

EYELA

Peristaltic tube
pump

Instruction Manual

Model MP-2000**Model MP-2001****Model MP-2010****Model MP-2011****Model MP-2000A****Model MP-2000B****Model MP-2100****Model MP-2101****Model MP-2110****Model MP-2111****Model MP-2010A****Model MP-2010B****IMPORTANT**

This instruction manual is designed to use the product safely with keeping its best performance.

Be sure to read “Safety precautions” before use.

Please keep this manual in a place easily accessible to every users.

Important Safety Notices

1. Signal words

Using flammable or combustible solution with this product might cause a personal injury or an accident when the product is handled improperly. Due to its function and features, operation at a higher room temperature may result in compromised performance or a malfunction.

Most of such accidents can be prevented if such danger is known beforehand.

To ensure the safety, this manual defines the information on such matters as requiring particular care in the safety as follows in terms of the importance and risk and attaches the alert mark and signal word.

It is recommended to follow the instruction to ensure the safe use of the product.

Alert mark Signal word	Definition
 DANGER	Death or serious injury of the user is imminent when mishandled.
 Warning	Wrong handling is assumed to cause the possibility of the death or heavy injury of the user.
 Caution	Wrong handling is assumed to cause the risk of injury of the operator or physical damages.

We have undertaken thorough verification concerning the possible occurrence of risk in the course of use of the product, but prediction of all and every kind of risk is extremely difficult. Namely, cautions contained in this manual are not necessarily all of possible risks.

However, if the product is operated according to the procedure described in this manual, the safe operation and work is ensured. Be sure to pay utmost care during handling of the product to prevent accident or failure of the product.

2. Warning Display on the Product

For particularly important warning instructions, the warning label is provided to the product main body.

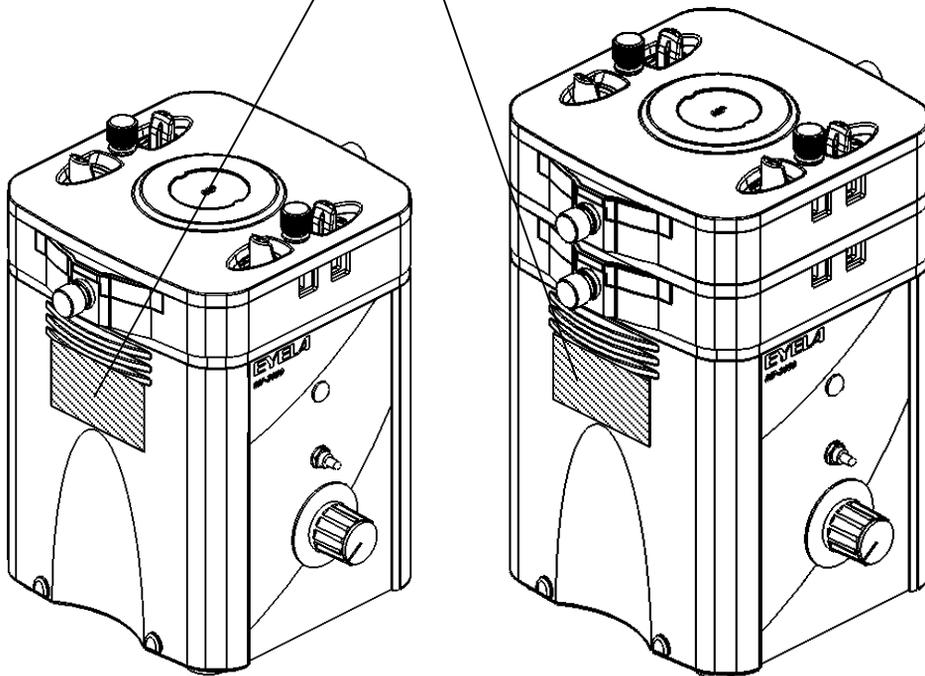
The labelling position is shown below.

When using the product, be sure to pay due attention to the description of the warning.

* If damaged and illegible, be sure to change the warning label to the new one.

Send the request for the new label to us.

● Peristaltic tube pump (Model MP-2000)



Thank you for purchasing our **EYELA** product.

Foreword

This instruction manual explains procedures for installation, operation, troubleshooting, maintenance, inspection and disposal of the products listed in the table.

Always read this manual before use to ensure familiarization of the product.

Peristaltic tube pump

- Model MP-2000
- Model MP-2001
- Model MP-2010
- Model MP-2011
- Model MP-2000A
- Model MP-2000B
- Model MP-2100
- Model MP-2101
- Model MP-2110
- Model MP-2111
- Model MP-2010A
- Model MP-2010B

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Details of packaged items

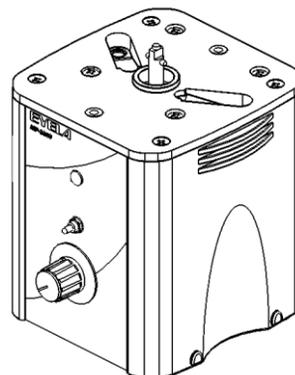
Be sure to check the type and quantity of parts before attempting to set them.

Product Box	MP-2000	MP-2001	MP-2010	MP-2011	MP-2000A	MP-2000B	MP-2010A	MP-2010B	MP-2100	MP-2101	MP-2110	MP-2111
No. 1	○	○			○	○			○	○		
No. 2			○	○			○	○			○	○
No. 3	○		○						○		○	
No. 4		○		○						○		○
No. 5					○		○					
No. 6						○		○				
No. 7									○		○	
No. 8										○		○

■ Package box No.1 Pump body (Gear ratio 15:1)

■ Package box No.2 Pump body (Gear ratio 300:1)

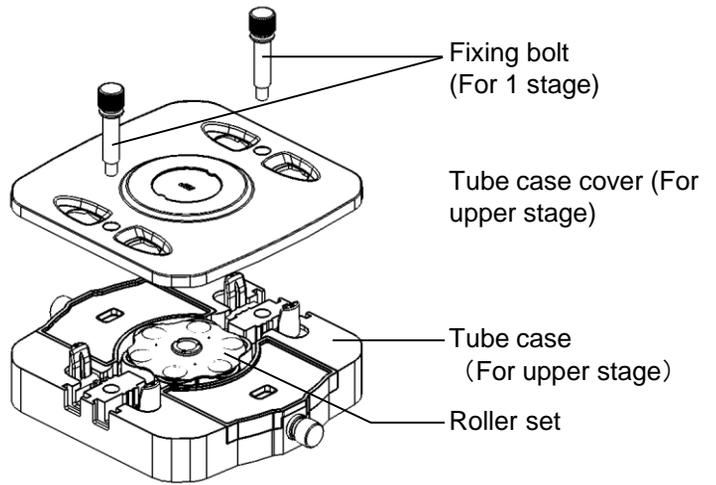
	Contents	Qty
1	Main unit	1
2	Instruction manual	1
3	Flow characteristics sheet	1
4	Warranty card	1



■ Package box No.3 Tube case set
TCS-0(Screw-adjustable)

■ Package box No.4 Tube case set
TCS-1(Spring type)

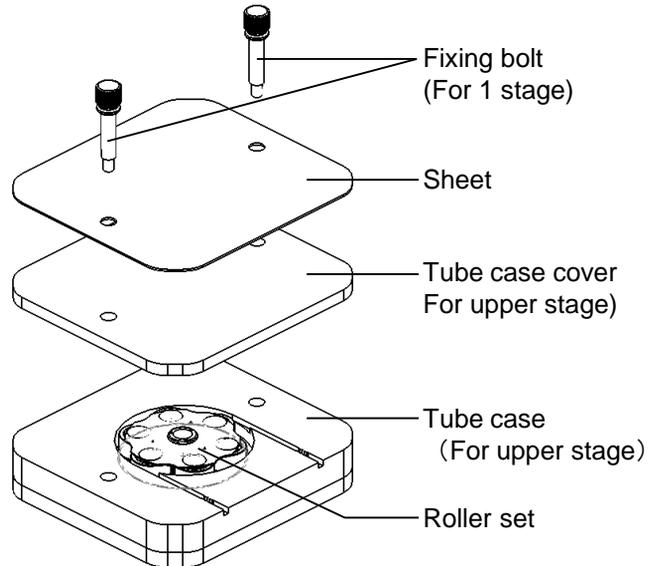
No.	Contents	Qty
1	Tube case (For upper stage)	1
2	Tube case cover (For upper stage)	1
3	Fixing bolt (For 1 stage)	2
4	Roller set	1



■ Package box No.5 Tube case set
TCS-A

■ Package box No.6 Tube case set
TCS-B

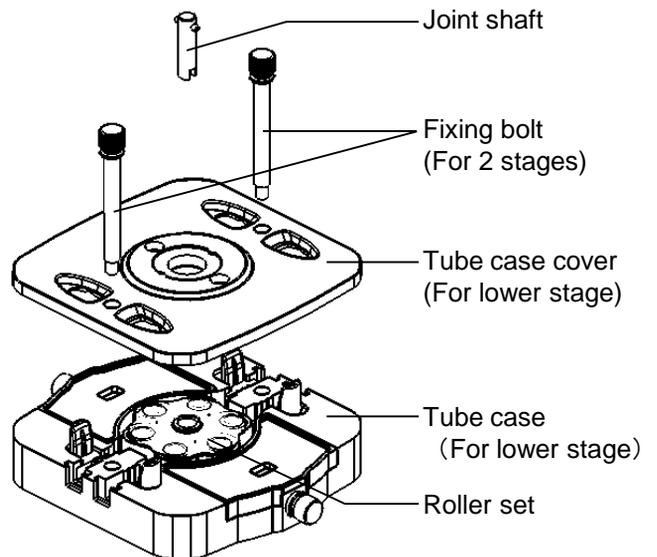
No.	Contents	Qty
1	Tube case (For upper stage)	1
2	Tube case cover (For upper stage)	1
3	Fixing bolt (For 1 stage)	2
4	Sheet	1
5	Roller set	1



■ Package box No.7
Tube case set for lower stage TCS-100(Screw-adjustable)

■ Package box No.8
Tube case set for lower stage TCS-101(Spring type)

No.	Contents	Qty
1	Tube case (For lower stage)	1
2	Tube case cover (For lower stage)	1
3	Fixing bolt (For 2 stages)	2
4	Joint shaft	1
5	Roller set	1



1 For safe operation

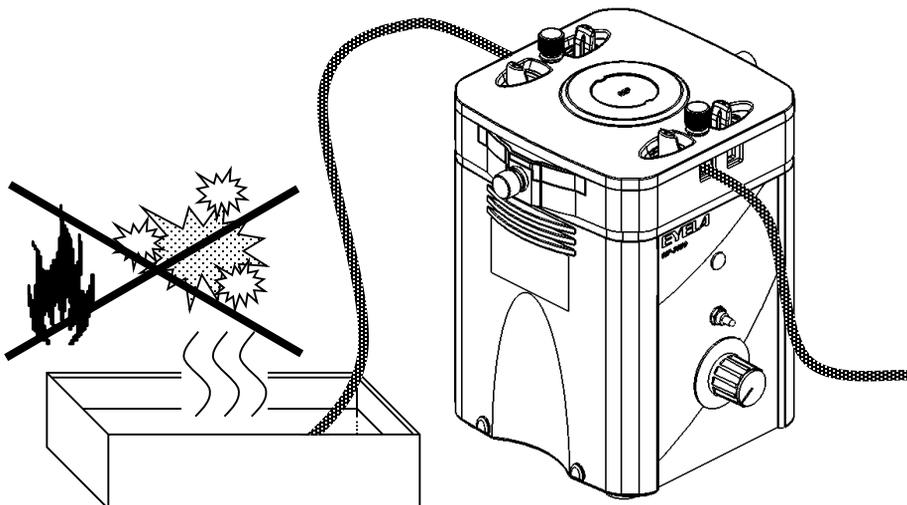
Be sure to handle the product properly and implement leak preventive measures based on the characteristics of the specific liquid to be sent.

Warning

Take extreme care when using flammable or combustible solution.

Flammable or combustible solution (methanol, etc) will, when it is left at a room temperature or higher temperature (or lower temperature for some solutions), ignite from some ignition source and combust.

Take extreme care when using such solutions.



Caution

Take care for leakage.

- Use one of our specified tubes.
Commercially available tubes may cause entanglement or cracking in a shorter time.
- Take care the viscosity of the solution in use will not exceed the value specified for the product.
- Set and replace tubes correctly following the specified procedures in this instruction manual.
- Take extreme care for deterioration or damages of the tube and replace with new one whenever necessary.
- If you should notice leakage, follow the procedures in "P.21 Cleaning and taking care of the product" to clean the leak.

2-1 Application



Warning

Never attempt to modify the product.
Operate the unit for the specified
purpose only.

An electric shock or a malfunction may result if
the product is modified or used for any purposes
other than that specified.

This product is a constant volume fluid supply
pump used to supply or collect a constant volume of
different solutions or solvents.

Depending on the use conditions you can replace or
add a tube case to support a broader flow ranges or
flow routes.

2-2 Specifications

Product name		Constant volume fluid supply pump (Peristaltic tube pump)			
Model		MP-2000	MP-2001	MP-2010	MP-2011
Tube holding system		Screw-adjustable	Spring type	Screw-adjustable	Spring type
Performance	Flow range	10~1450 mL/h × 2		0.5~72.5 mL/h × 2	
	Flow precision	±2% (Repetition precision: within ±1%)			
	Max. discharge pressure	196kPa(2kg/cm ²)	98kPa(1kg/cm ²)	196kPa(2kg/cm ²)	98kPa(1kg/cm ²)
	Max. suction pressure	9.8kPa(0.1kg/cm ²)			
	Viscosity and temperature of solution	Max.2Pa · s (2000cP) 0~60 °C (Non-freezing)			
Function	Rotation setting	Volume setting			
	Fluid supply direction	Normal/Reverse selectable			
Configuration	Motor	AC speed control & induction motor output: 15W			
	Driving circuit	Speed feedback control			
	Tube case	PET resin			
	Safety function	Thermal protector and fuse			
Standards	Number of tubes to hook	2 tubes			
	Number of tube case stages	1 stage (can be increased to 2)			
	Usable tube material	Silicon, Tygon®, Fluran®, PharMed®			
	Usable tube dia.	O.D.: 3~6.1mm			
Operating environmental temperature range		0~40 °C (Non-condensing)			
Ext. size[mm] ※1		120(166)W × 130(152)D × 177(190)H			
Mass		Approx. 3kg		Approx. 3.1kg	
Power input and rated power supply		AC100V 50/60Hz 0.4A 40VA			

※1 Figures in () shows a size including protrusions such as screws and knobs.

※ Performance has been measured at: room temperature of 20°C, rated source voltage, clean water, liquid temperature of 20°C, back pressure of 0, a silicon tube(s) is used.

※ Performance is not warranted for any other commercially available tubes other than specified by EYELA.

※ Flow, flow precision, discharge pressure and other pressures will differ depending on the tube used.

※ Discharge amount may be less when the viscosity of the solution exceeds 0.1Pa · s(100cp).

Product name		Constant volume fluid supply pump (Peristaltic tube pump)			
Model		MP-2000A	MP-2010A	MP-2000B	MP-2010B
Tube holding system		Groove with a fixed width			
Performance	Flow range	10~180 mL/h	0.5~9.0 mL/h	80~1450 mL/h	5.0~72.5 mL/h
	Flow precision	±2% (Repetition precision: within ±1%)			
	Max. discharge pressure	147kPa(1.5kg/cm ²)			
	Max. suction pressure	9.8kPa(0.1kg/cm ²)			
	Viscosity and temperature of solution	Max.2Pa · s (2000cP) 0~60℃ (Non-freezing)			
Function	Rotation setting	Volume setting			
	Fluid supply direction	Normal/Reverse selectable			
Configuration	Motor	AC speed control & induction motor output: 15W			
	Driving circuit	Speed feedback control			
	Tube case	PVC resin			
	Safety function	Thermal protector and fuse			
Standards	Number of tubes to hook	1 tube			
	Number of tube case stages	1 stage			
	Usable tube material	Silicon, Tygon®, Fluran®, PharMed®			
	Usable tube dia.	I.D.:1.15mm×O.D.:3.2mm		I.D.:3.7mm×O.D.:6.1mm	
Operating environmental temperature range		0~40℃ (Non-condensing)			
Ext. size[mm] ※1		120(137)W×130(152)D×177(190)H			
Mass		Approx.3.2kg			
Power input and rated power supply		AC100V 50/60Hz 0.4A 40VA			

Product name		Constant volume fluid supply pump (Peristaltic tube pump)			
Model		MP-2100	MP-2101	MP-2110	MP-2111
Tube holding system		Screw-adjustable	Spring type	Screw-adjustable	Spring type
Performance	Flow range	10~1450 mL/h×4		0.5~72.5 mL/h×4	
	Flow precision	±2% (Repetition precision: within ±1%)			
	Max. discharge pressure	196kPa(2kg/cm ²)	98kPa(1kg/cm ²)	196kPa(2kg/cm ²)	98kPa(1kg/cm ²)
	Max. suction pressure	9.8kPa(0.1kg/cm ²)			
	Viscosity and temperature of solution	Max.2Pa · s (2000cP) 0~60℃ (Non-freezing)			
Function	Rotation setting	Volume setting			
	Fluid supply direction	Normal/Reverse selectable			
Configuration	Motor	AC speed control & induction motor output: 15W			
	Driving circuit	Speed feedback control			
	Tube case	PET resin			
	Safety function	Thermal protector and fuse			
Standards	Number of tubes to hook	4 tubes			
	Number of tube case stages	2 stages			
	Usable tube material	Silicon, Tygon®, Fluran®, PharMed®			
	Usable tube dia.	O.D.: 3~6.1mm			
Operating environmental temperature range		0~40℃ (Non-condensing)			
Ext. size[mm] ※1		127(166)W×130(152)D×206(219)H			
Mass		Approx. 3.3kg		Approx.3.4kg	
Power input and rated power supply		AC100V 50/60Hz 0.4A 40VA			

※1 Figures in () shows a size including protrusions such as screws and knobs.

※ Performance has been measured at: room temperature of 20℃, rated source voltage, clean water, liquid temperature of 20℃, back pressure of 0, a silicon tube(s) is used.

※ Flow, flow precision, discharge pressure and other pressures will differ depending on the tube used.

※ Discharge amount may be less when the viscosity of the solution exceeds 0.1Pa · s(100cp).

2-3 Discharge flow characteristics (Not warranted for any other tubes other than specified by EYELA)

Model (flow route)	Tube(I.D. x O.D.)[mm]	Discharge flow range[mL/h]	
		MP-2000,2100 series	MP-2010 series
MP-2000 (×2) MP-2100 (×4)	1.15×3.2	10~180	0.5~9
MP-2001 (×2) MP-2101 (×4)	2.15×4.2	40~550	2~27.5
MP-2010 (×2) MP-2110 (×4)	3.15×5.2	80~1150	4~57.5
MP-2011 (×2) MP-2111 (×4)	3.7×6.1	100~1450	5~72.5
MP-2000A (×1) MP-2010A (×1)	1.15×3.2	10~180	0.5~9
MP-2000B (×1) MP-2010B (×1)	3.7×6.1	100~1450	5~72.5

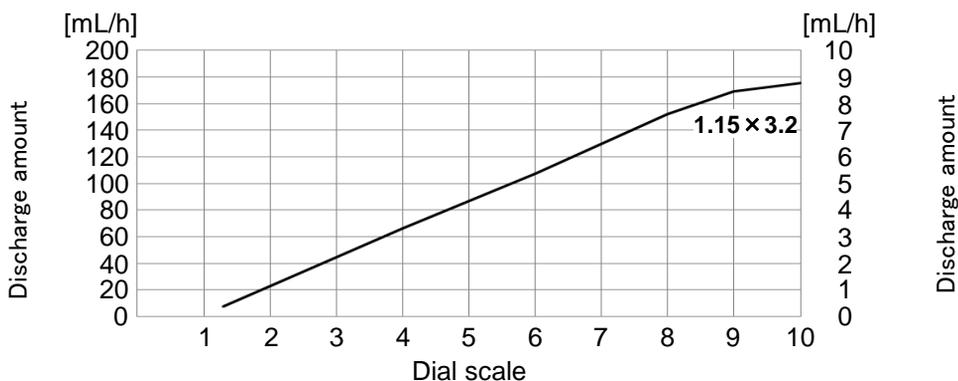
MP-2000 MP-2001
MP-2100 MP-2101

MP-2010 MP-2011
MP-2110 MP-2111



MP-2000A

MP-2010A



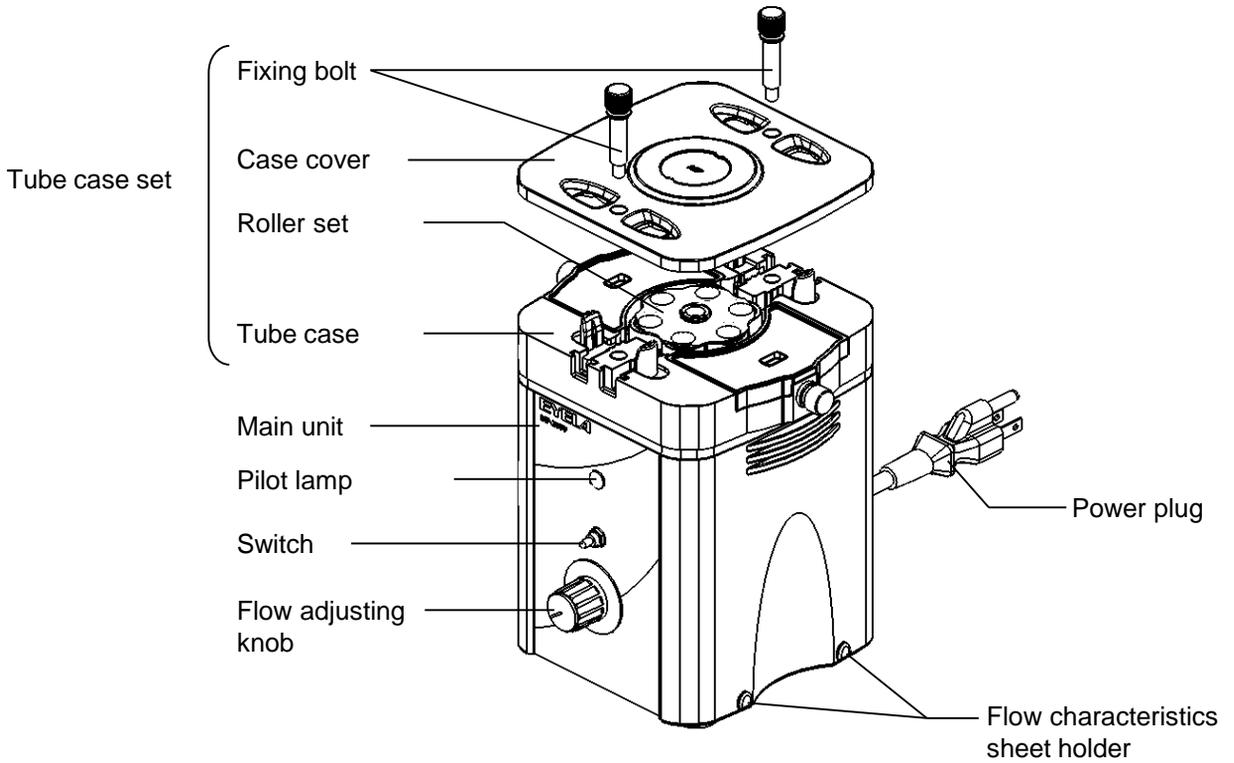
MP-2000B

MP-2010B

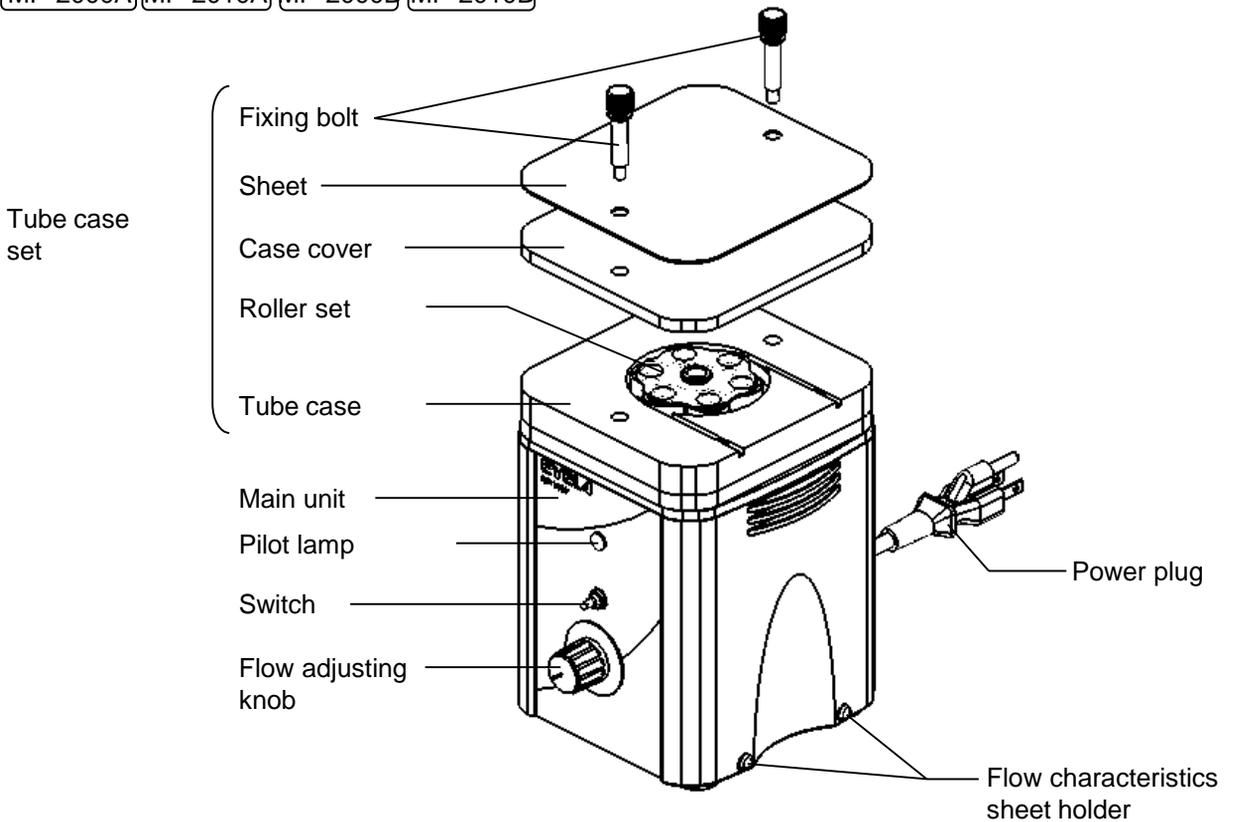


2-4 Names of parts

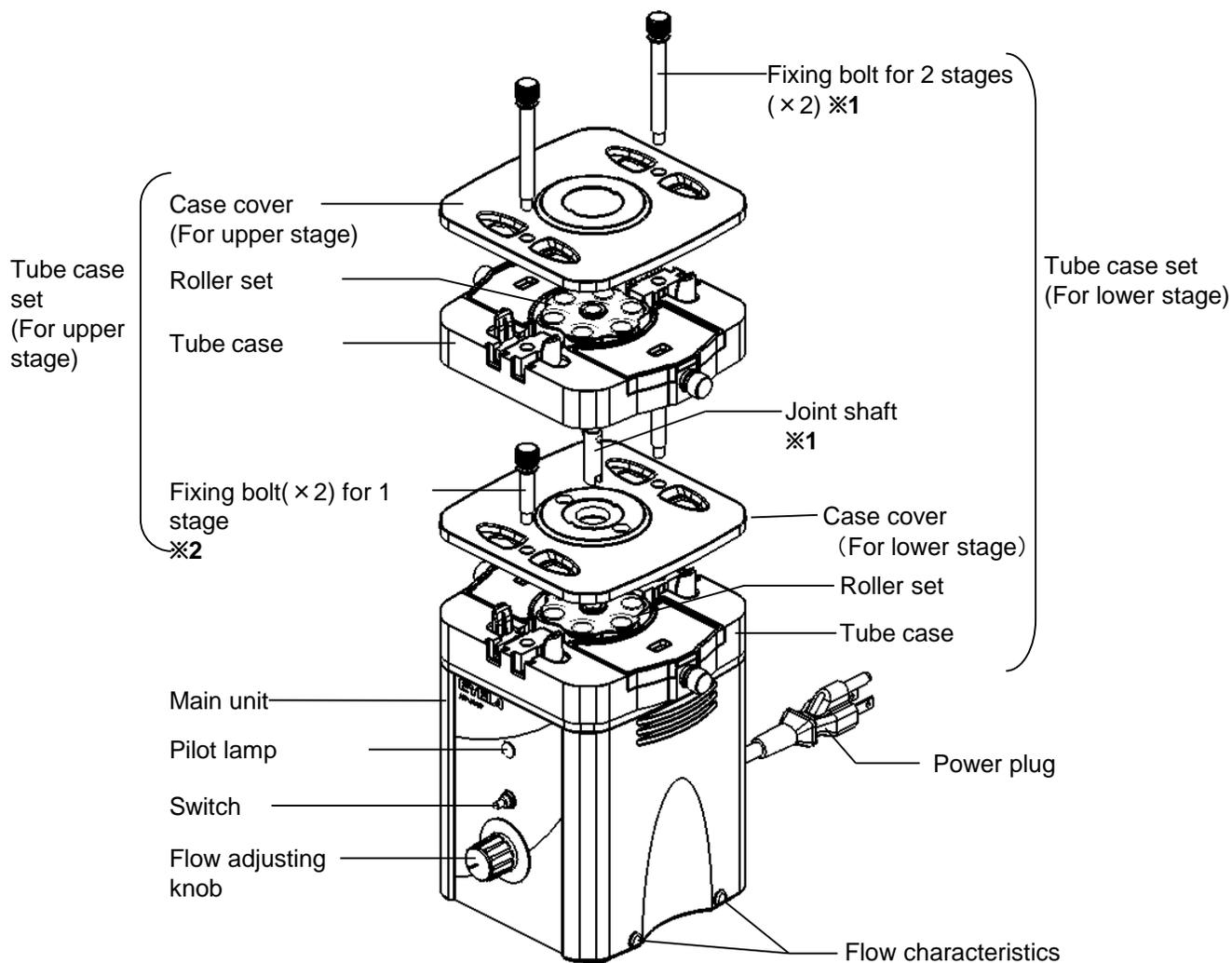
MP-2000 MP-2001 MP-2010 MP-2011



MP-2000A MP-2010A MP-2000B MP-2010B



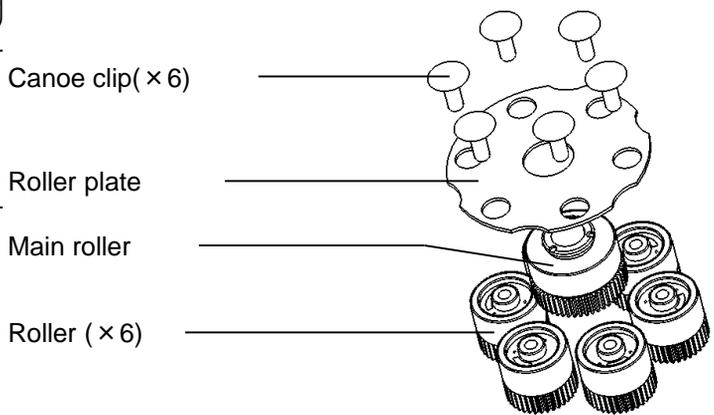
MP-2100 MP-2101 MP-2110 MP-2111



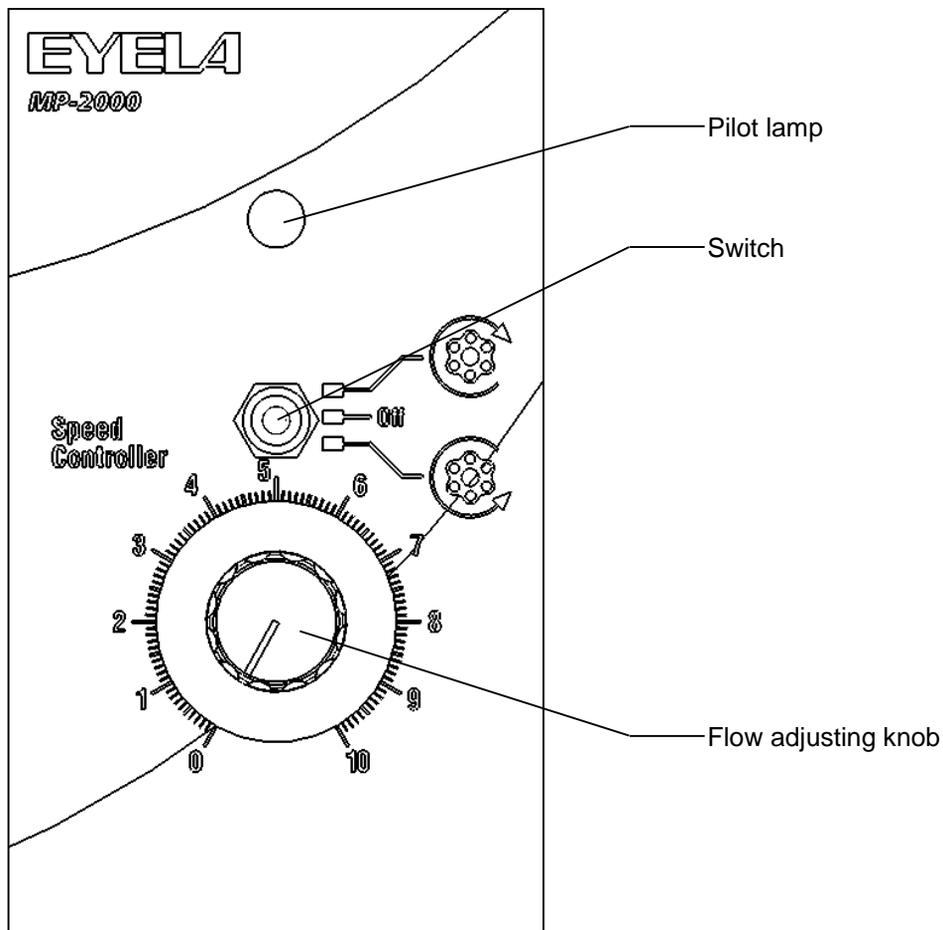
※1 Not used for 1-stage application.
 ※2 Not used for 2-stage application.

Roller set
 (Common for all models)

Plate clip set



Control assembly
(Common for all models)



Name	Description of functions
Pilot lamp	Turning the switch ON will light the lamp.
Switch	The switch for tuning power ON/OFF and changing the fluid supply direction. Pushing the switch upward makes the roller turn clockwise and downward, anticlockwise and supply of solution will start. (Pilot lamp : on) Leave the switch at the center to turn power OFF. (Pilot lamp : off) *See”P.19 5-3 Discharge/Suction Direction” for details.
Flow adjusting knob	The knob for adjusting flow. The further you turn the knob clockwise, the higher the flow becomes.

3 Safety function

This product has the safety functions shown below.

When any malfunctions occur, take appropriate actions by referring to “P20 Causes and solutions of troubles”.

Safety function

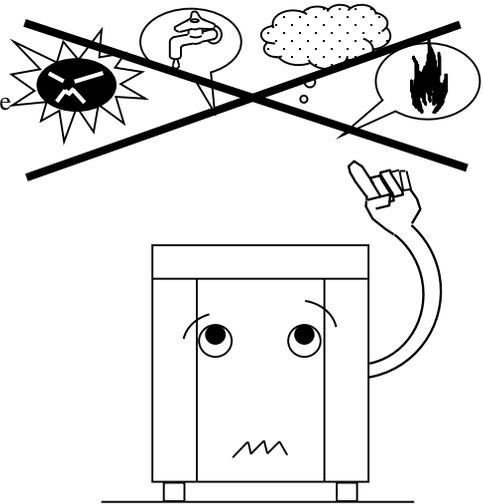
Safety device	Actions	Causes	Solutions
Fuse	It will be blown to shut off power.	Over current has flown through the circuit.	Contact your dealer or the nearest service center.
Thermal protector	It shuts off power supply to the motor.	The motor over heated.	Reduce the load. ※ The original state will be recovered automatically when the motor sufficiently cools down.

4 Installation

4-1 Installation environment

Select a site that meets the following conditions for installing the product.

- ⊙ Place free of flammable gas, liquid, or solid materials in the vicinity of the product.
- ⊙ Place where the ambient temperature can be kept within a range of 0~40℃.
- ⊙ Place free from condensation
- ⊙ Place with less humidity and free from splashing water.
- ⊙ Place with less dust
- ⊙ Place free from direct sunshine
- ⊙ Place of drafty or well-ventilated.
- ⊙ Level, stable, and firm place

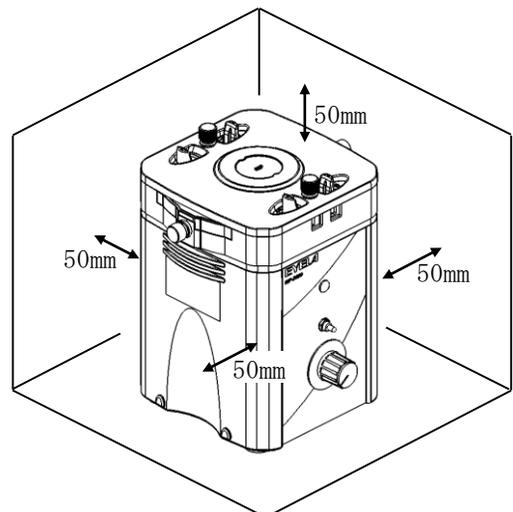


4-2 Installation conditions

⚠ Caution

Assure certain space around the unit.

This product supplies liquid.
Avoid leaving paper documents around it.



4-3 Connecting the utilities

⚠ Warning

Check the voltage, the phase, and the capacity of the power supply.

Connecting the power supply incorrectly may cause a fire or an electric shock.

⚠ Warning

Do not use the branching socket or table tap.

Over-current may cause cable burn, fire.

⚠ Warning

Connect the earth wire correctly.

Never connect the earth wire to a gas or a pipe to avoid an electric shock.

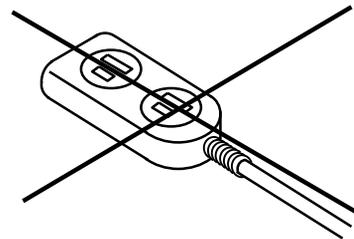
- (1) Check the product type as well as the voltage, phase, and capacity of power supply to be connected.
Power supply to be connected to the product is as shown in the right.
- (2) Check the outlet of the installation site.
Prepare an outlet with an earth plug.

Power supply needed for connection	
Voltage	Capacity
AC100V	15A

* Do not connect the power plug to the outlet yet.

* Make sure that the sheath of the power cord is not damaged.
Using such a cord may lead to an electric shock.

*Do not use a branching socket or a tap for connecting to the power supply.



Power cord specification (Common for all models)

Product model	Cable		Section area of the cord (AWG)
	Length	Thickness (O.D.)	
MP-2000 MP-2010 etc.	Approx.2.0m	Approx.7.4mm	0.75mm ² (AWG18)

5 Operation

5-1 Preparing for operation

⚠ Warning

Be sure to use the genuine tube of EYELA.

Tube materials and diameter (I.D.) that can be used in this product are specified. Use of other tubes may prevent specified performance from exercising or cause a malfunction.

⚠ Warning

Be sure to attach the case cover before rotating.

Touching the rotating roller directly may cause pinching of your finger or other personal injuries.

MP-2000

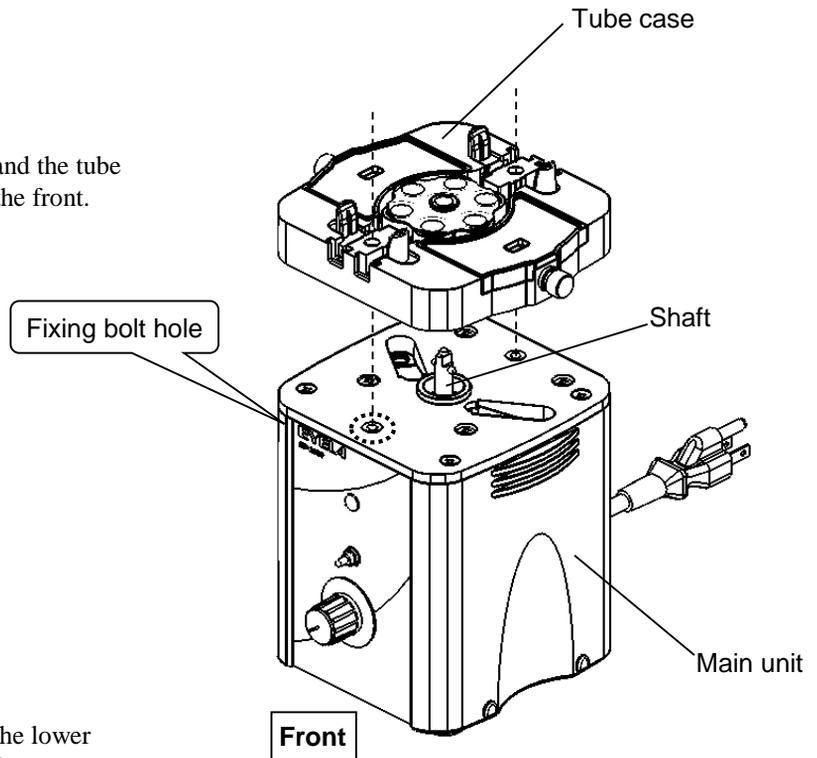
MP-2010

MP-2001

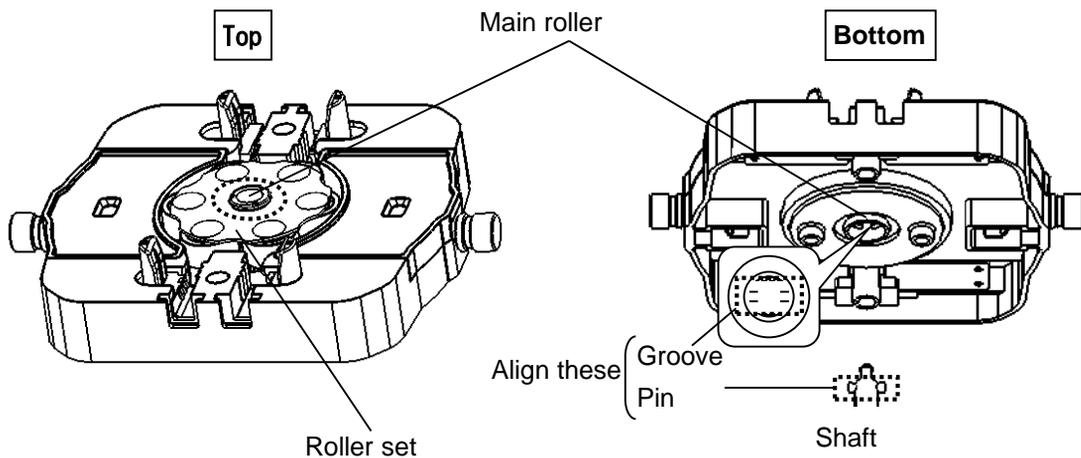
MP-2011

1. Tube case set

- (1) Check the direction of the main unit and the tube case. The fixing bolt hole shall be at the front.



- (2) Check the positions of the groove at the lower part of the main roller and the shaft pin. If these are dislocated, turn the shaft by hand to align with the groove.

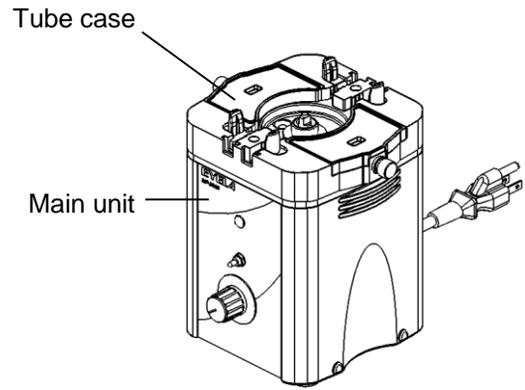


2. Setting the roller set to the tube case

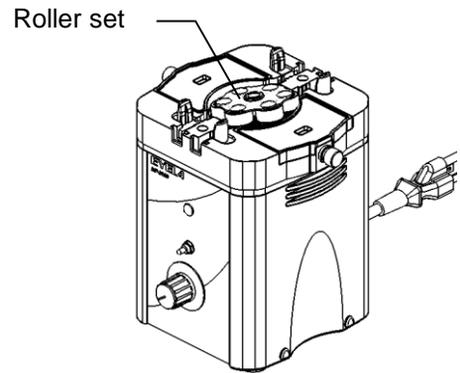
※At the factory shipping, the roller set has been set in the tube head, which shall be set according to the procedures in “P10 1. Setting the tube case”.

* If the roller set has been detached from the tube case, follow the procedures below to set the roller set to the tube case.

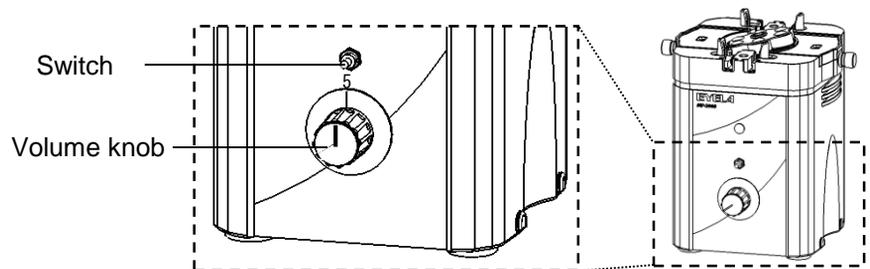
- (1) First make sure that the switch on the main unit is OFF, insert the power plug into the outlet.



- (2) Put the roller set on the gear of the tube case gently.



- (3) Set the volume knob to “5”, move the switch up or down to rotate the shaft.



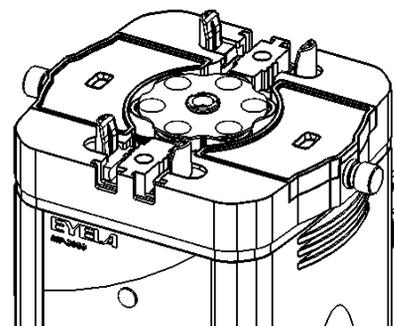
- (4) Once rotation is started, the roller set will be set to the tube case automatically.

* Check that a click is heard when the roller set is set.

* When the roller set is not set after a while rotation started, put the tube cover and lightly push it.

- (5) Once the roller set is set, remove the tube case from the main unit, and make sure that you can easily rotate the roller set with a finger.

* If it does not rotate lightly, repeat the procedure above from (1).



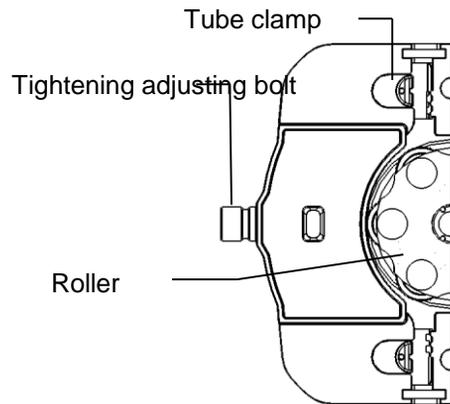
- (6) Follow the procedures in “P10 1. Setting a tube case” to set the tube case.

3.Setting the tube

 **Caution**

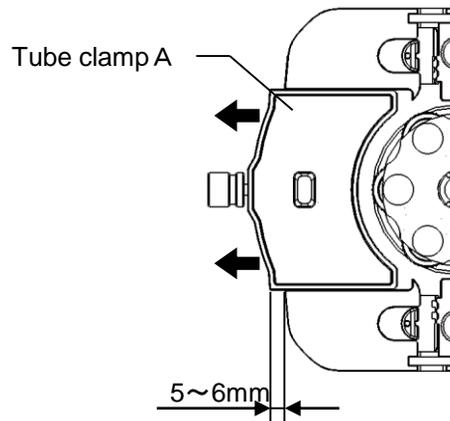
Take care for a leak.

Be sure to set the tube properly as instructed to avoid leak.

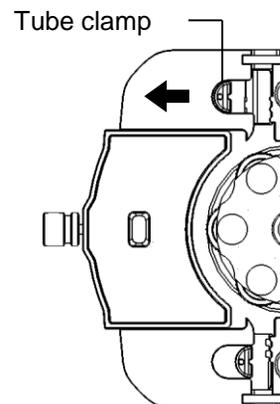


- (1) Loosen the tightening adjusting bolt and pull out the tube clamp A fully to widen the gap between clamp and the roller.

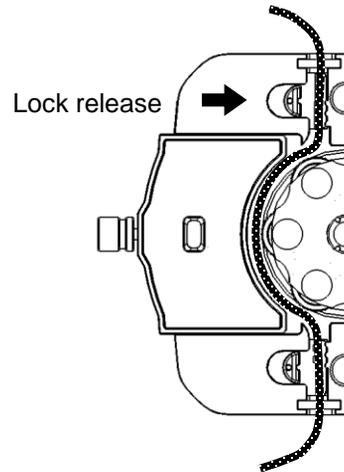
*If you keep loosening the bolt, it will stop at a point 5 to 6 mm away from the tube case surface. Never attempt to loosen the bolt beyond that point or the clamp will be detached and the tube case will be damaged.



- (2) Push the tube clamp into the direction of the arrow until it stops with a click. The tube clamp will be locked and you can set the tube.



- (3) Insert the tube into the groove as shown in the right figure.
When the tube clamp is unlocked, it will return with a spring and the tube will be secured.

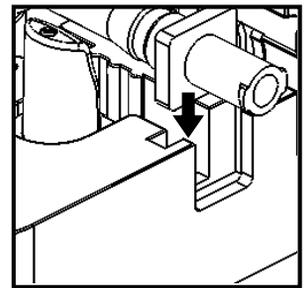


* Tube clamp holds the tube with a spring.
Take extreme care when setting the tube so that your finger will not be pinched.

* Be sure to unlock and secure the tube before attempting to use the product.
Operating the product without securing the tube, it may be caught.

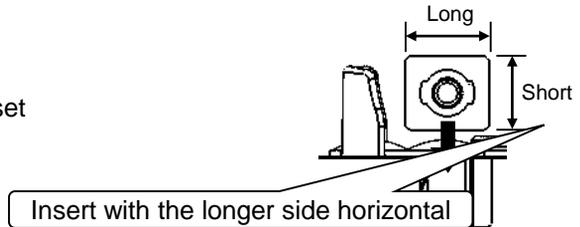
< When an adaptor set tube [Optional] is used >

Insert the adaptor set tube into the groove as shown in the right figure.
The tube adaptor is of a rectangular shape.
Make the longer sides horizontal before inserting into the groove.
When the tube clamp is unlocked, it will return with a spring and the tube adaptor will be secured.



*Take care so that the tube will not be twisted when setting the tube adaptor.

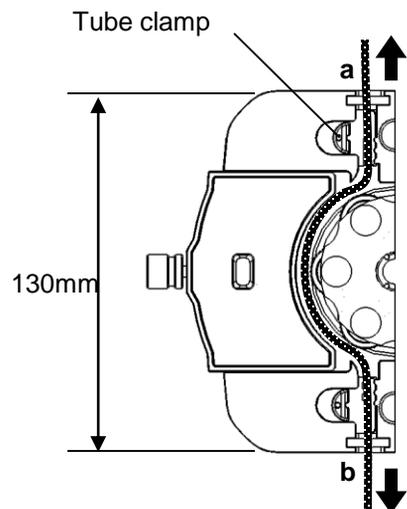
*Tube clamp holds the tube with a spring.
Take extreme care when setting the adaptor set tube so that your finger will not be pinched.



- (4) When the tube in the tube case is loosened, hold and lightly pull the tube close to the tube clamp (both ends) to remove the loosening.

* The tube size between a-b shall be "130 mm".
It is useful to mark the specified length with an oil pen for setting. (Refer to "P16 *Reference".)

- (5) Place the case cover on the tube case and fix it with a bolt.
When it is hard to turn the fixing bolt screw, try turning it while lightly pressing the case cover from above.



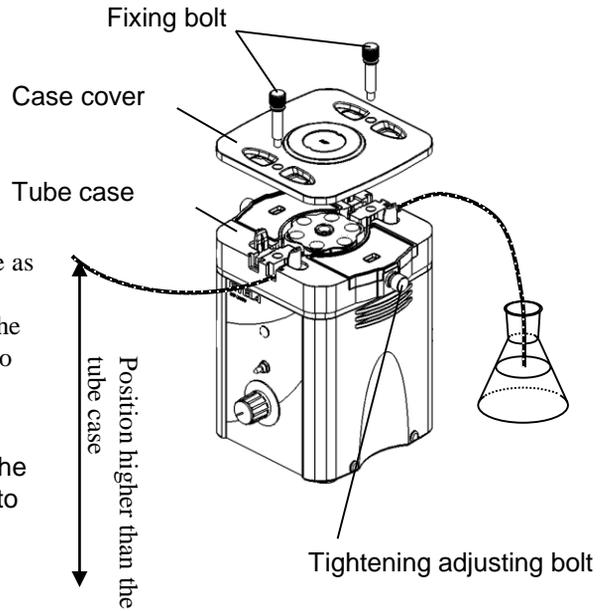
4. Connecting the power plug

First make sure that the switch is OFF, insert the power plug into the outlet.

5. Confirming the discharge direction

- (1) Soak one end of the tube into the solution.
- (2) Hold the discharge side tube higher than the tube case as shown in the figure.
Check the rotation direction and move the switch to the rotating direction so that solution will be discharged to the direction the tube is kept at a higher position.

* For the relationship between the ON position of the switch and the discharge/suction direction, refer to "P19 5-3 Discharge/Suction Direction".



6. Adjusting tightening amount of the tube

Tightening adjusting bolt will continuously crush the tube portion between the tube clamp A and the roller causing discharge to occur at the tube.

<For models MP-2000 and 2010>

Tighten the tightening adjusting bolt by another about $\frac{1}{4}$ turn from the point above.

- * Take care not to over-tighten the bolt.
Tightening the bolt overly will shorten the tube use life excessively.

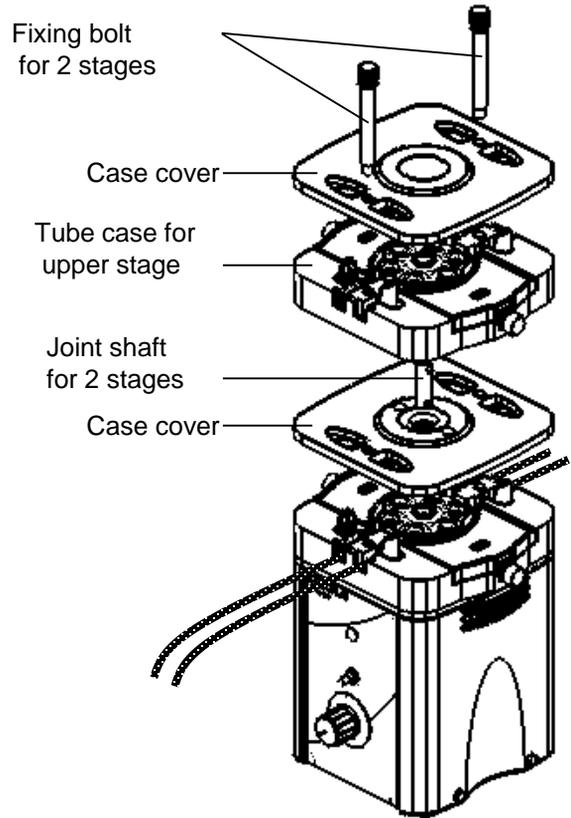
<For models MP-2001 and 2011>

From the state above, fully tighten the tightening adjusting bolt until you cannot turn it any further.

- * Turning the tightening adjusting bolt until it stops will be sufficient.
Take care not to over tighten it.

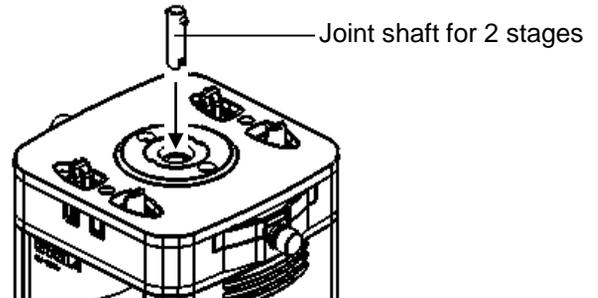
1. Set of tube case for lower stage & tube

- (1) Set the tube case and the tube on the lower stage following the procedures 1~6 for the model MP-2000.
- (2) Turn the switch OFF and pull out the power plug from the outlet.



2. Set of tube case for upper stage tube case and tube

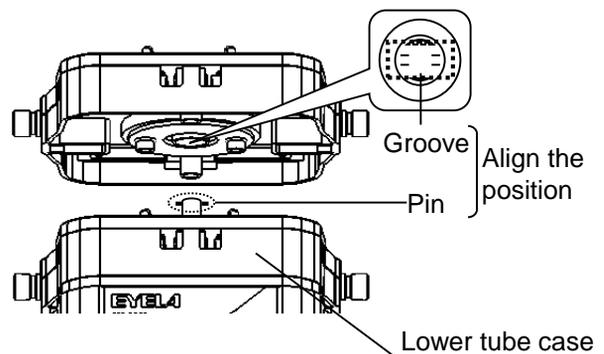
- (1) Insert the joint shaft for 2 stages into the shaft for lower stage.



- (2) Remove the fixing bolt for 1 stage with the case cover attached and install the tube case for upper stage.

* Align the groove at the bottom of the main roller on the tube case for upper stage with the pin of the joint shaft.

- (3) Set the tube following the procedures 3~6 for the model MP-2000.



3. Adjusting tightening of the tube

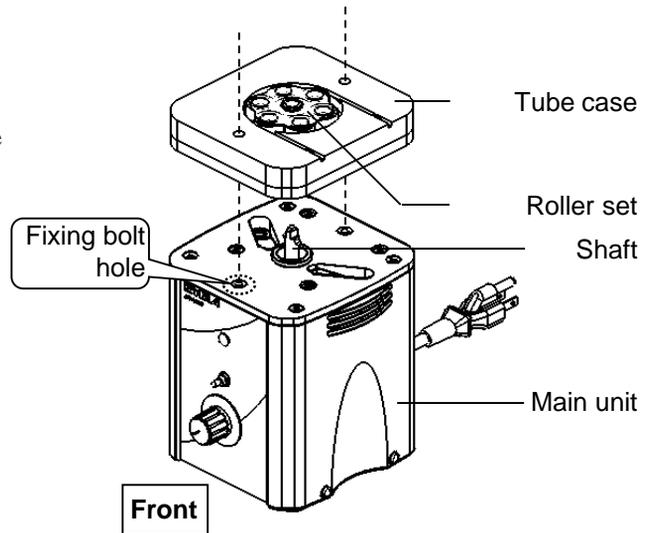
- (1) Adjust the tightening amount of the tube following the procedures of 6 of the model MP-2000
- (2) When you have set the tube on the upper stage, fix it with fixing bolts for 2 stages.

MP-2000A MP-2000B

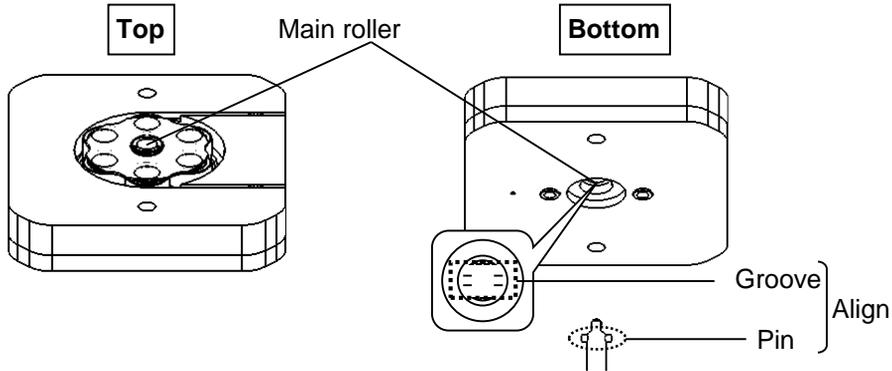
MP-2010A MP-2010B

1. Setting a tube case

(1) Check the direction of the main unit and the tube case.
The fixing bolt hole shall be at the front.



(2) Check the position of the groove at the bottom of the main roller at the center of the roller set and the shaft pin. When the pin position is shifted, turn the shaft by hand to align it with the groove.



2. Setting the tube and connecting the power plug

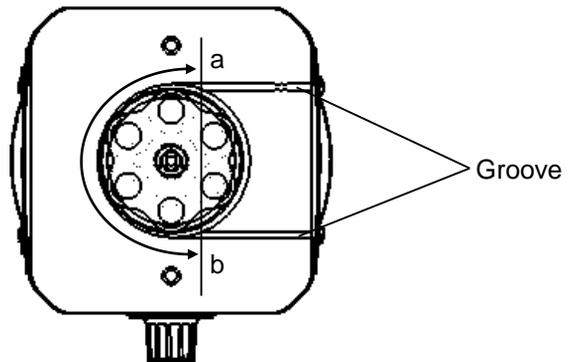
(1) Set the tube of the specified length into the groove taking care not to twist it.

※ Size between a-b

MP-2000A,2010A : 120mm

MP-2000B,2010B : 125mm

It is useful to mark the specified length with an oil pen for setting. (Refer to “*Reference” below.)



(2) First make sure that the switch on is OFF, insert the power plug into the outlet.

※Reference (Use this to determine the correct length of tubes.)

• MP-2000,2010 (130mm)



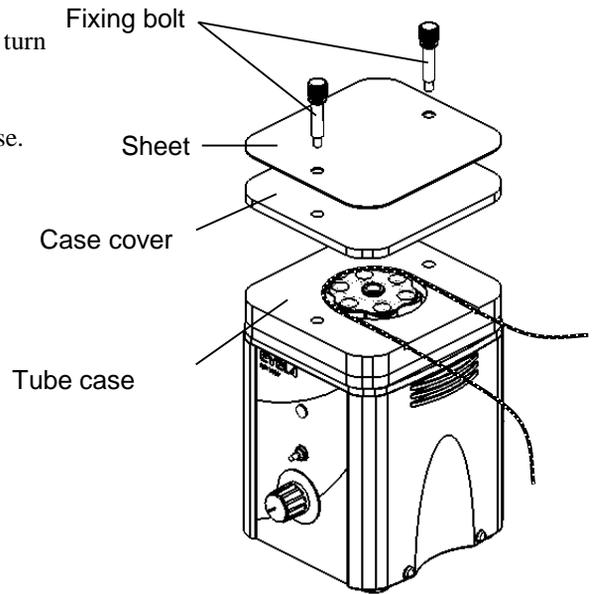
• MP-2000A,2010A(120mm)



• MP-2000B,2010B(125mm)



- (3) Place the case cover and lightly press it down with hand, turn the switch to ON (up or down) and then turn the flow adjusting knob.
(Scale : 2~3)
The tube will sit between the roller and the tube case.



- (4) When you have confirmed that the tube is in the correct position, turn the switch OFF.
- (5) Tighten the tube case cover and the sheet to complete the setting work.

* If the tube length does not meet the specification, it may be too tight or too loose causing it to be caught and repeatability of discharge amount may be lost.

5-2 Operating procedures

⚠ Caution

Regularly replace the tube.

The tube of the tube pump will be subjected to repeated compression force with the roller. Thus operating for a long time may wear and damage the tube causing leak or compromised resilience and decrease in flow.

⚠ Caution

Immediately stop operation if you notice an abnormality.

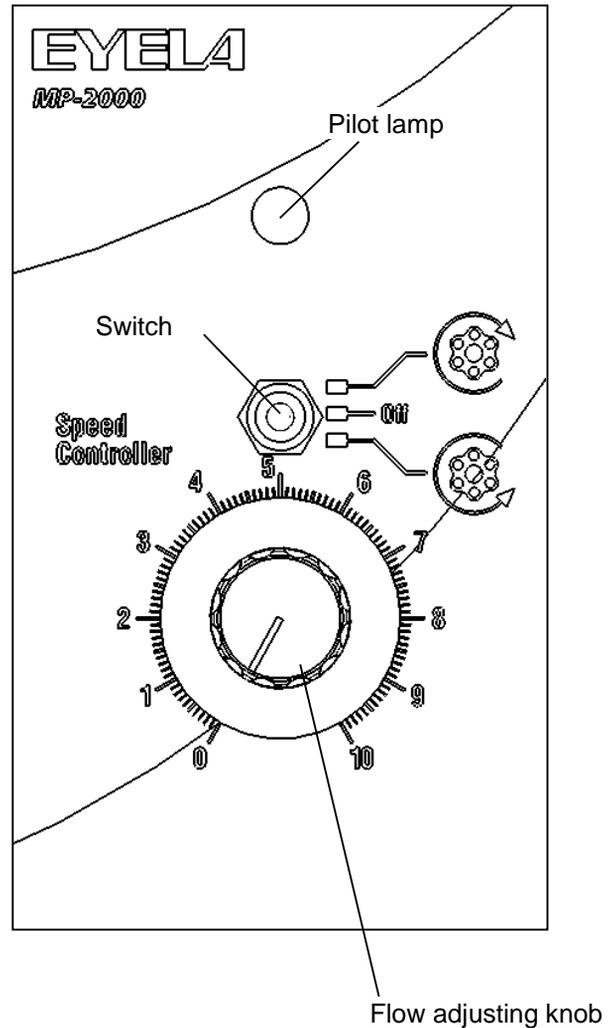
If you notice an abnormality, immediately turn the switch OFF and refer to the section “P20 Causes and solutions of troubles”.

⚠ Caution

Be sure to install the case cover before starting rotation.

Touching the rotating roller directly may cause your finger caught or other personal injury.

- (1) Align the flow adjusting knob with [0].
- (2) Turn the switch ON referring to “P19 5-3 Discharge/Suction Direction”. The pilot lamp will come on.
- (3) Adjust discharge amount by rotating the flow adjusting knob by referring to the relationship among tube diameter, dial scale and discharge amount in “P4 2-3 Discharge flow characteristics” or attached Flow characteristics sheet.
- (4) Turn the switch OFF to finish operation.



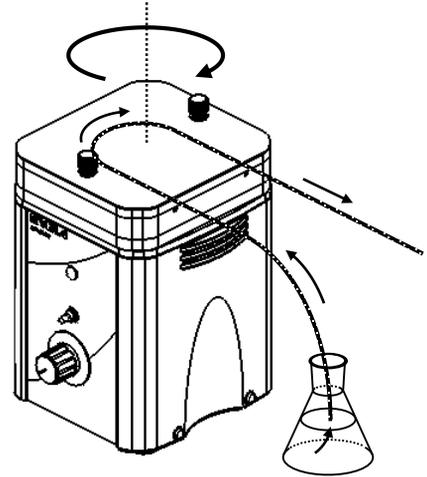
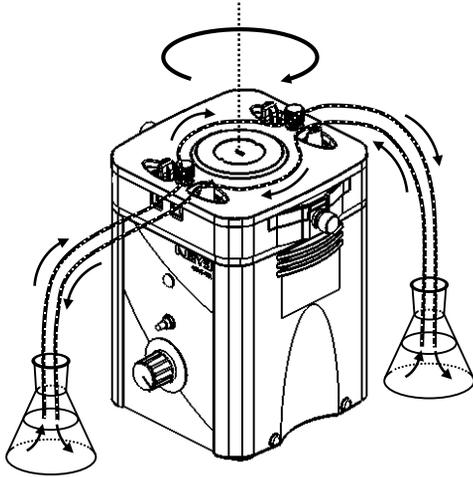
5-3 Discharge/Suction Direction

The figure below shows the directions of discharge and suction when the switch is ON to the upper side.

The directions will be reversed when the switch is ON to the lower side.

MP-2000 MP-2001 MP-2010 MP-2011
MP-2100 MP-2101 MP-2110 MP-2111

MP-2000A MP-2000B
MP-2010A MP-2010B



Process after operation

If you are not going to use the product for an extended time, turn the switch OFF and pull out the power plug from the outlet.

And remove the tube from the tube case.

To remove the tube, check that power is OFF, remove the tube case cover and then gently remove it so that the roller set will not be detached.

6

Troubleshooting and countermeasures

Contact your dealer or the nearest service center for troubles not listed here.

Symptom	Cause	Countermeasures
Rotation will not start even if the switch is turned ON. (Pilot lamp OFF)	The power plug is removed off the outlet or the inlet. Or it is not securely inserted.	First turn the power switch OFF and then insert the power plug into the outlet or the inlet.
	Power is not supplied.	Turn the breaker on the distribution board ON.
	Fuse is blown. (It is installed inside the unit and cannot be inspected from outside.)	Stop operation immediately and contact your dealer or our service center.
Solution will not be discharged.	Tightening adjusting bolt is not tightened sufficiently.	Turn the tightening amount of the tube to retighten the tube referring to "P14 Adjusting tightening amount of the tube".
	The diameter (thickness) of the tube used is wrong.	Replace with one of our recommended tubes.
	The tube is damaged.	Replace the tube.
It is impossible to adjust discharge amount.	The tube is damaged.	Replace the tube.
	The controller is malfunctioning.	Stop operation immediately and contact your dealer or our service center.
Discharge amount will fluctuate.	The tube has been deteriorated and worn.	Replace the tube.
	The roller or the tube case is worn.	Replace the roller or the tube case.
The tube is caught.	The diameter (thickness) of the tube used is wrong.	Replace with one of our recommended tubes.
Strange noise is heard.	The gear head is worn.	Stop operation immediately and contact your dealer or our service center.
	The roller or the tube case is damaged.	
	The motor is malfunctioning.	

7 Maintenance and inspection

7-1 Cleaning and care of the product

Warning

Never disassemble the unit.

Voltage is supplied to some components inside the unit and disassembly may cause an electric shock or other personal injuries.

Caution

Remove dust on the outlet frequently.

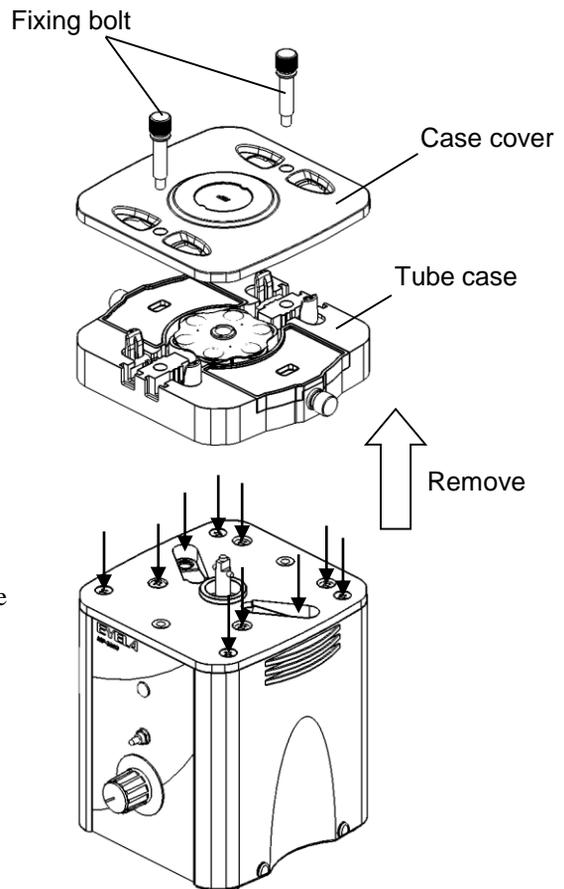
Operating the unit for a long time with connected to the outlet may cause dust to accumulate in the gap between the outlet and the power plug and lead to a malfunction of the unit or a fire. (tracking phenomena).

Caution

Use a correct method and items for cleaning or caring the product.

When cleaning or maintaining the product, never splash water to the exterior or the inside directly, do not put any foreign materials and never use the cleanser, thinner, oil, kerosene, acid, and equivalent. Otherwise, the user may suffer electric shock or damage to the product.

- (1) First turn the switch OFF and remove the power plug from the outlet before starting any maintenance work.
- (2) Loosen the fixing bolt and remove the case cover.
- (3) Take out the tube case from the main unit.
- (4) Check for any trace of leak on inside of the tube case and the top of the main unit.
- (5) To clean the product, wipe it with a soft cloth wrung out water, and, for stubborn dirt, use mild detergent and then carefully wipe off any remaining detergent.



When water leak has occurred, be sure to wipe any concave points (marked with ↓) clean.

8 Disposal of Products

Disposal of product or part must be done according to the specified disposal method.

Major component and disposal method

Component	Model	Weight	External dimensions (including protrusions)	How to discard
Main Unit	MP-2000	Approx. 3.0kg	127W×130D×177H (166W×152D×190H)	Request the disposal operator for disposal.
	MP-2001			
	MP-2010	Approx. 3.1kg		
	MP-2011			
	MP-2100	Approx. 3.3kg	127W×130D×206H (166W×152D×219H)	
	MP-2101			
	MP-2110	Approx. 3.4kg		
	MP-2111			
	MP-2000A	Approx. 3.2kg	120W×130D×177H (137W×152D×190H)	
	MP-2000B			
	MP-2010A			
	MP-2010B			

* When discarding the product, be sure to segregate before discarding according to the segregation rule based on the components in the table above.

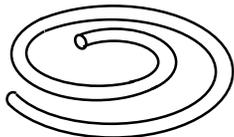
1. In case the product does not function satisfactorily, check first by referring to the page on troubleshooting to see if this is actually a trouble.
2. If the product remains unsatisfactory even after checking, contact the shop from which the user has purchased the product or the service center described in the manual and request repair.
3. Repair during the guarantee period will be made according to the guarantee stipulations.
4. After expiration of the guarantee period, the charged repair will be made at the customer's request.

Warranty Provisions

- 1 The warranty period of your product is 12 months from the date of purchase.
- 2 We will repair or replace your product free of charge for troubles occurred in your product during proper usage in the warranty period.
- 3 This warranty is limited to the product itself and shall not be construed to cover all and any consequential losses (operating losses, various expenses, etc.) from malfunctions or troubles of the product.
- 4 The provisions of this warranty are valid only in Japan.
When you are going to indirectly export the product you purchased to a foreign country, the provisions shall be exempted from application provided that a certification be issued that the product is not subject to the export control regulations and, in such case, all liabilities in relation to the product shall be borne by the exporting party .
- 5 Repair shall be paid by the user even during the warranty period for the following cases.
 - a) The user did not return the customer card or made user registration at our HP within one month from the date of purchase.
 - b) This warranty card was not presented or user registration could not be confirmed at the time of request for repair.
 - c) When the dealer name is not sealed on the warranty card or the date of the purchase is not indicated on it.
 - d) Malfunctions or damages caused by handling that is against cautions in the manual or labels on the product, or transportation from the installation site after purchase, dropping during use, or shocks.
 - e) Malfunctions or damages caused by mishandling, unauthorized modification or repair by the user.
 - f) Malfunctions or damages caused by a fire, an earthquake, wind and flood, salt damage, lightening, or other Acts of God or external factor including the power supply.
 - g) Degrading of performance or malfunctions resulted from consumption of consumable parts or replacement of consumable parts.
- 6 Warranty conditions may differ depending on specific products. Check the warranty conditions stipulated in the warranty space in the operation manual.
- 7 Ask your dealer or the nearest sales office for repair for malfunctions after the warranty period.
(In principle, the retention period of repair parts is five years after the end of production.)
- 8 Product warranty for products sold overseas by our overseas sales department shall be separately specified.

10 List of consumable & replacement parts/parts

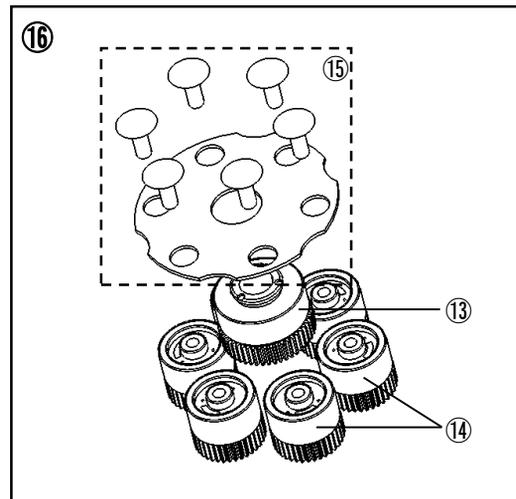
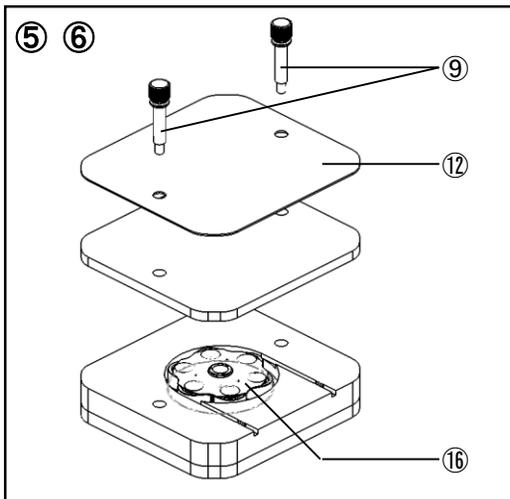
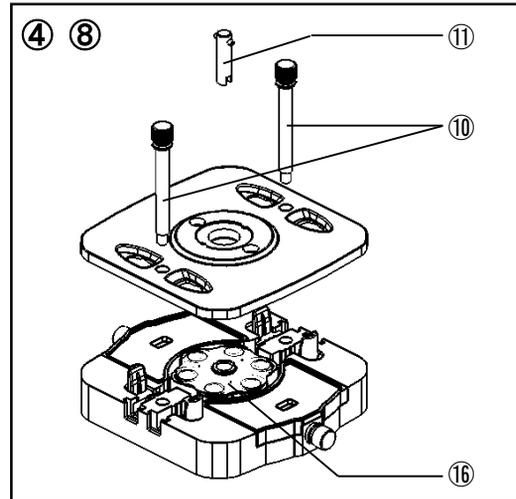
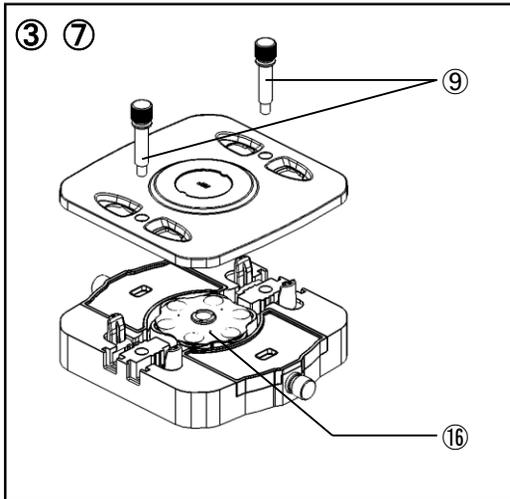
■ Tube types

	Code No.	Name	Tube size (I.D. x O.D.)	Length [m]	Outer appearance
①	125320	PharMed® tube	φ 1.15 × φ 3.2	7.5	
	125330			1.5	
	125340		φ 2.15 × φ 4.2	7.5	
	125350			1.5	
	125360		φ 3.15 × φ 5.2	7.5	
	125370			1.5	
	125380		φ 3.70 × φ 6.1	7.5	
	125390			1.5	
	125460		Silicon tube	φ 1.15 × φ 3.2	
	125470	5			
	125480	φ 2.15 × φ 4.2		15	
	125490			5	
	125500	φ 3.15 × φ 5.2		15	
	125510			5	
	125520	φ 3.70 × φ 6.1		15	
	125530			5	
	125600	Tygon® tube		φ 1.15 × φ 3.2	
	125610		5		
	125620		φ 2.15 × φ 4.2	15	
	125630			5	
	125640		φ 3.15 × φ 5.2	15	
	125650			5	
	125660		φ 3.70 × φ 6.1	15	
	125670	5			
	125740	Fluran® tube	φ 1.15 × φ 3.2	7.5	
	125750			1.5	
	125760		φ 2.15 × φ 4.2	7.5	
	125770			1.5	
	125780		φ 3.15 × φ 5.2	7.5	
	125790			1.5	
125800	φ 3.70 × φ 6.1		7.5		
125810			1.5		

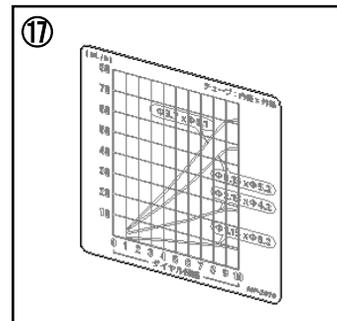
	Code No.	Name	Tube size (I.D. x O.D.)	Qty	Outer appearance
②	252680	Adaptor set tube	φ 1.15 × φ 3.2	1 pair	
	252690		φ 2.15 × φ 4.2		
	252700	Silicon	φ 3.15 × φ 5.2		
	252710		φ 3.70 × φ 6.1		
	252720	Adaptor set tube	φ 1.15 × φ 3.2		
	252730		φ 2.15 × φ 4.2		
	252740	PharMed	φ 3.15 × φ 5.2		
	252750		φ 3.70 × φ 6.1		
	252760	Adaptor set tube	φ 1.15 × φ 3.2		
	252770		φ 2.15 × φ 4.2		
	252780	Tygon	φ 3.15 × φ 5.2		
	252790		φ 3.70 × φ 6.1		
	252800	Adaptor set tube	φ 1.15 × φ 3.2		
	252810		φ 2.15 × φ 4.2		
	252820	Fluran	φ 3.15 × φ 5.2		
	252830		φ 3.70 × φ 6.1		

■ Tube case related items

	Code No.	Item name
③	251220	Tube case set for MP-2000~4000 TCS-0
④	251230	Tube case set for lower stage for MP-2000~4000 TCS-100
⑤	251240	Tube case set for MP-2000A~4000A
⑥	251250	Tube case set for MP-2000B~4000B
⑦	251260	Tube case set for MP-2010~4000TCS-1
⑧	251270	Tube case set for lower stage for MP-2010~4000 TCS-101



	Code No	Item name	Qty
⑨	196740	Fixing bolt 1-stage for MP-2000,1000,3N,3	2
⑩	196750	Fixing bolt 2-stages for MP-000,1000,3N,3	2
⑪	126520	Joint shaft for MP-2100,1100,32N,32	1
⑫	255880	PVC sheet for MP-2000	1
⑬	252550	Main roller for models MP-2000,3000,4000	1
⑭	252560	Roller for models MP-2000,3000,4000 (x 6)	6
⑮	196150	Clip plate set for MP-2000,1000	1
⑯	252570	Integrated type roller set for models MP-2000,3000,4000	1
⑰	255890	Flow characteristics sheet	1



Tokyo Rikakikai Co., Ltd.

Contact for inquiry

EYELA Customer Center

Operating time:9:00~12:00 and 13:00~17:00



0120-076-554

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