

8. Liquid Handling Microfluidics/Syringe pumps

Laboratory syringe pump SP1090 with separate controller TJS

SP1090:

- Single-channel micro syringe pump with two flow directions
- Controller is separated from the drive
- For standard syringes from 5 µl - 60 ml
- Flow rates of 0.138 ml/min - 52.94 ml/min
- Speed of 7.94 µm/min - 79.4 mm/min
- 100 - 240 VAC or 12 VDC

TJS:

- Operated via a keypad and rotary encoder
- Easy syringe selection using an included syringe list or custom syringe input
- Amount, flow rate or feed rate can be displayed
- LCD display, 128 x 64
- RS485 interface
- 100 - 240 VAC or 12 VDC

Dülabo Laborgeräte



6.266 993



6.266 994

Laboratory syringe pump SP1090 can only be ordered together with separate controller TJS.

Description	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
Syringe pump 1090	100 x 245 x 95	1.3	1	6.266 993 1
Controller TJS	108 x 170 x 65	0.5	1	6.266 994 2

Syringe pumps Legato®

The Legato® series syringe pumps provide the smoothest most accurate flow available.

Harvard Bioscience

The intuitive, chemically resistant touch screen enables the user to quickly create configurations and recall them for ease of use. Single syringe, single remote syringe, dual syringe and multitrack configurations are available along with the infuse only or infuse/withdraw/continuous operation (model dependent).

- Single and dual syringe infuse, infuse withdraw & continuous models
- Holds syringe sizes from 0.5 µl to 140 ml (Model dependent)
- Flow rates down to the picoliter/min (Model dependent)
- Programmable interface without the need for a PC (Model dependent)
- USB/RS-232/TTL Interfaces for external control (RS232 available on Legato® 200 Series Only)
- Rugged construction with cold rolled steel chassis

Applications: Electrospraying, Flow Cytometry, Microfluidics, Mass Spec, Drug Discovery, Organic Synthesis, Nanofluidics, Stereotaxic Injections

Legato® 100 Single Syringe Infusion Pump: This pump is ideal for applications where a single syringe is used.

Legato® 101 Dual Syringe Nanoliter Pump: This infusion only pump is ideal for applications where dual syringes are required with small volumes under 10ml.

Legato® 110 Single Syringe Infusion/Withdraw Pump: The Legato® 110 is based on the Legato® 100. It offers infuse/withdraw flow control and programmability for up to two multi-step programs of 50 steps each. This pump is ideal for more complex multi-step dosing and has multi-mode operation.

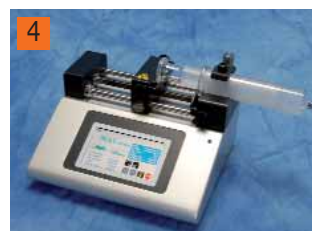
Legato® 185 Single Syringe Infusion/Withdraw Pump: It offers infuse/withdraw flow control and programmability for up to two multi-step programs of 50 steps each. This pump is ideal for more complex multi-step dosing and has multi-mode operation. Minimum flow rate only 0.54 pl/min.

Legato® 200 Dual Syringe Infusion Pump: This unit supports infuse only. User definable flow rates with selectable target volumes or time values to control the total infusion volume.

Legato® 210 Dual Syringe Infuse/Withdraw Pump: This unit supports infuse only, withdraw only, infuse/withdraw, withdraw/infuse and continuous mode. User defined flow rates with selectable target volumes.



6.267 707



6.267 708

Type	For syringes	Dimensions (W x D x H) mm	Flow rate	Weight kg	PK	Cat. No.
Legato® 100	1 (0.5 µl - 60 ml)	226 x 191 x 150	1.26 pl/min* - 88.28 ml/min	2.7	1	6.267 706
Legato® 101	2 (0.5 µl - 10 ml)	226 x 191 x 150	1.26 pl/min - 25.99 ml/min	2.7	1	6.267 707 3
Legato® 110	1 (0.5 µl - 60 ml)	226 x 191 x 150	1.26 pl/min - 88.28 ml/min	2.7	1	6.267 708 4
Legato® 185	1 (0.5 µl - 10 ml)	226 x 191 x 150	0.54 pl/min* - 11.7 ml/min	2.7	1	6.270 180
Legato® 200	2 (0.5 µl - 140 ml)	889 x 254 x 279	3.06 pl/min - 105 ml/min	5.0	1	6.267 701
Legato® 210	2 (0.5 µl - 140 ml)	889 x 254 x 279	3.06 pl/min - 105 ml/min	5.0	1	6.267 702

*using a 0.5 µl syringe

Disposable syringes please see page 1442.

8. Liquid Handling Microfluidics/Syringe pumps-Syringes



6.267 704

1 Multi-Rack for syringe pumps Legato® 200 and Legato® 210

Modular syringe racks can be purchased to create a multichannel syringe pump. These racks will work with the Legato® 200 or Legato® 210 only. All of them could be for infuse only as well.

Harvard Bioscience

Small Syringe Multi-Rack: The small syringe multi-rack will accommodate up to six 30 ml to 60 ml syringes or up to ten 0.5µl to 20ml syringes. For Infuse/Withdraw applications.

Large Syringe Multi-Rack: The large syringe multi-rack will accommodate up to four 60 ml to 140 ml plastic syringes. For Infuse/Withdraw applications.

Microliter Syringe Multi-Rack: The microliter syringe multi-rack will accommodate up to four 0.5 µl to 10 ml syringes. For Infuse/Withdraw applications.

Description	PK	Cat. No.
Small Syringe Multi-Rack	1	6.267 703
Large Syringe Multi-Rack	1	6.267 704 1
Microliter Syringe Multi-Rack	1	6.267 705

2



2 Syringe pump Legato® 130

NEW

The Legato® 130 Nanoliter pump is ideal for stereotaxic and micro manipulator devices.

Harvard Bioscience

The Legato® 130 is an infuse/withdraw single syringe pump. It works with micro syringes from 0.5 to 1000 µl. Any type of syringe can be used including glass and plastic. It has a remote pump head which can be placed close to the experiment to eliminate dead volume with long tubing. The remote pump head is ideal for use with a micromanipulator, stereotaxic and other clamping devices. Syringe size and flow rates are easily displayed as well as the volume delivered and the elapsed time. A wide dynamic flow range from picoliters per minute to milliliters per minute can be programmed into the pump.

- Remote pump head
- Large colour touchscreen display
- 2 programs with 50 steps each
- Icon driven software
- USB, RS-232 and RS485 interface
- Precise and smooth flow

Specifications

Flow rate:	3.66 pl/min to 3.82 ml/min (depending on syringe size)
Accuracy:	±0.5 %
Syringe size:	0.5 to 1000 µl
Dimensions:	9 x 19 x 7.6 mm
Weight:	2 kg
Power supply:	100-240 VAC, 50/60 Hz

Type	PK	Cat. No.
Legato® 130	1	6.287 229

3



3 LLG-Glass-Syringes, borosilicate glass

NEW

With brown graduations. Sterilisable up to 134 °C.

Capacity ml	Material Cone	Nozzle type	PK	Cat. No.
1	Glass	Luer	1	6.272 088
2	Glass	Luer	1	6.272 089
5	Glass	Luer	1	6.272 090
10	Glass	Luer	1	6.272 091
20	Glass	Luer	1	6.272 092
50	Glass	Luer	1	6.272 093
1	Metal	Luer-Lock	1	6.272 094
2	Metal	Luer-Lock	1	6.272 095
5	Metal	Luer-Lock	1	6.272 096
10	Metal	Luer-Lock	1	6.272 097
20	Metal	Luer-Lock	1	6.272 098
50	Metal	Luer-Lock	1	6.272 099

4



4 Repeat dispensing device PB600-1 for Microlitre syringes

For syringes 25µl to 2.5ml. Dispenses 2 % of total syringe volume each time the plunger is depressed.

Hamilton

Type	PK	Cat. No.
PB 600-1	1	9.221 650

8. Liquid Handling Microfluidics/Syringes

1 Microlitre syringes, Needle Types

Point Style 2 (pst2): 12° bevelled non-coring needle point recommended for septum penetration. Ideal for gas chromatographic applications.

Hamilton

Point Style 3 (pst3): Blunt needle point (90°) for use with HPLC injection valves. Also recommended for applications where exact dosing is required (e.g. thin layer chromatographs).

Point Style 4 (pst4): 10-12° bevelled needle point recommended for life science applications; sharp point for animal injection.

Point Style 5 (pst5): Conical needle with side port for penetration of septa, thin-gauged vinyls and plastics without coring; minimizes septum damage

Point Style AS (pstAS): Special conical style needle point (8° taper) designed to withstand the demands of multiple injections; exclusively used on GC autosampler syringes



2 Microlitre syringes, 7000 series

For dispensing minute liquid volumes and features a Modified Microliter design. The end of the plunger has a tungsten wire extension that fits the entire length of the needle all the way to the tip, resulting in a zero dead volume syringe.

Hamilton



Type	Capacity µl	Gauge	Point style	Needle length mm	PK	Cat. No.
7000.5 KH	0.5	25	2	70	1	6.700 111
7001 KH	1.0	25	2	70	1	9.221 121
7101 KH	1.0	22	2	70	1	6.802 391
7002 KH	2.0	25	2	70	1	6.204 624
7102 KH	2.0	23	2	70	1	6.801 037
7105 KH	5.0	24	2	70	1	9.221 125
7000.50C KH	0.5	32	3	100	1	9.221 590
7000.5 KH	0.5	25	3	70	1	9.221 126
7001 KH	1.0	25	3	70	1	6.802 598
7101 KH	1.0	22	3	70	1	9.221 131
7002 KH	2.0	25	3	70	1	9.221 122
7102 KH	2.0	23	3	70	1	9.221 132
7105 KH	5.0	24	3	70	1	6.050 160

3 Microlitre syringes Neuros™

NEW
Hamilton

Hamilton Neuros™ syringe technology provides unprecedented functionality for controlled injections e.g. of tissues and animals. An industry first, the Neuros™ accurately dispenses 50 nL to 100 µL of liquid through an ultrafine needle protected by a custom-designed sleeve. Developed specifically for the neurosciences, the Neuros minimizes injection site damage by increasing needle rigidity and delivering a microvolume of liquid to an exact location.

- Adjustable needle exposure of 0 to 20 mm
- Almost no dead volume
- Needle rigidity improves insertion path accuracy
- Minimal tissue damage reduces injection variability
- Reduced sample loss saves money and materials
- Fine gauge needle creates smaller injection sites
- Compatibility with most infusion pumps and stereotaxic holders means an easy integration into existing processes
- Also available as beveled 12° point (point style 4)

Needle length: 0 to 20 mm



Type	Capacity µl	Point style	Gauge	PK	Cat. No.
NRS7000.5 KH	0.5	3 (HPLC)	32	1	6.287 163
NRS7001 KH	1	3 (HPLC)	32	1	7.671 735
NRS7002 KH	2	3 (HPLC)	30	1	6.287 164
NRS75 RN	5	3 (HPLC)	33	1	7.642 505
NRS1701 RN*	10	3 (HPLC)	33	1	6.258 819
NRS1702 RN*	25	3 (HPLC)	33	1	6.287 165
NRS1705 RN*	50	3 (HPLC)	33	1	6.287 166
NRS1710 RN*	100	3 (HPLC)	33	1	6.287 167

*gastight syringes

8. Liquid Handling Microfluidics/Hoses and connections

GENERAL CATALOGUE EDITION 20



1 Versilic silicone tubing

Pure silicone with high-grade properties. To Ph.Eur, DAB 10 and USP XXIII Class VI (biological tests). Suitable for food use to FDA, BGA and EU guidelines. *Saint Gobain*
Temperature range from -60 to +200 °C (up to +220 °C for short periods). Transparent to translucent. Shore strength 62 ±5. Density 1.16. Biologically neutral. Suitable in particular for use in biotechnology, fermentation or pharmaceutical production. Good physical properties such as suppleness, elasticity, flexibility, resistant to bending and tearing. Good recovery characteristics, with high fatigue resistance when twisted. Elongation at tear >300 %. Supplied per metre or in standard coils of 25 m.

Int. diam. mm	Ext. diam. mm	Wall thickness mm	PK	Cat. No.
0.50	2.5	1.00	1	9.205 300
1.00	3.0	1.00	1	9.205 301
2.00	4.0	1.00	1	9.205 302
3.00	5.0	1.00	1	9.205 303
4.00	6.0	1.00	1	9.205 304
4.00	8.0	2.00	1	9.205 267
5.00	7.0	1.00	1	9.205 305
6.00	10.0	2.00	1	9.205 275
7.00	11.0	2.00	1	9.205 306
8.00	12.0	2.00	1	9.205 285
9.00	13.0	2.00	1	9.205 307
10.00	14.0	2.00	1	9.205 308
12.00	17.0	2.50	1	9.205 309



2 Peristaltic pump tubing, Tygon® LMT-55

With 2 colour-coded bridges (international standards). *Saint Gobain*
Shore: 55. Fits most common peristaltic pump models, e.g. Verder, Ismatec, Watson-Marlow, IKA and Heidolph. Standard tubing, transparent. Length 380 mm. Long working lifespan. Good resistance to acids and alkalis. Suitable for general use and with food.

Colour	Int. diam. mm	Wall thickness mm	PK	Cat. No.
orange-black	0.13	0.90	12	9.208 201
orange-blue	0.25	0.90	12	9.208 203
orange-green	0.38	0.90	12	9.208 204
orange-yellow	0.51	0.90	12	9.208 205
black-black	0.76	0.85	12	9.208 207
orange-orange	0.89	0.85	12	9.208 208
orange-red	0.19	0.90	12	9.208 202
white-white	1.02	0.85	12	9.208 209
red-red	1.14	0.85	12	9.208 210
grey-grey	1.30	0.85	12	9.208 211
yellow-yellow	1.42	0.85	12	9.208 212
yellow-blue	1.52	0.85	12	9.208 219
blue-blue	1.65	0.85	12	9.208 213
green-green	1.85	0.85	12	9.208 214
purple-purple	2.06	0.85	12	9.208 215
purple-black	2.29	0.85	12	9.208 216
purple-orange	2.54	0.85	12	9.208 217
purple-white	2.79	0.85	12	9.208 218
black-white	3.18	0.85	12	9.208 222



1026

E & OE.

info@haeberle-lab.de

www.haerberle-lab.de

Phone: +49 7336 9603-0

8. Liquid Handling Microfluidics/Hoses and connections

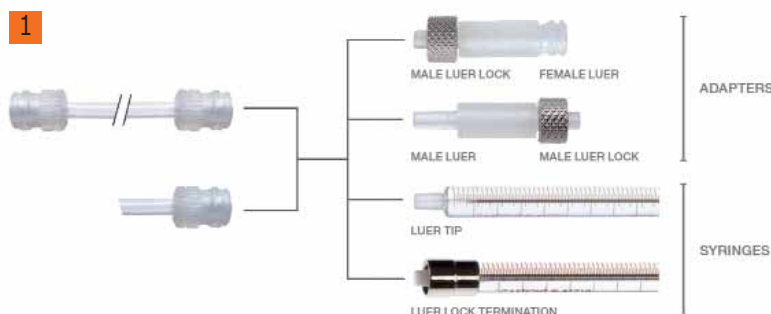
1 Luer Lock Hub Tubing

Assemblies and Tubings

Hamilton

Hamilton Luer Lock tubing assemblies are ideal for quickly connecting and disconnecting components with male luer locks suitable for micro fluidic applications. Hamilton offers a wide variety of chemically inert tubing assemblies for specific fluid applications. Different gauges, lengths, hub assemblies, and fittings are available according to standard or customer specification. To build your own assemblies, Hamilton offers fitting kits and tubings. Hamilton fittings and adapters are installed finger tight and provide leak tight seal rated to 0.6 MPa.

Hub Tubing Assemblies with 2 Hubs and further tubing lengths available on request.



2 Tubing for Luer Lock Hub Tubing Assemblies, 500 mm

NEW

2

Further tubing lengths available on request.

Hamilton

Gauge	Ext. diam. mm	Int. diam. mm	Material	PK	Cat. No.
30	0.75	0.35	PTFE	1	6.287 121
28	0.86	0.40	PTFE	1	6.287 120
26	0.91	0.46	PTFE	1	6.287 119
24	1.12	0.59	PTFE	1	6.287 118
22	1.23	0.71	PTFE	1	6.287 117
20	1.50	0.91	PTFE	1	6.287 116
19	1.83	1.02	PTFE	1	6.287 115
18	2.00	1.00	FEP	1	6.287 123
18	1.68	1.07	PTFE	1	6.287 114
17	1.62	1.02	PTFE	1	6.287 113
16	2.02	1.42	PTFE	1	6.287 112
15	2.17	1.57	PTFE	1	6.287 111
14	2.35	1.75	PTFE	1	6.287 110
12	2.77	2.16	PTFE	1	6.287 109
12	2.90	2.00	FEP	1	6.287 124
11	3.04	2.44	PTFE	1	6.287 108
10	3.33	2.72	PTFE	1	6.287 107
9	3.76	3.02	PTFE	1	6.287 106
8	4.19	3.43	PTFE	1	6.287 105
7	4.60	3.84	PTFE	1	6.287 104
1/8"	3.18	1.59	PTFE	1	6.287 122



3 Luer Lock Hub Tubing Assemblies, 1 Hub, 300 mm

NEW

3

The tubing is 300 mm in length but can be trimmed shorter to a desired length.

Hamilton

Gauge	Ext. diam. mm	Int. diam. mm	Material	PK	Cat. No.
30	0.75	0.35	PTFE	1	6.071 810
28	0.86	0.40	PTFE	1	6.206 417
24	1.12	0.59	PTFE	1	6.287 133
22	1.23	0.71	PTFE	1	6.071 809
20	1.50	0.91	PTFE	1	6.231 359
19	1.83	1.02	PTFE	1	6.071 808
18	1.68	1.07	PTFE	1	6.300 542
17	1.62	1.02	PTFE	1	6.287 132
16	2.02	1.42	PTFE	1	6.231 356
15	2.17	1.57	PTFE	1	6.287 131
14	2.35	1.75	PTFE	1	7.612 023
13	2.54	1.95	PTFE	1	6.287 130
12	2.77	2.16	PTFE	1	6.287 129
11	3.04	2.44	PTFE	1	6.287 128
10	3.33	2.72	PTFE	1	6.287 127
9	3.76	3.02	PTFE	1	6.287 126
8	4.19	3.43	PTFE	1	6.287 125
7	4.60	3.84	PTFE	1	7.611 570



8. Liquid Handling Microfluidics/Hoses and connections



1 Luer Lock Hub Tubing Assemblies, 1 Hub, 500 mm

NEW

The tubing is 500 mm in length but can be trimmed shorter to a desired length. Further tubing lengths available on request.

Hamilton

Gauge	Ext. diam. mm	Int. diam. mm	Material	PK	Cat. No.
30	0.75	0.35	PTFE	1	6.250 028
28	0.86	0.40	PTFE	1	6.287 102
26	0.91	0.46	PTFE	1	6.287 101
24	1.12	0.59	PTFE	1	6.287 100
22	1.23	0.71	PTFE	1	6.287 099
20	1.50	0.91	PTFE	1	6.287 098
19	1.83	1.02	PTFE	1	6.287 097
18	1.68	1.07	PTFE	1	6.204 854
17	1.62	1.02	PTFE	1	6.204 855
16	2.02	1.42	PTFE	1	6.204 856
15	2.17	1.57	PTFE	1	6.287 096
14	2.35	1.75	PTFE	1	6.287 095
13	2.54	1.95	PTFE	1	6.287 094
12	2.77	2.16	PTFE	1	6.287 093
11	3.04	2.44	PTFE	1	6.287 092
10	3.33	2.72	PTFE	1	6.287 091
9	3.76	3.02	PTFE	1	6.287 090
8	4.19	3.43	PTFE	1	6.287 089
7	4.60	3.84	PTFE	1	6.287 088



6.800 626

2 Removable Adapters (RN) for Luer Lock Hub Tubing

NEW

For 250 µl RN needle syringes and larger. Port diameter 1.5 mm, Inert Gas Sampling Valve 1 mm.

Hamilton

Description	PK	Cat. No.
Male Luer	1	6.079 139
Male Luer Lock	1	6.305 865
Female Luer	1	6.306 806
Inert Gas Sampling Valve	1	6.800 626 2



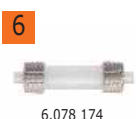
6.091 193



6.800 466



6.800 467



6.078 174

Adapters for Luer Lock Hub Tubing

NEW

Hamilton

Description	PK	Cat. No.
Female Luer/Female Luer	1	6.091 193 3
Female Luer/Male Luer	1	6.800 467 5
Female Luer/Male Luer Lock	1	6.287 085
Female Luer/1/4"-20 UNC	1	6.287 087
Female Luer closure	1	6.800 447
Male Luer/Male Luer	1	6.800 466 4
Male Luer Lock/Male Luer	1	6.241 919
Male Luer Lock/Male Luer Lock	1	6.078 174 6
Male Luer Lock/1/8"-NPT	1	6.287 086

We can supply this
manufacturer's
whole
product range !

