IWAKI PUMPS

IWAKI Magnetic Drive Pump

MDM Series (Asia Edition)

Instruction Manual

⚠ Read this manual before use of product

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

Contents

SAFETY SECTION

For the Safe and Correct Handling of the Pump

- Before use of the pump, read carefully this "Safety Section" to prevent accidents and to avoid the damage or loss of other assets.
- Observe and abide by the instructions described in this "Safety Section". These instructions are very important for protecting pump users or other persons from hazard or from loss of assets.
- Meaning of symbols
  Following two symbols describe the extent of hazards and loss which may brought if the instructions are not observed or if the pump is wrongly used.

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

Following two symbols describe the content to be observed.

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

⚠ Export Restrictions

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

Safety Section

⚠WARNING

- **Access limitation**

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


Prohibited

- **Turn off power before work**

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


Turning off power

- **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.


Wear protective gear

- **Use the eye bolt or lifting holes**

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

- **Do not modify the pump**

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


No Remodeling

- **When handling dangerous liquid**

  For the transfer of the harmful liquid as mentioned below, be sure to conduct daily inspection and maintenance for the prevention of liquid/gas leakage.

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

- **Ventilation**

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

Safety Section

⚠ CAUTION

- **Do not catch the finger**

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

- **Do not run pump dry**

  Do not run pump dry (operation without liquid). Friction heart builds up during dry running operation and damages internal parts. If the pump is operated with a suction side valve closed or without priming, the pump runs dry.

  *The pumps with the carbon bearing (CF type) can run dry up to 1 hour without damaging internal sliding parts (see page 15 as well).

- **Qualified personnel only**

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

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

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

- **Static electricity**

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

- **Commissioning**

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

- **Spill precautions**

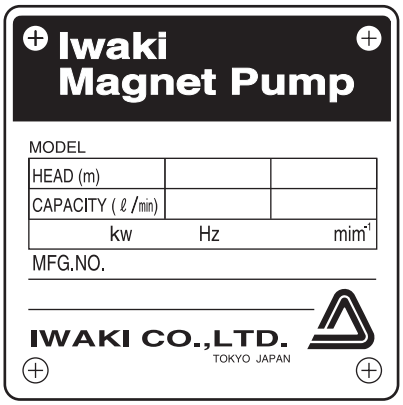
  Ensure protection and containment of solution in the event of plumbing or pump damage (secondary containment).

- **Disposal of a used pump**

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

OUTLINE OF PRODUCT

1. Unpacking and inspection

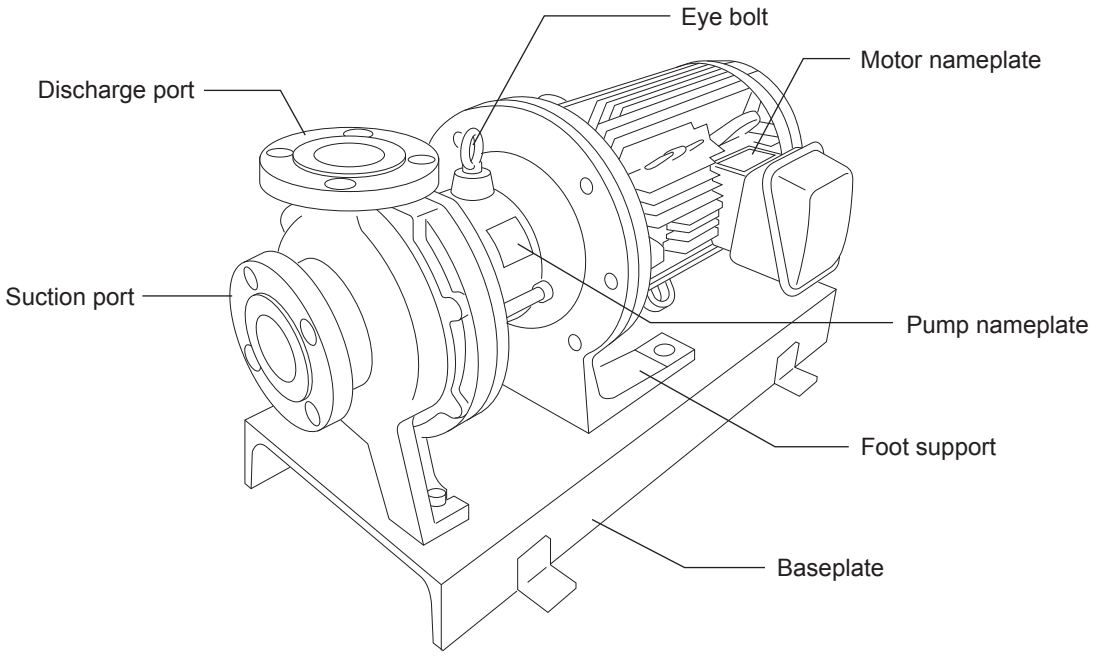


After unpacking of the pump, check the following points.

(1) If the product is ordered one.
Check model code, discharge capacity, discharge pressure, voltage which are written on nameplate of pump and motor to see if they conform to your order.

(2) If the product is not damaged or bolts are not loosened during transportation. Tighten especially the bolts which are holding a rear casing support to the specific tightening torque subsequent to the first tightening. Refer to the "13.Disassembling & assembling" for the specific torque value.

(3) If accessories are attached.
Standard accessories:
Bolts for back pull-out M12 × 100: 2pcs
(M10 × 50 : 2pcs for MDM25-1)
Optional accessories if ordered



2. Model code

MDM40 - 150 1 E KK F 075 J - D 2 H

1 2 3 4 5 6 7 8 9 10 11

1 Pump discharge bore

Suction	Discharge
25: 40	× 25
40: 50	× 40
50: 65	× 50
65: 80	× 65

2 Nominal impeller diameter: 100 - 225 (mm)

3 Impeller range: 1: Low head impeller type 2: High head impeller type (Available for MDM25 and MDM40)
3: High head impeller type (Available for MDM25 only)

4 Main material: E: CFRETFE P: PFA N: PFA (MDM25-2 and MDM40-1)

Note) Pumps with the "P" and "N" codes have PFA main materials, but then casing design is different from each other. See the section 15. Spare parts list for detail.

5 Bearing/spindle material: KK:SiC/SiC CF:High density carbon/High purity ceramic

6 Type of motor to be mounted: F : Flange mounted motor type

7 Motor output: 004 : 0.4 kW, 007 : 0.75 kW, 015 : 1.5 kW, 022 : 2.2 kW,
037 : 3.7 kW, 055 : 5.5 kW, 075 : 7.5 kW, 110 : 11 kW, 150 : 15 kW, (185 : 18.5 kW)

8 Standard for connection flange/motor
J : JIS pump flange + JIS motor I : ISO pump flange + IEC motor A : ANSI pump flange + JIS motor

9 Drain/special version

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

Note: For the pumps with the main material code of "P", an air vent is always equipped for "with drain" type.

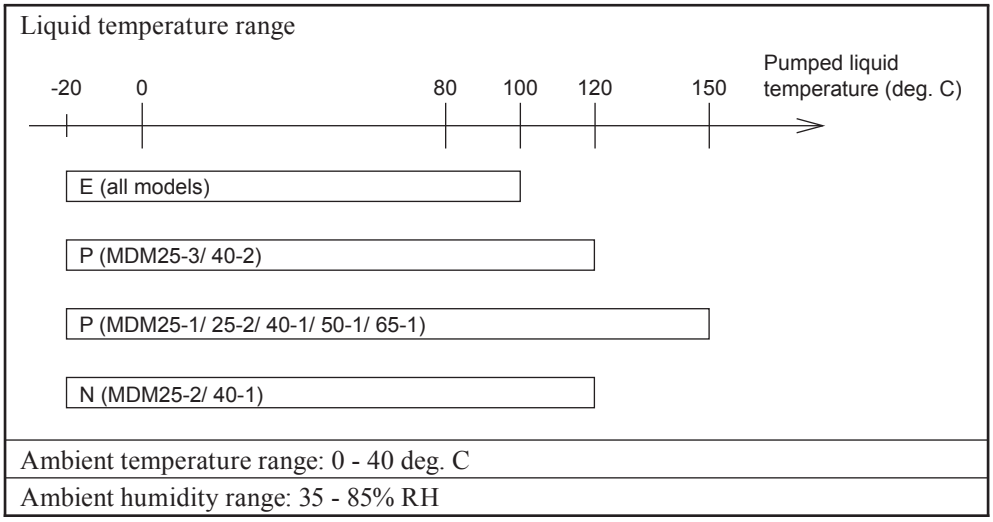
10 Motor pole : 2 : 2 pole motor
4 : 4 pole motor

11 High temperature type
No code : Standard
H : High temperature type
(Available for MDM25-3 and MDM40-2)

Note) In this manual, model code is simplified by using pump discharge bore code (1) and impeller range code (3). For example, when you see MDM25-1, MDM25-2, MDM25-3, MDM40-2, the figures 25 or 40 are pump discharge bore and 1, 2 or 3 are impeller range.

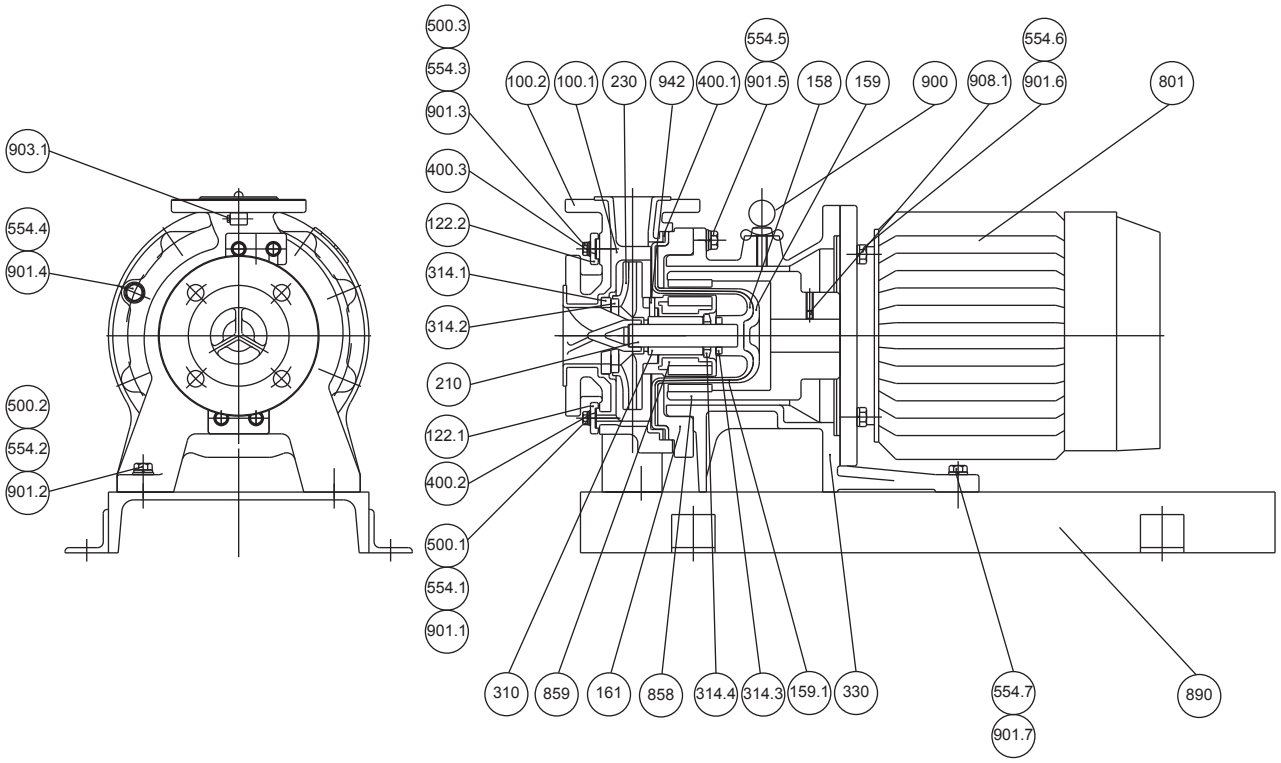
3. Conditions to be used

1. Maximum operating pressure
   Maximum operating pressure of the pump is 1 MPa (1.6 MPa for MDM25-3 and MDM40-2). Pay attention so that the pump discharge pressure does not exceed this figure.
2. Slurry containing liquid
   Basically slurry containing liquid can not be handled but SiC bearing type (KK type) can handle it in the following conditions:
   - Slurry concentration up to 5 wt%
   - Slurry hardness up to 80 Hs
   - Slurry size up to 50 μm
3. Performance change caused by specific gravity and viscosity of liquid
   When specific gravity and viscosity are larger than water, shaft power, discharge capacity and discharge head will change depending on specific gravity and viscosity of pumped liquid. The pump was made and shipped according to the information given to IWAKI. If the liquid condition is changed, ask and confirm IWAKI to use the pump without problem.
4. Influence by liquid temperature
   The chemical liquid changes its viscosity, vapor pressure and corrosivity according to the temperature change. Pay attention to the change of liquid characteristics.



Note 1) The code "E", "P" and "N" represents main materials.
2) For temperature range of each chemical liquid, refer to Chemical Resistant Table on booklet "Technical Information on MDM Series".
3) For liquid temperature below zero deg. C and above 120 deg. C, please contact IWAKI because detailed operating condition must be considered for these temperature ranges.

4. Structure and names of parts



NO.	Parts name	Q'ty	NO.	Parts name	Q'ty
100.1	Front casing	1	554.1	Spring washer	2
100.2	Cover	1	554.2	Spring washer	2
122.1	Drain plate	1	554.3	Spring washer	2
122.2	Air vent plate	1	554.4	Spring washer	8 (6) or (10) Note (1)
158	Rear casing	1	554.5	Spring washer	4
159	Rear casing cover	1	554.6	Spring washer	4
159.1	Reinforce pipe Note (2)	1	554.7	Spring washer	2
161	Rear casing support	1	801	Motor	1
210	Spindle	1	858	Drive magnet unit	1
230	Impeller	1	859	Magnet capsule unit	1
310	Bearing	1	890	Base plate	1
314.1	Liner ling	1	900	Eye bolt	1
314.2	Mouth ring	1	901.1	Hex. head bolt	2
314.3	Rear thrust	1	901.2	Hex. head bolt	2
314.4	Rear ring	1	901.3	Hex. head bolt	2
330	Bracket	1	901.4	Hex. head bolt	8 (6) or (10) Note (1)
400.1	Gasket	1	901.5	Hex. head bolt	4
400.2	Drain gasket	1	901.6	Hex. head bolt	4
400.3	Air vent gasket	1	901.7	Hex. head bolt	2
500.1	Plain washer	2	903.1	Hex. head bolt Note (3)	5
500.2	Plain washer	2	908.1	Hex. socket head bolt	2
500.3	Plain washer	2	942	Impeller pin	2

Note (1): Q'ty in parenthesis (6) is for MDM25-1 and (10) is for MDM25-3 & MDM40-2.

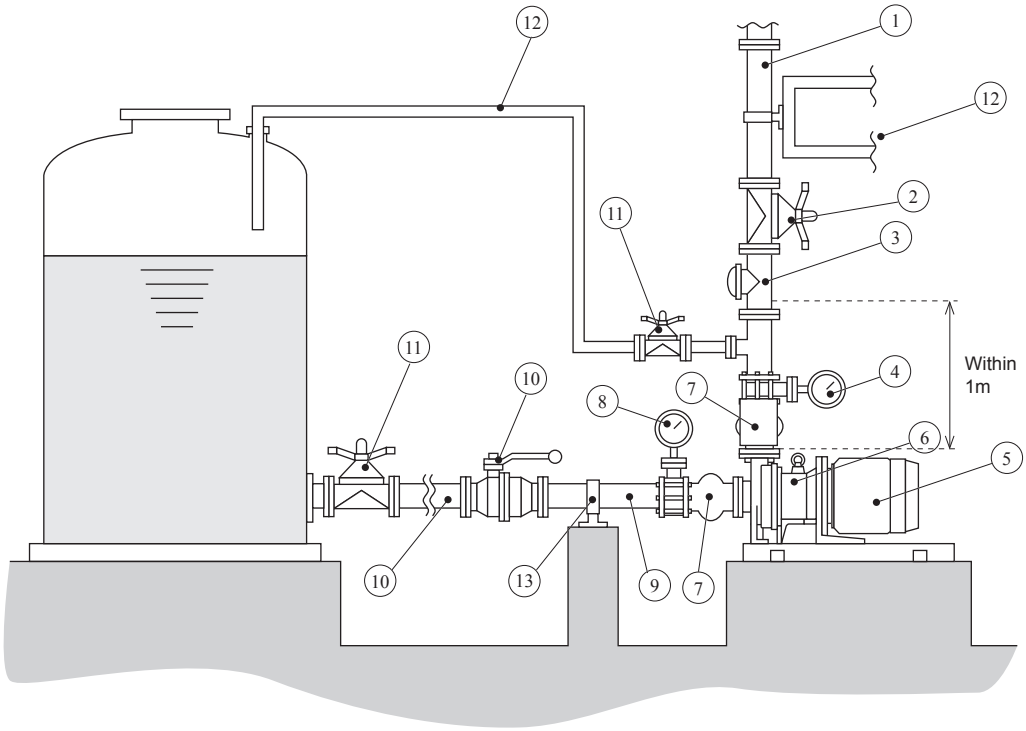
(2): For high temperature type "H" of MDM25-3 & MDM40-2.

(3): For pumps with the main material codes of "E" (all models), "P" (MDM25-1) and "N" (MDM25-2/40-1).

INSTALLATION

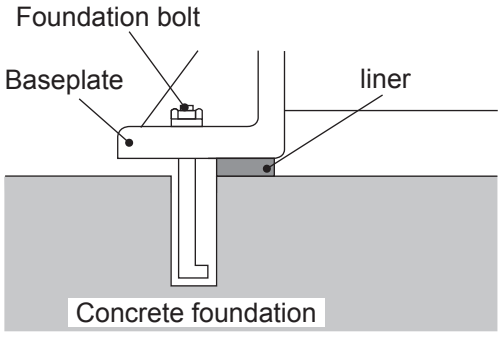
5. Installation

Example of recommended piping



1 Discharge pipe
2 Discharge valve
3 Check valve
4 Pressure gauge
5 Motor
6 Pump
7 Flexible joint
8 Vacuum gauge
9 Suction pipe
10 Suction valve
11 Gate valve
12 Air vent piping
13 Pipe support

1. Installed position
   - If the pump unit is not anchored to the foundation and if the motor unit is heavier than the pump unit, the entire pump leans towards to the motor. See page 42 as well.
   - Install and fix the pump on the foundation which is not affected by vibration generated by other machines.
   - Keep enough space around the pump for the back pull-out of motor, assembly and disassembly of the pump.
   - Foundation area must be larger than pump base plate.
2. Location
   - Install the pump as close to the tank as possible and at lower position than the tank (flooded suction).
   - If the pump is installed at the location that the pump suction port comes higher position than the liquid level of tank (suction lift style), install the priming piping and foot valve at the end.
3. Foundation
   - Refer to illustration below.



6. Piping

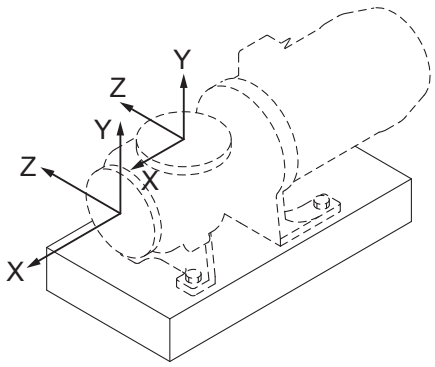
1. Tightening of pipe flange

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

Bolt size	Tightening torque
M16	78.4 N · m

2. Pipe load and moment

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



Allowable pipe load on pump flange

Direction of load	Load kN			
	Discharge flange		Suction flange	
	MDM25, 40, 50	MDM65	MDM25, 40, 50	MDM65
Fx	0.71	1.07	0.89	1.33
Fy (Pression/Tension)	0.89/0.44	1.33/0.67	0.58	0.89
Fz	0.58	0.89	0.71	1.07

Allowable moment on pump flange

Direction of load	Moment kN · m			
	Discharge flange		Suction flange	
	MDM25, 40, 50	MDM65	MDM25, 40, 50	MDM65
Mx	0.46	0.95	0.46	0.95
My	0.35	0.72	0.35	0.72
Mz	0.23	0.47	0.23	0.47

3. Suction piping

(1) Flooded suction

Flooded suction is recommended.

(2) Pipe diameter

Pipe diameter should be larger than pump inlet bore.

(3) Shortest piping

Employ less bends and shortest piping length.

(4) Straight piping

Employ straight pipe just before pump inlet port.

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

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

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

(5) Air pocket in piping

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

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

(6) Different diameter of pipes

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

(7) Gate valve in suction side

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

(8) Piping for flushing

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

(9) End of suction piping

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

(10) In case of suction lift piping

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

(11) Pipe support

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

(12) Pipe connection

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

4. Discharge piping

(1) Pipe diameter

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

(2) Position of the first valve

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

(3) Gate valve

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

(4) Pressure gauge

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

(5) Check valve

Check valve must be installed in the following cases.

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

(6) Air vent

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

(7) Drain

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

(8) Pipe support

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

(9) Priming piping

Install piping for priming in case of suction lift.

7. Electrical wiring

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

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

* See the instruction manual of the motor manufacturer for the handling of the motor.

8. Protection

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

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

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

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

OPERATION

9. Precautions on operation

⚠CAUTION

- Never operate pump dry or with suction side valve closed.
- Dry running possible model (CF type of carbon bearing) can run dry (completely no liquid in pump) continuously one hour max. However rubbing parts are worn in a short time which will result in pump damage in the worst case if pump runs dry continuously exceeding one hour or if it runs dry repeatedly although it is short time.
- After the pump ran dry, leave the pump one hour or more for cooling down to start it once again. If the liquid flows into the pump just after the pump ran dry, ceramic parts are cracked due to heat shock.
- Check the direction of rotation of pump. Clockwise seen from motor fan is correct direction. If operated in reverse, pump may be damaged.
- Stop the pump within one minute if it is operated in cavitation.
- Do not run pump with air sucking in.
- If magnet coupling is disconnected, pump can not transfer liquid. Stop pump within a minute and settle the cause of disconnection before pump is started again.
- Intermittent operation
  Frequent repetition of stop/start is not recommended. Stop/start repetition must be limited to six times an hour. Frequent stop/run more than six times an hour may cause accelerated damage of parts and lowered durability.
- Temperature change at starting, stopping and operating of pump must be within 80 deg. C.
- Fully close the discharge valve when pump is started to avoid water hammer.
- If the pump is operated with discharge valve closed for a long time, the liquid temperature inside the pump rises, which may cause pump damage. Do not run the pump for more than one minute with discharge valve closed.
- If power is interrupted while pump is running, switch off pump and close discharge valve.
- Pay attention so that discharge pressure can not exceed pump allowable pressure of 1 MPa.
  Check that there is no looseness on each bolt before operating pump. Tighten especially the bolts which are holding rear casing support to the specific tightening torque subsequent to the first tightening. Refer to the [13.Disassembling&assembling] for the specific torque value.
- Observe the allowable minimum flow rate. If the pump is operated below the allowable minimum flow rate, bearing or rubbing parts may be seized due to lack of lubrication and cooling.
  Allowable min. flow rate MDM25 : 20 ℓ/min.
  MDM40, 50, 65 : 50 ℓ/min.
- When high temperature liquid is transferred, pump surface becomes very hot. Do not touch the pump or pipe surface directly in or right after operation. Take protective measure against burn.

Liquid temp.	Max. pump surface temp. (Amb. temp. 40 deg.C)
80 deg. C	70 deg. C
100 deg. C	90 deg. C
120 deg. C	110 deg. C
150 deg. C	135 deg. C

- The noise emission levels are shown below. In case the pump noise affects human health or communication to secure a safety, provide a noise reduction cover.
  85 dB for MDM25-1, 25-2, 40-1, 50-1
  95 dB for MDM25-3, 40-2, 65-1

10. Operation (Starting)

1. Fully close discharge valve and fully open suction valve.
2. Fill liquid into pump
   - In case of flooded suction, confirm if suction valve is fully opened.
   - In case of suction lift, prime to fill liquid into suction piping.
3. Check rotating direction of motor.
   - Start motor momentarily (within a second) to check direction. Direction is shown on "arrow" mark on pump. (Clockwise seen from motor fan side)
   - Also check if motor fan smoothly stops when switched off. If it does not stop smoothly, pump rotating parts may be locked. Check the rotating parts.
4. Air vent operation
   - Before pump operation, vent the air in the pump.
   - Fully open the valve in air vent piping and repeat one second running for three to five times.
   - After the air vent running, fully close the discharge valve.

     Note: In case air vent piping is not equipped, open the discharge valve to repeat momentary run several times.
5. Starting pump
   - Start pump with discharge valve fully closed. (Maximum one minute)
   - Confirm that discharge pressure rises to shut-down pressure.
   - Gradually open discharge valve to get specified pressure (capacity).

     Note: Check for leakage before pump operation.
     Pay attention to over-load caused by excessively opened valve.
     Keep minimum allowable capacity to avoid seizure of bearing or rubbing parts.

	2P	4P
MDM25	20ℓ/min	10ℓ/min
MDM40, 50, 65	50ℓ/min	20ℓ/min

11. Pump stopping

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

Maintenance

12. Troubleshooting

Troubles	Symptom on pump		Cause	Check & countermeasures
	When disch. valve closed	When disch. valve opened		
Liquid can not be sucked		Press. gauge & vacuum gauge indicate zero.	• Lack of priming liquid • Dry running	• Stop pump and replenish pump with liquid to re-start.
	Primed liquid drops quickly		• Foot valve is clogged by foreign matters.	• Clean foot valve • Check if foreign matters are not adhered to valve seat.
	After starting, pressure drops as soon as discharge valve is opened.	Pressure gauge vibrates and drops to zero.	• Air is sucked from suction pipe or gasket.	• Check if connected flanges are completely sealed. • Check if liquid level of tank is not excessively lowered.
			• Disconnected magnet coupling	• Check amperage to see if motor is not overloaded. • Check if foreign matters do not lock impeller or magnet capsule • Check if voltage is normal.
	Press. gauge shows low pressure		• Low pump speed • Reverse rotation	• Check wiring or motor. • Interchange wiring connection.
Discharge capacity is small.	Pressure gauge & vacuum gauge indicates normal figure.	Vacuum gauge indicates high figure.	• Strainer is clogged by foreign matters.	• Remove foreign matters.
		Vacuum gauge indicates very high figure.	• Air pocket in suction piping	• Check and remedy suction piping.
			• Foreign matters are clogged at impeller inlet.	• Remove foreign matters.
		Pressure gauge & vacuum gauge vibrate.	• Air is sucked in from suction pipe or gasket.	• Check connection part of pipes and retighten it.
			• Foreign matters clog at discharge side.	• Remove foreign matters. • Remove foreign matters or scales in piping.
		Vacuum gauge indicates hign but pressure gauge indicates normal.	• There are resistance such as air pocket etc. in suction piping.	• Check if there is not protruded section in suction piping.

Troubles	Symptom on pump		Cause	Check & countermeasures
	When disch. valve closed	When disch. valve opened		
Discharge capacity is small.	Pressure gauge & vacuum gauge indicates normal figure.	Pressure is high but vacuum is normal.	• Too high actual head or too large pipe resistance	• Check actual head of discharge piping and loss of pipe resistance.
	Pressure is low and vacuum is very low.	Pressure is low and vacuum is low.	• Motor rotates in reverse	• Interchange motor wiring.
Motor is overheated.			• Lowered power voltage	• Check voltage or frequency.
			• Overload	• Check density and viscosity of liquid
			• Too high ambient temperature	• Ventilate
Discharge capacity is rapidly reduced.		Vacuum gauge indicates high figure.	• Foreign matters clog suction piping.	• Remove foreign matters.
Pump vibrates.			• Foundation is not perfect.	• Re-install the pump.
			• Loosened mounting bolts.	• Re-tighten
			• Cavitation occurs.	• Resolve the reason of cavitation.
			• Worn or melted bearing	• Replace
			• Broken magnet capsule or spindle	• Replace
			• Bad dynamic balance of drive magnet	• Resolve the reason or replace
			• Worn bearing of motor	• Replace bearing or motor

13. Maintenance & inspection

⚠ Warning

- Magnetic force is very strong. Pay attention when you handle the magnet capsule or driving magnet so that fingers can not be injured by attraction of magnets.
- The persons who are assisted by electronic devices such as pacemakers etc. are prohibited to approach the magnet capsule and drive magnet.

⚠ Caution

- Magnetic force is very strong. Pay attention iron pieces or powder can not be attracted to the magnet capsule or drive magnet.
- Do not approach the magnetic card to the pump not to break the data.

1. Periodical inspection (Once a six months)

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

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

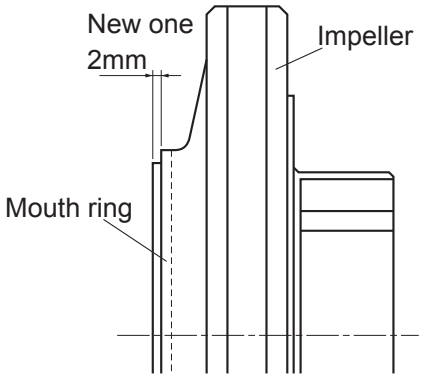
Model	Bearing inner dia.		Spindle outer dia.	
	New one	Wear limit	New one	Wear limit
MDM25-1	20	21	20	19
MDM25-2, MDM40-1, MDM50-1	26	27	26	25
MDM25-3, MDM40-2, MDM65-1	30	31	30	29

Note1. When the clearance between bearing inner dia. and spindle outer dia. exceeds 1 mm, replace by new ones.
Carbon bearing (CF) type: Replace by new one either spindle or bearing which is worn more (normally it is bearing) .
SiC bearing (KK) type: Replace by new ones both bearing and spindle.

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

3. Wear limit of mouth ring (Time to be replaced)
Step between mouth ring and impeller is 2 mm when the pump is shipped. Replace mouth ring when this step becomes zero.

Model	Thickness of mouth ring	
	New one	Wear limit
MDM25-1, MDM25-2, MDM40-1	8 mm	6 mm
MDM25-3, MDM40-2, MDM50-1, MDM65-1	9 mm	7 mm

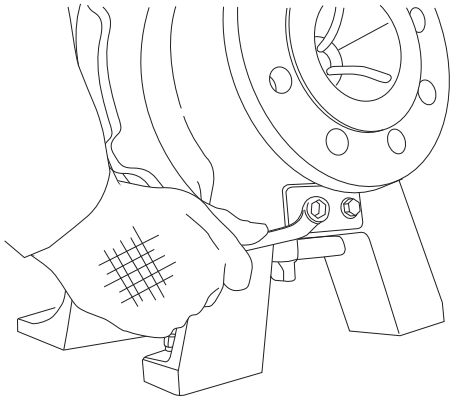


14. Disassembling & assembling

Tool list

Following tools are necessary to disassemble and assemble the pump.

Tool	MDM25-1	MDM25-2, MDM25-3, MDM40, MDM50, MDM65	Remarks
Spanner	13 mm, 17 mm, 19 mm	13 mm, 19 mm, 24 mm	1 pc/each
Hex. wrench	4 mm, 5 mm	4 mm, 5 mm	1 pc/each
Plastic round bar	24 mm dia. × 80 L	34 mm dia. × 100 L	To remove & mount bearing
Plastic welder or industrial dryer	1 unit		
Hand press	1 unit		



1. Disassembly of pump casing

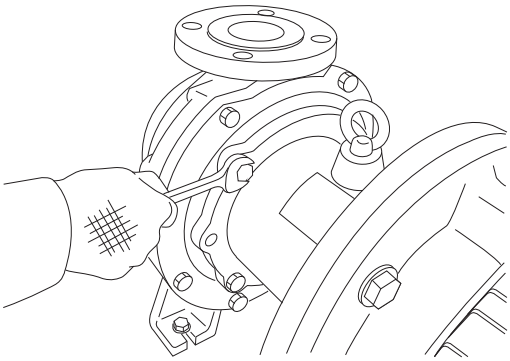
(1) Remove hex. bolts (901.3) and drain plate (122.1) to drain liquid inside. For the type without drain, disassemble the pump after the liquid inside is neutralized or the pump is cleaned by water.

⚠ Warning

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

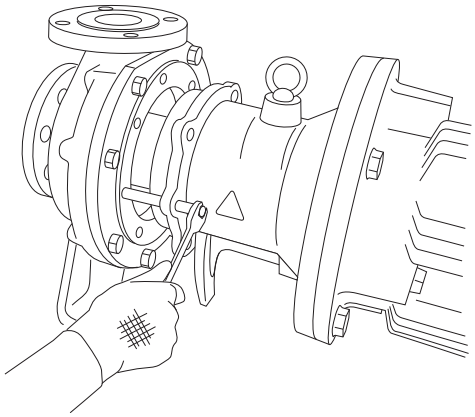
⚠ Caution

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



(2) Remove hex. bolts (901.7) of foot support (330).

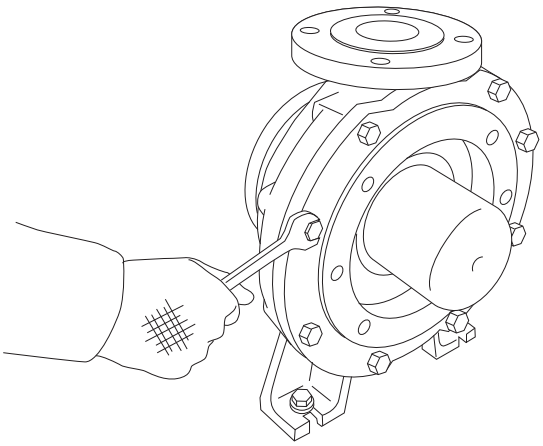
(3) Remove hex. bolts (901.5) of pump side.

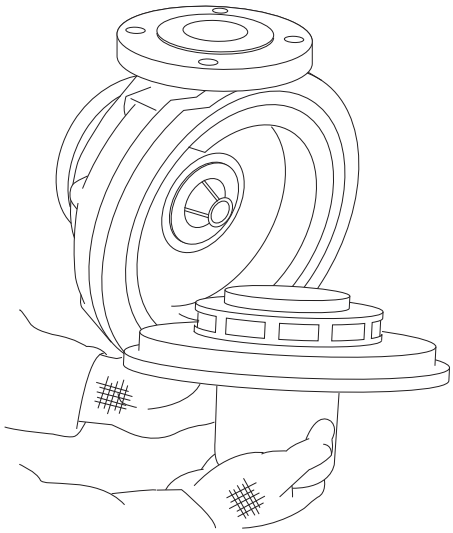


(4) Separate pump body from foot support by screwing two bolts (M12 × 100, and M10 × 50 for MDM25-1) from motor side through bolt threads holes of foot support. Screw in bolts alternatively to remove foot support backward. (Screw in bolts by approx. 80 mm and approx. 40mm for MDM25-1).

(5) Pull out backward motor and foot support by lifting them by crane or so. Take care so that the motor and foot support are pulled out straight to backward. Otherwise, drive magnet (858) touches the rear casing (158).

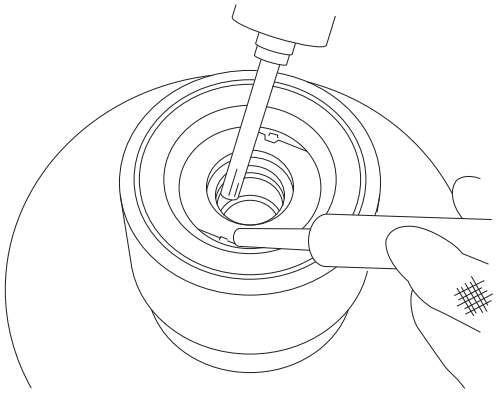
(6) Remove hex. bolts (901.4) of cover (100.2) to pull out rear casing holder.



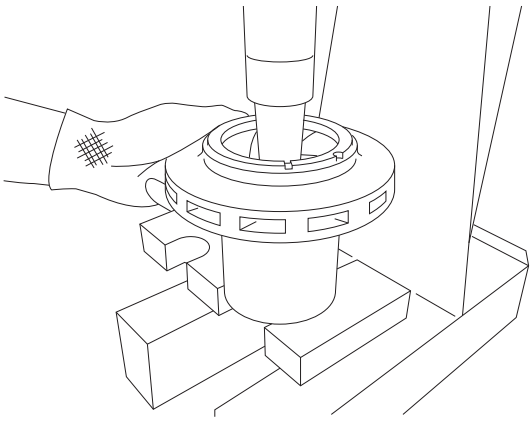


(7) Then, remove rear casing (158) from rear casing cover (159). If rear casing is hard to remove, remove it by turning. Pay attention not to drop the impeller (230)/magnet capsule (859) unit which is located in the rear casing.

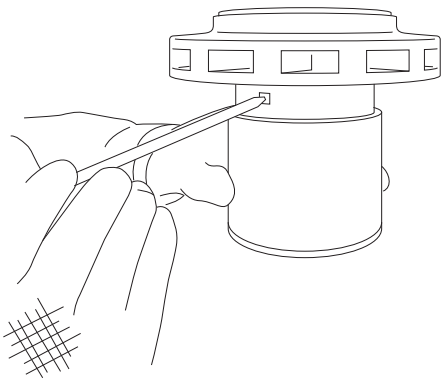
2. Removal of impeller and bearing



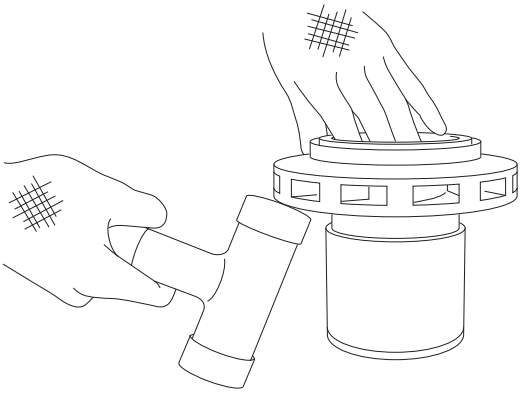
(1) Stand up the claw of rear ring (314.4) after it was heated by plastic welder or industrial dryer.



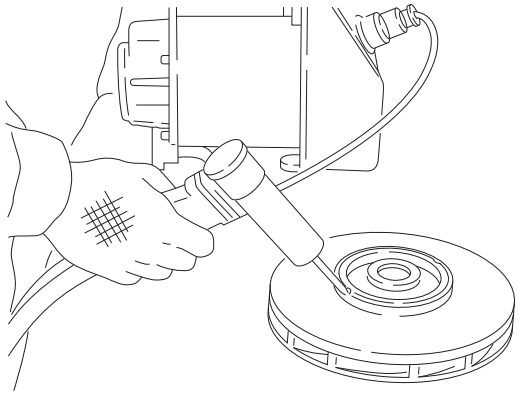
(2) Apply plastic made round bar of 34 mm dia. × 100L (24 mm dia. × 80 L for MDM25-1) on the bearing end through impeller side and remove bearing (310) and rear ring (314.4) using hand press etc.



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



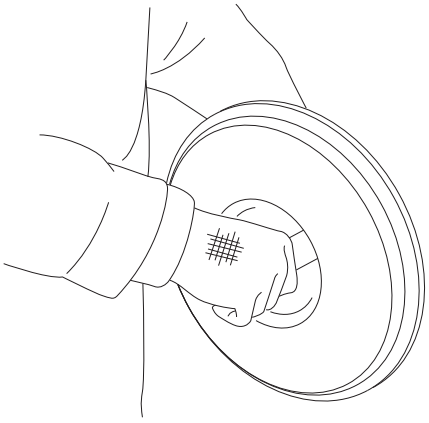
(4) Remove impeller (230) from magnet capsule (859). If it is hard to remove, slightly strike the impeller back side with plastic hammer.
Impeller (230) and magnet capsule (859) of high temp. type of MDM25-3 and MDM40-2 can not be separated because they are unified by welding.



3. Replacement of mouth ring

(1) Stand up the claw of impeller after it was heated by plastic welder or industrial dryer.

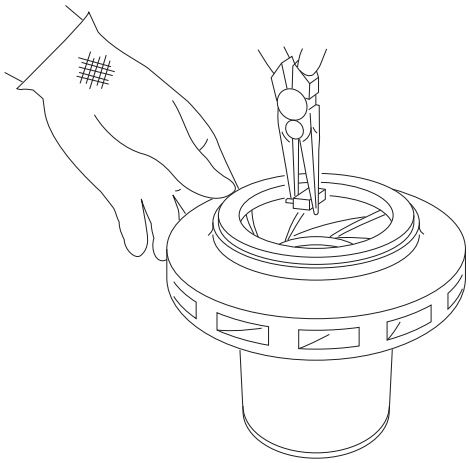
(2) Replace the mouth ring (314.2), and fix it by heating the claw with plastic welder or industrial dryer and push the claw down.



4. Replacement of spindle

(1) Spindle (210) is slightly pressed into rear casing (158). Pull out the spindle by a hand.
If it is hard to pull it out, pull it out by shaking it right and left.

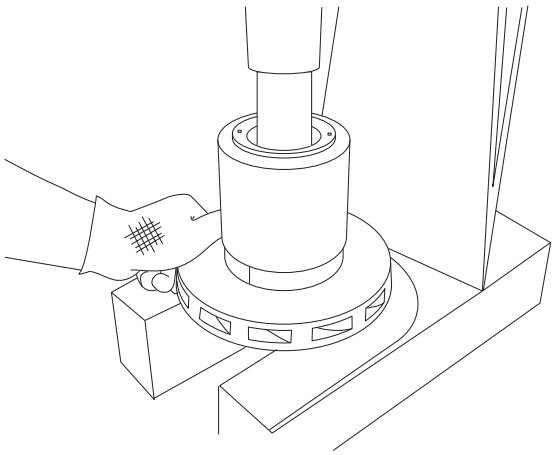
(2) Wipe off the stain at spindle inserted part of rear casing and insert the spindle. Use hand press or like if it is hard to insert.



5. Mounting impeller and bearing

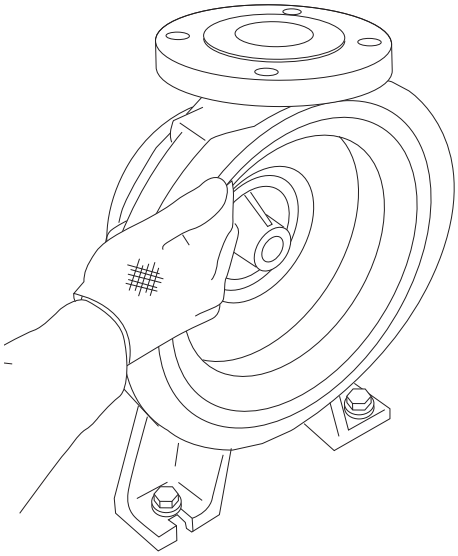
(1) Put together the depressed and hollowed parts of impeller and magnet capsule and insert the impeller into magnet capsule.
At the same time, align the insert ports of impeller pin.

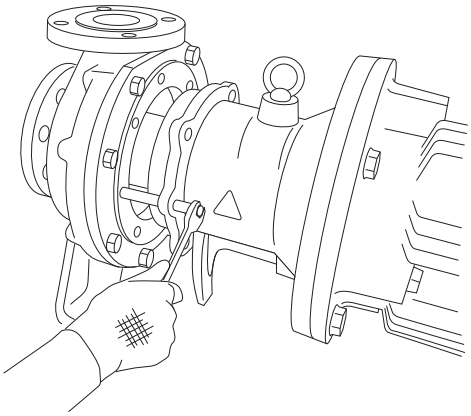
(2) Insert the impeller pin. Pliers are useful for easy insertion.



(3) Put the magnet capsule on top and insert the bearing into magnet capsule by using hand press. Before starting the works, warm the magnet capsule putting it in water of 90 deg. C.
Do not damage the mouth ring when using the hand press. Make sure the parts are clean and no debris is there in advance.

(4) Then, insert the rear ring and fix it by heating the claw with plastic welder or industrial dryer to weld it and push it to rear ring.





6. Assembling

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

- Replacement of gasket
  Do not fail to replace the gasket by new one. Pay attention so that it cannot be forgotten to be put or it can be mounted correctly without twist or bite. Clean the sealing surface before mounting the gasket.
- Tightening of bolts
  Tighten the bolts diagonally and evenly.
- Cleaning of magnet capsule
  Powdered iron or like can be attracted to the magnet capsule. Remove the foreign matters before assembling.

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

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

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

- Tightening torque of rear casing support

MDM25-1 : 58.8N · m

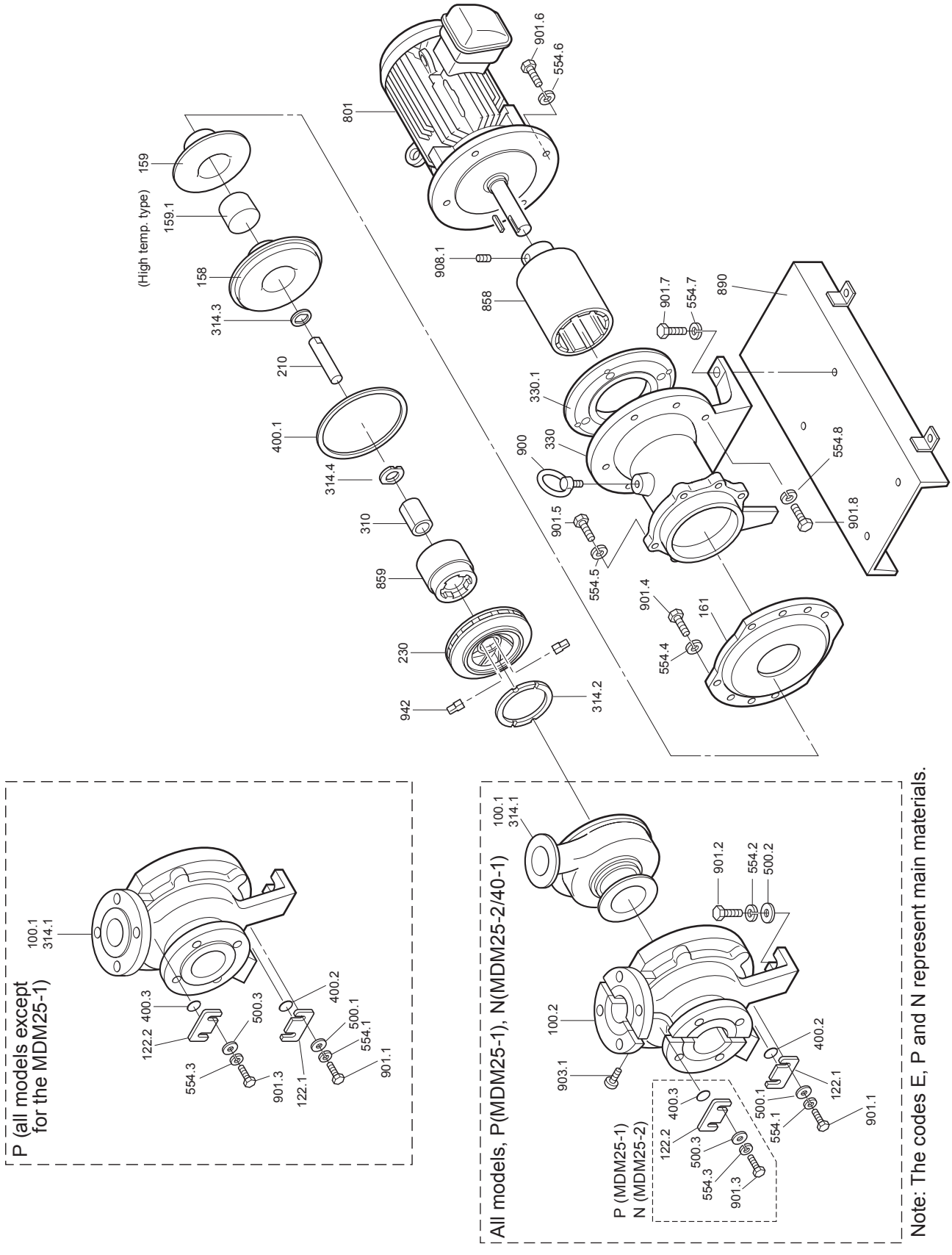
MDM25-2, MDM25-3, MDM40-1, MDM40-2, MDM50-1, MDM65-1 : 85N · m

(4) Remove foreign matters from the drive magnet.

(5) Lift the foot support/motor and insert the faucet part of foot support into the rear casing support by unscrewing the bolts alternatively. (Before the works, attached bolts (M12 × 100) are screwed by half into the foot support.

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

15. Repair parts list



No.	Parts name	Model code	Q'ty	MDM25-1	MDM25-2	MDM25-3	MDM25-3	MDM40-1	MDM40-2	MDM40-2	MDM50-1	MDM65-1	MDM65-1	Remarks
				Low head Code No.	High head Code No.	7.5kW or below Code No.	11/15/18.5kW Code No.	Code No.	7.5kW or below Code No.	11/15/18.5kW Code No.	Code No.	5.5/7.5kW Code No.	11/15/18.5kW Code No.	
100.1+ 314.1	Front casing	PKK	1	MDM0001										With drain hole
		EKK	1	MDM0002	MDM0110	MDM0722	MDM0722	MDM0203	MDM0869	MDM0869	MDM0279	MDM0366	MDM0366	With drain hole
		ECF	1	MDM0003	MDM0111	MDM1003	MDM1003	MDM0204	MDM1002	MDM1002	MDM0280	MDM0367	MDM0367	With drain hole
		NKK	1		MDM1118			MDM1101						With drain hole
		PKK	1	MDM0004										Without drain hole
		EKK	1	MDM0005	MDM0112	MDM0723	MDM0723	MDM0205	MDM0870	MDM0870	MDM0281	MDM0368	MDM0368	Without drain hole
		ECF	1	MDM0006	MDM0113	MDM1001	MDM1001	MDM0206	MDM1000	MDM1000	MDM0282	MDM0369	MDM0369	Without drain hole
		NKK	1		MDM1115			MDM1102						Without drain hole
100.1+ 314.1	Front casing unit (Note 1)	PKK	1		MDM0114	MDM0724	MDM0726	MDM0207	MDM0871	MDM0873	MDM0283	MDM0472	MDM0464	With drain hole
		PKK	1		MDM0115	MDM0725	MDM0727	MDM0208	MDM0872	MDM0874	MDM0284	MDM0473	MDM0465	Without drain hole
		PKK F075 (Note 3)	1		MDM0114	MDM0726		MDM0207	MDM0873		MDM0283	MDM0464		With drain hole
		PKK F075 (Note 3)	1		MDM0115	MDM0727		MDM0208	MDM0874		MDM0284	MDM0465		Without drain hole
100.2+ 903.1	Cover unit (Note 1)	PKK,NKK	1	MDM0007	MDM1116			MDM1103						
		EKK,ECF	1	MDM0008	MDM0116	MDM0728	MDM0729	MDM0209	MDM0875	MDM0876	MDM0285	MDM1106	MDM1108	
		EKK,ECF F075 (Note 3)	1		MDM0116	MDM0729		MDM0209	MDM0876		MDM0285	MDM1108		
122.1	Drain plate	Steel	1	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	
122.2	Air vent plate	PKK	1	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	MDM0009	
		NKK	1		MDM0009									
158	Rear casing	PKK,NKK	1	MDM0010	MDM0117	MDM0730	MDM0730	MDM0210	MDM0370	MDM0370	MDM0210	MDM0370	MDM0370	
		PKK, EKK, ECF for high temp. type	1			MDM0731	MDM0731		MDM0877	MDM0877				
		EKK,ECF	1	MDM0011	MDM0118	MDM0732	MDM0732	MDM0211	MDM0371	MDM0371	MDM0211	MDM0371	MDM0371	
159	Rear casing cover	FRP	1	MDM0012	MDM0119	MDM0733	MDM0733	MDM0212	MDM0119	MDM0119	MDM0212	MDM0119	MDM0119	
159.1	Reinforce ring for high temp. type	FRP	1			MDM0734	MDM0734		MDM0734	MDM0734				
161	Rear casing support	Ductile cast iron	1	MDM0013	MDM0120	MDM0852	MDM0852	MDM0213	MDM0878	MDM0878	MDM0213	MDM0120	MDM0120	
186	Front spacer	Steel	2		MDM0607			MDM0607			MDM0607			Note 4
210	Spindle	PKK,NKK,EKK	1	MDM0014	MDM0121	MDM0372	MDM0372	MDM0121	MDM0372	MDM0372	MDM0121	MDM0372	MDM0372	
		ECF	1	MDM0015	MDM0122	MDM0373	MDM0373	MDM0122	MDM0373	MDM0373	MDM0122	MDM0373	MDM0373	
230	Impeller	Refer to impeller parts list												
230+ 314.2	Impeller ass'y													
230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y													

No.	Parts name	Model code	Q'ty	MDM25-1 Low head Code No.	MDM25-2 High head Code No.	MDM25-3 7.5kW or below Code No.	MDM25-3 11/15/18.5kW Code No.	MDM40-1 Code No.	MDM40-2 7.5kW or below Code No.	MDM40-2 11/15/18.5kW Code No.	MDM50-1 Code No.	MDM65-1 5.5/7.5kW Code No.	MDM65-1 11/15/18.5kW Code No.	Remarks
310	Bearing	PKK, NKK, EKK	1	MDM0016	MDM0123	MDM0735	MDM0735	MDM0123	MDM0735	MDM0735	MDM0123	MDM0374	MDM0374	
		ECF	1	MDM0017	MDM0124	MDM0950	MDM0950	MDM0124	MDM0950	MDM0950	MDM0124	MDM0375	MDM0375	
314.2	Mouth ring	PKK, NKK, EKK	1	MDM0018	MDM0018	MDM0488	MDM0488	MDM0018	MDM0488	MDM0488	MDM0488	MDM0376	MDM0376	
		ECF	1	MDM0019	MDM0019	MDM0951	MDM0951	MDM0019	MDM0951	MDM0951	MDM0489	MDM0377	MDM0377	
314.3	Rear thrust	EKK, ECF	1	MDM0020	MDM0125	MDM0378	MDM0378	MDM0125	MDM0378	MDM0378	MDM0125	MDM0378	MDM0378	
		PKK, NKK	1	MDM0613	MDM0614	MDM0615	MDM0615	MDM0614	MDM0615	MDM0615	MDM0614	MDM0615	MDM0615	
314.4	Rear ring	PKK, NKK, EKK	1	MDM0021	MDM0126	MDM0126	MDM0126	MDM0126	MDM0126	MDM0126	MDM0126	MDM0126	MDM0126	
		ECF	1	MDM0022	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	
330	Bracket (Note 2)	F015, F022	1	MDM0023										
		F022 (Note 3)	1	MDM0604										
		F037	1		MDM0128			MDM0128			MDM0128			
		F055, F075	1		MDM0129	MDM0129		MDM0129	MDM0129		MDM0129	MDM0129		
		F075 (Note 3)	1		MDM0467	MDM0467		MDM0467	MDM0467		MDM0467	MDM0467		
		F110, F150, F185	1				MDM0467			MDM0467			MDM0467	
		F004-4P	1	MDM0616										
		F007-4P	1	MDM0023										
		F015-4P	1		MDM0620	MDM0620		MDM0620	MDM0620		MDM0620	MDM0620		
		F022, F037-4P	1		MDM0128	MDM0128		MDM0128	MDM0128		MDM0128	MDM0128		
		F055-4P	1			MDM0129			MDM0129			MDM0129		
330.1	Motor adapter	F150/F185 (Note 3)	1				MDM0610			MDM0610			MDM0610	
		F004-4P	1	MDM0617										
		F015-4P	1		MDM0621	MDM0621		MDM0621	MDM0621		MDM0621	MDM0621		
400.1	Gasket	PTFE	1	MDM0024	MDM0130	MDM0736	MDM0736	MDM0214	MDM0130	MDM0130	MDM0214	MDM0130	MDM0130	
400.2	Drain gasket	PTFE	1	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	
400.3	Air vent gasket	PKK/PTFE	1	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	MDM0025	
		NKK	1		MDM0025									
5001	Plain washer		2	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	
500.2	Plain washer		2	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	MDM0027	
500.3	Plain washer		2	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	MDM0026	
554.1	Spring washer		2	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	
554.2	Spring washer		2	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	
554.3	Spring washer		2	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	MDM0028	
554.4	Spring washer		6/8/10	MDM0030	MDM0029	MDM0490	MDM0490	MDM0029	MDM0490	MDM0490	MDM0029	MDM0029	MDM0029	25-1 : 6, 25-3 : 8, 40-2 : 10
554.5	Spring washer		4	MDM0030	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	

No.	Parts name	Model code	Q'ty	MDM25-1 Low head Code No.	MDM25-2 High head Code No.	MDM25-3 7.5kW or below Code No.	MDM25-3 11/15/18.5kW Code No.	MDM40-1 Code No.	MDM40-2 7.5kW or below Code No.	MDM40-2 11/15/18.5kW Code No.	MDM50-1 Code No.	MDM65-1 5.5/7.5kW Code No.	MDM65-1 11/15/18.5kW Code No.	Remarks
554.6	Spring washer	F015, F022	4	MDM0030										
		F022 (Note 3)	4	MDM0029										
		F037, F055, F075	4		MDM0029	MDM0029		MDM0029	MDM0029		MDM0029	MDM0029		
		F075 (Note 3)	4		MDM0490	MDM0490		MDM0490	MDM0490		MDM0490	MDM0490		
		F110, F150, F185	4				MDM0490			MDM0490			MDM0490	
		F004-4P	4	MDM0028										
		F007-4P	4	MDM0030										
		F015-4P	4		MDM0030	MDM0030		MDM0030	MDM0030		MDM0030	MDM0030		
		F022,F037-4P	4		MDM0029	MDM0029		MDM0029	MDM0029		MDM0029	MDM0029		
		F055-4P	4			MDM0029			MDM0029			MDM0029		
554.7	Spring washer		2	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	
554.8	Spring washer	F004-4P	4	MDM0028										
		F015-4P	4		MDM0030	MDM0030		MDM0030	MDM0030		MDM0030	MDM0030		
801	Motor		1											
858	Drive magnet unit (Note 2)	F015	1	MDM0031										
		F022	1	MDM0032										
		F022 (Note 3)	1	MDM0605										
		F037	1		MDM0131			MDM0131			MDM0131			
		F055	1		MDM0132	MDM0286		MDM0132	MDM0286		MDM0132	MDM0286		
		F075	1		MDM0286	MDM0286		MDM0286	MDM0286		MDM0286	MDM0286		
		F075 (Note 3)	1		MDM0608	MDM0608		MDM0608	MDM0608		MDM0608	MDM0608		
		F110	1				MDM0738			MDM0738			MDM0738	
		F150	1				MDM0738			MDM0738			MDM0738	
		F185	1				MDM0738			MDM0738			MDM0738	
		F150 (Note 3)	1				MDM0739			MDM0739			MDM0739	
		F185 (Note 3)	1				MDM0739			MDM0739			MDM0739	
		F004-4P	1	MDM0618										
		F007-4P	1	MDM0627										
		F015-4P	1		MDM0622	MDM0622		MDM0622	MDM0622		MDM0622	MDM0622		
		F022-4P	1		MDM0623	MDM0623		MDM0623	MDM0623		MDM0623	MDM0623		
		F037-4P	1		MDM0624	MDM0624		MDM0624	MDM0624		MDM0624	MDM0624		
		F055-4P	1			MDM0737			MDM0737			MDM0026		
859	Magnet capsule unit	PKK-F015	1	MDM0033										
		PKK-F022	1	MDM0033										

No.	Parts name	Model code	Q'ty	MDM25-1	MDM25-2	MDM25-3	MDM25-3	MDM40-1	MDM40-2	MDM40-2	MDM50-1	MDM65-1	MDM65-1	Remarks
				Low head Code No.	High head Code No.	7.5kW or below Code No.	11/15/18.5kW Code No.	Code No.	7.5kW or below Code No.	11/15/18.5kW Code No.	Code No.	5.5/7.5kW Code No.	11/15/18.5kW Code No.	
859	Magnet capsule unit	PKK/NKK-F037	1		MDM0133			MDM0133			MDM0133			
		PKK/NKK-F055	1		MDM0133	MDM0287		MDM0133	MDM0287		MDM0133	MDM0287		
		PKK/NKK-F075	1		MDM0287	MDM0287		MDM0287	MDM0287		MDM0287	MDM0287		
		PKK-F110	1				MDM0469			MDM0469			MDM0469	
		PKK-F150	1				MDM0469			MDM0469			MDM0469	
		PKK-F185	1				MDM0469			MDM0469			MDM0469	
		PKK-F004-4P	1	MDM0033										
		PKK-F007-4P	1	MDM0033										
		PKK/NKK-F015-4P	1		MDM0133	MDM0133		MDM0133	MDM0133		MDM0133	MDM0133		
		PKK/NKK-F022-4P	1		MDM0133	MDM0133		MDM0133	MDM0133		MDM0133	MDM0133		
		PKK/NKK-F037-4P	1		MDM0287	MDM0287		MDM0287	MDM0287		MDM0287	MDM0287		
		PKK-F055-4P	1			MDM0469			MDM0469			MDM0469		
		EKK/ECF-F015	1	MDM0034										
		EKK/ECF-F022	1	MDM0034										
		EKK/ECF-F037	1		MDM0134			MDM0134			MDM0134			
		EKK/ECF-F055	1		MDM0134	MDM0228		MDM0134	MDM0228		MDM0134	MDM0228		
		EKK/ECF-F075	1		MDM0228	MDM0228		MDM0228	MDM0228		MDM0228	MDM0228		
		EKK/ECF-F110	1				MDM0470			MDM0470			MDM0470	
		EKK/ECF-F150	1				MDM0470			MDM0470			MDM0470	
		EKK/ECF-F185	1				MDM0470			MDM0470			MDM0470	
		EKK/ECF-F004-4P	1	MDM0034										
		EKK/ECF-F007-4P	1	MDM0034										
		EKK/ECF-F015-4P	1		MDM0134	MDM0134		MDM0134	MDM0134		MDM0134	MDM0134		
		EKK/ECF-F022-4P	1		MDM0134	MDM0134		MDM0134	MDM0134		MDM0134	MDM0134		
		EKK/ECF-F037-4P	1		MDM0288	MDM0288		MDM0288	MDM0288		MDM0288	MDM0288		
		EKK/ECF-F055-4P	1			MDM0470			MDM0470			MDM0470		
890	Base plate		1	MDM0035	MDM0135	MDM0135	MDM0471	MDM0135	MDM0135	MDM0471	MDM0135	MDM0135	MDM0471	
		F022 (Note 3)	1	MDM0606										
		F075 (Note 3)	1		MDM0471	MDM0471		MDM0471	MDM0471		MDM0471	MDM0471		
900	Eye bolt		1	MDM0036	MDM0036	MDM0036	MDM0036	MDM0036	MDM0036	MDM0036	MDM0036	MDM0036	MDM0036	
901.1	Hex. head bolt		2	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	
901.2	Hex. head bolt		2	MDM0042	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	
		F075 (Note 3)	2		MDM0609	MDM0555		MDM0609	MDM0555		MDM0609	MDM0555		
901.3	Hex. head bolt		2	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	

No.	Parts name	Model code	Q'ty	MDM25-1	MDM25-2	MDM25-3	MDM25-3	MDM40-1	MDM40-2	MDM40-2	MDM50-1	MDM65-1	MDM65-1	Remarks
				Low head Code No.	High head Code No.	7.5kW or below Code No.	11/15/18.5kW Code No.	Code No.	7.5kW or below Code No.	11/15/18.5kW Code No.	Code No.	5.5/7.5kW Code No.	11/15/18.5kW Code No.	
901.4	Hex. head bolt		6/8/10	MDM0039	MDM0137	MDM0491	MDM0491	MDM0137	MDM0491	MDM0491	MDM0137	MDM0137	MDM0137	25-1 : 6, 25-3/40-2 : 10
901.5	Hex. head bolt		4	MDM0040	MDM0136	MDM0136	MDM0136	MDM0136	MDM0136	MDM0136	MDM0136	MDM0136	MDM0136	
901.6	Hex. head bolt	F015, F022	4	MDM0040										
		F022 (Note 3)	4	MDM0555										
		F037	4		MDM0555			MDM0555			MDM0555			
901.6	Hex. head bolt	F055, F075	4		MDM0137	MDM0137		MDM0137	MDM0137		MDM0137	MDM0137		
		F075 (Note 3)	4		MDM0491	MDM0491		MDM0491	MDM0491		MDM0491	MDM0491		
		F110, F150, F185	4				MDM0491			MDM0491			MDM0491	
		F004-4P	4	MDM0619										
		F007-4P	4	MDM0041										
		F015-4P	4		MDM0041	MDM0041		MDM0041	MDM0041		MDM0041	MDM0041		
		F022, F037-4P	4		MDM0555	MDM0555		MDM0555	MDM0555		MDM0555	MDM0555		
		F055-4P	4			MDM0137			MDM0137			MDM0137		
901.7	Hex. head bolt		2	MDM0042	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	
901.8	Hex. head bolt	F004-4P	4	MDM0698										
		F015-4P	4		MDM0625	MDM0625		MDM0625	MDM0625		MDM0625	MDM0625		
903.1	Hex. socket head bolt	PKK	5	MDM0043										
		EKK/ECF	5	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	
		NKK	5		MDM0043			MDM0043						
903.2	Hex. socket head bolt	F150/F185 (Note 3)	4				MDM0612			MDM0612			MDM0612	
908.1	Hex. socket head bolt		2	MDM0044	MDM0044	MDM0044	MDM0044	MDM0044	MDM0044	MDM0044	MDM0044	MDM0044	MDM0044	
942	Impeller pin		2	MDM0045	MDM0138	MDM0138	MDM0138	MDM0138	MDM0138	MDM0138	MDM0138	MDM0138	MDM0138	

Note 1: For MDM65, code No. is for TEFC motor type. Ask IWAKI if explosion proof or other type motor is mounted.

Note 2: Code No. is for TEFC motor type. Ask IWAKI if explosion proof or other type motor is mounted.

Note 3: For safety increased motor.

Note 4: For 7.5kW safety increased motor except MDM25-3 , 40-2 , and 65-1.

MDM25-1 Impeller parts list

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM25-1	230	Impeller	165		1	MDM0046	MDM0067	
			160		1	MDM0047	MDM0068	
			150		1	MDM0048	MDM0069	
			140		1	MDM0049	MDM0070	
			130		1	MDM0050	MDM0071	
			120		1	MDM0051	MDM0072	
			110		1	MDM0052	MDM0073	
			100		1	MDM0084	MDM0109	
			170	4P	1	MDM0628	MDM0632	
	230+ 314.2	Impeller ass'y	165		1	MDM0053	MDM0074	MDM0093
			160		1	MDM0054	MDM0075	MDM0094
			150		1	MDM0055	MDM0076	MDM0095
			140		1	MDM0056	MDM0077	MDM0096
			130		1	MDM0057	MDM0078	MDM0097
			120		1	MDM0058	MDM0079	MDM0098
			110		1	MDM0059	MDM0080	MDM0099
			100		1	MDM0083	MDM0081	MDM0100
			170	4P	1	MDM0629	MDM0633	MDM0637
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	165	1.5/2.2kW	1	MDM0060	MDM0085	MDM0101
			160	1.5/2.2kW	1	MDM0061	MDM0086	MDM0102
			150	1.5/2.2kW	1	MDM0062	MDM0087	MDM0103
			140	1.5/2.2kW	1	MDM0063	MDM0088	MDM0104
			130	1.5/2.2kW	1	MDM0064	MDM0089	MDM0105
			120	1.5/2.2kW	1	MDM0065	MDM0090	MDM0106
			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

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM25-2 Impeller parts list

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK/NKK	EKK	ECF
MDM25-2	230	Impeller	195		1	MDM0139	MDM0163	
			190		1	MDM0140	MDM0164	
			180		1	MDM0141	MDM0165	
			170		1	MDM0142	MDM0166	
			160		1	MDM0143	MDM0167	
			150		1	MDM0144	MDM0168	
			140		1	MDM0145	MDM0169	
			130		1	MDM0146	MDM0170	
			200	4P	1	MDM0640	MDM0645	
	230+ 314.2	Impeller ass'y	195		1	MDM0147	MDM0171	MDM0187
			190		1	MDM0148	MDM0172	MDM0188
			180		1	MDM0149	MDM0173	MDM0189
			170		1	MDM0150	MDM0174	MDM0190
			160		1	MDM0151	MDM0175	MDM0191
			150		1	MDM0152	MDM0176	MDM0192
			140		1	MDM0153	MDM0177	MDM0193
			130		1	MDM0154	MDM0178	MDM0194
			200	4P	1	MDM0641	MDM0646	MDM0650
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	195	3.7/5.5kW	1	MDM0155	MDM0179	MDM0195
			190	3.7/5.5kW	1	MDM0156	MDM0180	MDM0196
			180	3.7/5.5kW	1	MDM0157	MDM0181	MDM0197
			170	3.7/5.5kW	1	MDM0158	MDM0182	MDM0198
			160	3.7/5.5kW	1	MDM0159	MDM0183	MDM0199
			150	3.7/5.5kW	1	MDM0160	MDM0184	MDM0200
			140	3.7/5.5kW	1	MDM0161	MDM0185	MDM0201
			130	3.7/5.5kW	1	MDM0162	MDM0186	MDM0202
			195	7.5kW	1	MDM0556	MDM0564	MDM0572
			190	7.5kW	1	MDM0557	MDM0565	MDM0573
			180	7.5kW	1	MDM0558	MDM0566	MDM0574
			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	3.7kW-4P	1	MDM0643	MDM0648	MDM0651

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM25-3 Impeller parts list (except high temp. type of PKK)

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM25-3 (except high temp. type of PKK)	230	Impeller	225		1	MDM0740	MDM0764	
			220		1	MDM0741	MDM0765	
			210		1	MDM0742	MDM0766	
			200		1	MDM0743	MDM0767	
			190		1	MDM0744	MDM0768	
			180		1	MDM0745	MDM0769	
			170		1	MDM0746	MDM0770	
			160		1	MDM0747	MDM0771	
	230+ 314.2	Impeller ass'y	225		1	MDM0853	MDM0772	MDM0918
			220		1	MDM0854	MDM0773	MDM0919
			210		1	MDM0855	MDM0774	MDM0920
			200		1	MDM0856	MDM0775	MDM0921
			190		1	MDM0857	MDM0776	MDM0922
			180		1	MDM0858	MDM0777	MDM0923
			170		1	MDM0859	MDM0778	MDM0924
			160		1	MDM0860	MDM0779	MDM0925
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	225	5.5/7.5kW	1	MDM0756	MDM0788	MDM0934
			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
			160	5.5/7.5kW	1	MDM0763	MDM0795	MDM0941
			225	11/15/18.5kW	1	MDM0861	MDM0796	MDM0942
			220	11/15/18.5kW	1	MDM0862	MDM0797	MDM0943
			210	11/15/18.5kW	1	MDM0863	MDM0798	MDM0944
			200	11/15/18.5kW	1	MDM0864	MDM0799	MDM0945
			190	11/15/18.5kW	1	MDM0865	MDM0800	MDM0946
			180	11/15/18.5kW	1	MDM0866	MDM0801	MDM0947
			170	11/15/18.5kW	1	MDM0867	MDM0802	MDM0948
			160	11/15/18.5kW	1	MDM0868	MDM0803	MDM0949
			225	1.5/2.2kW-4P	1	MDM0748	MDM0780	MDM0926
			225	3.7kW-4P	1	MDM0756	MDM0788	MDM0934
			225	5.5kW-4P	1	MDM0861	MDM0796	MDM0942

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM25-3 Impeller parts list (for high temp. type of PKK)

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No. PKK-H	Remarks
MDM25-3 (for high temp. type of PKK)	230+ 859	Impeller/magnet capsule ass'y	225	5.5/7.5kW	1	MDM0812	Impeller and magnet capsule can not be separated because they are welded each other.
			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	
			225	11/15/18.5kW	1	MDM0820	
			220	11/15/18.5kW	1	MDM0821	
			210	11/15/18.5kW	1	MDM0822	
			200	11/15/18.5kW	1	MDM0823	
			190	11/15/18.5kW	1	MDM0824	
			180	11/15/18.5kW	1	MDM0825	
			170	11/15/18.5kW	1	MDM0826	
			160	11/15/18.5kW	1	MDM0827	
			225	1.5/2.2kW-4P	1	MDM0804	
			225	3.7kW-4P	1	MDM0812	
			225	5.5kW-4P	1	MDM0820	
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	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	
			160	5.5/7.5kW	1	MDM0843	
			225	11/15/18.5kW	1	MDM0844	
			220	11/15/18.5kW	1	MDM0845	
			210	11/15/18.5kW	1	MDM0846	
			200	11/15/18.5kW	1	MDM0847	
			190	11/15/18.5kW	1	MDM0848	
			180	11/15/18.5kW	1	MDM0849	
			170	11/15/18.5kW	1	MDM0850	
			160	11/15/18.5kW	1	MDM0851	
			225	1.5/2.2kW-4P	1	MDM0828	
			225	3.7kW-4P	1	MDM0836	
			225	5.5kW-4P	1	MDM0844	

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM40-1 Impeller parts list

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM40-1	230	Impeller	165		1	MDM0215	MDM0239	
			160		1	MDM0216	MDM0240	
			150		1	MDM0217	MDM0241	
			145		1	MDM0218	MDM0242	
			140		1	MDM0219	MDM0243	
			130		1	MDM0220	MDM0244	
			120		1	MDM0221	MDM0245	
			110		1	MDM0222	MDM0246	
			170	4P	1	MDM0654	MDM0659	
	230+ 314.2	Impeller ass'y	165		1	MDM0223	MDM0247	MDM0263
			160		1	MDM0224	MDM0248	MDM0264
			150		1	MDM0225	MDM0249	MDM0265
			145		1	MDM0226	MDM0250	MDM0266
			140		1	MDM0227	MDM0251	MDM0267
			130		1	MDM0228	MDM0252	MDM0268
			120		1	MDM0229	MDM0253	MDM0269
			110		1	MDM0230	MDM0254	MDM0270
			170	4P	1	MDM0655	MDM0668	MDM0664
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	165	3.7/5.5kW	1	MDM0231	MDM0255	MDM0271
			160	3.7/5.5kW	1	MDM0232	MDM0256	MDM0272
			150	3.7/5.5kW	1	MDM0233	MDM0257	MDM0273
			145	3.7/5.5kW	1	MDM0234	MDM0258	MDM0274
			140	3.7/5.5kW	1	MDM0235	MDM0259	MDM0275
			130	3.7/5.5kW	1	MDM0236	MDM0260	MDM0276
			120	3.7/5.5kW	1	MDM0237	MDM0261	MDM0277
			110	3.7/5.5kW	1	MDM0238	MDM0262	MDM0278
			165	7.5kW	1	MDM0580	MDM0588	MDM0596
			160	7.5kW	1	MDM0581	MDM0589	MDM0597
			150	7.5kW	1	MDM0582	MDM0590	MDM0598
			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	3.7kW-4P	1	MDM0657	MDM0662	MDM0665

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM40-2 Impeller parts list (except high temp. type of PKK)

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM40-2 (except high temp. type of PKK)	230	Impeller	225		1	MDM0740	MDM0764	
			220		1	MDM0741	MDM0765	
			210		1	MDM0742	MDM0766	
			200		1	MDM0743	MDM0767	
			190		1	MDM0744	MDM0768	
			180		1	MDM0745	MDM0769	
			170		1	MDM0746	MDM0770	
			160		1	MDM0747	MDM0771	
	230+ 314.2	Impeller ass'y	225		1	MDM0853	MDM0772	MDM0918
			220		1	MDM0854	MDM0773	MDM0919
			210		1	MDM0855	MDM0774	MDM0920
			200		1	MDM0856	MDM0775	MDM0921
			190		1	MDM0857	MDM0776	MDM0922
			180		1	MDM0858	MDM0777	MDM0923
			170		1	MDM0859	MDM0778	MDM0924
			160		1	MDM0860	MDM0779	MDM0925
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	225	5.5/7.5kW	1	MDM0756	MDM0788	MDM0934
			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
			160	5.5/7.5kW	1	MDM0763	MDM0795	MDM0941
			225	11/15/18.5kW	1	MDM0861	MDM0796	MDM0942
			220	11/15/18.5kW	1	MDM0862	MDM0797	MDM0943
			210	11/15/18.5kW	1	MDM0863	MDM0798	MDM0944
			200	11/15/18.5kW	1	MDM0864	MDM0799	MDM0945
			190	11/15/18.5kW	1	MDM0865	MDM0800	MDM0946
			180	11/15/18.5kW	1	MDM0866	MDM0801	MDM0947
			170	11/15/18.5kW	1	MDM0867	MDM0802	MDM0948
			160	11/15/18.5kW	1	MDM0868	MDM0803	MDM0949
			225	1.5/2.2kW-4P	1	MDM0748	MDM0780	MDM0926
			225	3.7kW-4P	1	MDM0756	MDM0788	MDM0934
			225	5.5kW-4P	1	MDM0861	MDM0796	MDM0942

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM40-2 Impeller parts list (for high temp. type of PKK)

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.	Remarks
						PKK-H	
MDM40-2 (for high temp. type of PKK)	230+ 859	Impeller/magnet capsule ass'y	225	5.5/7.5kW	1	MDM0812	Impeller and magnet capsule can not be separated because they are welded each other.
			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	
			225	11/15/18.5kW	1	MDM0820	
			220	11/15/18.5kW	1	MDM0821	
			210	11/15/18.5kW	1	MDM0822	
			200	11/15/18.5kW	1	MDM0823	
			190	11/15/18.5kW	1	MDM0824	
			180	11/15/18.5kW	1	MDM0825	
			170	11/15/18.5kW	1	MDM0826	
			160	11/15/18.5kW	1	MDM0827	
			225	1.5/2.2kW-4P	1	MDM0804	
			225	3.7kW-4P	1	MDM0812	
			225	5.5kW-4P	1	MDM0820	
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	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	
			160	5.5/7.5kW	1	MDM0843	
			225	11/15/18.5kW	1	MDM0844	
			220	11/15/18.5kW	1	MDM0845	
			210	11/15/18.5kW	1	MDM0846	
			200	11/15/18.5kW	1	MDM0847	
			190	11/15/18.5kW	1	MDM0848	
			180	11/15/18.5kW	1	MDM0849	
			170	11/15/18.5kW	1	MDM0850	
			160	11/15/18.5kW	1	MDM0851	
			225	1.5/2.2kW-4P	1	MDM0828	
			225	3.7kW-4P	1	MDM0836	
			225	5.5kW-4P	1	MDM0844	

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM50 Impeller parts list

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM50-1	230	Impeller	165		1	MDM0379	MDM0481	
			160		1	MDM0475	MDM0482	
			150		1	MDM0476	MDM0483	
			140		1	MDM0477	MDM0484	
			130		1	MDM0478	MDM0485	
			120		1	MDM0479	MDM0486	
			110		1	MDM0480	MDM0487	
			170	4P	1	MDM0669	MDM0674	
	230+ 314.2	Impeller ass'y	165		1	MDM0296	MDM0324	MDM0345
			160		1	MDM0297	MDM0325	MDM0346
			150		1	MDM0298	MDM0326	MDM0347
			140		1	MDM0299	MDM0327	MDM0348
			130		1	MDM0300	MDM0328	MDM0349
			120		1	MDM0301	MDM0329	MDM0350
			110		1	MDM0302	MDM0330	MDM0351
			170	4P	1	MDM0670	MDM0675	MDM0679
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	165	3.7/5.5KW	1	MDM0303	MDM0331	MDM0352
			160	3.7/5.5KW	1	MDM0304	MDM0332	MDM0353
			150	3.7/5.5KW	1	MDM0305	MDM0333	MDM0354
			140	3.7/5.5KW	1	MDM0306	MDM0334	MDM0355
			130	3.7/5.5KW	1	MDM0307	MDM0335	MDM0356
			120	3.7/5.5KW	1	MDM0308	MDM0336	MDM0357
			110	3.7/5.5KW	1	MDM0309	MDM0337	MDM0358
			165	7.5kW	1	MDM0310	MDM0338	MDM0359
			160	7.5kw	1	MDM0311	MDM0339	MDM0360
			150	7.5kW	1	MDM0312	MDM0340	MDM0361
			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	3.7kW-4P	1	MDM0372	MDM0677	MDM0680

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

MDM65 Impeller parts list

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM65-1	230	Impeller	165		1	MDM0289	MDM0317	
			160		1	MDM0290	MDM0318	
			150		1	MDM0291	MDM0319	
			140		1	MDM0292	MDM0320	
			130		1	MDM0293	MDM0321	
			120		1	MDM0294	MDM0322	
			110		1	MDM0295	MDM0323	
			170	4P	1	MDM0683	MDM0689	
	230+ 314.2	Impeller ass'y	165		1	MDM0380	MDM0408	MDM0436
			160		1	MDM0381	MDM0409	MDM0437
			150		1	MDM0382	MDM0410	MDM0438
			140		1	MDM0383	MDM0411	MDM0439
			130		1	MDM0384	MDM0412	MDM0440
			120		1	MDM0385	MDM0413	MDM0441
			110		1	MDM0386	MDM0414	MDM0442
			170	4P	1	MDM0684	MDM0690	MDM0695
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	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
			110	5.5/7.5kW	1	MDM0400	MDM0428	MDM0456
			165	11/15/18.5kW	1	MDM0401	MDM0429	MDM0457
			160	11/15/18.5kW	1	MDM0402	MDM0430	MDM0458
			150	11/15/18.5kW	1	MDM0403	MDM0431	MDM0459
			140	11/15/18.5kW	1	MDM0404	MDM0432	MDM0460
			130	11/15/18.5kW	1	MDM0405	MDM0433	MDM0461
			120	11/15/18.5kW	1	MDM0406	MDM0434	MDM0462
			110	11/15/18.5kW	1	MDM0407	MDM0435	MDM0463
			170	1.5/2.2kW-4P	1	MDM0685	MDM0691	MDM0694
			170	3.7kW-4P	1	MDM0686	MDM0692	MDM0696
			170	5.5kW-4P	1	MDM0687	MDM0693	MDM0697

Note: Tell us pump model code and Mfg. No. when impeller is ordered because actual impeller size may not be the same as those shown here.

16. Mass of pump

Model code	Motor output	Pump with no base	Pump with base
MDM25-1	1.5/2.2 kW	37kg	63kg
MDM25-2	3.7 kW	62kg	89kg
	5.5/7.5 kW	65kg	92kg
MDM25-3	5.5/7.5 kW	70kg	100kg
	11/15/18.5 kW	85kg	135kg
MDM40-1	3.7 kW	57kg	84kg
	5.5/7.5 kW	60kg	87kg
MDM40-2	5.5/7.5 kW	75kg	105kg
	11/15/18.5 kW	90kg	140kg
MDM50-1	3.7 kW	58kg	85kg
	5.5/7.5 kW	61kg	88kg
MDM65-1	5.5/7.5 kW	69kg	96kg
	11/15/18.5 kW	82kg	129kg

*The pump weights represent the pump unit only and do not include the motor weight.

*Some pump models may have more weight (a larger frame) than the above to have a flame-proof motor or an increased-safety explosion-proof motor.

*See our approval drawing of the pump plus motor as well for total weight information.

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