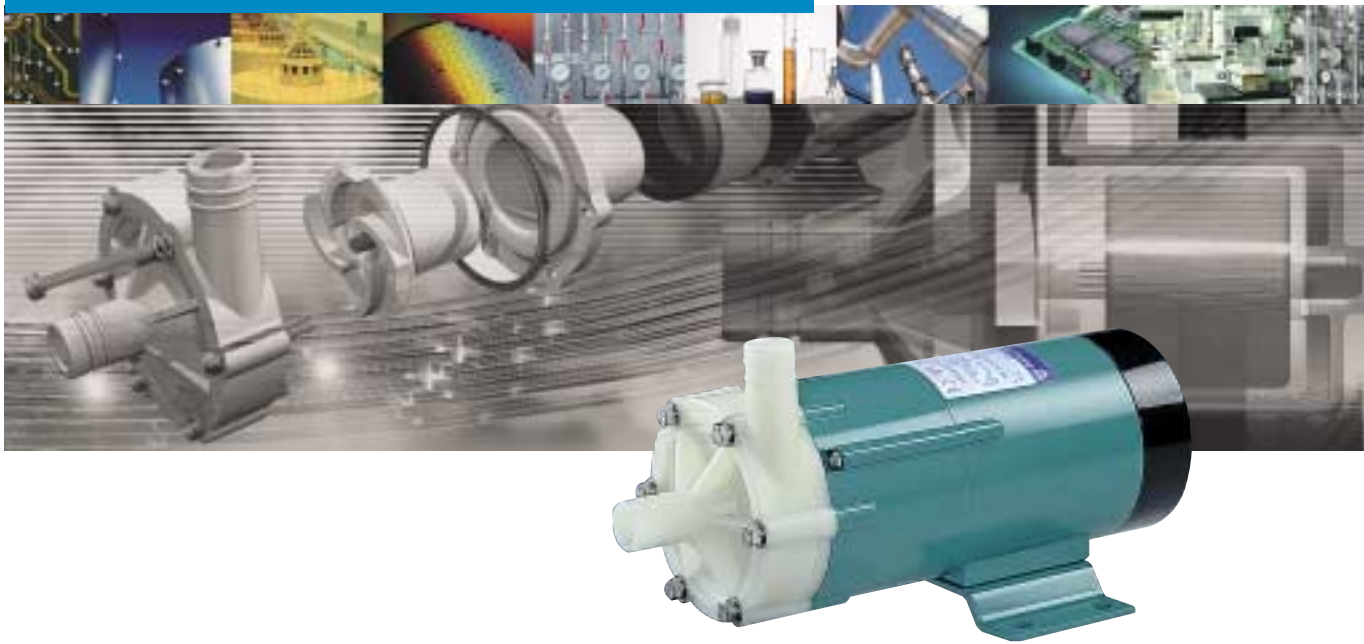


Magnetic drive pumps MD series



MD series, the world best-selling pumps

The MD series features small, high-performance magnetic drive pumps with a leakproof structure that are in wide use in more than 30 countries. The series is well known for its corrosion resistance and durability provided by its corrosion-resistant materials. In particular, E-TFE material type as its primary material, is specifically designed for highly corrosive fluids and can be used to pump virtually all chemicals, with only a few exceptions. The MD series can transfer nearly all chemicals safely, and is suitable for OEM photo processor and other equipments.

No leakage

The magnetically driven sealless pump prevents corrosion caused by fluid leakage through the pump assembly, which means contamination around the pump is prevented without seal replacement. Therefore, it is most suitable for incorporation in the equipment.

Good durability

As special-purpose design to handle highly corrosive fluids, corrosion resistant E-TFE and SiC are used for the main part of the MD-F pump. It can be used to pump almost all chemical fluids. Also, MD and MD-M, made of polypropylene, have also good corrosion resistance.

Various models

The MD series can be selected for every application because about forty models from maximum flow of 5.5L/min till 135 L/min are available.

Applicable to high density acids

The MD-F is designed for pumping strong acids. Three sizes of impeller are available according to the liquid specific gravity and power frequency. It can be used for high density strong acids such as concentrated sulphuric acid without overload.

High efficiency, economical type

Special-purpose high head and high capacity models are available respectively for such services as low flow and high head or low head and high flow. Selection of an economical model may be possible depending on duty point.



MD-6



MD-10



MD-15R-N



MD-20R-N



MD-30R-N

A variety models from 5.5L/min to 135L/min can be selected.



MD-100R



MD-70R



MD-55R-N



MD-40R-N

Thread type



MD-100RM, 55RM-N, 30RM-N, 15RM-N

ETFE type



MD-100F, 55F, 30F, 15F

High head type



MD-70RZ, 40RZ-N, 30RZ-N, 20RZ-N, 6Z

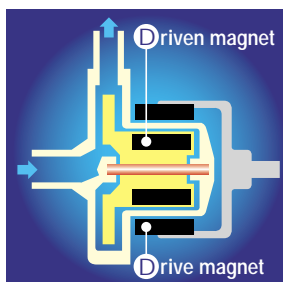
High capacity type



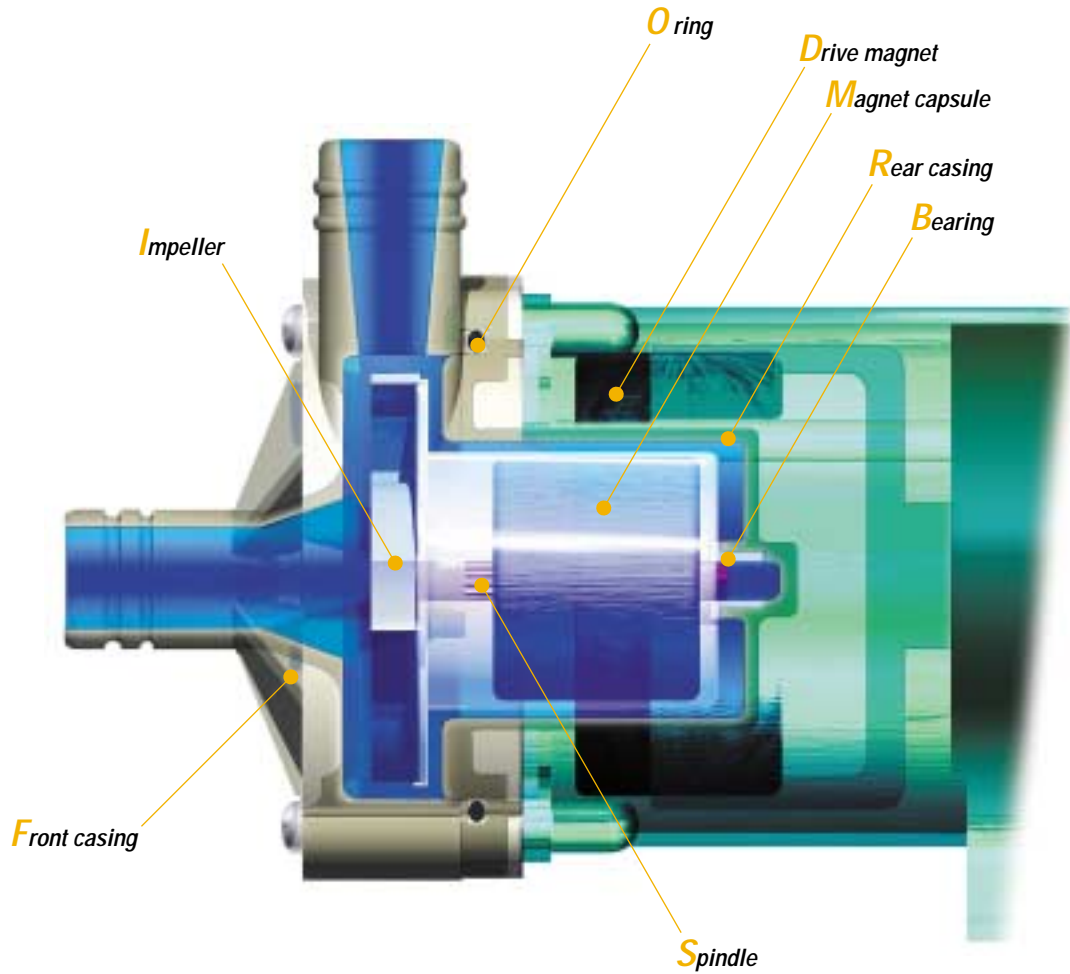
MD-40RX-N, 30RX-N, 20RX-N

Operating Principle

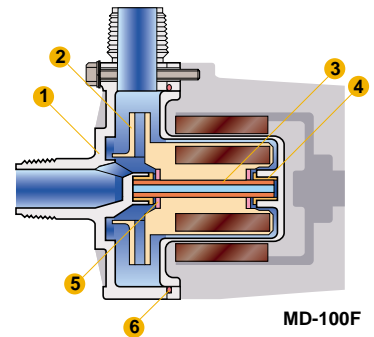
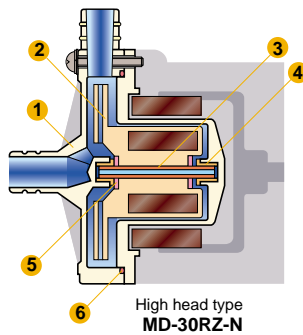
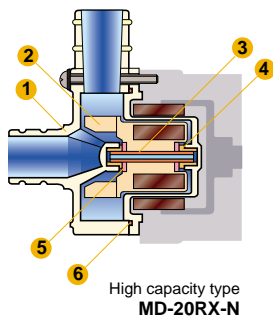
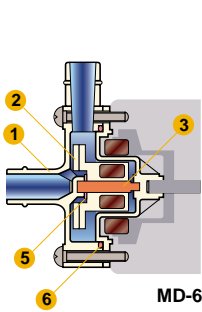
The centrifugal pump is driven by a pair of magnets which are incorporated in the impeller and motor shaft. The sealless pump structure eliminates shaft seals such as conventional mechanical seals because the pump chamber is shielded by the casings and the impeller is operated by the magnets. The combined coupling torque of the drive magnet and impeller magnet gives sufficient driving power against the motor torque.



Construction and materials



Wet-end materials



MD/MD-M type

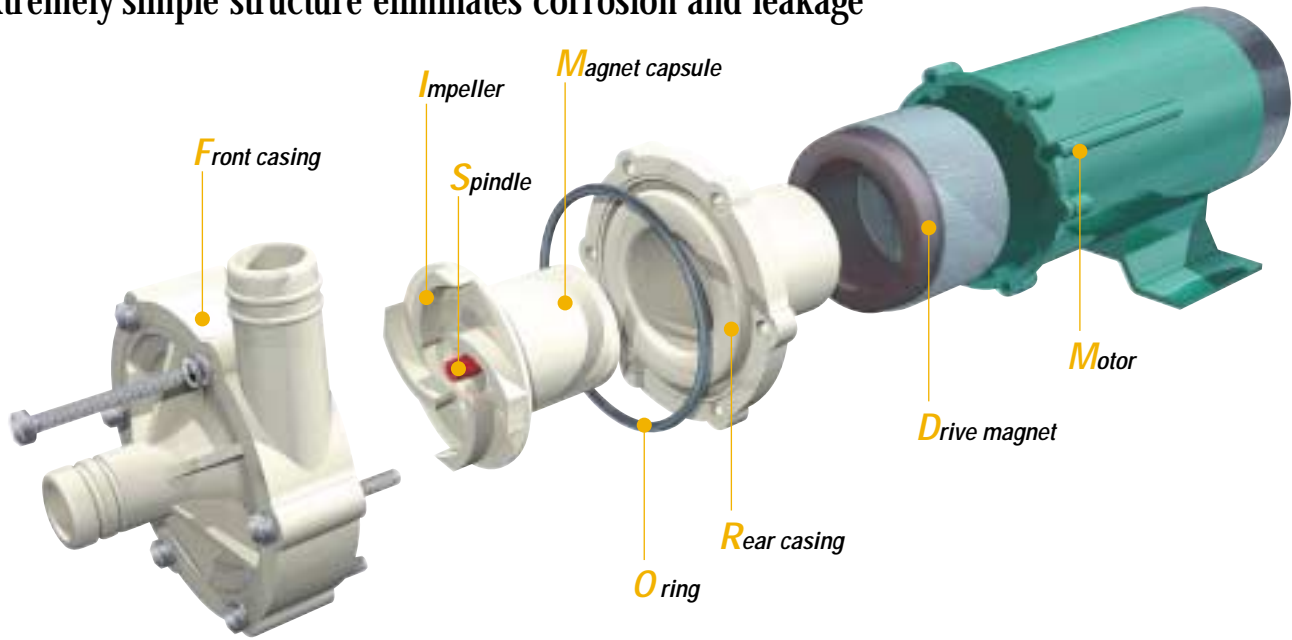
Part	Material
1 Casing	GFRPP
2 Impeller	GFRPP or CFRPP
3 Spindle	Alumina ceramic
4 Bearing	PTFE or PPS
5 Thrust ring	Alumina ceramic or PE
6 O-ring	FKM or EPDM

MD-F type

Part	Material
1 Casing	CFRETFE
2 Impeller	CFRETFE
3 Spindle	Silicon carbide
4 Bearing	Silicon carbide
5 Thrust ring	Silicon carbide
6 O-ring ^{Note}	FKM (fluoroelastomer)

Note: EPDM or Atlas[®] are also available on special request.

Extremely simple structure eliminates corrosion and leakage



Front casing for MD (hose connected type)

To increase mechanical strength, polypropylene is formed by integral moulding with a filler. PTFE bearing is provided in the centre of the casing (except Models MD-6 through MD-10). This type features ease of connection with flexible hose.



Standard type High head type High capacity type

Front casing for MD-M (Thread type)

3/4" and 1" thread connections are used. Reliability is further improved by adoption of a union joint. Piping can be done neatly when the casing is incorporated in the system.



Thread type

Front casing for MD-F (ETFE type)

The front casing is moulded of carbonfibre-filled E-TFE which has high corrosion resistance. Applications are further extended to acids, alkalis and organic solvents by integral moulding with an SiC bearing. Taper thread connection with a PTFE tubing connector available on the market.



E-TFE type

Impeller for MD/MD-M

The impeller is made of polypropylene in which a ferrite magnet is incorporated. A spindle is integrated (except MD-6 through MD-10). Open, closed, and semi closed impeller pumps are available to meet the performance and characteristics required.



Standard type High head type High capacity type

Impeller for MD-F (E-TFE type)

There are three standard sizes according to the liquid specific gravity and power frequency. The impeller is formed by integral moulding with the SiC spindle and thrust ring incorporated. Although compact, the pumps can perform pumping of strong acids such as hydrofluoric acid and concentrated sulphuric acid.



E-TFE type

Drive magnet

The drive magnet is magnetized barium ferrite for 4-, 6-, or 8-poles. It rotates the impeller by using the magnetic field from the outside of the rear casing.

Motor

To ensure long service life, ball bearings are adopted. Single-phase motors are used for all the models. Also, three-phase motors can be used for Model MD-70R or over. The single-phase motors have a built-in thermal protector.

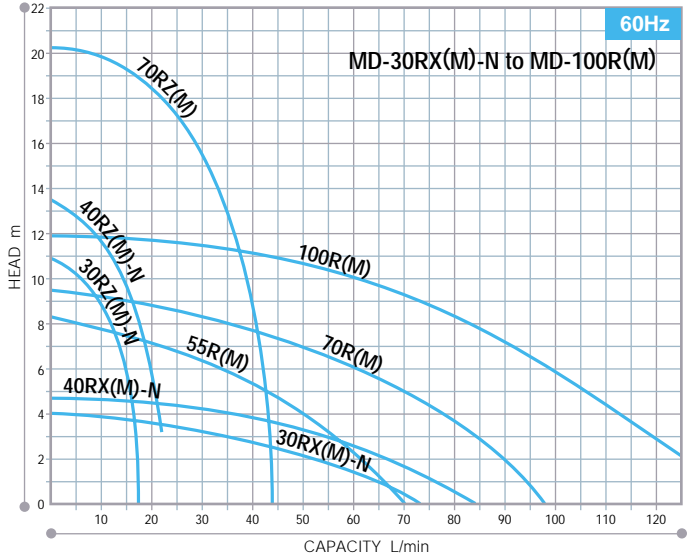
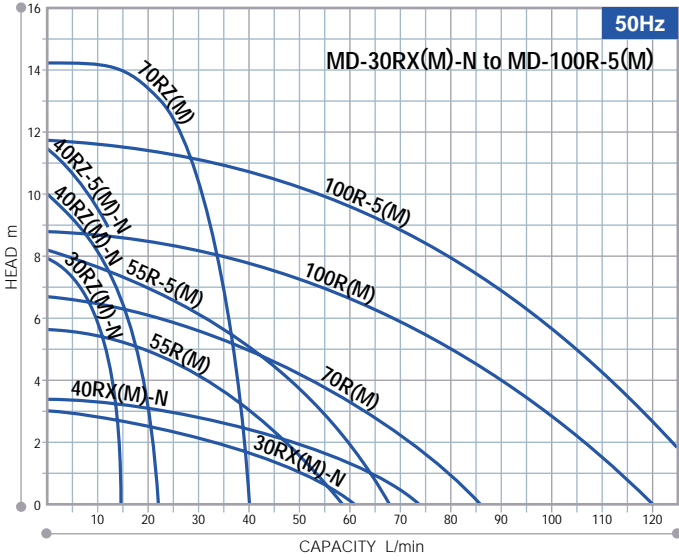
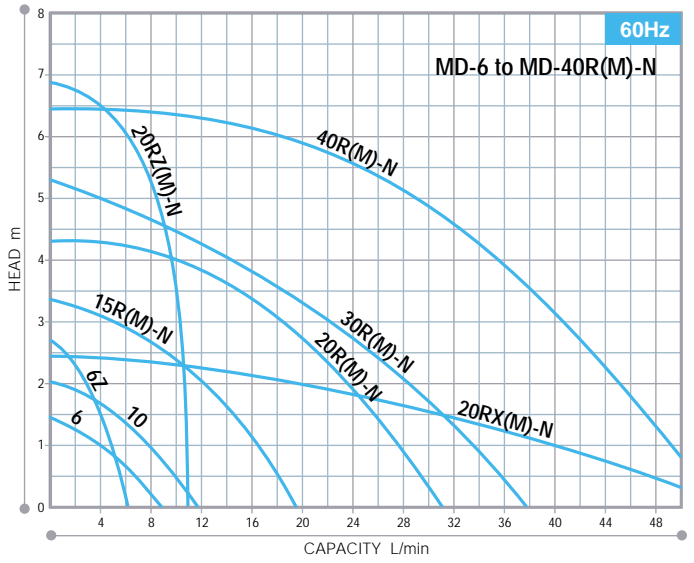
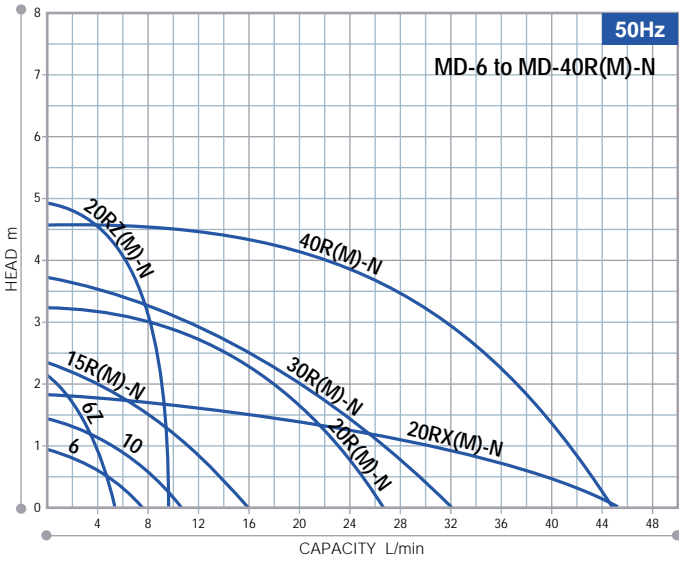
Special accessories

Special-purpose union joints are available to cope with three types (13mm, 16mm and 20mm dia.) of piping. Tight sealing O-rings are used to prevent thread damage caused by over tightening.



MD-30RM-N

MD/MD-M Performance curves



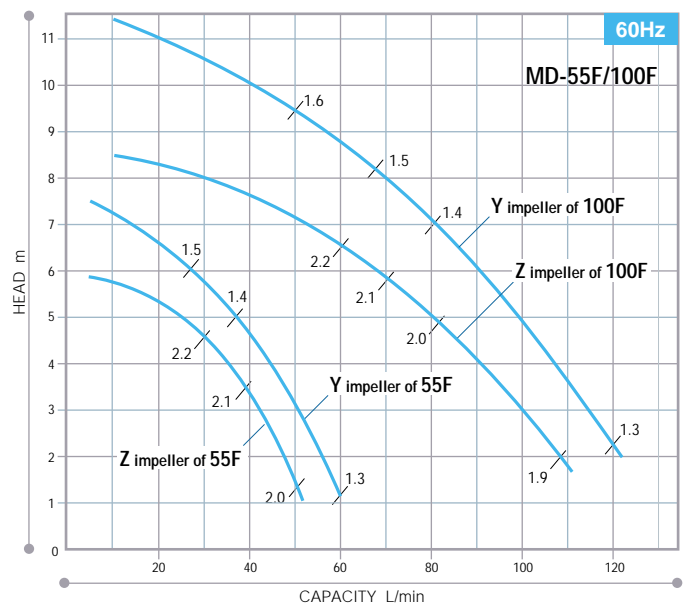
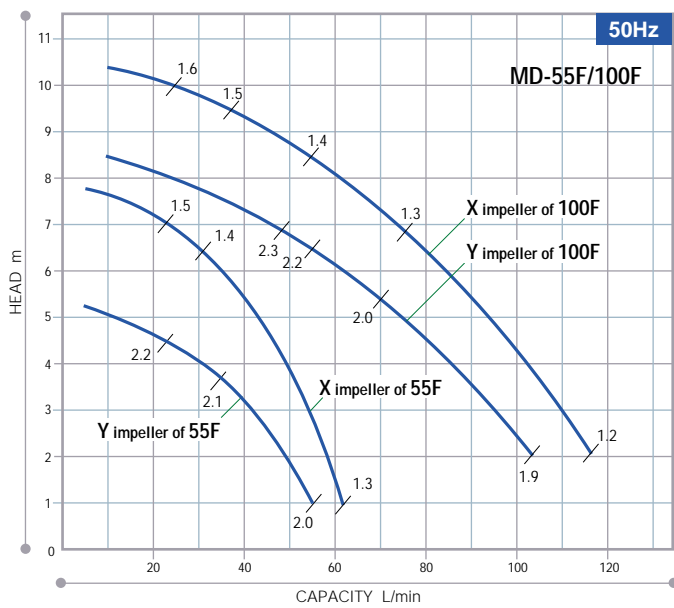
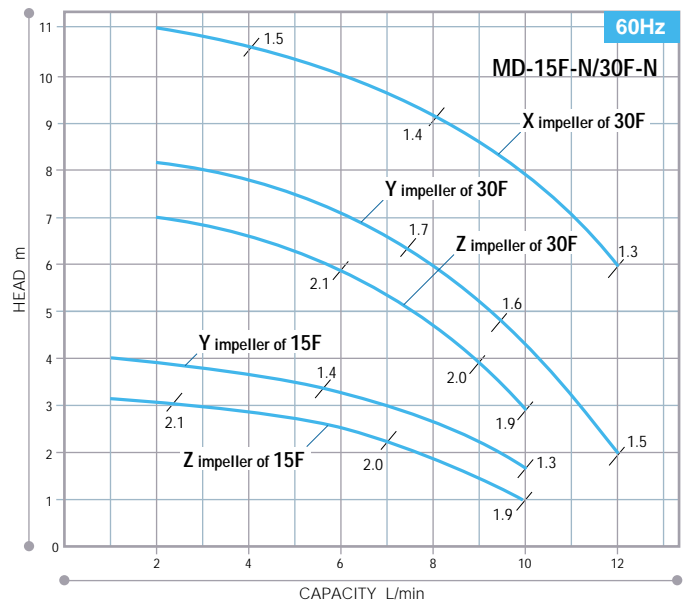
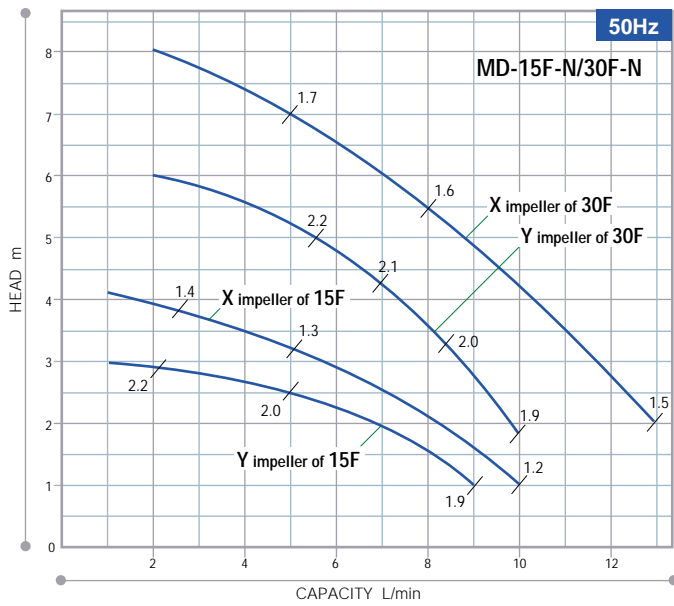
MD/MD-M Specifications

Model	Hose connected		Screwed connected		Max. Capacity L/min	Max. Head m	Standard duty point m-L/min	Temp. limit	Note2 S.G.	Note3		
	Inlet	Outlet	Inlet/Outlet	Union Note1						Output W	Input W	Phase
MD-6	14mm	14mm	-	-	8/9	1/1.4	0.8-2.8/0.8-5.0	0 to 80°C	1.2	3/3	22/22	1
MD-6Z	14mm	14mm	-	-	5.5/6.0	2.1/2.7	1.5-3.2/1.5-4.5	0 to 80°C	1.1	3/3	24/23	1
MD-10	14mm	14mm	-	-	11/12	1.5/2.1	1-5/1-8	0 to 75°C	1.1	6/6	35/35	1
MD-15R(M)-N	14mm	14mm	G 3/4	13mm	16/19	2.4/3.4	1.5-8/1.5-12	0 to 80°C	1.3	10/10	26/31	1
MD-20R(M)-N	18mm	17mm	G 3/4	16mm	27/31	3.1/4.3	2-17/2-22	0 to 80°C	1.1	20/20	40/50	1
MD-20RX(M)-N	26mm	26mm	G 1	20mm	46/52	1.8/2.5	1-30/1-40	0 to 80°C	1.3	20/20	40/50	1
MD-20RZ(M)-N	18mm	18mm	G 3/4	13mm	10/11	4.9/6.9	4-6/4-9	0 to 80°C	1.1	20/20	40/50	1
MD-30R(M)-N	20mm	20mm	G 3/4	16mm	32/38	3.8/5.4	2.5-16/2.5-24	0 to 80°C	1.3	45/45	60/80	1
MD-30RX(M)-N	26mm	26mm	G 1	20mm	62/72	2.9/4.1	2-32/2-46	0 to 80°C	1.1	45/45	70/90	1
MD-30RZ(M)-N	18mm	18mm	G 3/4	13mm	15/17	8/11	6-10/6-14	0 to 80°C	1.0	45/45	70/90	1
MD-40R(M)-N	20mm	20mm	G 3/4	16mm	45/52	4.6/6.5	4-22/4-34	0 to 80°C	1.1	65/65	90/130	1
MD-40RX(M)-N	26mm	26mm	G 1	20mm	75/85	3.3/4.7	2-47/2-65	0 to 80°C	1.1	65/65	85/120	1
MD-40RZ(M)-N	20mm	20mm	G 3/4	16mm	22/22	10/13.5	8-10/11-12	0 to 80°C	1.0	65/65	140/200	1
MD-40RZ-5(M)-N	20mm	20mm	G 3/4	16mm	11/-	11.5/-	10-8/-	0 to 80°C	1.0	65/-	140/-	1
MD-55R(M)	26mm	26mm	G 1	20mm	60/70	5.6/8.2	4-30/4-45	0 to 80°C	1.2	90/90	130/170	1
MD-55R-5(M)	26mm	26mm	G 1	20mm	70/-	8.2/-	4-45/-	0 to 80°C	1.2	90/-	170/-	1
MD-70R(M)	26mm	26mm	G 1	20mm	86/97	6.7/9.7	4-50/4-72	0 to 80°C	1.0	150/180	235/365	1 or 3
MD-70RZ(M)	20mm	20mm	G 3/4	16mm	40/43	14.3/20.3	12-24/17-25	0 to 80°C	1.0	180/216	275/395	1 or 3
MD-100R(M)	26mm	26mm	G 1	20mm	120/135	8.6/11.9	6.5-60/9-70	0 to 80°C	1.2	260/265	245/365	1 or 3
MD-100R-5(M)	26mm	26mm	G 1	20mm	135/-	11.7/-	9-60/-	0 to 80°C	1.1	260/-	365/-	1 or 3

Note1 : Size of union is nominal dia. of applicable PVC piping. Limitation of temperature is 0 to 50°C. High temperature version type of that is 0 to 80°C.

Note2 : Limit of specific gravity shows at the maximum flow and viscosity of fluid 1 mPa·s. Note3 : Motor input shows when pumping clear water. Ambient temperature : 0 to 40°C

MD-F Performance curves



MD-F Specifications

50Hz/60Hz

Model	Type of Impeller	Hose connected Inlet/Outlet	Max. Capacity L/min	Max. Head m	Standard duty point m-L/min	Temp.limit	Note1 S.G.	Note2 Motor		
								Output W	Input W	Phase
MD-15F-N	X	NPT1/2	10/-	4.1/-	3-5/-	0 to 80°C	1.2/-	10/-	38/-	1
	Y	NPT1/2	9/10	3/4	2-5/3-7	0 to 80°C	1.9/1.3	10/10	30/34	1
	Z	NPT1/2	-/10	-/3.1	-/2.5-6	0 to 80°C	-/1.9	-/10	-/31	1
MD-30F-N	X	NPT1/2	13/15	8/11	5.5-8/8.5-9.5	0 to 80°C	1.5/1.3	45/45	70/90	1
	Y	NPT1/2	10/12	6/8	4.5-6.5/6-8	0 to 80°C	1.9/1.5	45/45	70/90	1
	Z	NPT1/2	-/11	-/7	-/5.5-7	0 to 80°C	-/1.9	-/45	-/55	1
MD-55F	X	R1	65/-	7.8/-	6.4-30/-	0 to 80°C	1.3/-	90/-	170/-	1
	Y	R1	60/65	5.4/7.8	3.8-30/6.4-32	0 to 80°C	2.0/1.3	90/90	130/170	1
	Z	R1	-/55	-/6.0	-/4.5-25	0 to 80°C	-/2.0	-/90	-/130	1
MD-100F	X	R1	125/-	10.5/-	7.5-65/-	0 to 80°C	1.2/-	260/-	375/-	1 or 3
	Y	R1	115/135	8.5/11.5	6-60/8-70	0 to 80°C	2.0/1.3	260/265	260/375	1 or 3
	Z	R1	-/115	-/8.5	-/6.5-55	0 to 80°C	-/1.9	-/265	-/285	1 or 3

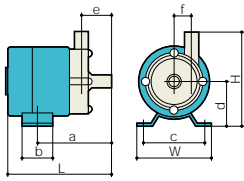
Note1 : Limit of specific gravity shows at the maximum flow and viscosity of fluid 1 mPa·s. Note2 : Motor input shows when pumping clear water. Ambient temperature : 0 to 40°C

Dimensions

Size of MD-M(Thread type) is shown in ().

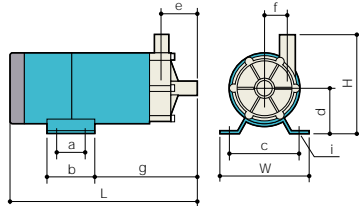
MD/MD-M

MD-6/6Z/10



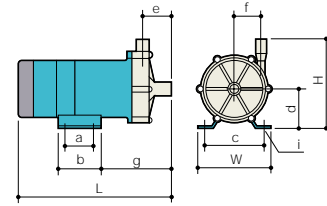
MD-15R(M)-N to 40R(M)-N

Illustration shows MD-30R-N



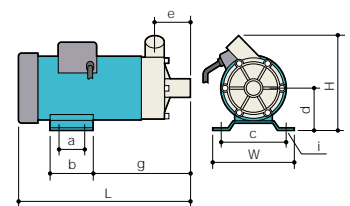
MD-20RZ(M)-N to 70RZ(M)-N

Illustration shows MD-20RZ-N



MD-20RX(M)-N to 40RX(M)-N

Illustration shows MD-40RX-N



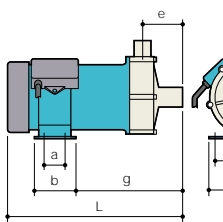
Model	W	H	L	a	b	c	d	e	f	g	i
MD-6											
MD-6Z	74	92	104	73	30	60	45	31	17	-	2 - 5.5 X9
MD-10											
MD-15R(M)-N	95	109 (114)	180 (179)	-	50	68	55	39	22	92	2 - 65.6
MD-20R(M)-N	106	105 (107)	209 (203)	44	60	90	45	39 (33)	29	94 (88)	4 - 6 X10
MD-30R(M)-N	120	130	248	40	64	100	60	48	31	137	4 - 69
MD-40R(M)-N			250								

220V motor is different from the above in dimensions. Please contact us for detail.

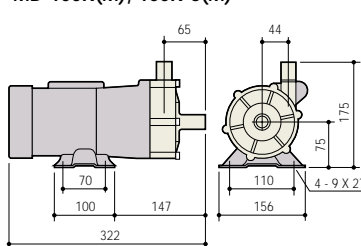
Model	W	H	L	a	b	c	d	e	f	g	i
MD-20RZ(M)-N	106	125	211	44	60	90	55		40	39	98
MD-30RZ(M)-N			130	230							120
MD-40RZ(M)-N	120		150	241	40	64	100	60	39	45	128
MD-40RZ-5(M)-N											4 - 69
MD-70RZ(M)	130	165	247	40	60	110	65	42	48	138	4 - 7 X11
MD-20RX(M)-N	106	119 (122)	220	44	60	90	45	47		105	4 - 6 X10
MD-30RX(M)-N	120	137 (140)	254	40	64	100	60	50		143	4 - 69
MD-40RX(M)-N		137 (141)	256								

MD-55R(M) to 70R(M)

Illustration shows MD-55F



MD-100R(M), 100R-5(M)

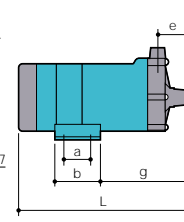


Model	W	H	L	a	b	c	d	e	f	g		i
										100V	200V	
MD-55R(M)	120	155	274	40	64	100	65	62 (61)	40	167 (166)	167	4 - 69
MD-55R-5(M)												
MD-70R(M)	130	155	258	40	60	110	65	53	43	149		4 - 7 X11

MD-F

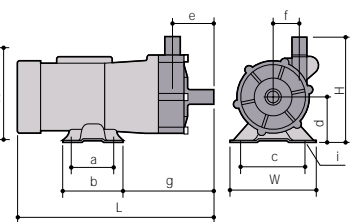
MD-15F-N, 30F-N

Illustration shows MD-15F-N



MD-55F, MD-100F

Illustration shows MD-100F



Model	W	H	L	a	b	c	d	e	f	g	i
MD-15F-N	95	120	186	-	50	68	55	34	29	99	2 - 65.6
MD-30F-N	120	130	231	40	64	100	60	39	39	120	4 - 69
MD-55F		155	270				65	59	40	167	
MD-100F	156	175	320	70	100	110	75	63	43	145	4 - 9 X 27

Self-priming chamber

Once fill up liquid, repriming is not required. It is very easy to use MD pump with self-priming chamber.



Attached to: SC-4 for 30RM-N and 40RM-N, SC-7 for 70RM
Connections(Inlet x Outlet): G3/4(SC-4)/G1(SC-7)
Suction limit: 0.8m(SC-4)/1.2m(SC-7)

Direct pump RD series

Designed to be cool, quiet, compact and lightweight. A variety of features, including a seal-less design to prevent leakage, enables the pumps to meet a full spectrum of user needs, with emphasis on ease of installation, operation and maintenance.



Max.capacity: 20L/min
Max.head: 10m
Temperature range: 0 - 40°C
Supplied power: DC24V (brushless)