IWAKI

Magnetic Drive Pumps

MDM

Magnetic Drive Process Pump
Resistant to Dry Run Damage

The Heart of Industry

Magnetic Drive Process Pump Resistant to Dry Run Damage

The MDM Series of Magnetic drive process pumps have wetted parts made of fluororesin. Natural PFA and CFRETFE being standard materials of construction. The MDM features a unique mechanism which gives a greatly improved performance against dry running (Non contact system). Applications cover a wide range of chemical process duties from acid to alkali together with high purity chemicals for the semiconductor industry.

ETFE and PFA Available in Standard Models

Carbon fibre reinforced CFRETFE and PFA linings can be supplied to meet many varying duties. PFA being a natural unfilled material generates fewer contaminants and makes it ideally suited for transfer of high purity chemicals.
Note 1: MDM50-2 and 65-2 are only CFRETFE version.

Compliance with JIS Standards

The pump with a common base complies with JIS Standards in regard to piping connection.

Note 1: For compatibility in size with other series of our magnet pumps, please call us.
Note 2: ANSI and ISO standards are also available.
For details, please call us.

Highly Durable Structure

The low head (maximum head of 65 m or less) series has a two-layer structure (pressure resistance 1.0 MPa) in which the rear casing is reinforced with an FRP (fiber reinforced plastic) rear casing cover. The high head models MDM25-3 and 40-2 types have a special three-layer structure(pressure resistance of 1.6 MPa) with one layer added to the rear casing and FRP rear casing cover. MDM50-2 and 65-2 models have a two-layer structure (withstand pressure of 1.6 MPa) in which the rear casing cover is reinforced with a CFRP (carbon fiber reinforced plastic) rear casing cover.

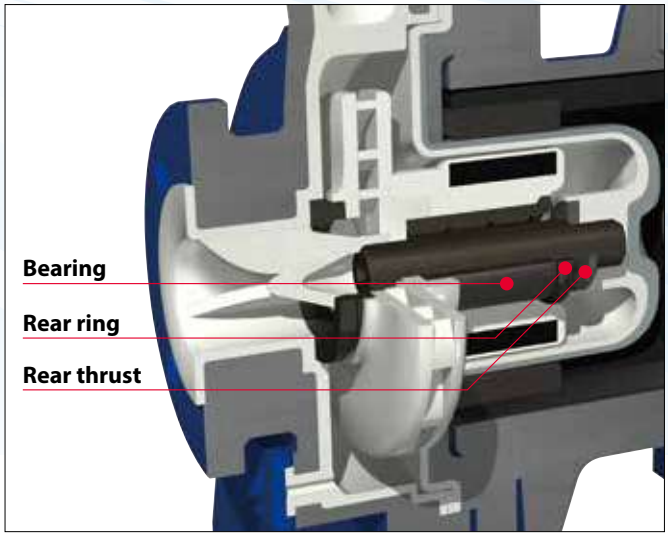
Unique Design Prevents Dry Running

The pump design features a mechanism to withstand dry running. High magnet power of the rare earth magnets prevents the magnet capsule coming into contact with the thrust ring of the rear casing, thus preventing melting of fluororesin components due to heat generation. This greatly improves resistance against dry running in comparison with conventional magnetic drive pumps made of fluororesin.

Note: Only CF type (fitted with high density carbon bearing) can cope with dry running. Dry running is not permitted in the case of KK type.

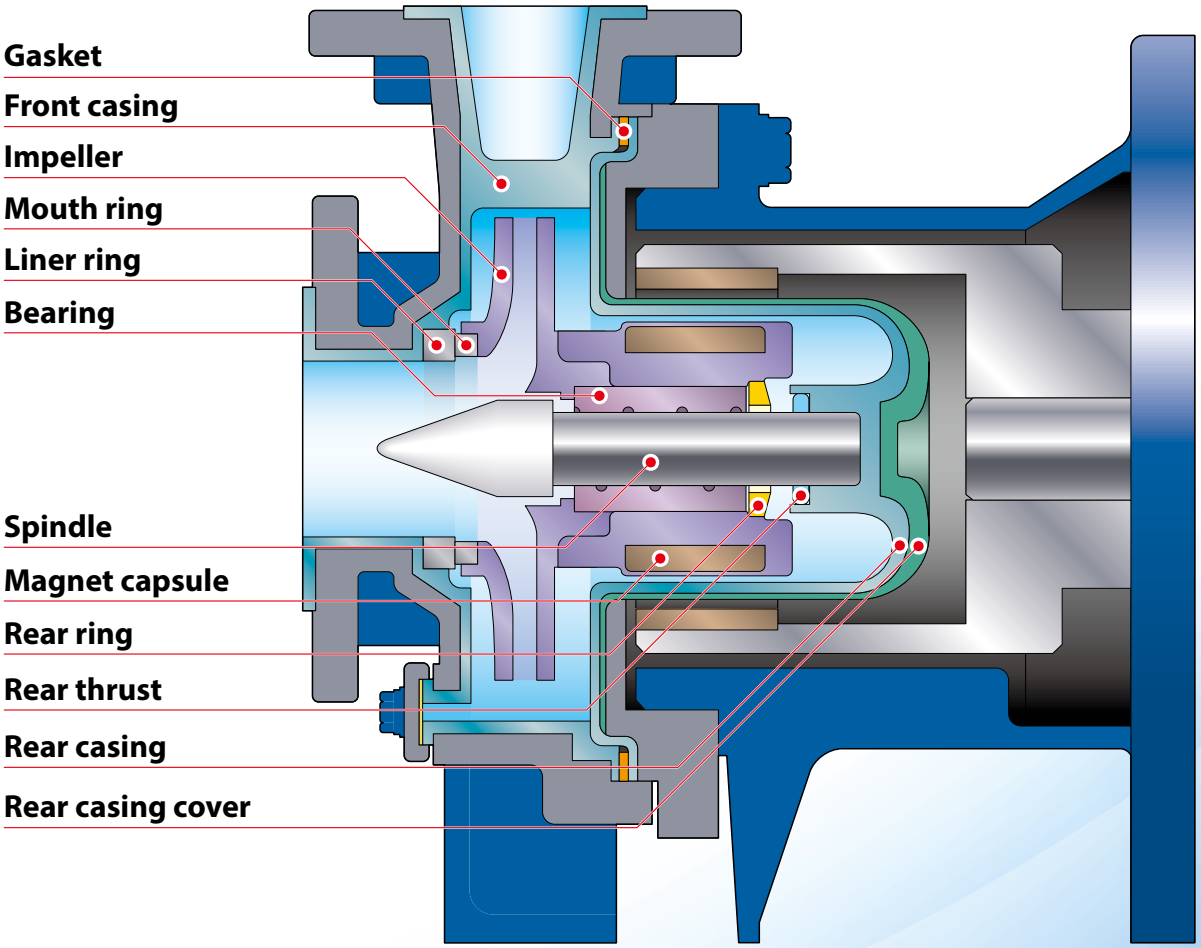
Back Pullout System

Even if the bracket is back-pulled, the rear casing is fixed with the rear casing support and bolts to the front casing side, so there is no leakage of the used liquid. A 2-step disassembly structure that considers safety.



Now Available High Head Models

High head models MDM25-3 and MDM40-2 now join MDM Series which is favoured as fluoroplastic made process magnet drive pump. The models obtain 74 meters head (50Hz), 107 meters head (60Hz) to expand the application. We also have a lineup of MDM50-2 and 65-2 types with high flow rate and high lift specifications. Both cover a maximum flow rate of 1400 L / min and a maximum head of 85 m (60 Hz).



Wet End Materials

Mark	ECF	EKK	PKK/NKK
Front casing	CFRETFE	CFRETFE	PFA
Rear casing	CFRETFE	CFRETFE	PFA
Impeller	CFRETFE	CFRETFE	PFA
Magnet capsule	CFRETFE	CFRETFE	PFA
Bearing	High density carbon	SiC	SiC
Spindle	High purity alumina ceramic	SiC	SiC
Liner ring	High purity alumina ceramic	SiC	SiC
Mouth ring	PTFE (with filler)	SiC	SiC
Rear ring	High purity alumina ceramic	SiC	SiC
Rear thrust	PTFE (with filler)	PTFE (with filler)	PTFE
Gasket	PTFE	PTFE	PTFE

Note1: Rear casing support is used on MDM25-3 and MDM40-2 for applications over 80˚C.
Note2: MDM50-2 and MDM65-2 have no rear ring. Material code PKK / NKK type is not available.

MDM65-1

MDM50-2 (with base)

Construction and Materials

Front casing

CFRETFE type
A moulding made of carbon fibre reinforced CFRETFE. It has both a high mechanical strength and excellent corrosion resistance. The outer peripheral surfaces are reinforced by a ductile cast iron outer casing in order to achieve excellent strength and durability.

PFA type
Natural PFA fluororesin is adapted as wetted parts. This construction is free from contamination and ideal for transfer of clean liquids or with less particle generation.

CFRETFE type PFA type

Impeller

Closed type impellers are designed to give high efficiency. To ensure positive fixing of impeller to magnet capsule a spline system together with a pin fixing is employed. This prevents the impeller from moving axially off the magnet capsule. MDM25 and 40 models now have impellers capable of reaching max. heads of 74 meters (50Hz), 107 meters (60Hz) to widen the range of application.

CFRETFE type PFA type

Magnet capsule

High strength rare earth magnets are totally encapsulated with fluororesin mouldings. Magnets are small and lightweight which increases the efficiency of the pump. Taking advantage of the high magnetic strength its new design of "Non contact system" was developed to protect pump from dry running. This enables us to offer pumps that will withstand dry running operation. (CF type only)

CFRETFE type PFA type

Rear Thrust

The rear thrust withstands axial loads encountered from abnormal operation, it also minimizes heat generation.

Bearing

Two standard bearing materials are available. SiC gives high resistance to abrasion. High density carbon withstands dry running operation. Bearings can be individually replaced.

SiC type High density carbon type

Spindle

Both ends of the spindle are supported by the front casing and the rear casing (the fixed spindle type). There are two types of spindle; one is made of high purity alumina ceramic and the other made of SiC.

SiC type High purity alumina ceramic type

Rear ring

To protect the pump against abnormal operation, such as cavitation or entrained air, where the magnet capsule could expereince reverse axial thrust, a rear ring and rear thrust ring are used. The rear ring is designed to minimize heat generation compared to conventional designs. This prevents surrounding fluororesin from melting.
Note: except MDM50-2 and MDM65-2.

Gasket

A PTFE shrouded gasket is used to enhance sealing performance and corrosion resistance.

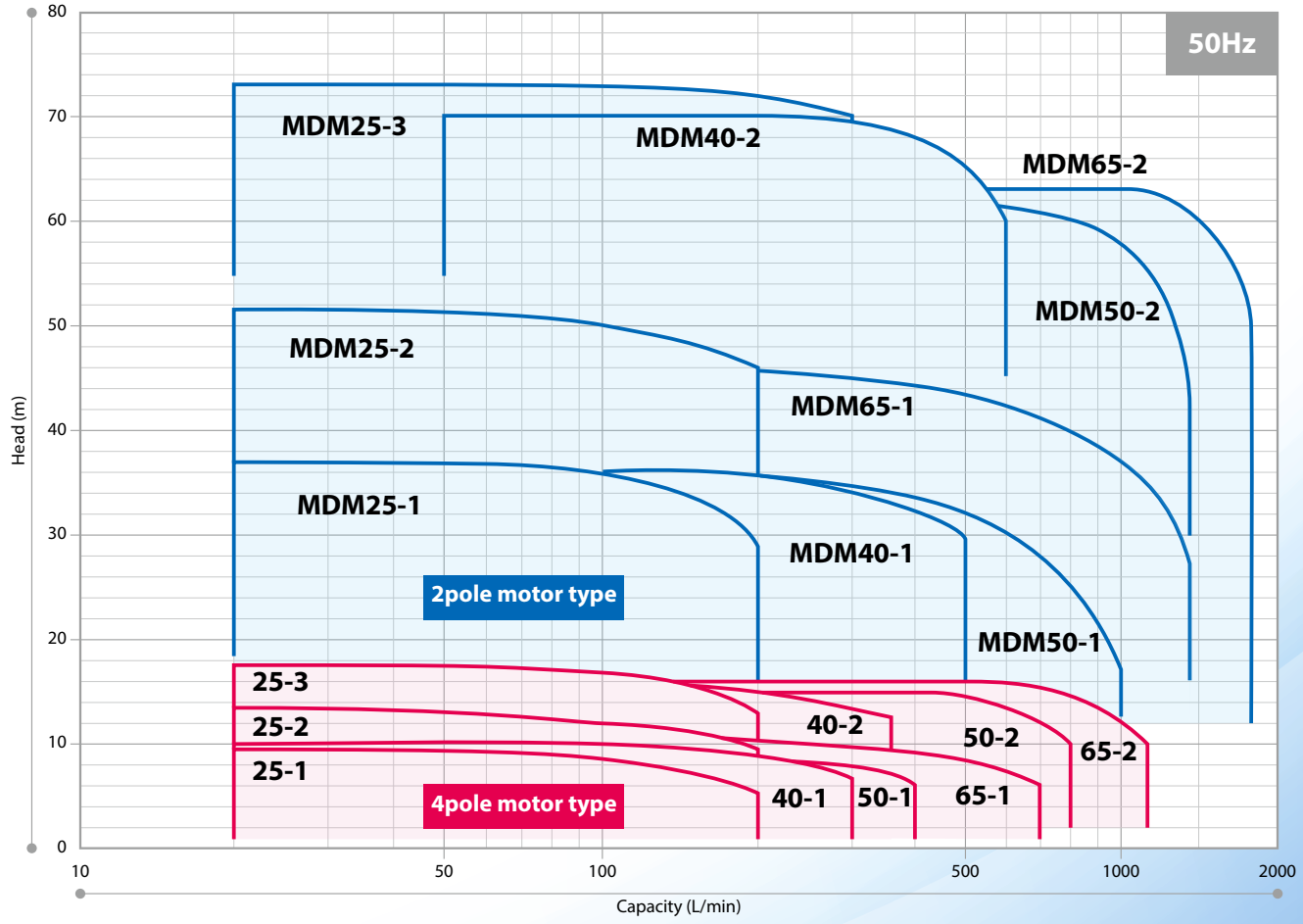
Rear casing / Rear casing cover

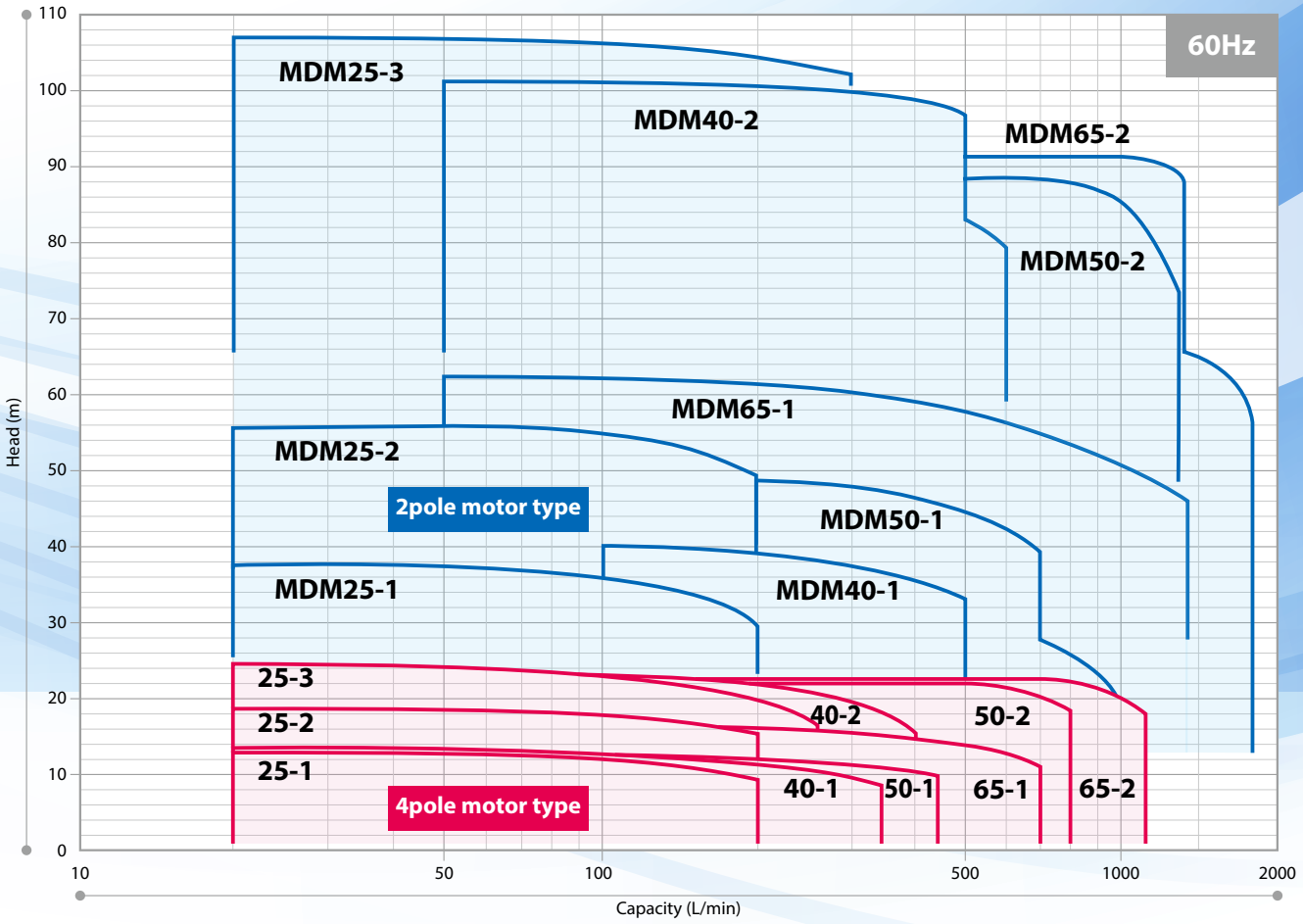
The fluororesin rear casing is strengthened by the outer rear casing cover which is manufactured in fibre reinforced plastic capable of withstanding a pressure of 1 MPa. This structure also eliminates any eddy current losses due to a rotating magnetic field. It also prevents sparks from being produced should the rear casing come into contact with the drive magnet unit.
A newly developed triple-layer casing is used for the high head models MDM25-3 and 40-2 when liquid temperature exceeds 80˚C. This new design allows a rated 1.6MPa casing pressure overall temperature range. Since the front and rear casings are bolted together from the front casing side, liquid does not leak out when the foot support is pulled back.

FRP type PFA type (with rear casing cover)

MDM25-1 (with base)

Performance Curves





Specifications

Note: Other than standard specifications are also available. Please contact us for details.

2P motor

Model	Pump size Suction×Discharge	50Hz			60Hz			Motor
		Impeller size	Capacity L/min	Head m	Impeller size	Capacity L/min	Head m	kW
MDM25-1 (Impeller range 1)	40A×25A	165	100	35.5	140	100	36.0	1.5, 2.2
		160		33.5	130		29.5	
		150		29.0	120		24.5	
		140		25.0	110		20.0	
		130		20.5	100		15.5	
MDM25-2 (Impeller range 2)	40A×25A	195	100	50.5	170	100	53.0	3.7, 5.5, 7.5
		190		47.5	160		47.0	
		180		42.5	150		40.5	
		170		37.0	140		35.0	
		160		32.5	130		29.0	
MDM25-3 (Impeller range 3)	40A×25A	225	100	74.0	225	100	107.0	5.5, 7.5, 11, 15 or 18.5 (60Hz only)
		220		69.0	220		102.0	
		210		61.0	210		90.0	
		200		55.0	200		80.0	
		190		48.5	190		71.0	
		180		42.5	180		62.5	
		—		—	170		55.0	
		—		—	160		48.0	
MDM40-1 (Impeller range 1)	50A×40A	165	208	35.0	145	250	38.0	3.7, 5.5, 7.5
		160		32.5	140		34.5	
		150		28.5	130		29.0	
		140		25.0	120		24.0	
		130		20.5	110		19.5	
		120		17.0	—		—	
MDM40-2 (Impeller range 2)	50A×40A	225	208	70.0	225	250	102.0	5.5, 7.5, 11, 15 or 18.5 (60Hz only)
		220		67.5	220		98.0	
		210		60.0	210		87.0	
		200		54.0	200		78.0	
		190		47.0	190		68.0	
		180		41.5	180		60.5	
		170		38.0	170		53.0	
		160		32.0	160		45.0	
MDM50-1 (Impeller range 1)	65A×50A	165	417	33.0	160	500	44.5	3.7, 5.5, 7.5
		160		31.0	150		38.0	
		150		27.0	140		33.0	
		140		22.5	130		27.0	
		130		18.0	120		21.5	
		120		15.0	110		18.5	
		110		12.0	—		—	
MDM50-2 (Impeller range 2)	65A×50A	210	417	62.0	210	500	88.5	5.5, 7.5, 11, 15 18.5, 22, 30
		205		58.0	205		83.5	
		200		51.0	200		74.0	
		190		48.0	190		68.5	
		180		42.0	180		61.0	
		170		36.5	170		53.0	
		160		32.0	160		45.5	
		150		27.0	150		39.5	
MDM65-1 (Impeller range 1)	80A×65A	165	833	38.5	160	1000	51.0	5.5, 7.5, 11, 15 or 18.5 (60Hz only)
		160		35.5	150		44.5	
		150		31.0	140		37.0	
		140		26.5	130		31.5	
		130		22.0	120		26.0	
		120		17.5	110		20.0	
		110		13.5	—		—	
MDM65-2 (Impeller range 2)	80A×65A	210	833	63.5	210	1000	90.5	5.5, 7.5, 11, 15 18.5, 22, 30
		205		58.5	205		84.0	
		200		51.0	200		72.5	
		190		48.0	190		69.5	
		180		42.0	180		60.5	
		170		36.0	170		51.0	
		160		30.5	160		44.0	
		150		26.0	150		37.5	

4P motor

Model	Pump size Suction×Discharge	50Hz Impeller size	50Hz Capacity L/min	50Hz Head m	60Hz Impeller size	60Hz Capacity L/min	60Hz Head m	Motor kW
MDM25-1 (Impeller range 1)	40A×25A	170	50	9.5	170	50	13.0	0.4, 0.75
MDM25-2 (Impeller range 2)	40A×25A	200	50	12.5	200	50	18.5	1.5, 2.2, 3.7
MDM25-3 (Impeller range 3)	40A×25A	225	50	17.5	225	50	24.0	1.5, 2.2, 3.7, 5.5
MDM40-1 (Impeller range 1)	50A×40A	170	200	9.0	170	200	11.5	1.5, 2.2, 3.7
MDM40-2 (Impeller range 2)	50A×40A	225	200	15.0	225	200	22.0	1.5, 2.2, 3.7, 5.5
MDM50-1 (Impeller range 1)	65A×50A	170	300	7.5	170	300	11.5	1.5, 2.2, 3.7
MDM50-2 (Impeller range 2)	65A×50A	210	208	15.5	210	250	22.0	5.5, 7.5, 11, 15
MDM65-1 (Impeller range 1)	80A×65A	170	500	8.5	170	500	14.0	1.5, 2.2, 3.7, 5.5
MDM65-2 (Impeller range 2)	80A×65A	210	417	16.0	210	500	23.0	5.5, 7.5, 11, 15

Common Specifications

• Temperature range of liquid handled	EKK/ECF: -20 to 105˚C , PKK: -20 to 150˚C Note1, NKK: -20 to 120˚C Note2
• Allowable slurry (KK type only)	Please contact us.
• Allowable maximum pressure	1.0MPa (MDM25-3 and MDM40-2 and MDM50-2 and MDM65-2 are 1.6MPa)
• Standard motor	3-phase, TEFC, out door flange mount type
• Standard color of paint	Ultra marine blue RAL5002

Note1: Please contact us when handling liquid temperature is below 0˚C or handling liquid temperature is higher than 120˚C with PFA type.
Note2: Please contact us when handling liquid temperature is higher than 80˚C with 65-1NKK type.

Pump Identification

MDM **40** - **200** **2** **E** **KK** **F** **055** **J** - **D** **2** **H**
1 2 3 4 5 6 7 8 9 10 11

1 Pump size (Suction×Discharge)
25 : 40A×25A
40 : 50A×40A
50 : 65A×50A
65 : 80A×65A

2 Impeller size
100 - **225** (mm)

3 Impeller range
1, **2** , **3**

4 Wet-end main material
E : CFRETFE
P : PFA
N : PFA (MDM25-2, 40-1, 50-1, 65-1)

5 Material of Bearing/Spindle
CF : High density carbon/ High purity alumina ceramic
KK : SiC/SiC

6 Type of motor
F : Flange motor

7 Motor output
004 : 0.4kW
007 : 0.75kW
015 : 1.5kW
022 : 2.2kW
037 : 3.7kW
055 : 5.5kW
075 : 7.5kW
110 : 11kW
150 : 15kW
185 : 18.5kW
220 : 22kW
300 : 30kW

8 Standard for pipe connection and motor
J : JIS flange+JIS motor
I : ISO flange+IEC motor
A : ANSI flange+JIS motor

Note: MDM50-2 and MDM65-2 are only E (CFRETFE) type wetted material.
Please refer to the wetted parts quality (page 2) for the combination of material symbols.

9 Special version

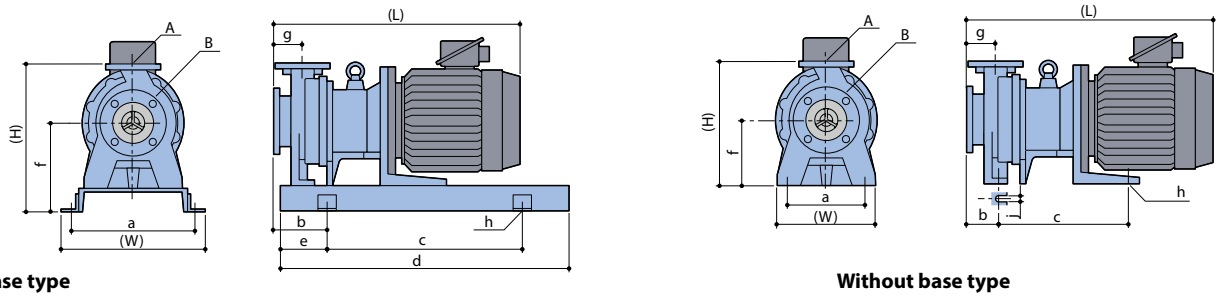
Mark	Drain	Base	Special version
A	Without drain	With base	Standard
S	Without drain	With base	Special
D	With drain	With base	Standard
X	With drain	With base	Special
B	Without drain	Without base	Standard
Y	Without drain	Without base	Special
E	With drain	Without base	Standard
Z	With drain	Without base	Special

Note : PFA and CFRETFE (MDM50-2 and 65-2) type with drain includes an air vent.

10 Motor pole
2 : 2 pole
4 : 4 pole

11 Special code
H : ETFE : 80 - 105˚C
PFA : 80 - 120˚C
(Applicable model: Flange motor type: MDM25-3, 40-2 only)
T : 120 - 150˚C (PKK type)

Dimensions in mm (2 pole motor type)



With base type

Model	Motor kW	(W)	(H)	(L)	a	b	c	d	e	f	g	h	A	B	Mass kg
MDM25-1	1.5	400	400	513	350	135	480	710	115	240	80	4×Ø19	25A	40A	80
	2.2			542											
MDM25-2	3.7	400	430	625	350	150	540	800	130	250	80	4×Ø19	25A	40A	120
	5.5			689											140
	7.5														
MDM25-3	5.5	400	415	711	350	172	540	800	130	250	102	4×Ø19	25A	40A	145
	7.5														150
	11	480	485	874	430	192	600	900	150	320					215
	15														225
	18.5														235
MDM40-1	3.7	400	410	625	350	150	540	800	130	250	80	4×Ø19	40A	50A	115
	5.5			689											135
	7.5														
MDM40-2	5.5	400	430	689	350	150	540	800	130	250	80	4×Ø19	40A	50A	150
	7.5														155
	11	480	500	852	430	170	600	900	150	320					220
	15														230
	18.5														240
MDM50-1	3.7	400	410	625	350	150	540	800	130	250	80	4×Ø19	50A	65A	115
	5.5			689											135
	7.5														
MDM50-2	5.5	490	500	770	440	227.5	740	1120	190	320	100	4×Ø23	50A	65A	230
	7.5														
	11			879											255
	15														265
	18.5														280
	22			934											380
	30			1012											420
MDM65-1	5.5	400	430	709	350	170	540	800	130	250	100	4×Ø19	65A	80A	145
	7.5														
	11	480	500	872	430	190	600	900	150	320					210
	15														220
	18.5														230
MDM65-2	5.5	490	520	773	440	230	740	1120	190	320	100	4×Ø23	65A	80A	230
	7.5														235
	11			881											255
	15														270
	18.5														285
	22			937											385
	30			1015											425

Without base type

(W)	(H)	a	b	c	f	h	j	Mass kg
180	310	130	100	150	150	2×Ø15	15	55
280	360	220	90	285	180	2×Ø14	14	95
				365				110
280	345	220	112	365	180	2×Ø14	14	115
								120
	395			450	230			165
								175
								185
280	340	220	90	285	180	2×Ø14	14	90
				365				105
280	360	220	90	365	180	2×Ø14	14	120
								125
	410			450	230			170
								180
								190
280	340	220	90	285	180	2×Ø14	14	85
				365				105
340	410	220	110.5	558.5	230	2×Ø15	14	170
								175
								195
								210
								220
								320
								360
280	360	220	110	365	180	2×Ø14	14	120
	410			450	230			165
								175
								185
340	430	220	113	558.5	230	2×Ø15	14	175
								200
								210
								235
								325
								365

Note: The dimensions may differ with the type of motor installed.

Optional Accessories

Pump Protector DRN Series

Detects Unusual Pump Operating Conditions Including Dry-Running and Overload

The DRN model protects equipment (including pumps) from damage!
Minimizes production downtime. Identifies possible causes of alarms so they can be investigated and addressed.

IWAKI CO., LTD. 6-6 Kanda-Sudacho 2-chome Chiyoda-ku Tokyo 101-8558 Japan TEL : (81)3 3254 2935 FAX : 3 3252 8892

IWAKI has global net work.
Please find your distributor location at **www.iwakipumps.jp**

European Headquarter	**IWAKI Europe GmbH**	TEL: (49)2154 9254 0	FAX: (49)2154 9254 48	U.S.A.	**IWAKI America Inc.**	TEL: (1)508 429 1440	FAX: (1)508 429 1386
Germany	**IWAKI Europe GmbH**	TEL: (49)2154 9254 50	FAX: (49)2154 9254 55	Brazil	IWAKI Do Brasil Comercio De Bombas Hidraulicas LTDA.	TEL: (55)19 3244 5900	FAX: (55)19 3244 5900
The Netherlands (Netherlands Branch)	**IWAKI Europe GmbH**	TEL: (31)74 2420011	FAX: (49)2154 9254 48	China (Shanghai)	**IWAKI Pumps (Shanghai) Co., Ltd.**	TEL: (86)21 6272 7502	FAX: (86)21 6272 6929
Italy (Italy Branch)	**IWAKI Europe GmbH**	TEL: (39)0445 561219	FAX: (39)0445 569088	China (Hong Kong)	**IWAKI Pumps Co., Ltd.**	TEL: (852)2607 1168	FAX: (852)2607 1000
Spain (Spain Branch)	**IWAKI Europe GmbH**	TEL: (34)934 741 638	FAX: (34)934 741 638	China (Guangzhou)	**GFTZ IWAKI Engineering & Trading Co., Ltd.**	TEL: (86)20 84350603	FAX: (86)20 84359181
Poland (East Europe Branch)	**IWAKI Europe GmbH**	TEL: (48)12 347 0755	FAX: (48)12 347 0900	Singapore	**IWAKI Singapore Pte Ltd.**	TEL: (65)6316 2028	FAX: (65)6316 3221
Denmark	**IWAKI Nordic A/S**	TEL: (45)48 242345		Indonesia (Indonesia Office)	**IWAKI Singapore Pte Ltd.**	TEL: (62)21 6906606	FAX: (62) 21 6906612
Finland	**IWAKI Suomi Oy**	TEL: (358)10 201 0490		Malaysia	**IWAKIm SDN. BHD.**	TEL: (60)3 7803 8807	FAX: (60)3 7803 4800
Norway	**IWAKI Norge AS**	TEL: (47)23 38 49 00		Korea	**IWAKI Korea Co.,Ltd.**	TEL: (82)2 6238 4800	FAX: (82)2 6238 4801
Sweden	**IWAKI Sverige AB**	TEL: (46)8 511 72900		Taiwan	**IWAKI Pumps Taiwan Co., Ltd.**	TEL: (886)2 8227 6900	FAX: (886)2 8227 6818
Belgium	**IWAKI Belgium N.V.**	TEL: (32)13 670200	FAX: (32)13 672030	Thailand	**IWAKI (Thailand) Co.,Ltd.**	TEL: (66)2 322 2471	FAX: (66)2 322 2477
France	**IWAKI France S.A.**	TEL: (33)1 69 63 33 70	FAX: (33)1 64 49 92 73	Australia	**IWAKI Pumps Australia Pty Ltd.**	TEL: (61)2 9899 2411	FAX: (61)2 9899 2421

( )Country codes

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.

Legal attention related to export.

Our products and/or parts of products fall in the category of goods contained in control list of international regime for export control. Please be reminded that export license could be required when products are exported due to export control regulations of countries.