

# Computerized Quantitative Filling Machine

(Specification & User's Manual) BAL-2001 2.0E version



## Filler Company Ltd

TEL: 886-2-2593-1616, 886-2-2591-6873

FAX: 886-2-2586-4587

<http://www.filler.com.tw>

E-mail: [filler@filler.com.tw](mailto:filler@filler.com.tw)

# Content

A. Specification / Technical Capability .....	01
B. Diagrammatic Structure .....	03
C. Diagrammatic Dimensions .....	04
D. List of Accessories .....	05
E. Warnings & Emergency Measures .....	08
F. Control Panel Introduction .....	09
G. Assembling Procedure .....	10
H. Disassembling Procedures .....	14
I. Operation Procedures .....	17
J. Setting Up Filling Parameters & Function Mode .....	18
K. Important Tips for Effective Operation .....	21
L. Using Intake Hose & Filter Set <b>(Intake alternative)</b> .....	23
M. Using Hand-held Set <b>(Output alternative)</b> .....	24
N. Warranty & Proof of Purchase .....	25
O. Maintenance & Replacement Record Sheet .....	27

# A. Specification / Technical Capability



## Specification :

Dimensions : L x W x H:

48cm x 42cm x 25cm

Weight : 29 kg

Power Supply : Mono-phase

220V, 50/60Hz (\*Note 1)

## Technical Capabilities:

- Filling capacity ranges from 0.125 ml up to 1000 ml per fill Capable of Handling liquid/viscid materials with viscosity from 0 up to 100,000 cp. (Note 2)
- Filling speed ranges from 3 ml up to 60 ml per second.
- Materials are metered precisely by computerized control system, digitalized setting of parameters, LCD display, and AC servomotor. (Note 3)
- Patent non-piston filling operation (peristalsis pump) ensures zero percent material transformation during process.
- Able to transmit materials of liquid/viscid form at room temperatures or warmer. (Note 4)
- Medical/food grade Transmission Tube guarantees contamination-free transmission.
- Top grade industrial stainless steel (no. 306) is utilized for all major parts and accessories.
- 3 Different sized Extruding Pipes are provided to fill bottles with different sized openings easily.
- Interchangeable use of “Test”, “Manu”, Auto”, and “Pedal Switch” functions optimizes production.

- “10 minutes” cleaning procedure totally eliminates excess labor.
- “Motor” switch, in addition to “Power” switch, guards against unexpected incidents during operation.
- An ideal liquid/viscid material-filling machine to be used for industries such as foods, cosmetics, and pharmacy.

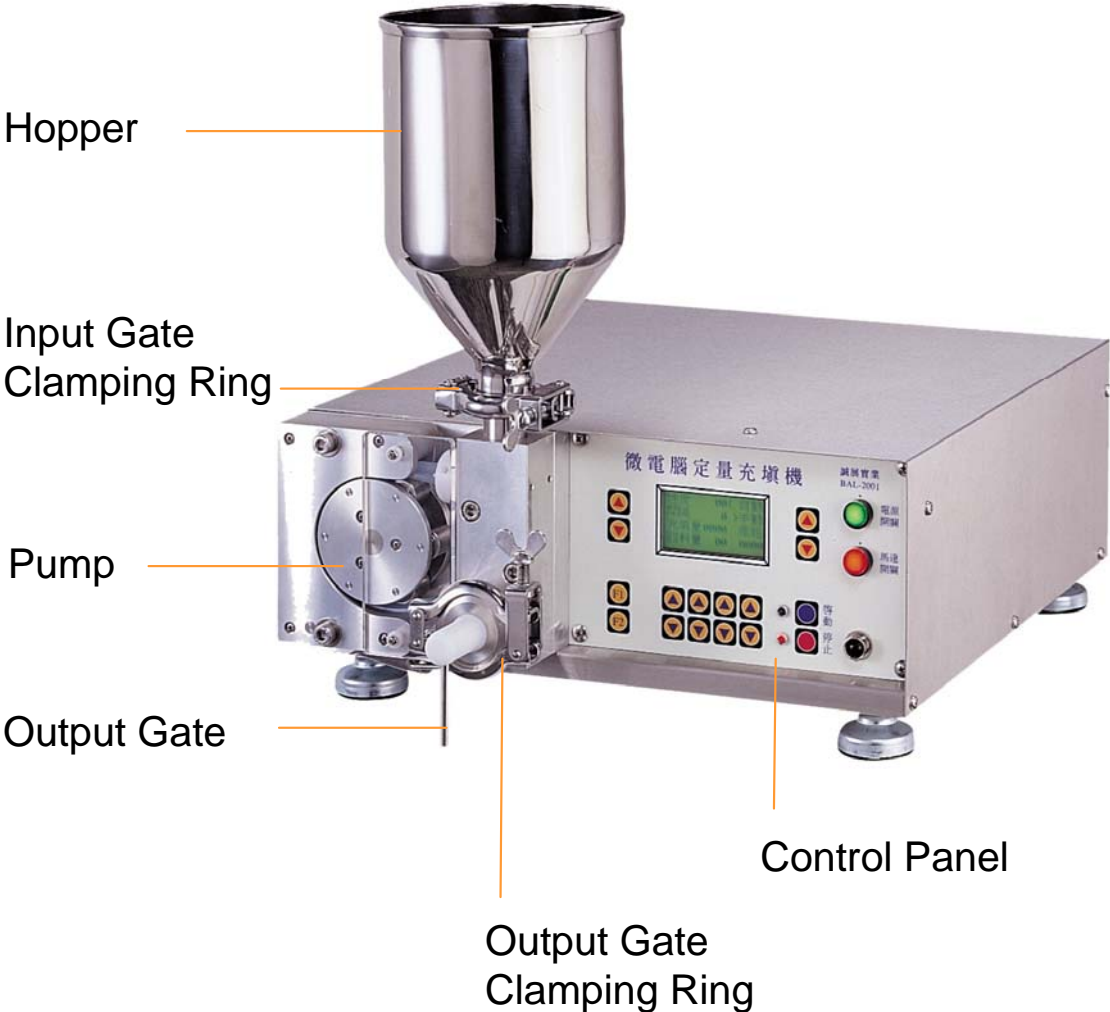
**Note 1:** Single phase 220V is required to operate this machine. Operating on low volt wire may cause great danger such as short circuit or fire.

**Note 2:** Range of viscosity is to be used as a general reference only. Actual filling feasibility is subject to all other factors not mentioned herein, e.g. evaporation speed, material weight, physical form change due to temperature change, etc.

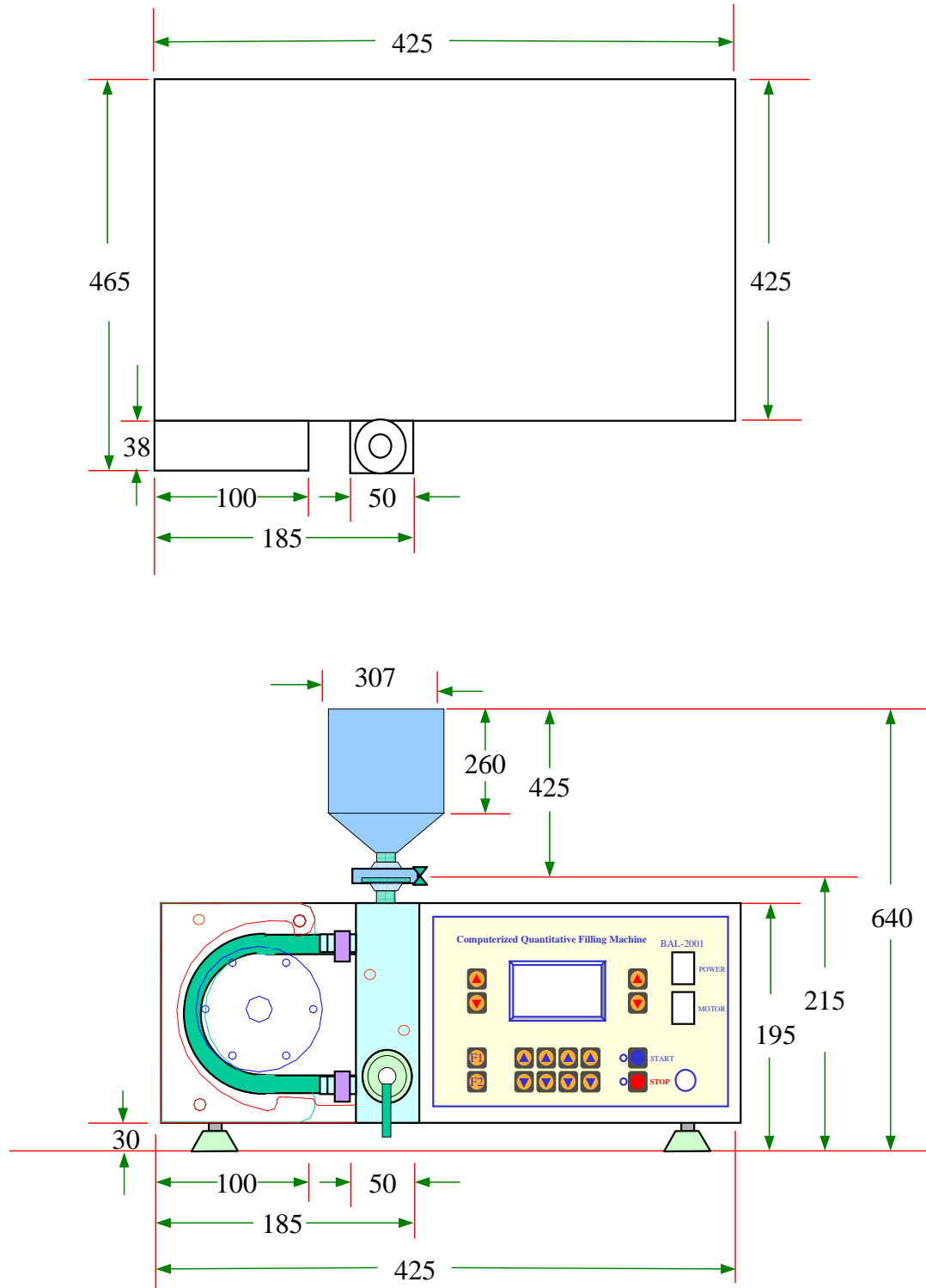
**Note 3:** Error range is 0.2% ~0.3%, while average industrial error at 1%.

**Note 4:** This machine can handle liquid/viscid material kept in the Hopper with temperature up to 90-degree Centigrade. The Transmission Fixture and Transmission Pipes have no problem to transmit the warm/hot material intended. However, please note that there will be a temperature change (number of degrees changed are subject to factors such as surrounding environment, nature of the material itself, etc.) the moment material is extruded from the Extrusion Pipe. There are some material types that their physical form is quickly changed within an extremely short period of time frame due to temperature change (for example, some wax based cosmetics products); this machine is definitely not made to handle them. Please contact us for custom made order that can handle such – for instance, a heating jacket, and an automatic stirring stick, etc. will be added into the features.

# B. Diagrammatic Structure



## C. Diagrammatic Dimensions (unit: mm)








## D. List of Accessories

Item	Illustration	Name	Code	Quantity	Description	Remarks
1		Hopper & Hopper Cover	FM-H15	1 unit	15-Liter Stainless-Steel	20-Liter (Optional)
2		Clipped Rubber Gasket	FM-L03	5 pieces	Inner Diameter: 1 Inch	
3		Clamper	FM-L01	3 sets	Stainless-Steel	
4		Transmission Fixture	CF-01	1 set		
5		Drop-out Pad	CF-47	2 pieces		
6		Drop-out Tool	CF-48	1 piece		
7		Transmission Tube Nut	CF-49	2 units		
8		Nut Fixing Tool	CF-50	1 piece		

Item	Illustration	Name	Code	Quantity	Description	Remarks
9		Transmission Tube Cover	CF-57	1 set		
10		Hand-held Extruding Pipe Set	CF-52	1 set	Pipe, Drop-out Pads, Extension Tube	
11		Extruding Pipe	CF-51	3 pieces	Large: 7 mm Medium: 5 mm Small: 3 mm	
12		Pipe Buckle Washer	CF-26	1 Washer		
13		90° Stainless Steel Joint	FM-L02	1 piece		
14		Stainless Steel Joint	FM-L06	1 piece	Diameter 3/4" Attached on Intake-hose already	
15		Intake Hose	FM-T04	5feet	Diameter 3/4" (Vacuum Pipe)	
16		Transmission Tube	CF-53	30 pieces	27 cm in length	



Item	Illustration	Name	Code	Quantity	Description	Remarks
17		Hexagon Wrench	FM-A01	1 piece	6mm	
18		Pedal Switch	CF-38	1 set		
19		Tool Box	FM-X01	1 box with cover		
20		User's Manual	FM-B2001	1 copy		
21		Cleaning tools	FM-C01	1 set (3 sizes)	Brushes	
22		Filter Cloth	CF-46	1 set	30 x 60 cm	
23		Filter Fixture	CF-45	1 set		

## E. Warnings & Emergency Measures

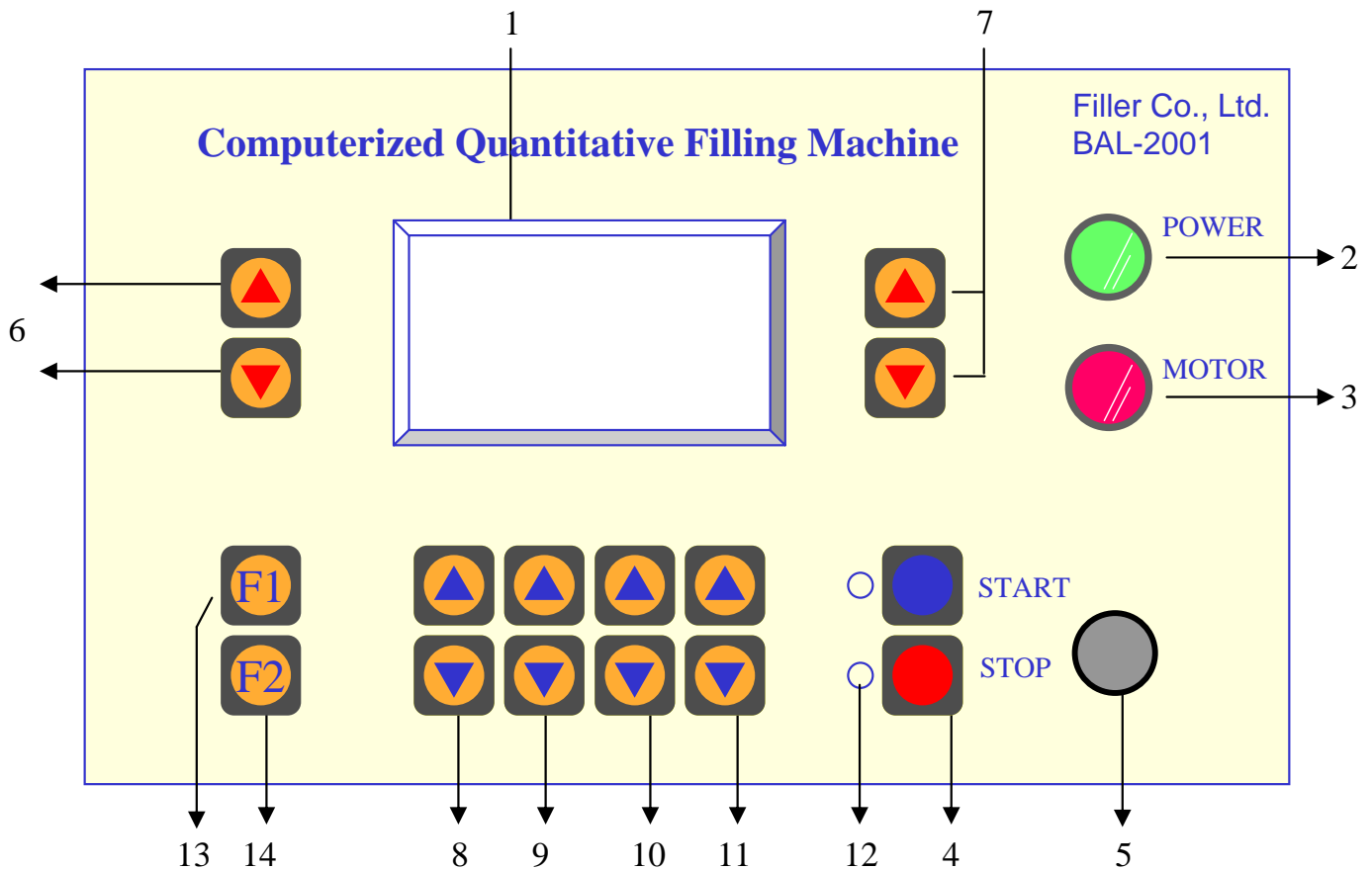
### **Warnings –**

1. Use “Mono-phase 220V” (+/-10% is acceptable) power supply ONLY since this machine is equipped with industrial serve-motor and driver.
2. Must carefully read through instructions given in this User’s Manual before operating this machine.
3. Connect the ground wire along with the plug properly before use. Never attempt to dismantle the ground wire.
4. Avoid any careless operation at all time.
5. Turn off the Power while it’s not in use for a long time.
6. Disassembling the main body of machine is strictly prohibited. Action of such automatically results in warranty to be totally voided.

### **Emergency Measures –**

Immediately unplug the power in case of any abnormal output continually performed by the machine. Contact us right away for further assistance.

## F. Control Panel Introduction

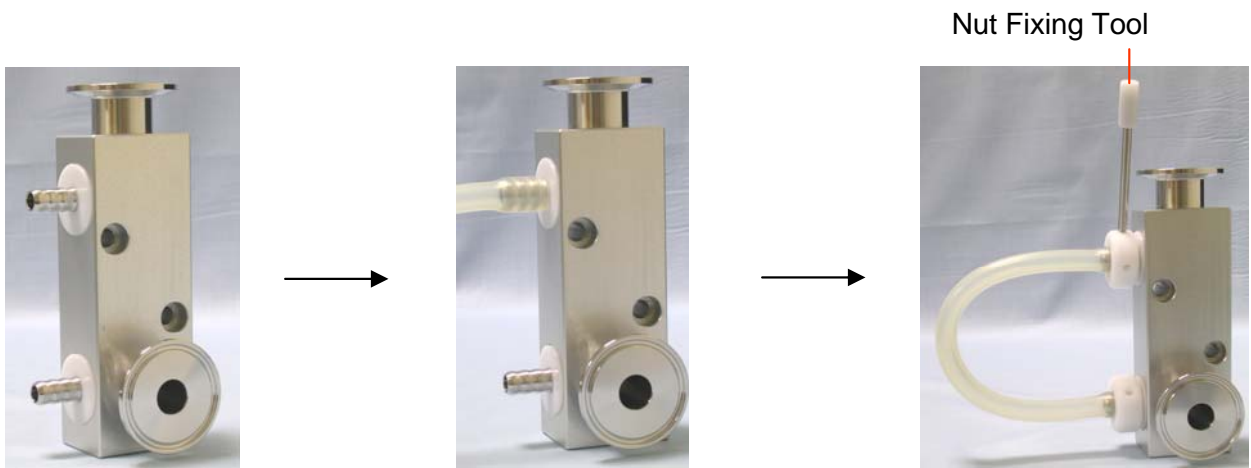


1. LCD shows **filling parameters and function mode** to be set
2. **Power** On/Off
3. **Motor** On/Off
4. **Start / Stop** to fill ("**Stop**" also for canceling the "Test" no. )
5. Connect "**Pedal Switch**"
6. **Up / Down** keys for the filling parameters on the Left in LCD
7. **Up / Down** keys for the function mode on the Right in LCD
8. **Thousands** digit --- Increase/Decrease the number
9. **Hundreds** digit -----Increase/Decrease the number
10. **Tens** digit ----- Increase/Decrease the number
11. **Ones** digit ----- Increase/Decrease the number
12. Lights indicating Start/Stop of filling action
13. F1 – Record the test no. & change to Manual mode
14. F2 – Reset "**Sum**" in LCD

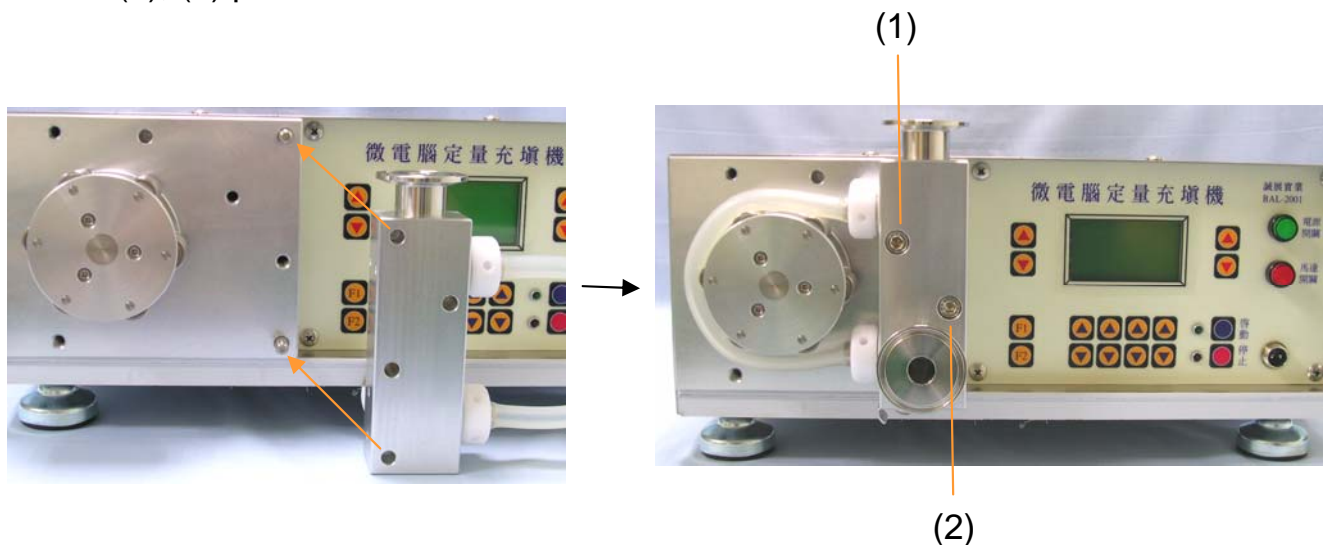
## G. Assembling Procedure

*Please note : Assemble the machine only in "power off" condition*

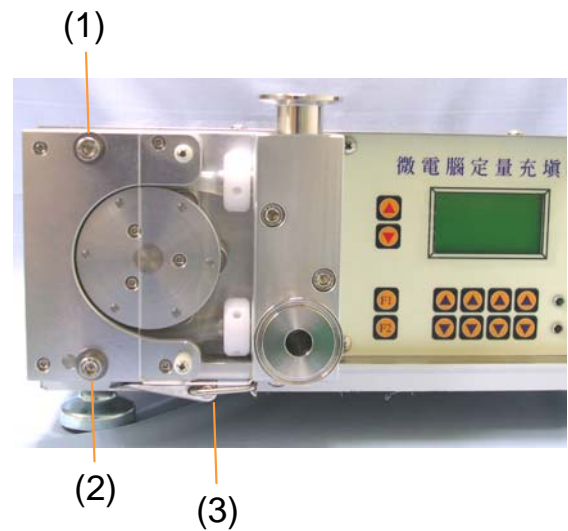
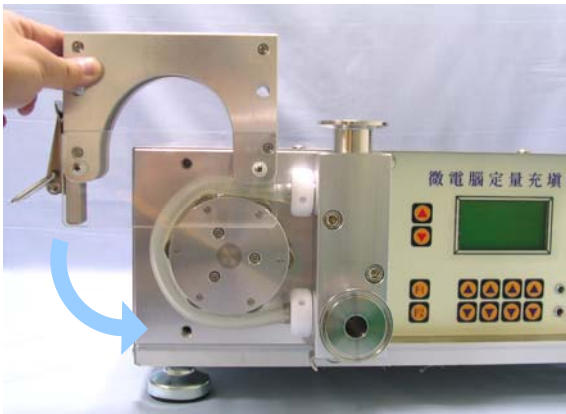
1. Place the Drop-out Pads and Transmission Tube Nuts onto Transmission Fixture, then insert one Transmission Tube. Turn Transmission Tube Nuts on both sides tightly until the Transmission Tube perfectly adheres to Transmission Fixture.



2. Set Transmission Fixture onto the machine with bolt in its proper position according to the angle shown below. Lock it securely by using the 8mm Screw (1), (2) provided.

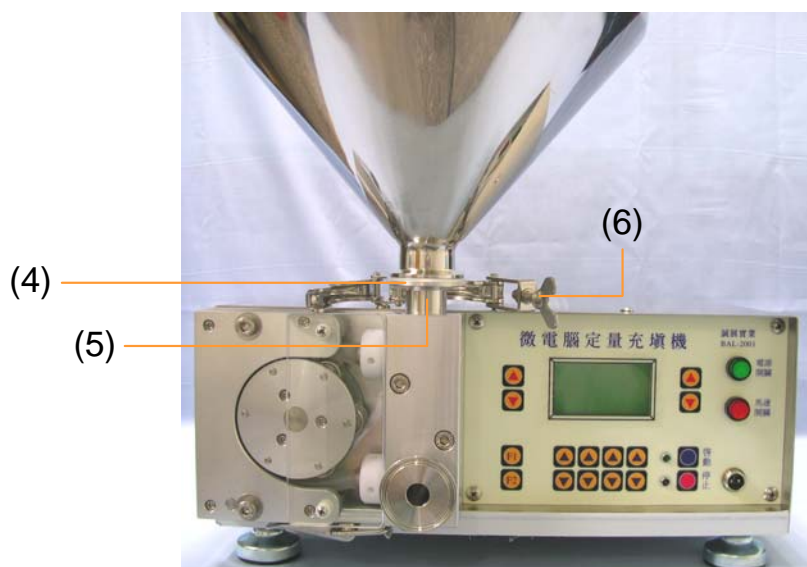


3. Connect Transmission Tube Cover as shown below, then rotate it counterclockwise and insert its bolt accordingly.  
Fasten the "Ring" underneath (3), then tighten screws (1) and (2).



4. Alternatives on the Input Gate - to suck material from:  
(a) the Hopper, (b) the Intake Hose.

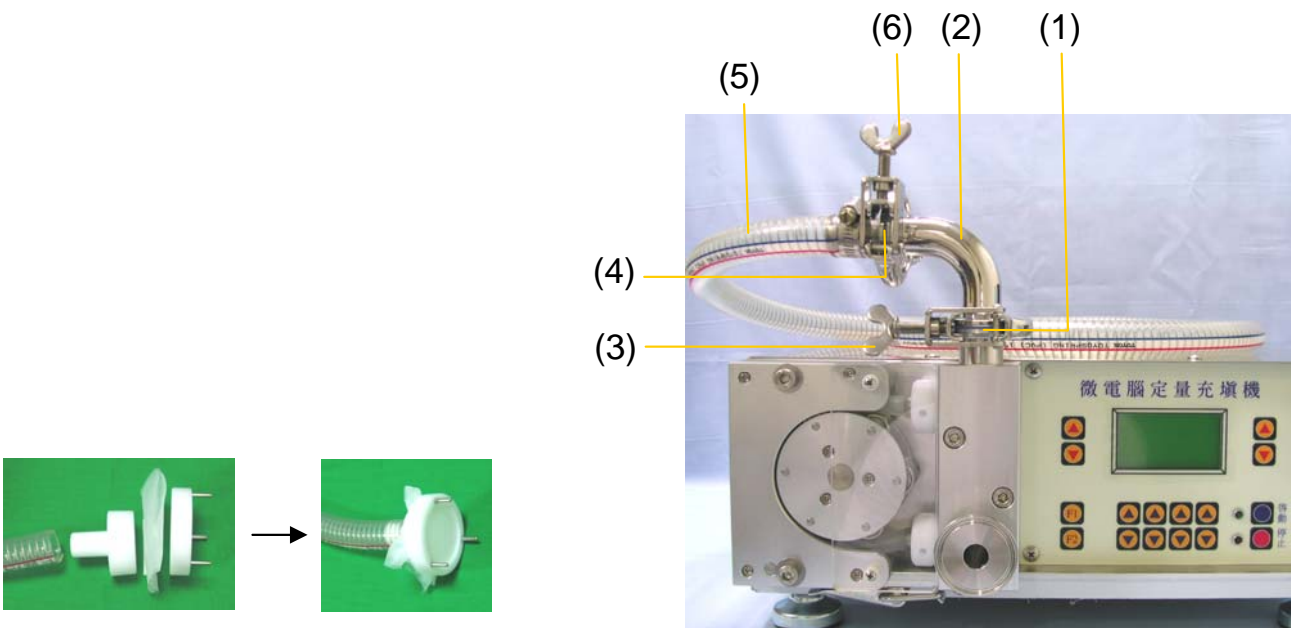
**(a) The Hopper:** Place Clipped Rubber Gasket (4) and Hopper on Input Gates shown below (5), then lock them together with the Clamper provided (6).  
Using the Hopper Cover will definitely help keep the material clean.



**(b) Intake Hose:** (Please also refer to instructions on page 21)

Connect the first Clipped Rubber Gasket (1) and the 90 degree Stainless Steel Joint (2) with Input Gate, and lock them by using a Clamper (3). Add the second Clipped Rubber Gasket (4) and the Intake Hose (5) onto the open side of the Stainless Steel Joint, and fasten them with another Clamper (6).

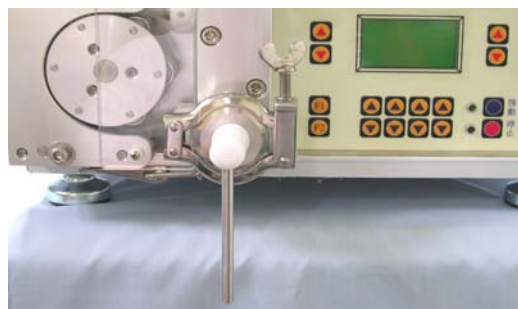
Please refer to below pictures for how to properly set up the filter cloth.



5. Alternatives on the Output Gate – to extrude material through (a) Extruding Pipes (3 different sizes provided), or (b) Hand-held Extruding Pipe Set (filling via (b) is recommended to fill liquid type material only as the actual output volume may be intervened by the weight and viscosity of viscid type material).

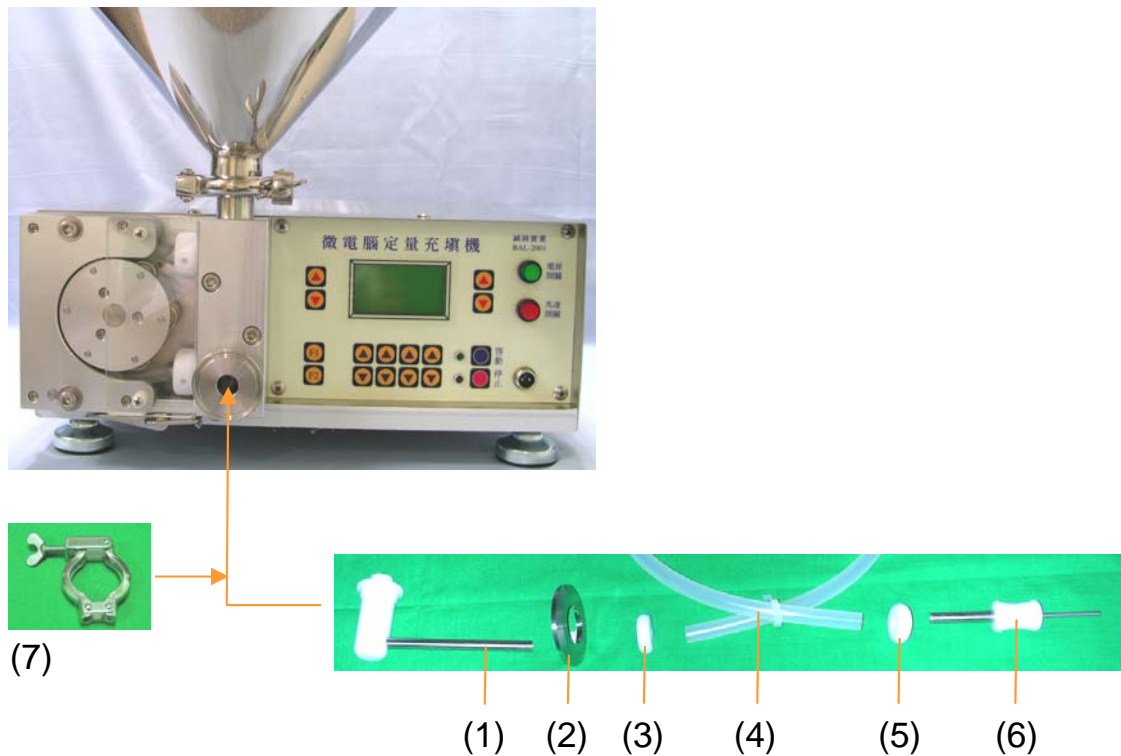
**(a) Extruding Pipes:**

Put a Clipped Rubber Gasket between the Extruding Pipe (3 different sizes provided) and the Output Gate. Use a Clamper to fasten them.



**(b) Hand-Held Extruding Pipes Set:** (Please also refer to instruction on page page 21 item #4 and page 24)

Please follow the steps shown on below diagram. Connect the Extruding Pipe (1), Pipe Buckle Washer (2), Drop-out Pad (3), Hand-Held Extension Tube(4), the other Drop-out Pad (5), Hand-held Extruding Pipe (6) accordingly, and use a Clamper (7) to fasten the Extruding Pipe (1) and Output Gate.



6. Review once more to ensure aforementioned assembling procedures are followed properly.

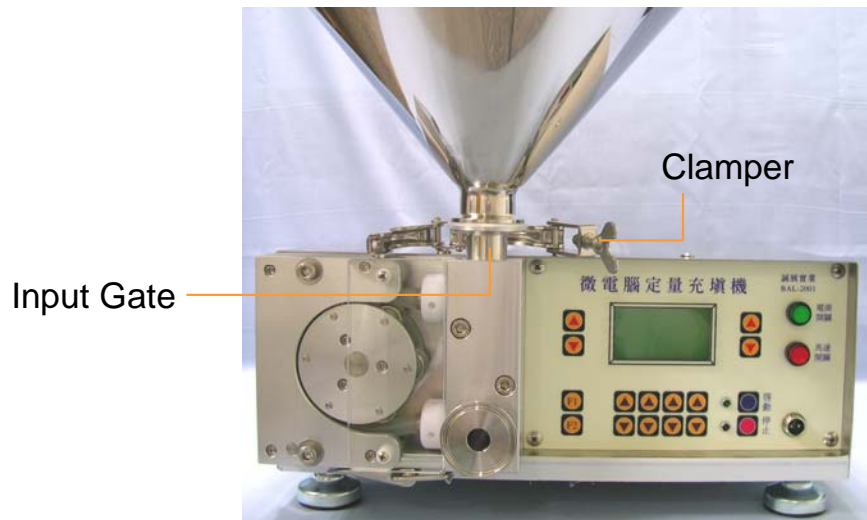


Assembling procedures completed.

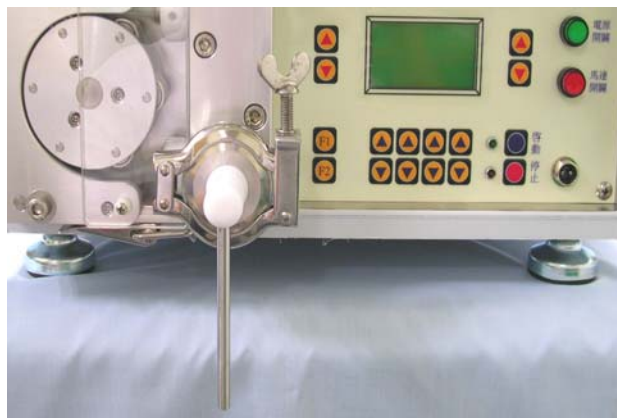
## H. Disassembling Procedures

**Note: Disassembling procedure can only be performed while machine is shut off**

1. Make sure there's no material left in the Hopper or the Intake Hose.  
Loosen the Clamper locking the Input Gate with Hopper or the Stainless Steel Joint connected with Intake Pipe.

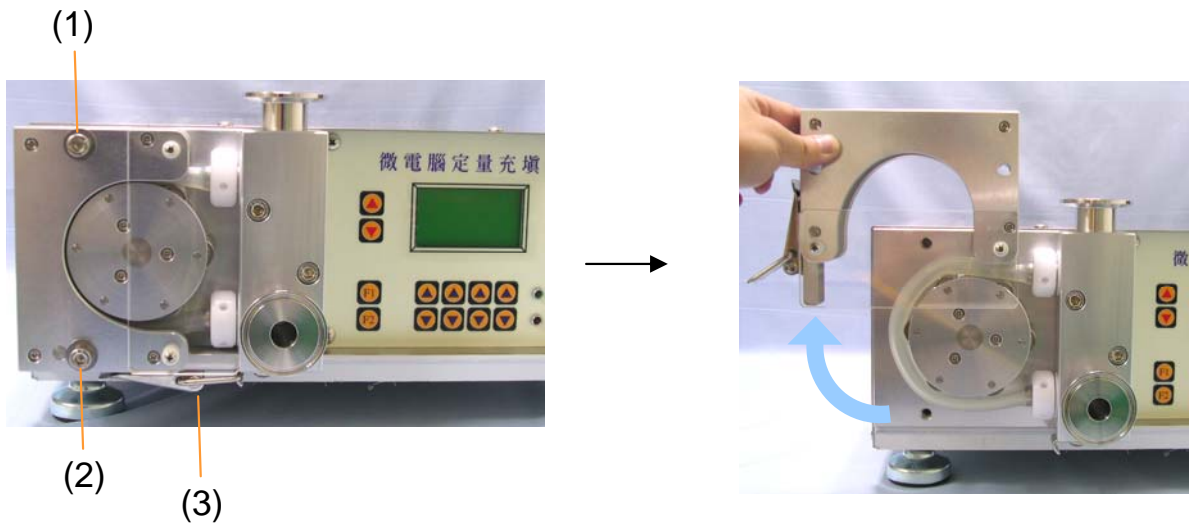


2. Loosen the Clamper to separate the Output Gate and Extruding Pipe.

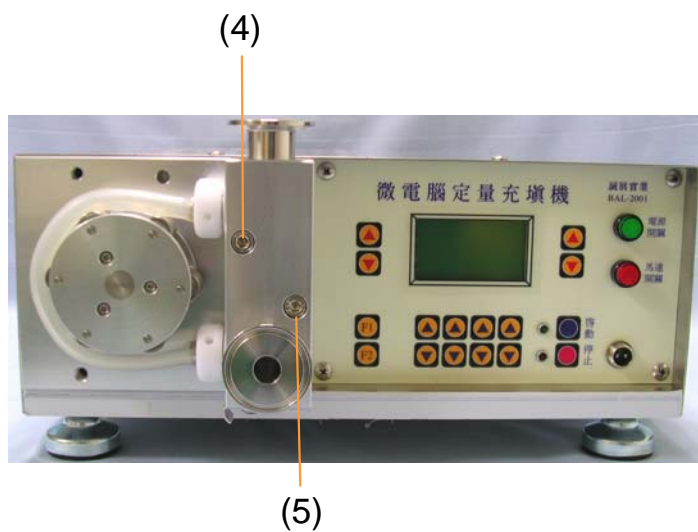




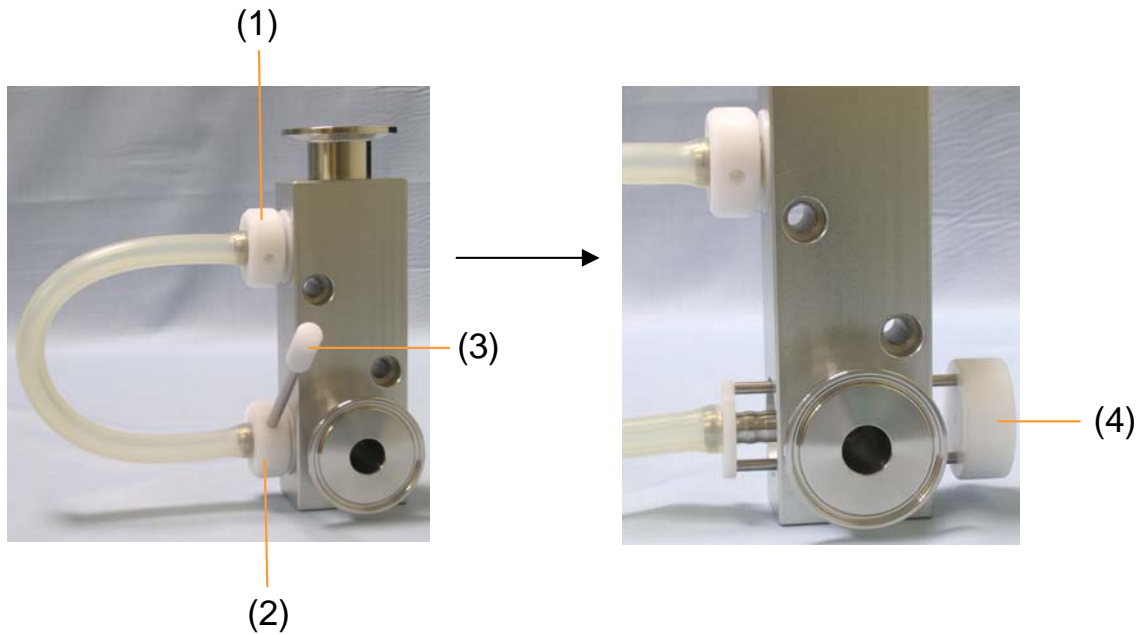
3. Loosen the screws (1), (2) on the Transmission Tube Cover, the binding Ring (3), and rotate the Transmission Tube Cover for ~90° clockwise to allow removing it from machine.



4. Loosen the screws (4), (5) on the Transmission Fixture and remove it from machine.



5. Loosen the Transmission Tube Nuts (1), (2) with Nut Fixing Tool (3).  
Use the Drop Out Tool (4) to push it out (disconnect) from the Transmission Fixture.



Disassembling procedures completed.

# I. Operation Procedures

**\*Remember to always turn the Motor “off” when you’re away from the machine**

1. Double check if all parts are properly assembled according to Assembling Procedures.
2. Carefully pour intended material into the Hopper. If extension Intake Hose is used, make sure the material is positioned in a level that allows smooth suction/flow performed by machine’s Serve Motor. (Note 1)
3. Turn the Power On.
4. Adjust Filling Parameters & Function Mode. (Please see “J. Setting Up Filling Parameters” on page 18, 19, 20.)
5. Turn the Motor on.
6. Properly place vessel under Extruding Pipe.
7. Press the “Start” button and intended material will be metered and filled into the vessel.
8. Repeat step 6 & 7 for next filling.

## **Note:**

1. Under normal condition according to general industrial practice, machine’s Serve Motor is powerful enough to suck liquid and viscid materials from containers other than attached Hopper. However, factors such as weight, texture, and evaporation speed of the materials all play important roles deciding whether the suction can be performed by this machine. Please send us sample material(s) for free testing. Before your purchase decision is made, we’ll provide confirmation that this machine is able to perform expected filling functions. Such confirmation is necessary to obtain the Warranty set forth in this User’s Manual.

## J. Setting Up Filling Parameters & Function Mode in LCD

### Please note:

- a) All the figures set for the parameters LCD are to be used as “indicators” to achieve desired precision.
  - b) With built-in time-delayed protection, machine will “restart” 7 seconds after being shut down.
  - c) We purposely design this machine to begin operating only after the action initiating button being “released” since all buttons on this Machine are “action sensitive”. In another words, you will see (I) any “number changes” made on the parameters or “cursor’s movement” between functional choices (e.g. Test, Auto, Manual, & Sum) in LCD; (ii) actions initiated by the “Start” button, will take place only after the change-initiating or action-initiating button being released. All functional buttons, except the “Stop”, as well as the Pedal Switch are subject to this design in order to achieve maximum precision.
1. **Speed (00 ~19):** “00” gives minimum speed at 3ml per second, and “19” gets maximum 60 ml per second. In between, the output quantity increases 3ml while the number goes up by “1”. When speed is high, the extrusion of material may cause splash, heavy drops, bubbles, etc. according to its nature. Before the formal filling begins, please try out various speed levels until best outcome is achieved.
  2. **Interval (0~9):** This represents a short period of time given to allow flexible movement (such as changing or replacing vessels) during continual (**Auto mode only**) operation. Number “0” gives minimum interval at 0.5 second. As the number goes up by 1, interval increases by 0.5 second. This machine gives maximum interval 4.5 seconds between fillings.
  3. **Suck Back (00~99):** This design aims at preventing unnecessary dripping to ensure precise volume filled, and helping keep the workplace clean. “00” is good for “**liquid**” type material as such is light enough not to let gravity pull any drops down. The number should go up while the weight and viscosity of material increase. Before actual operation starts, please try setting the number from lower level then increase until there’s no dripping after each fill.

#### 4. Volume (filling quantity)(0000 ~ 9999):

(1) Move the function mode to “Test”. After finishing the parameter record, start the quantitative filling job. Please refer the later paragraph (6. Test).

(2) Machine’s built-in computer program takes “8” as the factor to convert the desired actual output volume (in ml) into a figure capable of telling machine to act based on minute difference. Actual output can be achieved by using below equation:

**“Actual Output Volume (in ml) x 8 = The Number to be Set Here”**

For example, in order to get 5ml cream extruded from the machine, use the equation  $5 \times 8 = 40$ , you may set the Number at 0040 ( $5 \times 8 = 40$ ) or do some adjustment by your need. The output quantity increases 0.1~0.12ml while the number goes up by “1”, it depends on the material quality.

**5. Sum:** This number gives an idea of how many times the extrusion of material have been performed by the machine so far according to your set up. To reset the number back to zero, press F2 key on Control Panel.

We’ve added a small safety feature here: The machine will not operate while the cursor (on the right hand side of LCD) is pointing the “Sum”.

**6. Test:** Operating under this function mode provides a free zone to locate the best Volume setting for intended jars/bottles. Move the cursor pointing at “Test” in LCD, set approximate levels for “Speed” and “Suck Back”, **leave Volume at “0000”** (Note: Under “Manu” & “Auto” mode, machine will not operate when Volume is left at “0000”), you can start extruding material into a jar/bottle (let’s say it’s a 100ml jar) by pressing the “Start” button or “Pedal Switch”. When you see the jar/bottle is filled at “the level” you want, just release the button or Pedal to stop. Take a look at the Volume parameter in LCD, it must show a number (e.g. 0765) that represents “the level” you’ve filled the material into the jar/bottle.

Then, press F1 key on the Control Panel to record this number for next filling by Auto or Manu. and you’ll see the functional cursor is automatically moved to point at “Manu” mode while the settings (Volume / Speed / Suck Back) under Test mode stay unchanged (e.g. Volume showing 0765 in this case). At this time, you may choose to stay at this Manu mode to fill jars/bottles one at a time, or further move the functional cursor to pointing at “Auto” and start a continual operation.

**7. Manu:** Selecting this function mode gives a **one-time filling action** every time when you i) press the Start key on the Control Panel or ii) tap the Pedal Switch. Please use this mode to handle small quantity of filling, or to settle practice before a large number of automatic fillings (Auto mode) starts. (Note: Under “Manu” mode certain numbers must be set for “Speed”, “Suck Back”, & “Volume” to make machine operate.)

**8. Auto:** Selecting this function will enable machine to **automatically repeat** filling action according to previously set parameters of Speed, Interval, Volume, and Suck Back. Press Start (Stop) key on the Control Panel to begin (end) the automatic operation.

After turned off and restart, the filling machine will memorize all parameters (except the MODE, which will be in Manual) in last operation. You can use these setting to continue filling task or reset any parameters.

Since the machine memorizes only one latest setting, please still keep necessary records in your log or note book.

## K. Important Tips for Effective Operation

1. Carefully clean all parts that have direct contact with transmitted material, such as the Hopper & its cover, Clipped Rubber Gasket, Transmission Fixture, Transmission Tube, Extruding Pipe, Hand-held Extension Tube & Hand-held Extruding Pipe, Pipe Buckle Washer, Stainless Steel Joint, Intake Hose (while sucking material from the container other than the Hopper), and Filter Fixture. **According to our records, an experienced staff may need only 10 ~ 15 minutes effort to clean all above-mentioned items.** We've prepared three special-sized and easy-to-handle brushes in the package for you. Suggest using the largest brush for the Transmission Fixture, the medium for the Transmission Tube, and the small for the Extruding Pipe.
2. Always thoroughly clean the Transmission Tube right after it's been used for a set cycle of operation and machine is shut down to rest. Let it be completely dry before using it again. Avoid letting it sit under direct sunlight as the sunray may weaken its strength. Under proper care, a Transmission Tube can last up to 20 ~ 30 days based on a continual 8-hours usage per day. We've included plenty in the package for you to use interchangeably.
3. Above-mentioned parts that need to be cleaned after use are generally dishwasher safe. Hot water with temperature up to 100-degree Centigrade is generally ok to wash them.
4. The Hand-held Extruding Pipe set is designed to help ease the workload of filling very **small bottles** or **bottles with small openings**; especially for the **liquid type material**. For example, there are 5 rows of 3ml-bottles with 10 bottles on each row that are firmly positioned on a working table and ready to be filled with skin toner. We can use the Hand-held Extruding Pipe set to manually fill them within a surprisingly short period of time. **However, if the material intended to fill is thicker and heavier, adjustments of the settings on parameters in LCD are necessary to achieve desired result. Besides, whether or not the thin and long Hand-held Extension Tube can be thoroughly and easily cleaned after use is another question to be answered.**

5. This machine can handle material kept in the Hopper with temperature up to 90-degree Centigrade. The Transmission Fixture and Transmission Pipes have no problem to transmit the warm/hot material intended. **However, please be aware that there will be a change (the number of degrees are subject to surrounding environment and actual condition) in temperature the moment the material is extruded from the Extruding Pipe. There are some material types that their physical form will be changed within a very short period of time due to temperature change (for example, some wax based cosmetics products); this machine is definitely NOT made to handle them. Please contact us for custom made order that can handle such –for instance, a heating jacket, and an automatic stirring stick, etc. will be added into the features.**
  
6. Always try out setting different levels for the parameters and under “Test” mode in LCD a few times before formal and continual operation takes place.
  
7. Remember to record the numbers you’ve set for each parameter based on different materials, or for different size of jars. Keep all records in one place (e.g. one notebook) for future reference.



# L. Using Intake Hose & Filter Set

Note: The filter cloth is meant to filter LIQUID type material ONLY (not lotion or cream type viscid material)

- 1) Please refer to page 12 (b) for proper connection of Intake Hose.
- 2) Using the Filter Fixture & Filter Cloth:

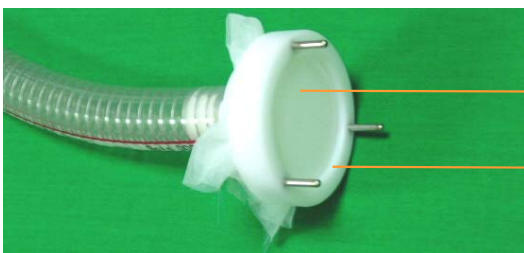
Cut a small piece of Filter Cloth and put in between the Filter Fixture as shown below. Put them together and connect them with the Intake Hose.



Filter cloth is applied on the other end of the intake Hose



Use filter fixture



filter

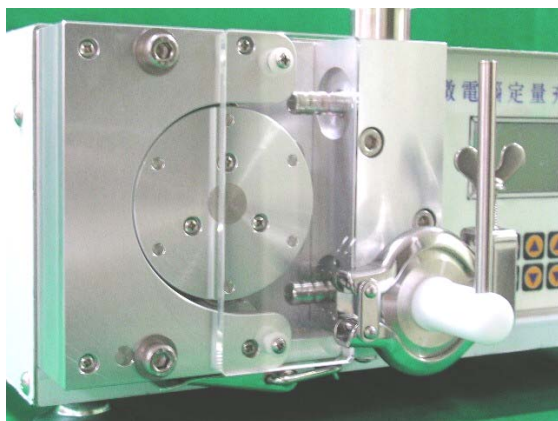
feet out

Note: We added three tiny feet on the bottom of the Filter Fixture. With the feet facing out, this feature helps ensure a clean and smooth suction when using Intake Hose to suck liquid material from a container other than the Hopper.

## M. Using Hand-held Extruding Pipe set

Please also refer to page 13 (b)

- 1) Please use the large size Extruding Pipe and turn the nozzle to be pointing upward



- 2) Insert one Drop-out Pad to the Extruding Pipe, connect the long Hand-held Extension Tube, add the other Drop-out Pad, and connect Hand-held Extruding Pipe (Accessories List No. 10 on Page 6) as shown below. The “Drop-out Pads” are very useful when you need to remove these parts from each other after the operation has been done.



## **N. Two (2) Years Limited Warranty - Worldwide**

**Filler Co.** warrants their standard products against defects in their operation and non-consumable materials under normal use for a period of Two (2) YEARS from the date of purchase by the original purchaser (“Warranty Period”). When a non-consumable hardware defect arises within the Warranty Period, a claim written in detail is to be received by Filler Co. within 30 days of the date the defect was discovered. At its option, Filler Co. will either (1) repair the hardware defect at no charge, using new or refurbished replacement parts, or (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product. This Limited Warranty does not apply to the damage caused by failure to either (1) follow instruction relating to the product’s use, or (2) handle, fill, transmit, wash, clamp, and/or manufacture the materials that are feasible and agreed upon through product testing beforehand and under general industrial acceptance.

Except as provided in this Warranty and to the extent permitted by law, Filler Co. shall not be liable for any direct, special, incidental, or consequential damages of any kind, including, but not limited to any expenses for removal or reinstallation resulting from a defect; loss of use; loss of revenue; loss of actual or anticipated profits (including loss of profits on contracts); loss of the use of money; loss of anticipated savings; loss of business; loss of opportunity; loss of goodwill; loss of reputation; loss of, damage to or corruption of material; or any indirect or consequential loss or damage howsoever caused including the replacement of equipment and property, any costs of recovering, programming, or reproducing any material stored, filled, transmitted, handled, washed, clamped or used with Filler Co.’s products.

### **In practical terms:**

- 1) We warrant this machine with quality of performing steady operation in normal use (based on existing industrial standard) according to its design, for two years counting from the date of purchase. .**
- 2) Parts that are considered consumables (such as Filling Pipe, Hand-held extension Pipe, Intake Pipe, etc.) are not covered under this warranty.**
- 3) Parts & labor will be charged additional if the breakdown of machine is due to following:**
  - Unauthorized disassembling of the machine.**
  - Unauthorized operation based on instructions NOT included in User’s Manual.**
  - Inappropriate power supply voltage applied.**
  - Damage from rats, insects, poor working condition, and natural disasters.**
  - Accident caused by failure in following instructions on assembling, disassembling, and cleaning procedures. (for example, sinking/soaking machine into water)**

## \* Proof of Purchase \*

Owner's Name		
Address		
Article		
Purchase Date		
Manufacturer	Filler Co., Ltd.	Company Seal
Model	BAL-2001	
TEL	+886-2-2593-1616	
FAX	+886-2-25864587	

1. We warrant the quality of this machine, in normal use, for two years from the date of purchase. Consumables are not under warranty.
2. Under warranty, partial material costs and service charges are necessary to repair the breakdown owing to :
  - a. Irregular use against the User's Manual
  - b. Unauthorized disassembling
  - c. Inappropriate power supply voltage applied
  - d. Private modification
  - e. Disasters, rats and insects
  - f. Personal factors (sinking / soaking into water) to cause severe damage

# O. Maintenance Record Sheet

Date	Maintenance Item	Signature