IWAKI PUMPS

IWAKI Magnetic Drive Pump

MDM Series (Europe Edition: English)

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

- **Magnet field danger**
  The magnet drive pumps contain very strong magnets. The strong magnet field could adversely affect persons who are assisted by electronic devices such as pace-makers etc.

- Always turn off power supply prior to maintenance works etc. Pay special attention so that no other operator turns on by mistake the power supply while someone is working on the pump. In a noisy or poor visibility environment, display a sign near power supply switch to notify other person that someone is "WORKING" on the pump. Power supply mistakenly turned on during maintenance works may lead to personal injury. Each operator must pay special attention.


Power off

- **Wear protectors**
  When piping is removed or pump is disassembled/assembled, wear protective gear such as safety goggles and protective gloves etc.


Wear protective gear

- **Lifting pump**
  When pump is lifted, apply chain or belt to eye bolt and motor to keep the pump & motor horizontally.

- **No remodeling**
  Remodeling of pump may result in serious personal injury or damage of the pump. Do not attempt remodeling pump because it is very dangerous.


No Remodeling

- **Dangerous liquid**
  When the pump is used to transfer dangerous liquids mentioned as below, the pump must always be checked and watched so that the liquid can not be leaked. The operation of pump leaking the liquid may result in personal injury, explosion or fire accident.
  - Explosive or flammable liquids
  - Corrosive or stimulus toxic liquids
  - Liquids harmful to human health

Safety Section

⚠CAUTION

- **Attention to magnetic force**
  This pump employs strong magnets. Special attention must be paid not to be injured by attracting force of magnets. Follow the procedure "Disassembling and Assembling" when the maintenance works are done.

- **Do not run pump dry**
  Do not run pump dry (without liquid). If the pump run dry, heat is generated by rubbing, which causes pump damage. If the pump is operated with suction side valve closed, the pump runs dry.

Do not run dry

- **Countermeasures for static electricity**
  When low electric conductivity liquid such as ultra-pure water and hydro carbon or inactive fluor liquid (e.g. Fluorinert™) is handled, the static electricity may be generated in pump and liquid. (This electric charge does not happen if liquid is mixed with water.)
  The high electric charge may cause the spark and break down of pump in the worst case. For the special applications IWAKI can supply the pump made in electric conductive material CFRETFE to reduce the risk of spark and explosion.

- **Qualified operator**
  The pump must be handled or operated by the person who has enough knowledge and well acquainted with the pump.

- **Eliminate air in pump chamber**
  Before full operation of pump, run pump to eliminate air from pump chamber.
  Above all when pumping liquid which easily generates bubbles (hydrogen peroxide, sodium hypochlorite or so), eliminate air every time when pump is operated.
  Operation of pump with air remaining in pump chamber may heat rubbing parts of pump resulting in pump damage.

- **For specified application only**
  The use of pump in any application other than those clearly specified may result in the failure or damage of the pump.

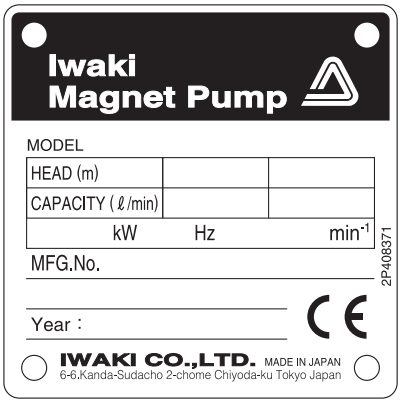
- **Ventilate the site**
  When handling the liquid which may generate toxic gas, safety measures such as ventilation must be taken to prepare for the accidental liquid leakage.

- **Countermeasure to liquid flowing out**
  Protective measurement must be taken against liquid flowing out caused by damage of pump or pipe by accident. Also, appropriate measurement must be taken so that the liquid can not directly flow out on the ground.

- **Disposal of used pump**
  Disposal of used or damaged pump must be done in accordance with local laws and regulations. (Consult a licensed industrial waste products disposing company.)

OUTLINE OF PRODUCT

1. Unpacking and inspection

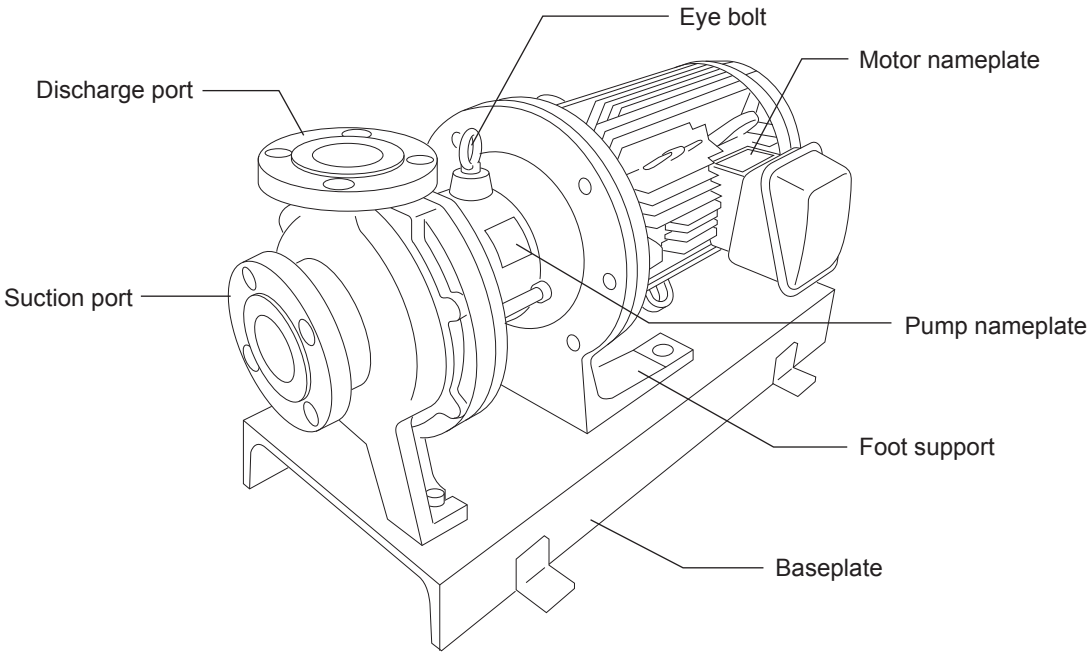


After unpacking of the pump, check the following points.

(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

MDM50 - 150 1 E KK F 075 I - D 2 H
① ② ③④ ⑤ ⑥ ⑦ ⑧ ⑨⑩⑪

① Pump discharge bore Suction Discharge
25: 40 × 25
32: 50 × 32
40: 65 × 40
50: 80 × 50

② Nominal impeller diameter: 100 - 225 (mm)

③ Impeller range: 1: Low head impeller type
2: High head impeller type (Available for MDM25 and MDM32)
3: High head impeller type (Available for MDM25 only)

④ Main material: E: CFRETFE P: PFA N: PFA (MDM32-1 only)

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 : 0.37 kW, 007 : 0.75 kW, 015 : 1.5 kW, 022 : 2.2 kW,
040 : 4.0 kW, 055 : 5.5 kW, 075 : 7.5 kW, 110 : 11 kW, 150 : 15kW

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

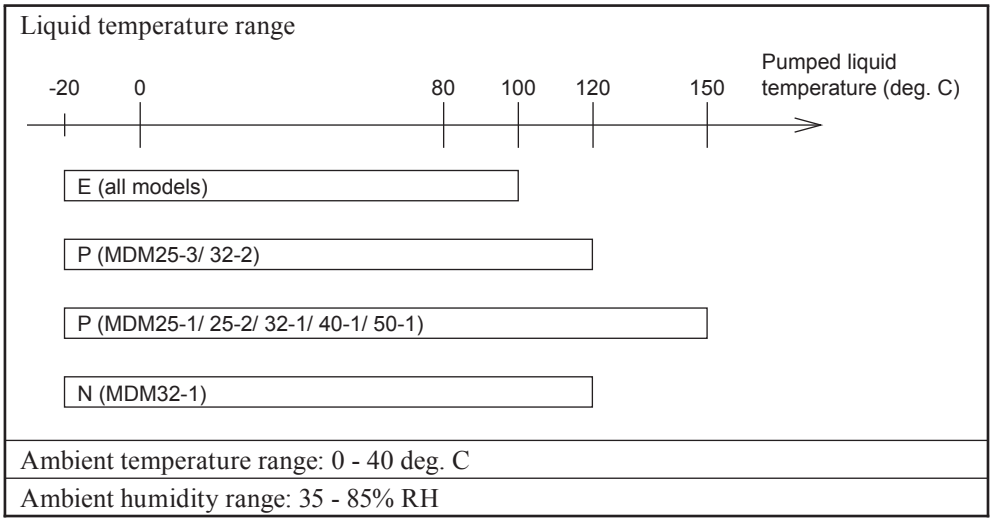
⑩ Motor pole : 2 : 2 pole motor
4 : 4 pole motor

⑪ High temperature type No code : Standard
H : High temperature type
(Available for MDM25-3 and MDM32-2)

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, MDM32-2, the figures 25 or 32 are pump discharge bore and 1, 2 or 3 are impeller range.

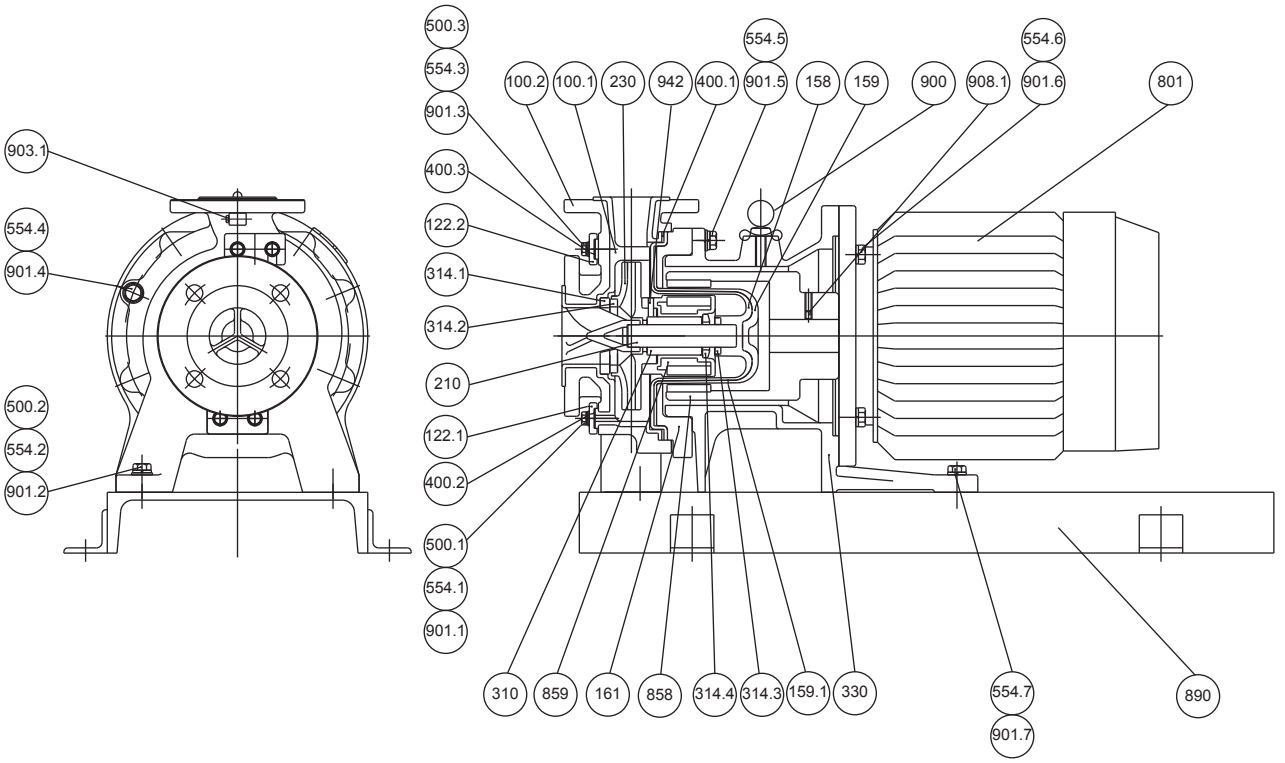
3. Conditions to be used

1. Maximum operating pressure
   Maximum operating pressure of the pump is 1 MPa (1.6 MPa for MDM25-3 and MDM32-2). 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	Foot support	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 & MDM32-2.

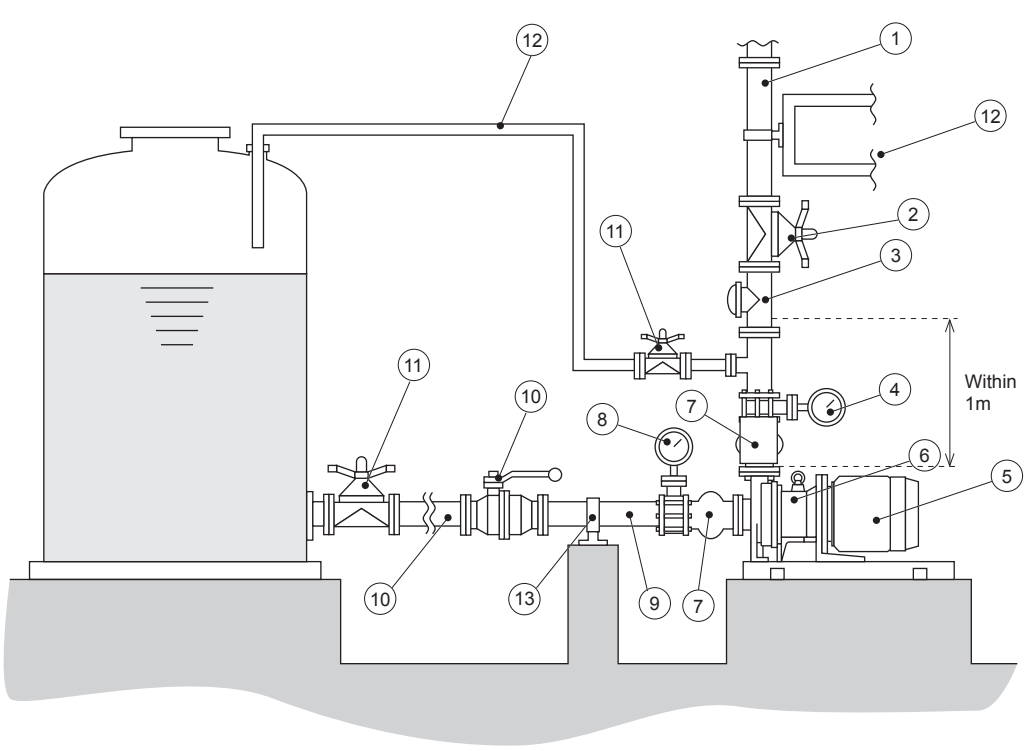
(2): For high temperature type "H" of MDM25-3 & MDM32-2.

(3): For pumps with the main material codes of "E" (all models), "P" (MDM25-1) and "N" (MDM32-1).

INSTALLATION

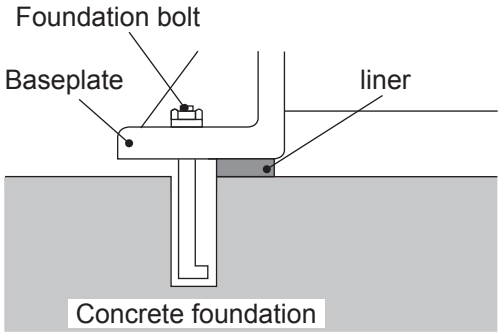
5. Installation

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
   - 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

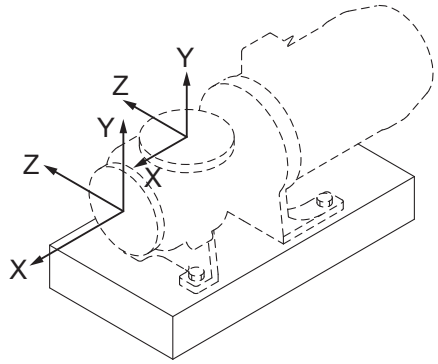
1. Tightening of pipe flange

   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, 32, 40	MDM50	MDM25, 32, 40	MDM50
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, 32, 40	MDM50	MDM25, 32, 40	MDM50
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 DR series dry running protector (electric current sensing type) 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 a rear casing support to the specific tightening torque subsequent to the first tightening. Refer to the "13. Disassembling & assembling" for the specific torque value.
- Observe the allowable minimum flow rate. If the pump is operated below the allowable minimum flow rate, bearing or rubbing parts may be seized due to lack of lubrication and cooling.
  Allowable min. flow rate MDM25 : 20 l/min.
  MDM32, 40, 50 : 50 l/min.
- When high temperature liquid is transferred, pump surface becomes very hot. Take protective measure against burn.

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

- Pump noise
  85 dB for MDM25-1, 25-2, 32-1, 40-1
  95 dB for MDM25-3, 32-2, 50-1

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: 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	20 l/min	10 l/min
MDM32, 40, 50	50 l/min	20 l/min

11. Pump stopping

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

Maintenance

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, MDM32-1, MDM40-1	26	27	26	25
MDM25-3, MDM32-2, MDM50-1	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).

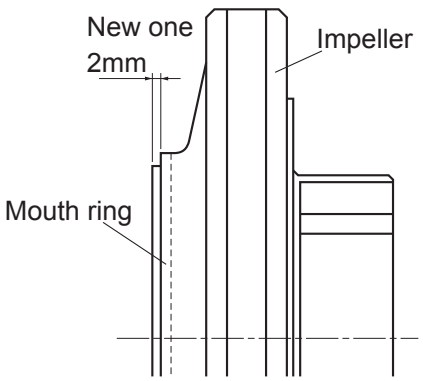
SiC bearing (KK) type: Replace by new ones both bearing and spindle.

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 MDM32-1	8 mm	6 mm
MDM25-3, MDM32-2 MDM40-1, MDM50-1	9 mm	7 mm



4. Consumable parts

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

Parts No.	Parts name	Time to be replaced
310	Bearing	10,000 hours
210	Spindle	10,000 hours
314.2	Mouth ring	10,000 hours
400.1	Gasket	At the time of periodical inspection
400.2	Drain gasket	At the time of periodical inspection
400.3	Air vent gasket	At the time of periodical inspection

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

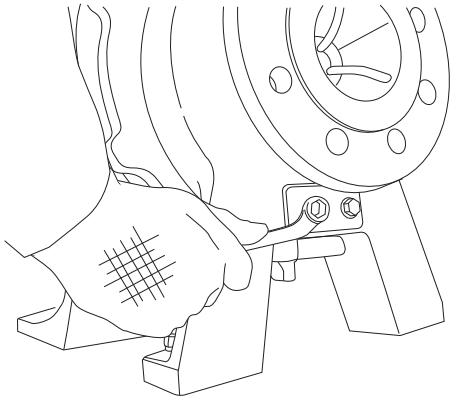
2. Bearing, spindle and mouth ring must be replaced at the time of the wear limit shown on above items 2 and 3 regardless of the time to be replaced shown on above table.
3. Gasket must be replaced when pump is disassembled regardless of the time of periodical inspection.
4. Refer to item 14 "Repair parts list" for the parts no. on above table.

14. Disassembling & assembling

Tool list

Following tools are necessary to disassemble and assemble the pump.

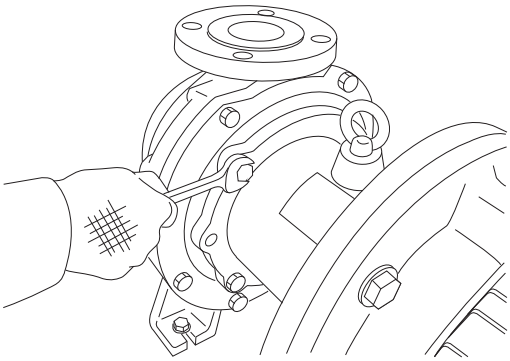
Tool	MDM25-1	MDM25-2, MDM25-3 MDM32, MDM40, MDM50	Remarks
Spanner	13 mm, 17 mm, 19 mm	13 mm, 19 mm, 24 mm	1 pc/each
Hex. wrench	4 mm, 5 mm	4 mm, 5 mm	1 pc/each
Plastic round bar	24 mm dia. × 80 L	34 mm dia. × 100 L	To remove & mount bearing
Plastic welder or industrial dryer	1 unit		
Hand press	1 unit		



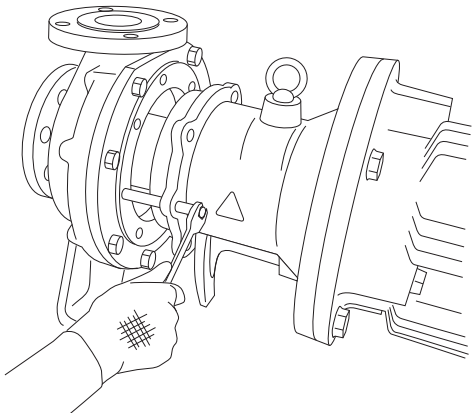
1. Disassembly of pump casing

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

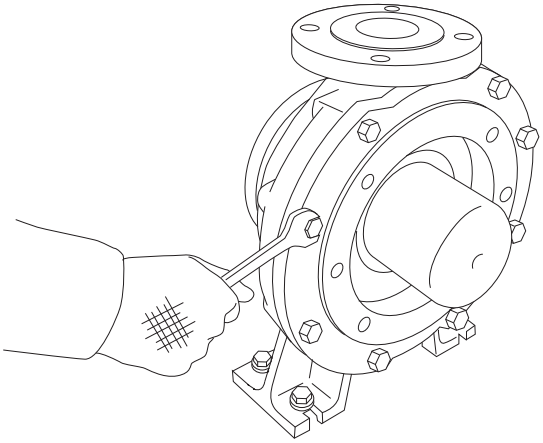
⚠ **Warning**
If all the hex. bolts are loosened simultaneously, liquid will splash and will result in injury.



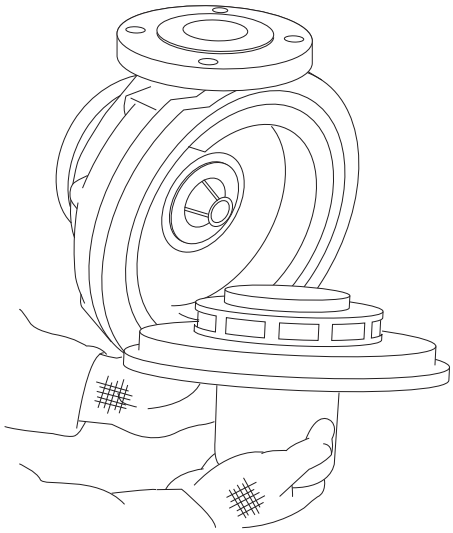
(2) Remove hex. bolts (901.7) of foot support (330).
(3) Remove hex. bolts (901.5) of pump side.



(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).
(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).

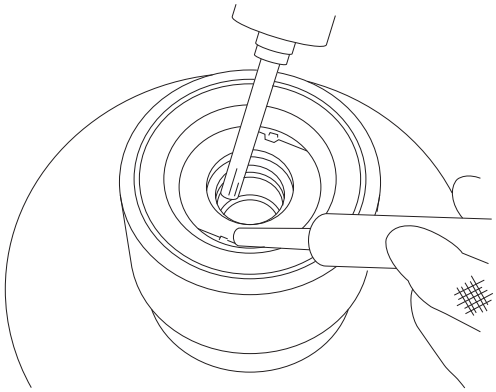


(6) Remove hex. bolts (901.4) of cover (100.2) to pull out rear casing holder.

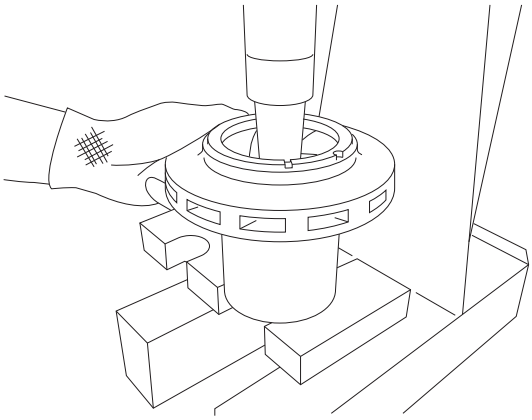


(7) Then, remove rear casing (158) from rear casing cover (159). If rear casing is hard to remove, remove it by turning. Pay attention not to drop the impeller (230)/magnet capsule (859) unit which is located in the rear casing.

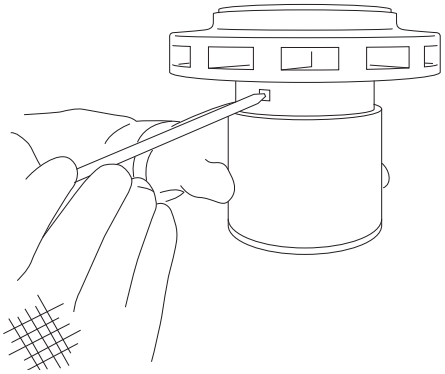
2. Removal of impeller and bearing



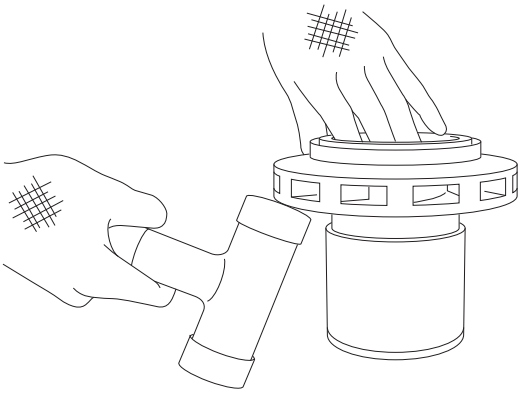
(1) Stand up the claw of rear ring (314.4) after it was heated by plastic welder or industrial dryer.



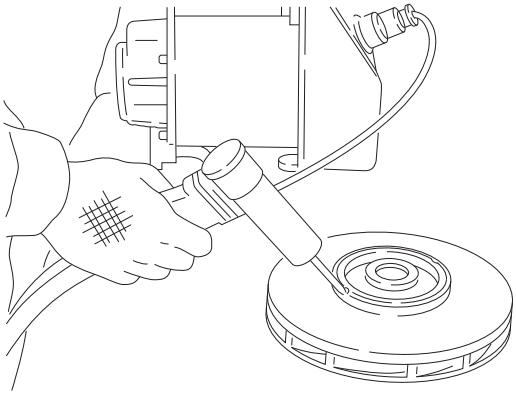
(2) Apply plastic made round bar of 34 mm dia. × 100L (24 mm dia. × 80 L for MDM25-1) on the bearing end through impeller side and remove bearing (310) and rear ring (314.4) using hand press etc.



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



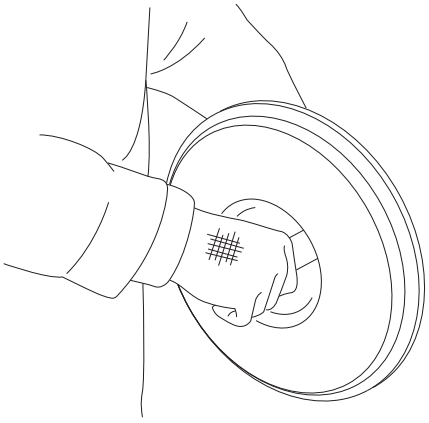
(4) Remove impeller (230) from magnet capsule (859). If it is hard to remove, slightly strike the impeller back side with plastic hammer.
Impeller (230) and magnet capsule (859) of high temp. type of MDM25-3 and MDM32-2 can not be separated because they are unified by welding.



3. Replacement of mouth ring

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

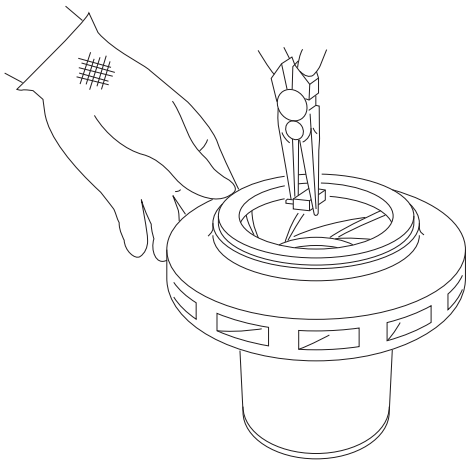
(2) Replace the mouth ring (314.2), and fix it by heating the claw with plastic welder or industrial dryer and push the claw down.



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.

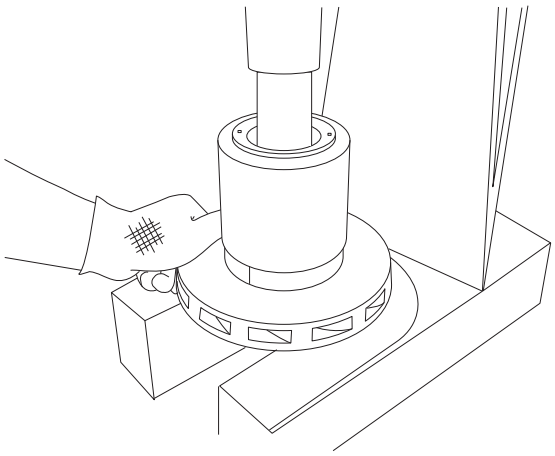
(2) Wipe off the stain at spindle inserted part of rear casing and insert the spindle. Use hand press or like if it is hard to insert.



5. Mounting impeller and bearing

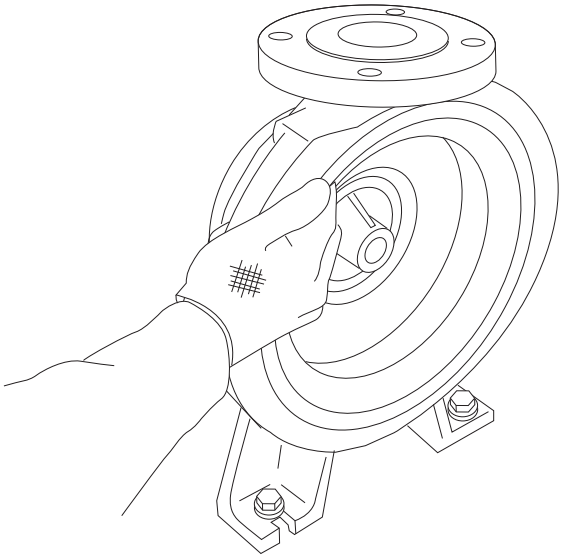
(1) Put together the depressed and hollowed parts of impeller and magnet capsule and insert the impeller into magnet capsule.
At the same time, align the insert ports of impeller pin.

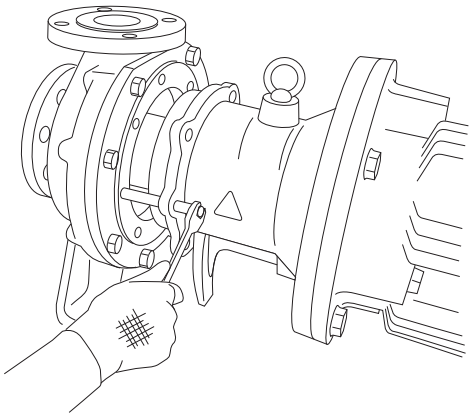
(2) Insert the impeller pin. Pliers are useful for easy insertion.



(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.

(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

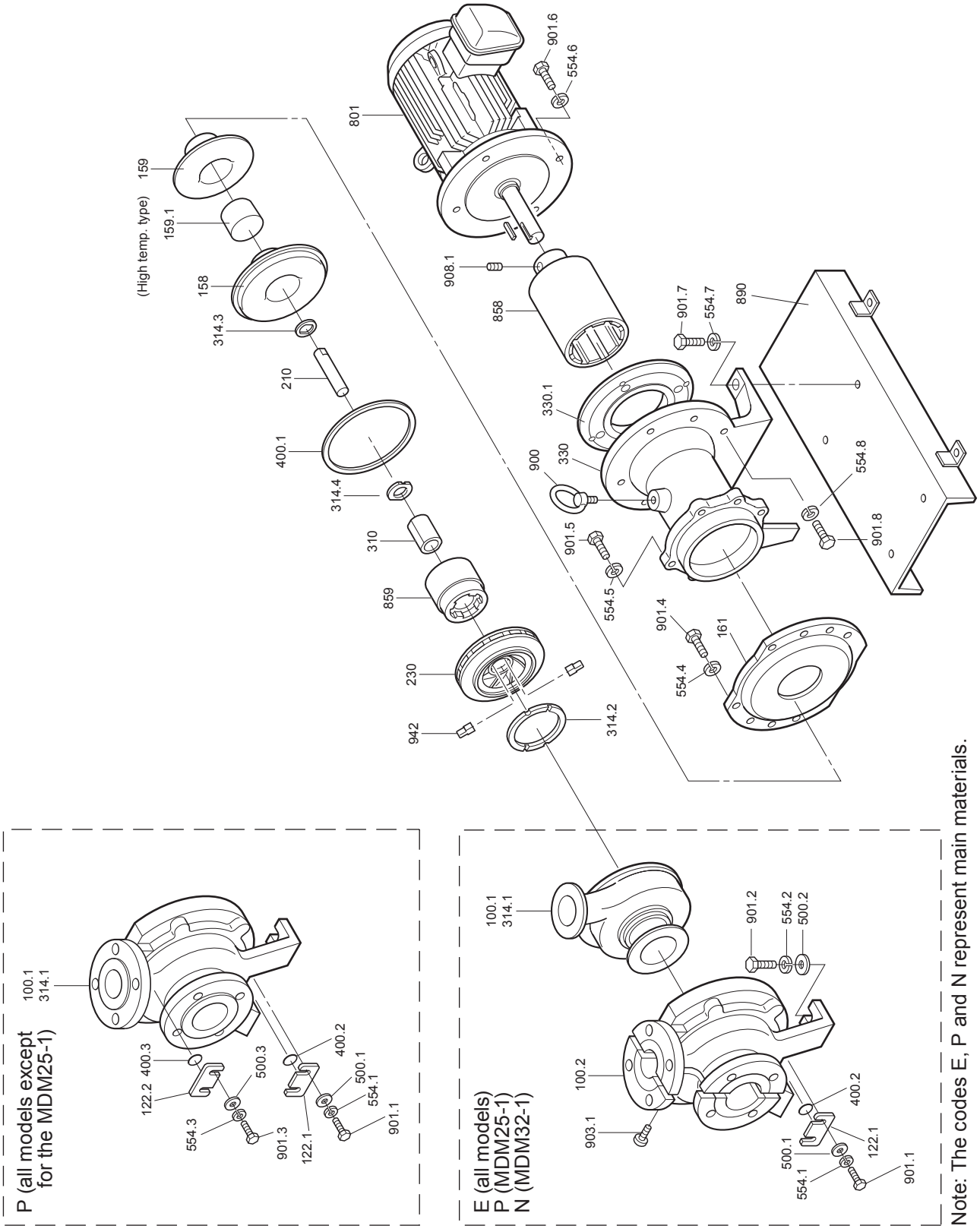
MDM25-2
MDM25-3
MDM32-1
MDM32-2
MDM40-1
MDM50-1
} 85N•m

(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



Note: The codes E, P and N represent main materials.

NO	Parts name	Model code	Q'ty	MDM25-1	MDM25-2	MDM25-3	MDM25-3	MDM32-1	MDM32-2	MDM32-2	MDM40-1	MDM50-1	MDM50-1	Remarks
						7.5kW or below	11/15kW		7.5kW or below	11/15kW		5.5/7.5kW	11/15kW	
				Code No.	Code No.	Code No.	Code No.	Code No.	Code No.	Code No.	Code No.	Code No.	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					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					MDM1102						Without drain hole
100.1+ 314.1	Front casing unit	PKK	1		MDM0499	MDM0879	MDM0882	MDM0503	MDM0885	MDM0888	MDM0506	MDM0493	MDM0496	With drain hole
		PKK	1		MDM0509	MDM0880	MDM0883	MDM0504	MDM0888	MDM0889	MDM0507	MDM0494	MDM0497	Without drain hole
100.2+ 903.1	Cover unit	PKK, NKK	1	MDM0501					MDM1104					
		EKK, ECF	1	MDM0502	MDM0500	MDM0881	MDM0864	MDM0505	MDM0887	MDM0890	MDM0508	MDM0495	MDM0498	
122.1	Drain plate		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	
158	Rear casing	PKK, NKK	1	MDM0010	MDM0117	MDM0730	MDM0730	MDM0210	MDM0370	MDM0370	MDM0210	MDM0370	MDM0370	
		PKK, EKK for high temp. type	1			MDM0731	MDM0731		MDM0877	MDM0877				
		EKK	1	MDM0011	MDM0118	MDM0732	MDM0732	MDM0211	MDM0371	MDM0371	MDM0211	MDM0371	MDM0371	
159	Rear casing cover	frap	1	MDM0012	MDM0119	MDM0733	MDM0733	MDM0212	MDM0119	MDM0119	MDM0212	MDM0119	MDM0119	
159.1	Reinforce ring for high temp. type	frap	1			MDM0734	MDM0734		MDM0734	MDM0734				
161	Rear casing support		1	MDM0013	MDM0120	MDM0852	MDM0852	MDM0213	MDM0878	MDM0878	MDM0213	MDM0120	MDM0120	
210	Spindle	PKK, EKK, NKK	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													
310	Bearing	PKK, EKK, NKK	1	MDM0016	MDM0123	MDM0735	MDM0735	MDM0123	MDM0735	MDM0735	MDM0123	MDM0374	MDM0374	
		ECF	1	MDM0017	MDM0124	MDM0950	MDM0950	MDM0124	MDM0950	MDM0950	MDM0124	MDM0375	MDM0375	

NO	Parts name	Model code	Q'ty	MDM25-1	MDM25-2	MDM25-3	MDM25-3	MDM32-1	MDM32-2	MDM32-2	MDM40-1	MDM50-1	MDM50-1	Remarks
				Code No.	Code No.	7.5kW or below Code No.	11/15kW Code No.	Code No.	7.5kW or below Code No.	11/15kW Code No.	Code No.	5.5/7.5kW Code No.	11/15kW Code No.	
314.2	Mouth ring	PKK, EKK, NKK	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	ECF, EKK, NKK	1	MDM0020	MDM0125	MDM0378	MDM0378	MDM0125	MDM0378	MDM0378	MDM0125	MDM0378	MDM0378	
		PKK	1	MDM0613	MDM0614	MDM0615	MDM0615	MDM0614	MDM0615	MDM0615	MDM0614	MDM0615	MDM0615	
314.4	Rear ring	PKK, EKK, NKK	1	MDM0021	MDM0126	MDM0128	MDM0128	MDM0126	MDM0128	MDM0128	MDM0126	MDM0126	MDM0126	
		ECF	1	MDM0022	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	MDM0127	
330	Foot support	F015, F022	1	MDM0023										
		F040	1		MDM0128			MDM0128			MDM0128			
		F055, F075	1		MDM0129	MDM0129		MDM0129	MDM0129		MDM0129	MDM0129		
		F110, F150	1				MDM0467			MDM0467			MDM0467	
		F004-4P	1	MDM0616										
		F007-4P	1	MDM0023										
		F015-4P	1		MDM0620	MDM0620		MDM0620	MDM0620		MDM0620	MDM0620		
		F022, F040-4P	1		MDM0128	MDM0128		MDM0128	MDM0128		MDM0128	MDM0128		
		F055-4P	1			MDM0129			MDM0129			MDM0129		
330.1	Motor adapter	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	
500.1	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	25-1:6EA, 25-3 32-2:10EA
554.5	Spring washer		4	MDM0030	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	
554.6	Spring washer		4	MDM0030	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0490	
554.7	Spring washer		2	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	MDM0029	
554.8	Spring washer	F004-4P	4	MDM0028										4P
		F007-4P	4		MDM0030			MDM0030			MDM0030	MDM0030		4P

NO	Parts name	Model code	Q'ty	MDM25-1	MDM25-2	MDM25-3	MDM25-3	MDM32-1	MDM32-2	MDM32-2	MDM40-1	MDM50-1	MDM50-1	Remarks
				Code No.	Code No.	7.5kW or below Code No.	11/15kW Code No.	Code No.	7.5kW or below Code No.	11/15kW Code No.	Code No.	5.5/7.5kW Code No.	11/15kW Code No.	
801	Motor		1											
858	Drive magnet unit	F015	1	MDM0031										
		F022	1	MDM0032										
		F040	1		MDM0131			MDM0131			MDM0131			
		F055	1		MDM0132	MDM0286		MDM0132	MDM0286		MDM0132	MDM0286		
		F075	1		MDM0286	MDM0286		MDM0286	MDM0286		MDM0286	MDM0286		
		F110	1				MDM0738			MDM0738			MDM0738	
		F150	1				MDM0738			MDM0738			MDM0738	
		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		
		F040-4P	1		MDM0624	MDM0624		MDM0624	MDM0624		MDM0624	MDM0624		
		F055-4P	1			MDM0737			MDM0737			MDM0626		
859	Magnet capsule unit	PKK-F015	1	MDM0033										
		PKK-F022	1	MDM0033										
		PKK/NKK-F040	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-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-F040-4P	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-F040	1		MDM0134			MDM0134			MDM0134			
		EKK/ECF-F055	1		MDM0134	MDM0228		MDM0134	MDM0228		MDM0134	MDM0228		
		EKK/ECF-F075	1		MDM0228	MDM0228		MDM0228	MDM0228		MDM0228	MDM0228		

NO	Parts name	Model code	Q'ty	MDM25-1	MDM25-2	MDM25-3	MDM25-3	MDM32-1	MDM32-2	MDM32-2	MDM40-1	MDM50-1	MDM50-1	Remarks
				Code No.	Code No.	7.5kW or below Code No.	11/15kW Code No.	Code No.	7.5kW or below Code No.	11/15kW Code No.	Code No.	5.5/7.5kW Code No.	11/15kW Code No.	
859	Magnet capsule unit	EKK/ECF-F110	1				MDM0470			MDM0470			MDM0470	
		EKK/ECF-F150	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-F040-4P	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	
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	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	MDM0555	
901.3	Hex. head bolt		2	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	MDM0037	
901.4	Hex. head bolt		6/8/10	MDM0039	MDM0137	MDM0491	MDM0491	MDM0137	MDM0491	MDM0491	MDM0137	MDM0137	MDM0137	25-1:6EA, 25-3 32-2:10EA
901.5	Hex. head bolt		4	MDM0040	MDM0136	MDM0138	MDM0136	MDM0136	MDM0138	MDM0136	MDM0136	MDM0136	MDM0136	
901.6	Hex. head bolt	F015, F022	4	MDM0041										
		F040	4		MDM0555			MDM0555			MDM0555			
		F055, F075	4		MDM0137	MDM0137		MDM0137	MDM0137		MDM0137	MDM0137		
		F110/F150	4				MDM0491			MDM0491			MDM0491	
		F004-4P	4	MDM0619										
		F007-4P	4	MDM0041										
		F015-4P	4		MDM0041			MDM0041			MDM0041	MDM0041		
		F022, F040-4P	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	MDM0042	MDM0136			MDM0136			MDM0136	MDM0136	MDM0136	
		F007-4P	4	MDM0698										
903.1	Hex. socket head bolt	EKK/ECF/PKK(25-1)/NKK(32-1)	5	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	MDM0043	
908.1	Hex. socket set screw		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	

MDM25 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	MDM0067
			160		1	MDM0047	MDM0068	MDM0068
			150		1	MDM0048	MDM0069	MDM0069
			140		1	MDM0049	MDM0070	MDM0070
			130		1	MDM0050	MDM0071	MDM0071
			170	4P	1	MDM0628	MDM0632	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
			170	4P	1	MDM0629	MDM0633	MDM0637
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	165	1.5kW	1	MDM0060	MDM0085	MDM0101
			160	1.5kW	1	MDM0061	MDM0086	MDM0102
			150	1.5kW	1	MDM0062	MDM0087	MDM0103
			140	1.5kW	1	MDM0063	MDM0088	MDM0104
			130	1.5kW	1	MDM0064	MDM0089	MDM0105
			165	2.2kW	1	MDM0060	MDM0085	MDM0101
			160	2.2kW	1	MDM0061	MDM0086	MDM0102
			150	2.2kW	1	MDM0062	MDM0087	MDM0103
			140	2.2kW	1	MDM0063	MDM0088	MDM0104
			130	2.2kW	1	MDM0064	MDM0089	MDM0105
			170	0.37kW-4P	1	MDM0630	MDM0634	MDM0635
			170	0.75kW-4P	1	MDM0630	MDM0634	MDM0635
MDM25-2	230	Impeller	195		1	MDM0139	MDM0163	MDM0163
			190		1	MDM0140	MDM0164	MDM0164
			180		1	MDM0141	MDM0165	MDM0165
			170		1	MDM0142	MDM0166	MDM0166
			160		1	MDM0143	MDM0167	MDM0167
			200	4P	1	MDM0640	MDM0645	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
			200	4P	1	MDM0641	MDM0646	MDM0650
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	195	4.0kW	1	MDM0155	MDM0179	MDM0195
			190	4.0kW	1	MDM0156	MDM0180	MDM0196
			180	4.0kW	1	MDM0157	MDM0181	MDM0197
			170	4.0kW	1	MDM0158	MDM0182	MDM0198
			160	4.0kW	1	MDM0159	MDM0183	MDM0199
			195	5.5kW	1	MDM0155	MDM0179	MDM0195
			190	5.5kW	1	MDM0156	MDM0180	MDM0196
			180	5.5kW	1	MDM0157	MDM0181	MDM0197
			170	5.5kW	1	MDM0158	MDM0182	MDM0198
			160	5.5kW	1	MDM0159	MDM0183	MDM0199

Model	NO	Parts name	Impeller size code	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM25-2	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	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	1.5kW-4P	1	MDM0642	MDM0647	MDM0649
			200	2.2kW-4P	1	MDM0642	MDM0647	MDM0649
			200	4.0kW-4P	1	MDM0643	MDM0648	MDM0651
MDM25-3 (except high temp. type of PKK)	230	Impeller	225		1	MDM0740	MDM0764	MDM0764
			220		1	MDM0741	MDM0765	MDM0765
			210		1	MDM0742	MDM0766	MDM0766
			200		1	MDM0743	MDM0767	MDM0767
			190		1	MDM0744	MDM0768	MDM0768
			180		1	MDM0745	MDM0769	MDM0769
			170		1	MDM0746	MDM0770	MDM0770
			160		1	MDM0747	MDM0771	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	5.5kW	1	MDM0756	MDM0788	MDM0934
			220	5.5kW	1	MDM0757	MDM0789	MDM0935
			210	5.5kW	1	MDM0758	MDM0790	MDM0936
			200	5.5kW	1	MDM0759	MDM0791	MDM0937
			190	5.5kW	1	MDM0760	MDM0792	MDM0938
			180	5.5kW	1	MDM0761	MDM0793	MDM0939
			170	5.5kW	1	MDM0762	MDM0794	MDM0940
			160	5.5kW	1	MDM0763	MDM0795	MDM0941
			225	7.5kW	1	MDM0756	MDM0788	MDM0934
			220	7.5kW	1	MDM0757	MDM0789	MDM0935
			210	7.5kW	1	MDM0758	MDM0790	MDM0936
			200	7.5kW	1	MDM0759	MDM0791	MDM0937
			190	7.5kW	1	MDM0760	MDM0792	MDM0938
			180	7.5kW	1	MDM0761	MDM0793	MDM0939
			170	7.5kW	1	MDM0762	MDM0794	MDM0940
			160	7.5kW	1	MDM0763	MDM0795	MDM0941
			225	11kW	1	MDM0861	MDM0796	MDM0942
			220	11kW	1	MDM0862	MDM0797	MDM0943
			210	11kW	1	MDM0863	MDM0798	MDM0944
			200	11kW	1	MDM0864	MDM0799	MDM0945

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM25-3 (except high temp. type of PKK)	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	190	11kW	1	MDM0865	MDM0800	MDM0946
			180	11kW	1	MDM0866	MDM0801	MDM0947
			170	11kW	1	MDM0867	MDM0802	MDM0948
			160	11kW	1	MDM0868	MDM0803	MDM0949
			225	15kW	1	MDM0861	MDM0796	MDM0942
			220	15kW	1	MDM0862	MDM0797	MDM0943
			210	15kW	1	MDM0863	MDM0798	MDM0944
			200	15kW	1	MDM0864	MDM0799	MDM0945
			190	15kW	1	MDM0865	MDM0800	MDM0946
			180	15kW	1	MDM0866	MDM0801	MDM0947
			170	15kW	1	MDM0867	MDM0802	MDM0948
			160	15kW	1	MDM0868	MDM0803	MDM0949
			225	1.5kW-4P	1	MDM0748	MDM0780	MDM0926
			225	2.2kW-4P	1	MDM0748	MDM0780	MDM0926
			225	4.0kW-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.

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.	Remarks
						PKK-H	
MDM25-3 (high temp. type of PKK)	230+ 859	Impeller/magnet capsule ass'y	225	5.5kW	1	MDM0812	Impeller and magnet capsule can not be separated because they are welded each other.
			220	5.5kW	1	MDM0813	
			210	5.5kW	1	MDM0814	
			200	5.5kW	1	MDM0815	
			190	5.5kW	1	MDM0816	
			180	5.5kW	1	MDM0817	
			170	5.5kW	1	MDM0818	
			160	5.5kW	1	MDM0819	
			225	7.5kW	1	MDM0812	
			220	7.5kW	1	MDM0813	
			210	7.5kW	1	MDM0814	
			200	7.5kW	1	MDM0815	
			190	7.5kW	1	MDM0816	
			180	7.5kW	1	MDM0817	
			170	7.5kW	1	MDM0818	
			160	7.5kW	1	MDM0819	
			225	11kW	1	MDM0820	
			220	11kW	1	MDM0821	
			210	11kW	1	MDM0822	
			200	11kW	1	MDM0823	
			190	11kW	1	MDM0824	
			180	11kW	1	MDM0825	
			170	11kW	1	MDM0826	
			160	11kW	1	MDM0827	
			225	15kW	1	MDM0820	
			220	15kW	1	MDM0821	

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No. PKK-H	Remarks
MDM25-3 (high temp. type of PKK)	230+ 859	Impeller/magnet capsule ass'y	210	15kW	1	MDM0822	
			200	15kW	1	MDM0823	
			190	15kW	1	MDM0824	
			180	15kW	1	MDM0825	
			170	15kW	1	MDM0826	
			160	15kW	1	MDM0827	
			225	1.5kW-4P	1	MDM0804	
			225	2.2kW-4P	1	MDM0804	
			225	4.0kW-4P	1	MDM0812	
			225	5.5kW-4P	1	MDM0820	
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	225	5.5kW	1	MDM0836	
			220	5.5kW	1	MDM0837	
			210	5.5kW	1	MDM0838	
			200	5.5kW	1	MDM0839	
			190	5.5kW	1	MDM0840	
			180	5.5kW	1	MDM0841	
			170	5.5kW	1	MDM0842	
			160	5.5kW	1	MDM0843	
			225	7.5kW	1	MDM0836	
			220	7.5kW	1	MDM0837	
			210	7.5kW	1	MDM0838	
			200	7.5kW	1	MDM0839	
			190	7.5kW	1	MDM0840	
			180	7.5kW	1	MDM0841	
			170	7.5kW	1	MDM0842	
			160	7.5kW	1	MDM0843	
			225	11kW	1	MDM0844	
			220	11kW	1	MDM0845	
			210	11kW	1	MDM0846	
			200	11kW	1	MDM0847	
			190	11kW	1	MDM0848	
			180	11kW	1	MDM0849	
			170	11kW	1	MDM0850	
			160	11kW	1	MDM0851	
			225	15kW	1	MDM0844	
			220	15kW	1	MDM0845	
			210	15kW	1	MDM0846	
			200	15kW	1	MDM0847	
			190	15kW	1	MDM0848	
			180	15kW	1	MDM0849	
			170	15kW	1	MDM0850	
			160	15kW	1	MDM0851	
			225	1.5kW-4P	1	MDM0828	
			225	2.2kW-4P	1	MDM0828	
			225	4.0kW-4P	1	MDM0836	
			225	5.5kW-4P	1	MDM0844	

MDM32 Impeller parts list

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.		
						PKK/NKK	EKK	ECF
MDM32-1	230	Impeller	165		1	MDM0215	MDM0239	MDM0239
			160		1	MDM0216	MDM0240	MDM0240
			150		1	MDM0217	MDM0241	MDM0241
			145		1	MDM0218	MDM0242	MDM0242
			140		1	MDM0219	MDM0243	MDM0243
			130		1	MDM0220	MDM0244	MDM0244
			120		1	MDM0221	MDM0245	MDM0245
			170	4P	1	MDM0654	MDM0659	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
			170	4P	1	MDM0655	MDM0668	MDM0664
	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	165	4.0kW	1	MDM0231	MDM0255	MDM0271
			160	4.0kW	1	MDM0232	MDM0256	MDM0272
			150	4.0kW	1	MDM0233	MDM0257	MDM0273
			145	4.0kW	1	MDM0234	MDM0258	MDM0274
			140	4.0kW	1	MDM0235	MDM0259	MDM0275
			130	4.0kW	1	MDM0236	MDM0260	MDM0276
			120	4.0kW	1	MDM0237	MDM0261	MDM0277
			165	5.5kW	1	MDM0231	MDM0255	MDM0271
			160	5.5kW	1	MDM0232	MDM0256	MDM0272
			150	5.5kW	1	MDM0233	MDM0257	MDM0273
			145	5.5kW	1	MDM0234	MDM0258	MDM0274
			140	5.5kW	1	MDM0235	MDM0259	MDM0275
			130	5.5kW	1	MDM0236	MDM0260	MDM0276
			120	5.5kW	1	MDM0237	MDM0261	MDM0277
			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
			170	1.5kW-4P	1	MDM0656	MDM0661	MDM0663
			170	2.2kW-4P	1	MDM0656	MDM0661	MDM0663
			170	4.0kW-4P	1	MDM0657	MDM0662	MDM0665

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM32-2 (except high temp. type of PKK)	230	Impeller	225		1	MDM0740	MDM0764	MDM0764
			220		1	MDM0741	MDM0765	MDM0765
			210		1	MDM0742	MDM0766	MDM0766
			200		1	MDM0743	MDM0767	MDM0767
			190		1	MDM0744	MDM0768	MDM0768
			180		1	MDM0745	MDM0769	MDM0769
			170		1	MDM0746	MDM0770	MDM0770
			160		1	MDM0747	MDM0771	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	5.5kW	1	MDM0756	MDM0788	MDM0934
			220	5.5kW	1	MDM0757	MDM0789	MDM0935
			210	5.5kW	1	MDM0758	MDM0790	MDM0936
			200	5.5kW	1	MDM0759	MDM0791	MDM0937
			190	5.5kW	1	MDM0760	MDM0792	MDM0938
			180	5.5kW	1	MDM0761	MDM0793	MDM0939
			170	5.5kW	1	MDM0762	MDM0794	MDM0940
			160	5.5kW	1	MDM0763	MDM0795	MDM0941
			225	7.5kW	1	MDM0756	MDM0788	MDM0934
			220	7.5kW	1	MDM0757	MDM0789	MDM0935
			210	7.5kW	1	MDM0758	MDM0790	MDM0936
			200	7.5kW	1	MDM0759	MDM0791	MDM0937
			190	7.5kW	1	MDM0760	MDM0792	MDM0938
			180	7.5kW	1	MDM0761	MDM0793	MDM0939
			170	7.5kW	1	MDM0762	MDM0794	MDM0940
			160	7.5kW	1	MDM0763	MDM0795	MDM0941
			225	11kW	1	MDM0861	MDM0796	MDM0942
			220	11kW	1	MDM0862	MDM0797	MDM0943
			210	11kW	1	MDM0863	MDM0798	MDM0944
			200	11kW	1	MDM0864	MDM0799	MDM0945
			190	11kW	1	MDM0865	MDM0800	MDM0946
			180	11kW	1	MDM0866	MDM0801	MDM0947
			170	11kW	1	MDM0867	MDM0802	MDM0948
			160	11kW	1	MDM0868	MDM0803	MDM0949
			225	15kW	1	MDM0861	MDM0796	MDM0942
			220	15kW	1	MDM0862	MDM0797	MDM0943
			210	15kW	1	MDM0863	MDM0798	MDM0944
			200	15kW	1	MDM0864	MDM0799	MDM0945
			190	15kW	1	MDM0865	MDM0800	MDM0946
			180	15kW	1	MDM0866	MDM0801	MDM0947

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM32-2 (except high temp. type of PKK)	230+	Impeller/magnet capsule ass'y	170	15kW	1	MDM0867	MDM0802	MDM0948
	310+		160	15kW	1	MDM0868	MDM0803	MDM0949
	314.2+		225	1.5kW-4P	1	MDM0748	MDM0780	MDM0926
	314.4+		225	2.2kW-4P	1	MDM0748	MDM0780	MDM0926
	859+		225	4.0kW-4P	1	MDM0756	MDM0788	MDM0934
	942		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 shown here.

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.	Remarks
						PKK-H	
MDM32-2 (high temp. type of PKK)	230+ 859	Impeller/magnet capsule ass'y	225	5.5kW	1	MDM0812	Impeller and magnet capsule can not be separated because they are welded each other.
			220	5.5kW	1	MDM0813	
			210	5.5kW	1	MDM0814	
			200	5.5kW	1	MDM0815	
			190	5.5kW	1	MDM0816	
			180	5.5kW	1	MDM0817	
			170	5.5kW	1	MDM0818	
			160	5.5kW	1	MDM0819	
			225	7.5kW	1	MDM0812	
			220	7.5kW	1	MDM0813	
			210	7.5kW	1	MDM0814	
			200	7.5kW	1	MDM0815	
			190	7.5kW	1	MDM0816	
			180	7.5kW	1	MDM0817	
			170	7.5kW	1	MDM0818	
			160	7.5kW	1	MDM0819	
			225	11kW	1	MDM0820	
			220	11kW	1	MDM0821	
			210	11kW	1	MDM0822	
			200	11kW	1	MDM0823	
			190	11kW	1	MDM0824	
			180	11kW	1	MDM0825	
			170	11kW	1	MDM0826	
			160	11kW	1	MDM0827	
			225	15kW	1	MDM0820	
			220	15kW	1	MDM0821	
			210	15kW	1	MDM0822	
			200	15kW	1	MDM0823	
			190	15kW	1	MDM0824	
			180	15kW	1	MDM0825	
			170	15kW	1	MDM0826	
			160	15kW	1	MDM0827	
			225	1.5kW-4P	1	MDM0804	
			225	2.2kW-4P	1	MDM0804	
			225	4.0kW-4P	1	MDM0812	
			225	5.5kW-4P	1	MDM0820	

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No. PKK-H	Remarks
MDM32-2 (high temp. type of PKK)	230+ 310+ 314.2+ 314.4+ 859+ 942	Impeller/magnet capsule ass'y	225	5.5kW	1	MDM0836	
			220	5.5kW	1	MDM0837	
			210	5.5kW	1	MDM0838	
			200	5.5kW	1	MDM0839	
			190	5.5kW	1	MDM0840	
			180	5.5kW	1	MDM0841	
			170	5.5kW	1	MDM0842	
			160	5.5kW	1	MDM0843	
			225	7.5kW	1	MDM0836	
			220	7.5kW	1	MDM0837	
			210	7.5kW	1	MDM0838	
			200	7.5kW	1	MDM0839	
			190	7.5kW	1	MDM0840	
			180	7.5kW	1	MDM0841	
			170	7.5kW	1	MDM0842	
			160	7.5kW	1	MDM0843	
			225	11kW	1	MDM0844	
			220	11kW	1	MDM0845	
			210	11kW	1	MDM0846	
			200	11kW	1	MDM0847	
			190	11kW	1	MDM0848	
			180	11kW	1	MDM0849	
			170	11kW	1	MDM0850	
			160	11kW	1	MDM0851	
			225	15kW	1	MDM0844	
			220	15kW	1	MDM0845	
			210	15kW	1	MDM0846	
			200	15kW	1	MDM0847	
			190	15kW	1	MDM0848	
			180	15kW	1	MDM0849	
			170	15kW	1	MDM0850	
			160	15kW	1	MDM0851	
			225	1.5kW-4P	1	MDM0828	
			225	2.2kW-4P	1	MDM0828	
			225	4.0kW-4P	1	MDM0836	
			225	5.5kW-4P	1	MDM0844	

MDM40-1 Impeller parts list

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM40-1	230	Impeller	165		1	MDM0379	MDM0481	MDM0481
			160		1	MDM0475	MDM0482	MDM0482
			150		1	MDM0476	MDM0483	MDM0483
			140		1	MDM0477	MDM0484	MDM0484
			130		1	MDM0478	MDM0485	MDM0485
			120		1	MDM0479	MDM0486	MDM0486
			110		1	MDM0480	MDM0487	MDM0487
			170	4P	1	MDM0669	MDM0674	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	4.0kW	1	MDM0303	MDM0331	MDM0352
			160	4.0kW	1	MDM0304	MDM0332	MDM0353
			150	4.0kW	1	MDM0305	MDM0333	MDM0354
			140	4.0kW	1	MDM0306	MDM0334	MDM0355
			130	4.0kW	1	MDM0307	MDM0335	MDM0356
			120	4.0kW	1	MDM0308	MDM0336	MDM0357
			110	4.0kW	1	MDM0309	MDM0337	MDM0358
			165	5.5kW	1	MDM0303	MDM0331	MDM0352
			160	5.5kW	1	MDM0304	MDM0332	MDM0353
			150	5.5kW	1	MDM0305	MDM0333	MDM0354
			140	5.5kW	1	MDM0306	MDM0334	MDM0355
			130	5.5kW	1	MDM0307	MDM0335	MDM0356
			120	5.5kW	1	MDM0308	MDM0336	MDM0357
			110	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	1.5kW-4P	1	MDM0671	MDM0676	MDM0678
			170	2.2kW-4P	1	MDM0671	MDM0676	MDM0678
			170	4.0kW-4P	1	MDM0672	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.

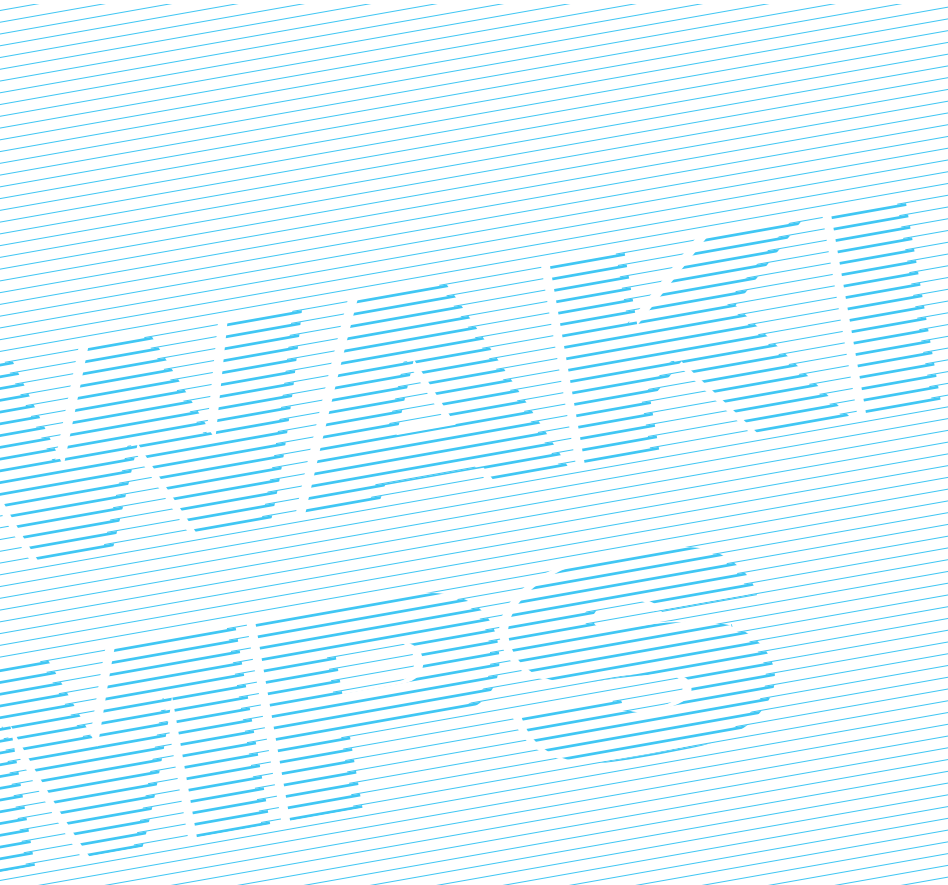
MDM50-1 Impeller parts list

Model	NO	Parts name	Impeller size	Motor power	Q'ty/ unit	Parts code No.		
						PKK	EKK	ECF
MDM50-1	230	Impeller	165		1	MDM0289	MDM0317	MDM0317
			160		1	MDM0290	MDM0318	MDM0318
			150		1	MDM0291	MDM0319	MDM0319
			140		1	MDM0292	MDM0320	MDM0320
			130		1	MDM0293	MDM0321	MDM0321
			120		1	MDM0294	MDM0322	MDM0322
			110		1	MDM0295	MDM0323	MDM0323
			170	4P	1	MDM0683	MDM0689	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	5.5kW	1	MDM0394	MDM0422	MDM0450
			160	5.5kW	1	MDM0395	MDM0423	MDM0451
			150	5.5kW	1	MDM0396	MDM0424	MDM0452
			140	5.5kW	1	MDM0397	MDM0425	MDM0453
			130	5.5kW	1	MDM0398	MDM0426	MDM0454
			120	5.5kW	1	MDM0399	MDM0427	MDM0455
			110	5.5kW	1	MDM0400	MDM0428	MDM0456
			165	7.5kW	1	MDM0394	MDM0422	MDM0450
			160	7.5kW	1	MDM0395	MDM0423	MDM0451
			150	7.5kW	1	MDM0396	MDM0424	MDM0452
			140	7.5kW	1	MDM0397	MDM0425	MDM0453
			130	7.5kW	1	MDM0398	MDM0426	MDM0454
			120	7.5kW	1	MDM0399	MDM0427	MDM0455
			110	7.5kW	1	MDM0400	MDM0428	MDM0456
			165	11kW	1	MDM0401	MDM0429	MDM0457
			160	11kW	1	MDM0402	MDM0430	MDM0458
			150	11kW	1	MDM0403	MDM0431	MDM0459
			140	11kW	1	MDM0404	MDM0432	MDM0460
			130	11kW	1	MDM0405	MDM0433	MDM0461
			120	11kW	1	MDM0406	MDM0434	MDM0462
			110	11kW	1	MDM0407	MDM0435	MDM0463
			170	1.5kW-4P	1	MDM0685	MDM0691	MDM0694
			170	2.2kW-4P	1	MDM0685	MDM0691	MDM0694
			170	4.0kW-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 shown here.

16. Mass of pump

Model	Output (kW)	Total mass without motor & with base-plate (kg)	Total mass without motor & without baseplate (kg)
MDM25 - 1	1.5	67	42
	2.2	67	42
MDM25 - 2	4.0	89	64
	5.5	96	66
	7.5	96	66
MDM32	4.0	84	59
	5.5	91	61
	7.5	91	61
MDM40	4.0	89	59
	5.5	91	61
	7.5	91	61
MDM50	5.5	96	71
	7.5	96	71
	11	130	85



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