Magnetic drive pumps

Withstands difficult operating conditions and offers high efficiency

The MX Series represents the latest state of the art design in plastic magnetic drive pumps to meet the most severe of operating conditions.
Withstands difficult operating conditions and offers high efficiency

The MX Series represents the latest state of the art design in plastic magnetic drive pumps 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” (Pat.Pend.) 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. (Pat.Pend.)

• Simply constructed, it is robust and facilitates maintenance.

Self-radiating 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.

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)

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 getting 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.  
(Except MX-70, 100)

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-70, 100)

MX-402(H) and 403(H) models: an unplugging preventive lock pin is adopted for ensuring more steady securing.
## Wet end materials

### MX-70, 100

<table>
<thead>
<tr>
<th>Model</th>
<th>MX-70</th>
<th>MX-100</th>
<th>MX-250 to 403H</th>
<th>MX-250 to 401</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark</td>
<td>V(E)</td>
<td>CV(CE)</td>
<td>RV(RE)</td>
<td>AV(AE)</td>
</tr>
<tr>
<td>1 Front casing</td>
<td>GFRPP</td>
<td></td>
<td>GFRPP</td>
<td></td>
</tr>
<tr>
<td>2 Impeller</td>
<td>CFRPP</td>
<td></td>
<td>GFRPP</td>
<td></td>
</tr>
<tr>
<td>3 Rear casing</td>
<td>GFRPP</td>
<td></td>
<td>GFRPP</td>
<td></td>
</tr>
<tr>
<td>4 Magnet capsule</td>
<td>-</td>
<td></td>
<td>PP</td>
<td></td>
</tr>
<tr>
<td>5 O ring</td>
<td>FKM(EPDM)</td>
<td></td>
<td>FKM(EPDM)</td>
<td></td>
</tr>
<tr>
<td>6 Spindle</td>
<td>Alumina ceramic</td>
<td></td>
<td>Alumina ceramic</td>
<td></td>
</tr>
<tr>
<td>7 Bearing</td>
<td>CFRPPS</td>
<td>PTFE</td>
<td>Carbon</td>
<td>PTFE</td>
</tr>
<tr>
<td>8 Rear thrust</td>
<td>-</td>
<td></td>
<td>CFRPPS (MX-402 to 403H: CFRPEEK)</td>
<td></td>
</tr>
<tr>
<td>9 Mouth ring</td>
<td>-</td>
<td>PTFE</td>
<td></td>
<td>PTFE</td>
</tr>
<tr>
<td>10 Thrust/Liner ring</td>
<td>Alumina ceramic</td>
<td></td>
<td>Alumina ceramic</td>
<td></td>
</tr>
<tr>
<td>11 Lock pin</td>
<td>-</td>
<td></td>
<td>GFRPPS (Only available type 402 to 403H)</td>
<td>-</td>
</tr>
</tbody>
</table>

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

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**Diagram:**

- **MX-403**
- **MX-401**

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**Diagram:**

- **MX-70, 100**
- **MX-250 to 401**
- **MX-402 to 403H**
### Pump identification

- **MX-70 and 100**
  - **Pump size**
    - 70: G1 x G1  150W/180W
      - (MX series only available)
    - 100: G1 x G1  260W
  - **Series symbol**
    - MX: Material of Casing/GFRPP

- **MX-250 to 403H**
  - **Pump size**
    - 250: 25A x 25A  0.4kW
      - 25A: 25A x 25A  0.75kW
      - 400: 40A x 40A  0.4kW
      - 401: 40A x 40A  0.75kW
      - 402, 402H: 50A X 40A  1.5kW
      - 403, 403H: 50A X 40A  2.2kW
  - **Series symbol**
    - MX: Material of Casing/GFRPP

- **Materials**
  - MX: FKM (O-ring)
  - E: EPDM (O-ring)

- **Connection**
  - No mark: Tube connection
  - Note: (Fitting diameter: 30mm)
    - Note: Applied to the models MX-70 and MX-100

- **Motor**
  - No mark: 1 phase 100V
    - 11: 1 phase 110V
      - 13: 1 phase 220V/240V
      - 32: 3 phase 200V/220V
      - 33: 3 phase 220/380V
      - 34: 3 phase 400/440V

- **Impeller mark**
  - MX
    - 5: 50Hz only
    - 6: 60Hz only

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

- **Material of Bearing/Spindle/O-ring**
  - MX: Carbon/Alumina ceramic/FKM/EPDM
  - RV, RE: PTFE/Alumina ceramic/FKM/EPDM
  - AV, AE: Alumina ceramic/Alumina ceramic/FKM/EPDM

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Connection</th>
<th>Suction X Discharge</th>
<th>Limit of specific gravity</th>
<th>Standard capacity L/min - m</th>
<th>Maximum capacity L/min</th>
<th>Motor kW</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-70M</td>
<td>G1 x G1</td>
<td>1.2</td>
<td>5 - 5.4 / 7.8</td>
<td>90 / 100</td>
<td>0.15 / 0.18</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>MX-100M</td>
<td>G1 x G1</td>
<td>1.2</td>
<td>70 - 6 / 79</td>
<td>110 / 125</td>
<td>0.26</td>
<td>8.2</td>
<td></td>
</tr>
<tr>
<td>MX-250</td>
<td>25A x 25A</td>
<td>1.2</td>
<td>50 - 14 / 13.5</td>
<td>150</td>
<td>0.4</td>
<td>13.5</td>
<td></td>
</tr>
<tr>
<td>MX-251</td>
<td>25A x 25A</td>
<td>1.0</td>
<td>80 - 19</td>
<td>150</td>
<td>0.75</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>MX-400</td>
<td>40A x 40A</td>
<td>1.2</td>
<td>100 - 10.5 / 10</td>
<td>280</td>
<td>0.4</td>
<td>13.5</td>
<td></td>
</tr>
<tr>
<td>MX-401</td>
<td>40A x 40A</td>
<td>1.2</td>
<td>150 - 14.5</td>
<td>320</td>
<td>0.75</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>MX-402</td>
<td>50A x 50A</td>
<td>1.2</td>
<td>200 - 20 / 19.5</td>
<td>450</td>
<td>1.5</td>
<td>30.5</td>
<td></td>
</tr>
<tr>
<td>MX-402H</td>
<td>50A x 50A</td>
<td>1.0</td>
<td>100 - 30</td>
<td>160</td>
<td>1.5</td>
<td>30.5</td>
<td></td>
</tr>
<tr>
<td>MX-403</td>
<td>50A x 40A</td>
<td>1.2</td>
<td>250 - 23 / 25</td>
<td>500</td>
<td>2.2</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>MX-403H</td>
<td>50A x 40A</td>
<td>1.0</td>
<td>100 - 35 / 36</td>
<td>300 / 250</td>
<td>2.2</td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

Note 1) The specific gravity limit values shown above are with maximum discharges. For details, please contact us.
Note 2) 25mm tube connection option available on the MX-70 and MX-100.
Note 3) AV/AE type is different in discharge capacity. 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-70/100

50Hz

MX-70/100

60Hz

MX-250/251

50Hz

MX-250/251

60Hz

MX-400

50Hz

MX-400

60Hz
Performance curves

MX Series

MX-401

50Hz

MX-401

60Hz

MX-402/402H

50Hz

MX-402/402H

60Hz

MX-403/403H

50Hz

MX-403/403H

60Hz
Dimensions

<table>
<thead>
<tr>
<th>Models</th>
<th>W</th>
<th>H</th>
<th>L</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
<th>k</th>
<th>m</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-70</td>
<td>130</td>
<td>155</td>
<td>258.5</td>
<td>110</td>
<td>48</td>
<td>40</td>
<td>65</td>
<td>90</td>
<td>53</td>
<td>159.5</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>MX-100</td>
<td>150</td>
<td>175</td>
<td>319.5</td>
<td>110</td>
<td>51</td>
<td>70</td>
<td>75</td>
<td>100</td>
<td>65</td>
<td>162</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>MX-250</td>
<td>160</td>
<td>255</td>
<td>408</td>
<td>130</td>
<td>65</td>
<td>130</td>
<td>115</td>
<td>140</td>
<td>90</td>
<td>163</td>
<td>12</td>
<td>—</td>
</tr>
<tr>
<td>MX-251</td>
<td>160</td>
<td>255</td>
<td>444</td>
<td>130</td>
<td>65</td>
<td>130</td>
<td>115</td>
<td>140</td>
<td>90</td>
<td>171</td>
<td>12</td>
<td>—</td>
</tr>
<tr>
<td>MX-400</td>
<td>140</td>
<td>225</td>
<td>408</td>
<td>110</td>
<td>54</td>
<td>98</td>
<td>95</td>
<td>130</td>
<td>87</td>
<td>150</td>
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<td>—</td>
</tr>
<tr>
<td>MX-401</td>
<td>160</td>
<td>255</td>
<td>457</td>
<td>130</td>
<td>72</td>
<td>130</td>
<td>115</td>
<td>140</td>
<td>103</td>
<td>184</td>
<td>12</td>
<td>—</td>
</tr>
<tr>
<td>MX-402, 402H, 403, 403H</td>
<td>260</td>
<td>280</td>
<td>516</td>
<td>208</td>
<td>80</td>
<td>200</td>
<td>120</td>
<td>160</td>
<td>89</td>
<td>157</td>
<td>14</td>
<td>36</td>
</tr>
</tbody>
</table>

Note 1: 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.

- 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
- IT is unable to use DR when inverter is employed in the system.

<table>
<thead>
<tr>
<th>Specification</th>
<th>DR-10</th>
<th>DR-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td>Motor power</td>
<td>200 to 240V three phase</td>
<td>380 to 440V three phase</td>
</tr>
<tr>
<td>Applied motor</td>
<td>0.4 to 7.5kW</td>
<td>0.75 to 15kW</td>
</tr>
<tr>
<td>Power control</td>
<td>100 to 240V single phase</td>
<td></td>
</tr>
<tr>
<td>Power V</td>
<td>100V ±10% single phase</td>
<td>200 to 240V ±10% single phase</td>
</tr>
<tr>
<td>Input</td>
<td>3.5W</td>
<td></td>
</tr>
<tr>
<td>Detective current</td>
<td>0.5 to 0.2A</td>
<td></td>
</tr>
<tr>
<td>Current transformer</td>
<td>Built-in</td>
<td></td>
</tr>
<tr>
<td>Outer dimension</td>
<td>180 X W153 X H122</td>
<td></td>
</tr>
</tbody>
</table>

Union joint (Option)
Special purpose union joints are available.
Material: PVC/Heat resistant PVC