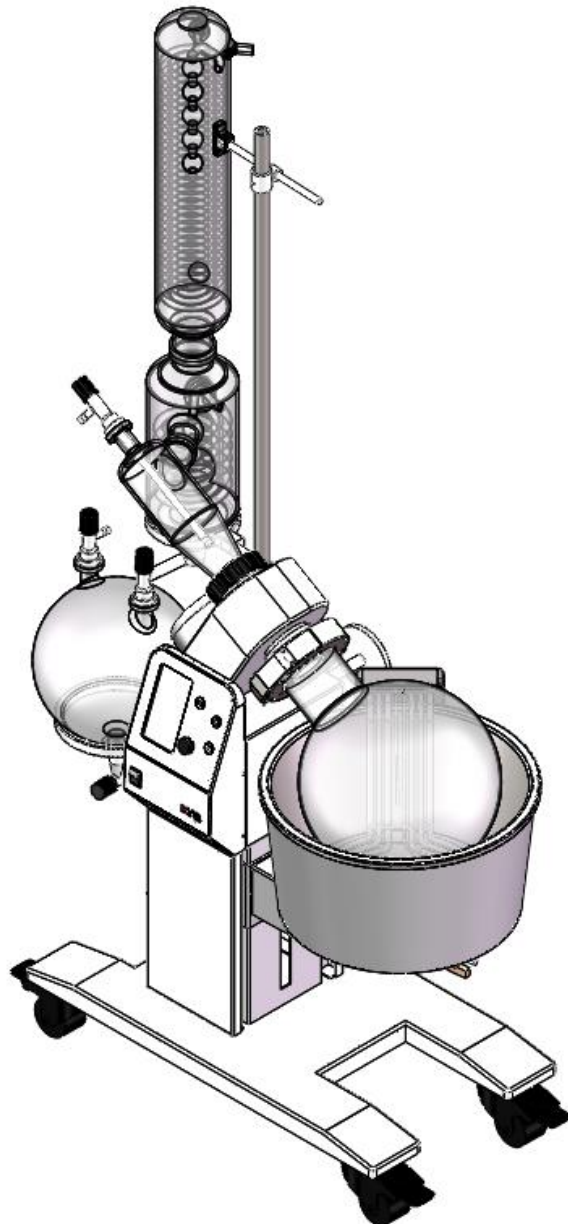


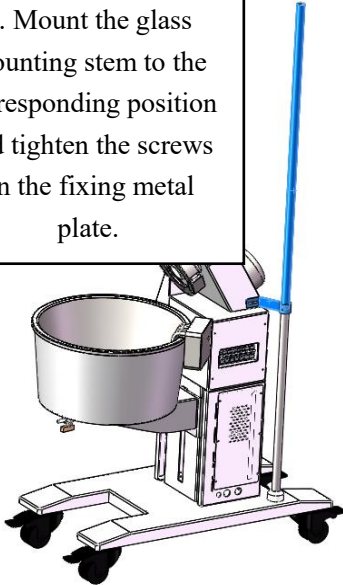
# Quick User Guide to 20L Rotary Evaporator



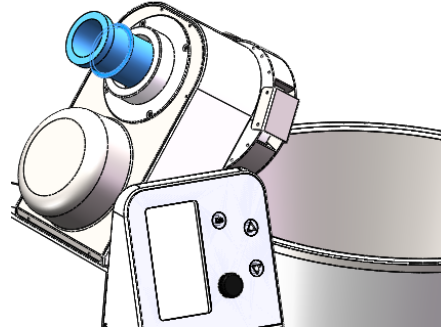
Before operating and using the instrument, please carefully read this user guide and fully understand the safety-related precautions.

# 1. Installation of Glass Assembly

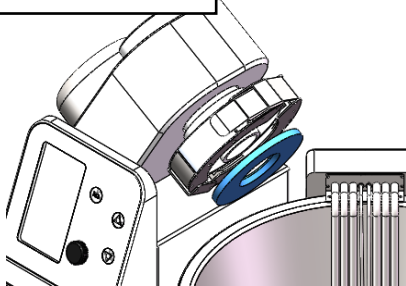
1. Mount the glass mounting stem to the corresponding position and tighten the screws on the fixing metal plate.



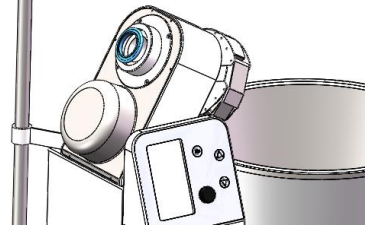
2. Place the glass axle with the PTFE washer into the corresponding position.



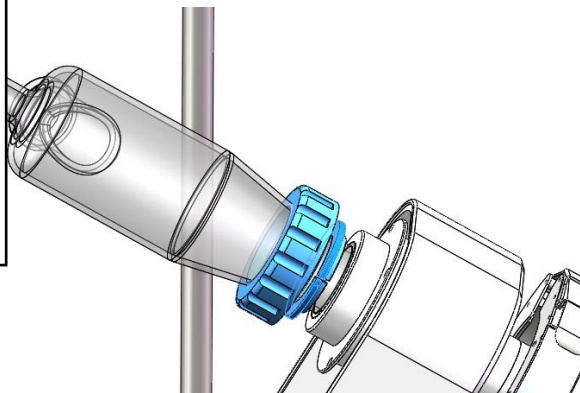
3. Insert the sealing gasket into the corresponding position and apply silicon grease lubricant.



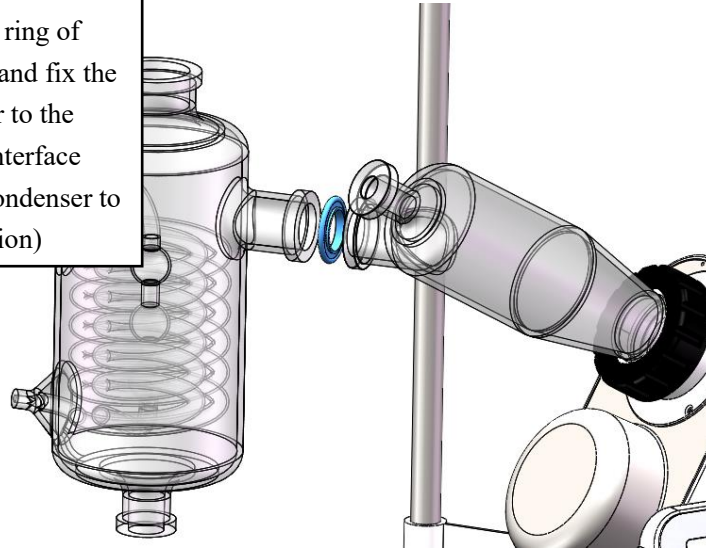
4. Place in sealing ring of corresponding size.



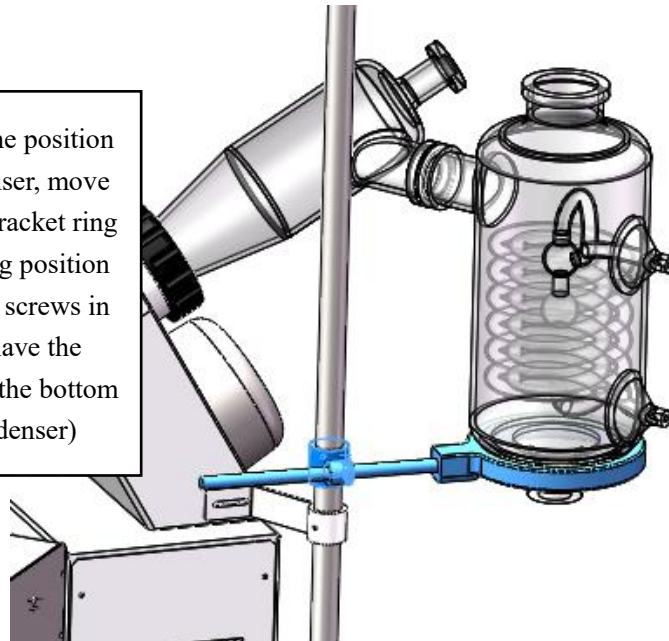
5. Mount the adaptor bottle with locknut in conjunction with the glass fastener. (Be sure to tighten it securely)



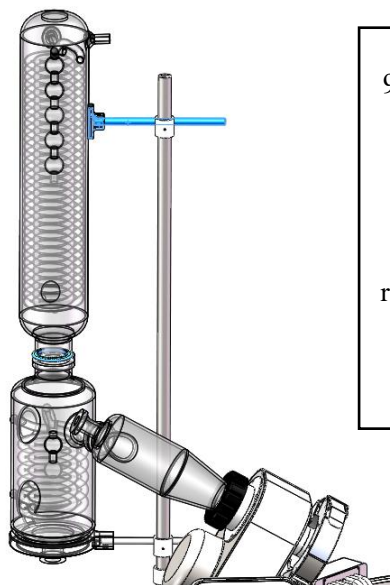
6. Add a sealing ring of corresponding size and fix the small condenser to the corresponding interface  
(Please adjust the condenser to upright position)



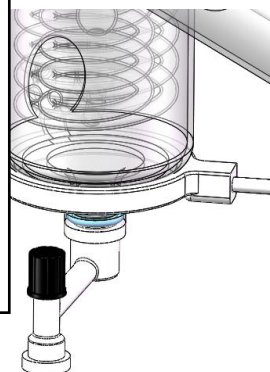
7. Properly adjust the position of the small condenser, move the corresponding bracket ring to the corresponding position and tighten the two screws in turn (be sure to have the bracket ring fit into the bottom of the small condenser)



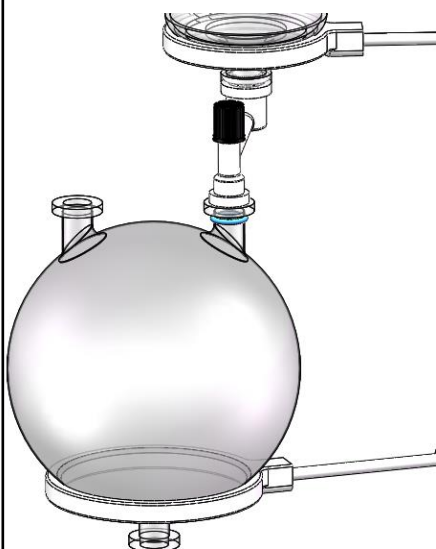
8. Mount the sealing ring of corresponding caliber, fix the large condenser to the top of the small condenser, properly adjust the position of the bandage and then tighten the screws.



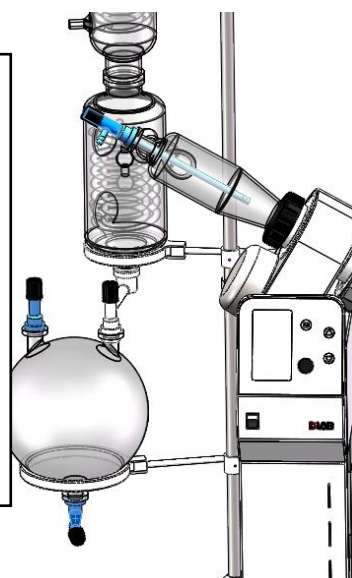
9. Mount the sealing ring of corresponding caliber and fix the valve of the receiving flask to the corresponding position.



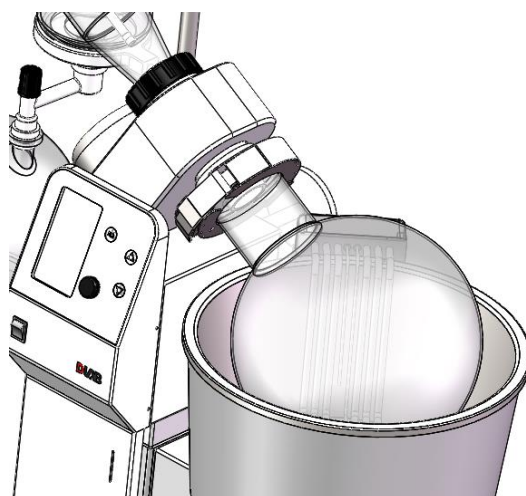
10. Mount the sealing ring of corresponding caliber, fix the collecting bottle to the corresponding position and then properly adjust the position of the strut before tightening it securely.

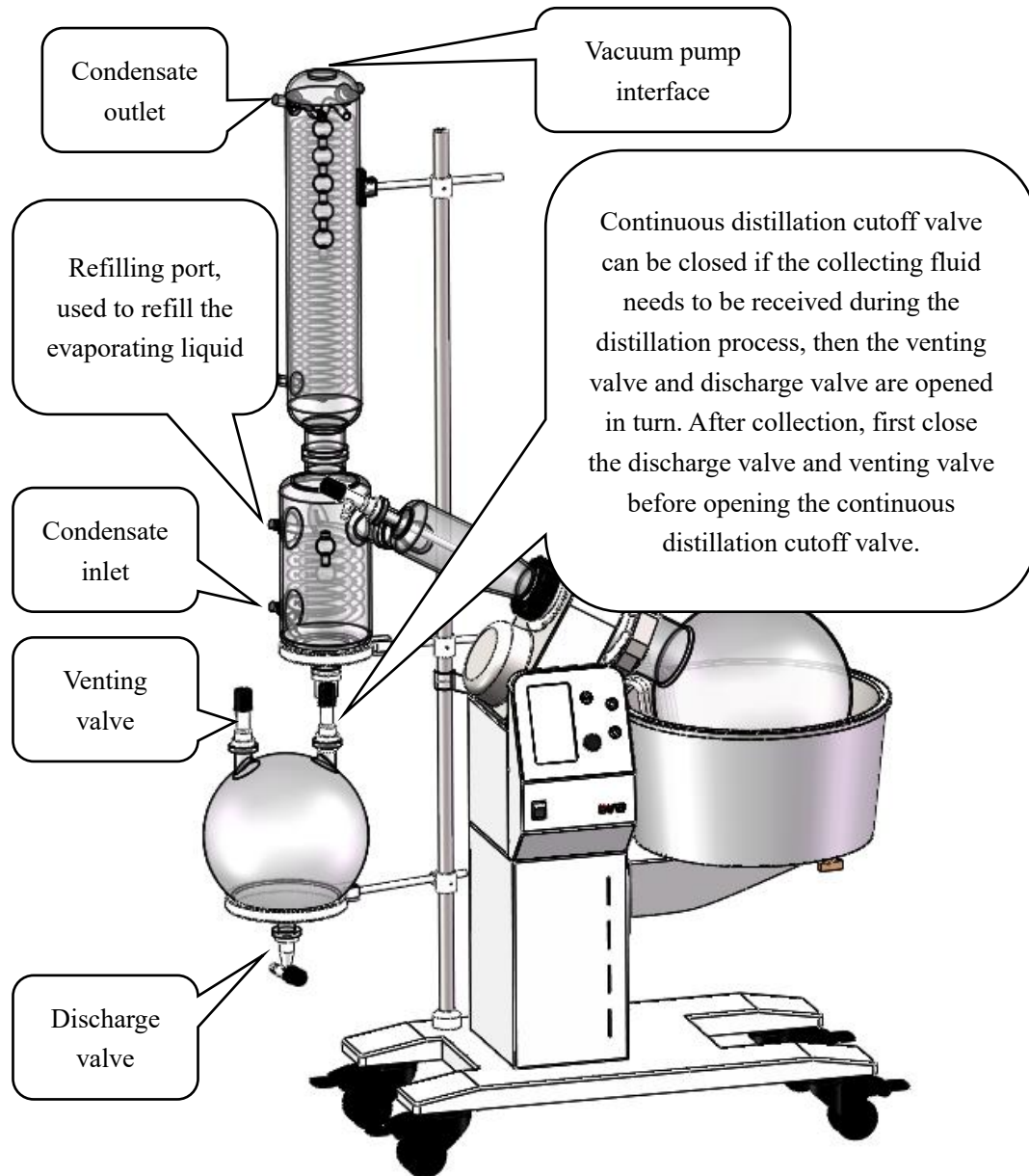


11. Mount the sealing ring of corresponding caliber and mount three valve ports to the corresponding positions.



12. Mount the sealing ring of corresponding caliber and then fix the evaporating flask to the corresponding position with the clamping mechanism.





## 2. Operating panel

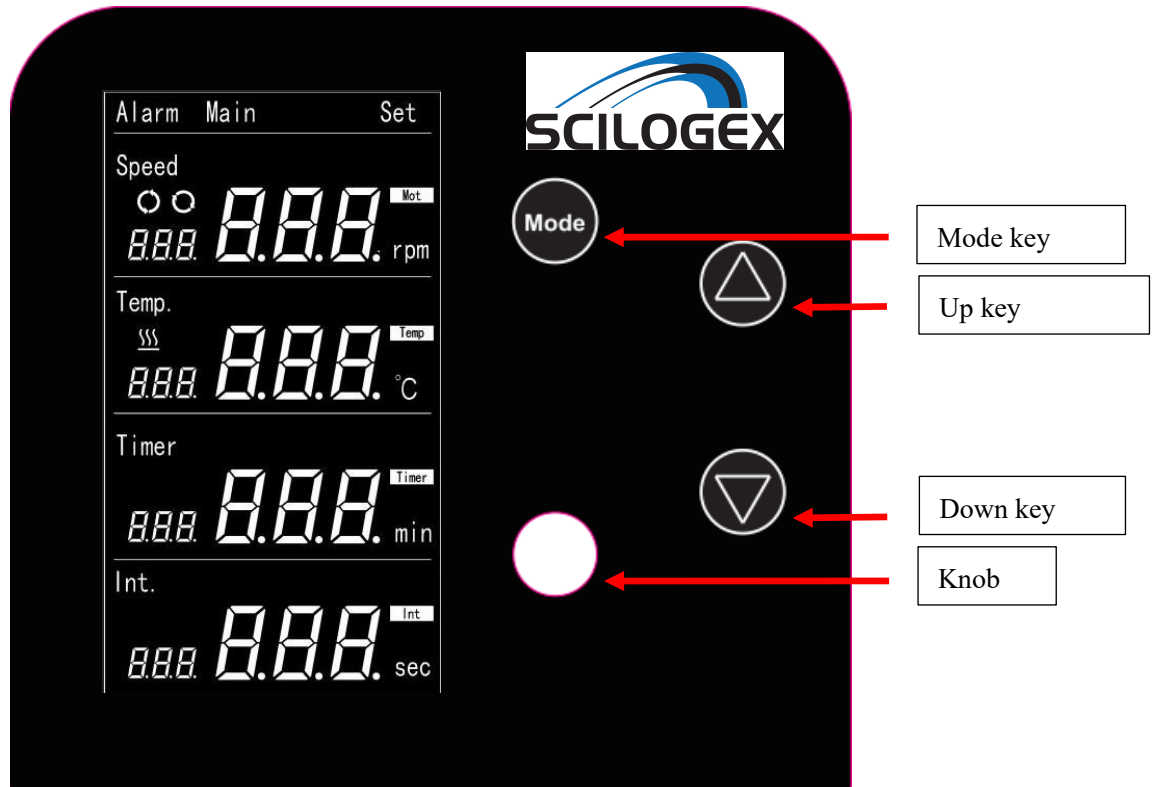


Figure 1-1 Schematics of operating panel

No.	Icon	Name	Function
1		Mode key	Switch between modes, the mode adjustment sequence is speed adjustment→ temperature adjustment →timing adjustment→ forward and reverse rotation time adjustment.
2		Knob	Press the knob to run, and press it again to stop. While in the adjustment mode, turn the knob clockwise to increase the parameter and turn the knob counterclockwise to decrease the parameter.
3		Up key	Press this key to raise the heating kettle.
4		Down key	Press this key to lower the heating kettle.



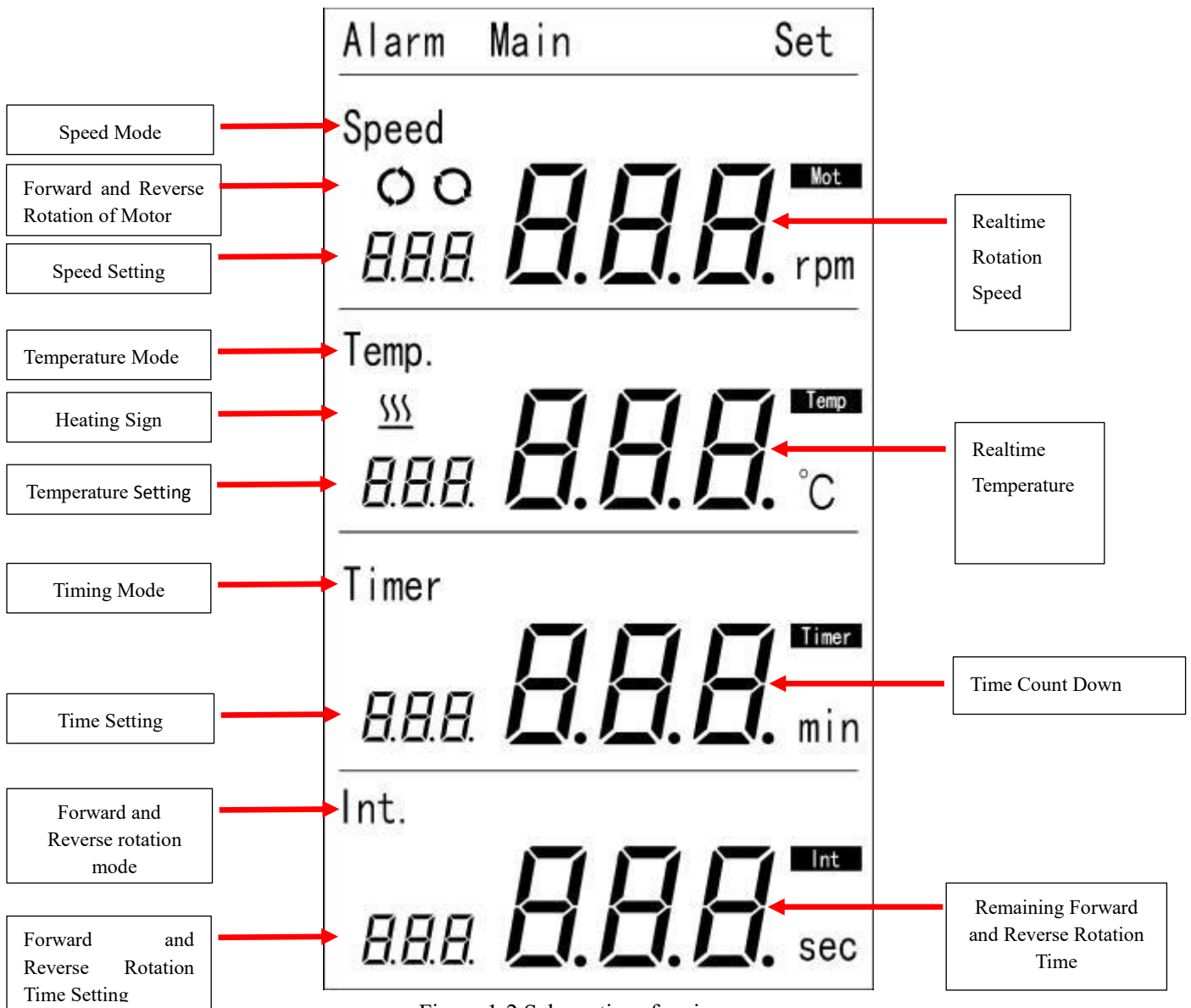


Figure 1-2 Schematics of main screen

### 3. Operation

#### ⚠ Caution

- Don't move or lean against the instrument while the instrument is running.
- Before running the instrument, ensure the cleanliness inside the heating kettle and be sure to remove any foreign objects from the heating kettle, such as plastic bags.
- When any strange noise or any other abnormality occurs during the operation, please stop the instrument immediately and contact our service center.

#### 3.1 Normal operation

When turning on the power switch, the display is lit and the last operating parameters are displayed

after the instrument completes self-test.

## 1) Set the operating parameters

### (1) Set the rotation speed

- Briefly press the set key. When the speed character is flashing, the current mode is the speed adjustment mode. Turn the knob clockwise to increase the speed and turn the knob counterclockwise to reduce the speed. The speed setting range is 10rpm-150rpm; when the speed is set to 0rpm, the rotation function is deactivated.
- After adjusting the parameter, the parameter will be saved automatically without further operation;
- This instrument supports speed parameter adjustment during operation in the same manner as described above;
- When the speed is set above 100rpm, note that the liquid in the heating kettle might be brought out by the evaporation flask;



### (2) Set the temperature

- After adjusting the speed parameter, briefly press the set key again. When the Temp character is flashing, the current mode is the temperature adjustment mode, in which turning the knob clockwise increases the temperature and turning the knob counterclockwise decreases the temperature. The temperature setting range is 20°C-180°C; when the temperature is set at 0°C, the heating function is deactivated.
- After adjusting the parameter, the parameter will be saved automatically without further operation;
- This instrument supports temperature parameter adjustment during operation in the same manner as described above;
- When the liquid inside the heating kettle is water, the set temperature may not exceed 90°C.



### (3) Set the time

- After adjusting the temperature parameter, briefly press the set key again. When the Timer character is flashing, the current mode is the timing adjustment mode, in which turning the knob clockwise increases the set time and turning the knob counterclockwise decreases the set time. The timing setting range is 0min-999min; when the time is set to 0min, the timing function is deactivated.
- After adjusting the parameter, the parameter will be saved automatically without further operation;
- This instrument supports timing parameter adjustment during operation in the same manner as described above.



- (4) Set the time interval between forward and reverse rotation
- After adjusting the timing parameter, briefly press the set key again. When the Int character is flashing, the current mode is the forward/reverse rotation timing adjustment mode, in which turning the knob clockwise increases the forward/reverse rotation interval and turning the knob counterclockwise decreases the forward/reverse rotation interval. The forward/reverse rotation interval setting range is 0s - 999s; when the forward/reverse rotation interval is set at 0s, the forward/reverse rotation function is deactivated
  - After adjusting the parameter, the parameter will be saved automatically without further operation;
  - This instrument supports forward/reverse rotation interval adjustment during operation in the same manner as described above;
- (5) Heating kettle height adjustment
- Press the  key without release to start raising heating kettle. When the heating kettle rises to the top position, it will not further rise.
  - Hold the  key to lower the heating kettle until it reaches the lowest position.

## 2) Start the operation

- (1) Press the knob to start the operation.
- Press the  key or  key to adjust the heating kettle up to a suitable position (the liquid level in the heating kettle should be on the same level as the liquid level in the evaporating flask).
  - Start timing after startup. The time display shows the remaining running time. When the remaining time is 0min, the instrument stops running.
- (2) Error display
- The instrument will automatically stop when any failure occurs during the operation and the time display window will show the error code and alarm. By checking the Table 2, the user can identify the cause of failure and deal with it accordingly.

## 3) End the operation

- The instrument stops when the set time ends.
- The instrument stops when the knob is pressed.
- The instrument stops when any error is displayed.
- After the end of operation, the program will automatically save the set parameters of the current operation. When starting the instrument again, the program will automatically load the set parameters of the last operation.

## 4. Troubleshooting

This instrument is capable of self diagnosis such that the temperature display window will show the error code when the instrument cannot operate due to any failure. The cause of failure can be determined according to the error code.

Phenomenon	Possible Causes	Solutions
Er1	Too high temperature inside the heating kettle.	Contact the service center.
	Sensor disconnected	Check the temperature sensor for proper connection.
Er2	Heating kettle without liquid inside.	Add water or silicone oil into the kettle.
	Sensor disconnected	Check the temperature sensor for proper connection.
Er3	Er1 and Er2 displayed at the same time.	Same as Er1 and Er2
Er4	Heating kettle without liquid inside.	Add water or silicone oil into the kettle.
	Sensor disconnected	Check the temperature sensor for proper connection.
Er5	Er1 and Er4 displayed at the same time.	Same as Er1 and Er4
Er6	Er2 and Er4 displayed at the same time.	Same as Er2 and Er4
Er7	Er1, Er2 and Er4 displayed at the same time.	Same as Er1, Er2 and Er4

Note: Error 2 and 4 are of similar phenomenon detected by different mechanisms.

Table 2 Troubleshooting