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IWAKI

Magnetic drive pumps

MX series

Withstands difficult operating conditions and offers high efficiency

The MX Series represents the latest state of the art design in plastic magnetic drive pumps. With experience gained from the previous generations of MDH pumps the MX series has been designed to meet the most severe of operating conditions.
When fitted with a carbon bearing the MX will allow for brief periods of dry running. The new “self radiating structure” (patent pending) in addition to the existing proven non contact principle and front and rear supported spindle greatly improves the pumps ability to withstand some cavitation and running against closed discharge valve.
MX series pumps are highly recommended for use in various production processes such as filtering, spraying, washing and etching in surface treatment processes.

An improved mechanical strength design allows operation under abnormal conditions and results in reduction of running cost and maintenance cost.

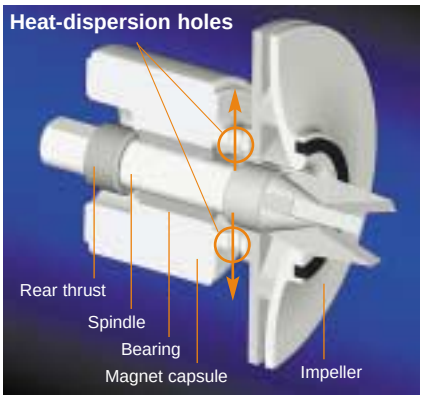
The adoption of a volute casing divided into two raises efficiency. (patent pending)

Simply constructed, it is robust and facilitates maintenance.

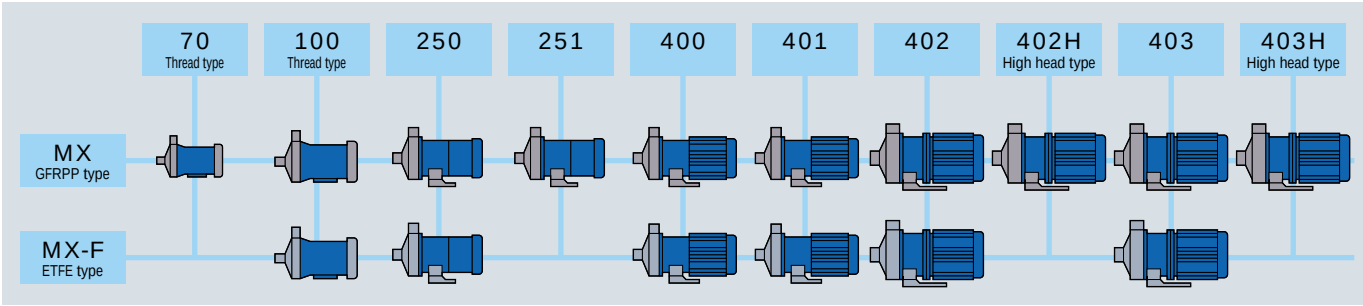
GFRPP and CFRETFE available in standard models.

Self radiation structure

(International patent applied)
Through heat-dispersion holes provided in the fixed portions of the impeller and the magnet capsule, the liquid around the spindle and the bearing is forced to circulate so that heat generated by sliding can be reduced effectively. Thus, thermal deformation and melt are prevented.



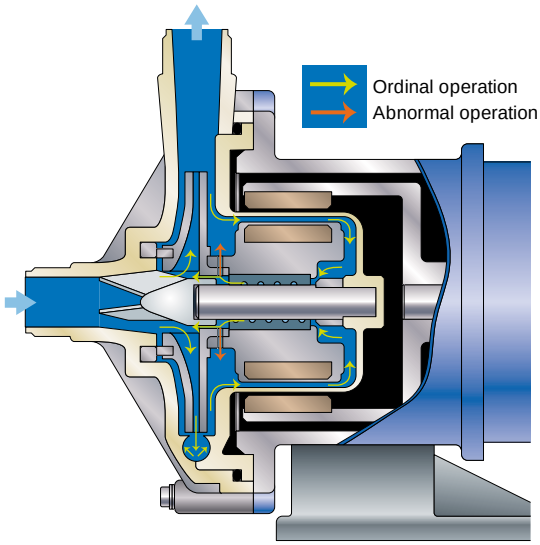
MX Series Family



Tube connection type for MX-70 and MX-100 are available.

MX-403 MX-402

Heat-dispersion system



Volute casing divided into two sections

(International patent applied)

The MX series is the first resin magnet pump which uses the pump casing divided into the front casing and the rear casing to form a vortex chamber as an ideal form. Therefore, the internal leak phenomenon, which means that the liquid passing out of the impeller returns to the pump casing and is suppressed to a minimum and the liquid is efficiently guided to the discharge port to enhance overall efficiency.

Robust structure

All stress bearing portions, such as the front and rear casings, are reinforced by means of ribs to improve the pressure resistance and the mechanical strength of the pump.

The bearing is not only fixed by conventional press fit but is also sandwiched between the shoulder at the bottom of the magnet capsule and the back face of the impeller to improve its reliability under high temperature. (Except MX-70, 100)

MX-(F)402/H and MX-(F)403/H models: removable lock pins are adopted to improve the security of the impeller and magnet capsule on these larger models.

Non-contact structure

By installing the driving magnet and the driven magnet in an inventive way, the movement of the magnet capsule is controlled by magnetic force to prevent the rear thrust and the rear portion of the bearing coming into contact with each other continuously even during dry running. This structure reduces heat generation and secures lubricant routes.

(Except MX-70, 100)

Front casing Rear casing

Front casing of model 100 and 402/403

MX-F402 MX-F250 MX-F100

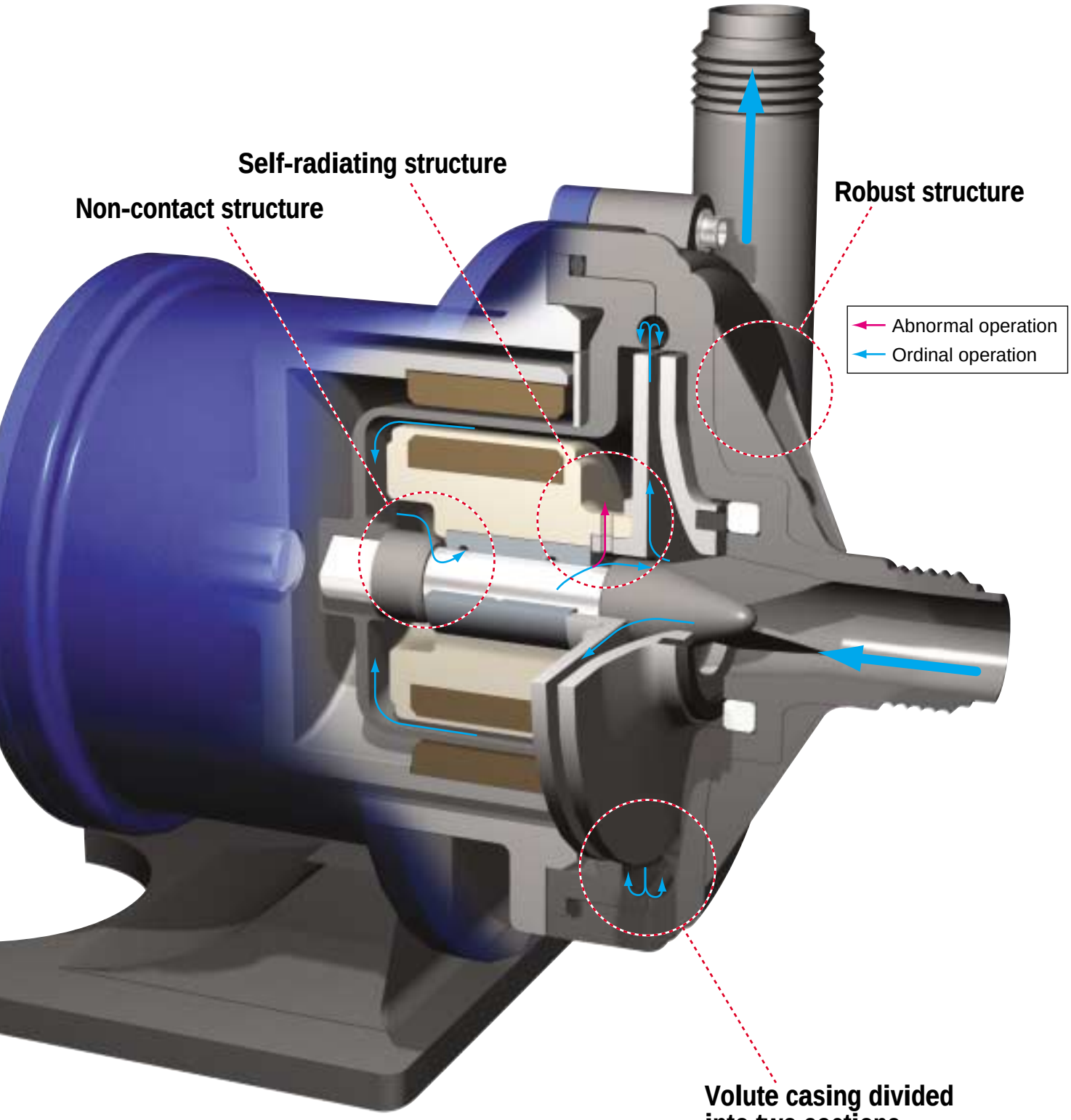


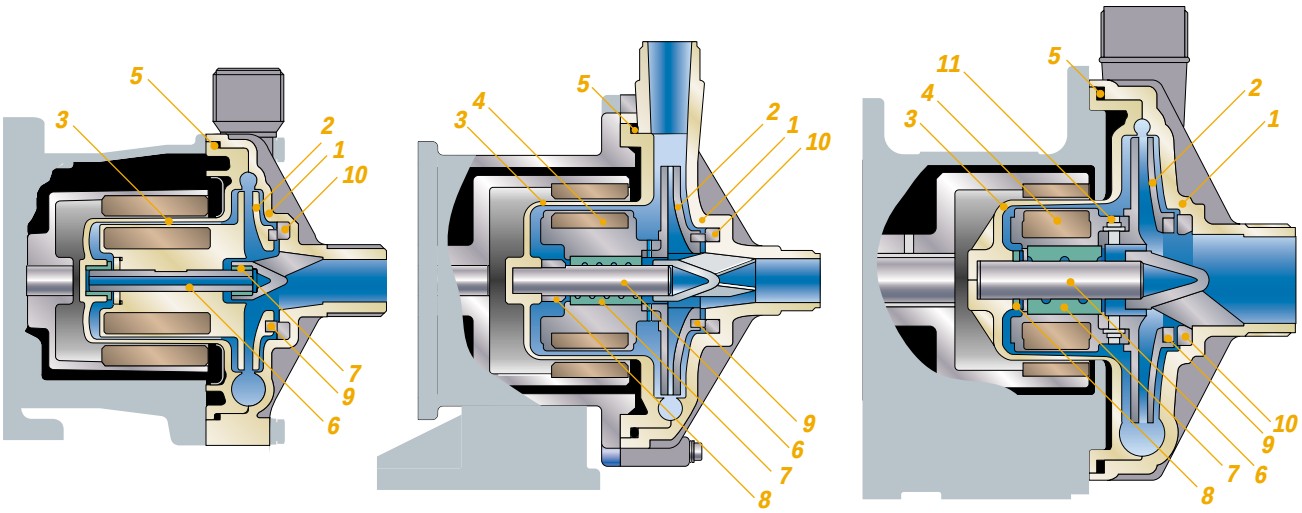
Illustration shows MX-250

Wet end materials

MX-70,100
MX-F100

MX-250 to 401
MX-F250 to F401

MX-402 to 403H
MX-F402 to F403



Materials of MX series

Model	MX-70	MX-100	MX-250 to 403H		MX-250 to 401
Mark	V(E)		CV(CE)	RV(RE)	AV(AE)
1 *Front casing*	GFRPP		GFRPP		
2 *Impeller*	CFRPP		GFRPP		
3 *Rear casing*	GFRPP		GFRPP		
4 *Magnet capsule*	–		PP		
5 *O ring* Note 1	FKM(EPDM)		FKM(EPDM)		
6 *Spindle*	Alumina ceramic		Alumina ceramic		
7 *Bearing*	CFRPPS	PTFE	Carbon	PTFE	Alumina ceramic
8 *Rear thrust*	–		CFRPPS, CFRPEEK (402 to 403H only)		
9 *Mouth ring*	–	PTFE	PTFE		
10 *Thrust/Liner ring*	Alumina ceramic		Alumina ceramic		
11 *Lock pin*	–		GFRPPS (402 to 403H only)		–

Note 1: O-ring made of AFLAS® is also available

Materials of MX-F series

Model	MX-F100		MX-F250 to F401			MX-F402 to F403		
Mark	RV	KV	CFV	RFV	KKV	CFV	RFV	KKV
1 *Front casing*	CFRETFE		CFRETFE			CFRETFE		
2 *Impeller*	CFRETFE		CFRETFE			CFRETFE		
3 *Rear casing*	CFRETFE		CFRETFE			CFRETFE		
4 *Magnet capsule*	–		CFRETFE			CFRETFE		
5 *O ring* Note 1	FKM		FKM			FKM		
6 *Spindle*	High purity alumina ceramic	SiC	High purity alumina ceramic		SiC	High purity alumina ceramic		SiC
7 *Bearing*	PTFE	SiC	High density carbon	PTFE	SiC	High density carbon	PTFE	SiC
8 *Rear thrust*	High purity alumina ceramic	SiC(Front & Rear)	CFRETFE			CFRPFA		
9 *Mouth ring*	PTFE	–	PTFE		SiC	PTFE		SiC
10 *Thrust/Liner ring*	High purity alumina ceramic	–	High purity alumina ceramic		SiC	High purity alumina ceramic		SiC
11 *Lock pin*	–		–			CFRETFE		

Note 1 : O-ring made of AFLAS® and EPDM are also available

Pump identification

MX-70 and 100
MX-F100

MX-F 100 V M Y - 13

- **Pump size**
  70: G1X G1 150W (MX series only)
  100: G1X G1 260W
- **Series symbol**
  MX: Material of Casing/GFRPP
  MX-F: Material of Casing/CFRETFE
- **Connection**
  No mark: Tube connection (Fitting diameter:26mm) Note
  Note:Applied to the models MX-70 and MX-100
  M: Thread connection
- **Materials**
  MX V: FKM (O-ring)
  E: EPDM (O-ring)
  MX-F RV: PTFE/FKM (Bearing/O-ring)
  KV: SiC/FKM (Bearing/O-ring)
- **Impeller mark**
  MX No mark: 50Hz
  MX-F Y: 50Hz
- **Motor**
  13: 1 phase 220V/240V
  34: 3 phase 400/440V

MX-250 to 403H
MX-F250 to F403

MX-F - 250 CFV T E - S

- **Pump size**
  250: G1 x G1 0.37kW
  251: G1 x G1 0.75kW (MX series only)
  400: G1 1/2 x G1 1/2 0.37kW
  401: G1 1/2 x G1 1/2 0.75kW
  402: G2 1/2 x G1 1/2 1.5kW
  403: G2 1/2 x G1 1/2 2.2kW
  402H: G2 x G1 1/2 1.5kW (MX series only)
  403H: G2 x G1 1/2 2.2kW (MX series only)
- **Series symbol**
  MX: Material of Casing/GFRPP
  MX-F: Material of Casing/CFRETFE
- **Material of Bearing/Spindle/O-ring**
  MX CV,CE: Carbon/Alumina ceramic/FKM(EPDM)
  RV,RE: PTFE/Alumina ceramic/FKM(EPDM) Note
  AV,AE: Alumina ceramic/Alumina ceramic/FKM(EPDM)
  Note:Applied to the models MX-250 to MX-401
  MX-F CFV: High density carbon/High purity alumina ceramic/FKM
  RFV: PTFE/High purity alumina ceramic/FKM
  KKV: SiC/SiC/FKM
- **Impeller mark**
  MX 5: 50Hz only
  MX-F T,V,W 5: 50Hz only
- **Motor specification**
  E: IEC Motor
- **Special specification**
  No mark: Standard
  S: Non standard specification

Specifications

50Hz

Model	Connection Suction X Discharge	Limit of specific gravity Note 1	Standard capacity L/min - m	Maximum capacity L/min	Motor kW	Mass kg Note 3
MX-70M	G1 x G1	1.2	50 - 5.4	90	0.15	6.5
MX-100M	G1 x G1	1.2	70 - 6	110	0.26	8.2
MX-250	G1 x G1	1.2	50 - 14	150	0.37	7.7
MX-251	G1 x G1	1.0	80 - 19	150	0.75	10.2
MX-400	G1 1/2 x G1 1/2	1.2	100 - 10.5	280	0.37	6.2
MX-401	G1 1/2 x G1 1/2	1.2	150 - 14.5	320	0.75	10.2
MX-402	G2 x G1 1/2	1.2	200 - 20	450	1.5	13.5
MX-402H	G2 x G1 1/2	1.0	100 - 30	160	1.5	13.5
MX-403	G2 x G1 1/2	1.2	250 - 23	500	2.2	14.5
MX-403H	G2 x G1 1/2	1.0	100 - 35	300	2.2	14.5
MX-F100 Y	G1 x G1	1.9	70 - 5.8	110	0.26	8.5
MX-F250 T	G1 x G1	1.2	50 - 11.3	150	0.37	8.0
MX-F250 V	G1 x G1	1.5	50 - 9.1	140	0.37	8.0
MX-F250 W	G1 x G1	1.8 to 2.0	50 - 6.4	130	0.37	8.0
MX-F400 T	G1 1/2 x G1 1/2	1.2	100 - 10.1	250	0.37	6.5
MX-F400 V	G1 1/2 x G1 1/2	1.5	100 - 8.1	230	0.37	6.5
MX-F400 W	G1 1/2 x G1 1/2	1.8 to 2.0	100 - 5.5	210	0.37	6.5
MX-F401 T	G1 1/2 x G1 1/2	1.2	150 - 12.8	270	0.75	10.5
MX-F401 V	G1 1/2 x G1 1/2	1.5	150 - 10.8	260	0.75	10.5
MX-F401 W	G1 1/2 x G1 1/2	1.8 to 2.0	150 - 8.1	230	0.75	10.5
MX-F402 T	G2 x G1 1/2	1.2	200 - 18.3	440	1.5	14.0
MX-F402 V	G2 x G1 1/2	1.5	200 - 16	430	1.5	14.0
MX-F402 W	G2 x G1 1/2	1.8 to 2.0	200 - 12.5	400	1.5	14.0
MX-F403 T	G2 x G1 1/2	1.2	250 - 22.8	510	2.2	15.0
MX-F403 V	G2 x G1 1/2	1.5	250 - 19.4	500	2.2	15.0
MX-F403 W	G2 x G1 1/2	1.8 to 2.0	250 - 15.3	480	2.2	15.0

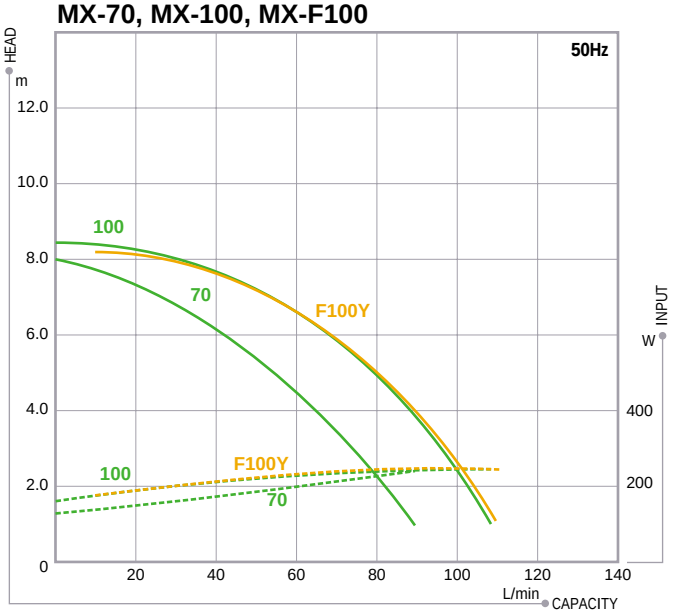
Note 1) The specific gravity limit values shown above are with maximum flow. The specific gravity limit varies with the discharge. For details, please contact us.
Note 2) 26mm tube connection option available on the MX-70 and MX-100.
Note 3) Less Motor except MX-(F)70/100. Mass shown above table is W/O motor.
Note 4) AV(AE) type is different in performance. For details, please contact us.

Common specifications

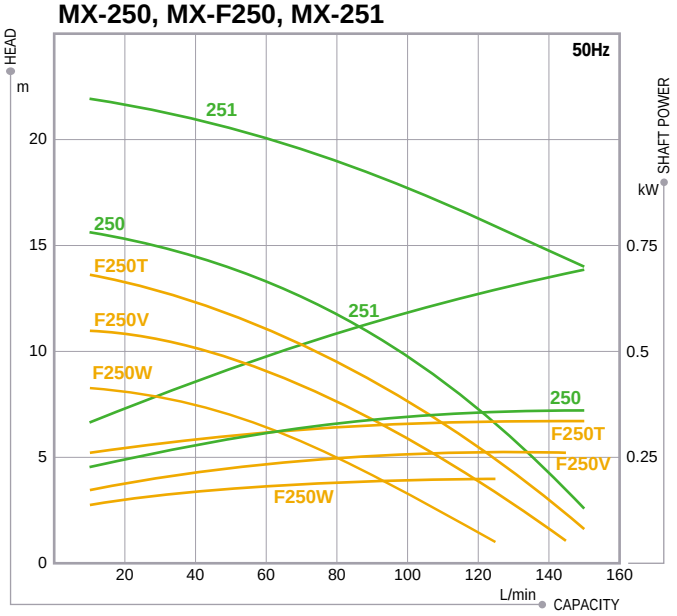
• Range of liquid temperature : 0 to 80˚C (10 to 80˚C in case AFLAS® O-rings are used.) • Range of ambient temperature : 0 to 40˚C.

Performance curves

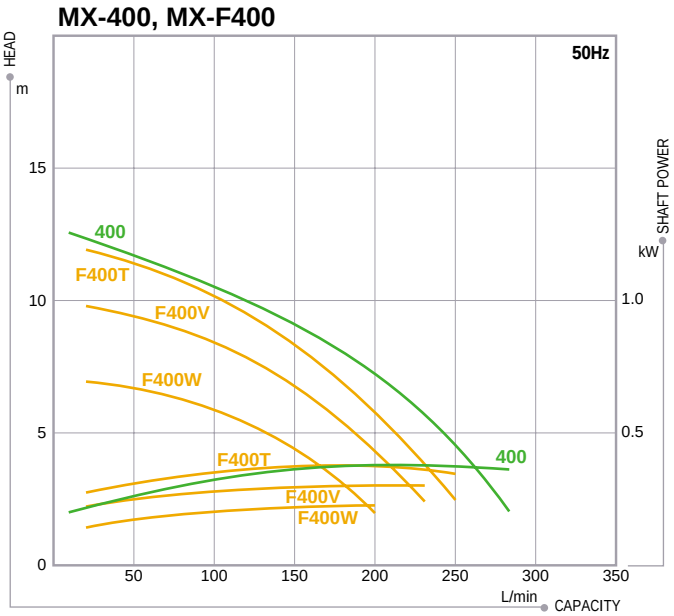
MX-70, MX-100, MX-F100



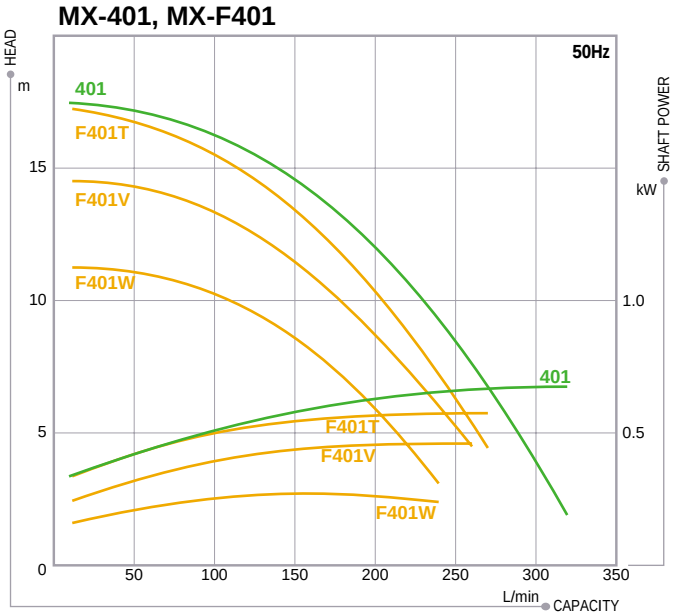
MX-250, MX-F250, MX-251



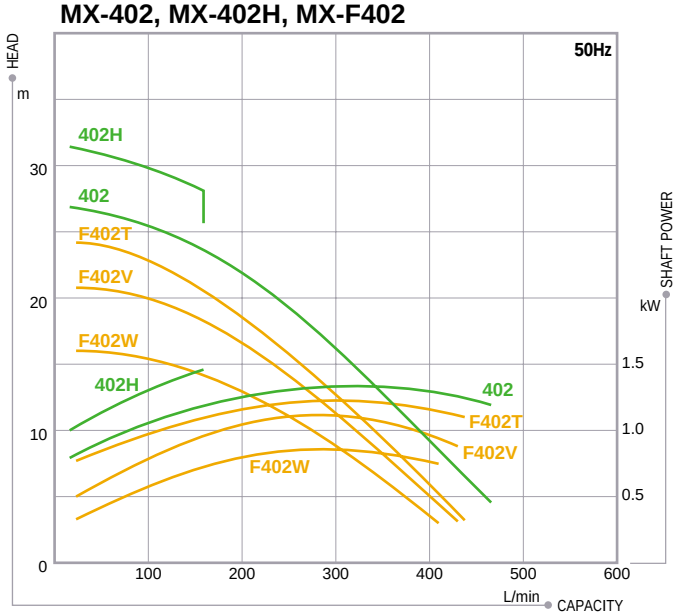
MX-400, MX-F400



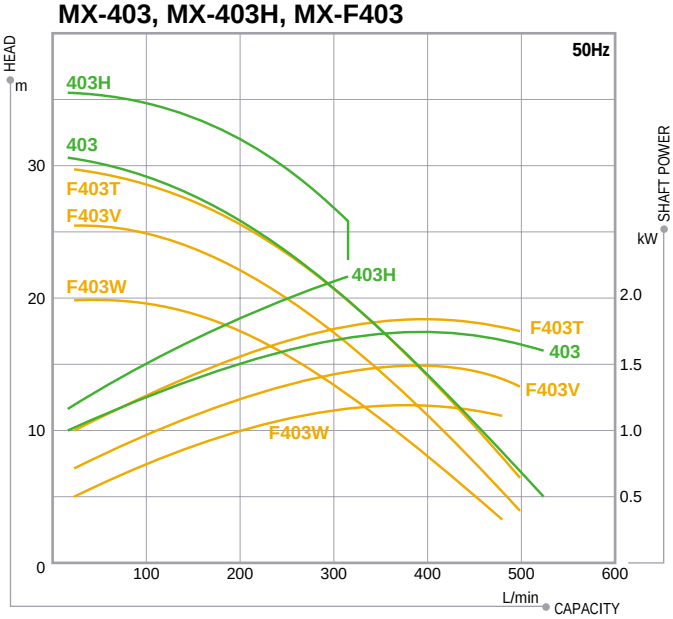
MX-401, MX-F401



MX-402, MX-402H, MX-F402

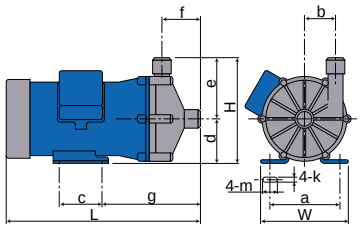


MX-403, MX-403H, MX-F403

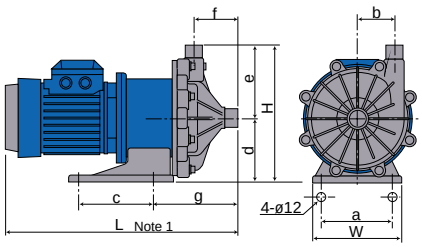


Dimensions

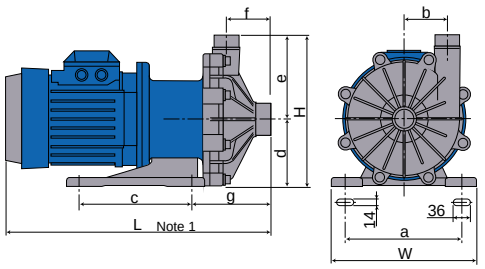
MX-70, 100
MX-F100



MX-250 to 401
MX-F250 to F401



MX-402(H), 403(H)
MX-F402, F403



in mm

Models	W	H	L	a	b	c	d	e	f	g	k	m
MX-70 Note 2	130	155	258.5	110	48	40	65	90	53	159.5	7	11
MX-100, MX-F100 Note 2	150	175	319.5	110	51	70	75	100	65	162	9	27
MX-250, MX-F250	160	247.5	422	130	65	130	115	132.5	82.5	155.5	—	—
MX-251	160	247.5	458.5	130	65	130	115	132.5	82.5	163.5	—	—
MX-400, MX-F400	140	219	423.5	110	54	98	95	124	81	144	—	—
MX-401, MX-F401	160	249	473	130	72	130	115	134	97	178	—	—
MX-402 to 403, MX-F402 to F403	260	274	478.5	208	80	200	120	154	83	151	—	—

Note 1) The dimensions L may differ with the type of motor installed.
Note 2) MX-70 and MX-100 shows thread type in the above dimensions, Please contact us for tube connection type.

Optional accessories

Iwaki dry running protector DR series

Model DR is electric current sensing type dry running protector. It detects the decreased load current (lower limit) to stop the pump when it runs dry or runs with air sucking in. It can detect over-load, too.

Specification

Model		DR-20
Motor power		380 to 440V three phase
Applied motor		0.75 to 15kW
Power control		100 to 240V shingle phase
Power	V	200 to 240V ±10%shingle phase
	Input	3.5W
Detective current		0.5 to 32.0A
Current transformar(CT)		Built-in
Outer dimension		D80 mm X W153 mm X H122 mm

DR-20

- Current figure to be set is indicated on LCD.
- Both top/bottom figures can be set.
  Top:Over-load
  Bottom:Dry running, air sucking-in operation, operation with suction side closed
- Built-in current transformer
- DIN rail mounting