The Heart of Industry

IWAKI

IWAKI MAGNETIC DRIVE PUMPS

MX-F

Patent

JAPAN / U.S.A. / EU / CHINA / TAIWAN

Solution for chemical handling applications

Chemically resistant magnetic drive pumps which can tolerate abnormal operation

The MX-F series development was based on the concept of optimum reliability under severe operating conditions and features our unique self radiation structure (PAT.) as well as our well-established non contact system.
The MX-F retains excellent durability under abnormal operation such as dry running, cavitation and closed-discharge operation.
High grade materials including ETFE, are utilized as the main wetted materials.
The MX-F series is an excellent choice for reliably handling a wide range of chemicals in various manufacturing 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. (PAT.)
- Simply constructed, it is robust and facilitates maintenance.
- Fluororesin, excellent resistance to chemicals.
- Lap joint construction

MX-F403

MX-F401

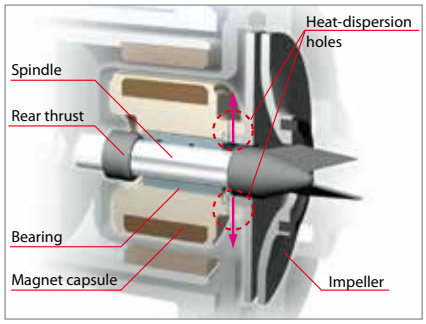
MX-F250

MX-F100

Self-radiating structure (PAT.)

Through heat-dispersion holes provided in the fixed portions of the impeller and the magnet capsule, liquid is circulated under pressure between the spindle and bearing to reduce friction heat transmission and prevent thermal deformation.

(Except MX-F100)



Non-contact structure

The drive magnet and driven magnet are carefully positioned so that their strong magnetic field limits rear thrust contact of the magnet capsule parts, even during dry running. As a result, heat generation is greatly reduced and liquid circulation is maintained.

(Except MX-F100)

Volute casing divided into two sections (PAT.)

The MX-F 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, internal leakage is kept to a minimum and overall hydraulic efficiency is enhanced.

(Except MX-F400)

Front casing Rear casing

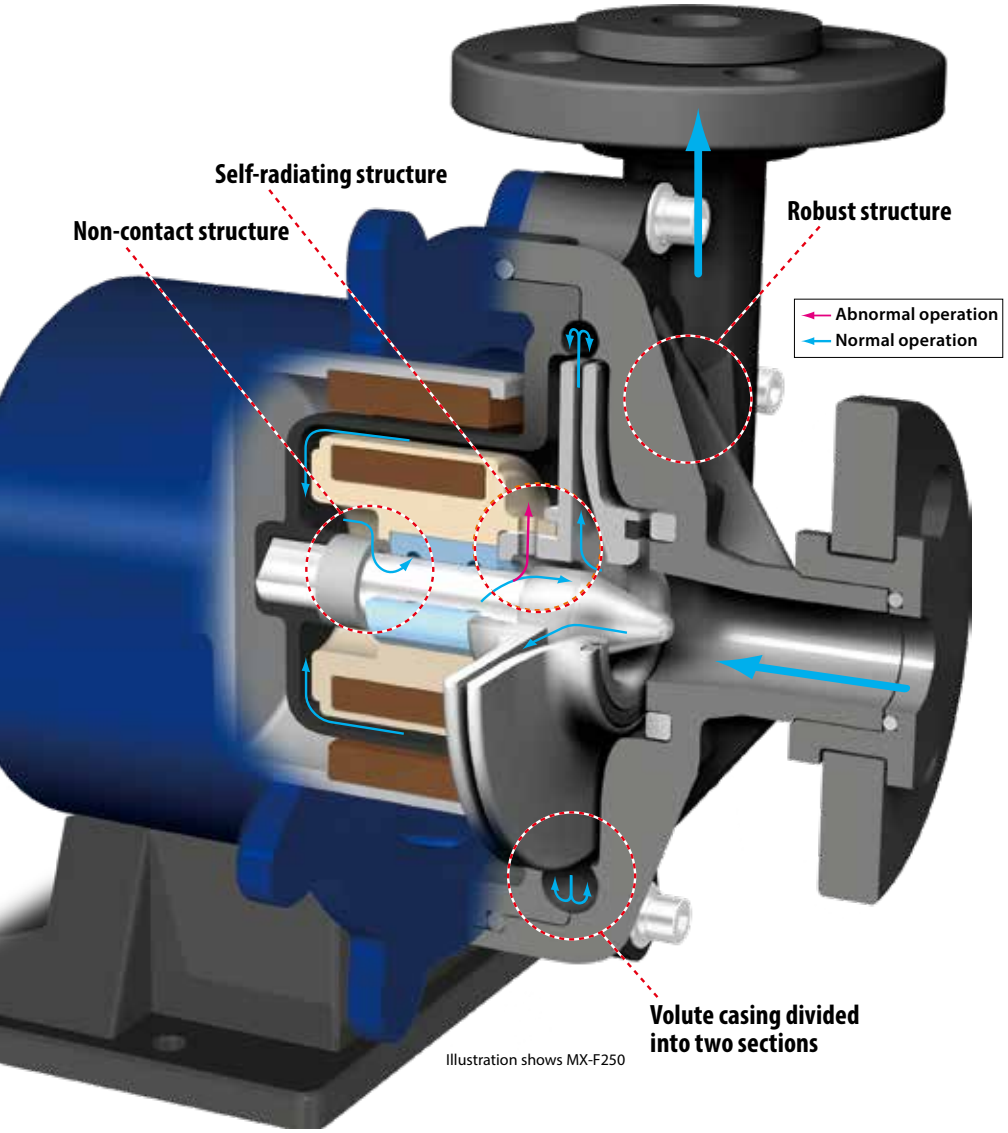


Illustration shows MX-F250

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.

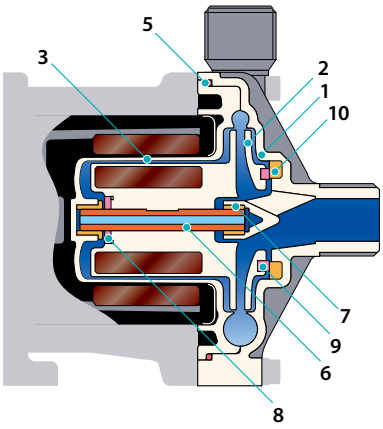
The bearing is not only fixed by conventional press fit but is also sandwiched between the abutting portion in the depth of the magnet capsule and the rear end of the impeller to improve its reliability under high temperature.
(Except MX-F100)

MX-F402 and F403 models: an unplugging preventive lock pin is adopted for ensuring more steady securing.

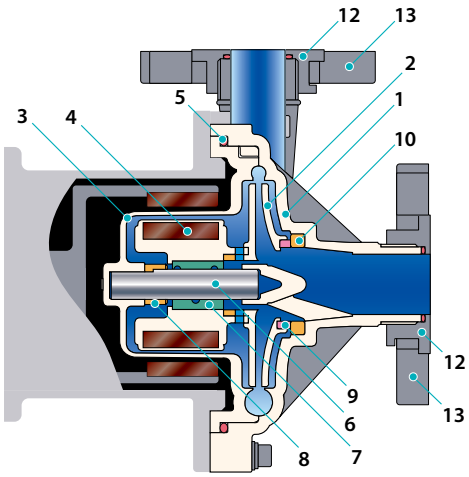
Front casing of type MX-F100 and MX-F402/403

Wet end materials

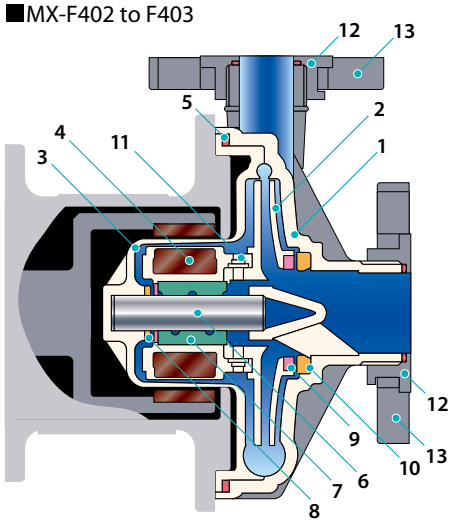
■MX-F100



■MX-F250 to F401



■MX-F402 to F403



	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			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(with filler)	SiC	High density carbon	PTFE(with filler)	SiC	High density carbon	PTFE	SiC
8	Rear thrust	High purity alumina ceramic	SiC(Front & Rear)	CFRETFE			CFRETFE		
9	Mouth ring	PTFE(with filler)	-	PTFE(with filler)		SiC	PTFE(with filler)		SiC
10	Thrust/Liner ring	High purity alumina ceramic	-	High purity alumina ceramic		SiC	High purity alumina ceramic		SiC
11	Lock pin	-		-			CFRETFE		
12	Inner flange	-		CFRETFE			CFRETFE		
13	Outer flange	-		GFRPP			GFRPP		

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

Pump identification

■ **MX-F100**

MX-F 100 RV M Y - 32

- **Pump size**
  100 : G1X G1 260W
- **Series symbol**
  MX-F : Material of Casing/CFRETFE
- **Materials**
  MX-F RV : PTFE(with filler)/FKM (Bearing/O-ring)
  KV : SiC/FKM (Bearing/O-ring)
- **Connection**
  M : Thread connection
  Not for Lap joint type
- **Connection**
  MX-F Y : 50Hz/60Hz
  Z : 60Hz only
- **Motor**
  No mark : 1 phase 100V
  11 : 1 phase 110V
  13 : 1 phase 220V/240V
  32 : 3 phase 200V/220V
  34 : 3 phase 400/440V

■ **MX-F250 to F403**

MX-F 400 CFV T C - L 2 S

- **Pump size**
  250 : 25A X 25A 0.4kW
  251 : 25A X 25A 0.75kW
  400 : 40A X 40A 0.4kW
  401 : 40A X 40A 0.75kW
  402 : 50A X 40A 1.5kW
  403 : 50A X 40A 2.2kW
- **Series symbol**
  MX-F : Material of Casing/CFRETFE
- **Impeller mark**
  MX-F T,V,W 5 : 50Hz only
  X,Y,Z 6 : 60Hz only
- **Motor specification**
  No mark : TEFC indoor
  C : TEFC outdoor
  A : Increased safety type
  (Except 2.2kW type)
- **Flange type**
  No mark : Flange type
  L : Lap joint type
- **Material of Bearing/Spindle/O-ring**
  MX-F CFV : High density carbon/High purity alumina ceramic/FKM
  CFE : High density carbon/High purity alumina ceramic/EPDM
  RFV : PTFE(with filler)/High purity alumina ceramic/FKM
  RFE : PTFE(with filler)/High purity alumina ceramic/EPDM
  KKV : SiC/SiC/FKM
  KKE : SiC/SiC/EPDM
- **Special specification:**
  No mark : Standard
  S : Order-made specification
- **Motor**
  2 : 3phase 200/200/220V
  3 : 3phase 220/380V (Only 250, 251, 400, 401)Note1
  4 : 3phase 380 to 440VNote2 (Only 250, 251, 400, 401)Note1
  6 : 3phase 380V (Only 402, 403)
  7 : 3phase 400/400/440V (Only 402, 403)
  8 : 3phase 415V (Only 402, 403)
  9 : 3phase 460V

Note1: 3 and 4 are reserved for a dedicated motor, while a general-purpose motor is assigned an ID number from among 6 through 8.
Note2: Frequency 380: 50/60Hz, 400: 50/60Hz, 415: 50Hz, 440: 60Hz

Specifications

50/60Hz

Model	Connection Suction X Discharge	Limit of specific gravity Note1	Standard capacity L/min - m	Maximum capacity L/min	Motor kW	Mass kg
MX-F100 Y	G1 x G1 Note2	1.9 / 1.2	70 - 5.8 / 9.0	110 / 125	0.26	8.5
MX-F100 Z		- / 1.8	70 - - / 5.8	- / 110		
MX-F250 T/X	25A x 25A	1.2	50 - 11.7 / 11.8	150/160	0.4	13.5
MX-F250 V/Y		1.5	50 - 9.1 / 9.5	145/150		
MX-F250 W/Z		1.8 to 2.0	50 - 6.4 / 7.5	126/132		
MX-F251 T/X	25A x 25A	1.2	80 - 15.7 / 17.7	150	0.75	22
MX-F251 V/Y		1.5	80 - 12.2 / 14.1	150		
MX-F251 W/Z		1.8 to 2.0	80 - 9.4 / 11.5	120 / 140		
MX-F400 T/X	40A x 40A	1.2	100 - 10.1 / 9.3	250	0.4	13.5
MX-F400 V/Y		1.5	100 - 8.1 / 7.6	230		
MX-F400 W/Z		1.8 to 2.0	100 - 5.5 / 6.3	210		
MX-F401 T/X	40A x 40A	1.2	150 - 12.8 / 12.6	270/280	0.75	22
MX-F401 V/Y		1.5	150 - 10.8 / 10.4	260		
MX-F401 W/Z		1.8 to 2.0	150 - 8.1 / 6.9	240/230		
MX-F402 T/X	50A x 40A	1.2	200 - 18.3 / 18.5	440	1.5	38
MX-F402 V/Y		1.5	200 - 16 / 15.2	430		
MX-F402 W/Z		1.8 to 2.0	200 - 12.5 / 11.7	410/400		
MX-F403 T/X	50A x 40A	1.2	250 - 22.8 / 23.1	510	2.2	43
MX-F403 V/Y		1.5	250 - 19.4 / 19.2	500		
MX-F403 W/Z		1.8 to 2.0	250 - 15.3 / 14.7	470/480		

Note1: The specific gravity limit varies with the discharge. For details, please contact us.
Note2: 26mm tube connection option available on the MX-F100.

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.

Precautions for pump selection

1. The performance curves on this catalogue are based on clean water of 20 ºC.
Keep a margin (3% of curves) when selecting the pump.

2. For the MX-F250, select a proper impeller size according to specific gravity. Always keep 10% allowance to motor output.

Applicable motor output

$$Sp \times S.G \times (1.1) \leqq \frac{\text{Motor output}}{\text{Allowance}}$$

3. The magnetic drive pump is not durable for a long time in closed-discharge operation. Always keep the minimum flow.

Minimum flow

MX-F100, 250, 251, 400, 401: 10 L/min
MX-F402, 403: 20 L/min

4. NPSH validation
Observe the following for the prevention of cavitation.

$$NPSHa \geqq NPSHr + \frac{0.5\ m}{\text{Allowance}}$$

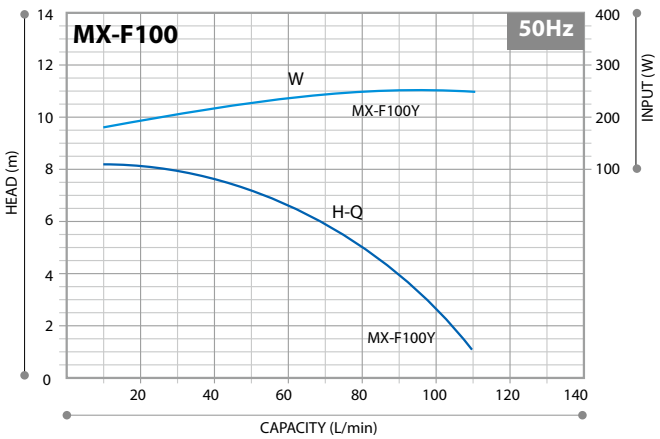
$$NPSHa = 10^6 \times \frac{(Pa - Pv)}{\rho g} \pm hs - hfs$$

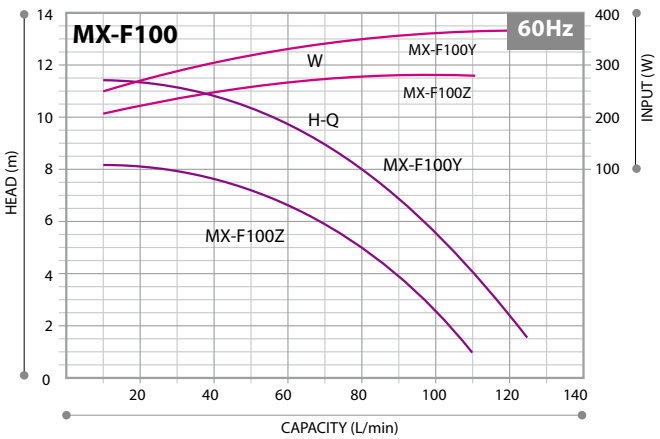
5. Maximum withstand pressure

MX-F100: 0.19MPa
MX-F250: 0.25MPa
MX-F251: 0.33MPa
MX-F400: 0.22MPa
MX-F401: 0.28MPa
MX-F402: 0.43MPa
MX-F403: 0.43MPa

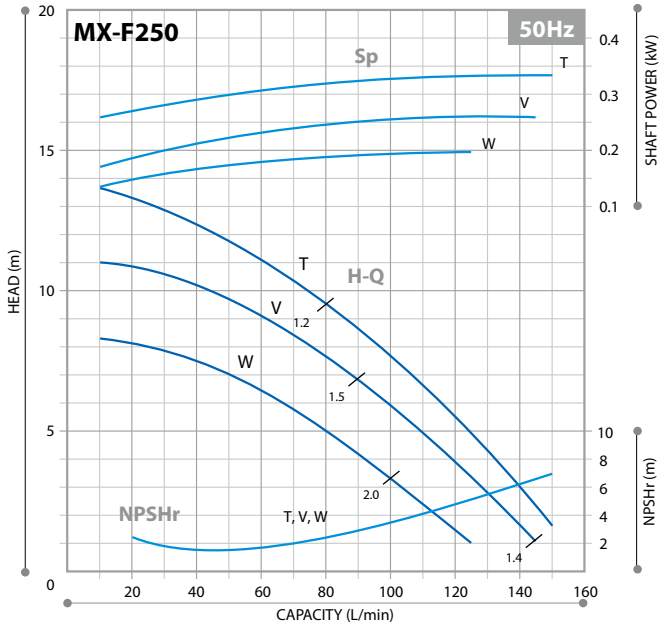
NPSHa: Net Positive Suction Head Available (m)
NPSHr: Net Positive Suction Head Required (m)
Pa: Pressure on the suction liquid level (MPa) (Absolute pressure)
Pv: Pressure of saturated vapor (MPa)
hs: Static suction head (m)
hfs: Suction pipe resistance (m)
ρ: Liquid density (kg/m³)
g: G-force (9.8m/sec²)

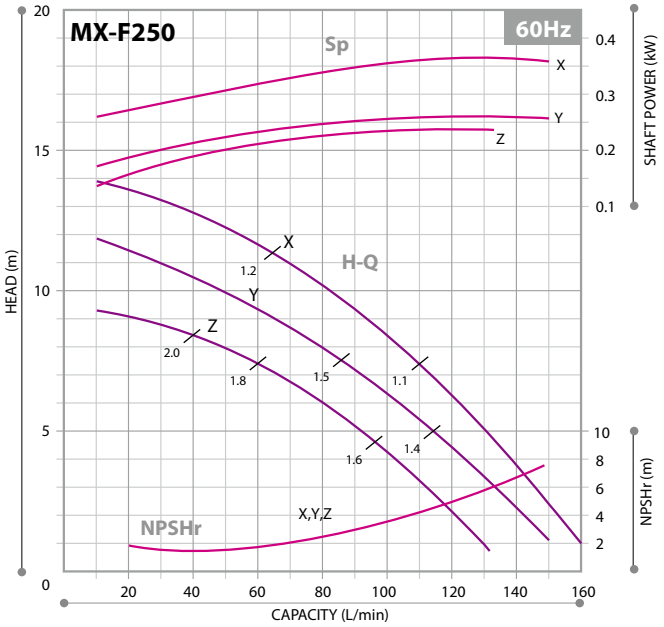
Performance curves

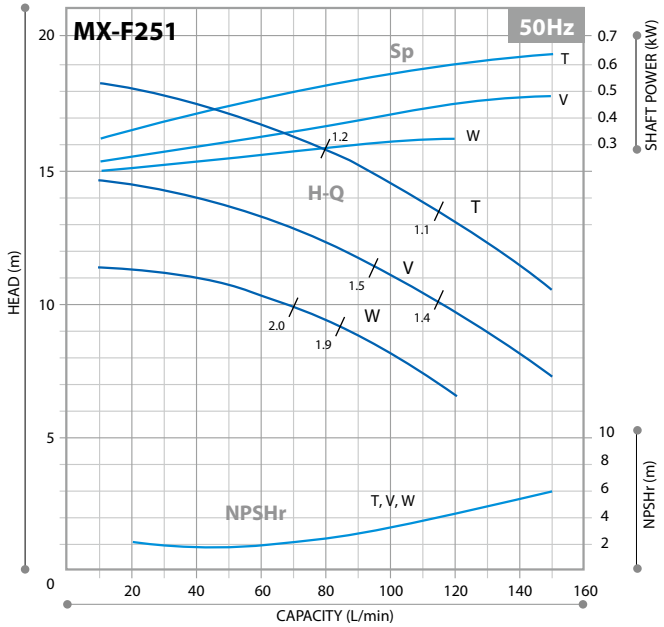


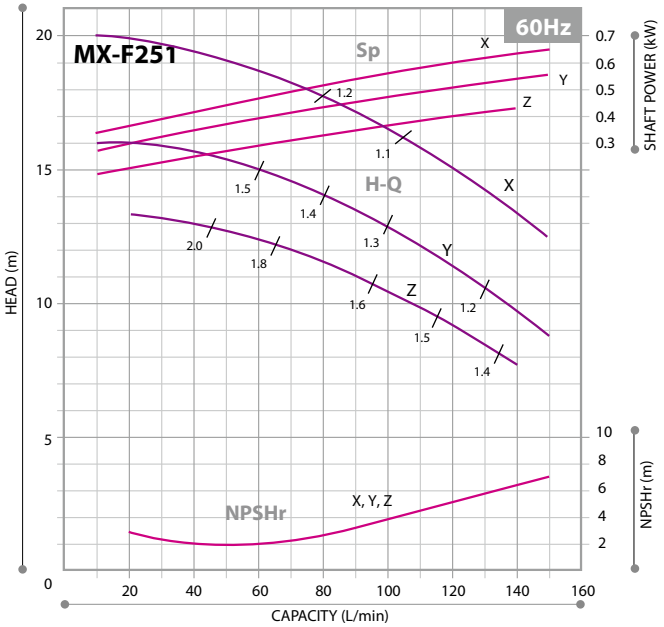


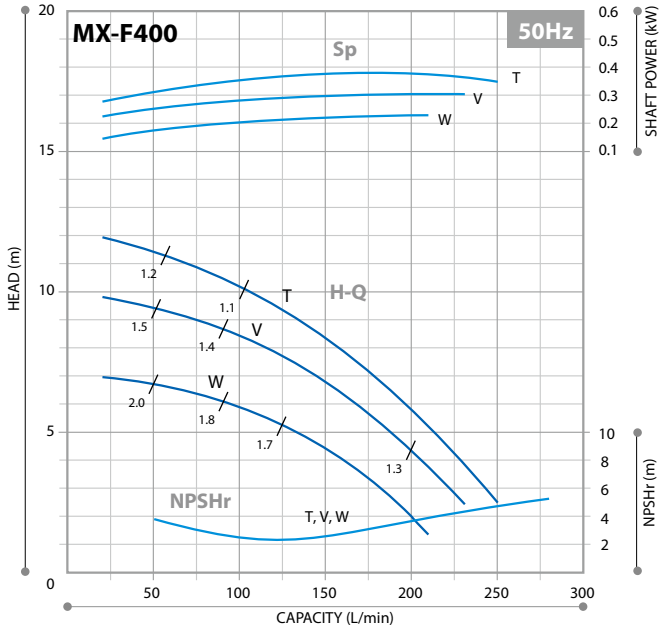
Performance curves

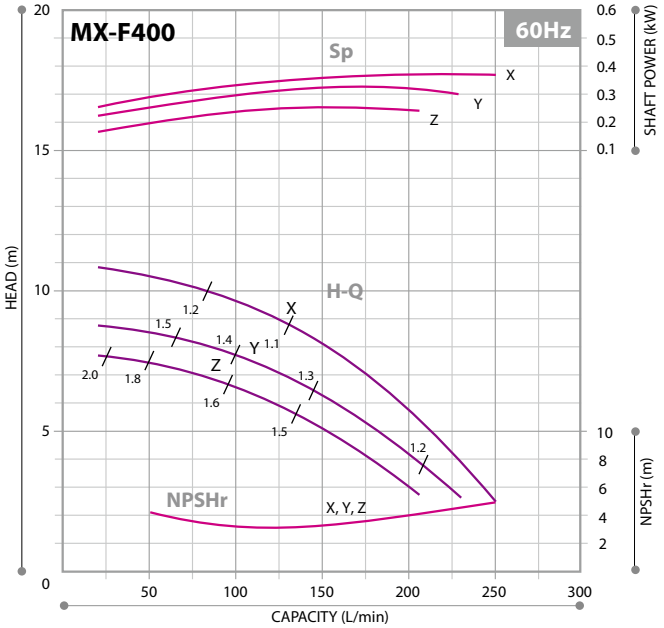




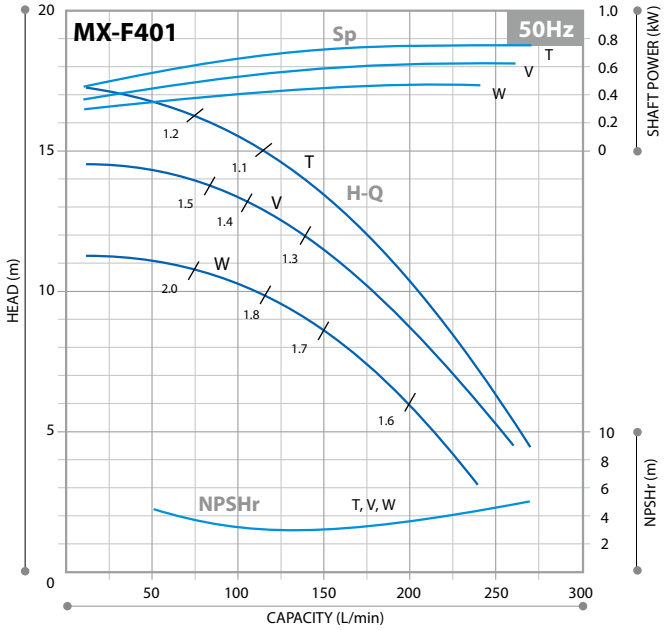


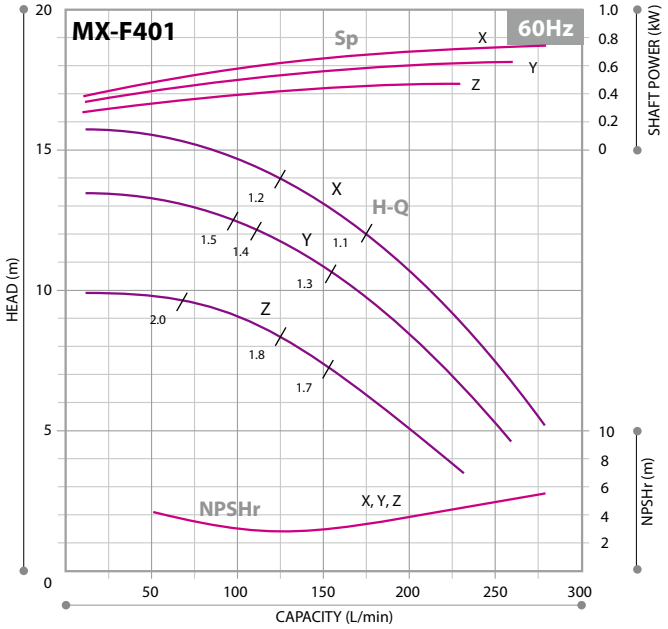


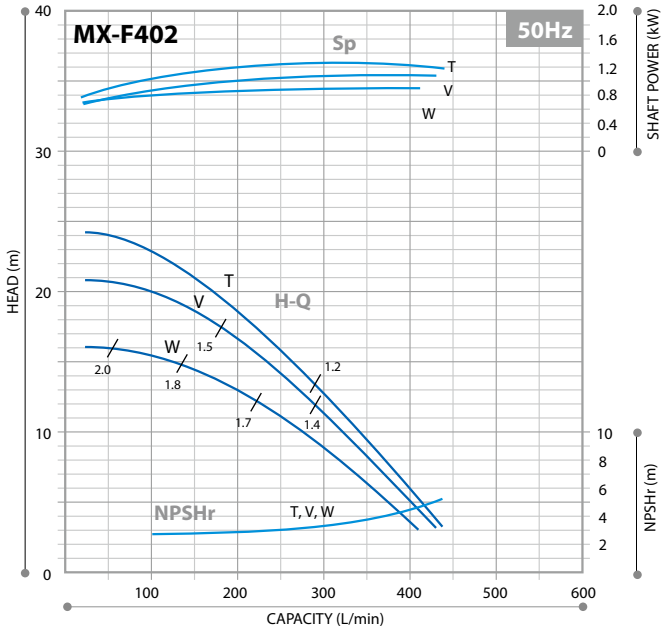


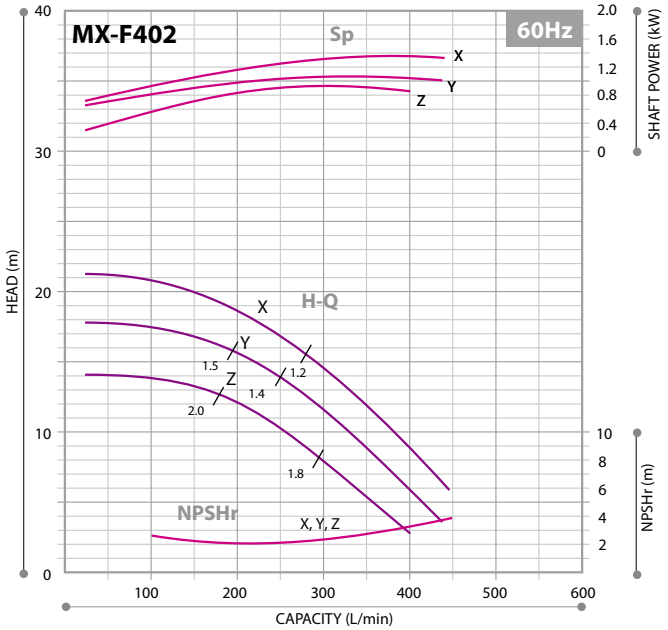


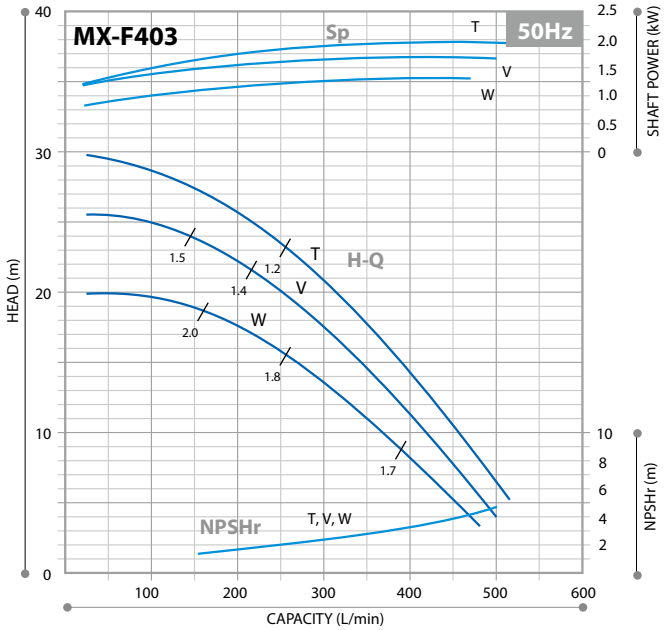
Performance curves

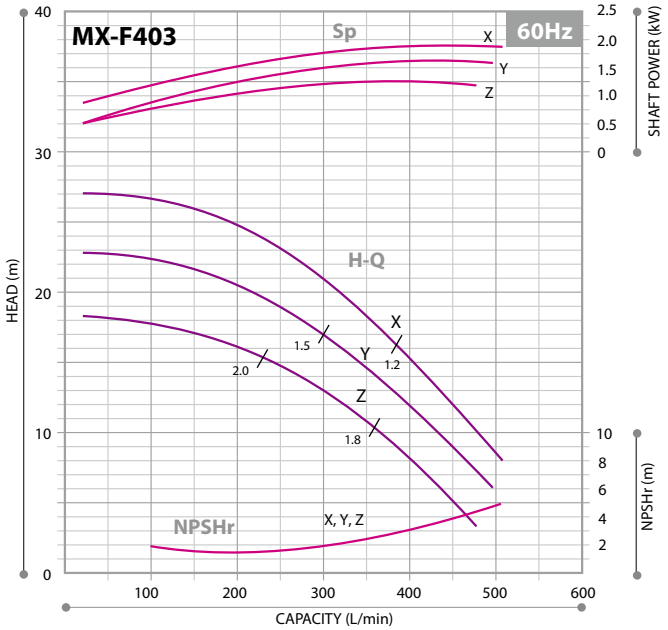






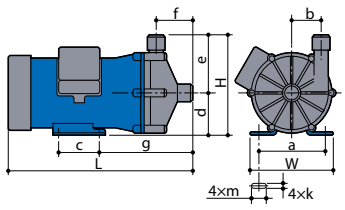




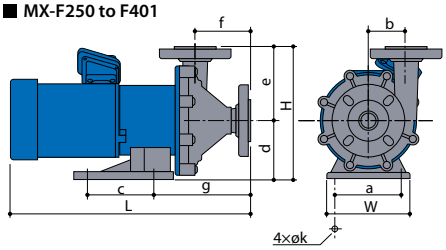


Dimensions

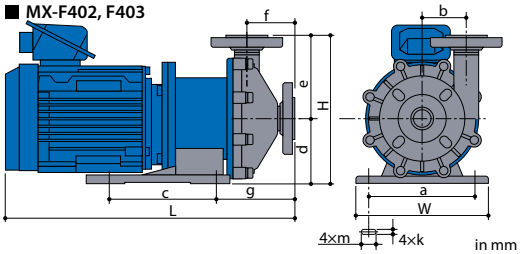
■ MX-F100



■ MX-F250 to F401



■ MX-F402, F403



in mm

Models	W	H	L	a	b	c	d	e	f	g	k	m
MX-F100	150	175	319.5	110	51	70	75	100	65	162	9	27
MX-F250	160	255	411	130	65	130	115	140	90	163	12	—
MX-F251	160	255	446	130	65	130	115	140	90	171	12	—
MX-F400	140	225	411	110	54	98	95	130	87	150	12	—
MX-F401	160	255	459	130	72	130	115	140	103	184	12	—
MX-F402	260	280	514	208	80	200	120	160	89	157	14	36
MX-F403	260	280	543	208	80	200	120	160	89	157	14	36

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

Optional accessories

Iwaki pump protector DRN series

Detects unusual pump operating conditions induding 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.

Multiple Input	Two analog, one digital, one temperature input and one current input
Easy operation	Equipped with EASY setup mode to remember the operation status and set the lower/upper limit values, as well as AUTO setup mode
Bar graph	Visible indication of current operating status
Logging capability	Data log feature for preventative maintenance scheduling
Communication	RS485 external communication capability

Specifications

Model	DRN-01	DRN-02
Amperometric range	0.5-30.00A	5.0-200.0A
Unit's source voltage	AC100–240V 50/60Hz 10VA	
Operating temperature	0–40°C	
Operating humidity	35–85%RH	

Union joint

Special purpose union joints are available. Material : PVC/Heat resistant PVC

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 office	**: IWAKI Europe GmbH**	TEL: (49)2154 9254 0	FAX: 2154 9254 48
Germany	**: IWAKI Europe GmbH**	TEL: (49)2154 9254 50	FAX: 2154 9254 55
Holland	**: IWAKI Europe GmbH** (Netherlands Branch)	TEL: (31)74 2420011	FAX: (49)2154 925448
Italy	**: IWAKI Europe GmbH** (Italy Branch)	TEL: (39)0444 371115	FAX: 0444 335350
Spain	**: IWAKI Europe GmbH** (Spain Branch)	TEL: (34)93 37 70 198	FAX: 93 47 40 991
Belgium	**: IWAKI Belgium N.V.**	TEL: (32)13 67 02 00	FAX: 13 67 20 30
Denmark	**: IWAKI Nordic A/S**	TEL: (45)48 24 2345	
Finland	**: IWAKI Suomi Oy**	TEL: (358)9 2745810	
France	**: IWAKI France S.A.**	TEL: (33)1 69 63 33 70	FAX: 1 64 49 92 73
Norway	**: IWAKI Norge AS**	TEL: (47)23 38 49 00	
Sweden	**: IWAKI Sverige AB**	TEL: (46)8 511 72900	
U.K.	**: IWAKI Pumps (UK) Ltd.**	TEL: (44)1743 231363	FAX: 1743 366507

( )Country codes

U.S.A.	**: IWAKI America Inc.**	TEL: (1)508 429 1440	FAX: 508 429 1386
Argentina	**: IWAKI America Inc.** (Argentina Branch)	TEL: (54)11 4745 4116	
Brasil	: IWAKI Do Brasil Comercio De Bombas Hidraulicas LTDA.	TEL: (55)19 3244 5900	FAX: 19 3244 5900
Singapore	**: IWAKI Singapore Pte Ltd.**	TEL: (65)6316 2028	FAX: 6316 3221
Indonesia	**: IWAKI Singapore** (Indonesia Office)	TEL: (62)21 6906606	FAX: 21 6906612
Malaysia	**: IWAKIm Sdn. Bhd.**	TEL: (60)3 7803 8807	FAX: 3 7803 4800
Australia	**: IWAKI Pumps Australia Pty Ltd.**	TEL: (61)2 9899 2411	FAX: 2 9899 2421
Hong Kong	**: IWAKI Pumps Co., Ltd.**	TEL: (852)2607 1168	FAX: 2607 1000
China	**: GFTZ IWAKI Engineering & Trading Co., Ltd.**	TEL: (86)20 84350603	FAX: 20 84359181
	: IWAKI Pumps (Shanghai) Co., Ltd.	TEL: (86)21 6272 7502	FAX: 21 6272 6929
Korea	**: IWAKI Korea Co.,Ltd.**	TEL: (82)2 2630 4800	FAX: 2 2630 4801
Taiwan	**: IWAKI Pumps Taiwan Co., Ltd.**	TEL: (886)2 8227 6900	FAX: 2 8227 6818
Thailand	**: IWAKI (Thailand) Co.,Ltd.**	TEL: (66)2 322 2471	FAX: 2 322 2477

⚠ 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.