

All That Pump

| 튜빙 펌프 | 피스톤 펌프 | 기어 펌프 | 시린지 펌프 | 다이어프램 펌프 | 고압 펌프 |
| 디게서 | 마이크로플루이드 시스템 | 유량 컨트롤러 | 오토메틱밸브 | 액세서리 |



레보딕스(주) 홈페이지에
방문하시면 더욱 다양한 제품을
보실 수 있습니다.

REVODIX
레보딕스(주)

[REVODIX 카탈로그 구성도]

주요 카탈로그

그룹별 카탈로그

메이커 카탈로그

Microfluidic product

Laboratory product



All That Pump

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튜브펌프, 기어펌프, 시린지펌프, 피스톤펌프,
다이아프램펌프, OEM펌프



All That Pump Summary Version

_ 28 page



All That Laboratory

Summary Version _ 52 page

기초·분석장비, 챔버, 미생물장비,
초순수제조장치, 실험실 소모품



Better Solution for Microfluidic System

_ 20 page

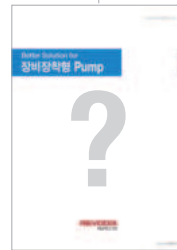
무맥동 유량 제어 시스템,
유속센서, 압력센서



Better Solution for Pump Consumable

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튜브, 피팅, 커넥터



Better Solution for 장비장착형 Pump 요약

(제작 예정)

튜브펌프, 기어펌프,
로터리피스톤펌프,
시린지펌프, 밸브



Better Solution for Air Product

(제작 예정)

펌프, 밸브,
커넥터, MFC



Chemyx (USA)

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시린지펌프



Micropump (USA)

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기어펌프 헤드



Alicat (USA)

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유량계, 압력계



Linktech (USA)

_ 4 page

퀵 커플러



FMI (USA)

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로터리 피스톤 펌프
장비 장착용 펌프



Masterflex (USA)

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튜브펌프, 튜빙



IDEX (USA)

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피팅, 튜빙, 커넥터, 밸브,
HPLC소모품, Upchurch제품



ILS (Germany)

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시린지, 니들



Shenzhen

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튜브펌프, 튜빙

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Tubing Pump

(Peristaltic Pump)

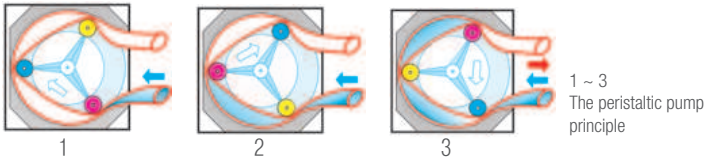
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Tubing pump, Drive & Heads for tubing pump	
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INFORMATION ON TUBING PUMPS

The multi-purpose tubing pump

Safe and easy to use



Tubing Pump Specifications

• Flow rate : 0.0001 ~ 42,000 ml/min • Channel : 1 ~ 24 Channels

Models	Flow rates (ml/min)		Channels
	min.	max.	
IP	0.002	44	4, 8, 12, 16, 24
IP-N	0.0004	11	4, 8, 12, 16, 24
IPC	0.002	44	4, 8, 12, 16, 24
IPC-N	0.0004	11	4, 8, 12, 16, 24
REGLO ICC	0.0002	43	3
REGLO DIGITAL MULTIFLEX	0.0001	68	2, 4
REGLO MINIFLEX	0.004	365	1, 2
MCP STANDARD	0.0041	3700	1 ~ 24
MASTERFLEX L/S MASTER SENSE	0.0001	3400	1
MASTERFLEX L/S STANDARD DIGITAL	0.0001	3400	1 ~ 12
MASTERFLEX L/S PRECISION VARIABLE-SPEED	0.06	3400	1 ~ 12
MASTERFLEX L/S ANALOG VARIABLE-SPEED	0.42	2900	1 ~ 12
MASTERFLEX L/S DIGITAL PROCESS	0.001	3400	1 ~ 12
MASTERFLEX I/P DIGITAL PROCESS	0.6	26000	1, 2
MASTERFLEX I/P DIGITAL MODULAR	0.6	19000	1, 2
MASTERFLEX I/P BRUSHLESS PROCESS	200	26000	1, 2
MASTERFLEX B/T MODULAR DIGITAL	710	42000	1
MASTERFLEX B/T BIOPHARMA	650	42000	1

Safe and easy to use

- 사용 용액의 오염이 전혀 없음 (용액은 오직 tubing에만 접촉됨)
- Dry-running에서도 펌프에 무리가 없음
- Valve less type pump
- Seals less type pump
- Flushing 과 cleaning이 필요 없음
- MAX key와 Reverse key로 액을 빠르게 채우고 액의 진행 방향을 정,역방향으로 변경 가능함

Application range of tubing pumps

산업분야	생물공학 / 화학공학 / 환경공학 / 음료, 식품 잉크, 페인트 / 의약, 제약 / 도금, 인쇄 / 섬유
응용분야	분석 / 발효 / 여과, 분리 / 전기처리공정 연구개발 / 음용수, 수처리
특수분야	연마제 / 세포배양 / 부식성 유체 / 페인트, 안료 인쇄잉크 / Solid content up to 60%

For a wide range of applications

- 튜빙 펌프는 High viscosity, Corrosive 또는 Sterile 용액뿐만 아니라 고형물을 포함한 용액 (up to 60%)과 거의 모든 용액을 Pumping 할 수 있음
- Multi-channel pumps (최대 24 channels)는 다양한 용액을 독립적으로 동시에 다른 flow-rate로 이송할 수 있음
- 8m까지의 self priming
- 정방향,역방향 모두 액체 이송 가능
- 12 롤러 pumphead 사용시 pulse가 거의 없음
- Calibration가능하며, microprocessor가 drive를 제어하여 고정밀 dispensing 가능

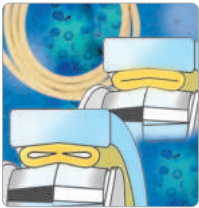
Inexpensive to maintain

- 실질적인 펌프 유지비용이 거의 없음
- Tubing만이 유일한 소모품
- Seal과 Valve가 필요 없음
- 사용하기 쉬움
- Tubing의 교체가 쉽고 간편함



Click'n'go tubing cassettes with automatic pressure setting

Unique!



Convex rollers

- 부드러운 액체 이송 (Living cell 이송에 적합)
- 액체이송 안정성이 탁월함
- 재현성이 탁월함
- 최적의 tube centering



Changing the tube within 5 seconds

- 13L/min flow-rate의 Flowmaster pump-head
- 1분 이내로 pump-head를 분리 가능



Carrying out programs independently of a PC

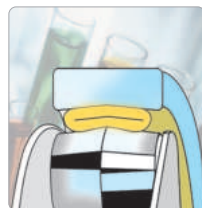
- PC에서 application profile을 만들 수 있음 (ProgEdit software)
- Pump 메모리로 파일 데이터를 다운로드
- Pump를 PC로 Control
- 단독 장비로 펌프를 사용하여 그 자리에서 실험 실행



Unique coupling system


MCP 드라이브는 다양한 pump-heads를 사용할 수 있음

- 어떠한 도구사용 없이 몇 초 안에 pump-head를 교체할 수 있음
- 14종류 이상의 peristaltic pump-head를 사용할 수 있음 (1 with PTFE tubing)



Unique!

Convex roller와 Concave tub-bed

-  표시가 있는 pump-head는 예민한 pumping을 요구하는 세포와 media를 위한 pump-head임

Selection by flow rate and model

Flow rate (ml/min)		Model
min.	max.	
0.0001	68	IPC, IP, IPC-N, IP-N, REGLO-ICC, REGLO Digital Multiflex
0.004	365	REGLO Miniflex
0.0001	3700	MCP Standard, L/S MASTER SENSE, L/S STANDARD DIGITAL, L/S PRECISION VARIABLE-SPEED, L/S ANALOG VARIABLE-SPEED, L/S DIGITAL PROCESS
0.6	42000	I/P DIGITAL PROCESS, I/P DIGITAL MODULAR, I/P BRUSHLESS PROCESS, B/T MODULAR DIGITAL B/T BIOPHARMA

Versatile and flexible, the MCP system

with instantly interchangeable pump-heads

Drives MCP Standard

Pump-heads

Flow rate ml/min		Channel	Model
min.	max.		
0.45	3700	1	Pro-280/281, Pro-380/381
0.072	3600	1	360, 380, 380AD
0.07	1100	1	Easy-Load®, Easy-Load
0.07	45	1	PTFE-Tubing
0.002	230	4 ~ 12	CA-4, CA-8, CA-12
0.09	1100	2 ~ 3	SB 2V, SB 3V
0.001	100	4 ~ 24	MS/CA4 ~ 12, MS/CA8-6
0.021	26	2 ~ 4	MS-CA

Tubing

Rating Comparison

Material Properties

Special tubing for aggressive media and high pressure

Ordering Information

DIGITAL MULTI CHANNEL PERISTALTIC PUMP IPC/IP and IPC-N / IP-N

분석적용을 위한 Pulse는 최소, 정밀성은 최상의 펌프

- Very high repeatability on all channels
- Planetary drive



IPC, IPC-N

with dispensing functions

- Microprocessor controlled
- Very accurate pumping
- Stand-by mode (tubing system이 밤새 건조해 지는 것을 방지)

IPC (and IP)

2 µl/min ~ 44 ml/min (per channel)

IPC-N (and IP-N)

0.4 µl/min ~ 11 ml/min (per channel)

- 4, 8, 12, 16, 24 채널
- 8개의 stainless steel rollers
- Stainless steel housing
- Membrane key-pad와 LED display
- 자동 압력 세팅의 Click'n'go cassettes
- 각 채널별 다양한 tubing size 사용 가능
- 2-stop tubing 사용
- Differential pressure 1.0 bar
- Differential pressure는 tubing의 재질에 따라 좌우되며, 작은 ID size일수록 높은 압력이 가능

IP and IP-N

without dispensing functions

- Microprocessor controlled
- High accurate pumping
- IPC와 IPC-N과 같은 flow rate

Ordering information

Model IPC / IPC-N	Order No. IPC / IPC-N	Model IP / IP-N	Order No. IP / IP-N	Flow rates ml/min per channel	Channels	Speed rpm
IPC 4	78001-08	IP 4	78011-09	0.002 ~ 44	4	0.4 ~ 45
IPC 8	78001-18	IP 8	78011-19	0.002 ~ 44	8	0.4 ~ 45
IPC 12	78001-28	IP 12	78011-29	0.002 ~ 44	12	0.4 ~ 45
IPC 16	78001-38	IP 16	78011-39	0.002 ~ 44	16	0.4 ~ 45
IPC 24	78001-48	IP 24	78011-49	0.002 ~ 44	24	0.4 ~ 45
IPC-N 4	78001-06	IP-N 4	78011-07	0.0004 ~ 11	4	0.11 ~ 11.25
IPC-N 8	78001-16	IP-N 8	78011-17	0.0004 ~ 11	8	0.11 ~ 11.25
IPC-N 12	78001-26	IP-N 12	78011-27	0.0004 ~ 11	12	0.11 ~ 11.25
IPC-N 16	78001-36	IP-N 16	78011-37	0.0004 ~ 11	16	0.11 ~ 11.25
IPC-N 24	78001-46	IP-N 24	78011-47	0.0004 ~ 11	24	0.11 ~ 11.25

Interfaces



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



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

0.002 ~ 44 ml/min



Tablet dissolution



Studies and simulation of the environmental influences of rain water in free-land plants

Flow rates and tubing guide

Model Channels Rollers		IPC / IP 4 / 8 / 12 / 16 / 24 8		IPC-N / IP-N 4 / 8 / 12 / 16 / 24 8	
Speed rpm		0.4	44.0	0.11	11.25
Tygon® LMT-55 Order No.	Tubing i.d. (mm)	ml/min per channel min.	ml/min per channel max	ml/min per channel min	ml/min per channel max
97618-09	0.13	0.002	0.15	0.0004	0.039
97618-12	0.25	0.005	0.41	0.001	0.10
97618-18	0.51	0.015	1.5	0.004	0.38
97618-24	0.76	0.032	3.2	0.009	0.81
97618-28	1.02	0.057	5.7	0.014	1.4
97618-31	1.22	0.079	7.9	0.020	2.0
97618-36	1.52	0.12	12	0.030	3.0
97618-40	1.85	0.17	17	0.043	4.3
97618-46	2.54	0.30	30	0.075	7.5
97618-49	3.17	0.44	44	0.11	11.0

Approx. values: determined with water, at 22°C, no differential pressure, Tygon tubing
Ask for our Pump Tubing Selection Guide (see also Page 34 to 43)



톱니바퀴 Type으로 중심 Wheel에 의해 각 롤러가 회전하므로 tubing의 뒤틀림이나 찌그러짐을 막아 줌. 따라서 tubing의 사용 수명을 증가시키고 낮은 pulsation, 높은 재현성을 실현할 수 있음

Applications

- Toxicological in-vitro use
- Perfusion of animal tissue slices
- Sampling from tablet dissolution systems

Flow rates and tubing guide

Model	4 Channels	8 Channels	12 Channels	16 Channels	24 Channels
Depth/Width/Height (mm)	180×175×130	220×175×130	260×175×130	300×175×130	380×175×130
Weight (kg)	4.6	5.1	5.8	6.5	7.9

Specifications IPC and IPC-N

Motor type	DC motor
Speed IPC IPC-N	0.4 ~ 45 rpm 0.11 ~ 11.25 rpm
Speed setting Flow rate setting	1 ~ 100%, resolution 0.1% µl/min or ml/min
Power consumption	30 W
Mains connection	230VAC/50Hz, 115VAC/60Hz adjustable
Protection rating	IP 30

Specifications IP and IP-N

Motor type	DC motor
Speed IP IP-N	0.4 ~ 45 rpm 0.11 ~ 11.25 rpm
Speed setting IP IP-N	1 ~ 100%, resolution 0.1% rpm, resolution 0.1 rpm rpm, resolution 0.03 rpm
Power consumption	30 W
Mains connection	230VAC/50Hz, 115VA/60Hz adjustable
Protection rating	IP 30

INDEPENDENT CHANNEL CONTROL PERISTALTIC PUMP

Reglo ICC

Real Multi – Tasking Pump

각 채널별 독립적인 유량 제어 가능 펌프

- Independent Channel Control Pump
- Continuous & Dispensing flow control
- PC Control(USB Interface) & Keypad Control 가능



REGLO ICC

with dispensing functions

0.0002 ~ 43 ml/min (per channel)

- 2,3,4 채널 / 6, 8, 12 rollers
- 각 채널별 정방향 / 역방향 동시 컨트롤 가능
- 각 채널별 다양한 tubing size 사용 가능
- Differential Pressure 1.0 bar
- 3-stopper tubing 사용
- Windows software 포함

Specifications REGLO ICC

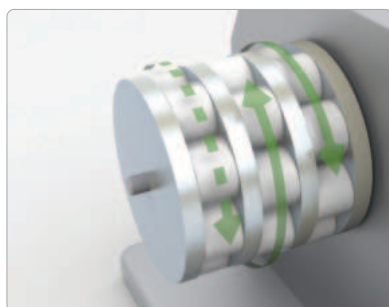
Motor type	Stepper motor
Speed	0.1 ~ 100 rpm Digitally adjustable in steps of 0.01 rpm
Difference pressure	max. 1.0 bar (14.5 psi)
Remote control	via USB 2.0 or RS232 digital interface
Main power connection	100 ~ 230 VAC / 50 ~ 60 HZ
Power consumption	30 W
Depth/Width/Height	205X125X170 mm
Protection rating	IP 30

Interfaces



REGLO ICC
PC-controllable
RS232, USB 2.0

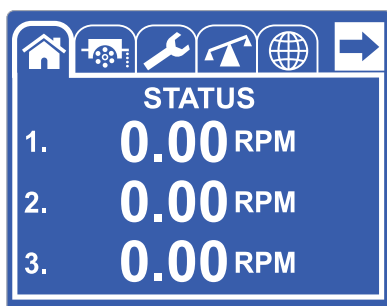
0.0002 ~ 35 ml/min



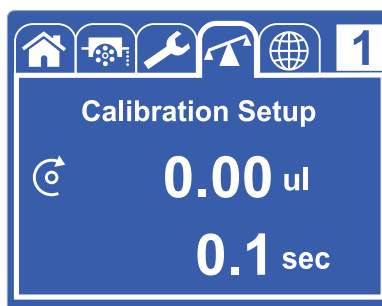
Independent Channel Control Pump



7-button membrane key-pad.
Flow rate setting in ul/min and ml/min



REGLO ICC
Status Menu, LCD-display



Calibration Menu
Each channel can be calibrated independently

Flow rates and tubing

REGLO ICC 3Channel 8Rollers				
Tygon LMT-55	Tubing ID (mm)	Flow Rate(per Channel)		
		Min(ml/min)	Max(ml/min)	
		0.1 RPM	100 RPM	
97619-09	0.13	0.0002	0.11	
97619-12	0.25	0.0005	0.41	
97619-18	0.51	0.0017	1.7	
97619-24	0.76	0.0036	3.6	
97619-28	1.02	0.0063	6.3	
97619-31	1.22	0.0088	8.8	
97619-36	1.52	0.013	13	
97619-40	1.85	0.017	17	
97619-46	2.54	0.027	27	
97619-49	3.17	0.035	35	

Ordering information

Model	Order No	Flow Rates(ml/min)	Channels	Rollers	Speed(rpm)
Reglo ICC	78001-60	0.0002 ~ 35	2	8	0.1 ~ 100
	78001-70		3		
	78001-80		4		

COMPACT MULTICHANNEL PERISTALTIC PUMP

Reglo Digital Multiflex

- Compact, benchtop pumps
- 5" (12.7 cm) capacitive TFT/RGB touch screen
- Screen, MasterflexLive, or analog remote control



REGLO Digital Multiflex

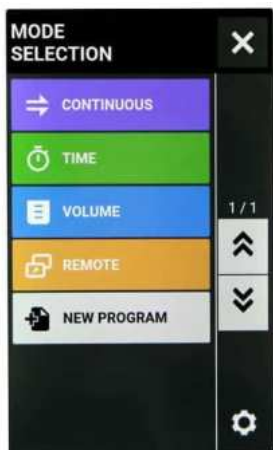
0.0001 ~ 68 ml/min

- 터치스크린을 통한 제어 가능
- 2 또는 4 채널
- 6, 8, 12 roller 선택 가능
- 자동 압력 세팅의 Click'n'go cassettes
- 각 채널별 다양한 tubing size 사용 가능
- 3-stopper tubing 사용
- Differential pressure 1.0 bar
- RJ45 ETHERNET, RS232 등 다양한 INTERFACE
- WIFI를 통한 외부 컨트롤 가능

Specifications REGLO Digital Multiflex

Control Type	Variable-Speed Digital
Min RPM	0.1
Max RPM	160
Number of Channels	2,4
Max Flow Rate Per Channel (ml/min)	68
Min Flow Rate Per Channel (ml/min)	0.0001
Tubing sizes accepted	Three-stop tubing; 0.13 mm ID to 3.17 mm ID
Drive IP rating	IP 31
Washdown Capable	No
Power (VAC)	90 ~ 260
Duty Cycle	Continuous
Number of Rollers	6,8,12
Power (Hz)	50/60
Width (cm)	14.7
Height (cm)	15.7
Length (cm)	22.9
Housing Material	ABS Plastic and Aluminum
Remote I/O	RJ45 Ethernet. USB 0 to 20 mA, 4 to 20 mA, 0 to 10 V

0.0001 ~ 68 ml/min
(depends on pump head)



SETTING MODE



FLOW CONTROL MODE



Flow rates and tubing



CHANNEL		2		2		2		4		4		4	
ROLLER		6		8		12		6		8		12	
RPM		0.1		160		0.1		160		0.1		160	
Tygon® LMT-55	Tubing i.d.(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.1	max.	min.1	max.	min.1	max.	min.1	max.	min.1	max.	min.1	max.
97619-09	0.13	0.000138	0.22	0.000106	0.17	0.00009375	0.15	0.000138	0.22	0.000106	0.17	9.38E-05	0.15
97619-12	0.25	0.000475	0.76	0.000406	0.65	0.00038125	0.61	0.000475	0.76	0.000406	0.65	0.000381	0.61
97619-18	0.51	0.001938	3.1	0.001688	2.7	0.0015625	2.5	0.001938	3.1	0.001688	2.7	0.001563	2.5
97619-24	0.76	0.004188	6.7	0.003625	5.8	0.0033125	5.3	0.004188	6.7	0.003625	5.8	0.003313	5.3
97619-28	1.02	0.0075	12	0.00625	10	0.005625	9	0.0075	12	0.00625	10	0.005625	9
97619-31	1.22	0.01	16	0.00875	14	0.0075	12	0.01	16	0.00875	14	0.0075	12
97619-36	1.52	0.015	24	0.0125	20	0.010625	17	0.015	24	0.0125	20	0.010625	17
97619-40	1.85	0.02125	34	0.0175	28	0.013125	21	0.02125	34	0.0175	28	0.013125	21
97619-46	2.54	0.033125	53	0.0275	44	0.019375	31	0.033125	53	0.0275	44	0.019375	31
97619-49	3.17	0.0425	68	0.035625	57	0.02375	38	0.0425	68	0.035625	57	0.02375	38

Ordering information

Model	Order REGLO	Flow rates ml/min per channel	Channels	Rollers	Speed rpm
MS-2/06	78018-10	0.0002 ~ 68	2	6	0.1 ~ 160
MS-2/08	78018-12	0.0002 ~ 57	2	8	0.1 ~ 160
MS-2/12	78018-14	0.0001 ~ 38	2	12	0.1 ~ 160
MS-4/06	78018-20	0.0002 ~ 68	4	6	0.1 ~ 160
MS-4/08	78018-22	0.0002 ~ 57	4	8	0.1 ~ 160
MS-4/12	78018-24	0.0001 ~ 38	4	12	0.1 ~ 160

SINGLE CHANNEL PERISTALTIC PUMP

Reglo MINIFLEX

- Optimize ease of use, accuracy, and reliability
- 5" (12.7 cm) capacitive TFT/RGB touch screen
- Flexible operational control



REGLO MINIFLEX

0.004 ~ 365 ml/min

- 터치스크린을 통한 제어 가능
- 1 또는 2 채널
- 각 채널별 다양한 tubing size 사용 가능
- 쉬운 튜빙 교체
- RJ45 ETHERNET, RS232 등 다양한 INTERFACE
- WIFI를 통한 외부 컨트롤 가능

Specifications REGLO Miniflex

Control Type	Variable-Speed Digital
Min RPM	0.1
Max RPM	350
Number of Channels	1,2
Max Flow Rate Per Channel (ml/min)	350
Min Flow Rate Per Channel (ml/min)	0.004
Tubing sizes accepted	L/S® 13, 14, 16
Drive IP rating	IP 31
Power (VAC)	90 ~ 260
Duty Cycle	Continuous
Number of Rollers	3
Width (cm)	14.7
Height (cm)	15.7
Length (cm)	22.1
Housing Material	ABS Plastic and Aluminum
Remote I/O	RJ45 Ethernet. USB 0 to 20 mA, 4 to 20 mA, 0 to 10 V

Ordering information

Model	Order REGLO	Flow rates ml/min per channel	Channels	Rollers	Speed rpm
MS-1/03	78018-40	0.004 ~ 365	1	3	0.1 ~ 350
MS-2/03	78018-42	0.004 ~ 190	2	3	0.1 ~ 350

0.004 ~ 350 ml/min
(depends on pump head)



REGLO MINIFLEX Dispensing System

0.16 ~ 365 ml/min (per channel)

- Flow range 0.16 ~ 365 ml/min with L/S tubing (depends on drive rpm, pump head, and tubing size)
- 수동 주입, 수동 피페팅, bottle-top 스타일 디스펜서에 비해 효율성, 처리량 향상
- 5" capacity TFT/RGB 터치 스크린의 직관적 인터페이스
- Time dispense, volume dispense
- 스크린, Masterflexlive, 아날로그 원격 제어로 유연한 작동성
- 자주 사용하는 dispense 프로토콜을 저장하고 불러올 수 있음
- 1 또는 2 채널

2-Product options

Order REGLO	Included Accessories	Max Flow Rate (ml/min)	Min Flow Rate (ml/min)	Pump Head	Speed (rpm)
77922-20	Foot switch, stainless steel dispensing nozzle, PTFE tube weight, dispensing stand, rod and clamps	365	0.16	Miniflex	0.1 ~ 350
77922-22	Handheld remote controller and PTFE tube weight	365	0.16	Miniflex	0.1 ~ 350

DRIVE FOR TUBING PUMP-HEADS MCP Standard

0.001 ~ 3700 ml/min
(depends on pump-head)

Multi-purpose

Save individual application parameters!

- Robust, powerful drive
- Ideal for dispensing and filling

Interfaces



PC-controllable:
-RS232



Speed control (0 ~ 5 or 0 ~ 10 V, 0 ~ 20 or 4 ~ 20 mA)
Speed output (0 ~ 10VDC or 0 ~ 7.2 kHz)
Start/Stop, Rotation direction,
Autostart



BVP Standard drive (pump-heads on
Pages 24 to 29)

MCP Standard

without dispensing functions

- 다양한 tubing 사이즈와 펌프헤드를 프로그램으로 입력하여 digital로 flow rate control 가능
- Membrane key-pad, LED display
- 4개의 프로그램 저장 기능
- 20개 이상의 다양한 pump head를 선택할 수 있음
- Bayonet 커플링 시스템으로 도구 없이 pump head 교체 가능
- Mounted pump head에 따라 flow rate, channels, rollers와 differential pressure가 다름

Applications

- With pump head 360 : 제약공정 중 시립 bottle에 작은 생산규모 (500 ~ 1000 units)의 bottle 충전용으로 사용 가능 (foot switch 이용 가능)
- With PTFE-tubing pump head : 합성공정 중 time control에 의해 유기용매를 첨가하는 데 사용 가능 (small scale pilot plant)



Specifications

Motor type	DC motor
Speed	1 ~ 240 rpm
Speed setting	rpm, resolution 0.1 rpm
Flow rate setting	µl/min, ml/min, l/min
Power consumption	100 W
Mains connections	230VAC /50Hz, 115VAC /60Hz adjustable
Depth/Width/Height	220 X 155 X 260 mm (without pump head)
Weight	6.4 kg (without pump head)
Protection rating	IP 30

Ordering Information

The complete pump system MCP Standard consists of:	
Drive	78002-02
Pump-head	Pages 24 to 29
Tubing	Pages 34 to 43
Accessories Foot switch	Page 65 78003-07

SINGLE-CHANNEL PUMP-HEADS

Gentle pumping

0.45 ~ 3700 ml/min
(depends on pump-head)

부드러운 pumping의 pump-head는 농축된 살아있는 세포의 pumping 가능



Pro-280

Order No. 78002-11

0.49 ~ 3700 ml/min

- 알루미늄 코팅된 pump-head
- 오목한 tube-bed와 볼록한 roller에 자동적으로 중앙 세팅이 되며, tubing의 수명을 연장
- 2개의 stainless steel roller로 구성 (3roller보다 맥동이 더 있음)
- 1.6 mm 벽 두께를 가진 tubing 사용 가능
- 1.5bar까지의 differential pressure

Flow rates and tubing

Tygon® LMT-55 Order No.	Wall (mm)	Tubing i.d.(mm)	ml/min	
			min.	max.
SC0373T	1.6	1.6	0.49	120
SC0374T	1.6	3.2	1.9	450
SC0379T	1.6	4.8	4.2	1000
SC0375T	1.6	6.4	7.2	1700
SC0376T	1.6	8.0	11	2600
SC0383T	1.6	9.5	14	3300
SC0384T	1.6	11.1	16	3700

Pro-281

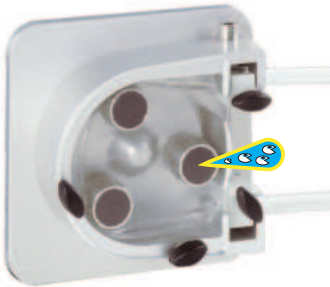
Order No. 78002-13

3.6 ~ 3100 ml/min

- Pro-280과 같은 사양
- 2.4 mm 벽 두께의 tubing 사용 가능
- 2.5bar까지의 differential pressure

Flow rates and tubing

Tygon® LMT-55 Order No.	Wall (mm)	Tubing i.d.(mm)	ml/min	
			min.	max.
SC0500T	2.4	4.8	3.6	870
SC0501T	2.4	6.4	6.5	1600
SC0502T	2.4	8.0	9.9	2400
SC0503T	2.4	9.5	13	3100



Pro-380

Order No. 78002-16

0.45 ~ 3400 ml/min

- Pro-280과 같은 사양
- 3 stainless steel roller (2 rollers보다 맥동이 적음)

Flow rates and tubing

Tygon® LMT-55 Order No.	Wall (mm)	Tubing i.d.(mm)	ml/min	
			min.	max.
SC0373T	1.6	1.6	0.45	110
SC0374T	1.6	3.2	1.7	400
SC0379T	1.6	4.8	3.7	890
SC0375T	1.6	6.4	6.5	1600
SC0376T	1.6	8.0	9.7	2300
SC0383T	1.6	9.5	13	3000
SC0384T	1.6	11.1	14	3400

Pro-381

Order No. 78002-14

3.3 ~ 2900 ml/min

- Pro-280과 같은 사양
- 3 stainless steel roller (2 rollers보다 맥동이 적음)
- 2.4 mm의 벽 두께를 가진 tubing 사용 가능

Flow rates and tubing

Tygon® LMT-55 Order No.	Wall (mm)	Tubing i.d.(mm)	ml/min	
			min.	max.
SC0500T	2.4	4.8	3.3	800
SC0501T	2.4	6.4	5.8	1400
SC0502T	2.4	8.0	8.8	2100
SC0503T	2.4	9.5	12	2900

Instantly interchangeable pump system



MCP Standard
ISM 404

- 기어펌프, 피스톤펌프, centrifugal pump와 비교 했을 때 peristaltic pump가 살아있는 세포를 포함한 media를 이송하거나, 멸균 가능한 pump system으로 가장 적합
- Differential pressure는 tubing의 재질에 의해 좌우되며, 작은 내경 일수록 높은 압력이 가능

응용분야

- 화학, 바이오, 제약산업 등
- 식품산업
- 내구성, 신뢰성, 청결한 상태를 요구하는 분야
- 점성이 있는 액체
- 다루기 힘든 고체가 포함된 액체

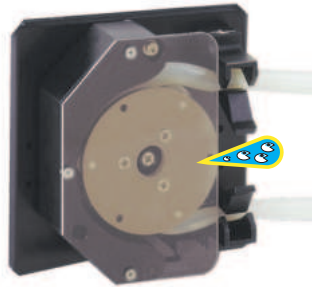
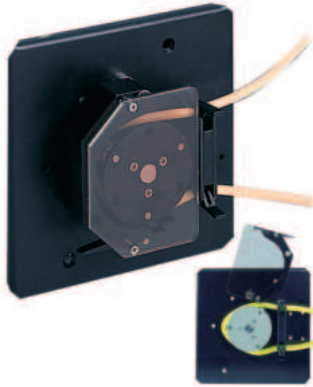
SINGLE-CHANNEL PUMP-HEADS

Multi-purpose single-channel pump-heads

0.072 ~ 3600 ml/min
(depends on pump-head)

For MCP drive

도구의 사용 없이 몇 초안에 pump-head 교체 가능



360¹

0.072 ~ 880 ml/min

Order No.78002-22

- 이용하기 쉬운 flip-up tube-bed를 사용하여 쉽고 빠르게 교체할 수 있음
- 투명한 보호창으로 tube와 회전하는 회전자를 관찰할 수 있음
- 오목한 tube-bed와 볼록한 roller에 자동적으로 중앙 세팅이 되며, tubing의 수명을 연장시킴
- 내경 0.8 ~ 6.4 mm, tubing 벽두께 1.6 mm 사용 가능
- 3 stainless steel roller (2 roller보다 맥동이 적음)
- 1.5bar의 differential pressure²

380¹

0.44 ~ 2800 ml/min

Order No. 78002-20

- 360과 같은 사양이며 더 큰 사이즈임
- 내경 1.6 ~ 9.5 mm, tubing 벽 두께 1.6 mm 사용 가능
- 1.5bar의 differential pressure²
- 멸균 media에 이상적임

380 AD

0.41 ~ 3600 ml/min

Order No. 78002-60

- Tubing의 압력은 롤러에 의해 조정될 수 있음
- 내경 1.6 ~ 11.1 mm, tubing 벽두께 1.6, 2.4mm 사용 가능
- 3 stainless steel rollers
- 1.5bar의 differential pressure² (1.6 mm 벽 두께의 tubing)
- 2.5bar의 differential pressure² (2.4 mm 벽 두께의 tubing)
- 고체가 포함되거나 높은 점도를 지닌 media에 이상적임

Flow rates and tubing

Model 360

Tygon® LMT-55 Order No.	Wall	Tubing	ml/min	
	(mm)	i.d.(mm)	min.	max.
SC0355T	1.6	0.8	0.072	17
SC0373T	1.6	1.6	0.26	62
SC0374T	1.6	3.2	1.0	240
SC0379T	1.6	4.8	2.2	530
SC0375T	1.6	6.4	3.7	880

Flow rates and tubing

Model 380

Tygon® LMT-55 Order No.	Wall	Tubing	ml/min	
	(mm)	i.d.(mm)	min.	max.
SC0373T	1.6	1.6	0.44	100
SC0374T	1.6	3.2	1.7	400
SC0379T	1.6	4.8	3.6	860
SC0375T	1.6	6.4	6.0	1400
SC0376T	1.6	8.0	8.8	2100
SC0383T	1.6	9.5	12	2800

Flow rates and tubing

Model 380AD

Tygon® LMT-55 Order No.	Wall	Tubing	ml/min	
	(mm)	i.d.(mm)	min.	max.
SC0373T	1.6	1.6	0.4	99
SC0374T	1.6	3.2	1.5	370
SC0379T	1.6	4.8	3.4	830
SC0375T	1.6	6.4	6.2	1500
SC0376T	1.6	8.0	9.5	2300
SC0383T	1.6	9.5	13.0	3000
SC0384T	1.6	11.1	15.0	3600
SC0500T	2.4	4.8	3.4	830
SC0501T	2.4	6.4	6.2	1500



OEM

1 OEM용의 pump-head 사용 가능. 자세한 사항은 data sheet 참조
2 differential pressure는 tubing의 재질에 의해 좌우되며, 작은 내경 일수록 높은 압력이 가능
3 2개의 pump head가 하나의 drive에 장착가능 (special mounting set는 개별적으로 주문)

0.07 ~ 1100 ml/min
(depends on pump-head)

The pump-head for PTFE tubing



78020-86, 78020-90

Easy-Load^{®3}

0.07 ~ 1100 ml/min

Order No. MF 0313 / ISM738

- 이용하기 쉬운 pump-head
- 빠른 tubing 교체 가능
- PSF housing (polysulfone)
- Tubing 벽 두께 1.6 mm 사용 가능
- 3 stainless steel roller
- 0.7bar의 differential pressure²

78020-86, 78020-88

Easy-Load II³

0.24 ~ 1000 ml/min

Order No. MF 0446 / ISM738

- Easy-Load와 같은 사양
- 압력 세팅이 조정 가능
- 자동 tubing 유지력이 향상됨
- PPS housing (Polyphenylene sulfide)
- 4 stainless steel roller
- 0.7bar의 differential pressure²

78020-86, 77390-00

PTFE-Tube

0.07 ~ 45 ml/min

Order No. MF 0330 / ISM727

- 6 stainless steel rollers
- Stainless steel rotor
- 양극 처리된 알루미늄 몸체
- Locking 손잡이에 의한 tube-bed 압력조절 가능
- 6.9bar의 differential pressure

Flow rates and tubing Model Easy-Load

Tubing Order No.	ID (mm)	Flow Rate(ml/min)	
		min	max
06507-01	0.8	0.066	16
06507-03	1.6	0.25	59
06507-05	3.2	0.91	220
06507-09	4.8	1.9	450
06507-11	6.4	3.1	730
06507-13	8	4.7	1100

Flow rates and tubing Model Easy-Load II

Tubing Order No.	ID (mm)	Flow Rate(ml/min)	
		min	max
06507-03	1.6	0.25	59
06507-05	3.2	0.91	220
06507-09	4.8	1.9	450
06507-11	6.4	3.1	730
06507-13	8	4.7	1100

Flow rates and tubing

Tubing i.d.	Flow rates(ml/min)
2 mm	0.07 to 15
4 mm	0.19 to 45



구입정보와 튜브에 관한 사항은 아래를 참조

Ordering information for pump-head PTFE tubing

Article	Specifications	Order No.	Pack size
PTFE pump tubing, 38 cm long	2 mm i.d./ 4 mm o.d., for 0.07 ~ 15 ml/min	77390-50	2 pieces
PTFE pump tubing, 38 cm long	4 mm i.d./ 6 mm o.d., for 0.19 ~ 45 ml/min	77390-60	2 pieces
Tube connectors (straight) (2 connectors are needed for one tube)	for tubing with 2 mm i.d.	31321-61	3 pieces
Tube connectors (straight) (2 connectors are needed for one tube)	for tubing with 4 mm i.d.	31321-64	1 pieces
PTFE extension tubing, 3.65 m long	for tubing with 2 mm i.d.	06605-53	1 × 3.65 m
PTFE extension tubing, 3.65 m long	for tubing with 4 mm i.d.	06605-54	1 × 3.65 m
Tubing grooving tool (Use only tubing with 4 mm i.d.)	Important for connections which must withstand 2.8 bar (40 psi) or greater	MF 0337	1 pieces

MULTI-CHANNEL PUMP-HEADS

Pump-heads up to 24 channels

0.002 ~ 1100 ml/min
(depends on pump-head)

For MCP drive

도구를 사용하지 않고 단시간에 pump-head 교체 가능



CA-4, CA-8, CA-12

0.002 ~ 230 ml/min

- Order No. 78002-32 CA4 (with cassettes for 4 channels)
 - Order No. 78002-34 CA8 (with cassettes for 8 channels)
 - Order No. 78002-36 CA12 (with cassettes for 12 channels)
 - CA Click'n'go cassettes(spare cassettes, 64page 참조)
 - 자동 압력 세팅
 - 빠르고 쉬운 tubing 교체
 - 각 채널별 분리, 펌프 가동 중에도 교체 가능
 - 8 rollers
 - 4 ~ 12채널, 각 채널별 다른 사이즈의 tubing 가능
 - 2-stop tubing 사용, 내경 0.13 ~ 3.17 mm 가능
 - 1.0 bar의 differential pressure
- 높은 flow rate로 여러 채널을 응용하고자 할 경우 가장 이상적임

Flow rates / Tubing



Tygon® LMT-55 Order No	Tubing	ml/min per channel	
	i.d.(mm)	min.	max.
97618-09	0.13	0.002	0.31
97618-12	0.25	0.008	1.8
97618-18	0.51	0.034	8.2
97618-24	0.76	0.074	18
97618-28	1.02	0.13	31
97618-31	1.22	0.18	42
97618-36	1.52	0.26	62
97618-40	1.85	0.36	86
97618-46	2.54	0.62	150
97618-49	3.17	0.94	230



SB 2V / SB 3V

0.09 ~ 1100 ml/min

- Order No. 78002-80 (depends on tube-bed)
 - +Tube-bed set:
 - 2-channel, SB 2V 07611-10 for Standard tubing 1.1 to 1100 ml/min
 - 3-channel, SB 3V 07611-15 for Standard tubing 0.09 to 530 ml/min
 - Spring-loaded, tube-bed 교체 가능
 - 각 채널별로 독립적이고 계속적으로 압력 세팅 조정 가능
 - 6 roller, 2 ~ 3채널, 표준 tubing
 - 1.5 bar의 differential pressure
- 압력 조절이 부드러워 민감한 물질 이용시 적합

Flow rates / Tubing

Model SB2V

Tygon® LMT-55 Order No.	Wall	Tubing	ml/min per channel	
	(mm)	i.d.(mm)	min.	max.
06507-05	1.6	3.2	1.1	260
06507-09	1.6	4.8	2.3	550
06507-11	1.6	6.4	3.7	890
06507-13	1.6	8.0	4.6	1100

Flow rates / Tubing

Model SB3V

Tygon® LMT-55 Order No.	Wall	Tubing	ml/min per channel	
	(mm)	i.d.(mm)	min.	max.
06507-01	1.6	0.8	0.09	22
06507-03	1.6	1.6	0.26	63
06507-05	1.6	3.2	0.99	240
06507-09	1.6	4.8	2.2	530

0.001 ~ 100 ml/min
(depends on pump-head)



MS/CA 4-12

0.001 ~ 57 ml/min

Order No. 78002-90

+max.3 extension blocks 07623-30

- 최대 3개의 블록 확장 가능
- CA Click'n'go cassettes(spare cassettes, 64page 참조)
- 빠르고 쉬운 tubing 교체
- 각 채널별 분리, 펌프 가동 중에도 교체 가능
- 12 roller, 가장 낮은 맥동
- 4채널, 16채널까지 확장 가능
- 3-stop tubing, 내경 0.13 ~ 3.17 mm 가능
- 1.0 bar의 differential pressure

Flow rates / Tubing



Tygon® LMT-55 Order No.	Tubing i.d.(mm)	ml/min per channel	
		min.	max.
97619-09	0.13	0.001	0.22
97619-12	0.25	0.004	0.91
97619-18	0.51	0.016	3.8
97619-24	0.76	0.033	8.0
97619-28	1.02	0.056	13
97619-31	1.22	0.075	18
97619-36	1.52	0.10	25
97619-40	1.85	0.13	32
97619-46	2.54	0.19	46
97619-49	3.17	0.24	57

MS/CA 8-6

0.002 ~ 100 ml/min

Order No. 78002-50

+max.2 extension blocks 07623-00

- 최대 2개의 블록 확장 가능
- CA Click'n'go cassettes(spare cassettes, 64page 참조)
- 빠르고 쉬운 tubing 교체
- 각 채널별 분리, 펌프 가동 중에도 교체 가능
- 6 rollers
- 8채널, 24채널까지 확장 가능
- 3-stop tubing, 내경 0.13 ~ 3.17 mm 가능
- 1.0 bar의 differential pressure

Flow rates / Tubing



Tygon® LMT-55 Order No.	Tubing i.d.(mm)	ml/min per channel	
		min.	max.
97619-09	0.13	0.002	0.33
97619-12	0.25	0.005	1.1
97619-18	0.51	0.019	4.6
97619-24	0.76	0.042	10
97619-28	1.02	0.073	18
97619-31	1.22	0.10	24
97619-36	1.52	0.15	36
97619-40	1.85	0.21	50
97619-46	2.54	0.33	79
97619-49	3.17	0.43	100

1 차압 (differential pressure) 은 tubing의 재질에 의해 좌우되며, 작은 내경 일수록 높은 압력이 가능
유속은 drive의 RPM에 의존하며, BVP standard drive의 최소 유속은 2.4rpm으로 표시 (측정값 : 물, 22°C, 차압은 없음, 타이곤 튜빙 이용)

- Remote process control
- Store programs securely



Masterflex® L/S® MasterSense Drives

0.0001 ~ 3400 ml/min (depends on drive model)

- 작은 설치 공간에서 최대 3400 ml/min(600rpm)의 강력한 성능, 가변 유량
- 유지 보수가 필요 없는 브러시리스 모터 - 6000:1의 턴다운 비율로 ±1%의 정확도 제공
- 사용자의 요구에 맞는 연결 및 제어 옵션 - EtherNet/IP, Probus, Wi-Fi 및 아날로그 원격 communication
- MasterflexLive 옵션- 장소에 관계없이 제어 및 모니터링

Choose The Drive or Complete Pump That is right for You

	100rpm (up to 4 pump heads accepted)	600rpm (up to 2 pump heads accepted)	600rpm Easy-Load Complete System	600rpm Easy-load II Complete System
Flow Range	0.001 to 580 ml/min	0.006 to 3400 ml/min	0.08 to 480 ml/min	0.28 to 1700 ml/min
With EtherNet/IP and Masterflex Live	07526-20	07526-10	77920-40	77920-42
With Profibus and MasterflexLive	07526-22	07526-12	77920-50	77920-52

Drive Specifications

Agency Approvals	UL, cUL, CE
Warranty	2 Year
MasterflexLive	Real-time remote control of all pump parameters.
EtherNet/IP or Profibus	Interface directly with either Ethernet/IP or Profibus based process control network
Speed control accuracy (resolution)	±1% (0.1rpm at 600rpm; 0.01rpm at 100rpm)
Reversible	Yes
Display	5" capacitive TFT/RGB touch screen with in-plane switching.
Digital Dispensing	Yes
External control - input	0 to 20 mA, 20 to 0 mA, 4 to 20 mA, 20 to 4 mA; 0 to 10 V, 10 to 0 V, 0 to 5 V, 5 to 0 V; start/stop, direction (CW/CCW), prime via contact closure
External control - output	0 to 20 mA, 20 to 0 mA, 4 to 20 mA, 20 to 4 mA; 0 to 10 V, 10 to 0 V, 0 to 5 V, 5 to 0 V; Tach output (open collector), Motor running, Open head, Local/Remote, General alarm
Motor	Brushless DC with encoder; continuous duty; reversible; 1/10 hp (75 W)
Open-head sensor	Yes; extension cable included
Housing materials	ABS plastic housing, painted aluminum chassis, painted aluminum bezel
Enclosure rating	IP33
Dimensions (L x W x H)	10-1/4" x 7-5/8" x 8-1/2"
Shipping weight	11 lb (5 kg)
Power	90 to 260 VAC, 50/60 Hz



L/S® Standard Digital Drives

0.0001 ~ 3400 ml/min

- 그래픽 LCD 디지털 인터페이스 : 작동 모드와 작동 상황을 표시
- 유지 보수가 필요 없는 브러시리스 모터 사용
- 작동 모드 : continuous run, volume dispense, time dispense, copy dispense
- 사용자 친화적 인터페이스를 통해 펌프 조작 및 프로그래밍
- 드림 방지 기능으로 디스펜싱 정확도 보장
- USB, RS232 통신 (옵션 선택)
- Dispense 용량 : 0.001 ~ 9,999 ml
- Dispense 반복 횟수 : 1 ~ 9,999 cycle
- Time interval : 1sec ~ 99hr, 59min, 59sec per cycle
- Speed accuracy : $\pm 0.1\%$ (6000 : 1 turndown ratio)

Drive Specifications

Pump Series	L/S	Type of Pump Head Accepted	Standard, Easy-Load, Easy-Load II, Easy-Load 3, High Performance, Cartridge, Multichannel, PTFE Tubing, PTFE Diaphragm
Control Type	Digital	IP rating	IP33
Min RPM (rpm)	0.1	Washdown Capable	No
Max RPM (rpm)	300	Dimension (LxWxH)	10 x 8.5 x 8.5 inches
Speed accuracy	$\pm 0.1\%$	Open-Head Sensor	드라이브 옵션
Max Flow Rate	3400 ml/min	Housing Material	ABS plastic & Aluminum
Min Flow Rate	0.001 ml/min	Remote I/O	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure

Ordering Information

P/N	Max flow rate (ml/min)	Max RPM	Open-head Sensor	Remote I/O
EW-07522-20	3400	600	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07522-28	3400	600	Yes	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07522-30	566	100	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07522-38	566	100	Yes	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07551-20	3400	600	No	RS-232, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07551-30	566	100	No	RS-232, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07551-40	3400	600	Yes	RS-232, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07551-42	566	600	Yes	RS-232, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure



L/S® Precision Variable-Speed Console Drives

0.06 ~ 3400 ml/min

- Flow rate : 0.06 ~ 3400 ml/min (드라이브 옵션에 따라 다름)
- 3 digit LED 디스플레이 - 모터 스피드 표시
- Reversible motor : 양방향 펌핑 가능
- 모터 방향 확인용 LED indicator
- 멀티채널 어플리케이션, 유량 증가를 위해 2, 4 펌프 헤드 적용 가능
- 스피드 버튼과 on/off 버튼 분리로 펌프 작동, 중지 시 스피드 설정 유지
- IP33 등급의 적용 가능한 ABS 플라스틱 하우징
- DB9 female 커넥터로 원격 제어 가능
- 속도 제어 입력 : 4 to 20 mA or 0 to 10 VDC
- 멤브레인 키패드를 통한 쉬운 작동

Drive Specifications

Pump Series	L/S
Control Type	Digital
Min RPM (rpm)	1 (depends on drive option)
Max RPM (rpm)	600 (depends on drive option)
Speed accuracy	±0.25%
Max Flow Rate	3400 ml/min (depends on drive option)
Min Flow Rate	0.06 ml/min (depends on drive option)
Type of Pump Head Accepted	Standard, Easy-Load, Easy-Load II, Easy-Load 3, High Performance, Cartridge, Multichannel, PTFE Tubing, PTFE Diaphragm
IP rating	IP33
Washdown Capable	No
Dimension (LxWxH)	10.8 x 8.3 x 8.5 inches
Open-Head Sensor	드라이브 옵션
Housing Material	ABS plastic & Aluminum
Remote I/O	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure

Ordering Information

P/N	Max flow rate (ml/min)	Max RPM	Open-head Sensor	Remote I/O
EW-07528-10	3400	600	No	4 to 20 mA, 0 to 10 V, start/stop and direction via contact closure
EW-07528-20	1700	300	No	4 to 20 mA, 0 to 10 V, start/stop and direction via contact closure
EW-07528-30	580	100	No	4 to 20 mA, 0 to 10 V, start/stop and direction via contact closure



L/S® Analog Variable-Speed Console Drives

0.42 ~ 2900 ml/min

- Flow rate : 0.42 ~ 2900 ml/min
- 단일 회전식 속도 제어 노브로 작동이 간단함
- 별도의 전원 스위치 적용으로 펌프의 작동을 on/off 시 속도 설정 유지
- 펌프 전원 켜짐을 표시하는 전면 LED
- Reversible 모터 사용으로 양방향 펌핑 가능
- 드라이브 뒷면의 DB9 커넥터 연결을 통해 펌프의 작동과 중지를 원격 제어

Drive Specifications

Pump Series	L/S
Control Type	Analog Variable Speed
Min RPM (rpm)	7 (depends on drive option)
Max RPM (rpm)	600 (depends on drive option)
Speed accuracy	±5%
Max Flow Rate	3400 ml/min (depends on drive option)
Min Flow Rate	0.42 ml/min (depends on drive option)
Reversible motor	Yes
Digital dispensing	No
Type of Pump Head Accepted	Standard, Easy-Load, Easy-Load II, Easy-Load 3, Multichannel, High-Performance, Cartridge
IP rating	IP22
Washdown Capable	No
Dimension (LxWxH)	9.1 x 7.2 x 5.3 inches
Open-Head Sensor	No
Housing Material	Painted Steel and ABS Plastic
Remote I/O	Start / Stop

Ordering Information

P/N	Max flow rate (ml/min)	Max RPM	Remote I/O
EW-07555-05	2900	600	Start/Stop
EW-07555-15	1130	200	Start/Stop



L/S® Digital Process Drives

0.001 ~ 3400 ml/min

- 그래픽 LCD 디지털 인터페이스 - 펌프 작동모드와 상태 표시
- 작동 모드 : continuous run, time dispense, volume dispense, copy dispense
- 아날로그 통신을 이용한 원격 제어
- 디스펜스 용량 : 0.001 ~ 9,999 ml
- 디스펜스 반복 횟수 : 1 ~ 9,999 cycles
- Time interval : 1sec ~ 99hr, 59min, 59sec per cycle
- 드립 방지 기능으로 정확한 디스펜싱 보장
- Open-head 센서 기능 적용 시 헤드가 열릴 때 펌프의 작동 중지
- NEMA 4X (IP66) 등급 방수로 드라이브 세척 가능

Drive Specifications

Pump Series	L/S	Digital dispensing	Yes
Control Type	Digital	No. of Pump Head Accepted	2,4
Min RPM (rpm)	0.02 (depends on drive option)	Type of Pump Head Accepted	Standard, Easy-Load, Easy-Load II, Easy-Load 3, High Performance, Cartridge, Multichannel, PTFE Tubing, PTFE Diaphragm
Max RPM (rpm)	600 (depends on drive option)	IP rating	IP66
Speed accuracy	±0.1%	Washdown Capable	Yes
Max Flow Rate	3400 ml/min (depends on drive option)	Dimension (LxWxH)	12 x 9 x 9.25 inches
Min Flow Rate	0.001 ml/min (depends on drive option)	Open-Head Sensor	드라이브 옵션
Reversible motor	Yes	Housing Material	Stainless steel, Powder coat steel

Ordering Information

P/N	Max flow rate (ml/min)	Max RPM	Housing Material	No. of Pump Heads Accepted	Open-head Sensor	Remote I/O
EW-07575-30	3400	600	Stainless Steel	2	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-35	566	100	Stainless Steel	4	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-38	3400	600	Stainless Steel	2	Yes	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-40	3400	600	Powder-Coat Steel	2	Yes	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-45	566	100	Powder-Coat Steel	4	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-48	3400	600	Powder-Coat Steel	2	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-50	3400	600	Stainless Steel	2	Yes	Ethernet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-52	3400	600	Stainless Steel	2	Yes	Ethernet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-60	3400	600	Powder-Coat Steel	2	Yes	Ethernet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-07575-62	3400	600	Powder-Coat Steel	2	Yes	Ethernet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure



L/S® Easy-Load® Pump Heads

0.0012 ~ 2900 ml/min

- 드라이브에서 헤드를 제거하지 않고 다양한 크기의 튜빙 교체
- Stainless steel 로터로 내구성 향상
- 개방형 헤드 센서 (option)
- 다중채널 어플리케이션을 위한 stackable 디자인
- 효율적인 공간 활용을 위한 컴팩트 디자인
- L/S® Precision pump tubing 에 적합

Specifications

Pump Series	L/S
Number of Channels	1
Flow Rate (ml/min)	0.0012 ~ 2900
Housing Material	White Polyarylamide or Black PPS
Tubing Retention	Automatic
Occlusion	Adjustable or Fixed
Optimum RPM Range (rpm)	0.02 to 650
Rollers	4
Rotor Material	CRS or SUS
Suction Lift (m)	8.8
Tubing sizes accepted	L/S 13, 14, 16, 25, 17, 18L/S 15, 24, 35, 36

Volume Per Revolution

L/S 13 Tubing (ml)	0.06
L/S 14 Tubing (ml)	0.21
L/S 16 Tubing (ml)	0.8
L/S 25 Tubing (ml)	1.7
L/S 17 Tubing (ml)	2.8
L/S 18 Tubing (ml)	3.8
L/S 15 Tubing (ml)	1.7
L/S 24 Tubing (ml)	2.8
L/S 35 Tubing (ml)	3.8
L/S 36 Tubing (ml)	4.8



L/S® High-Performance Pump Heads

0.006 ~ 3400 ml/min

- 헤드가 닫히고 잠길 때 최적화 되는 Automatic tubing occlusion
- L/S 고압 펌프 튜브로 최대 150psi 작동 압력
- 강화 나일론 하우징 및 occlusion bed
- 모든 1/10hp L/S 드라이브와 호환 가능
- 효율적인 공간활용을 위한 컴팩트 디자인

Specifications

Pump Series	L/S
Number of Channels	1
Flow Rate (ml/min)	0.006 ~ 3400
Housing Material	Glass-Filled Nylon Polyamide
Tubing Retention	Manual
Occlusion	Fixed
Optimum RPM Range (rpm)	0.02 to 650
Rollers	3
Rotor Material	SUS
Suction Lift (m)	8.8
Tubing sizes accepted	L/S 16, 25, 17, 18, 15, 24, 35, 36

Volume Per Revolution

L/S 16 Tubing (ml)	0.9
L/S 25 Tubing (ml)	1.9
L/S 17 Tubing (ml)	3
L/S 18 Tubing (ml)	3.8
L/S 15 Tubing (ml)	1.8
L/S 24 Tubing (ml)	3
L/S 35 Tubing (ml)	4.3
L/S 36 Tubing (ml)	5.9



L/S® Standard Pump Heads

0.001 ~ 2900 ml/min

- 단일 크기의 튜빙을 수용하도록 정밀하게 성형됨
- 컴팩트한 사이즈, 동일한 입/출구 방향으로 공간활용에 유리
- OEM 어플리케이션에 쉽게 통합 가능
- 최대 4개의 헤드 적용 가능

Specifications

Pump Series	L/S
Number of Channels	1
Flow Rate (ml/min)	0.001 ~ 2900
Housing Material	PC or PPS
Tubing Retention	Manual
Occlusion	Fixed
Optimum RPM Range (rpm)	0.02 to 600
Rollers	3
Rotor Material	CRS or SUS
Suction Lift (m)	8.8
Tubing sizes accepted	L/S 13, 14, 16, 17, 18, 15, 24, 35, I/P36

Volume Per Revolution

L/S 13 Tubing (ml)	0.06
L/S 14 Tubing (ml)	0.21
L/S 16 Tubing (ml)	0.8
L/S 17 Tubing (ml)	2.8
L/S 18 Tubing (ml)	3.8
L/S 25 Tubing (ml)	1.7
L/S 24 Tubing (ml)	2.8
L/S 35 Tubing (ml)	3.8
I/P 36 Tubing (ml)	4.8



Multichannel Cartridge Pump Head

0.0012 ~ 2900 ml/min

- 드라이브에서 헤드를 제거하지 않고 빠른 튜빙 교체 - Snap in and out
- 개선된 리테이너 디자인으로 튜빙 고정성 향상
- 최대 12개의 대형 카트리지가 수용
- 최소 1/10hp, 600rpm 드라이브와 호환

Specifications

Pump Series	L/S
Number of Channels	2, 4, 6, 8, 12
Flow Rate (ml/min)	0.00001 ~ 1400
Housing Material	Polysulfone (PSF)
Tubing Retention	Stopped Tubing or Manual
Occlusion	Adjustable
Optimum RPM Range (rpm)	0.02 to 600
Rollers	3, 4, 6, 8
Rotor Material	SUS
Suction Lift (m)	8.8
Tubing sizes accepted	L/S 14, 16, 25, 17

Volume Per Revolution

L/S 14 Tubing (ml)	0.21
L/S 16 Tubing (ml)	0.8
L/S 25 Tubing (ml)	1.7
L/S 17 Tubing (ml)	2.8

Minicartridge Multichannel Pump Head

0.002 ~ 195 ml/min

- 채널 개별 압력 조절을 위한 adjustable occlusion 옵션 주문 가능
- 다른 채널에 간섭 없이 미니 카트리지를 쉽게 제거, 삽입
- Pressure-level 카세트로 최대 1.5bar 의 작동 압력 가능
- Click-n-go 카세트로 최대 1.0bar 의 작동 압력 가능

Specifications

Pump Series	L/S
Number of Channels	4 or 8
Flow Rate per Channel(ml/min)	0.002 ~ 195
Housing Material	Anodized Aluminum
Tubing Retention	Stopped Tubing or Manual
Occlusion	Adjustable
Optimum RPM Range (rpm)	1 to 600
Rollers	6 or 8 or 12
Rotor Material	Nylatron®
Tubing sizes accepted	3-Stop microbre

Masterflex® L/S® and I/P® Pump Head Replacement Parts



- L/S® 와 I/P® pump head 에 적합한 교체용 파츠를 주문할 수 있습니다. 교체용 파츠를 활용하여 펌프 헤드를 최대한 사용하세요
- 정상적인 사용을 위해서는 2 end-bell assemblies 가 필요합니다.



I/P® Digital Process Drives

0.0006 ~ 26 L/min

- Flow rate : 0.0006 ~ 26 L/min
- 그래픽 LCD 디지털 인터페이스 : 펌프 작동 상태와 모드 표시
- 작동 모드 : continuous run, time dispense, volume dispense, copy dispense
- 아날로그 통신을 통한 원격 제어
- 원하는 언어로 드라이브 프로그래밍 및 조작
- 드림 방지 기능으로 정확한 디스펜싱 보장
- 유지 보수가 필요 없는 브러시리스 모터
- 디스펜스 용량 : 0.0001 ml ~ 9,999 ml
- 디스펜스 반복 횟수 : 1 ~ 9,999 cycles
- Time interval : 1sec ~ 99hr, 59min, 59sec per cycle
- 스피드 컨트롤 정확도 : $\pm 0.1\%$ (6000 : 1 turndown ratio)
- NEMA 4X (IP66) 방수 등급 하우징

Drive Specifications

Pump Series	L/S	Digital dispensing	Yes
Control Type	Digital	No. of Pump Head Accepted	2
Min RPM (rpm)	0.1	Type of Pump Head Accepted	I/P Standard, I/P Easy-Load, I/P High-Performance
Max RPM (rpm)	650	IP rating	IP66
Speed accuracy	$\pm 0.1\%$	Washdown Capable	Yes
Max Flow Rate	26 L/min	Dimension (LxWxH)	16.7 x 11.1 x 12.9 inches
Min Flow Rate	0.6 ml/min	Open-Head Sensor	Option
Reversible motor	0	Housing Material	Stainless steel, Powder coat steel

Ordering Information

P/N	Housing Material	Open-head Sensor	Remote I/O
EW-77420-10	Stainless Steel	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-77420-18	Stainless Steel	Yes	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-77420-20	Powder-Coat Steel	No	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-77420-28	Powder-Coat Steel	Yes	0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-77420-30	Stainless Steel	Yes	EtherNet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-77420-32	Stainless Steel	Yes	EtherNet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-77420-40	Powder-Coat Steel	Yes	EtherNet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure
EW-77420-42	Powder-Coat Steel	Yes	EtherNet/IP, Bluetooth LE, USB, 0 to 20 mA, 4 to 20 mA, 0 to 10 V, start/stop, direction, and prime via contact closure



I/P[®] Digital Modular Drive

0.036 ~ 19 L/min

- 컨트롤러와 모터가 분리된 디자인
- LED 디지털 인터페이스 - 펌프 작동 상태 표시
- 아날로그 통신을 통한 원격 제어
- 스피드 정확도를 유지하며 2펌프 헤드 사용 가능
- 멤브레인 키패드로 간편한 조작

Specifications

Pump Series	I/P
Control Type	Digital Variable Speed
RPM	6 ~ 650
Speed accuracy	±0.25%
Flow Rate	0.036 ~ 19 L/min
Reversible motor	Yes
No. of Pump Head Accepted	2
Type of Pump Head	I/P Standard, I/P Easy-Load,
Accepted	I/P High-Performance
IP rating	IP33 (controller, motor)
Housing Material	ABS Plastic and Aluminum (Controller) Painted Steel (Drive)

I/P[®] Digital Modular Drive

0.0006 ~ 19 L/min

- 컨트롤러와 모터가 분리된 디자인
- 그래픽 LCD 디지털 인터페이스
- 아날로그 통신을 통한 원격 제어
- Dispense 용량: 0.001 ~ 9,999 ml
- Dispense copy: 1 ~ 9,999 cycle
- Time interval : 1 sec ~ 99hr, 59sec per cycle
- 드립 방지 기능으로 디스펜싱 정밀도 보장
- 작동 범위 : 6000 : 1 (turn down ratio)
- 방수 옵션 선택 가능

Specifications

Pump Series	I/P
Control Type	Digital Variable Speed
RPM	0.1 ~ 650
Speed accuracy	±0.1%
Flow Rate	0.0006 ~ 19 L/min
Reversible motor	Yes
Digital Dispensing	Yes
No. of Pump Head Accepted	2
Type of Pump Head	I/P Standard, I/P Easy-Load,
Accepted	I/P High-Performance
IP rating	IP33, IP66 (controller, motor)
Housing Material	ABS Plastic and Aluminum (Controller) Painted Steel and Aluminum (Drive)

Ordering Information

P/N	Flow rate (L/min)	RPM	No. of Pump Heads Accepted	Washdown Capable
EW-07591-20	0.0036 ~ 19	6 ~ 650	2	No
EW-07591-30	0.0036 ~ 19	6 ~ 650	2	Yes
EW-07594-00	0.0006 ~ 19	0.1 ~ 650	2	No
EW-07594-10	0.0006 ~ 19	0.1 ~ 650	2	Yes



I/P[®] Brushless Process Drive

0.2 ~ 26 L/min

- 합리적인 가격의 다목적 펌프 - 강력한 성능, 유지 관리의 필요가 없음
- LED 디스플레이 디지털 인터페이스로 스피드 컨트롤
- 회전식 전위차계로 쉽고 빠르게 속도 조절 - 1%
- Speed Control Resolution : 1%
- 밀봉된 키패드를 통해 시작/중지 및 역회전 기능을 쉽게 제어
- 유지 보수가 필요 없는 브러시리스 모터 (0.25% 정확도)
- IP55등급 하우징
- 아날로그 통신을 통한 원격 제어 옵션 선택

Drive Specifications

Pump Series	I/P
Control Type	Digital Variable Speed
Min RPM (rpm)	33
Max RPM (rpm)	650
Speed accuracy	±0.25%
Max Flow Rate	26 L/min
Min Flow Rate	0.2 L/min
Reversible motor	Yes
Digital dispensing	No
No. of Pump Head Accepted	2
Type of Pump Head Accepted	I/P Standard, I/P Easy-Load, I/P High-Performance
IP rating	IP55
Washdown Capable	Yes
Dimension (LxWxH)	14 x 10 x 9 inches
Housing Material	Painted Steel and Aluminum
Remote I/O	4 to 20 mA, 0 to 10 V, start/stop and direction via contact closure (option)

Ordering Information

P/N	Flow rate(L/min)	RPM	No. of Pump Heads Accepted	Washdown Capable	Analog Communication
EW-77411-00	0.2 ~ 26	33 ~ 650	2	Yes	Yes
EW-77410-10	0.2 ~ 26	33 ~ 650	2	Yes	No

MASTERFLEX I/P PUMP HEADS

Masterflex I/P Pump Heads



I/P® Easy-Load® Pump Heads

0.01 ~ 13 L/min

- Auto tubing retention : 헤드 탈거 없이 쉬운 튜빙 교체
- 부드러운 flow 를 생성하는 3-roller
- Rotor/ Roller – stainless steel, cold-rolled steel 선택 가능
- 적층 가능한 헤드 디자인
- 공간을 절약할 수 있는 컴팩트 디자인
- 다양한 튜빙 사이즈 적용
- Adjustable occlusion-압력, 흡입 성능 최적화/ 튜빙 수명 증대

Specifications

Pump Series	I/P
Number of Channels	1
Max Flow Rate (LPM)	13
Min Flow Rate (LPM)	0.01
Housing Material	White or Black PPS
Tubing Retention	Automatic
Occlusion	Adjustable
Optimum RPM Range (rpm)	0.1 to 650
Rollers	3
Rotor Material	CRS or SUS
Suction Lift (m)	7.6
Tubing sizes accepted	I/P 26, I/P 73, I/P 82

Volume Per Revolution

I/P 26 Tubing (ml)	6.2
I/P 73 Tubing (ml)	12.3
I/P 82 Tubing (ml)	20

I/P® High-Performance Pump Head

0.01 ~ 19 L/min

- 부드러운 flow 를 생성하는 3-roller
- Stainless steel rotor/roller – 우수한 내구성과 내 화학성
- 다양한 장착 구성 – 튜빙이 상단, 측면으로 향하게 장착 가능
- Adjustable tubing retention – 헤드 안에서 튜빙의 움직임을 방지

Specifications

Pump Series	I/P
Number of Channels	1
Max Flow Rate (LPM)	19
Min Flow Rate (LPM)	0.01
Housing Material	PE and SUS
Tubing Retention	Manual
Occlusion	Fixed
Optimum RPM Range (rpm)	0.1 to 650
Rollers	3
Rotor Material	SUS
Suction Lift (m)	8.8
Tubing sizes accepted	I/P 70, I/P 88, I/P 89

Volume Per Revolution

I/P 70 Tubing (ml)	12.3
I/P 88 Tubing (ml)	26.2
I/P 89 Tubing (ml)	29.2

I/P® Standard Pump Heads

0.001 ~ 13 L/min

- I/P 펌프 헤드 중 정확성과 반복 재현성이 가장 좋음
- 성능과 내구성을 높이기 위해 단일 사이의 튜빙 장착
- 2 헤드 적용 가능 – Flow rate 2X

Specifications

Pump Series	I/P
Number of Channels	1 ~ 2
Max Flow Rate (LPM)	8 or 13
Min Flow Rate (LPM)	0.001 or 0.002
Housing Material	PC or PPS
Tubing Retention	Manual
Occlusion	Fixed
Optimum RPM Range (rpm)	0.1 to 650
Rollers	3
Rotor Material	CRS or SUS
Suction Lift (m)	8.8
Tubing sizes accepted	I/P 73 or I/P 82

Volume Per Revolution

I/P 73 Tubing (ml)	12.3
I/P 82 Tubing (ml)	20



Masterflex® L/S® and I/P® Pump Head Replacement Parts

- L/S® 와 I/P® pump head 에 적합한 교체용 파츠를 주문할 수 있습니다. 교체용 파츠를 활용하여 펌프 헤드를 최대한 사용하세요
- 정상적인 사용을 위해서는 2 end-bell assemblies 가 필요합니다.



B/T® Modular Digital Drives

0.71 ~ 42 L/min

- 고 유량 전달, 디스펜싱 펌프
- 그래픽 LCD 디지털 인터페이스 - 펌프 성능과 작동 상태 표시
- 작동 모드 : Continuous run, time dispense, volume dispense, copy dispense
- 아날로그 통신을 통한 원격 제어
- Rapid-Load® pump head occlusion technique : 쉬운 튜브 장착, 개선된 tubing occlusion
- Interlock 스위치 - 헤드 커버 오픈 시 전원 차단

Drive Specifications

Pump Series	B/T
Control Type	Digital
Min RPM (rpm)	12
Max RPM (rpm)	321
Number of Channels	1
Max Flow Rate	42 L/min
Min Flow Rate	0.71 L/min
Reversible motor	Yes
Digital dispensing	Yes
Tubing Sizes Accepted	B/T 87 or B/T 91
No. of Rollers	3
IP rating	IP56
Washdown Capable	Yes
Drive Dimension (WxHxL)	15.8 x 15.1 x 27 inches
Controller Dimension (WxHxL)	11 x 4.5 x 9
Open-Head Sensor	Yes
Housing Material	Cast-aluminum with epoxy-powder coating

Performance Data

Tubing Size	B/T 87	B/T 91
Inside Diameter	0.5"	0.75"
Hose Barb Size	1/2"	3/4"
Flow Range (with 12 ~ 321 rpm)	0.67 ~ 18.9 L/min	1.4 ~ 42 L/min
Maximum Pressure	35 psi	30 psi
Maximum Vacuum	26" Hg (660 mmHg)	
Suction Lift	29 ft H ₂ O (8.8 mH ₂ O)	



B/T[®] MasterSense™ BioPharma Pump

0.65 ~ 42 L/min

- 연속적인 바이오 제약 공정에 적합한 설계
- IP66 방수 등급의 316 stainless steel 하우징
- 고 해상도, 광 시야각의 정전식 5" TFT 터치 스크린
- 간단한 터치로 파라미터 조정 (장갑을 낀 상태로 터치 가능)
- 무선 펌웨어 업데이트
- 연결 및 제어 옵션 : MasterflexLive®, EtherNet/IP™, Profibus, or analog signal
- 3단계로 설정 가능한 online 접근 보안 옵션 : 작업자와 컨트롤 level을 설정 가능
- 자주 사용하는 설정을 저장하고 불러오기 가능
- 작동 모드 : Continuous run, volume dispense, time dispense, volume and time mode (time interval)

Drive Specifications

Pump Series	B/T
Control Type	Digital
Min RPM (rpm)	11
Max RPM (rpm)	321
Speed accuracy	±0.1%
Max Flow Rate	42 L/min
Min Flow Rate	0.65 L/min
Reversible motor	Yes
Digital dispensing	Yes
Cloud connected	Yes
Tubing Sizes Accepted	B/T 87 or B/T 91
IP rating	IP66
Washdown Capable	Yes
Dimension (WxHxL)	15.8 x 18.8 x 24.5 inches
Housing Material	316 Stainless Steel
Open-Head Sensor	Yes
Remote I/O	0 to 20 mA, 20 to 0 mA, 4 to 20 mA, 20 to 4 mA; 0 to 10 V, 10 to 0 V, 0 to 5 V, 5 to 0 V; Start/stop, Direction (CW/CCW), Prime via contact closure, Tach output (open collector), Motor running, Open head, Local/remote, General alarm

Masterflex[®] B/T[®] Rapid-Load Pump Heads



B/T[®] Rapid-Load[®] Pump Head

0 ~ 42 L/min

- 기존 모터를 대용량의 B/T 드라이브로 변환
- 새로운 occlusion 방식으로 튜빙을 쉽게 장착
- B/T Perfect Position™ B/T 87 and B/T 91 튜빙 장착 가능
- Interlock 스위치로 헤드 커버 오픈 시 전원 차단
- Nylatron[®] 로터로 내구성 및 내 화학성 향상

Drive Specifications

Pump Series	B/T
Max Flow Rate	42
Tubing Sizes Accepted	B/T 87 or B/T 91
No. of Rollers	3
IP rating	IP56
Motor Mount	NEMA Type 56C, IEC 72-71-14F130 with B5 160-mm flange
Mounting Type	Direct-coupled
Gear Ratio	5.6:1
Volume pre Revolution with B/T 91 Tubing	0.131 L
Volume pre Revolution with B/T 87 Tubing	0.059 L
Dimension (WxHxL)	27 x 15.7 x 15.1 inches
Open-Head Sensor	No

Performance Data

Tubing Size	B/T 87	B/T 91
Inside Diameter	0.5"	0.75"
Hose Barb Size	1/2"	3/4"
Flow Range (with 12 ~ 321 rpm)	0.67 ~ 18.9 L/min	1.4 ~ 42 L/min
Maximum Pressure	35 psi	30 psi
Maximum Vacuum	26" Hg (660 mmHg)	
Suction lift	29 ft H ₂ O (8.8m H ₂ O)	

Ordering Information

P/N	Max Flow rate(L/min)	Motor Mount
EW-77111-50	42	NEMA Type 56C
EW-77111-55	42	IEC 72-71-14F130 with B5 160-mm flange

COMPACT PERISTALTIC PUMP LabK1, K3

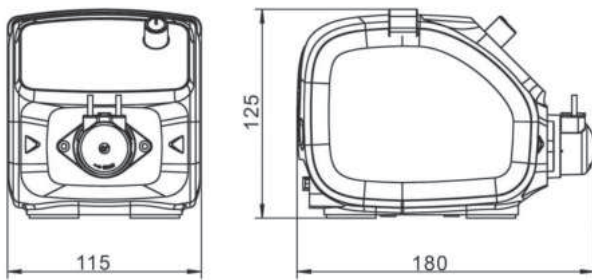
0.004 ~ 149.23 ml/min



Product Features

- ABS 엔지니어링 플라스틱 하우징, 부식 방지, 정전기 방지
- OLED 화면 디스플레이, 디지털 knob 컨트롤
- Compact한 디자인, 다양한 외부 컨트롤 가능
- 작동 시 펌프 헤드 및 튜빙 상태를 쉽게 확인 가능
- 낮은 전력소비, 음소거 작동
- 안정적인 유량 및 연속적인 dosing 어플리케이션에 적합
- 헤드 장착용 Pharmed 튜빙 교체가 쉬움
- 메모리 백업, 정전시 사용자 setting 저장 가능

Dimension Drawing (Unit:mm)



Color Selection



Micropump

With nine colors, customer can choose according to their needs

Technical Specifications

Flow rate range	0.004 ~ 63.96 ml/min	External control	Start/stop direction control (switch signal)
Speed range	LabK1 : 0.1 ~ 150rpm reversible LabK3 : 0.1 ~ 350rpm reversible		0 ~ 5V, 4 ~ 20mA (standard) 0 ~ 10V (optional)
Speed resolution	0.1rpm	Power adapter	DC 12V/1Awith power adapter
Speed control	Digital keypad	Dimension	180 x 115 x 125 mm (LxWxH)
Control method	Mechanical keypad	Weight	0.8 kg
Keypad lifetime	300,000 times	Condition temperature	0 ~ 40°C
Display	0.96" OLED display	Relative humidity	< 80%
Communication interface	USB connector, RS485 interface (MODBUS protocol, RTU mode)	IP rate	IP31

Product Composition and Flow Rate Range

Model	Pump Head	Speed (rpm)	Tubing Size (ID x Wall Thickness)(mm)	Flow Rate Range (ml/min)
LabK1	MicroPump	0.1 ~ 150	1x1, 2x1, 3x1, 4x1	0.004 ~ 63.96
LabK3		0.1 ~ 350		0.004 ~ 149.23

COMPACT PERISTALTIC PUMP LabS1, S3

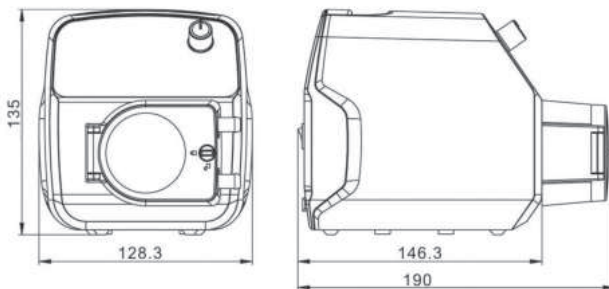
0.0024 ~ 930 ml/min



Product Features

- ABS 엔지니어링 플라스틱 하우징, 부식 방지, 정전기 방지
- OLED 화면 디스플레이, 디지털 knob 컨트롤
- Compact한 디자인, 다양한 외부 컨트롤 가능
- 작동 시 펌프 헤드 및 튜빙 상태를 쉽게 확인 가능
- 낮은 전력소비, 음소거 작동
- 안정적인 유량 및 연속적인 dosing 어플리케이션에 적합
- 헤드 장착용 Pharmed 튜빙 교체가 쉬움
- 메모리 백업, 정전시 사용자 setting 저장 가능

Dimension Drawing (Unit:mm)



Pump Head



Minipump

UD15

Technical Specifications

Flow rate range	0.0024 ~ 930 ml/min		
Speed range	LabS1/UD15 : 0.1 ~ 150 reversible	Communication interface	USB connector, RS485 interface (MODBUS protocol, RTU mode)
	LabS1/Minipump : 0.1 ~ 100 reversible		
	LabS3/UD15 : 0.1 ~ 350 reversible	External control	Start/stop direction control (switch signal)
	LabS3/Minipump : 0.1 ~ 300 reversible		
Speed resolution	0.1rpm		0 ~ 5V, 4 ~ 20mA (standard), 0 ~ 10V (optional)
Speed control	Digital knob	Power supply	DC 24V/1Awith power adapter
Control method	Mechanical keypad	Dimension	190 x 128.3 x 135 mm (LxWxH)
Keypad lifetime	300,000 times	Weight	800 g
Display	0.96" OLED display	Condition temperature	0 ~ 40°C
IP rate	IP31	Relative humidity	< 80%

Product Composition and Flow Rate Range

Model	Pump Head	Speed (rpm)	Tubing Size (ID x Wall Thickness)(mm)	Flow Rate Range (ml/min)
LabS1	UD15	0.1 ~ 150	16#,17#,25#	0.08 ~ 398.57
	Minipump	0.1 ~ 100	1x1, 2x1, 2.5x1, 3x1 / 13#,14#, 19#, 16#, 25#	0.0024 ~ 63.33
LabS3	UD15	0.1 ~ 350	16#,17#,25#	0.08 ~ 930
	Minipump	0.1 ~ 300	1x1, 2x1, 2.5x1, 3x1 / 13#,14#, 19#, 16#, 25#	0.0024 ~ 190

COMPACT PERISTALTIC PUMP SP-MiniPump01, 02

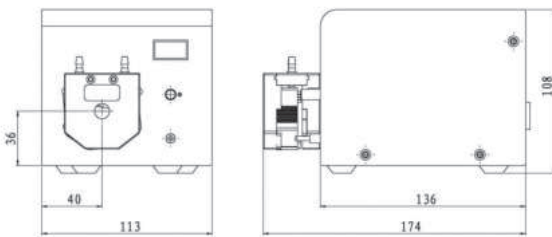
0.0024 ~ 190 ml/min



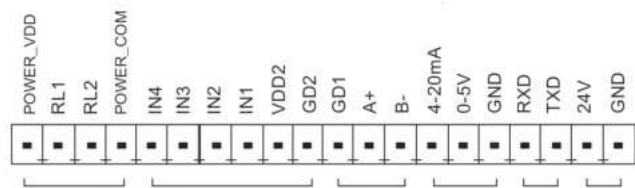
Product Features

- 304 SUS 하우징, 내식성, 여러 대 적용하여 사용가능
- OLED 화면 디스플레이, 현재 모터속도 및 작동상태 확인 가능
- 디지털 knob 컨트롤, toggle 스위치 컨트롤
- 다양한 외부 컨트롤 가능, RS485 통신, MODBUS 프로토콜 지원

Dimension Drawing (Unit:mm)



External Control Schematic Diagram



Technical Specifications

Flow rate range	0.0024 ~ 190 ml/min	Communication interface	RS485 support MODBUS protocol (RTU mode)
Speed range	0.1 ~ 300 rpm, reversible.	Power supply	24V/1A DC power
Speed resolution	0.1rpm	Drive dimension	174 x 113 x 108 mm (LxWxH)
Speed control	Digital knob control speed	Weight	1.64 kg
Motor type	Stepper motor	Power consumption	< 15 W
Display	OLED display	Condition temperature	0 ~ 40°C
External control	Start/stop control (switch signal) 0 ~ 5V, 4 ~ 20mA (standard), 0 ~ 10V (optional)	Relative humidity	< 80%
		IP rate	IP31

SP-Mini Pump Speed/Flow Rate Reference

Rotation Speed (rpm)	Dual Channel Flow Rate (ml/min) and Tubing (1 mm wall thickness)			
	ID 1 mm	ID 2 mm	ID 2.5 mm	103 mm
5	0.25	0.90	1.28	1.78
10	0.49	1.84	2.59	3.52
15	0.74	2.76	3.85	5.30
25	1.25	4.57	6.43	8.80
40	2.00	7.31	10.25	14.02
50	2.52	9.14	12.78	17.47
75	3.76	13.64	19.04	26.12
100	5.03	18.17	25.42	35.34
200	10.12	36.45	51.27	71.44
250	12.63	45.75	64.34	88.35
300	15.01	54.63	76.84	108.39

Rotation Speed (rpm)	Single Channel Flow Rate (ml/min) and Tubing (.6 mm wall thickness)				
	13" Tubing ID 0.8 mm	14" Tubing ID 1.6 mm	19" Tubing ID 2.4 mm	16" Tubing ID 3.1 mm	25" Tubing ID 4.8 mm
5	0.12	0.56	1.26	1.97	3.26
10	0.26	1.15	2.53	3.90	6.41
15	0.39	1.74	3.80	5.80	9.52
25	0.66	2.88	6.31	9.59	15.74
40	1.08	4.59	10.11	15.29	25.15
50	1.34	5.69	12.62	18.96	31.14
75	2.00	8.54	18.93	28.36	46.55
100	2.73	11.37	25.27	37.66	61.98
200	5.46	22.76	50.82	76.02	124.14
250	6.81	28.40	65.39	95.08	153.63
300	8.28	33.88	77.23	114.31	190.00

COMPACT PERISTALTIC PUMP LabM1, LabM3, LabM6

0.000829 ~ 3100 ml/min
(depends on model)



Suitable Pump Head



New Generation Easy Load Type Pump Head



YZ Series



New Generation Multichannel Type Pump Head



MC Series

Product Features

- 3 디지털 LED 디스플레이, mechanical keypad
- Timing 기능 가능
- 0.5s ~ 999s 의 시간 설정으로 간편한 dispensing 가능
- RS232 통신, RS485 통신, MODBUS 프로토콜 지원

Typical Application

- 대학 실험실 및 연구소
- 이온 크로마토그래피

Technical Specifications

Flow rate range	LabM1 : 0.000829 ~ 775 ml/min LabM3: 0.000829 ~ 1808 ml/min LabM6: 0.000829 ~ 3100 ml/min	Start/stop direction signal	Passive switch signal, such as foot pedal switch; Active switch signal: 24V default
Speed resolution	0.1 rpm when the speed is 0 ~ 100rpm 1 rpm when the speed is 100 ~ 600rpm	Communication interface	RS485(optional), Modbus protocol(RTU mode) RS232(standard), Shenchen communication protocol;
Testing time range	0.5s ~ 999s	Power supply	AC 220V ±10%, 50Hz/60Hz (standard) AC 110V ±10%, 50Hz/60Hz (optional)
Outlet pressure	0.1 Mpa (0.8 ~ 1.0 mm wall thickness tubing) 0.1 ~ 0.27Mpa (1.6 ~ 2.4 mm wall thickness tubing)	Drive dimension	261.4 x 157.3 x 236.9 mm (LxWxH)
Display	3 digital LED	Drive weight	4.40 kg
Control method	Mechanical keypad	Power consumption	< 50W
Keypad lifetime	300,000 times	Condition temperature	0 ~ 40°C
External speed control signal	0 ~ 5V (standard), 4 ~ 20mA, 0 ~ 10V (optional)	Relative humidity	< 80%
		IP rate	IP31

Product Composition and Flow Rate Range

Flow Rates Peristaltic Pump		Pump Head & Flow Rate (ml/min)			
		YZ1515x	YZ2515x	MC1-MC12(10)	MC1-MC12(6)
Drive&speed	Tubing	13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness: 0.8 ~ 1 mm	
	LabM1	0.5 ~ 150 rpm	0.035 ~ 570	0.85 ~ 435	0.000829 ~ 49 (working speed ≤150rpm)
	LabM3	0.5 ~ 350 rpm	0.035 ~ 1330	0.85 ~ 1015	
LabM6	0.5 ~ 600 rpm	0.035 ~ 2280	0.85 ~ 1740	0.000925 ~ 65 (working speed ≤150rpm)	
Drive&speed	Tubing	New Generation Easy Load Type Pump Head		New Generation Multichannel Type Pump Head	
		EasyPump (1.60 mm wall thickness)	EasyPump (2.40 mm wall thickness)	8 rollers	
		13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#, 35#, 36#	Inner diameter: 0.13 ~ 3.17mm Wall thickness : 0.8 ~ 1 mm	
	LabM1	0.5 ~ 150 rpm	0.0267 ~ 645	0.90 ~ 775	0.001 ~ 52 (working speed ≤150rpm)
	LabM3	0.5 ~ 350 rpm	0.0267 ~ 1505	0.90 ~ 1808	
LabM6	0.5 ~ 600 rpm	0.0267 ~ 2580	0.90 ~ 3100		

FLOW RATES PERISTALTIC PUMP LabN1, LabN3, LabN6

0.000166 ~ 3100 ml/min
(depends on model)



Product Features

- 3.2" 컬러 LCD 스크린
- 동일한 화면에서 유량 및 모터 속도 디스플레이 가능
- Timing 기능 가능
- 0.1s ~ 9999hours 시간 설정으로 간편한 dispensing 가능

Typical Application

- 대학 실험실 및 연구소
- 이온 크로마토그래피
- Pilot scale 및 산업분야

Technical Specifications

Flow rate range	LabN1: 0.000166 ~ 775 ml/min LabN3: 0.000166 ~ 1808 ml/min LabN6: 0.000166 ~ 3100 ml/min	Start/stop, reversing signal	Passive switch signal, such as foot pedal Active switch signal: 5V, 12V, 24V for option
Speed resolution	0.1rpm	Communication interface	RS232, RS485 support Modbus protocol(RTU mode)
Back suction angle	0 ~ 360°	Output interface	Output motor working status (Open-Collector output)
Testing time range	0.1 s ~ 9999 h	Power supply	AC 220V ±10% 50Hz/60Hz (standard) AC 110V ±10% 50Hz/60Hz (optional)
Outlet pressure	0.8 ~ 1.0 mm wall thickness tubing: 0.1 Mpa; 1.6 ~ 2.4 mm wall thickness tubing: 0.1 ~ 0.27Mpa	Drive dimension	261.4 x 157.3 x 236.9 mm
Display	3.2" high definition LCD screen	Drive weight	4.40 kg
Control method	Knob speed and Mechanical keypad	Power consumption	< 50W
Keypad lifetime	300,000 times	Condition temperature	0 ~ 40°C
External speed control signal	0 ~ 5V, 0 ~ 10V, 4 ~ 20mA for option	IP rate	IP31
Relative humidity	< 80%		

Product Composition and Flow Rate Range

Flow Rates Peristaltic Pump		Pump Head & Flow Rate (ml/min)			
		YZ1515x	YZ2515x	MC1-MC12(10)	MC1-MC12(6)
Drive&speed	Tubing	13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness: 0.8 ~ 1 mm	
	LabN1	0.007 ~ 570	0.17 ~ 435	0.000166 ~ 49 (working speed ≤150rpm)	0.000185 ~ 65 (working speed ≤150rpm)
	LabN3	0.007 ~ 1330	0.17 ~ 1015		
	LabN6	0.007 ~ 2280	0.17 ~ 1740		
Drive&speed	Tubing	New Generation Easy Load Type Pump Head		New Generation Multichannel Type Pump Head	
		EasyPump (1.60 mm wall thickness)	EasyPump (2.40 mm wall thickness)	8 rollers	
		13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#, 35#, 36#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness : 0.8 ~ 1 mm	
	LabN1	0.0053 ~ 645	0.18 ~ 775	0.0002 ~ 52 (working speed ≤150rpm)	
	LabN3	0.0053 ~ 1505	0.18 ~ 1808		
LabN6	0.0053 ~ 2580	0.18 ~ 3100			

Suitable Pump Head



New Generation Easy Load Type Pump Head



YZ Series

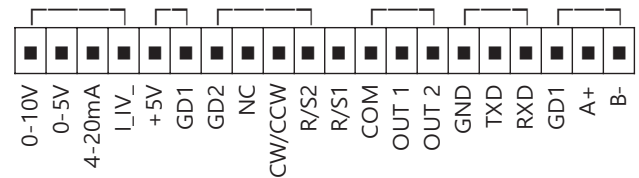


New Generation Multichannel Type Pump Head



MC Series

External Control Schematic Diagram



FLOW RATES PERISTALTIC PUMP LabV1, LabV3, LabV6

0.000166 ~ 3100 ml/min
(depends on model)



Product Features

- 4.3" 컬러 LCD 스크린, 터치 스크린
- 중국어, 영어 인터페이스 사용 가능
- 동일한 화면에서 유량, 전송상태, 설정값, 시스템구성 디스플레이 가능
- 3가지 작업모드, 고정 볼륨 측정, 고정 시간 및 볼륨 측정
- 타이머 시작 및 중지 가능
- 지능적인 calibration 기능, 온라인 미세 조정 가능

Typical Application

- 대학 실험실 및 연구소
- 산업 장비 분야

Technical Specifications

Flow rate range	LabV1/V1: 0.000166 ~ 775 ml/min LabV3/V3: 0.000166 ~ 1808 ml/min LabV6/V6: 0.000166 ~ 3100 ml/min	Start/stop, direction signal	Passive switch signal, such as foot pedal switch Active switch signal: 5V, 12V and 24V for option
Speed range	0.1 ~ 600 rpm	Communication interface	RS232, RS485 support MODBUS protocol (RTU mode)
Speed resolution	0.01 rpm	Output interface	Output motor working status (Open-Collector output)
Flow rate resolution	0.01 µl	Power supply	AC 220V ±10% 50Hz/60Hz (standard) AC 110V ±10% 50Hz/60Hz (optional)
Flow rate accuracy	< ±0.5%	Drive dimension (LxWxH)	LabV Series: 261.4 x 157.3 x 236.9 mm V Series: 252 x 152 x 243 mm
Back suction angle	0 ~ 360°	Drive weight	LabV Series: 4.40 kg V Series: 4.20 kg
Outlet pressure	0.1 Mpa (0.8 ~ 1.0 mm wall thickness tubing) 0.1 ~ 0.27Mpa (1.6 ~ 2.4 mm wall thickness tubing)	Power consumption	< 50W
Motor type	Stepper motor	Condition temperature	0 ~ 40°C
Display	Industrial grade 4.3" LCD color display	Relative humidity	< 80%
Control method	Touch screen and Mechanical keypad	IP rate	IP31
Keypad lifetime	300,000 times		
External speed control signal	0 ~ 5V, 0 ~ 1 OV, 4 ~ 20mA for option		

Suitable Pump Head



New Generation Easy Load Type Pump Head



YZ Series

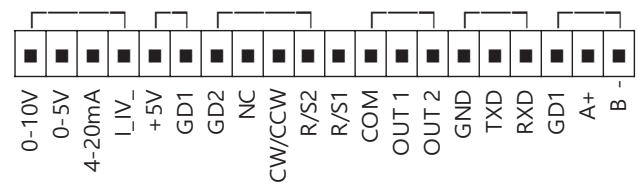


New Generation Multichannel Type Pump Head



MC Series

External Control Schematic Diagram



Product Composition and Flow Rate Range

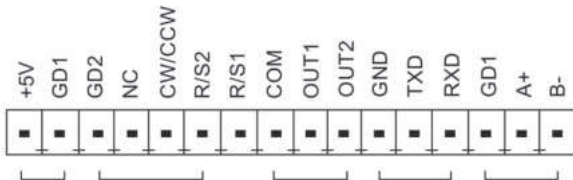
Flow Rates Peristaltic Pump		Pump Head & Flow Rate (ml/min)			
		YZ1515x	YZ2515x	MC1-MC12(10)	MC1-MC12(6)
Drive&speed		Tubing	13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness: 0.8 ~ 1 mm
LabV1/V1	0.1 ~ 150 rpm		0.007 ~ 570	0.17 ~ 435	0.000166 ~ 49 (working speed ≤150rpm)
LabV3/V3	0.1 ~ 350 rpm		0.007 ~ 1330	0.17 ~ 1015	
LabV6/V6	0.1 ~ 600 rpm		0.007 ~ 2280	0.17 ~ 1740	
Drive&speed		Tubing	New Generation Easy Load Type Pump Head		New Generation Multichannel Type Pump Head
			EasyPump (1.60 mm wall thickness)	EasyPump (2.40 mm wall thickness)	8 rollers
Drive&speed			13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#, 35#, 36#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness: 0.8 ~ 1 mm
LabV1/V1	0.1 ~ 150 rpm		0.0053 ~ 645	0.18 ~ 775	0.0002 ~ 52 (working speed ≤150rpm)
LabV3/V3	0.1 ~ 350 rpm		0.0053 ~ 1505	0.18 ~ 1808	
LabV6/V6	0.1 ~ 600 rpm		0.0053 ~ 2580	0.18 ~ 3100	

DISPENSING PERISTALTIC PUMP LabF1, LabF3, LabF6

0.00166 ~ 3100 ml/min
(depends on model)



External Control Schematic Diagram



Product Features

- 4.3" 컬러 LCD 스크린, 터치 스크린
- Dispensing 볼륨, 시간 미리 설정 가능
- 60가지의 filling modes 저장 가능
- 지능적인 calibration 기능, 온라인 미세 조정 가능

Typical Application

- 진단 시약, 의약품, 화학 물질 dispensing
- 향수, 립글로스 같은 화장품 dispensing

Accessories



Technical Specifications

Flow rate range	LabF1/F1: 0.00166 ~ 775 ml/min LabF3/F3: 0.00166 ~ 1808 ml/min LabF6/F6: 0.00166 ~ 3100 ml/min	Start/stop, direction signal	Passive switch signal, such as foot pedal switch; Active switch signal : 5V, 12V and 24V for option
Speed range	1 ~ 600 rpm	Output interface	Output motor working status (Open-Collector output)
Speed resolution	0.01 rpm	Communication interface	RS232, RS485 support Modbus protocol (RTU mode)
Dispensing volume range	0.1 ~ 9999.99 ml	Power supply	AC 220V±10% 50Hz/60Hz (Standard) AC 110V±10% 50Hz/60Hz (Optional)
Dispensing volume resolution	0.01 ml	Outlet pressure	0.1 Mpa (0.8 ~ 1.0 mm wall thickness tubing) 0.1 ~ 0.27Mpa (1.6 ~ 2.4 mm wall thickness tubing)
Dispensing time	0.1 ~ 9999.99s	Drive dimension (LxWxH)	LabF Series: 261.4 x 157.3 x 236.9 mm F Series: 212 x 152 x 243 mm
Pause time	0.1 ~ 9999.99s	Drive weight	LabF Series: 4.40 kg F Series: 4.20 kg
Time resolution	0.01 s	Power consumption	< 50W
Copy numbers	1 ~ 9999 times, setting '0' means unlimited	Condition temperature	0 ~ 40°C
Back suction angle	0 ~ 360°	Relative humidity	< 80%
Dispensing accuracy	< ±0.5%	IP rate	IP31
Motor type	Stepper motor		
Display	Industrial grade 4.3" color LCD display		
Control method	Touch screen and Mechanical keypad		
Keypad lifetime	300,000 times		

Product Composition and Flow Rate Range

Flow Rates Peristaltic Pump		Pump Head & Flow Rate (ml/min)				
		YZ1515x	YZ2515x	MC1-MC12(10)	MC1-MC12(6)	
Drive&speed	Tubing	13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness: 0.8 ~ 1 mm		
	LabF1/F1	1 ~ 150 rpm	0.07 ~ 570	1.7 ~ 435	0.00166 ~ 49 (working speed ≤150rpm)	
	LabF3/F3	1 ~ 350 rpm	0.07 ~ 1330	1.7 ~ 1015		
LabF6/F6	1 ~ 600 rpm	0.07 ~ 2280	1.7 ~ 1740	0.00185 ~ 65 (working speed ≤150rpm)		
Drive&speed	Tubing	New Generation Easy Load Type Pump Head		New Generation Multichannel Type Pump Head		
		EasyPump (1.60 mm wall thickness)	EasyPump (2.40 mm wall thickness)	8 rollers		
	Tubing	13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#, 35#, 36#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness : 0.8 ~ 1 mm		
		LabF1/F1	1 ~ 150 rpm	0.053 ~ 645	1.8 ~ 775	0.002 ~ 52 (working speed ≤150rpm)
		LabF3/F3	1 ~ 350 rpm	0.053 ~ 1505	1.8 ~ 1808	
LabF6/F6	1 ~ 600 rpm	0.053 ~ 2580	1.8 ~ 3100			



Product Features

- 4.3" 컬러 LCD 스크린, 터치 스크린
- Servo 모터 컨트롤
- UC25 펌프헤드 장착 가능

Typical Application

- 대학 실험실 및 연구소

Product Composition and Flow Rate Range

Model	Pump Head	Speed Range(rpm)	Tubing Size	Flow Rate (ml/min)
LabV6-IV	UC25	0.1 ~ 600	15#, 24#, 35#, 36#	0.3423 ~ 6663
LabF6-IV		1 ~ 600		3.423 ~ 6663
LabN6-IV		0.1 ~ 600		0.3423 ~ 6663
LabM6-IV		0.5 ~ 600		1.7115 ~ 6663

Technical Specifications

Outlet pressure	0.14 ~ 0.27 Mpa	Power supply	AC 220V ± 10% 50Hz/60Hz(standard) AC 110V ± 10% 50Hz/60Hz(optional)
Motor type	Servo motor	Drive dimension	261.4 x 157.3 x 236.9 mm
Communication interface	LabV6-IV/LabF6-IV /LabN6-IV: RS232, RS485 support MODBUS protocol (RTU mode); LabM-IV: RS232(standard), Shenchen communication protocol; RS485(optional), Modbus protocol (RTU mode)	Drive weight	4.40 kg
		Power consumption	< 80W
		Condition temperature	0 ~ 40°C
		Relative humidity	< 80%
		IP rate	IP31

Drive	Model	Display	Operating mode	External control signal	Motor Status Output Interface
LabV6-IV	Intelligent flow rate type	4.3" -industrial-true color LCD Screen	Touch screen + Mechanical keypad	External speed control signal: 0 ~ 5V, 0 ~ 10V, 4 ~ 20mA for option; Start/Stop: Passive switch signal, such as foot pedal; Active switch signal: 5V(standard), 12V, 24V(optional)	open-collector output
LabF6-IV	Intelligent dispensing type	4.3" -industrial-true color LCD Screen	Touch screen + Mechanical keypad	Start/Stop: Passive switch signal, such as foot pedal; Active switch signal: 5V(standard), 12V, 24V(optional)	No
LabN6-IV	Standard flow rate type	3.2" LCD Screen	Mechanical keypad	External speed control signal: 0 ~ 5V, 0 ~ 10V, 4 ~ 20mA for option; Start/Stop: Passive switch signal, such as foot pedal; Active switch signal: 5V(standard), 12V, 24V(optional)	No
LabM6-IV	Standard type	3 digital LED	Mechanical keypad	External speed control signal: 0 ~ 5V(standard), 0 ~ 10V, 4 ~ 20mA(optional); Start/Stop: Passive switch signal, such as foot pedal; Active switch signal: 5V, 12V(optional), 24V(standard)	No



Product Features

- Servo 모터 컨트롤
- 펌프 유지보수에 탁월
- 3 디지털 LED 디스플레이
- 고유량 및 고정밀 이송 가능

Typical Application

- 산업 현장에 적합

Technical Specifications

Flow rate range	N6-3L: 0.211 ~ 3600 ml/min N6-6L: 0.3 ~ 6000 ml/min N6-12L: 0.00069 ~ 12 L/min	Power supply	AC 220V ±10% 50Hz/60Hz(standard) AC 110V ±10% 50Hz 60Hz(optional)
		Power consumption	N6-3L : <80W ; N6-6L : <180W ; N6-12L : <300W
Speed range	0.1 ~ 600 rpm	Communication interface	RS232, RS485 support MODBUS protocol (RTU mode)
Flow rate accuracy	< ±0.5%	Motor type	Servo motor
Speed resolution	0.1rpm	Copy numbers	1 ~ 9999 times, setting '0' means unlimited
Fixed time dispensing Function	0.1s ~ 9999h	Drive dimension (LxWxH)	N6-3L: 223 x 152 x 230 mm N6-6L: 283 x 192 x 264 mm N6-12L: 302 x 222 x 321 mm
Control method	Mechanical keypad+Rotary encoded switch	Drive weight	N6-3L: 5.06 kg; N6-6L: 7.88 kg; N6-12L: 13.01 kg
Display	3.2" high definition LCD screen	Relative humidity	< 80%
Start/Stop,direction signal	Passive switch signal, such as foot pedal switch Active switch signal: 5V, 12V and 24V for option	Environment temperature	0 ~ 40°C
External speed control signal	0 ~ 5V, 0 ~ 10V, 4 ~ 20mA for option	IP rate	IP31
Output interface	Output motor working status (Open-Collector output)	Back suction angle	0 ~ 360°

Product Composition and Flow Rate Range

Drive	Model	Pump Head	Tubing Size	Speed Range(rpm)	Flow Rate (ml/min)
N6-3L	Servo Motor	DZ25-3L	15#, 24#, 35#, 36#	0.1 ~ 600	0.211 ~ 3600
N6-6L		DZ25-6L	15#, 24#, 35#, 36#		0.3 ~ 6000
N6-12		YZ35	26#, 73#, 82#		0.69 ~ 12000

FLOW RATES PERISTALTIC PUMP

V6-3L/DZ25-3L, V6-6L/DZ25-6L, V6-12L/YZ35

0.00069 ~ 12 L/min
(depends on model)



Product Features

- Servo 모터 컨트롤, 정확한 컨트롤 가능
- 304 stainless steel 하우징
- 고유량 및 고정밀 이송 가능

Typical Application

- 산업 현장에 적합

Technical Specifications

Flow rate range	V6-3L: 0.211 ~ 3600 ml/min V6-6L: 0.3 ~ 6000 ml/min V6-12L: 0.00069 ~ 12 L/min	Start/Stop, direction signal	Passive switch signal, such as foot pedal switch Active switch signal: 5V, 12V and 24V for option
		Communication interface	RS232, RS485 support MODBUS protocol (RTU mode)
Speed range	0.1 ~ 600 rpm	Output interface	Output motor working status (Open-Collector output)
Speed resolution	0.01 rpm	Power supply	AC 220V ±10% 50Hz/60Hz (standard) AC 110V ±10% 50Hz/60Hz (optional)
Flow rate resolution	0.01 ml		
Flow rate accuracy	< ±0.5%	Drive dimension	V6-3L: 223 x 152 x 231 mm V6-6L: 283 x 192 x 274 mm V6-12L: 302 x 222 x 331 mm
Back suction angle	0 ~ 360°		
Outlet pressure	0.3 Mpa		
Motor type	Servo motor	Drive weight	V6-3L: 5.02 kg; V6-6L: 7.85 kg; V6-12L: 13.14 kg
Display	Industrial grade 4.3" color LCD display	Power consumption	V6-3L: < 80W ; V6-6L: < 180W ; V6-12L: < 300W
Control method	Touch screen and Mechanical keypad	Environment temperature	0 ~ 40°C
Keypad lifetime	300,000 times	Relative humidity	< 80%
External speed control signal	0 ~ 5V, 0 ~ 10V, 4 ~ 20mA for option	IP rate	IP31

Product Composition and Flow Rate Range

Drive	Model	Pump Head	Tubing Size	Speed Range(rpm)	Flow Rate (ml/min)
V6-3L	Servo Motor	DZ25-3L	15#, 24#, 35#, 36#	0.1 ~ 600	0.211 ~ 3600
V6-6L		DZ25-6L	15#, 24#, 35#, 36#		0.3 ~ 6000
V6-12L		YZ35	26#, 73#, 82#		0.69 ~ 12000

DISPENSING PERISTALTIC PUMP

F6-3L/DZ25-3L, F6-6L/DZ25-6L, F6-12L/YZ35

0.0069 ~ 12 L/min
(depends on model)



Product Features

- Servo 모터 컨트롤, 정확한 컨트롤 가능
- 304 stainless steel 하우징
- Filling line 지원
- 고유량, 고정밀 이송 가능

Typical Application

- 산업 현장에 적합

Technical Specifications

Flow rate range	F6-3L: 2.11 ~ 3600 ml/min	Control method	Touch screen and Mechanical keypad
	F6-6L: 3.0 ~ 6000 ml/min	Keypad lifetime	300,000 times
	F6-12L: 0.0069 ~ 12 L/min	Start/stop	Passive switch signal, such as foot pedal switch
Speed range	1 ~ 600 rpm	direction signal	Active switch signal: 5V, 12V and 24V for option
Speed resolution	0.01 rpm	Output interface	Output motor working status (Open-Collector output)
Dispensing volume range	0.1 ~ 9999.99 ml	Communication interface	RS232, RS485 support Modbus protocol (RTU mode)
Dispensing volume resolution	0.01 ml	Power supply	AC 220V ±10% 50Hz/60Hz (Standard)
Dispensing time	0.1 ~ 9999.99 s		AC 110V ±10% 50Hz/60Hz (Optional)
Pause time	0.1 ~ 9999.99 s	Drive dimension	F6-3L: 223 x 152 x 231 mm
Time resolution	0.01 s		F6-6L: 283 x 192 x 274 mm
Copy numbers	1 ~ 9999 times, setting '0' means unlimited		F6-12L: 302 x 222 x 331 mm
Back suction angle	0 ~ 360°	Drive weight	F6-3L: 5.02 kg ; F6-6L: 7.85 kg ; F6-12L: 13.14 kg
Outlet pressure	0.3 Mpa	Power consumption	F6-3L: < 80W ; F6-6L: < 180W ; F6-12L: < 300W
Dispensing accuracy	< ±0.5%	Condition temperature	0 ~ 40°C
Motor type	Servo motor	Relative humidity	< 80%
Display	Industrial grade 4.3" color LCD display	IP rate	IP31

Product Composition and Flow Rate Range

Drive	Model	Pump Head	Tubing Size	Speed Range(rpm)	Flow Rate (ml/min)
F6-3L	Servo Motor	DZ25-3L	15#, 24#, 35#, 36#	1 ~ 600	2.11 ~ 3600
F6-6L		DZ25-6L	15#, 24#, 35#, 36#		3.0 ~ 6000
F6-12L		YZ35	26#, 73#, 82#		6.9 ~ 12000

LOW PULSATION DISPENSING PERISTALTIC PUMP IF3

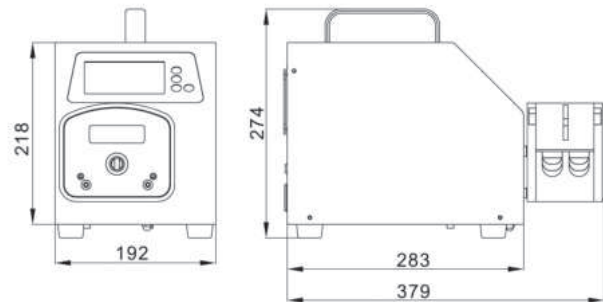
0.1 ~ 4340 ml/min
(depends on pump head)



Product Features

- Servo 모터 컨트롤
- 304 stainless steel 하우징
- 저맥동 이송 가능
- 튜브 수명 연장 가능
- 미세 유량의 고정밀 dispensing 가능

Dimension Drawing (Unit:mm)



Product Composition and Flow Rate Range

Drive	Model	Pump Head	Tubing Size	Speed Range(rpm)	Flow Rate (ml/min)
IF3	Servo motor	DY15 DY25	13#, 14#, 19#, 16#, 25#, 17#, 18# 15#, 24#, 35#, 36#	1 ~ 350	0.1 ~ 3337 4.2 ~ 4340

Filling Volume Reference Parameter(Media is water)

Tubing	Filling Volume	Filling Time	Actual Filling Volume(ml)										Filling Accuracy	
			1	2	3	4	5	6	7	8	9	10	Min	Max
14#	0.5 ml	0.5s	0.5003	0.5010	0.4982	0.5015	0.5015	0.5010	0.5014	0.5005	0.4981	0.4998	-0.37%	0.32%
			0.5025	0.4983	0.5024	0.5021	0.5020	0.5004	0.5005	0.4997	0.4977	0.5008		
14#	1 ml	1s	1.0037	1.0000	1.0026	1.0003	1.0031	1.0015	1.0000	1.0007	1.0023	1.0035	-0.44%	0.42%
			1.0002	1.0020	0.9968	1.0010	0.9986	1.0026	1.0030	1.0029	1.0023	1.0017		
14#	2 ml	1s	2.0020	2.0060	2.0039	2.0037	2.0047	1.9944	2.0062	2.0040	1.9951	2.0060	-0.58%	0.60%
			2.0036	1.9940	2.0024	2.0086	1.9946	2.0005	1.9951	2.0068	1.9971	1.9965		
19#	3 ml	1s	3.0058	2.9935	3.0092	3.0008	2.9927	3.0072	3.0046	2.9914	3.0040	3.0000	-0.33%	0.31%
			2.9902	3.0048	3.0008	2.9919	2.9984	3.0012	3.0084	2.9915	2.9990	3.0051		
16#	5 ml	1s	5.0215	4.9982	5.0145	5.0038	4.9864	5.0183	4.9962	5.0227	5.0158	4.9806	-0.39%	0.50%
			5.0248	5.0070	4.9861	5.0108	4.9995	5.0080	5.0044	4.9868	5.0231	4.9977		
25#	10 ml	1s	10.02	10.04	10.00	9.98	10.02	10.03	10.04	10.04	10.01	9.99	-0.20%	0.40%
			10.00	10.02	10.02	10.04	9.99	9.98	10.00	10.04	10.02	10.03		
25#	15 ml	1s	15.02	14.97	14.97	14.94	15.00	15.00	14.94	14.95	14.96	14.99	-0.47%	0.13%
			14.96	14.95	14.96	14.99	14.98	14.94	14.93	14.93	14.98	14.96		
17#	30 ml	1s	29.92	30.01	29.99	29.91	29.83	29.86	29.91	29.91	29.91	29.89	-0.57%	0.20%
			29.88	29.96	30.03	30.06	30.02	30.02	30.06	29.96	29.96	29.83		
18#	100 ml	2.5s	99.80	99.90	99.80	99.90	100.00	100.10	100.10	100.00	100.10	100.00	-0.20%	0.30%
			99.80	100.00	100.10	100.20	99.90	100.10	100.00	100.30	100.10	100.10		
15#	10 ml	1s	9.97	10.01	9.96	9.98	10.01	9.96	9.97	9.99	9.96	9.96	-0.60%	0.10%
			10.00	9.94	9.97	10.00	9.96	9.97	10.00	10.00	10.01	9.97		
24#	30 ml	1s	29.90	29.80	30.10	29.90	29.90	30.00	29.90	29.90	30.00	29.90	-0.67%	0.33%
			29.90	29.90	29.90	29.90	29.90	29.80	30.00	29.90	29.90	30.00		
35#	70 ml	1.2s	69.80	69.90	69.90	69.90	69.70	70.10	70.00	69.70	69.90	69.90	-0.43%	0.43%
			69.90	70.10	70.00	69.90	70.30	69.70	70.10	69.70	69.70	69.90		
36#	100 ml	2s	99.80	99.90	99.80	99.80	100.00	99.90	99.90	99.90	99.90	99.90	-0.20%	0.10%
			99.80	99.90	99.90	99.90	100.00	100.10	99.80	100.10	99.90	99.90		



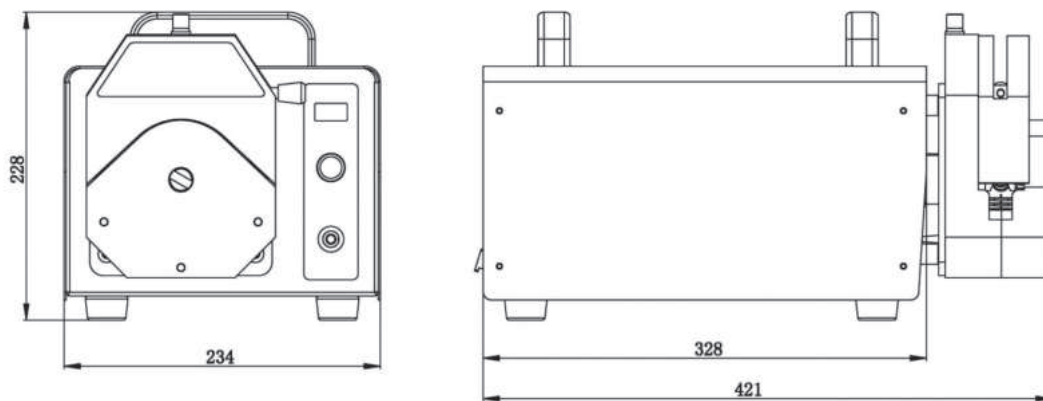
Product Features

- 산업용 튜빙펌프
- 고전력 DC 모터 컨트롤
- 2개의 펌프헤드 사용 가능
- 고유량, 고압 application에 적합

Typical Application

- 광물 처리 시스템에 화학 물질 추가 application에 적합
- 산업 발효 시스템에 산, 염기 추가 application에 적합
- 여과장비

Dimension Drawing (Unit:mm)



Technical Specifications

Flow rate range	414 ~ 12000 ml/min	External speed control signal	0 ~ 5V, 0 ~ 10V, 4 ~ 20mA for option
Speed range	60 ~ 600 rpm	Power supply	AC 220V ±10% 50Hz/60Hz (standard) AC 110V ±10% 50Hz/60Hz (optional)
Rotation direction	reversible	Drive dimension	328 x 234 x 228 mm (LxWxH)
Speed resolution	1 rpm	Drive weight	17 kg
Flow rate accuracy	< ±0.5%	Power consumption	< 300W
Outlet pressure	0.3 Mpa	Condition temperature	0 ~ 40°
Motor type	DC motor	Relative humidity	< 80%
Display	4 bit LED shows the current speed	IP rate	IP31
Speed control	Multiturn potentiometer control motor speed		

Product Composition and Flow Rate Range

Drive	Pump Head	Tubing Size	Speed Range(rpm)	Flow Rate (ml/min)
ZG600x	YZ35, YZ35-PPS 2 x YZ35, 2 x YZ35-PPS	26#, 73#, 82# 26#, 73#, 82#	60 ~ 600	414 ~ 12000 (each channel) 414 ~ 12000

PLANETARY GEAR TYPE INDUSTRIAL PERISTALTIC PUMP J25

1.0 ~ 28.15 L/min
(depends on pump head)



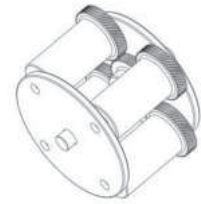
Product Features

- 알루미늄 합금 펌프헤드
- 304 stainless steel 롤러로 긴 수명, 내식성
- AC 모터 컨트롤 (주파수 사용으로 유량 조절)
- PLC, IPC, PC 연결 가능
- 고유량, 고압, 고점도, 고양정 액체 이송에 적합

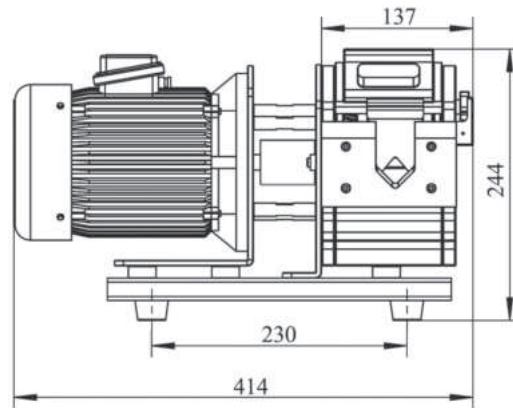
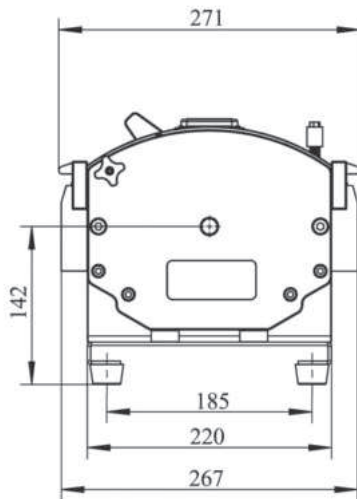
Typical Application

- 바이오메디컬
- 화학산업
- 환경보호

Roller Components Graph



Dimension Drawing (Unit:mm)



Product Composition and Flow Rate Range

Pump Head	Power Supply	Power	Speed (rpm)	Tubing		Flow Rate (L/min)	Pressure (Mpa)		Weight
				Size	ID x Wall thickness (mm)		Continuous	Intermittent	
DZ45	AC380V /50Hz	370W	37.5 ~ 350	88#	12.7 x 4.8	1.0 ~ 14.3	0.25	0.3	30 kg
			37.5 ~ 270	92#	25.4 x 4.8	3.68 ~ 28.15			

EXPLOSION PROOF PERISTALTIC PUMP EXP600

12.6 ~ 12000 ml/min
(depends on pump head)



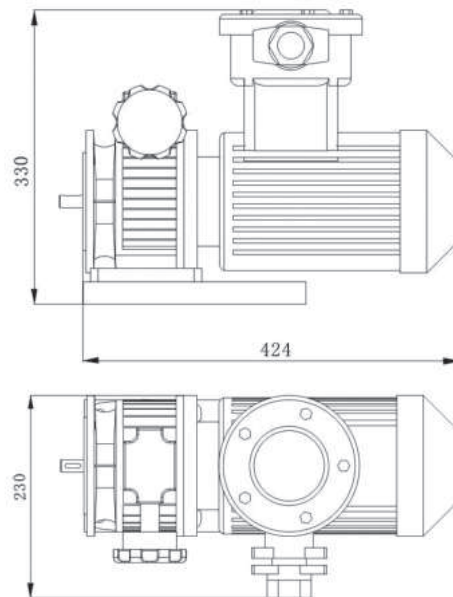
Product Features

- 방폭펌프 (방폭등급 : ExdII BT4 Gb)
- IP등급 : IP55
- 스텝리스 방식 속도조절
- 역방향 가능
- 7개 종류의 펌프헤드 장착 가능 (다양한 유량범위)

Typical Application

- 인화성, 폭발성 산업현장에 적합

Dimension Drawing (Unit:mm)



Technical Specifications

Speed range	180 ~ 600 rpm	Condition temperature	0 ~ 40°C
Speed control	Manual stepless speed regulation/ Inverter speed regulation	Relative humidity	< 80%
		Explosion-proof grade	ExdII BT4 Gb, ExdII CT4
Voltage	3 phase 380V (standard) 3 phase 220V (optional)	IP rate	IP55
		Drive dimension (LxWxH)	424 x 230 x 330 (mm)
Drive weight	30 kg		

Product Composition and Flow Rate Range

Drive	Speed	Pump Head	Tube Size	Flow Rate (ml/min)
EXP600	180 ~ 600rpm	YZ1515x	13#, 14#, 19#, 16#, 25#, 17#, 18#	12.6 ~ 2280
		YZ2515x	5#, 24#	306 ~ 1740
		YZ35	26#, 73#, 82#	1242 ~ 12000
		DZ25-3L	15#, 24#, 35#, 36#	379.8 ~ 3600
		DZ25-6L	15#, 24#, 35#, 36#	540 ~ 6000
		SN15	14#, 16#	43.2 ~ 528
		SN25	24#	450 ~ 1500

EXPLOSION PROOF PERISTALTIC PUMP QD600

0.111 ~ 3600 ml/min
(depends on pump head)



Product Features

- 방폭펌프
- 공압모터 컨트롤 (작동압력 0.1 ~ 0.4Mpa)
- 스텝리스 방식 속도조절
- Manual valve로 유량조절
- 시작/중지, 방향, 과부하 보호 기능

Suitable Pump Head



New Generation Easy Load Type Pump Head



YZ Series



New Generation Multichannel Type Pump Head



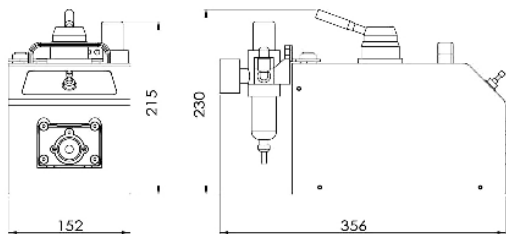
DZ25-3L

Typical Application

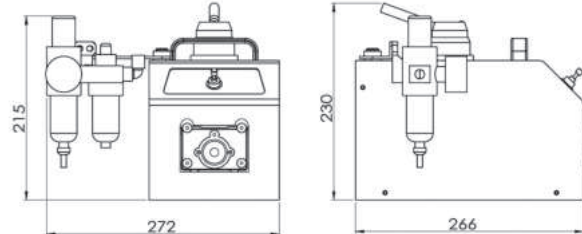
- 인화성, 폭발성 산업현장에 적합

Dimension Drawing (Unit:mm)

Working status dimension drawing



Non-working status dimension drawing



Technical Specifications

Speed range	60 ~ 600 rpm	Drive dimension (LxWxH)	Working: 266 x 272 x 230 mm Non-working: 356 x 152 x 230 mm
Display	Display air pressure	Drive weight	4.10 kg
Speed control	stepless speed regulation (By adjusting the flow valve)	Condition temperature	0 ~ 40°C
Control function	Start/stop, reversing (gas reversing valve control)	Relative humidity	< 80%
Working air pressure	0.1 ~ 0.4Mpa	IP rate	IP31
Gas consumption	4L/Sec		

Product Composition and Flow Rate Range

Flow Rates Peristaltic Pump		Pump Head & Flow Rate (ml/min)			
		YZ1515x	YZ2515x	MC1 ~ MC12(10)	DZ25-3L
Drive&speed	Tubing	13#, 14#, 19#, 16# 25#, 17#, 18#	15#, 24#	Inner diameter: 0.13 ~ 3.17 mm Wall thickness: 0.8 ~ 1 mm	15#, 24#, 35#, 36#
	QD600	60 ~ 600rpm	5 ~ 2280	100 ~ 1740	0.111 ~ 65 (working speed ~ 150rpm)

INTEGRATED FILLING SYSTEM DF600, DF600 Plus, DF600IV, DF350

Integrated filling system

DF600



Product Features

- 하나의 컨트롤러로 4개 그룹 제어 가능 (총 16개)
- 60가지의 filling modes 저장 가능
- Filling 진행 중에 bottle이 없을 때 Filling 중지 신호 수신 가능

Typical Application

- 제약, 건강제품, 진단시약 dispensing에 적합
- 음식, 음료 filling에 적합
- 화장품 filling에 적합

DF600 Plus



Product Features

- HMI, PLC 등 산업용 제어 시스템과 연결되어 하나의 컨트롤러로 8개의 그룹 제어 가능

DF600 IV (servo motor control)

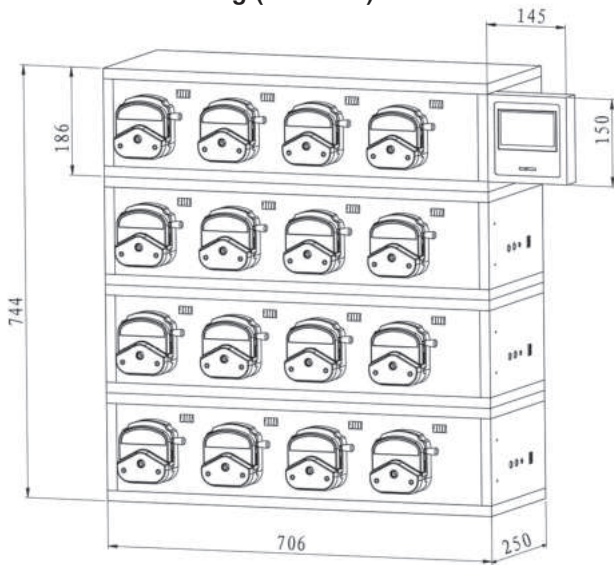


DF350 (servo motor control)



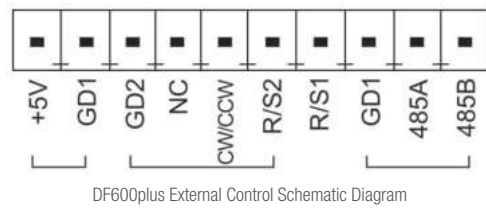
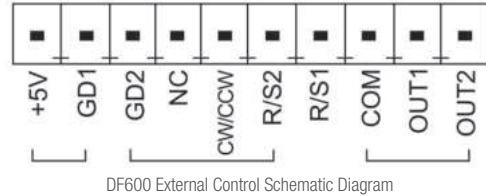
0.07 ~ 12000 ml/min
(depends on drive)

Dimension Drawing (Unit:mm)



External Control Schematic Diagram

- DF600에는 Filling 상태 output 신호가 있어서 장비에서 모니터링이 가능
- DF600 plus는 HMI와 원활한 연결을 할 수 있도록 MODBUS 프로토콜 통신을 사용



The pump type suffixed with "Plus" support MOD BUS communication protocol

Drive	Pump Head	Flow Rate (ml/min)	Motor Type	Drive Dimension (LxWxH)	Power Consumption	Drive Weight
DF600 DF600Plus	YZ1515x YZ2515x	0.07 ~ 2280 1.7 ~ 1740	Stepper motor	706x250x186 mm	Each Unit < 50W	21.8 kg
DF600 II DF600Plus II	DZ25-3L	2.11 ~ 3600	Servo motor	706x250x186 mm	Each Unit < 80W	21.8 kg
DF600 III DF600Plus III	DZ25-6L	3.0 ~ 6000	Servo motor	910x290x212 mm	Each Unit < 180W	41.45 kg
DF350 DF350Plus	DY15 DY25	0.1 ~ 3337 4.2 ~ 4340	Servo motor	910x290x212 mm	Each Unit < 180W	41.45 kg
DF600IV DF600Plus IV	YZ35	6.9 ~ 12000	Servo motor	1056x310x248 mm	Each Unit < 300W	58.6 kg



Pharmaceutical Filling Machine

Cosmetic Filling Line

Desktop filling system

KF300



The control unit

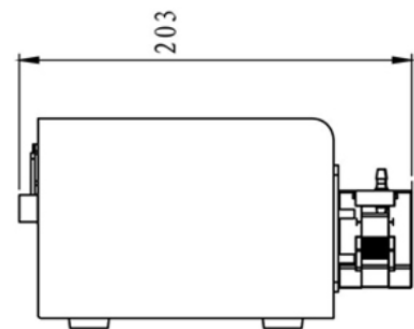
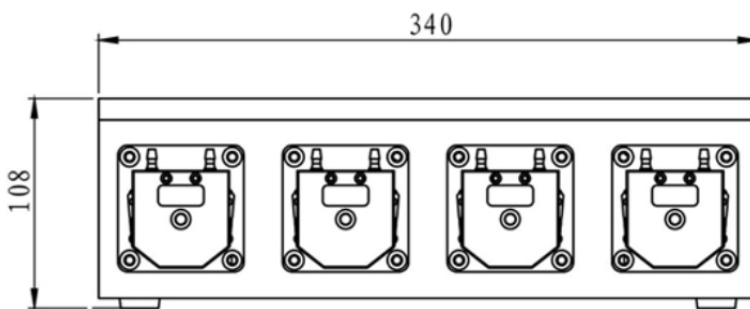
Product Features

- 원격으로 제어 가능
- 하나의 컨트롤러로 1 ~ 32대 제어 가능
- Compact한 사이즈
- 고정밀, micro 액체 filling에 적합

Typical Application

- 실험실 액체 분배
- 진단 시약 성분

Dimension Drawing (Unit:mm)



Technical Specifications

Speed range	1 ~ 300 rpm
Filling volume	0.01 ~ 9999.99 ml
Dispensing time	0.1 ~ 9999.99 s
Interval time	0.1 ~ 9999.99 s
Volume resolution	0.01 ml
Time resolution	0.01 s
Copy numbers	1 ~ 9999 times, 0 represent unlimited
Back suction angle	0 ~ 360°
Filling accuracy	< ±0.5%
Filling units	1 ~ 32units
Display	4.3" Industrial grade -color LCD display
Keypad lifetime	300,000 times

Control mode	Touch screen and Mechanical keypad
Start/stop, direction signal	Passive switch signal, such as :foot pedal switch; Active switch signal, 5V, 12V, 24V for options
Output interface	Output motor working status (Open-collector output)
Communication interface	RS485 support Mod bus protocol (RTU mode)
Power supply	AC 220V ±10% 50Hz/60Hz (standard) AC 110V ±10% 50Hz/60Hz (optional)
Condition Temperature	0 ~ 40°C
Relative humidity	< 80%
IP rate	IP31

SPECIAL TUBING FOR AGGRESSIVE MEDIA

화학적 특성이 강한 특수 tubing Tygon®

싱글/ 멀티채널 스톱퍼 Tubing Pump 용



강한 용매를 위한 스톱퍼 tubing Tygon® MHL

- 강한 화학성분에 높은 내구성
- USP CALSS VI 규격
- 흡착율이 낮은 최상조건의 이송
- 내화학성, 순도 및 다양한 적용의 장점
- 불투명한 베이지색 칼라
- 800시간 이상의 수명

Applications

- 배터리액 충전
- 소포액 이송
- 유독성 물질의 이송
- 산/염기성액, 케톤류, 염류, 알코올류에 적용
- 고른 내표면으로 고품질흡착이 적고, tubing의 순도를 유지

Specifications

- Tubing pump용 고순도 tubing
- 내경 2.79 mm까지의 스톱퍼 tubing 규격
- 내경 2.79 mm까지의 일반 tubing 규격
- 식품용 FDA 규격
- 고압증기멸균, 가스멸균, UV/감마레이 멸균 가능
- 무향, 무미 재질

화학 응용을 위한 스톱퍼 tubing Tygon® MHS

- 넓은 범위의 유체에 적합한 내 화학성
- 식용 재료에 사용 가능한 FDA 기준 충족
- 사용 유체에 오염이 없음
- 투명 컬러
- 75시간의 긴 튜빙 펌프 작동 수명

Applications

- 투명한 튜브를 통해 유체 흐름을 모니터링 해야 하는 어플리케이션
- 알약 코팅
- 실험실 단위의 분석, dispensing
- 하수 처리 과정의 산/염기성 유체 흐름
- 고른 내표면으로 고품질 흡착이 적고 튜빙의 순도를 유지

Specifications

Ultra-pure tubing for peristaltic pumps

- Tubing pump용 고순도 tubing
- 내경 2.79 mm까지의 스톱퍼 tubing 규격
- 내경 2.79 mm까지의 일반 tubing 규격
- 식품용 FDA 규격
- 고압증기멸균, 가스멸균, UV/감마레이 멸균 가능
- 무향, 무미 재질

MASTERFLEX PUMP TUBING

Rating comparison

평가결과

+ 적합
± 제한적으로 적합
- 비권장

1 추천하지 않음
10 최상



평가항목		Tygon®E-LFL	Tygon®LMT-55	PharMed® Ismaprene	Tygon®MHSL 2001	Tygon®MHLL
FDA		+	+	+	+	+
US Pharmacopoeia Class VI		+	-	+	-	+
투명도		+	+	-	+	-
수명		7	1	10	3	10
가스투과성	CO ₂	8	7	5	5	5
	O ₂	9	9	8	9	8
	N ₂	10	9	8	6	8
온도	0°C 이상	2	2	7	1	7
	0°C 이하	3	4	8	7	8
압력		9	5	1	1	1
흡수/흡착		6	6	9	10	9
Chemical Resistance						
산(H ₂ SO ₄)	10%	10	10	10	10	10
	30%	10	10	10	10	10
	95 ~ 98%	1	1	1	7	1
염기(NaOH)	10 ~ 15%	10	10	10	10	10
	30 ~ 40%	4	4	10	10	10
탄화수소(지방류)		1	1	1	1	1
미네랄염		10	10	10	10	10
알코올류		1	1	10	10	10
케톤(아세톤)		1	1	1	7	1

Maximum recommended operating pressure

WT*(mm)	i.d.(mm)	bar	bar	bar	bar	bar
1.6	0.8	8.7	8.7	3.7	N.A.	N.A.
1.6	1.6	4.8	4.8	2.1	3.1	N.A.
1.6	2.4	3.8	3.8	1.6	N.A.	N.A.
1.6	3.2	3.0	3.0	1.3	2.0	N.A.
1.6	4.8	2.2	2.2	0.9	1.5	N.A.
1.6	6.4	1.8	1.8	0.8	1.1	N.A.
1.6	8.0	1.5	1.5	0.6	0.9	N.A.
1.6	9.5	1.3	1.3	0.5	0.8	N.A.
1.6	11.1	1.2	1.2	0.5	N.A.	N.A.
1.6	12.7	1.1	1.1	0.5	N.A.	N.A.
1.6	15.9	1.0	1.0	0.4	N.A.	N.A.
2.4	4.8	3.0	3.0	1.3	N.A.	N.A.
2.4	6.4	2.4	2.4	1.0	N.A.	N.A.
2.4	8.0	2.0	2.0	0.8	N.A.	N.A.
2.4	9.5	1.8	1.8	0.8	N.A.	N.A.
2.4	11.1	1.5	1.5	0.6	N.A.	N.A.
2.4	12.7	1.3	1.3	0.6	N.A.	N.A.
2.4	15.9	1.2	1.2	0.5	N.A.	N.A.
3.2	6.4	3.0	3.0	1.3	N.A.	N.A.
3.2	9.6	2.2	2.2	0.9	N.A.	N.A.
3.2	12.7	1.8	1.8	0.8	1.1	N.A.
3.2	15.9	1.5	1.5	0.6	0.9	N.A.

*WT: Wall thickness

We recommend you to also observe the chart 'Tubing Properties' on the following pages. All information has been supplied to ISMATEC by the tubing manufacturers. It is for your guidance only. We recommend you to test the tubing before use



평가항목		Tygon®HC F-4040-A	Tygon®SL Silicone3350 (Platinum)	Silicone Peroxid	Norprene® A-60-G	Viton® Fluran® HCA F-5500-A
FDA		-	+	+	-	-
US Pharmacopoeia Class VI		-	+	+	-	-
투명도		±	±	±	-	-
수명		2	4	4	10	3
가스투과성	CO ₂	9	1	1	5	10
	O ₂	10	1	1	8	10
	N ₂	10	1	1	8	10
온도	0°C 이상	2	10	10	7	9
	0°C 이하	1	10	10	8	4
압력		7	1	1	1	1
흡수/흡착		6	1	1	9	7
Chemical Resistance						
산(H ₂ SO ₄)	10%	10	10	10	10	10
	30%	7	7	8	10	10
	95 ~ 98%	1	1	1	1	10
염기(NaOH)	10 ~ 15%	1	10	10	10	10
	30 ~ 40%	1	10	10	10	10
탄화수소(지방류)		7	1	1	1	7
미네랄염		10	7	7	10	10
알코올류		7	7	10	10	1
케톤(아세톤)		1	4	1	1	1

Maximum recommended operating pressure

WT*(mm)	i.d.(mm)	bar	bar	bar	bar	bar
1.6	0.8	10.9	1.9	1.9	3.7	3.7
1.6	1.6	6.1	1.0	1.0	2.1	2.1
1.6	2.4	4.8	0.8	0.8	1.6	1.6
1.6	3.2	3.8	0.6	0.6	1.3	1.3
1.6	4.8	2.7	0.5	0.5	0.9	0.9
1.6	6.4	2.2	0.4	0.4	0.8	0.8
1.6	8.0	1.8	0.3	0.3	0.6	0.6
1.6	9.5	1.6	0.3	0.3	0.5	0.5
1.6	11.1	1.5	0.3	0.3	0.5	0.5
1.6	12.7	1.4	0.2	0.2	0.5	0.5
1.6	15.9	1.2	0.2	0.2	0.4	0.4
2.4	4.8	3.8	0.6	0.6	1.3	1.3
2.4	6.4	3.0	0.5	0.5	1.0	1.0
2.4	8.0	2.5	0.4	0.4	0.8	0.8
2.4	9.5	2.2	0.4	0.4	0.8	0.8
2.4	11.1	1.8	0.3	0.3	0.6	0.6
2.4	12.7	1.7	0.3	0.3	0.6	0.6
2.4	15.9	1.5	0.3	0.3	0.5	0.5
3.2	6.4	3.8	0.6	0.6	1.3	1.3
3.2	9.6	2.7	0.5	0.5	0.9	0.9
3.2	12.7	2.2	0.4	0.4	0.8	0.8
3.2	15.9	1.8	0.3	0.3	0.6	0.6

*WT: Wall thickness

Properties of MASTERFLEX tubing







- Proven quality for a wide range of laboratory applications. Be sure to choose the tubing most suitable for your application.



Type	Tygon®E-LFL	Tygon®LMT-55	PharMed® Ismaprene	Tygon®MHS 2001	Tygon®MHLL
Special Properties	The tubing with longest service life of any clear tygon® tubing	The inexpensive all-round tubing for general laboratory applications	The ideal tubing for pharmaceutical and medical applications, and for foodstuffs	The transparent, plasticiser-free tubing with superior pump-life. Especially designed for MEK and other aggressive solvents	Chemically resistant to acetone, MEK and other aggressive solvents. Long life tubing
Advantages	<ul style="list-style-type: none"> • Transparent • Broad chemical resistance • Tasteless • Extremely low particulate spallation • Meets USP Class VI and FDA criteria • Non-aging • High dielectric constant 	<ul style="list-style-type: none"> • Transparent • Resistant to almost all inorganic chemicals • Tasteless • Smooth polished inner wall • Low gas permeability • Non-aging and non-oxidizing • High dielectric constant 	<ul style="list-style-type: none"> • Recommendable for cell and tissue cultures • Ideal for production filtration, fermentation and bioreactor process lines • Very long service-life • Non-toxic and non-hemolytic • Impermeable to normal light and UV-radiation • Appropriate for medical products and foodstuffs • Low particulate spallation • Can be autoclaved repeatedly • Withstands repeated CIP and SIP cleaning and sterilization • Meets USP class VI, FDA and NSF criteria 	<ul style="list-style-type: none"> • Plasticizer and oil-free • Smooth inner-bore • Low sorption maintains fluid and tube integrity • Does not impart anything into the pumping medium • No release of hazardous materials when properly incinerated 	<ul style="list-style-type: none"> • Plasticizer-free • Smooth innerbore • Low sorption maintains fluid integrity • Minimal adhesion and diffusion • Suitable for MEK, Acetone and other corrosive solvents • Long life tubing
Limitations	<ul style="list-style-type: none"> • Potential leaching of plasticizers • Not recommended for human blood and tissue 	<ul style="list-style-type: none"> • Potential leaching of plasticizers • Short service-life 	<ul style="list-style-type: none"> • Potential leaching of additives(lubricants) 	None	<ul style="list-style-type: none"> • Cannot be repeatedly sterilized • Only available as stopper tubing
Physical Properties	<ul style="list-style-type: none"> • Thermoplastic • PVC-based material with plasticizer • Flexible, firm, transparent 	<ul style="list-style-type: none"> • Thermoplastic • PVC-based material with plasticizer • Flexible, firm, transparent 	<ul style="list-style-type: none"> • Thermoplastic Elastomer based on polypropylene • Flexible, firm, opaque 	• Polyolefin	<ul style="list-style-type: none"> • Special thermoplastic of high purity • Without additives • Without plasticizer • Environmental-friendly disposal • Flexible, firm, opaque
Service Temperature Range	-50°C to +74°C (-58°F to + 165°F)	-50°C to +74°C (-58°F to + 165°F)	-60°C to +135°C (-75°F to + 275°F)	-73°C to +57°C (-100°F to + 135°F)	-70°C to +74°C (-94°F to + 165°F)
Applications	Acids: good	Acids: good	Acids: good	Acids: excellent	Acids: excellent
	Alkaline solutions: good	Alkaline solutions: good	Alkaline solutions: good	Alkaline solutions: excellent	Alkaline solutions: excellent
	Solvents: not recommended	Solvents: not recommended	Solvents: not recommended	Solvents: good/excellent	Solvents: excellent
	Pressure: good	Pressure: fair	Pressure: not recommended	Pressure: -	Pressure: not recommended
	Vacuum: good	Vacuum: good	Vacuum: excellent	Vacuum: -	Vacuum: good
	Viscous media: excellent	Viscous media: excellent	Viscous media: good	Viscous media: -	Viscous media: good
	Sterile Media: limited	Sterile Media: limited	Sterile Media: excellent	Sterile Media: -	Sterile Media: good
Complies with the standards	FDA 21 CFR175.300 US Pharmacopoeia Class VI	FDA 21 CFR175.300	FDA 21 CFR177.2600 US Pharmacopoeia Class VI NSF listed(Standard 51)	FDA	FDA 21 CFR177.2600 USP Pharmacopoeia Class VI
Sterilization	Autoclaveable with steam 30 minutes at 1 bar (15 psi) and 121°C(250°F); tubing will appear milky Gas sterilization with Ethylene oxide Not recommended for sterilization with radiation	Autoclaveable with steam 30 minutes at 1 bar (15 psi) and 121°C(250°F); tubing will appear milky Gas sterilization with Ethylene oxide Not recommended for sterilization with radiation	Autoclaveable with steam 30 minutes at 1 bar (15 psi) and 121°C(250°F) Gas sterilization with Ethylene oxide/Sterilization with radiation up to 2.5 mrad /Caution:Use special tubing version(welded stoppers) when autoclaving 2 or 3-stop colour-coded tubing	Autoclaveable with steam 30 minutes at 1 bar (15 psi) and 121°C(250°F) Gas sterilization with Ethylene oxide Sterilization with radiation up to 2.5 mrad	Autoclaveable with steam 30 minutes at 1 bar (15 psi) and 121°C(250°F) Gas sterilization with Ethylene oxide Sterilization with radiation up to 2.5 mrad Caution : Can not be repeatedly sterilized
Gas permeability ¹	CO ₂ : 563	CO ₂ : 360	CO ₂ : 1200	CO ₂ : 1140	CO ₂ : -
	O ₂ : 124	O ₂ : 80	O ₂ : 200	O ₂ : 76	O ₂ : -
	N ₂ : 67	N ₂ : 40	N ₂ : 80	N ₂ : 190	N ₂ : -
Odour and Taste	none	none	low	-	-
Toxicity	non-toxic	non-toxic	non-toxic and non-hemolytic	-	-
Tubing life ³	at 0 bar: 800 hrs	at 0 bar: 35 hrs	at 0 bar: 1000 + hrs	at 0 bar: 75 hrs	at 0 bar: 800 + hrs
	at 0.7 bar: 700 hrs	at 0.7 bar: 30 hrs	at 0.7 bar: 1000 hrs	at 0.7 bar: -	at 0.7 bar: 800 + hrs

¹ Permeability Coefficient = $\frac{\text{Amount of gas (cm}^3\text{) x tubing wall thickness (cm)}}{\text{Surface area of tubing ID (cm}^2\text{) x time (seconds) x pressure drop across tubing wall (cmHg)}} \times 10^{-11}$

- This information has been supplied to Ismatec by the tubing manufacturers. It is for your guidance only
- We recommend you to test the tubing before use

					
Tygon®HC F-4040-A	Tygon®SI Silicone3350 (Platinum)	Silicone Peroxid	Norprene® A-60-G	Norprene® Chemical	Viton® Fluran®HCA F-5500-A
The special tubing for hydrocarbons, petroleum products and distillates	The platinum-cured silicone tubing with an ultra-smooth inner surface for sanitary transfer of sensitive fluids	Silicone tubing blended with organic peroxide for biological applications	The high performance tubing for industrial use	Chemically resistant to acetone, MEK and other aggressive solvents. Long life tubing	The special tubing for concentrated acids and corrosive solvents
<ul style="list-style-type: none"> • Specially formulated to transport hydrocarbons, petroleum products and distillates • Ideal for gasoline, kerosene, heating oils, cutting liquids and coolants based on glycols • High dielectric constant • Low gas permeability 	<ul style="list-style-type: none"> • Steam autoclaveability • Excellent biological compatibility • Ultra-smooth inner bore reduces potential for particle entrapment • Lower level of protein binding • Entirely non-toxic, nonhemolytic and non-pyrogenic • Weather, ozone, sunlight and radiation resistant • Resistant to fungus • Odourless 	<ul style="list-style-type: none"> • Steam autoclaveability • Excellent biological compatibility • Greater physical compression capability • Not prone to mould • Non-toxic • Waterproof and resistant to ozone, radiation and sunlight • Resistant to fungus • Odourless 	<ul style="list-style-type: none"> • Offers longest service-life with good flow consistency • Good resistance to acids and alkaline chemicals • Superior Weathering • Abrasion resistant • Non-ageing and non-oxidizing • Outstanding flexural fatigue resistance • Low gas permeability versus rubber tubing • Ozone(300pphm) and UV light resistant • Ideal for use in vacuum system 	<ul style="list-style-type: none"> • Plasticizer-free • Smooth innerbore • Low sorption maintains fluid integrity • Minimal adhesion and diffusion • Suitable for MEK, Acetone and other corrosive solvents • Long life tubing 	<ul style="list-style-type: none"> • High chemical resistance • Low gas permeability • Wide temperature range
<ul style="list-style-type: none"> • Not recommended for strong acids and alkalis, foodstuffs, beverages and medicines • Potential leaching of plasticizers 	<ul style="list-style-type: none"> • Not suitable for concentrated solvents, oils, acids or diluted sodium hydroxide • Relatively high gas permeability 	<ul style="list-style-type: none"> • Not recommended for concentrated solvents, oils, acids or diluted sodium hydroxide • Relatively high gas permeability 	<ul style="list-style-type: none"> • Potential leaching of blend material 	<ul style="list-style-type: none"> • Cannot be repeatedly sterilized • Only available as stopper tubing 	<ul style="list-style-type: none"> • Limited service-life
<ul style="list-style-type: none"> • Thermoplastic • PVC-based material with plasticizer • Flexible, firm, translucent, yellow 	<ul style="list-style-type: none"> • Thermal set rubber • Siloxane polymers and amorphous silica • Soft, translucent, clear to light amber • Excellent compression strength 	<ul style="list-style-type: none"> • Polydimethylsiloxane with silica filler and silicone oil • Excellent resistance to compression • Soft, translucent, clear to light amber 	<ul style="list-style-type: none"> • Thermoplastic elastomer based on polypropylene • Excellent tensile strength • Firm, opaque, black 	<ul style="list-style-type: none"> • Special thermoplastic of high purity • Without additives • Without plasticizer • Environmental-friendly disposal • Flexible, firm, opaque 	<ul style="list-style-type: none"> • Fluoropolymerelastomer • Firm, opaque, black
-37°C to +74°C (-35°F to +165°F)	-60°C to +200°C (-75°F to +392°F)	-51°C to +238°C (-60°F to +460°F)	-60°C to +135°C (-75°F to +275°F)	-70°C to +74°C (-94°F to +165°F)	-31°C to +204°C (-25°F to +400°F)
limited	limited	limited	excellent	excellent	excellent
not recommended	limited	good	excellent	excellent	excellent
not recommended	limited	not recommended	not recommended	excellent	limited
good	not recommended	not recommended	not recommended	not recommended	not recommended
good	good	good	good	good	good
excellent	fair	fair	excellent	good	good
limited	excellent	excellent	not recommended	good	fair
None	US Pharmacopoeia XXIII Class VI FDA 21CFR177.2600 also exceeds 3A sanitary standards	US Pharmacopoeia Class VI FDA 21CFR177.2600	None	FDA 21CFR177.2600 USP Pharmacopoeia Class VI	None
Not recommended	Autoclaveable with steam 30 minutes at 1 bar (15 psi) and 121°C(250°F) Gas sterilization with Ethylene oxide Sterilization with radiation up to 2.5 mrad	Autoclaveable for 30 min at 1 bar (15 psi),121°C(250°F) Radiation : Irradiate at up to 2.5 mrad Gas :Not recommended to sterilize with Ethylene oxide	Not recommended	Autoclaveable with steam 30 minutes at 1 bar (15 psi) and 121°C(250°F) Gas sterilization with Ethylene oxide Sterilization with radiation up to 2.5 mrad Caution : Can not be repeatedly sterilized	Not recommended
100	25147	25147	1200	-	38
22	4715	4715	200	-	14
12	2284	2284	80	-	5
²	none	-	²	-	²
²	non-toxic	-	²	-	²
60 hrs	200 hrs	-	1000 + hrs	800 + hrs	150 hrs
60 hrs	100 hrs	-	1000 hrs	800 + hrs	90 hrs

² Must not be used for foodstuffs, beverages, and drugs

³ Tubing 6.4 mm i.d., 1.6 mm wall, 3-roller pump head, 600 rpm, 23°C, service-life ending with rupture (ISMATEC® tubing pumps run at approx. 11 rpm-500 rpm)

Pump tubing ordering information

Standard tubing for single channel pumps

i.d. mm	WT mm	Tygon® E-LFL	Tygon® LMT-55	PharMed® Ismaprene	Tygon® HC F-4040-A	Tygon® MHSL2001	Tygon® SI Silicone3350	Silicone Peroxide	Norprene® A-60-G	Norprene® Chemical	Viton® Fluran® HCA F-5500-A
0.8	1.6	06511-02		06515-02			06517-02	06516-02	06514-02		06519-02
1.6	1.6	06511-04	06507-01	06515-04	06512-04	06518-04	06517-04	06516-04	06514-04		06519-04
2.4	1.6										
3.2	1.6	06511-08	06507-05	06515-08	06512-08	06518-08	06517-08	06516-08	06514-08	95716-06	06519-08
4.8	1.6	06511-14	06507-09	06515-14	06512-14	06518-14	06517-14	06516-14		95716-11	06519-14
6.4	1.6	06511-16	06507-11	06515-16	06515-16	06518-16	06517-16	06516-16	06514-16	95716-14	06519-16
8	1.6	06511-18		06515-18	06512-18	06518-18	06517-18	06516-18	06516-18		06519-18
9.5	1.6		06507-15		06512-22	06518-22	06517-22		06514-22	95716-21	
11.1	1.6				06512-26						
4.8	2.4			06515-32	06512-32		06517-32	06516-32	06514-32		06519-32
6.4	2.4		06507-21	06515-34	06512-34		06517-34	06516-34	06514-34		09519-34
8	2.4								06514-36		06519-58
9.5	2.4						06517-38	06516-38	06514-38		
11.1	2.4										
12.7	2.4				06512-44						
6.4	3.2	06511-54		06515-54			06517-54		06514-54		
9.5	3.2	06511-58	06507-39	06515-58			06517-58		06514-58		
12.7	3.2	09511-64	06507-43	06515-64		06818-64	06517-64		06514-64	95716-29	
15.9	3.2			06515-66		06518-66			06514-66		

WT = Wall thickness

Extension tubing for 2 and 3-stop tubing

i.d. mm	WT mm	o.d. mm	Tygon® LMT-55	PharMed® Ismaprene	Tygon® HC F-4040-A	Silicone Peroxide	silicon Platin	Viton® Fluran® HCA F-5500-A	Tygon® MHSL2001
0.13	0.91	1.95	05502-09						
0.19	0.91	2.01	05502-10	95809-10	95712-10				
0.25	0.91	2.07	05502-12	95809-12	95712-12	07625-12			
0.38	0.91	2.2	05502-14	95809-14	95712-14	07625-14			96467-14
0.44	0.91	2.26	05502-16						
0.51	0.91	2.33	05502-18	95809-18	95712-18	07625-18		97632-18	
0.57	0.91	2.39	05502-19						
0.64	0.91	2.46		95809-22		07625-22	95612-22	97632-22	96467-22
0.76	0.86	2.48	05502-24	95809-24		07625-24	95612-24	97632-24	
0.89	0.86	2.61		95809-26	95712-26	07625-26		97632-26	
0.95	0.86	2.67	05502-27						
1.02	0.86	2.74	05502-28	95809-28		07625-28		97632-28	96467-28
1.09	0.86	2.81	05502-29						
1.14	0.86	2.86	05502-30	95809-30	95712-30	07625-30		97632-30	
1.22	0.86	2.94	05502-31						
1.3	0.86	3.02	05502-32	95809-32	95712-32	07625-32		97632-32	
1.42	0.86	3.14	05502-34	95809-34		07625-34	95612-34	97632-34	
1.52	0.86	3.24	05502-36	95809-36	95712-36	07625-36		97632-36	96467-36
1.65	0.86	3.37	05502-38	95809-38		07625-38	95612-38	97632-38	
1.75	0.86	3.47	05502-39						
1.85	0.86	3.57	05502-40	95809-40	95712-40	07625-40	95612-40	97632-40	
2.06	0.86	3.78	05502-42	95809-42	95712-42	07625-42		97632-42	96467-42
2.29	0.86	4.01	05502-44	95809-44		07625-44		97632-44	
2.54	0.86	4.26	05502-46	95809-46		07625-46		97632-46	
2.79	0.86	4.51	05502-48	95809-48	95712-48	07625-48		97632-48	96467-48
3.17	0.86	4.89	05502-49						

WT = Wall thickness

3-Stopper tubing for MS/CA cassettes

i.d. mm	Color-code	Tygon® E-LFL	Tygon® LMT-55	PharMed® Ismaprene	Tygon® HC F-4040-A	Tygon® MHSL2001	Tygon® SI Silicone3350	Silicone Peroxide	Viton® Fluran® HCA F-5500-A
0.13 (1)	orange-black								
0.19 (1)	orange-red	96450-10	97619-10	95714-10	95715-10				
0.25 (1)	orange-blue	96450-12	97619-12	95714-12	95715-12				
0.38 (1)	orange-green	96450-14	97619-14	95714-14	95715-14	96466-14			
0.44 (1)	green-yellow		97619-16						
0.51 (1)	orange-yellow	96450-18	97619-18	95714-18	95715-18			07624-18	97629-18
0.57 (1)	white-yellow		97619-19						
0.64 (1)	orange-white	96450-22	97619-22	95714-22	95715-22	96466-22		07624-22	97629-22
0.76 (2)	black-black	96450-24	97619-24	95714-24	95715-24			07624-24	97629-24
0.89 (2)	orange-orange	96450-26	97619-26	95714-26	95715-26			07624-26	97629-26
0.95 (2)	white-black								
1.02 (2)	white-white	96450-28		95714-28	95715-28	96466-28		07624-28	97629-28
1.09 (2)	white-red		97619-29						
1.14 (2)	red-red	96450-30	97619-30	95714-30	95715-30			07624-30	97629-30
1.22 (2)	red-grey		97619-31						
1.30 (2)	grey-grey	96450-33 (1.37 mm)	97619-32	95714-32	95715-32			07624-32	97629-32
1.42 (2)	yellow-yellow	96450-34	97619-34	95714-34	95715-34			07624-34	97629-34
1.52 (2)	yellow-blue	96450-36	97619-36	95714-36	95715-36	96466-36		07624-36	97629-36
1.65 (2)	blue-blue	96450-37(1.6 mm)	97619-38	95714-38	95715-38			07624-38	97629-38
1.75 (2)	blue-green								
1.85 (2)	green-green	96450-40	97619-40	95714-40	95715-40			07624-40	97629-40
2.06 (2)	purple-purple	96450-42	97619-42	95714-42	95715-42	96466-42		07624-42	97629-42
2.29 (2)	purple-black	96450-43(2.2 mm)			95715-44			07624-44	97629-44
2.54 (2)	purple-orange	96450-47(2.62 mm)		95714-46	95715-46			07624-46	97629-46
2.79 (2)	purple-white	96450-48	97619-48	95714-48	95715-48	96466-48		07624-48	97629-48
3.17 (2)	black-white	96450-49	97619-49						
Pack		12	6	12	6	6	6	6	12
tube length(mm)		400	400	400	300	400	400	400	400

(1) Wall thickness : 0.91 mm (2) Wall thickness : 0.86 mm

2-Stopper tubing for CA cassettes

i.d. mm	Color-code	Tygon® E-LFL	Tygon® LMT-55	PharMed® Ismaprene	Tygon® HC F-4040-A	Tygon® MHSL2001	Tygon® SI Silicone3350	Silicone Peroxide	Viton® Fluran® HCA F-5500-A
0.13 (1)	orange-black		97618-09						
0.19 (1)	orange-red	96449-10	97618-10	95723-10	95703-10				
0.25 (1)	orange-blue	96449-12		95723-12	95703-12			07616-12	
0.38 (1)	orange-green	96449-14	97618-14	95723-14	95703-14	96465-14			
0.44 (1)	green-yellow		97618-16						
0.51 (1)	orange-yellow	96449-18		95723-18	95703-18				97628-18
0.57 (1)	white-yellow								
0.64 (1)	orange-white	96449-22		95723-22	95703-22	96465-22		07616-22	97628-22
0.76 (2)	black-black	96449-24	97618-24	95723-24	95703-24			07616-24	97628-24
0.89 (2)	orange-orange	96449-26	97618-26	95723-26	95703-26			07616-26	97628-26
0.95 (2)	white-black								
1.02 (2)	white-white	96449-28	97618-28	95723-28	95703-28	96465-28		07616-28	97628-28
1.09 (2)	white-red		97618-29						
1.14 (2)	red-red	96449-30	97618-30	95723-30	95703-30			07616-30	97628-30
1.22 (2)	red-grey	96449-31	97618-31						
1.30 (2)	grey-grey	96449-33(1.37 mm)	97618-32	95723-32	95703-32			07616-32	97628-32
1.42 (2)	yellow-yellow	96449-34	97618-34	95723-34	95703-34			07616-34	97628-34
1.52 (2)	yellow-blue	96449-36		95723-36	95703-36	96465-36		07616-36	97628-36
1.65 (2)	blue-blue	96449-37(1.6 mm)	97618-38	95723-38	95703-38			07616-38	97628-38
1.75 (2)	blue-green		97618-39						
1.85 (2)	green-green	96449-40	97618-40	95723-40	95703-40			07616-40	97628-40
2.06 (2)	purple-purple	96449-42	97618-42	95723-42	95703-42	96465-42		07616-42	97628-42
2.29 (2)	purple-black	96449-43(2.2 mm)	97618-44	95723-44	95703-44			07616-44	97628-44
2.54 (2)	purple-orange	96449-47(2.62 mm)	97618-46	95723-46	95703-46			07616-46	97628-46
2.79 (2)	purple-white	96449-48	97618-48	95723-48	95703-48	96465-48		07616-48	97628-48
3.17 (2)	black-white		97618-49						
Pack		12	12	6	12	6	6	6	12
tube length(mm)		400	400	400	400	380	400	400	180

(1) Wall thickness : 0.91 mm (2) Wall thickness : 0.86 mm

PERISTALTIC PUMP TUBING

Silicone Tubing

Silicone Tubing

- Platinum-cured silicone tubing

Slightly clarity, smooth surface, low protein binding levels, fewer potential leachable.

Ideal for pharmaceutical and biotechnology use, suitable temperature range -51 ~ 238°C.

Micro Flow Rate Tubing

Tubing Size		0.13 x 0.86	0.5 x 0.86	0.86 x 0.86	1.52 x 0.86	2.06 x 0.86	2.79 x 0.86	1 x 1	2 x 1	3 x 1	2.4 x 0.8	
Tubing cross sections (1:1)												
Wall thickness (mm)		0.86						1.0			0.8	
Inside diameter (mm)		0.13	0.5	0.86	1.52	2.06	2.79	1.0	2.0	3.0	2.4	
Maximum pressure (Mpa)	Continuous	0.1										
	Intermittent	0.1										

Basic Flow Rate Tubing

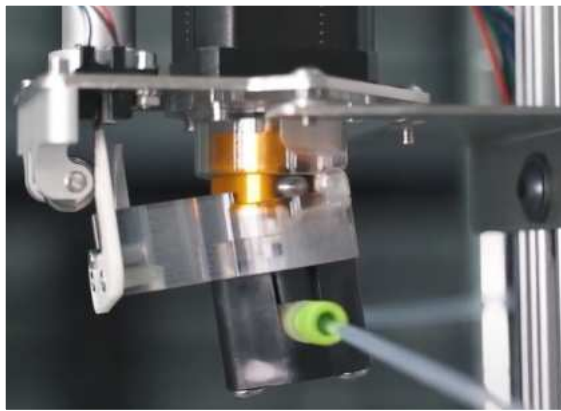
Tubing Size		13#	14#	19#	16#	25#	17#	18#	15#	24#	35#	36#	
Tubing cross sections (1:1)													
Wall thickness	mm	1.6						2.4					
	inch	1/16						3/32					
Inside diameter	mm	0.8	1.6	2.4	3.1	4.8	6.4	7.9	4.8	6.4	7.9	9.6	
	inch	1/32	1/16	3/32	1/8	3/16	1/4	5/16	3/16	1/4	5/16	3/8	
Maximum pressure (Mpa)	Continuous	0.17			0.14	0.1	0.07	0.17			0.14		
	Intermittent	0.27			0.24	0.14	0.1	0.27			0.24		

Industrial Tubing

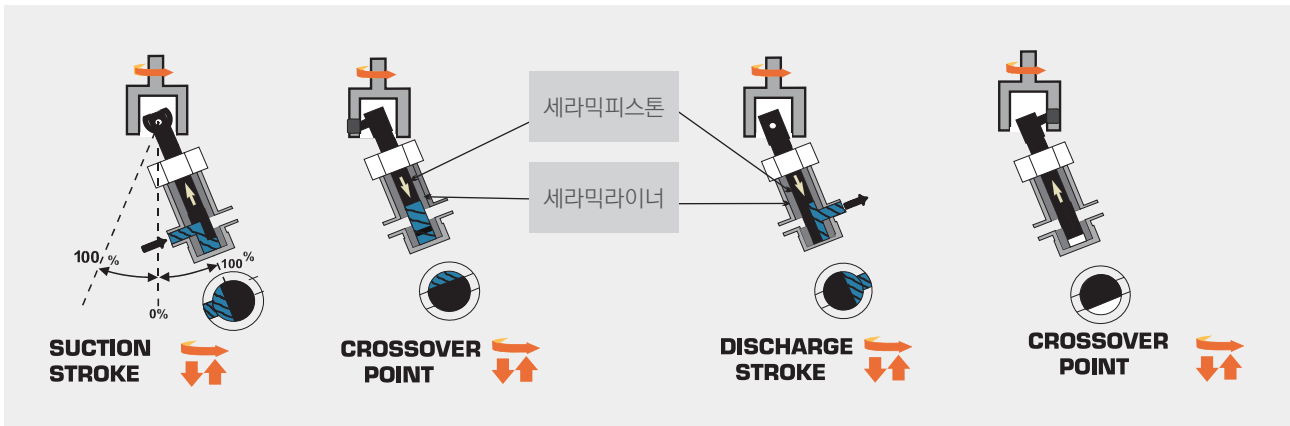
Tubing Size		26#	73#	82#	86#	90#	88#	92#	
Tubing cross sections (1:1)									
Wall thickness	mm	3.3			6.3		4.8		
	inch	1/8			1/4		3/16		
Inside diameter	mm	6.4	9.6	12.7	9.5	19	12.7	25.4	
	inch	1/4	3/8	1/2	3/8	3/4	1/2	1	
Maximum pressure (Mpa)	Continuous	0.2			0.25				
	Intermittent	0.27			0.3				

Piston Pump

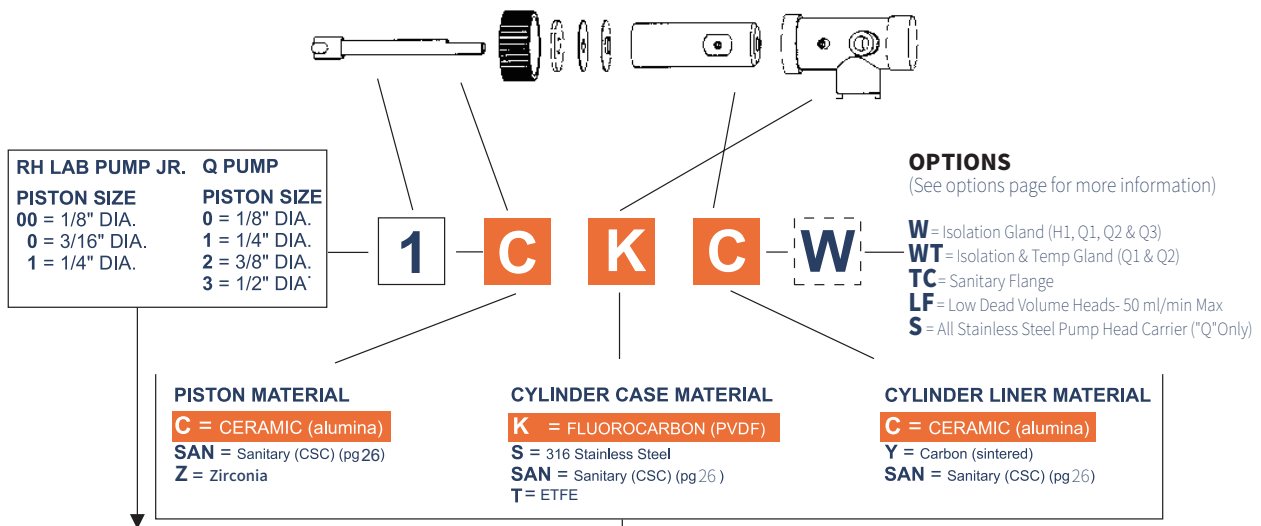
FMI 64
Rotary piston pump, OEM Pump,
Rotary piston pump heads



Working Principle, Head Configuration



Pump Head Materials Configuration



사용 가능 모듈

피스톤 사이즈 (Code)	펌프 헤드별 재질 구성								최대 유량 ml/stroke
	CKC	CKY	CSC	CSY	SAN	CTC	ZKC	ZTC	
RH00							사용 가능 모듈	사용 가능 모듈	0.025
RH0	사용 가능 모듈					사용 가능 모듈			0.05
RH1	사용 가능 모듈					사용 가능 모듈			0.1
Q0									0.08
Q1	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈			0.32
Q2	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈			0.72
Q3	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈	사용 가능 모듈			1.28
피스톤 재질	세라믹	세라믹	세라믹	세라믹	세라믹	세라믹	지르코니아	지르코니아	
케이스 재질	PVDF	PVDF	SUS316	SUS316	SUS316	ETFE	PVDF	ETFE	
실린더 재질	세라믹	카본	세라믹	카본	세라믹	세라믹	세라믹	세라믹	
온도(°C)	100	100	175	175	175	100	100	100	

* Q 모델은 피스톤 재질을 SUS316으로 선택 가능

REGLO Pump Drive



Features

- 5" (12.7 cm) capacitive TFT/RGB touch screen
- MasterflexLive 혹은 아날로그 원격제어 가능
- 연속실행 / 볼륨 / 시간 / 프로그램 제어 가능
- 0.025 ~ 180 ml/min 유량범위를 가지는 FMI 펌프헤드와 호환

Specifications REGLO-Z,ZS DIGITAL

Motor type	DC motor
Speed range	1 ~ 1800rpm
Speed setting	rpm, resolution 1rpm
Flow rate setting	ml/min, liters/min
Power consumption	90 ~ 260VAC
Mains connection	100 ~ 230V/50 ~ 60Hz
Protection rating	IP31
size	14.6x19.4x16cm

Ordering Information

The complete pump system	
Drive(magnet included)	78018-60
Accessories-foot switch	78016-93

Weight

Drive REGLO-Z	1.7 kg(without pumphead)
Drive REGLO-ZS	0.7 kg(without pumphead)
External control unit	1.2 kg

Compatible FMI Head information

Series	Flow range	Stroke volume	Piston diameter	Piston	Cylinder case	Cylinder liner	Max temperature	Max differential pressure	Inlet connection	Catalog number
RH00	0.025 to 45 ml/min	0 to 0.0025 ml	1/8"	316 stainless steel	PVDF	Carbon (sintered)	212°F(100°C)	100psi (6.9bar)	1/4"OD tubing	MK-07117-33
									1/4"OD tubing	MK-07117-35
									1/4"-28 female	MK-07117-41
RH0	0.05 to 90 ml/min	0 to 0.05 ml	3/16"	Ceramic (alumina)	ETFE	Ceramic (alumina)	212°F(100°C)	100psi (6.9bar)	1/4"OD tubing	MK-07117-53
									1/4"-28 female	MK-07117-61
					PVDF		212°F(100°C)		1/4"OD tubing	MK-07117-55
									1/4"-28 female	MK-07117-59
RH1	0.10 to 180 ml/min	0 to 0.10 ml	1/4"	Ceramic (alumina)	ETFE	Ceramic (alumina)	212°F(100°C)	100psi (6.9bar)	1/4"OD tubing	MK-07117-63
									1/4"-28 female	MK-07117-71
					PVDF		212°F(100°C)		1/4"OD tubing	MK-07117-65
									1/4"-28 female	MK-07117-69

ROTARY PISTON PUMP FMI QV Serie, FVD Series

115.2 ~ 2304 ml/min (QV series)
0.01 ~ 200 ml/min (FVD series)

QV SERIES

고용량 피스톤펌프
피드 및 연속주입



Features

- Valveless 기술로 긴 Life time
- 최소 90 최대 1800RPM 조절가능
- FMI 사의 V300 컨트롤러 장착가능
- Application 에 따라 펌프헤드 교체가능
- 각도 조절로 미세량 조절가능

Specification (상세스펙은 펌프헤드에 따라 상이)

Flow Rate Max (ml/min)	2304
Flow Rate Min (ml/min)	115.2
Operating Pressure Max (PSIG)	25
Operating Pressure Max (Bar)	1.72
Operating Temperature (F)	350
Operating Temperature (C)	177
Wetted Materials (Piston)	Ceramic
Wetted Materials (Cylinder Liner)	Ceramic
Wetted Materials (Cylinder Case)	316 Stainless Steel
Dispense Resolution Max (ml/rev)	1.28
Dispense Resolution Min (ml/rev)	0.064
RPM (Min/Max)	90/1800
Input Supply	100 ~ 240 VAC
Frequency (Hz)	50/60

FVD Series

OEM(장비 장착용) 피스톤펌프
분주, 피드 및 연속주입



Features

- Linear actuator를 통해 분주량을 실시간으로 제어
- 가변 유량에 대한 안정적이고 재현성 있는 dispensing 이 가능
- Priming, flushing, dispensing 과정을 단일 펌프에서 모두 실행가능하여 별도의 priming system이 필요 없음
- FMI의 CeramPump® 기술로 우수한 내구성과 내 화학성 확보
- Flow rate : 0.01 ~ 200 mL/min
- Dispense resolution : 0.002ml/rev(Min)-0.2ml/rev (Max)

Specification (상세스펙은 펌프헤드에 따라 상이)

Dimensions	6 x 3 x 3.75 inches (152.4 x 76.2 x 95.3 mm)
Shipping Weight	1.3 lbs (589g)
Wetted Material	Ceramic (Alumina), PVDF, UHMWPE, FKM
Dispense Volume	2 ~ 200 μ L
Accuracy	$\pm 5\%$, C.V $\leq 1\%$ (for 2 ~ 10 μ L) / $\pm 1\%$, C.V $\leq 0.5\%$ (for 10 ~ 200 μ L)
Dispense Resolution	0.002 ~ 0.2 mL/rev
Pump Pressure Rating	30 psi (2.06 Bar)
Flow rate	0.01 ~ 200 mL/min
Operating Temperature	0 ~ 60 °C

PDS100 Series

Programmable 피스톤펌프
분주, 피드 및 연속주입



Features

- Valveless 기술로 긴 Life time
- 직관적인 메뉴기반 프로그래밍
- 정밀 스테핑모터 및 드라이브 탑재
- Application 에 따라 펌프헤드 교체가능
- 듀얼 및 싱글 펌프헤드 장착 가능

Specification (상세스펙은 펌프헤드에 따라 상이)

Flow Rate Max (ml/min):	37.5
Flow Rate Min (ml/min):	0.036
Operating Pressure Max (PSIG):	100
Operating Pressure Max (Bar):	6.9
Operating Temperature (F):	140
Operating Temperature (C):	60
Wetted Materials (Piston):	316 Stainless Steel
Wetted Materials (Cylinder Liner):	Carbon
Wetted Materials (Cylinder Case):	PVDF
Dispense Resolution Max (ml/rev):	0.025
Dispense Resolution Min (ml/rev):	0.003
RPM (Min/Max):	6/750
Input Supply:	100 ~ 240 VAC
Frequency (Hz):	50/60
Current Max (amps):	0.6 / 0.25 A
Drive Environmental Temperature Rating:	41 deg to 104 deg F.

PIP Series

간단하고 경제적인 피스톤펌프
분주 및 피드



Features

- Valveless 기술로 긴 Life time
- Application 에 따라 펌프헤드 교체가능
- 릴레이 방식의 모터 드라이브
- 각도 조절로 미세량 조절가능

Specification (상세스펙은 펌프헤드에 따라 상이)

Flow Rate Max (ml/min):	15
Flow Rate Min (ml/min):	0.45
Operating Pressure Max (PSIG):	25
Operating Pressure Max (Bar):	1.7
Operating Temperature (F):	140
Operating Temperature (C):	60
Wetted Materials (Piston):	316 Stainless Steel
Wetted Materials (Cylinder Liner):	Carbon
Wetted Materials (Cylinder Case):	PVDF
Dispense Resolution Max (ml/rev):	0.025
Dispense Resolution Min (ml/rev):	0.003
RPM:	150, 300, 600
Input Supply:	115 VAC
Frequency (Hz):	60
Current Max (amps):	.08 A

STF Series

OEM(장비 장착용) 피스톤펌프
분주, 피드 및 연속주입



Features

- Valveless 기술로 긴 Life time
- 컴팩트한 디자인
- 정확한 유량보정을 위한 Bushing
- 최고의 안정성을 가진 세라믹 피스톤
- REACH 및 RoHS 인증

Specification (상세스펙은 펌프헤드에 따라 상이)

Shipping weight:	0.85 lb. (0.39 kg) approx.
Dimensions:	4.7" x 1.67" x 1.67" (119 x 42.4 x 42.4 mm)
Electrical:	Rated Current: 2.0 Amps / Phase
Motor:	NEMA Size 17 Frame Stepper Motor
	Direction set to clockwise rotation
	Operating temperature: -20°C to 50°C
	Not suited for dispensing into pressure
Flow Rate Adjustment:	Bushings can be rotated in CW or CCW direction to modify flow rate
	The top bushing is for coarse adjustment $\pm 25 \mu\text{l}$
	The bottom bushing is for fine adjustment $\pm 6 \mu\text{l}$

9 Pump Drives and 4 Pump Heads Available

Pump Drive P/N	9 mm Nominal Dispense Volume ($\mu\text{l}/\text{rev}$)
STF1	200
STF2	225
STF3	250
STF4	275
STF5	300
STF6	325
STF7	350
STF8	375
STF9	400

Pump Head P/N	Fluid Path Materials
H9CKC	Ceramic (alumina) PVDF
H9CKCLF	Ceramic (alumina) PVDF
H9CTC	Ceramic (alumina) ETFE/PTFE
H9CTCLF	Ceramic (alumina) ETFE

Pump Heads - FMI's Piston Pump Heads

RH Series Pump Heads



RH00 Series

- 최대 유량 : 65 ml/min
- 최대 압력 : 6.9bar
- 사용 온도 : 60°C 또는 100°C (재질에 따라 다름)
- 피스톤 재질 : 지르코니아 또는 Stainless Steel 316
- 라이너 재질 : 세라믹 또는 카본
- 실린더 재질 : PVDF 또는 ETFE
- 최대 RPM : 2600
- Stroke volume : 2.5 ~ 25 μ l



RH0 Series

- 최대 유량 : 130 ml/min
- 최대 압력 : 6.9bar
- 사용 온도 : 100°C
- 피스톤 재질 : 세라믹
- 라이너 재질 : 세라믹
- 실린더 재질 : PVDF 또는 ETFE
- 최대 RPM : 2600
- Stroke volume : 5 ~ 50 μ l



RH1 Series

- 최대 유량 : 260 ml/min
- 최대 압력 : 6.9bar
- 사용 온도 : 100°C
- 피스톤 재질 : 세라믹
- 라이너 재질 : 세라믹
- 실린더 재질 : PVDF 또는 ETFE
- 최대 RPM : 2600
- Stroke volume : 10 ~ 100 μ l

Pump Heads - FMI's Piston Pump Heads

Q Series Pump Heads



Q0 Series

- 최대 유량 : 144 ml/min
- 최대 압력 : 6.9bar
- 사용 온도 : 60°C
- 피스톤 재질 : Stainless Steel 316
- 라이너 재질 : 카본
- 실린더 재질 : Stainless Steel 316
- 최대 RPM : 1800
- Stroke volume : 3.2 ~ 80 μ l



Q1 Series

- 최대 유량 : 576 ml/min
- 최대 압력 : 4.1bar 또는 6.9bar (재질에 따라 다름)
- 사용 온도 : 60°C, 100°C 또는 177°C (재질에 따라 다름)
- 피스톤 재질 : 세라믹 또는 Stainless Steel 316
- 라이너 재질 : 세라믹 또는 카본
- 실린더 재질 : PVDF, ETFE 또는 Stainless Steel 316
- 최대 RPM : 1800
- Stroke volume : 12.8 ~ 320 μ l



Q2 Series

- 최대 유량 : 1296 ml/min
- 최대 압력 : 4.1bar 또는 6.9bar (재질에 따라 다름)
- 사용 온도 : 60°C, 100°C 또는 177°C (재질에 따라 다름)
- 피스톤 재질 : 세라믹 또는 Stainless Steel 316
- 라이너 재질 : 세라믹 또는 카본
- 실린더 재질 : PVDF, ETFE 또는 Stainless Steel 316
- 최대 RPM : 1800
- Stroke volume : 28.8 ~ 720 μ l



Q3 Series

- 최대 유량 : 2304 ml/min
- 최대 압력 : 1.7bar
- 사용 온도 : 100°C 또는 177°C (재질에 따라 다름)
- 피스톤 재질 : 세라믹
- 라이너 재질 : 세라믹
- 실린더 재질 : PVDF, ETFE 또는 Stainless Steel 316
- 최대 RPM : 1800
- Stroke volume : 51.2 ~ 1280 μ l

Gear Pump

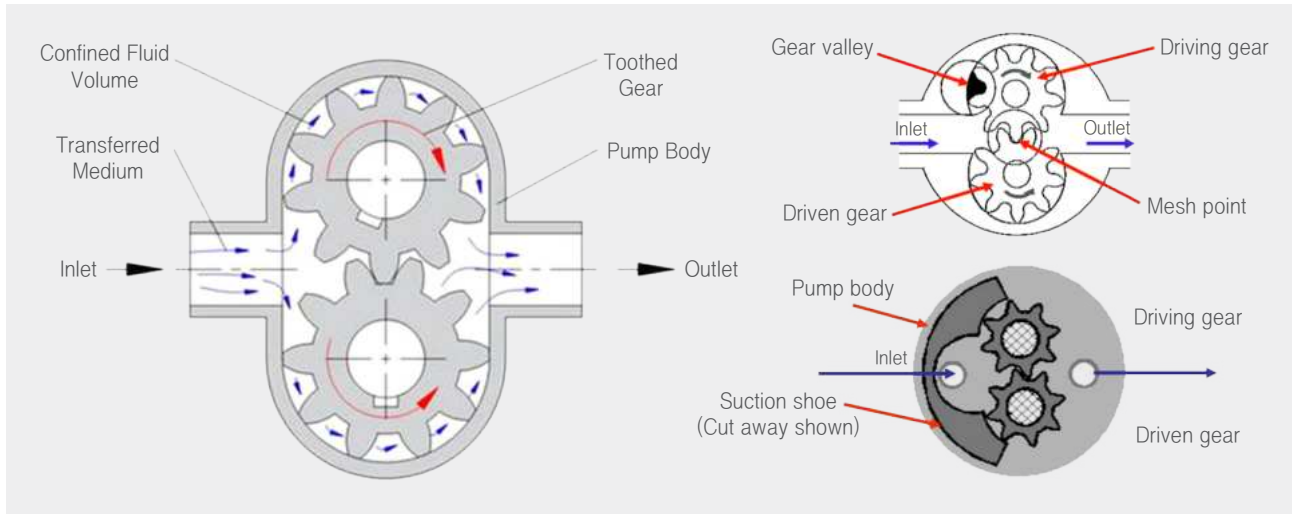
Masterflex	73
Drives for gear pump	
Micropump	74
Drives & Head for gear pump	
TCS micropumps	76
Pulseless gear pump	
Flightworks	78
Pulseless gear pump	
MVV gear pump	79
Heads for gear pump	



GEAR PUMP

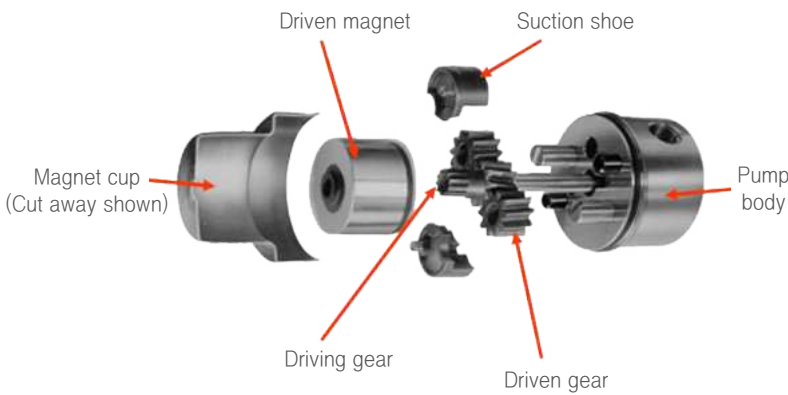
Working Principle Gear Pump

기어펌프 동작원리



Driving gear가 회전하면서 맞물린 Driven gear가 같이 회전
회전하는 Gear와 pump body 사이의 공간으로 액체 이송

SUCTION SHOE STYLE PUMP - EXPLODED VIEW



- 특허 기술을 통한 Micropump 만의 독립적인 방식
- 기존 gear pump 기술에 비해 발전된 pump-heads

이러한 타입의 Pump-head design은 pump chamber 의 흡입 부분에 seal plate가 고정되어 있고, (Suction Shoe) dispensing 압력은 gear 상단의 밀착된 위치 상태를 유지하여 고압 적용 시에 압력이 떨어지는 것을 방지

Advantage

- 온도 범위: $-46 \sim 177^{\circ}\text{C}$ ($-51 \sim 350^{\circ}\text{F}$)
- 다양한 seal 재질에 따라 온도와 압력에 선택적인 적용가능
- Service kit 를 통해 간단한 부품 교환으로 Pump 수명을 연장

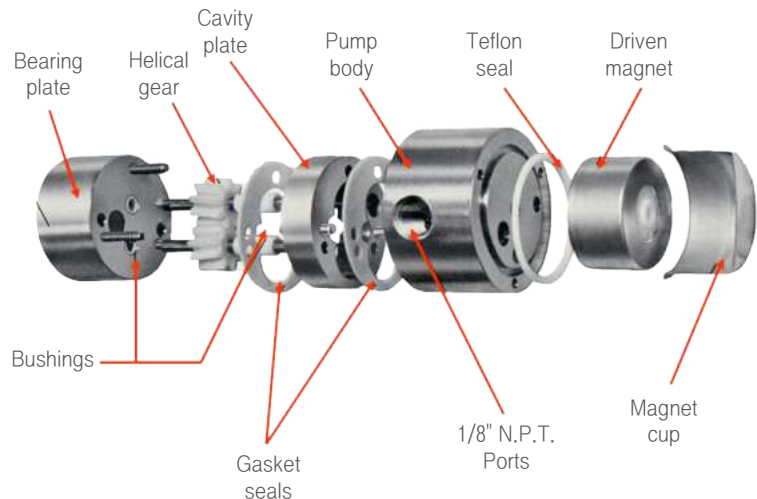
- 최대 흡입 높이 (물 사용시): 8m (pump-head와 tubing 에 따라 달라질 수 있음)
- 200 mbar 까지의 진공 pumping
- 전형적인 gear pump technology 방식
- 적당한 differential pressure 요구 시 적용

Suction Shoe pump-heads와 비교하여 cavity style 은 점도가 있는 media에 사용 가능하고 일정한 흡입 높이에 사용 가능

Advantage

- 화학적 내구성이 우수
- 소음이 적고 smooth 한 작동
- 내부 마찰이 적음

CAVITY STYLE PUMP - EXPLODED VIEW



REGLO Gear Pump



Ordering Information

Drive	78018-50
Pump head	GJ, GA, GB
Foot switch	78016-93

Features

- 5" (12.7 cm) capacitive TFT/RGB touch screen
- MasterflexLive 혹은 아날로그 원격제어 가능
- 연속실행 / 볼륨 / 시간 / 프로그램 제어 가능
- Micropump 사의 A mount 혹은 B mount 스타일의 헤드와 호환 가능

Specification

Motor type	BLDC with encode
Speed	100 ~ 4000 rpm
resolution	0.1 rpm
Power	90 ~ 260 VAC
Communication	DB-25, USB, RJ-45 Ethernet and Wi-Fi
Size	229 x 147 x 157 (L x W x H, mm)

MCP-Z



Ordering Information

Drive	78004-37
Pump head	GJ, GA, GB
Foot switch	78016-93

Features

- 멤브레인 키패드, LED display
- 사용하는 응용 parameter 프로그램을 4개까지 저장하여 사용 가능
- Flow rate 및 differential pressure 요구에 따른 20가지 종류의 pump-heads를 교체 가능

Specification

Motor type	DC motor
Speed	60 ~ 6000 rpm
Speed setting	rpm, resolution 1 rpm
Flow rate setting	μl/min, ml/min, liters/min
Power consumption	150 W
Main connection	230VAC/50Hz, 115VAC/60Hz adjustable
Depth/Width/Height	220 X 155 X 260 mm (without pump head)
Weight	6.4 kg (without pump head)
Protection rating	IP 30

DB-380A, DB-380B



Features

- GA, GB, GJ용 24VDC Brushless Drive
- 0-5VDC 속도 제어 및 Tach 출력
- 유지보수 비용이 적은 BLDC 모터 적용
- A마운트, B마운트를 위한 드라이브
- 과부하시 펌프를 보호하기 위한 토크 제한 기능

Specification

Motor type	Brushless DC motor
Speed	500 ~ 4600 RPM
Speed Setting	0 ~ 5Vdc
Power	24Vdc
Protection rating	IP55

Ordering Information

Drive	83668, 83669
Pump head	GJ, GA, GB

EagleDrive(DEMSE, DEELE)



Features

- GA, GB, GJ, GJR, GAF, CA용 Drive
- 0-5VDC 속도 제어 및 Tach 출력
- Digital error output를 통한 엔진점검 기능
- 120°C까지 동작 가능
- 최대 8000RPM의 속도로 운전 가능

Specification

Motor type	Electromagnetic
Speed	250 ~ 8000RPM
Speed Setting	0 ~ 5Vdc
Power	10 ~ 38 Vdc

Ordering Information

Drive	85220, 85222
Pump head	GJ, GA, GB GJR, GAF, CA

Micropump Head



Selection criteria
(Pump-heads 선택기준)



Flow performance and pressure	Cavity style	Suction shoe
Only flow	√	√
Pre-pressure necessary	-	√
Back-pressure		
Flow rate stable	-	√
Pumping out of vacuum		
recommended up to 200 mbar		
absolutely	√	-
not suitable	-	√
Viscosity		
0.2 to 1500 cp	√	√
max 2000 cp, depending on pump-head	√	-

Features >> Suction Shoe <<

- 증가하는 differential pressure에 강화된 pumping 성능
- 증가하는 temperature ranges에 적합

Suction Shoe	Pump-head No.	P/N	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.							
	GA-X21.CFS.B	82092	1	99	1.4	Graphite	PTFE	SS316	21	-46 ~ +177	-
	GA-X21.JFS.B	L20820	1	99	2.3	PEEK™	PTFE	SS316	21		-
	GA-V21.CFS.B	82114	3	252	2.8	Graphite	PTFE	SS316	21		-
	GA-T23.CFS.B	82115	5	504	2.8	Graphite	PTFE	SS316	21		-
	GA-T23.PFS.B	81473	6	560	5.2	PPS	PTFE	SS316	21		-
	GA-T23.JFS.B	L18489	6	560	5.2	PEEK	PTFE	SS316	21		-
	GB-P25.PVS.A.B1	81281	35	3509	3.5	PPS	Viton	SS316	21	√	
	GB-P25.JVS.A	220004	35	3480	3.5	PEEK	Viton	SS316	21	-	
	GB-P35.PVS.A.B1	81282	70	7020	3.5	PPS	Viton	SS316	21	√	
Organic solvents	GB-P35.JKS.A.B1	L22609	73	7241	3.5	PEEK	Kalrez®	SS316	21	√	
For corrosive media	GA-X21.CFC.B	L17164	1	99	1.4	Graphite	PTFE	Hastelloy®-C276	21	-46 ~ +177	-
	GA-V23.CFC.B	L2383	5	504	2.8	Graphite	PTFE	Hastelloy®-C276	21		-

Features >> Cavity Style <<

- 점도가 있는 용액과 일정 흡입 높이가 있는 경우에 사용
- 화학적 내구성 우수
- 부드럽고 정밀한 유량

Cavity style	Pump-head No.	P/N	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.							
	GJ-N23.FFS.B.B1	82004	40	3950	3.5	PTFE	PTFE	SS316	21	-46 ~ +54	√
	GJ-N23.FFS.B	82001	40	3950	3.5	PTFE	PTFE	SS316	21		-
	GJ-N23.JFS.B	L19735	40	3950	5.6	PEEK	PTFE	SS316	21		-
	GJ-N25.FFS.B	82003	55	5460	3.5	PTFE	PTFE	SS316	21		-
	GJ-N23.PFS.B.B1	81529	40	3950	5.2	PPS	PTFE	SS316	21		√
	GJ-N23.PFS.B	81531	40	3950	5.2	PPS	PTFE	SS316	22		-
For corrosive media	GJ-N23.FFC.B	L20284	40	3950	3.5	PTFE	PTFE	Hastelloy-C276	21	-	
	GJ-N25.FFC.B	L21812	55	5480	3.5	PTFE	PTFE	Hastelloy-C276	21	-	
For abrasive media	GJ-N23.9FD.B	MI0265	40	3950	5.2	NiC	PTFE	Surface hardened	21	-	

MGD1000



Features

- 무맥동 기어 펌프
- 역방향 컨트롤 가능
- 고점도 및 저점도 액체 가능
- Self-priming 가능 제품

Specification

Model	MGD1000
Flow rate	최대 1,150 ml/min
Pressure	최대 12 bar
Dimension	61 x 32 x 30 mm
Weight	110 g
Working Temp	-20 to 100 °C
Protection	Standard : IP45 Water Proof : IP67
Supply voltage	6.0 ~ 24.0 Vdc
Power consumption	3 ~ 30 W
Viscosity	500 cSt

Model	Supply voltage	Max flow rate	Max pressure	Max power	Weight
MGD1000S	6 ~ 24V	630 ml/min	10 Bar	30W	110g
MGD1000F	6 ~ 24V	1,150 ml/min	8 Bar	30W	110g
MGD1000P	6 ~ 24V	470 ml/min	12 Bar	30W	110g

MG2000



Features

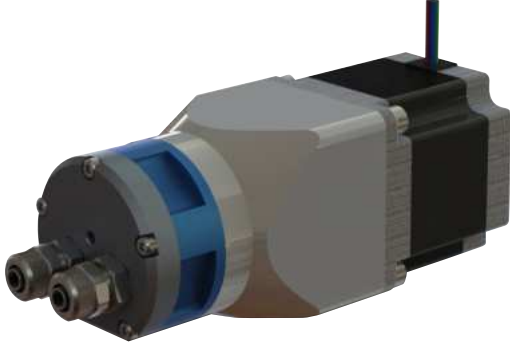
- 무맥동 기어 펌프
- 역방향 컨트롤 가능
- 고점도 및 저점도 액체 가능
- Self-priming 가능 제품

Specification

Model	MG2000
Flow rate	최대 2,400 ml/min
Pressure	최대 10 bar
Dimension	90 x 53 x 50 mm
Weight	340 g
Working Temp	-20 to 100 °C
Protection	Standard : IP67
Supply voltage	6.0 ~ 24.0 Vdc
Power consumption	10 ~ 100 W
Viscosity	1,000 cSt

Model	Supply voltage	Max flow rate	Max pressure	Max power	Weight
MGD2000S	6 ~ 24V	1,750 ml/min	10 Bar	99W	340g
MGD2000F	6 ~ 24V	2,400 ml/min	8 Bar	99W	340g

MG2000-STEP



Features

- 무맥동 기어 펌프
- 역방향 컨트롤 가능
- 고점도 및 저점도 액체 가능
- Self-priming 가능 제품

Specification

Model	MG2000-STEP
Flow rate	최대 200 ml/min
Pressure	최대 10 bar
Dimension	57 x 57 x 132 mm
Weight	1,080 g
Working Temp	-20 to 100 °C
Protection	Standard : IP46
Supply voltage	12.0 ~ 24.0 Vdc
Power consumption	2 ~ 12 W
Viscosity	1,000 cSt

Model	Supply voltage	Max flow rate	Max pressure	Max power	Weight
MGD2000-ST	12 ~ 24V	200 ml/min	6 Bar	12W	1,080g

MGD3000



Features

- 무맥동 기어 펌프
- 역방향 컨트롤 가능
- 고점도 및 저점도 액체 가능
- Self-priming 가능 제품

Specification

Model	MG3000
Flow rate	최대 3,500 ml/min
Pressure	최대 10 bar
Dimension	106 x 102 x 138 mm
Weight	1,000 g
Working Temp	-20 to 100 °C
Protection	Standard : IP44 Water Proof : IP67
Supply voltage	12.0 ~ 30.0 Vdc
Power consumption	10 ~ 100 W
Viscosity	5,000 cSt

Model	Supply voltage	Max flow rate	Max pressure	Max power	Weight
MGD3000S	12 ~ 30V	2,500 ml/min	8 Bar	300W	1,000g
MGD3000F	12 ~ 30V	3,500 ml/min	6 Bar	300W	1,000g
MGD3000P	12 ~ 30V	1,600 ml/min	10 Bar	300W	1,000g

C-Series



Features

- DC 전압 제어 및 높은 수명
- 부드럽고 조용한 작동
- Fuels, oils, glycols 유체 사용 가능

Specification

Model	C-Series Low Flow Coreless Gear Pumps
Flow rate	0.3 ~ 400 ml/min
Pressure	최대 15 bar
Dimension	D : 20 ~ 24 mm L : 36 ~ 58 mm
Weight	60 ~ 105 g
Working Temp	0 to 85 °C
Supply voltage	6.0 ~ 24.0 Vdc
Viscosity	2 ~ 100 cSt

X-Series



Features

- 피드백 제어 및 높은 수명
- 최대 20 bar의 Differential Pressures
- 속도 컨트롤러로 정확한 프로그래밍
- Fuels, oils, glycols 유체 사용 가능

Specification

Model	X-Series Brushless Gear Pumps
Flow rate	0.3 ~ 900 ml/min
Pressure	최대 20 bar
Dimension	D : 22 ~ 30 mm L : 50 ~ 100 mm
Weight	95 ~ 500 g
Working Temp	0 to 100 °C
Supply voltage	6.0 ~ 48.0 Vdc
Viscosity	2 ~ 100 cSt

M-Series



Features

- 마그네틱 기어펌프
- 2.5L/min의 넓은 유량 범위
- Water, alcohols, solvents, fuels, oils, glycols 유체 사용 가능

Specification

Model	M-Series Magnetic Drive Gear Pumps
Flow rate	0.3 ~ 2,500 ml/min
Pressure	최대 37.5 bar
Dimension	D : 22 ~ 30 mm L : 75 ~ 150 mm
Weight	105 ~ 550 g
Working Temp	-30 to 150 °C
Supply voltage	6.0 ~ 24.0 Vdc
Viscosity	0.5 ~ 100 cSt

HEADS FOR GEAR PUMP

MVV PL, PA, P-Series

PL8 / PL2 / PLR / PLZ



PAL / PA6 / PA7 / PF2 / PAx / PFx



P55 / P6x / PLE / PAE / P5x



모델명	점도	유량	압력	온도	특징
PL8 / PL2 PLR / PLZ	50 ~ 80,000 cp	0.1 ~ 140 cc/rev	최대 150 bar	10 ~ 180 °C	고점도 기어펌프
PAL / PA6 / PA7 PF2 / PAx / PFx	50 ~ 1,000,000 cp	0.3 ~ 200 cc/rev	최대 300 bar	10 ~ 200 °C	고점도 기어펌프
P55	1,000 ~ 10,000 cp	0.3 ~ 6 cc/rev	최대 40 bar	10 ~ 90 °C	내화학성 기어펌프
P6x	1,000 ~ 10,000 cp	10 ~ 90 cc/rev	최대 40 bar	10 ~ 90 °C	내화학성 기어펌프
PLE	1 ~ 1,000,000 cp	1 ~ 2,500 cc/rev	최대 300 bar	최대 120 °C	고압 기어펌프
PAE	1 ~ 1,000,000 cp	1 ~ 2,500 cc/rev	최대 500 bar	최대 350 °C	고압, 고온 기어펌프
P5x	1,000 ~ 10,000 cp	0.3 ~ 6 cc/rev	최대 30 bar	10 ~ 90 °C	다중포트 기어펌프

Syringe Pump

Chemyx	81
Precision syringe pump	
IMI NORGEN	86
OEM syringe pump	



Fusion 100-X TOUCH

Infusion(주입식 주사기펌프)



Features

- 주사기 크기 : 0.5 μl to 60 ml
- 유량 : 0.0001 $\mu\text{l}/\text{min}$ to 157 ml/min
- 터치스크린 동작 및 USB, RS232 등 외부제어
- MATLAB Driver 무상제공

Specifications

Mode	주입(Infusion)
Accuracy	$\pm < 0.35\%$
Reproducibility	$\pm < 0.05\%$
Syringe Size (Min/Max)	0.5 μl to 60 ml
Minimum Flow Rate	0.0001 $\mu\text{l}/\text{min}$ (with 0.5 μl syringe)
Maximum Flow Rate	157 ml/min (with 60 ml syringe)
Linear Force	55lb (25 kg)
Connectivity	USB-B, RS232 and TTL Ports
Dimensions	9.5 x 8.0 x 4.9 inches (24 x 20 x 12 cm)
Weight	3 kg
Step Resolution	0.098 $\mu\text{m}/\text{step}$
Operating Temperature	4°C to 40°C (40°F to 104°F)
Storage Temperature	-10°C to 70°C (14°F to 158°F)
Programing Mode	최대 99 Step 까지 설정 및 사용 가능 (Program steps up to 99 step)
Option	11 channel syringe rack
Regulatory Compliance	CE, RoHS, REACH, FCC

Fusion 200-X TOUCH

Infusion & Withdraw(주입 및 흡입식 주사기펌프)



Features

- 주사기 크기 : 0.5 µl to 60 ml
- 유량 : 0.0001 µl/min to 84.7 ml/min
- 터치스크린 동작 및 USB, RS232 등 외부제어
- MATLAB Driver 무상제공

Specifications

Mode	주입/흡입(Infusion/Withdraw)
Accuracy	± < 0.35%
Reproducibility	± < 0.05%
Syringe Size (Min/Max)	0.5 µl to 60 ml
Minimum Flow Rate	0.0001 µl/min (with 0.5 µl syringe)
Maximum Flow Rate	84.7 ml/min (with 50 ml syringe)
Linear Force	65lb (29.4 kg)
Connectivity	USB-B, RS232 and TTL Ports
Dimensions	9.5 x 8.2 x 4.9 inches (24 x 20.8 x 12 cm)
Weight	3.1 kg
Step Resolution	0.0528 µm/step
Operating Temperature	4°C to 40°C (40°F to 104°F)
Storage Temperature	-10°C to 70°C (14°F to 158°F)
Programing Mode	최대 200 Step 까지 설정 및 사용 가능 (Program steps up to 200 step)
Option	11 channel syringe rack
Regulatory Compliance	CE, RoHS, REACH, FCC

Fusion 4000-X

INDEPENDENT CHANNELS(독립 제어 주사기펌프)



Features

- 2개 채널 독립제어 가능
- 주사기 크기 : 0.5 µl to 100 ml
- 유량 : 0.0001 µl/min to 170.5 ml/min
- 터치스크린 동작 및 USB, RS232, RS485 등 외부 제어
- MATLAB Driver 무상제공



Specifications

Mode	주입/흡입(Infusion/Withdraw)
Accuracy	± < 0.35%
Reproducibility	± < 0.05%
Syringe Size (Min/Max)	0.5 µl to 100 ml
Minimum Flow Rate	0.0001 µl/min (with 0.5 µl syringe)
Maximum Flow Rate	170.5 ml/min (with 100 ml syringe)
Linear Force	95lb (43 kg)
Connectivity	USB-B, RS232, RS485 and TTL Ports
Dimensions	11 x 12 x 4.9 inches (28 x 31 x 13 cm)
Weight	8.6 kg
Step Resolution	0.0293 µm/step
Operating Temperature	4°C to 40°C (40°F to 104°F)
Storage Temperature	-10°C to 70°C (14°F to 158°F)
Regulatory Compliance	CE, RoHS, REACH, FCC

Fusion 6000-X

HIGH PRESSURE(고압 주사기펌프)



Features

- 고압용 Application 사용 가능
- 온도 및 압력제어(옵션사항)
- 주사기 크기 : 0.5 µl to 200 ml
- 유량 : 0.0001 µl/min to 271 ml/min
- Prime 버튼으로 시린지 푸셔 블록의 위치를 쉽게 조정
- 터치스크린 동작 및 USB, RS232 등 외부제어
- MATLAB Driver 무상제공



Specifications

Mode	주입/흡입(Infusion/Withdraw)
Accuracy	± < 0.35%
Reproducibility	± < 0.05%
Heating Temperature	Up to 80°C
Syringe Size (Min/Max)	0.5 µl to 300 ml
Minimum Flow Rate	0.0001 µl/min (with 0.5 µl syringe)
Maximum Flow Rate	408 ml/min (with 300 ml syringe)
Linear Force	700lb (318 kg)
Maximum Pressure	275bar (6 ml Steel 주사기 사용시)
Maximum Viscosity	250,000 cP
Connectivity	USB-B, RS232 and TTL Ports
Dimensions	11 x 10 x 6.9 inches (28 x 26 x 14 cm)
Weight	8.61 kg
Step Resolution	0.0938 µm/step
Operating Temperature	4°C to 40°C (40°F to 104°F)
Storage Temperature	-10°C to 70°C (14°F to 158°F)
Option	4 channel syringe rack
Regulatory Compliance	CE, RoHS, REACH, FCC

Syringe Pump Comparisons

				
Model	Fusion 100-X	Fusion 200-X	Fusion 4000-X	Fusion 6000-X
Mode	주입(Infusion)	주입/흡입 (Infusion/Withdraw)	주입/흡입 (Infusion/Withdraw) INDEPENDENT	주입/흡입 (Infusion/Withdraw) HIGH PRESSURE
Syringe Size (Min/Max)	0.5 µl to 60 ml	0.5 µl to 60 ml	0.5 µl to 100 ml	0.5 µl to 300 ml
Minimum Flow Rate	0.0001 µl/min (0.5 µl syringe)	0.0001 µl/min (0.5 µl syringe)	0.0001 µl/min (0.5 µl syringe)	0.0001 µl/min (0.5 µl syringe)
Maximum Flow Rate	157 ml/min (60 ml syringe)	84.7 ml/min (60 ml syringe)	170.5 ml/min (100 ml syringe)	408 ml/min (300 ml syringe)
Linear Force	55lb (25 kg)	65lb (29.4 kg)	95lb (43 kg)	700lb (318 kg)
Step Resolution	0.098 µm/step	0.0528 µm/step	0.0293 µm/step	0.0938 µm/step
Connectivity	가능	가능	가능	가능
Programing Mode	가능	가능	가능	가능

Accessories



11-Syringe Infuse Holding Rack
(For Fusion 100-X)



11-Syringe Holding Rack
(For Fusion 200-X)



4-Syringe Holding Rack
(For Fusion 6000-X)



Pressure Sensor for Fusion 6000-X



Syringe Heating Sleeve
For Fusion 6000-X



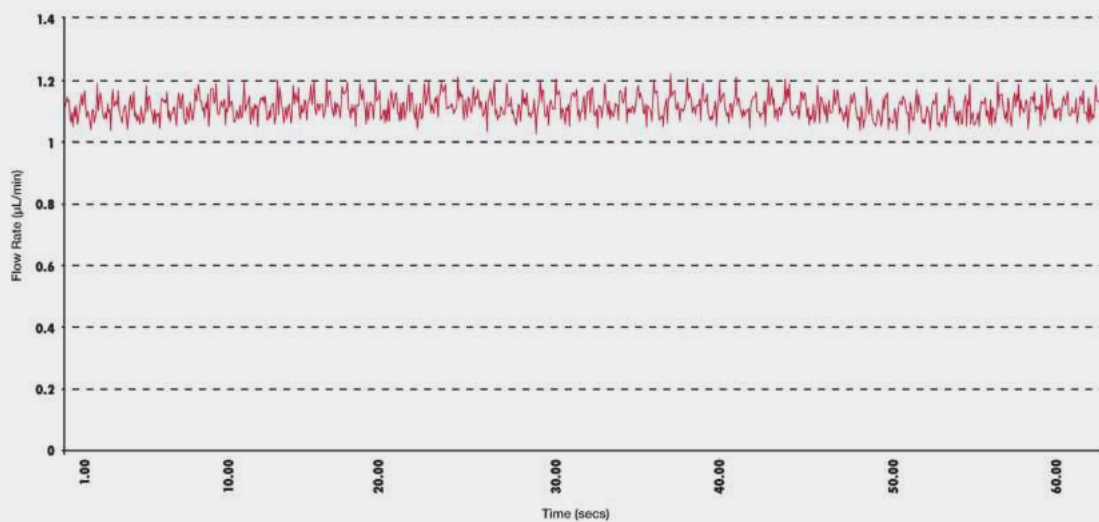
CADENT™3 Syringe Pump

Features

- Stroke length: 3 cm
- 50 µl ~ 5 ml 크기의 주사기 장착 가능
- Rotary valve : up to 12way
- 1 ml 주사기 사용시 1 µl/min 안정적인 유량
- ± 0.5% 의 유량 정확도
- 1회 토출시 최대 약 4.4일의 유속 설정
- 200만 Cycle 의 Lifetime

뛰어난 유체이송 성능

Flow Variance Over Time (µl/min)



Flow rate measurements taken over a 60-second period on a 10KHz sample rate showing flow accuracy/stability of ±1%.

Specifications

Environmental	사용 온도 : 2°C ~ 50°C
	보관 온도 : -33°C ~ 71°C
	Lifetime : 200만 Cycles (모델별 상이)
Mechanical	Resolution : 6000, 12000, 24000 (모델별 상이)
Performance	정확도 : ±0.5%
Electrical Connection	6 inputs : 2 Analog/Digital, 4 Digital outputs
	Tamper pin
Communication	RS-232, RS485, CANbus
Power	24VDC (± 5% allowance)

CADENT™6 Syringe Pump



Features

- Stroke length : 6 cm
- 10 µl ~ 50 ml 크기의 주사기 장착 가능
- Rotary valve : up to 12way
- 볼 스크류에 의한 탁월한 분해능 보장
- ± 0.3% 의 스트로크 정확도
- 1회 토출시 최대 약 8.9일의 유속 설정
- 최대 140lbs 의 Lift Force - 고압 응용
- 570만 Cycle 의 Lifetime

Specifications

Environmental	사용 온도 : 2°C ~ 50°C
	보관 온도 : -33°C ~ 71°C
	Lifetime : 570만 Cycles
Mechanical	Resolution : 12000, 24000, 48000 (모델별 상이)
Performance	정확도 : ±0.5%
	Plunger Lift Force : 최대 140lbs (모델별 상이)
	Valve Torque : 120in oz
Electrical Connection	6 inputs : 2 Analog/Digital, 4 Digital outputs
	Tamper pin
Communication	RS-232, RS485, CANbus
Power	24VDC (± 5% allowance)
Valve Option	최대 12way 장착 가능
Syringe Size	10 µl ~ 50 ml
Compliance	REACH & RoHS
	UL & CE
	CSA Certified

CADENT™6 Multi Syringe Pump



Features

- 250 µl ~ 5 ml 크기의 주사기 장착 가능
- 3/2 솔레노이드 밸브 장착
- 볼 스크류에 의한 탁월한 분해능 보장
- 분석, 의료 기기 및 진단 application
- 570만 Cycle 의 Lifetime
- 2, 4, 6, 8 채널 선택 가능

Specifications

Environmental	사용 온도 : 2°C ~ 50°C
	보관 온도 : -33°C ~ 71°C
	Lifetime : 570만 Cycles
Mechanical	Resolution : 24000, 48000 (모델별 상이)
Communication	RS-232, RS485, CANbus
Power	24VDC (± 5% allowance)
Valve Option	FAS 사 MS-E 3/2 솔레노이드 밸브
Syringe Size	250 µl ~ 5 ml
Compliance	REACH & RoHS
	UL & CE
	CSA Certified
Performance	정확도 : ± 0.5%

Diaphragm Pump

EMEC	90
Diaphragm pump	
FINK chem+tec	96
High precision metering pump	
TCS micropumps	98
Micro diaphragm pump	
Bartels	101
Micro diaphragm pump & Controller	





Advantages

- Moulded glass filled, 폴리프로필렌 하우징으로 화학물질에 대한 내성 확보
- 액체 접촉부의 내 화학성을 위한 PVDF 재질
- Max 8,000 cps 점성 액체 사용 가능
- Self-venting 기능 (AMSA model)
- 스테인리스 스틸 (AISI 316), PMMA 헤드 옵션 선택 가능
- 펌프 용량이 LCD 디스플레이에 표시 됨

Technical Features

- Foot mounted
- Backlit LCD display
- IP65 protection (NEMA4x)
- Power supply: 230 VAC (190 ~ 265 VAC) 115 VAC (90 ~ 135 VAC) 24 VAC (20 ~ 32 VAC) – 12 VDC (10 ~ 16 VDC)
- Working temperature: -10°C / +45°C (14°F / 113°F)
- Dosing accuracy \pm 2%

Performance

- Range: 5 ~ 60 l/hr (83.3 ml/min ~ 1 l/min)
- Pressure: 2 ~ 25 bar

Applications

- 소독
- 레지오넬라 감염 예방
- 쿨링 타워
- 수처리
- 수영장 소독
- 공업용 화학물질 처리

Digital Control Model

AMS MF	AMS PH	AMS RH
Multifunction	pH meter (0 ~ 14pH)	ORP meter(0 ~ 2000mV)

Manual Control Models

AMS CO	AMS CL	AMS IS	AMS PV	AMS PVM	AMS IC
Constant feeding	Constant feeding Level control	Proportional feeding Level control	Pulse divider mode(0 ~ 100)	Pulse multiplier mode (1 ~ 10)	Current signal(0/4)

Manual Venting

FLOW & PRESSURE			Delivery Hose (PVDF)	Suction Hose	cc per stroke	
					min	max
2505	5 l/h (83.3 ml/min) at 25 bar	1,32 GPH at 362 PSI	4 x 6	4 x 6	0,21	0,70
1510	10 l/h (166.6 ml/min) at 15 bar	2,64 GPH at 217 PSI	4 x 6	4 x 6	0,42	1,4
1015	15 l/h (250 ml/min) at 10 bar	3,96 GPH at 145 PSI	6 x 8	6 x 8	0,62	2,08
720	20 l/h (333.3 ml/min) at 7 bar	5,28 GPH at 101 PSI	6 x 8	6 x 8	0,83	2,8
340	40 l/h (666.6 ml/min) at 3 bar	10,56 GPH at 43 PSI	8 x 10	8 x 12	1,67	5,6
260	60 l/h (1 l/min) at 2 bar	15,85 GPH at 29 PSI	8 x 10	8 x 12	2,31	7,7



Advantages

- Moulded glass filled, 폴리프로필렌 하우징으로 화학물질에 대한 내성 확보
- 액체 접촉부의 내 화학성을 위한 PVDF 재질
- Max 8,000 cps 점성 액체 사용 가능
- Self-venting 기능 (KMSA model)
- 스테인리스 스틸 (AISI 316), PMMA 헤드 옵션 선택 가능
- 펌프 용량이 LCD 디스플레이에 표시 됨

Technical Features

- Foot mounted
- Backlit LCD display
- IP65 protection (NEMA4x)
- Power supply: 230 VAC (190 ~ 265 VAC) 115 VAC (90 ~ 135 VAC) 24 VAC (20 ~ 32 VAC) – 12 VDC (10 ~ 16 VDC)
- Working temperature: -10°C / +45°C (14°F / 113°F)
- Dosing accuracy $\pm 2\%$

Performance

- Range: 1 ~ 18 l/hr (16.7 ml/min ~ 0.3 l/min)
- Pressure: 2 ~ 20 bar

Applications

- 소독
- 레지오넬라 감염 예방
- 쿨링 타워
- 수처리
- 수영장 소독
- 공업용 화학물질 처리

Digital Control Model

KMS DC	KMS MF	KMS EN	KMS PH	KMS RH
Constant feeding	Multifunction mode	Electrovave control (option)	pH meter (0 ~ 14pH)	ORP meter(0 ~ 2000mV)

Manual Control Models

K CO	K CL	K IS	K PV	K PVM	K IC
Constant feeding	Level control	Proportional feeding	Pulse divider mode (0 ~ 1000)	Pulse multiplier mode (1 ~ 10)	Current signal(0/4)

Manual Venting

	FLOW & PRESSURE		Delivery Hose (PVDF)	Suction Hose	cc per stroke	
					min	max
2001	1 l/h(16.66 ml/min) at 20bar	0,26 GPH at 290PSI	4 x 6	4 x 6	0.03	0.09
1802	2 l/h(33.3 ml/min) at 18bar	0,53 GPH at 261PSI	4 x 6	4 x 6	0.06	0.19
1504	4 l/h(66.6 ml/min) at 15bar	1,06 GPH at 217PSI	4 x 6	4 x 6	0.11	0.37
1005	5 l/h(83.3 ml/min) at 10bar	1,32 GPH at 102PSI	4 x 6	4 x 6	0.14	0.46
0808	8 l/h(133.3 ml/min) at 8bar	2,11 GPH at 116PSI	4 x 6	4 x 6	0.22	0.74
0510	10 l/h(166.6 ml/min) at 5bar	2,64 GPH at 58PSI	4 x 6	4 x 6	0.28	0.93
0218	18 l/h(300 ml/min) at 2bar	4,76 GPH at 29PSI	6 x 8	6 x 8	0.50	1.67



Advantages

- Moulded glass filled, 폴리프로필렌 하우징으로 화학물질에 대한 내성 확보
- 액체 접촉부의 내 화학성을 위한 PVDF 재질
- Max 8,000 cps 점성 액체 사용 가능
- Self-venting 기능
- 스테인리스 스틸 (AISI 316), PMMA 헤드 옵션 선택 가능
- 펌프 용량이 LCD 디스플레이에 표시 됨

Technical Features

- Foot mounted
- Backlit LCD display
- IP65 protection (NEMA4x)
- Power supply: 230 VAC (190 ~ 265 VAC) 115 VAC (90 ~ 135 VAC) 24 VAC (20 ~ 32 VAC) – 12 VDC (10 ~ 16 VDC)
- Working temperature: -10°C / +45°C (14°F / 113°F)
- Dosing accuracy $\pm 2\%$

Performance

- Range: 5 ~ 100 l/hr (83.3 ml/min ~ 1.66 l/min)
- Pressure: 0 ~ 20 bar

Applications

- 소독
- 레지오넬라 감염 예방
- 쿨링 타워
- 수처리
- 수영장 소독
- 공업용 화학물질 처리

Digital Control Model

TMS DC	TMS MF	TMS PH	TMS RH
Constant feeding	Multifunction mode	pH meter (0 ~ 14pH)	ORP meter (0 ~ 2000mV)

Manual Control Models

T CO	T CL
Constant feeding	Constant feeding

Manual Venting

	FLOW & PRESSURE		Delivery Hose (PVDF)	Suction Hose	cc per stroke
2005	5 l/h (83.3 ml/min) at 20 bar	1,32 GPH at 290 PSI	4 x 6	4 x 6	0,7
515	15 l/h (250 ml/min) at 5 bar	3,96 GPH at 73 PSI	6 x 8	6 x 8	2,1
420	20 l/h (333.3 ml/min) at 4 bar	5,28 GPH at 58 PSI	6 x 8	6 x 8	2,8
330	30 l/h (500 ml/min) at 3 bar	1,32 GPH at 43 PSI	8 x 10	8 x 12	4,2
150	50 l/h (833.3 ml/min) at 1 bar	1,32 TPH at 15 PSI	8 x 10	8 x 12	7
100	100 l/h (1.66 l/min) at 0 bar	2,64 GPH at 0 PSI	12 x 18 PVC retined	12 x 18 PVC retined	14



Advantages

- Moulded glass filled, 폴리프로필렌 하우징으로 화학물질에 대한 내성 확보
- 액체 접촉부의 내 화학성을 위한 PVDF 재질
- Max 8,000 cps 점성 액체 사용 가능
- Self-venting 기능 (VMSA and VA model)
- 스테인리스 스틸 (AISI 316), PMMA 헤드 옵션 선택 가능
- 펌프 용량이 LCD 디스플레이에 표시 됨

Technical Features

- Foot mounted
- Backlit LCD display
- IP65 protection (NEMA4x)
- Power supply: 230 VAC (190 ~ 265 VAC) 115 VAC (90 ~ 135 VAC) 24 VAC (20 ~ 32 VAC) – 12 VDC (10 ~ 16 VDC)
- Working temperature: -10°C / +45°C (14°F / 113°F)
- Dosing accuracy \pm 2%

Performance

- Range: 0 ~ 17 l/hr (0 ~ 283.3 ml/min)
- Pressure: 1 ~ 20 bar

Applications

- 소독
- 레지오넬라 감염 예방
- 콜링 타워
- 수처리
- 수영장 소독
- 공업용 화학물질 처리

Digital Control Model

VMS MF	VMS EN
Multifunction mode	Weekly timer
VMS PH	VMS RH
pH meter (0 ~ 14pH)	ORP meter (0 ~ 2000mV)

Manual Control Models

V CO	V CL
Constant feeding	Level control

Manual Venting

	FLOW & PRESSURE		Delivery Hose (PVDF)	Suction Hose	cc per stroke
2001	1 l/h(16.66 ml/min) at 20 bar	0,26 GPH at 290 PSI	4 x 8	4 x 8	0,1
1802	2 l/h(33.3 ml/min) at 18 bar	0,52 GPH at 261 PSI	4 x 8	4 x 8	0,19
1804	4 l/h(66.6 ml/min) at 18 bar	1,05 GPH at 261 PSI	4 x 8	4 x 8	0,37
1502	2 l/h(33.3 ml/min) at 15 bar	0,52 GPH at 217 PSI	4 x 6	4 x 6	0,19
1504	4 l/h(66.6 ml/min) at 15 bar	1,05 GPH at 217 PSI	4 x 6	4 x 6	0,37
1505	5 l/h(83.3 ml/min) at 15 bar	1,32 GPH at 217 PSI	4 x 6	4 x 6	0,46
1004	4 l/h(66.6 ml/min) at 10 bar	1,05 GPH at 145 PSI	4 x 6	4 x 6	0,37
1005	5 l/h(83.3 ml/min) at 10 bar	1,32 GPH at 145 PSI	4 x 6	4 x 6	0,46
1010	10 l/h(166.6 ml/min) at 10 bar	2,64 GPH at 145 PSI	4 x 6	4 x 6	0,93
706	6 l/h(100 ml/min) at 7 bar	1,58 GPH at 101 PSI	4 x 6	4 x 6	0,56
510	10 l/h(166.6 ml/min) at 5 bar	2,64 GPH at 72 PSI	4 x 6	4 x 6	0,93
512	12 l/h(200 ml/min) at 5 bar	3,17 GPH at 72 PSI	4 x 6	4 x 6	1,11
501	1 l/h(16.66 ml/min) at 5 bar	0,26 GPH at 72 PSI	4 x 6	4 x 6	0,1
408	8 l/h(133.3 ml/min) at 4 bar	2,11 GPH at 58 PSI	4 x 6	4 x 6	0,74
310	10 l/h(166.6 ml/min) at 3 bar	2,64 GPH at 43 PSI	4 x 6	4 x 6	0,93
217	17 l/h(283.3 ml/min) at 2 bar	4,49 GPH at 29 PSI	6 x 8	6 x 8 (PE)	1,57
116	16 l/h(266.6 ml/min) at 1 bar	4,22 GPH at 14 PSI	6 x 8	6 x 8 (PE)	1,48



Advantages

- Moulded glass filled, 폴리프로필렌 하우징으로 화학물질에 대한 내성 확보
- 액체 접촉부의 내 화학성을 위한 PVDF 재질
- Self-venting 기능

Technical Features

- Wall mounted
- Backlit LCD display
- Two dosing pumps
- Rotational ENCODER
- IP65 protection (NEMA4x)
- Power supply: 230 VAC (190 ~ 265 VAC) – 115 VAC (90 ~ 135 VAC)
24 VAC (20 ~ 32 VAC) – 12 VDC (10 ~ 16 VDC)
- Working environment temperature: -10°C / +45°C (14°F / 113°F)

Performance

- Range: 4 ~ 10 l/h (66.6 ~ 166.6 ml/min)
- Pressure: up to 3 bar

Applications

- 수영장 소독
- 수처리

Digital Control Model

WDPHRH	WDPHCL	WDPHCF	WDPHCA	WDPHOS	WDPHRHS	WDPHCLS
Acid/base (pH) and disinfectant(ORP)	Acid/base (pH) and Chlorine/Bromine	Acid/base (pH) and flocculant (gr/h) With 230VAC output for Chlorine	Acid/base (pH) and antialgae with 230VAC output for chlorine	pH: 0/14 pH Chlorine: 0/10 mg/l Cl ₂ Bromine: 0/10 mg/l Br	Acid/base (pH) and disinfectant(ORP)	Acid/base (pH) and Chlorine/Bromine

Manual Venting

	FLOW & PRESSURE		Delivery Hose (PVDF)	Suction Hose	cc per stroke
0310	10 l/h(166.6 ml/min) at 3bar	2,64GPH at 43PSI	4 x 6	4 x 6	0,93



PUMP HEADS

- PVDF
- PP
- SS
- PMMA

FEATURES

- Stepper motor-driven control
- Foot mounted
- LCD display
- Microprocessor technology
- Double ball check valve
- Electronic stroke speed adjustment
- PTFE membrane

FUNCTIONS

- Alarms
- Level control
- Stand-by
- Multifunction (Constant-Constant with external input-ppm-%-mlq-Pause-work-Weekly-mA-Pulse-Volt-external Batch-manual Batch)
- Pump status indicated by multicolor display: pump running (green), stand-by (white), warning condition (yellow), alarm condition (red)
- Slow mode

MANUAL VENTING

BAR	FLOW
25BAR	2L/h
20BAR	5L/h
10BAR	13L/h
5BAR	28L/h
2BAR	80L/h



Features

- Full PTFE 디자인 (우수한 내 화학성)
- 6종의 장착 사이즈, 3 µl/min ~ 480 ml/min, outlet pressure up to 4 bar
- 저 맥동의 정밀한 미터링
- 쉬운 작동 방법, RS232 디지털 통신, 4 ~ 20 mA 아날로그 통신

Specifications

Pump type	R 05/3	05/30	05/60	05/120	05/250	05/480
Max. metering capacity (ml/min)	3	30	60	120	250	480
Min. metering capacity (µl/min)	3	30	60	120	250	480
Max. stroke frequency (strokes/min)	ca. 32	ca. 50	ca. 48	ca. 46	ca. 53	ca. 51
Max. pressure inlet (bar)	4	4	3	2	1.5	1.5
Max. pressure outlet (bar)	4	4	3	2	1.5	1.5
Stroke volume (µl)	95	600	1250	2600	4700	9400
Min. stroke duration (sec.)	1.8	1.2	1.2	1.2	1.2	1.1
Max. stroke duration (sec.)	1910	1190	1260	1300	1080	1190
Repeat accuracy (%)	< 1	< 1	< 1	< 1	< 1	< 1
Vacuum at inlet (mbar)	20	20	20	20	20	20
Vacuum at outlet (mbar)	0	0	0	2	0	0
Max. viscosity (mPas)	100	200	300	500	500	500
Max. viscosity (mPas) **	200	400	600	800	800	800
Max. medium temperature (°C)	120°C					
Material. pump head	PTFE					
Material. diaphragm	PTFE					
Material. valves	PTFE					
Input voltage	100 ~ 240V					
Power input	25W (125 ~ 800W heated)					
Protection	IP 30					
Ambient temperature	50°C					
Max. dimensions LxBxT	270x130x205					

** Max. viscosity with using software module R05-AK



Features

- Full-PTFE 디자인
- Positively controlled diaphragm valves
- 가변 밸브 actuators
- 적절한 출력 특성
- Fluid-neutral 압력 센서
- 통합된 stroke detection

Performance

- Dosing rates : 3 ul/min ~ 480 ml/min
- Back pressure : up to 18 bar
- Dosing range : 1:7000

Specifications

Pump type	R15-35-18	R15-160-12	R15-500-5
Max. Dosing capacity (ml/min)	35	160	500
Min. Dosing rate (ml/min)	0,035	0,16	0,5
Min dosing capacity (ml/min)	0,005	0,05	0,15
Stroke volume (ml)	0,8	3,5	11
Max. Stroke frequency (strokes/min)		50	
Suction interruption (sec)		ca. 0,7	
Max. Dosing time (min)		ca. 30	
Max. Overpressure (bar)	18	12	5
Max. Overpressure (bar) PTFE Fitting	10	10	5
Max. vaccum (mbar abs.)		1	
Max. Viscosity (mpas)	100	150	200
Max. Viscosity (mpas)	2.000	3.000	4.000
Max. Temperature fluid (°C)		80 (150)	
Absolute accuracy		< 1%	
Relative accuracy (Reproducibility)		< 0,5%	
Material wetted		PTFE	
Supply voltage (V)		pump 48 VDC / power adapter 80 ~ 264VAC (47 ~ 63Hz)	
Power consumption (W)		pump 45 / pump heated 150	
Protection		IP40	
Ambient temperature (°C)		40	
Dimensions LxWxH (mm)		280x124x175	
Weight (kg)		5,5	

MICRO DIAPHRAGM PUMP WITH CORELESS BRUSHED MOTOR

TCS Micropumps D220S, D220BLZ

~ 425 ml/min (AIR, D220S)
~ 450 ml/min (AIR, D220BLZ)

D220S



	Input (V)	Power (W)	Flow (ml/min)	Pressure (psi)
Air	4.5	0.4	425	11
	4.5	0.4	-300	-8
Water	4.5	1.8	90.0	9.0

Features

- 다이어프램 맥동 펌프
- 낮은 전력 소비
- 2.4 mm Tubing 사용 가능
- Power Supply 및 배터리 사용 가능
- 가스 및 액체 사용 가능

Specifications

Model	D220S
Flow rate	최대 425 ml/min (AIR)
Pressure	10 psi
Dimension	42 x 27 x 17 mm
Weight	31 g
Working Temp	-20 to 100 °C
Protection	Standard : IP41
Supply voltage	3.0 ~ 4.5 Vdc
Power consumption	0.1 ~ 0.6 W

D220BLZ



	Input (V)	Power (W)	Flow (ml/min)	Pressure (psi)
Air	6	0.7	450	10
	6	0.7	-380	-8

Features

- 다이어프램 맥동 펌프
- 낮은 전력 소비
- 2.4 mm Tubing 사용 가능
- Power Supply 및 배터리 사용 가능

Specifications

Model	D220BLZ
Flow rate	최대 450 ml/min (AIR)
Pressure	11 psi
Dimension	42 x 27 x 17 mm
Weight	25 g
Working Temp	-20 to 100 °C
Protection	Standard : IP41
Supply voltage	3.0 ~ 6.0 Vdc
Power consumption	0.1 ~ 0.6 W

MICRO DIAPHRAGM PUMP WITH CORELESS BRUSHED MOTOR

TCS Micropumps D250S, D250BLZ

~ 580 ml/min (AIR, D250S)
~ 620 ml/min (AIR, D250BLZ)

D250S



	Input (V)	Power (W)	Flow (ml/min)	Pressure (psi)
Air	4.5	0.4	580	11
	4.5	0.4	-360	-8

Features

- 다이어프램 맥동 펌프
- 낮은 전력 소비
- 2.4 mm Tubing 사용 가능
- Power Supply 및 배터리 사용 가능

Specifications

Model	D250S
Flow rate	최대 580 ml/min (AIR)
Pressure	11 psi
Dimension	42 x 27 x 17 mm
Weight	34 g
Working Temp	-20 to 100 °C
Protection	Standard : IP41
Supply voltage	3.0 ~ 4.5 Vdc
Power consumption	0.1 ~ 0.6 W

D250BLZ



	Input (V)	Power (W)	Flow (ml/min)	Pressure (psi)
Air	6	0.7	620	12
	6	0.7	-420	-8

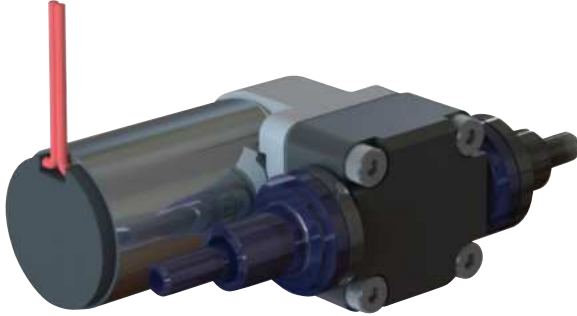
Features

- 다이어프램 맥동 펌프
- 낮은 전력 소비
- 2.4 mm Tubing 사용 가능
- Power Supply 및 배터리 사용 가능

Specifications

Model	D250BLZ
Flow rate	최대 620 ml/min (AIR)
Pressure	12 psi
Dimension	42 x 27 x 17 mm
Weight	28 g
Working Temp	-20 to 100 °C
Protection	Standard : IP41
Supply voltage	3.0 ~ 6.0 Vdc
Power consumption	0.1 ~ 0.6 W

D250S-L



Model	Input (V)	Power (W)	Flow (ml/min)	Pressure (psi)
D250S-L-Liq	4.5	1.4	165	12
D250S-L-Air	4.5	0.3	610	3

Features

- 다이어프램 맥동 펌프
- 낮은 전력 소비
- 2.4 mm Tubing 사용 가능
- Power Supply 및 배터리 사용 가능.
- 가스 및 액체 사용 가능

Specifications

Model	D250S-L
Flow rate	최대 165 ml/min (Liquid)
Pressure	12 psi
Dimension	55 x 31 x 17 mm
Weight	26 g
Working Temp	-20 to 100 °C
Protection	Standard : IP41
Supply voltage	3.0 ~ 4.5 Vdc
Power consumption	0.1 ~ 1.4 W

D250BLZ-L



Model	Input (V)	Power (W)	Flow (ml/min)	Pressure (psi)
D250BLZ-L-Liq	6	2.4	189	15
D250BLZ-L-Air	6	0.5	610	5

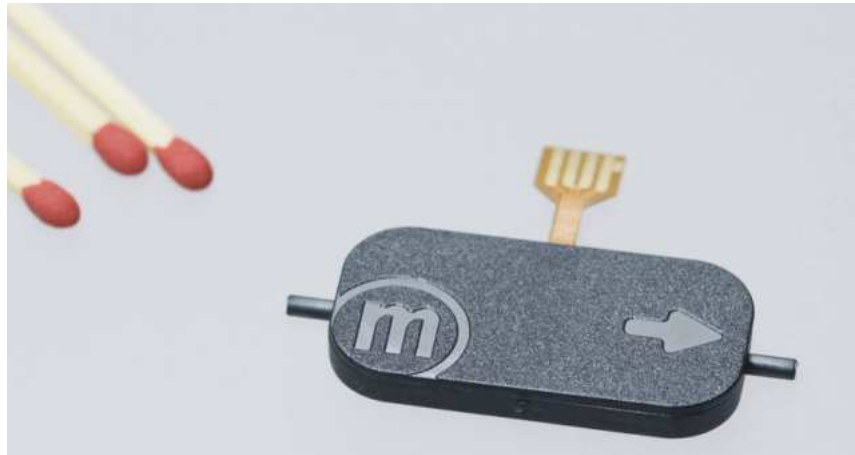
Features

- 다이어프램 맥동 펌프
- 낮은 전력 소비
- 2.4 mm Tubing 사용 가능
- Power Supply 및 배터리 사용 가능.
- 가스 및 액체 사용 가능

Specifications

Model	D250BLZ-L
Flow rate	최대 189 ml/min (Liquid)
Pressure	15 psi
Dimension	55 x 31 x 17 mm
Weight	26 g
Working Temp	-20 to 100 °C
Protection	Standard : IP41
Supply voltage	3.0 ~ 6.0 Vdc
Power consumption	0.1 ~ 2.4 W

mp6 series



Specifications

Model	mp6-gas	mp6-liq	mp6-pi	mp6-pp
Pump Type	Piezoelectric Diaphragm Pump	Piezoelectric Diaphragm Pump	Piezoelectric Diaphragm Pump	Piezoelectric Diaphragm Pump
Dimensions	30 x 15 x 3.8 mm	30 x 15 x 3.8 mm	30 x 15 x 3.8 mm	30 x 15 x 3.8 mm
Power Consumption	~ 50 mW	~ 50 mW	~ 50 mW	~ 50 mW
IP-code	IP33	IP33	IP33	IP33
Life time	5000h	5000h	5000h	5000h
Operating temperature	0 ~ 70 °C	0 ~ 70 °C	0 ~ 70 °C	0 ~ 70 °C
Materials	PPSU	PPSU	PPSU, PI	PP, PI
Pressure (liquid)		≥ 500 mbar	≥ 500 mbar	≥ 500 mbar
Flow rate (liquid)		8 µl/min – 10000 µl/min	8 µl/min – 8000 µl/min	8 µl/min – 4000 µl/min
Pressure (gas)	≥ 100 mbar			
Flow rate (gas)	≥ 25 ml/min			

• PPSU : Polyphenylene sulphone

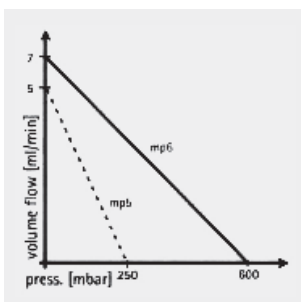
• PI: Polyimide

• PP: Poly Propylene

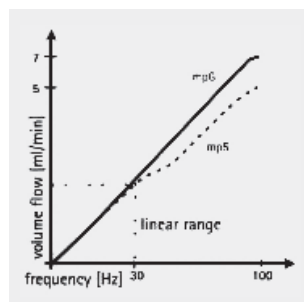
Conditions: Gases, room temperature, settings mp-x:300Hz, 250V, SRS
Conditions: DI water, room temperature, settings mp-x:100Hz, 250V, SRS

Typical characteristics of the Bartels micropumps

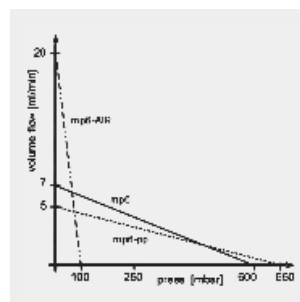
volume flow vs pressure



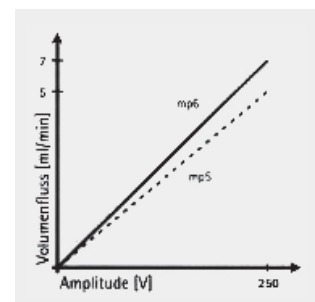
volume flow vs frequency



volume flow vs pressure



volume flow vs frequency



mp Smart



Features

- 컨트롤 가능 Flow rate : 0.5 ~ 8 ml/min
- 정확도 : <5%
- 소비 전력 : 235/365 mW
- Sensor : Sensirion SLF3s-1300F
- Driver/PID regulation: Bartels Mikrotechnik mpSmart-Dosing driver
- Software : 무료 제공
- Calibration : Waterbased solution
- Windows 환경에서 실행 가능

mpSmart-Lowdosing

Flow range	Accuracy	Power consumption	Sensor	Calibration	Power supply
liquids-water 0.005 ~ 1 ml/min	>95%	185/230 mW	Sensirion SLF3s-0600F	Waterbased solution	5V DC via PC (USB)







mpSmart-Dosing

Flow range	Accuracy	Power consumption	Sensor	Calibration	Power supply
liquids-water 0.5 ~ 8 ml/min	>95%	235/365 mW	Sensirion SLF3s-0600F	Water based solution	5V DC via PC (USB)

mpSmart-Flowstop

Flow range	Pressure range	Power consumption	Valve	Calibration	Power supply
Controlable through amplitude and frequency	Inlet up to 1bar Outlet up to 500mbar	275/60 mW	Takasago Valve SMV-2R- BN1F	Liquids and gases	5V DC via PC (USB)

OEM Comparison

						
Category	mp6-OEM	mp6-EVA	mp6-QuadEVA	mp6-QuadOEM	mp6-QuadKEY	mp-x
Outputs	1	1	1	4	4	1
Frequency range	25 ~ 226Hz	25 ~ 226Hz	50 ~ 800Hz	50 ~ 800Hz	50 ~ 800Hz	0 ~ 300Hz
Dependant frequency control	-	-	-	x	x	x
Amplitude range	85 ~ 270Vpp	85 ~ 270Vpp	0 ~ 260Vpp	0 ~ 260Vpp	0 ~ 260Vpp	0 ~ 250Vpp
Dependant amplitude control	-	-	-	o	o	o
Signal shape	OEM	OEM	sine, trapezoid, rectangle	sine, trapezoid, rectangle	sine, trapezoid, rectangle	SRS, rectangular, sine
Power supply	2.5 ~ 5.5V	USB or 2.5 ~ 5.5V	7.5V, 1000mA	2.7 ~ 5.5V	7.5 ~ 12V, 500mA	7.5 ~ 12V
Interface	TTL	TTL(USB just for power)	TTL or I ² C	I ² C	USB	main adaptor
Size	10.5x20.5x6 mm	65x32 mm	10.4x25.5x4.2 mm	38x18x12 mm	92x46x23 mm	75x160x200 mm

Evaluation-Sets

Order code	Controller	Pumps
mp6-lab! set	mp-x	6x mp6
mp6-basic set	mp6-EVA(based on mp6-OEM)	
MP6-Quadbasic set	mp6-QuadKEY	
mp6-basic+set	mp6-XEVA(based on mp6-XOEM)	6x mp6

Order code	Controller	Pumps
mp6-chemical-lab! set	mp-x	6x mp6(2x mp6-liq, 2x mp6-pi, 2x mp6-pp)
mp6-chemical- basic set	mp6-EVA(based on mp6-OEM)	
MP6-chemical- Quadbasic set	mp6-QuadKEY	

Order code	Controller	Pumps
mp6-lowflow-lab! set	mp-x	3x mp6
mp6-lowflow- basic set	mp6-EVA(based on mp6-OEM)	
mp6-lowflow- Quadbasic set	mp6-QuadKEY	

Applications



Water Immersion Micro Dispenser



Lubrication of electric appliances



Gas and liquid sampling



Small appliances



Success factors

- 컴팩트한 사이즈
- 저렴한 비용
- 강한 펌프 내구성
- 저전력 소비

Successful use cases

- 잔류 응축 액체의 제거
- 가슴을 위한 유체 이송 장치
- 헤드를 통한 분무 장치에 적용
- 스팀 발생기로의 유체 이송 장치

High Pressure Pump

Cetoni	106
Syringe pump & controller	
FLOM	111
High pressure piston pump	
Vindum	114
High pressure metering pump	



Base Module

전원 및 펌프 제어기



Features

- 여러대의 Pump module 연결 가능
- Software 연동
- 모델 별 120W, 600W 사용 가능



Specifications

Model		Base 120	Base 600
Power Output		120 W	600 W
Weight		1.8 kg	3.7 kg
Dimensions		94 x 310 x 56 mm	200 x 310 x 56 mm
Number of Supported Modules	neMESYS Low Pressure	8	41
	neMESYS Mid Pressure	5	25
	neMESYS High Pressure	2	12

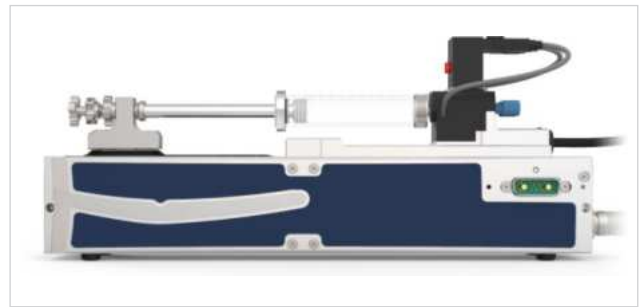
Low Pressure Syringe Pump

Nemesys S



Features

- 무백동 이송 가능
- 확장 가능한 모듈형 장비
- 다양한 사이즈의 주사기 사용 가능
- SDK 및 LabVIEW 지원



Specifications

Mode	주입/흡입
Syringe Size	0.01 ml ~ 50 ml
Minimum Flow Rate	0.008 nl/min (with 0.01 ml syringe)
Maximum Flow Rate	300 ml/min (with 50 ml syringe)
Linear Force	400 N
Pusher Velocity	0.765 mm/s ~ 6 mm/s
Connectivity	CAN, RS232, USB
Dimensions (LxWxH)	310 x 56 x 145 mm
Weight	2.25 kg
Operating Temperature	-20 ~ 50 °C
Storage Temperature	-40 ~ 75 °C

Mid Pressure Syringe Pump

Nemesys M



Features

- 무백동 이송 가능
- 점도가 있는 액체 사용 가능
- 확장 가능한 모듈형 장비
- 지능형 고압 밸브 기술
- 힘 측정 센서 장착-임계값 이상에서 시스템 자동 종료
- SDK 및 LabVIEW 지원



Specifications

Mode	주입/흡입
Syringe Size	3 ml ~ 50 ml
Minimum Flow Rate	2.31 nl/min (with 3 ml syringe)
Maximum Flow Rate	304 ml/min (with 50 ml syringe)
Linear Force	1000N
Pusher Velocity	0.765 nm/s ~ 6 mm/s
Connectivity	CAN, RS232, USB
Diminsions (LxWxH)	310 x 56 x 108 mm
Weight	2.3 kg
Operating Temperature	-20 ~ 50 °C
Storage Temperature	-40 ~ 75 °C
Maximum Pressure	199 bar

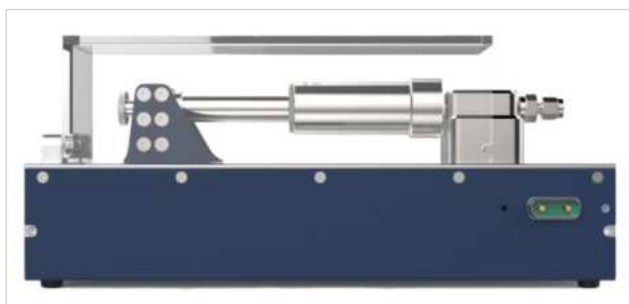
High Pressure Syringe Pump

Nemesys High Pressure Module



Features

- 무백동 이송 가능
- 점도가 있는 액체 사용 가능
- 최대 압력 500 bar
- 통합 압력 센서, 폴리카보네이트 보호 커버
- 액체, 기체, 초임계 유체 취급 가능
- SDK 및 LabVIEW 지원

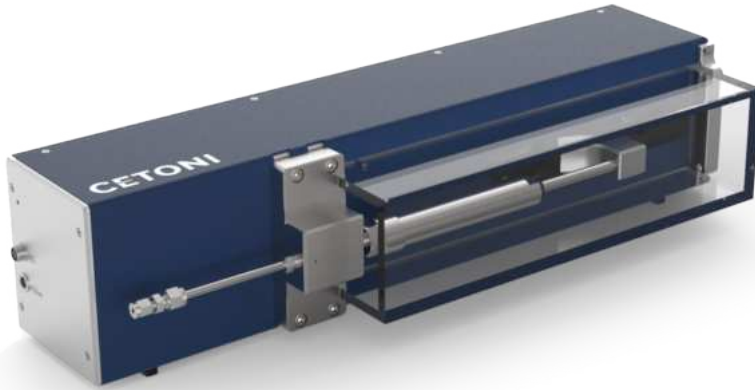


Specifications

Mode	주입/흡입
Syringe Size	3 ml ~ 100 ml
Minimum Flow Rate	4.4 nl/min (with 3 ml syringe)
Maximum Flow Rate	826 ml/min (with 100 ml syringe)
Linear Force	2600 N
Pusher Velocity	1,450 nm/s ~ 7 mm/s
Connectivity	CAN, RS232, USB
Dimension (LxWxH)	310 x 110 x 136 mm
Weight	4.5 kg
Operating Temperature	0 ~ 45 °C
Storage Temperature	-20 ~ 75 °C
Maximum Pressure	517 bar

Ultra High Pressure Syringe Pump

Nemesys Ultra High Pressure Module



Features

- 무백동 이송 가능
- 용도에 따른 다양한 주사기 크기 사용 가능
- 최대 압력 890 bar
- 압력 모니터링을 위한 압력센서
- SDK 및 LabVIEW 지원



Specifications

Mode	주입/흡입
Syringe Size	10 ml ~ 250 ml
Minimum Flow Rate	12 nl/min (with 10 ml syringe)
Maximum Flow Rate	1,540 ml/min (with 250 ml syringe)
Linear Force	7000 N
Pusher Velocity	2,564 nm/s ~ 13 mm/s
Connectivity	CAN, RS232, USB
Dimension (LxWxH)	595 x 194 x 146 mm
Weight	19 kg
Operating Temperature	0 ~ 45 °C
Storage Temperature	-40 ~ 85 °C
Maximum Pressure	890 bar

SINGLE PLUNGER PISTON PUMP FLOM PCS Pump SP-22, 21 Series



PCS Pump
SP-22-13,SUS

PCS Pump
SP-22-13,PEEK

Single Plunger Pump PCS Pump SP-22 Series

Single plunger pump equipped with pressure sensor

Features

- 컴팩트한 디자인
- Plunger의 빠른 동작으로 인한 Pulse 의 최소화
- Flow pressure sensor for real-time pressure monitoring
- Column 보호를 위한 Pressure limiter
- Dosing mode
- Non-metallic PEEK pump 이용 가능
- 3종류의 모델 (Micro, analytical and preparative application)

Product name	PCS Pump (with pressure sensor)									
Part number	SP-22-02S	SP-22-02P	SP-22-12S	SP-22-12P	SP-22-13S	SP-22-13P	SP-22-32S	SP-22-32P	SP-22-33S	SP-22-33P
Pumphead material	SUS	PEEK	SUS	PEEK	SUS	PEEK	SUS	PEEK	SUS	PEEK
Max pressure	20 MPa (2900 psi)		20 MPa (2900 psi)		10 MPa (1450 psi)		5 MPa (725 psi)		2 MPa (290 psi)	
Flow rate range	0.001 ~ 1.000 ml/min		0.01 ~ 2.00 ml/min		0.1 ~ 5.0 ml/min		0.1 ~ 10.0 ml/min		0.1 ~ 20.0 ml/min	
Flow per stroke	8 μ l		16 μ l		32 μ l		77 μ l		154 μ l	
Plunger stroke	2 mm		2 mm		4 mm		2 mm		4 mm	
Flow accuracy	$\pm 0.5 \%$									
Features	Pulse control, Set volume dispensing, Upper/lower pressure limiters									
Pressure accuracy	< 0.5 %									
Wetted Material	SUS : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, SUS PEEK : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, PEEK									
Remote control	Input : PUMP ON / OFF, Output : Error signal									
Communication	RS232C									
Dimensions	144 (H) \times 79 (W) \times 285 (D) mm, excluding protuberances									
Weight	Approx. 3.0 kg									
Power	AC100 ~ 240 V(50 / 60 Hz) MAX 80 VA									
Order Code	SSP-P3062	SSP-P3061	SSP-P3064	SSP-P3063	SSP-P3066	SSP-P3065	SSP-P3068	SSP-P3067	SSP-P3070	SSP-P3069



PCS Pump
SP-21-13,SUS

PCS Pump
SP-21-13,PEEK

Single Plunger Pump PCS Pump SP-21 Series

Single plunger pump without pressure sensor

Features

- 컴팩트한 디자인
- Plunger의 빠른 동작으로 인한 Pulse 의 최소화
- Column 보호를 위한 Pressure limiter
- Dosing mode
- Non-metallic PEEK pump 이용 가능
- 3종류의 모델 (Micro, analytical and preparative application)

Product name	PCS Pump (without pressure sensor)									
Part number	SP-21-02S	SP-21-02P	SP-21-12S	SP-21-12P	SP-21-13S	SP-21-13P	SP-21-32S	SP-21-32P	SP-21-33S	SP-21-33P
Pumphead material	SUS	PEEK	SUS	PEEK	SUS	PEEK	SUS	PEEK	SUS	PEEK
Max pressure	20 MPa (2900 psi)		20 MPa (2900 psi)		10 MPa (1450 psi)		5 MPa (725 psi)		2 MPa (290 psi)	
Flow rate range	0.001 ~ 1.000 ml/min		0.01 ~ 2.00 ml/min		0.1 ~ 5.0 ml/min		0.1 ~ 10.0 ml/min		0.1 ~ 20.0 ml/min	
Flow per stroke	8 μ l		16 μ l		32 μ l		77 μ l		154 μ l	
Plunger stroke	2 mm		2 mm		4 mm		2 mm		4 mm	
Flow accuracy	$\pm 0.5 \%$									
Features	Set volume dispensing									
Pressure accuracy	-									
Wetted Material	SUS : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, SUS PEEK : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, PEEK									
Remote control	Input : PUMP ON / OFF, Output : Error signal									
Communication	RS232C									
Dimensions	144 (H) \times 79 (W) \times 285 (D) mm, excluding protuberances									
Weight	Approx. 3.0 kg									
Power	AC100 ~ 240 V(50 / 60 Hz) MAX 80 VA									
Order Code	SSP-P3052	SSP-P3051	SSP-P3054	SSP-P3053	SSP-P3056	SSP-P3055	SSP-P3058	SSP-P3057	SSP-P3060	SSP-P3059

DUAL PLUNGER PISTON PUMP FLOM Dual Pump KP-22, 21 Series



Dual Pump
KP-22-13S

Dual Pump
KP-22-13P

Dual Plunger Pump Dual Pump KP-22 Series

A general use pump equipped with pressure sensor

Features

- 컴팩트한 디자인
- Flow pressure sensor for flow monitoring
- Column 보호를 위한 Pressure limiter
- Dosing mode
- Non-metallic PEEK pump 이용 가능
- Communication terminal for remote pump operation
- 3종류의 모델 (Micro, analytical and preparative application)

Product name	Dual Pump (with pressure sensor)					
Part number	KP-22-01S	KP-22-01P	KP-22-13S	KP-22-13P	KP-22-33S	KP-22-33P
Pumphead material	SUS	PEEK	SUS	PEEK	SUS	PEEK
Max pressure	25 MPa (3625 psi)	20 MPa (2900 psi)	25 MPa (3625 psi)	20 MPa (2900 psi)	5 MPa (725 psi)	5 MPa (725 psi)
Flow rate range	0.001 ~ 1.000 ml/min		0.01 ~ 10.00 ml/min		0.1 ~ 50.0 ml/min	
Flow per stroke	4 μ l		32 μ l		154 μ l	
Plunger stroke	2 mm		4 mm		4 mm	
Flow accuracy	< 0.3 %					
Features	Pulse control, Consistent pressure flow, Set volume dispensing, Upper/lower pressure limiters					
Pressure accuracy	< 5 %					
Wetted Material	SUS : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, PEEK, SUS PEEK : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, PEEK					
Remote control	Input : PUMP ON / OFF, Output : Error signal					
Communication	RS232C					
Dimensions	144 (H) \times 79 (W) \times 285 (D) mm, excluding protuberances					
Weight	Approx. 4.3 kg					
Power	AC100 ~ 240 V(50 / 60 Hz) MAX 80 VA					
Order Code	SDP-P1081	SDP-P1080	SDP-P1077	SDP-P1076	SDP-P1079	SDP-P1078



Dual Pump
KP-21-13S

Dual Pump
KP-21-13P

Standard Dual Plunger Pump Dual Pump KP-21 Series

A general use pump without pressure sensor

Features

- 컴팩트한 디자인
- Non-metallic PEEK pump 이용 가능
- Communication terminal for remote pump operation
- 3종류의 모델 (Micro, analytical and preparative application)

Product name	Dual Pump (without pressure sensor)					
Part number	KP-21-01S	KP-21-01P	KP-21-13S	KP-21-13P	KP-21-33S	KP-21-33P
Pumphead material	SUS	PEEK	SUS	PEEK	SUS	PEEK
Max pressure	25 MPa (3625 psi)	20 MPa (2900 psi)	25 MPa (3625 psi)	20 MPa (2900 psi)	5 MPa (725 psi)	5 MPa (725 psi)
Flow rate range	0.001 ~ 1.000 ml/min		0.01 ~ 10.00 ml/min		0.1 ~ 50.0 ml/min	
Flow per stroke	4 μ l		32 μ l		154 μ l	
Plunger stroke	2 mm		4 mm		4 mm	
Flow accuracy	< 0.3 %					
Features	Set volume dispensing					
Pressure accuracy	-					
Wetted Material	SUS : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, PEEK, SUS PEEK : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, PEEK					
Remote control	Input : PUMP ON / OFF, Output : Error signal					
Communication	RS232C					
Dimensions	144 (H) \times 79 (W) \times 285 (D) mm, excluding protuberances					
Weight	Approx. 4.3 kg					
Power	AC100 ~ 240 V(50 / 60 Hz) MAX 80 VA					
Order Code	SDP-P1087	SDP-P1086	SDP-P1083	SDP-P1082	SDP-P1085	SDP-P1084

PULSE CONTROL PUMP & BACK PRESSURE REGULATOR FLOM UI-22 Series, BP-11 Series



Intelligent Pump
UI-22-110S

Intelligent Pump
UI-22-110P

Intelligent Pump
UI-22-110D

Linear Motor Pulse Control Intelligent Pump Intelligent Pump UI-22 Series

Combines high precision flow and ease of use

Features

- Linear Drive Design 을 통한 맥동을 최소화
- Air bubble 을 획기적으로 감소시킴
- Plunger seal 수명 연장
- LCD를 통한 압력 및 유량 확인
- 최소 압력 및 최대 압력 설정 가능
- 컴팩트한 디자인
- 2대 이상의 펌프를 RS-232C 통신으로 제어 가능
- PEEK, PCTFE, SUS 중 재질 선택 가능

Product name	Intelligent Pump					
Part number	UI-22-110S	UI-22-110P	UI-22-110D	UI-22-410S	UI-22-410P	UI-22-410D
Pumphead material	SUS	PEEK	SUS	PEEK	SUS	PEEK
Max pressure	35 MPa (5075 psi)	20 MPa (2900 psi)	2 MPa (290 psi)	5 MPa (725 psi)	5 MPa (725 psi)	2 MPa (290 psi)
Flow rate range	0.001 ~ 9.999 ml/min			0.01 ~ 99.99 ml/min		
Flow per stroke	80 µl			708 µl		
Plunger stroke	10 mm					
Flow accuracy	< 0.3 %					
Features	Active pulse reduction, upper/lower pressure limiters					
Pressure accuracy	< 5 %					
Wetted Material	SUS : Sapphire, Ruby, PTFE, PCTFE, PFA, FFKM, HDPE, PEEK, SUS PEEK : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM, HDPE, PEEK PCTFE : Sapphire, Ruby, PTFE, PCTFE, PFA, ETFE, FFKM					
Remote control	Input : PUMP ON / OFF, Output : Error signal					
Communication	RS232C, RS485 (between FLOM devices)					
Dimensions	144 (H) × 105 (W) × 240 (D) mm, excluding protuberances					
Weight	Approx. 5.6 kg					
Power	AC100 ~ 240 V(50 / 60 Hz) MAX140 VA					
Order Code	SLP-P509	SLP-P514	SLP-P517	SLP-P511	SLP-P516	SLP-P510



Auto BPR
BP-11S

Auto Back Pressure Regulator for the UI-22 Series Auto BPR BP-11 Series

Automatic Pressure Regulation

Features

- 일정한 압력 조절이 가능
- UI-22 펌프와 사용하여 실시간 압력 조절 가능
- 내화학성이 높은 재질 사용 가능
- 다양한 INTERFACE (RS232C, RS485)

Product name	Auto BPR	
Part number	BP-11S	BP-11D
Wetted materials	SUS, PFA PCTFE	PFA
Path diameter	0.6 mm	
Pressure range	0.10 ~ 5.00 MPa (14.5 ~ 725 psi)	
Flow rate range	0.1 ~ 100 ml/min	
Pressure range (Using distilled water or methanol)	0.5 ~ 5.00 MPa (72.5 ~ 725 psi)	
Pressure accuracy	±0.1 MPa (±14.5 psi)	
Pressure signal range	uses pressure signal from UI-22 [DC1 - 5V]	
Communication	RS232C, RS485 (START-IN, READY-OUT)	
Dimensions	144 (H) × 79 (W) × 240 (D) mm, excluding protuberances	
Weight	Approx. 2.7 kg	
Power	AC100 ~ 240 V(50 / 60 Hz) MAX 70 VA	
Order Code	SBP-F012	SBP-F019



VP-Series

Features

- 0.1 μ l/min – 97ml/min
- 최대 25,000psi 토출 가능
- 맥동 없이 토출 가능
- 최대 160°C 액체 토출 가능
- 소프트웨어 무상제공
- RS-232, USB 연결 가능
- Compact 한 크기 (19"H × 6"W × 9"D)

Specification & Order information

VP Pump Model	VP-3K Ambient VP-3K Extended Temp VP-3K High Temp	VP-6K Ambient VP-6K Extended Temp VP-6K High Temp	VP-12K Ambient VP-12K Extended Temp VP-12K High Temp	VP-20K Ambient VP-25K Ambient
Maximum Pressure Rating:	3,500 psi (207 bar)	6,500 psi (413 bar)	12,000 psi (827 bar)	20,000 psi (1,379 bar) 25,000 psi (1,725 bar)
Minimum Flow Rate:	0.00005 ml/min	0.00003 ml/min	0.000015 ml/min	0.000007 ml/min
Maximum Flow Rate:	97 ml/min (0 ~ 2,000 psi)	54 ml/min (0 ~ 4,000 psi)	29 ml/min (0 ~ 7,500 psi)	12 ml/min (0 ~ 12,000 psi)
Flow rate & volume accuracy:	+/- 0.1% of set point	+/- 0.1% of set point	+/- 0.1% of set point	+/- 0.1% of set point
Rate & volume repeatability:	+/-0.05% of set point	+/-0.05% of set point	+/-0.05% of set point	+/-0.05% of set point
Displacement Resolution:	0.0240 μ l/step	0.0135 μ l/step	0.0074 μ l/step	0.0034 μ l/step
Single Stroke Volume:	40 ml	20 ml	10 ml	5 ml
Compression Ratio:	5.4 : 1	4.5 : 1	3.7 : 1	3.8 : 1
Pressure Accuracy:	+/- 0.1% of Full Scale	+/- 0.1% of Full Scale	+/- 0.1% of Full Scale	+/- 0.1% of Full Scale
Pressure Resolution:	0.1 psi	0.1 psi	0.1 psi	0.1 psi
Capable of Vacuum Filling:	Yes	Yes	Yes	Yes
Operating Environment Operating Environment (EXT) Operating Environment (HT) (portion of pump inside oven)	5°C - 40°C (41°F ~ 104°F) 5°C ~ 40°C (41°F ~ 104°F) 5°C ~ 160°C (41°F ~ 320°F)	5°C ~ 40°C (41°F ~ 104°F) 5°C ~ 40°C (41°F ~ 104°F) 5°C ~ 160°C (41°F ~ 320°F)	5°C ~ 40°C (41°F ~ 104°F) 5°C ~ 40°C (41°F ~ 104°F) 5°C ~ 160°C (41°F ~ 320°F)	5°C ~ 40°C (41°F ~ 104°F)
Fluid Temp. Fluid Temp (EXT) Fluid Temp (HT)	To 65°C (150°F) To 130°C (320°F) To 160°C (320°F)	To 65°C (150°F) To 130°C (320°F) To 160°C (320°F)	To 65°C (150°F) To 130°C (320°F) To 160°C (320°F)	To 65°C (150°F)
Pump Dimensions (HxWxL) (excludes cables)	19 x 6 x 9 inches 19 x 6 x 9 inches 26 x 9 x 10 inches	19 x 6 x 9 inches 19 x 6 x 9 inches 26 x 9 x 10 inches	19 x 6 x 9 inches 19 x 6 x 9 inches 26 x 9 x 10 inches	19 x 6 x 9 inches
Fluid Connection Fittings	Autoclave Engineers SW250 Female (1/4" Speed-Bite)	Autoclave Engineers SW250 Female (1/4" Speed-Bite)	Autoclave Engineers W125 Female (1/8" Speed-Bite)	Autoclave Engineers F250C Female (1/4" High Pressure)
Safety Blowout Disk Port Connection (tubing connection to SBD assembly)	Autoclave Engineers W125 Female (1/8" Speed-Bite)	Autoclave Engineers W125 Female (1/8" Speed-Bite)	Autoclave Engineers W125 Female (1/8" Speed-Bite)	3/8" NPT Female
Power Supply Requirement	100 ~ 240VAC, 47 ~ 63 Hz	100 ~ 240VAC, 47 ~ 63 Hz	100 ~ 240VAC, 47 ~ 63 Hz	100 ~ 240VAC, 47 ~ 63 Hz

Degasser

Biotech	116
Solvent degassing system	
FLOM	120
Solvent degassing system	



SOLVENT DEGASSING SYSTEM

Biotech DEGASI® Plus Series

Solvent Degassing System



Ordering information

Part Number	Number of Channels	Internal Volume
0003-6351-A	1	480 µl
0003-6352-A	2	480 µl
0003-6353-A	3	480 µl
0003-6354-A	4	480 µl
0003-6355-A	5	480 µl
0003-6356-A	6	480 µl

DEGASI® PLUS CLASSIC

- 실험실의 대부분 응용분야에서 사용 가능
- 매우 우수한 내화학성
- Biocompatible flow path
- 5년 이상의 연속실행 용량
- 손쉬운 프라이밍
- 최적 동작을 위한 진공시스템 모니터링 기능
- 오류 및 누출 검사 기능
- CE & RoHS compliant

Specifications

Product Name	DEGASI® PLUS CLASSIC
Number of Channel	1 ~ 6 channels
Maximum Pressure	70 psi
Wetted Materials	Systec AF™, PEEK, Glass-filled PTFE
Internal Volume	480 µl
Thread size	1/4" -28 UNF threaded flat-bottom port
Size	245(L) x 111(H) x 59(W)
Power	110 ~ 240V, 50/60Hz



Ordering information

Part Number	Number of Channels	Internal Volume
0003-6621	1	480 µl
0003-6622	2	480 µl
0003-6623	3	480 µl
0003-6624	4	480 µl
0003-6625	5	480 µl
0003-6626	6	480 µl

DEGASI® PLUS GPC

- 100 % 유기용매 사용 가능
- 매우 우수한 내화학성
- Biocompatible flow path
- 5년 이상의 연속실행 용량
- 손쉬운 프라이밍
- 최적 동작을 위한 진공시스템 모니터링 기능
- 오류 및 누출 검사 기능
- CE & RoHS compliant

Specifications

Product Name	DEGASI® PLUS GPC
Number of Channel	1 ~ 6 channels
Maximum Pressure	70 psi
Wetted Materials	Systec AF™, PEEK, Glass-filled PTFE
Internal Volume	480 µl
Thread size	1/4" -28 UNF threaded flat-bottom port
Size	245(L) x 111(H) x 59(W)
Power	110 ~ 240V, 50/60Hz

Solvent Degassing System



Ordering information

Part Number	Number of Channels	Internal Volume
0003-6351-S	1	100 µl
0003-6352-S	2	100 µl
0003-6353-S	3	100 µl
0003-6354-S	4	100 µl
0003-6355-S	5	100 µl
0003-6356-S	6	100 µl

DEGASI[®] PLUS MICRO

- 저유량에 적합한 모델
- 매우 우수한 내화학적성
- Biocompatible flow path
- 5년 이상의 연속실행 용량
- 손쉬운 프라이밍
- 최적 동작을 위한 진공시스템 모니터링 기능
- 오류 및 누출 검사 기능
- CE & RoHS compliant

Specifications

Product Name	DEGASI [®] PLUS MICRO
Number of Channel	1 ~ 6 channels
Maximum Pressure	70 psi
Wetted Materials	Systec AF™, PEEK, Glass-filled PTFE
Internal Volume	100 µl
Thread size	1/4" -28 UNF threaded flat-bottom port
Size	245(L) x 111(H) x 59(W)
Power	110 ~ 240V, 50/60Hz



Ordering information

Part Number	Number of Channels	Internal Volume
0003-6351-L	1	925 µl
0003-6352-L	2	925 µl
0003-6353-L	3	925 µl
0003-6354-L	4	925 µl
0003-6355-L	5	925 µl
0003-6356-L	6	925 µl

DEGASI[®] PLUS SEMI-PREP

- 6 ~ 10 ml/min 보다 큰 유량에서 사용 가능
- 매우 우수한 내화학적성
- Biocompatible flow path
- 5년 이상의 연속실행 용량
- 손쉬운 프라이밍
- 최적 동작을 위한 진공시스템 모니터링 기능
- 오류 및 누출 검사 기능
- CE & RoHS compliant

Specifications

Product Name	DEGASI [®] PLUS SEMI-PREP
Number of Channel	1 ~ 6 channels
Maximum Pressure	70 psi
Wetted Materials	Systec AF™, PEEK, Glass-filled PTFE
Internal Volume	925 µl
Thread size	1/4" -28 UNF threaded flat-bottom port
Size	245(L) x 111(H) x 59(W)
Power	110 ~ 240V, 50/60Hz

Solvent Degassing System



DEGASI® PREP

- 매우 우수한 내화학적성
- Biocompatible flow path
- 5년 이상의 연속실행 용량
- 손쉬운 프라이밍
- 최적 동작을 위한 진공시스템 모니터링 기능
- 오류 및 누출 검사 기능
- CE & RoHS compliant

Specifications

Product Name	DEGASI® PREP
Number of Channel	2 channels
Maximum Pressure	70 psi
Wetted Materials	Systec AF™, PEEK, Glass-filled PTFE, Stainless Steel (P/N 2053)
Internal Volume	100 µl
Thread size	1/4"-28 UNF threaded flat-bottom port
Size	6484: 296(L) x 163(H) x 79(W) 2053: 195(L) x 100(H) x 175(W)
Power	110 ~ 240V, 50/60Hz

Ordering information

Part Number	Number of Channels	Channel Volume (ml)
0001-2053	2	5.3



DEGASI® PREP+

- 고유량에 사용가능한 유기용매용 디게서
- 매우 우수한 내화학적성
- 높은 탈기효율
- 75 ~ 100 ml/min (per channel)
- Pressure Drop : 0.0226.kPa/ml/min

Specifications

Product Name	DEGASI® PREP+
Number of Channel	1, 2, 4 channels
Maximum Pressure	70 psi
Wetted Materials	Systec AF™, FEP, Tefzel, PTFE and Glass-filled PPS
Internal Volume	23 ml
Thread size	1/4"-28 UNF threaded flat-bottom port
Size	295(L) x 110(H) x 80(W) (1-channel) 260(L) x 110(H) x 150(W) (2-channel) 260(L) x 110(H) x 290(W) (4-channel)
Power	110 ~ 240V, 50/60Hz

Ordering information

Part Number	Number of Channels	Internal Volume
0001-0120	1	23 ml
0001-0120SH	1	23 ml +minichamber
0001-0220	2	2x23 ml
0001-0220SH	2	2X23 ml +minichamber
0001-0420	4	4x23 ml
0001-0420SH	4	4x23 ml +minichamber

Solvent Degassing System



DEGASI[®] COMPACT

- 최소 설치면적을 가지는 디게서
- 167 x 59 mm footprint를 가진 하우징
- 우수한 내화학성

Specifications

Product Name	DEGASI [®] COMPACT
Number of Channel	2, 4, 6 channels
Maximum Pressure	70 psi
Wetted Materials	Systec AF [™] , PPS, PEEK, Glass-filled PTFE
Internal Volume	285 µl
Thread size	1/4"-28 UNF threaded flat-bottom port
Size	167(L) x 111(H) x 59(W)
Power	110 ~ 240V, 50/60Hz

Ordering information

Part Number	Number of Channels	Internal Volume
0004-2285-W	2	285 µl
0004-4285-W	4	285 µl
0004-6285-W	6	285 µl

Process flow rates up to 1000 ml/min



DEGASI[®] HIGH FLOW 1000

- 고유량 어플리케이션용 디게서
- 1000 ml/min의 유량에서도 사용 가능
- 높은 탈기 효율
- 세척을 위해서 10%의 에탄올 혹은 메탄올 사용 가능

Specifications

Product Name	DEGASI [®] HIGH FLOW 1000
Number of Channel	1 channel
Maximum Pressure	14 PSI/1 Bar
Wetted Materials	Silicone, PVC, Nitrile Rubber, Polyamide
Internal Volume	200 ml
Thread size	Barb for ID 10 mm tubing
Size	365(L) x 135(H) x 150(W)
Power	110 ~ 240V, 50/60Hz

Ordering information

Part Number	Number of Channels	Internal Volume
0003-HF.1000	1	200 ml

Solvent Degassing System



Gastorr AG-42

Gastorr AG-44

Gastorr AG Series

- 저렴한 비용으로 저유량 어플리케이션에 사용
- 진공펌프 열화 방지를 위한 Auto cleaning function
- CPU 제어를 통해 안정적으로 가스 제거
- 용매 오염 방지를 위한 독립적인 챔버 구조
- 2ch or 4ch 선택 가능

Specifications

Product Name	Gastorr Solvent	Degassing Units
Product Number	AG-42-01	AG-44-01
Channels	2	4
Internal volume	340 µl	
Flow rate	≤ 10 ml/min	
Vacuum range	100 hPa fixed	
Thread size	1/4-28 UNF	
Wetted material	Teflon™ AF, ETFE, PTFE	
Remote control	-	
Dimensions	108 (H) × 70 (W) × 240 (D) mm, excluding protuberances	
Weight	Approx. 2.1 kg	
Power	AC 100 ~ 240 V (50 / 60 Hz) MAX 80 VA	
Order code	SGA-G3001	SGA-G3002



Gastorr BG-42

Gastorr BG-44

Gastorr BG Series

- 어플리케이션에 따라 적절한 Internal Volume 선정 가능
- 진공펌프 열화 방지를 위한 Auto cleaning function
- CPU 제어를 통해 안정적으로 가스 제거
- 용매 오염 방지를 위한 독립적인 챔버 구조
- 2ch or 4ch 선택 가능
- 진공도 실시간 표기 기능

Specifications

Product Name	Gastorr Solvent Degassing Units			
Product Number	BG-42-02	BG-44-02	BG-42-10	BG-44-10
Channels	2	4	2	4
Internal volume	510 µl		1020 µl	
Flow rate	≤ 10 ml/min			
Vacuum range	100 hPa fixed			
Thread size	1/4-28 UNF			
Wetted material	Teflon™ AF, ETFE, PTFE			
Remote control	Input : -, Output : Error signal			
Dimensions	108 (H) × 70 (W) × 240 (D) mm, excluding protuberances			
Weight	Approx. 2.1 kg			
Power	AC 100 ~ 240 V (50 / 60 Hz) MAX 80 VA			
Order code	SGA-G3003	SGA-G3004	SGA-G3005	SGA-G3006

Solvent Degassing System



Gastorr FG-42

Gastorr FG Series

- Fluorinated solvents에 사용 가능
- 진공펌프 열화 방지를 위한 Auto cleaning function
- CPU 제어를 통해 안정적으로 가스 제거
- 용매 오염 방지를 위한 독립적인 챔버 구조
- 진공도 실시간 표기 기능

Specifications

Product Name	Gastorr Solvent Degassing Unit
Product Number	FG-42
Channels	2
Internal volume	10 ml
Flow rate	≤ 5 ml/min
Vacuum range	150 hPa fixed
Thread size	1/4-28UNF
Wetted material	PTFE, ETFE, PPS
Remote control	Input : -, Output : Error signal
Dimensions	108 (H) × 70 (W) × 240 (D) mm, excluding protuberances
Weight	Approx. 2.3 kg
Power	AC100 ~ 240 V (50 / 60 Hz) MAX 80 VA
Order code	SGA-G3008

Gastorr PG Series

- 최대 50 ml/min의 유량
- 진공펌프 열화 방지를 위한 Auto cleaning function
- CPU 제어를 통해 안정적으로 가스 제거
- 용매 오염 방지를 위한 독립적인 챔버 구조
- 진공도 실시간 표기 기능
- 1ch or 2ch 선택 가능



Gastorr PG-41, PEEK

Gastorr PG-42, PEEK

Specifications

Product Name	Gastorr Solvent Degassing Units	
	PG-41P	PG-42P
Product Number		
Channels	1	2
Internal volume	62.0 ml	
Flow rate	≤ 50 ml/min	
Vacuum range	150 hPa	
Thread size	1/4-28UNF	
Wetted material	PEEK : PTFE, ETFE, PEEK	
Remote control	Input : -, Output : Error signal	
Dimensions	80 (H) × 90 (W) × 400 (D) mm, excluding protuberances	
Weight	Approx. 5.0 kg	Approx. 6.0 kg
Power	AC100 ~ 240 V (50 / 60 Hz) MAX 80 VA	
Order code	SGA-G3501	SGA-G3502

Microfluidic System

Elveflow	123
Microfluidic controller & Flow sensor	
LabSmith	129
Microfluidic automation & system	



MICROFLUIDIC CONTROLLER

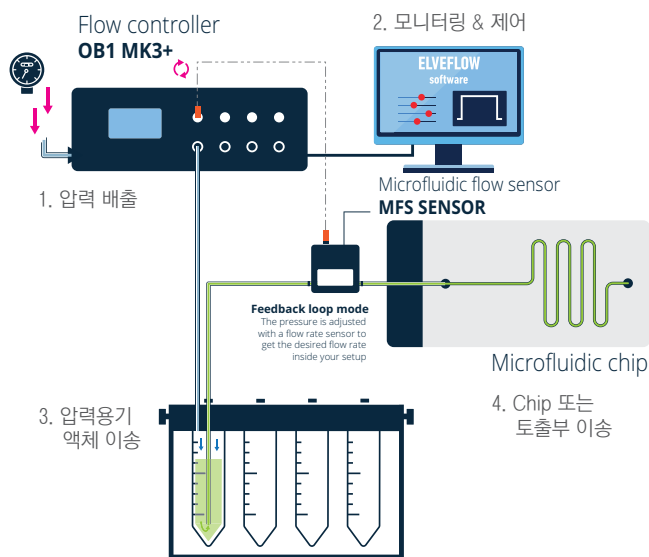
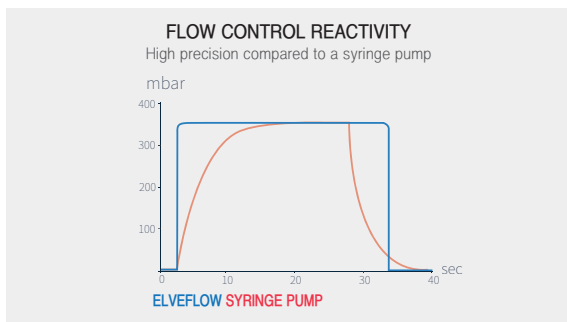
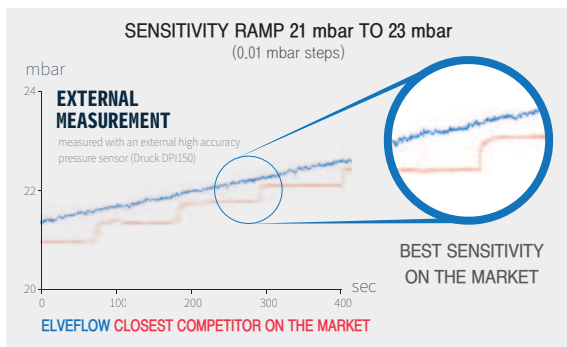
Elveflow OB1 Mk3+ Controller



OB1 Mk3+ Controller

MULTI CHANNEL PRESSURE & VACUUM CONTROLLER

- 안정적인 압력 제어로 무액동 액체 이송
- 1 ~ 4 채널 구성 가능
- 압력 안정성 0.005%
- 반응 시간 9ms
- 안정화 시간 35ms
- SDK 및 LabVIEW 지원



Specifications

OB1 MK3+ CHANNEL PRESSURE RANGE	0 to 200 mbar (0 to 2.9 psi)	0 to 2,000 mbar (0 to 29 psi)	0 to 8,000 mbar (0 to 116 psi)	-900 to 1,000 mbar (-13 to 14.5 psi)	-900 to 6,000 mbar (-13 to 87 psi)
Pressure stability	0.005 % FS 10 µbar (0.00014 psi)	0.005 % FS 100 µbar (0.0014 psi)	0.006% FS 500 µbar (0.007 psi)	-900 to 500 mbar	-900 to 2,000 mbar
				0.005 % FS 100 µbar (0.0014 psi)	0.005 % FS 350 µbar (0.05 psi)
				500 to 1,000 mbar	2,000 to 6,000 mbar
				0.007 % FS 150 µbar (0.0021 psi)	0.007 % FS 525 µbar (0.076 psi)
Response time	down to 9 ms				
Settling time	down to 35 ms				
Minimum pressure increment	0.003 % FS 6.1 µbar - 0,00085 ps	0.003 % FS 56 µbar - 0,00085 psi	0.003 % FS 240 µbar - 0,0035 psi	0.0032 % FS 61 µbar - 0,00085 psi	0.003 % FS 210 µbar - 0.003 psi
Input pressure	1.5 bar - 10 bar non corrosive, non explosive, dry and oil-free gases, e.g. air, argon, N ₂ , CO ₂ , ...				
Input vacuum	/			any value from 0 to -1 bar	
Liquid compatibility	no liquid should enter the OB1 any aqueous or organic solvent, oil or biological sample solution can be propelled				

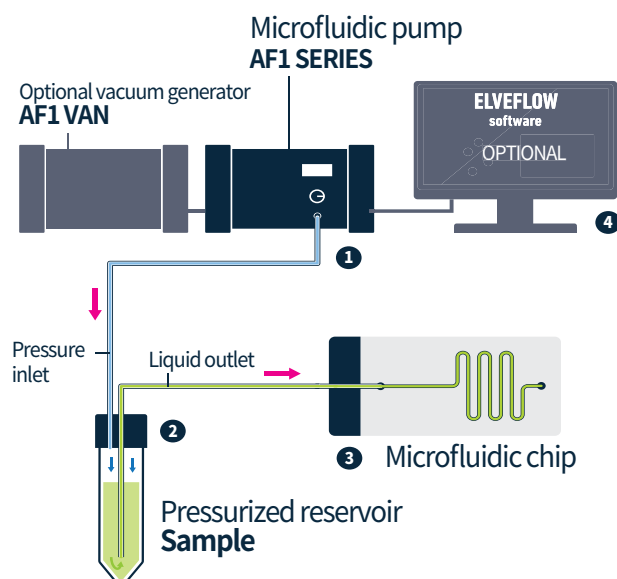
SINGLE CHANNEL AUTONOMOUS PUMP Elveflow AF1 Series



AF1 SERIES

SINGLE CHANNEL AUTONOMOUS PUMP

- 안정적인 압력 제어로 무맥동 액체 이송
- 단일 채널 사용
- 컴프레셔 내장
- 반응 시간 50ms
- 안정화 시간 100ms
- SDK 및 LabVIEW 지원

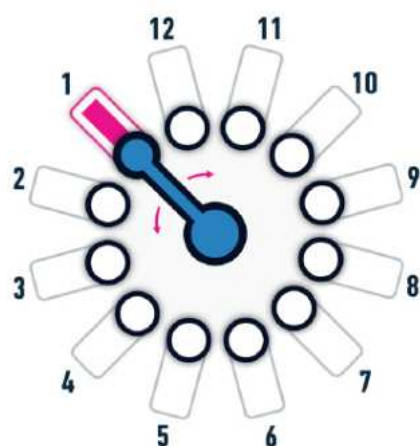


Specifications

AF1 PREMIUM	AF1 200	AF1 1,600	AF1 DUAL
Pressure range	0 to 200 mbar (0 to 2.9 psi)	0 to 1,600 mbar (0 to 23 psi)	-700 to 1,000 mbar (-10 to 14 psi)
Type of pressure	positive	positive	negative & positive
Minimum pressure increment	0.006 % FS 12.2 μ bar (0.0007 psi)	0.006 % FS 122 μ bar (0.007 psi)	0.006 % FS 122 μ bar (0.007 psi)
Pressure stability	100 μ bar 0.05 % FS (0.0014 psi)	1 mbar 0.05 % FS (0.014 psi)	1 mbar 0.05 % FS (0.014 psi)
Response time	50 ms		
Settling time	down to 100 ms		
Supply pressure (min - max)	integrated pressure pump no pressure source needed		integrated pressure & vacuum source no pressure & vacuum source needed
Liquid compatibility	any aqueous or organic solvent, oil, or biological sample solution can be propelled		
Output connectors	stainless steel female luer lock		

12-WAY BIDIRECTIONAL VALVE

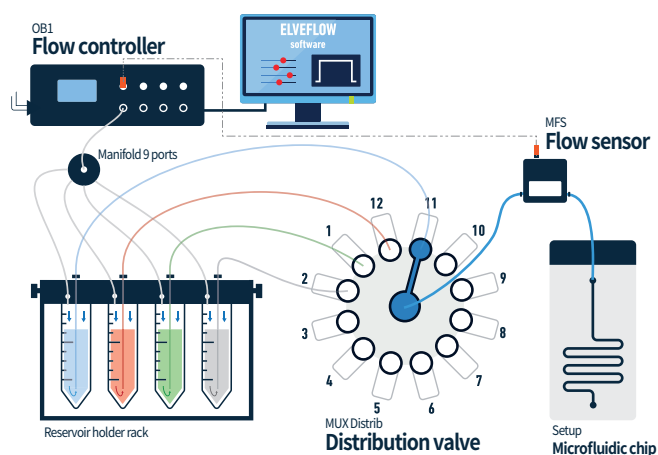
Elveflow MUX DISTRIB



MUX DISTRIB

12 - WAY BIDIRECTIONAL VALVE

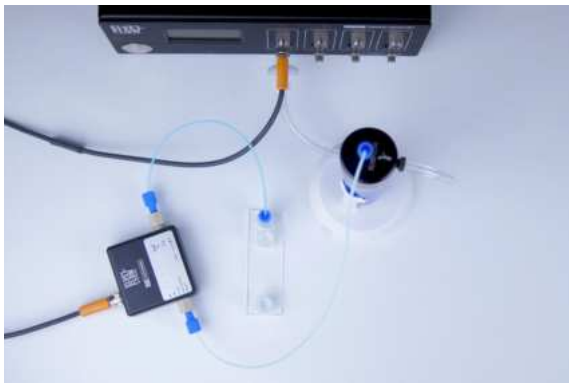
- 반응 시간 156ms
- 기본 ¼-28 피팅 사용
- Internal Volume 3.5 µl
- 화학적 내성 우수(PCTFE, PTFE)



Specifications

MUX DISTRIB		
Performances	Port to port switching time (ms)	156 ms
	Max. supported pressure	7 bar
	Internal diameter	0.5 mm
Power supply	Input voltage range, AC	100 V to 240 V
	AC supply frequency	50 Hz to 60 Hz
	Max current consumption	2A peak
	Power consumption (max)	36 W
	Power supply voltage	18 ~ 24VDC
Mechanical specifications	Valve type	12 positions / 13 ports rotative valve
	Fluidic connectors	Standard 1/4-28 UNF, flat-bottom
	Operating temperature	5 °C to 40 °C
	Operating humidity	20 ~ 70% non condensing
	Wetted materials	PCTFE and PTFE
	Dead volume	None
Software	Computer specifications	USB 2.0 port, Intel Pentium II 500 MHz, 1 Go Hard Disk space, 2 Go RAM Windows XP and newer, 32/64 bit. LabVIEW® 2011 is required when using LabVIEW® libraries.
	Connection type	USB
	Provided elements	C++, Python, MATLAB® and LabVIEW® libraries

THERMAL BASED FLOW SENSOR Elveflow MFS

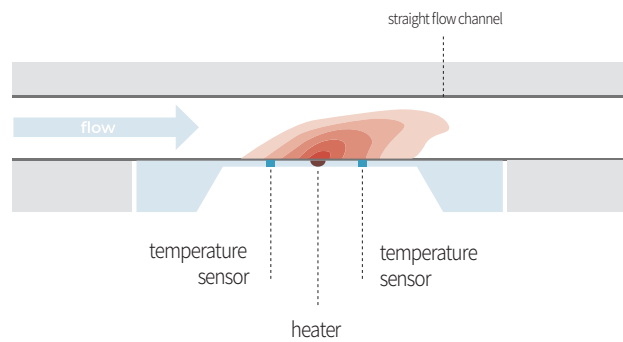


MFS

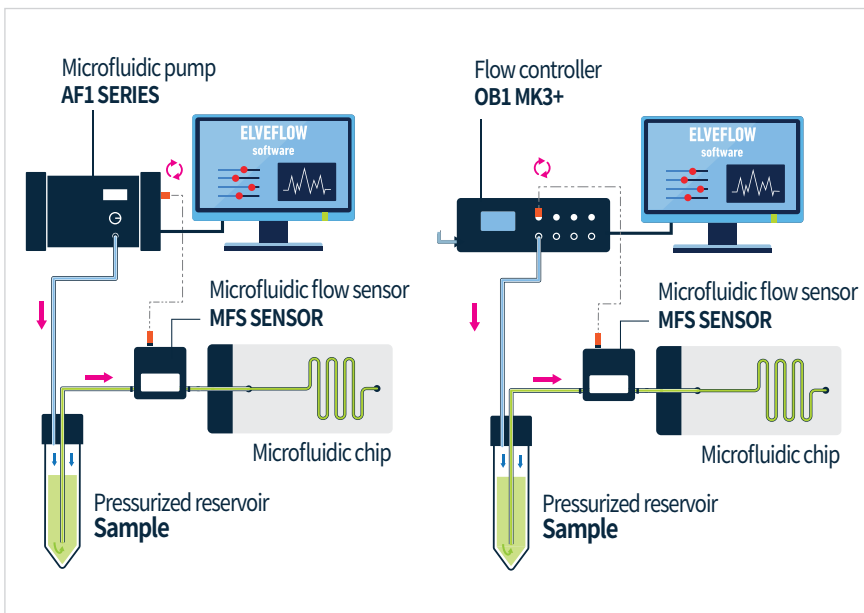
THERMAL BASED FLOW SENSOR

- 최소 0.07 $\mu\text{L}/\text{min}$ 부터 5,000 $\mu\text{L}/\text{min}$ 측정
- 반응시간 40ms
- Resolution 1.5pL/s
- 내부 재질 : Glass 또는 Quartz

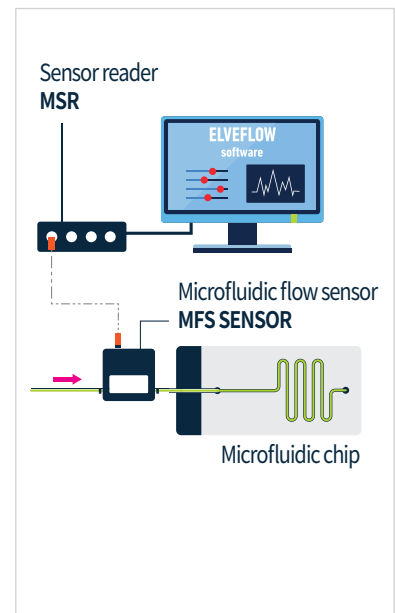
PRINCIPLE



WITH ELVEFLOW FLOW CONTROLLERS: MONITORING + CONTROL



WITH SENSOR READER: MONITORING



Specifications

MFS FLOW SENSORS	MFS 1	MFS 2		MFS 3		MFS 4		MFS 5
Media calibration	water / aqueous solutions	water / aqueous solutions	IPA	water / aqueous solutions	IPA	water / aqueous solutions	IPA	water / aqueous solutions
Flow rate range	0 to \pm 1.5 μ l/min	0 to \pm 7 μ l/min	0 to \pm 70 μ l/min	0 to \pm 80 μ l/min	0 to \pm 500 μ l/min	0 to \pm 1 ml/min	0 to \pm 10 ml/min	0 to \pm 5 ml/min
Accuracy m.v. - measured value applies to negative values (bi-directional)	7 nL/min between [0 to 75] nL/min	20 nL/min between [0 to 0.42] μ l/min	210 nL/min between [0 to 4.2] μ l/min	120 nL/min between [0 to 2.4] μ l/min	5 μ l/min between [0 to 25] μ l/min	2 μ l/min between [0 to 0.04] ml/min	100 μ l/min between [0 to 0.5] ml/min	10 μ l/min between [0 to 200] μ l/min
	10 % m.v. between [75 to 1,500] nL/min	5 % m.v. between [0.42 to 7] μ l/min	20 % m.v. between [4.2 to 70] μ l/min	5 % m.v. between [2.4 to 80] μ l/min	20 % m.v. between [25 to 500] μ l/min	5 % m.v. between [0.04 to 1] ml/min	20 % m.v. between [0.5 to 10] ml/min	5 % m.v. between [0.2 to 5] ml/min
Repeatability m.v. - measured value applies to negative values (bi-directional)	0.9 nL/min between [0 to 80] nL/min	3.5 nL/min between [0 to 0.7] μ l/min	7 nL/min between [0 to 0.7] μ l/min	8 nL/min between [0 to 1.4] μ l/min	0.25 μ l/min between [0 to 25] μ l/min	0.2 μ l/min between [0 to 0.04] ml/min	5 μ l/min between [0 to 0.5] ml/min	1 μ l/min between [0 to 0.2] ml/min
	< 1 % m.v. between [80 to 1,500] nL/min	0.5 % m.v. between [0.7 to 7] μ l/min	1 % m.v. between [0.7 to 70] μ l/min	0.5 % m.v. between [1.4 to 80] μ l/min	1 % m.v. between [25 to 500] μ l/min	0.5 % m.v. between [0.04 to 1] ml/min	1 % m.v. between [0.5 to 10] ml/min	0.5 % m.v. between [0.2 to 5] ml/min
Pressure drop at full scale flow rate, 23 °C	1 bar	3 mbar	60 mbar	1 mbar	7 mbar	< 1 mbar	5 mbar	< 1 mbar
Total internal volume	1 μ l	1.5 μ l		5 μ l		25 μ l		80 μ l
Sensor inner diameter	25 μ m	150 μ m		430 μ m		1.0 mm		1.8 mm
Tubing inner length	29 mm							
Operating pressure	200 bar			100 bar		15 bar		15 bar
Burst pressure	400 bar			200 bar		30 bar		30 bar
Microfluidic fitting type	UNF 1/4-28							
Wetted material	PEEK							
Internal sensor capillary material	Quartz					Borosilicate glass		

CORIOLIS BASED FLOW SENSOR Elveflow BFS

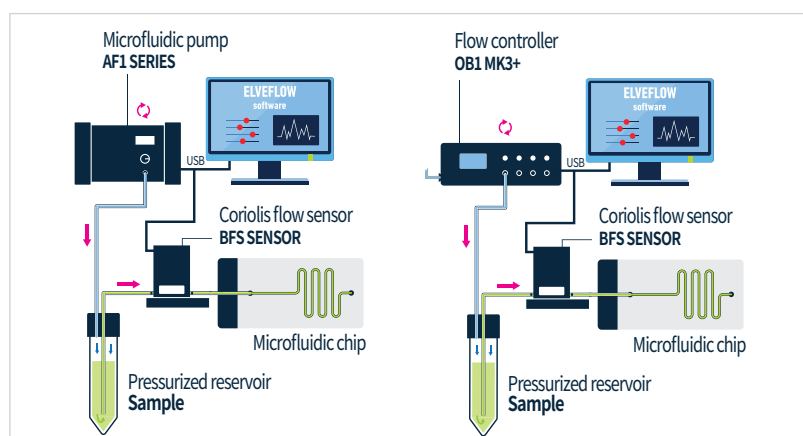


BFS

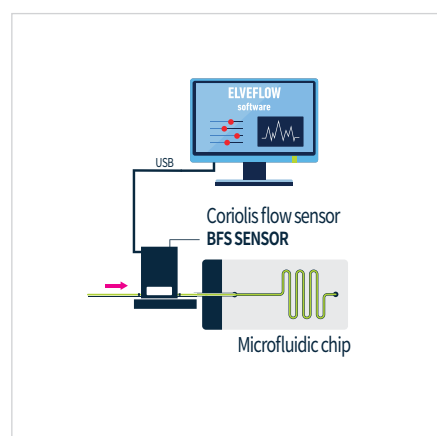
CORIOLIS BASED FLOW SENSOR

- 최소 1.6 $\mu\text{l}/\text{min}$ 부터 500 ml/min 측정
- 반응시간 35ms
- 정확성 2%

WITH ELVEFLOW FLOW CONTROLLERS: MONITORING + CONTROL



WITH EXTERNAL EQUIPMENT: MONITORING



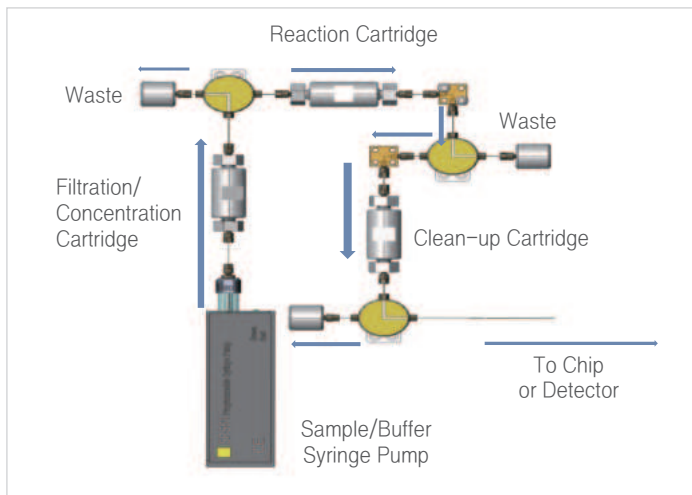
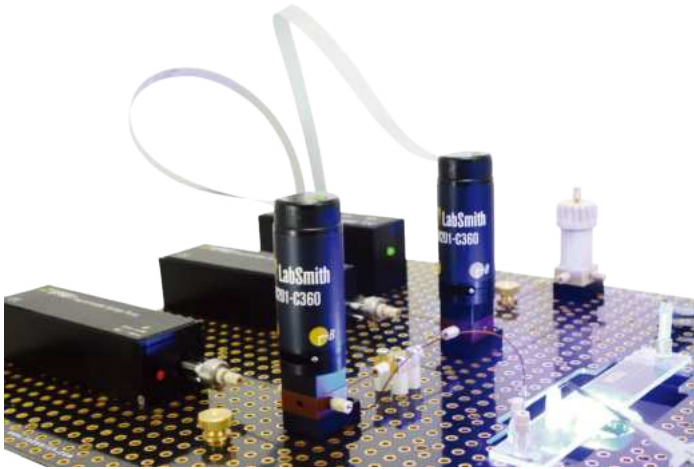
Specifications

CORIOLIS FLOW SENSOR	BFS 1	BFS 1+	BFS 2	BFS 3
Flow range	0.1 g/h to 200 g/h		1 g/h to 2000 g/h	30 g/h to 30000 g/h
Minimum flow rate (water)	1.6 $\mu\text{l}/\text{min}$		16.6 $\mu\text{l}/\text{min}$	500 $\mu\text{l}/\text{min}$
Maximum flow rate (water)	3.3 ml/min		33.3 ml/min	500 ml/min
PERFORMANCE				
Mass flow accuracy liquids	down to $\pm 2\%$ of measured value		down to $\pm 0.2\%$ of measured value	
Mass flow accuracy gases	up to $\pm 0.5\%$ of measured value			
Repeatability	$\pm 0.05\%$ of rate $\pm 1/2 (ZS^* \times 100/\text{flow})\%$ based on digital output			
Zero stability (ZS) ⁽¹⁾	$< \pm 0.01$ g/h		$< \pm 0.2$ g/h	$< \pm 6$ g/h
Density accuracy	$< \pm 5$ kg/m ³			
Temperature accuracy	± 0.5 °C			
Temperature effect ⁽²⁾	Zero drift: ± 0.01 g/h/°C		Zero drift: ± 0.02 g/h/°C	Zero drift: ± 0.5 g/h/°C
Mounting ⁽³⁾	Any position, attitude sensitivity negligible			
Device temperature	0 ~ 70 °C			
Response time (t 98 %)	0.2 s to fill the tubing then 35 ms			
MECHANICAL PARTS				
Wetted material	Stainless steel 316 L or comparable		Stainless steel 316 L or comparable Optional: Hastelloy-C22 Optional: Hastelloy-C23	
Pressure rating	200 bar		200 bar; higher on request	
Sensor inner diameter	250 μm		0.5 mm	1.3 mm
Microfluidic fitting type	1/4-28"		SwageLok	
Internal volume	13 μl		0.45 ml	0.82 ml
Calibration	/		Individual calibration certificate	

MICROFLUIDIC AUTOMATION & SYSTEM

LabSmith uProcess System

기존에 없었던, 전혀 새로운 방식의 Lab-on-a-chip 제작용 Maker!



Features

- 액체 이송과정을 자동으로 제어가능
- System을 구성하기 위한 획기적인 Software
- 정압, 정속의 흐름
- 빠르고 간편한 자동화 구도

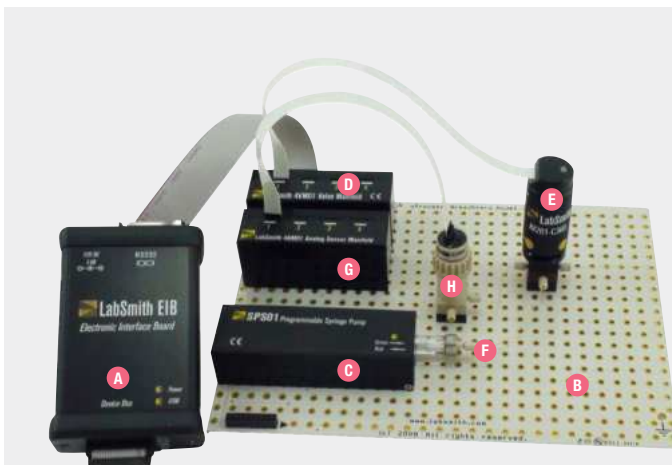
Component

- Syringe pump (0.005 ~ 5600 μ l/min)
- Automation valve (3,4port)
- 각종 Fitting 류
- Cartridge 류
- 전제품 고정용 Breadboard
- PC Control 가능한 Software 기본 제공

Option

- High voltage Control
- Timing & Synchronization
- Microscopes

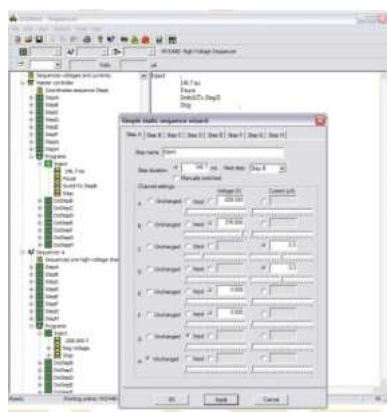
LabSmith uProcess™ System 구성



- A Electronic Interface Board(EIB)는 SPS01 syringe pump, AV201automated valve, uPS01 Pressure sensor를 제어할 수 있습니다.
- B uPB 혹은 iBB breadboard(사진 : uPB-05)는 선택 가능하며, 간단하게 부품을 장착할수 있도록 설계되어 있습니다.
- C SPS01는 프로그램 가능한 Syringe pump입니다.
- D 4VM01 Valve Manifold는 AV201 혹은 AV202 Automated Valve를 최대 4개까지 Control 가능합니다.
- E A V201 Automated Valve 입니다.
- F CapTite™는 microfluidic을 구성하는데 필요한 모든 부품을 완벽히 지원해 줄 수 있습니다. 사진에 보이는 것은 Breadboard Reservoir, one-piece fitting, capillary tubing 입니다.
- G 4AM01 Analog Manifold controls는 uPS pressure sensors를 최대 4개까지 control 할 수 있습니다.
- H uPS series는 압력 센서로 압력을 감지하고 조절할 수 있습니다. syringe pump의 정압, 정속 mode를 사용하면 조절가능 합니다.

Labsmith HVS448 High Voltage Sequencer

Complete electric field control for microsystem analysis



Features

- Current 를 관찰하면서 Voltage 조절 가능 (최대 ± 3.0 kV)
- Voltage 를 관찰하면서 Current 조절 가능 (최대 ± 100 mA)
- 정확한 Multimeter 처럼 Current와 Voltage 감지

Application

- Pulsed-Field Electrophoresis
- Dielectrophoresis
- Lysis
- Electroporation
- Chip-Base Electric Manipulation
- Array Assays
- Multi-channel Separation

Specifications

SUPPLY						
Model	Max Output Voltage	Max voltage Difference	Max Output Current	Max Output Current Per Channel	Current Monitor Resolution	Voltage Monitor Resolution
8000D	± 4000 V	8000V	± 2.5 mA	± 1.8 mA	250 nA	150 mV
6000D	± 3000 V	6000V	± 3.2 mA	± 2.4 mA	300 nA	100 mV
3000	± 3000 V	3000V	± 6 mA	± 4.8 mA	300 nA	100 mV
300D	± 1500 V	3000V	± 6 mA	± 4.8 mA	500 nA	50 mV
1500	± 1500 V	1500V	± 12 mA	± 10 mA	500 nA	50 mV
800	± 800 V	800V	± 25 mA	± 20 mA	1 μ A	25 mV

MONITOR				
Property	Min	Max	Notes	
Monitor time resolution	-	100 μ s	-	
Voltage setting time	-	500 μ s	Step load change or step voltage change	
Current settling time	-	10 ms	Step load change or step voltage change	

SEQUENCE PROGRAMING				
Property	Min	Max	Notes	
Number of step programs per sequence	-	8	-	
Total number of instructions	-	1024	-	
Trigger programming	Arbitrary logical comparison of 4 digital inputs and 8channel outputs.			Individual program for each

LabSmith Microscope



Features

- High-sensitivity video
- Synchronous pulsed fluorescence illuminator
- x-y 축으로 움직이면서 초점을 맞춤
- Microscope에 맞춘 획기적인 Software
- 고화질 사진과 동영상 전부 촬영 가능

Application

- uTAS research and prototyping
- 유전자, 단백질 chip 연구
- 일반적인 소형 자동화 실험
- 폐쇄된 Microsystem control
- 자동화 방식 연구
- Array assays
- Forensics
- 혈액분석
- Particle Image Velocimetry (PIV)

Specifications

PHYSICAL		
Dimensions	21 x 27 x 8.5 cm(8.3 x 10.5 x 3.3") W x L x H	
Enclosure	Black enamel-coated, anti-RFI steel enclosure	
Weight	2.8 kg (6.2 lbs)	
Power	Voltage	90 ~ 264 VAC, 47 ~ 63 Hz
	Current	0.5 A
Mounting	Four 8 ~ 32 threaded holes on 17.8 x 22.9 cm (7.0 x 9.0") rectangle	

CAMERA MODULES		
Snap-in modules with CCD camera, optional fluorescence filter and threading for standard		
DIN microscope objective		
RS-170-BW, EPI Modules	High sensitivity analog black & white camera with 640 x 480 pixels	
	600 lines of resolution, 30 frames per second	
RS-170-C	490 lines of resolution, 30 fps, S Video output	

TRAVERSE - FOCUS		
Motorized traverse and focus controlled through software and front panel		
	Resolution	Range
X-Y traverse	10 μm	5 cm x 7.5 cm
Z-traverse	1 μm	3 mm

CONTROL AND ACQUISITION SOFTWARE		
uScope™ software included		
Automated controls for illuminator, x-y traverse and focus		
Save and process videos and images		
Particle Image Velocimetry		
LabVIEW™ drivers available / Software Developers' Kit (C, C++) included		

SCHOTT FILTERS FOR CAMERA MODULES		
495, 515, 530, 550, 570, 590, 610, 630, 645, 655 nm wavelengths*		

OBJECTIVE					
POWER	NUMERICAL APERTURE	WORKING DISTANCE	FOCAL LENGTH	FIELD OF VIEW	
4X	0.10	15.97 mm	31.0 mm	1.5 x 1.5 mm	
10X	0.25	6.3 mm	16.76 mm	0.6 x 0.6 mm	
20X	0.40	3.3 mm	8.55 mm	0.3 x 0.3 mm	

* Illuminator LED와 wavelengths 가 있는 Schott filter의 자료는 따로 요청 바랍니다.

Mass Flow Controller

Alicat 133

Flow meter & controller for gas and liquid, pressure controller



MASS FLOW CONTROLLER

Alicat M, MC, MB Series

Mass Flow Meter / Controller



M - Series

MC - Series

Product Series

- M-series : Mass Flow Meter (질량유량계)
- MC-series : Mass Flow Controller (질량 유량 컨트롤러)
- MB-series : Portable Gas Mass Flow Meter (휴대용 유량계)

Features

- PC 및 PLC에 연결 없이 독립적으로 키패트 컨트롤 가능
- COMPOSER™ gas composition 펌웨어 포함
- 반응 속도 : 4ms
- 작동 준비 시간이 짧음(<1 second)
- 다양한 기체혼합가스 측정 가능
- 한 화면에 모든 플로우 데이터 값 표기
- 압력차 측정방식 : 습기 혹은 방향 변화에 영향 없음
- 정밀도 : 0.6%
- 작동 범위 : 0.01 ~ 100% of full scale
- 유량 범위 : Max 0 ~ 5000 SLPM ; Min 0 ~ 0.5 SCCM
- 재질 : 304 stainless steel
(사용 조건에 따라 316L stainless steel적용 가능:MC,MCS series)

Specifications

SENSOR PERFORMANCE	
Mass Flow Accuracy (at Calibration Conditions)	Low flow : $\pm 0.8\%$ of reading and $\pm 0.2\%$ of full scale Mid flow : $\pm 0.6\%$ of reading or $\pm 0.1\%$ of full scale High flow : $\pm 0.8\%$ of reading and $\pm 0.2\%$ of full scale
High Accuracy Option	Low flow : $\pm 0.4\%$ of reading and $\pm 0.2\%$ of full scale Mid flow : $\pm 0.5\%$ of reading or $\pm 0.1\%$ of full scale High flow : $\pm 0.4\%$ of reading and $\pm 0.2\%$ of full scale
Repeatability	Low flow : $\pm(0.2\%$ of reading + 0.02% of full scale) Mid flow : $\pm(0.1\%$ of reading + 0.02% of full scale) High flow : $\pm(0.2\%$ of reading + 0.02% of full scale)
Flow Measurement Range	0.01 ~ 100% of full scale
Operating Temperature Range	-10 ~ 60°C
Temperature Accuracy	$\pm 0.75^\circ\text{C}$
Operating Pressure Full Scale	160 PSIA
Pressure Accuracy (above/below) 1atm	$\pm 0.5\%$ of reading / ± 0.07 PSIA
Sensor Response / Warm-Up Time	<10 ms, flow rate dependent / <1 s
COMMUNICATIONS	
Analog I/O	4 ~ 20 mA, 0 ~ 5 VDC, 1 ~ 5 VDC, 0 ~ 10 VDC
Digital I/O	RS-232 Serial by default RS-485 Serial, Modbus RTU (over RS-232 or RS-485) Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, Profibus
Electrical Connection	6 pin locking, 8 pin mini-DIN, 8 pin M12, DB-9, DB-15 (contact Alicat for custom pinouts)
Power Requirements	9 ~ 24 VDC, 40 mA (12 ~ 24 VDC, 80 mA if equipped with 4 ~ 20 mA or 0 ~ 10 VDC output)
Digital Data Update Rate	40 Hz at 19200 baud
Analog Data Update Rate	1 kHz
Display Update Rate	10 Hz
Analog Signal Accuracy	$\pm 0.1\%$ of full scale additional uncertainty

Liquid Flow Meter / Controller



Product Series

- L-series : Liquid Flow Meter (액체유량계)
- LC-series : Liquid Flow Controller (액체 유량 컨트롤러)
- LB-series : Portable Liquid Flow Meter (휴대용 액체 유량계)

Features

- PC 및 PLC에 연결 없이 독립적으로 키패트 컨트롤 가능
- 한 화면에 모든 플로우 데이터 값 표기
- 반응 속도 (측정시간 / 조절시간) : 20ms / 100ms
- 작동 준비 시간이 짧음(<1 second)
- PID Valve tuning방식을 통한 최고의 속도와 안정성 확보
- 정확도(Accuracy) : $\pm 2\%$ of full scale
- 작동 범위 : 2 ~ 100% of full scale
- 유량 범위 : 0 ~ 0.5 ccm to 0 ~ 10 lpm
- 재질 : 304 stainless steel
(사용 조건에 따라 316L stainless steel적용 가능:LS,LCS series)
- 방폭옵션 선택 가능(CSA Class 1 Div 2 D16 Classification)

Specifications

Performance			
Product	L Meters	LC Controllers	LCR Controllers
Available Ranges	0.5 ccm to 10 lpm	0.5 ccm to 500 ccm	1 lpm to 5 lpm
Accuracy at calibration conditions after tare	$\pm 2\%$ Full Scale		
Repeatability	$\pm 2\%$ Full Scale		
Zero Shift and Span Shift	0.02% Full Scale / °Celsius / Atm		
Operating Range	2% to 100% Full Scale		
Turndown Ratio	50:1 Turndown		
Maximum Flow Rate	128% FS Measurable	102.4% FS Controllable	
Typical Response Time	20 ms (Adjustable)	100 ms (Adjustable)	
Warm-up Time	< 1 Second		

Operating Conditions			
Product	L Meters	LC Controllers	LCR Controllers
Operating Temperature	Non-Freezing -10° to +60 °Celsius		
Max. Internal Pressure	100 psig		
Proof Pressure	200 psig		
Ingress Protection	IP40		

Communication / Power			
Product	L Meters	LC Controllers	LCR Controllers
Digital Output Signal	RS-232 Serial / RS-485 Serial / Modbus / PROFIBUS3		
Analog Output Signal	0 ~ 5 Vdc / 1 ~ 5 Vdc / 0 ~ 10 Vdc / 4 ~ 20 mA		
Electrical Connection	8 pin Mini-DIN / 9-pin D-sub (DB9) / 15-pin D-sub (DB15) / 6 pin locking		
Supply Voltage	7 ~ 30 Vdc	12 ~ 30 Vdc	24 ~ 30 Vdc
Supply Current	0.040 Amp	0.250 Amp	0.750 Amp

Pressure and Vacuum Gauge / Controller



Product Series

- P-series : Pressure Gauge (압력 게이지)
- PC-series : Pressure Controller (진공, 압력 컨트롤러)
- PCB-series : Dual Valve Differential Pressure Controllers (이중밸브 압력컨트롤러)

Features

- PC 및 PLC에 연결 없이 독립적으로 키패드 컨트롤 가능
- 한 화면에 모든 플로우 데이터 값 표기
- 응답시간 : 50 ~ 100 ms
- PID Valve tuning방식을 통한 최고의 속도와 안정성 확보
- 정확도(Accuracy) : $\pm 0.25\%$ of full scale
- 재현성(Repeatability) : 0.08% of reading
- 작동범위 : PC & PCP : 0.01 ~ 100% Full scale
 PCR : 0.5 ~ 100% Full scale

Specifications

Performance			
Product	P-Series Gauges	PC & PC3 Controllers	PCR & PCR3 Controllers
Standard Accuracy		$\pm 0.30\%$ Full Scale (2 in H ₂ O) $\pm 0.25\%$ (≥ 1 psi)	
High Accuracy Option		$\pm 0.125\%$ (≥ 1 psi)	
Repeatability		$\pm 0.08\%$ Full Scale	
Zero Shift and Span Shift		0.02% Full Scale / °C	
Operating Range		PC & PCP : 0.01 ~ 100% Full scale PCR : 0.5 ~ 100% Full scale	
Turndown Ratio		10000 : 1 (PC, PCP) / 200 : 1 (PCR)	
Excess Pressure	128% Full Scale Measurable		102.4% Full Scale Controllable
Burst Pressure		3 X Full Scale (1.5 X Full Scale for ranges >500 psi)	
Warm-up Time		< 1 Second	

Operating Conditions			
Product	P-Series Gauges	PC & PC3 Controllers	PCR & PCR3 Controllers
Operating Temperature		Non-Freezing -10° to +60 °Celsius	
Ingress Protection		IP40	

Performance			
Product	P-Series Gauges	PC & PC3 Controllers	PCR & PCR3 Controllers
Digital Output Signal		RS-232 Serial, RS-485 Serial, DeviceNet, EtherCAT, EtherNet/IP, Modbus RTU, Modbus TCP/IP, PROFIBUS	
Analog Output Signal		0 ~ 5 Vdc / 1 ~ 5 Vdc / 0 ~ 10 Vdc / 4 ~ 20 mA	
Electrical Connection		8 pin Mini-DIN, 9 pin D-sub (DB9), 15 pin D-sub (DB15), 6 pin locking, 8 pin M12	
Supply Voltage	7 ~ 30 Vdc	12 ~ 30 Vdc	24 ~ 30 Vdc
Supply Current	0.040 Amp	0.250 Amp	0.750 Amp

Coriolis Mass Flow Meters and Controllers



Product Series

- KM/KC-series : Standard Coriolis 식 질량 유량계
- KMO/KCO-series : Coriolis for OEM applications

Features

- 측정범위 : 0.2 g/h ~ 10 kg/h
- 정밀도 : 액체) $\pm 0.2\%$ of reading or $\pm 0.05\%$ (of full scale)
 가스) $\pm 0.5\%$ of reading or $\pm 0.05\%$ (of full scale)
- 액체 및 기체의 화학적 특성을 모르는 경우에도 각각의 질량 및 유량을 정확하게 판독 가능
- 외부 진동에 영향받지 않아 환경간섭에도 높은 정확도를 유지
- 부식성유체에 사용가능 : IP67등급
- 작동압력(max.) : 4000 PSIA

Specifications

SENSOR AND CONTROL PERFORMANCE	
Full Scale Flow Rate Options	100 g/h, 1000 g/h, 10,000 g/h
Flow Accuracy	Liquid: $\pm 0.2\%$ of reading or $\pm 0.05\%$ of full scale, whichever is greater Gas: $\pm 0.5\%$ of reading or $\pm 0.05\%$ of full scale, whichever is greater
Repeatability	$\pm 0.05\%$ of reading or $\pm 0.025\%$ of full scale, whichever is greater
Minimum Measurable Flow	0.2% of full scale
Density Accuracy	± 5 kg/m ³
Viscosity Range	0 ~ 200 cP
Zero Stability	$\pm 0.05\%$ of full scale (included in the flow accuracy specification)
Temperature Sensitivity	Mass flow zero shift: $\pm 0.01\%$ of full scale per °C from tare temperature Mass flow span shift: $\pm 0.005\%$ of reading per °C from 25°C
Valve Function	Normally Closed
Typical Control Response Time	<500 ms (T98)
Typical Indication Response Time	<100 ms (T98)
MECHANICAL	
Maximum Operating Pressure (Proof)	100 ~ 1000 g/h: 1500 PSIA 10000 g/h: 1000 PSIA 4000 PSIA option is available for all ranges
Operating Temperature Range	Ambient: 0 ~ 60°C Fluid : 30 ~ 105°C
Ingress Protection	IP40 (IP67 optional, M12 required)
Wetted Materials	FKM, 316L
Process Connections	1/4" VCR Male
Inlet Filter Recommended	Meter: 20 microns Controller: 1 micron
COMMUNICATIONS	
Analog I/O	0 ~ 5 Vdc, 0 ~ 10 Vdc, 4 ~ 20 mA
Digital I/O	Modbus RTU (over RS-232 or RS-485)
Electrical Connector Options	DB-15 with USB-C (default), M12 (IP67 only)
Power Requirements	Meter: 1.4 watts, 5 ~ 30 Vdc (58 mA at 24 Vdc) via USB-C or DB15/M12 Controller: 4 watts, 12 ~ 30 Vdc (167 mA at 24 Vdc) via DB15/M12 only
Digital Update Rate	50 Hz at 19200 baud
Analog Update Rate	50 Hz

Gas Select™ 5.0



- MFM, MFC에 등록된 130가지 가스 각각의 유량을 측정 및 컨트롤
- 130가지 가스 중 5가지 가스의 혼합물에 대한 측정 및 컨트롤
- 각 가스는 0.01%의 미세한 양까지 혼합 가능
- 원하는 혼합물의 Calibration data를 20개까지 저장 가능
- 가스 혼합물에 대한 측정 및 컨트롤을 실시간으로 확인 가능(NIST ref.)
- RS-232를 통하여 원하는 가스 리스트 생성



Sample Application—On-Site Laser Gas Mixing

Verify flow rates for gases mixed on-site.

Create 20 mixes tailored to your exact application needs.

20 gas mixes > 5 gases per mix > up to 130 preloaded gases

Pure Gases

- Acetylene (C₂H₂)
- Air
- Argon (Ar)
- i-Butane (i-C₄H₁₀)
- n-Butane (n-C₄H₁₀)
- Carbon dioxide (CO₂)
- Carbon monoxide (CO)
- Deuterium (D₂)
- Ethane (C₂H₆)
- Ethylene/Ethene (C₂H₄)
- Helium (He)
- Hydrogen (H₂)
- Krypton (Kr)
- Methane (CH₄)
- Neon (Ne)
- Nitrogen (N₂)
- Nitrous Oxide (N₂O)
- Oxygen (O₂)
- Propane (C₃H₈)
- Sulfur Hexafluoride (SF₆)
- Xenon (Xe)

Stack/Flue Gases

- 2.5% O₂+10.8% CO₂+85.7% N₂+1% Ar
- 2.9% O₂+14% CO₂+82.1% N₂+1% Ar
- 3.7% O₂+15% CO₂+80.3% N₂+1% Ar
- 7% O₂+12% CO₂+80% N₂+1% Ar
- 10% O₂+9.5% CO₂+79.5% N₂+1% Ar
- 13% O₂+7% CO₂+79% N₂+1% Ar

Bioreactor Gases

- 5% CH₄ 95% CO₂
- 10% CH₄ 90% CO₂
- 15% CH₄ 85% CO₂
- 20% CH₄ 80% CO₂
- 25% CH₄ 75% CO₂
- 30% CH₄ 70% CO₂
- 35% CH₄ 65% CO₂
- 40% CH₄ 60% CO₂
- 45% CH₄ 55% CO₂
- 50% CH₄ 50% CO₂
- 55% CH₄ 45% CO₂
- 60% CH₄ 40% CO₂
- 65% CH₄ 35% CO₂
- 70% CH₄ 30% CO₂
- 75% CH₄ 25% CO₂
- 80% CH₄ 20% CO₂
- 85% CH₄ 15% CO₂
- 90% CH₄ 10% CO₂
- 95% CH₄ 5% CO₂

Breathing Gases

- EAN-32 (32% O₂+68% N₂)
- EAN-36 (36% O₂+64% N₂)
- EAN-40 (40% O₂+60% N₂)
- EA-40 (40% O₂+60% Air)
- EA-60 (60% O₂+40% Air)
- EA-80 (80% O₂+20% Air)
- Heliox-20 (20% O₂+80% He)
- Heliox-21 (21% O₂+79% He)
- Heliox-30 (30% O₂+70% He)
- Heliox-40 (40% O₂+60% He)
- Heliox-50 (50% O₂+50% He)
- Heliox-60 (60% O₂+40% He)
- Heliox-80 (80% O₂+20% He)
- Heliox-99 (99% O₂+1% He)
- Metabolic Exhalant
(16% O₂+78.04% N₂+5% CO₂+0.96% Ar)

Fuel Gases

- Coal Gas 50% H₂+35% CH₄+10% CO+5% C₂H₄
- Endothermic Gas 75% H₂+25% N₂
- HHO 66.67% H₂+33.33% O₂
- LPG HD-5 96.1% C₃H₈+1.5% C₂H₆+0.4% C₃H₆+1.9% n-C₄H₁₀
- LPG HD-10 85% C₃H₈+10% C₂H₆+ 5% n-C₄H₁₀
- Nat Gas 1 93% CH₄+3% C₂H₆+1% C₃H₈+2% N₂+1% CO₂
- Nat Gas 2 95% CH₄+3% C₂H₆+1% N₂+ 1% CO₂
- Nat Gas 3 95.2% CH₄+2.5% C₂H₆+0.2% C₃H₈+0.1% C₄H₁₀+1.3% N₂+0.7% CO₂
- Syn Gas 1 40% H₂+29% CO+20% CO₂+11% CH₄
- Syn Gas 2 64% H₂+28% CO+1% CO₂+7% CH₄
- Syn Gas 3 70% H₂+4% CO+25% CO₂+1% CH₄
- Syn Gas 4 83% H₂+14% CO+3% CH₄

Laser Gases

- 4.5% CO₂+13.5% N₂+82% He
- 6% CO₂+14% N₂+80% He
- 7% CO₂+14% N₂+79% He
- 9% CO₂+15% N₂+76% He
- 9.4% CO₂+19.25% N₂+71.35% He
- 9% Ne+91% He

O₂ Concentrator Gases

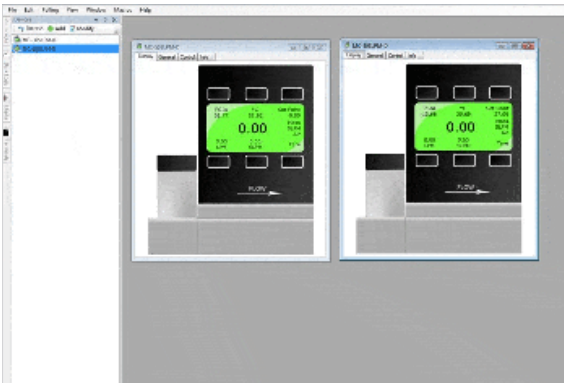
- 89% O₂+7% N₂+4% Ar
- 93% O₂+3% N₂+4% Ar
- 95% O₂+1% N₂+4% Ar

Software

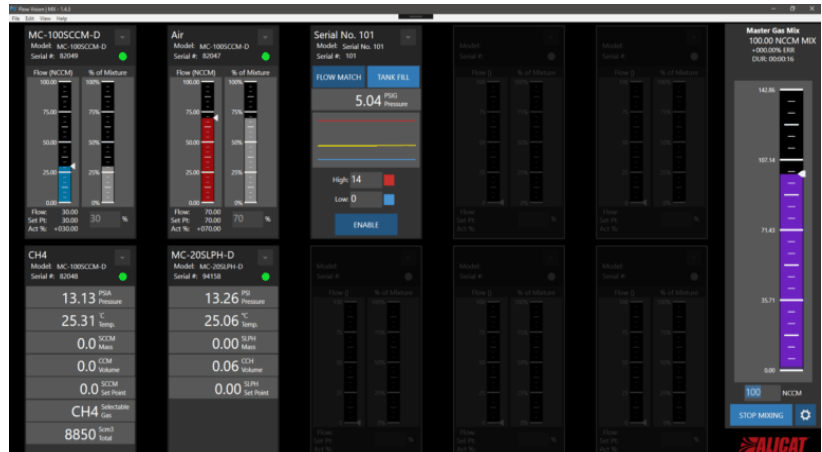
Flow Vision SC Software



- 최대 26개의 제품을 실시간으로 동시 모니터링 및 컨트롤
- 데이터 캡처 기능 및 로깅 기능(그래프 표시 가능)
- 프로그램에서 손쉬운 Gas Calibration 가능
- 제품 연결시 자동 구성 가능
- 사용중이던 설정 값 저장 및 불러내기 가능
- 제품이 멈췄을 경우 또는 설정 범위가 넘을 경우 알람 기능 탑재



Flow Vision MX™ Gas Mixing Software



- 최대 6개의 Mass flow controller를 이용하여 실시간 가스 혼합
- 데이터 캡처 기능 및 로깅 기능(그래프 표시 가능)
- 프로그램에서 손쉬운 Gas Calibration 가능
- Graphical user interface (GUI) 제공
- 제품 연결시 자동 구성 가능
- 사용중이던 설정 값 저장 및 불러내기 가능
- 제품이 멈췄을 경우 또는 설정범위가 넘었을 경우 알람기능 탑재

Multi-drop Breakout Boxes (BB9 series)

- RS-232, RS-485, USB사용자가 원하는 사양 선택
- 하나의 PC로 최대 9개의 MFC를 동시에 작동



Communications Cables

- Supply DC Cable
- 8-pin, 6-pin, D-Subend으로 구성
- RS-232, RS-485, USB 사용자 원하는 사양 선택 가능
- 하나의 PC로 최대 9개의 MFC를 동시에 작동



Fittings and Adapters

- 사용 조건에 따라 원하는 Connection port선택 가능
- NPT ports (1.0", 1.5", 2.0")
- British Standard Pipe ports (1/8", 1/4", 3/8", 1/2", 3/4" etc.)
- Welded VCR ports (1/8", 1/4", 1/2", 3/4" etc.)



Display Option

- Remote Display
 - 사용자 장비내 별도 장착 가능
 - 기존 장비와 같이 데이터를 실시간 모니터링가능
 - 칼라 옵션 적용가능



REMOTE ELECTRONICS (for high temperature)

- 측정부와 모니터링부분을 분리하여 운용
- 고온의 가스 측정시 적용 가능
(가스 온도 100°C 에도 사용 가능)
- 소형장비에 장착하여 원격운용 가능



APPLICATIONS

Mass flow controller secures stable flow

Mass flow controller secures stable flow

Mass Flow Meter



M Standard Series



MW Low Pressure Drop Series

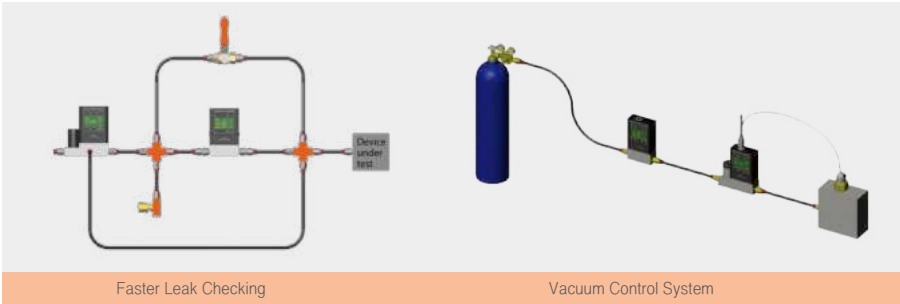


MS Anti-Corrosive Series



MB and PCU Portable Calibration Series

Application



Faster Leak Checking

Vacuum Control System

Mass Flow Controller



MC Standard Series



MCR High-Flow Series

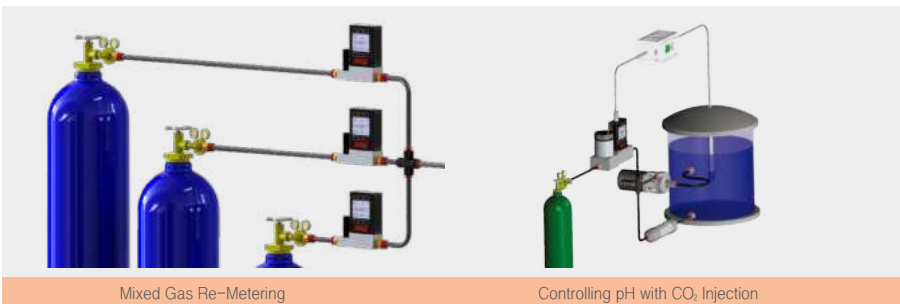


MCW, MCRW Low Pressure Series



MCD, MCRD Bidirectional Series

Application



Mixed Gas Re-Metering

Controlling pH with CO₂ Injection

Automatic Valve

IDEX	142
Automatic switching / selection valves	
Clippard	146
Solenoid valves	



AUTOMATIC SWITCHING/ SELECTION VALVES

MX Series II Modules



MXX
Low Pressure
UP to 125psi/9bar

MXT
Fast Chromatography
Up to 15,000psi/1000bar

MXP
High pressure
Up to 6,000psi/400bar

Features

- **Flexible Automation**
 - 분석장비 또는 PC (BCD, serial, USB)에 연결하기 위한 다양한 선택 사양
 - Remote Control 뿐만 아니라 LED 창에서 버튼을 눌러 직접 조작 가능
 - 각 Maker Chromatography software 또는 Titan MX software로 명령어 전달 가능
- **Reduce Downtime**
 - 부품 교체가 빠르고 용이한 POD 디자인
 - Titan EX fitting-less tubing connection system으로 쉽고 빠른 connections 교체
 - 밸브의 긴 수명
- **Increases Laboratory Capability**
 - Nano, Semi-Prep, Low Pressure, Fast chromatography (UPLC)에 적용
 - 다양한 Flow Path
 - 믿을 수 있는 자동제어장치 Titan Valves
 - 시간 절약과 생산성 향상에 기여

Specifications

Maximum Pressure	MXT : 15,000 psi (1,034 bar) MXP : 6,000 psi (414 bar) MXX : 125 psi (9 bar)
Flow Passages	Nano : 0.10 mm (0.004") diameter Analytical : 0.25 mm (0.010") diameter Preparative : 1.5 mm (0.060") diameter
Power Requirements	100-120 VAC, 50-60 Hz
Regulatory Compliant	CE Mark
Remote Control	USB, I ² C, BCD, Level Logic
Operating Temperature	0° ~ 40°C, non-condensing
Storage Temperature	0° ~ 75°C
Dimensions (H x W x D)	117 mm x 76 mm x 128 mm (4.6" x 3.0" x 5.0")

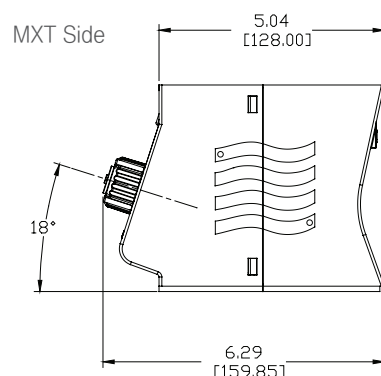
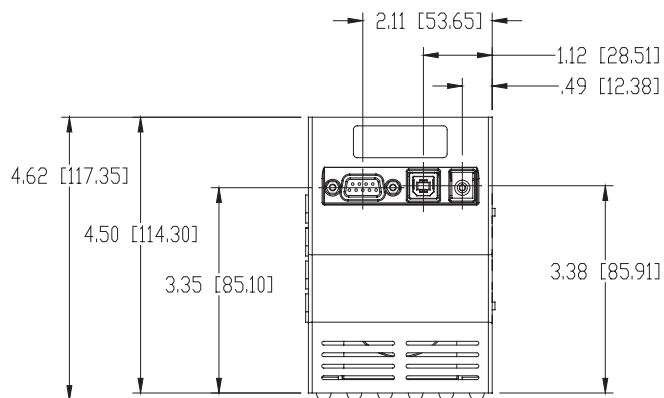
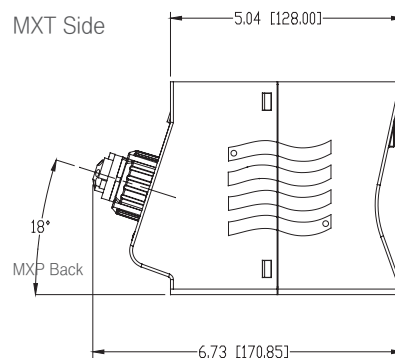
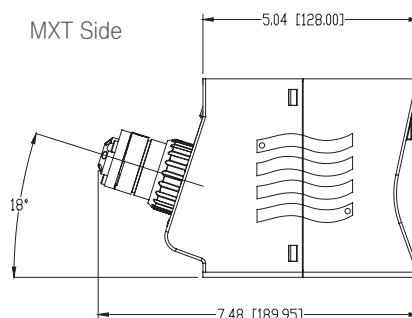
Ordering information

MXT for Fast Chromatography Applications, up to 15,000 psi (1,034 bar)			
Part Number	Description	Material	Stator Passages
MXT715-000	2-position 6-port Switching Valve	Stainless Steel UltraLife	0.011" (.28 mm)
MXT715-102	2-position 10-port Switching Valve	Stainless Steel UltraLife	0.006" (.15 mm)
MXT715-105	6-position 7-port Selector Valve	Stainless Steel UltraLife	0.011" (.28 mm)

MXP for High pressure Applications, up to 6,000 psi (414 bar)			
Part Number	Description	Material	Stator Passages
MXP7900-000	2-position 6-port Switching Valve	Stainless Steel DuraLife	0.012" (.30 mm)
MXP9900-000	2-position 6-port Switching Valve	PEEK	0.012" (.30 mm)
MXP7960-000	2-position 10-port Switching Valve	Stainless Steel DuraLife	0.010" (.25 mm)
MXP7970-000	6-position 7-port Selection Valve	Stainless Steel DuraLife	0.012" (.30 mm)
MXP9960-000	2-position 10-port Switching Valve	PEEK	0.010" (.25 mm)
MXP7986-000	2-position 10-port Nano Switching Valve	Titanium DuraLife	0.004" (.10 mm)

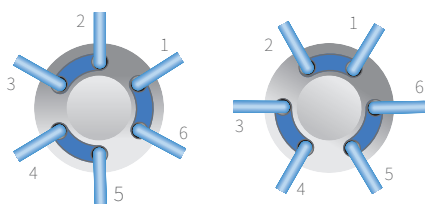
MXX for Low Pressure Applications, up to 125 psi (9 bar)			
Part Number	Description	Material	Stator Passages
MXX777-601	2-position 6-port Switching Valve	RPC-7	0.016" (.41 mm)
MXX777-605	6-position 7-port Selection Valve	RPC-7	0.040" (1.0 mm)
MXX777-612	2-position 6-port Switching Valve	RPC-7	0.060" (1.5 mm)
MXX777-616	6-position 7-port Switching Valve	RPC-7	0.060" (1.5 mm)
MXX778-605	10-position 11-port Selection Valve	RPC-7	0.060" (1.5 mm)

Dimensional Drawings

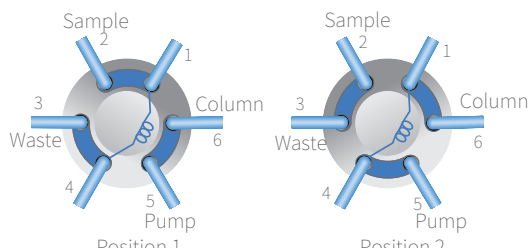


Mass flow controller secures stable flow

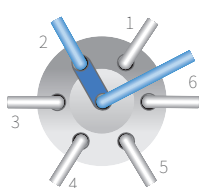
Flow Path



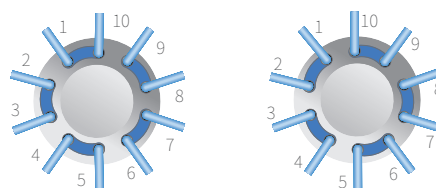
Position 1 Position 2
2-Position, 6-Port Switching Valve



Position 1 Position 2
2-Position, 6-Port as an Injection Valve



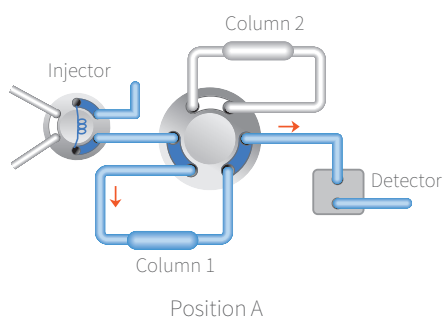
7-Port Selector Valve



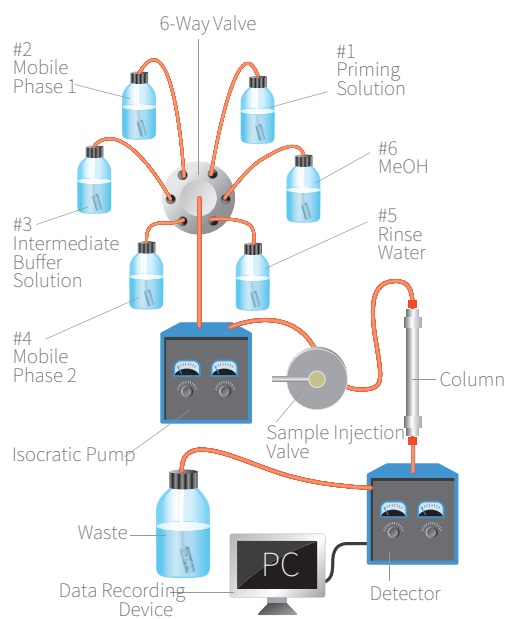
Position 1 Position 2
2-Position, 10-Port Switching Valve

Applications

- Sample Injection
- Two-Column Selection
- Alternating Column Regeneration
- High Speed Sample Enrichment
- High Speed Sample Clean Up
- Column Backflushing
- Multi-Dimensional Proteomic Peptide Separation
- Solvent Selection
- Fraction Collection
- Six Column Selection



Column Selection Using a 2-Position, 6-Port Switching Valve



Different Solvent Selection Using a 7-Port Selector Valve

Accessories



Stator



RheoBuild Kit

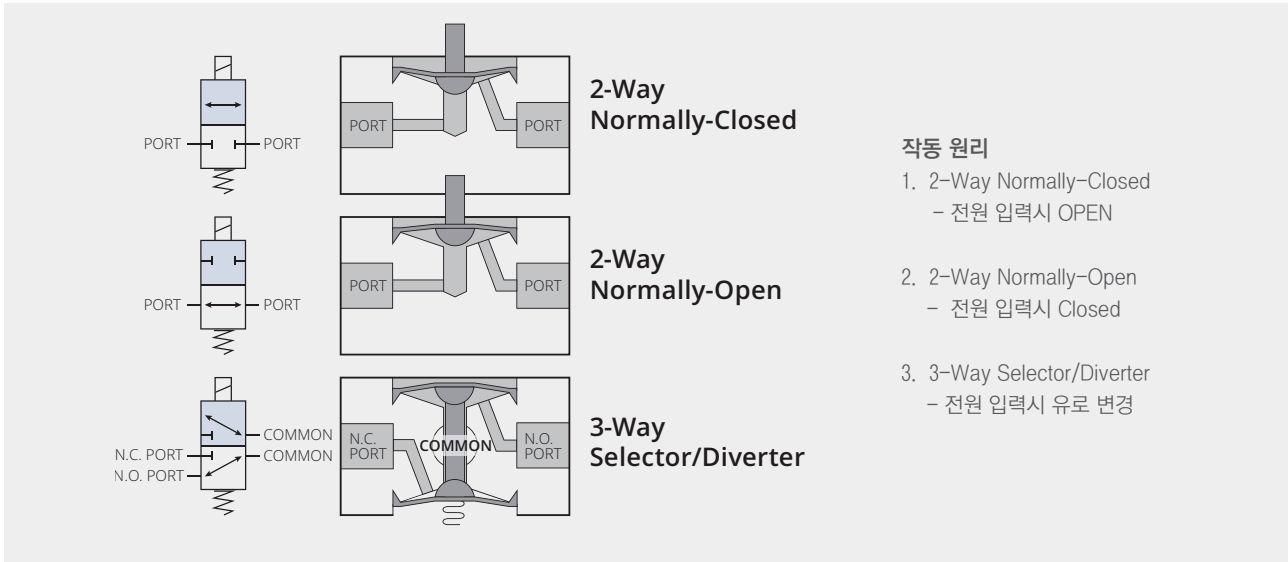


Sample Loop

Ordering information

Part Number	For Valve Model No.
Stators	
7123-548	MXT715-000
7123-550	MXT715-105
7123-568	MXT715-102
7770-229	MXP7920-000
7980-004	MXP7980-000
7900-146	MXP9900-000
7900-179	MXP7900-000
7900-183	MXP7970-000
7960-014	MXP7960-000
9960-002	MXP9960-000
Sample Loop (For MXII Valves)	
7755-020	5 µl Sample Loop
7755-021	10 µl Sample Loop
7755-022	20 µl Sample Loop
7755-023	50 µl Sample Loop
7755-024	100 µl Sample Loop
7755-025	200 µl Sample Loop
7755-026	500 µl Sample Loop
7755-027	1.0 ml Sample Loop
7755-028	2.0 ml Sample Loop
7755-029	5.0 ml Sample Loop
RheoBuild Kit	
7150-999	MXT715-000
7152-999	MXT715-102
7155-999	MXT715-105
7920-999	MXP7920-000 and MXP7900-000
7960-999	MXP9960-000
7961-999	MXP7960-000
7970-999	MXP7970-000
79801-999	MXP7980-000
7900-999	MXP9900-000
Rapid Replacement Pods	
PD715-000	MXT715-000
PD715-102	MXT715-102
PD715-105	MXT715-105
PD7960	MXP7960-000
PD7970	MXP7970-000
PD9900	MXP9900-000
PD9960	MXP9960-000

NIV Series PTFE Media Isolation Valves



작동 원리

1. 2-Way Normally-Closed
- 전원 입력시 OPEN
2. 2-Way Normally-Open
- 전원 입력시 Closed
3. 3-Way Selector/Diverter
- 전원 입력시 유로 변경



Features

- 저 전력 소비
- 소형, 경량 디자인
- 양방향 컨트롤
- 데드 볼륨 최소화
- 모든 접액 부위 재질 PTFE
- 부식성 유체 사용 가능
- 높은 사용 수명
- 빠른 반응 시간
- CE, RoHS Compliant
- ISO 9001:2015

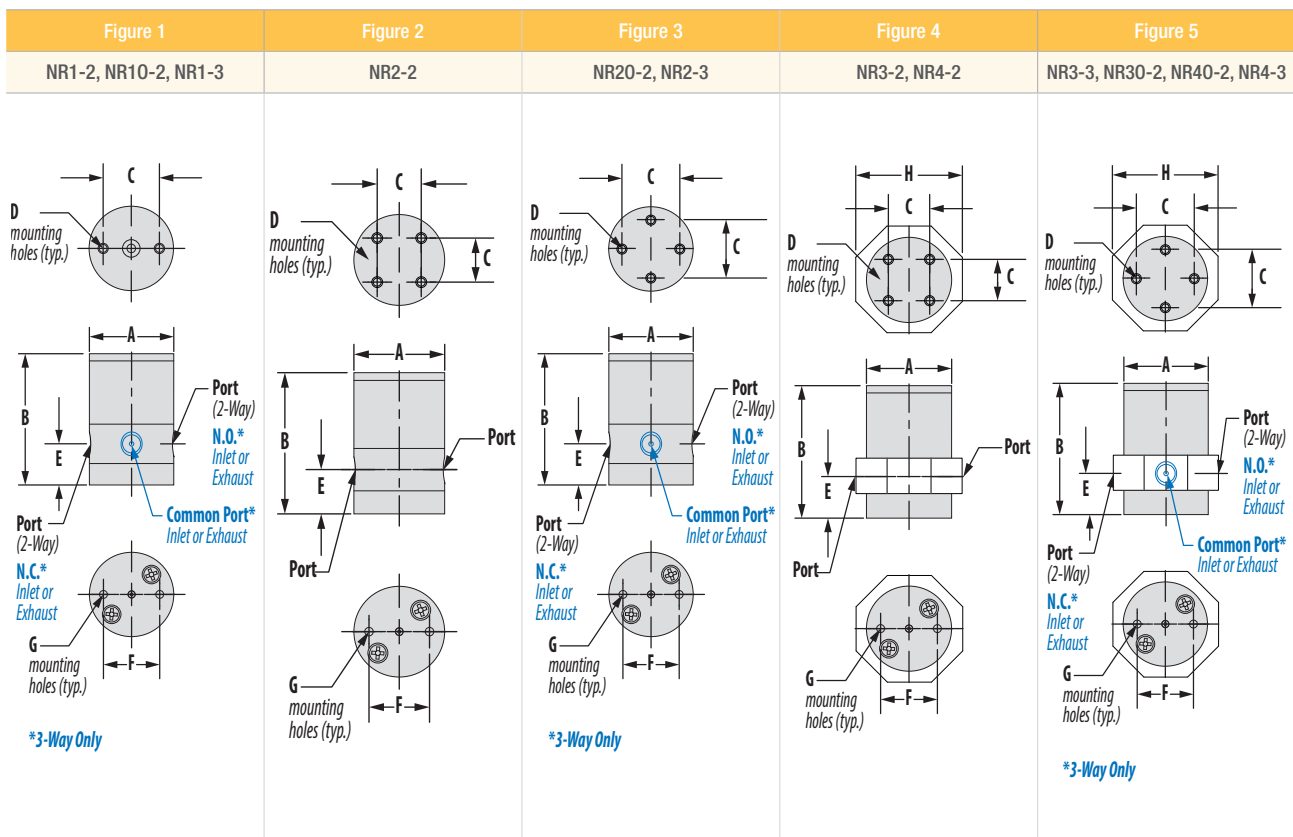
SPECIFICATIONS

Valve Type	2-Way Normally-Closed, 2-Way Normally-Open, 3-Way Selector/Diverter
Medium	Air, water, gas, compatible fluids
Max. Coil Temp. Rating	158°F
Operating Pressure	Vacuum to 30 psig
Flow	6 to 60 l/min
Max. Pressure Range	28" Hg to 30 psig
Power Consumption	1.0 to 7.2 watts
Response Time	5 to 20 ms
Electrical Connections	18" wire leads
Voltage	12 or 24 VDC
Ports	#10-32, 1/4-28 UNF or 1/8 NPS
Mounting	#2-56, #4-40, or Manifold Mount
Wetted Materials	PTFE
Compliance	CE, RoHS

STANDARD VALVES

Configuration	Orifice	Ports	Fig.	Standard Valve Dimensions—See Figures 1-6, below								Part Number	
				A	B	C	D	E	F	G	H	12 VDC	24 VDC
2-Way, Normally-Closed	0.040"	#10-32	1	0.750"	1.155"	0.500"	#2-56 x 0.094" deep	0.363"	0.500"	#2-56 x 0.188" deep	n/a	NR1-2-12	NR1-2-24
	0.062"	1/4-28	2	1.000"	1.488"	0.486"	#4-40 x 0.125" deep	0.450"	0.687"	#4-40 x 0.250" deep	n/a	NR2-2-12	NR2-2-24
	0.093"	1/4-28	4	1.250"	1.863"	0.626"		0.500"	0.884"		1.500	NR3-2-12	NR3-2-24
	0.156"	1/8 NPS	4	1.500"	2.088"	0.796"		0.562"	1.125"		1.750	NR4-2-12	NR4-2-24
2-Way, Normally-Open	0.040"	#10-32	1	0.750"	1.163"	0.500"	#2-56 x 0.094" deep	0.363"	0.500"	#2-56 x 0.188" deep	n/a	NR10-2-12	NR10-2-24
	0.062"	1/4-28	3	1.000"	1.493"	0.486"	#4-40 x 0.125" deep	0.450"	0.687"	#4-40 x 0.250" deep	n/a	NR20-2-12	NR20-2-24
	0.093"	1/4-28	5	1.250"	1.814"	0.884"		0.500"	0.884"		1.500	NR30-2-12	NR30-2-24
	0.156"	1/8 NPS	5	1.500"	2.039"	1.125"		0.562"	1.125"		1.750	NR40-2-12	NR40-2-24
3-Way, Selector/Diverter	0.040"	#10-32	1	0.750"	1.161"	0.500"	#2-56 x 0.094" deep	0.363"	0.500"	#2-56 x 0.188" deep	n/a	NR1-3-12	NR1-3-24
	0.062"	1/4-28	3	1.000"	1.492"	0.687"	#4-40 x 0.125" deep	0.450"	0.687"	#4-40 x 0.250" deep	n/a	NR2-3-12	NR2-3-24
	0.093"	1/4-28	5	1.250"	1.814"	1.814"		0.500"	0.884"		1.500		
	0.156"	1/8 NPS	5	1.500"	2.039"	2.039"		0.562"	1.125"		1.750		

STANDARD VALVE DRAWINGS



NPV Series 2-Way & 3-Way Miniature Pinch Valves



Features

- Compact한 디자인
- 낮은 전력 소비
- 다양한 튜빙사이즈 사용 가능
- 파티클 용액, 혈액 이송 가능
- CE, RoHS Compliant 인증
- ISO 9001:2008

SPECIFICATIONS

Valve Type	2-Way Normally-Open or Normally-Closed 3-Way (one tube N.O., one tube N.C.)
Medium	Air, water, gas, compatible fluids
Max. Pressure Range	20 to 30 psig
Power Consumption	1.0 to 7.2 watts
Electrical Connections	18" wire leads
Voltage	12 or 24 VDC
Mounting	#2-56, #4-40
Wetted Materials	Silicone tubing
Compliance	CE, RoHS

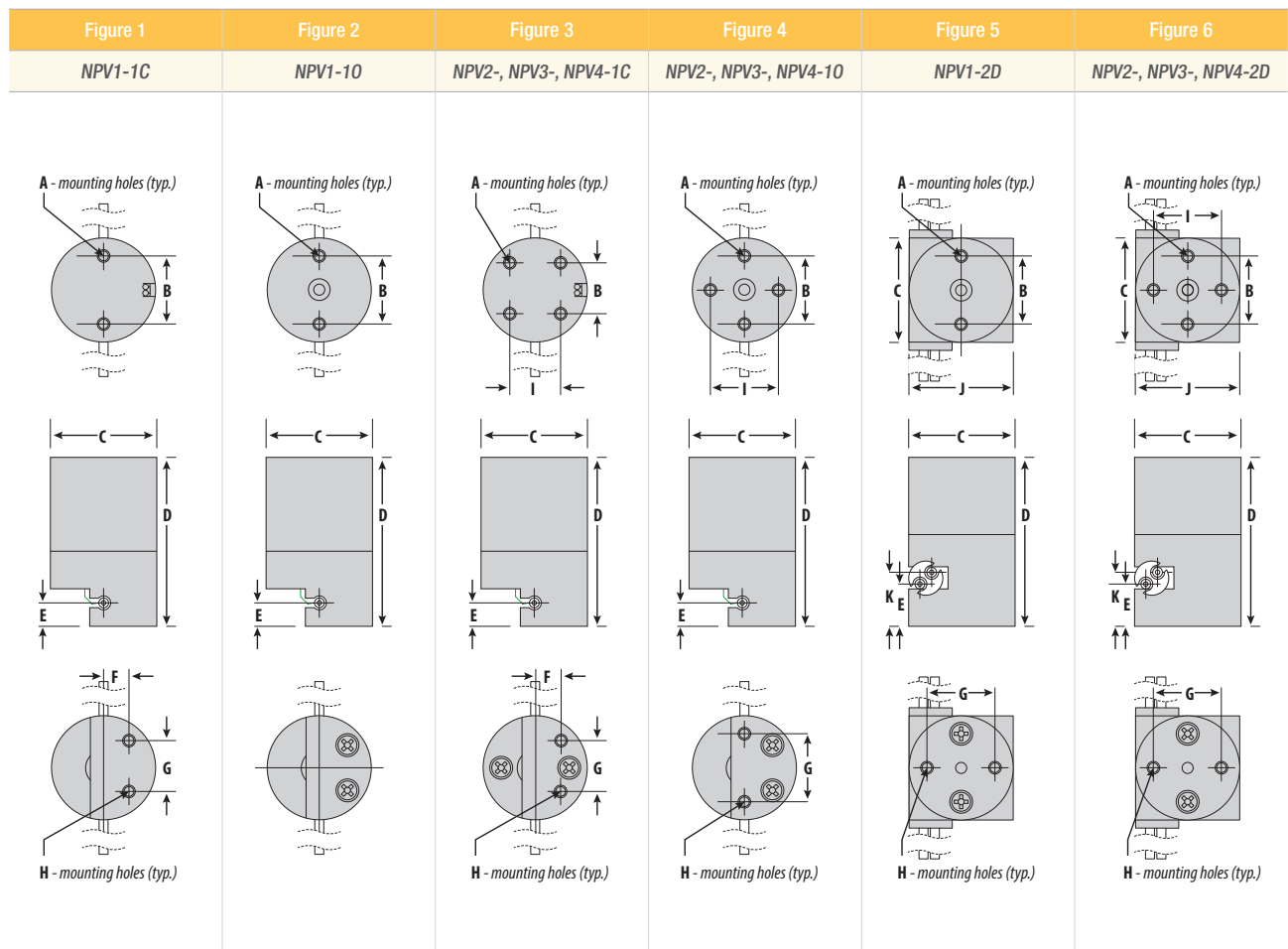
ORDERING INFORMATION

Tubing Type	Tubing No.	Valve Model	Voltage		Configuration			Amps	Power	Max. Pressure
			12 VDC	24 VDC	1 Tube, N.C.	1 Tube, N.O.	2 Tubes			
Medical/ Laboratory Grade Silicone Tubing (Standard)	01	NPV1	•		NPV1-1C-01-12	NPV1-10-01-12	NPV1-2D-01-12	0.08	1.0W	30 psi
				•	NPV1-1C-01-24	NPV1-10-01-24	NPV1-2D-01-24	0.04		
	02	NPV2	•		NPV2-1C-02-12	NPV2-10-02-12	NPV2-2D-02-12	0.13	1.5W	
				•	NPV2-1C-02-24	NPV2-10-02-24	NPV2-2D-02-24	0.06		
			•		NPV2-1C-03-12	NPV2-10-03-12	NPV2-2D-03-12	0.13		
				•	NPV2-1C-03-24	NPV2-10-03-24	NPV2-2D-03-24	0.06		
	04	NPV3	•		NPV3-1C-04-12	NPV3-10-04-12	NPV3-2D-04-12	0.40	4.2W	
				•	NPV3-1C-04-24	NPV3-10-04-24	NPV3-2D-04-24	0.18		
			•		NPV3-1C-05-12	NPV3-10-05-12	NPV3-2D-05-12	0.40		
				•	NPV3-1C-05-24	NPV3-10-05-24	NPV3-2D-05-24	0.18		
	06	NPV4	•		NPV4-1C-06-12	NPV4-10-06-12	NPV4-2D-06-12	0.60	7.2W	
				•	NPV4-1C-06-24	NPV4-10-06-24	NPV4-2D-06-24	0.30		
			•		NPV4-1C-07-12	NPV4-10-07-12	—	0.60		
				•	NPV4-1C-07-24	NPV4-10-07-24	—	0.30		
Sanitary Food Grade Silicone Tubing (Available)	23	NPV2	•		NPV2-1C-23-12	NPV2-10-23-12	NPV2-2D-23-12	0.13	1.5W	14 psi
				•	NPV2-1C-23-24	NPV2-10-23-24	NPV2-2D-23-24	0.06		
	25	NPV3	•		NPV3-1C-25-12	NPV3-10-25-12	NPV3-2D-25-12	0.40	4.2W	
				•	NPV3-1C-25-24	NPV3-10-25-24	NPV3-2D-25-24	0.18		
	27	NPV4	•		NPV4-1C-27-12	NPV4-10-27-12	—	0.60	7.2W	9 psi
				•	NPV4-1C-27-24	NPV4-10-27-24	—	0.30		

VALVE DIMENSIONS

Configuration	Model	Figure	Dimensions—See Figures 1-6, below										
			A	B	C	D	E	F	G	H	I	J	K
1 Tube, N.C.	NPV1-1C-	1	#2-56 x 0.094" deep	0.500"	0.750"	1.002"	0.156"	0.177"	0.354"	#2-56 x 0.188" deep	—	—	—
	NPV2-1C-	3	#4-40 x 0.125" deep	0.486"	1.000"	1.462"	0.176"	0.243"	0.486"	#4-40 x 0.250" deep	0.486"	—	—
	NPV3-1C-	3	#4-40 x 0.125" deep	0.626"	1.250"	1.847"	0.289"	0.313"	0.626"	#4-40 x 0.250" deep	0.626"	—	—
	NPV4-1C-	3	#4-40 x 0.125" deep	0.796"	1.500"	2.197"	0.411"	0.398"	0.796"	#4-40 x 0.250" deep	0.796"	—	—
1 Tube, N.O.	NPV1-10-	2	#2-56 x 0.094" deep	0.500"	0.750"	1.125"	0.156"	—	—	#2-56 x 0.188" deep	—	—	—
	NPV2-10-	4	#4-40 x 0.125" deep	0.687"	1.000"	1.467"	0.176"	—	0.687"	#4-40 x 0.250" deep	0.687"	—	—
	NPV3-10-	4	#4-40 x 0.125" deep	0.884"	1.250"	2.000"	0.289"	—	0.884"	#4-40 x 0.250" deep	0.884"	—	—
	NPV4-10-	4	#4-40 x 0.125" deep	1.125"	1.500"	2.350"	0.411"	—	1.125"	#4-40 x 0.250" deep	1.125"	—	—
2 Tubes (1 N.O., 1 N.C.)	NPV1-2D-	5	#2-56 x 0.094" deep	0.500"	0.750"	1.625"	0.470"	—	0.500"	#2-56 x 0.188" deep	—	0.785"	0.562"
	NPV2-2D-	6	#4-40 x 0.125" deep	0.687"	1.000"	1.842"	0.470"	—	0.687"	#4-40 x 0.250" deep	0.687"	1.000"	0.578"
	NPV3-2D-	6	#4-40 x 0.125" deep	0.884"	1.250"	2.313"	0.527"	—	0.884"	#4-40 x 0.250" deep	0.884"	1.250"	0.723"
	NPV4-2D-	6	#4-40 x 0.125" deep	1.125"	1.500"	2.663"	0.609"	—	1.125"	#4-40 x 0.250" deep	1.125"	1.800"	0.891"

STANDARD VALVE DRAWINGS



PINCH VALVES

Clippard NPP Series

Clippard

Made in USA

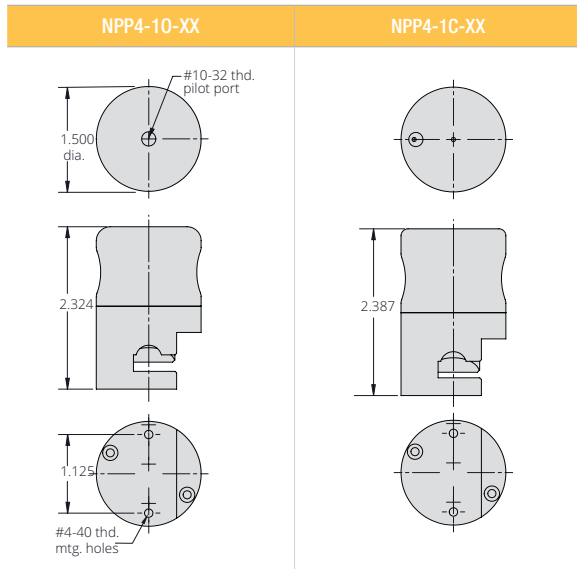
NPP Series 2-Way Miniature Pneumatic Pinch Valves



Features

- 컴팩트한 디자인
- Normally-Open 또는 Normally-Closed
- 쉬운 세척과 튜브 교체
- 혈액과 파티클용액 처리 가능
- 막힘 없는 흐름 경로
- 선택적 1/2" 튜빙 함께 제공
- 다양한 직경과 및 재질의 튜브 사용 가능

DRAWINGS



SPECIFICATIONS

Valve Type	2-Way, Normally-Open & Normally-Closed
Medium	Air, Water, Gas & Compatible Fluids
Max. Pilot Pressure	250 psig
Tubing Pressure	See chart below
Mounting	#4-40
Temperature Range	32 to 230°F
Wetted Materials	Medical or Food Grade Silicone, or Polyurethane
Compliance	RoHS

ORDERING INFORMATION

Tubing Type	Tubing Dimensions			Tubing Max. Pressure	Tubing No.	Normally-Open		Normally-Closed		Tubing Re-Order Part No.
	I.D.	O.D.	Wall			Part Number	Min. to Close	Part Number	Min. to Open	
Medical/ Laboratory Grade Silicone Tubing	1/16"	1/8"	0.0313"	30 psig	03	NPP2-10-03	15 psig	NPP2-1C-03	30 psig	SIH1-0402-NAS
	1/16"	3/16"	0.0625"		04	NPP2-10-04	40 psig	NPP2-1C-04		SIH1-0602-NAS
	1/8"	1/4"	0.0625"	20 psig	05	NPP4-10-05	10 psig	NPP4-1C-05	20 psig	SIH1-0804-NAS
	3/16"	5/16"	0.0625"		06	NPP4-10-06		NPP4-1C-06		SIH1-1006-NAS
	1/4"	3/8"	0.0625"		07	NPP4-10-07		NPP4-1C-07		SIH1-1208-NAS
Polyurethane Tubing	1/16"	1/8"	0.0313"	105 psig	13	NPP2-10-13	50 psig	NPP2-1C-13	65 psig	URH1-0402-CLT
	1/8"	1/4"	0.0625"		15	NPP4-10-15	45 psig	NPP4-1C-15		URH1-0804-CLT
Sanitary Food Grade Silicone Tubing	1/16"	1/8"	0.0313"	14 psig	23	NPP2-10-23	15 psig	NPP2-1C-23	30 psig	SFG1-0402-NAS
	1/8"	1/4"	0.0625"		25	NPP4-10-25	10 psig	NPP4-1C-25		20 psig
	1/4"	3/8"	0.0625"	9 psig	27	NPP4-10-27		NPP4-1C-27	SFG1-1208-NAS	

ACCESSORIES

IDEX	152
Tubing, Connectors, Adapters	
SETonic	154
Glass syringes, Needles	



PEEK Tubing

- 1/16", 1/8", 1.8 mm OD
- 사용가능 압력 최대 10,000 psi(690 bar)
- 생체에 적합한 재질
- 뛰어난 내화학성, 쉬운 커팅
- High pressure application

OD	ID
360 µm	25 µm, 50 µm, 100 µm, 150 µm
1/32"	125 µm, 175 µm, 250 µm, 400 µm, 500 µm
1/16"	65 µm, 100 µm, 125 µm, 175 µm, 250 µm, 500 µm, 750 µm, 1.0 mm
1/8"	1.55 mm, 2.00 mm

Stainless Steel Tubing

OD	ID
1/32"	100 µm, 150 µm, 200 µm, 250 µm, 400 µm, 450 µm
1/16"	125 µm, 175 µm, 250 µm, 500 µm, 750 µm, 1.0 mm, 1.15 mm
1/8"	2.0 mm
1/8"	1.55 mm, 2.00 mm

FEP Tubing

- Mid-low 설비에 적합
- 1/32", 1/16", 1/8", 3/16", 1/4", 5/16" OD
- 1 mm, 2 mm, 3 mm and 4 mm OD

OD	ID
1/16"	250 µm, 500 µm, 750 µm
1/8"	1.55 mm
3/16"	3.2 mm
1/4"	4.8 mm
1.0 mm	500 µm
2.0 mm	1.0 mm
3.0 mm	2.0 mm

ETFE Tubing

- Mid-low application
- 1/32", 1/16", 1/8", 3/16", 1/4", 5/16" OD
- 1 mm, 2 mm, 3 mm and 4 mm OD

OD	ID
1/16"	250 µm, 500 µm, 750 µm, 1.0 mm
1/8"	1.55 mm, 2.4 mm

PFA Tubing

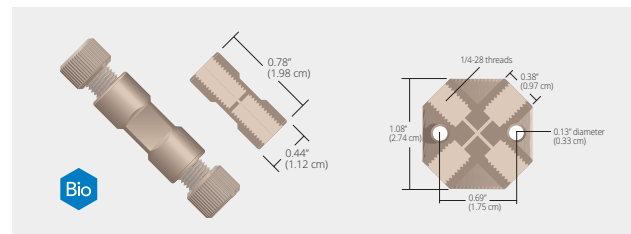
- OD 1/16", 1/8"
- PFA HP, HP Plus 등급 취급
- 오염물질 거의 없음
- 훌륭한 용매 저항성과 낮은 가스 투과성

OD	ID
1/16"	500 µm, 750 µm, 1.0 mm
1/8"	1.55 mm

High pressure connector

P/N	Type	Threads	Pressure rating
P-704	Union	10-32 Coned	5,000 psi (344 bar)
U-402	Union	10-32 Coned	20,000 psi (1,380 bar)
P-727	Tee	10-32 Coned	3,500 psi (241 bar)
U-428	Tee	10-32 Coned	20,000 psi (1,380 bar)
P-729	Cross	10-32 Coned	3,500 psi (241 bar)
U-430	Cross	10-32 Coned	20,000 psi (1,380 bar)

Union, Tee, Cross, Valve



Low pressure connector

P/N	Type	Threads	Pressure rating
P-702	Union	1/4-28 FB	1,000 psi (69 bar)
P-712	Tee	1/4-28 FB	1,000 psi (69 bar)
P-722	Cross	1/4-28 FB	1,000 psi (69 bar)

SHUT-OFF Valve

Tubing OD	P/N	Pressure rating
1/16"	P-732(PEEK), P-782(PTFE)	500psi
1/8"	P-733(PEEK), P-783(PTFE)	500psi

ACCESSORIES

IDEX Adapters, Fittings, Filters, Cutters

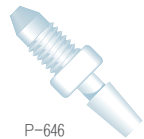
Adapters

Conical Adapters

- Direct Connect 1/16" and 1/8" OD Rigid and Semi-rigid Tubing to Peristaltic Tubing
- Accept 0.020" Through 1/8"(0.50 ~ 3.2 mm) ID Peristaltic Tubing
- Biocompatible Flospath With Excellent Chemical Compatibility



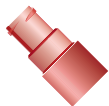
P-663



P-646

Barbed Adapters

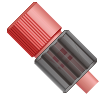
- Three Barb Sizes, for 1/16", 1/8" and 3/16" ID flexible Tubing
- Adapt to 1/4-28 Flat-Bottom, 5/16-24 Flat-Bottom or 10-32 Coned Receiving Ports
- Available with .04", .08" and 10" Thru-holes



P-658



P-659



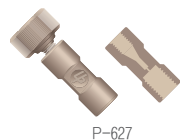
P-655



P-657

Quick Connect Luer Adapters

- Delrin®, Polypropylene, Tefzel® (ETFE) and PEEK™ Versions
- 1/4-28, 10-32, 5/16-24 and M6 Threaded Ports



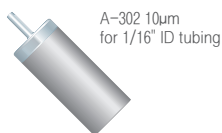
P-627

English Threaded Adapters

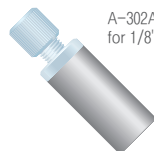
- P-627 Female 10-32 to 1/4-28 Adapter

Filters, Cutters

Solvent Filters



A-302 10µm
for 1/16" ID tubing



A-302A 10µm
for 1/8" OD tubing

PEEK Bottom-of-the-Bottle Solvent Filters



A-435
Bottom-of-the-Bottle Solvent Filters



A-438 (for small neck bottles)
Bottom-of-the-Bottle Solvent Filters

Fittings

Syringe Pump 시스템에 사용되는 나사산의 형태



Tubing (OD)	Thread	Description	Part No.		
1/16"	10-32	One piece fittings	F-100	Kel-F for 1/16" tubing	
			F-120	PEEK for 1/16" tubing	
			P-100	Kel-F for 1/8" tubing	
	1/4-28	Nuts	Two piece fittings	F-300	PEEK Nuts, Natural, with F-142 Ferrules
				F-331	Short PEEK Natural with F-142 Ferrules
		Ferrules	F-142	PEEK Ferrules, Natural	
		Flangeless Nuts	P-201	Black Delrin	
			P-202	Red Delrin	
			Flangeless Ferrules	P-200	Blue ETFE
	SuperFlangeless Nuts			P-252	Delrin Nuts
1/8"	1/4-28	SuperFlangeless Nuts	P-255	PEEK Nuts	
		SuperFlangeless Ferrules	P-250	PEEK Ferrules	
		P-259	ETFE Ferrules		
		Flangeless Nuts	P-315	Natural ETFE	
	P-330	Natural PEEK			
	Flangeless Ferrules	P-300	Yellow ETFE		
	SuperFlangeless Nuts	LT-210	PEEK Nuts		
	P-332	Delrin Nuts			
SuperFlangeless Ferrules	P-350	PEEK Ferrules			
P-359	ETFE Ferrules				

Flangeless fittings

Upchurch Scientific® Flangeless fittings eliminate the need to flange tubing. This removable and reusable system provides several benefits :

- 이점 : Flangeless fitting은 구성하기가 매우 쉬움
- 최소시간: fitting을 위한 최소시간만으로 구성
- 비용효과 : 플랜지가 assembly type으로 되어 있는 것은 비용이 많이 소요되나, Flangeless fitting에는 ferrule의 교체만이 필요하기 때문에 최소비용으로 할 수 있음
- Flangeless fitting은 1.5 mm(1/16 ") and 3.0 mm (1/8 ") 외경의 tubing을 사용하는데 유효
- Nuts와 Ferrule은 개별적으로 판매 가능

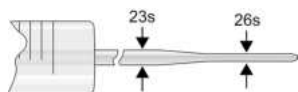
The convenience of flangeless fittings



Glass syringes

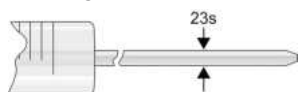
Technical Syringe Information

- 23s–26s Dual Gauge Tapered Needle



- ⇒ Split/splitless or on-column injections
- ⇒ Versatility without sacrificing durability
- ⇒ More solid needle than regular 26s
- ⇒ Minimizes septum abrasion

- 23s Gauge Needle



- ⇒ Most durable needle
- ⇒ Merlin MicroSeal™ and standard septum injections
- ⇒ Packed column injections
- ⇒ Split/splitless injections

- 26s Gauge Needle



- ⇒ Fine gauge offers versatility
- ⇒ On-column injections
- ⇒ Split/splitless injections

Gauge Index Table

Gauge	Nominal OD mm*	Nominal ID mm*	Wall	
			Thickness mm*	Volume µl/Inch
26s	0.474	0.127	0.35	0.322
26	0.464	0.260	0.20	1.349
25s	0.515	0.153	0.36	0.464
25	0.515	0.260	0.25	1.349
24	0.566	0.311	0.25	1.930
23s	0.642	0.116	0.53	0.268
23	0.642	0.337	0.30	2.266
22s	0.718	0.168	0.55	0.563
22	0.718	0.413	0.30	3.403
21	0.819	0.514	0.30	5.271
20	0.908	0.603	0.30	7.255
19	1.067	0.686	0.38	9.389

Gauge Index Table

Type	Diagram	Description	SGE	Hamilton
Type AS and c		Special conical needle recommended for septum penetration (Autosampler Type).	1	AS
Type a		Beveled needle is recommended for life science applications.	2	4
Type b		Blunt needle for use with HPLC-Injection valves and for sample pipetting.	3	3
Type d		Conical needle with side port is recommended for penetration of septa, thin-gauged vinyls and plastics without coring (Headspace GC).	5	5

SETonic Microsyringes for manual use

Luer Tip Syringes



- Stainless Steel Plunger with PTFE Seal 5 µl-10.0 ml

Part No.	Volume	Needle	ILS	Hamilton
3030286	5 µl	w/o	2600314	
3030287	10 µl	w/o	2600412	
3030288	25 µl	w/o	2600511	80201
3030289	50 µl	w/o	2600611	80901
3030290	100 µl	w/o	2600711	81001
3030291	250 µl	w/o	2600811	81101
3030292	500 µl	w/o	2600911	81201
3030293	1.0 ml	w/o	2600013	81301
3030294	2.5 ml	w/o	2600033	81401
3030295	5.0 ml	w/o	2600053	81501
3030296	10.0 ml	w/o	2600073	81601

NLL - Luer Lock Needles

- Needle Tip Style a*, Needle Length 51 mm

Part No.	for Syringe Volume	OD (Gauge)	Qty.
3050260	all volume needle	0.47 mm (G26s)	pk.3
3050261	all volume needle	0.47 mm (G26)	pk.3
3050262	all volume needle	0.64 mm (G23s)	pk.3
3050263	all volume needle	0.64 mm (G23)	pk.3
3050264	all volume needle	0.72 mm (G22s)	pk.3
3050265	all volume needle	0.72 mm (G22)	pk.3
3050266	all volume needle	1.1 mm (G19)	pk.3

* Also available in other pointstyles.

SETonic Liquid Handling Syringes - 60 mm Stroke

PEEK Tubing Connector Syringes



- For use with all kinds of infusion pumps

Part No.	Volume	Plunger Type	Termination	Qty.	ILS
3010230	10 µl	PTFE	1/4"-28UNF	ea.	2624415
3010231	25 µl	PTFE	1/4"-28UNF	ea.	2624515
3010232	50 µl	PTFE	1/4"-28UNF	ea.	2624615
3010233	100 µl	PTFE	1/4"-28UNF	ea.	2624715
3010234	250 µl	PTFE	1/4"-28UNF	ea.	2624815
3010235	500 µl	PTFE	1/4"-28UNF	ea.	2624915
3010236	1.0 ml	PTFE	1/4"-28UNF	ea.	2624016
3010237	2.5 ml	PTFE	1/4"-28UNF	ea.	2624036
3010238	5.0 ml	PTFE	1/4"-28UNF	ea.	2624056
3010239	10.0 ml	PTFE	1/4"-28UNF	ea.	2624076
3010240	25.0 ml	PTFE	1/4"-28UNF	ea.	2624096
3010241	50.0 ml	PTFE	1/4"-28UNF	ea.	2624102

PEEK Tubing Connector Syringes

- Place the supplied PTFE Washer (sealing disc) on the bottom of the inner thread.
- Tighten the fitting hand-tight. If the connection is still leaking, gently pull.
- Do not use a gripper to tighten.
- For M6 syringes use M6 fittings and for 1/4"-28UNF syringe fittings with 1/4"-28UNF thread.
- You can use ferrule fittings or flanged fittings. SETonic GmbH offer you a wide range of fittings and the matching tools.

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