



Magnetic Drive Gear Pumps **MDG**

**Compact Gear Pumps That Completely
Eliminate Leakage Problems**



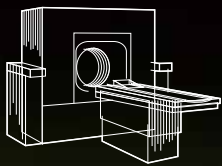
The Heart of Industry

Wide Use in Hundreds of Varied Applications

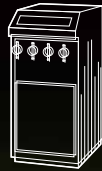
MDG Series pumps are small seal-less magnetic drive gear pumps engineered to provide the utmost in quiet and leak-free operation.

Owing to their remarkable efficiency and compact design, MDG pumps are in wide use in hundreds of varied applications including some of the most sophisticated medical and laboratory equipment.

Applications in Various Fields



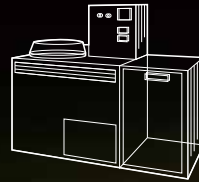
CT Scanner



Dialyzer



Plasma etching units



Freon recovery and regeneration systems



Pure-water producing machines

Medical appliances: CT Scanner, Dialyzer, Laser-applied surgical knife and other laser-applied medical treatment units, X-ray film processors

Semiconductor or liquid crystal manufacturing equipment: Laser-applied machining units, Plasma etching units,

Pure-water or solvent use washing machines, Soldering machines, IC testing units

Printing equipment: Blanket auto washers

Food processing equipment: Noodle producing machines, Water coolers, Freshness preservation units for food

Waste liquid recovery and processing equipment: Freon recovery and regeneration systems, Photographic chemical waste processing units, Organic solvent recovery units

Others: Pure-water producing machines, Oil circulation and filtering units, Liquid adding machines for pasturage, Hydroponic systems, Spraying machines for agricultural chemicals, Dye laser units, Fuel cells, Machines applied in physics and chemistry, Laboratories or experimental facilities

R2



Transfer Liquid at High Pressure

Despite its small size, it is capable of high-pressure discharge of Max. 0.6 MPa and vacuum degree of 5.3 kPa.



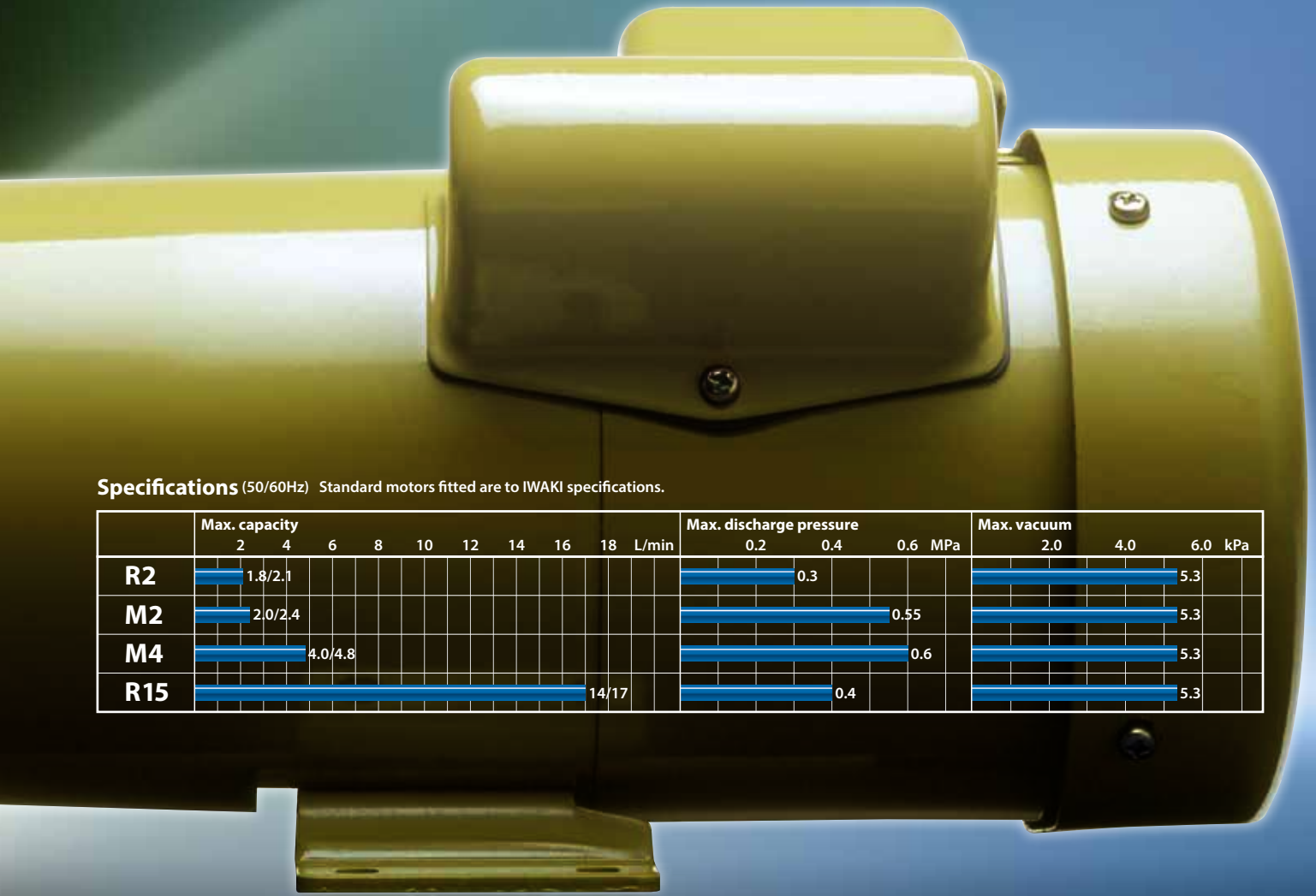
Excellent Corrosion Resistance

Excellent corrosion resistant materials such as SUS316, PPS, PEEK, and PTFE are used for the wet ends. Various chemicals can be transferred.



Seal-Less Design

Magnetic drive seal-less pumps are free from leakage problem and the need for seal replacement.



Specifications (50/60Hz) Standard motors fitted are to IWAKI specifications.

	Max. capacity										Max. discharge pressure			Max. vacuum			
	2	4	6	8	10	12	14	16	18	L/min	0.2	0.4	0.6	MPa	2.0	4.0	6.0
R2	1.8/2.1										0.3			5.3			
M2	2.0/2.4										0.55			5.3			
M4	4.0/4.8										0.6			5.3			
R15	14/17										0.4			5.3			

M2



M4



R15



Excellent Heat Resistance

In addition to using heat-resistant materials, the pump body is precision-machined using our unique technology, enabling high-temperature chemical transfer. The standard type can be used with Max. 95 °C ^{Note}.
Note: It depends on the model.



Compact Design

In addition to being compact and light-weight, it has low noise and vibration, making it suitable for incorporation into devices and equipment.



Long Life Design

Demonstrates excellent durability even for long-term continuous operation. There is also a type with a built-in relief valve to protect the pump.

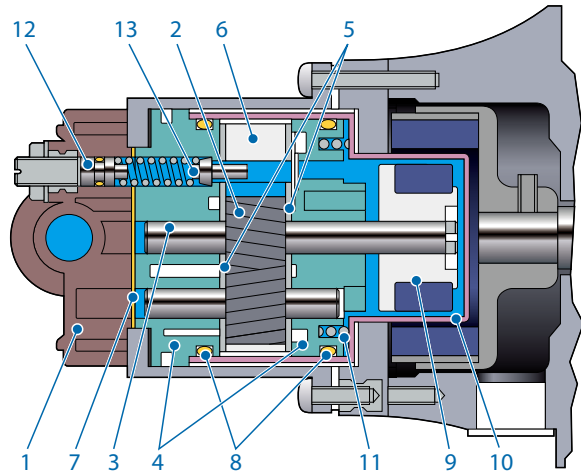
R2



Construction and Materials

Name of part	Materials
1 Pump head	GFRPPS
2 Gear	PPS
3 Shaft	SUS316
4 Bearing	(CF+PTFE) PPS ^{Note}
5 Plate	SUS316
6 Gear case	SUS316
7 Gasket seal	FKM
8 O ring	FKM
9 Magnet capsule	SUS316, GFRPPS
10 Rear casing	SUS316
11 Retaining spring	SUS316 equivalent
12 Adjusting screw	SUS316
13 Valve	(CF+PTFE) PPS ^{Note}

Note: PPS with carbon fiber + PTFE



Identification

MDG - R2 R V B 230

1 2 3 4 5

1 Model R2	2 Temp. range R : 0 - 50°C B : 0 - 95°C	3 Relief valve V : with relief valve no symbol : without relief valve	4 Connection A : Rc1/8 B : NPT1/8 C : G1/4	5 Motor 230 : AC220 - 240V 115 : AC115V
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Specifications (50/60Hz)

Model	Connection size	Max. capacity L/min	Max. discharge pressure MPa	Max. vacuum kPa	Liquid temp. range °C	Viscosity limit ^{Note1} mPa·s	Motor ^{Note2}	Mass kg
MDG-R2R□□□	Rc1/8, NPT1/8, G1/4	1.8/2.1	0.3	5.3	0 - 50	50	AC100V, 20W	2.1
MDG-R2B□□□	Rc1/8, NPT1/8, G1/4	1.6/1.9	0.3	5.3	0 - 95	50	AC100V, 20W	2.1

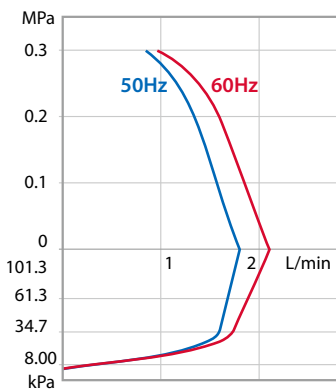
- Pump performance will change depending on type of liquid. Further information will be provided on request.
- When handling pure water and solvent, please contact us.
- Standard motors fitted are to IWAKI specifications.

Note1: When viscosity of handling liquid exceeds limitation of pump, please contact us.

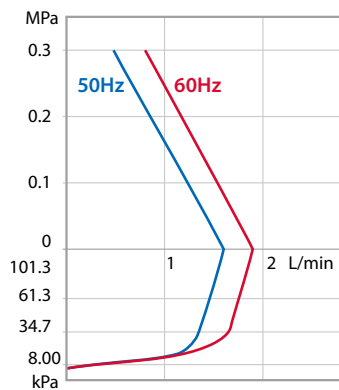
Note2: 115V motor is also available.

Performance Curves (Clear water at 25°C)

MDG-R2R□□□



MDG-R2B□□□

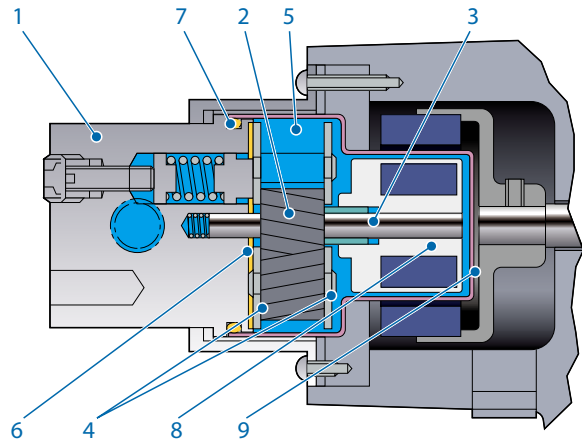


M2



Construction and Materials

Name of part	Materials
1 Pump head	SUS316
2 Gear	CFRPEEK
3 Shaft	SUS316
4 Plate	SUS316
5 Gear case	CFRPEEK
6 Gasket	PTFE
7 O ring	FKM
8 Magnet capsule	SUS316, PPS
9 Rear casing	SUS316



Identification

MDG - M2 S6 B 220

1
2
3
4

1 Model
M2
2 Pressure • Flow rate
S6
3 Connection (M2S6)
B : NPT1/8
4 Motor
220 : AC220 - 240V, 115 : AC115V

Specifications (50/60Hz)

Model	Connection size	Max. capacity L/min	Max. discharge pressure MPa	Max. vacuum kPa	Liquid temp. range °C	Viscosity limit mPa·s ^{Note1}	Motor ^{Note2}	Mass kg
MDG-M2S6B□	NPT1/8	2.0/2.4	0.55	5.3	0 - 65	50	AC220 - 240V, 45W	3.5

• Pump performance will change depending on type of liquid. Further information will be provided on request.

• When handling pure water and solvent, please contact us.

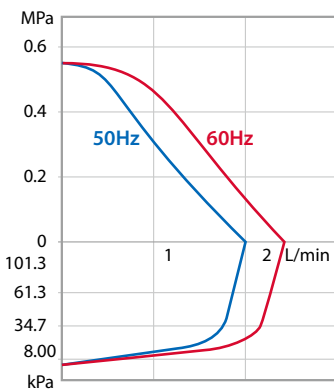
• Standard motors fitted are to IWAKI specifications.

Note1: When viscosity of handling liquid exceeds limitation of pump, please contact us.

Note2: 115V motor is also available.

Performance Curves (Clear water at 25°C)

MDG-M2S6B□

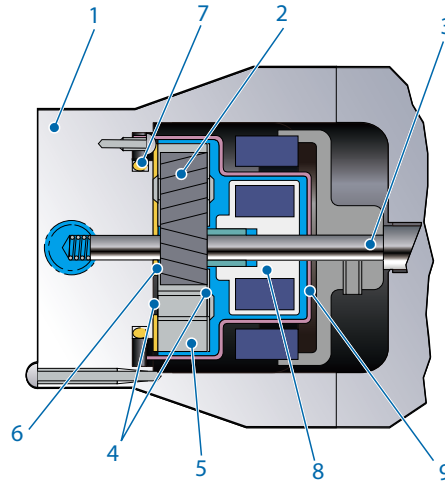


M4



Construction and Materials

Name of part	Materials
1 Pump head	SUS316
2 Gear	CFRPEEK
3 Shaft	SUS316
4 Plate	SUS316
5 Gear case	PPS
6 Gasket	PTFE
7 O ring	FKM
8 Magnet capsule	SUS316, PPS
9 Rear casing	SUS316



Identification

MDG - M4 S6 A 220 H

1 2 3 4 5

- | | | | | |
|------------------------------|---|--|--|---|
| <p>1 Model
M4</p> | <p>2 Pressure • Flow rate
S6
T6</p> | <p>3 Connection
A : Rc1/4
B : NPT1/4</p> | <p>4 Motor
220 : AC220 - 240V
115 : AC115V</p> | <p>5 Non-standard specification code
no symbol : 100W
H : 150W</p> |
|------------------------------|---|--|--|---|

Specifications (50/60Hz)

Model	Connection size	Max. capacity L/min	Max. discharge pressure MPa	Max. vacuum kPa	Liquid temp. range °C	Viscosity limit mPa·s ^{Note1}	Motor ^{Note2}	Mass kg
MDG-M4T6□□□□	Rc1/4, NPT1/4	3.8/4.6	0.6	8.0	0 - 95	80	AC220 - 240V, 100W	7.9
MDG-M4S6□□□□	Rc1/4, NPT1/4	4.0/4.8	0.6	5.3	0 - 50	30	AC220 - 240V, 100W	7.9
MDG-M4T6□□220H	Rc1/4, NPT1/4	3.8/4.6	0.6	8.0	0 - 95	200	AC220 - 240V, 150W	8.2

- Pump performance will change depending on type of liquid. Further information will be provided on request.
- When handling pure water and solvent, please contact us.
- Standard motors fitted are to IWAKI specifications.

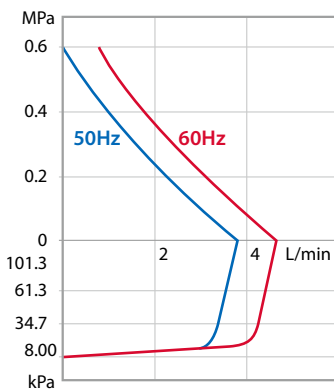
Note1: When viscosity of handling liquid exceeds limitation of pump, please contact us.

When the viscosity of the liquid used is 45 mPa.s or more, the maximum discharge pressure is 0.5 MPa.

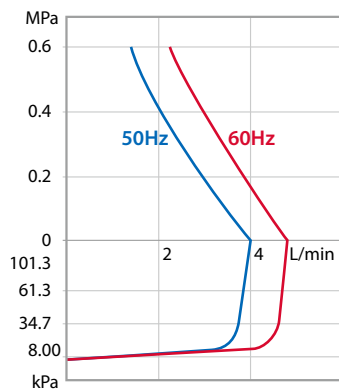
Note2: 115V motor is also available.

Performance Curves (Clear water at 25°C)

MDG-M4T6□□(H)



MDG-M4S6□□



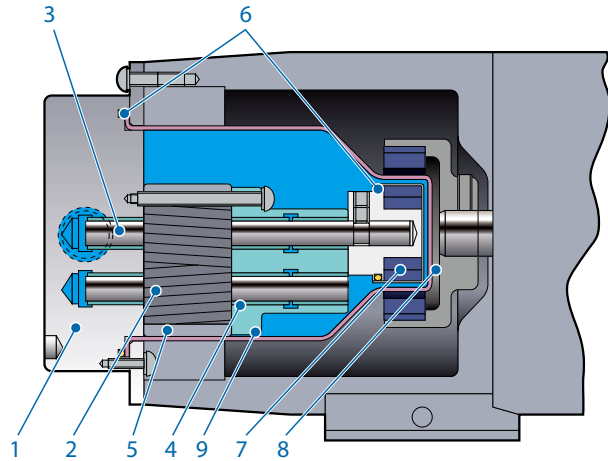
R15



Construction and Materials

Name of part	Materials
1 Pump head	SUS316
2 Gear	PTFE/PEEK
3 Shaft	SUS316
4 Bearing	GFRPTFE, (CF+PTFE) PPS ^{Note}
5 Gear case	SUS316
6 O ring	FKM
7 Magnet capsule	SUS316, FKM
8 Rear casing	SUS316
9 Bearing holder	SUS316

Note: PPS with carbon fiber + PTFE



Identification

MDG - R15 T 220

1 2 3

1 Model
R15

2 Material of gear / Temp. range
T : PTFE gear, GFRPTFE bearing / 0 - 45°C **P** : PEEK gear, (CF+PTFE)PPS bearing / 0 - 45°C
K : PTFE gear, GFRPTFE bearing / 0 - 95°C **C** : PEEK gear, (CF+PTFE)PPS bearing / 0 - 95°C

3 Motor
220 : AC220 - 240V
115 : AC115V

Specifications (50/60Hz)

Model	Connection size	Max. capacity L/min	Max. discharge pressure MPa	Max. vacuum kPa	Liquid temp. range °C	Viscosity limit ^{Note1} mPa·s	Motor ^{Note2}	Mass kg
MDG-R15T□ MDG-R15P□	Rc3/8	14/17	0.3	5.3	0 - 45	30	AC220 - 240V, 150/180W	7.8
MDG-R15K□ MDG-R15C□	Rc3/8	12.5/15	0.3	8.0	0 - 95	30	AC220 - 240V, 150/180W	7.8

• Pump performance will change depending on type of liquid. Further information will be provided on request.

• When handling pure water and solvent, please contact us.

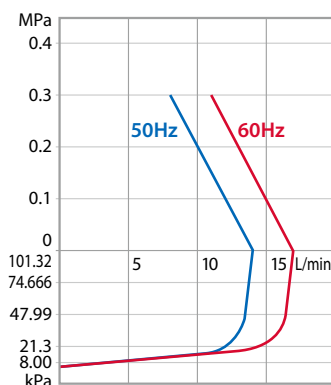
• Standard motors fitted are to IWAKI specifications.

Note1: When viscosity of handling liquid exceeds limitation of pump, please contact us.

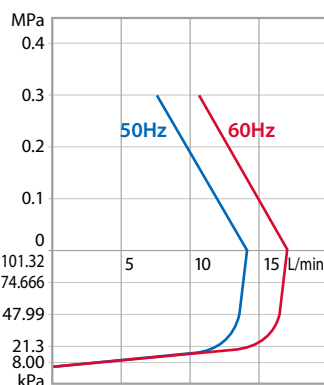
Note2: 115V motor is also available.

Performance Curves (Clear water at 25°C)

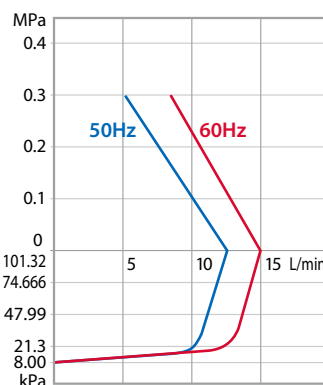
MDG-R15T□



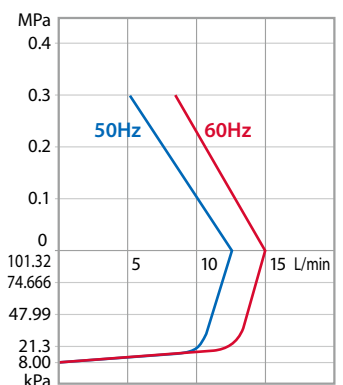
MDG-R15P□



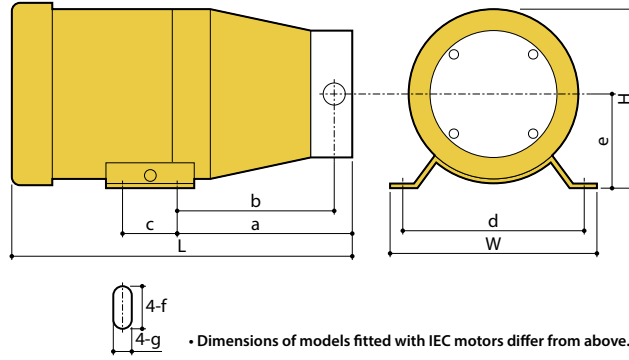
MDG-R15K□



MDG-R15C□



Dimensions in mm



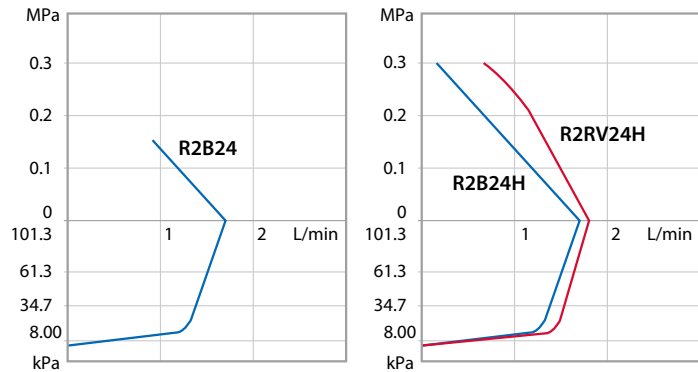
Model	W	H	L	a	b	c	d	e	f	g
MDG-R2□□□230	106	83	202	101.5	91.3	44	90	45	10	6
MDG-R2B□□24	90	80.5	154	81	71	44	75	45	10	6
MDG-R2□□□24H	90	80.5	161	81	71	44	75	45	10	6
MDG-M2S6B220	120	105	213	114	98	40	100	60	∅9	—
MDG-M4□□6B220	130	122.5	242	120	107	40	110	65	11	7
MDG-M4□□6B220H	130	132.5	239	120	107	40	110	65	11	7
MDG-R15□□220	130	155	257	97	84	40	110	65	11	7

MDG-R2/DC24V type

Employing DC motor creates less heat, low noise and less vibration, and it is suitable to install in equipment because of light and compact. It is easy to control flow rate by changing voltage.



Performance Curves (Clear water at 25°C)



Model	Connection size	Max. capacity L/min	Max. discharge pressure MPa	Max. vacuum kPa	Liquid temp. range °C	Viscosity limit mPa·s	Motor	Mass kg
MDG-R2B□□24	Rc1/8,	1.7	0.15	5.3	0 - 95	10	DC24V, 10W	1.2
MDG-R2RV□□24H	NPT1/8,	1.8	0.3		0 - 50		DC24V, 14W	
MDG-R2B□□24H	G1/4	1.7	0.3		0 - 95			

- □ shows connection size. Please refer above table.
- Pump performance will change depending on kind of liquid. Further information will be provided on request.
- Note1: When handling pure water and solvent, please contact us.
- Note2: When viscosity of handling liquid exceeds limitation of pump, please contact us.

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⚠ Caution for safety use: Before use of pump, read instruction manual carefully to use the product correctly. Actual pumps may differ from the photos. Specifications and dimensions are subject to change without prior notice. For further details please contact us.

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