CE

KEMPION MAGNETIC DRIVE PUMPS

MX Series

Magnetic Drive Pumps

Instruction Manual

www.cheonsei.co.kr

Thank you very much for purchasing KEMPION MX Series.
Before beginning operation, please read this instruction manual carefully. Correct handling, repair, & maintenance are described easily.
Please use this pumps safely to be guaranteed performance & long life of the pump after reading this instruction manual.
Please keep this instruction manual at the place where you can find it easily.

Contents

1 Notice for Safety

1-1 Introduction

- To use the products safely, the signs are showed on the manual as below.
- As it is a matter of safety, please be sure to keep the directions in manual.
- The sign and indications are as follows.

⚠ Warning — Person Death or serious injury will be occurred if warnings is not kept by wrong handling.

⚠ Caution — Person injury or property damage will be occurred if cautions is not kept by wrong handling.

1-2 Cautions for Operating Condition

⚠ Caution

- Do not use this pump for other purposes except liquid injection.
  Otherwise it may cause trouble.
- The pump should never be used for kinds of liquids which caused liquid end parts to be damaged.
- Please keep the followings, otherwise it may cause trouble.
  - Ambient temperature : 0~40℃
  - Temperature of handling liquid : 0~80℃(P, G Type)
    0~100℃(M Type)
  - Viscosity of handling liquid : 1~30mPas
  - Improper liquid to use :
    Liquid included particles as like Fe, Ni etc. affecting magnet.
    Organic solvent liquid to expand PP material obviously and slurry liquid .

1-3 Cautions for Installation

⚠ Warning

- Install this pump beyond the reach of children and/or unauthorized person.
- Do not touch with wetted hand. Electric shock may be occurred.

⚠ Caution

- Do not install pump at the place where ambient temperature is higher than 40℃ or lower than freezing point. If the pump is installed at the place, internals of the pump may be damaged.
- Do not install pump in the heavy moist or dusty place. It may cause electric shock and trouble.
- Install the suction side of pump at lower place than liquid level of tank because of not self-suction.
- Check voltage, phase, & frequency of motor and connect the pump with correct power.
- Pump should be properly grounded. If pump is not grounded, it may cause electric shock.
- Entrust the wiring to electrical engineer.
- Install regulated Magnet Switch and Thermal Relay for the control and maintenance of the pump.
- Use standardized parts in wiring and fully pay attention to safety in accordance with the technical standard & wiring regulation of the electrical equipment.
- Connect power of motor to set rotation direction, reverse rotation of motor may be caused trouble.

1-4 Cautions for Operation

⚠ Warning

- Do not operate the pump without pumping liquid, Internal parts is damaged.

⚠ Caution

- Wear suitable protective clothing(gloves, mask, goggles, working clothes, & etc.) when pumping hazardous liquids.
- Some water may be remained in the pump head after final performance test.In case of use for some liquids reacted to water, remove water in the pump and dry the pump necessarily.
- Do not touch with bare hand on motor part when operation. A burn caused by high temperature may be occurred.
- Do not open and close suction and discharge side valve suddenly.
  Otherwise, Impeller Set and Driving Magnet Set may be detached and impeller can not be rotated.

1-5 Cautions for Maintenance and Check

⚠ Warning

- Turn off the power and stop pump & other equipments before repair & maintenence, otherwise it may cause eletric shock.

⚠ Caution

- Wear suitable protective clothing during assemble and disassemble work.
- Work after releasing pressure from discharge piping and remove liquid from Liquid End Part prior to repair or maintenance of pump.
- Pump may be damaged when ambient temperature go down below freezing point of liquid. Be sure to remove the liquid in the pump and piping after operation stop.

1-6 Caution of Warranty and Repair Service

⚠ Warning

- If the pump is reconstructed arbitrarily or the undesignated parts are used into the pump, CHEONSEI will not warrant and CHEONSEI is not responsible for any expense caused by accident or trouble.

⚠ Caution

- When the pump is sent to factory for repair service, clean out inside of pump.
- Do not send the pump, if the pump has been used for harmful & fatal liquid to health.

1-7 Etc

⚠ Caution

- Make proper protection in consideration of indeliberate leakage from damage of pump & Piping.
- Do not use damaged pump. it may cause accident.
- Dispose of waste pump in accordance with related national law.

2 Confirmation of Product

2-1 Check Point when Unpacking

Please check following points immediately after receiving the pump.

[1] Is specification correct as ordered?
[2] Is there any missing parts?
[3] Is there any visible damage caused by vibration or shock during transport?
[4] Is there any loosened bolt or nut?

2-2 Standard Accessories

[1] Instruction manual ..... 1 copy
[2] Bolt for pump installation ..... 4 SET (In case of MX-135S, M8 ×35L)
(In case of MX-250,300, M10 ×40L)

3 General

3-1 Feature

[1] There is no worry totally of liquid leakage to adopt indirect driving methode by ferrite magnet seperated pump room between motor.
[2] There is design of small and light caused by a high efficent motor and a compact pump chamber.
[3] Main parts like as pump chamber etc. are made with pp material, also shaft is used by high corrosion resistance material as like ceramic etc.
[4] All kinds of liquid are possible to transfer except some organic solvent.
Cheon-sei Magnetic pump has excellent performance for transfer of chemical liquid as acid and alkali.

3-2 Use

[1] Film auto developer, photo plate-making developer, photo liquid disposal.
[2] Supply of hot water in vending machine of soft drink and heating equipment, etc.
[3] Water tank with a constant temperature, gas analyzer, ion analyzer, chemical machinery, etc.
[4] Circulation of liquid in an ultrasonic washer and medical equipment, etc.
[5] Liquid disposal in equipment for removal of grease, acid cleaning, surface treatment equipment, etc.
[6] Cathode-ray tube production equipment, photo plate making equipment for IC, etc.
[7] Transfer, circulation and agitation of liquid medicine.
[8] Research room, laboratory, and test plant.

4 Model Code

MX - 135 - P H - S

❶ ❷ ❸ ❹ ❺

❶ Series Name

MX : MX(Magnetic Drive Pump) Series

❷ Model No. (Max. capacity)

135 : 135 ℓ /min (60 Hz)

❸ Liquid-end materials

P : PP(For general liquid)
M : MPPO(For high temperature liquid)
G : PP(For abrasive liquid)
X : Specail

❹ Connection type

H : Hose F : Flange T : Thread X : Special

❺ Power supply

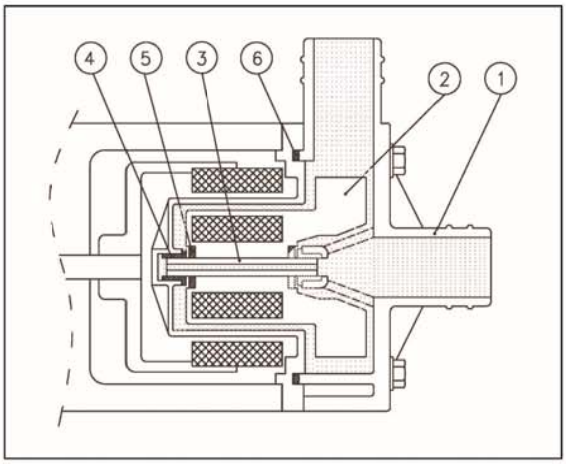
S : 1 ø 220V 60Hz A : 3 ø 220/380V 60Hz
B : 3 ø 440V 60Hz X : Special

5 Specifications

Specs. / Model	Max. capacily (ℓ/min-m)		Max. Head (m)		Standard Capaccity (ℓ/min-m)		Connection			Motor		Max. S.G.	Weight (kg)
	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	Hose	Flange	Thread	Output	Phase		
MX-30	25	30	2.9	4.3	15-2	22-2	16mm	–	–	35W	1	1.4	3
MX-50	45	50	2	2.8	30-1.1	40-1.2	25mm					1.4	
MX-85	75	85	3.2	4.5	45-2	65-2	25mm			65W		1.4	5.5
MX-120	105	120	7.2	10.4	60-5.5	70-8	25mm	25A	G1	300W	1 3	1.2	8.5
MX-135	120	135	8.5	12	60-6	70-9	25mm	25A	G1			1.3	
MX-135S										0.4kW	3	1.6	14
MX-250	225	250	10	14	120-7	130-10	–	40A	–	0.75kW	3	1.2	26
MX-300	270	300	12.5	17.5	160-7.5	170-11		40A		1.5kW		1.8	30

Note) 1. The figure of maximum capacity comes out at 0 head and that of maximum total head comes out with closing the discharge valve.
2. In case of P & G type, temperature of handling liquid is 0~80℃.
In case of M type, temperature of handling liquid is 0~100℃.
3. It is for indoor and freezing liquid can not be used.
4. The Munsell No. of painting is1.5BG 5.3/5.
5. Specifications can be changed for improvement without prior notice.

6 Liquid End Material

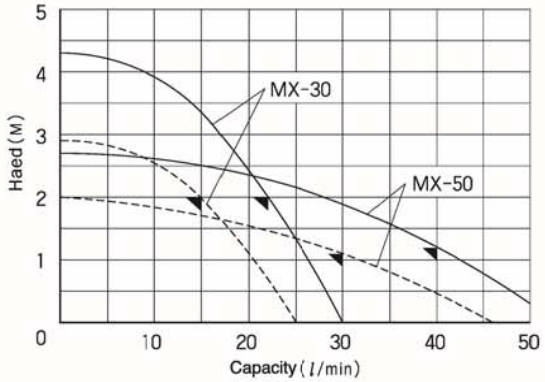


No.	Name of part	Material	
		P.G Type	M Type
①	Casing	PP	MPPO
②	Impeller	PP	MPPO
③	Shaft	CERAMIC	CERAMIC
④	Bearing	RULON	RULON
⑤	Washer	CERAMIC	CERAMIC
⑥	O-ring	FKM	FKM

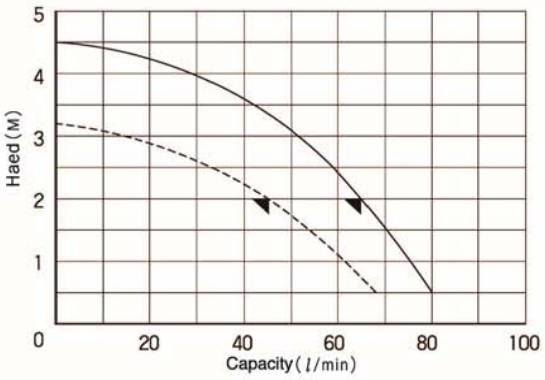
7 Performance Curves

Conditions : —— 60Hz, - - - 50Hz, Room temperature, Clean water

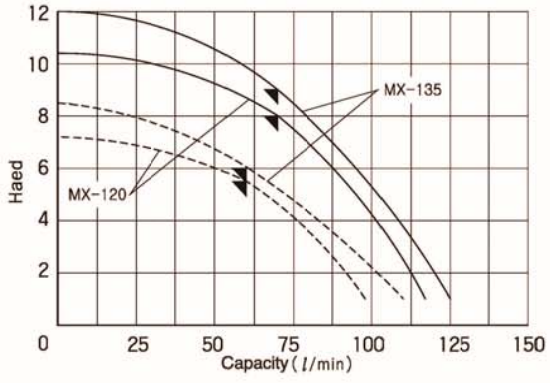
1 MX-30, 50



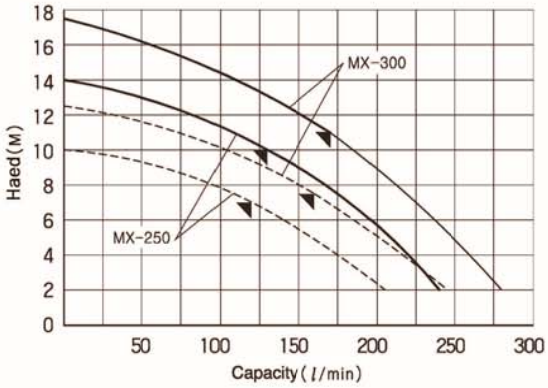
2 MX-85



3 MX-135



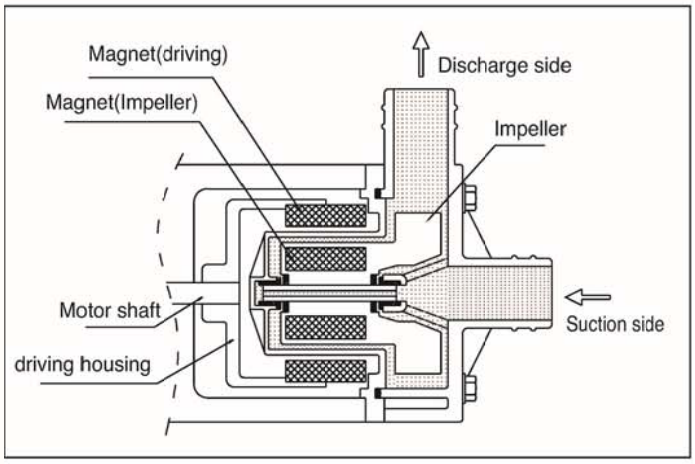
4 MX-250, 300



Note) The performance curves show examples at our testing facility under constant conditions. Purformance curves differ at each local site.

8 Principle of Operation

As indicated in the figure, the impeller embedded the magnet(impeller) is rotated by the magnet (driving) attached to the motor shaft. It is called a magnet driven pump. The pump chamber is mainly composed of a polypropylene(PP) and isolated from the exterior. There is no need of a pump shaft and mechanical seals because of the rotation of the impeller by the magnets, not by the motor.



9 Installation

9-1 Installation Place

⚠ Warning

- Install this pump beyond the reach of children and/or unauthorized person.

⚠ Caution

- Do not install pump at the place where ambient temperature is higher than 40℃ or lower than freezing point. If the pump is installed at the place, internals of the pump may be damaged.
- Do not install pump in the heavy moist or dusty place. It may cause electric shock and trouble.
- Install the suction side of pump at lower place than liquid level of tank because of not self-suction.

1 Install pump at easy place for maintenance and inspection.
2 In case of pump installs at higher than level of tank, foot valve attaches on suction side and liquid should be filled up in pump head prior to operation.

9-2 Piping

⚠ Caution

- Use special heat-proof hose for transferring liquid of high temperature.

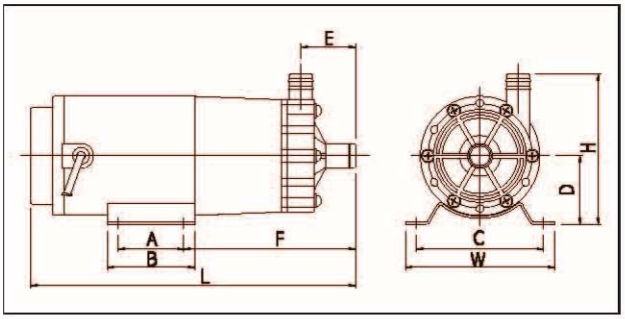
1 Use corrosion resistance as like vinyl hose for piping of hose type and use flange of plastic series for MX-120, 135, 250, 300. Especially hose type uses wired hose(blade hose) to protect distortion by suction pressure.
2 Use hose band on connection part of hose for hose type and insert gasket and fully tighten with

bolts between flange not to leak liquid. Especially in case of connecion on suction side is not safe, drop off capacity of pumping up.

3 Shorten length and do not bend piping to reduce friction resistance of liquid.

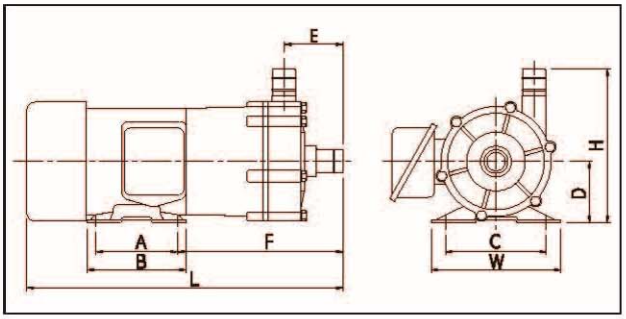
9-3 Dimension

1 MX-30, 50, 85



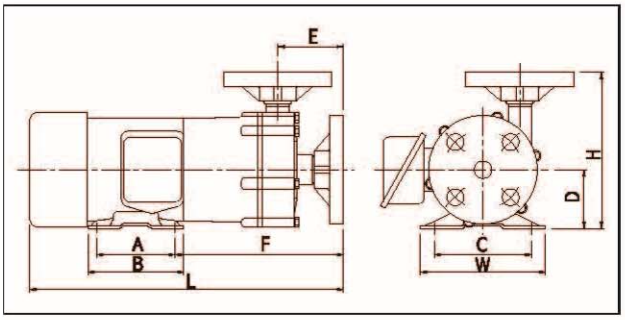
Model	W	H	L	A	B	C	D	E	F
MX-30	108	110	238	48	64	93	50	40	126
MX-50	108	114	248	48	64	93	50	47	136
MX-85	120	137	304	60	80	102	65	50	163

2 MX-120, 135(Hose, Thread type)



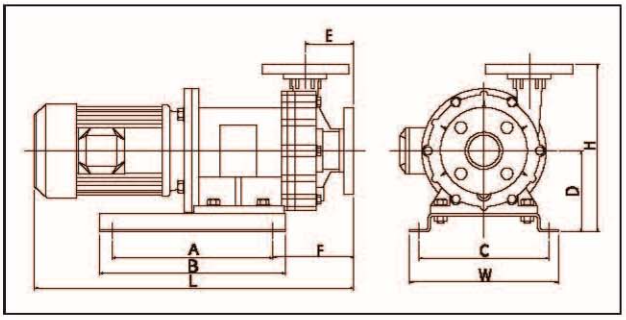
Model	W	H	L	A	B	C	D	E	F
MX-120	144	170	351	90	110	112	68	66	184
MX-135									
MX-135S	185	210	399	160	200	160	107	66	110

3 MX-120, 135(Flange type)



Model	W	H	L	A	B	C	D	E	F
MX-120	144	180	361	90	110	112	68	76	194
MX-135									
MX-135S	185	220	409	160	200	160	107	76	120

4 MX-250, 300



Model	W	H	L	A	B	C	D	E	F
MX-250	240	274	518	260	300	210	131	81	134
MX-300			551						

9-4 Wiring

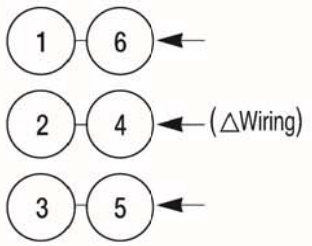
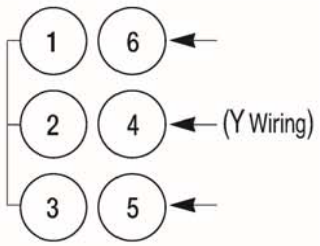
⚠ Warning

- Do not touch with wetted hand. Electric shock may be occurred.

⚠ Caution

- Before wiring, check voltage, phase, & frequency and connect the pump with correct power.
- It may cause trouble and fire, if connecting with incorrect power.
- Pump should be properly grounded in order to prevent electric shock.
- Install regulated Magnet Switch and Thermal Relay for the adjustment and maintenance of the pump.
- Use standardized parts in wiring and fully pay attention to safety in accordance with the technical standard & wiring regulation of the electrical equipment.
- Connect power of motor to set rotation direction, reverse rotation of motor may be caused trouble.

Motor wiring method when 3phase 220/380V combination (Motor wired 220V when factoy shipping.)

220V Wiring	380V Wiring
	

10 Operation

⚠ Warning

- Do not run dry, internal parts may be damaged.

⚠ Caution

- Wear suitable protective clothing(gloves, mask, goggles, working clothes, & etc.) when pumping hazardous liquids.
- Some water may be remained in the pump after final performance test.
  In case of use for some liquids reacted to water, remove water in the pump and dry the pump necessarily.
- Do not touch with bare hand on motor part when operation. A burn caused by high temperature may be occurred.
- Do not open and close suction and discharge side valve suddenly.
  Otherwise, Impeller Set and Driving Magnet Set may be detached and impeller can not be rotated.

1 Fill water up in pump room, close valve on discharge side, power on, and then open valve slowly.
(Fill water up in suction hose and pump room and then power on in case of using foot valve.)

2 Check transfer of liquid without malfunction of pump. If not transfer immediately power off and remove the cause.

3 Do not insert alien material in pump. If insert alien material, impellar may be locked. Motor rotates without transfer at case of lock, immediately power off and please remove alien material after disassemblying of pump.

11 Maintenance

⚠ Warning

- Turn off the power and stop pump & other equipments before repair & maintenance, otherwise it may cause electric shock.

⚠ Caution

- Wear suitable protective clothing during assemble and disassemble work.
- Work after releasing pressure from discharge piping and remove liquid from Liquid End Part prior to repair or maintenance of pump.
- Pump may be damaged when ambient temperature go down below freezing point of liquid. Be sure to remove the liquid in the pump and piping after operation stop.

1 Check operation status of pump, vibration, abnormal sound, and voltage value, discharge quantity.

2 In case of something wrong, power off immediately and remove the causes with reference of Article 'Causes of Trouble and Troubleshooting'.

12 Cause of Trouble and Troubleshooting

Trouble	Cause	Remedy
Motor not work	Bad or disconnection of wire	Check
	Bad of condenser (1 phase)	Replace
	Bad or disconnection of wire	Repair and replace
Not pumping up or capacity of pumping up is not much.	Empty operation	Check liquid before operation
	Air in pump	Get rid of air fully
	Air suction from suction side	Check and repair on connection of piping to prevent air suction
	Shrinking of suction hose(In case of hose type)	Repace with wired hose not to shrink
	Alien material attachment on impeller	Clean impeller
	Air in piping	Get rid of air in piping
Overload of motor	Excessive of specific gravity and viscosity for handling liquid	Replace with proper pump
	Alien material attachment on impeller	Clean impeller
	Outer circumference of impeller	Replace parts
	contacts on rear casing impeller damage	Replace parts
Noise and vibraion are high.	Empty operation	Check circulation liquid on hose of suction side or piping
	Alien material attachment on impeller	Clean impeller
	Impeller damage	Replace parts
Leakage of liquid	O-ring damage	Replace parts
	Rear casing damage	Replace parts

13 Warranty

⚠ Warning

- If the pump is reconstructed arbitrarily or the undesignated parts are used into the pump, CHEONSEI will not warrant and CHEONSEI is not responsible for any expense caused by accident or trouble.

[1] Warranty period is one year from purchase date.

[2] During warranty period, repair or change of pump is free of charge, if trouble or damage of pump due to design or manufacturing of CHEONSEI.

※ Consumable parts are excluded.

[3] Repair or change product due to following reasons will be charged regardless the warranty period.

① Trouble or damage of pump expired warranty period.

② Trouble of using by careless handling.

③ Trouble or damage due to using non-designated part & reconstructing the pump arbitrarily.

④ Trouble by fire or natural disaster.

14 Repair Service

⚠ Caution

- When the pump is sent to factory for repair service, clean out inside of pump.
- Do not send the pump back, if the pump has been used for harmful & fatal liquid

[1] Contact to CHEONSEI or local distributor as shown on back of the manual, if you have any problem or questions.

[2] If you want to repair, please inform the following.

① Model Name & manufacture number written in name plate

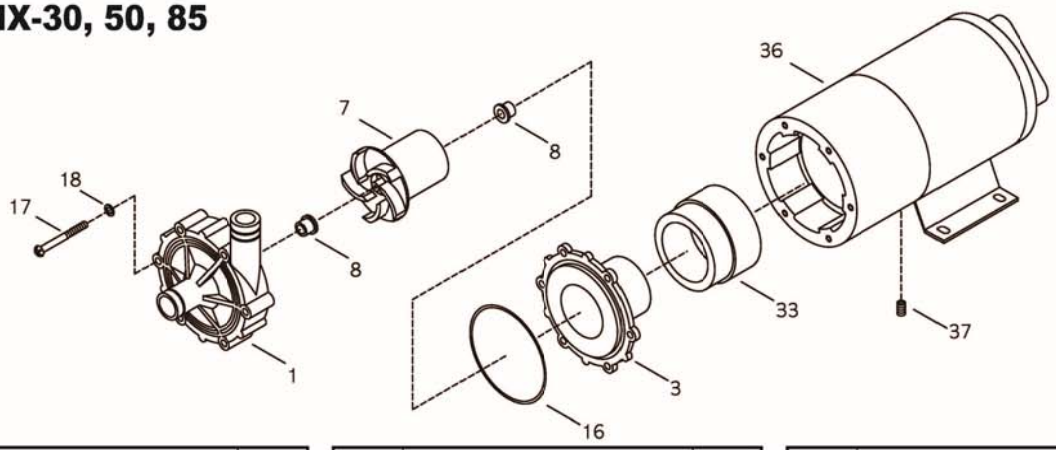
② Used period, using condition, state, and transfer liquid

[3] If warranty period is over, it may charge according to repair part. Please contact with sales agent for more information.

[4] Minimum retention period of parts for repair is 5 years from the date of production.

15 Structure and Name of Each Part

15-1 MX-30, 50, 85



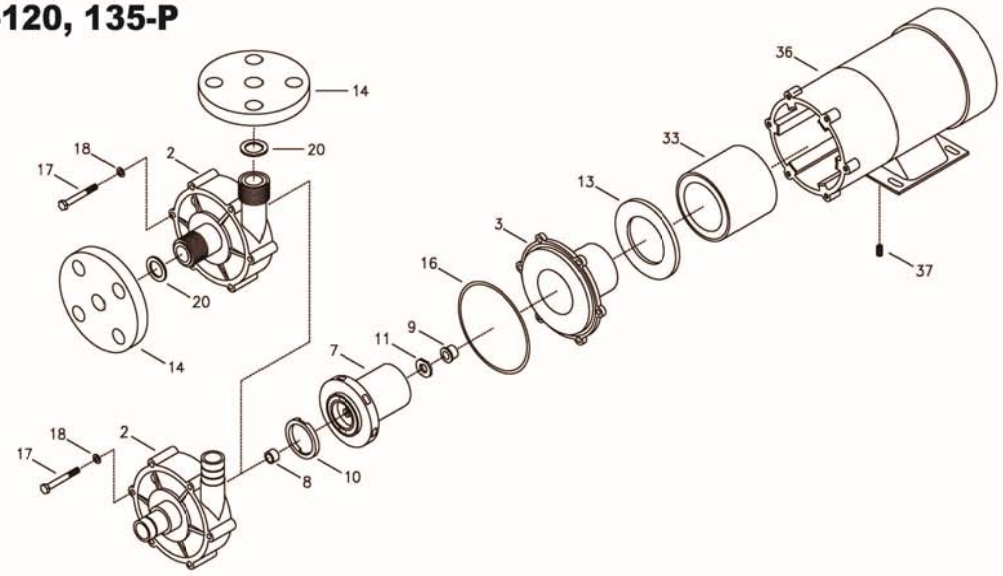
No.	Part Name	Q,ty
1	Front Casing	1
3	Rear Casing	1
7(1)	Impeller Set	1
8	Bearing	2

No.	Part Name	Q,ty
16	O-ring	1
17	Bolt	6
18(2)	Washer(Flat)	6
33	Driving Magnet Set	1

No.	Part Name	Q,ty
36	Moter	1
37	Set Screw	2

Notice) (1) Ceramic Washer is included in Impeller.
(2) Only for MX-85

15-2 MX-120, 135-P



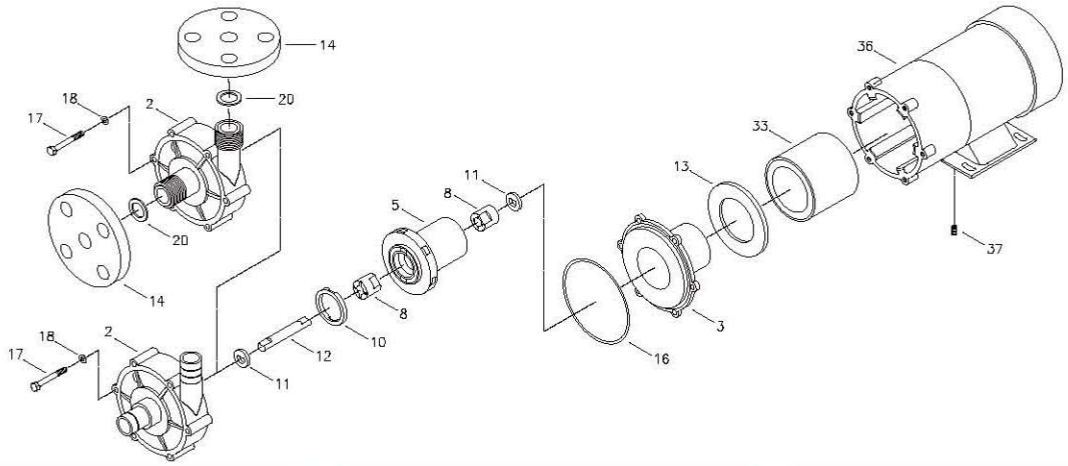
No.	Part Name	Q,ty
2	Front Casing Set	1
3	Rear Casing	1
7	Impeller Set	1
8	Bearing “S”	1
9	Bearing “F”	1
10	Mouth Ring	1

No.	Part Name	Q,ty
11	Washer	1
13	Rear Casing Cover	1
14(1)	Flange	2
16	O-ring	1
17	Bolt(Hex.)	6
18	Washer(Flat)	6

No.	Part Name	Q,ty
20(1)	Packing	2
33	Driving Magnet Set	1
36	Motor	1
37	Set Screw	2

Notice) (1) Only for flange type

15-3 MX-135S-M, G



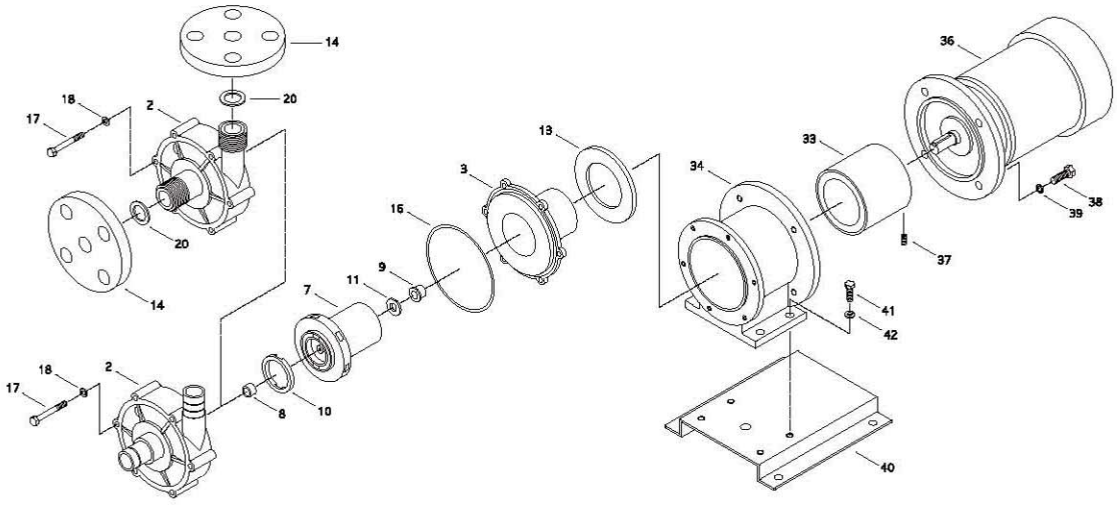
No.	Part Name	Q,ty
2	Front Casing Set	1
3	Rear Casing	1
5	Impeller	1
8	Bearing	2
10	Mouth Ring	1
11	Washer	2

No.	Part Name	Q,ty
12	Shaft	1
13	Rear Casing Cover	1
14(1)	Flange	2
16	O-ring	1
17	Bolt(Hex.)	6
18	Washer(Flat)	6

No.	Part Name	Q,ty
20(1)	Packing	2
33	Driving Magnet Set	1
36	Motor	1
37	Set Screw	2

Notice) (1) Only for flange type

15-4 MX-135S-P



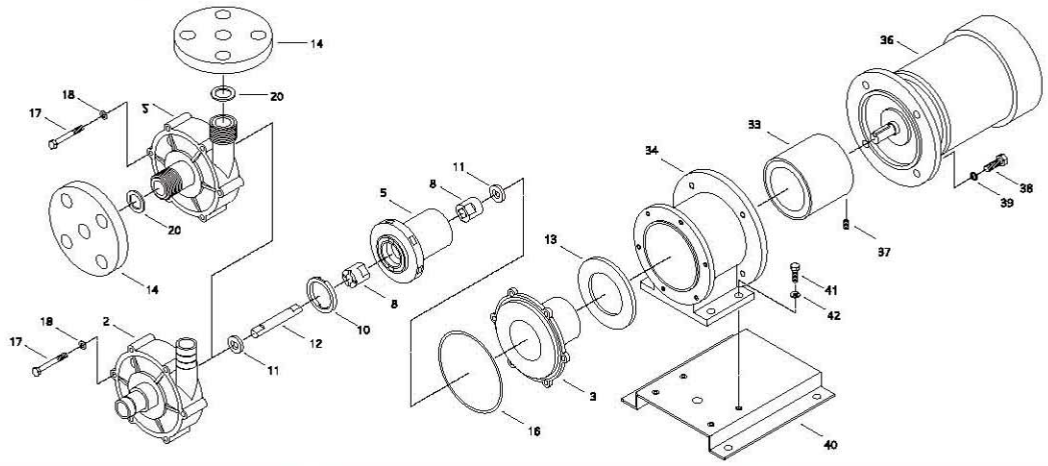
No.	Part Name	Q,ty
2	Front Casing Set	1
3	Rear Casing	1
7	Impeller Set	1
8	Bearing "S"	1
9	Bearing "F"	1
10	Mouth Ring	1
11	Washer	1
13	Rear Casing Cover	1

No.	Part Name	Q,ty
14(1)	Flange	2
16	O-ring	1
17	Bolt(Hex.)	6
18	Washer(Flat)	6
20(1)	Packing	2
33	Driving Magnet Set	1
34	Braket	1
36	Motor	1

No.	Part Name	Q,ty
37	Set Screw	2
38	Bolt(Hex.)	4
39	Washer(Spring)	4
40	Bed	1
41	Bolt(Hex.)	4
42	Washer(Spring)	4

Notice) (1) Only for flange type

15-5 MX-135S-M, G



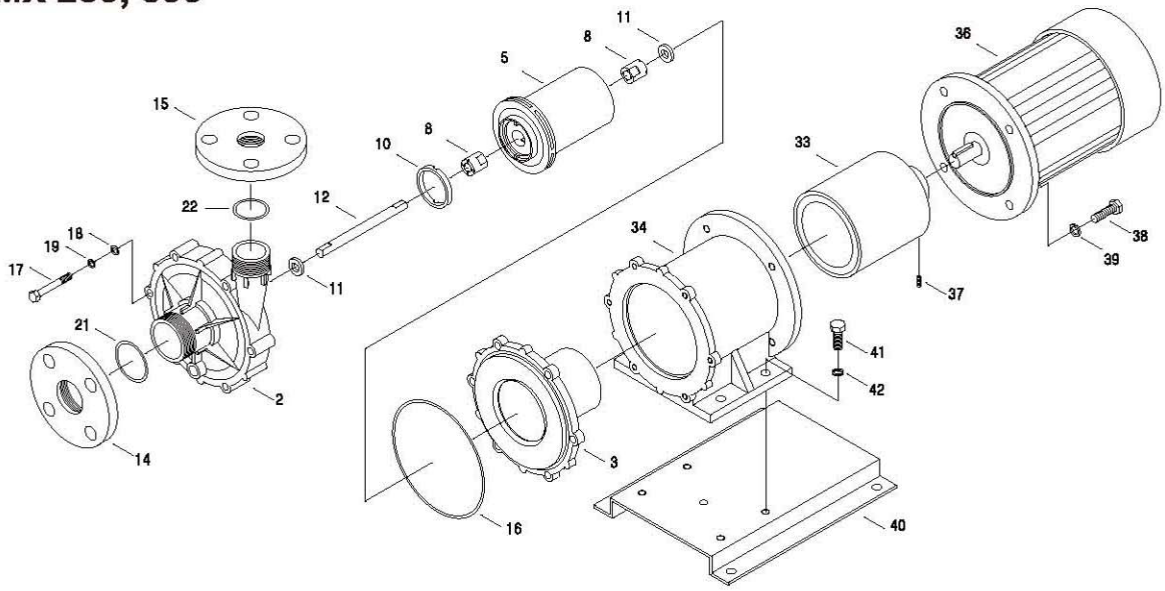
No.	Part Name	Q,ty
2	Front Casing Set	1
3	Rear Casing	1
5	Impeller	1
8	Bearing	2
10	Mouth Ring	1
11	Washer	2
12	Shaft	1
13	Rear Casing Cover	1

No.	Part Name	Q,ty
14(1)	Flange	2
16	O-ring	1
17	Bolt(Hex.)	6
18	Washer(Flat)	6
20(1)	Packing	2
33	Driving Magnet Set	1
34	Bracket	1
36	Motor	1

No.	Part Name	Q,ty
37	Set Screw	2
38	Bolt(Hex.)	4
39	Washer(Spring)	4
40	Bed	1
41	Bolt(Hex.)	4
42	Washer(Spring)	4

Notice) (1) Only for flange type

15-6 MX-250, 300



No.	Part Name	Q,ty
2	Front Casing Set	1
3	Rear Casing	1
5	Impeller	1
8	Bearing	2
10	Mouth Ring	1
11	Washer	2
12	Shaft	1
14	Flange(Suction)	1

No.	Part Name	Q,ty
15	Flange(Discharge)	1
16	O-ring	1
17	Bolt(Hex.)	6
18	Washer(Flat)	6
19	Washer(Spring)	6
21	O-ring	1
22	O-ring	1
33	Driving Magnet Set	1

No.	Part Name	Q,ty
34	Bracket	1
36	Motor	1
37	Set Screw	2
38	Bolt(Hex.)	4
39	Washer(Spring)	4
40	Bed	1
41	Bolt(Hex.)	4
42	Washer(Spring)	4

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