

Ismatec® BVP and MCP Quick-Couple Drives

Mount pump heads quickly

- Easily mount pump heads with turn-and-lock mounting system
- Select from over 20 interchangeable tubing pump heads to achieve flow rates from 0.001 to 3700 mL/min
- Control speed, start/stop pump, or change flow direction remotely via analog signal
- Choose from 4 drive types: BVP Standard, BVP Process, MCP Standard, MCP Process

Drive + Pump Head + Tubing =
Complete Pump System





BVP Standard

- Economical yet versatile drive lets you adjust speed in 0.1% steps
- Prime, flush, or prevent overflow with Max/Slow toggle switch
- Top interface: on/off, run/stop, direction, max/slow, 3-digit potentiometer for speed

BVP Process

- Microprocessor controlled drive features membrane keypad for speed setting
- IP65-rated washdown pump—ideal for dusty, humid, or corrosive environment and in cleanroom areas
- Digital display shows speed
- Sealed stainless steel housing offers durability
- Top interface: run/stop, direction, min/max, arrows for speed



MCP Standard

- 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—RS-232 in for remote operation; RS-232 out for cascading pumps
- Digital display shows speed, flow rate, dispensing volume, dispensing time, and pause time
- Store and recall up to four programs
- Preprogrammed with tubing sizes and heads for faster setup
- Top interface: on/off, run/stop, calibration, up arrow/down arrow, mode, max/reset

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MCP Process



- IP65-rated washdown pump—ideal for dispensing and filling 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—RS-232 in for remote operation; RS-232 out for cascading pumps
- Digital display shows speed, flow rate, dispensing volume, dispensing time, and pause time
- Store and recall up to four programs—using ProgEdit
- Preprogrammed with tubing sizes and heads for faster setup
- Sealed stainless steel housing provides durability
- Top interface: run/stop, calibration, up arrow/down arrow, mode, max/reset
- Pump can complete a program-dispensing/pumping sequence created with ProgEdit—from 1 of 4 internal program slots or from a remote PC

Specifications

Motor type: DC motor

Size: 155 x 260 x 220 mm*

Power consumption: 100 W

A current driver for LabView® software is available for FREE for MCP-series drives at masterflex.com.

Drive Ordering Information



Model	BVP Standard		BVP Process		MCP Standard		MCP Process	
	115 VAC, 60 Hz	230 VAC, 50 Hz	115 VAC, 60 Hz	230 VAC, 50 Hz	115 VAC, 60 Hz	230 VAC, 50 Hz	115 VAC, 60 Hz	230 VAC, 50 Hz
Catalog number	MK-78002-10	MK-78002-12	MK-78003-12	MK-78003-10	MK-78002-00	MK-78002-02	MK-78003-05	MK-78003-08
Programmable	No		No		Yes		Yes	
Speed	2.4 to 240 rpm (indicated as 1 to 99.9%)		1 to 240 rpm		1 to 240 rpm		1 to 240 rpm	
Resolution	0.1% via 3-digit potentiometer		0.1 rpm		0.1 rpm		0.1 rpm	
Flow range/channel	0.003 to 3700 mL/min		0.001 to 3700 mL/min		0.001 to 3700 mL/min		0.001 to 3700 mL/min	
Flow rate settings	—		—		µL/min, mL/min, L/min		µL/min, mL/min, L/min	
Remote control capabilities	Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 12 kHz Start/stop, rotation direction		Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 7.2 kHz Start/stop, rotation direction, autostart		RS-232 (1 in, 1 out), 1 analog Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 12 kHz Start/stop, rotation direction, autostart		RS-232 (1 in, 1 out), 1 analog Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 7.2 kHz Start/stop, rotation direction, autostart	
Protection rating	IP30		IP65		IP30		IP65	
Weight*	5.7 kg		6.9 kg		6.4 kg		6.9 kg	

*without pump head

Accessories

For BVP and MCP Drives

[MK-78003-07](#) Foot switch for start/stop operation, 6-ft (1.8 m) cable

For MCP Drives Only

[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)

[MK-78019-92](#) Pressure control unit for pumping against pressure

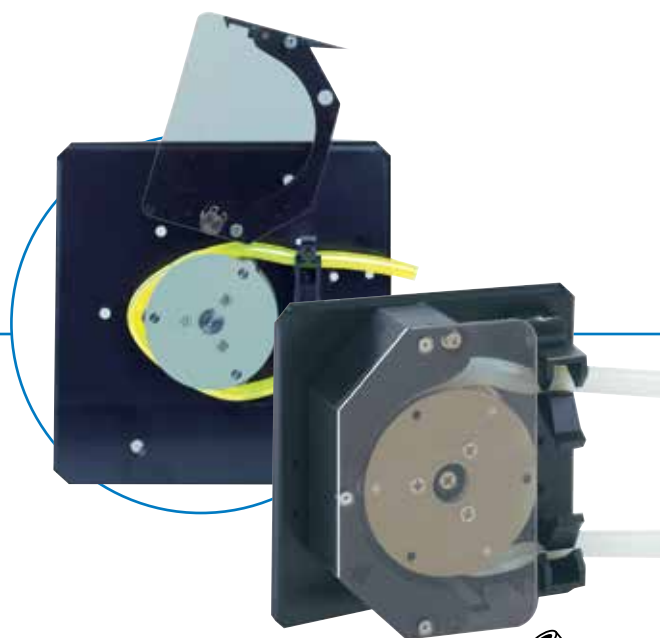
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Pump Heads for Standard Tubing



Model	Channels	Rollers	Flow rate per channel [†]	Catalog number
Pro-280	1	2	0.49 to 3700 mL/min	MK-78002-11
Pro-281	1	2	3.6 to 3100 mL/min	MK-78002-13
Pro-380	1	3	0.45 to 3400 mL/min	MK-78002-16
Pro-381	1	3	3.3 to 2900 mL/min	MK-78002-14



Model	Channels	Rollers	Flow rate per channel [†]	Catalog number
360	1	3	0.072 to 880 mL/min	MK-78002-22
380	1	3	0.44 to 2800 mL/min	MK-78002-20
380AD	1	3	0.41 to 3600 mL/min	MK-78002-60

BioPharm

Pro-280

- Can be dismantled for cleaning—ideal for applications requiring hygienic conditions
- Convex rollers and concave tube-bed help maintain the integrity of cellular material being pumped
- Self-centering tube-track lengthens tubing life
- Two stainless steel rollers (higher max flow rate but more pulsation than with three rollers)
- Coated aluminum pump head
- For tubing with 1.6 mm wall thickness
- 1.5 bar (22 psi) differential pressure[‡]

Pro-281 Same pump head as Pro-280, but

- For tubing with 2.4 mm wall thickness
- 2.5 bar (36 psi) differential pressure[‡]

Pro-380 Same pump head as Pro-280, but

- Three stainless steel rollers (less pulsation but lower max flow rate than with two rollers)

Pro-381 Same pump head as Pro-280, but

- Three stainless steel rollers (less pulsation but lower max flow rate than with two rollers)
- For tubing with 2.4 mm wall thickness
- 2.5 bar (36 psi) differential pressure[‡]

Quick-Change (360/380/380AD)

- 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)
- Three stainless steel rollers
- 1.5 bar (22 psi) differential pressure[‡]
- **360:** accepts tubing ID from 0.8 to 6.4 mm with 1.6 mm wall thickness
- **380:** accepts tubing ID from 1.6 to 9.5 mm with 1.6 mm wall thickness
- **380AD:** accepts tubing ID from 1.6 to 11.1 mm with wall thicknesses of 0.8, 1.6 or 2.4 mm

[†]The flow rates are based on a drive speed of 1 to 240 rpm. For minimum flow rate for BVP Standard drive multiply the flow rate at 1 rpm by 2.4. Approx. values: determined with water, at 22°C, no differential pressure, and Tygon® tubing.

[‡]Differential pressure depends on tubing material; tubing with small IDs may enable higher pressure.

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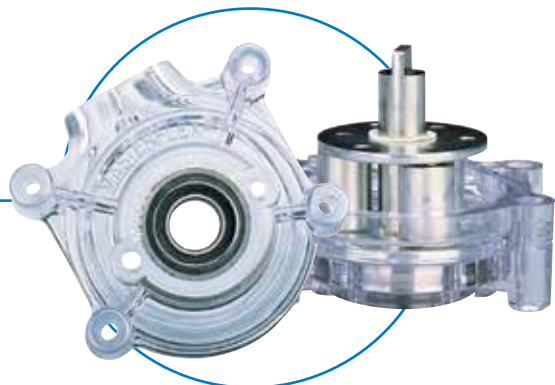
Pump Heads for Standard Tubing



Model	Channels	Rollers	Flow rate per channel†	Catalog number
SB 2V	2	6	1.1 to 1100 mL/min	MK-78002-62
SB 3V	3	6	0.09 to 530 mL/min	MK-78002-64

Tubing Bed (SB)

- Independently adjustable occlusion for each channel offers optimum pressure and tubing retention
- Ideal for delicate substances which require gentle occlusion setting
- Six rollers provide minimum pulsation among pump heads using standard tubing
- **SB 2V:** two channels of standard tubing from 3.2 to 8.0 mm ID with 1.6 mm wall thickness
- **SB 3V:** three channels of standard tubing from 0.8 to 4.8 mm ID with 1.6 mm wall thickness



Mounting plate included (not shown)



Model	Flow rate per channel†	Catalog number
Standard 1.6	0.24 to 57 mL/min	MK-78002-72
Standard 6.4	2.30 to 560 mL/min	MK-78002-74
Standard 8.0	3.40 to 820 mL/min	MK-78002-76

Standard

- Pump heads accept specific tubing size for better reproducibility
- Use thick-wall tubing for viscous fluids, higher pressure, and longer tubing life
- For 1.6 mm or 8.0 mm tubing ID with 1.6 mm wall thickness; 6.4 mm tubing ID with 2.4 mm wall thickness



Model	Flow Rate per channel†	Catalog number
PTFE-Tube 2 mm	0.07 to 15 mL/min	MK-78002-82
PTFE-Tube 4 mm	0.19 to 45 mL/min	MK-78002-84

PTFE Tubing

- PTFE tubing is the only wetted part—ideal for corrosive media
- Adjustable occlusion for higher pressure or longer tubing life
- Anodized aluminum and acetal body; stainless steel rotor assembly
- Accepts 2.0 or 4.0 mm ID PTFE tubing

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Pump Heads for Standard Tubing



Model	Channels	Rollers	Flow rate per channel†	Catalog number
Easy-Load	1 (up to 2)	3	0.07 to 1100 mL/min	MK-78002-42

Easy-Load®

- Easily accessible pump head allows rapid tube change-over
- PSF (polysulfone) housing
- Rotor with three stainless steel rollers
- For tubing ID from 0.8 to 8.0 mm with 1.6 mm wall thickness
- 0.7 bar (10 psi) differential pressure*



Model	Channels	Rollers	Flow rate per channel†	Catalog number
Easy-Load II	1	4	0.24 to 1000 mL/min	MK-78002-44

Easy-Load® II

- Adjustable pressure setting
- Automatic tubing retention
- PPS (polyphenylene sulfide) housing
- Rotor with four stainless steel rollers for less pulsation
- For tubing ID from 1.6 to 8.0 mm with 1.6 mm wall thickness
- 0.7 bar (10 psi) differential pressure*



Mounting plate included (not shown)

Flow rate per channel†	Maximum pressure	Catalog number
80 to 480 mL/min	75 psi (5.0 bar)	MK-78002-86
10 to 60 mL/min	100 psi (6.9 bar)	MK-78002-88

PTFE-Diaphragm

- Ideal for accurate chemical feed/metering and applications requiring high-purity, high-pressure, or both
- Turns an Ismatec drive into a chemically inert diaphragm pump—wetted parts resist even the most aggressive chemicals
- Unique geometry minimizes fluid churning and dead volume for high metering accuracy—maintain $\pm 2\%$ repeatability
- Self priming—wet or dry
- Intermittent pressure capabilities: maintains consistent flow performance up to 100 psi (6.9 bar)

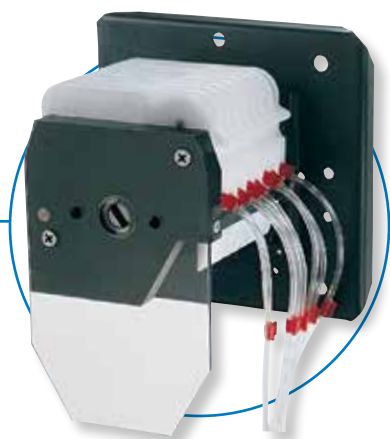
†The flow rates are based on a drive speed of 1 to 240 rpm. For minimum flow rate for BVP Standard drive, multiply the flow rate at 1 rpm by 2.4. Approximate values are determined with water, at 22°C, no differential pressure, and Tygon® tubing.

*Differential pressure depends on tubing material; tubing with small IDs may enable higher pressure.

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Pump Heads for Stopped Tubing



Model	Channels	Rollers	Flow rate per channel†	Catalog number
MS/CA 8-6	8 (up to 24)	6	0.002 to 100 mL/min	MK-78002-50
MS/CA 4-12	4 (up to 16)	12	0.001 to 57 mL/min	MK-78002-90

MK-07623-00 Eight-channel extension pump head. Use up to two with ISM724 to get 24 channels

MK-07622-30 Four-channel extension pump head. Use up to three with ISM735 to get 16 channels



Model	Channels	Rollers	Flow rate per channel†	Catalog number
CA 4	4	8	0.002 to 230 mL/min	MK-78002-32
CA 8	8			MK-78002-34
CA 12	12			MK-78002-36

Minicassette (MS/CA)

- Up to 16 or 24 channels using extension pump heads
- Quick and easy tubing change with MS/CA Click'n'go cassettes (included)
- Accepts Ismatec three-stop tubing
- 1.5 bar (22 psi) differential pressure‡
- Twelve rollers (model MS/CA 4–12) provide lowest pulsation among Ismatec pump heads

Standard Cassette (CA)

- Higher flow rates than MS/CA series pump heads
- Fast and easy tubing change with CA Click'n'go cassettes (included)
- Eight rollers offer low pulsation
- Select from 4, 8, or 12 channel pump heads
- Accepts Ismatec two-stop tubing
- 1.5 bar (22 psi) differential pressure‡

Tubing Cassettes

Click'n'go Cassettes (Replacement)

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

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.

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. For applications at elevated differential pressure conditions (>1 bar).

Model	Material††	Adapters required?	Qty	Catalog number
Replacement Click'n'go cassettes				
MS/CA Click'n'go	POM-C	No	1	MK-78016-96
CA Click'n'go	POM-C	Yes††	1	MK-78001-95
Pressure lever cassettes (optional)				
MS/CA Click'n'go with pressure lever	POM-C	No	1	MK-07624-64
	PVDF	No	1	MK-07624-96
CA Click'n'go with pressure lever	POM-C	Yes††	1	MK-78001-90
	PVDF	Yes††	1	MK-78001-96
Replacement adapters‡‡				
Adapter for CA Click'n'go cassettes	POM-C	—	1	MK-07618-65
		—	4/pk	MK-07618-67
		—	8/pk	MK-07618-69
		—	12/pk	MK-07618-71
	PVDF	—	1	MK-07618-75

††POM-C = polyoxymethylene copolymer, PVDF = polyvinylidene fluoride: PVDF offers higher chemical resistance.

‡‡When ordering CA Cassettes, two adapters per cassette must also be ordered.

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Flow Rates for Standard Tubing Pump Heads[†] (mL/min per channel)



Model		Pro-280	Pro-281	Pro-380	Pro-381	360	380	SB 2V	SB 3V
Channels		1	1	1	1	1	1	2	3
Rollers		2	2	3	3	3	3	6	6
Tube ID (mm)	WT (mm)	Standard tubing	Standard tubing	Standard tubing	Standard tubing	Standard tubing	Standard tubing	Standard tubing	Standard tubing
0.8	1.6					0.072 to 17			0.09 to 22
1.6	1.6	0.49 to 120		0.45 to 110		0.26 to 62	0.44 to 100		0.26 to 63
3.2	1.6	1.9 to 450		1.7 to 400		1.0 to 240	1.7 to 400	1.1 to 260	0.99 to 240
4.8	1.6	4.2 to 1000		3.7 to 890		2.2 to 530	3.6 to 860	2.3 to 550	2.2 to 580
6.4	1.6	7.2 to 1700		6.5 to 1600		3.7 to 880	6.0 to 1400	3.7 to 890	
8.0	1.6	11 to 2600		9.7 to 2300			8.8 to 2100	4.6 to 1100	
9.5	1.6	14 to 3300		13 to 3000			12 to 2800		
11.1	1.6	16 to 3700		14 to 3400					
4.8	2.4		3.6 to 870		3.3 to 800				
6.4	2.4		6.5 to 1600		5.8 to 1400				
8.0	2.4		9.9 to 2400		8.8 to 2100				
9.5	2.4		13 to 3100		12 to 2900				

Model		Standard	Easy-Load	Easy-Load II
Channels		1	1	1
Rollers		3	3	4
Tube ID (mm)	WT (mm)	Standard tubing	Standard tubing	Standard tubing
0.8	1.6		0.066 to 16	
1.6	1.6	0.24 to 57	0.25 to 59	0.24 to 58
3.2	1.6		0.91 to 220	0.92 to 220
4.8	1.6		1.9 to 450	1.9 to 460
6.4	1.6		3.1 to 730	3.0 to 730
8.0	1.6	3.4 to 820	4.7 to 1100	4.2 to 1000
4.8	2.4			
6.4	2.4	2.3 to 560		

Model	PTFE tubing
Channels	1
Rollers	—
Tube ID (mm)	PTFE tubing
2.0	0.07 to 15
4.0	0.19 to 45

Flow Rates for Stopped Tubing Pump Heads[†] (mL/min per channel)



Model	MS/CA 8-6	MS/CA 4-12	CA 4 / CA 8 / CA 12
Channels	8 to 24	4 to 16	4 / 8 / 12
Rollers	6	12	8
Tube ID (mm)	3-Stop tubing	3-Stop tubing	2-Stop tubing
0.13	0.002 to 0.33	0.001 to 0.22	0.002 to 0.31
0.19	0.003 to 0.67	0.003 to 0.51	0.004 to 0.94
0.25	0.005 to 1.1	0.004 to 0.91	0.008 to 1.8
0.38	0.011 to 2.6	0.009 to 2.1	0.019 to 4.5
0.44	0.014 to 3.5	0.012 to 2.8	0.025 to 6.1
0.51	0.019 to 4.6	0.016 to 3.8	0.034 to 8.2
0.57	0.024 to 5.7	0.019 to 4.7	0.042 to 10
0.64	0.030 to 7.2	0.024 to 5.8	0.053 to 13
0.76	0.042 to 10	0.033 to 8.0	0.074 to 18
0.89	0.057 to 14	0.044 to 11	0.10 to 24
0.95	0.064 to 15	0.050 to 12	0.11 to 27
1.02	0.073 to 18	0.056 to 13	0.13 to 31
1.09	0.083 to 20	0.063 to 15	0.14 to 35
1.14	0.090 to 22	0.067 to 16	0.16 to 38
1.22	0.10 to 24	0.075 to 18	0.18 to 47
1.30	0.11 to 27	0.083 to 20	0.20 to 47
1.42	0.13 to 32	0.094 to 23	0.23 to 55
1.52	0.15 to 36	0.10 to 25	0.26 to 62
1.65	0.17 to 42	0.12 to 28	0.30 to 71
1.75	0.19 to 46	0.13 to 30	0.33 to 78
1.85	0.21 to 50	0.13 to 32	0.36 to 86
2.06	0.25 to 59	0.15 to 37	0.43 to 100
2.29	0.29 to 69	0.17 to 41	0.51 to 120
2.54	0.33 to 79	0.19 to 46	0.62 to 150
2.79	0.37 to 89	0.21 to 52	0.74 to 180
3.17	0.43 to 100	0.24 to 57	0.94 to 230

[†]The flow rates given are based on a drive speed of 1 to 240 rpm. For minimum flow rate for BVP Standard drive, multiply the flow rate at 1 rpm by 2.4. Approximate values are determined with water, at 22°C, no differential pressure, and Tygon® tubing.

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