IWAKI MAGNETIC DRIVE PUMPS

MX

Solutions for chemical handling applications
Even better dry-running resistance and efficiency than previous models. Iwaki MX magnetic drive pumps - reliable & energy efficient.

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.) 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. Our innovative design has achieved higher efficiency. 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 split-volute casing significantly improves efficiency over previous versions.

• Simple yet robust construction allows easy maintenance.

Self-radiating structure (PAT.)
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.
(Except MX-70, 100)

Volute casing divided into two sections (PAT.)
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-400)

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.

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)
## Wet end materials

### MX-70, 100

- Front casing: Alumina ceramic
- Impeller: CFRPP
- Rear casing: Alumina ceramic
- Magnet capsule: CFRPP
- O ring: FKM (EPDM)
- Spindle: PTFE
- Bearing: CFRPPS
- Rear thrust: Alumina ceramic
- Thrust/Liner ring: Alumina ceramic
- Lock pin: GFRPP

### MX-250 to 401

- Front casing: Alumina ceramic
- Impeller: CFRPP
- Rear casing: Alumina ceramic
- Magnet capsule: CFRPP
- O ring: FKM (EPDM)
- Spindle: PTFE
- Bearing: CFRPPS
- Rear thrust: CFRPPS (MX-402 to 403H: CFRPEEK)
- Thrust/Liner ring: Alumina ceramic
- Lock pin: GFRPP

### MX-402 to 403H

- Front casing: Alumina ceramic
- Impeller: CFRPP
- Rear casing: Alumina ceramic
- Magnet capsule: CFRPP
- O ring: FKM (EPDM)
- Spindle: PTFE
- Bearing: CFRPPS
- Rear thrust: CFRPPS (MX-402 to 403H: CFRPEEK)
- Thrust/Liner ring: Alumina ceramic
- Lock pin: GFRPP

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<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>CV(CE)</td>
<td>GFRPP</td>
<td></td>
</tr>
<tr>
<td>2 Impeller</td>
<td>CFRPP</td>
<td>CV(CE)</td>
<td>GFRPP</td>
<td></td>
</tr>
<tr>
<td>3 Rear casing</td>
<td>GFRPP</td>
<td>CV(CE)</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>Note 1</td>
<td>FKM(EPDM)</td>
<td>FKM(EPDM)</td>
<td></td>
</tr>
<tr>
<td>6 Spindle</td>
<td>Alumina ceramic</td>
<td>CV(CE)</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>PTFE</td>
</tr>
<tr>
<td>9 Mouth ring</td>
<td>PTFE</td>
<td></td>
<td>PTFE</td>
<td></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.
### Pump identification

**MX-70 and 100**

- **Series symbol**
  - MX: Material of Casing/GFRPP

- **Pump size**
  - 70: G1 x G1 150W
  - 100: G1 x G1 260W

**MX-250 to 403H**

- **Series symbol**
  - MX: Material of Casing/GFRPP

- **Pump size**
  - 250: G1 x G1 0.37kW
  - 251: G1 x G1 0.75kW
  - 400: G1 1/2 x G1 1/2 0.37kW
  - 401: G1 1/2 x G1 1/2 0.75kW
  - 403/403H: G2 x G1 1/2 2.2kW

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### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Connection</th>
<th>Limit of S.G.</th>
<th>Standard capacity</th>
<th>Maximum capacity</th>
<th>Motor kW</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-70</td>
<td>G1 x G1</td>
<td>1.2</td>
<td>50 - 5.4</td>
<td>90</td>
<td>0.15</td>
<td>6.5</td>
</tr>
<tr>
<td>MX-100</td>
<td>G1 x G1</td>
<td>1.2</td>
<td>70 - 6</td>
<td>110</td>
<td>0.26</td>
<td>8.2</td>
</tr>
<tr>
<td>MX-250</td>
<td>G1 x G1</td>
<td>1.2</td>
<td>50 - 14</td>
<td>150</td>
<td>0.37</td>
<td>7.7</td>
</tr>
<tr>
<td>MX-251</td>
<td>G1 x G1</td>
<td>1.0</td>
<td>80 - 19</td>
<td>150</td>
<td>0.75</td>
<td>10.2</td>
</tr>
<tr>
<td>MX-400</td>
<td>G1 1/2 x G1 1/2</td>
<td>1.2</td>
<td>100 - 10.5</td>
<td>280</td>
<td>0.37</td>
<td>6.2</td>
</tr>
<tr>
<td>MX-401</td>
<td>G1 1/2 x G1 1/2</td>
<td>1.2</td>
<td>150 - 14.5</td>
<td>320</td>
<td>0.75</td>
<td>10.2</td>
</tr>
<tr>
<td>MX-402</td>
<td>G2 x G1 1/2</td>
<td>1.2</td>
<td>200 - 20</td>
<td>450</td>
<td>1.5</td>
<td>13.5</td>
</tr>
<tr>
<td>MX-402H</td>
<td>G2 x G1 1/2</td>
<td>1.0</td>
<td>100 - 30</td>
<td>160</td>
<td>1.5</td>
<td>13.5</td>
</tr>
<tr>
<td>MX-403</td>
<td>G2 x G1 1/2</td>
<td>1.2</td>
<td>250 - 23</td>
<td>500</td>
<td>2.2</td>
<td>14.5</td>
</tr>
<tr>
<td>MX-403H</td>
<td>G2 x G1 1/2</td>
<td>1.0</td>
<td>100 - 35</td>
<td>300</td>
<td>2.2</td>
<td>14.5</td>
</tr>
</tbody>
</table>

**Note:**
1. The specific gravity limit values shown above are with maximum discharges. The specific gravity limit varies with the discharge. For details, please contact us.
2. 26mm tube connection option available on the MX-70 and MX-100.
3. AV(AE) type is different in discharge capacity. For details, please contact us.
4. Less motor except MX-70 and 100.

**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
**Dimensions**

### Models

<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>247.5</td>
<td>422</td>
<td>130</td>
<td>65</td>
<td>130</td>
<td>115</td>
<td>132.5</td>
<td>82.5</td>
<td>155.5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MX-251</td>
<td>160</td>
<td>247.5</td>
<td>458.5</td>
<td>130</td>
<td>65</td>
<td>130</td>
<td>115</td>
<td>132.5</td>
<td>82.5</td>
<td>163.5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MX-400</td>
<td>140</td>
<td>219</td>
<td>423.5</td>
<td>110</td>
<td>54</td>
<td>98</td>
<td>95</td>
<td>124</td>
<td>81</td>
<td>144</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MX-401</td>
<td>160</td>
<td>249</td>
<td>473</td>
<td>130</td>
<td>72</td>
<td>130</td>
<td>115</td>
<td>134</td>
<td>97</td>
<td>178</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>MX-402, 402H, 403, 403H</td>
<td>260</td>
<td>274</td>
<td>478.5</td>
<td>208</td>
<td>80</td>
<td>200</td>
<td>120</td>
<td>154</td>
<td>83</td>
<td>151</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Note 1:** The dimension 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.

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**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.

**Specification**

<table>
<thead>
<tr>
<th>Model</th>
<th>DR-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor power</td>
<td>380 to 440V three phase</td>
</tr>
<tr>
<td>Applied motor</td>
<td>0.75 to 15kW</td>
</tr>
<tr>
<td>Power control</td>
<td>100 to 240V single phase</td>
</tr>
<tr>
<td>Power</td>
<td>200 to 240V ±10% single phase</td>
</tr>
<tr>
<td>Input</td>
<td>3.5W</td>
</tr>
<tr>
<td>Detective current</td>
<td>0.5 to 32mA</td>
</tr>
<tr>
<td>Current transformer(CT)</td>
<td>Built-in</td>
</tr>
<tr>
<td>Outer dimension</td>
<td>D80 X W153 X H122</td>
</tr>
</tbody>
</table>
Iwaki process magnetic drive pump series

**MX-F series**
Withstands difficult operating conditions and offers high efficiency

Max. discharge capacity: 510 L/min
Max. discharge head: 30 m
Main materials: CFRETFE

**SMX series**
Versatile self-priming magnetic drive pump with enhanced durability under abnormal operation

Max. discharge capacity: 440 L/min
Max. head: 25.5 m
Main materials: GFRPP, CFRETFE

**MXM series**
Magnetic drive pumps with an excellent balance of features and performance

Max. discharge capacity: 600 L/min
Max. head: 29 m
Main materials: CFRETFE

**MDM series**
Magnetic drive processing pump with dry running capability

Max. discharge capacity: 1.4 m³/min
Max. head: 74 m
Main materials: CFRETFE, PFA