



**Chemically Resistant Magnetic Drive Pumps  
Which Can Tolerate Severe Operating Conditions**

# Chemically Resistant Magnetic Drive Pumps Which Can Tolerate Severe Operating Conditions



## Self-Radiating Structure

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

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)



## ETFE Available for Aggressive Chemicals

Carbon fiber reinforced CFRETFE can be used for a variety of application having a superior chemical compatibility.



## 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.



## Lap Joint Flanges

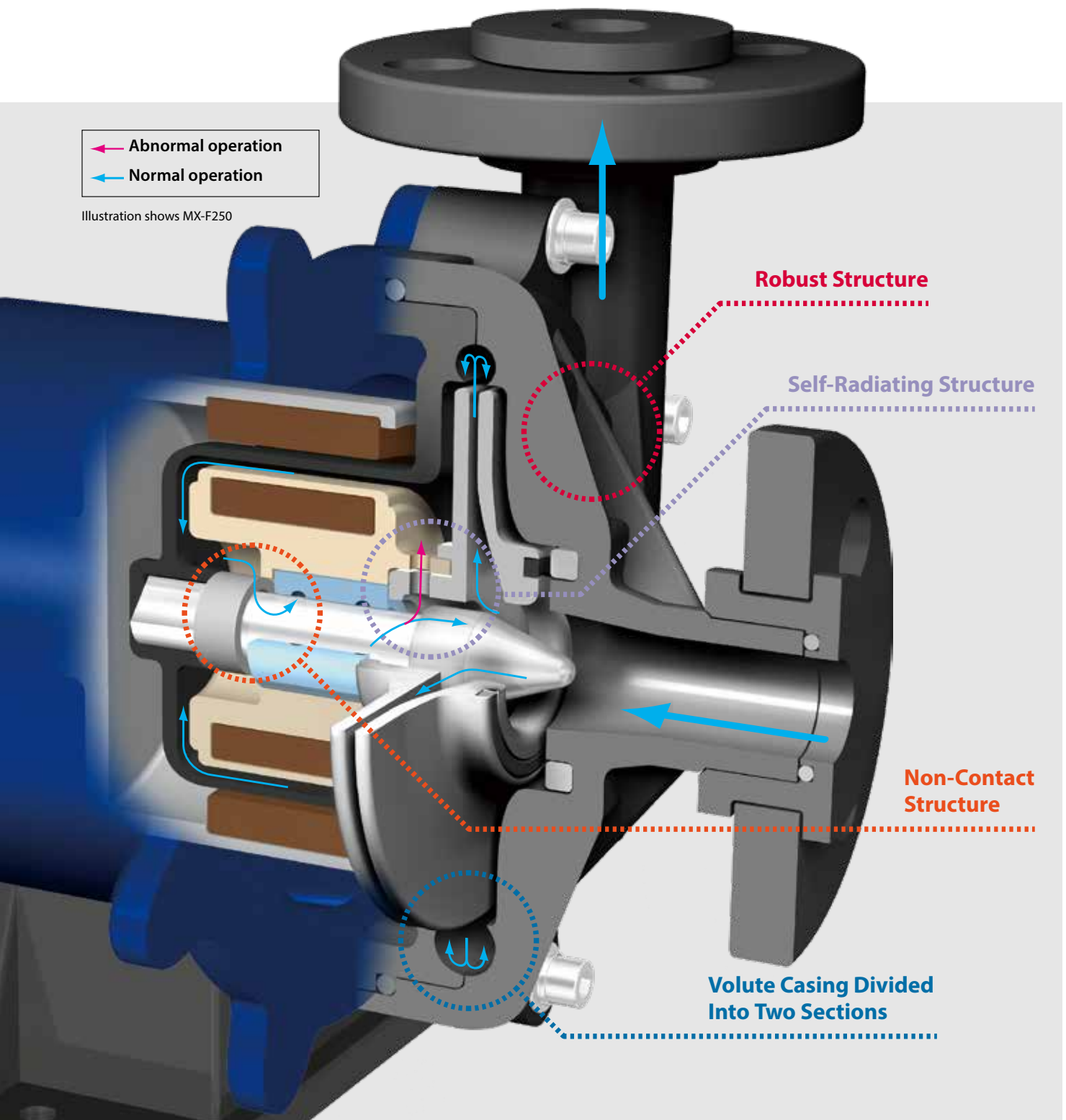
New for this series or size - can be rotated to match the end users piping alignment with ease.



MX-F403



MX-F401



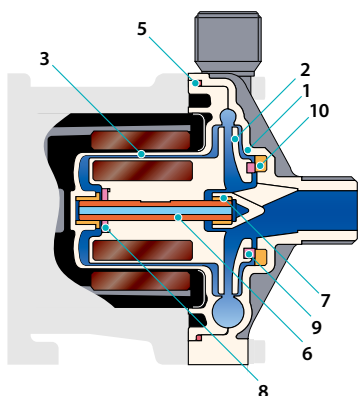
MX-F250



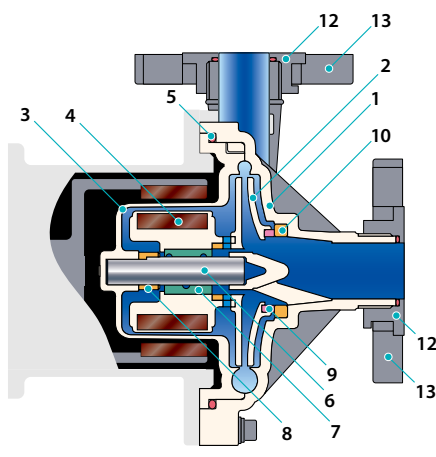
MX-F100

## Wet end Materials

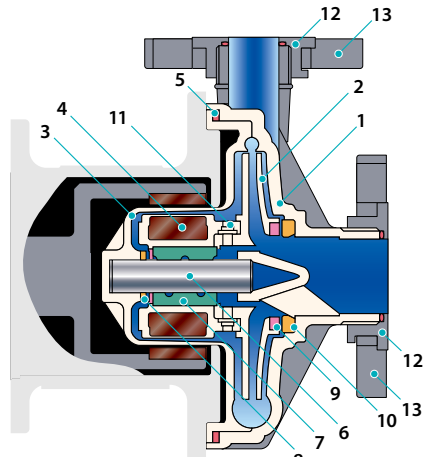
### MX-F100



### MX-F250 to 401



### MX-F402 to 403



| Model                     | MX-F100                     |                   | MX-F250 to 401              |                    |         | MX-F402 to 403              |                    |         |
|---------------------------|-----------------------------|-------------------|-----------------------------|--------------------|---------|-----------------------------|--------------------|---------|
| Mark                      | RV/RE                       | KV/KE             | CFV/CFE                     | RFV/RFE            | KKV/KKE | CFV/CFE                     | RFV/RFE            | KKV/KKE |
| 1 Front casing            | CFRETFE                     |                   | CFRETFE                     |                    |         | CFRETFE                     |                    |         |
| 2 Impeller                |                             |                   |                             |                    |         |                             |                    |         |
| 3 Rear casing             |                             |                   |                             |                    |         |                             |                    |         |
| 4 Magnet capsule          | FKM(EPDM)                   |                   | FKM(EPDM)                   |                    |         | FKM(EPDM)                   |                    |         |
| 5 O ring <sup>Note1</sup> |                             |                   |                             |                    |         |                             |                    |         |
| 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 (with filler) | SiC     |
| 8 Rear thrust             | High purity alumina ceramic | SiC(Front & Rear) | CFRETFE                     |                    |         | CFRETFE                     |                    |         |
| 9 Mouth ring              | PTFE(with filler)           | -                 |                             |                    |         |                             |                    |         |
| 10 Thrust/Liner ring      | High purity alumina ceramic | -                 | High purity alumina ceramic |                    | SiC     | High purity alumina ceramic |                    | SiC     |
| 11 Lock pin               | -                           | -                 | CFRETFE                     |                    |         | CFRETFE                     |                    |         |
| 12 Inner flange           | -                           | -                 |                             |                    |         |                             |                    |         |
| 11 Outer flange           | -                           | -                 | GFRPP                       |                    |         | GFRPP                       |                    |         |

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

## Pump Identification

### MX-F100

**MX-F 100 RV M Y - 32**  
 1 2 3 4 5 6

1 Series symbol  
**MX-F**: Material of Casing/  
 CFRETFE

3 Materials of Bearing/O-ring  
**MX-F RV, RE**: PTFE(with filler)/FKM(EPDM)  
**KV, KE**: SiC/FKM(EPDM)

5 Impeller mark  
**MX-F Y**: 50Hz / 60Hz **Z**: 60Hz only

2 Pump size  
**100**: G1X G1 260W

4 Connection  
**M**: Thread connection  
**FL**: Flange connection  
 Not for Lap joint type

6 Motor  
 No mark: 1 phase 100V  
**13**: 1 phase 220V/240V  
**32**: 3 phase 200V/220V  
**34**: 3 phase 400/440V

### MX-F250 to 403

**MX-F 400 CFV T C - L 2 S**  
 1 2 3 4 5 6 7 8

1 Series symbol  
**MX-F**: Material of Casing/  
 CFRETFE

3 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

6 Flange type  
**L**: Lap joint type

2 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

4 Impeller mark  
**MX-F T, V, W**: 50Hz only **X, Y, Z**: 60Hz only

7 Motor  
**2**: 3phase 200/200/220V  
**3**: 3phase 220/380V (Only 250, 251, 400, 401)<sup>Note1</sup>  
**4**: 3phase 380 to 440V<sup>Note2</sup> (Only 250, 251, 400, 401)<sup>Note1</sup>  
**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

5 Motor specification  
 No mark: TEFC indoor  
**C**: TEFC outdoor **A**: Increased safety type  
 (Except 2.2kW type)

8 Special specification:  
 No mark: Standard **S**: Order-made specification

## Specifications

50/60Hz

| Model       | Connection<br>Suction X Discharge | Limit of<br>specific gravity <sup>Note1</sup> | Standard capacity<br>L/min - m | Maximum capacity<br>L/min | Motor<br>kW | Mass<br>kg |
|-------------|-----------------------------------|-----------------------------------------------|--------------------------------|---------------------------|-------------|------------|
| MX-F100 Y   | G1 x G1 <sup>Note2</sup>          | 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 °C.  
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

$$Sp \times S.G \times (1.1) \leq \text{Motor output}$$

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.

$$NPSHa \geq NPSHr + 0.5 \text{ m}$$

Allowance

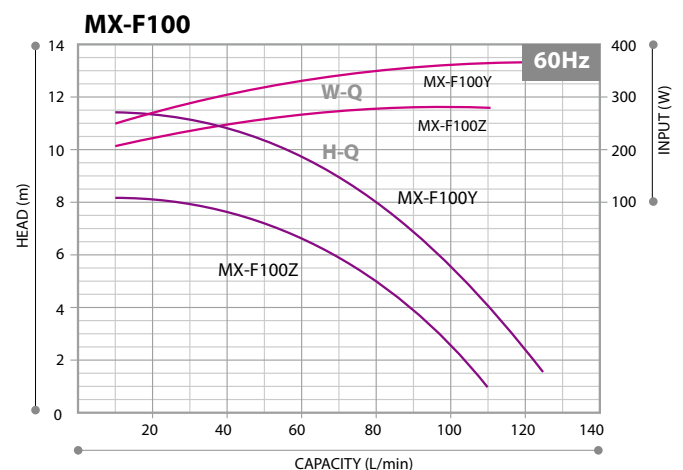
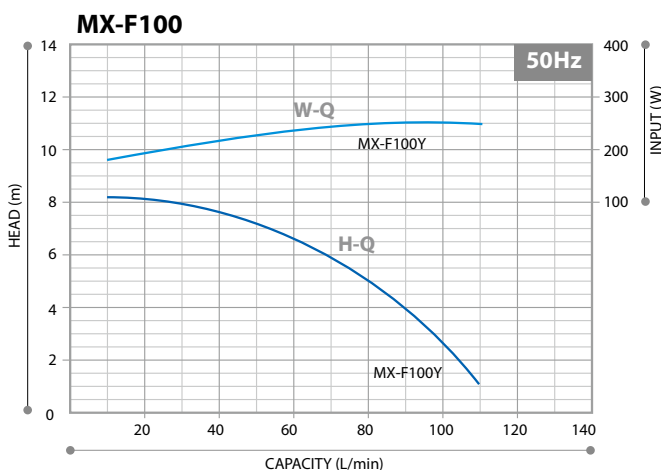
$$NPSHa = \frac{(Pa - Pv) \times 10^6}{\rho g} \pm hs - hfs$$

5. Maximum withstand pressure

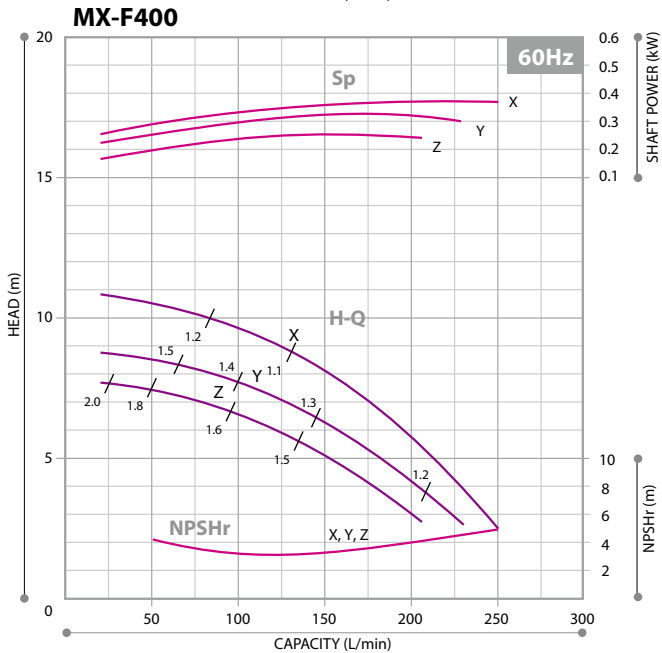
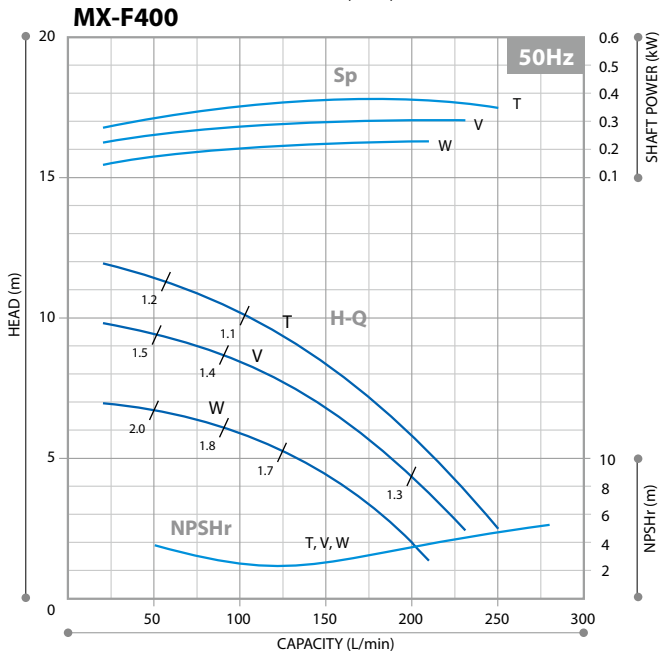
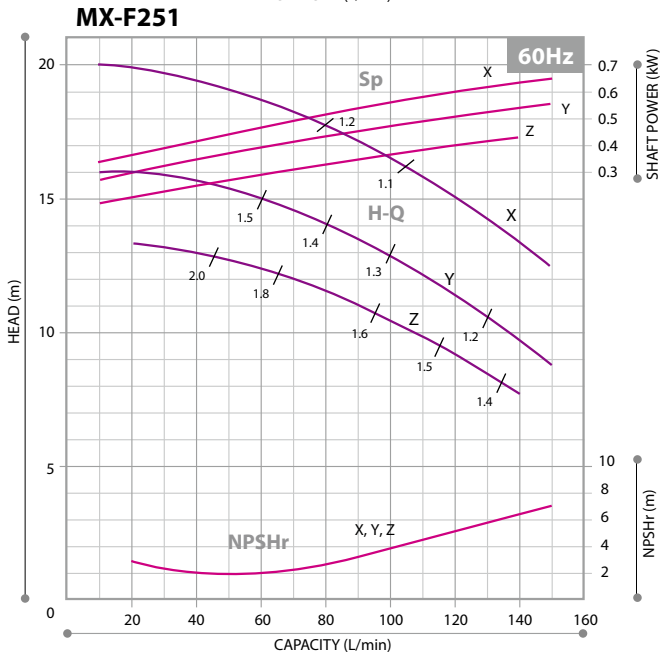
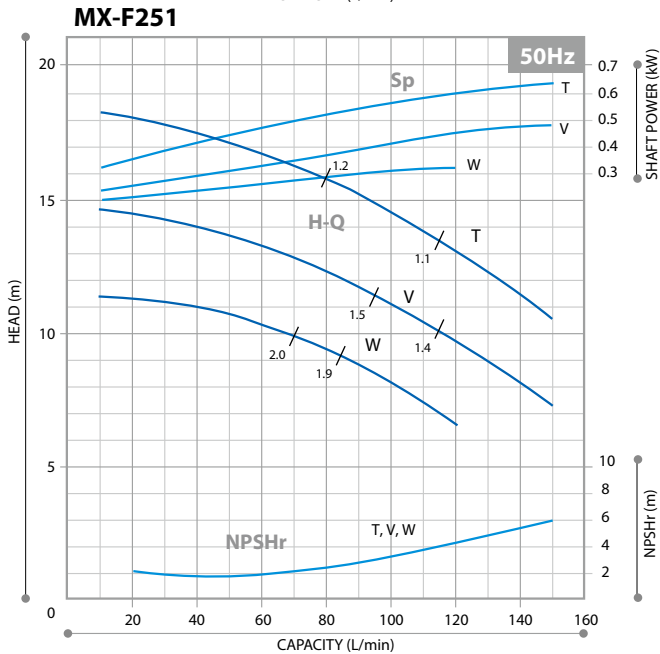
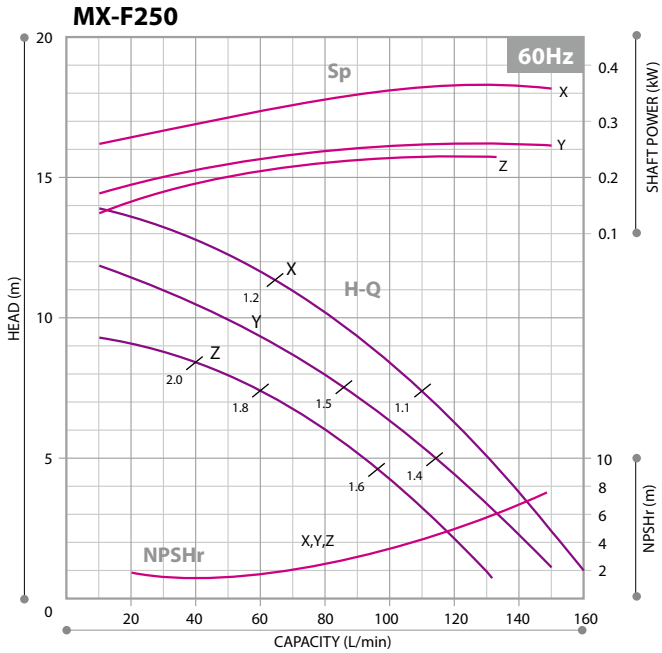
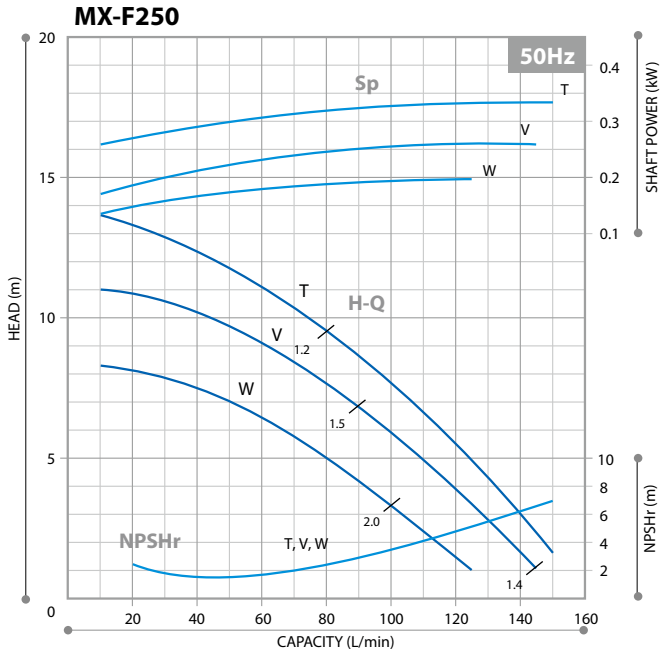
MX-F100: 0.19MPa      MX-F400: 0.22MPa  
MX-F250: 0.25MPa      MX-F401: 0.28MPa  
MX-F251: 0.33MPa      MX-F402: 0.43MPa  
MX-F403: 0.43MPa

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)  
 $\rho$ : Liquid density (kg/m<sup>3</sup>)  
g: G-force (9.8m/sec<sup>2</sup>)

## Performance Curves



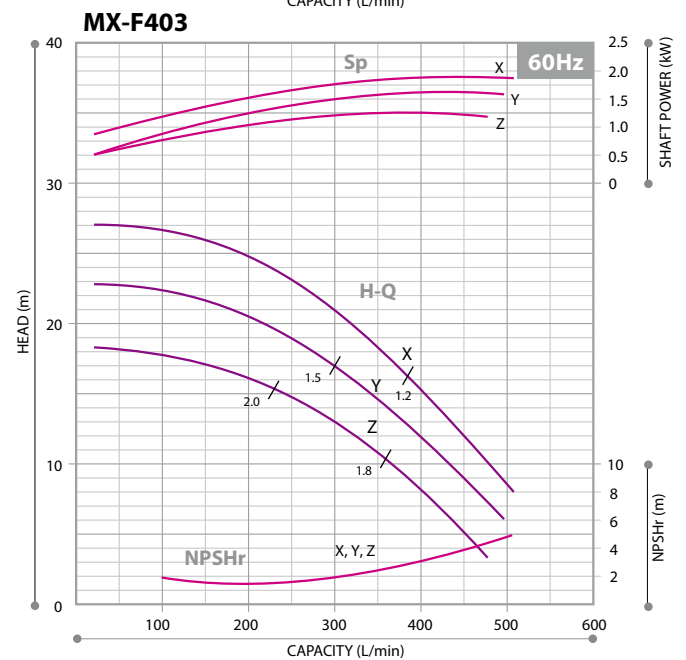
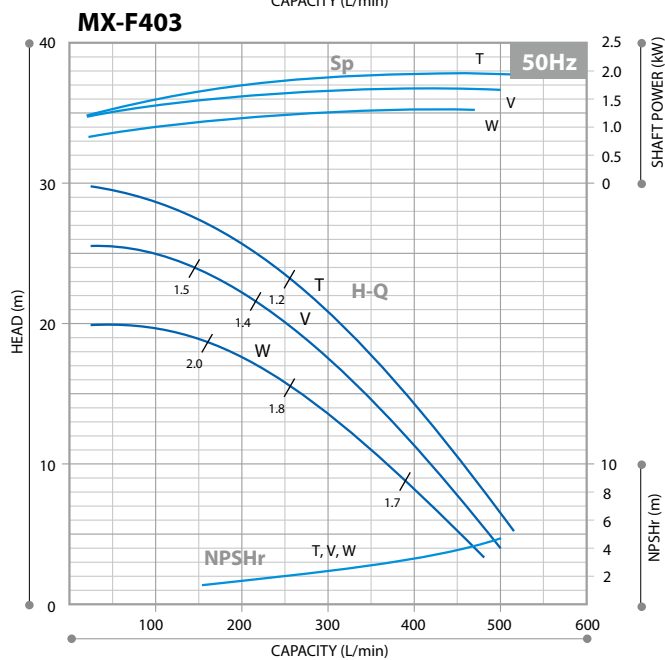
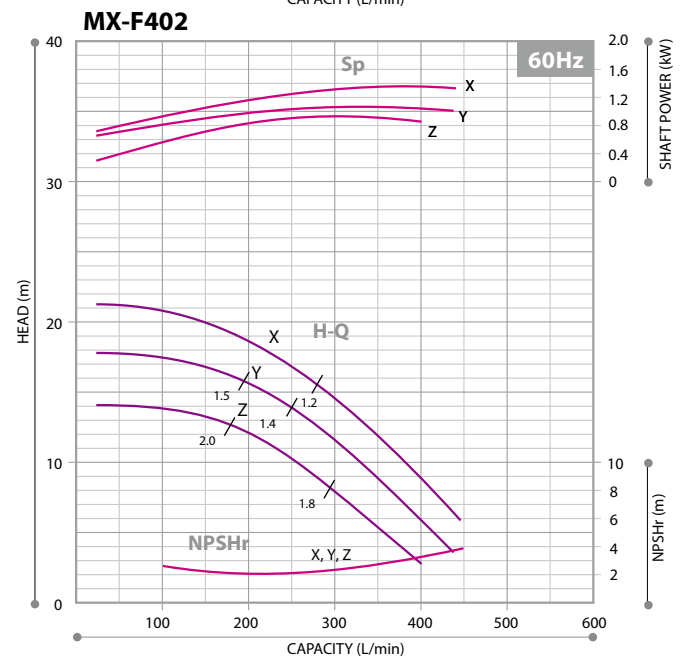
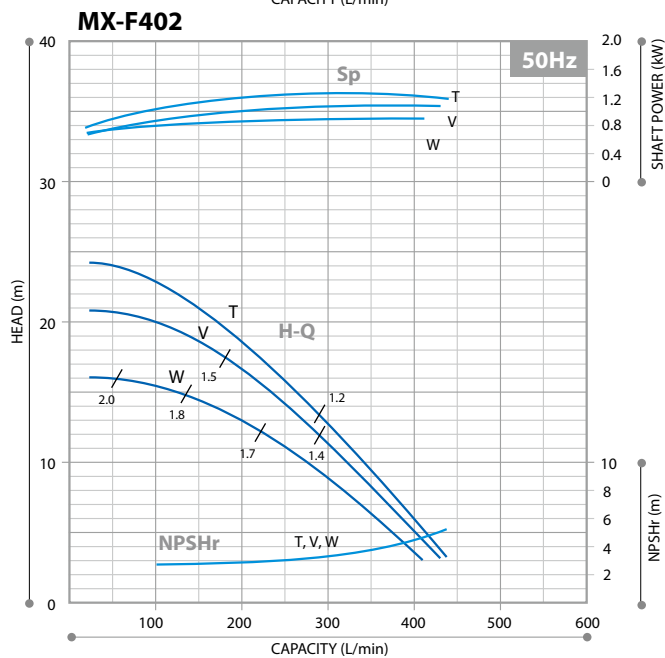
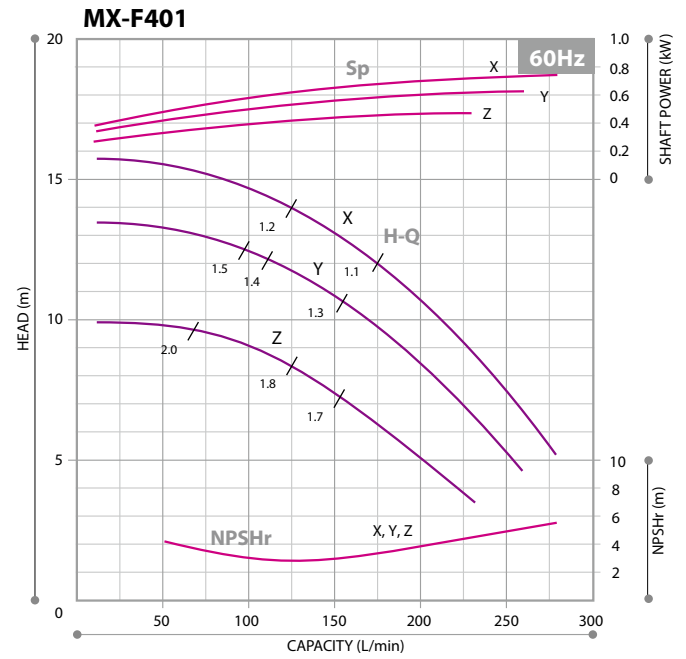
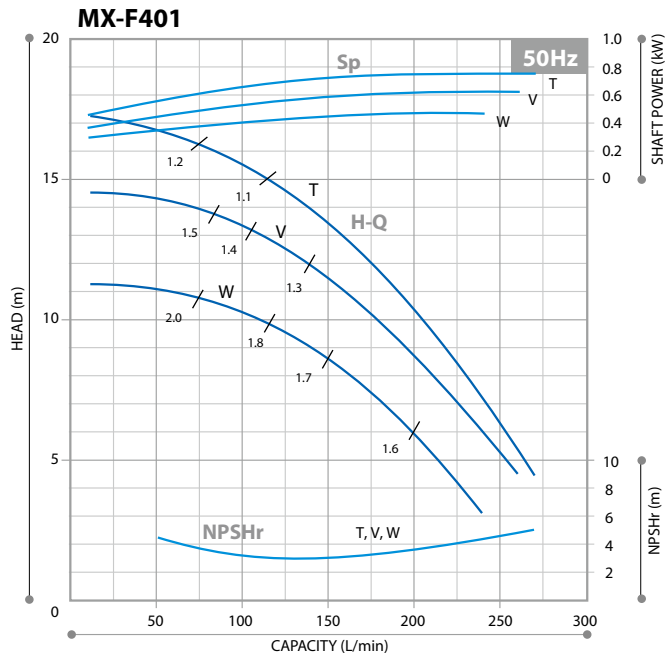
Performance Curves



Note: The specific gravity limit described in the head is only a guide and please contact us for details.

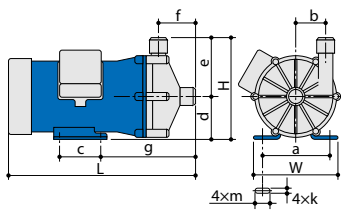


## Performance Curves

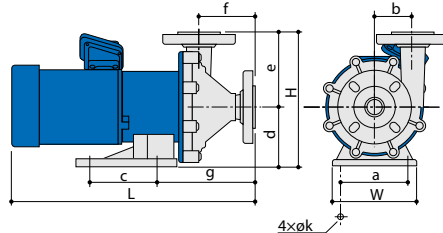


## Dimensions (mm)

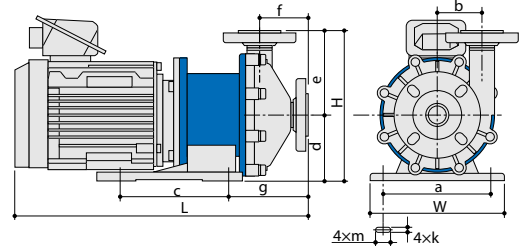
### MX-F100



### MX-F250 to 401



### MX-F402, 403



| 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 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.

|                    |                                                                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 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](http://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.

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