

# carousel reaction stations™

## instructions

RR98030  
12 Place Carousel  
Reaction Station  
With Reflux Head

Your Local Distributor

### RADLEYS

innovative solutions for **Combinatorial Chemists**

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PATENT PENDING



**Thank you for purchasing your Carousel Reaction Station**

## **Introduction**

The Carousel Reaction Station is designed for parallel synthesis.

Your Carousel is designed to mount on a standard stirring hotplate, with a circular top plate having a diameter of not more than 135mm. The single rotating magnetic field created by the stirrer, uniformly stirs individual PTFE magnetic stirring bars in each of the Carousel's 12 glass Reaction Tubes.

The Carousel was originally designed and tested for use with the IKA RCT Basic stirring hotplate. However it can be operated successfully on other stirring hotplates having similar specifications.



## **Warranty**

Carousels include one year full parts and labour warranty from date of original purchase. Warranty will only be valid if a completed warranty card is returned within 2 months of date of purchase.

In the event of product failure please contact your local distributor.  
Please do not return any goods without prior agreement.

## **Safety Information**

The following symbols are intended to assist the user in the safe and efficient operation of the Carousel.

	<b>WARNING</b> Applies when there is a possibility of personal injury.
	<b>IMPORTANT NOTE</b> Alerts the user to important facts.

## Products Enclosed

The items enclosed in this package, should include:

- 1 x Aluminium Carousel with Reflux Head
- 12 x Flexible Tubing
- 1 x Operating Instructions

## Additional Equipment & Consumables

### **RR98072 RCT- Basic Stirring Hotplate**

Or similar magnetic stirring hot plate, with a top plate diameter of not greater than 135mm.

### **RR98073 - ETS-D4 Digital Temperature Controller**

Fuzzy logic digital temperature control for accurate control of the RCT-basic stirring hotplate and Carousel Reaction Station to +/- 1°C.

### **RR98063/RR98064 - Plain Glass Reaction Tubes**

Plain glass reaction tubes 24mm x 150mm. RR98063 (pack of 6) or RR98064 (pack of 12).

or

### **RR98061/RR98062 - Threaded Glass Reaction Tubes**

Threaded glass reaction tubes 24mm x 150mm. RR98061 (pack of 6) or RR98062 (pack of 12).

### **RR98070 - Octagonal Magnetic Stirring Bar**

Large Octagonal PTFE Magnetic Stirring Bar. Pack 20.

or

### **RR98074 - Cross Shaped Magnetic Stirring Bar**

Large High Speed Cross Shaped PTFE Magnetic Stirring Bar. Pack 20. (maximises vortex)

### **RR98067 - Gas Tight Threaded PTFE Cap, with Valve**

These Gas Tight Threaded PTFE are used with threaded glass reaction tubes RR98061/2 to allow full control over atmosphere including the ability to remove reaction tubes individually whilst other reaction tubes remain under inert conditions (pack of 6).

### **RR98068 - Gas Tight Threaded PTFE Cap**

These Gas Tight Threaded PTFE are used with threaded glass reaction tubes RR98061/2, allowing reaction tubes to remain under inert conditions during synthesis (pack of 6).

### **RR98069 - Push-on PTFE cap**

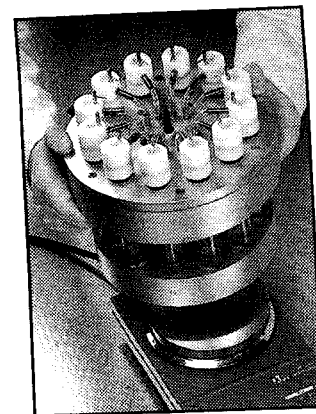
For use with plain glass reaction tubes RR98063/4. These caps do not offer a reliable gas tight seal.

### **RR98076 - Replacement Suba-Seals, (pack of 100)**

All PTFE caps are supplied with replaceable Suba-Seal septums allowing addition of reagents or the removal of aliquots during synthesis. Suba-Seals will require periodic replacement.

**WARNING**

Carousel Reaction Stations should always be used in a fume cupboard.



octagonal stirring bar



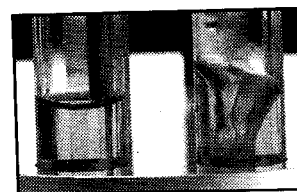
'cross shaped' stirring bar

- 1 **Connect loose flexible tubing** lengths (supplied) to the 12 radial gas hose barbs. The tubing has been cut to length to optimise the gas flow to the individual reaction tubes by avoiding kinks etc. Should you ever need to replace this tubing please be sure to use exactly the same length.
- 2 **The Carousel is simply placed on top of the stirring hotplate.** The circular recess in the base of the Carousel is designed to fit snugly around the top plate of your stirring hotplate (maximum top plate diameter 135mm).
- 3 The Carousels modular design allows it to be easily lifted on and off the hotplate stirrer as required. Being circular, it can be rotated when in place to facilitate access to all reaction tubes. This removes the need to 'lean' into the fume cupboard during operation.

**WARNING**

Following synthesis, care should always be taken to ensure that the Carousel's heated base has had sufficient time to cool before its removal from the hotplate.

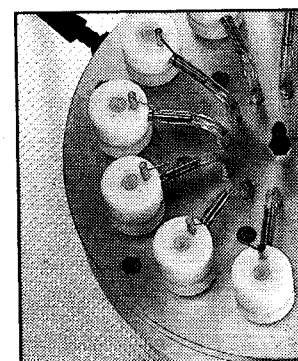
- 4 **The reaction tubes (threaded or plain)** are placed in position by simply being lowered into place through the reflux top. The individual Reaction Tubes are precision engineered to ensure a good fit into the individual wells for maximum heating/cooling transfer. The RR98061/2 threaded Reaction Tubes are recommended for reactions requiring an inert atmosphere.
- 5 **The PTFE stirring bars** should now be placed in the individual Reaction Tubes. We recommend the cross shaped stirring bar for vigorous stirring.
- 6 Reagents, compounds etc may now be added before caps are positioned, or afterwards via a syringe through the Suba-Seal septum
- 7a **Push-on PTFE Caps RR98069** - Before attaching the cap to the Reaction Tube, firstly connect the flexible tubing to the stainless steel side arm of the cap. The PTFE caps are now gently, but firmly, pushed into place on the Reaction Tubes. The nitrile o-ring will form a good seal directly with the outside of the glass tube.
- 7b **Gas Tight Threaded PTFE Caps RR98068** - Before attaching the cap to the Reaction Tube, firstly connect the flexible tubing to the stainless steel side arm of the cap. The PTFE caps are now gently, but firmly, screwed onto the threaded Reaction Tubes. The nitrile o-ring will form a gas tight seal directly with the outside of the glass tube.
- 7c **Gas Tight Threaded PTFE Caps with Valve RR98067** - Before attaching the cap to the Reaction Tube, firstly connect the flexible tubing to the stainless steel side arm of the cap. The PTFE caps are now gently, but firmly, screwed onto the threaded Reaction Tubes. The nitrile o-ring will form a gas tight seal directly with the outside of the glass tube.



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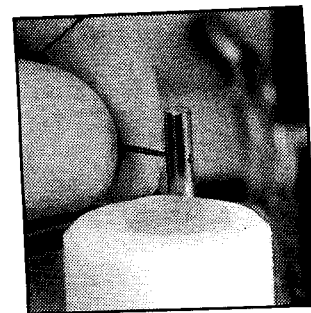
**IMPORTANT NOTE**

Please note that the screw threaded caps 'seal' on the nitrile o-ring before they are fully tightened. Fully tightening the caps will effect a double seal on the PTFE cap and nitrile o-ring.



**WARNING**

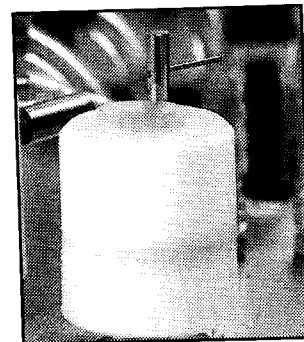
Do not over tighten PTFE caps, as this may damage the cap and cause fracture of the glass Reaction Tube.



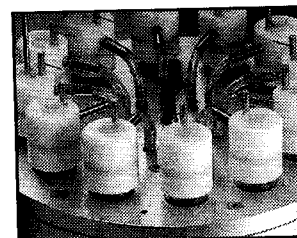
**IMPORTANT NOTE**

The threaded PTFE caps now feature a stainless steel outer ring, designed to prevent the cap from popping if over-tightened. These outer rings are an interference fit and therefore may rotate independently of the cap if forced (this is quite normal).

- 8 **PTFE Caps with Valve RR98067** - when using these caps to ensure the flow of inert gas, the valve must be in the 'OPEN' position - this is where the valve bar lines up with the flexible gas inlet tube. A quarter turn (anti-clockwise or clockwise) will 'CLOSE' the valve, isolating the Reaction Tube from the system.
- 9 **A Suba-Seal Septum** located in the top of each PTFE cap, which permits either reaction monitoring through the withdrawal of aliquots or the addition of reagents during synthesis. Suba-Seals will require periodic replacement.
- 10 **Gas Inlet System.** A central gas inlet and radial distribution system combined with gas tight PTFE caps allows reactions to be performed under an inert (nitrogen/argon) atmosphere.



For use under inert atmosphere, attach the centre port of the manifold to a suitable tubing. You will require a two way valve to allow switching from vacuum to inert gas.



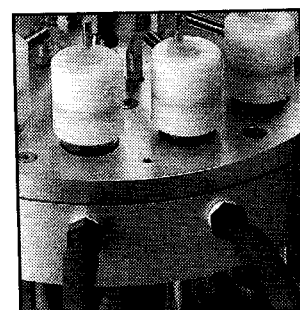
**WARNING**

When applying gas to the reaction station gas inlet system do not exceed 1 (one) psi as the Reaction Tube and PTFE Caps are not rated for pressure, (they are however suitable for applying a rough vacuum).

**IMPORTANT NOTE**

When applying inert gas, the valve on the PTFE cap must be in the 'OPEN' position - this is where the valve bar lines up with the flexible gas inlet tube. A quarter turn (anti-clockwise or clockwise) will 'CLOSE' the valve, isolating the Reaction Tube from the system.

- 11 **Cooling Reflux System.** For the reflux option connect the inlet and outlet to a suitable water (chilled water is preferred) supply and drain, ensuring enough tubing is free for easy rotation. High pressure water supplies should not be used.

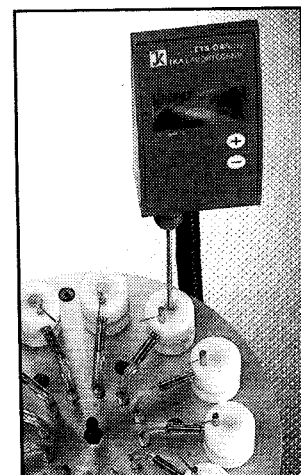


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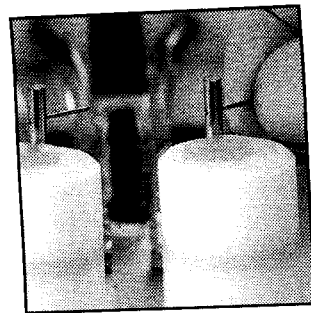
When heating reactions take care not to touch the reaction block. We recommend a maximum operating temperature of no more than 160°C.

- 12 **For accurate temperature control** we recommend using the IKA ETS-D4 Fuzzy Logic Digital Temperature Controller (or similar). The stainless steel temperature sensor is positioned either; directly in to one of the Reaction Tubes (through the Suba-Seal) to monitor and control the solution temperature; or directly into the reaction block via a thermocouple pocket between the reflux inlets.

The best accuracy will be obtained when using the temperature sensor directly in the Reaction Tube +/- 1°C.



- 13 **The Reaction Tubes can be isolated** or removed during synthesis by simply closing the valve on the PTFE Cap ensuring the other reaction remain under controlled inert conditions. (Take extreme care when removing Reaction Tubes at high temperatures).



**IMPORTANT NOTE**

Always ensure that the temperature sensor is completely immersed into the liquid when inserted into the reaction tube.

**IMPORTANT NOTE**

The bottom and top halves of the reflux head should not be separated as the silicone seal between the two plates may be compromised causing a water leak during operation.

**IMPORTANT NOTE**

The inlet/outlet barbs for the water and gas supply should not require tightening. Over-tightening of these may cause failure and leaking.

**IMPORTANT WARNING**

In the event of a water leak from the reflux head - please stop using the unit immediately. **DO NOT TOUCH THE CAROUSEL OR HOTPLATE.** Switch off all power supply to the hotplate at the mains. Remove the power plug from the mains. Once the carousel has cooled sufficiently remove it from the hotplate.

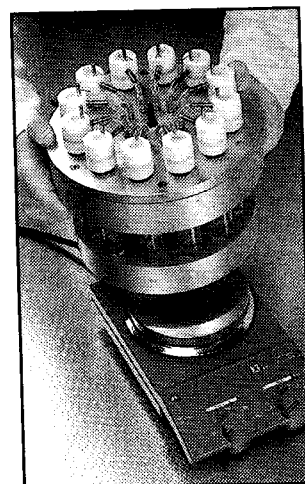
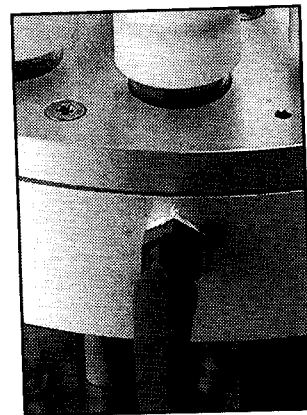
Do not attempt to repair the leak. **THIS WILL INVALIDATE YOUR WARRANTY.** Please contact your local distributor.

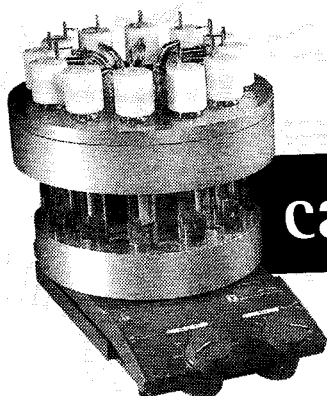
**IMPORTANT WARNING**

The Carousel should only be operated by trained and competent personnel. As with all chemistries, care should be taken to monitor your reactions at all stages. The Carousel should not be left unattended unless in a supervised area.

**IMPORTANT WARNING**

Carousel Reaction Stations should always be used in a fume cupboard.





# carousel reaction stations™

## ordering information

Cat No	Description	Pk Qty
RR98030	12 Place Heated Carousel Reaction Station + Reflux *	1

### Carousel Consumables

RR98061	Threaded Glass Reaction Tube, 24mm x 150mm	6
RR98062	Threaded Glass Reaction Tube, 24mm x 150mm	12
RR98063	Plain Glass Reaction Tube, 24mm x 150mm	6
RR98064	Plain Glass Reaction Tube, 24mm x 150mm	12
RR98067	Gas Tight Threaded PTFE Cap + Inlet + Valve	6
RR98068	Gas Tight Threaded PTFE Cap + Inlet	6
RR98069	Push-on PTFE Cap + Inlet	6
RR98070	Large Octagonal PTFE Magnetic Stirring Bar	20
RR98074	Large High Speed Cross Shape PTFE Magnetic Stirring Bar	20
RR98076	Replacement Suba-Seals for Caps	100

### Stirring Hotplate

RR98072	RCT-Basic Stirring Hotplate, 240 volt	1
RR98072/115V	RCT-Basic Stirring Hotplate, 115 volt	1
RR98073	ETS-D4 Fuzzy Logic Digital Temperature Controller, 240 volt	1
RR98073/115V	ETS-D4 Fuzzy Logic Digital Temperature Controller, 115 volt	1

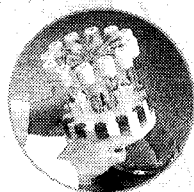
\* Please note reaction Tubes, Caps, Stirring Bars or Stirring Hotplate are not included with reaction Stations.

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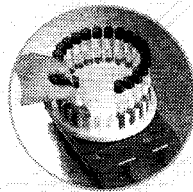
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12 Place PTFE  
Reaction Station



24 Place PTFE  
Reaction Station



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