

Version : 2025 Rev.0

1200°C Rotary Tube Furnace



SH-FU-120/200/250RTG300

SH-FU-120/200/250RTG600

SH-FU-120/200/250RTG900

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Keep this manual on-hand so it can be used by all operators of the unit.
Use the unit only in the way described in this manual.
Failure to follow the instruction in this manual may cause wrong operation.

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1. General description

Thank you for purchasing our product. We know that in today's competitive marketplace, customers have many choices when purchasing laboratory equipment. We appreciate your choosing our quality product. We stand behind our products and want to let you know we are here if you need us.

Before you use the unit, read this entire manual carefully to understand how to install, operate and maintain the unit in a safe manner.

Your satisfaction with the unit will be maximized as you read this manual thoroughly. Our capable products will satisfy you by the best performance with easy operation.

SH SCIENTIFIC

2. Graphic symbols

BE SURE THAT YOU UNDERSTAND ALL OF THESE SYMBOLS
BEFORE OPERATING THE UNIT.



Important operating and / or maintenance instruction. Read the accompanying text carefully.



This symbol indicates items and procedures that are **STRICTY PROHIBITED** with regards to the unit.



Potential electrical hazards.



Explosive.



No disassemble.

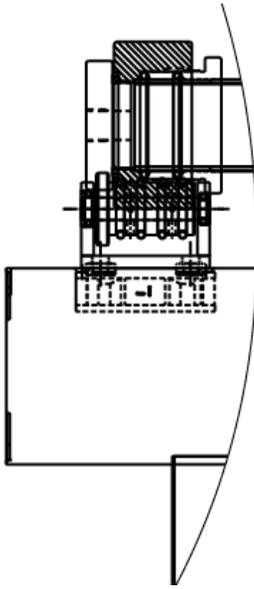


Flammable.

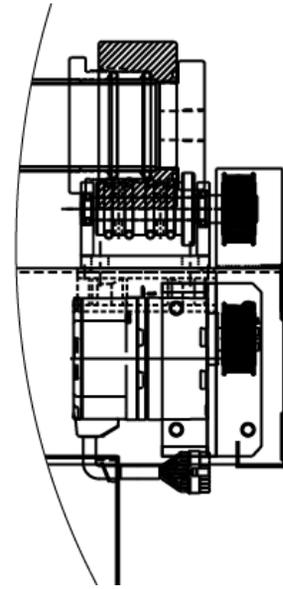


Hot surface or steam.

3. The Outward <SH-FU-xxxRTG300 / SH-FU-xxxRTG600 / SH-FU-xxxRTG900>

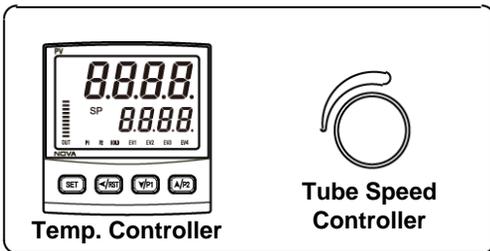


< Front Left >

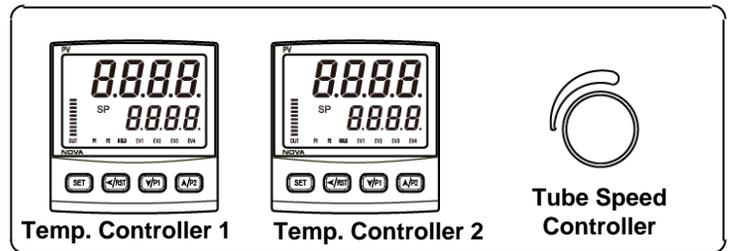


< Front Right >

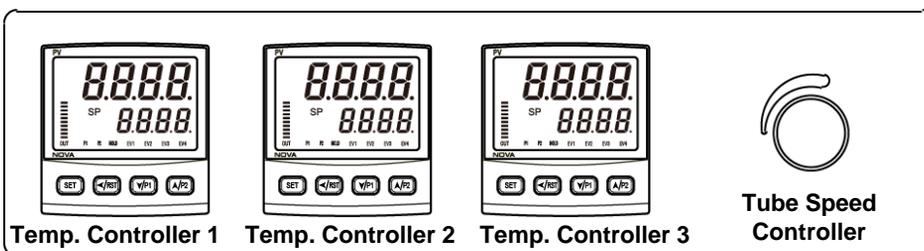
- Controller box



<SH-FU-xxxRTG300>

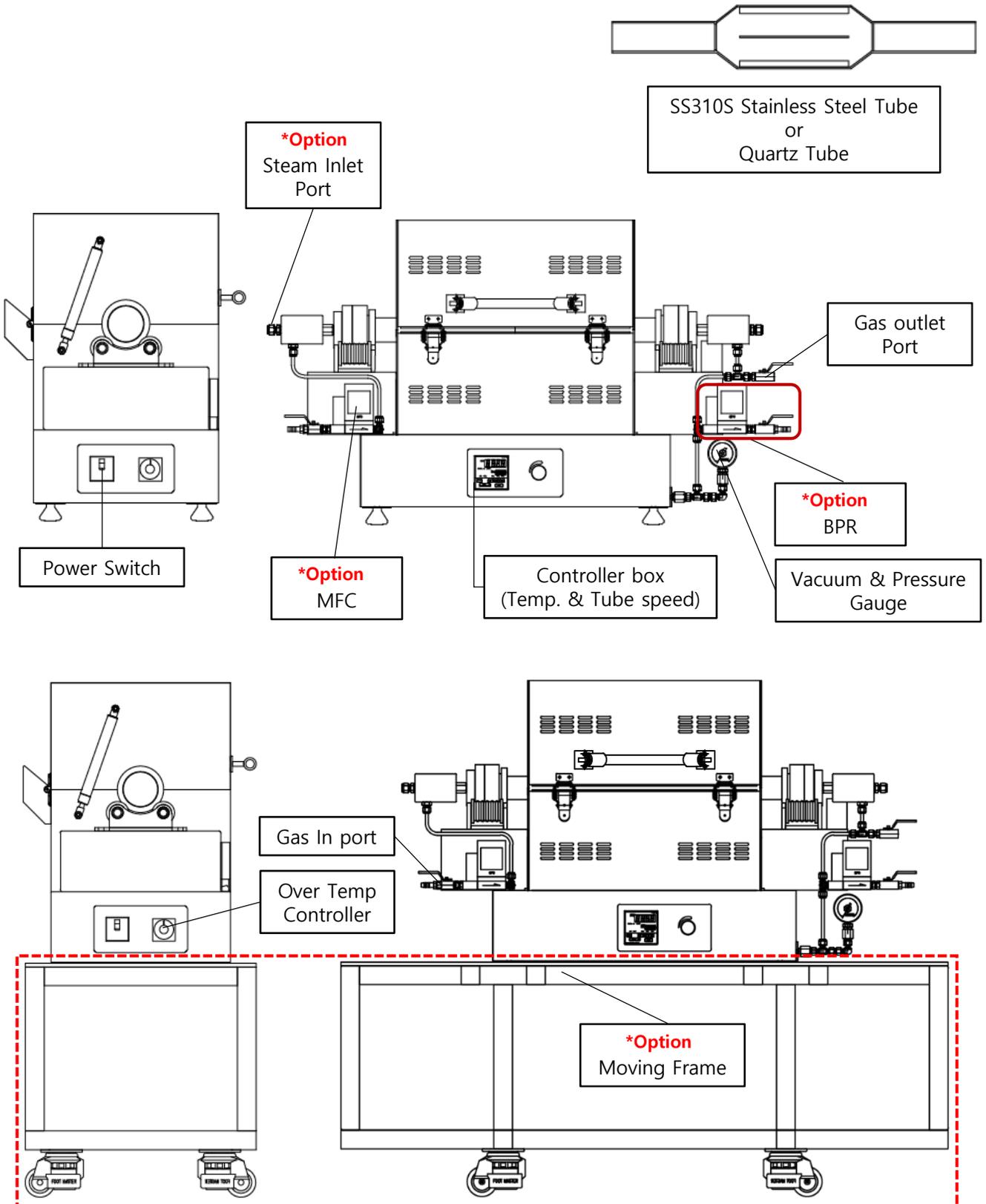


<SH-FU-xxxRTG600>

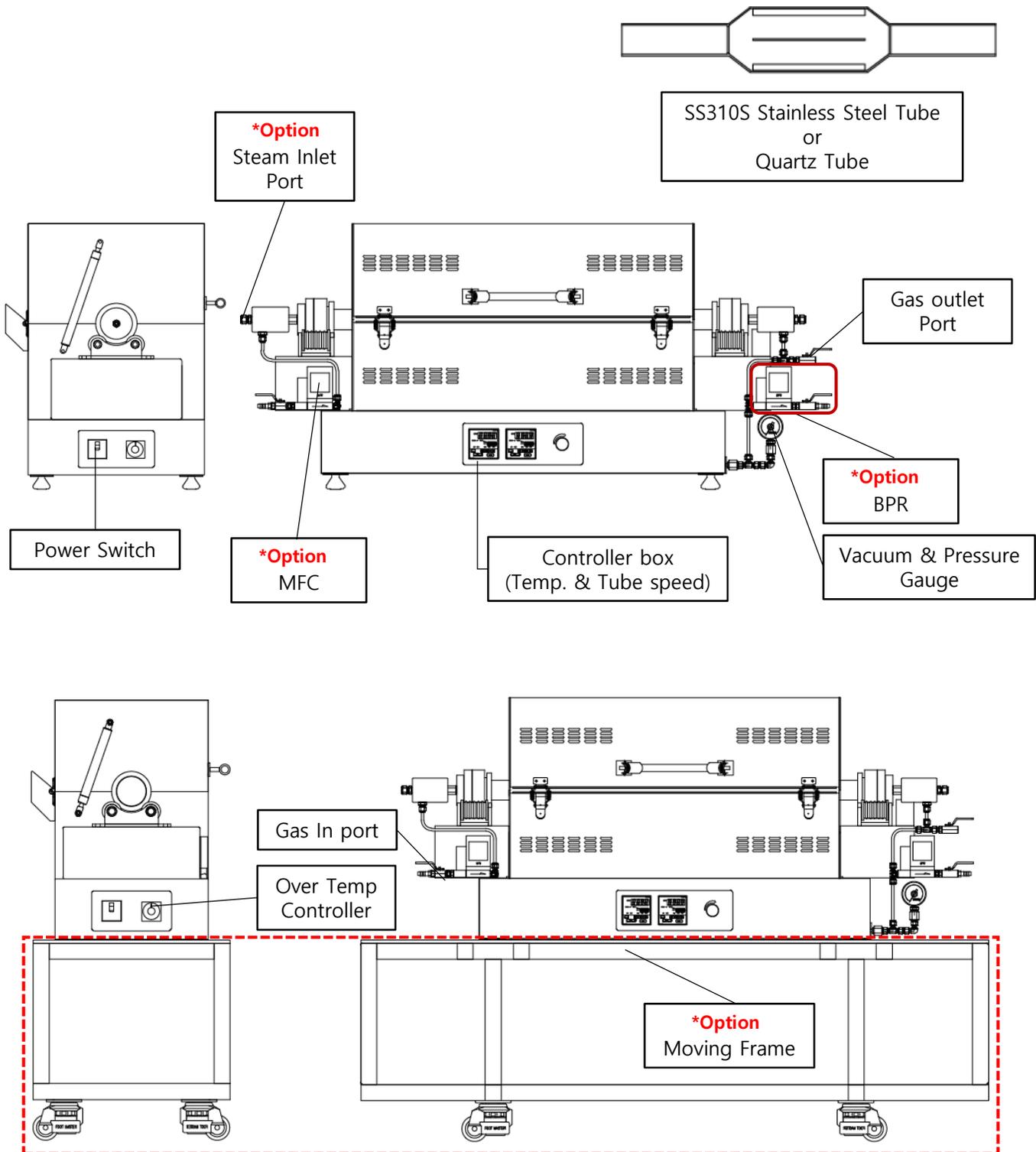


<SH-FU-xxxRTG900>

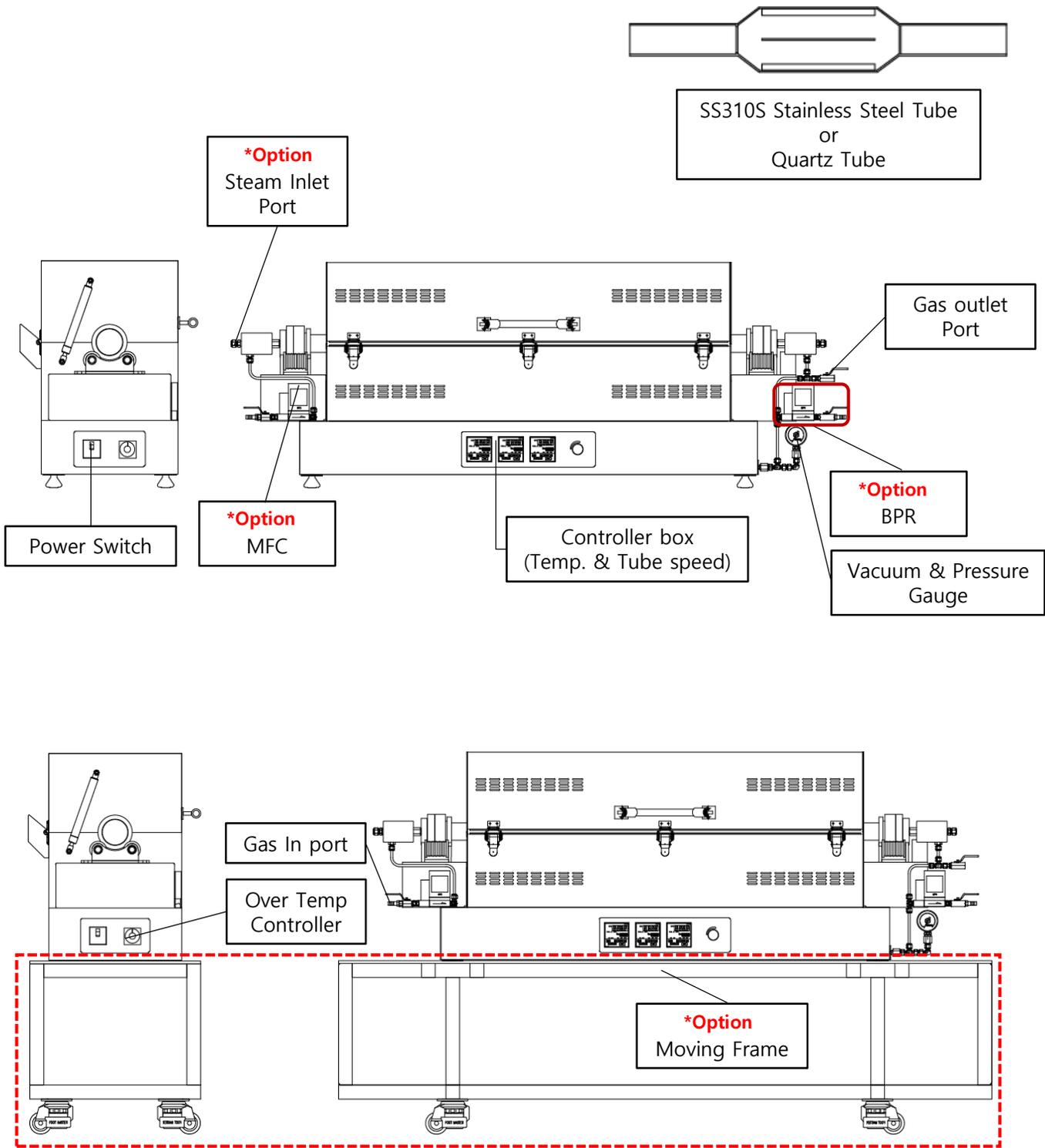
< SH-FU-xxxRTG300 >



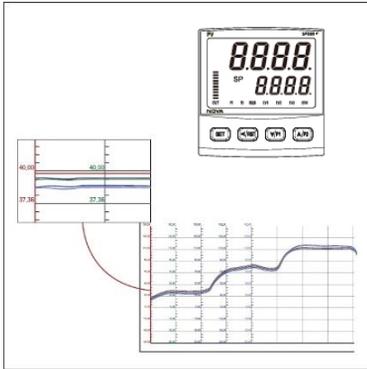
< SH-FU-xxxRTG600 >



<SH-FU-xxxRTG900>



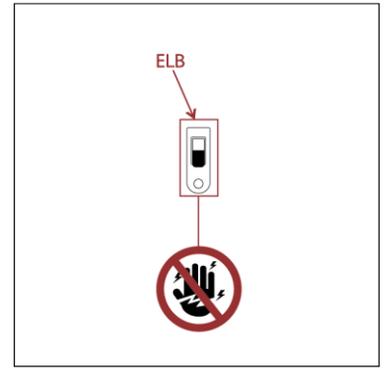
4. Key Feature



- Digital display of temp and time
- Multi key-in (100Ω(DIN Pt100Ω), KPt100Ω(JPt100Ω), K(CA))
- Precise temperature control
- Alarm when timer ends



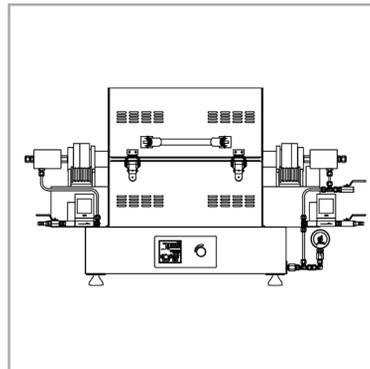
- Auto back up



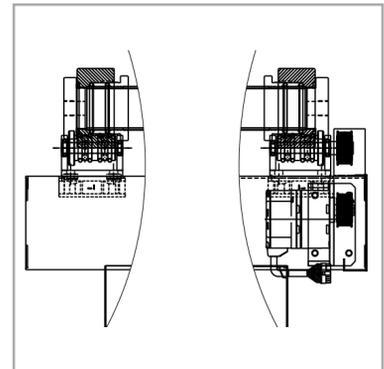
- Over-current protection function



- Over-temperature protection function

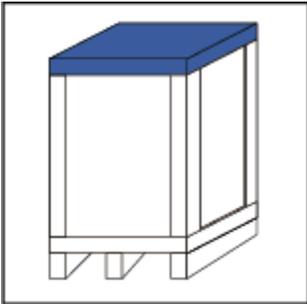


- Separated body and control box design protecting from thermal shock

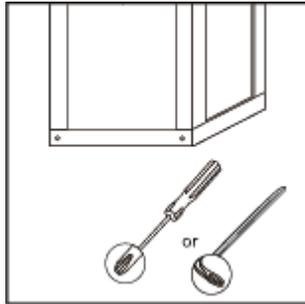


- Seamless and efficient input of raw materials

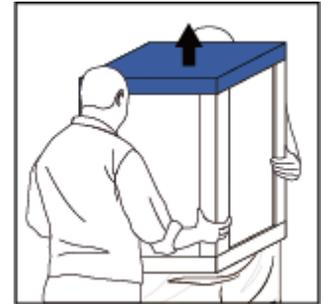
5. Installation



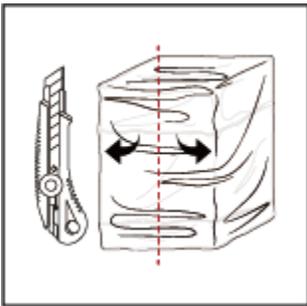
① Once the product is delivered, place the package on a flat location.



② Unscrew the bottom of the box.



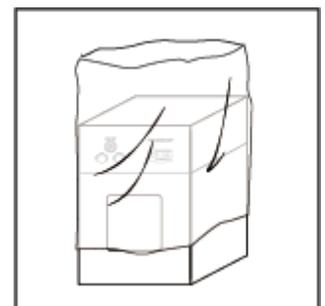
③ Lift the box as shown in the picture.



④ Unwrap the bag.

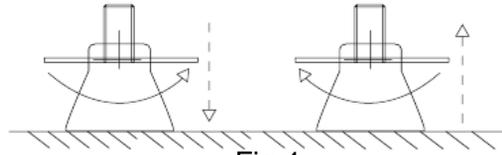


⑤ Place the equipment on your desired location.



⑥ Lift the remaining plastic up.

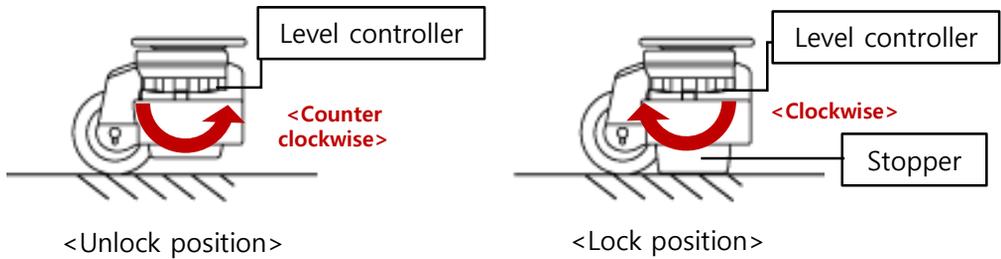
※ Normal (Standard model)



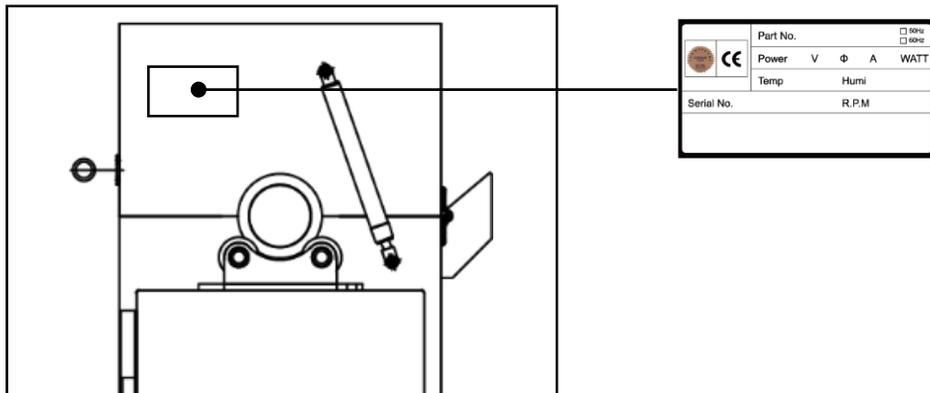
<Fig-1>

Refer to above fig-1, level the equipment by adjusting the feet.

※ Selecting the Moving Frame Option



When installing equipment, turn the level controller clockwise to secure stopper on the floor.



 Please check the model and power specifications on the serial label by referring to the above illustration. Connect the power and turn on the main switch(E.L.B).

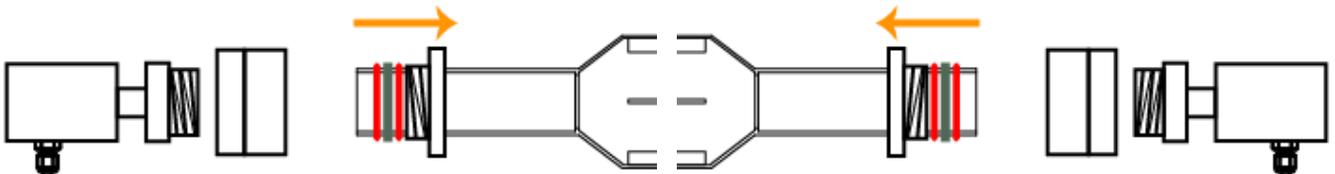
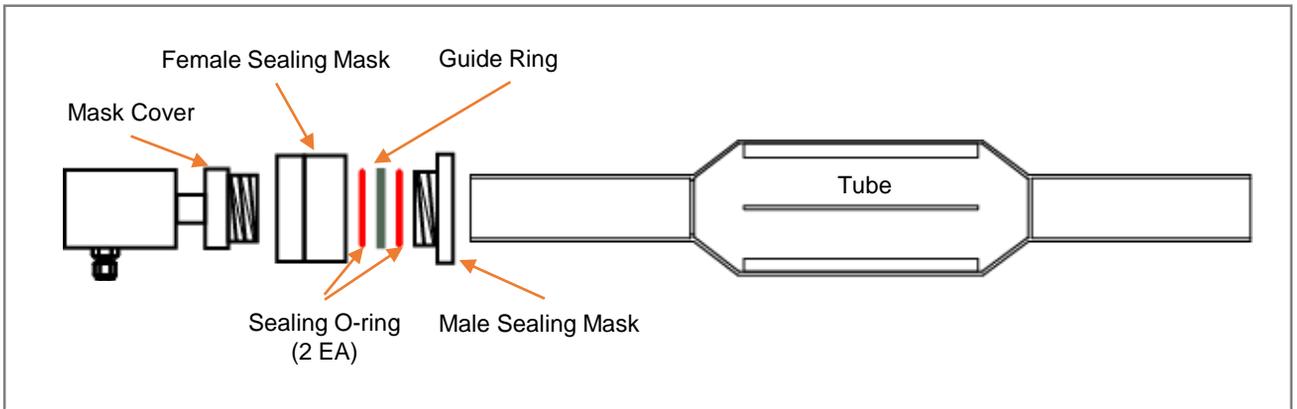


Please avoid a sharp and rapid increase in temperature, which will deteriorate the durability of heating elements. We recommend 15°C/min or similar as ideal ramp up rate.

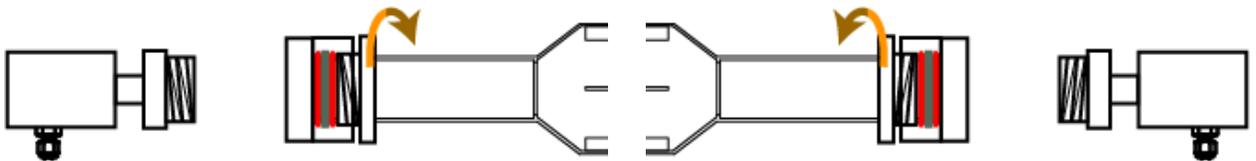


After high temperature operation, tube rotation must be maintained until the furnace temperature drops below 300°C to prevent tube deformation. Failure to rotate the tube during high temperature conditions may result in structural damage due to thermal stress.

► How to Install and Replace a Tube



1. Fit the parts to both of left and right ends of the tube in the following order;
Male Sealing Mask → Sealing O-ring → Guide Ring → Sealing O-ring

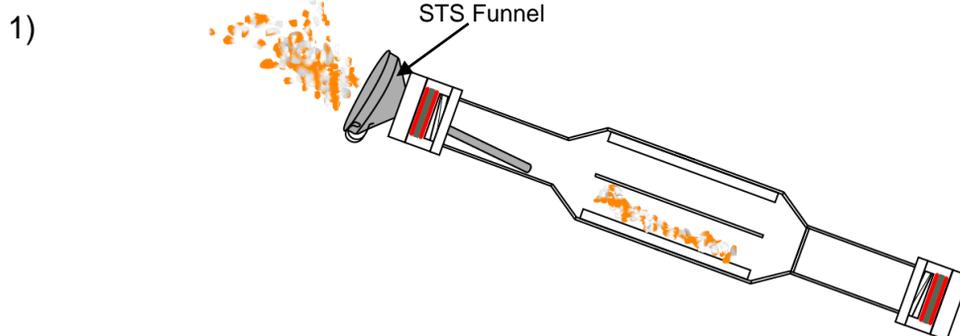


2. Turn the Male Sealing Mask clockwise and assemble it with the Female Sealing Mask.



3. Turn the Mask Cover clockwise and assemble it with the Female Sealing Mask.

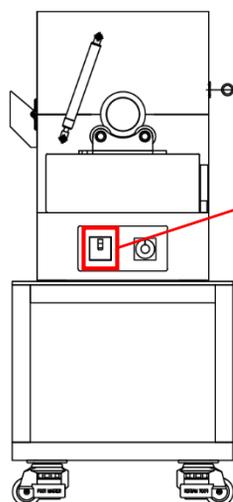
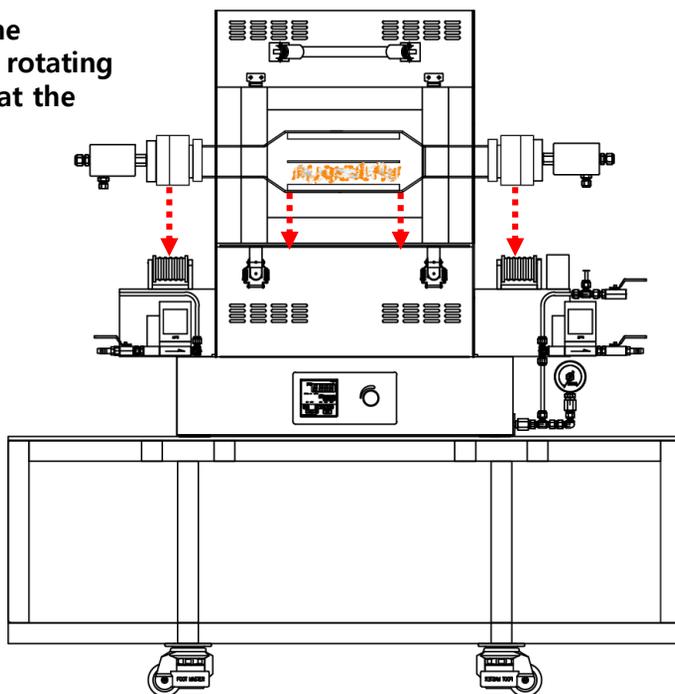
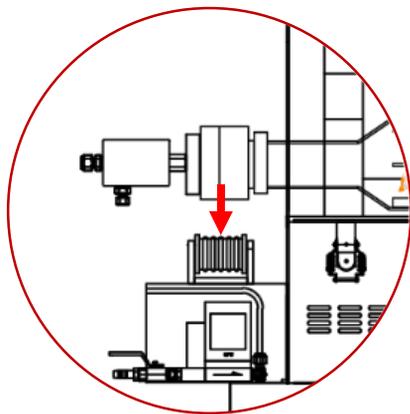
6. Setting and Operation



Use the supplied STS funnel to load the tube with feed material.

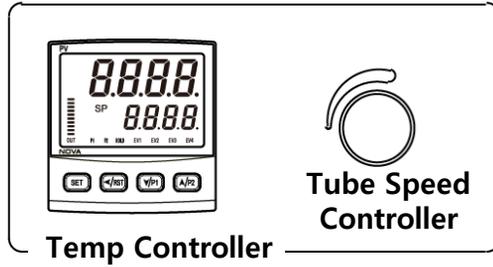
For optimal operation, load the tube to 30~35% of its internal volume. Do not exceed 35%.

- 2) **With the furnace top open, place the loaded tube onto the left and right rotating rollers, ensuring the sealing masks at the both ends sit on the rollers.**



- 3) **Set the E.L.B of the equipment to ON position.**

3) Controller outward & function



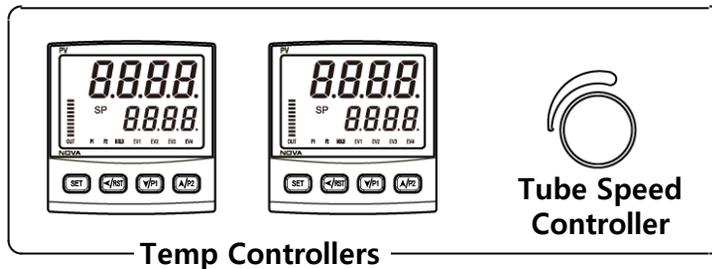
<SH-FU-xxxRTG300>

Temp Controller : Set the desired temperature set point. (see page 15 onward)

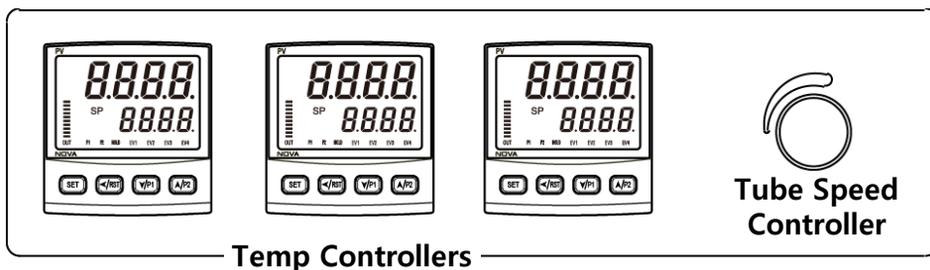
Tube Speed Controller : Adjust the rotating tube speed.

Turn the knob clockwise to set the desired speed.

Turn the knob fully counterclockwise to stop rotation of the tube.



<SH-FU-xxxRTG600>



<SH-FU-xxxRTG900>

7. Temp Controller Setting

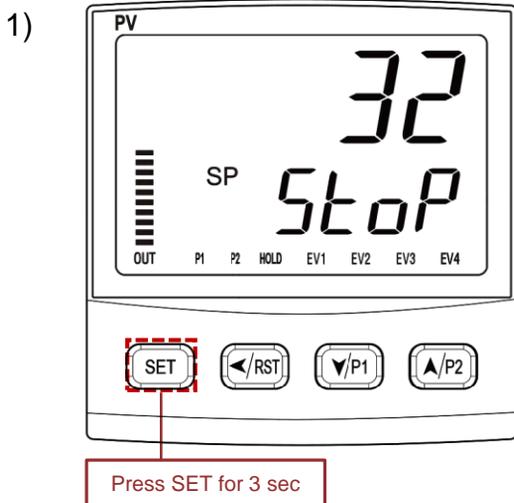
Controller outward and function



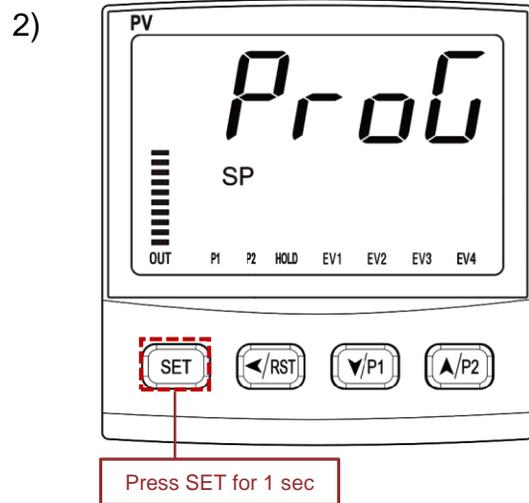
No.	Contents	No.	Contents	
1	PV display, Parameter Symbol	6	<ul style="list-style-type: none"> Used in switching between parameters or registering parameter settings. Used to change Display screen from RUN screen. 	
2	<ul style="list-style-type: none"> MV Bar Graph display <ul style="list-style-type: none"> 90.1 ~ 100.0% : Lights on 10 80.1 ~ 90.0% : Lights on 9 70.1 ~ 80.0% : Lights on 8 60.1 ~ 70.0% : Lights on 7 50.1 ~ 60.0% : Lights on 6 40.1 ~ 50.0% : Lights on 5 30.1 ~ 40.0% : Lights on 4 20.1 ~ 30.0% : Lights on 3 10.1 ~ 20.0% : Lights on 2 0.1 ~ 10.0% : Lights on 1 0% : All Lights off OUT LAMP : When Proportional Control, Lights off When Proportional Control, Display the Valve B.GRP : When CUR, Heater current display 		<ul style="list-style-type: none"> Pressing the SET key for 3 sec from the RUN screen. → Move to the SET screen. Pressing the SET key for 3 sec from the SET screen. → Move to the RUN screen. 	
3	SP Set, Parameter Set		7	<ul style="list-style-type: none"> Used when shifting position to modify value RST : Pressing when Pattern End (Pressing for 1 sec)
4	Lights on during EVENT			8
5	Lights on during P1, P2, HOLD			

※Temperature Setting and Time Programming

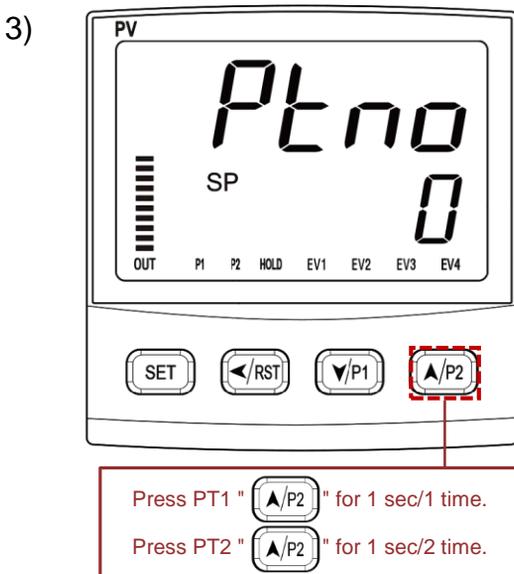
- example) Step 1. Ramp up to 800°C for 2hours
 Step 2. Hold at 800°C for 30minutes
 Step 3. Ramp up to 850°C for 30minutes
 Step 4. Hold at 850°C for 30minutes



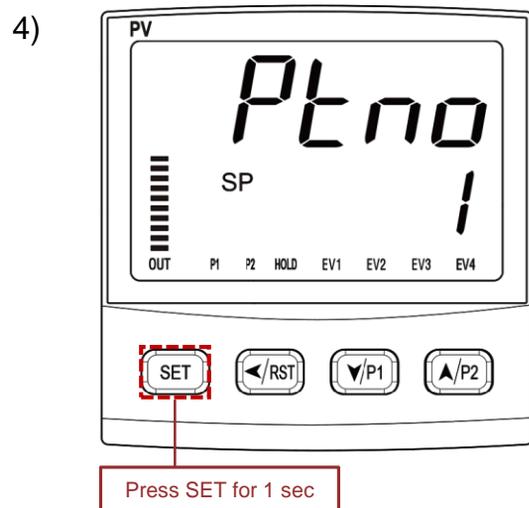
Press SET for 3 sec,
Go to setting mode.



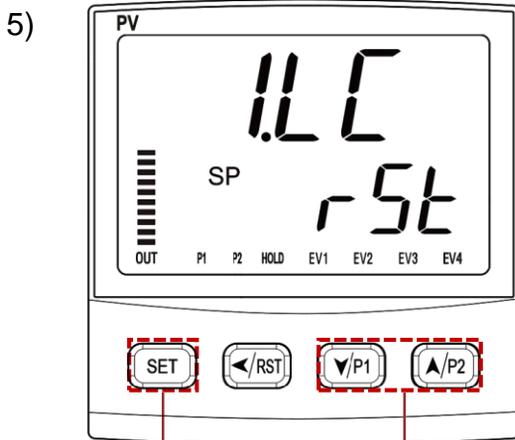
Press SET for 1 sec,
Go to program mode.



Using up/down button,
set the number of your pattern (1 or 2)



Press SET for 1 Sec to fix
the number of your pattern.

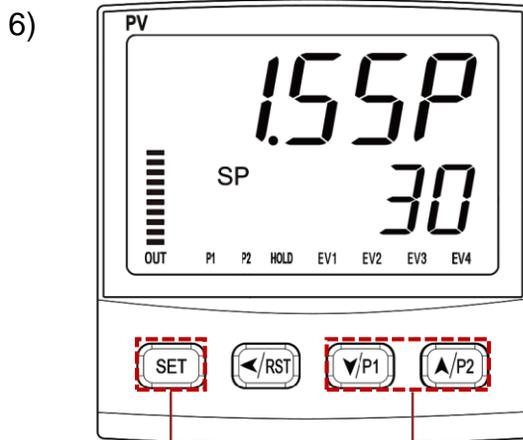


After setting
press SET for 1 sec

Changing setting
press  for 1 sec

1.LC has 4 ending modes of your pattern 1or 2 you input

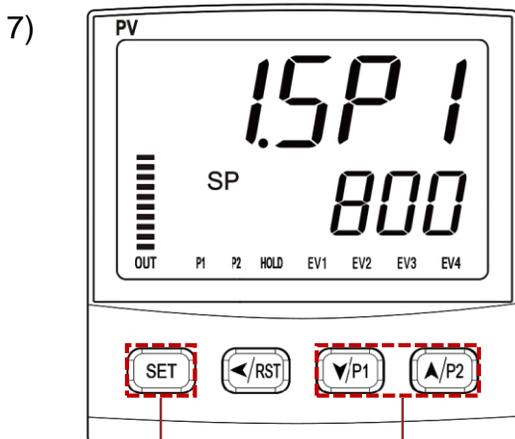
- RST-Stop operating after last step
- HOLD-Keep temp of last step
- PTH1-Endless repeat of No.1 pattern
- PTH2-Endless repeat of No.2 pattern



After setting
press SET for 1 sec

Changing setting
press  for 1 sec

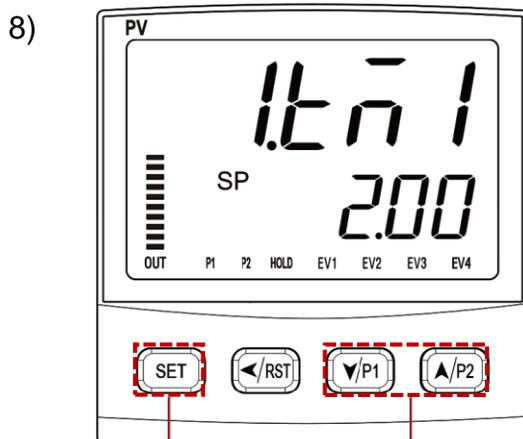
1.SSP means the starting temperature.



After setting
press SET for 1 sec

Changing setting
press  for 1 sec

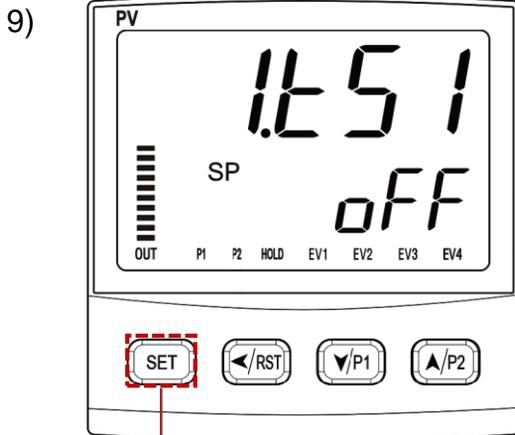
1.SP1 means the first temperature you want to reach



After setting
press SET for 1 sec

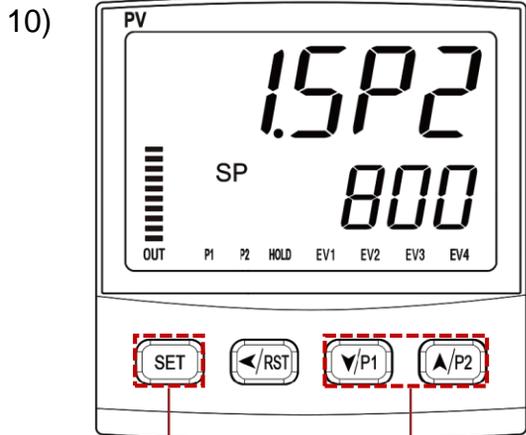
Changing setting
press  for 1 sec

1.tn1 means the time you want in order to reach 800°C
(00.00) (HH.MM)



After setting
press SET for 1 sec

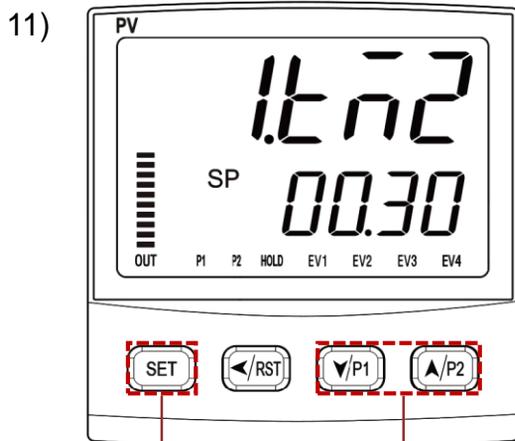
Keep 1.tS1 as oFF always.



After setting
press SET for 1 sec

Changing setting
press   for 1 sec

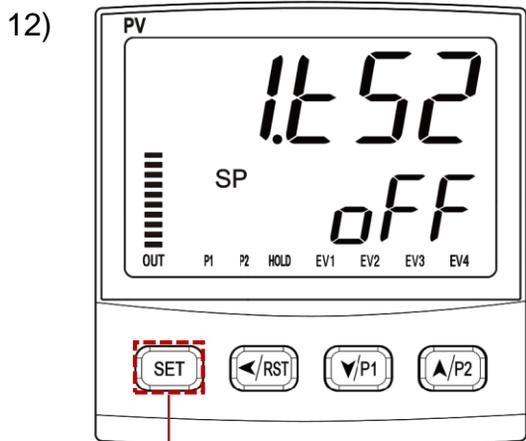
1.SP2 means the second temperature
you want to reach or hold



After setting
press SET for 1 sec

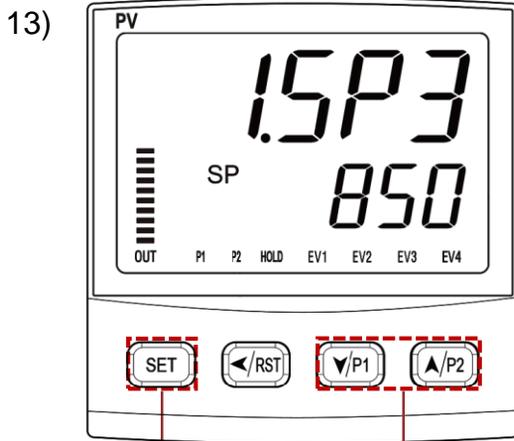
Changing setting
press   for 1 sec

1.tm2 means the time you want to
reach at 1.SP2 or hold
(00.00) (HH.MM)



After setting
press SET for 1 sec

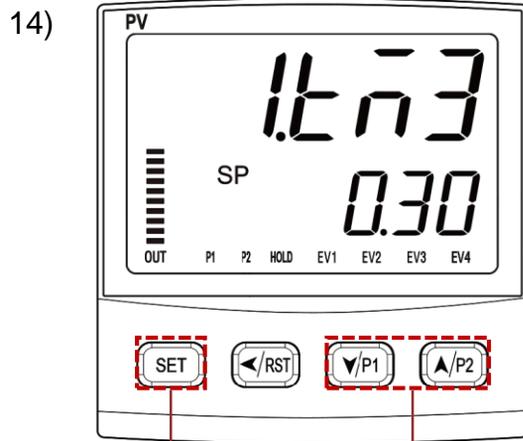
Keep 1.tS2 as oFF always.



After setting
press SET for 1 sec

Changing setting
press ↓/P1 ↑/P2 for 1 sec

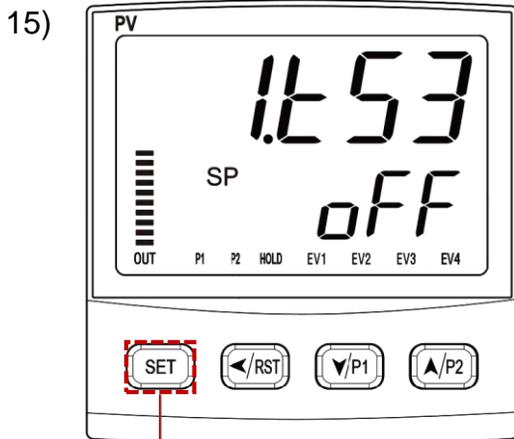
1.SP3 means the third temperature you want to reach



After setting
press SET for 1 sec

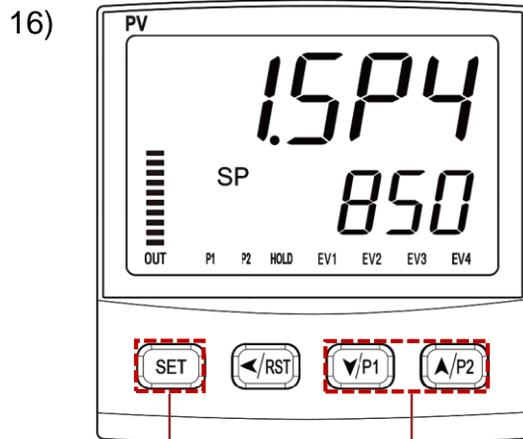
Changing setting
press ↓/P1 ↑/P2 for 1 sec

1.t3 means the time you want in order to reach at 1.SP3



After setting
press SET for 1 sec

Keep 1.t53 as OFF always

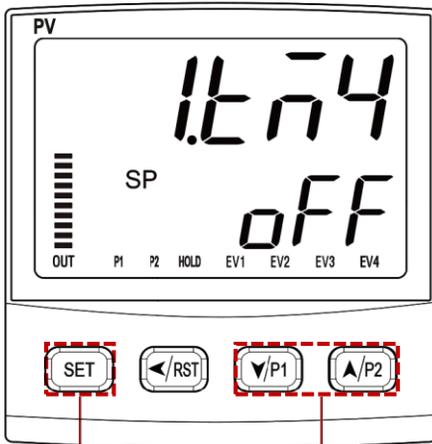


After setting
press SET for 1 sec

Changing setting
press ↓/P1 ↑/P2 for 1 sec

1.SP4 means the temperature you want to reach or hold

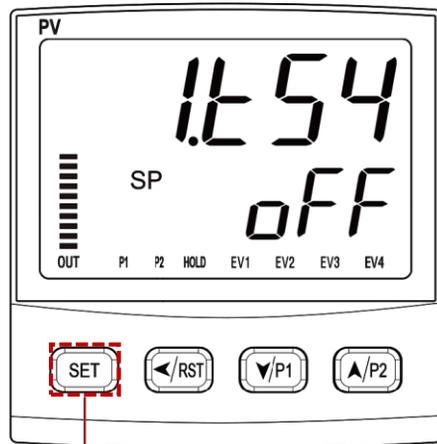
17)



After setting
press SET for 1 sec

Changing setting
press  for 1 sec

18)

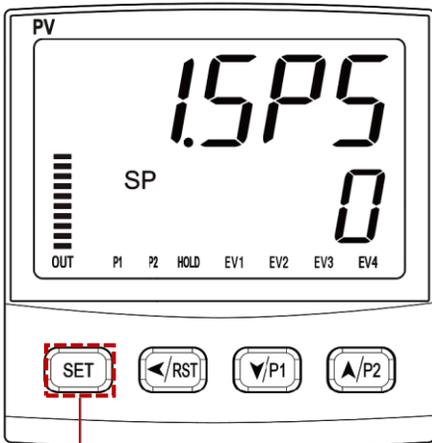


After setting
press SET for 1 sec

1,tm4 means the time you want in order
to reach at 1.SP4 or hold

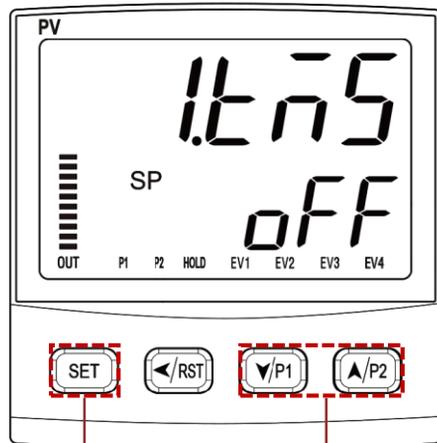
Keep 1.tS4 as OFF always

19)



After setting
press SET for 1 sec

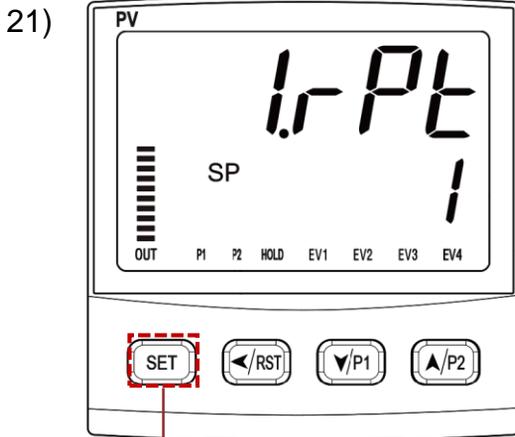
20)



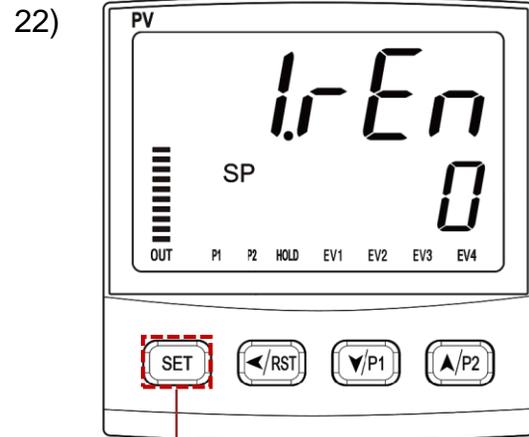
After setting
press SET for 1 sec

Changing setting
press  for 1 sec

When you put 0 at 1.SP5 and off at 1.tm5, it means the program is done.



After setting
press SET for 1 sec

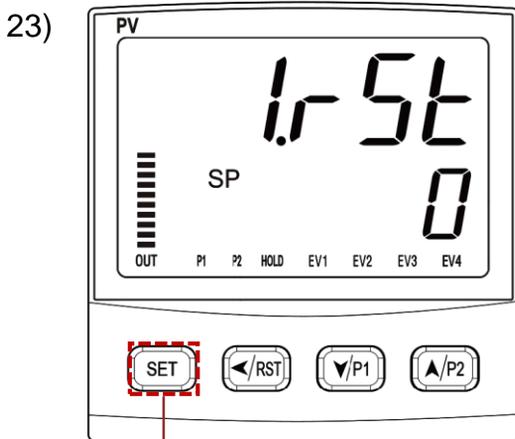


After setting
press SET for 1 sec

1.rPt means how many time you want to repeat the pattern 1.

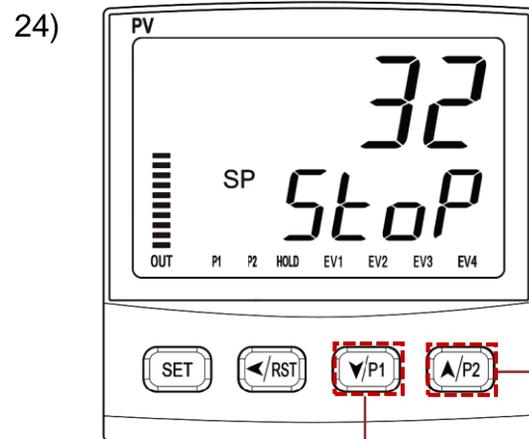
※ 0 means infinite repeat.

Keep 1.rEn as 0 always



After setting
press SET for 3 sec

Keep 1.rSt 0 always.
And press SET for 3 sec to return standby mode.

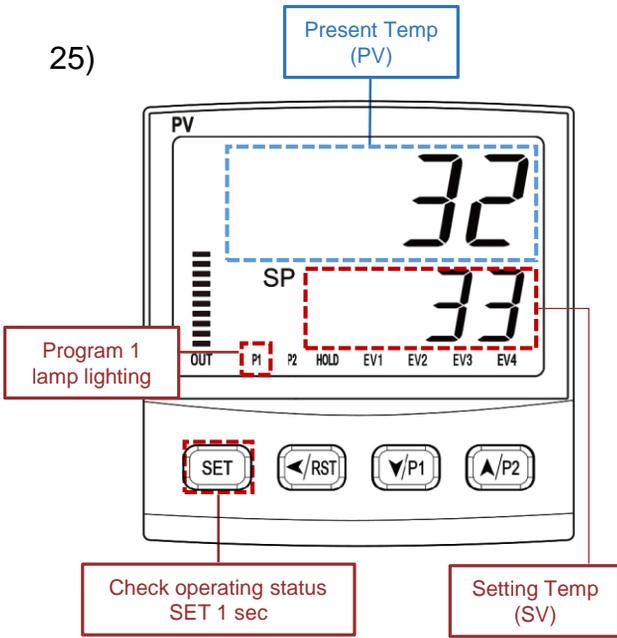


Operating
program 1

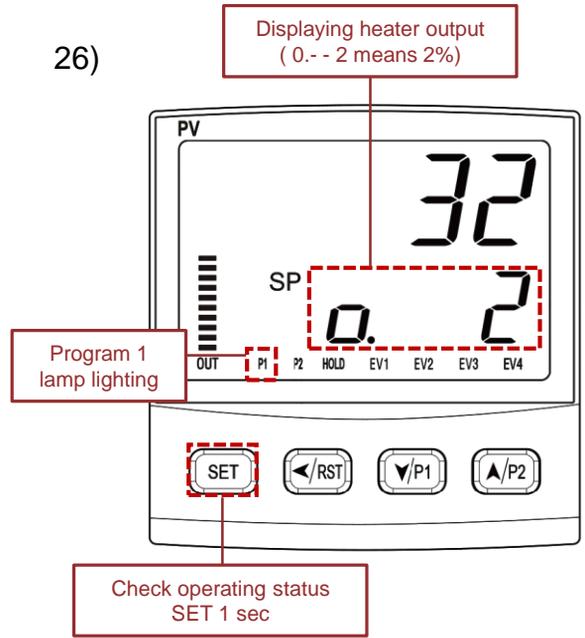
Operating
program 2

Press your pattern button for 3 sec
so the controller starts running

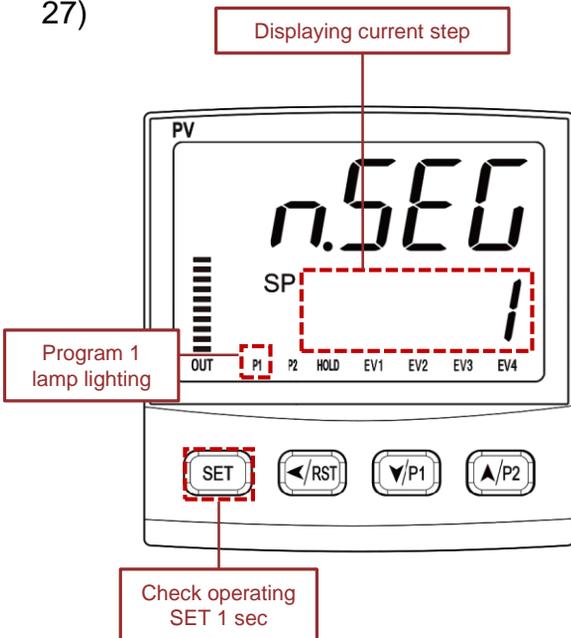
25)



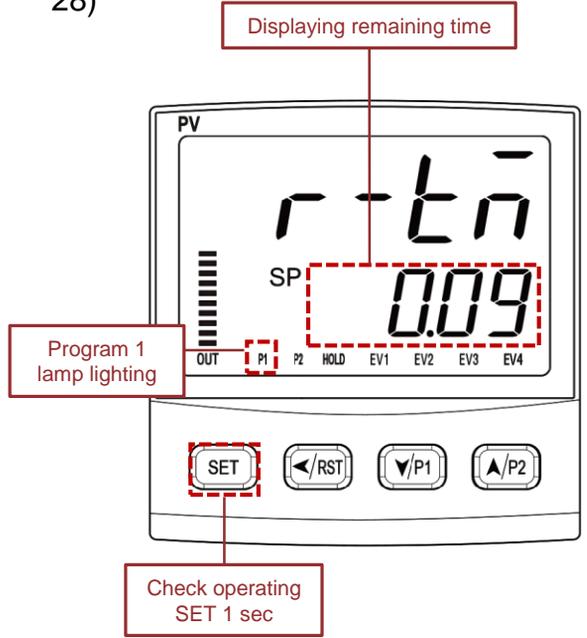
26)



27)

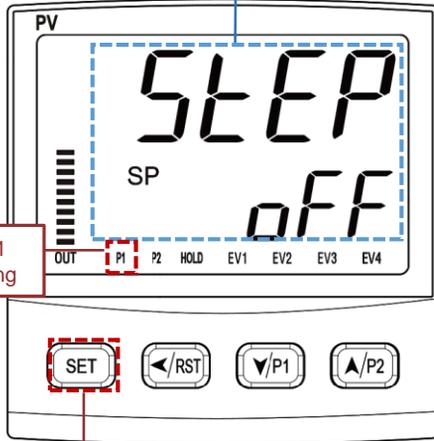


28)



29)

STEP "OFF"
Do not change



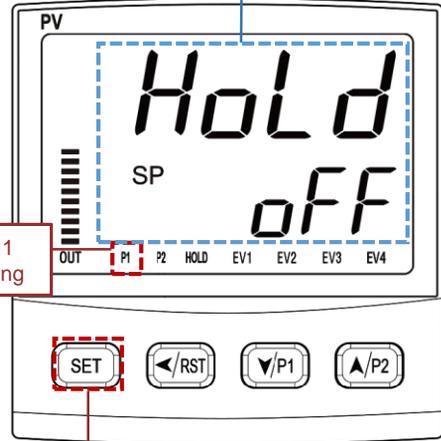
Program 1
lamp lighting

Check operating
SET 1 sec

※ STEP OFF-Do not change

30)

"HOLD OFF"
Do not change



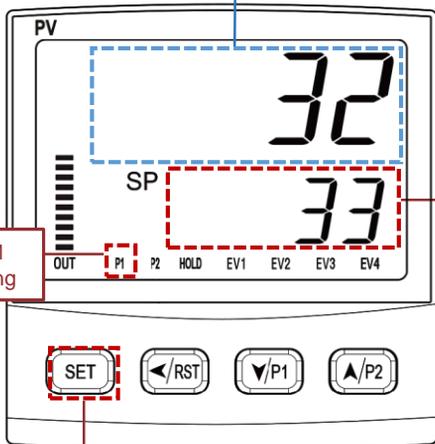
Program 1
lamp lighting

Check operating
SET 1 sec

※ HOLD OFF-Do not change

31)

Present Temp
(PV)

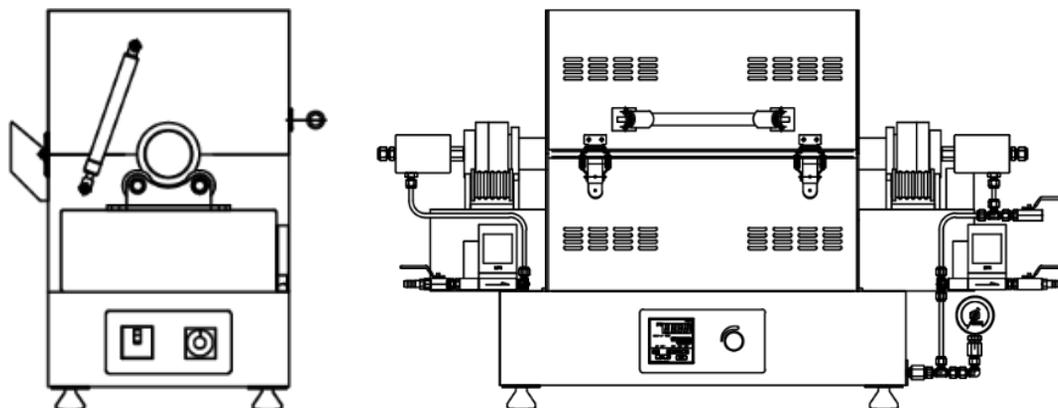


Program 1
lamp lighting

Setting Temp
(SV)

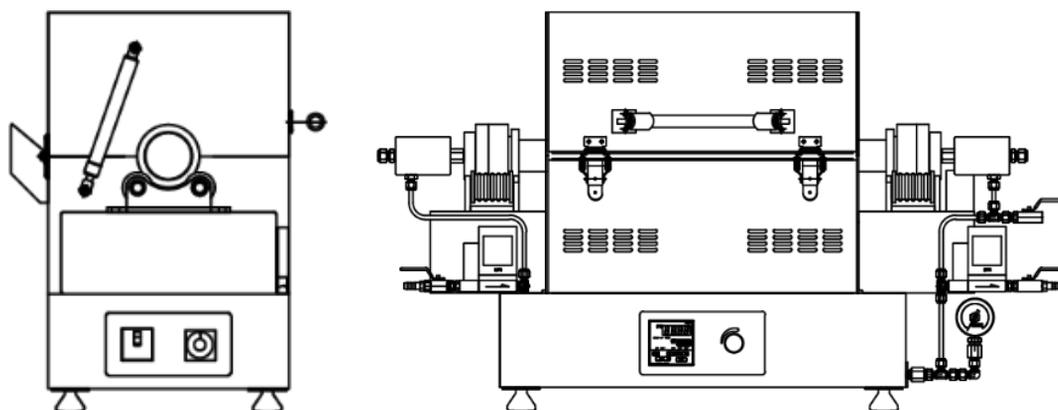
Check operating
SET 1 sec

9. Specifications < SH-FU-120RTG300 >



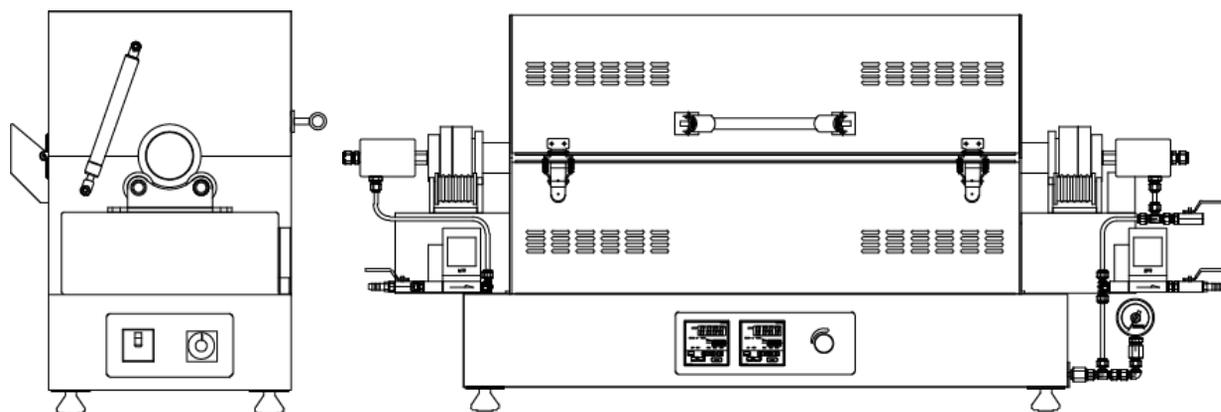
Model		SH-FU-120RTG300
Max Temp		1200°C (2192°F)
Temp Controller		Programmable Controller (SP570)
Tube Diameter & length(Fuse Type) total length(700mm)	Heating Middle	114.3 Φ x 3T x 220mm (STS310S) 120 Φ x 3T x 220mm (Quartz)
	Heating Reduce	114.3 Φ x 3T > 60Φ x 2.8T x 40mm (STS310S) 120 Φ x 3T > 60Φ x 2.5T x 40mm (Quartz)
	Cooling End	60 Φ x 2.8T x 200mm (STS310S) 60 Φ x 2.5T x 200mm (Quartz)
Dimension External (W×D×H)		940 x 390 x 640 mm 37.0 x 15.3 x 25.2"
Heater Capa		4.0 kW
Tube Rotation Speed		0 ~ 10rpm
Heater Element		Kanthal A-1
Insulation		Ceramic Board
Gas port		¼" tube Lock valve
Gas Exhaust port		1/4" tube Lock & valve & gauge
Electrical Power 220V, 50/60Hz, 1Φ		18.5 A

9. Specifications < SH-FU-200/250RTG300 >



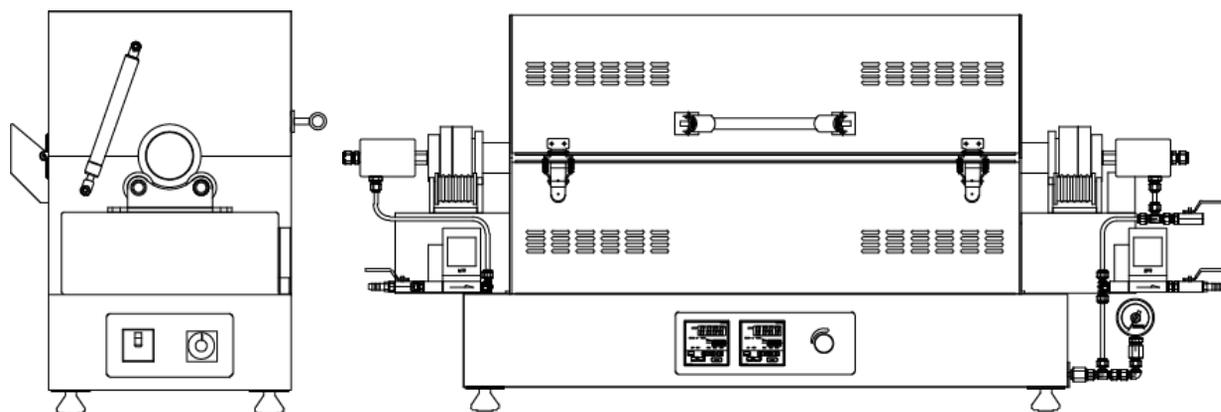
Model		SH-FU-200RTG300	SH-FU-250RTG300
Max Temp		1200°C (2192°F)	
Temp Controller		Programmable Controller (SP570)	
Tube Diameter & length(Fuse Type) total length(800mm)	Heating Middle	216.3 Φ x 4T x 220 mm (STS310S) 200 Φ x 5T x 220 mm (Quartz)	267.4 Φ x 4T x 220 mm (STS310S) 250 Φ x 5T x 220 mm (Quartz)
	Heating Reduce	216.3Φ x 4T > 60Φ x 2.8T x 40mm (STS310S) 200Φ x 5T > 60Φ x 2.5T x 40mm (Quartz)	267.4 Φ x 4T > 60Φ x 2.8T x 40mm (STS310S) 250 Φ x 5T > 60Φ x 2.5T x 40mm (Quartz)
	Cooling End	60Φ x 2.8T x 250mm (STS310S) 60Φ x 2.5T x 250mm (Quartz)	60Φ x 2.8T x 250mm (STS310S) 60Φ x 2.5T x 250mm (Quartz)
Dimension External (W×D×H)		1040 x 520 x 720mm 40.9 x 20.5 x 28.3"	1040 x 570 x 770 mm 40.9 x 22.4 x 30.3"
Heater Capa		6.0 kW	8.0 kW
Tube Rotation Speed		0 ~ 10rpm	
Heater Element		Kanthal A-1	
Insulation		Ceramic Board	
Gas port		¼" tube Lock valve	
Gas Exhaust port		1/4" tube Lock & valve & gauge	
Electrical Power 220V, 50/60Hz, 1Φ		28.0 A	37.0 A
Electrical Power 220V, 50/60Hz, 3Φ		NA	12.5 A

9. Specifications < SH-FU-120RTG600 >



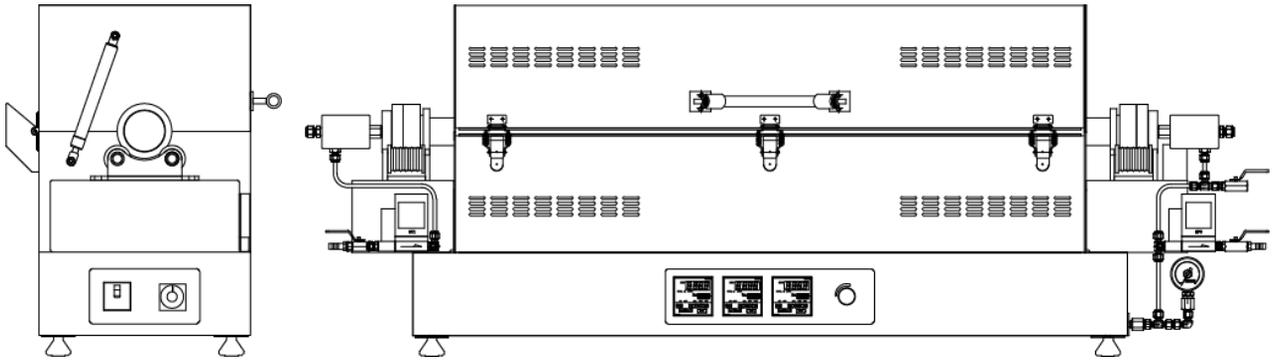
Model		SH-FU-120RTG600
Max Temp		1200°C (2192°F)
Temp Controller		Programmable Controller (SP570)
Tube Diameter & length(Fuse Type) total length(1025mm)	Heating Middle	114.3 Φ x 3T x 545mm (STS310S) 120 Φ x 3T x 545mm (Quartz)
	Heating Reduce	114.3 Φ x 3T > 60Φ x 2.8T x 40mm (STS310S) 120 Φ x 3T > 60Φ x 2.5T x 40mm (Quartz)
	Cooling End	60 Φ x 2.8T x 200mm (STS310S) 60 Φ x 2.5T x 200mm (Quartz)
Dimension External (W×D×H)		1365 x 390 x 640 mm 53.7 x 15.4 x 25.2"
Heater Capa		6 kW
Tube Rotation Speed		0 ~ 10rpm
Heater Element		Kanthal A-1
Insulation		Ceramic Board
Gas port		¼" tube Lock valve
Gas Exhaust port		1/4" tube Lock & valve & gauge
Electrical Power 220V, 50/60Hz, 1Φ		27 A

9. Specifications < SH-FU-200/250RTG600 >



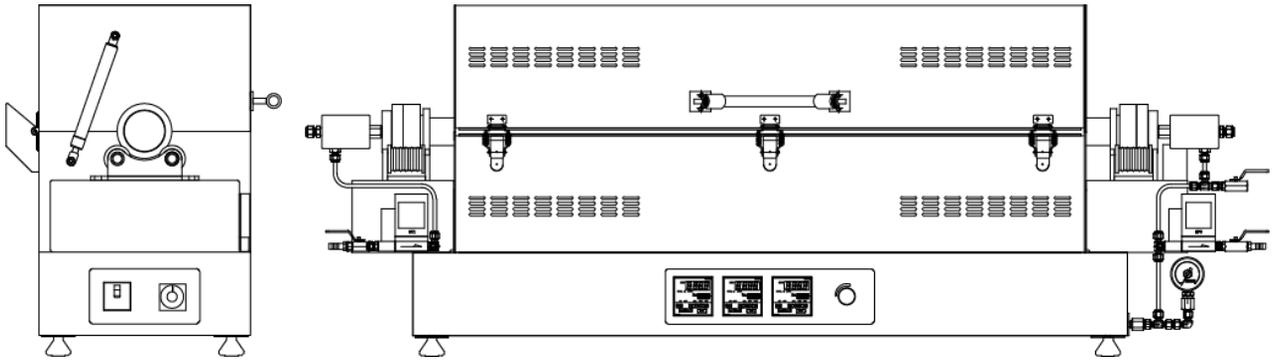
Model		SH-FU-200RTG600	SH-FU-250RTG600
Max Temp		1200°C (2192°F)	
Temp Controller		Programmable Controller (SP570)	
Tube Diameter & length(Fuse Type) total length(1125mm)	Heating Middle	216.3 Φ x 4T x 545 mm (STS310S) 200 Φ x 5T x 545 mm (Quartz)	267.4 Φ x 4T x 545 mm (STS310S) 250 Φ x 5T x 545 mm (Quartz)
	Heating Reduce	216.3Φ x 4T > 60Φ x 2.8T x 40mm (STS310S) 200Φ x 5T > 60Φ x 2.5T x 40mm (Quartz)	267.4 Φ x 4T > 60Φ x 2.8T x 40mm (STS310S) 250 Φ x 5T > 60Φ x 2.5T x 40mm (Quartz)
	Cooling End	60Φ x 2.8T x 250mm (STS310S) 60Φ x 2.5T x 250mm (Quartz)	60Φ x 2.8T x 250mm (STS310S) 60Φ x 2.5T x 250mm (Quartz)
Dimension External (W×D×H)		1365 x 520 x 720mm 53.7 x 20.5 x 28.3"	1365 x 570 x 770 mm 53.7 x 22.4 x 30.3"
Heater Capa		12 kW	16 kW
Tube Rotation Speed		0 ~ 10rpm	
Heater Element		Kanthal A-1	
Insulation		Ceramic Board	
Gas port		¼" tube Lock valve	
Gas Exhaust port		1/4" tube Lock & valve & gauge	
Electrical Power 220V, 50/60Hz, 3Φ		31.5 A	42.0 A
Electrical Power 380V, 50/60Hz, 3Φ		18.3 A	24.3 A

9. Specifications < SH-FU-120RTG900 >



Model		SH-FU-120RTG900
Max Temp		1200°C (2192°F)
Temp Controller		Programmable Controller (SP570)
Tube Diameter & length(Fuse Type) total length(1350mm)	Heating Middle	114.3 Φ x 3T x 870mm (STS310S) 120 Φ x 3T x 870mm (Quartz)
	Heating Reduce	114.3 Φ x 3T > 60Φ x 2.8T x 40mm (STS310S) 120 Φ x 3T > 60Φ x 2.5T x 40mm (Quartz)
	Cooling End	60 Φ x 2.8T x 200mm (STS310S) 60 Φ x 2.5T x 200mm (Quartz)
Dimension External (W×D×H)		1690 x 390 x 640 mm 66.5 x 15.4 x 25.2"
Heater Capa		8 kW
Tube Rotation Speed		0 ~ 10rpm
Heater Element		Kanthal A-1
Insulation		Ceramic Board
Gas port		¼" tube Lock valve
Gas Exhaust port		1/4" tube Lock & valve & gauge
Electrical Power 220V, 50/60Hz, 1Φ		36.4 A

9. Specifications < SH-FU-200/250RTG900 >



Model		SH-FU-200RTG900	SH-FU-250RTG900
Max Temp		1200°C (2192°F)	
Temp Controller		Programmable Controller (SP570)	
Tube Diameter & length(Fuse Type) total length(1450mm)	Heating Middle	216.3 Φ x 4T x 870 mm (STS310S) 200 Φ x 5T x 870 mm (Quartz)	267.4 Φ x 4T x 870 mm (STS310S) 250 Φ x 5T x 870 mm (Quartz)
	Heating Reduce	216.3Φ x 4T > 60Φ x 2.8T x 40mm (STS310S) 200Φ x 5T > 60Φ x 2.5T x 40mm (Quartz)	267.4 Φ x 4T > 60Φ x 2.8T x 40mm (STS310S) 250 Φ x 5T > 60Φ x 2.5T x 40mm (Quartz)
	Cooling End	60Φ x 2.8T x 250mm (STS310S) 60Φ x 2.5T x 250mm (Quartz)	60Φ x 2.8T x 250mm (STS310S) 60Φ x 2.5T x 250mm (Quartz)
Dimension External (W×D×H)		1690 x 520 x 720mm 66.5 x 20.4 x 28.3"	1690 x 570 x 770 mm 66.5 x 22.4 x 30.3"
Heater Capa		18 kW	24 kW
Tube Rotation Speed		0 ~ 10rpm	
Heater Element		Kanthal A-1	
Insulation		Ceramic Board	
Gas port		¼" tube Lock valve	
Gas Exhaust port		1/4" tube Lock & valve & gauge	
Electrical Power 220V, 50/60Hz, 3Φ		47.3 A	NA
Electrical Power 380V, 50/60Hz, 3Φ		27.4 A	36.5 A

