0286	MDM1317	MDM0286		MDM1317	F075	
	MDM0738		MDM1318		MDM0738	MDM1318	F110	
	MDM0738		MDM1315		MDM0738	MDM1315	F150	
			MDM1315			MDM1315	F185	
			MDM1339			MDM1339	F220	
			MDM1337			MDM1337	F300	
							F004-4P	
							F007-4P	
MDM0622		MDM0622		MDM0622			F015-4P	
MDM0623		MDM0623		MDM0623			F022-4P	
MDM0624		MDM0624		MDM0624			F040-4P	
MDM0737			MDM1317	MDM0737		MDM1317	F055-4P	
			MDM1314			MDM1314	F075-4P	
			MDM1315			MDM1315	F110-4P	
			MDM1315			MDM1315	F150-4P	
							PKK-F015	
		1					PKK-F022	
		MDM0133					PKK/NKK-F040	
MDM0287		MDM0133		MDM0287			PKK/NKK-F055	
MDM0287		MDM0287		MDM0287			PKK/NKK-F075	
	MDM0469				MDM0469		PKK/NKK-F110	
	MDM0469				MDM0469		PKK/NKK-F150	
							PKK-F004-4P	
							PKK-F007-4P	
MDM0133		MDM0133		MDM0133			PKK/NKK-F015-4P	
MDM0133		MDM0133		MDM0133			PKK/NKK-F022-4P	
MDM0287		MDM0287		MDM0287			PKK/NKK-F040-4P	
MDM0469				MDM0469			PKK/NKK-F055-4P	
							EKK/ECF-F015	
							EKK/ECF-F022	
		MDM0134					EKK/ECF-F040	
MDM0288		MDM0134	MDM1311	MDM0288		MDM1311	EKK/ECF-F055	
MDM0288		MDM0288	MDM1311	MDM0288		MDM1311	EKK/ECF-F075	

						PARTS CODE		
No.	PARTS NAME	WET END CODES	Q'ty	MDM25-1	MDM25-2	MDM25-3 7.5kW or below	MDM25-3 11/15kW	MDM32-1
		EKK/ECF-F110	1				MDM0470	
		EKK/ECF-F150	1				MDM0470	
		EKK/ECF-F185	1					
		EKK/ECF-F220	1					
		EKK/ECF-F300	1					
		EKK/ECF-F004-4P	1	MDM0034				
950	Magnat appaula unit	EKK/ECF-F007-4P	1	MDM0034				
009	magnet capsule unit	EKK/ECF-F015-4P	1		MDM0134	MDM0134		MDM0134
		EKK/ECF-F022-4P	1		MDM0134	MDM0134		MDM0134
		EKK/ECF-F040-4P	1		MDM0288	MDM0288		MDM0288
		EKK/ECF-F055-4P	1			MDM0470		
		EKK/ECF-F075-4P	1					
		EKK/ECF-F110-4P	1					
		EKK/ECF-F150-4P	1					
890	Base plate		1	MDM0035	MDM0135	MDM0135	MDM0471	MDM0135
900	Eye bolt		1	MDM0036	MDM0036	MDM0036	MDM0036	MDM0036
901.1	Hex. head bolt		2	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037
901.2	Hex. head bolt		2	MDM0042	MDM0555	MDM0555	MDM0555	MDM0555
901.3	Hex. head bolt		2	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037
901.4	Hex. head bolt		6/8/10	MDM0039	MDM0137	MDM0491	MDM0491	MDM0137
901.5	Hex. head bolt		4	MDM0040	MDM0136	MDM0136	MDM0136	MDM0136
		F015/F022	4	MDM0040				
		F040	4		MDM0555			MDM0555
		F055/F075	4		MDM0137	MDM0137		MDM0137
		F110/F150/F185	4				MDM0491	
		F220/F300	4					
004.0		F004-4P	4	MDM0619				
901.6	Hex. head bolt	F007-4P	4	MDM0041				
		F015-4P	4		MDM0041	MDM0041		MDM0041
		F022/F040-4P	4		MDM0555	MDM0555		MDM0555
		F055-4P	4			MDM0137		
		F075-4P	4					
		F110/F150-4P	4					
901.7	Hex. head bolt		2	MDM0042	MDM0555	MDM0555	MDM0555	MDM0555
		F004-4P	4	MDM0698				
901.8	Hex. head bolt	F015-4P	4		MDM0625	MDM0625		MDM0625
			4					
		PKK	5	MDM0043				
903.1	Hex. soch head bolt	EKK/ECF	5	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043
		NKK	5		MDM0043			MDM0043

		F	PARTS COD	E				
MDM32-2 7.5kW or below	MDM32-2 11/15kW	MDM40-1	MDM40-2	MDM50-1 5.5/7.5kW	MDM50-1 11/15kW	MDM50-2	WET END CODES	NOTES
	MDM0470		MDM1311		MDM0470	MDM1311	EKK/ECF-F110	
	MDM0470		MDM1310		MDM0470	MDM1310	EKK/ECF-F150	
			MDM1310			MDM1310	EKK/ECF-F185	
			MDM1310			MDM1310	EKK/ECF-F220	
			MDM1310			MDM1310	EKK/ECF-F300	
							EKK/ECF-F004-4P	
							EKK/ECF-F007-4P	
MDM0134		MDM0134		MDM0134			EKK/ECF-F015-4P	
MDM0134		MDM0134		MDM0134			EKK/ECF-F022-4P	
MDM0288		MDM0288		MDM0288			EKK/ECF-F040-4P	
MDM0470		-	MDM1311	MDM0470		MDM1311	EKK/ECF-F055-4P	
			MDM1310			MDM1310	EKK/ECF-F075-4P	
			MDM1310			MDM1310	EKK/ECF-F110-4P	
			MDM1310			MDM1310	EKK/ECF-F150-4P	
MDM0135	MDM0471	MDM0135	MDM1332	MDM0135	MDM0471	MDM1332		
MDM0036	MDM0036	MDM0036	MDM1338		MDM0036	MDM1338		
MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037		
MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555		
MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037		
MDM0491	MDM0491	MDM0137	MDM0491	MDM0137	MDM0137	MDM0491		MDM25-1: 6 MDM25-3/32-2/40-2/50- 2: 10
MDM0136	MDM0136	MDM0136	MDM0555	MDM0136	MDM0136	MDM0555		
							F015/F022	
		MDM0555					F040	
MDM0137		MDM0137	MDM0555	MDM0137		MDM0555	F055/F075	
	MDM0491		MDM0491		MDM0491	MDM0491	F110/F150/*F185	*MDM40-2/-50-2 only
			MDM0491			MDM0491	F220/F300	
							F004-4P	
							F007-4P	
MDM0041		MDM0041		MDM0041			F015-4P	
MDM0555		MDM0555		MDM0555			F022/F040-4P	
MDM0137			MDM0555	MDM0137		MDM0555	F055-4P	
			MDM0555			MDM0555	F075-4P	
			MDM0491			MDM0491	F110/F150-4P	
MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555		
							F004-4P	
MDM0625		MDM0625		MDM0625			F015-4P	
			MDM0555			MDM0555		
							PKK	
MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	EKK/ECF	
		MDM0043		MDM0043	MDM0043		NKK	

						PARTS CODE		
No.	PARTS NAME	WET END CODES	Q'ty	MDM25-1	MDM25-2	MDM25-3 7.5kW or below	MDM25-3 11/15kW	MDM32-1
		F055/F075	4					
903.2	Hex. soch head bolt	F300	4					
		F055/F075-4P	4					
			2	MDM0044	MDM0044	MDM0044	MDM0044	MDM0044
		F055/F075	2					
908.1	Hex. head set screw	F110/F150/F185/ F220/F300	2					
		F055/F075-4P	2					
		F110/F150-4P	2					
942	Pin, Impeller		2	MDM0045	MDM0138	MDM0138	MDM0138	MDM0138

		F	PARTS COD	E				
MDM32-2 7.5kW or below	MDM32-2 11/15kW	MDM40-1	MDM40-2	MDM50-1 5.5/7.5kW	MDM50-1 11/15kW	MDM50-2	WET END CODES	NOTES
			MDM1331			MDM1331	F055/F075	
			MDM1331			MDM1331	F300	
			MDM1331			MDM1331	F055/F075-4P	
MDM0044	MDM0044	MDM0044		MDM0044	MDM0044			
			MDM1320			MDM1320	F055/F075	
			MDM1321			MDM1321	F110/F150/F185/ F220/F300	
			MDM1320			MDM1320	F055/F075-4P	
			MDM1321			MDM1321	F110/F150-4P	
MDM0138	MDM0138	MDM0138	MDM0138	MDM0138	MDM0138	MDM0138		

Impeller part list

If you need the new impeller, contact us with the pump model code and the MFG #. They are shown on the spec label of the pump. Note the "Nominal" impeller O.D. may be different from the actual impeller O.D. as some adjustment is needed to optimize the pump performance.

MDM25-1

MODEI	No		IMPELLER	MOTOR	O'ty	F	PARTS CODE	=
NODEL	INU.	FARTSNAME	O.D.	OUTPUT	Qly	PKK	EKK	ECF
			165		1	MDM0046	MDM	0067
			160		1	MDM0047	MDM	0068
			150		1	MDM0048	MDM	0069
			140		1	MDM0049	MDM	0070
	230	Impeller	130		1	MDM0050	MDM	10071
			120		1	MDM0051	MDM	0072
			110		1	MDM0052	MDM	0073
			100		1	MDM0084	MDM	0109
			170	4P	1	MDM0628	MDM	0632
			165		1	MDM0053	MDM0074	MDM0093
			160		1	MDM0054	MDM0075	MDM0094
MDM25-1			150		1	MDM0055	MDM0076	MDM0095
	220.		140		1 N 1 N 1 N		MDM0077	MDM0096
	230+ 314.2	Impeller assembly	130		1	MDM0057	MDM0078	MDM0097
	01112		120		1	MDM0058	MDM0079	MDM0098
		120 110 100	110		1	MDM0059	MDM0080	MDM0099
			100		1	MDM0083	MDM0081	MDM0100
			170	4P	1	MDM0629	MDM0633	MDM0637
			165	1.5/2.2kW	1	MDM0060	MDM0085	MDM0101
			160	1.5/2.2kW	1	MDM0061	MDM0086	MDM0102
	230+		150	1.5/2.2kW	1	MDM0062	MDM0087	MDM0103
	310+		140	1.5/2.2kW	1	MDM0063	MDM0088	MDM0104
3	314.2+	assembly	130	1.5/2.2kW	1	MDM0064	MDM0089	MDM0105
	859+		120	1.5/2.2kW	1	MDM0065	MDM0090	MDM0106
	942		110	1.5/2.2kW	1	MDM0066	MDM0091	MDM0107
		-	100	1.5/2.2kW	1	MDM0082	MDM0092	MDM0108
			170	0.75/1.5kW-4P	1	MDM0630	MDM0634	MDM0635

■ MDM25-2

MODEL	No	PARTS NAME	IMPELLER	MOTOR	O'tu	PARTS CODE		
MODEL	INO.		O.D.	OUTPUT	Qly	PKK/NKK	EKK	ECF
			195		1	MDM0139	MDM	0163
			190		1	MDM0140	MDM	0164
			180		1	MDM0141	MDM	0165
			170		1	MDM0142	MDM	0166
	230	Impeller	160		1	MDM0143	MDM	0167
			150		1	MDM0144	MDM	0168
			140		1	MDM0145	MDM	0169
			130		1	MDM0146	MDM	10170
			200	4P	1	MDM0640	MDM	0645
			195		1	MDM0147	MDM0171	MDM0187
			190		1	MDM0148	MDM0172	MDM0188
			180		1	MDM0149	MDM0173	MDM0189
	000.		170		1	MDM0150	MDM0174	MDM0190
	230+	Impeller assembly	160		1	MDM0151	MDM0175	MDM0191
	314.2		150		1	MDM0152	MDM0176	MDM0192
			140		1	MDM0153	MDM0177	MDM0193
			130		1	MDM0154	MDM0178	MDM0194
			200	4P	1	MDM0641	MDM0646	MDM0650
IVIDIVIZ5-Z			195	4.0/5.5kW	1	MDM0155	MDM0179	MDM0195
			190	4.0/5.5kW	1	MDM0156	MDM0180	MDM0196
			180	4.0/5.5kW	1	MDM0157	MDM0181	MDM0197
			170	4.0/5.5kW	1	MDM0158	MDM0182	MDM0198
			160	4.0/5.5kW	1	MDM0159	MDM0183	MDM0199
			150	4.0/5.5kW	1	MDM0160	MDM0184	MDM0200
	000.		140	4.0/5.5kW	1	MDM0161	MDM0185	MDM0201
	230+		130	4.0/5.5kW	1	MDM0162	MDM0186	MDM0202
	314.2+	Impeller-Magnet capsule	195	7.5kW	1	MDM0556	MDM0564	MDM0572
	314.4+	assembly	190	7.5kW	1	MDM0557	MDM0565	MDM0573
	859+		180	7.5kW	1	MDM0558	MDM0566	MDM0574
	942		170	7.5kW	1	MDM0559	MDM0567	MDM0575
			160	7.5kW	1	MDM0560	MDM0568	MDM0576
			150	7.5kW	1	MDM0561	MDM0569	MDM0577
			140	7.5kW	1	MDM0562	MDM0570	MDM0578
			130	7.5kW	1	MDM0563	MDM0571	MDM0579
			200	1.5/2.2kW-4P	1	MDM0642	MDM0647	MDM0649
			200	4.0kW-4P	1	MDM0643	MDM0648	MDM0651

MODEL	No		IMPELLER	R MOTOR	044	PARTS CODE		
MODEL	INO.	PARISNAME	O.D.	OUTPUT	Qty	PKK	EKK	ECF
			225		1	MDM0740	MDM	0764
	230		220		1	MDM0741	MDM	0765
			210		1	MDM0742	MDM0766	
		Impeller	200		1	MDM0743	MDM	0767
			190		1	MDM0744	MDM	0768
			180		1	MDM0745	MDM	0769
			170		1	MDM0746	MDM	0770
			160		1	MDM0747	MDM	0771
			225		1	MDM0853	MDM0772	MDM0918
			220		1	MDM0854	MDM0773	MDM0919
			210		1	MDM0855	MDM0774	MDM0920
	230+	Impollor accombly	200		1	MDM0856	MDM0775	MDM0921
	314.2		190		1	MDM0857	MDM0776	MDM0922
			180		1	MDM0858	MDM0777	MDM0923
			170		1	MDM0859	MDM0778	MDM0924
			160		1	MDM0860	MDM0779	MDM0925
			225	5.5/7.5kW	1	MDM0756	MDM0788	MDM0934
MDM25-3			220	5.5/7.5kW	1	MDM0757	MDM0789	MDM0935
			210	5.5/7.5kW	1	MDM0758	MDM0790	MDM0936
			200	5.5/7.5kW	1	MDM0759	MDM0791	MDM0937
			190	5.5/7.5kW	1	MDM0760	MDM0792	MDM0938
			180	5.5/7.5kW	1	MDM0761	MDM0793	MDM0939
			170	5.5/7.5kW	1	MDM0762	MDM0794	MDM0940
	230+		160	5.5/7.5kW	1	MDM0763	MDM0795	MDM0941
	310+		225	11/15kW	1	MDM0861	MDM0796	MDM0942
	314.2+	Impeller-Magnet capsule	220	11/15kW	1	MDM0862	MDM0797	MDM0943
	859+		210	11/15kW	1	MDM0863	MDM0798	MDM0944
	942		200	11/15kW	1	MDM0864	MDM0799	MDM0945
			190	11/15kW	1	MDM0865	MDM0800	MDM0946
			180	11/15kW	1	MDM0866	MDM0801	MDM0947
			170	11/15kW	1	MDM0867	MDM0802	MDM0948
			160	11/15kW	1	MDM0868	MDM0803	MDM0949
			225	1.5/2.2kW-4P	1	MDM0748	MDM0780	MDM0926
			225	4.0kW-4P	1	MDM0756	MDM0788	MDM0934
			225	5.5kW-4P	1	MDM0861	MDM0796	MDM0942

■ MDM25-3 (except "PKK" wet ends and "H" liquid temperature type)

			IMPELLER	MOTOR		PARTS CODE	NOTEO
MODEL	NO.	PARISNAME	O.D.	OUTPUT	Q'ty	PKK-H	NOTES
			225	5.5/7.5kW	1	MDM0812	Welded impeller-Magnet capsule are not detachable.
			220	5.5/7.5kW	1	MDM0813	
			210	5.5/7.5kW	1	MDM0814	
			200	5.5/7.5kW	1	MDM0815	
			190	5.5/7.5kW	1	MDM0816	
			180	5.5/7.5kW	1	MDM0817	
			170	5.5/7.5kW	1	MDM0818	
			160	5.5/7.5kW	1	MDM0819	
	230+	Impeller-Magnet capsule	225	11/15kW	1	MDM0820	
	859	assembly	220	11/15kW	1	MDM0821	
			210	11/15kW	1	MDM0822	
			200	11/15kW	1	MDM0823	
			190	11/15kW	1	MDM0824	
			180	11/15kW	1	MDM0825	
			170	11/15kW	1	MDM0826	
			160	11/15kW	1	MDM0827	
			225	1.5/2.2kW-4P	1	MDM0804	
			225	4.0kW-4P	1	MDM0812	
MDM25-3			225	5.5kW-4P	1	MDM0820	
			225	5.5/7.5kW	1	MDM0836	
			220	5.5/7.5kW	1	MDM0837	
			210	5.5/7.5kW	1	MDM0838	
			200	5.5/7.5kW	1	MDM0839	
			190	5.5/7.5kW	1	MDM0840	
			180	5.5/7.5kW	1	MDM0841	
			170	5.5/7.5kW	1	MDM0842	
	230+		160	5.5/7.5kW	1	MDM0843	
	310+	Impeller Magnet espeule	225	11/15kW	1	MDM0844	
	314.2+	assembly	220	11/15kW	1	MDM0845	
	859+		210	11/15kW	1	MDM0846	
	942		200	11/15kW	1	MDM0847	
			190	11/15kW	1	MDM0848	
			180	11/15kW	1	MDM0849	
			170	11/15kW	1	MDM0850	
			160	11/15kW	1	MDM0851	
			225	1.5/2.2kW-4P	1	MDM0828	
			225	4.0kW-4P	1	MDM0836	
			225	5.5kW-4P	1	MDM0844	

MDM32-1

MODEL	No	PARTS NAME	IMPELLER	MOTOR	014	PARTS CODE			
MODEL	INO.		O.D.	OUTPUT	Qly	PKK/NKK	EKK	ECF	
			165		1	MDM0215	MDM	0239	
			160		1	MDM0216	MDM	0240	
			150		1	MDM0217	MDN	0241	
			145		1	MDM0218	MDN	0242	
	230	Impeller	140		1	MDM0219	MDM	0243	
			130		1	MDM0220	MDM	0244	
			120		1	MDM0221	MDM	0245	
			110		1	MDM0222	MDM	0246	
			170	4P	1	MDM0654	MDM	0659	
			165		1	MDM0223	MDM0247	MDM0263	
			160		1	MDM0224	MDM0248	MDM0264	
			150		1	MDM0225	MDM0249	MDM0265	
	000.		145		1	MDM0226	MDM0250	MDM0266	
	230+	Impeller assembly	140		1	MDM0227	MDM0251	MDM0267	
	011.2		130		1	MDM0228	MDM0252	MDM0268	
			120		1	MDM0229	MDM0253	MDM0269	
			110		1	MDM0230	MDM0254	MDM0270	
MDM22.1			170	4P	1	MDM0655	MDM0668	MDM0664	
IVIDIVI32-1			165	4.0/5.5kW	1	MDM0231	MDM0255	MDM0271	
			160	4.0/5.5kW	1	MDM0232	MDM0256	MDM0272	
			150	4.0/5.5kW	1	MDM0233	MDM0257	MDM0273	
			145	4.0/5.5kW	1	MDM0234	MDM0258	MDM0274	
			140	4.0/5.5kW	1	MDM0235	MDM0259	MDM0275	
			130	4.0/5.5kW	1	MDM0236	MDM0260	MDM0276	
	2201		120	4.0/5.5kW	1	MDM0237	MDM0261	MDM0277	
	310+		110	4.0/5.5kW	1	MDM0238	MDM0262	MDM0278	
	314.2+	Impeller-Magnet capsule	165	7.5kW	1	MDM0580	MDM0588	MDM0596	
	314.4+	assembly	160	7.5kW	1	MDM0581	MDM0589	MDM0597	
	859+		150	7.5kW	1	MDM0582	MDM0590	MDM0598	
	572		145	7.5kW	1	MDM0583	MDM0591	MDM0599	
			140	7.5kW	1	MDM0584	MDM0592	MDM0600	
			130	7.5kW	1	MDM0585	MDM0593	MDM0601	
			120	7.5kW	1	MDM0586	MDM0594	MDM0602	
			110	7.5kW	1	MDM0587	MDM0595	MDM0603	
			170	1.5/2.2kW-4P	1	MDM0656	MDM0661	MDM0663	
			170	4.0kW-4P	1	MDM0657	MDM0662	MDM0665	

	-	-							
MODEL	No	PARTS NAME	IMPELLER	MOTOR	O'tv	PARTS CODE			
MODEL	INO.		O.D.	OUTPUT	Qiy	PKK	EKK	ECF	
			225		1	MDM0740	MDM	0764	
			220		1	MDM0741	MDM	0765	
			210		1	MDM0742	MDM	0766	
	230	Impeller	200		1	MDM0743	MDM	0767	
	230		190		1	MDM0744	MDM	0768	
			180		1	MDM0745	MDM	0769	
			170		1	MDM0746	MDM	0770	
			160		1	MDM0747	MDM	0771	
			225		1	MDM0853	MDM0772	MDM0918	
			220		1	MDM0854	MDM0773	MDM0919	
			210		1	MDM0855	MDM0774	MDM0920	
	230+	Impeller assembly	200		1	MDM0856	MDM0775	MDM0921	
	314.2		190		1	MDM0857	MDM0776	MDM0922	
			180		1	MDM0858	MDM0777	MDM0923	
			170		1	MDM0859	MDM0778	MDM0924	
			160		1	MDM0860	MDM0779	MDM0925	
			225	5.5/7.5kW	1	MDM0756	MDM0788	MDM0934	
MDM32-2			220	5.5/7.5kW	1	MDM0757	MDM0789	MDM0935	
			210	5.5/7.5kW	1	MDM0758	MDM0790	MDM0936	
			200	5.5/7.5kW	1	MDM0759	MDM0791	MDM0937	
			190	5.5/7.5kW	1	MDM0760	MDM0792	MDM0938	
			180	5.5/7.5kW	1	MDM0761	MDM0793	MDM0939	
			170	5.5/7.5kW	1	MDM0762	MDM0794	MDM0940	
	230+		160	5.5/7.5kW	1	MDM0763	MDM0795	MDM0941	
	310+	Impeller Magnet eeneule	225	11/15kW	1	MDM0861	MDM0796	MDM0942	
	314.2+	assembly	220	11/15kW	1	MDM0862	MDM0797	MDM0943	
	859+		210	11/15kW	1	MDM0863	MDM0798	MDM0944	
	942		200	11/15kW	1	MDM0864	MDM0799	MDM0945	
			190	11/15kW	1	MDM0865	MDM0800	MDM0946	
			180	11/15kW	1	MDM0866	MDM0801	MDM0947	
			170	11/15kW	1	MDM0867	MDM0802	MDM0948	
			160	11/15kW	1	MDM0868	MDM0803	MDM0949	
			225	1.5/2.2kW-4P	1	MDM0748	MDM0780	MDM0926	
			225	4.0kW-4P	1	MDM0756	MDM0788	MDM0934	
			225	5.5kW-4P	1	MDM0861	MDM0796	MDM0942	

■ MDM32-2 (except "PKK" wet ends and "H" liquid temperature type)

MODEL	No.	PARTS NAME	IMPELLER O.D.	MOTOR OUTPUT	Q'ty	PARTS CODE PKK-H	NOTES
			225	5.5/7.5kW	1	MDM0812	Welded impeller-Magnet capsule are not detach- able.
			220	5.5/7.5kW	1	MDM0813	
			210	5.5/7.5kW	1	MDM0814	
			200	5.5/7.5kW	1	MDM0815	
			190	5.5/7.5kW	1	MDM0816	
			180	5.5/7.5kW	1	MDM0817	
			170	5.5/7.5kW	1	MDM0818	
			160	5.5/7.5kW	1	MDM0819	
	230+	Impeller-Magnet capsule	225	11/15kW	1	MDM0820	
	859	assembly	220	11/15kW	1	MDM0821	
			210	11/15kW	1	MDM0822	
			200	11/15kW	1	MDM0823	
			190	11/15kW	1	MDM0824	
			180	11/15kW	1	MDM0825	
			170	11/15kW	1	MDM0826	
			160	11/15kW	1	MDM0827	
			225	1.5/2.2kW-4P	1	MDM0804	
			225	4.0kW-4P	1	MDM0812	
MDM32-2			225	5.5kW-4P	1	MDM0820	
			225	5.5/7.5kW	1	MDM0836	
			220	5.5/7.5kW	1	MDM0837	
			210	5.5/7.5kW	1	MDM0838	
			200	5.5/7.5kW	1	MDM0839	
			190	5.5/7.5kW	1	MDM0840	
			180	5.5/7.5kW	1	MDM0841	
			170	5.5/7.5kW	1	MDM0842	
	230+		160	5.5/7.5kW	1	MDM0843	
	310+		225	11/15kW	1	MDM0844	
	314.2+	Impeller-Magnet capsule	220	11/15kW	1	MDM0845	
	859+	assembly	210	11/15kW	1	MDM0846	
	942		200	11/15kW	1	MDM0847	
			190	11/15kW	1	MDM0848	
			180	11/15kW	1	MDM0849	
			170	11/15kW	1	MDM0850	
			160	11/15kW	1	MDM0851	
			225	1.5/2.2kW-4P	1	MDM0828	
			225	4.0kW-4P	1	MDM0836	
			225	5.5kW-4P	1	MDM0844	

■ MDM32-2 (except "PKK" wet ends and "H" liquid temperature type)

■ MDM40-1

MODEL	Na	PARTS NAME	IMPELLER MOTOR		0.4			
MODEL	NO.		O.D.	OUTPUT	Qty	PKK/NKK	EKK	ECF
			165		1	MDM0379 MDM		0481
			160		1	MDM0475	MDM	0482
			150		1	MDM0476	MDM	0483
	220	Impollor	140		1	MDM0477	MDM	0484
	230		130		1	MDM0478	MDM	0485
			120		1	MDM0479	MDM	0486
			110		1	MDM0480	MDM	0487
			170	4P	1	MDM0669	MDM	0674
			165		1	MDM0296	MDM0324	MDM0345
			160		1	MDM0297	MDM0325	MDM0346
			150		1	MDM0298	MDM0326	MDM0347
	230+	Impeller assembly	140		1	MDM0299	MDM0327	MDM0348
	314.2	Impeller assembly	130		1	MDM0300	MDM0328	MDM0349
			120		1	MDM0301	MDM0329	MDM0350
			110		1	MDM0302	MDM0330	MDM0351
			170	4P	1	MDM0670	MDM0675	MDM0679
			165	4.0/5.5kW	1	MDM0303	MDM0331	MDM0352
			160	4.0/5.5kW	1	MDM0304	MDM0332	MDM0353
			150	4.0/5.5kW	1	MDM0305	MDM0333	MDM0354
			140	4.0/5.5kW	1	MDM0306	MDM0334	MDM0355
			130	4.0/5.5kW	1	MDM0307	MDM0335	MDM0356
	2201		120	4.0/5.5kW	1	MDM0308	MDM0336	MDM0357
	230+		110	4.0/5.5kW	1	MDM0309	MDM0337	MDM0358
	314.2+	Impeller-Magnet capsule	165	7.5kW	1	MDM0310	MDM0338	MDM0359
	314.4+	assembly	160	7.5kW	1	MDM0311	MDM0339	MDM0360
	859+		150	7.5kW	1	MDM0312	MDM0340	MDM0361
	542		140	7.5kW	1	MDM0313	MDM0341	MDM0362
			130	7.5kW	1	MDM0314	MDM0342	MDM0363
			120	7.5kW	1	MDM0315	MDM0343	MDM0364
			110	7.5kW	1	MDM0316	MDM0344	MDM0365
			170	1.5/2.2kW-4P	1	MDM0371	MDM0676	MDM0678
			170	4.0kW-4P	1	MDM0372	MDM0677	MDM0680

■ MDM40-2

MODEL	No	DARTS NAME	IMPELLER		O'ty	PARTS	CODE
MODEL	INU.	PARTS NAME	O.D.	WOTOR OUTFUT	Qly	EKK	ECF
			210		1	MDM	1309
			205		1	MDM	1302
			200		1	MDM	1303
			190		1	MDM	1304
	230	Impeller	180		1	MDM	1305
			170		1	MDM	1306
			160		1	MDM	1307
			150		1	MDM	1308
			210	4P	1	MDM	1309
			210		1	MDM1270	MDM1294
			205		1	MDM1271	MDM1295
			200		1	MDM1272	MDM1296
			190		1	MDM1273	MDM1297
	230+	Impeller assembly	180		1	MDM1274	MDM1298
	014.2		170		1	MDM1275	MDM1299
			160		1	MDM1276	MDM1300
			150		1	MDM1277	MDM1301
			210	4P	1	MDM1270	MDM1294
IVIDIVI40-2			210	5.5/7.5/11kW	1	MDM1262	MDM1286
			205	5.5/7.5/11kW	1	MDM1263	MDM1287
			200	5.5/7.5/11kW	1	MDM1264	MDM1288
			190	5.5/7.5/11kW	1	MDM1265	MDM1289
			180	5.5/7.5/11kW	1	MDM1266	MDM1290
			170	5.5/7.5/11kW	1	MDM1267	MDM1291
	220.		160	5.5/7.5/11kW	1	MDM1268	MDM1292
	230+		150	5.5/7.5/11kW	1	MDM1269	MDM1293
	314.2+	Impeller-Magnet capsule	210	15/18.5/22/30kW	1	MDM1254	MDM1278
	314.4+	assembly	205	15/18.5/22/30kW	1	MDM1255	MDM1279
	859+		200	15/18.5/22/30kW	1	MDM1256	MDM1280
	342		190	15/18.5/22/30kW	1	MDM1257	MDM1281
			180	15/18.5/22/30kW	1	MDM1258	MDM1282
			170	15/18.5/22/30kW	1	MDM1259	MDM1283
			160	15/18.5/22/30kW	1	MDM1260	MDM1284
			150	15/18.5/22/30kW	1	MDM1261	MDM1285
			210	5.5kW-4P	1	MDM1262	MDM1286
			210	7.5/11/15kW-4P	1	MDM1254	MDM1278

■ MDM50-1

MODEL	No	PARTS NAME	IMPELLER	LLER MOTOR	O'tu	PARTS CODE		
MODEL	INU.		O.D.	OUTPUT	Qly	PKK/NKK	EKK	ECF
			165		1	MDM0289	MDM	0317
			160		1	MDM0290	MDM	0318
			150		1	MDM0291	MDM	0319
	220	Impoller	140		1	MDM0292	MDM	0320
	230		130		1	MDM0293	MDM	0321
			120		1	MDM0294	MDM	0322
			110		1	MDM0295	MDM	0323
			170	4P	1	MDM0683	MDM	0689
			165		1	MDM0380	MDM0408	MDM0436
			160		1	MDM0381	MDM0409	MDM0437
			150		1	MDM0382	MDM0410	MDM0438
	230+	Impoller accombly	140		1	MDM0383	MDM0411	MDM0439
	314.2	Impeller assembly	130		1	MDM0384	MDM0412	MDM0440
			120		1	MDM0385	MDM0413	MDM0441
			110		1	MDM0386	MDM0414	MDM0442
			170	4P	1	MDM0684	MDM0690	MDM0695
MDM50-1			165	5.5/7.5kW	1	MDM0394	MDM0422	MDM0450
			160	5.5/7.5kW	1	MDM0395	MDM0423	MDM0451
			150	5.5/7.5kW	1	MDM0396	MDM0424	MDM0452
			140	5.5/7.5kW	1	MDM0397	MDM0425	MDM0453
			130	5.5/7.5kW	1	MDM0398	MDM0426	MDM0454
			120	5.5/7.5kW	1	MDM0399	MDM0427	MDM0455
	230+		110	5.5/7.5kW	1	MDM0400	MDM0428	MDM0456
	310+		165	11/15kW	1	MDM0401	MDM0429	MDM0457
	314.2+	Impeller-Magnet capsule	160	11/15kW	1	MDM0402	MDM0430	MDM0458
	859+	assembly	150	11/15kW	1	MDM0403	MDM0431	MDM0459
	942		140	11/15kW	1	MDM0404	MDM0432	MDM0460
			130	11/15kW	1	MDM0405	MDM0433	MDM0461
			120	11/15kW	1	MDM0406	MDM0434	MDM0462
			110	11/15kW	1	MDM0407	MDM0435	MDM0463
			170	1.5/2.2kW-4P	1	MDM0685	MDM0691	MDM0694
			170	4.0kW-4P	1	MDM0686	MDM0692	MDM0696
			170	5.5kW-4P	1	MDM0687	MDM0693	MDM0697

■ MDM50-2

MODEL	No		IMPELLER		0.4	PARTS	CODE
MODEL	INO.	PARISNAME	O.D.	MOTOR OUTPUT	Qly	EKK	ECF
			210		1	MDM	1253
			205		1	MDM	1244
			200		1	MDM	1245
			190		1	MDM	1246
	230	Impeller	180		1	MDM	1247
			170		1	MDM	1248
			160		1	MDM	1249
			150		1	MDM	1250
			210	4P	1	MDM	1253
			210		1	MDM1212	MDM1236
			205		1	MDM1213	MDM1237
			200		1	MDM1214	MDM1238
	000.		190		1	MDM1215	MDM1239
	230+	Impeller assembly	180		1	MDM1216	MDM1240
	011.2		170		1	MDM1217	MDM1241
			160		1	MDM1218	MDM1242
			150		1	MDM1219	MDM1243
			210	4P	1	MDM1212	MDM1236
IVIDIVI30-2			210	5.5/7.5/11kW	1	MDM1204	MDM1228
			205	5.5/7.5/11kW	1	MDM1205	MDM1229
			200	5.5/7.5/11kW	1	MDM1206	MDM1230
			190	5.5/7.5/11kW	1	MDM1207	MDM1231
			180	5.5/7.5/11kW	1	MDM1208	MDM1232
			170	5.5/7.5/11kW	1	MDM1209	MDM1233
	2201		160	5.5/7.5/11kW	1	MDM1210	MDM1234
	310+		150	5.5/7.5/11kW	1	MDM1211	MDM1235
	314.2+	Impeller-Magnet capsule	210	15/18.5/22/30kW	1	MDM1196	MDM1220
	314.4+	assembly	205	15/18.5/22/30kW	1	MDM1197	MDM1221
	859+		200	15/18.5/22/30kW	1	MDM1198	MDM1222
	572		190	15/18.5/22/30kW	1	MDM1199	MDM1223
			180	15/18.5/22/30kW	1	MDM1200	MDM1224
			170	15/18.5/22/30kW	1	MDM1201	MDM1225
			160	15/18.5/22/30kW	1	MDM1202	MDM1226
			150	15/18.5/22/30kW	1	MDM1203	MDM1227
			210	5.5kW-4P	1	MDM1204	MDM1228
			210	7.5/11/15kW-4P	1	MDM1196	MDM1220

Points to be observed

- Follow instructions in this manual for replacement of wear parts. Do not disassemble the pump beyond the extent of the instructions.
- Always wear protective clothing such as an eye protection, chemical resistant gloves, a mask and a face shield during disassembly, assembly or maintenance work. The specific solution will dictate the degree of protection. Refer to SDS precautions from the solution supplier.
- Risk of electrical shock. Be sure to turn off power to stop the pump and related devices before service is performed.
- Magnetic force of the pump is powerful. When taking apart or putting together the pump, take measures not to catch the finger in the metal parts.
- 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.

Before disassembly

- **1** Turn off the power and stop the pump.
- **2** Close the suction line and the discharge line.
- **3** Tag motor wires with U(R), V(S), and W(T) codes and make sure the motor turns in the correct direction after maintenance is finished.

Necessary tools

No.	Tools	MDM25-1	MDM25-2/25-3/32-1 /32-2/40-1/50-1	MDM40-2/50-2	Q'ty			
1	Spanner	13mm/17mm/24mm	3mm/17mm/24mm 13mm/19mm/24mm					
2	Hex wrench	4mm/5mm	4mm/5mm 4mm/5mm					
3	Bearing press (plastic round bar)	ø24×80L	ø34×100L	ø37×100L	1 each			
4	Plastic welder or industrial dryer		-					
5	Handpress		-		1			
6	Drivers		-		1			
7	Longnose pliers		-		1			
8	Plastic hammer		-		1			
9	Bar	-						
10	Belt wrench		-		1			

Pump casing







- While the motor is lifted up, make sure the drive magnet (858) does not hit the rear casing (158).

- Always keep the motor level.



1 Heat the lugs on the rear ring (314.4) with a plastic welder or an industrial dryer and open them up. For the MDM40-2/50-2, the lugs are on the bearing (310). 2 Use a hand press and a plastic round bar to push the bearing (310) out of the magnet capsule unit. Use the three different bars depending on the pump model. Models O.D. Length 雦 MDM25-1 24mm (0.94") 80mm (3.14") MDM25-2/25-3/32-1 34mm (1.33") \square /32-2/40-1/50-1 100mm (3.93") MDM40-2/50-2 37mm (1.45") 3 Push off the impeller pins (942). -51 4 Detach the impeller from the magnet capsule unit. Use a plastic hummer if necessary. For the MDM25-3/32-2 with the "PKK" wet ends and the "H" liquid temperature type, the impeller and the magnet capsule are not detachable. They are welded together. 5

1 Heat the lugs on the mouth ring (314.2) with a plastic welder or an industrial dryer and open them up. Remove the worn mouth ring. If necessary, immerse the impeller into a hot water (90°C/194°F) for easier removal.



2 Replace the new mouth ring and use a plastic welder or an industrial dryer to hold it with lugs.

If necessary, immerse the impeller into a hot water ($90^{\circ}C/194^{\circ}F$) for easier mounting.

Spindle replacement



2 Mount the spindle into the rear thrust. Clean the rear thrust in the rear casing in advance. It's mating connection. Do not use excessive force that may break their mating point.

- 1 Mount the impeller onto the magnet capsule. It's mating connection. Find a mating point and then push the impeller down to the magnet capsule.
- 2 Use the impeller pins to catch the impeller. ## 3 Immerse the magnet capsule unit into a hot water (90°C/194°F) to warm/soften it up. For the MDM40-2/50-2, immerse the "impeller" in a hot water. Use a hand press and a plastic round bar to press 4 the bearing (310) into the magnet capsule unit. Use the three different bars depending on the pump model. Models 0.D. Length MDM25-1 24mm (0.94") 80mm (3.14") MDM25-2/25-3/32-1 34mm (1.33") 100mm (3.93") /32-2/40-1/50-1

*Do not use excessive force that may break the plastic/ceramic mouth ring.

37mm (1.45")



5 Replace the new rear ring (314.4) and use a plastic welder or an industrial dryer to hold it with lugs.

100mm (3.93")

*Note the MDM40-2/50-2 do not have the rear ring to be replaced.

MDM40-2/50-2

Reassembly

Take the following steps and put together the disassembled pump. NOTE

- Do not reuse gaskets or O rings. Always replace them with new ones, or sealing performance reduces. Clean sealing areas and fit gaskets or O rings in place.
- Tighten the bolts diagonally and evenly by the rated torque before initial operation and at regular intervals.
- The magnetic force of the pump is powerful. Take care not to catch the finger in the foot support. Do not allow iron pieces/powder to adhere to the magnet capsule unit.

1 Fit the gasket onto the front casing (100.1). 2 Fit the rear casing to the front casing. Place the magnet capsule unit (plus the impeller) into the rear casing in advance. Rotate and fit the rear casing. ## 3 Mount the rear casing cover and the rear casing support. Tighten the rear casing support diagonally and evenly by the rated torque of: Models Tightening torque MDM25-1 58.8N•m MDM25-2/25-3/32-1/32-2/40-1/50-1 85N•m MDM40-2/50-2 100N•m 4 Clean the drive magnet (858) if iron objects stick to the surface.

5 Screw the attached back pull-out bolts into the foot support (330) to the mid of the full bolt length.

- **6** Use an overhead crane or any other proper transporting machine to catch/hold the motor (and the foot support) horizontally and shift it to the pump.
 - Make sure the drive magnet (858) does not hit the rear casing (158).
 - Always keep the motor level.

7 Once the back pull-out bolts come in contact with the rear casing support of the pump, start loosening the bolts gradually and alternately until the motor "lands" on the pump. For the MDM40-2/50-2, use of guide bolts will make this step easier and more secure.

MDM25-1/25-2/25-3/32-1/32-2/40-1/50-1

MDM40-2/50-2





8 Tighten the foot support-rear casing fixing bolts.

NOTE -

Magnetic force of the pump is powerful. When taking apart or putting together the pump, take measures not to catch the finger in the metal parts.

Drive magnet demounting

Make sure the motor is electrically-disconnected in advance.

NOTE -

If the motor were to run in this process, personal injury would result.

- **1** Remove the motor (and foot support) from the pump head. See page 62 as well.
- **2** Remove the hexagon bolt (901.6) and the foot support from the motor.

3 Demount the drive magnet from the motor shaft.

Drive magnet mounting

Make sure the motor is electrically-disconnected in advance.

NOTE -

If the motor were to run in this process, personal injury would result.

- Clean the motor shaft surface and the shaft hole of the drive magnet. Use a sand paper or sand blaster to remove burrs if necessary. *Be careful not to drop the drive magnet, or it may break.
- 2 Adjust the depth of the hexagon socket set screws in the drive magnet so they won't hinder the insertion of the drive magnet to the motor shaft.
- **3** Mount the key to the motor shaft in place beforehand.
- 4 Slide the drive magnet down to the motor shaft until it bottoms out. If the drive magnet does not bottoms out, check for burrs or debris or any other obstacles. Adjust the key position if necessary.



5 Adjust the depth of the drive magnet so the "H" length becomes proper at each motor size.



Model	Motor output [kW]	Poles	H [mm]
	1.5		120
	2.2		125
	4.0		173
	5.5		199 (262)
	7.5	199 (262)	
	11	Ζ	230 (237)
	15		230 (237)
	18.5		230 (237)
	22		267
MDM	30		267
	0.4		130
	0.75		120
	1.5		183
	2.2		179
	4.0	4	179
	5.5		200 (262)
	7.5		262
	11		237
	15		237

*The parenthetic values are for the MDM40-2 and the MDM50-2.

6 Tighten the hex. socket set screws by the rated torque shown below to fix the drive magnet to the motor shaft.

When a 5.5kW or larger motor is used, apply the LOCTITE #243 onto the screw threads.



Motor output	Tightening torque	Adhesive application	Adhesive agent	
4.0kW or below	15Nem (or 20Nem)	NR	-	
5.5kW or above		Required	LOCTITE #243	

*The parenthetic torque is for the MDM40-2 and the MDM50-2.

7 Check the drive magnet is fixed tight and won't loose in operation.

8 Remount the foot support to the motor.

NOTE -

Always fit the "single" foot support part to the motor first, and then the pump head (driven magnet) to the foot support, on the step by step basis!

Do not fit the combination of the foot support and the pump head (driven magnet) to the motor. There is a very strong magnetic force between the drive magnet and the driven magnet, and there is always the risk of personal injury which could happen when they strongly and unexpectedly pull each other. To take apart the foot support and the pump head in a correct way, see page 62.

Specifications

Information in this section is subject to change without notice.

Pump

										50Hz	
		MDM25-1	MDM25-2	MDM25-3	MDM32-1	MDM32-2	MDM40-1	MDM40-2	MDM50-1	MDM50-2	
Inlet I.D. (mm)		40		50		65		80			
Outlet I.D. (mm)			25		3	32		40		50	
Top lift (m)	2P	36.0	51.6	74.6	36.2	70.4	36.0	62.0	42.9	63.6	
	4P	9.8	12.8	17.7	10.0	16.1	8.6	15.5	11.1	16.0	
Max flow (L/min)	2P	200	200	300	500	600	1000	1400	1400	1800	
	4P	200	200	250	350	400	450	900	700	1200	
Min flow (L/min)	2P	20			50						
	4P	10			20						
Motor output (kW)	2P	1.5/2.2	4.0/5.5/7.5	5.5/7.5/11 /15	4.0/5.5/7.5	5.5/7.5/11 /15	4.0/5.5/7.5	5.5/7.5/11 /15/18.5 /22/30	5.5/7.5/11 /15	5.5/7.5/11 /15/18.5 /22/30	
	4P	0.4/0.75	1.5/2.2/4.0	1.5/2.2/4.0 /5.5	1.5/2.2/4.0	1.5/2.2/4.0 /5.5	1.5/2.2/4.0	5.5/7.5/11 /15	1.5/2.2/4.0 /5.5	5.5/7.5/11 /15	
Noise level (dB)		8	5	95	85	95	85		95		
Liquid temp (°C)		See page 12.									
Max pressure (MPa)		1	.0	1.6	1.0	1.6	1.0	1.6	1.0	1.6	
Max visco	sity (mPa⋅s)	Contact us.									
Slurry capability		Pumps with SiC bearing and SiC spindle can handle the slurry with limitations of: - Max concentration of 5% - Max particle size of 50µm - Max hardness of 80Hs Contact us for more information.									
Ambient		0-40°C (32-104°F), 35-85%RH									
	Front casing (100.1)	PFA/CFRETFE									
	Impeller (230)	PFA/CFRETFE									
Wet ends	Rear casing (158)	PFA/CFRETFE									
	Magnet capsule (859)	PFA/CFRETFE									
	Bearing (310)	SiC/High density carbon									
	Spindle (210)	SiC/ Highly purity alumina ceramics									
	Liner ring (314.1)	SiC/ Highly purity alumina ceramics									
	Mouth ring (314.2)	SiC/Filled PTFE									
	Rear thrust (314.3)	PTFE/Filled PTFE									
	Gasket (400.1)	PTFE									
Pumps with a baseplate





Pump model	Motor output kW	(W)	(H)	(L)	а	b	с	d	е	f	g	h	A	В	Weight kg
MDM25-1	1.5 2.2	400	400	-	350	135	480	710	115	240	80	4×φ19	25A	40A	63
MDM25-2	4.0	400	430	-	350	150	540	800	130	250	80	4×φ19	25A	40A	89
	5.5														00
	7.5			-											92
MDM25-3	5.5	400	415		350	470	540	800	130	250	102	4×φ19	25A	40A	400
	7.5	400		-		172									100
	11	480	485	-	430	192	600	900	150	320					
	15														135
	18.5														
	4.0		410	-	350	150	540	800	130	250	80	4×φ19	40A	50A	84
MDM32-1	5.5	400													07
	7.5	1		-											07
	5.5	400	430		250	150	E 40	000	120	250					105
MDM32-2	7.5	400		-	350	150 540 800	800	130	250					105	
	11	480	500	-	430	170	600	900	150	320	80	4×φ19	40A	50A	
	15														140
	18.5														
MDM40-1	4.0		410	-	350	150	540	800	130	250	80	4×φ19	50A	65A	85
	5.5	400													00
	7.5			-											00
	5.5		500			230	740	1120	190	320	100	4×φ23	50A	65A	167
	7.5	490													107
	11				440										154
MDM40-2	15			-											156
	18.5														150
	22			-											173
	30			-											175
MDM50-1	5.5	400	430	- I	350	170	540	800	130	250					96
	7.5	400			000		0.0	000		200	-	4×φ19	65A	80A	
	11	480	500	-	430	190	600	900	150	320	100				
	15														129
	18.5														
MDM50-2	5.5	490	520	-		230	740	1120	190	320	100	4×φ23	65A		170
	7.5														
	11				440										157
	15			-										80A	159
	18.5														
	22			-											176
	30			-											

*The pump unit is shipped without a motor. Contact your motor manufacturer for the info about motor length/weight. *Outer dimensions are subject to change. Contact us for the up-to-date revision.

Pumps without a baseplate





Pump model	Motor output kW	(W)	(H)	(L)	а	b	с	f	g	h	j	A	В	Weight kg
MDM25-1	1.5	180	310	-	130	100	150	150	80	2×φ15	15	25A	40A	37
	2.2			-									_	
MDM25-2	4.0	280	360	-	220	90	285	180	80	2×φ14	14	25A	40A	62
	5.5						365							65
	7.5													
MDM25-3	5.5	280	345	-	220	112	365	180		2×φ14	14	25A	40A	70
	1.0							230	102					
	15		395	-			450							85
	18.5													00
	4.0	+	+	-			285							57
MDM32-1	5.5	280	340		220	90		180	80	2×φ14	14	40A	50A	
	7.5			-			365							60
MDM32-2	5.5	280				90	0.05	100	80	2×φ14	14	40A	50A	
	7.5		360	-	220		365	180						75
	11		410	-			450	230						
	15													90
	18.5													
MDM40-1	4.0	280	340	-		90	285		80	2×φ14	14	50A	65A	58
	5.5			_	220		365	180						61
	7.5						505							01
	5.5	340	410	_		113	556	230	100	2×φ15	14	50A	65A	109
	7.5				220									
	11			-										96
MDM40-2	15													98
	18.5													
	22			-										115
	50			-										
MDM50-1	5.5 75		360	-	220	110	365	180	100	2×φ14	14	65A	80A	69
	11	280	410	-			450	230						
	15	200												82
	18.5													02
MDM50-2	5.5	340	430		220	113	558.5	230	100	2×φ15	14	65A	80A	
	7.5			-										112
	11													99
	15			-										404
	18.5													101
	22			-										110
	30			-										118

*The pump unit is shipped without a motor. Contact your motor manufacturer for the info about motor length/weight. *Outer dimensions are subject to change. Contact us for the up-to-date revision.

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: 2010 EN809: 1998 + A1: 2009 EN50581: 2012 (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. K, Nishikubo **KAZUNARI NISHIKUBO** Tokyo, December 3, 2019 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-493-5

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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