Ismatec® Piston Pumps

No valves to clog or wear out

- Get high pressure, accurate dispensing, and great repeatability—all with one pump
- Only one moving part—the piston
- Remotely control speed, start/stop flow, or change fluid direction
- Differential pressure up to 6.9 bar (100 psi)
- Applications include dispensing of organic solvents, acids/bases, and highly corrosive acids including HF
- Reglo-CPF drives are compatible with the full range of RH pump heads for flow rates up to 180 mL/min
- MCP-CPF Process drive is the ideal choice for higher overall flow rates to 2300 mL/min in a washdown environment; compatible with the full range of RH and Q series of pump heads
- Wide selection of pump heads handles most of your application needs

Drive + Pump Head + Tubing = Complete Pump System
**Reglo-CPF Analog Drive**
- Two-digit potentiometer provides a 100:1 turndown
- Four analog signal plus relay contact permit remote control from a variety of instruments
- Use only with RH-series (standard and low flow) pump heads

**Reglo-CPF Digital Drive**
- Program pump for dispensing fluids by flow rate, volume, time, or number of dispensing cycles
- Drip-free dispensing—program pump to draw back fluid
- RS-232 interface allows control via a PC
- Use only with RH-series (standard and low flow) pump heads

**MCP-CPF Process Drive**
- IP65 rated, stainless steel housing—ideal for pumping in dusty, humid, or corrosive environment and in cleanroom areas
- Dispense by time, volume, flow rate, batches with variable pause time, stored programs, roller backsteps, or number of dispensing cycles
- Use the RS-232 interface to automate your lab or operate independently via the keypad
- Digital display shows speed, flow rate, dispensing volume, dispensing time, and pause time
- Store and recall up to four programs
- Use with RH- and Q-series pump heads

### Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Reglo CPF Analog</th>
<th>Reglo CPF Digital</th>
<th>MCP-CPF Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power</strong></td>
<td>115 VAC, 60 Hz</td>
<td>115 VAC, 60 Hz</td>
<td>115 VAC, 60 Hz</td>
</tr>
<tr>
<td><strong>Catalog number</strong></td>
<td>MK-78020-45</td>
<td>MK-78020-47</td>
<td>MK-78020-30</td>
</tr>
<tr>
<td>Programmable</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Speed</td>
<td>18 to 1800 rpm</td>
<td>40 to 1800 rpm</td>
<td>10.0 to 1800 rpm</td>
</tr>
<tr>
<td>Resolution</td>
<td>1% via 2-step potentiometer</td>
<td>0.1 rpm</td>
<td>0.1 rpm</td>
</tr>
<tr>
<td>Flow rate settings</td>
<td>µL/min, mL/min</td>
<td>µL/min, mL/min, L/min</td>
<td>µL/min, mL/min, L/min</td>
</tr>
<tr>
<td>Remote control capabilities</td>
<td>Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 9 kHz Start/stop, rotation direction</td>
<td>RS-232 Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA Speed output: 0 to 9 kHz Start/stop, autostart, rotation direction</td>
<td>RS-232 (1 in, 1 out, 1 analog Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA Speed output: 0 to 10 VDC or 0 to 12 kHz Start/stop, autostart, rotation direction</td>
</tr>
<tr>
<td>Protection rating</td>
<td>IP30</td>
<td>IP30</td>
<td>IP65</td>
</tr>
<tr>
<td>Motor type</td>
<td>DC motor</td>
<td>DC motor</td>
<td>DC motor</td>
</tr>
<tr>
<td>Power consumption</td>
<td>50 W</td>
<td>140 W</td>
<td>100 W</td>
</tr>
<tr>
<td>Size*</td>
<td>178 x 100 x 135 mm</td>
<td>178 x 100 x 135 mm</td>
<td>220 x 155 x 260 mm</td>
</tr>
<tr>
<td>Weight*</td>
<td>2.5 kg</td>
<td>2.1 kg</td>
<td>6.9 kg</td>
</tr>
</tbody>
</table>

*without pump head
RH-Series Piston Pump Heads

- Small displacement provides excellent precision
- Fully adjustable from zero to maximum

Flow Ranges (mL/min)

<table>
<thead>
<tr>
<th>Drive Type</th>
<th>RH00</th>
<th>RH0</th>
<th>RH1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reglo-CPF Analog</td>
<td>0.045 to 45</td>
<td>0.09 to 90</td>
<td>0.18 to 180</td>
</tr>
<tr>
<td>Reglo-CPF Digital</td>
<td>0.1 to 45</td>
<td>0.2 to 90</td>
<td>0.4 to 180</td>
</tr>
<tr>
<td>MCP-CPF Process</td>
<td>0.025 to 45</td>
<td>0.05 to 90</td>
<td>0.1 to 180</td>
</tr>
</tbody>
</table>

RH00, RH0, and RH1 Pump Heads

<table>
<thead>
<tr>
<th>Type</th>
<th>RH00</th>
<th>RH0</th>
<th>RH1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number</td>
<td>MK-07117-75*</td>
<td>MK-07117-64*</td>
<td>MK-07117-59*</td>
</tr>
<tr>
<td>Stroke volume</td>
<td>2.5 to 25 µL</td>
<td>2.5 to 25 µL</td>
<td>5 to 50 µL</td>
</tr>
<tr>
<td>Piston</td>
<td>Ceramic</td>
<td>316 stainless steel</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Cylinder case</td>
<td>PVDF</td>
<td>PVDF</td>
<td>PVDF</td>
</tr>
<tr>
<td>Cylinder liner</td>
<td>Ceramic</td>
<td>Carbon</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Lip seals</td>
<td>Rulon® AR</td>
<td>Rulon J</td>
<td>Rulon AR</td>
</tr>
<tr>
<td>Gland washers</td>
<td>PTFE</td>
<td>PTFE</td>
<td>PTFE</td>
</tr>
<tr>
<td>Max temperature</td>
<td>212°F (100°C)</td>
<td>140°F (60°C)</td>
<td>212°F (100°C)</td>
</tr>
<tr>
<td>Max differential pressure</td>
<td>6.9 bar (100 psi)</td>
<td>6.9 bar (100 psi)</td>
<td>6.9 bar (100 psi)</td>
</tr>
<tr>
<td>Flow ports</td>
<td>¼” NPT(F)†</td>
<td>¼” NPT(F)†</td>
<td>¼” NPT(F)†</td>
</tr>
</tbody>
</table>

*For low flow rates, 1/4-28 (female) adapters are recommended.
†Tubing adapters are sold below.

Tubing Adapters

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Catalog number</th>
</tr>
</thead>
<tbody>
<tr>
<td>R412-0K</td>
<td>PVDF barbed adapter for tubing with 3.2 mm ID</td>
<td>MK-07115-01</td>
</tr>
<tr>
<td>R412-1K</td>
<td>PVDF barbed adapter for tubing with 6.4 mm ID</td>
<td>MK-07115-92</td>
</tr>
<tr>
<td>R412-2K</td>
<td>PVDF barbed adapter for tubing with 9.5 mm ID</td>
<td>MK-07115-03</td>
</tr>
<tr>
<td>R412-5K</td>
<td>PVDF adapter for tubing with ¼-28 (female) fittings</td>
<td>MK-07115-94‡</td>
</tr>
<tr>
<td>H476K</td>
<td>PVDF compression adapter for tubing with 3.2 mm OD</td>
<td>MK-07115-07</td>
</tr>
</tbody>
</table>

‡Recommended for low-flow pump heads or order kit below.

MK-07117-87 Low-flow kit contains two ¼-28 (female) fittings or order kit below. Use with tubing with 3.2 mm OD or less.

Tubing Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Length</th>
<th>Catalog number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTFE tubing coil, 4 mm ID x 6 mm OD</td>
<td>7.5 m</td>
<td>MK-06605-54</td>
<td></td>
</tr>
<tr>
<td>Lab tubing coil, 3.2 mm ID</td>
<td>15 m</td>
<td>MK-06607-05</td>
<td></td>
</tr>
<tr>
<td>Lab tubing coil, 6.4 mm ID</td>
<td>15 m</td>
<td>MK-06607-11</td>
<td></td>
</tr>
<tr>
<td>Lab tubing coil, 9.5 mm ID</td>
<td>15 m</td>
<td>MK-06607-15</td>
<td></td>
</tr>
<tr>
<td>Tubing assembly with PTFE tubing, 1.6 mm ID x 3.2 mm OD, and two UNF ¼-28 (male) fittings</td>
<td>0.41 m</td>
<td>MK-06154-24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.61 m</td>
<td>MK-06154-26</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.91 m</td>
<td>MK-06154-26</td>
<td></td>
</tr>
</tbody>
</table>

Accessories for Drives

For Reglo-CPF Drives
MK-78016-91 Foot switch for Reglo-CPF Analog drive. On/off control, 6-ft (1.8 m) cable
MK-78016-93 Foot switch for Reglo-CPF Digital drive. On/off control, 6-ft (1.8 m) cable

For MCP-CPF Process Drive
MK-78003-07 Foot switch for start/stop operation, 6-ft (1.8 m) cable
MK-78098-02 Labworldsoft® software, requires Windows® 3.1 or higher, Windows 95
MK-78098-22 Interface card for controlling up to eight instruments, ISA
MK-78098-24 Interface card for controlling up to eight instruments, PCI
MK-78098-26 Adapter for 78098-22, 25-pin (female) to 9-pin (male)
MK-78002-92 Extension cable for 78098-26, 9-pin (female) to 9-pin (male)
Q-Series Piston Pump Heads

- Larger capacity pump heads designed for use with MCP-CPF Process drive

### Q0 and Q3 Pump Heads

<table>
<thead>
<tr>
<th>Type</th>
<th>Q0</th>
<th>Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Catalog number</td>
<td>Catalog number</td>
</tr>
<tr>
<td>Stroke volume</td>
<td>3.2 to 80 µL</td>
<td>51.2 to 1280 µL</td>
</tr>
<tr>
<td>Flow rate</td>
<td>0.04 to 144 mL/min</td>
<td>0.51 to 2300 mL/min</td>
</tr>
<tr>
<td>Piston</td>
<td>316 stainless steel (SS)</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Cylinder case</td>
<td>316 SS</td>
<td>PVDF</td>
</tr>
<tr>
<td>Cylinder liner</td>
<td>Carbon</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Lip seals</td>
<td>Rulon® J</td>
<td>Rulon AR</td>
</tr>
<tr>
<td>Gland washers</td>
<td>PTFE</td>
<td>PTFE</td>
</tr>
<tr>
<td>Cylinder head seal</td>
<td>PTFE</td>
<td>None</td>
</tr>
<tr>
<td>Max temperature</td>
<td>212°F (100°C)</td>
<td>212°F (100°C)</td>
</tr>
<tr>
<td>Max differential pressure</td>
<td>6.9 bar (100 psi)</td>
<td>1.7 bar (1600 rpm), 0.5 bar (from 1600 rpm)</td>
</tr>
<tr>
<td>Flow ports</td>
<td>¼” NPT(F)†</td>
<td>¼” NPT(F)†</td>
</tr>
</tbody>
</table>

†Tubing adapters are sold below.

### Q1 Pump Heads

- Stroke volume: 12.8 to 320 µL
- Flow rate: 0.04 to 144 mL/min

<table>
<thead>
<tr>
<th>Type</th>
<th>Q1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Catalog number</td>
</tr>
<tr>
<td>Stroke volume</td>
<td>6.9 bar (100 psi)</td>
</tr>
<tr>
<td>Flow rate</td>
<td>0.29 to 1300 mL/min</td>
</tr>
<tr>
<td>Piston</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Cylinder case</td>
<td>316 SS</td>
</tr>
<tr>
<td>Cylinder liner</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Lip seals</td>
<td>Rulon® AR</td>
</tr>
<tr>
<td>Gland washers</td>
<td>PTFE</td>
</tr>
<tr>
<td>Cylinder head seal</td>
<td>PTFE</td>
</tr>
<tr>
<td>Max temperature</td>
<td>350°F (177°C)</td>
</tr>
<tr>
<td>Max differential pressure</td>
<td>6.9 bar (100 psi)</td>
</tr>
<tr>
<td>Flow ports</td>
<td>¼” NPT(F)†</td>
</tr>
</tbody>
</table>

†Tubing adapters are sold below.

### Q2 Pump Heads

- Stroke volume: 28.8 to 720 µL
- Flow rate: 0.29 to 1300 mL/min

<table>
<thead>
<tr>
<th>Type</th>
<th>Q2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Catalog number</td>
</tr>
<tr>
<td>Stroke volume</td>
<td>6.9 bar (100 psi)</td>
</tr>
<tr>
<td>Flow rate</td>
<td>0.29 to 1300 mL/min</td>
</tr>
<tr>
<td>Piston</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Cylinder case</td>
<td>316 SS</td>
</tr>
<tr>
<td>Cylinder liner</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Lip seals</td>
<td>Rulon® AR</td>
</tr>
<tr>
<td>Gland washers</td>
<td>PTFE</td>
</tr>
<tr>
<td>Cylinder head seal</td>
<td>PTFE</td>
</tr>
<tr>
<td>Max temperature</td>
<td>350°F (177°C)</td>
</tr>
<tr>
<td>Max differential pressure</td>
<td>6.9 bar (100 psi)</td>
</tr>
<tr>
<td>Flow ports</td>
<td>¼” NPT(F)†</td>
</tr>
</tbody>
</table>

†Tubing adapters are sold below.

### Tubing Adapters

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Catalog number</th>
</tr>
</thead>
<tbody>
<tr>
<td>R412-6K</td>
<td>PTFE barbed adapter for tubing with 3.2 mm ID</td>
<td>MK-07115-91</td>
</tr>
<tr>
<td>R412-1X</td>
<td>PTFE barbed adapter for tubing with 6.4 mm ID</td>
<td>MK-07115-92</td>
</tr>
<tr>
<td>R412-2K</td>
<td>PTFE barbed adapter for tubing with 9.5 mm ID</td>
<td>MK-07115-93</td>
</tr>
<tr>
<td>H476K</td>
<td>PTFE compression adapter for tubing with 3.2 mm OD</td>
<td>MK-07115-97</td>
</tr>
</tbody>
</table>

### Tubing Ordering Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Length</th>
<th>Catalog number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTFE tubing coil, 4 mm ID x 6 mm OD</td>
<td>7.5 m</td>
<td>MK-00605-54</td>
</tr>
<tr>
<td>Lab tubing coil, 3.2 mm ID</td>
<td>15 m</td>
<td>MK-00607-05</td>
</tr>
<tr>
<td>Lab tubing coil, 6.4 mm ID</td>
<td>15 m</td>
<td>MK-00607-11</td>
</tr>
<tr>
<td>Lab tubing coil, 9.5 mm ID</td>
<td>15 m</td>
<td>MK-00607-15</td>
</tr>
<tr>
<td>Tubing assembly with PTFE tubing, 1.6 mm ID x 3.2 mm OD, and two UNF ¼-28 (male) fittings</td>
<td>0.45 m</td>
<td>MK-96154-24</td>
</tr>
<tr>
<td></td>
<td>0.61 m</td>
<td>MK-96154-25</td>
</tr>
<tr>
<td></td>
<td>0.91 m</td>
<td>MK-96154-26</td>
</tr>
</tbody>
</table>