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## ■ Specifications

Model		RE301	
Composition	Motor	DC brushless motor (for rotation) and Rod Actuator (for lifting)	
Performance and features	Rotation speed	20 - 250 r/min (rpm)	
	Lift stroke	130mm	
	Speed (rpm) setting	Control knob (digital indication)	
	Safety measures (main unit)	Manual-setting lower limit, upper limit, motor overload	
	Lifting feature	Rod Actuating	
Specifications	External dimension *1	With Glassware A (mm)	828(W)× 400(D)×586(H) (716 when raised) mm
		With Glassware B/C (mm)	643(W)× 400(D)×727(H) (857 when raised) mm
	Weight		Approx. 14.1kg(excluding the glassware and the water/oil bath)
	Power supply	Main unit	100 - 240V AC, 1.5A(excluding the water/oil bath)

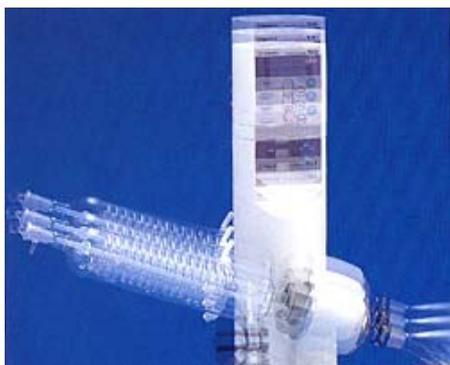
Model		RE601	RE801	
Composition	Motor	DC brushless motor (for rotation) and Rod Actuator (for lifting)		
	Controller	Vacuum regulator VR600	Vacuum regulator VR800	
Performance	Rotation speed	20 - 250 r/min (rpm)		
	Lift stroke	130mm		
	Setting range of vacuum	0-981hPa		
	Measurable range of vacuum	0-1033hPa		
	Resolution of vacuum	1hPa		
	Setting range of hysteresis	1-50hPa		
	Resolution of vapor temperature indicator	Selectable(either 1deg.C or 0.1deg.C)		
	Readout of cooling water temperature	Depending on indicator(option)		
	Resolution of cooling water temperature indicator	1deg.C or 0.1deg.C		
Performance and features	Operation modes	Manual without vacuum control, preset, preset with timer, pressure gradient, and gradient with timer		
		-	Auto I (drying), Auto II (for one solvent)	
	Setting range of timer	1-999 minutes in increments/decrements of 1 minute for preset operations, 1-99 minutes for progressive operations		
	Memory	10 programs/operation mode		
	Data of solvents	-	53 saturated vapor pressure curves	
	Speed (rpm) setting	Control knob (digital indication)		
	Safety measures (drive unit)	Manual-setting lower limit, upper limit (RE801 only), motor overload		
	Safety measures (vacuum regulator)	Self-diagnosis, main unit/bath synchronized stop at malfunctions		
Specifications	Synchronized control feature	Selection of automatic bath stop or automatic insulation		
		Lifting feature	Motorized lifting system	Motorized lifting system synchronized with control
	External *1 dimension	With Glassware A (mm)	828(W)× 400(D)×727(H)(857(H)when raised)	
		With Glassware B/C (mm)	643(W)× 400(D)×727(H)(857(H)when raised)	
Weight		Approx. 15.1kg(excluding the glassware and the water/oil bath)		
Power supply	Main unit	100 - 240V AC, 1.5A(excluding the water/oil bath)		

\*1 External dimensions (excluding protrusions)

\*2 A microprocessor memorizes the saturated vapor pressure of each solvent and automatically presets an optimum vacuum pressure.

## ■ Features

### 1. Motorized lift standard for all models



Yamato Rotary Evaporators, models RE301/601/801, are easily raised or lowered by simple operation of switch. Model RE801, can be pre-set, so that when operation of the rotary evaporator ceases, unit will be raised.

### 3.Space-saving design



The rotary evaporator is compact, which can be neatly installed in a fume hood. Despite its depth of 400 mm, the vertical condenser (Glassware B/C) does not take up space.

### 5.Quick release of evaporating flask



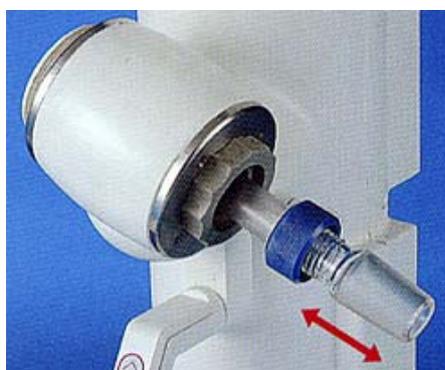
The evaporating flask can be released easily and quickly by just turning the flask release nut. vertical condenser (Glassware B/C) does not take up space.

### 2.Digital settings and display in Japanese or English



The evaporator's motor speed(rpm), vacuum(degrees) and vapor temperature can be digitally set and displayed. Experimental conditions and steps during a reaction can be saved and repeated in future. Display language can be chose either Japanese or English.(Only the rpm of the motor can be digitally displayed in model RE301.)

### 4.Movable rotary joint



The rotary joint's locking position feature is adjustable within 80 mm; especially useful when using varying capacity evaporating flasks or when there is a need to shift the vacuum seal's contact position. (Patent No. 3220033)

### 6.Newly designed glass components (Guard against liquid stagnation)



quickly by just turning the flask release nut. Vertical condenser (Glassware B&C) function to prevent liquid from stagnating. (patent pending) New condenser tubes (type A&B) designed to increase rapidity of cooling capacity.(Surface area is 20% larger than previous model.)

### 7. Water bath (oil bath)



Original removable bath enables easy cleaning and replacing of the water(oil). The digital temperature indicator is designed for easy setting and reading. The most suitable bath is selectable from model BM Water Bath or Model BO Oil Bath in accordance with working temperatures of the experiment.

### 9. Hose joints



Resin-made hose joints are used for easy connection of cooling water and vacuum hoses to their corresponding glass ports.

### 8. Voltage-sensing power pack



The rotary evaporator (including the water bath, oil bath and some optional accessories) works with a power supply of 100-240V AC. For use overseas, please choose a plug according to shape of socket your abode among configuration of power plugs(and cord) as an option herein.

### 10. Others

#### \*Vacuum seal

The fluoro-rubber vacuum seal with its multistage configuration is designed to maintain the stability of reduced pressures. Pure Teflon vacuum seal is also available as an option for evaporation of ether-based and ketone-based liquids.

#### \*Carefully designed safety measures

The evaporator can detect any malfunctions in the driving mechanisms in the rotary section and the lifting device, and will automatically stop to ensure safety. It can also automatically detect abnormal temperatures in the water bath and oil bath and will stop the operation of the evaporator(only for models RE601/801).

#### \*Stable rotation at low and high speeds

Together with the digital setting and display, the rotary evaporator maintains a stable rotation by using the feedback control feature. This ensures precise reproducibility of experiments.

## RE301



RE301A-W



RE301B-W



RE301C-W

- Motorized lift
- Feedback control motor
- Voltage-sensing power supply
- Digital setting and rpm display
- Stable rotation

[ RE601/801 ]



RE601A-W



RE601B-W



RE601C-W

- Motorized lift
- Good readouts in either Japanese or English
- Equipped with several operation modes, such as preset mode, timer mode, progressive mode and customer-programmed mode
- One-touch operation of storing and readout of operating conditions
- Voltage-sensing power supply

[ RE801 ]



RE801A-W



RE801B-W



RE801C-W

- Automatic distillation
- Continuous bath control
- Data on 53 solvents installed as default

## ■ Function (RE801)

### -Vacuum regulation -

Boiling point indicates a temperature at which ambient pressure becomes equal to the saturated vapor pressure of a liquid. The saturated vapor pressure varies with the temperature. The pressure goes down when the temperature decreases. "Vacuum regulation" is the reduction in the internal pressure of a vessel which can decrease the boiling point of a liquid.

### -Vapor temperature-

Once a liquid reaches its boiling point, it starts vaporizing, generating bubbles and foam. (This is different from what is generally known as "bumping".) The temperature of the vapor in this state is called "vapor temperature".

### -Automatic distillation-

After the desired vapor temperature is preset, pressure is reduced until the temperature reaches the preset temperature. The reduced pressure is maintained at this temperature. When the vapor temperature deviates from its setting, the automatic distillation feature will either proceed to the next step (setting) in the operation or stop the operation there. This feature detects even a fine fluctuation of pressure and automatically regulates it to prevent bumping and ensure gradual change in pressure.

## ■ 53 Solvents in the memory of RE801

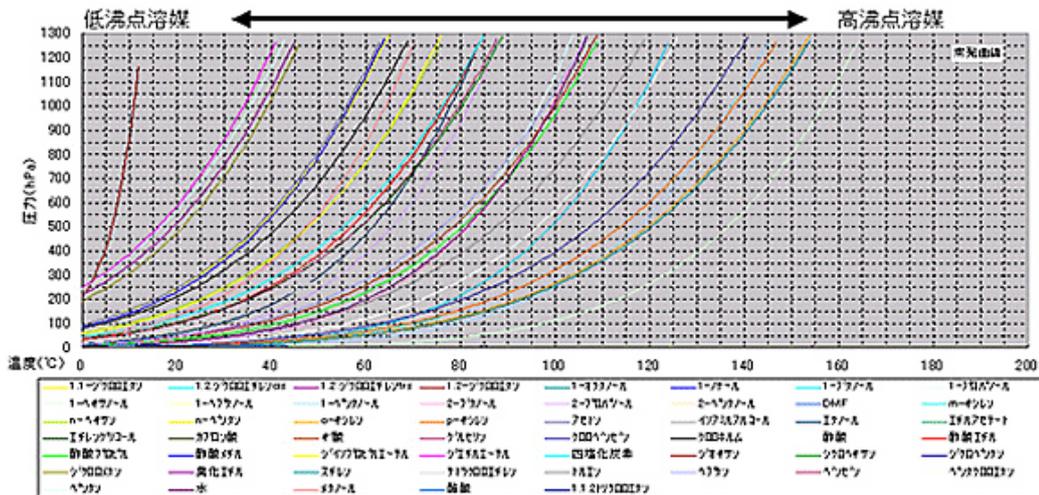
### For Low Boiling Point

1,1-Dichloroethane
1,2-Dichloroethylene cis
1,2-Dichloroethylene trs
1,2-Dichloroethane
1-Propanol
2-Butanol
2-Propanol
n-Hexane
n-Pentane
Acetone
Ethyl Acetate
Ethanol
Chloroform
Ethyl acetate
Methyl acetate
Diisopropyl Ether
Diethyl Ether
Carbontetrachloride
Cyclohexane
Cyclopentane
Dichloromethane
Ethylbromide
Heptane
Benzene
Pentane
Pentachloroethane
Water
Methanol

### For High Boiling Point

1,1,2-Trichloroethane
1-Octanol
1-Nonanol
1-Butanol
1-Hexanol
1-Heptanol
1-Pentanol
2-Pentanol
N,N-Dimethylformamide
m-Xylene
o-Xylene
p-Xylene
Isoamyl Alcohol
Ethylene Glycol
Hexanoic acid
Formic acid
Glycerol
Chlorobenzene
Acetic acid
Propyl acetate
Dioxane
Styrene
Tetrachloroethylene
Toluene
Butanic acid

■ The Saturated Vapor Pressure Curve In The Memory



The following Antoine Formula is often used for the calculation of liquid's steam pressure.  
 $\log P = A - B / (C - t)$  ..... Antoine (Antoine's Formula) P : Steam Pressure(kPa) T : Temperature(deg.C), A, B, C are called "Antoine Constant" and they are various depending on the substance.

■ Specification of optional Vacuum Regulator VR300

Vacuum sensor		0 to 981hPa
Setting range of vacuum		0-981hPa
Measurable range of vacuum		0-1033hPa
Resolution of vacuum		1hPa
Setting range of hysteresis		1-50hPa
Operation modes		Customer-programmed, presetting, presetting with timer, progressive, and progressive with timer modes
Setting range of timer	Preset operation	1 - 999minutes
	Progressive operation	1 - 99minutes
Safety measures		Self-diagnosis, alarm

■ Specification for Water Bath BM500/510, Oil Bath BO400/410

Product code			222120	222121	222113	222115
Model			BM500	BM510	BO400	BO410
Composition	Bath (made of stainless steel)	External dimension	263mm (outer diameter) × 165mm (base diameter) × 124mm (height)			
	Heater	Output	120V/1440W (equivalent to 1000W at 100V)	120V/1440W (equivalent to 1000W at 220V)	120V/1440W (equivalent to 1000W at 100V)	240V/1440W (equivalent to 1000W at 200V)
	Controller	Setting, indicating and controlling	Digital setting by up down keys, digital indication and PID control			
		Sensor	Type K thermocouple			
		Power Switch	Functs as a circuit breaker			
		Casing	ABS heat resistant resin			
Performance	Ambient temperature	5 to 35deg.C				
	Setting range and accuracy of temperatures	Room temperature +5-100deg.C ±1.5deg.C (at stirring)		Room temperature +5 to 180deg.C ±2deg.C (at stirring)		
Features	Operation mode	Preset, quick auto-stop, auto stop, auto start				
	Setting range of timer	0-999 hours 50 minutes (an increment/decrement of 1 minute for 0-99 hours 59 minutes, at an increment/decrement of 10 minutes for 100-999 hours 50 minutes)				
	Auxiliary features	Key locking, RE signal transmission-reception, power-stabilizing against power failure, calibration offsetting				
	Safety measures (main unit)	Self-diagnosis (automatic prevention of overload, detection of sensor malfunction), circuit-breaking power switch, thermal fuse, bath level sensor				
	Operation control	Automatic operation control with signals from RE601/801 controller (continuous operation, heat insulating operation and stop), report of errors to RE601/801				
Specification	External dimensions(mm) and weight	W340 × D349 × H231 / Approx. 5.5kg				
	Power supply	100-120V AC 12.5A	200-240V AC 6.5A		100-120V AC 12.5A	200-240V AC 6.5A

### ■ Specification of optional Vapor Temperature Indicator TA300

Vapor temperature sensor	Pt100 ohm
Steam temperature indicator	Digital indication
Resolution of vapor temperature indicator	0.1deg.C

### ■ Optional Accessories

Remark	Description	Model No.	Product Code
	Water bath AC100-120V for BM500	RE301/601/801	222120
	Water bath AC200-240V for BM510	RE301/601/801	222121
	Oil bath AC100-120V for BO400	RE301/601/801	222113
	Oil bath AC200-240V for BO410	RE301/601/801	222115
	Vacuum controller (RE301) for VR300	RE301	255277
	Teflon vacuum seal, ORE70	RE301/601/801	255368
	VR300/600/800 Teflon electromagnetic valve, ORE80	RE301/601/801	255341
	VR300/600/800 SUS pressure sensor, ORE90	RE301/601/801	255342
	Steam temp. display for TA300	RE301	255317
	Trap (with nozzle) for RE301/601/801, ORE40	RE301/601/801	255285
	Hose connection parts for RE301/601/801, ORE30	RE301/601/801	255284
	Vacuum Pump Control Unit for RE601/801, ORE60	RE601/801	255288
	Cooling hose, 9mm dia, 2mX1pc.	RE301/601/801	255296
	Vacuum hose, 6mm dia, 5mX1pc.	RE301/601/801	255297
	Distillation flask 100ml, translucent ORG20	RE301/601/801	RE20000100
	Distillation flask 200ml, translucent ORG22	RE301/601/801	RE20000200
	Distillation flask 300ml, translucent ORG24	RE301/601/801	RE20000300
	Distillation flask 500ml, translucent ORG26	RE301/601/801	RE20000500
	Distillation flask 1L ORG16	RE301/601/801	RG00A30040
	Distillation flask 2L, translucent ORG28	RE301/601/801	RE20002000
	Receiving flask, 300ml ORG34	RE301/601/801	RE47002
	Receiving flask, 500ml ORG36	RE301/601/801	RE47001
	Receiving flask 1L ORG18	RE301/601/801	2551730413
	Receiving flask, 2L ORG38	RE301/601/801	2127410575
	Coating distillation flask 1L ORG58	RE301/601/801	255505
	Coating receiving flask 1L ORG56	RE301/601/801	255511
	Clamp KS35B	RE301/601/801	LT00035452
	Clamp KC39	RE301/601/801	F0410001
	Three-way cock, ORG50	RE301/601/801	255363
●	Stand with caster (15A service receptacle), ORE10	RE301/601/801	255282

#### Note:

The transportation cost will not be required if the order is together with main unit except the item marked "●".  
In case you order the item marked "●" together with the main unit, please ask Yamato to obtain the correct transportation cost.



Hose connection parts and trap  
(with nozzle)



Water Bath BM500/510  
Oil Bath BO400/410



Vacuum regulator VR300



Steam temperature indicator TA300



Vacuum pump control unit

#### ■ Peripheral Equipment



RE801BW + Vacuum pump PG201 + Solvent recovery unit RT200 + Cooling water circulation unit CF301 + Cart



RE801BW + Vacuum pump PG201 + Cooling water circulation unit CF301

Product code	Description	Model	Working temperature	Cooling capacity	Power supply
255281	Solvent recovery unit	RT200	-	-	-
221512	Cooling water circulation unit	CF301	-20deg.C - room temperature	385kcal/h at 10deg.C	100V AC
221527	Cooling water circulation unit	CF800	-20deg.C - room temperature	830kcal/h at 10deg.C	100V AC
221563	Cooling water circulation /pump unit	CF321P	-20deg.C - room temperature	344kcal/h at 10deg.C	100V AC
221579	Cooling water circulation /pump unit	CF800P	-20deg.C - room temperature	903kcal/h at 10deg.C	100V AC

Product code	Description	Model	Ultimate vacuum*	Displacement	Power supply
242424	Handy aspirator	WP15	2.3kPa at 20deg.C	11-14l/min×2	100V AC
255158	Diaphragm vacuum pump	PG201	1000Pa	20/24l/min(50/60Hz)	100V AC
255159	Diaphragm vacuum pump	PG301	1000Pa	15-30l/min(50/60Hz)	100V-240V AC
242237	Diaphragm vacuum pump	DTC-41	1000Pa	40/46l/min(50/60Hz)	100V AC

Depending on the water vapor pressure at a given working temperature

Product code	Description	Model	Attainable lowest temperature	Trap capacity	Dehumidification	Power supply
221436	Cooling trap	CA301	-45deg.C	Approx. 4L	0.9kg	100V AC
221487	Glass condenser for CA301	-	-	-	-	-