

# LABORATORY PUMPS

**ALL-NEW  
REGLO ICC**  
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**PERISTALTIC  
PUMPS**  
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**GEAR PUMPS**  
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**ROTARY  
PISTON PUMPS**  
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- ▶ Carrying local inventory of commonly-ordered items
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We have come to rely on our authorized Distributors to provide value-added service to end-users of our products. So, while we are happy to take your order directly, we encourage you to contact your local Distributor — we feel confident it will be a positive experience!

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IDEX Health & Science facilities are certified ISO 9001. Some facilities are also certified ISO 13485:2003.



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[www.idex-hs.com](http://www.idex-hs.com)

IDEX Health & Science's Ismatec® pump drives are available with three pump types — peristaltic, gear, and piston — to make a complete pumping system. The chart below will help you choose the right pump technology. Once you find the desired pumping technology, proceed to the section pages listed and choose the pump/drive combination best suited for your application.

SELECTION CRITERIA		PERISTALTIC PUMPS	GEAR PUMPS	ROTARY PISTON PUMPS
<b>Pages</b>		<b>92</b>	<b>110</b>	<b>116</b>
<b>Flow Rate Min. to Max.</b>		< 0.001 mL/min to 13 L/min	1 mL/min to 7 L/min	0.025 mL/min–2.3 L/min
<b>Number of Channels</b>		1–24	1	1
<b>Differential Pressure</b>		Max. 2.5 bar (36 psi)	Max. 5.6 bar (81 psi)	Max. 6.9 bar (100 psi)
<b>Suction Lift (water)</b>		7–8 m	< 1 m	~5 m
<b>Dead Volume</b>		Practically None	5–45 mL	Very Small
<b>Chemical Resistance</b>		Depends on Tubing Material	High	Very High
<b>Accuracy and Repeatability</b>		High	High <sup>1</sup>	Very High
<b>Self-Priming</b>		Yes	Possible <sup>4</sup>	Possible
<b>Sensitive to Dry-Running</b>		No	Yes	Yes
<b>Syphoning Effect</b>		No	Yes	No
<b>Pumping</b>	Gently = Low Shearing Forces	Yes	No	No
	Under Sterile Conditions	Yes	No	No
	In Both Directions	Yes	Yes <sup>4</sup>	Yes
	Pulse-Free	<sup>2</sup>	Yes	<sup>2</sup>
	Contamination-Free	Yes	No	No
<b>Media</b>	Containing Particles	Very Good	No	Max. 0.8 mm Ø
	Viscous	Very Good	Possible	Good
	Containing Living Cells	Very Good	No	No
	Foaming	Very Good	No	No
	Corrosive/Aggressive	<sup>3</sup>	Good	Very Good
	Gas	<sup>3</sup>	No	<sup>4</sup>

<sup>1</sup> Requires non-return valve.

<sup>2</sup> Pumping with low pulsation possible; depends on the pump head.

<sup>3</sup> Depends on the tubing material.

<sup>4</sup> Depends on the pump head.

## Reglo ICC Independent-Channel Control Peristaltic Pump

- ▶ Continuous pumping or precision dispensing
- ▶ Flexibility of bi-directional flow in each channel
- ▶ Easy-to-use tubing cassettes allow quick changeovers
- ▶ Independent channel calibration minimizes the tube to tube differences resulting in the best calibration accuracy possible in a multichannel peristaltic pump
- ▶ New easy-to-use USB interface makes connections quickly
- ▶ Windows® software is included. Control up to eight Reglo ICC pumps. Time based routines allow for complex experiment development.

Expand the power of your peristaltic pumping application! By providing individually addressable control of each fluidic channel, the new Ismatec® Reglo ICC eliminates the clutter of multiple pumps on the bench top as well as allowing you, the scientist, to solve your application complexity in a single pump.

Long hailed in Europe as the gold standard of Swiss precision, Ismatec drives will now power up to four channels — flowing, dispensing, starting, stopping, reversing, aspirating, and calibrating — all working independently at the command of your PC or keypad. Plus the precision and accuracy of Ismatec's traditional peristaltic pumps for low-volume applications. For the first time, you'll be able to perform multiple precision fluidic tasks — at multiple flow rates — all from a single space-saving pump.



NEW!

**ISM4408**  
Reglo ICC  
4-Channel Pump

## SPECIFICATIONS & DETAILS

### Reglo ICC

<b>Motor Type</b>	Stepper Motor (1/channel)
<b>Speed Range</b>	0.1–100 rpm
<b>Speed Setting</b>	rpm (Resolution = 0.01 rpm)
<b>Flow Rate Range</b>	0.0002–35 mL/min/channel (tubing dependent)
<b>Number of Channels</b>	2–4
<b>Number of Rollers</b>	8 Ertalyte® rollers standard; 6 and 12-roller options also available
<b>Cassettes</b>	MS/CA Click'n'Go (POM-C; alternatives available)
<b>Dimensions (HxWxD)</b>	6.7" (170 mm) x 5" (125 mm) x 8.1" (205 mm)* (*=for 3-channel model)
<b>Weight</b>	6 lbs. (2.7 kg)
<b>Power Consumption</b>	30 W (Max.) Main Voltage: 100–264 V AC/50/60 Hz (Requires use of included power supply, cables)
<b>Protection Rating</b>	IP 30
<b>Differential Pressure</b>	1.0 bar/14.5 psi (Max.)

## FLOW RATES & TUBING

Tubing ID (mm)	Flow Rate (mL/min per channel)	
	0.1 rpm Min.	100 rpm Max.
0.13	0.0002	0.11
0.25	0.0005	0.41
0.51	0.0017	1.7
0.76	0.0036	3.6
1.02	0.0063	6.3
1.22	0.0088	8.8
1.52	0.013	13
1.85	0.017	17
2.54	0.027	27
3.17	0.035	35



NEW!

**ISM4308**  
Reglo ICC  
3-Channel Pump

Part No.	Description	Flow rates mL/min	Channels	Rollers	Speed rpm
<b>REGLO ICC</b>					
<b>ISM4308</b>	Reglo ICC	0.0002–35	3	8	100
<b>ISM4408</b>	Reglo ICC	0.0002–35	4	8	100

## Peristaltic Pumps & Tubing

The pumps presented on pages 94–108 require peristaltic tubing to operate. Flow rate of a given fluid through a peristaltic tubing pump depends on two variables:

1. The speed of the pump, measured in revolutions per minute (rpm)
2. The volume held within the internal diameter (ID) of the selected tubing

### Variable Speed Pump Flow Rates

For a variable speed pump, such as the products on pages 93–103, 112–115, and 117–118, the flow rate of a channel can be changed by varying the pump rpm, or by using tubing with different IDs, or a combination of both.

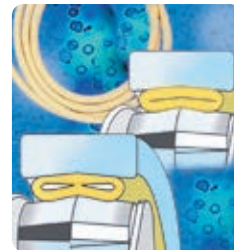
### Fixed Speed Pump Flow Rates

Single-channel and multichannel peristaltic tubing pumps are available in this catalog. The number of channels refers to how many pieces of tubing that can be used simultaneously. Tubing with different IDs can be used in each channel to deliver varying flow rates at any given pump speed.

### Convex Rollers and Concave Tube-Bed

- ▶ Treat the liquid gently (e.g. living cells)
- ▶ Improve the delivery stability
- ▶ Increase the repeatability
- ▶ Guarantee optimum tube centering

The tube is progressively closed, starting from the center outwards.



Pump heads with this sign are ideal for cell and media sensitive pumping.



## RELATED PRODUCTS

Accessories

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Tubing

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## NOTE

All microprocessor controlled drives are LabVIEW™ compatible and can easily be integrated into process control systems. The LabVIEW drivers can be downloaded from the website: [www.idex-hs.com/ismatec](http://www.idex-hs.com/ismatec)

PUMP SERIES	CHANNELS	FLOW RANGE	DRIVE OPTIONS	INTERFACE	PAGE
REGLO 	1-4	0.001-230 mL/min	Variable	Digital = RS-232 only interface Analog = Analog only	<b>95</b>
FLOWMASTER® 	Single channel only	37-13,000 mL/min	Variable	Analog	<b>98</b>
ECOLINE 	1-8	0.005-5,400 mL/min	Variable	Analog	<b>99</b>
IP / IPC 	4-24	0.001-44 mL/min	Variable	RS-232, Analog	<b>101</b>
BVP/MCP 	1-24	0.001-3,700 mL/min	Variable	RS-232, Analog	<b>103</b>

## Reglo Analog/Digital

The Smallest Dispensing Pump with Calibration Features



**Reglo Analog**  
without dispensing functions  
0.002–68 mL/min (per channel)  
Variable speed drive



DISPENSING  
& CALIBRATING

**Reglo Digital**  
with dispensing functions  
0.001–68 mL/min (per channel)  
Microprocessor controlled

## SPECIFICATIONS & DETAILS

### Reglo Analog

<b>Motor Type</b>	DC motor	
<b>Speed</b>	2-channel	3.2–160 rpm
	4-channel	2.0–100 rpm
<b>Speed Setting</b>	2–99%, resolution 1%	
	2-digit potentiometer	
<b>Power Consumption</b>	20 W	
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable	
<b>Protection Rating</b>	IP 30	
<b>Depth/Width/Height</b>	2-channel	178 x 100 x 143 mm
	4-channel	190 x 100 x 143 mm
<b>Weight</b>	2-channel	2.0 kg
	4-channel	2.1 kg

### Reglo Digital

<b>Motor Type</b>	DC motor	
<b>Speed</b>	2-channel	1.6–160 rpm
	4-channel	1.0–100 rpm
<b>Speed Setting</b>	rpm, resolution 0.1 rpm	
<b>Flow Rate Setting</b>	µL/min or mL/min	
<b>Power Consumption</b>	75 W	
<b>Mains Connection</b>	100–230 V AC/50–60 Hz, selectable	
<b>Protection Rating</b>	IP 30	
<b>Depth/Width/Height</b>	2-channel	178 x 100 x 135 mm
	4-channel	190 x 100 x 135 mm
<b>Weight</b>	2-channel	2.0 kg
	4-channel	2.1 kg

### Interfaces



#### Reglo Analog

- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output  
2-channel: 0–8 kHz  
4-channel: 0–5 kHz
- ▶ Start/Stop
- ▶ Rotation direction



#### Reglo Analog

2-digit potentiometer  
2–99%, resolution 1% (for speed setting)



#### Reglo Digital

- ▶ PC-controllable
- ▶ Digital is RS-232 only



#### Reglo Digital

6-button membrane key-pad,  
LED-display  
Flow rate setting in µL/min and mL/min

## FLOW RATES & TUBING



Model	Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital		Reglo Analog+Digital		
Channels	2		2		2		4		4		4		
Rollers	6		8		12		6		8		12		
Speed rpm	1.61 160		1.61 160		1.61 160		1.0 <sup>1</sup> 100		1.0 <sup>1</sup> 100		1.0 <sup>1</sup> 100		
Tygon® ST R-3603/R-3607 Part No.	Tubing ID mm	mL/min per channel		mL/min per channel		mL/min per channel		mL/min per channel		mL/min per channel		mL/min per channel	
		min. <sup>1</sup>	max. <sup>2</sup>	min. <sup>1</sup>	max. <sup>2</sup>	min. <sup>1</sup>	max. <sup>2</sup>	min. <sup>1</sup>	max. <sup>2</sup>	min. <sup>1</sup>	max. <sup>2</sup>	min. <sup>1</sup>	max. <sup>2</sup>
SC0189	0.13	0.003	0.22	0.002	0.17	0.002	0.15	0.002	0.14	0.002	0.11	0.001	0.093
SC0050	0.25	0.008	0.76	0.007	0.65	0.007	0.61	0.005	0.48	0.005	0.41	0.004	0.38
SC0053	0.51	0.031	3.1	0.027	2.7	0.025	2.5	0.019	1.9	0.017	1.7	0.016	1.6
SC0056	0.76	0.067	6.7	0.058	5.8	0.053	5.3	0.042	4.2	0.036	3.6	0.033	3.3
SC0059	1.02	0.12	12	0.10	10	0.090	9.0	0.073	7.3	0.063	6.3	0.056	5.6
SC0062	1.22	0.16	16	0.14	14	0.12	12	0.10	10	0.088	8.8	0.075	7.5
SC0065	1.52	0.24	24	0.20	20	0.17	17	0.15	15	0.13	13	0.10	10
SC0068	1.85	0.34	34	0.28	28	0.21	21	0.21	21	0.17	17	0.13	13
SC0071	2.54	0.53	53	0.44	44	0.31	31	0.33	33	0.27	27	0.19	19
SC0224	3.17	0.68	68	0.57	57	0.38	38	0.43	43	0.35	35	0.24	24

Approx. values: determined with water, at 22 °C, no differential pressure, Tygon tubing.

<sup>1</sup> Min. flow rates shown are for the Reglo Digital. Min. flow rate for Reglo Analog = 2% of max. flow rate.

<sup>2</sup> Max. flow rates shown are for both the Reglo Analog and Digital pumps.

## APPLICATION NOTE

- ▶ Addition of a reagent to a reactor and simultaneous removal of the reaction product from the upper fraction. Ramp control combined with a thermostat to maintain the  $\Delta T$  during the reaction.
- ▶ Simultaneous addition of both components of a 2-component adhesive in ratio 1:10 with two different tubing sizes.

Part No.	Model	Flow rates mL/min per channel	Channels	Rollers	Speed rpm
<b>REGLO ANALOG</b>					
ISM830	MS-2/06	0.005–68	2	6	1.6–160
ISM829	MS-2/08	0.004–57	2	8	1.6–160
ISM795	MS-2/12	0.003–38	2	12	1.6–160
ISM828	MS-4/06	0.003–43	4	6	1.0–100
ISM827	MS-4/08	0.003–35	4	8	1.0–100
ISM796	MS-4/12	0.002–24	4	12	1.0–100
<b>REGLO DIGITAL</b>					
ISM831	MS-2/06	0.003–68	2	6	3.2–160
ISM832	MS-2/08	0.002–57	2	8	3.2–160
ISM596	MS-2/12	0.002–38	2	12	3.2–160
ISM833	MS-4/06	0.002–43	4	6	2.0–100
ISM834	MS-4/08	0.002–35	4	8	2.0–100
ISM597	MS-4/12	0.001–24	4	12	2.0–100
<b>ACCESSORIES</b>					
Part No.	Description				
ISM891	Reglo Analog Foot switch, see page 109				
ISM894	Reglo Digital Foot switch, see page 109				
LabVIEW™ driver for Reglo Digital download for free: <a href="http://www.idex-hs.com/ismatec">www.idex-hs.com/ismatec</a>					

## RELATED PRODUCTS

Accessories

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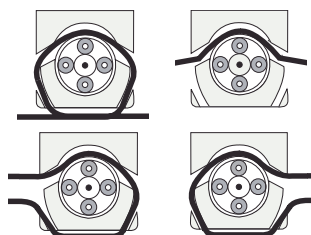


# Reglo Quick™

## Very Fast Tubing Change-Over



**Reglo Quick**  
2.1–230 mL/min  
Easily accessible tube-bed thanks to wide opening angle.



**TIP** Flexible layout for tubing appropriate to your application

### **i** APPLICATION NOTE

Single-channel delivery processes with variable flow rates where frequent tubing change-over is required e.g.:

- ▶ Addition of dye stuffs with tubing exchange after each dispensing process.
- ▶ Flushing cylinder heads of HPLC pumps.

## **□** SPECIFICATIONS & DETAILS

### Reglo Quick

<b>Motor Type</b>	DC motor
<b>Speed</b>	3.2–160 rpm
<b>Speed Setting</b>	1–99 %, resolution 1 % 2-digit potentiometer
<b>Power Consumption</b>	30 W
<b>Mains Connection</b>	230 V AC /50 Hz, 115 V AC /60 Hz, selectable
<b>Protection Rating</b>	IP 30
<b>Depth/Width/Height</b>	178 x 100 x 143 mm (pump head closed)
<b>Weight</b>	2.2 kg

### Interfaces



- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–8 kHz)
- ▶ Start/stop
- ▶ Rotation direction



**Reglo Quick**  
2-digit potentiometer  
1–99%, resolution 1% (for speed setting)

## **~** FLOW RATES & TUBING

		Model/Type	Reglo Quick	
		Channels	1	
		Rollers	4	
		Speed rpm	3.2	160
Tygon® ST R-3603/R-3607 Part No.	Wall (mm)	Tubing ID (mm)	mL/min minimum	mL/min maximum
MF0030	1.6	3.2	2.1	103
SC0379	1.6	4.8	4.6	230

Approx. values: determined with water, at 22°C, no differential pressure, Tygon tubing.

Part No.	Flow rates mL/min per channel	Channels max.	Rollers	Speed rpm
<b>REGLO QUICK</b>				
<b>ISM897</b>	2.1–230	1	4	3.2–160

## Flowmaster®

### Ideal for Heavy-Duty Processes

- ▶ Ideal for dispensing and filling applications in a dusty, humid or corrosive environment and in clean room areas
- ▶ Protection rating of IP 65

### Optimized for Increased Hygienic Requirements

- ▶ Stainless steel housing
- ▶ Tube-loading under sterile conditions without aspirating air
- ▶ Easy disassembly of the pump head
- ▶ Thorough cleaning thanks to easy disassembly and reassembly of the pump head

### Safety

- ▶ Pump Stops When Opening the Tube-Bed
- ▶ Multiple Overload Protection

## Flowmaster FMT300

### 37 mL/min–13 L/min

- ▶ 1 channel
- ▶ 3 convex stainless steel rollers
- ▶ Automatic tube retention
- ▶ Standard tubing 6.4–15.9 mm ID, wall thickness 3.2 mm, differential pressure max. 2 bar (30 psi) — depends on tubing material used

### TIP TUBE EXCHANGE IN 5 SECONDS!!



- ▶ Insert the Tube (Easily and Fast)
- ▶ Press Down the Lever (Automatically Correct Pressure Setting of the Tube)
- ▶ Start the Pump!

## RELATED PRODUCTS

### Accessories

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### Tubing

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Part No.	Description	Flow rates mL/min	Channels	Rollers	Speed rpm
<b>FLOWMASTER</b>					
ISM1020A	Flowmaster FMT300 230 V 50 Hz	37–13,000	1	3	5–500
ISM1022A	Flowmaster FMT300 115 V 60 Hz	37–13,000	1	3	5–500
<b>ACCESSORIES</b>					
IS10279	Foot switch, see page 109				



## SPECIFICATIONS & DETAILS

<b>Motor type</b>	DC motor
<b>Speed</b>	5 to 500 rpm
<b>Speed setting</b>	Resolution 0.1 rpm membrane key-pad, LED display
<b>Power consumption</b>	500 W
<b>Mains connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable
<b>Protection rating</b>	IP 65
<b>Depth/Width/Height</b>	500 x 220 x 262 mm
<b>Weight</b>	26 kg

### Interfaces

PLC compatible interface with status information for process control systems (the level of the inputs can be configured: 5, 12, or 24 V).



- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Start/stop, rotation direction
- ▶ Autostart
- ▶ Speed output
- ▶ Digital output (potential free) (error, okay, busy)

### Settings menu

- ▶ Configuration of analog interface
- ▶ Entry of basic settings, e.g. rpm, time, etc.
- ▶ Foot switch control
- ▶ Rotation speed (% or rpm)
- ▶ Service life of tubing
- ▶ Timer function, etc.

## FLOW RATES & TUBING

### Tubing Information

### Flow Rates in L/min

Tygon® E-LFL Part No.	PharMed® Part No.	Wall (mm)	Tubing ID (mm)	rpm 5	rpm 10	rpm 50	rpm 100	rpm 200	rpm 300	rpm 400	rpm 500
SCE0393	MF0015	3.2	6.4	0.037	0.074	0.37	0.74	1.5	2.2	3.1	3.7
SCE0395	MF0016	3.2	9.5	0.08	0.16	0.80	1.6	3.2	4.8	6.4	8.0
SCE0396	MF0034	3.2	12.7	0.10	0.20	1.0	2.0	4.0	6.0	8.0	10.0
	SC0696	3.2	15.9	0.13	0.26	1.3	2.6	5.2	7.8	10.4	13.0

Approx. values: determined with water, at 22 °C, no differential pressure, PharMed tubing.

## Ecoline VC-MS/CA8-6

0.005–150 mL/min

- ▶ 8 channels
- ▶ 6 rollers
- ▶ 3-stop tubing
- ▶ Differential pressure 1.0 bar<sup>1</sup> (15 psi)

## Ecoline VC-MS/CA4-12

0.003–83 mL/min

- ▶ 4 channels
- ▶ 12 rollers (low pulsation)
- ▶ Click'n'Go cassettes with automatic pressure setting
- ▶ 3-stop tubing
- ▶ Differential pressure 1.0 bar<sup>1</sup> (15 psi)

<sup>1</sup> Possible with appropriate tubing material; tubing with small ID's and/or cassettes with the pressure lever (see page 109) may enable higher pressures.

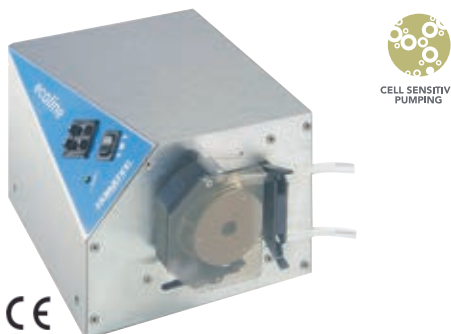


## Ecoline VC-360

0.25–1,300 mL/min

- ▶ 1 channel
- ▶ 3 convex rollers treat the liquid and tubing gently
- ▶ Hinged tube-bed for easy and rapid tube change-over
- ▶ Standard tubing 1.6 mm WT
- ▶ Differential pressure 1.5 bar<sup>1</sup> (22 psi)

<sup>1</sup> Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.



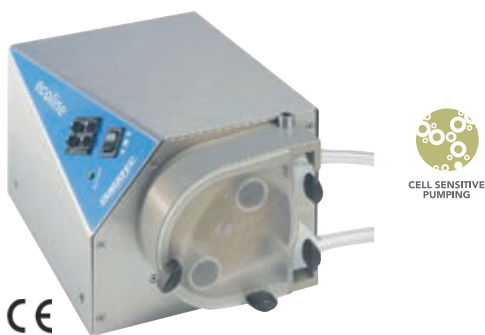
### APPLICATION NOTE

- ▶ **Ecoline VC-280**  
To apply protective lacquer to cartons
- ▶ **Ecoline VC-380**  
As recirculating pump for coolant in thermostat bath
- ▶ **Ecoline VC-360**  
Externally controlled spectrophotometer cuvette filling
- ▶ **Ecoline VC-MS/CA8-6**  
8-channel flushing of the tubing system of a digital fabric printing machine

## Ecoline VC-280 (1.7–5,400 mL/min) and Ecoline VC-380 (1.6–5,000 mL/min)

- ▶ 1 channel
- ▶ 2 or 3 convex rollers treat the liquid and tubing gently
- ▶ With exchangeable rotor e.g. for lower pulsation, higher flow rates, or elevated differential pressures
- ▶ Standard tubing 1.6 mm wall thickness (WT)
- ▶ Differential pressure 1.5 bar<sup>1</sup> (22 psi)

<sup>1</sup> Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.



## SPECIFICATIONS & DETAILS

<b>Motor Type</b>	DC motor
<b>Speed</b>	3.5–350 rpm
<b>Speed Setting</b>	1–99%, resolution 1% 2-digit potentiometer
<b>Power Consumption</b>	100 W
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable
<b>Protection Rating</b>	IP 30

### Size and Weight

Model	Depth x Width x Height	Weight
<b>Ecoline VC-280</b>	256 x 169 x 138 mm	5.2 kg
<b>Ecoline VC-380</b>	256 x 169 x 138 mm	5.3 kg
<b>Ecoline VC-360</b>	238 x 169 x 138 mm	4.9 kg
<b>Ecoline VC-Easy-Load™</b>	285 x 169 x 138 mm	5.2 kg
<b>Ecoline VC-MS/CA8-6</b>	313 x 169 x 138 mm	5.5 kg
<b>Ecoline VC-MS/CA4-12</b>	281 x 169 x 138 mm	5.4 kg

### Interfaces



- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Start/stop, rotation direction

## FLOW RATES & TUBING

### 3-Stop Tubing



Model Type	Ecoline VC-MS / CA8-6		Ecoline VC-MS / CA4-12		
	Channels	Rollers	Channels	Rollers	
	8	6	4	12	
<b>Speed rpm</b>	3.5	350	3.5	350	
Tygon® ST R-3603/R-3607 Part No.	Tubing ID (mm)	mL/min per channel		mL/min per channel	
		min.	max.	min.	max.
SC0189	0.13	0.005	0.49	0.003	0.32
SC0050	0.25	0.017	1.7	0.013	1.3
SC0053	0.51	0.067	6.7	0.055	5.5
SC0056	0.76	0.15	15	0.12	12
SC0059	1.02	0.26	26	0.20	20
SC0062	1.22	0.36	36	0.26	26
SC0065	1.52	0.53	53	0.36	36
SC0068	1.85	0.73	73	0.47	47
SC0071	2.54	1.2	120	0.68	68
SC0224	3.17	1.5	150	0.83	83

Approx. values: determined with water at 22 °C, no differential pressure, Tygon ST tubing.

### Standard Tubing

Model Type	Ecoline VC-280		Ecoline VC-380		Ecoline VC-260			
	Channels	Rollers	Channels	Rollers	Channels	Rollers		
	1	2	1	3	1	3		
<b>Speed rpm</b>	3.5	350	3.5	350	3.5	350		
Tygon ST R-3603/R-3607 Part No.	WT (mm)	Tubing ID (mm)	mL/min per channel		mL/min per channel		mL/min per channel	
			min.	max.	min.	max.	min.	max.
MF0001	1.6	0.8					0.25	25
MF0028	1.6	1.6	1.7	170	1.6	160	0.9	90
MF0030	1.6	3.2	6.6	660	5.9	590	3.5	350
SC0379	1.6	4.8	5.1	1,500	13	1,300	7.7	770
MF0031	1.6	6.4	25	2,500	23	2,300	13	1,300
MF0032	1.6	8.0	37	3,700	34	3,400		
SC0383	1.6	9.5	48	4,800	44	4,400		
SC0384	1.6	11.1	54	5,400	50	5,000		

Approx. values: determined with water at 22 °C, no differential pressure, Tygon ST tubing.

Part No.	Model	Flow rates mL/min per channel	Channels max.	Rollers
<b>COMPLETE ECOLINE PUMPS</b>				
<b>ISM1063</b>	Ecoline VC-MS/CA8-6	0.005–150	8	6
<b>ISM1076A</b>	Ecoline VC-360	0.25–1,300	1	3
<b>ISM1078B</b>	Ecoline VC-280 WT 1.6	1.7–5,400	1	2
<b>ISM1079B</b>	Ecoline VC-380 WT 1.6	1.6–5,000	1	3
<b>ISM1090</b>	Ecoline VC-MS/CA4-12	0.003–82	4	12
<b>ISM1091</b>	Ecoline EasyLoad I	0.23–1,600	1	3
<b>ISM1091B</b>	Ecoline EasyLoad II	0.24–1,000	1	4

\*For standard tubing 2.4 mm wall thickness 4.8–9.5 mm (3/16–3/8") inner diameter.

## RELATED PRODUCTS

### Accessories

Page 109

### Tubing

Pages 75–89

## IPC/IP & IPC-N/IP-N

### IPC (and IP)

- ▶ 0.002–44 mL/min (Per Channel)

### IPC-N (and IP-N)

- ▶ 0.4 µL/min–11 mL/min (Per Channel)

## SPECIFICATIONS & DETAILS

### Specifications IPC and IPC-N

<b>Motor Type</b>	DC motor
<b>Speed</b>	IPC 0.4–44 rpm IPC-N 0.11–11.25 rpm
<b>Speed Setting</b>	1–100 %, resolution 0.1%
<b>Flow Rate Setting</b>	µL/min or mL/min
<b>Power Consumption</b>	30 W
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable
<b>Protection Rating</b>	IP 30

### Specifications IP and IP-N

<b>Motor Type</b>	DC motor
<b>Speed</b>	IP 0.4–44 rpm IP-N 0.11–11.25 rpm
<b>Speed Setting</b>	1–100 %, resolution 0.1% IP rpm, resolution 0.1 rpm IP-N rpm, resolution 0.03 rpm
<b>Power Consumption</b>	30 W
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable
<b>Protection Rating</b>	IP 30

### Dimensions/Weight

<b>4 Channels</b>	
Depth/Width/Height	180 x 175 x 130 mm
Weight	4.6 kg
<b>8 Channels</b>	
Depth/Width/Height	220 x 175 x 130 mm
Weight	5.1 kg
<b>12 Channels</b>	
Depth/Width/Height	260 x 175 x 130 mm
Weight	5.8 kg
<b>16 Channels</b>	
Depth/Width/Height	300 x 175 x 130 mm
Weight	6.5 kg
<b>24 Channels</b>	
Depth/Width/Height	380 x 175 x 130 mm
Weight	7.9 kg

### Interfaces



RS232

#### IPC, IPC-N

- ▶ PC-controllable
- ▶ Analog: same as IP, IP-N



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#### IP, IP-N

- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–10 V or 0–11 kHz)
- ▶ Start/stop
- ▶ Rotation direction
- ▶ Autostart



Standard Speed (IPC)



## FLOW RATES & TUBING



Model	IPC / IP		IPC-N / IP-N		
	Channels	Rollers	Speed rpm	Speed rpm	
	4 / 8 / 12 / 16 / 24	8	0.4	44.0	
			0.11	11.25	
Tygon® ST R-3603/R-3607 Part No.	Tubing ID (mm)	mL/min per channel min.	mL/min per channel max.	mL/min per channel min.	mL/min per channel max.
SC0188	0.13	0.002	0.15	0.0004	0.039
SC0002	0.25	0.005	0.41	0.001	0.10
SC0005	0.51	0.015	1.5	0.004	0.38
SC0008	0.76	0.032	3.2	0.009	0.81
SC0011	1.02	0.057	5.7	0.041	1.4
SC0014	1.22	0.079	7.9	0.020	2.0
SC0017	1.52	0.12	12	0.030	3.0
SC0020	1.85	0.17	17	0.043	4.3
SC0023	2.54	0.30	30	0.075	7.5
SC0222	3.17	0.44	44	0.11	11

Approx. values: determined with water, at 22 °C, no differential pressure, Tygon tubing.



4 channels

8 channels

12 channels

16 channels

24 channels

### Planetary Drive System



With the planetary drive system each roller is directly driven by the sun wheel. This prevents axial push-pull friction on the tubing.

Result: increased service-life of the tubing, lower pulsation, high repeatability.

### APPLICATION NOTE

- ▶ Toxicological in-vitro use.
- ▶ Perfusion of animal tissue samples.
- ▶ Sampling from tablet dissolution systems.
- ▶ Environmental applications.

### RELATED PRODUCTS

Accessories

Page 109

Tubing

Pages 75–89

Part No.	Model	Flow rates mL/min per channel	Channels	Speed rpm
<b>IPC AND IPC-N</b>				
ISM930	IPC 4	0.002–44	4	0.4–45
ISM931	IPC 8	0.002–44	8	0.4–45
ISM932	IPC 12	0.002–44	12	0.4–45
ISM933	IPC 16	0.002–44	16	0.4–45
ISM934	IPC 24	0.002–44	24	0.4–45
ISM935	IPC-N 4	0.0004–11	4	0.11–11.25
ISM936	IPC-N 8	0.0004–11	8	0.11–11.25
ISM937	IPC-N 12	0.0004–11	12	0.11–11.25
ISM938	IPC-N 16	0.0004–11	16	0.11–11.25
ISM939	IPC-N 24	0.0004–11	24	0.11–11.25
<b>IP AND IP-N</b>				
ISM940	IP 4	0.002–44	4	0.4–45
ISM941	IP 8	0.002–44	8	0.4–45
ISM942	IP 12	0.002–44	12	0.4–45
ISM943	IP 16	0.002–44	16	0.4–45
ISM944	IP 24	0.002–44	24	0.4–45
ISM945	IP-N 4	0.0004–11	4	0.11–11.25
ISM946	IP-N 8	0.0004–11	8	0.11–11.25
ISM947	IP-N 12	0.0004–11	12	0.11–11.25
ISM948	IP-N 16	0.0004–11	16	0.11–11.25
ISM949	IP-N 24	0.0004–11	24	0.11–11.25

LabVIEW™ driver, download for free [www.idex-hs.com/ismatec](http://www.idex-hs.com/ismatec)

## BVP Standard

### Economical

- ▶ Robust, powerful drive
- ▶ Variable speed

### Without Dispensing Functions

- ▶ 3-digit potentiometer for speed setting
- ▶ 20 pump head configurations available
- ▶ Bayonet coupling system enables a system change without tools
- ▶ Flow rates, channels, rollers and differential pressure depend on the mounted pump head (see pages 105 to 108)



**BVP Standard Drive**  
(pump heads on pages 105 to 108)

## BVP Process

### Washdown

- ▶ Protection rating of IP 65
- ▶ Extremely robust drive
- ▶ Microprocessor controlled
- ▶ Ideal for applications in a dusty, humid or corrosive environment and in clean room areas (IP 65, dust-tight and protected against water jets)

### Without Dispensing Functions

Flow rates, channels, rollers and differential pressure depend on the mounted pump head (see pages 105 to 108)

- ▶ Membrane key-pad for speed setting, LED display
- ▶ Stainless steel housing
- ▶ More than 20 pump heads available
- ▶ Bayonet coupling system enables a system change without tools



**BVP Process drive**  
(pump heads on pages 105 to 108)

## SPECIFICATIONS & DETAILS

	BVP Standard	BVP Process
<b>Motor Type</b>	DC motor	DC motor
<b>Speed</b>	2.4–240 rpm	1–240 rpm
<b>Speed Setting</b>	1–99.9%, resolution 0.1% 3-digit potentiometer	rpm, resolution 0.1 rpm
<b>Power Consumption</b>	100 W	120 W
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable	230 V AC/50 Hz, 115 V AC/60 Hz, selectable
<b>Protection Rating</b>	IP 30	IP 65
<b>Depth/Width/Height</b>	220 x 155 x 260 mm (without pump head)	220 x 155 x 260 mm (without pump head)
<b>Weight</b>	5.7 kg (without pump head)	6.9 kg (without pump head)

### Interfaces



#### BVP Standard

- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–10 V DC or 0–12 kHz)
- ▶ Start/stop, rotation direction



#### BVP Process

- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–10 V DC or 0–7.2 kHz)
- ▶ Start/stop, rotation direction, autostart



## RELATED PRODUCTS

<b>Accessories</b>	Page 109
<b>Tubing</b>	Pages 75–89

### Part No. Includes

#### THE COMPLETE PUMP SYSTEM BVP PROCESS CONSISTS OF:

**ISM920A** Drive, page 103

#### Order the Following to Complete the BVP Process Pump System

Pump head, pages 105–108

Tubing, pages 61–89

Accessories, page 109

**IS10039** Foot switch, page 109

#### THE COMPLETE PUMP SYSTEM BVP STANDARD CONSISTS OF:

**ISM444B** Drive, page 103

#### Order the Following to Complete the BVP Standard Pump System

Pump head, pages 105–108

Tubing, pages 61–89

Accessories, page 109

**IS10039** Foot switch, page 109

## MCP Standard

### Multi-Purpose

- ▶ Saves individual application parameters
- ▶ Robust, powerful drive
- ▶ Ideal for dispensing and filling
- ▶ Pre-programmed tube sizes and pump heads allow you to work with flow rates
- ▶ Membrane key-pad, LED display
- ▶ 4 program memories for saving individual application parameters
- ▶ More than 20 pump heads available
- ▶ Bayonet coupling system enables a system change without tools
- ▶ Flow rates, channels, rollers and differential pressure depend on the pump head mounted (see pages 105 to 108)



CE

**MCP Standard Drive**  
(pump heads on pages 104–107)



DISPENSING &amp; CALIBRATING

## MCP Process

### Programmable

- ▶ Programs can be carried out on the spot independently of a PC
- ▶ Protection rating of IP 65
- ▶ Extremely robust drive, suitable for industries
- ▶ Ideal for dispensing and filling applications in a dusty, humid or corrosive environment, and in clean room areas
- ▶ Pre-programmed tube sizes and pump heads allow you to work with flow rates
- ▶ Stainless steel housing, membrane key-pad, LED display
- ▶ 4 program memories for saving individual application parameters or PC programmed command sequences
- ▶ More than 20 pump heads available
- ▶ Bayonet coupling system enables a system change without tools
- ▶ Flow rates, channels, rollers and differential pressure depend on the pump head mounted (see pages 105 to 108)



CE

**MCP Process Drive**  
(pump heads on pages 105 to 108)



DISPENSING &amp; CALIBRATING

## SPECIFICATIONS & DETAILS

	MCP Process	MCP Standard
<b>Motor Type</b>	DC motor	DC motor
<b>Speed</b>	1–240 rpm	1–240 rpm
<b>Speed Setting</b>	rpm, resolution 0.1 rpm	rpm, resolution 0.1 rpm
<b>Flow Rate Settings</b>	µL/min, mL/min, L/min	µL/min, mL/min, L/min
<b>Power Consumption</b>	100 W	100 W
<b>Mains Connection</b>	100–230 V AC/50–60 Hz, selectable	230 V AC/50 Hz, 115 V AC/60 Hz, selectable
<b>Protection Rating</b>	IP 65	IP 30
<b>Depth/Width/Height</b>	220 x 155 x 260 mm (without pump head)	220 x 155 x 260 mm (without pump head)
<b>Weight</b>	6.9 kg (without pump head)	6.4 kg (without pump head)

### Interfaces



RS232

#### MCP Standard

- ▶ PC controllable
- ▶ RS-232
- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–10 V DC or 0–12 kHz)
- ▶ Start/stop, rotation direction, autostart



ANALOG



RS232

#### MCP Process

- ▶ PC controllable
- ▶ RS-232
- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–10 V DC or 0–7.2 kHz)
- ▶ Start/stop, rotation direction, autostart
- ▶ 2 universal inputs
- ▶ 2 universal outputs



ANALOG

### Part No. Includes

#### THE COMPLETE PUMP SYSTEM MCP PROCESS CONSISTS OF:

**ISM915A** Drive, page 104

#### Order the Following to Complete the MCP Process Pump System

Pump head, pages 105 to 108

Tubing, pages 61–89

Accessories, page 109

**IS10039** Foot switch, page 109

#### THE COMPLETE PUMP SYSTEM MCP STANDARD CONSISTS OF:

**ISM404B** Drive, page 104

#### Order the Following to Complete the MCP Standard Pump System

Pump head, pages 105 to 108

Tubing, pages 62–89

Accessories, page 109

**IS10039** Foot switch, page 109

LabVIEW™ driver download for free: [www.idex-hs.com/ismatec](http://www.idex-hs.com/ismatec)



# Drive (MCP or BVP) + Pump Head + Tubing = Complete Pump System

## BVP/MCP — an Investment for the Future

### Instantly Interchangeable Pump Systems



**BVP Standard**  
ISM444

**MCP Standard**  
ISM404B

**BVP Process**  
ISM920A  
IP 65

**MCP Process**  
ISM915A  
IP 65

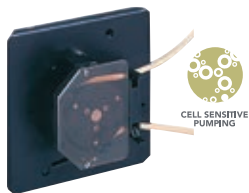
## Easy Interchangeable Pump Heads

- ▶ Mount the pump head without using a tool

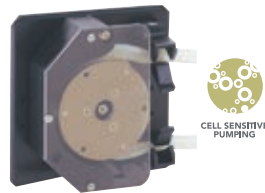
The MCP and BVP drives enable the user to choose individually from a large variety of different pump heads. These heads are interchangeable and can be mounted or exchanged within seconds.



### Single-Channel



**ISM719A**  
0.072–530 mL/min  
Type 360



**ISM718A**  
0.44–2,800 mL/min  
Type 380



**ISM785A**  
0.49–3,700 mL/min  
Type Pro-280  
For 1.6 mm Wall Thickness



**ISM791A**  
0.45–3,400 mL/min  
Type Pro-380  
For 1.6 mm Wall Thickness

**ISM793A**  
3.6–3,100 mL/min  
Type Pro-281  
For 2.4 mm Wall Thickness

**ISM797A**  
3.3–2,900 mL/min  
Type Pro-381  
For 2.4 mm Wall Thickness



**MF0313**  
0.07–1,100 mL/min  
Type MF Easy-Load®



**MF0446**  
0.24–1,000 mL/min  
Type MF Easy-Load II  
(with adjustable pressure setting)

### Multi-Channel



**SB 2V (2 channel)**  
**ISM734B + ISM010A**  
1.1–1,100 mL/min



**ISM721A (4 channel)**  
**ISM732B (8 channel)**  
**ISM733A (12 channel)**  
0.002–230 mL/min  
4–12 channels  
Type CA 4, CA 8, and CA 12

**SB 3V (3 channel)**  
**ISM734B + ISM011A**  
0.09–530 mL/min



**ISM735A (4 channel)**  
**(ISM737A 4 channel extension block)**  
0.001–57 mL/min  
Type MS/CA 4–12  
(Combine up to 3 extension blocks of 4 channels each)



**ISM724B (8 channel)**  
**(ISM185A 8 channel extension block)**  
0.002–100 mL/min  
Type MS/CA 8–6  
(Combine up to 2 extension blocks of 8 channels each)

### Single-Channel for Corrosive Media



#### Rigid PTFE Tubing Pump Head

**MF0330**  
0.07–15 mL/min  
PTFE tubing 2 mm ID

0.19–45 mL/min  
PTFE tubing 4 mm ID

## BVP/MCP Pump Heads

### Pro-280

ISM785A

0.49–3,700 mL/min

- ▶ Coated aluminum pump head
- ▶ Can be dismantled for cleaning
- ▶ Self-centering tube-track thanks to concave tube-bed and convex rollers, which lengthens the tube-life
- ▶ 2 stainless steel rollers (higher max. flow rate but more pulsation than with 3 rollers)
- ▶ For tubing with 1.6 mm wall thickness
- ▶ 1.5 bar (22 psi) differential pressure<sup>1</sup>



### Pro-281

ISM793A

3.6–3,100 mL/min

Same pump head as Pro-280, but

- ▶ For tubing with 2.4 mm wall thickness
- ▶ 2.5 bar (36 psi) differential pressure<sup>1</sup>

### Pro-380

ISM791A

0.45–3,400 mL/min

Same pump head as Pro-280, but

- ▶ 3 stainless steel rollers (less pulsation but lower max. flow rate than with 2 rollers)



### Pro-381

ISM797A

3.3–2,900 mL/min

Same pump head design as Pro-280, but

- ▶ 3 stainless steel rollers (less pulsation but lower max. flow rate than with 2 rollers)
- ▶ For tubing with 2.4 mm wall thickness
- ▶ 2.5 bar (36 psi) differential pressure<sup>1</sup>

<sup>1</sup> Differential pressure depends on tubing material; tubing with small ID's enable higher pressures.

The flow rates are based on a drive speed of 1 (or 2.4) to 240 rpm. For the BVP Standard drive the indicated min. flow rates must be multiplied by factor 2.4.

Approx. values: determined with water, at 22 °C, no differential pressure, Tygon tubing.

## APPLICATION NOTE

- ▶ Chemical, biotechnological, and pharmaceutical applications.
- ▶ Food industry.
- ▶ Elevated differential pressures (Pro-281 and Pro-381).
- ▶ Viscous fluids.
- ▶ Fluids containing a high content of sensitive solids.
- ▶ Applications requiring hygienic conditions, durability, and reliability.
- ▶ Comparisons to gear, piston and centrifugal pumps proved that peristaltic pumps are the only suitable and sterilizable pump system for gently pumping media containing living cells.

## RELATED PRODUCTS

Accessories

Page 109

Tubing

Pages 75–89

## FLOW RATES & TUBING

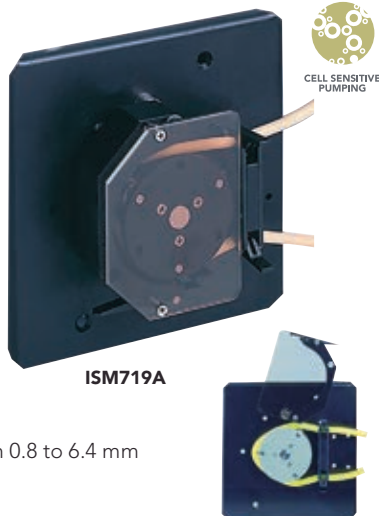
Tygon® ST R-3603/R-3607 Part No.	Wall (mm)	Tubing ID (mm)	mL/min	
			min.	max.
<b>MODEL PRO-280</b>				
MF0028	1.6	1.6	0.49	120
MF0030	1.6	3.2	1.9	450
SC0379	1.6	4.8	4.2	1,000
MF0031	1.6	6.4	7.2	1,700
MF0032	1.6	8.0	11	2,600
SC0383	1.6	9.5	14	3,300
SC0384	1.6	11.1	16	3,700
<b>MODEL PRO-281</b>				
MF0029	2.4	4.8	3.6	870
MF0033	2.4	6.4	6.5	1,600
SC0502	2.4	8.0	9.9	2,400
SC0503	2.4	9.5	13	3,100
<b>MODEL PRO-380</b>				
MF0028	1.6	1.6	0.45	110
MF0030	1.6	3.2	1.7	400
SC0379	1.6	4.8	3.7	890
MF0031	1.6	6.4	6.5	1,600
MF0032	1.6	8.0	9.7	2,300
SC0383	1.6	9.5	13	3,000
SC0384	1.6	11.1	14	3,400
<b>MODEL PRO-381</b>				
MF0029	2.4	4.8	3.3	800
MF0033	2.4	6.4	5.8	1,400
SC0502	2.4	8.0	8.8	2,100
SC0503	2.4	9.5	12	2,900

## BVP/MCP Pump Heads

360<sup>1</sup>

0.072–530 mL/min

- ▶ Easily accessible flip-up tube-bed guarantees easy and rapid tube change-over
- ▶ Transparent protection cover allows monitoring the tube and the revolving rotor
- ▶ Self-centering tube-track design thanks to the concave tube-bed and convex rollers (lengthens tube-life)
- ▶ Rotor accepts tubing ID from 0.8 to 6.4 mm with 1.6 mm wall thickness
- ▶ 3 stainless steel rollers
- ▶ 1.5 bar (22 psi) differential pressure<sup>2</sup>

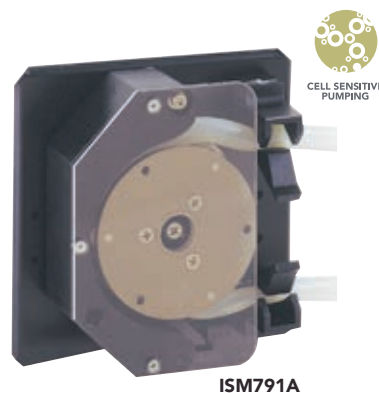


380<sup>1</sup>

0.44–2,800 mL/min

*Same design as pump head 360, but larger size*

- ▶ For tubing ID from 1.6 to 9.5 mm with 1.6 mm wall thickness
- ▶ 1.5 bar (22 psi) differential pressure<sup>2</sup>
- ▶ Ideal for sterile media



<sup>1</sup> An OEM version of this pump head is also available. Ask for the detailed data sheet.

<sup>2</sup> Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.

### NOTE

The flow rates are based on a drive speed of 1 (or 2.4) to 240 rpm. For the BVP Standard drive the indicated min. flow rates must be multiplied by factor 2.4. Approx. values: determined with water, at 22 °C, no differential pressure, and Tygon® tubing.

## BVP/MCP Pump Heads

### Easy-Load<sup>®1</sup>

0.07–1,100 mL/min

- ▶ Easily accessible pump head
- ▶ Allows rapid tube change-over
- ▶ PSF housing (polysulfone)
- ▶ Rotor designed for tubing with 1.6 mm wall thickness
- ▶ Rotor with 3 stainless steel rollers
- ▶ 0.7 bar (10 psi) differential pressure<sup>2</sup>



MF0313

### Easy-Load II<sup>1</sup>

0.24–1,000 mL/min

Same specifications as Easy-Load, but

- ▶ Adjustable pressure setting
- ▶ Improved, automatic tubing retention
- ▶ PPS housing (polyphenylene sulfide)
- ▶ Rotor with 4 stainless steel rollers
- ▶ 0.7 bar (10 psi) differential pressure<sup>2</sup>



MF0446

<sup>1</sup> Two pump heads can be mounted on one drive. (Special mounting sets must be ordered separately).

<sup>2</sup> Differential pressure depends on tubing material; tubing with small ID's may enable higher pressures.

## FLOW RATES & TUBING

Tygon <sup>®</sup> ST R-3603/R-3607 Part No.	Wall (mm)	Tubing ID (mm)	mL/min	
			min.	max.
<b>MODEL 360</b>				
MF0001	1.6	0.8	0.072	17
MF0028	1.6	1.6	0.26	62
MF0030	1.6	3.2	1.0	240
SC0379	1.6	4.8	2.0	530
<b>MODEL 380</b>				
MF0028	1.6	1.6	0.44	100
MF0030	1.6	3.2	1.7	400
SC0379	1.6	4.8	3.6	860
MF0031	1.6	6.4	6.0	1,400
MF0032	1.6	8.0	8.8	2,100
SC0383	1.6	9.5	12	2,800
<b>MODEL 380AD</b>				
MF0028	1.6	1.6	0.4	99
MF0030	1.6	3.2	1.5	370
SC0379	1.6	4.8	3.4	830
MF0031	1.6	6.4	6.2	1,500
MF0032	1.6	8.0	9.5	2,300
SC0383	1.6	9.5	13.0	3,000
SC0384	1.6	11.1	15.0	3,600
MF0029	2.4	4.8	3.4	830
MF0033	2.4	6.4	6.2	1,500
<b>MODEL EASY-LOAD</b>				
MF0001	1.6	0.8	0.066	16
MF0028	1.6	1.6	0.25	59
MF0030	1.6	3.2	0.91	220
SC0379	1.6	4.8	1.9	450
MF0031	1.6	6.4	3.1	730
MF0032	1.6	8.0	4.7	1,100
<b>MODEL EASY-LOAD II</b>				
MF0028	1.6	1.6	0.24	58
MF0030	1.6	3.2	0.92	220
SC0379	1.6	4.8	1.9	460
MF0031	1.6	6.4	3.0	730
MF0032	1.6	8.0	4.2	1,000

## RELATED PRODUCTS

Accessories

Page 109

Tubing

Pages 75–89

## Tubing Cassettes

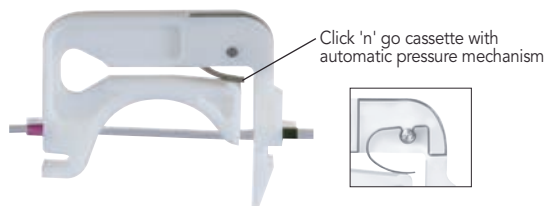
- ▶ Developed and consistently improved by Ismatec®

### Click 'n' go Cassettes (Standard)<sup>1</sup>

#### Advantages:

- ▶ Automatic tubing pressure; no readjustment necessary
- ▶ Ideal for non-monitored, long-time use

Please Note: Click 'n' go cassettes are not suitable for differential pressure greater than 1 bar (15 psi). For these conditions you should choose the pressure lever cassettes.



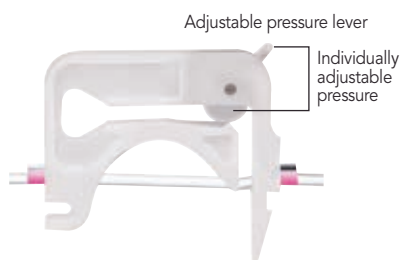
MS/CA Click 'n' go



CA Click 'n' go

### Pressure Lever Cassettes (Optional)

The optional pressure lever allows you to set a different tubing pressure for each channel. Depending on the application, tubing material and diameter, an optimally adjusted tubing pressure can be set. To maintain constant flow rates it may be necessary to periodically adjust the tubing pressure.



MS/CA Pressure Lever (Optional)



CA Pressure Lever (Optional)

## Foot Switch

The Ismatec foot switch for start/stop is very practical for use with pumps as dispensing systems, e.g. for filling tubes, bottles etc. A foot switch provides the start/stop signal required, allowing hands-free activation of the filling system. The switch's protection rating is IP21. A 6-foot (1.8 m) cable is included.



Part No.	Model	Material	Adapters Required?	Qty.
<b>TUBING CASSETTES AND ADAPTERS</b>				
<b>Click 'n' go Spare Cassettes<sup>1</sup></b>				
IS3510A	MS/CA Click 'n' go	POM-C <sup>4</sup>	No	1
IS3710A	CA Click 'n' go	POM-C <sup>4</sup>	Yes <sup>2</sup>	1
<b>Pressure Lever Optional Cassettes</b>				
IS0649A	MS/CA Pressure Lever	POM-C <sup>4</sup>	No	1
IS3629A	MS/CA Pressure Lever	PVDF <sup>3,4</sup>	No	1
IS0122A	CA Pressure Lever	POM-C <sup>4</sup>	Yes <sup>2</sup>	1
IS3820A	CA Pressure Lever	PVDF <sup>3,4</sup>	Yes <sup>2</sup>	1
<b>Replacement Adapters for CA Cassettes<sup>2</sup></b>				
IS0123A	Adapter for CA Cassettes	POM-C <sup>4</sup>		1
IS0123A-4	Insert Adapter Packs	POM-C <sup>4</sup>		4-pk
IS0123A-8	Insert Adapter Packs	POM-C <sup>4</sup>		8-pk
IS0123A-12	Insert Adapter Packs	POM-C <sup>4</sup>		12-pk
IS3861A	Adapter for CA Cassettes	PVDF <sup>3,4</sup>		
<b>FOOT SWITCH</b>				
<b>Part No. Foot switch suitable for pump models:</b>				
ISM016	IPC and IPC-N (firmware version older than 4.00)			
IS10039	IPC and IPC-N (from firmware version 4.00)			
ISM891	Reglo Analog, Reglo Quick™			
ISM894	Reglo Digital			

<sup>1</sup> One set is included with all Ismatec cassette-style pumps.

<sup>2</sup> When ordering replacement CA Cassettes, two Adapters per cassette must also be ordered.

<sup>3</sup> PVDF offers higher chemical resistance.

<sup>4</sup> POM-C = Polyoxymethylene Copolymer, PVDF = Polyvinylidene Fluoride

## Gear Pumps

### Pulsefree Pumping

- ▶ Gear pumps allow differential pressures up to max. 5.6 bar (81 psi)

### Low Operation Costs

- ▶ Interchangeable, magnetically coupled pump heads
- ▶ Maintenance-free drives
- ▶ Only few wearing parts (gears, seals)
- ▶ Service kits allow the user to exchange worn parts
- ▶ High quality and precision for an optimum performance even after many years of intensive use



CLOCKWISE

Ismatec® gear pumps run only in the clockwise direction (Exception Reglo Z Digital).

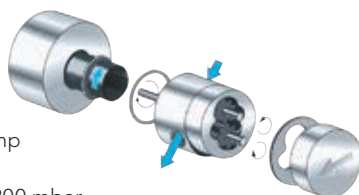


CONTINUOUS DUTY

### Cavity Style

#### Series GJ

- ▶ Max. suction height with water and flooded pump head: 8 m, depending on pump head and tubing
- ▶ Pumping out of a vacuum of 200 mbar
- ▶ Based on the traditional gear pump technology
- ▶ For application with moderate differential pressure

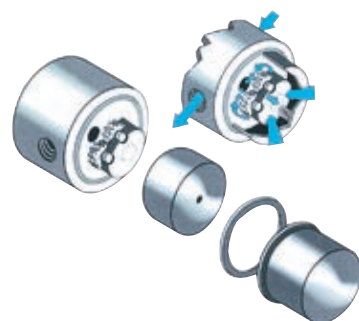


In comparison to the Suction Shoe pump heads, the Cavity style pump heads can be used for viscous media and applications with a certain suction height.

### Suction Shoe Style

#### Series GA and GB

- ▶ An exclusive Micropump® product featuring a patented technology
- ▶ Modified pump chamber compared to the conventional gear pump technique



This type of pump head design has a seal plate mounted with a deliberate play in the suction part of the pump chamber (hence the expression Suction Shoe). Discharge pressure keeps the Suction Shoe seated tightly on top of the gears which prevents flow from decreasing in high-pressure applications.



REVERSIBLE

With Cavity Style pump head, rotation direction is reversible



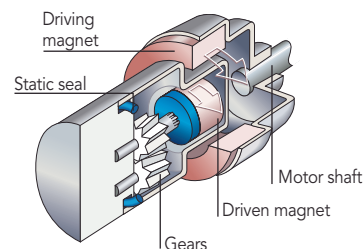
CLOCKWISE

With Suction shoe pump head, run only in the clockwise direction

### NOTE

#### The Magnetically Coupled Drive Principle

Consists of two magnets, a driving magnet that attaches to the motor shaft and a driven magnet that is completely sealed within the pump head and is connected to the driving gear. The driven magnet is a non-wetted component and is totally encapsulated.



The two magnets couple automatically such that the driving magnet turns the driven magnet and gears without physical contact.

Decoupling occurs when the pump load exceeds the coupling torque between the two magnets. This feature can act as a safety device to prevent damage to the pump and motor as well as associated piping. The magnets can be recoupled by bringing the motor to a complete stop, eliminating the cause of the decoupling and restarting.

#### Application Range of Gear Pumps

Industries	Applications	Special Media
Biotechnological	Sampling	Biozides
Chemical	Refrigeration Technology	Dye Stuffs
Food	Water Treatment	Thixotropic Products
Mining	Liquid Chromatography	Liquid Waxes
Power	Surface Treatment	Hydrogen Peroxide
Pulp and Paper	Distillation Systems	Flux
Semiconductor		Not suited for media containing particulates
Textile		

#### Pump Head Material Options

##### Enhance the chemical compatibility and application potential

<b>Base material</b>	Standard:	Stainless Steel 316
	Options:	e.g., Hastelloy® B2, Hastelloy C-276, Alloy 20, and Titanium
<b>Gears</b>	Standard:	PPS, Graphite, PTFE (depends on pump head)
	Options:	e.g., PEEK, PPSKV
<b>Static seals</b>	Standard:	Viton®, PTFE (depends on pump head)
	Options:	EP, Buna N, Kalrez®
<b>Magnets</b>	Standard:	Ferrite
	Options:	e.g., SmCo, NdFeB

##### Further pump head options

Integral Drive
High System Pressure
Deck Ports
1/4-18 NPT Ports
Tri-clamp Fittings

PTFE = Polytetrafluoroethylene, PPS = Polyphenylenesulphide, PEEK = Polyetheretherketone

PUMP SERIES	PUMP STYLE	FLOW RANGE*	GEAR MATERIALS	DRIVE OPTIONS	INTERFACE	PAGE
REGLO Z	 Suction Shoe	1–466 mL/min	PEEK, PPS, Graphite	Digital and Analog	RS-232, Analog	<b>112</b>
	 Cavity Style	33–3,290 mL/min	PEEK, PTFE, PPS			
REGLO ZS	 Suction Shoe	1–466 mL/min	PEEK, PPS, Graphite	Digital and Analog	RS-232, Analog	<b>112</b>
	 Cavity Style	33–3,290 mL/min	PEEK, PTFE, PPS			
BVP-Z	 Suction Shoe	1–7,271 mL/min	PEEK, PPS, Graphite	Analog	Analog	<b>113</b>
	 Cavity Style	40–5,480 mL/min	PEEK, PTFE, PPS			
MCP-Z STANDARD	 Suction Shoe	1–7,271 mL/min	PEEK, PPS, Graphite	Digital and Analog	RS-232, Analog	<b>113</b>
	 Cavity Style	40–5,480 mL/min	PEEK, PTFE, PPS			
MCP-Z PROCESS	 Suction Shoe	1–7,271 mL/min	PEEK, PPS, Graphite	Digital and Analog	RS-232, Analog	<b>114</b>
	 Cavity Style	40–5,480 mL/min	PEEK, PTFE, PPS			

\*Depending on pump head.

## Reglo Z, Reglo ZS

### Reglo Z Analog

1–3,290 mL/min

- ▶ Variable speed
- ▶ Differential pressure of pump drive max. 3.0 bar (43.5 psi)



ISM895E

### Reglo ZS Analog

1–3,290 mL/min

- ▶ Drive and pump head are separated by a 2 m long cable



ISM896B

### Reglo Z Digital

1–3,290 mL/min with dispensing functions

- ▶ Membrane key-pad
- ▶ LED display with setting menu
- ▶ Differential pressure of pump drive max. 3.0 bar (43.5 psi)



ISM901B

### Reglo ZS Digital

1–3,290 mL/min with dispensing functions

- ▶ Drive and pump head are separated by a 2 m long cable



ISM1143A

## SPECIFICATIONS & DETAILS

	Reglo Z/ZS Analog	Reglo Z/ZS Digital
<b>Motor Type</b>	DC motor	DC motor
<b>Speed</b>	50–5,000 rpm	50–5,000 rpm
<b>Speed Setting</b>	1–99%, resolution 1% 2-digit potentiometer	For flow setting (mL/min) For dispensing volume (mL)
<b>Flow Rate Setting</b>		mL/min, L/min
<b>Power Consumption</b>	50 W	75 W
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable	100–230 V AC/50–60 Hz
<b>Protection Rating</b>	IP 30	IP 30
<b>Depth/Width/Height</b>		
<b>Drive Reglo Z</b>	178 x 100 x 143 mm	178 x 100 x 135 mm
<b>Drive Reglo ZS</b>	175 x 65 x 80 mm	175 x 65 x 80 mm
<b>External Control Unit</b>	178 x 100 x 143 mm	178 x 100 x 135 mm
<b>Weight</b>		
<b>Drive Reglo Z</b>	2.1 kg (without pump head)	1.7 kg (without pump head)
<b>Drive Reglo ZS</b>	0.7 kg (without pump head)	0.7 kg (without pump head)
<b>External Control Unit</b>	1.7 kg	1.2 kg



REVERSIBLE

With Cavity Style pump head,  
rotation direction is reversible



CLOCKWISE

With Suction shoe pump head,  
run only in the clockwise direction

### Interfaces



ANALOG

#### Reglo Z/ZS Analog

- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output 0–10 KHz, start/stop
- ▶ Rotation direction



RS232

#### Reglo Z Digital

- ▶ RS-232 PC-controllable
- ▶ Speed output 0–12 KHz, start/stop and autostart



ANALOG



## RELATED PRODUCTS

**Accessories** Page 109

**Tubing** Pages 75–89

Part No.	Description
<b>REGLO Z AND REGLO ZS</b>	
<b>ISM895E</b>	Reglo Z Analog
<b>ISM896B</b>	Reglo ZS Analog
<b>ISM901B</b>	Reglo Z Digital
<b>ISM1143A</b>	Reglo ZS Digital
<b>ISM891</b>	Footswitch
	Pump Head, page 115
	2 Nozzles, page 115

LabVIEW™ drivers for Reglo Z Digital download for free: [www.idex-hs.com/ismatec](http://www.idex-hs.com/ismatec)  
Never use a gear pump for media containing particulates.

Max. differential pressure limited by pump drive, pump head capable of max. 5.2 bar (75 psi).



## BVP-Z Standard

### BVP-Z Standard without Dispensing Functions

- ▶ 3-digit potentiometer (for speed setting)
- ▶ Over 20 interchangeable Micropump® pump heads
- ▶ Flow rates and differential pressure depend on the pump head mounted



## MCP-Z Standard

### MCP-Z Standard with Dispensing Functions

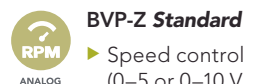
- ▶ Membrane key-pad, LED display
- ▶ 4 program memories for saving individual application parameters
- ▶ Over 20 interchangeable Micropump pump heads (pre-programmed)
- ▶ Flow rates and differential pressure depend on the pump head mounted



## SPECIFICATIONS & DETAILS

	BVP-Z Standard	MCP-Z Standard
<b>Motor Type</b>	DC motor	DC motor
<b>Speed</b>	60–6,000 rpm	60–6,000 rpm
<b>Speed Setting</b>	1–99.9%, resolution 0.1% 3-digit potentiometer	rpm, resolution 1 rpm
<b>Flow Rate Setting</b>		µL/min, mL/min, L/min
<b>Power Consumption</b>	150 W	150 W
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz selectable	230 V AC/50 Hz, 115 V AC/60 Hz selectable
<b>Protection Rating</b>	IP 30	IP 30
<b>Depth/Width/Height</b>	220 x 155 x 260 mm (without pump head)	220 x 155 x 260 mm (without pump head)
<b>Weight</b>	5.7 kg (without pump head)	6.4 kg (without pump head)

### Interfaces



- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–10 V DC or 0–12 kHz)
- ▶ Start/stop



- ▶ PC-controllable
- ▶ RS-232
- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output (0–10 V DC or 0–12 kHz)
- ▶ Start/stop
- ▶ Autostart

## APPLICATION NOTE

### BVP-Z Standard

- ▶ Single-channel delivery processes under pressure for particulate-free fluids, e.g.: addition of reagents/solvents in organic synthesis at laboratory scale.
- ▶ Pumping propylene oxide into a laboratory reactor with a dispensing precision of +/-1% and a differential pressure of up to max. 3 bar.

### MCP-Z Standard

- ▶ Single-channel delivery and dispensing processes of particulate-free fluids under pressure.
- ▶ With pump heads GJ-N23 and GA-X21: Pulseless dispensing under pressure of different reagents with 2 pumps in different quantity ratios via a mixing valve into a reactor.

Part No.	Includes
<b>THE COMPLETE PUMP SYSTEM BVP-Z STANDARD CONSISTS OF:</b>	
<b>ISM446B</b>	Drive (magnet included), page 113
<b>Order the Following to Complete the BVP-Z Standard Pump System</b>	
	Pump head, page 115
	2 Nozzles, page 115
	Accessories, page 109
<b>ISM891</b>	Foot switch, page 109
<b>THE COMPLETE PUMP SYSTEM MCP-Z STANDARD CONSISTS OF:</b>	
<b>ISM405A</b>	Drive (magnet included), page 113
<b>Order the Following to Complete the MCP-Z Standard Pump System</b>	
	Pump head, page 115
	2 Nozzles, page 115
	Accessories, page 109
<b>IS10039</b>	Foot switch, page 109

## MCP-Z Process

### Programmable

- ▶ Programs can be entered on the spot independently of a PC
- ▶ Protection rating of IP 65
- ▶ Suitable for industries, extremely robust gear pump drive
- ▶ For pulseless pumping up to 5.2 bar (75 psi)
- ▶ Stainless steel housing
- ▶ Membrane key-pad with LED display
- ▶ 4 program memories for saving individual application parameters or PC programmed command sequences
- ▶ Pre-programmed pump heads
- ▶ Over 20 interchangeable Micropump® pump heads
- ▶ Flow rates and differential pressure depend on the pump head mounted



**ISM918A**  
MCP-Z Process  
with interchangeable gear pump heads  
(material options, see page 110)



DISPENSING  
& CALIBRATING

## SPECIFICATIONS & DETAILS

<b>Motor Type</b>	DC motor
<b>Speed</b>	60–6,000 rpm
<b>Speed Setting</b>	rpm, resolution 1 rpm
<b>Flow Rate Setting</b>	µL/min, mL/min, L/min
<b>Power Consumption</b>	200 W
<b>Mains Connection</b>	100–230 V AC/50–60 Hz, selectable
<b>Protection Rating</b>	IP 65
<b>Depth/Width/Height</b>	260 x 160 x 262 mm (without pump head)
<b>Weight</b>	6.9 kg (without pump head)

### Interfaces



RS232

- ▶ PC-controllable
- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Start/stop
- ▶ Autostart
- ▶ 2 universal inputs
- ▶ 2 universal outputs



ANALOG

## APPLICATION NOTE

- ▶ Single-channel delivery and dispensing processes under pressure, for particulate-free solutions.
- ▶ Addition of various reagents in different quantity ratios via mixing valve into reactor.
- ▶ Ideal for dispensing and filling applications in a dusty, humid or corrosive environment, and in clean room areas (IP 65, dust-tight and protected against water jets).

## RELATED PRODUCTS

<b>Accessories</b>	Page 109
<b>Tubing</b>	Pages 75–89

Part No.	Includes
<b>THE COMPLETE PUMP SYSTEM MCP-Z PROCESS CONSISTS OF:</b>	
<b>ISM918A</b>	MCP-Z Process Pump System
<b>Order the Following to Complete the MCP-Z Process Pump System</b>	
	Drive (magnet included), page 114
	Pump head, page 115
	2 Nozzles, page 115
	Accessories, page 109
<b>IS10039</b>	Foot Switch, page 109
<i>LabVIEW™ driver download for free: <a href="http://www.idex-hs.com/ismatec">www.idex-hs.com/ismatec</a></i>	

## Ordering Information Pump Heads for BVP-Z/ MCP-Z/Reglo Z/Reglo ZS

### Suction Shoe Pump Heads

- ▶ Enhanced pumping performance at elevated differential pressures
- ▶ Suited for higher temperature ranges
- ▶ Not recommended for applications requiring suction lift



**Ismatec® gear pumps run only in the clockwise direction**

Never use a gear pump for media containing particulates

SUCTION SHOE	Part No.	Pump Head No.	Flow rate (mL/min)		Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass	
			min.	max.								
	MI0006	GA-X21.CFS.B	1	99	1.4 (20 psi)	Graphite	PTFE	SS316	21	-46+177	–	
	MI0007	GA-V21.CFS.B	3	252	2.8 (40 psi)	Graphite	PTFE	SS316	21	-46+177	–	
	MI0008	GA-V23.CFS.B	5	504	2.8 (40 psi)	Graphite	PTFE	SS316	21	-46+177	–	
	MI0131	GA-T23.PFS.B	6	560	5.2 (75 psi)	PPS	PTFE	SS316	21	-46+177	–	
	MI0280	GA-V23.JFS.B	6	560	5.2 (75 psi)	PEEK	PTFE	SS316	21	-46+177	–	
	MI0022	GB-P25.PVS.A.B	35	3,509	3.5 (51 psi)	PPS	Viton®	SS316	21	-29+177	✓	
	MI0306	GB-P25.JVS.A	35	3,480	3.5 (51 psi)	PEEK	Viton	SS316	21	-29+177	–	
	MI0023	GB-P35.PVS.A.B	70	7,020	3.5 (51 psi)	PPS	Viton	SS316	21	-29+177	✓	
	<b>Organic solvents</b>	MI0378	GB-P35.JKS.B	73	7,241	3.5 (51 psi)	PEEK	Kalrez®	SS316	21	-29+177	✓
	<b>For corrosive media</b>	MI0309	GA-X21.CFC.B	1	99	1.4 (20 psi)	Graphite	PTFE	Hastelloy®-C276	21	-46+177	–
	MI0310	GA-V23.CFC.B	5	504	2.8 (40 psi)	Graphite	PTFE	Hastelloy-C276	21	-46+177	–	

Ports (internal thread) 1/8"-27NPT.  
Flow rates without differential pressure.  
Operating temperature: with other seals up to 99 °C possible.

### Cavity Style Pump Heads

- ▶ Excellent chemical resistance
- ▶ Smooth and precise flow
- ▶ Recommended for applications requiring a modest suction lift

CAVITY STYLE	Part No.	Pump Head No.	Flow rate (mL/min)		Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass	
			min.	max.								
	MI0013	GJ-N23.FFS.B.B1	40	3,950	3.5 (51 psi)	PTFE	PTFE	SS316	21	-46+54	✓	
	MI0016	GJ-N23.FFS.B	40	3,950	3.5 (51 psi)	PTFE	PTFE	SS316	21	-46+54	–	
	MI0313	GJ-N23.JFS.B	40	3,950	5.6 (81 psi)	PEEK	PTFE	SS316	21	-46+54	–	
	MI0018	GJ-N25.FFS.B	55	5,460	3.5 (51 psi)	PTFE	PTFE	SS316	21	-46+54	–	
	MI0019	GJ-N23.JFS.B.B1	40	3,950	5.2 (75 psi)	PPS	PTFE	SS316	21	-46+54	✓	
	MI0020	GJ-N23.JFS.B	40	3,950	5.2 (75 psi)	PPS	PTFE	SS316	22	-46+54	–	
	<b>For corrosive media</b>	MI0284	GJ-N23.FFC.B	40	3,950	3.5 (51 psi)	PTFE	PTFE	Hastelloy-C276	21	-46+54	–
		MI0311	GJ-N25.FFC.B	55	5,480	3.5 (51 psi)	PTFE	PTFE	Hastelloy-C276	21	-46+54	–

Ports (internal thread) 1/8"-27NPT.  
Flow rates without differential pressure.  
Operating temperature: with other seals up to 99 °C possible.



### Service Kits Available for all Micropump® Gear Pumps

Service Kits contain the wearing parts (brushings, seals, gears). For ordering information, contact your local distributor or IDEX Health & Science.

Part No. External Thread Tubing Adaptor Tubing ID mm

#### TUBING ADAPTERS FOR GEAR PUMP HEADS

##### Threaded stainless steel connectors

AR0002	1/8" NPT	Tube nozzle	3
AR0004	3/8" NPT	Tube nozzle	12
AR0008	1/8" NPT	Tube nozzle	8
AR0009	1/8" NPT	Tube nozzle	9.5
AR0024	1/8" NPT	Pipe connection	6 (outside)

##### Threaded connectors in Hastelloy-C

AR0001-HC	1/8" NPT	Tube nozzle	6
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## Rotary Piston Pumps Introduction

### For Corrosive Media and Very Accurate Dispensing

The pump heads are available with ceramic pistons and ceramic cylinder liners, which makes these components very resistant even to highly aggressive chemicals.

### Inexpensive to Maintain

- ▶ Interchangeable pump heads
- ▶ No valves
- ▶ Only one moving part — the piston
- ▶ High quality and precision guarantee an optimum performance even after many years of intensive use



REVERSIBLE

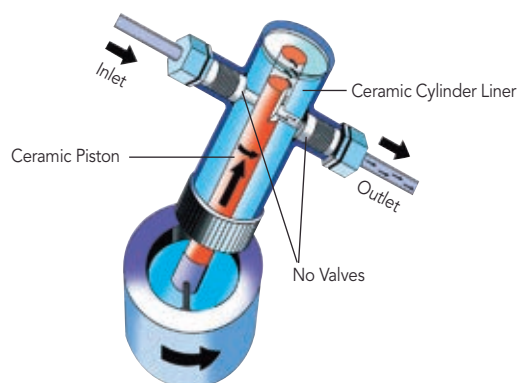


CONTINUOUS DUTY

## Valveless Pumping

The valveless pumping function is accomplished by the synchronous rotation and reciprocation of the ceramic piston in the precisely mated ceramic cylinder liner. One complete piston revolution is required for each suction/discharge cycle.

The piston always bottoms for maximum fluid and bubble clearing. Together with the drive speed the stroke volume, which can be pre-set by the adjustment of the pump head angle, determines the actual flow rate.



### Only the Ismatec® Rotary Piston Pump MCP-CPF Process Features:

#### Carrying out programs independently of a PC

- ▶ Download the file data into the pump memory
- ▶ Disconnect the pump from the PC
- ▶ Carry out your application on the spot, using the pump as a stand-alone unit



## APPLICATION NOTE

### Application Range of Piston Pumps

Industries	Applications	Special Media
Biotechnology	Accurate dispensing e.g. into bioreactors	Biozides
Chemistry	Emulsion and slurry dosing	Dyes
Medical	Medical diagnostics production	Flux compound
Electronic	Milk and beverage enrichment	Hydrogen peroxide
Food and Dairy	Plating bath replenishment	Liquid wax
Perfume/Cosmetics	Titration equipment	Thixotropic products
Rubber/Plastics		
Glass/Ceramic		Not suited for media containing particles larger than 0.8 mm
Pulp and Paper		

## RELATED PRODUCTS

### Accessories







Page 109

### Tubing

Pages 75–89

## NOTE

All microprocessor controlled drives are LabVIEW™ compatible and can easily be integrated into process control systems.

PUMP SERIES	FLOW RANGE	PISTON MATERIAL	DRIVE OPTIONS	INTERFACE	PAGE	
RH 00		0.025–45 mL/min	316 SST, Ceramic	Analog or Digital	RS-232 or Analog	118
		0.045–45 mL/min	316 SST, Ceramic	Digital	RS-232 and Analog	118
RH 0		0.09–90 mL/min	Ceramic	Analog or Digital	RS-232 or Analog	118
RH 0		0.05–90 mL/min	Ceramic	Digital	RS-232 and Analog	118
RH 1		0.1–180 mL/min	Ceramic	Analog or Digital	RS-232 and Analog	119
RH 1 & Q-SERIES		0.18–180 mL/min	Ceramic	Digital	RS-232 or Analog	120
		0.4–144 mL/min	316 SST	Digital	RS-232 or Analog	122
		0.13–576 mL/min	316 SST, Ceramic	Digital	RS-232 or Analog	121
		0.29–1,300 mL/min	316 SST, Ceramic	Digital	RS-232 or Analog	121
		0.51–2,300 mL/min	Ceramic	Digital	RS-232 or Analog	121

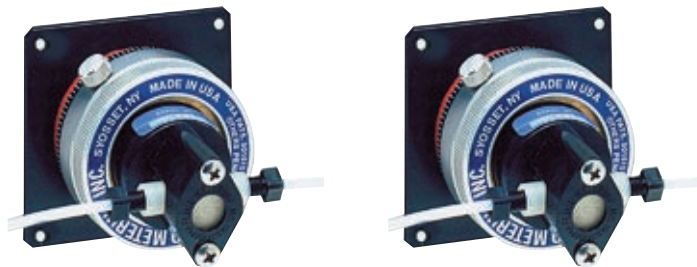
## RH Pump Heads

### Pump Head RH 00

Stroke volumes  
2.5–25 µL

Drives and flow rates:

- ▶ Reglo CPF Analog  
0.045–45 mL/min
- ▶ Reglo CPF Digital  
0.1–45 mL/min
- ▶ MCP-CPF *Process*  
0.025–45 mL/min



Part No.	FMI009	FMI010A
<b>TYPE</b>	RH00.CKC-LF	RH00.SKY-LF
<b>Piston</b>	Ceramic	316 Stainless Steel
<b>Cylinder Case</b>	Kynar® (Fluorocarbon (PVDF))	Kynar (Fluorocarbon (PVDF))
<b>Cylinder Liner</b>	Ceramic	Carbon
<b>Lip Seals</b>	Rulon® AR	Rulon J
<b>Gland Washers</b>	PTFE	PTFE
<b>Max. Temperature</b>	100 °C	60 °C
<b>Max. Differential Pressure</b>	6.9 bar (100 psi)	6.9 bar (100 psi)
<b>Flow Ports</b>	Kynar UNF 1/4"–28 (female)	Kynar UNF 1/4"–28 (female)

PTFE TUBING FOR PUMP HEADS MENTIONED ABOVE  
(MUST BE ORDERED SEPARATELY)

1.6 mm ID, 3.2 mm OD with 2 fittings UNF 1/4"–28 male

Part No.	Length	Part No.	Length
IC0053	0.25 m	IC0061	0.75 m

### Pump Head RH 0

Stroke volumes  
5–50 µL

Drives and flow rates:

- ▶ Reglo CPF Analog  
0.09–90 mL/min
- ▶ Reglo CPF Digital  
0.2–90 mL/min
- ▶ MCP-CPF *Process*  
0.050–90 mL/min



Part No.	FMI005A	FMI013
<b>TYPE</b>	RH0.CKC	RH0.CKC-LF
<b>Piston</b>	Ceramic	Ceramic
<b>Cylinder Case</b>	Kynar (Fluorocarbon (PVDF))	Kynar (Fluorocarbon (PVDF))
<b>Cylinder Liner</b>	Ceramic	Ceramic
<b>Lip Seals</b>	Rulon AR	Rulon AR
<b>Gland Washers</b>	PTFE	PTFE
<b>Max. Temperature</b>	100 °C	100 °C
<b>Max. Differential Pressure</b>	6.9 bar (100 psi)	6.9 bar (100 psi)
<b>Flow Ports</b>	2 fixed tube fittings for PTFE tubing 6 mm OD	Kynar UNF 1/4"–28 (female)

TUBING (MUST BE ORDERED SEPARATELY)

PTFE tubing 4 mm ID, 6 mm OD

Part No. MF0336
(For other tubing material; use tubing adapters, see page 123)

PTFE tubing 1.6 mm ID, 3.2 mm OD  
with 2 fittings UNF 1/4"–28 male

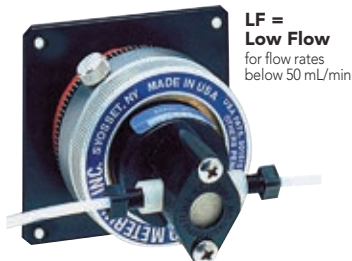
Part No.	Length
IC0053	0.25 m
IC0057	0.50 m
IC0061	0.75 m
IC0065A	1.00 m

**Pump Head RH 1**

**Stroke volumes  
10–100 µL**

Drives and flow rates:

- ▶ Reglo CPF Analog 0.18–180 mL/min
- ▶ Reglo CPF Digital 0.4–180 mL/min
- ▶ MCP-CPF Process 0.1–180 mL/min



Part No.	FMI007	FMI015	FMI008A
<b>TYPE</b>	RH1.CKC	RH1.CKC-LF	RH1.CTC
<b>Piston</b>	Ceramic	Ceramic	Ceramic
<b>Cylinder Case</b>	Kynar® (Fluorocarbon (PVDF))	Kynar (Fluorocarbon (PVDF))	ETFE
<b>Cylinder Liner</b>	Ceramic	Ceramic	Ceramic
<b>Lip Seals</b>	Rulon® AR	Rulon AR	Rulon AR
<b>Gland Washers</b>	PTFE	PTFE	PTFE
<b>Max. Temperature</b>	100 °C	100 °C	100 °C
<b>Max. Differential Pressure</b>	6.9 bar (100 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)
<b>Flow Ports</b>	2 fixed tube fittings for PTFE tubing 6 mm OD	Kynar UNF 1/4"-28 (female)	2 fixed tube fittings for PTFE tubing 6 mm OD

**TUBING (MUST BE ORDERED SEPARATELY)**

**PTFE tubing 4 mm ID, 6 mm OD**

**Part No. SC1016B0**  
(For other tubing material; use tubing adapters, see page 123)

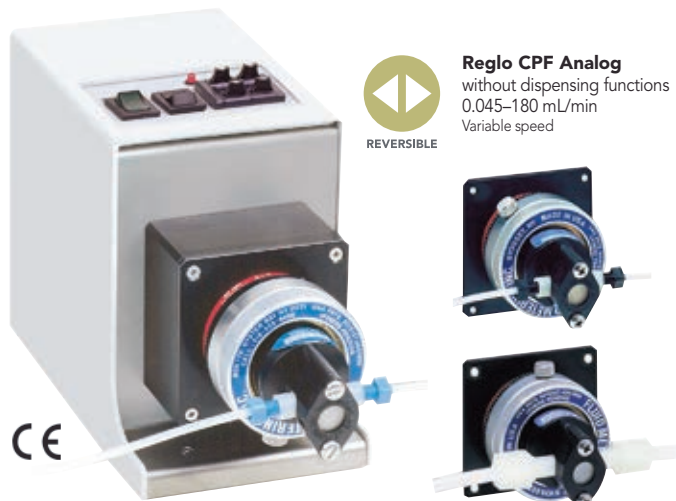
**PTFE tubing 1.6 mm ID, 3.2 mm OD with 2 fittings UNF 1/4"-28 male**

Part No.	Length
IC0053	0.25 m
IC0057	0.50 m
IC0061	0.75 m
IC0065A	1.00 m

**PTFE tubing 4 mm ID, 6 mm OD**

**Part No. SC1016B0**  
(For other tubing material; use tubing adapters, see page 123)

## Reglo CPF Analog



REVERSIBLE

**Reglo CPF Analog**  
without dispensing functions  
0.045–180 mL/min  
Variable speed



Overview of piston pump  
heads on pages 118 to 119

## Reglo CPF Digital



REVERSIBLE

**Reglo CPF Digital**  
with dispensing functions  
0.1–180 mL/min  
Microprocessor controlled

DISPENSING  
& CALIBRATING

**Reglo CPF Digital**  
**ISM321C**  
with piston pump head RH 00.CKC-LF

**Reglo CPF Analog**  
**ISM1014B**  
with piston pump head RH 00.CKC-LF

### Dispensing Pumps — Ideal for Corrosive Media

- ▶ Easy to calibrate
- ▶ High repeatability
- ▶ Differential pressure up to 6.9 bar (100 psi)
- ▶ 10 cm wide, 13.5 cm high
- ▶ Wide selection of ceramic piston pumps



**Reglo CPF Analog**  
2-digit potentiometer  
1–99%, resolution 1% (for speed)



**Reglo CPF Digital**  
6-button membrane key-pad, LED display  
Flow rate setting in  $\mu\text{L}/\text{min}$  and  $\text{mL}/\text{min}$

## SPECIFICATIONS & DETAILS

	Reglo CPF Analog	Reglo CPF Digital
<b>Motor Type</b>	DC motor	DC motor
<b>Speed</b>	18–1,800 rpm	40–1,800 rpm
<b>Speed Setting</b>	1–99%, resolution 1% 2-digit potentiometer	rpm, resolution 0.1 rpm
<b>Flow Rate Setting</b>		$\mu\text{L}/\text{min}$ and $\text{mL}/\text{min}$
<b>Power Consumption</b>	50 W	75 W
<b>Mains Connection</b>	230 V AC/50 Hz, 115 V AC/60 Hz, selectable	100–230 V AC/50–60 Hz, selectable
<b>Protection Rating</b>	IP 30	IP 30
<b>Depth/Width/Height</b>	250 x 100 x 143 mm	250 x 100 x 135 mm
<b>Weight</b>	2.5 kg	2.1 kg

### Interfaces

RPM  
ANALOG

#### Reglo CPF Analog

- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Speed output 0–9 kHz
- ▶ Start/stop
- ▶ Rotation direction



RS232

#### Reglo CPF Digital

- ▶ RS-232
- ▶ Speed output 0–9 kHz, Start/stop, autostart

## APPLICATION NOTE

- ▶ Highly reproducible, single-channel dispensing processes of organic solvents or acids/bases.
- ▶ Dispensing of hydrogen fluoride and other highly corrosive acids with an X-Y-Z dispenser.
- ▶ Remotely controlling the pump in hazardous environments.

## RELATED PRODUCTS

**Accessories** Page 109

**Tubing** Pages 75–89

Part No. (Drive Only)	Model (Drive Only)	Flow rates	Channels	Speed
<b>REGLO CPF</b>				
<b>ISM1014B</b>	Reglo CPF Analog	0.045–180	1	18–1,800
<b>ISM321C</b>	Reglo CPF Digital	0.1–180	1	40–1,800
<b>FOOT SWITCH</b>				

**ISM891** Reglo CPF Analog, page 109

**ISM894** Reglo CPF Digital, page 109

### THE COMPLETE PUMP SYSTEM REGLO CPF CONSISTS OF:

Select Drive, page 120

Select Piston pump head, pages 118–119



## MCP-CPF Process

DISPENSING  
& CALIBRATING

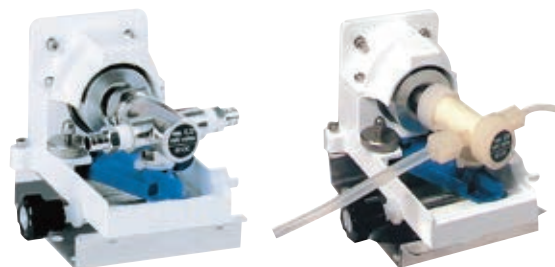
REVERSIBLE

Rotation direction reversible



'RH' pump heads (description see pages 118 to 119)

Type	Flow rates mL/min	Stroke volumes µL
RH 00	0.025–45	2.5–25
RH 0	0.050–90	5.0–50
RH 1	0.10–180	10.0–100



'Q' pump heads (description see pages 122 to 123)

Type	Flow rates mL/min	Stroke volumes µL
QP Q0	0.04–144	3.2–80
QP Q1	0.13–576	12.8–320
QP Q2	0.29–1,300	28.8–720
QP Q3	0.51–2,300	51.2–1,280

CE

**MCP-CPF Process**  
**ISM919A**  
with rotary piston pump head QP Q0.SS.Y-LF

## SPECIFICATIONS & DETAILS

<b>Motor Type</b>	DC motor
<b>Speed</b>	10.0–1,800 rpm
<b>Speed Setting</b>	rpm, resolution 0.1 rpm
<b>Flow Rate Setting</b>	µL/min, mL/min, L/min
<b>Power Consumption</b>	100 W
<b>Mains Connection</b>	100–230 V AC/50–60 Hz
<b>Protection Rating</b>	IP 65
<b>Depth/Width/Height</b>	220 x 155 x 260 mm (without pump head)
<b>Weight</b>	6.9 kg (without pump head)

### Interfaces



RS232

- ▶ PC-controllable
- ▶ RS-232
- ▶ Speed control (0–5 or 0–10 V, 0–20 or 4–20 mA)
- ▶ Start/stop
- ▶ Rotation direction
- ▶ Autostart
- ▶ 2 universal inputs
- ▶ 2 universal outputs



ANALOG

## APPLICATION NOTE

- ▶ Single-channel sterile delivery and dispensing processes under pressure for particulate-free solvents.
- ▶ Addition of various reagents in different volume ratios through mixing valve into reactor.

## RELATED PRODUCTS

**Accessories** Page 109

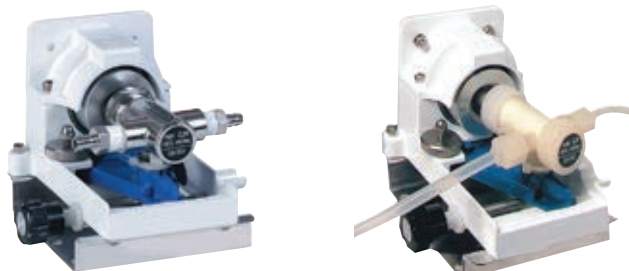
**Tubing** Pages 75–89

Part No.	Description
<b>THE COMPLETE PUMP SYSTEM MCP-CPF PROCESS CONSISTS OF:</b>	
<b>ISM919A</b>	MCP-CPF Process Pump System
<b>Order the Following to Complete the MCP-CPF Process Pump System</b>	
	Drive, page 121
	Pump head and tubing, pages 122–123
<b>IS10039</b>	Foot switch, page 109
LabVIEW™ driver download for free: <a href="http://www.idex-hs.com/ismatec">www.idex-hs.com/ismatec</a>	

## Q-Type Pump Heads

### Pump Head Q0 and Q3

- ▶ Q0 = stroke vol.  
3.2–80  $\mu$ L
- ▶ Q3 = stroke vol.  
51.2–1,280  $\mu$ L
- ▶ Q0 = flow rate  
0.04–144 mL/min
- ▶ Q3 = flow rate  
0.51–2,300 mL/min



Part No.	FMI202	FMI217
<b>TYPE QP</b>	Q0.SSY	Q3.CKC
<b>Piston</b>	316 Stainless Steel	Ceramic
<b>Cylinder Case</b>	316 Stainless Steel	Kynar (Fluorocarbon (PVDF))
<b>Cylinder Liner</b>	Carbon	Ceramic
<b>Lip Seals</b>	Rulon® J	Rulon AR
<b>Gland Washers</b>	PTFE	PTFE
<b>Cylinder Head Seal</b>	PTFE	None
<b>Max. Temperature</b>	60 °C	100 °C
<b>Max. Differential Pressure</b>	6.9 bar	1.7 bar (to 1,600 rpm) 0.5 bar (from 1,600 rpm)
<b>Flow Ports</b>	1/4 NPT (female) Includes: 2 stainless steel adapters with thread 1/4 NPT (male) and fitting for tubing with 6.4 mm ID	For tubing up to 12.7 mm ID or PTFE tubing 6 mm OD Includes: 2 Kynar (PVDF) adapters for tubing with 6 mm OD

#### TUBING (MUST BE ORDERED SEPARATELY)

Part No.	Tubing ID	Part No.	Tubing ID
<b>Tygon® ST R-3603</b>		<b>Tygon ST R-3603</b>	
<b>MF0031</b>	6.4 mm	<b>SC0382</b>	12.7 mm
<b>Accessories</b>		<b>PTFE Tubing</b>	
<b>FMI056A</b>	Low Flow Kit R 479 (see below)	<b>MF0336</b>	4 mm/6 mm, 3.6 m long

### Pump Heads Q1 and Q2

- ▶ Q1 = stroke vol.  
12.8–320  $\mu$ L
- ▶ Q2 = stroke vol.  
28.8–720  $\mu$ L
- ▶ Q1 = flow rates  
0.13–576 mL/min
- ▶ Q2 = flow rates  
0.29–1,300 mL/min



Part No.	FMI205	FMI212	FMI352
<b>TYPE QP</b>	Q1.CSC	Q2.CSC	Q1.CKC
<b>Piston</b>		Ceramic	Ceramic
<b>Cylinder Case</b>		316 Stainless Steel	Kynar®2
<b>Cylinder Liner</b>		Ceramic	Ceramic
<b>Lip Seals</b>		Rulon AR	Rulon AR
<b>Gland Washers</b>		PTFE	PTFE
<b>Cylinder Head Seal</b>		PTFE	none
<b>Max. Temperature</b>		177 °C	100 °C
<b>Max. Differential Pressure</b>		6.9 bar (100 psi)	4.1 bar (60 psi)
<b>Main Flow Ports</b>		1/4 NPT (female) Includes: 2 stainless steel adapters with thread 1/4 NPT (male) and fitting for tubing with 9.5 mm ID	For tubing up to 9.5 mm ID

#### TUBING (MUST BE ORDERED SEPARATELY)

Part No.	Tubing ID
<b>Tygon ST R-3603</b>	
<b>SC0383A</b>	9.5 mm
<b>Accessories</b>	
<b>FMI056A</b>	Low Flow Kit R 479

**Other Materials for Wetted Parts for:**

**Pump Heads Q1 and Q2 (see table below)**

- ▶ Q1 = stroke vol. 12.8–320 µL
- ▶ Q2 = stroke vol. 28.8–720 µL
- ▶ Q1 = flow rates 0.13–576 mL/min
- ▶ Q2 = flow rates 0.29–1,300 mL/min



Part No.	FMI355	FMI356	FMI357	FMI358	FMI353	FMI359	FMI360	FMI361	FMI362	FMI363	FMI364	FMI365	FMI366	
QP TYPE PUMP HEADS	Q2.CKC	Q1.CKCW	Q2.CKCW	Q1.CKY	Q2.CKY	Q1.CSY	Q2.CSY	Q1.SKY	Q2.SKY	Q1.SSY	Q2.SSY	Q1.SAN <sup>1</sup>	Q2.SAN <sup>1</sup>	
<b>Piston</b>	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	Ceramic	Ceramic	
<b>Cylinder Case</b>	Kynar <sup>2</sup>	Kynar <sup>2</sup>	Kynar <sup>2</sup>	Kynar <sup>2</sup>	Kynar <sup>2</sup>	316 Stainless Steel	316 Stainless Steel	Kynar <sup>2</sup>	Kynar <sup>2</sup>	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	
<b>Cylinder Liner</b>	Ceramic	Ceramic	Ceramic	Carbon	Carbon	Carbon	Carbon	Carbon	Carbon	Carbon	Carbon	316 Stainless Steel	316 Stainless Steel	
<b>Lip Seals</b>	Rulon <sup>®</sup> AR	Rulon AR	Rulon AR	Rulon AR	Rulon AR	Rulon AR	Rulon AR	Rulon J	Rulon J	Rulon J	Rulon J	PTFE	PTFE	
<b>Gland Washers</b>	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	
<b>Cylinder Head Seal</b>	None	None	None	None	None	PTFE	PTFE	None	None	PTFE	PTFE	PTFE	PTFE	
<b>Max. Temperature</b>	100 °C	100 °C	100 °C	100 °C	100 °C	177 °C	177 °C	60 °C	60 °C	60 °C	60 °C	177 °C	177 °C	
<b>Max. Diff. Pressure</b>	4.1 bar (60 psi)	4.1 bar (60 psi)	4.1 bar (60 psi)	4.1 bar (60 psi)	4.1 bar (60 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)	4.1 bar (60 psi)	4.1 bar (60 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)	
<b>Main Flow Ports</b>	For tubing up to 9.5 mm ID	For tubing up to 9.5 mm ID With isolation gland Fittings for tubing with 3.2 mm ID	For tubing up to 9.5 mm ID	For tubing up to 9.5 mm ID	For tubing up to 9.5 mm ID	1/4 NPT (female)	1/4 NPT (female)	For tubing up to 9.5 mm ID	For tubing up to 9.5 mm ID	For tubing up to 9.5 mm ID	For tubing up to 9.5 mm ID	1/4 NPT (female)	1/4 NPT (female)	PTFE tubing adaptor

<sup>1</sup> Designed for sanitary applications.  
<sup>2</sup> Kynar = Fluorocarbon (PVDF).

**Low Flow Kit R 479**

**Part No. FMI056**

Suitable for the following pump heads:

- ▶ QP Q0.SSY
- ▶ QP Q1.SSY
- ▶ QP Q2.CSY
- ▶ QP Q1.CSC
- ▶ QP Q2.CSC
- ▶ QP Q2.SSY
- ▶ QP Q1.CSY



This Low Flow adaptor Kit enables the use of the above mentioned pump heads for flow rates below 50 mL/min or in case that a minimum dead volume or a maximum of chemical compatibility are required. The adaptor features a 1/4-28 inner thread. These threads are used with low flow tube fittings for small bore tubing of 3.2 mm OD or less. Hence, this Low Flow Kit is also very useful for chromatography applications.

Part No.	Length
<b>PTFE TUBING FOR LOW FLOW KIT R 479</b>	
<b>1.6 mm ID/3.2 mm OD, with 2 fittings 1/4-28 (male)</b>	
IC0053	0.25 m long
IC0057	0.50 m long
IC0061	0.75 m long
IC0065A	1.00 m long

**Tubing Adapters for Pump Heads with a Kynar Cylinder Case:**

- ▶ Q0.SKY
- ▶ Q1.CKC
- ▶ Q1.CKCW
- ▶ Q2.CKC
- ▶ Q1.CKY
- ▶ Q2.CKY
- ▶ Q2.SKY
- ▶ Q3.CKC
- ▶ Q1.SKY

In addition to the tubing mentioned above, these adapters enable the use of other tubing.



Part No.	Description
<b>TUBING ADAPTERS</b>	
FMI050	R412-0K For tubing with 3.2 mm ID
FMI051	R412-1K For tubing with 6.4 mm ID
FMI052	R412-2K For tubing with 9.5 mm ID
FMI053	R412-5K For tubing with 1/4-28 ferrule fittings
FMI054	H476K For tubing with 3.2 mm OD