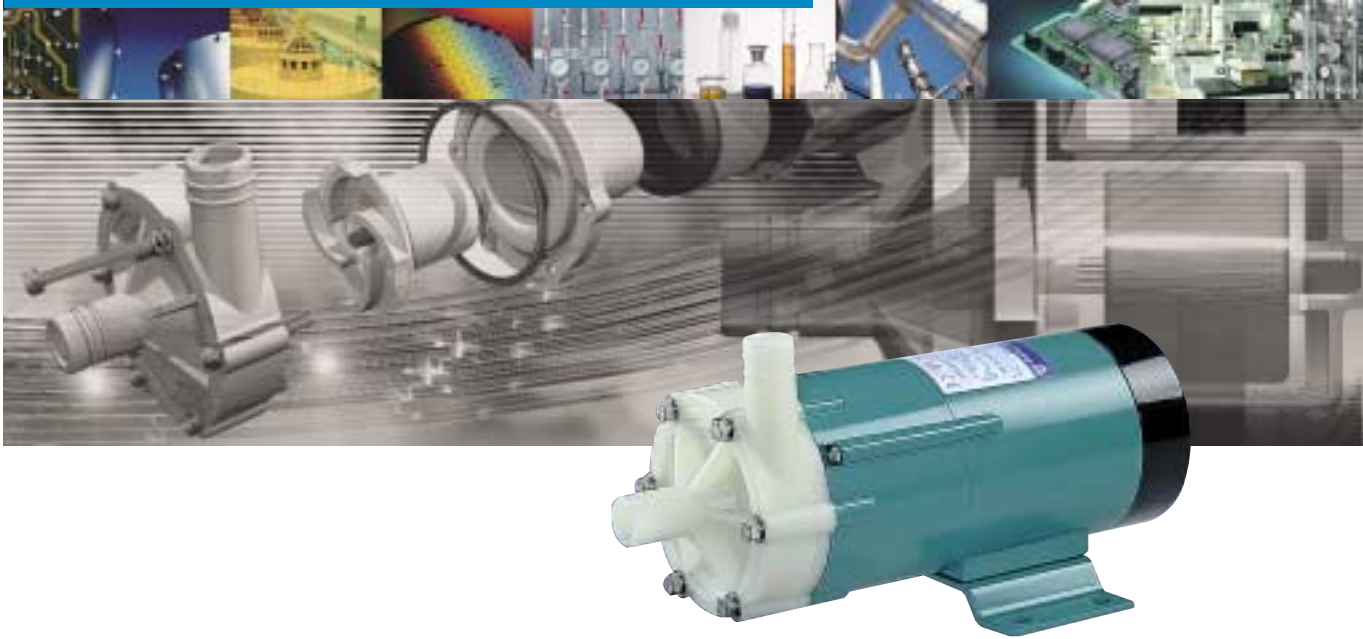


Magnetic drive pumps MD series



MD series, one of the world's best-selling pumps

The MD/MD-F series are leak-proof, small-sized magnetic pumps, which are our best-selling product line and widely used in over 30 countries. The line's most attractive characteristic is its numerous model configurations. Models made from GFRPP and now CFRPVDF have been introduced for the MD series and their variants have been further improved. From inclusion into machines such as automatic photo processors and various analytical devices, these pumps can transfer all kinds of chemical liquids. The MD-F series is designed specially for highly corrosive chemicals and employs CFRETFE as its main material. It is widely used for surface treatment and transfer of fluids containing strong acids/strong alkalies in liquid crystal manufacture.

No leakage

These are seal-less pumps using a magnetic drive system. Since there is no possibility of seal leakage, all problems relating to seal wear & replacement have been eliminated. The pumps are ideally suited to original equipment inclusion due to their compact design.

High durability

A CFRPVDF type (MD-V model) now supplements the GFRPP type on 6 models. Application on electrolyzed water and alkaline baths for enhanced surface treatment are now possible.

The MD-F series using CFRETFE as its main material can handle nearly all types of chemical liquids including strong acids/ alkalies and organic solvents.

Applicable on high specific gravity fluids

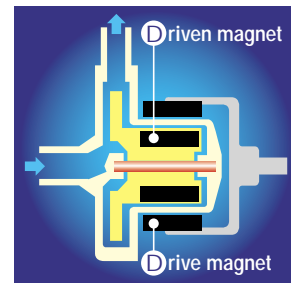
The MD-F series is designed and intended for use with heavier liquid fluids such as strong acids. To handle high specific gravity requirements, 3 types of impeller are available depending on the intended liquid.

Various models

There are a total of 50 models in the MD series. In addition to the standard versions, there are special models for high-head (MD-Z), high flow rate (MD-X) and with screwed connections (MD-M). The product line now contains more variants than ever before, for maximum application flexibility.

Easy maintenance

Since the pump's structure consists of only a few integrated parts, disassembly and inspection are very easy.



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.



MD-6



MD-10



MD-15R-N



MD-20R-N



MD-30R-N

A variety of models from 5.5 l/min to 135 l/min is available.

MD series

Thread type

MD-M



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

High head type

MD-Z



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

High capacity type

MD-X



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

MD-V series

CFRPVDF type

MD-V



MD-70RVM, 30RV-N, 15RV-N

MD-F series

CFRETFE type

MD-F



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



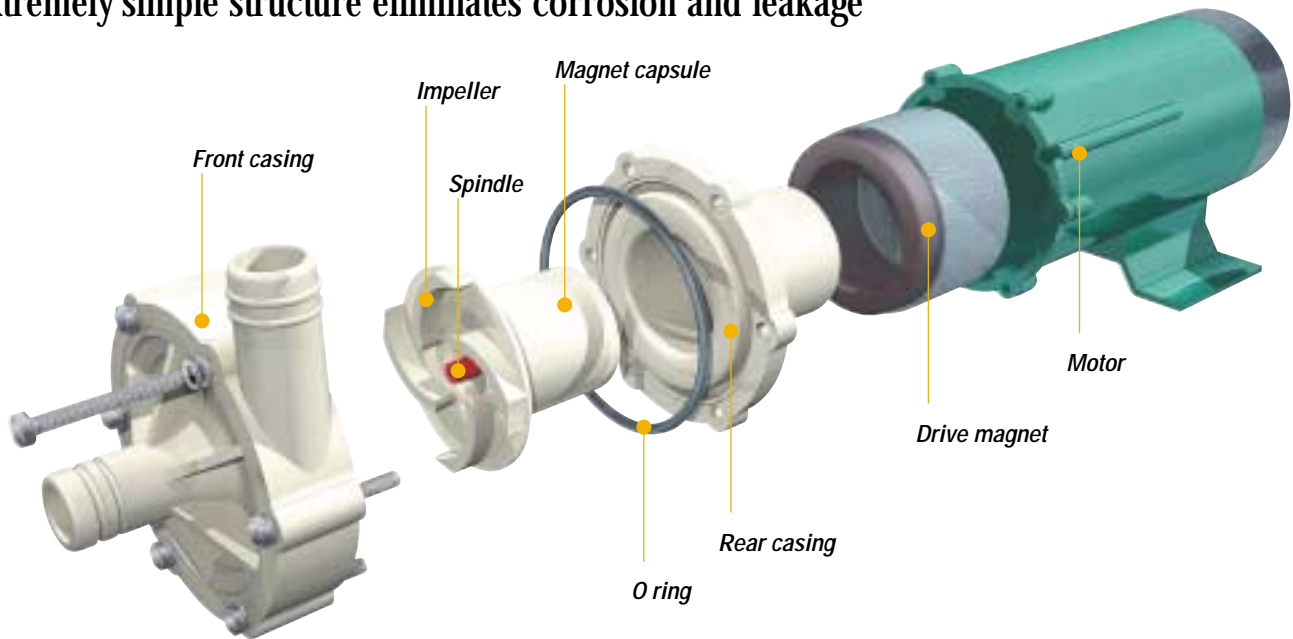
MD-100R

MD-70R

MD-55R-N

MD-40R-N

Extremely simple structure eliminates corrosion and leakage



Front casing



GFRPP
Hose connection type



CFRPVDF
Screwed connection type

MD **MD-V**

Casings are made from either GFRPP or CFRPVDF (MD-V). Both materials are available with either hose connections or screwed connections (MD-M) depending on application.

Screwed connection versions can additionally be fitted with either flanges or union joints types for further flexibility.

Note: Screwed Connection is not available for MD-6, 6Z, 10 and 15RV-N types due to their small sizes. Hose connection is option for MD-V.

MD-F

The pumps are made from injection molded carbon-fiber-filled ETFE. As a matter of course, screwed pipe connections are standard with safety as the primary consideration.

Rear casing

MD **MD-V**

The MD model uses GFRPP and the MD-V model uses CFRPVDF materials. Both types are an integrated design with bearings mounted in the ends to support the spindle.

Note: Bearings are not used on MD-6K-N/6ZK-N/10K-N models due to their small size.

MD-F

CFRETFE models also use integrated bearings mounted in the rear casings similar to other MD models.

Impeller

MD **MD-V**

The MD model is made from GFRPP and the MD-V model is made from CFRPVDF, with both types incorporating moulded-in ferrite magnets. The hollow, rotating Alumina ceramic spindle is integrated into this magnet. Open/closed/semi-open impeller configurations can be selected depending on liquid characteristics.

Note: MD-6, 6Z and 10 models use a fixed-spindle design.



Standard type



High head type



High capacity type

MD-F

The integrated closed impeller is made from CFRETFE. 3 types (X/Y/Z) of impeller diameters are standardized to cover all specific gravity requirements.



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.

Special accessories

• Union joint

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

• Self-priming chamber

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

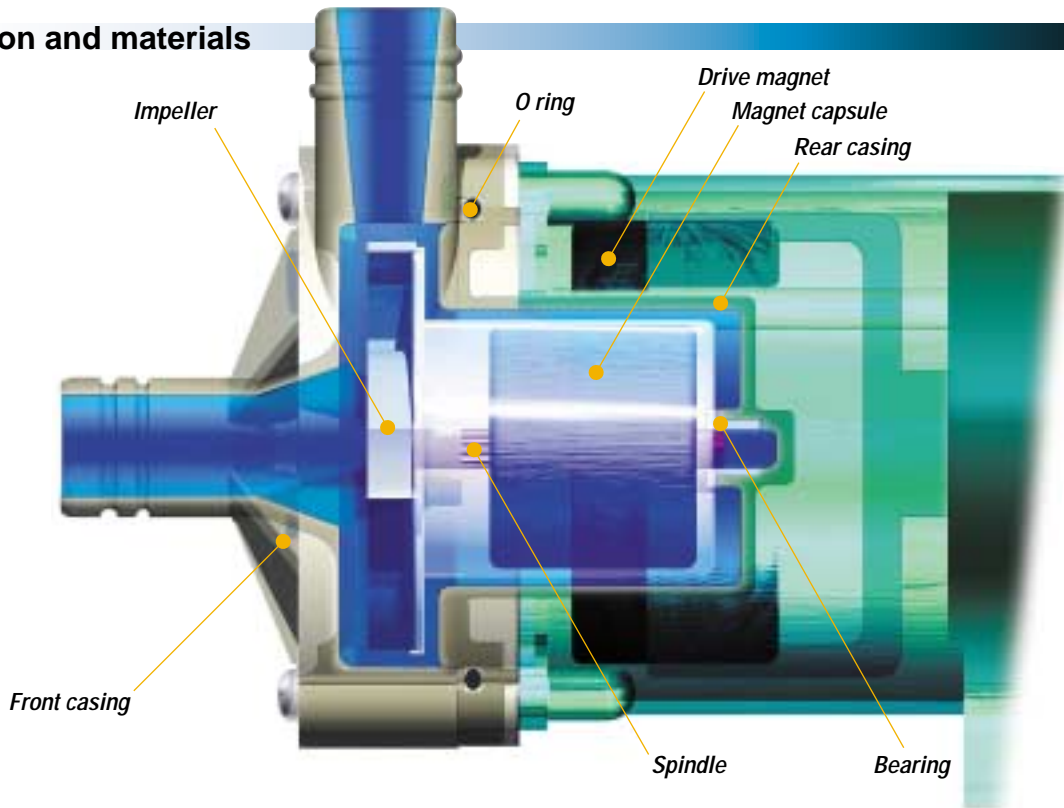


Attached to: SC-4 for 30RM-N and 40RM-N,
SC-7 for 70RM

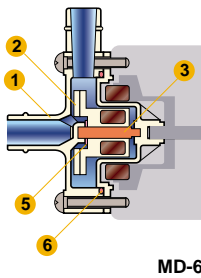
Connections(Inlet X Outlet): G3/4(SC-4)/G1(SC-7)
Suction limit: 0.8m(SC-4)/1.2m(SC-7)

Note: Self-priming height depends on liquid temperature and characteristics.

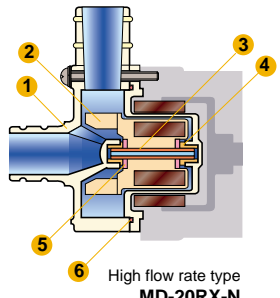
Construction and materials



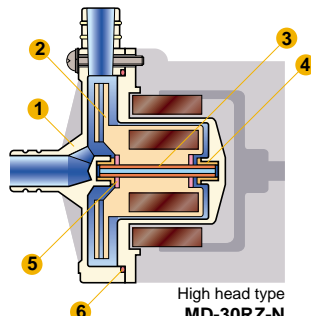
Wet-end materials



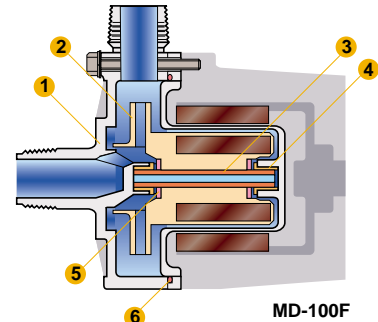
MD-6



High flow rate type
MD-20RX-N



High head type
MD-30RZ-N



MD-100F

MD

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

Note1: Bearing material of MD-40RZ-N and 70RZ is PPS.

MD-V

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

Note2: Bearing material of 70RZV is PPS.

MD-F

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)

Note3: EPDM or Atlas[®] are also available on special request.

Pump identification

MD-6 to 10

MD-6 Z V - N
1 2 3 4

1 Pump size	6 to 10
2 Type	No mark: Standard type Z: High head type
3 Material of casing	No mark: GFRPP V: CFRPVDF
4 Motor	N: AC220/240V(or 230V), single phase

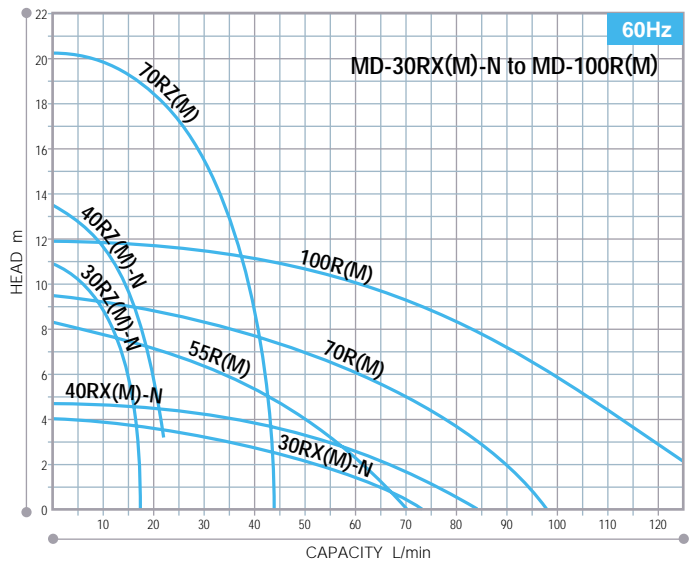
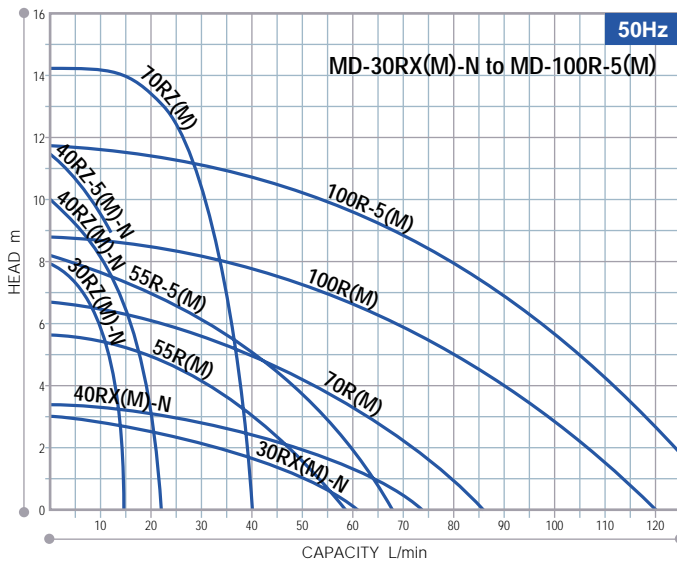
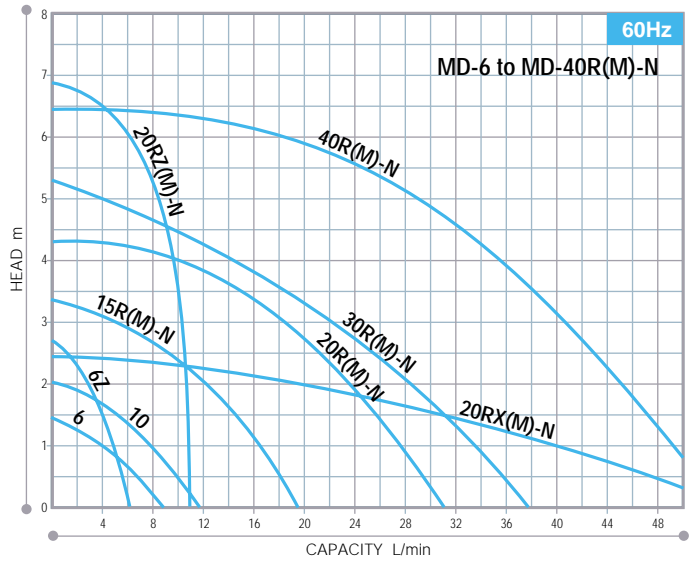
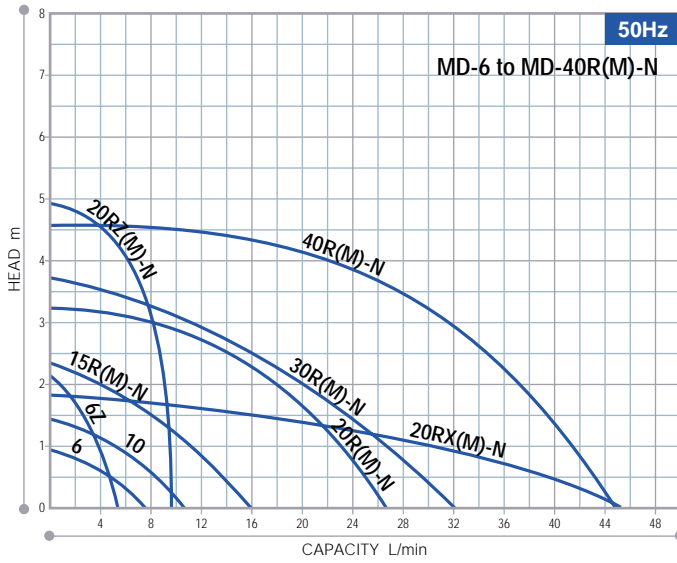
MD-15 to 100

MD-30 RZ V M - 200N
1 2 3 4 5

1 Pump size	15 to 100
2 Type	R: Standard type RZ: High head type RX: High capacity type
3 Material of casing	No mark: GFRPP V: CFRPVDF
4 Connection	No mark: Hose type M: Screwed type
5 Motor	N: AC100Vsingle phase, 200N: AC200/220/240V(or 230V) single phase No code of voltage for MD55R to MD100R.

Note4: Please ask us for model code of MD-F Series.

Performance curves



Note: Performance is based on pumping clear water at ambient temperature. Do not run pump with discharge valve closed because pump life may be shortened.
MD-40RZ-N model makes water noise when used at head of 6 meters (50 Hz)/7 meters (60Hz) or below.

Specifications

50Hz/60Hz

Model	Hose connection		Screwed connection		Max. Capacity L/min	Max. Head m	S.G.	Motor			Mass kg
	Inlet	Outlet	Inlet/Outlet	Union				Note	Output W	Input W	
MD-6	14mm	14mm	-	-	8.0/9.0	1.0/1.4	1.2	3/3	22/22	1	0.9
MD-6Z	14mm	14mm	-	-	5.5/6.0	2.1/2.7	1.1	3/3	24/23	1	0.9
MD-10	14mm	14mm	-	-	11/12	1.5/2.1	1.1	6/6	35/35	1	0.9
MD-15R(M)-N, 15RV(N)	14mm	14mm	G 3/4	13mm	16/19	2.4/3.4	1.3	10/10	26/31	1	1.6
MD-20R(M)-N	18mm	17mm	G 3/4	16mm	27/31	3.1/4.3	1.1	20/20	40/50	1	2.0
MD-20RZ(M)-N, 20RZV(M)-N	17.5mm	17mm	G 3/4	13mm	10/11	4.9/6.9	1.1	20/20	40/50	1	2.0
MD-20RX(M)-N	26mm	26mm	G 1	20mm	46/52	1.8/2.5	1.3	20/20	40/50	1	2.0
MD-30R(M)-N, 30RV(M)-N	20mm	20mm	G 3/4	16mm	32/38	3.8/5.4	1.3	45/45	60/80	1	3.5
MD-30RZ(M)-N, 30RZV(M)-N	17.5mm	17mm	G 3/4	13mm	15/17	8.0/11	1.0	45/45	70/90	1	3.5
MD-30RX(M)-N	26mm	26mm	G 1	20mm	62/72	2.9/4.1	1.1	45/45	70/90	1	3.5
MD-40R(M)-N	20mm	20mm	G 3/4	16mm	45/52	4.6/6.5	1.1	65/65	90/130	1	3.9
MD-40RZ(M)-N	20mm	20mm	G 3/4	16mm	22/22	10/13.5	1.0	65/65	140/200	1	3.9
MD-40RZ-5(M)-N	20mm	20mm	G 3/4	16mm	11/-	11.5/-	1.0	65/-	140/-	1	3.9
MD-40RX(M)-N	26mm	26mm	G 1	20mm	75/85	3.3/4.7	1.1	65/65	85/120	1	3.9
MD-55R(M)	26mm	26mm	G 1	20mm	60/70	5.6/8.2	1.2	90/90	130/170	1	5.4
MD-55R-5(M)	26mm	26mm	G 1	20mm	70/-	8.2/-	1.2	90/-	170/-	1	5.4
MD-70R(M), 70RV(M)	26mm	26mm	G 1	20mm	86/97	6.7/9.7	1.0	150/180	235/365	1 or 3	6.0
MD-70RZ(M), 70RZV(M)	20mm	20mm	G 3/4	16mm	40/43	14.3/20.3	1.0	180/216	275/395	1 or 3	6.0
MD-100R(M)	26mm	26mm	G 1	20mm	120/135	8.6/11.9	1.2	260/265	245/365	1 or 3	8.5
MD-100R-5(M)	26mm	26mm	G 1	20mm	135/-	11.7/-	1.1	260/-	365/-	1 or 3	8.5

• Temperature range: 0 - 80°C • Ambient temperature : 0 to 40°C • Limit of viscosity: 30mPa·s (at specific gravity 1) • Slurries shorten pump life.

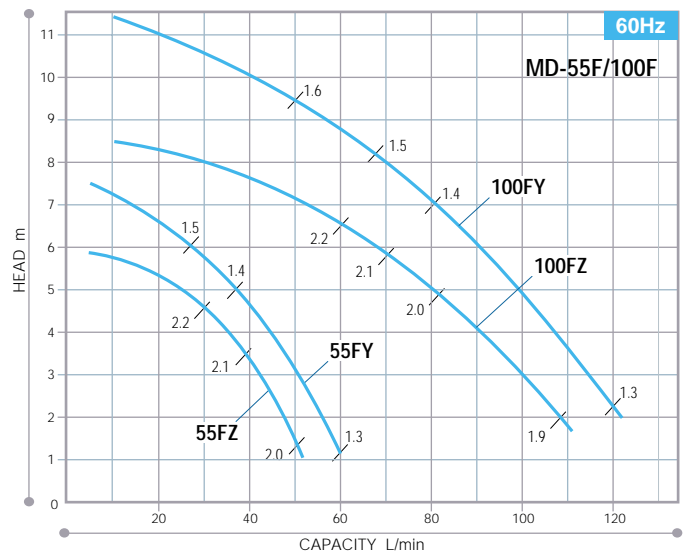
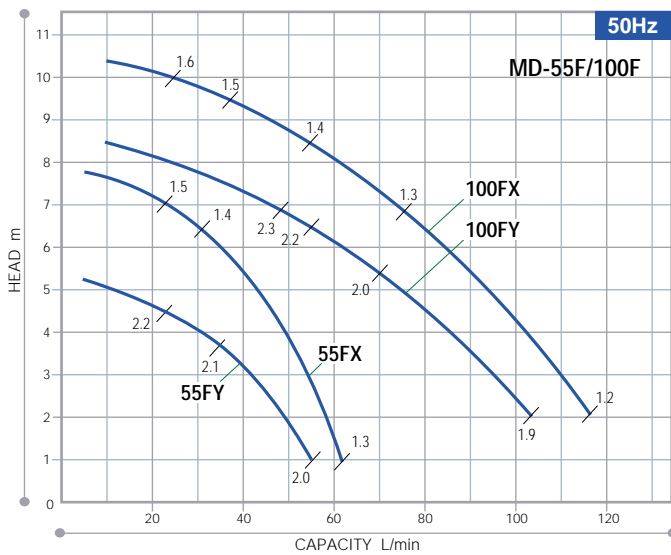
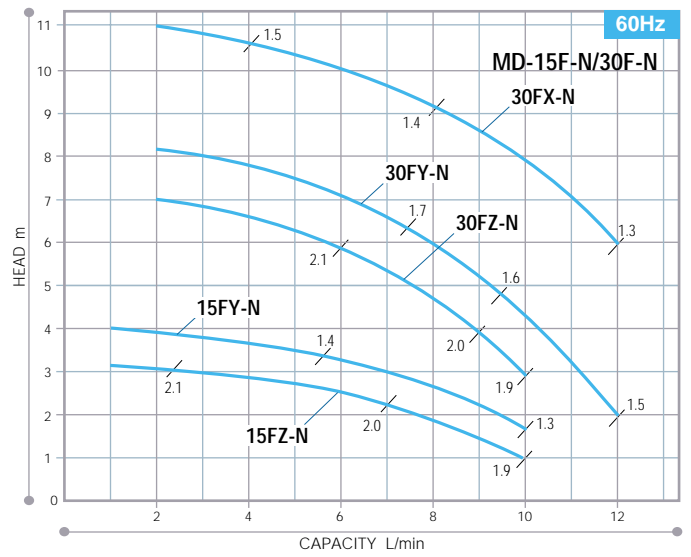
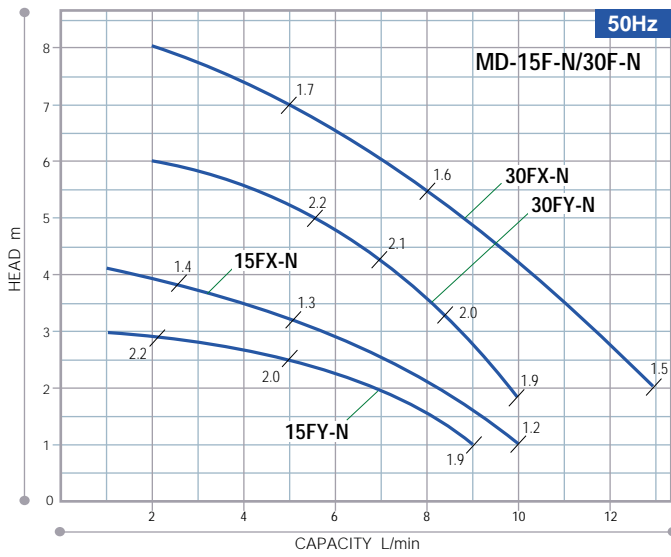
Note: Size of union is nominal dia. of mated PVC pipe. Allowable temperature range is 0 to 55°C.

• Allowable liquid temperature may depend on pumped liquid and operating condition such as heat cycles or so. Please contact us for details.

• MD-40RZ-5(M)-N, 55R-5(M) and 100R-5(M) models are exclusive use for 50 cycle frequency.

MD-F

Performance curves



Note: Performance is based on pumping clear water at ambient temperature. Do not run pump with discharge valve closed because pump life may be shortened. Figures on the performance curves shows the specific gravity limit at viscosity of 1mPa·s.

Specifications

50Hz/60Hz

Model	Type of Impeller	Hose connected Inlet/Outlet	Max. Capacity L/min	Max. Head m	S.G.	Motor		Note2	Mass kg		
						Output W	Input W				
MD-15F-N	X	NPT1/2	10/-	4.1/-	1.2/-	10/-	38/-	1	1.8		
	Y		9/10	3/4	1.9/1.3	10/10	30/34				
	Z		-/10	-/3.1	-/1.9	-/10	-/31				
MD-30F-N	X	NPT1/2 or G3/4	13/15	8/11	1.5/1.3	45/45	70/90	1	3.5		
	Y		10/12	6/8	1.9/1.5						
	Z		-/11	-/7	-/1.9					-/45	-/55
MD-55F	X	R1 or G1	65/-	7.8/-	1.3/-	90/-	170/-	1	5.4		
	Y		60/65	5.4/7.8	2.0/1.3					90/90	130/170
	Z		-/55	-/6.0	-/2.0					-/90	-/130
MD-100F	X	R1 or G1	125/-	10.5/-	1.2/-	260/-	375/-	1 or 3	8.5		
	Y		115/135	8.5/11.5	2.0/1.3					260/265	260/375
	Z		-/115	-/8.5	-/1.9					-/265	-/285

• Temperature range: 0 - 80°C • Ambient temperature : 0 to 40°C • Limit of viscosity: 30mPa·s (at specific gravity 1) • Slurries shorten pump life. • Allowable liquid temperature may depend on pumped liquid and operating condition such as heat cycles or so. Please contact us for details.

Dimensions

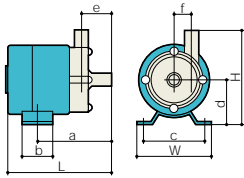
Size of MD-M(Screwed connection type) is shown in ().

MD

MD-V

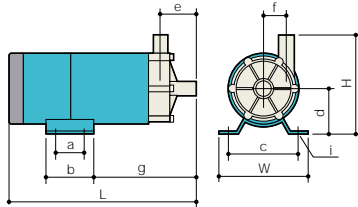
MD-6/6Z/10

Illustration shows MD-6



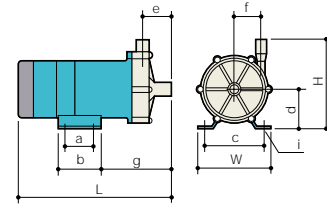
MD-15R(M)-N to 40R(M)-N

Illustration shows MD-30R-N



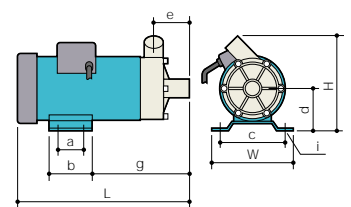
MD-20RZ(M)-N to 70RZ(M)-N

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 - Ø5.6
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		248	40	64	100	60	48	31	137	4 - Ø9
MD-40R(M)-N			250								

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

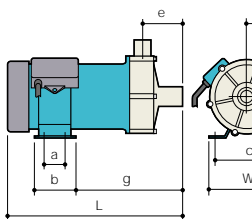
Model	W	H	L	a	b	c	d	e	f	g	i
MD-20RZ(M)-N	106	125	211	44	60	90	55			98	4 - 6 X10
MD-30RZ(M)-N		130	230					40	39	120	
MD-40RZ(M)-N	120		241	40	64	100	60		45	128	4 - Ø9
MD-40RZ-5(M)-N											
MD-70RZ(M)	130	165	247	40	60	110	65	42	48	138	4 - 7 X11
MD-20RX(M)-N	106	119 (122)	220	44	60	90	45	47		105	4 - 6 X10
MD-30RX(M)-N		137 (140)	254								
MD-40RX(M)-N	120	137 (141)	256	40	64	100	60	50		143	4 - Ø9

MD

MD-V

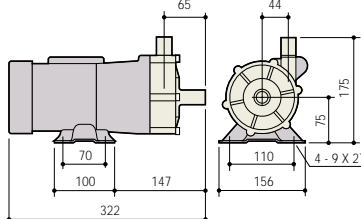
MD-55R(M) to 70R(M)

Illustration shows MD-55R



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

Illustration shows MD-100R

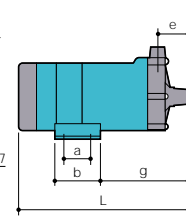


Model	W	H	L	a	b	c	d	e	f	g		i
										100V	200V	
MD-55R(M)	120	155	274	40	64	100	65	62 (61)	40	167 (166)	167	4 - Ø9
MD-55R-5(M)												
MD-70R(M)	130	155	258	40	60	110	65	53	43	149		4 - 7 X11

MD-F

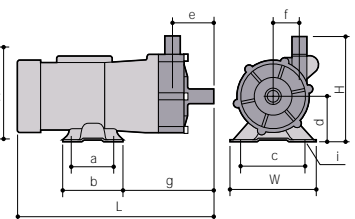
MD-15F-N, 30F-N

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 - Ø5.6
MD-30F-N		130	231					60	39	39	120
MD-55F	120	155	270	40	64	100	65	59	40	167	4 - Ø9
MD-100F	156	175	320	70	100	110	75	63	43	145	4 - 9 X 27

Dimension of G screw type of MD-30F-N, 55F and 100F models is different. Ask us for them.

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: DC14 to 24V (brushless)



RD-05

RD-30