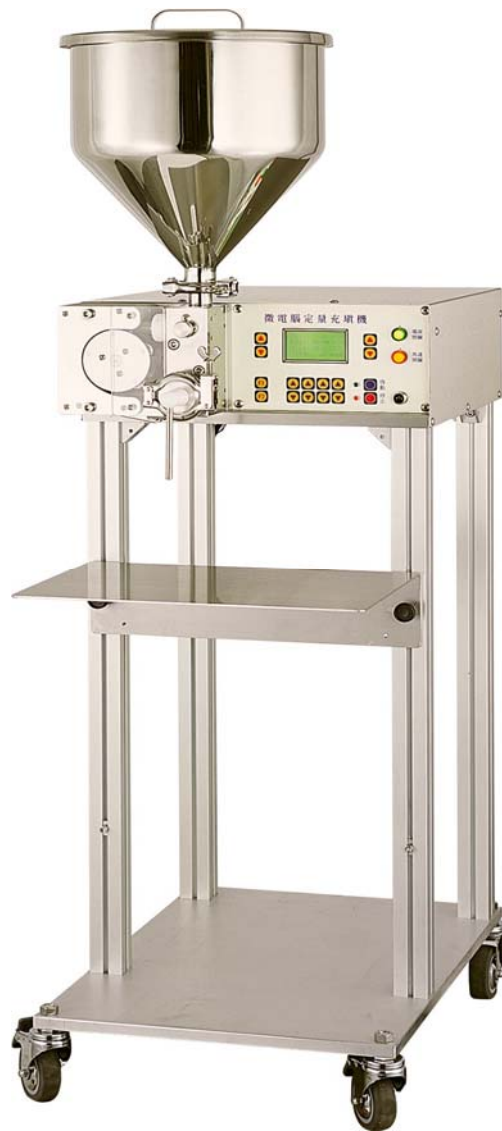


Computerized Quantitative Filling Machine

Specification & User's Manual (BAL-2003 2.0E version)



Filler Company Limited

TEL: +886-2-2593-1616

FAX: +886-2-2586-4587

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

E-mail: filler@filler.com.tw

Content

Specification / Technical Capability	01
Diagrammatic Structure	03
List of Accessories	04
Warnings and Emergency Measures	07
Control Panel Introduction	08
Assembling Procedure	09
Disassembling Procedures	13
Operation Procedures	16
Setting Up Filling Parameters and Function Mode ...	17
Important Tips for Effective Operation	21
Using Intake Hose & Filter Set	23
Maintenance Record Sheet	24
Warranty and Proof of Purchase	25

Specification / Technical Capability



Specification:

Dimensions : L x W x H: 60 x 42 x 104cm
(Including Cart)

Weight of main machine : 58 kg

Voltage : single-phase 220V 50/60Hz (Note 1)

Technical Capabilities:

- Interlocking double pump is designed for enhancing the filling capability and reducing the impulse.
- Filling capacity ranges from 0.4 ml up to 4000 ml per fill.
- Capable of handling liquid and viscid materials with viscosity from 0 up to 100,000 cp. (Note 2)
- Filling speed ranges from 10 ml up to 200 ml per second.
- Materials are metered precisely by computerized control system, digitalized setting of parameters, LCD display, and AC servo-motor. (Note 3)
- Patent non-piston filling operation (peristaltic pump) ensures zero percent material transformation during process.
- Able to transmit materials of liquid or 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.

- Connecting with peripheral device completely achieves automatic process and labor saving.
- “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.

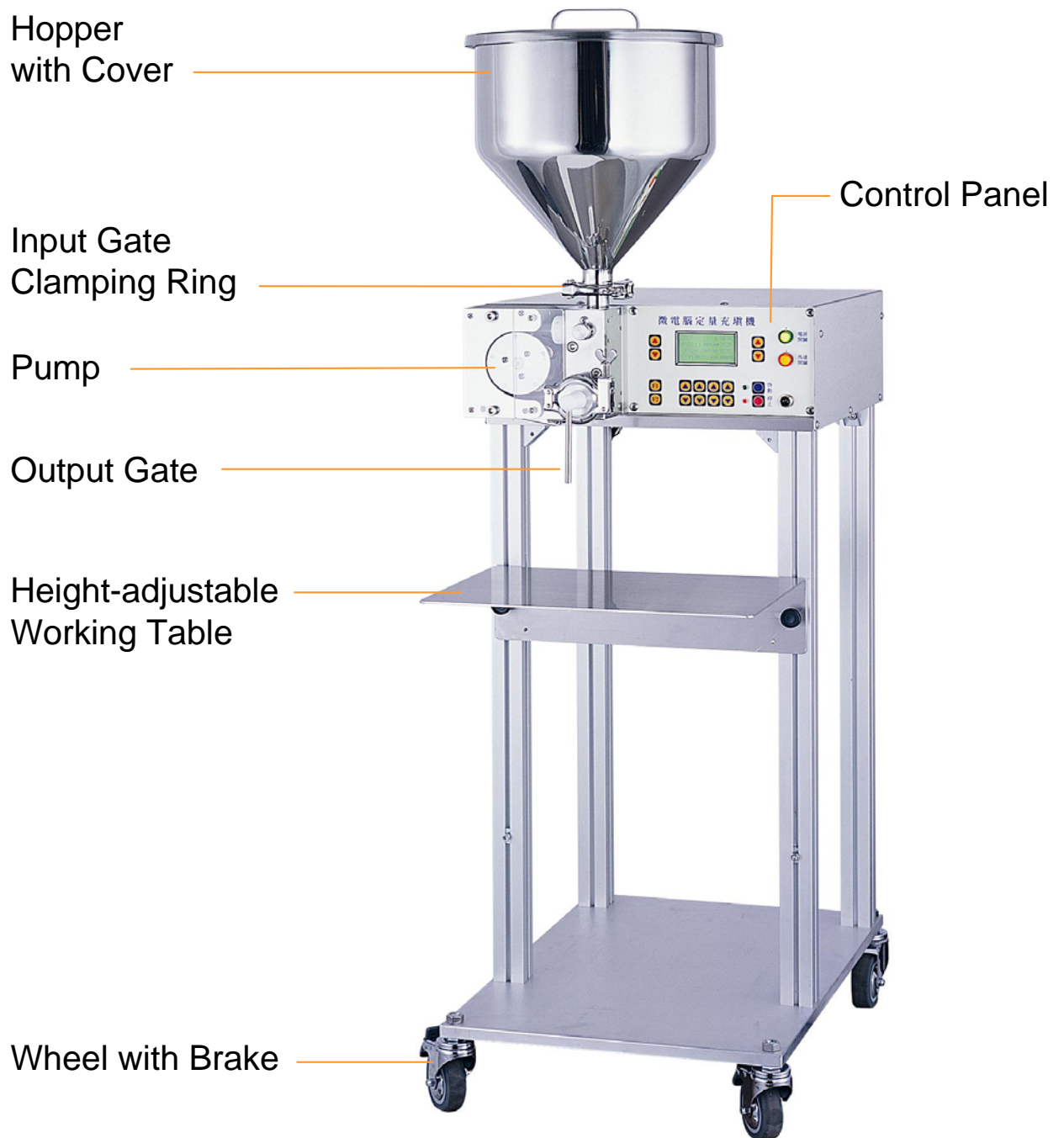
Note 1: Single phase 220V (+/- 10% acceptable) is required to operate this machine. Operating on low volt wire may cause great danger such as short circuit or fire.

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: The error range is only 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.




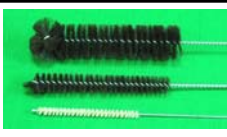



Diagrammatic Structure



List of Accessories

Item	Illustration	Name	Code	Quantity	Description	Remarks
1		Hopper with Cover	FM-H50	1 Unit	50 Liter	
2		Clipped Rubber Gasket	FM-L03	5 Pieces	Inner Diameter: 1 inch	
3		Clamper	FM-L01	3 Sets	Stainless Steel	
4		Transmission Fixture	CBF-01	1 Set		
5		Drop-out Pad	CBF-05	2 Pieces		
6		Drop-out Tool	CBF-06	1 Piece		
7		Transmission Tube Nut	CBF-07	4 Units		
8		Nut Fixing Tool	CF-50	1 Piece		

Item	Illustration	Name	Code	Quantity	Description	Remarks
9		Transmission Tube Cover	CBF-10	1 Set		
10		Input gate plug	CBF-09	1 Set		
11		Extruding Pipe	CF-51	3 Pieces	Large 9.5mm Medium 7mm Small 5mm	
12		Pipe Buckle Washer	CF-26	1 Piece		
13		90° Stainless Steel Joint	FM-L02	1 Piece		
14		Stainless Steel Joint	FM-L06	1 Piece	Dia. 3/4" Attached on Intake-hose already	
15		Intake Hose	FM-T04	5-Feet	Dia. 3/4" (Vacuum Pipe)	
16		Transmission Tube	CBF-08	60 Pieces	26.5cm in length	
17		O-Ring (12x1.5)		10 Pieces	Spare	

Item	Illustration	Name	Code	Quantity	Description	Remarks
18		Hexagon Wrench	FM-A01	1 Piece	6-mm	
19		Pedal Switch	CF-38	1 Set		
20		Tool Box	FM-X01	1 Box		
21		Cleaning Tools	FM-C01	1 Set	Brushes (3 pieces)	
22		Filter Cloth	CF-46	1 Set		
23		Filter Fixture	CF-45	1 Set		
24		Hand-Held Extruding Pipe Set	CBF-15	1 Set		1.5-Meter
26		User's Manual	FM-B2003	1 Copy		

Warnings & Emergency Measures

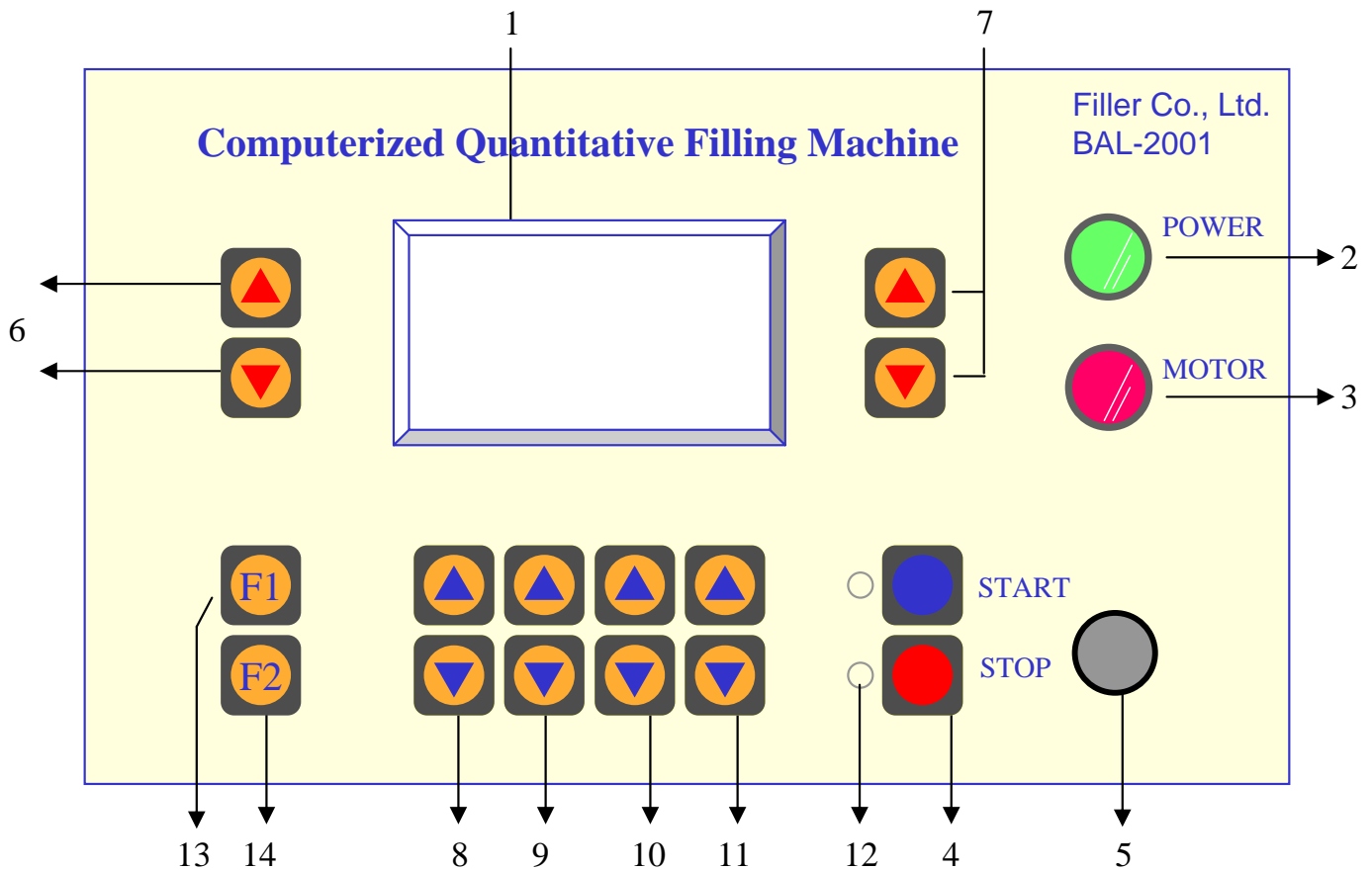
Warnings:

1. Use “single-phase 220V” electricity ONLY (+/-10% acceptable) since this machine is equipped with high precision of serve-motor and driver.
2. Please carefully read through instructions given in this User’s Manual before operating the 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.
7. Transmission tube (silicon tube) is a consumable material which may easily cause the elastic fatigue if in long time using. It’s good to change the tube every month (8 hours per day).
8. The filling temperature is limited to 90°C below. If the material should be filled with high temperature please contact us for custom made order.
9. The intake hose and hand-held extruding pipe set are suitable for the liquid filling. When the viscosity of material is high, we suggest using the hopper for intake and fixed-nozzle for output.

Emergency Measures:

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

Control Panel Introduction

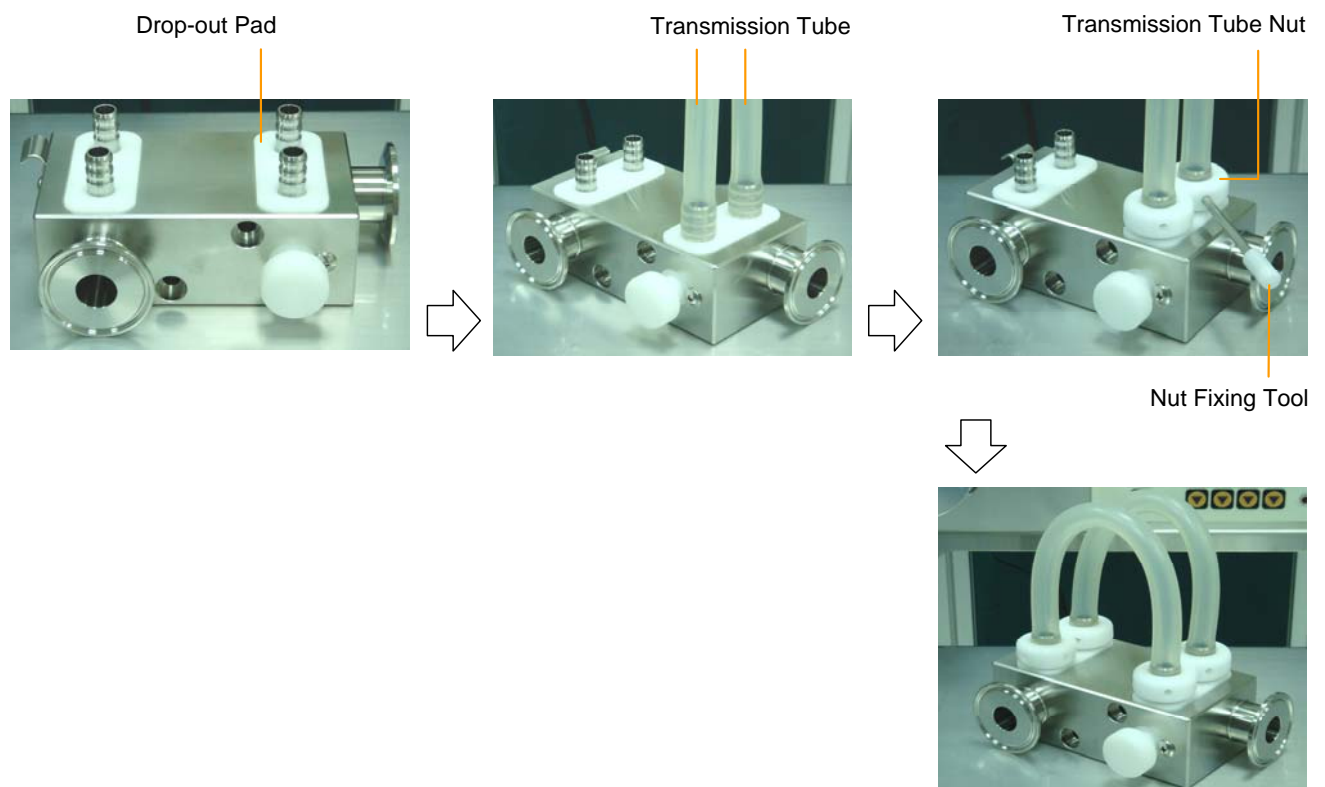


1. LCD shows **filling parameters and function mode** to be set
2. **Power** On /Off
3. **Motor** On /Off
4. **Start / Stop** to fill ("**Stop**" also for canceling the "Test" number)
5. Connector to "**Pedal Switch**"
6. **Up / Down** keys for the filling parameters on the Left in LCD
7. **Up / Down** 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

Assembling Procedure

Please note: Assemble the machine only in “Power-Off” condition

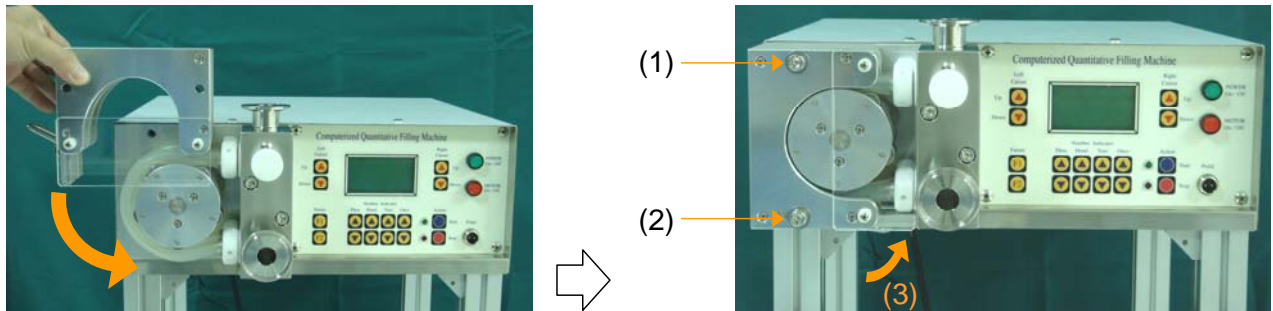
1. Place the Drop-outs Pad on the Transmission Fixture. Place Transmission Tube Nuts through the Tubes. Then put Transmission Tubes ends onto the Fixture. Use the Nut Fixing Tool to tighten the Nuts. Make sure the Tubes ends are tightly adhered on the Fixture.



2. Set the Fixture onto the machine with its bolts to keep in correct position. Then use wrench and screws (1,2) provided to tighten the Fixture.



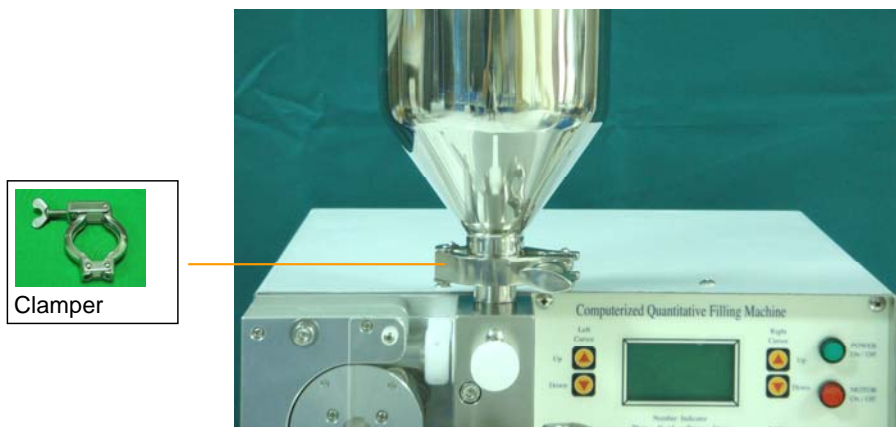
3. Connect Transmission Tube Cover as shown below with its bolt, and rotate it counterclockwise to hold the Tubes. Then fasten the Ring (3) below the Cover, and tighten screws (1,2).



4. Two alternative intakes are selectable: By Hopper or by Intake Hose.

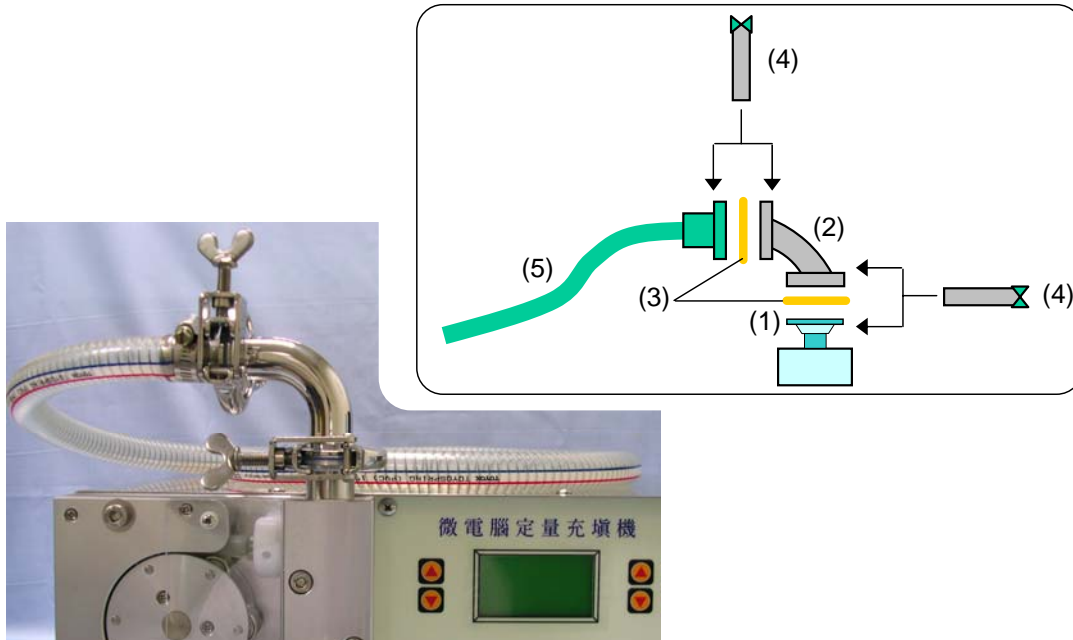
(a) By Hopper:

Place the Clipped Rubber Gasket and Hopper on the Input Gate shown below, Then lock them together with the Clamper.



(b) By Intake Hose:

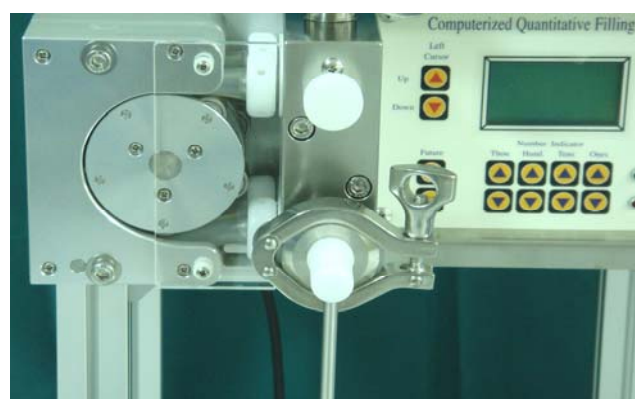
Use the 90° Stainless Joint (2) to connect the Intake Hose (5) and Input Gate (1) as shown below. Use the Clipped Rubber Gaskets (3) for each connections. Also use the Clampers (4) to fix the connections. Use the Intake Filter if applicable To the materials.



5. Two alternative output methods are selectable for filling task:

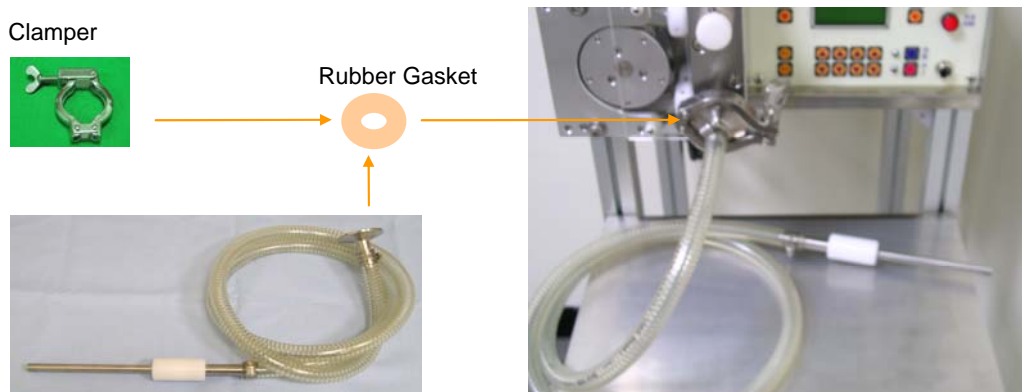
(a) By Extruding pipes (3 sizes provided):

Place a Clipped Rubber Gasket between the Output Gate and Extruding Pipe. Use the Clamper to fasten them.



(b) By Hand-Held Extruding Pipe Set:

Is recommended only for filling of liquid type materials, not ideal for viscid ones. Place a Clipped Rubber Gasket between the Output Gate and Hand-Held Extruding Pipe Set (already assembled). Use a Clamper to fasten them.



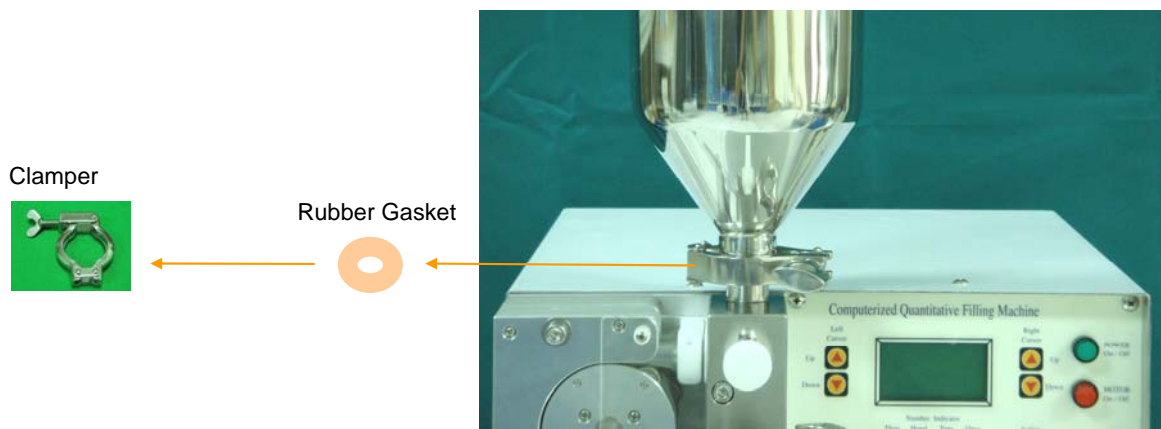
6. Check again for all assembly and connections to make sure that they are firm and proper.



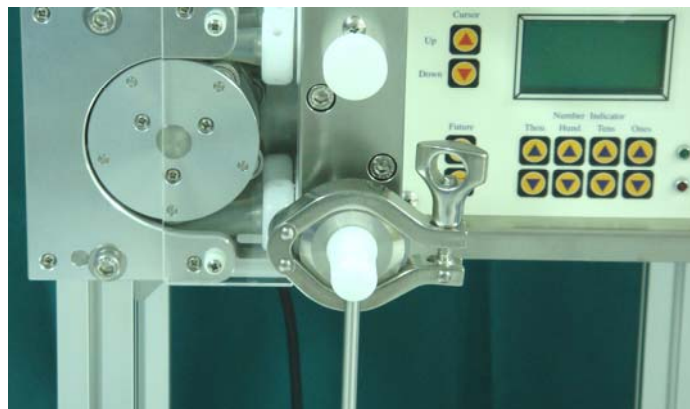
Disassembling Procedures

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

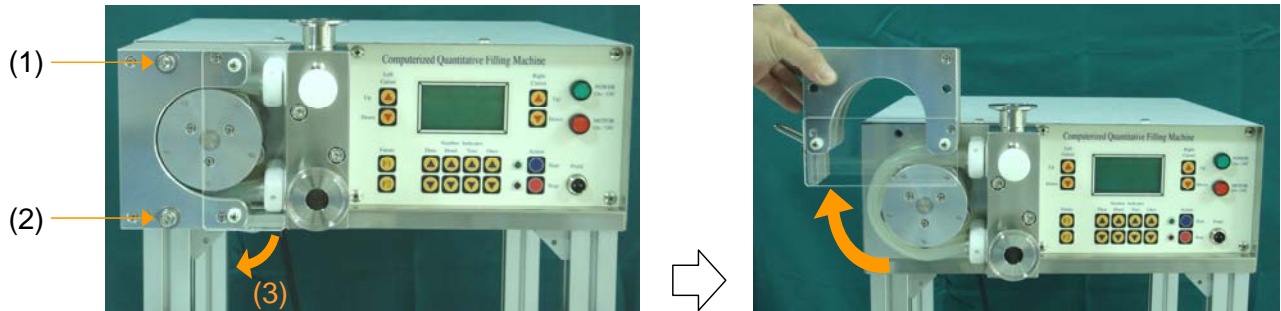
1. Make sure there's no material left in the Hopper or the Intake Hose. Otherwise, empty them by action under "Test mode".
Loosen the Clamper locking the Input Gate with Hopper or the Stainless Joint connected with Intake Pipe.



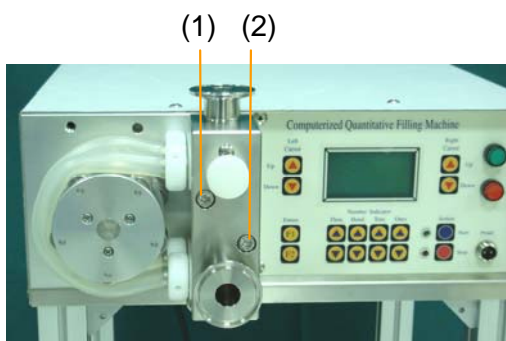
2. Loosen the Clamper that fastens the Output Gate and Extruding Pipe.



3. Loosen the screws (1,2) on the Transmission Tube Cover and relax Ring (3), and rotate the Transmission Tube Cover clockwise to allow removing it from pump tube and machine.



4. Loosen the screws(1,2) on the Transmission Fixture and remove it from machine.



5. Loosen the Transmission Tube Nuts with Nut Fixing Tool.

Then use the Drop Out Tool to push it out (disconnect) from the Transmission Fixture.



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 the 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 “Setting Up Filling Parameters” on page 17~20.)
5. Turn the Motor on.
6. Properly place vessel under Extruding Pipe. The height of work table on the Cart is adjustable.
7. Press the “Start” button and intended material will be metered and filled into the vessel.
8. Repeat step 6 and 7 for next filling.

Note:

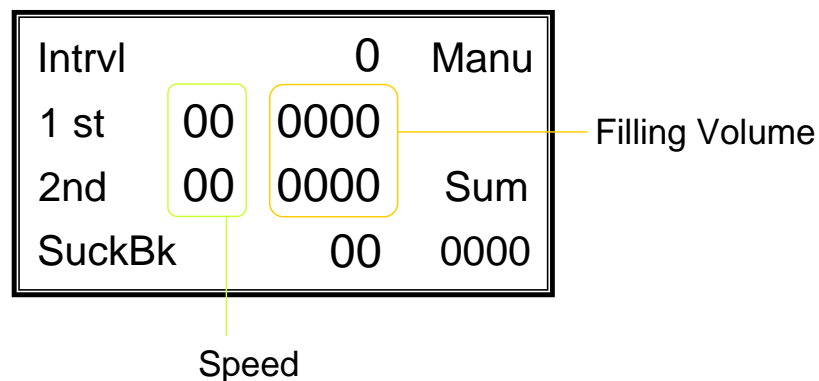
1. Under normal condition according to general industrial practice, machine’s Serve Motor is powerful enough to suck liquid and viscid materials from containers other than attached Hopper. However, factors such as weight, texture, and evaporation speed of the materials all play important roles deciding 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.

Setting Up Filling Parameters and Function Mode on 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 mechanism, machine will “*restart*” in 15 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”, “Test” as well as the *Pedal Switch* are subject to this design in order to achieve maximum precision.

LCD Monitor:



- 1. Speed (00 ~19):** “00” gives minimum speed at 10ml per second, and “19” gets maximum 200 ml per second. In between, the output quantity increases 10ml while the number goes up by each “1” unit. When speed is high, the liquid material may cause some bubbles and splashes. Therefore, we recommend you using the 2nd speed to avoid. The 2nd speed can be set slower than 1st one. For cream material, we suggest you slow down the 1st speed to let the container be brimmed the material completely.
- 2. Interval (0~9):** Under the Auto mode only, this parameter indicates the time interval between each fills when continual, automatic action. Number “0” gives minimum interval at 0.5 second. Each “1” unit represents 0.5 second, The maximum of time interval is 4.5 seconds. Operator please set proper time period for changing or replacing vessels.

3. Suck Back (00~99): This design helps to prevent unnecessary dripping to ensure precise volume filled, and keep the workplace clean.

“00” is good for “**liquid**” type material as such is light enough not to let gravity pull any drops down. When filling the **heavy and viscid** materials, please try setting the number from lower level then increase until there’s no dripping in end of each fills.

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

* Please note: the volume number is not equal to the ml. This number is only an arbitrary, reference unit.

Therefore, the calibration for your first bottle is recommended.

(1) Move the function mode to “Test”. Measure the desired volume, then memorize this number by F1. After finishing the parameter setting, start the filling task.

Details please refer to the later paragraph (6. Test).

We recommend this kind of calibration.

(2) Machine’s built-in computer program takes “**2.5**” as the factor to convert the desired actual output volume (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 (ml) x 2.5 = The Number to be Set Here”

For example, to obtain 20ml of cream extruded from the machine, use the equation $20 \times 2.5 = 50$, you may set the Number at 0050 and do some adjustment since the exact output may depends on both material properties and speed setting. The output quantity increases ~0.4ml while the number goes up by “1”, also depends on above factors.

(3) How to set up the 1st and 2nd Volume and Speed:

This function is designed for the deceleration when the filling process may cause some splashes and bubbles in high speed. First, calculate the number of volume (filling quantity) by method (1) or (2). Set this number to 2nd volume (that is: the total quantity is set to 2nd volume).

For example:

1st Volume: 800 with Speed 10; and 2nd Volume: 1000 with Speed 7.

Therefore, the machine will fill 800ml by speed 10 and then fill the residual 200ml by speed 7.

5. Sum: This number shows how many times the extrusion of material have been performed by the machine. Therefore, in actual working, it represents the bottles number already filled.

To re-zero, press F2 key.

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". In another words, machine only starts taking command (Start or Stop) while the cursor is clearly pointing at "Test", "Manu" or "Auto".

6. Test: This mode provide easy calibration for your first jar/ bottle.

Only the 2nd speed is set for speed adjustment in this "Test" function.

First, move the cursor pointing at "Test" in LCD, set approximate levels for "Speed" (2nd speed) and "Suck Back", **leave Volume at "0000"**. (Note: Under "Manu" and "Auto" mode, machine will not operate when Volume is left at "0000").

You can start extruding material into a jar/ bottle by pressing the "Start" button or Pedal Switch.

This action can be stopped and still continue until the jar/ bottle is filled at the level you desired. You can weight the filled bottle for precise quantity. The total volume filled will be shown on the LCD as well.

Then, press F1 key to memorize this number. Then the functional cursor is automatically moved to "Manu" mode. Now, the calibration is accomplished.

You may stay at this Manu mode to fill jars/bottles one at a time, or further move the functional cursor "Auto" and start a continual operation.

Under both modes, following jars/ bottles will be filled with exactly equal volume.

Please Note: When the Speed has been significantly changed during operation, the output Volume may be slightly shifted too. Re-calibration on volume may be therefore needed.

7. Manu: Selecting this function mode gives a **one-time filling action** every time when you either:

- (1) press the Start key on the Control Panel, or
- (2) 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” and “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 or 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.

Important Tips for Effective Operation

1. Carefully clean all parts that have direct contact with transmitted material, such as the Hopper and its cover, Clipped Rubber Gasket, Transmission Fixture, Transmission Tube, Extruding Pipe, Hand-held Extension Tube and Hand-held Extruding Pipe, Pipe Buckle Washer, Stainless Steel Joint, Intake Hose, and Filter Fixture. **Generally, an experienced staff may need only 10~15 minutes effort to clean all above-mentioned items.** We 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 one for the Transmission Tube, and the small one 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 also provided 60 pieces of spare tubes for your replacing.
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 acceptable for washing 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 3 ml-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 to be filled is thicker or heavier, adjustments of the settings on parameters in LCD are necessary to achieve a desired result. Besides, cleaning of the Hand-held Extension Tube may need some artful efforts.

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 or 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.

The Hopper with Heater and Temperature-adjustable Controller is available. please contact us.

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.
8. 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 memorize only one latest setting, please still keep necessary records as above (7).

Using Intake Hose and Filter Set

Note: The filter cloth is meant to filter LIQUID type material ONLY.

(not for lotion or cream type viscous material)

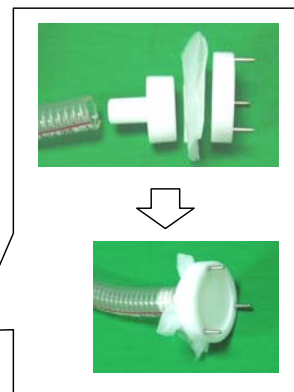
(1) Please refer to page 11 (b) for proper connection of Intake Hose.

(2) Using the Filter Fixture and 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.



Assembly of Intake Filter Set:



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.

Maintenance Record Sheet

Date	Maintenance Item	Signature

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.	Signature
Model	BAL-2003	
TEL		
FAX		

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