

# LabTech



## EV400 SERIES

ROTARY EVAPORATORS

USER MANUAL



Thank you for selecting our EV400 Series.

We are sure that you will be completely satisfied with the performance of this new unit entering your laboratory. We invite you to read carefully this user manual and to keep it close to the instrument for convenient and fast consulting. For any possible clarification or any request for assistance please contact either our local Representative or:

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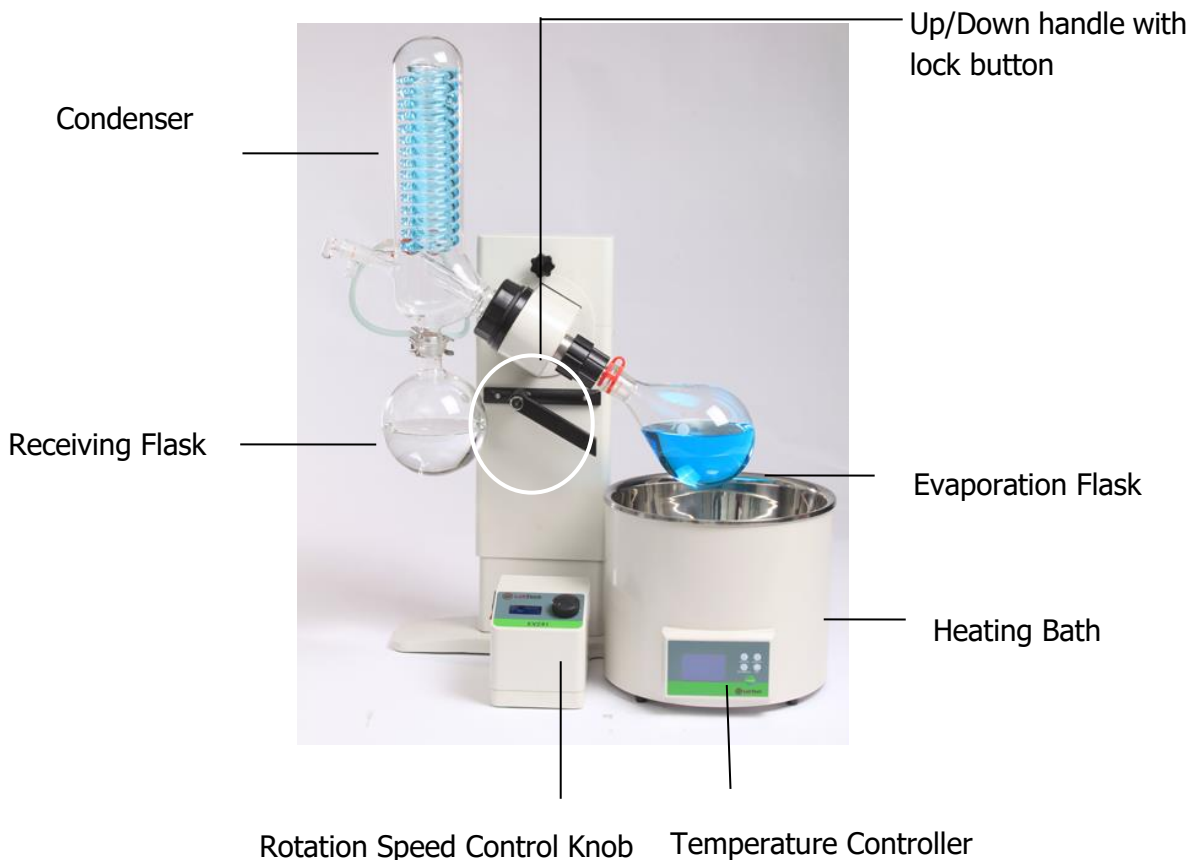
LABTECH  
EV400H EV400 EV400Touch EV400VAC

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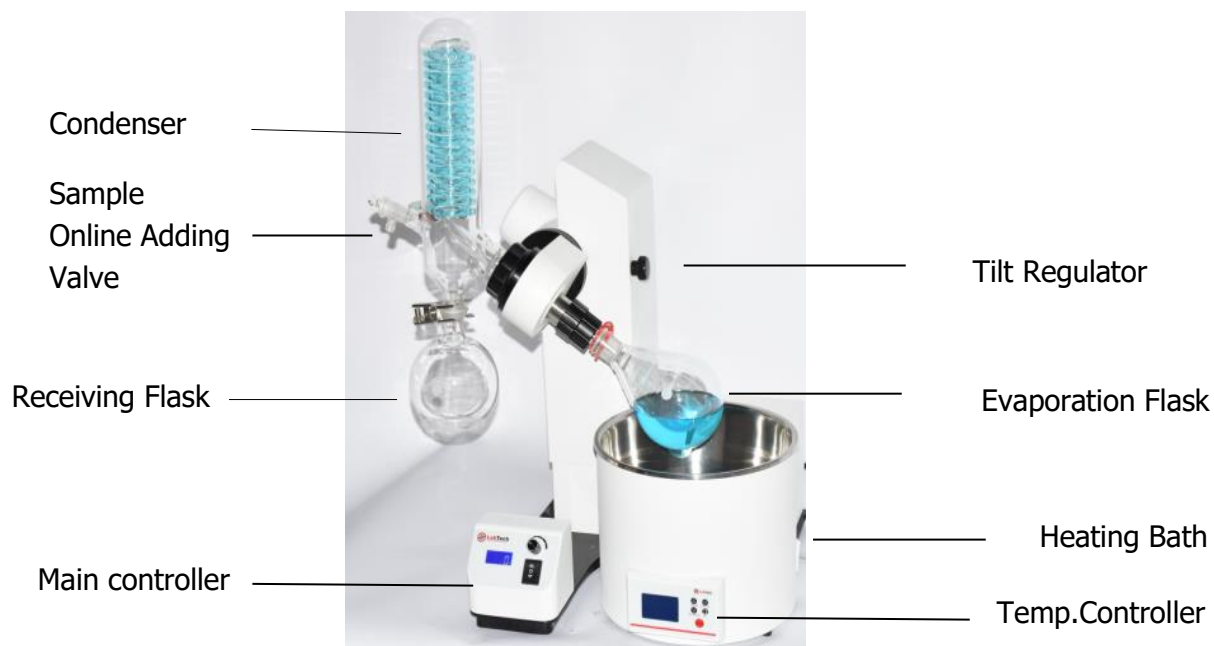
# 1. INTRODUCTION

## FRONT VIEW

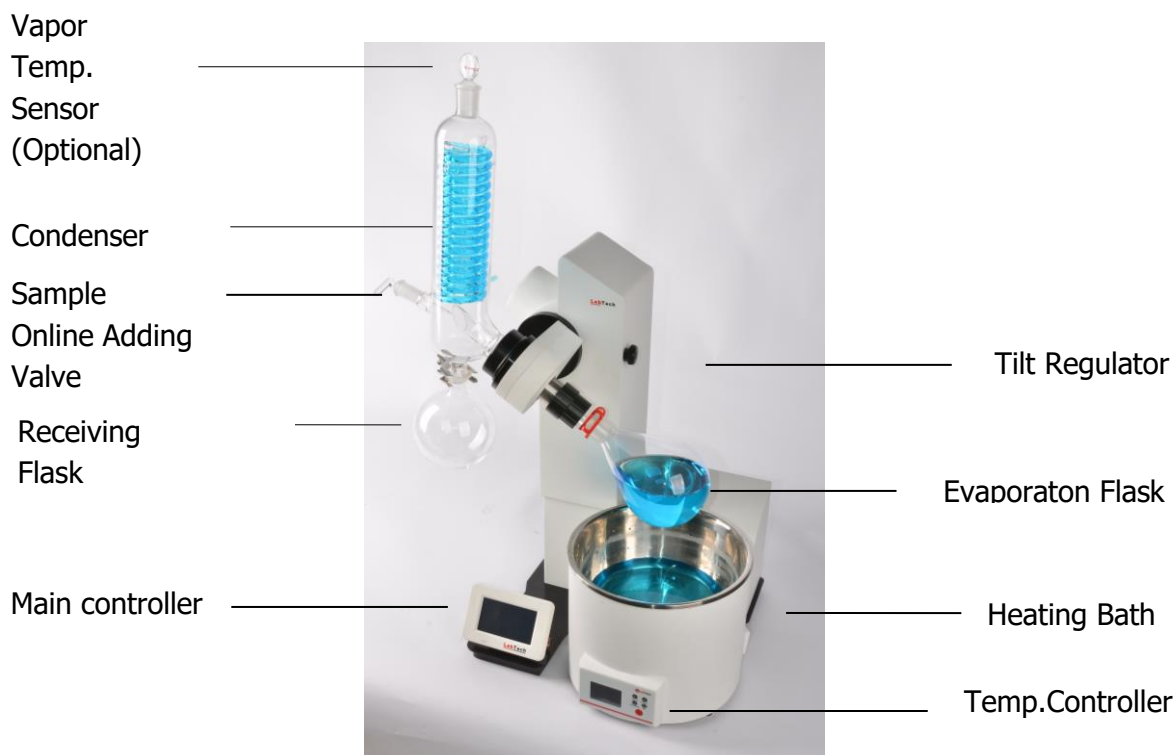
### EV400H



## EV400



## EV400Touch and EV400VAC



**Specifications**

LabTech rotary evaporator system, in combination with LabTech chiller and vacuum pump, provides a total solution package to customer who wants to have an efficient, fast and gentle way to separate liquids.

The rotary evaporator principle is that the evaporating flask generates an effective heat transfer for fast evaporation and prevents a local overheating whilst leading to a smooth mixing of the content.

<b>Model</b>	<b>EV400H</b>	<b>EV400</b>	<b>EV400Touch</b>	<b>EV400VAC</b>
<b>Display</b>	LCD	LCD	Color Touch Control	
<b>Max. Rotation Speed</b>	300 rpm	300 rpm		
<b>Lift Up/Down</b>	Manual	Motor		
<b>Lift Stroke</b>	150 mm	160 mm		
<b>Head Tilt Angle</b>	0-60 degree			
<b>Bath Temperature</b>	Ambient - 230°C			
<b>Temperature Accuracy</b>	±1°C			
<b>Heating Power</b>	1300 W			
<b>Bath Volume</b>	5 L			
<b>Rotation Flask</b>	50-2000 mL	50-3000 mL		
<b>Condenser</b>	1200 cm <sup>2</sup> (Standard) / 1500 cm <sup>2</sup> V: Vertical Condenser L: Diagonal Condenser			
<b>Clockwise/counter-clockwise Rotation</b>	Yes	-	Yes	Yes
<b>Gradient Distillation</b>	-	-	-	Yes
<b>Built-in Vacuum Controller</b>	-	-	-	Yes
<b>Solvents Library</b>	-	-	-	Yes
<b>Vapor Temperature</b>	-	-	Option	Option
<b>Auto-Distillation</b>	-	-	-	Option

## 2. SAFETY RULES

### General Information

Please read carefully this user manual before starting to use the instrument and follow its prescriptions with the utmost care. This user manual is part of the delivery, hence must be always kept together with the instrument on its working place.

It is imperative that every person operating with this instrument has read and fully understood this manual. The non-observance of the instructions contained herein or improper use may involve damages/injuries that are not covered by product liability. When the equipment is working or its temperature hasn't cooled down to ambient temperature, make sure not to touch the heating area.

Observe all warning labels and never remove them.

Never operate a damaged equipment.

Please take care of glass parts when doing installation and/or removal. Avoid vibration, scraping and temperature changing suddenly. Please clean and dry the glass vessel before using it.

Fix all glass components before lifting up or down the system. Let the system lift up and down calmly and slowly to avoid the vibration of glass vessel.

The unit surface may get hot especially when using water bath or oil bath, therefore care must be taken to avoid possible scalding.

Make sure that there is no water inside the bath before using oil, otherwise hot oil will splash and may cause scalding.

Make sure to evaporate organic solvents in an place with enough ventilation. The accumulation of organic solvent vapor inside the unit may bring to an explosion.

During the working of the unit, some solvents inside or outside of the unit may form peroxide or flammable and explosive gasses. Do pay enough attention to avoid explosion when processing hazardous or unknown substances.

Lift up the rotation vessel first, turn off the instrument and disconnect the power cord from the power socket when no operation is needed.

Always turn off the equipment and disconnect the power cord from the power source before performing any service or maintenance procedures or before moving the unit.

Never place the equipment in a humid place. The moisture may reduce the insulation capacity. Keep a free room of more than 100 mm around the equipment. If the distance is too short, it may damage items around it.

Please put the equipment on a firm, strong bench. Avoid the resonance from the bench. This will decrease the risk of vibrations and noise.


Fluids in the rotating flask should not be over half of the flask's full volume.

Clean the heating bath periodically. Distilled water or purified water are recommended.


The unit has been preset to operate as water bath. If oil bath is needed, please recalibrate the instrument or contact the Labtech Service Team.

It's better to consult the Labtech Service Team before performing any maintenance. Wrong actions may damage the equipment and make the warranty void.


### Electrical safety

The instrument has to be used within the rated voltage. Prior to use, please check if the wire is  aged. In case of aged wires, please contact the after-sales service for inspection. It is forbidden to disassemble the instrument and to connect internal circuit parts, in order to avoid a short circuit or open circuit.

### Fire safety

Numerous reagents are flammable and explosive. When the solvent vapor concentration reaches a certain level, it would be flammable and could cause fire. The instrument  should be kept away from the sources of ignition and high temperature places. If there is solvent pungent smell, carefully check whether there is gas or liquid leakage, and turn off the power.

### Chemical safety

The instrument is an instrument for organic chemical sample pretreatment. The involved  chemical solvents have harmful effects on the human health. Despite the instrument is



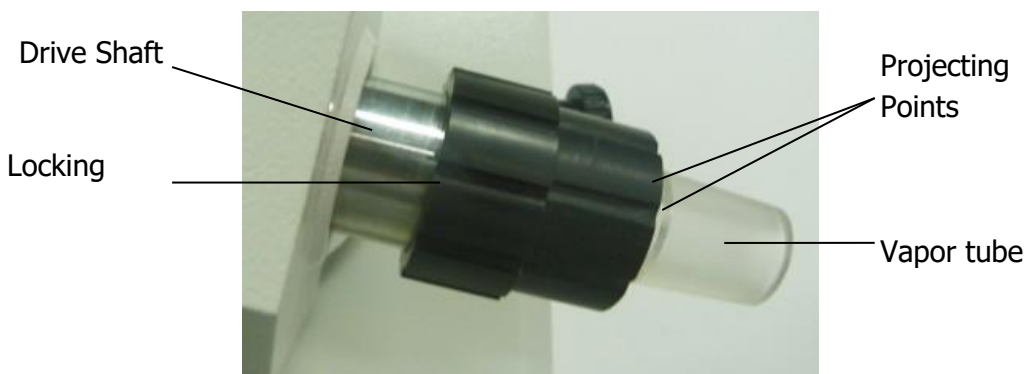
fully closed and features full vent design, it is recommended to pay attention to the personal safety during the use. Regular check of liquid waste barrels as well as working conditions of the vent fan are required to avoid the risk of leakage caused by corrosion and to avoid the formation of organic solvent vapors affecting operators' health. If there is a fault, please contact the Labtech Service Team.

### 3. INSTALLATION

Please check all parts and accessories before installation and set up according to the following:

#### **Installation of vapor tube**

Insert the vapor tube into the drive shaft until it stops, rotate the vapor tube to fix its projecting points to the groove of locking nut. Then rotate clockwise the locking nut tightly. Try to pull the vapor tube out to check if it was firmly installed.



#### **Installation of the seal rings**

Place the dark seal ring in the vapor tube with the spring side face inside, then fit the gray seal ring to vapor tube with central bulge part out. Press the two seal rings to the bottom. Note the seal ring direction, improper installation will cause system vacuum failure.

Auxiliary Gray Seal Ring



Main Dark Seal Ring

After Installation



**Installation of the evaporating flask**

Connect the evaporating flask to the end of the glass axis and fix it by a clamp. Manually rotate the evaporating flask to check if it was fixed firmly. The evaporating flask can be easily detached from the glass axis by rotating counter-clockwise the push-off nut below.

Push-off Nut



Clip

**Note: When replacing the evaporating flask, first switch off the power and turn on the PTFE valve to balance the pressure inside and outside the system.**

### Installation of the condenser

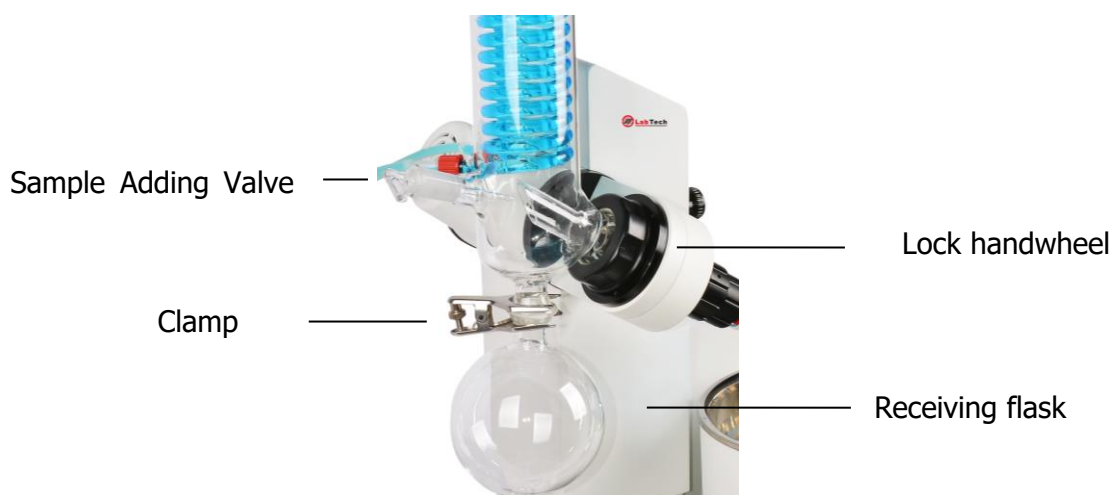
Cover the condensation tube by the lock handwheel. Place the whole system above the top-left corner of the rotation head. When the condenser mouth connects fully to the seal ring inside the rotation head, spin the lock handwheel tightly; do not over-tighten.

### Installation of the sample adding valve

Insert the sample adding valve into the condensation tube and adjust the block set to an optimal position.

### Installation of the receiving flask

Let the receiving flask cover the condensation tube and adjust the end-screw of the clamp to fix them.



**NOTE: When replacing the evaporating flask, be sure to switch off the power and turn on the sample adding valve (see above pic.) to let the pressure inside and outside of the system to get balanced.**

### Connection of the vacuum controller of the EV400VAC

Connect the instrument which needs the vacuum to the "Container" port of the vacuum control port and connect the vacuum pump to the "pump" port of the vacuum control unit. Be sure there is no leakage.

The control on/off of the vacuum pump by the vacuum controller can be done by connecting the vacuum pump to the conversion power socket on the back of the vacuum controller.

Switch on the vacuum controller of the EV400VAC

Vacuum Container Connection

Conversion  
Power  
Socket

Power

Pump Supply



Pump  
Connection

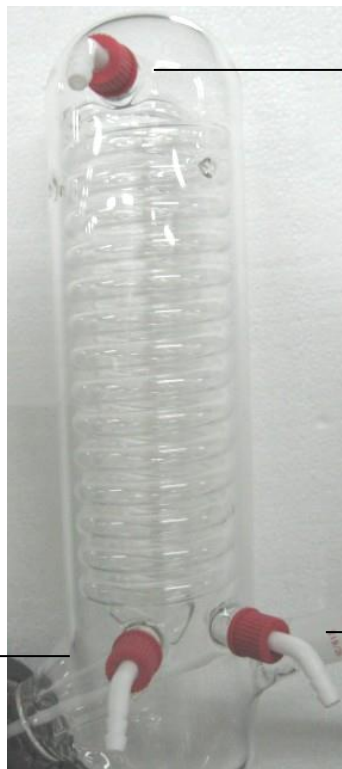
Temp. Sensor  
Connection

**Installation of the vacuum/water tubes**

Vacuum Port

Cooling Water Inlet

Cooling Water Outlet



## 4. OPERATION PROCEDURE

### HOW TO ADJUST THE TILT ANGLE OF THE ROTATION HEAD

Loosen the tilt regulation knob and adjust the tilt angle of the motor to the appropriate degree then lock the knob. Common angle is 30°.

**NOTE: This function is only available for the vertical type condenser; do not adjust the rotation head when the diagonal condenser is in use.**



Tilt Regulation Knob of **EV400** series



Tilt Regulation Knob of **EV400H**

### HOW TO OPERATE THE MAIN UNIT OF THE OF EV400H

#### **Rotation speed setting of EV400H**

Set the rotation speed via the knob as shown in the picture below.

Rotate it clockwise to increase speed, counter-clockwise to decrease.

The LCD screen shows real time the rotation speed.

Set the rotation speed to minimum, switch on the instrument, then increase the speed; 100rpm is commonly set.



### Lift up/down of EV400H

Set the rotation speed to minimum, switch on the instrument. Switch off the up/down control button on the handle as shown in the picture below, lift up/down the rotary evaporator to the desired height. Gently switch on the control button to lock it.

**Careful handling will avoid the risk of flask breakage.**



### Rotation sense of EV400H

In stop status (invalid in running state), press and hold the speed control knob for 3s until "LC" displayed, the lower line displays code, input "9" by rotating the knob, then press the knob to enter into the parameter set interface, press the knob to display "dIF" which means rotation direction, rotation the knob to set dIF value. dIF=0 for clockwise rotation, dIF=1 for counter clockwise rotation, press and hold control knob for 3s to save and quit the setting interface.

## **HOW TO OPERATE THE MAIN UNIT OF THE EV400**

### **Rotation speed setting of EV400**

Set the rotation speed via the knob as shown in the picture below.

Rotate it clockwise to increase speed, counter-clockwise to decrease.

The LCD screen shows real time the rotation speed.

Set the rotation speed to minimum, switch on the instrument, then increase the speed; 100rpm is commonly set.

### **Lift up/down of EV400**

Adjust the height of rotation flask by using the appropriate button.

**Careful handling will avoid the risk of flask breakage.**



## **HOW TO OPERATE THE MAIN UNIT OF THE EV400Touch/EV400VAC**

The EV400Touch and EV400VAC are equipped with an advanced touch control panel which ensures smart and programmable evaporation.

The EV400Touch supports Standard and Gradient Step evaporation mode.

The EV400VAC supports Standard, Gradient Step, solvent library and auto-distillation functions.



## EV400TOUCH

### Lift Up/Down

Click the up/down key to move the rotation flask up/down, **click it again to stop**.

#### Standard Control Mode



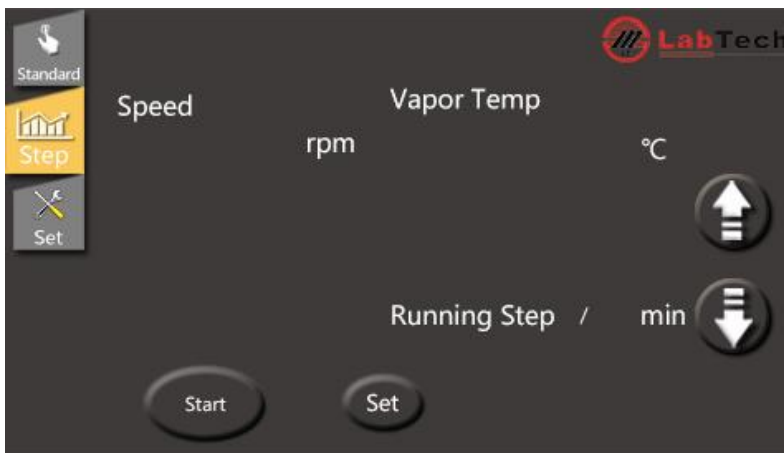
**Rotation speed:** Upper white numbers are set speed. Lower yellow numbers are real value. Click the white number to change the setting speed.

**Vapor Temp:** Displays the vapor temperature which requires a vapor sensor (optional).

**Running time:** Displays the real running time. The time can be set via the "Time" icon.

**Start/Stop:** Starts/Stops the system

#### Step Control Mode



**Running Step:** In Step mode the current running step no. and running time of this step will be displayed.

**Set:** Set step program in below picture



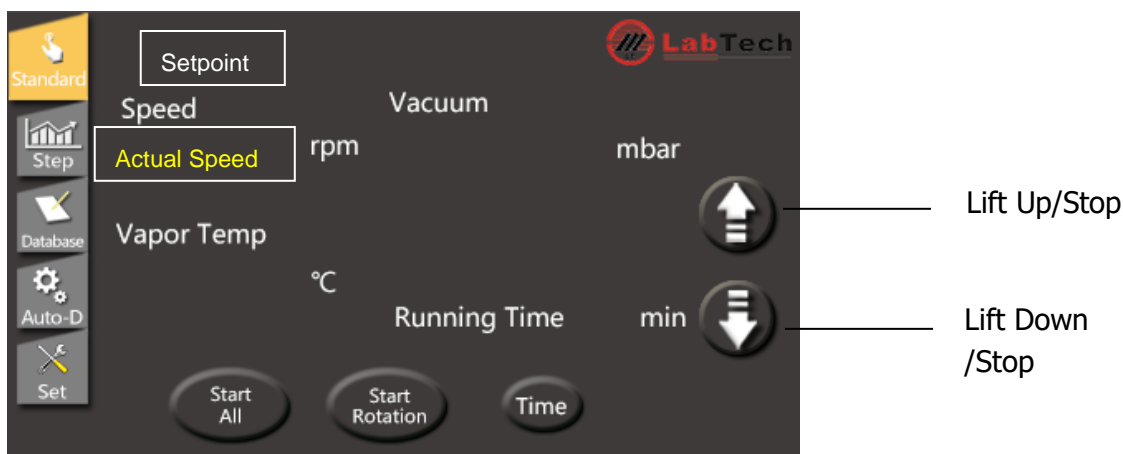
The EV400 Touch supports up to 8 steps with parameters including **time, rotation speed, direction (0: clockwise, 1: counter-clockwise)**  
Choose **checkbox** to set different steps.

### Set interface

Parameters can be checked in the SET page including internal parameters, alarm info and can be exported to a USB flash disk etc..



### EV400VAC



The EV400VAC has 4 different control modes including standard, step (program) control, database (solvent library) and Auto-Distillation (option). Click the icons to choose a suitable control mode.

#### Standard Control Mode

**Rotation speed:** Upper white numbers are set speed. Lower yellow numbers are real value. Click the white number to change the setting speed.

**Vapor temp.:** Displays the vapor temperature which requires a vapor sensor (optional).

**Running time:** Displays the real running time. The time can be set via the "Time" icon.

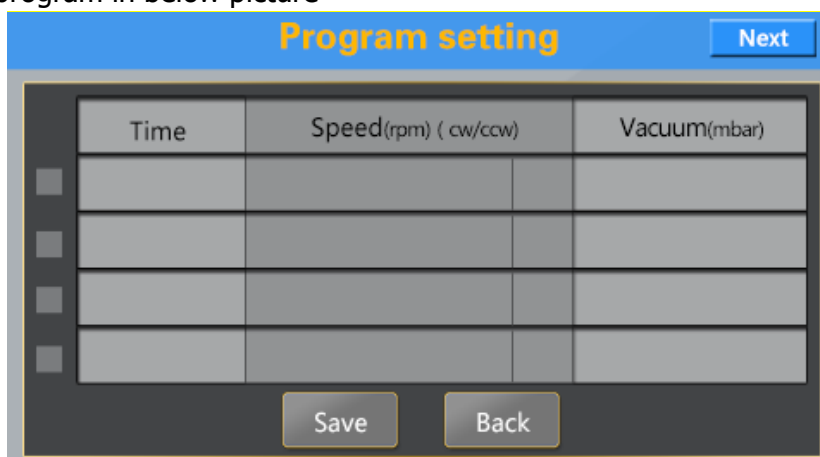
**Start/Stop All:** Starts/Stops both the rotation system and the vacuum control system.

**Start/Stop Rotation:** Starts/Stops the rotation system.

#### Step mode

**Step no.:** In Step mode, current running step no. and running time of this step will be displayed.

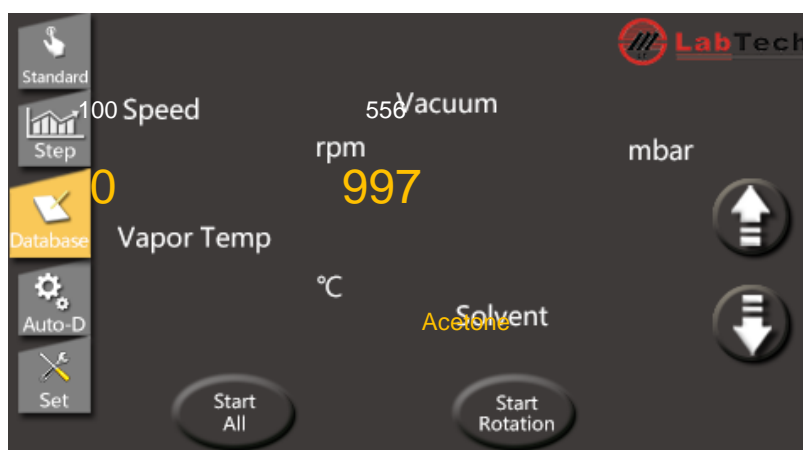
**Set:** Set step program in below picture



The EV400VAC supports up to 8 steps with parameters including **time**, **rotation speed**, **direction** (**0**: clockwise, **1**: counter-clockwise) and **vacuum pressure**. Choose **checkbox** to set different steps.

### Database

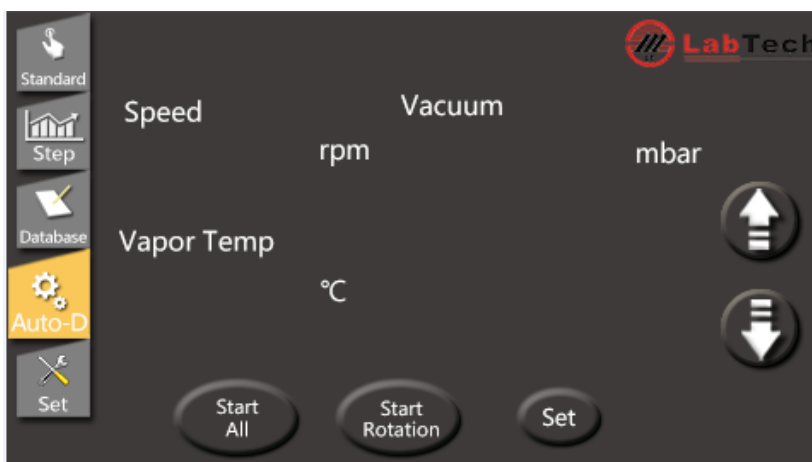
**The solvents in the library are tested with the heating bath set at 60°C, hence, please set bath temperature at 60°C when using the library function.**



Solvent: Displays the selected solvent and related parameters. Click the yellow solvent name to enter the library database and set.

### Auto-Distillation (Optional function)

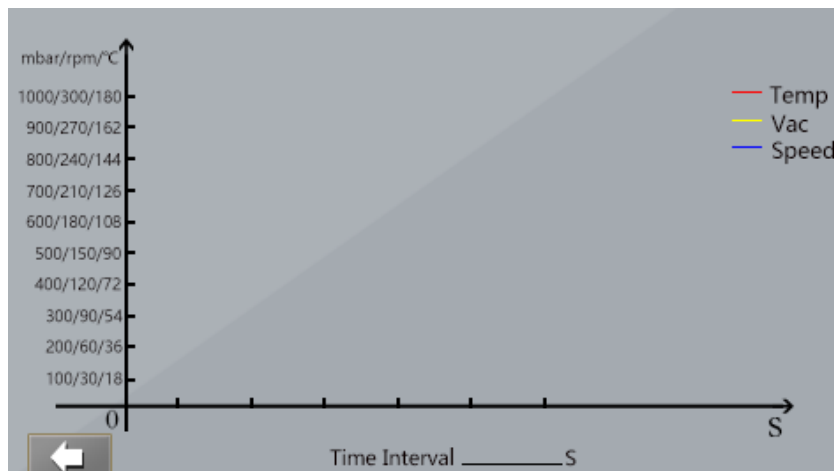
For uncertain distillations, the Auto-D function can be used to identify the boiling point automatically.



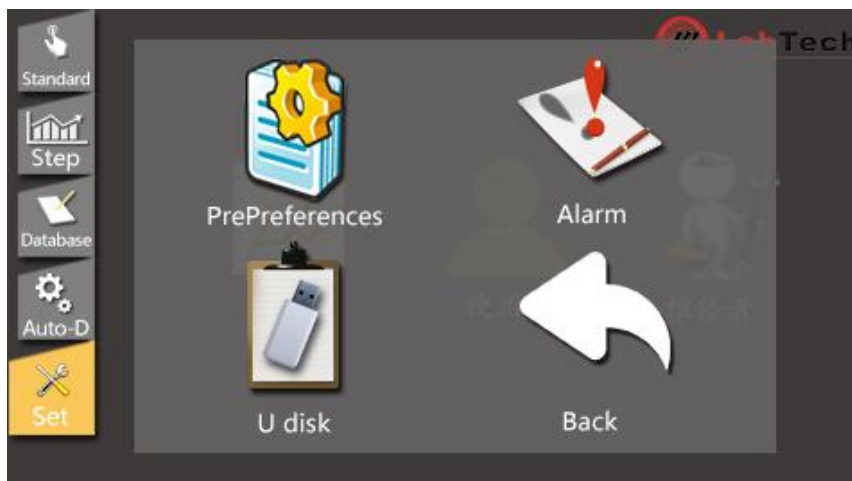
### Set interface



Distillation curves: Click the Curves icon to check the evaporation info. including rotation speed, vacuum pressure, vapor temp. etc.



### User interface



Parameters: please don't change the factory set parameters if unnecessary.

Parameters		
Power-off memory		0 : No 1 : Yes
Communication		(1 ~ 32)
Factory Reset		0 : No 1 : Yes
Language		0 : Chinese 1 : English
Date & Time	20__ - __ - __ __:__:__	Y-T-D h:min:s

Alarm: Check the alarm info. in the below page

Failure Alert		
Er-1	Power board communication	
Er-2	Driver board communication	
Er-3	Vacuum sensor	
Er-4	Driver board hardware	
Er-5	Motor blocked	
Er-6	Vacuum degree deviation	

U Disk: Export distillation curves to an USB flash disk



**HOW TO OPERATE THE HEATING BATH**

**Choose the appropriate heat transfer medium**

Bath Type	Temp. Range	Heat Transfer Medium	Remark
Water bath	Ambient~100	Water	Hardness of the water must be as low as possible; When using deionized water, please add 0.2% Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> *10H <sub>2</sub> O solvent for anti-corrosion.
Oil Bath	100°C~210°C	Silicone Oil	Viscosity of the silicone oil must be below 50centipoise.

Pour into the heating bath an appropriate volume of liquid. Connect the unit to the power, press the green button to switch on the unit. Red to switch off.

**HB-03PLUS HEATING BATH**



**SET:** Set or check temperature, holding time and other parameters.

**SHIFT/AT:** In set interface, the key is a digital transposition key. In other interface, press and hold the key for 6 seconds to enter or the quit auto-calibration system.

**DEC/RERUN:** In set interface, press the key to decrease value, press and hold it to speed up the value decrease. In other interface, press and hold the key for 3 seconds can rerun the system after finishing the heating phase.

**INC/LED:** In set interface, press the key to increase value, press and hold it to speed up the value increase. In other interface, press the key to backlight on/off.


### How to setup parameters

Press the SET key to enter the **temperature set** interface, SP will be displayed in the upper line, then the temperature can be set via   .

Press the SET key a 2<sup>nd</sup> time to enter the **holding time set** interface, ST will be displayed in the upper line, then the desired holding time can be set on the setpoint.

Press the SET key a 3<sup>rd</sup> time to enter the **heating mode set** interface, ND will be displayed in the upper line, then the heating mode 0 (water bath) or 1 (oil bath) can be set.

Press SET key a 4<sup>th</sup> time to save and go back to the normal interface.

The lower line of the LCD screen displays the total running time. When the actual temperature is up to the setpoint, the timer starts and the second signal of time flashes. The screen will display **End**, when the holding time is over and the beeper will keep buzzing for 30 s. Press and hold  for 3 s to rerun the main function.

**Note: The holding time can be set from 00:01 to 99:59.**

**By setting the holding time to 0, the lower line of the LCD screen will display the setpoint temperature and the system keeps the heating state.**

When the unit is overheating, the buzzer will sound and ALM will be displayed on the LCD screen. If the overheating state is caused by the temperature set operation, there will be no buzz and only ALM be displayed on the screen.

Press any key to stop the buzzer.

In parameter set interface, the screen will turn to normal interface automatically in case of no operation in 1 minute.

### **HOW TO SHUT DOWN THE ROTARY EVAPORATOR SYSTEM**

(1) Shut down the heating bath; (2) Set the rotation speed to 0 and lift up the evaporating flask; (3) Shut down the main unit; (4) When the flask is cooled to ambient, turn off the vacuum pump and/or the chiller, if any.



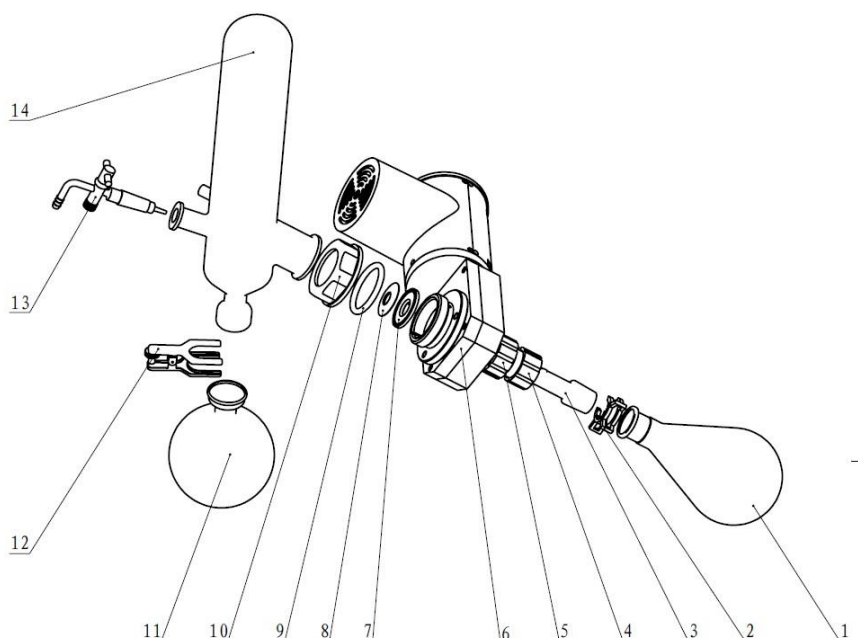
**NOTE: After switching off the instrument it's better to disconnect the power plug from power socket to guarantee the safety.**

Periodically replace heating liquid and clean the bath to keep longevity.

**HOW TO CLEAN AND INSTALL THE SEAL SYSTEM**

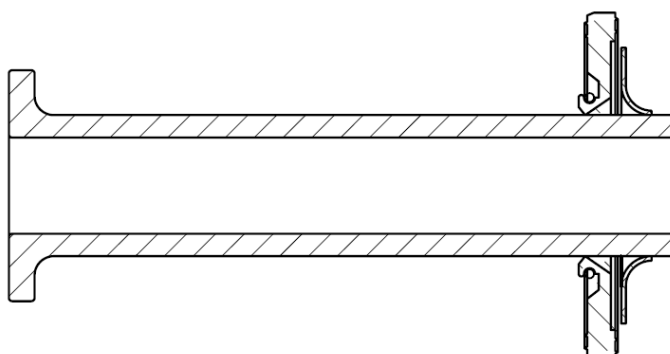
The picture below depicts the basic configuration of the seal system.

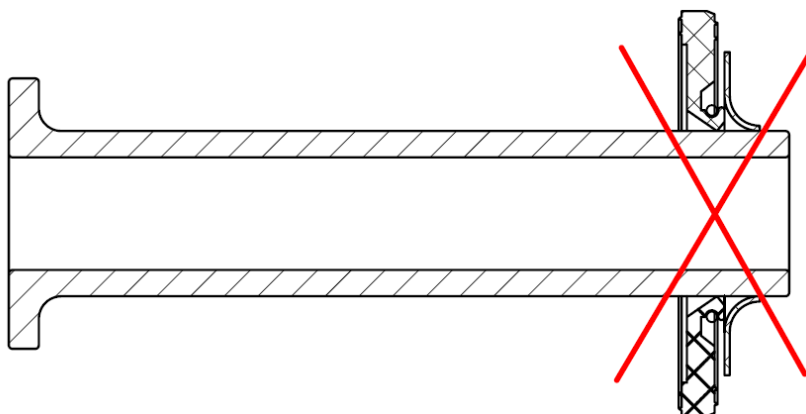
1. Shut off the power, remove the PTFE valve, the receiving flasks (#11) and the condenser (#14).
2. Rotate counter-clockwise the push-off nut (#4) to detach the evaporating flask (#1). Pull the glass axis (#3) out. At the same time, get off the two seal rings (#7,#8) from the other end of the glass axis.
3. Clean involved components.
4. Reassemble the system according to the installation procedure.



1. Evaporation Flask 2. Clamp 3. Glass Axis 4. Push-off Nut 5. Locking Nut 6. Rotation part 7. Main Seal Ring 8. Auxiliary Seal Ring 9. Spring 10. Condenser Lock Handwheel 11. Receiving Flask 12. Clamp 13. Sample Adding Valve 14. Condenser

**NOTE: Be sure to install the seal ring in the right direction (see below pictures). Incorrect installation will cause improper system vacuum.**





### **HOW TO CONNECT THE LABTECH VACUUM PUMP**

1. Connect the vacuum pump to the power with the provided power cord.
2. Connect the evaporator condenser and the vacuum pump tightly by the rubber tube and make sure the system is without leaking. The gas is drained from the exhaust connector by the connected tube.
3. Put the switch in the — position to start the vacuum pump, put the switch in the ○ position to turn off the vacuum pump.

**NOTE: In order to guarantee the longevity of this product, please reduce the possibility of unnecessary continuous working and avoid the solvent being sucked into pump.**

Please see the user manual of the vacuum pump for more detailed instructions.

### **HOW TO CONNECT THE LABTECH WATER CHILLER**

The plumbing connections are located on the rear of the chiller and labeled "SUPPLY" and "RETURN". Remove the plastic protective plugs from both plumbing connections. Install the barbed adapters to these connections.

1. Connect the fitting "SUPPLY" to the hose feeding inlet of the evaporator condenser. Connect the fitting "RETURN" to the hose from the outlet of the evaporator condenser. Clamp all connections.

It is important to keep the distance between the chiller and the evaporator as short as possible. Tubing should be straight and without bends.

2. Before starting the unit, fill the water tank and double-check all electrical and plumbing connections.
3. Place the switch located on the rear of the unit to the up position, the controller will flash and the unit starts.

4. Place the switch located on the rear of the unit to the down position, the unit will be shut down.

**NOTE: If you want to turn on the unit again after a shut down, please wait for at least 10 seconds.**

Please see the user manual of the water chiller for more detailed instructions.

## 5. MAINTENANCE

### ROTATING PART

Use tepid diluted HCl to clean the glass vessel if necessary.

In order to guarantee the longevity of this unit, please disconnect the unit from the power socket after switching off the unit.

In normal working conditions, the sealing ring should be replaced every two years.

If it is difficult to lift up/down but an internal mechanical driving sound could be heard, please adjust the tension steel wire according to following instructions (see the below picture):

First, lay down the unit. There is a yellow tension block under the base. Rotate clockwise the two M6 tension screws on it with a hexagonal wrench to tighten the steel wire. Too tight steel wire may cause tension failure or noise.



### LABTECH WATER CHILLER

#### Reservoir Cleaning

Periodically inspect the fluid inside the reservoir. If cleaning is necessary, flush the reservoir with a cleaning fluid compatible with the circulating system and the cooling fluid.

The cooling fluid should be replaced periodically. Replacement frequency depends on the operating environment and run time.

Before replacing the cooling fluid ensure that it is at a safe handling temperature.

### **Condenser Cleaning**

For proper operation, the unit needs to pull a substantial amount of air through the condenser. Dust and/or debris accumulated on the fins of the condenser will lead to a loss of cooling capacity. Optional air filters are available, if needed please contact the Labtech Service Team. Periodic vacuuming of the condenser fins is necessary. The cleaning frequency depends on the operating environment. After the initial installation we recommend a monthly visual inspection of the condenser. After several months, the cleaning frequency will be established. Use care when cleaning the condenser fins, they can easily bend.

## **6. TROUBLE SHOOTING**

### **NO INDICATION LIGHT**

Check the power cord; ensure it is plugged in.  
Check the fuse; ensure it is not burned.

### **INADEQUATE TEMPERATURE CONTROL OF THE HEATING BATH**

Check the power cord; ensure it is plugged in.  
Check if there is too much scale in the heating bath. Clean it if necessary.

### **THE MOTOR DOES NOT ROTATE**

Check the power cord; ensure it is plugged in.  
Check if the synchronous belt driving is damaged.

### **NOISE IN THE ROTATING PART**

There could be accumulation of powder (abrasion of the seal ring). Disassemble the glass tube and remove it.  
The synchronous the belt could be heavily worn or works out of its seat. It has to be replaced.  
The bearing is over-loaded. Replace it.

### **NO OR NOT ENOUGH VACUUM**

Check the seal ring to see if the ring is abraded, if so replace it.  
The sucking state of the vacuum pump is abnormal. Check the vacuum pump and tighten the head.  
Check if the glass parts are broken and replace them if so.  
The glass parts cannot seal tightly. Put a vacuum grease layer on the glass parts.

### **ABNORMAL LIFT UP/DOWN**

Tighten the steel wire by adjusting two M6 screws under the base.  
Check the malfunction of motor.

**ATTENTION PLEASE: Please contact the Labtech Service Team if the above suggestions have no effect.**

## 7. SOLVENTS TABLE

Solvent	Formula	Molar mass in g/mol	Evaporation energy in J/g	Boiling point at 1013 mbar	Density in g/cm <sup>3</sup>	Vacuum in mbar for boiling point at 40 °C
Acetone	CH <sub>3</sub> H <sub>6</sub> O	58.1	553	56	0.790	556
n-amylalcohol, n-pentanol	C <sub>5</sub> H <sub>12</sub> O	88.1	595	37	0.814	11
Benzene	C <sub>6</sub> H <sub>6</sub>	78.1	548	80	0.877	236
n-butanol	C <sub>4</sub> H <sub>10</sub> O	74.1	620	118	0.810	25
tert. butanol (2-methyl-2-propanol)	C <sub>4</sub> H <sub>10</sub> O	74.1	590	82	0.789	130
Chlorobenzene	C <sub>6</sub> H <sub>5</sub> Cl	112.6	377	132	1.106	36
Chloroform	CHCl <sub>3</sub>	119.4	264	62	1.483	474
Cyclohexane	C <sub>6</sub> H <sub>12</sub>	84.0	389	81	0.779	235
Diethylether	C <sub>4</sub> H <sub>10</sub> O	74.0	389	35	0.714	850
1,2-dichloroethane	C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	99.0	335	84	1.235	210
1,2-dichloroethylene (cis)	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	97.0	322	60	1.284	479
1,2-dichloroethylene (trans)	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	97.0	314	48	1.257	751
Diisopropyl ether	C <sub>6</sub> H <sub>14</sub> O	102.0	318	68	0.724	375
Dioxane	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	88.1	406	101	1.034	107
DMF (dimethyl-formamide)	C <sub>3</sub> H <sub>7</sub> NO	73.1		153	0.949	11
Acetic acid	C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	60.0	695	118	1.049	44
Ethanol	C <sub>2</sub> H <sub>6</sub> O	46.0	879	79	0.789	175
Ethylacetate	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	88.1	394	77	0.900	240
Heptane	C <sub>7</sub> H <sub>16</sub>	100.2	373	98	0.684	120
Hexane	C <sub>6</sub> H <sub>14</sub>	86.2	368	69	0.660	360
Isopropylalcohol	C <sub>3</sub> H <sub>8</sub> O	60.1	699	82	0.786	137
Isoamylalcohol (3-methyl-1-butanol)	C <sub>5</sub> H <sub>12</sub> O	88.1	595	129	0.809	14
Methylethylketone	C <sub>4</sub> H <sub>8</sub> O	72.1	473	80	0.805	243
Methanol	CH <sub>4</sub> O	32.0	1227	65	0.791	337
Methylene chloride, dichloromethane	CH <sub>2</sub> Cl <sub>2</sub>	84.9	373	40	1.327	850
Pentane	C <sub>5</sub> H <sub>12</sub>	72.1	381	36	0.626	850
n-propylalcohol	C <sub>3</sub> H <sub>8</sub> O	60.1	787	97	0.804	67
Pentachloroethane	C <sub>2</sub> HCl <sub>5</sub>	202.3	201	162	1.680	13
1,1,2,2-tetra-chloroethane	C <sub>2</sub> H <sub>2</sub> Cl <sub>4</sub>	167.9	247	146	1.595	20
Tetrachlorocarbon	CCl <sub>4</sub>	153.8	226	77	1.594	271
1,1,1-trichloroethane	C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub>	133.4	251	74	1.339	300
Tetra-chloro-ethylene	C <sub>2</sub> Cl <sub>4</sub>	165.8	234	121	1.623	53
THF (tetrahydrofurane)	C <sub>4</sub> H <sub>8</sub> O	72.1		67	0.889	374
Toluene	C <sub>7</sub> H <sub>8</sub>	92.2	427	111	0.867	77
Trichloroethylene	C <sub>2</sub> HCl <sub>3</sub>	131.3	264	87	1.464	183
Water	H <sub>2</sub> O	18.0	2261	100	1.000	72
Xylene (mixture)	C <sub>8</sub> H <sub>10</sub>	106.2	389			25
o-xylene	C <sub>8</sub> H <sub>10</sub>	106.2		144	0.880	
m-xylene	C <sub>8</sub> H <sub>10</sub>	106.2		139	0.864	
p-xylene	C <sub>8</sub> H <sub>10</sub>	106.2		138	0.861	

## 8. SERVICE

The LABTECH worldwide technical support network consists of highly trained Field Service Engineers, Technical Support Specialists and Service Coordinators who are ready to quickly assist customers with answers and solutions to service needs and application questions.

For any possible clarification or any request for assistance please contact either our local Representative or:

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