

Built-in Safety

All Water Manifolds are fitted with a female inlet/outlet connector, whilst the Gas/Vacuum Manifolds are fitted with a male inlet/outlet connector. This prevents incorrect connection of fluid and gas supplies.

Synthesis and Reflux

Multi-Scale Synthesis Workstation

Demands on Chemists time are ever increasing, and time spent assembling and setting up of equipment prior to use is time lost for the key function of efficient synthesis. This application describes the concept of a multi-scale shared workstation which chemists may use instantly with minimal set up, adding or removing modules to suit the application.

Fig 1. shows a workstation system set up with two synthesis modules included; a Carousel 12 Reaction Station and a Heat-On 250ml block.

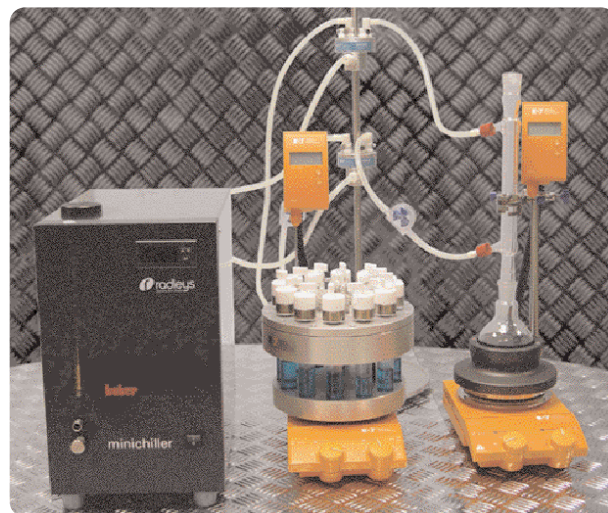


Fig 1.

Workstations comprise:

1. Cooling Water Supply

Typically a cooled circulator, such as the Huber Minichiller is used for supply of closed-loop chilled water to glass condensers and/or reflux heads. A fixed chilled mains/tap water supply could be substituted.

2. Heating and Stirring

Use standard IKA or Radleys stirring hotplates to heat and stir.

3. Plug-in Synthesis Modules

Select from a variety of synthesis or reaction modules to suit your reaction volume and chemistry. See Fig 5. shown overleaf.

4. Water Distribution

At the heart of the system lies two StarFish Water Distribution Manifolds (Fig 2.) which allow the neat distribution and return of cooling water to the reaction modules.



Fig 2.

5. Gas/Vacuum Distribution

Similar to the water distribution manifold, the StarFish Gas/Vacuum Distribution Manifold (Fig 3.) allows gas or a vacuum from a single source to be evenly distributed to up to five reactions making it ideally suited for both vacuum and gas purging. Each manifold contains shut-off valves which automatically seal when a connector is plugged in or out.



Fig 3.

How does the StarFish water manifold work?

The StarFish water manifold has been designed to allow cooling water from a single source to be evenly distributed to up to five condensers and then the flow re-combined to one return/drain tube.

Because the water connectors feature shut-off valves that automatically close when the couplings are parted, the manifold can be used with any number of condensers without the need for complex daisy-chaining (connecting in series). Typically two manifolds are used in each system; one to distribute water to the condensers and one to collect coolant for recirculation or to drain.

NB. When using 5 condensers a water flow rate of at least 1.5 litres per minute should be used to maintain even distribution to each condenser. A cooling water temperature of 15°C is also recommended.

Water manifold method of operation

- Each water manifold contains a series of 5 shut-off valves which automatically open when a connector is plugged in, and close and seal when the connector is removed
- Synthesis/reaction modules can be easily plugged into or removed from the workstation without water spills. Simply snap in as needed, see Fig 4.
- One StarFish manifold accepts the cooling water supply from the Minichiller or mains tap, and distributes it to the desired synthesis modules.
- The second manifold receives the water return for each module, and directs it back to the Minichiller or waste.



Fig 4.

NB. Gas/vacuum manifold does not control or regulate gas/vacuum flow. The maximum operating pressure is 3psi above atmospheric pressure and a vacuum of approximately 150 to 125mBar. Operates in similar way to water manifold explained above right. Please ask for further details.

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Fig 5. Typical Radleys Synthesis Modules



StarFish 3 x 500ml Workstation



StarFish Multi-Experiment Workstation



Carousel 12 Reaction Station



Carousel 6 Reaction Station



GreenHouse Plus Parallel Synthesiser



StarFish with PolyBlocks



Heat-On Blocks 1 x 250ml



Heat-On Blocks Multi-well

Volume range of Radleys Synthesis Modules

	0-1ml	1-10ml	10-100ml	100-250ml	250-500ml	500-1000ml	1000-5000ml
GreenHouse Plus Parallel Synthesiser							
Carousel 12 Reaction Station							
Carousel 6 Reaction Station							
StarFish round bottom flasks							
StarFish tubes & vials							
Heat-On Multi-well							
Heat-On single flasks							

Use a chiller to save water, save money and reduce the risk of flooding!

Large savings on water consumption

The Minichiller (Fig 6) can service up to 5 condensers simultaneously which represents a possible saving of £1800 in mains water charges per year.

Reduce the risk of flooding

The Minichiller has an integral float-switch which cuts off the coolant flow should tubing become dislodged. The maximum internal coolant capacity is also limited to 2 litres, thereby restricting any flood to this volume.

Powerful cooling - even in summer

The Minichiller ensures excellent temperature stability. Giving increased condensing performance, particularly in summer when mains tap water temperatures can be >20°C, at which point refluxing will not work well with low boiling solvents such as DCM, leading to solvent loss or reactions boiling dry.

Constant cooling without pressure drop

Pressure drops in your mains water supply can cause erratic cooling which can significantly affect your work. This is a particularly common where larger scale apparatus is used elsewhere on the same water supply.

Water consumption and typical mains water costs

Based on a flow of 1 litre per minute, at a cost of £00.1 per litre	1 Tap Running			5 Taps Running		
	4 hours use	8 hours use	24 hours use	4 hours use	8 hours use	24 hours use
Water Consumption per day (litres)	240	480	1440	1200	2400	7200
Cost per day (£)	£0.30	£0.50	£1.50	£1.30	£2.50	£7.60
Cost per month (£) (20 working days)	£5	£10	£30	£25	£50	£150
Cost per annum (£)	£60	£120	£360	£300	£600	£1800



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