

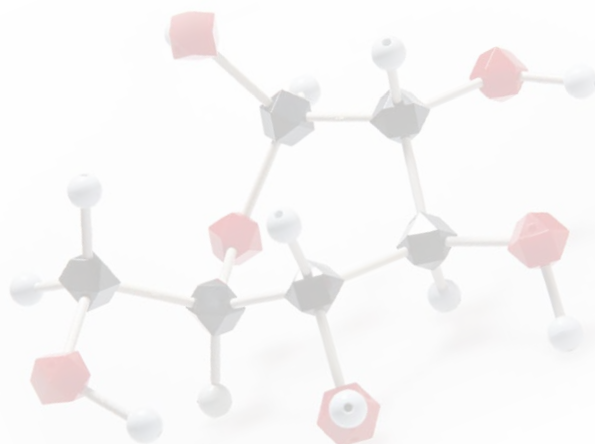
manufactured by



## LIQUID PHASE ORGANIC SYNTHESIZER, "CHEMIST PLAZA"

Large Capacity

**CPG-2000**



Small Capacity

**CP-1000**



# Introduction

## What is organic synthesis?

To bond organic compounds with other substances or organic compounds with organic compounds

### Examples of organic compounds

→ Organic solvents, plastics, rubbers, drugs, dyes, perfumes, etc

### What are organic compounds?

→ Compounds that are mainly carbon, with most compounds consisting of carbon and hydrogen

## Goals of Organic Synthesis

### ① To create a new substance

To develop a new material

To develop new chemical substances

→ Resin, fibers, dyes, etc

→ New drugs, perfumes, high performance substances

### ② To make existing substances at low cost

Synthesis of natural products

→ Manufacture expensive natural products industrially

→ Uniform quality

### ③ Other research goals

## Specific Example

### Mass production of active ingredients of natural substances

An active ingredient that has pain relieving effects was found to exist in willow branches.



It can not be mass produced from natural products  
(Mass amounts of willow braches would be necessary.)



The main substances are synthetically arranged by chemical synthesis (organic synthesis)



Enables the mass production/manufacturing of aspirin  
(acetylsalicylic acid: pain reliever/fever reducer)



Enables sales as medication

## Research procedures of organic synthesis

Determine the new substance according to goals.

(Determine the structures of substances that have the characteristics  
that are in accordance to goals from documents.)



Determine how to synthesize.

(Determine the synthesizing method for production and start development.)



Heat, cool, stirring, etc.

Evaluate product.

(Determine if product coincides with original goal if it does not, re-determine synthesis methods.)



Determine the manufacturing method, determination of (scaling up)  
(Determination of methods and conditions where the compounds  
can be mass produced in the most cost effective way.)



Goes to market as a product...

# Main Features of the CHEMIST PLAZA



## CPG-2000 ( large capacity type )

### ■ For determination of large capacity reaction!

- 4 reaction containers with the ability to setup each temperature and stirring individually.
- Possible to set temperature, stirring, time programs

### ■ Target markets

- ◇ Universities, department of pharmacy, chemistry departments
- ◇ Research, development, composite departments of pharmaceuticals and medicines
- ◇ Development of new materials in cosmetics, perfumes
- ◇ When the synthesis scale is too small with the CP-100
- ◇ When temperature, stirring, and temperature rising programs need to be set up for determination of reaction conditions



## CP-1000 (small capacity type)

### ■ For determination of small capacity reaction!

- 5 reaction containers with ability the to set temperature and stirring up individually

### ■ Target markets

- ◇ Universities, department of pharmacy, chemistry departments
- ◇ Research, development, composite departments of pharmaceuticals and medicines
- ◇ Development of new materials in cosmetics, perfumes

If you need to reduce your operation Space and Time,  
the Chemist Plaza can be used in place of Magnetic stirrer,  
Heaters, Flasks(2 or 3necks), and Condensers.





# CPG-2000 For Determination of Conditions for Large Capacity Reactions!!

The Chemist Plaza CPG-2000 series are devices well suited for large capacity organic synthesis such as development of new reaction, and new catalysts, synthesis of intermediate products, and when scaling-up small capacity samples to large capacity samples.

To efficiently determine reaction conditions, temperature, stirring (number of rotations), and program (temperature, stirring, time) of the 4 blocks on the main body can be set individually.

## Individual Manual, Program Operation for 4 Specimen

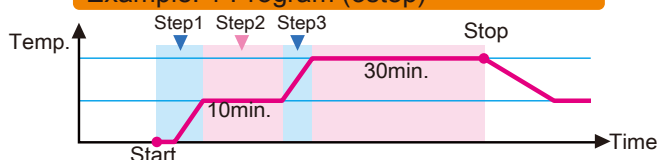
(Possible to setup temperature, stirring speed, time)

## Individual Program Functions, Link Functions

(Possible to setup temperature, stirring speed, time)

- 9 varieties of program setups possible per block.
  - Loaded with a link function that connects each program.
- Maximum 81 steps are programmable per program.

### Example: 1 Program (3step)



## Individual Temperature Adjustment from -30~200°C

Each of the 4 heating blocks have auto-tuning function loaded in the so that temperatures can be individually set (-30~200°C), enabling highly precise heating and cooling.

\* 1 A cooling water circulation device is necessary if the temperature is to be adjusted below room temperature.

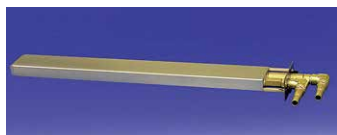
## Strong Individual Agitation of 50 to 2000rpm

## Cooling Cartridge

When a low temperature circulation tank is connected, return current and low temperature reaction can be preformed.

The cooling cartridge can be inserted from both the right and left side of the main body and the connection nozzle will turn 360 degrees.

The hose will not bend and can be arranged in any direction.



## Control Panel



### ① Display

Current temperature of the heating block, number of rotations, program, and step number is displayed according to the conditions.

### ② MODE key

Use to convert to and from manual mode and program mode.

### ③ SET key

Use to edit the program in program mode

### ④ TIMER key

Use to set the time in manual mode and program mode.

### ⑤ START/STOP key

This is the ON/OFF switch for the heating program of each of the heating blocks.

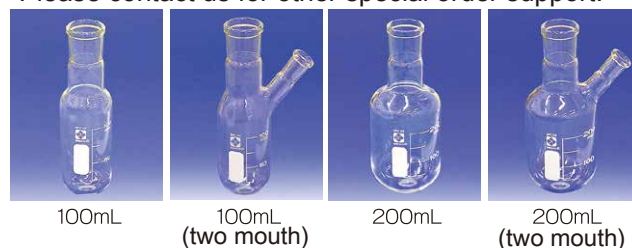
### ⑥ Revolution Adjustment Volume

Use to set the number of rotations of the stirrer.



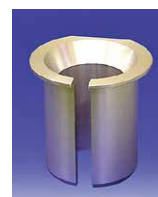
## 4 Varieties of Reaction Containers

2 varieties of standard reaction containers; the 100mL type (CPG-2110) and 200mL type (CPG-2120). Optionally, two mouth types are available. Please contact us for other special order support.



## Container Units, Container Holders

Exchanging just the container holder or reaction container enables different reaction experiments to be performed on each of the heating blocks. Aluminum block holder, Return current unit, Container holder



Aluminum block holder



Reflux unit



Container holder

## Reagent Adder

The reagent adder is a SPC15 joint. Mounting the included silicon septum and the reagents can also be added with a syringe.



Septum

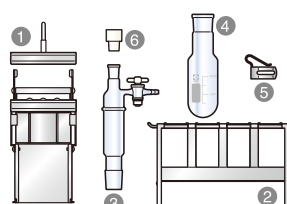


SPC15 joint

# Specifications

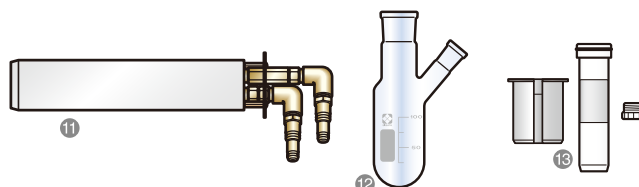
Models in sets		CPG-2110	CPG-2120
Synthesizer Main Body		Chemi Chemi-200 (054300-200)	
Synthesizer Scale		25~100mL	50~200mL
Reaction Vessel	Type, No. of Units	Atmospheric pressure: glass containers x 4	
	Dimensions (mm)	φ 50×174H	φ 70×174H
Dimension of Stirring Bar (mm)		Max. dia. approx. 13mm x total length 25mm, Oval edge type	
Stirrer Dimensions (mm)		1~4 pcs	
Temperature	Setting Range	-30~200°C※1、4 individual temperature adjustment	
	Setting Accuracy	±0.5°C~	
	Setup/Display	Sheet key entry/Digital LED Display	
Revolutions	Setting Range	50~2000rpm, 4 individual stirrers	
	Stirring Method	Ferromagnetic Stirrer Method	
	Setup/Display	Volume entry (During program control: digital up down setup) Digital LED Display	
Program Functions	Program Number	9 programs (individually separate blocks: 4locations)/9 steps (per program)	
	Program Link Func.	9 step/1 program x 9 programs (maximum program links of 81 steps possible:4 locations)	
	Setup Contents	Temperature, number of revolutions, time (constant temperature, rising temperature program possible), ON/OFF timer	
Gas Displacement		Vacuuming/Inert gas induction possible, Connection port outside diameter φ8mm	
Reflux		Reflux via cleaning cartridge (cooling plate can be attached and removed from both left and right sides) *1	
Low Temperature Reaction		Reflux via cleaning cartridge (cooling plate can be attached and removed from both left and right sides) *1	
Reagent Addition Method		Pipit, syringe, dropping funnel (SPC15) possible to add either under inert conditions	
Reaction Observation		Observation possible from slit in aluminum block	
Safety Measures		Polycarbonate cover, drip receiving tray, over heating/over cooling warnings (able to set individually)	
Wetted Material		Glass	
Cooling Water Connection Port		Outside diameter φ10mm, φ12.7mm 2stage hose port	
Analog Output		DC4~20mA	
Operational Ambient Temperature		5~35°C	
Dimensions (W×D×H mm)		500×230×510	
Weight		39kg	38kg
Power Supply		AC100V 50/60Hz 10A 1kVA	
Ordering Code No.		054300-2110	054300-2120

※1 It is necessary to connect a cooling water circulation device if the temperature is adjusted below room temperature or return current is to be performed

CPG Series Standard Component			CPG-2110	CPG-2120	
Order No.	Description	Q'ty	Necessary number	Necessary number	
054300-200	Synthesizer Main Body	1	1	1	
054310-2111	Cooling cartridge 4pcs	1	1	1	
054310-2121	Heating block adapter φ 50	1	4	—	
054310-2131	Reaction container stand	1	1	1	
054310-2141A	Stirrer, oval edge model	5	4	4	
① 054310-2211	Reflux unit	1	4	4	
② 054310-2221	Container holder stand	1	1	1	
③ 054310-2231	Reagent addition part SPC29	1	4	4	
④ 054310-2232	Reaction container 100mL	1	4	—	
054310-2233	Reaction container 200mL	1	—	4	
054310-1807	Two way valve set	1	1	1	
⑤ 047410-29A	Joint clamp for taper	10	4	4	
⑥ 054310-1804A	Septum	10	4	4	

## Optional Parts

Order No.	Description	Q'ty
⑪ 054310-2511	Cooling cartridge 2pcs	1
⑫ 054310-2611	SPC two mouth reaction container 100mL	1
054310-2612	SPC two mouth reaction container 200mL	1
030060-15A	SPC flat plug for SPC15	10
030060-29A	SPC flat plug for SPC29	10
054320-215105	φ15×105 Test tube adapter set	2
⑬ 054320-215150	φ15×150 Test tube adapter set	2
054320-230200	φ30×200 Test tube adapter set	2



# CP-1000 For Determination of Conditions for Small Capacity Reactions!!

Temperatures and stirring of the 5 reaction containers of the CP-1000 series can be set individually, which enables an efficient determination of 5 types of reaction conditions simultaneously. It is equipped with heating, cooling, return current, and gas flow functions and can also speedily perform concentrations after reaction.

## Individual Temperature Adjustment from -20~160°C

The built in auto-tuning function enables high precision heating and cooling.

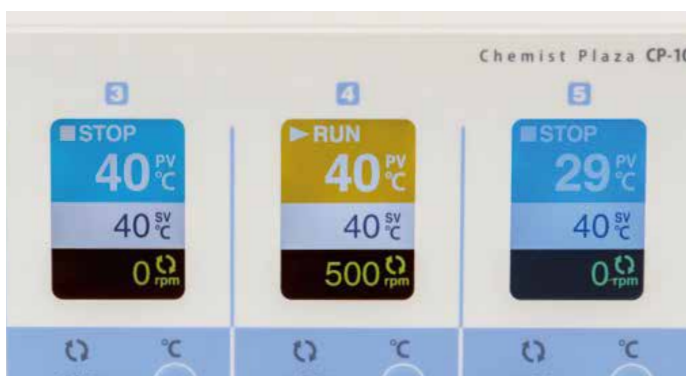
## 6 varieties of Reaction Containers!

- A total varieties; the test tube type (2 varieties), vial type (variety), and the SPC test tube type (2 varieties) to choose from.



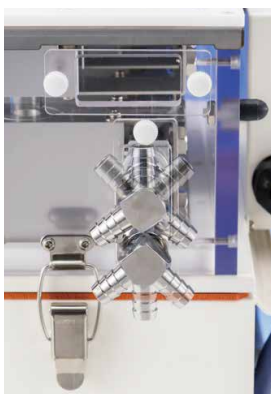
## Container Unit, Container Holder

- The entire rack of the container unit can be removed from the main body.
- Each of the container blocks are independent of one another, enabling the use of different containers.



## Cooling Cartridge

- When a low temperature circulation tank is connected, return current and low temperature reaction can be preformed.
- The connection nozzle will turn 360 degrees, and can be installed in any location.



## An Ultra Compact Body needs less than the Surface Area of A3 Size Paper for Installation!!

- Width 330mm X Depth 222mm

## Strong Individual Agitation of 100 to 2000rpm

- A Ferromagnetic stirrer is used for strong agitation.

## Complete Safety Functions

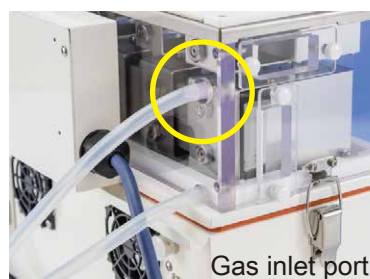
- The safety cover prevents casualties from accidental dispersion of glass test tubes.
- Constructed so that the power is not supplied if the safety cover is not on.



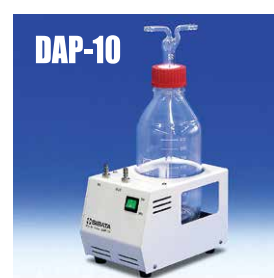
- Over Heating/Over Cooling Warnings  
When the heating block reaches a certain temperature in relation to the set temperature, a warning buzzer will sound and the individual displays will show an error message. Further, each heating block can be set to its own high-low limit.

## Prevent Condensation

- Send dry air without using nitrogen gas and prevent condensation within the device.



Gas inlet port



\* The silica gel is sold separately.



## Line-Up

Name in Setting	φ 15x105H Test Tube set	φ 15x150H Test Tube set	φ 30x200H Test Tube set
Type of Vessel	Test Tube with Lip	Test Tube with Lip	Test Tube with Lip
Size of Vessel	φ 15x105Hmm	φ 15x150Hmm	φ 30x200Hmm
Synthesize Capacity	7mL (Max.)	7mL (Max.)	30mL (Max.)
Ordering Code	054300-1010	054300-1020	084300-1030



Name in Setting	SPC15 Test Tube set	SPC29 Test Tube set	Vial Tube set
Type of Vessel	SPC Test Tube	SPC Test Tube	Vial Tube
Size of Vessel	φ 15x170Hmm	φ 30x190Hmm	φ 30x65Hmm
Synthesize Capacity	7mL (Max.)	30mL (Max.)	28mL (Max.)
Ordering Code	054300-1040	054300-1050	084300-1060



## Specifications

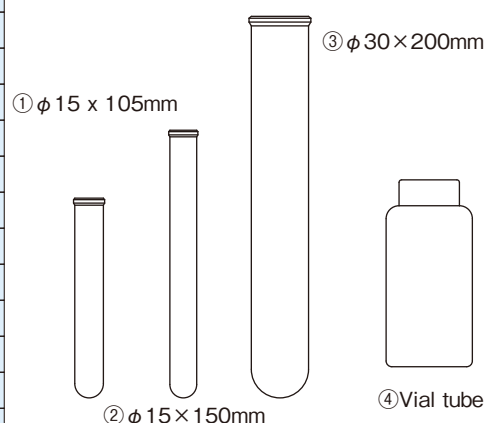
Model		CP-1000
Installed Reaction Vessel		1 to 5 Tubes
Temperature	Setting Range	-20 to 160℃, Individual setting
	Setting / Display	Sheet key entry/ Digital LED display with back-lit
Agitation	Setting Range	100 to 2000rpm, Individual setting
	Setting / Display	Volume entry / Digital LED display with back-lit
	Stirring Type	Ferromagnetic stirrer
Reflux Method		Reflux by cooling cartridge *1
Overall Dimensions		330W x 222D x 325Hmm
Weight		Approx. 15kg
Ordering Code No.		054300-1000

※ Temperature of 5 heating blocks can setup individually.

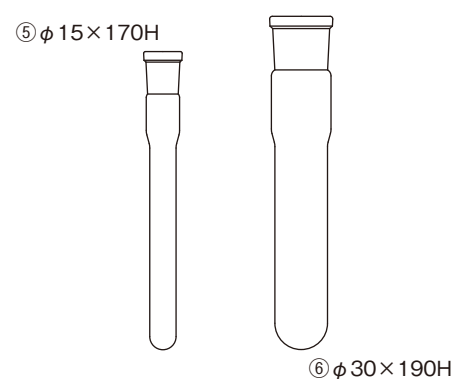
# Parts for CP-1000 (Includes optional items)

Ordering Code No.	Description	Q'ty
① 054310-1601A	Test tube $\phi$ 15 x 105mm	100
② 054310-1602A	Test tube $\phi$ 15 x 150mm	50
③ 054310-1603A	Test tube $\phi$ 30 x 200mm	25
④ 054310-1606A	Vial tube 28mL	50
⑤ 054310-1608A	SPC Test tube $\phi$ 15 x 170mm	10
⑥ 054310-1609A	SPC Test tube $\phi$ 30 x 190mm	10
⑦ 054310-4410	PTFE adapter (with taper) for $\phi$ 15 test tube	1
⑧ 054310-4420	PTFE adapter (with taper) for $\phi$ 30 test tube	1
⑨ 054310-4430	PTFE adapter (with taper) for vial tube	1
⑩ 054310-1201A	Stirrer cross shape for $\phi$ 15 test tube	10
054310-1202A	Stirrer cross shape for $\phi$ 30 test tube	10
054310-1204A	Stirrer triangle shape for vial tube 28mL	10
⑪ 054310-1207A	Stirrer cross shape for $\phi$ 30 test tube L25	10
⑫ 054310-4210	Reflux unit for $\phi$ 15 x 105mm test tube	1
⑬ 054310-4220	Reflux unit for $\phi$ 15 x 150mm, SPC $\phi$ 15 test tube	1
⑭ 054310-4230	Reflux unit for $\phi$ 30 test tube, Vial tube	1
⑮ 054310-4310	Heat block adaptor for $\phi$ 15 tube	1
⑯ 054310-4110	Cooling cartridge	1
⑰ 030300-1529	SPC adaptor SPC15 - SPC29	1
⑱ 054310-4510	Three-way cock SPC15	1
054310-1804A	Septum	10
⑲ 030300-2915	SPC adaptor SPC29 - SPC15	1
007020-2915	Joint adaptor 29/40 - 15/25	1
030730-15150	Dimroth condenser SPC15	1
030230-1525	Separatory funnel, SOC joint	1
054330-5100	Liebig condenser SPC15, GL14	1
054330-5200	Half-moon shaped funnel SPC15	1
054330-5300	Funnel with stop cock, 50mL	1

## Test tube



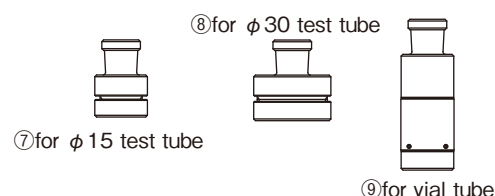
## SPC Test tube



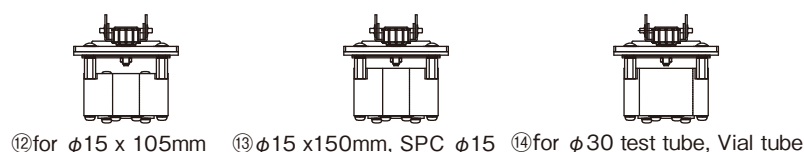
## Stirrer cross shape



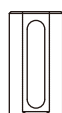
## PTFE adapter (with taper)



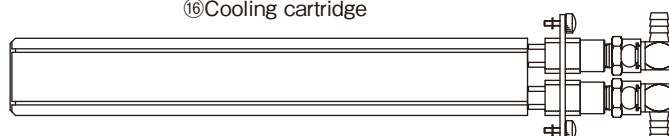
## Reflux unit



## ⑮ Heat block adaptor



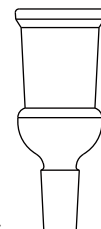
## ⑯ Cooling cartridge



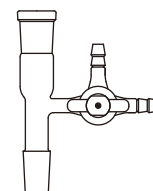
## ⑰ SPC adaptor SPC15 - SPC29



## ⑲ SPC adaptor



## ⑱ Three-way cock SPC15



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