Fineflow Products Catalog

Vacuum Filling System

Syringe Filling System

Compact Coater

Plunger pump

Teflon Valve

Applications

Our products are used in a wide range of industries: batteries, electronic components,

Battery

Use Puroducts

Note PC

Hybrid Car

Solar House

Type of Battery

Laminate Battery

Laminate Battery

Lead-acid Batteries

Solar Battery

Our Products

SH-pump Mortor Drive Type

Vacuum Filling Machine

Battery

Smartphone

Calculator

Digital Camera

Digital Watch

Game Machine

Square Battery

Coin Battery

Cylindrical Battery

SH-pump Air Drive Type

SH-pump Mortor Drive Type

lighting, and the food industry. This page shows some examples, including end products for illustration.

Foods

Application products

Jelly Product Line

Jelly

Seaweed

Whiskey Bonbon

Steamed Meat Dumpling

Noodles

Our Products

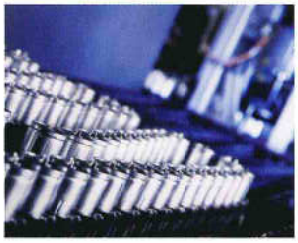
SH-pump Air Drive Type for Foods

Teflon Valve V30

Electronics

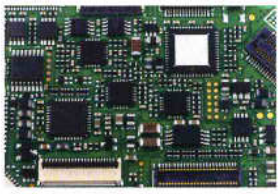
LED Lamp

Coil



Capacitor Product Line

Capacitor



P.C.B

Reflow Oven

Solder Paste

High-Viscosity Materials

Syringe Filling

SH-pump Motor Drive Type

Teflon Valve V30

Syringe Filling Machine

1 SH-Pump Series

★ Overview

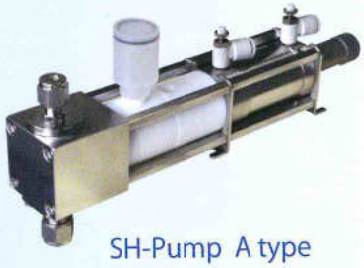
Named for "Simple High-performance," the SH-pump series was developed for high-precision measured dispensing and filling of low- and medium-viscosity materials.

★ Features

- SH-pump products include the SH series for handling materials such as battery electrolytes which are liable to crystallization, and the SH-F series, with its ease of cleaning suited to food and similar applications.
- Parts in contact with fluid are made of stainless steel or Teflon, with excellent chemical resistance.
- The disposable plunger is fixed in a housing which can be taken apart for easy replacement.
- The plunger has a floating construction, obviating the need for centering adjustment.
- Models are available for electric motor drive or compressed air drive.
- The compressed air drive version allows the filling amount to be set with the micrometer gauge. There are controls for adjusting intake rate and ejection rate.
- The electric motor drive version is supplied with a controller, which can set the dispensing amount, intake rate, and ejection rate by simple digital input, allowing precise repeatability whoever is using the system.

★ Three kinds of pumps

SH-Pump M type

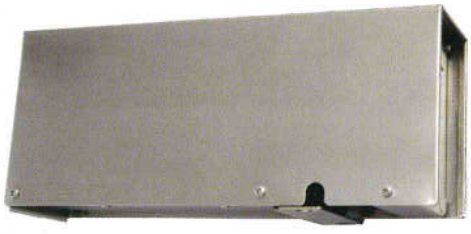


SH-Pump A type

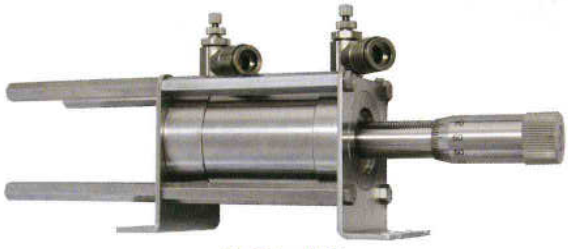
SH-Pump AF type

★ Pump component parts

M type

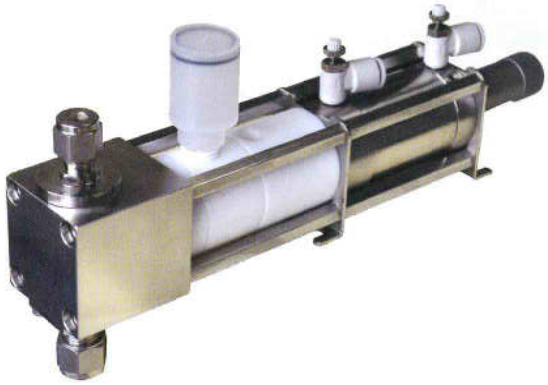


Pump Head (common parts) Plunger



AF type

A SH-Pump A type



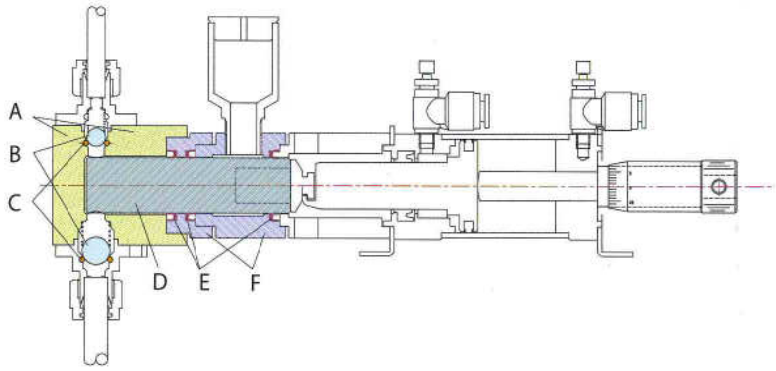
★ Applications

High-precision measured filling and dispensing of low- and medium-viscosity materials.

★ Specific examples

- Filling electrolytic capacitors with electrolyte
- Measured dispensing of drugs and trial drugs
- Dispensing ink and paint
- Mounting in food processing equipment
- High-precision filling of oils, solvents, and chemical products
- High-precision filling of cosmetics, including shampoo, rinse, and perfume

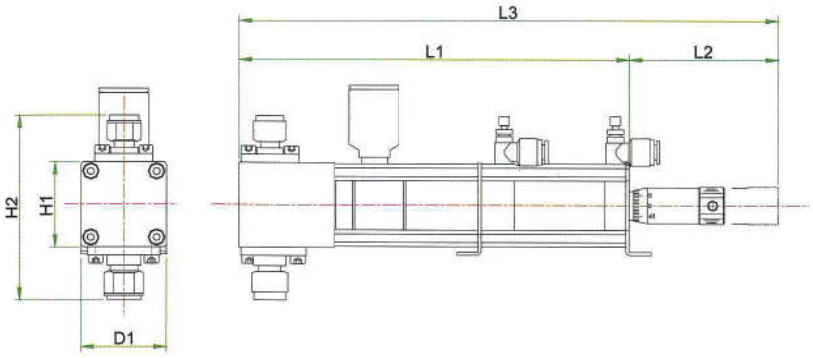
★ Cross-Sectional Drawing



★ Wetted Part Material

No.	Parts Name	Material ( ) inside is an Option
A	Pump Head	SUS316
B	Valve Ball	SUS316
C	O-ring	EPDM (Viton, Silicon, Kalrez)
D	Plunger	Ceramics
E	Seal	Teflon/EPDM (Viton, Silicon, Kalrez)
F	Spacer	Teflon

★ Dimensional Drawing



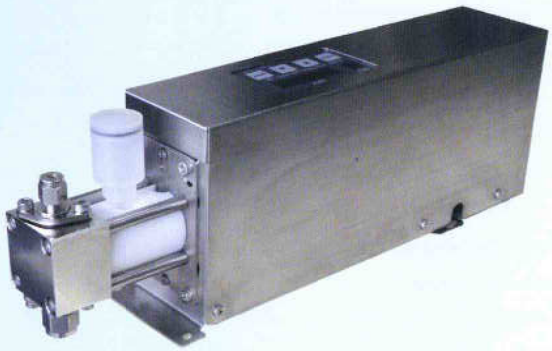
★ "A" series Dimension Table

Model	H1	H2	D	L1	L2	L3
SH-03A	39	65	39	168	45	213
SH-07A	39	86	39	172	45	217
SH-12A	41	89	41	189	72	261
SH-20A	45	122	49	206	79	285
SH-50A	86	208	72	216	75	291
SH-100A	86	208	72	296	125	421

★ "A" Series Specifications Table

Model	Dispensing Amount (cc)	Plunger Dia. (mm)	Max. Stroke (mm)	Cycle Rate (Per Minute)	Weight (kg)
SH-03A	0.03 ~ 0.22	Φ4.76	12.5	180	1.2
SH-07A	0.18 ~ 1.22	Φ11.1	12.5	180	1.2
SH-12A	0.70 ~ 7.00	Φ19.1	25.0	120	1.5
SH-20A	3.00 ~ 20.0	Φ31.8	25.0	120	2.5
SH-50A	5.00 ~ 51.0	Φ52.0	25.0	80	4.5
SH-100A	10.0 ~ 102.0	Φ52.0	25.0	40	6.5

M SH-Pump M type



★Applications

High-precision measured filling and dispensing of low- and medium-viscosity materials.

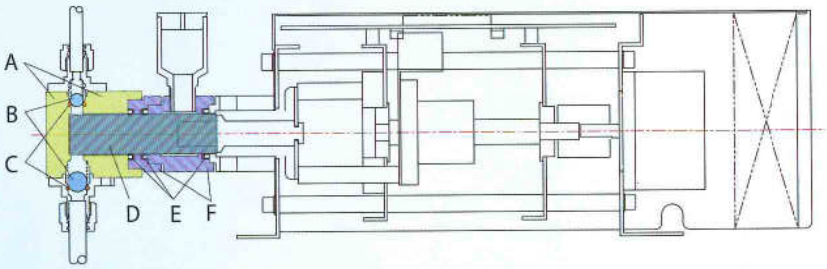
★ Specific examples

- Filling electrolytic capacitors with electrolyte
- Measured dispensing of drugs and trial drugs
- Dispensing ink and paint
- Mounting in food processing equipment
- High-precision filling of oils, solvents, and chemical prod
- High-precision filling of cosmetics, including shampoo, rinse, and perfume

★ Features of the "M "eries

- Dispensing amount and dispensing rate can be easily controlled digitally
- Switching the dispensing mode allows switching between one-of and continuous operation.
- A completion output signal allows easy control by a sequencer.

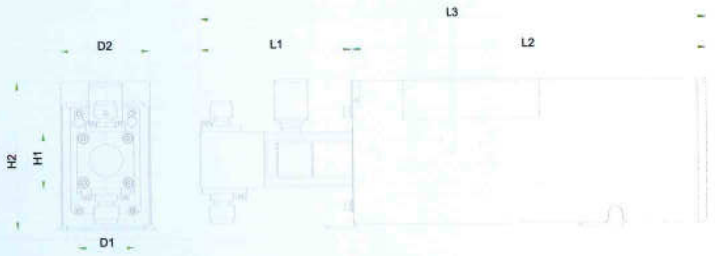
★ Cross-Sectional Drawing



★ Wetted Part Material

No.	Parts Name	Material ( ) inside is an Option
A	Pump Head	SUS316
B	Valve Ball	SUS316
C	O-ring	EPDM (Viton, Silicon, Kalrez)
D	Plunger	Ceramics
E	Seal	Teflon/EPDM (Viton, Silicon, Kalrez)
F	Spacer	Teflon

★ Dimensional Drawing



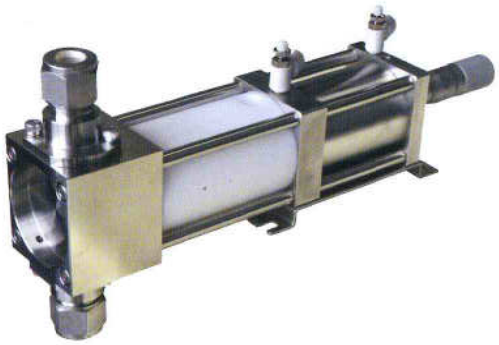
★ "M" Series Dimension Table

Model	H1	H2	D1	D2	L1	L2	L3
SH-03M	65	107	39	65	168	45	213
SH-07M	86	107	39	65	172	45	217
SH-12M	89	107	41	65	189	72	261
SH-20M	122	107	49	65	206	79	285
SH-50M	208	110	72	75	216	75	291
SH-100M	208	110	72	75	296	125	421

★ "M" Series Specifications Table

Model	Dispensing Amount (cc)	Plunger Dia. (mm)	Max. Stroke (mm)	Cycle Rate (Per Minute)	Weight (kg)
SH-03M	0.03 ~ 0.22	Φ4.76	12.5	180	2.3
SH-07M	0.18 ~ 1.22	Φ11.1	12.5	180	2.5
SH-12M	0.70 ~ 7.00	Φ19.1	25.0	120	2.8
SH-20M	3.00 ~ 20.0	Φ31.8	25.0	120	3.0
SH-50M	5.00 ~ 51.0	Φ52.0	25.0	80	6.5
SH-100M	10.0 ~ 102.0	Φ52.0	25.0	40	7.0

AF SH-Pump AF type



★Applications

High-precision measured filling and dispensing of low- and medium-viscosity materials.

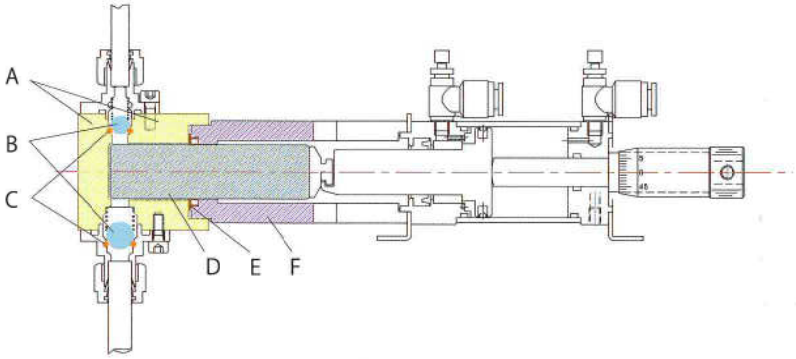
★Specific examples

- Simultaneous multipoint filling of jelly
- Filling whiskey bonbons, and other liqueur-filled candies
- Injection of vinegar based sauce for mozuku (a kind of edible seaweed)
- Filling containers of sauce, edible oil, soup, etc.
- Filling cosmetics such as shampoo and rinse
- Mounting in packaging equipment for food or cosmetics

★Features of the "AF"eries

- Number of components coming into contact with product is small, for easy maintenance.
- Single plunger seal location, and one-fifth as many components in seal greatly reduced compared with SH-A models
- Simple disassembly for cleaning

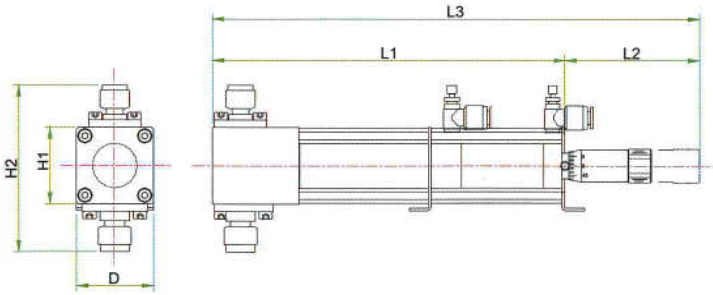
★Cross-Sectional Drawing



★Wetted Part Material

No.	Parts Name	Material ( ) inside is an Option
A	Pump Head	SUS316
B	Valve Ball	SUS316
C	O-ring	EPDM (Viton, Silicon, Kalrez)
D	Plunger	Ceramics
E	Seal	Teflon/EPDM (Viton, Silicon, Kalrez)
F	Spacer	Teflon

★Dimensional Drawing



★"A F"series Dimension Table

Model	H1	H2	D	L1	L2	L3
SH-03FA	39	65	39	168	45	213
SH-07FA	39	86	39	172	45	217
SH-12FA	41	89	41	189	72	261
SH-20FA	55	122	49	206	79	285
SH-50FA	86	208	72	216	75	291
SH-100FA	86	208	72	296	125	421

★"AF" Series Specifications Table

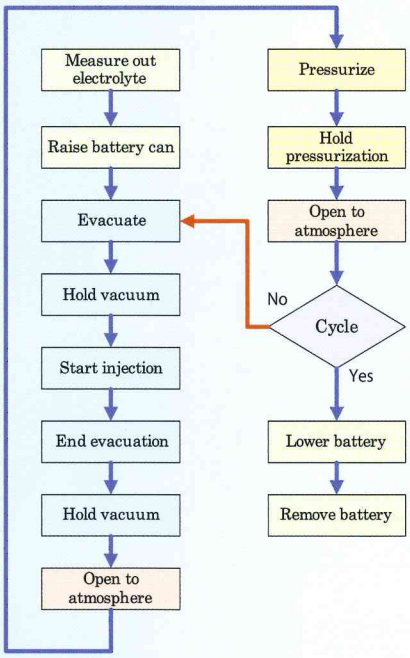
Model	Dispensing Amount (cc)	Plunger Dia. (mm)	Max. Stroke (mm)	Cycle Rate (Per Minute)	Weight (kg)
SH-03AF	0.03 ~ 0.22	Φ4.76	12.5	180	1.2
SH-07AF	0.18 ~ 1.22	Φ11.1	12.5	180	1.2
SH-12AF	0.70 ~ 7.00	Φ19.1	25.0	120	1.5
SH-20AF	3.00 ~ 20.0	Φ31.8	25.0	120	2.5
SH-50AF	5.00 ~ 51.0	Φ52.0	25.0	80	4.5
SH-100AF	10.0 ~ 102.0	Φ52.0	25.0	40	6.5

2 Vacuum Filling System

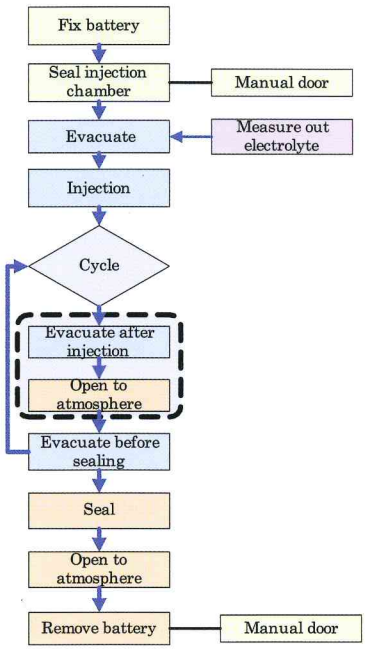
★ Device overview and operational flow

This device was designed for research and development in vacuum filling of lithium-ion battery with electrolyte.
There are three models: for cylindrical batteries only, for laminated batteries only, and dual-purpose for both.
A flow rate control pump is used for the vacuum injection together with an electrolyte measuring pump, providing high-precision injection and avoiding leakage of the electrolyte to the vacuum supply line during the injection.
There are minor differences in the operational flow for the cylindrical and laminated battery versions. For more details see the flow diagrams below.

Flow diagram for cylindrical battery



Flow diagram for laminated battery



C VD102 for Cylindrical Battery

★ Device overview

The VD102 is a vacuum electrolyte filling system for cylindrical batteries.
Place the battery on the support, and press the Start switch.
This raises the support, evacuates the battery, then fills it with electrolyte from the stock tank.

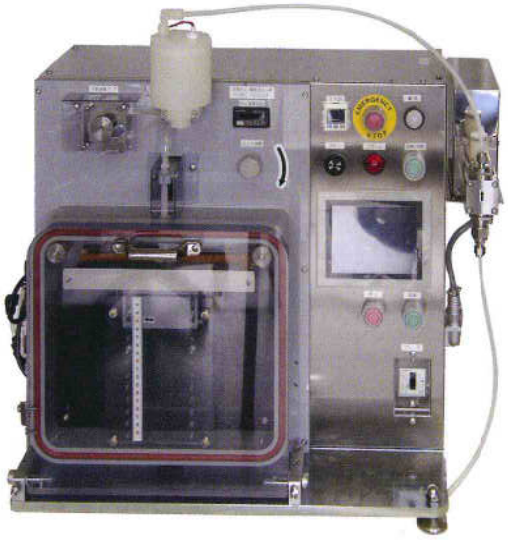
★ Features

- The amount of electrolyte injected can be set with the electric motor drive measurement pump.
- The injection rate can be controlled freely with the variable flow injection pump.
- The electrolyte is supplied from the stock tank by the variable flow injection pump, enabling visual confirmation.
- Parameters for evacuation, injection, and pressurizing can be set separately, allowing replication of injection conditions suited to the particular battery or electrolyte.
- Leakage of the electrolyte to the vacuum pump is almost entirely eliminated, providing a high level of accuracy for the injection.
- The vacuum level, injection rate, and so on can all be checked and adjusted manually.
- In the automatic mode, you can combine any consecutive processes into the maximum step.

★ Specification Table

Applications	Cylindrical battery for laboratory use	Battery Size	18650
Power supply	AC100V, 50/60Hz, 3A	Control	Sequence control
Measurement pump	SH12M (1.4~7.0c c)	Pressure supply	0.4~1MPa
Injection rate	1cc/sec. less	Stock Tank	10cc
Maximum vacuum	-97kPa	External dimensions	W350XH550XL400mm
Maximum pressurization	196kPa	Weight	30kg (Body) 8kg (Vacuum Pump)

L VD2020 for Laminate Battery



★ Device overview

The VD2020 is a vacuum electrolyte filling system for laminated batteries.
After vacuum filling of the electrolyte the laminate is heat-sealed.

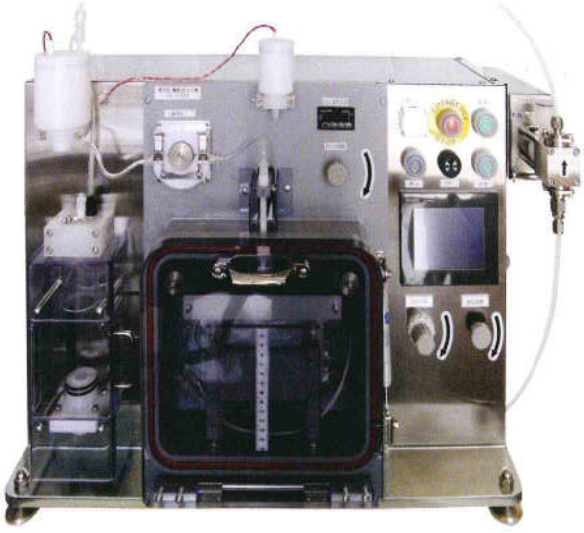
★ Features

- The amount of electrolyte injected can be set with the electric motor drive measurement pump
- The injection rate can be controlled freely with the variable flow injection pump.
- The electrolyte is supplied from the stock tank by the variable flow injection pump, enabling visual confirmation.
- Parameters for evacuation, injection, and pressurizing can be set separately, allowing replication of injection conditions suited to the particular battery or electrolyte
- Leakage of the electrolyte to the vacuum pump is almost entirely eliminated, providing a high level of accuracy for the injection.
- The vacuum level, injection rate, and so on can all be checked and adjusted manually.
- The laminated battery is heat-sealed after the electrolyte has been injected.

★ Specification Table

Applications	Laminated battery for laboratory use	Battery Size	□200X5t
Power supply	AC100V, 50/60Hz, 8A	Control	Sequence control
Measurement pump	SH-12M (1.4~7.0c c)	Pressure supply	0.4~1MPa
Injection rate	0.9cc/sec. less	Sealing width	200mmX5t
Maximum injection volume	150cc less	Sealing temperature	300℃ less
Stock Tank	170cc with upper limit switch	External dimensions	W570XH530XD367mm
Maximum pressurization	-97kPa	Weight	55kg (Body) 35kg (Vacuum pump)

C/L VD1020A for Cylindrical & Laminate Battery



★ Device overview

The VD1020A is a dedicated vacuum electrolyte filling system for cylindrical and laminated batteries.
For laminated batteries, after filling with the electrolyte, while still in the vacuum state the lamination is heat-sealed.
Switching between battery types is simple: after changing the tubes from the measurement pump and stock tank, select the battery type on the control panel.

★ Features

- Combines the features of the devices for filling each of cylindrical and laminated batteries.
- Since this device can handle both cylindrical and laminated batteries, it provides effective space-saving, with the economy of not requiring to purchase two separate devices.

★ Specification Table

Applications	Cylindrical battery and Laminated battery for laboratory use	Battery Size	Cylindrical battery 18650 Laminated battery □150 x 5t
Power supply	AC100V, 50/60Hz, 8A	Control	Sequence control
Measurement pump	SH-12M (1.4~7.0c c)	Pressure supply	0.4~1MPa
Injection rate	3.5cc/sec. or less	Stock Tank	Cylindrical battery 25cc with upper limit switch Laminated battery 170cc with upper limit switch
Maximum injection volume	Cylindrical battery 20cc or less Laminated battery 150cc or less		
Sealing width	150mmX5t	Sealing temperature	260℃ or less
Maximum vacuum	-97kPa	External dimensions	W670XH480XD367
Maximum pressurization	196kPa (Only cylindrical battery)	Weight	40kg (Body) 30kg (Vacuum pump)

3 Teflon Valve V30/ V31

★ Overview

The V30/V31 Teflon valves have an integral body appropriate for all materials, and are compact and lightweight. The parts in contact with the fluid are Teflon, Viton, or Perfluor seals.

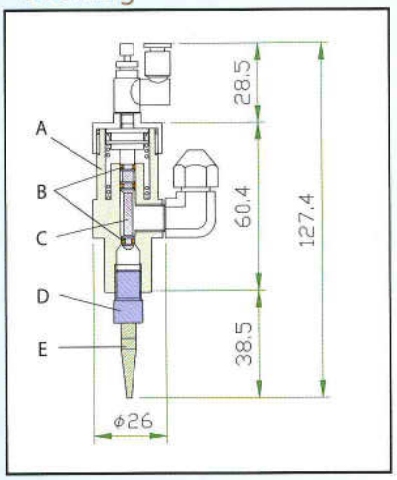
★ Features

- The fluid-contacting seals are all of moving seal construction, fixed to the valve shaft, providing a compact, lightweight unit with easy disassembly and cleaning.
- The suck-back effect ensures an excellent clean break after dispensing.
- Teflon body and high-performance seals enable use with a wide range of fluids.
- The model V31 with adjustable suck-back amount is now standard.

★ Specification table

Item	Specification
Working Pressure	0.35~0.5MPa
Material Feed Pressure	Max. 0.5MPa
Durability	3 million cycles
Min.Dispensing Amount	0.05cc/Shot
Flow Rate(Value of CV)	2.9Liter/Minute
Wetted Part Material	Teflon/Viton
Seal Material	Viton (Standard) 、EP、Silicon、NBR、Kalrez
Weight	70g

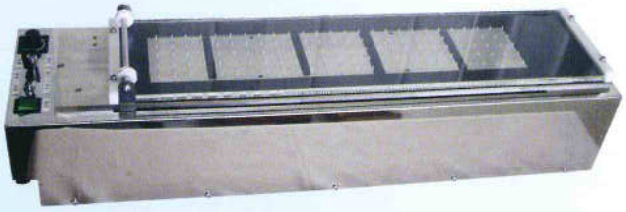
★ Cross-Sectional & Dimensional Drawing



★ Weeted Part Material

No	Parts Name	Material ( ) Inside is an option.
A	Valve Head	Teflon
B	O-ring	EPDM (Viton, Silicon, Kalrez)
C	Shaft	Teflon Coating
D	Needle Adapter	Polyacetal
E	Nozzle	Polypropylene

4 Compact Coater



★ Overview

The compact coater is an ideal coating machine for testing and laboratory processes of applying a uniform coating to film, metal foil, glass, and other substrates.

★ Features

- Built-in vacuum pump for film adhesion.
- Film adhesion using removable high-precision plate.
- Coating speed controlled with aperture knob.
- Coating, return, and stop operations are switch-operated. Coating stopped by built-in limit switches.
- Compact, and can be inserted through the pass box of a glove box.

★ Specification

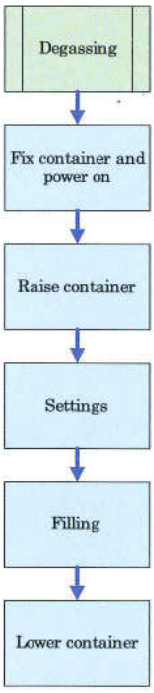
Applications	Film coating for lab use
Power supply	AC100V 50/60Hz 2A
Control	Switch controlled
Coating speed	7.2~7mm/sec.
Coating size	100X100mm
Film adhesion	Built-in vacuum pump
External dimensions	W190XH160XD336
Weight	8 kg

5 Syringe Filling System

★ Outline

The syringe filling system allows the degassed material in a container to be mounted in the machine, and used to fill syringes without any gas entering.

★ Basic sequence of syringe filling



- Before mounting the container of material, the material must be degassed in the container.
- Fix the container of material within the guides, and attach the retaining ring. After attaching the syringe to be filled, power on the unit.
- Manually raise the container, and remove the air from the filling adapter and container. Use the filling position switch for this.
- In the operating panel filling menu, set the time, weight, and rate for filling.
- Start filling with the start switch or the foot switch. The syringe is manually attached and detached.
- At the filling completion position, process the container and remove.

- Filling sample

★ Common options

❶ Variable container size

Set the equipment to fit different sizes of material container

❷ Vacuum air extraction

Remove air within the container and syringe using a vacuum, for filling without any gas combining with the material.

❸ Heating

For high-viscosity materials, heating the container lowers the viscosity for filling the syringe.

M LD100J Manual Type

★ Features

- The container is moved with a hydraulic jack, so that even in manual operation filling can be carried out with a light load.
- Filling can be carried out efficiently, with a short and direct path for the material to move through.
- Compared with a pump or pressure system, since no valve is used the construction of the parts in contact with the fluid is simple, and filling can be carried out with little loss of material from the container.

S LD800V Servo Motor Type

★ Features

- Movement of the container table is digitally controlled, for simple setting of the filling conditions.
- Filling capacity and filling rate can be set digitally.
- Wide range of filling amounts and material containers are supported.
- Vacuum container mechanism provided to solve problem of gas entering within the container and syringe.
- Since syringe is evacuated before filling, possibility of gas entering is further reduced.

Fine flow Inc.

Address : Sengendai KM Building 4F
1-5-2 Sengendai Nishi Koshigayashi
Saitama Japan 343-0041
Phone : 81-48-940-2804 Fax:81-48-940-2805
URL : http://www.e-fineflow.com
Email : sales@e-fineflow.com

Shanghai Office
YOULIU PUMP（SHANGHAI）Co,.Ltd.
Address : Room 513 Antian Building
145Lanxi Road Shanghai
P.R.China 200062
Phone : 86-21-3256-7052 FAX. 86-21-3256-7082
URL : http://www.fineflow.cn
Email : lifeng@fineflow.cn

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