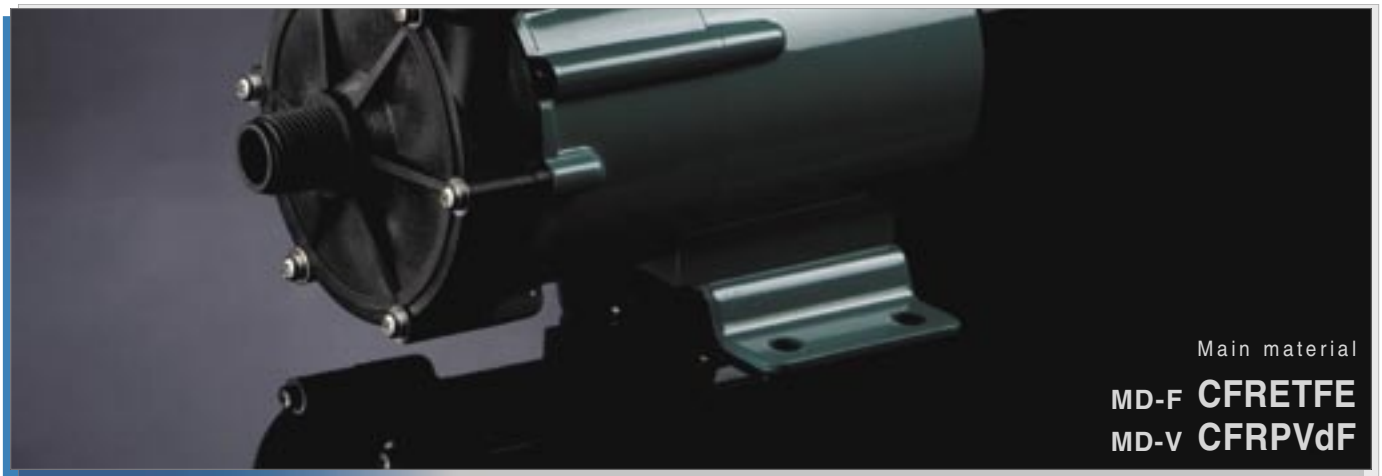
MD-F
MD-V
series

Magnetic drive pumps

A world's best-seller, the high-end compact magnetic pumps



Magnetic drive pumps

Magnetically-driven seal-less pumps are free from leak problems and the need of seal replacement.
Most chemicals can be handled including strong acid /alkaline.

Compliant with highly corrosive/viscous liquids
High-end compact magnetic drive pumps

Most chemicals can be handled including strong acid/alkaline.

High corrosion-resistance

The combination of the MD-F series with CFRETFE wet ends and the MD-V series with CFRPVdF wet ends covers most chemicals including strong acid/alkaline.

Viscosity responsiveness

The MD-F series is designed to pump highly viscous liquids such as strong acid. Three types of impellers are selectable according to liquid viscosity.

MD-F

MD-15F

MD-30F

MD-15F·30F C F R ETFE 50/60Hz

- Max Discharge capacity **9/10 - 13/15** l/min
- Max Discharge head **3/3.1 - 8/11** m

MD-55F

MD-100F

MD-55F·100F C F R ETFE 50/60Hz

- Max Discharge capacity **60/55 - 125/135** l/min
- Max Discharge head **5.4/6.0 - 10.5/11.5** m

Leak free

Magnetically-driven seal-less pumps are free from leak problems and the need of seal replacement. This feature and its compact nature offer the best fit in built-in applications.

Easy maintenance

The pump unit is comprised of a small number of subunits, so that maintenance is significantly eased.

MD-V

MD-6KV

MD-15V

MD-20V

MD-30RV

MD-70RV

MD-6KV C F R PVdF 50/60Hz

- Max Discharge capacity **8.0/9.0** l/min
- Max Discharge head **1.0/1.4** m

MD-15V·20V·30V C F R PVdF 50/60Hz

- Max Discharge capacity **10/11 - 32/38** l/min
- Max Discharge head **2.4/3.4 - 8.0/11** m

MD-70V C F R PVdF 50/60Hz

- Max Discharge capacity **40/43 - 86/97** l/min
- Max Discharge head **6.7/9.7 - 14.3/20.3** m

A wide selection range according to chemical liquids

Hyperbaric/High-compression types are available.

Outline of the series

Main Material	Models		Max. discharge capacity (l/min) 20 40 60 80 100 120 140	Max. discharge head (m) 5 10 15 20	Limit of specific gravity
CFRETFE	**MD-15FX** Low S. G. type	50Hz	10	4.1	1.2
	MD-15FY Middle S. G. type	50Hz	9	3	1.9
		60Hz	11	4	1.3
	MD-15FZ High S. G. type	60Hz	10	3.1	1.9
	MD-30FX Low S. G. type	50Hz	13	8	1.5
		60Hz	15	11	1.3
	MD-30FY Middle S. G. type	50Hz	10	6	1.9
		60Hz	12	8	1.5
	MD-30FZ High S. G. type	60Hz	11	7	1.9
	MD-55FX Low S. G. type	50Hz	65	7.8	1.3
	MD-55FY Middle S. G. type	50Hz	60	5.4	2.0
		60Hz	65	7.8	1.3
	MD-55FZ High S. G. type	60Hz	55	6.0	2.0
	MD-100FX Low S. G. type	50Hz	125	10.5	1.2
	MD-100FY Middle S. G. type	50Hz	115	8.5	2.0
		60Hz	135	11.5	1.3
	MD-100FZ High S. G. type	60Hz	115	8.5	1.9
CFRPVdF	**MD-6KV** Standard type	50Hz	8.0	1.0	1.2
		60Hz	9.0	1.4	1.2
	MD-15RV Standard type	50Hz	16	2.4	1.3
		60Hz	19	3.4	1.3
	MD-20RZV High head type	50Hz	10	4.9	1.1
		60Hz	11	6.9	1.1
	MD-30RV Standard type	50Hz	32	3.8	1.3
		60Hz	38	5.4	1.3
	MD-30RZV High head type	50Hz	15	8.0	1.1
		60Hz	17	11	1.1
	MD-70RV Standard type	50Hz	86	6.7	1.0
		60Hz	97	9.7	1.0
	MD-70RZV High head type	50Hz	40	14.3	1.0
		60Hz	43	20.3	1.0

Construction

Motor

Drive magnet

The 6- or 8-pole high power ferrite magnet drives the impeller over the rear casing.

Rear casing

CFRETFE single-piece rear casing of the MD-F and CFRPVdF single-piece rear casing of the MD-V. The bearing is placed at the bottom, supporting the spindle.

O ring

Impeller

MD-F CFRETFE single-piece closed impeller.
Three impeller types (X・Y・Z) are available according to specific gravity.


X: Low S.G. impeller


X: Middle S.G. impeller


X: High S.G. impeller

MD-V For the MD-V, the ferrite magnet is encapsulated into the CFRPVdF impeller. For the rotating spindle type, an alumina ceramic spindle is integrally molded with the impeller.

Note: The MD-6KV-N is a rotating spindle type.

Spindle

Front casing

MD-F CFRETFE injection mold of the safety thread connection type

MD-V CFRPVdF hose connection is available as well as thread connection. Also union joints can be installed for the thread connection types.

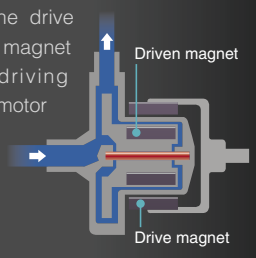
Note: For the 6KV-N and 15RV-N, the thread connection type is not available.


Hose connection type


Thread connection type

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-15F·30F

C F R
E T F E
50/60 Hz

- Range of Max. discharge capacity: 9/10 - 13/15 L/min
- Range of Max. discharge head: 3/3.1 - 8/11 m

MD-15F

MD-30F

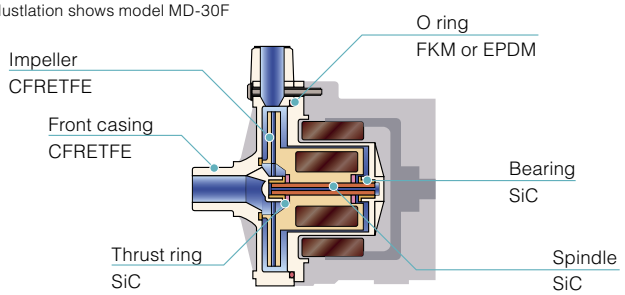
Specifications (50/60Hz)

Model	Type of Impeller	Hose connection Inlet/Outlet	Max. capacity (L/min)	Max. head (m)	S.G.	Output (W)	Input (W)	Power source	Mass (kg)
MD-15F	X	NPT1/2	10 / –	4.1 / –	1.2 / –	10 / –	30 / –	100V/200V/ 220V - 240V Single phase	1.8
	Y		9 / 11	3 / 4	1.9 / 1.3	10 / 10	30 / 34		
	Z		– / 10	– / 3.1	– / 1.9	– / 10	– / 31		
MD-30F	X	NPT1/2orG3/4	13 / 15	8 / 11	1.5 / 1.3	45 / 45	70 / 90		3.5
	Y		10 / 12	6 / 8	1.9 / 1.5	45 / 45	70 / 90		
	Z		– / 11	– / 7	– / 1.9	– / 45	– / 90		

• Temperature range: 0 - 80˚C (Contact us for applications below zero.) • Limit of viscosity: 30 mPa·s (at 1 S.G.) • Ambient temperature: 0 - 40˚C
•Motor type: Capacitor-run induction motor

Construction and materials

Illustlation shows model MD-30F

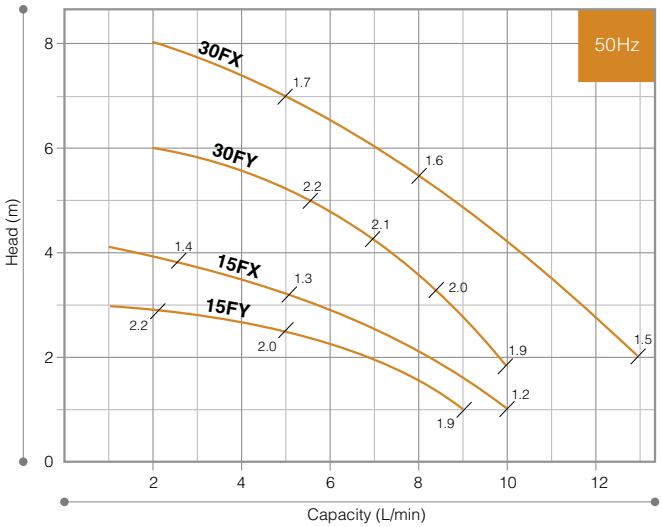


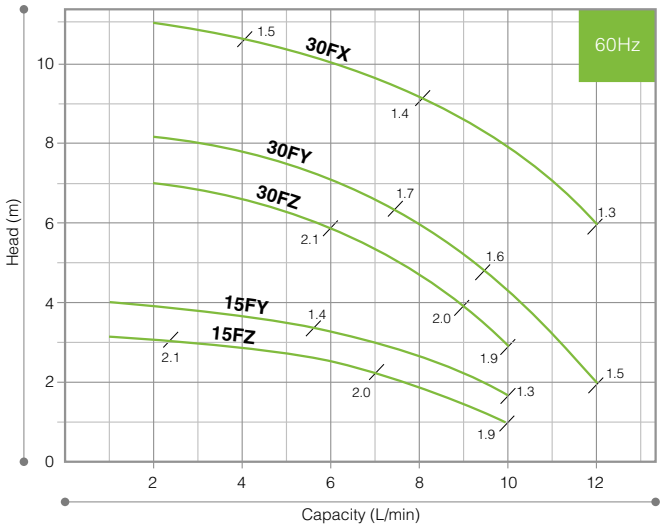
Pump identification

MD - 30F G Z - 200 E N

- Pump size
  15F, 30F
- Connection
  No mark: NPT thread connection
  G: G thread connection
- Impeller
  X: Low S.G. type
  Y: Middle S.G. type
  Z: High S.G. type
- Motor
  No mark: 100V single (Standard)
  200: 200V single (Special order)
  220/240: 220/240 single
- Material of O ring
  No mark: FKM (Standard)
  E: EPDM (Special order)

Performance curves





MD-55F·100F

C F R
ETFE
50/60 Hz

- Range of Max. discharge capacity: 60/55 - 125/135 L/min
- Range of Max. discharge head: 5.4/6.0 - 10.5/11.5 m

MD-55F

MD-100F

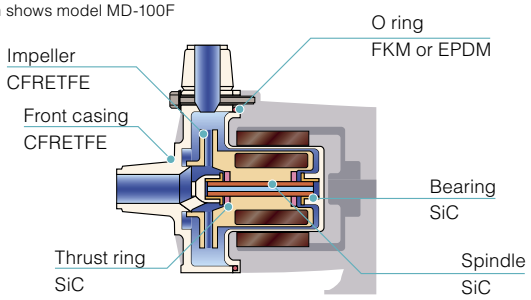
Specifications (50/60Hz)

Model	Type of Impeller	Hose connection Inlet/Outlet	Max. capacity (L/min)	Max. head (m)	S.G.	Output (W)	Input (W)	Power source		Mass (kg)
								Single phase	Three phase	
MD-55F	X	R1 or G1	65 / –	7.8 / –	1.3 / –	90 / –	170 / –	100V/200V/ 220V - 240V	–	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 / –		220V/380V/ 400V/440V	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 (Contact us for applications below zero.) • Limit of viscosity: 30 mPa·s (at 1 S.G.) • Ambient temperature: 0 - 40˚C
•Motor type: Capacitor-run induction motor

Construction and materials

Illustlation shows model MD-100F



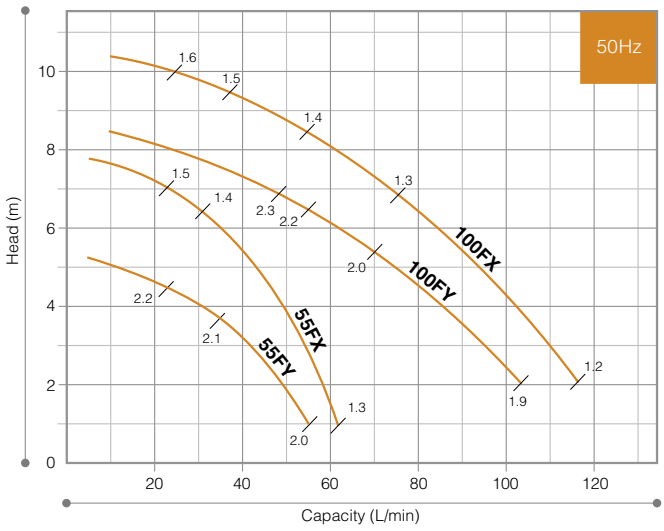
Pump identification

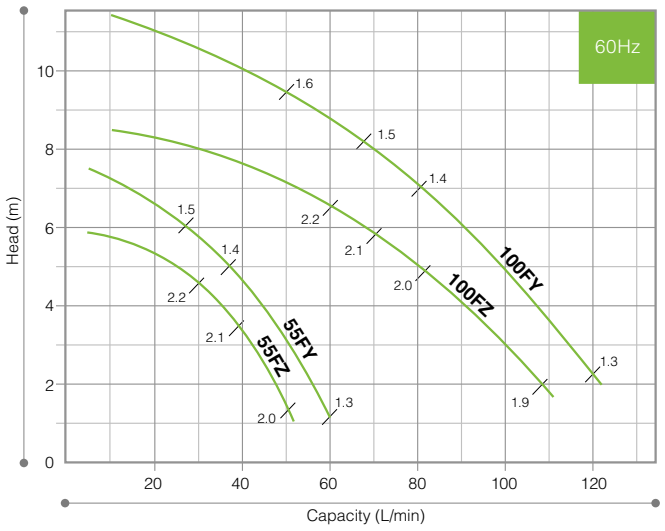
MD - 100F G X

- Pump size **55F, 100F**
- Connection
  No mark: R thread connection
  G: G thread connection
- Impeller
  X: Low S.G. type
  Y: Middle S.G. type
  Z: High S.G. type

Note: Specify the pump model and power specification at an inquiry phase.

Performance curves





MD-15V·20V·30V

C F R
P V d F
50/60 Hz

- Range of Max. discharge capacity: 10/11 - 32/38 L/min
- Range of Max. discharge head: 2.4/3.4 - 8.0/11 m

MD-15RV　MD-20RZV　MD-30RV

Specifications (50/60Hz)

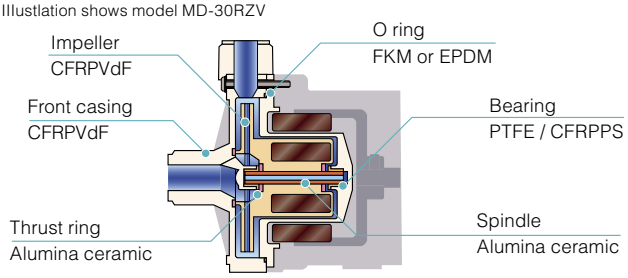
Model	Hose connection RV · RZV		Screwed connection RVM · RZV-M		Max. capacity	Max. head	S.G.	Output	Input	Power source (Note2)	Mass
	Inlet (mm)	Outlet (mm)	Inlet/Outlet	Union (mm) (Note1)	(L/min)	(m)		(W)	(W)		(kg)
MD-15RV	14	14	G3/4	13	16 / 19	2.4 / 3.4	1.3	10 / 10	26 / 31	100V / 200V 220V - 240V Single phase	1.6
MD-20RZV	17.5	17	G3/4	13	10 / 11	4.9 / 6.9	1.1	20 / 20	40 / 50		2.0
MD-30RV	20	20	G3/4	16	32 / 38	3.8 / 5.4	1.3	45 / 45	60 / 80		3.5
MD-30RZV	17.5	17	G3/4	13	15 / 17	8.0 / 11	1.0	45 / 45	70 / 90		3.5

• Temperature range: 0 - 80˚C (Contact us for applications below zero.) • Limit of viscosity: 30 mPa·s (at 1 S.G.) • Ambient temperature: 0 - 40˚C
•Motor type: Capacitor-run induction motor

Note 1: The union field shows the nominal diameter of the applicable VP vinyl chloride hose. Heat resistance of the standard union is 0 - 55˚C and that of the heat resistant union is 0 - 80˚C
Note 2: Single phase of 200V model is special order. Please contact us for details.

Construction and materials

Illustlation shows model MD-30RZV



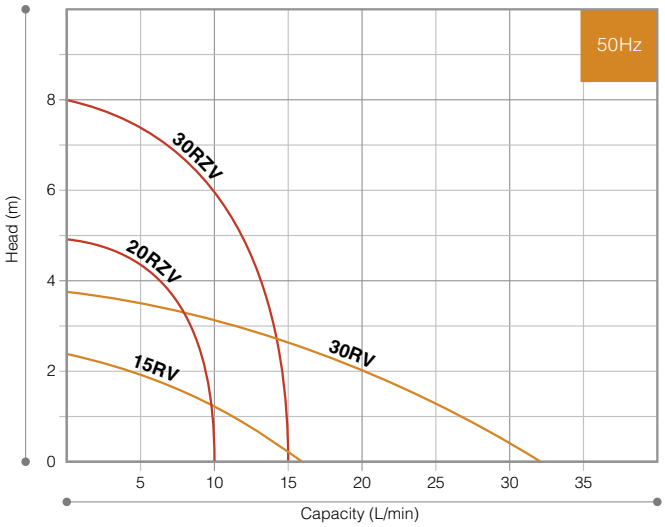
Note: Material of bearing for MD-15RV, 20RZV and 30RV are CFRPPS

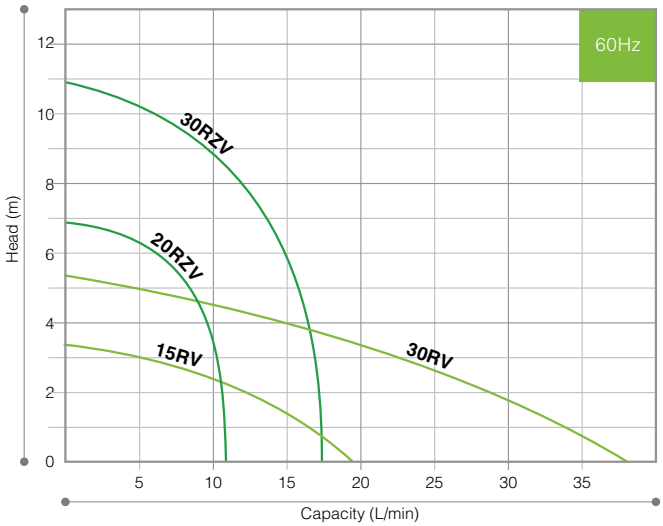
Pump identification

MD - 30 RZ V M - 200 E N

- Pump size **15, 20, 30**
- Type **R**: Standard type **RZ**: High head type
- Material of casing **V**: CFRPVdF
- Connection No mark: Hose type **M**: G thread connection
- Motor No mark: 100V single phase **200**: 200V single phase **220**: 220V - 240V single phase
- Material of O ring No mark: FKM (Standard) **E**: EPDM (Special order)

Performance curves





MD-70V

C F R
P V d F
50/60 Hz

- Range of Max. discharge capacity: 40/43 - 86/97 L/min
- Range of Max. discharge head: 6.7/9.7 - 14.3/20.3 m

MD-70RV

Specifications (50/60Hz)

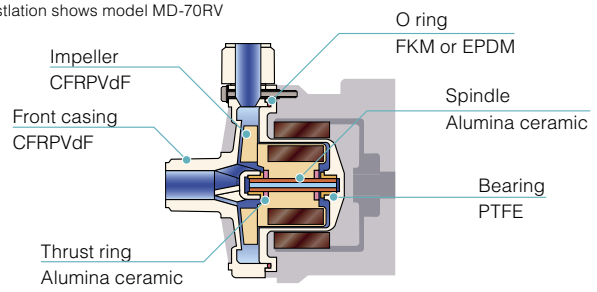
Model	Hose connection RV · RZV		Screwed connection RVM · RZV-M		Max. capacity	Max. head	S.G.	Output	Input	Power source (Note2)	Mass
	Inlet (mm)	Outlet (mm)	Inlet/Outlet	Union (mm) (Note1)	(L/min)	(m)		(W)	(W)		(kg)
MD-70RV	26	26	G1	20	86 / 97	6.7 / 9.7	1.0	150 / 180	235 / 365	100V/200V Single phase	6.0
MD-70RZV	20	20	G3/4	16	40 / 43	14.3 / 20.3	1.0	180 / 216	275 / 395	220/240V, 380/400V Three phase	6.0

• Temperature range: 0 - 80˚C (Contact us for applications below zero.) • Limit of viscosity: 30 mPa·s (at 1 S.G.) • Ambient temperature: 0 - 40˚C
•Motor type: Capacitor-run induction motor

Note 1: The union field shows the nominal diameter of the applicable VP vinyl chloride hose. Heat resistance of the standard union is 0 - 55˚C and that of the heat resistant union is 0 - 80˚C
Note 2: Single phase of 200V model is special order. Please contact us for details.

Construction and materials

Illustlation shows model MD-70RV



Note: Material of bearing for MD-70RZV is CFRPPS

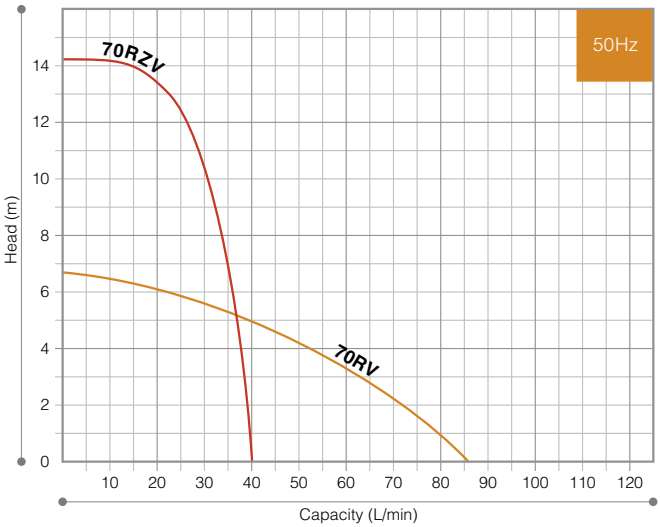
Pump identification

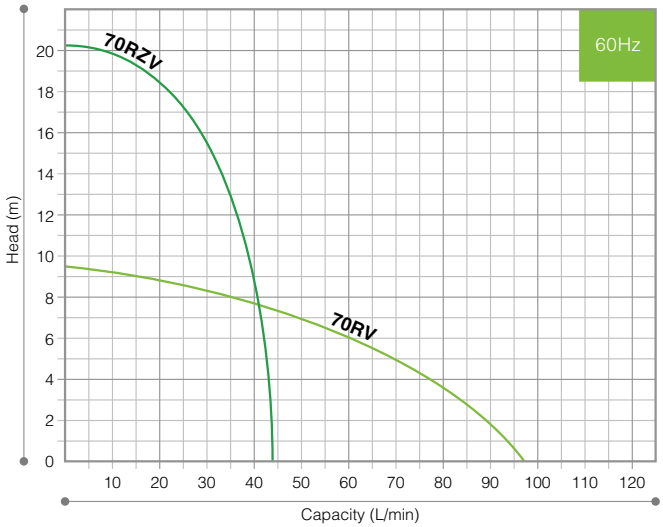
MD - 70 R V M

- Pump size **70**
- Type **R**: Standard type **RZ**: High head type
- Material of casing **V**: CFRPVdF
- Connection No mark: Hose type **M**: G thread connection

Note: Specify the pump model and power specification at an inquiry phase.

Performance curves





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.

Specifications

Model	13A	H13A	16A	H16A	20A	H20A
Material	PVC	HT-PVC	PVC	HT-PVC	PVC	HT-PVC
Range of temp.	0 - 55˚C	0 - 80˚C	0 - 55˚C	0 - 80˚C	0 - 55˚C	0 - 80˚C
Material of O ring	FKM or EPDM					

Dimensions (mm)

MD-F

MD-15F, 30F

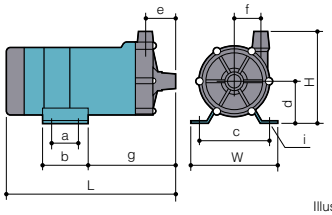


Illustration shows MD-30F

Model	W	H	L	a	b	c	d	e	f	g	i
MD-15F	95	120	186	–	50	68	55	34	29	99	2 - ø5.6
MD-30F	120	130	231	40	64	100	60	39	39	120	4 - ø9

Please contuct us for G connection type.

MD-55F, 100F

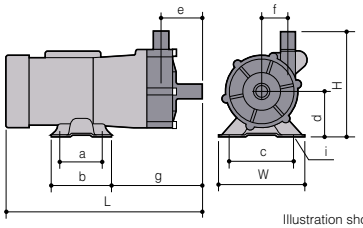


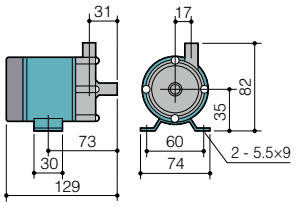
Illustration shows MD-100F

Model	W	H	L	a	b	c	d	e	f	g	i
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 - 9×27

Please contuct us for G connection type.

MD-V

MD-6KV



MD-15RV, 30RV, 70RV

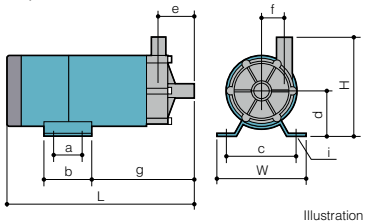


Illustration shows MD-30RV

Model	W	H	L	a	b	c	d	e	f	g	i
MD-15RV	95	109 (114)	180 (179)	–	50	68	55	39	22	92	2 - ø5.6
MD-30RV	120	130	248	40	64	100	60	48	31	137	4 - ø9
MD-70RV	130	155	258	40	60	110	65	53	43	149	4 - 7×11

( ): Thread connection type

MD-20RZV, 30RZV, 70RZV

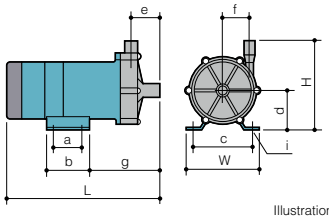


Illustration shows MD-20RZV

Model	W	H	L	a	b	c	d	e	f	g	i
MD-20RZV	106	125	211	44	60	90	55	40	39	98	4 - 6×10
MD-30RZV	120	130	230	40	64	100	60			120	4 - ø9
MD-70RZV	130	165	247	40	60	110	65	42	48	138	4 - 7×11