

2015 International Product Guide

Equipment for chemical
synthesis, process
development,
evaporation
and work-up



World leaders in innovative productivity tools for chemists

Radleys provides innovative chemistry equipment for safer, cleaner, greener and more productive chemical research.

We have been manufacturing scientific glassware and laboratory instruments for over 45 years and our customers include leading blue-chip industrial and academic research facilities around the world.

Our areas of expertise are focused on equipment for chemical synthesis, process development, work-up and evaporation.

Who uses Radleys?

If you are heating, cooling or stirring liquids, then you can benefit from the technology we offer.

The Radleys benefits

- Increased throughput for improved productivity
- Savings in time, space and money
- Better yields and improved results
- Safer, cleaner and greener working practices
- Reliable and reproducible results

Doing it differently

We believe that forward-thinking scientists and chemists are always seeking better ways of doing what they do.

Our team of R&D chemists and engineers look at every detail of the chemistry workflow, to identify what changes can be made to improve the methods, apparatus and glassware that are used everyday.

Chemistry and hi-tech engineering

Indeed, it is this unique blend of chemistry and engineering expertise that has allowed us to develop many of the successful and innovative solutions we offer today.

Better = Change = Doing it differently

Partnerships

In the UK we are the master distributor for the full range of Huber thermoregulators and Heidolph benchtop instruments.



Scale	From RESEARCH... 	...to DEVELOPMENT 
	From BENCHTOP... 	...to PRODUCTION 

Positions	From SINGLE... 	...to PARALLEL 
	From 1... 	...to 24 

Temperature	From DRY ICE... 	...to CIRCULATORS 
	From -120°C... 	...to +425°C 

Volume	From VIALS... 	...to JACKETED VESSELS 
	From 0.1ml... 	...to 50 litres 

Stirring	From MAGNETIC... 	...to MECHANICAL 
	From 30rpm... 	...to 2000rpm 

Control	From MANUAL... 	...to AUTOMATION 
	From DIY... 	...to SOFTWARE CONTROL 

Benchtop and Hotplate Tools

Control Software

<p>Findenser Air Condenser</p> <p>Page 4</p> 	<p>Heat-On Block System</p> <p>Page 5</p> 	<p>Cool-It Insulated Bowls</p> <p>Page 6</p> 
<p>StarFish Work Station</p> <p>Page 7</p> 	<p>Carousel Stirring Hotplates</p> <p>Page 8</p> 	<p>RS Overhead Stirrers</p> <p>Page 9</p> 

AVA Laboratory Control Software
and Data Hub

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Parallel Reaction Stations

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Jacketed Lab Reactors

<p>Custom Jacketed Reaction Systems</p> <p>Page 21</p> 	<p>Reactor-Ready Lab Reactor</p> <p>Page 22</p> 	<p>Reactor-Ready Duo Lab Reactor</p> <p>Page 23</p> 	<p>Reactor-Ready Pilot Lab Reactor</p> <p>Page 24</p> 	<p>Lara Controlled Lab Reactor</p> <p>Page 25</p> 
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Findenser™ - prevents flooding and saves water

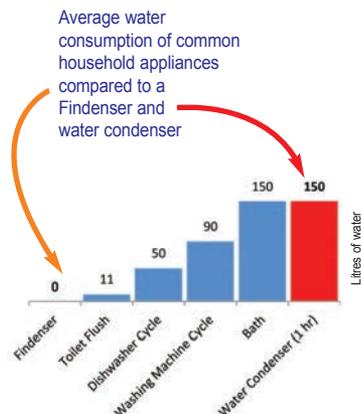
Replaces water-cooled condensers in over 95% of common chemistry applications

How does Findenser work?

- Findenser comprises an internal glass condenser and an external, finned aluminium jacket, between which a small amount of water is permanently sealed.
- The glass condenser design has a greater internal surface area than traditional air condensers, increasing heat transfer capacity.
- The finned jacket fits around the glass condenser, further increasing the external surface area.
- The result is a 'SUPER air condenser'.

What are the benefits?

- No risk of flooding from running water
- Eliminate the cost of water purchase and disposal
- For solvent volumes from 5ml up to 1 litre
- Helps meet sustainable water reduction targets



Choice of B14, B19, B24 and B29 joint sizes



B14



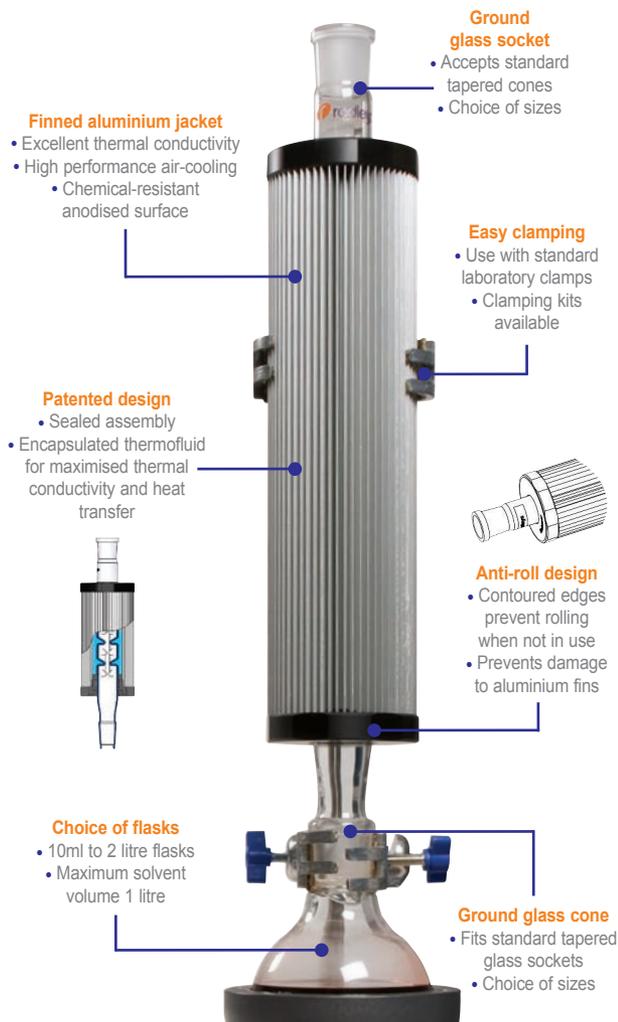
B19



B24



B29



Findenser requires no running water to operate. Water is a precious resource. It makes little economic or environmental sense to waste thousands of litres just to cool a single condenser.

Performance testing

A range of solvents, in identical flasks and set-ups, were tested with a Findenser, water condenser and air condenser to record solvent loss by weight.

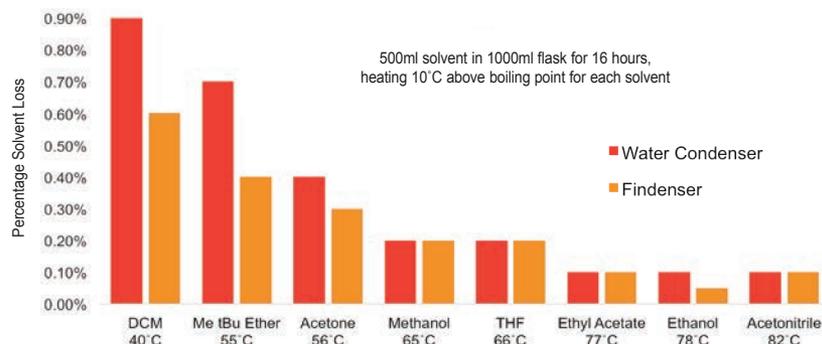
Findenser compared to an air condenser

For synthesis with low boiling point solvents, Findenser showed a significant improvement in solvent retention. With acetone or DCM the reaction boiled dry when using an air condenser, yet Findenser retained 95% of the solvent under the same conditions.

For synthesis with medium boiling point solvents, Findenser delivered improved solvent retention particularly with larger volumes and high temperatures.

Findenser compared with a water condenser

Under identical conditions, a standard Findenser retained solvent to the same level as a water condenser (with the exception of diethyl ether).



Heat-On™ Block System - *the safer alternative to oil baths*

The safest, fastest and most efficient way to heat and stir round bottom flasks from 10ml to 5 litres

Features

- Replace messy oil baths, heating mantles and avoid spills.
- Make your chemistry safer, cleaner and faster.
- Solid aluminium blocks provide even heating.
- Lightweight design allows rapid heating.
- Unique well design eliminates cracking of flasks.
- Blocks feature two probe holes and optional lifting handles.
- Use up to 260°C.
- Also accepts Florentine flasks.

The risk of oil fires and injury from hot oil spills, plus the mess and cost associated with the use of oil, means that oil baths no longer represent safe working practice in labs. Heating mantles are expensive, difficult to clean, do not respond well to spills and often create hot spots when heating. Scientists are increasingly turning to specially designed aluminium blocks located on stirring hotplates to heat standard round bottom flasks.

Not all block designs are the same

Test results show that Heat-On heats up to 66% faster and uses 30% less energy than other brands of block.

Visit radleys.com to download the application bulletin



Heat-On Multi-well Block with 50ml and 100ml flask inserts



Heat-On Multi-well Block

- Accepts two 50ml or 100ml flasks, or one 150ml flask

Two temperature probe holes

- Accept 3mm \varnothing probe

Lightweight design enables rapid heating

- Use up to 260°C
- Uses 30% less energy
- Heats water 66% faster



Anodised finish

- Heat-On blocks are also available with a lower cost anodised finish if preferred

PTFE safety covers reduce the risk of burns

- Reduces surface temp. by up to 50%
- Reduces energy consumption by 15%
- Available for the most popular Heat-On sizes

Over 50 styles and sizes to choose from

- Accepts tubes and flasks
- 1ml to 5 litres



Unique well design prevents flask cracking

- Unlike many other inferior blocks, Heat-On will not crack your flask when cooling



Optional lifting handles

- Quick-release mechanism for safe removal

Fluoropolymer coating

- Superb chemical resistance
- Easy to clean
- Speeds up heating times



Square hotplate adapter

- Allows Heat-On to sit on a square top plate up to 200 x 200mm

Fits all leading hotplate brands

- Suitable for 145mm \varnothing top plates
- Optional adapter for 135mm \varnothing top plates



Cool-It™ Bowl - the unbreakable dewar

The safe and efficient way of cooling and stirring round bottom flasks to -78°C

Cool-It replaces fragile glass dewars, unstable plastic bowls and keeps your chemistry colder for longer. The compact and virtually unbreakable Cool-It insulated bowls are designed to fit onto a standard stirring hotplate to cool and stir round bottom flasks, beakers and test tubes etc.

Cool-It keeps it cooler for longer

- Cool-It will keep your sample below -70°C for up to 5 times longer than a plastic bowl.
- Cool-It will keep your reactions below -70°C for twice as long as a glass dewar.

-78°C



Two part lid can be removed with flask in situ



Small Cool-It bowl for flasks up to 400ml



Large Cool-It bowl for flasks up to 2 litres

Cool-It accessories

- Clamps, stand, digital thermometer, scoop, protective gloves, apron and face shield

Lid improves cooling

- Keeps reaction cool for up to 20% longer
- Easily fitted once your flask is in place
 - Minimises ice formation on flask
 - Prevents spitting

Virtually unbreakable

- Manufactured from a robust, chemically-resistant HDPE
- High quality insulated foam core
- Unlike fragile glass dewars is virtually unbreakable

Protects your stirrer and minimises spills

- Cool-It minimises frost on the outer surfaces, protecting your stirrer from moisture ingress
 - Cool-It fits securely on the top plate minimising spills and the risk of the bowl being knocked off the top plate

Fits on all popular brands of stirring hotplate

- Suitable for use with top plates of 135mm and 145mm diameter

Easy pour spout and handle

- Non-drip spout and handle makes the disposal of solvents safer and easier
- Avoid spills for a safer working environment

Cool-It keeps it cooler for longer

- Cool-It will keep your sample below -70°C for up to 5 times longer than a plastic bowl
- Cool-It will keep your reactions below -70°C for twice as long as a glass dewar

Large and small bowl options

- Small for flasks up to 400ml
- Large for flasks up to 2 litres



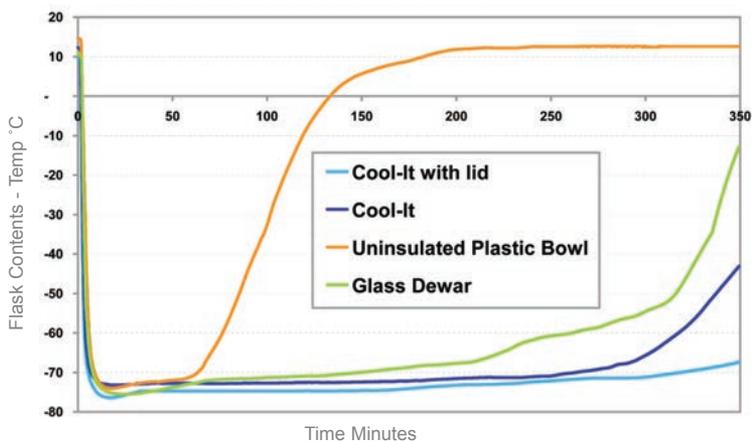
Cool-It accepts all shapes and sizes of round bottom and Florentine flask up to 2 litres



Easy pour design with spout and handle

Cool-It vs. Glass Dewar

Acetone and dry ice, 250ml flask, 100ml acetone



StarFish™ Multi-Experiment Work Station - *the space saver*

StarFish is a modular, general purpose heating and stirring work station

Whether you want to just heat and stir or perform more complex parallel experiments, StarFish really can make your life easier and improve productivity.

Features

- Fits all leading brands of stirring hotplate.
- Accepts vials, test tubes, beakers and flasks.
- Set up vessels individually or in parallel.



Applications

- Heating and stirring
- Synthesis
- Distillation
- Extraction
- Digestion
- Concentration



Space saving

Uses less space than multiple heating and stirring set-ups.

Increases productivity

Multiple positions allow you to heat, stir and reflux experiments in parallel.

Cost effective

Use your existing stirring hotplate and glassware. Eliminate the cost of multiple set-ups.

Safer, cleaner working

Eliminate oil baths, reduce spills, mess and accidents.

Flexible

Use as many positions as you want.

Easy to use

Easy to store and quick to assemble.

Compact

Store spare components in a drawer and not on the bench.

Gas/vacuum manifold

- Even distribution to up to five positions or vessels
- Quick-release connectors
- Leak-proof shut-off valves

Central support rod

- Single or two piece options
- Screws into base plate
- Stainless steel

Universal 3 or 5-way telescopic clamps

- Adjusts to hold a wide variety of glassware
- Velcro or rubber straps

Water manifold

- Distributes water to up to five condensers simultaneously
- Quick-release connectors
- Leak-proof shut-off valves

Use your own hotplate and glassware

- Compatible with all popular brands of stirring hotplate
- Compatible with non-Radleys glassware

MonoBlocks or PolyBlocks

- Wide choice of block options
- From vials to 500ml flasks

Choice of base plates

- For round or square hotplates
- Optional handles

Aluminium reducing inserts with PolyBlocks



PolyBlock

MonoBlock



Mix'n'match the components you need, when you need them

Water and gas/vacuum distribution manifolds

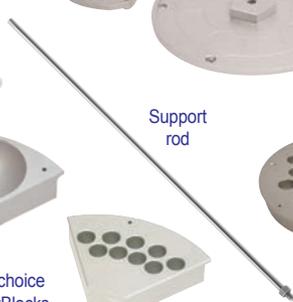


Base plate with optional handles accepts both MonoBlocks and PolyBlocks



Universal 3 and 5-way clamps

Support rod



Inserts for flasks



Wide choice of PolyBlocks



MonoBlocks for 3 or 5 round bottom flasks



Carousel™ Stirring Hotplates

Choice of three models to suit your chemistry and budget, all offering improved safety, ease of use and faster heat-up times

Features

- 3 year warranty
- 800 watt heating power
- Heating range: 20 to 300°C
- Speed range: 30 to 1400rpm
- Pt1000 temperature sensor for all models
- Suitable for continuous unattended operation
- Chemical-resistant Kera-Disk top plate
- 135mm top plate diameter



Carousel Standard



Carousel Tech



Carousel Advanced



Carousel Standard Stirring Hotplate

- Large analogue knobs for convenient speed and temperature setting.
- Stirrer magnets provide superior coupling at high speeds/viscosities.
- Stirring features a smooth ramp to set speed, prevents decoupling.
- An illuminated on/off switch for heating prevents unintentional heat-up.
- Safety circuit switches off heating if the set temp. is exceeded by 25°C.
- Extra safety control circuit and hotplate cut-out by two independent temperature sensors.
- Optional Pt1000 temp. sensor with stainless steel or glass coated probe.

Carousel Tech Stirring Hotplate

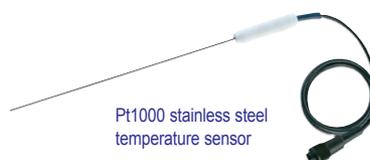
All Carousel Standard features, plus:

- Digital display of temperature and speed with both set and actual values.
- Residual heat indicator provides a clear warning of when the top plate surface is above 50°C, minimising accidents.
- Choice of fast or precise heating modes.
- External sensor control; if Pt1000 is not immersed in the medium, heating is switched off.
- Money saving Tech Package includes Tech Stirring Hotplate, Pt1000 Temperature Sensor and Pt1000 Clamping System.

Carousel Advanced Stirring Hotplate

All Carousel Tech features, plus:

- RS232 interface for optional PC control.
- Speed range: 30 to 1400rpm with superior accuracy: ±1%.
- Optional Pt1000 temperature sensor offers improved temperature accuracy of ± 0.2 K accuracy.
- Independent safety circuit switches off heating at an operator pre-determined value.



Pt1000 stainless steel temperature sensor



	Carousel Standard	Carousel Tech	Carousel Advanced
Speed range (rpm)	100 to 1400	100 to 1400	30 to 1400
Speed accuracy (%)	± 2	± 2	± 1
Display	-	Digital	Digital
Analogue/digital interface (RS232)	-	-	Yes
Heating power (W)	800 (600 for 115V)	800 (600 for 115V)	800 (600 for 115V)
Hotplate temperature (°C)	20 to 300	20 to 300	20 to 300
Resolution of temperature setting (K)	± 5	± 1	± 1
External temperature sensor	Pt1000	Pt1000	Pt1000
Temperature accuracy with external temp. sensor (K)	± 1	± 1	± 0.2
Sensor breakage protection	With Pt1000	With Pt1000	With Pt1000
Temperature control	Micro controller	Micro controller	Micro controller
Temperature accuracy hotplate (K)	± 5	± 5	± 5
Safety circuit hotplate (°C)	25°C over hotplate temperature	25°C over hotplate temperature	10°C - 25°C over nominal temperature
Stirring capacity, max (water)	20	20	20
Plate diameter (mm)	ø 135	ø 135	ø 135
Top plate material	Kera-Disk (Silumin with ceramic coating)	Kera-Disk (Silumin with ceramic coating)	Kera-Disk (Silumin with ceramic coating)
Weight (kg)	2.9	2.6	2.6
Dimension l x w x h (mm)	173 x 277 x 94	173 x 277 x 94	173 x 277 x 94
Protection class	IP 32	IP 32	IP 32
Supply voltage	230V / 50Hz or 115V / 60Hz	230V / 50Hz or 115V / 60Hz	230V / 50Hz or 115V / 60Hz

RS Overhead Stirrers - for powerful stirring

The powerful RS range can accomplish the most demanding mixing tasks whilst providing the highest safety and increased operating lifetime

Features

- Powerful stirring from 40 to 2000rpm.
- Smooth start which prevents splashing and spills.
- Lightweight; easy to set up and use.
- Designed for continuous 24 hour operation and high viscosity applications.
- High torque (up to 520 Ncm) provides better mixing in less time, reducing process times.
- Sealed housing helps prevent internal corrosion from aggressive liquids and vapours and ensures years of maintenance-free operation.
- Sparkless motors reduce potential risks in volatile environments.



RS27 Standard for standard applications

- Analogue control; 2 gears, 40 to 2,000rpm.
- Suitable for applications that do not require accurate speed settings.
- Ideal for medium to high viscosity mixing tasks with a maximum viscosity of 60,000 mPa s.

RS37 Digital Plus for high viscosity

- Digital display for accurate speed settings.
- 2 gears; 40 to 2,000rpm.
- Ideal for any highly viscous mixing with a maximum viscosity up to 100,000 mPa s.

RS50 Control for precise stirring

- Enhanced bright digital display of torque and speed.
- 50 to 2,000rpm (single gear).
- Viscosity range up to 10,000 mPa s.
- Allows calibration of torque during your process to monitor viscosity changes over time.
- RS232 interface for remote control or via PC.
- Maintains constant speed even under significant load changes.

RS100 Control Plus for constant speed under changing loads

- Enhanced bright digital display of torque and speed.
- 2 gears; 12 to 2,000rpm.
- Viscosity range up to 100,000 mPa s.
- RS232 interface for remote control or via PC.
- Maintains constant speed even under significant load changes.



Accessories

- Range of paddle designs available in stainless steel, PTFE and POM plastic.
- Range of fixed and telescopic stands.
- Optional remote control allows operation from outside the fume hood.

	RS27 Standard	RS37 Digital Plus	RS50 Control	RS100 Control Plus
Power input/output (W)	50/27	70/37	80/50	140/100
Gears	2	2	1	2
Speed range (rpm)	40 to 400 200 to 2,000	40 to 400 200 to 2,000	50 to 2,000	12 to 400 60 to 2,000
Speed indicator	Analogue	Digital	Digital	Digital
Speed control	Mechanical	Mechanical	Electronic	Electronic
Maximum torque (Ncm)	400	520	20 (40 overload mode)	200 (400 overload mode)
Power reserve under overload (%)	-	-	200	200
Torque indicator (Ncm)	-	-	Digital	Digital
Viscosity up to (mPa s)	60,000	100,000	10,000	100,000
Stirring cap. H ₂ O up to (l)	25	40	40	100
RS232 interface	-	-	Yes	Yes
Shaft diameter up to (mm)	10	10	10	10
Stay bar size (dia. x l)	13 x 160	13 x 160	13 x 160	13 x 160
Weight (kg)	3.0	3.3	2.8	3.7
Dimension w x h x d (mm)	82 x 206 x 176	82 x 211 x 176	72 x 206 x 176	82 x 211 x 176
Protection class (DIN EN 60529)	IP 40	IP 40	IP 40	IP 40
Supply voltage	230V / 50Hz	230V / 50Hz	230V / 50Hz	230V / 50Hz



RS27 Standard Overhead Stirrer

RS37 Digital Plus Overhead Stirrer



RS50 Control Overhead Stirrer

RS100 Control Plus Overhead Stirrer



Remote Control

Telescopic Stand

Boss Clamp



Visco Jet 60mm ø S/S

Visco Jet 80mm ø POM

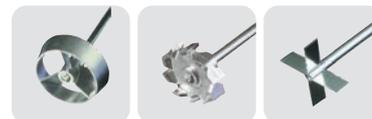
Visco Jet 120mm ø S/S



Square Blade Stirrer

Collapsible Blade Stirrer

Pitched Blade Stirrer



Ringed Stirrer

Radial Flow Stirrer

Crossed Blade Stirrer



PTFE Anchor

PTFE Turbine

PTFE Retreat Curve

Simple and convenient, the Carousel Work-Up Station will reduce post-synthesis bottlenecks.



Work-Up Station for parallel or sequential work-up of 12 samples, using filtration, phase separation, liquid/liquid extraction or SPE.

Carousel 12 Plus Reaction Station™

The patented Carousel 12 Plus simultaneously heats/cool, stirs and refluxes multiple samples under an inert atmosphere

An effective personal synthesis station for parallel solution phase chemistry and solid supported reagent based synthesis.

220°C



Features

- Accepts up to 12 glass tubes with a reaction volume of 1ml to 20ml.
- Powerful, even stirring - fits onto a Carousel Stirring Hotplate.
- Rapid heating to 220°C and cooling to -78°C.
- Quick to set up and easy to use.
- Easy viewing of tube contents during experiments.
- Removable water-cooled reflux head.
- Perform reactions under an inert atmosphere.
- Fluoropolymer coating for chemical resistance and easy cleaning.
- PTFE caps feature a quick-thread for fast attachment to glass tubes.
- Removable reflux head allows reaction tubes to be transferred between heated base, cooled base or stand.



The world's most popular parallel synthesiser

Heated directly by the stirring hotplate with optional digital control and Pt1000 temperature sensor.

Quick-release inlet/outlet for vacuum and gas, combined with a radial gas distribution system and gas-tight caps, allow reactions under an inert atmosphere.

Water-cooled aluminium reflux head provides efficient refluxing within individual reaction tubes.

Chemical-resistant Easy-On PTFE caps feature a quick-thread for fast attachment to the glass tubes and push-on connections to the s/steel gas outlets.



Accepts up to 12 tubes with reaction volume of 5 to 20ml (1ml with reduced volume tubes).

Quick-release water couplings with cut-off valves for ease of connection to cooling water supply.



Fluoropolymer coating for chemical resistance and easy cleaning.

Easy to operate and set up with minimal training. No electrical or moving parts ensure maintenance-free operation.

Unique removable fluoropolymer insulation plate helps insulate the heated base for faster heating and energy savings of up to 36%.

Base design improves heat transfer and provides energy savings. Maximum operating temperature 180°C (220°C for short periods).

Visibility slots allow easier viewing of tube contents. Easy to rotate round design gives access to all tubes with no need to lean into the fume cupboard.

Utilises the single rotating magnetic field of the hotplate stirrer to stir all the positions evenly and powerfully.

Control and log your chemistry

Carousel Stirring Hotplate offers higher temperature, powerful stirring and digital control.

Rare earth cross shaped stirring bars for vigorous stirring and a deeper vortex, without jamming.



Cooled Carousel 12 Plus Reaction Station™

Cost effective, low temperature parallel synthesis down to -78°C

The innovative Cooled Carousel 12 Plus reservoir is designed to accept the removable reflux/inerting head from the Carousel 12 Plus, allowing reaction tubes to be easily and rapidly transferred between heating and cooling bases.

Features

- Simultaneously performs 12 cooled and stirred reactions to -78°C.
- Powerful, even stirring - reservoir fits on to a Carousel Stirring Hotplate.
- Robust HDPE cooling reservoir is compatible with a wide range of cooling mixtures, including dry-ice/acetone for manually controlled cooling from ambient down to -78°C.
- Features a non-drip spout and handle for disposal of waste solvents.
- Insulated foam core maintains low temperatures for long periods whilst protecting the stirrer from freezing. Also reduces condensation and ice formation on outer surfaces.
- HDPE lid keeps your reaction cooler for longer, minimises ice formation on your tubes (maintaining visibility of the contents) and prevents spitting from the cooling mixture.
- The robust HDPE reservoir is virtually unbreakable.

-78°C



Upgrade your Carousel to perform cooled chemistry



Transfer the reflux/inerting head to the Cooled Reservoir



Robust HDPE cooling reservoir is compatible with a wide range of freezing mixtures including dry-ice/acetone for manually controlled cooling from ambient to -78°C.

Central inlet/outlet for vacuum and gas, combined with a radial gas distribution system and gas-tight PTFE caps, allows reactions under an inert atmosphere.

PTFE caps feature a quick-thread for fast attachment to the glass tubes and easy-on push connections to the stainless steel gas outlets.

Simultaneously performs 12 cooled and stirred reactions to -78°C.

Accepts up to 12 glass tubes with reaction volumes of 5 to 20ml (1ml with reduced volume tubes).

Features a unique non-drip spout and ergonomically designed handle for easy disposal of waste solvents.

Carousel Stirring Hotplate powerful stirring with optional digital control.

The robust HDPE reservoir is virtually unbreakable.

Insulated foam core maintains low temperatures for long periods whilst protecting the stirrer from freezing. Also reduces condensation and ice formation on outer surfaces.

Utilises single rotating magnetic field of the stirrer to stir all the positions evenly and powerfully.



Transfer head between bases

Carousel 12 Plus Stand

The Carousel stand is designed to support the reflux/inerting head either with or without reaction tubes.

The heavy duty metal stand is fluoropolymer coated for improved chemical resistance and ease of cleaning. The integral drip tray catches any dripping condensation from tubes and gives excellent stability.



The Tornado integrates with the Carousel 6 Plus to provide powerful, controlled mechanical stirring of up to six round bottom flasks.

It offers unrivalled stirring for both viscous samples and for the dispersion of delicate solids in solution.

See page 14



Carousel 6 Plus Reaction Station™

The patented Carousel 6 Plus simultaneously heats, stirs and refluxes multiple samples under an inert atmosphere

Accepts round bottom flasks: 5ml, 10ml, 25ml, 50ml, 100ml, 170ml and 250ml sizes.

Features

- Powerful, even stirring - fits onto a Carousel Stirring Hotplate.
- Rapid heating to 180°C.
- Quick to set up and easy to use.
- Water-cooled reflux head.
- Perform reactions under an inert atmosphere.
- Easy viewing of flask contents during experiments.
- 100ml and 250ml azeotropic (Dean and Stark) flask option.
- PTFE caps feature a quick-thread for fast attachment to flasks.



A wide range of accessories including liquid additions funnels, powder funnels and rotary evaporator adapters



Heated directly by the stirring hotplate with optional digital control and Pt1000 temperature sensor.

Central inlet/outlet for vacuum and gas, combined with a radial gas distribution system and gas-tight PTFE caps, allow reactions under an inert atmosphere.

Round design makes all reaction flasks visible, with no need to lean into the fume hood.

Chemical-resistant Easy-On PTFE caps feature a quick-thread for fast attachment to the glass tubes and push-on connections to the stainless steel gas outlets.

Water-cooled aluminium reflux head provides efficient refluxing within individual glass reaction flasks. Quick-release couplings prevent water loss during set-up/breakdown.

Aluminium inserts allow easy removal of flasks and good temperature transfer for refluxing.

Range of glass vessels: 5ml, 10ml, 25ml, 50ml, 100ml, 170ml and 250ml round bottom flasks, as well as vessels with one or two sidearms.

PTFE heat protection ring protects user from contact with hot base.

Rare earth elliptical PTFE stirring bar provides powerful stirring and a deep vortex.



Utilises the single rotating magnetic field of the hotplate stirrer to stir all the positions evenly and powerfully.



Round aluminium base transmits heating evenly to all positions. Compact size has small bench-top footprint. Easy to store.

Carousel Stirring Hotplate offers higher temperature, powerful stirring and digital control.

Aluminium inserts for 5ml, 10ml, 25ml, 50ml, 100ml and 170ml flasks



5ml Reaction Flask Reflux Tube & PTFE Cap 10ml Reaction Flask Reflux Tube & PTFE Cap 25ml Reaction Flask Reflux Tube & PTFE Cap 50ml Reaction Flask Reflux Tube & PTFE Cap 50ml Flask with Sidearm Reflux Tube & PTFE Cap 100ml Reaction Flask Reflux Tube & PTFE Cap

Cooled Carousel 6 Plus Reaction Station™

Cost effective low temperature parallel synthesis down to -78°C

The Cooled Carousel 6 Plus allows chemists to perform sub-ambient reactions in a range of flasks from 5ml to 250ml with the option of an inert, moisture-free atmosphere.

Features

- Simultaneously perform up to six cooled and stirred reactions to -78°C .
- Powerful, even stirring - reservoir fits on to a Carousel Stirring Hotplate.
- Robust HDPE cooling reservoir is compatible with a wide range of cooling mixtures, including dry-ice/acetone for manually controlled cooling from ambient down to -78°C .
- Insulated foam core maintains low temperatures for long periods, whilst protecting the stirrer from freezing. Also reduces condensation and ice formation on outer surfaces.
- HDPE lid keeps reactions cooler for longer, minimises ice formation on flasks (maintaining visibility of the contents) and prevents spitting from the cooling mixture.
- Round design makes all reaction flasks visible and allows easy addition of reagents and solvents, with no need to lean into the fume hood.



Visit www.radleys.com to download a PDF on the Cooled Carousel 6 Plus



HDPE lid reduces frost formation and reduces the risk of solvents spitting.

Insulated foam core maintains low temperatures for long periods whilst protecting the stirrer from freezing and also reduces condensation and ice formation on outer surfaces.

Utilises the single rotating magnetic field of the hotplate stirrer to stir all the positions evenly and powerfully.



Fits on a standard Carousel Stirring Hotplate.

Compact size has a small bench-top footprint and is easy to store.

Chemical-resistant Easy-On PTFE caps feature a quick-thread for fast attachment to the glass tubes and push-on connections to the s/steel gas outlets.

Central inlet/outlet for vacuum and gas, combined with a radial gas distribution system and gas-tight PTFE caps, allow reactions under an inert atmosphere.

Round design makes all reaction flasks visible, with no need to lean into the fume cupboard.

Robust HDPE cooling reservoir is compatible with a wide range of freezing mixtures including dry-ice/acetone for manually controlled cooling from ambient to -78°C .



Rare earth elliptical PTFE stirring bar provides powerful stirring and a deep vortex.

No electrical or moving parts ensures maintenance free operation. Easy to set up with minimal training time.



HDPE Cooled Carousel stand

Carousel Stirring Hotplate powerful stirring with optional digital control.



100ml Flask with Sidearm Reflux Tube and PTFE Cap



170ml Reaction Flask Reflux Tube and PTFE Cap



250ml Reaction Flask Reflux Tube and PTFE Cap



250ml Wide Neck Vessel



250ml Flask with 2 Sidearms with Dropping Funnel



250ml Reaction Flask with Dropping Funnel



250ml Azeotropic Reaction Flask with Dropping Funnel



Tornado with 250ml wide neck flasks

Tornado™ Overhead Stirring System

Use a single overhead stirrer to stir up to six round bottom flasks from 50ml to 250ml simultaneously. Increase your stirring productivity by up to 600%

The Tornado allows powerful, controlled mechanical stirring of round bottom flasks with the Carousel 6 Plus Reaction Station, offering unrivalled stirring for both viscous samples and for the dispersion of delicate solids in solution.



Features

- Integrates with Carousel 6 Plus to provide heated and stirred reactions.
- Rapid heating to 180°C with water-cooled reflux head.
- Perform reactions under an inert atmosphere.
- Accepts 50ml, 100ml and 250ml round bottom flasks.
- Uses a single overhead stirrer - save space and money compared to multiple set-ups.
- Compatible with all leading brands of overhead stirrer.
- 2-speed drive allows overhead stirrers with less torque to be used for higher viscosities.
- Stir to 1,000rpm in low viscosity
- Max. viscosity 10,000mPas at 500rpm.

PTFE stirring shafts

Choice of centrifugal, anchor and propeller PTFE stirrers, specifically sized for each vessel.



Choice of flask sizes and styles with wide neck option

Wide neck flasks allow easier removal of viscous and solid samples and the use of larger stirrer blades. Baffles also improve stirring by disrupting the creation of a vortex.

Azeotropic vessels

250ml azeotropic (Dean and Stark) flask option.

250ml azeotropic vessel with dropping funnel and centrifugal PTFE stirrer



Compatible with all leading brands of overhead stirrer

Heated directly by the stirring hotplate with optional digital control and Pt1000 temperature sensor.

Tool-free pinch-grip mechanism and sealed stirrer system allows easy stirrer shaft insertion and operation under an inert atmosphere

Integral polycarbonate safety guard

Provides up to six heated (max +180°C) and stirred reaction positions

Universal support stand gives added stability



Uses a single overhead stirrer to agitate up to six 250ml flasks

Easy to operate and set up with minimal training time

2-speed drive (1:1 and 2:1) allows lower rated stirrers to be used for higher viscosity liquids

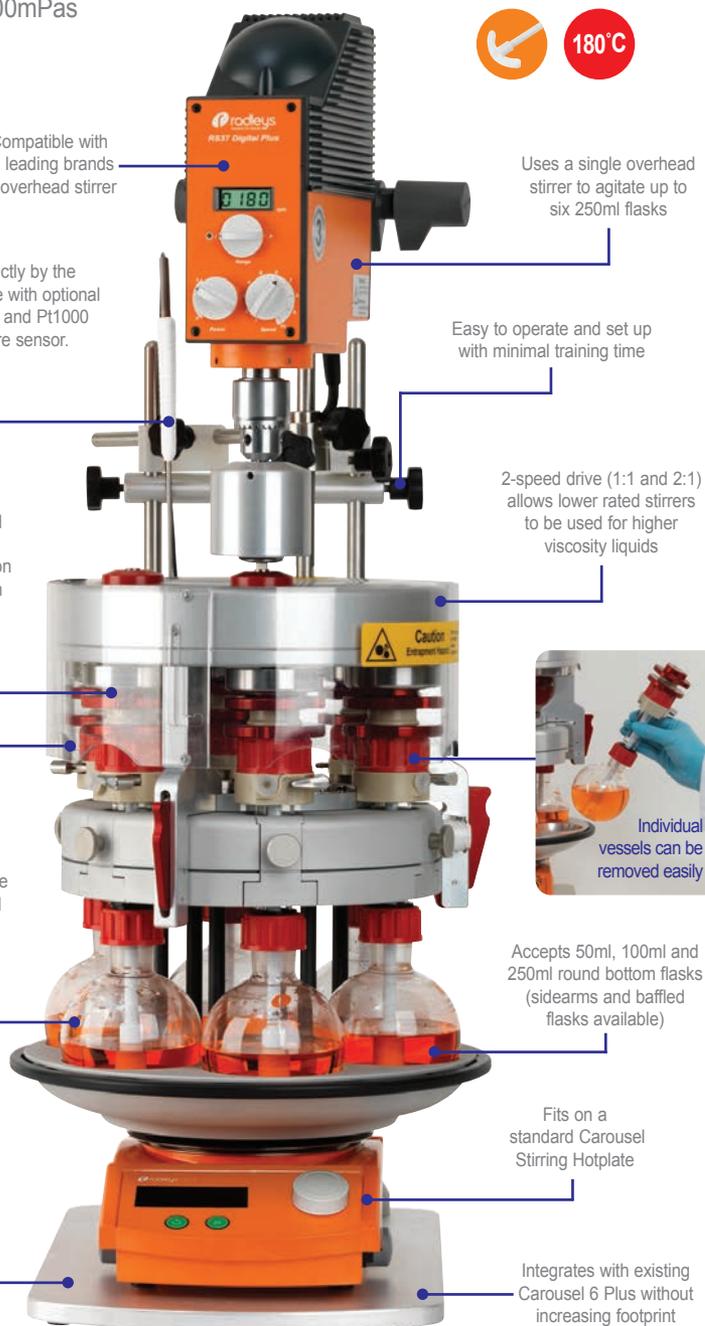


Individual vessels can be removed easily

Accepts 50ml, 100ml and 250ml round bottom flasks (sidearms and baffled flasks available)

Fits on a standard Carousel Stirring Hotplate

Integrates with existing Carousel 6 Plus without increasing footprint



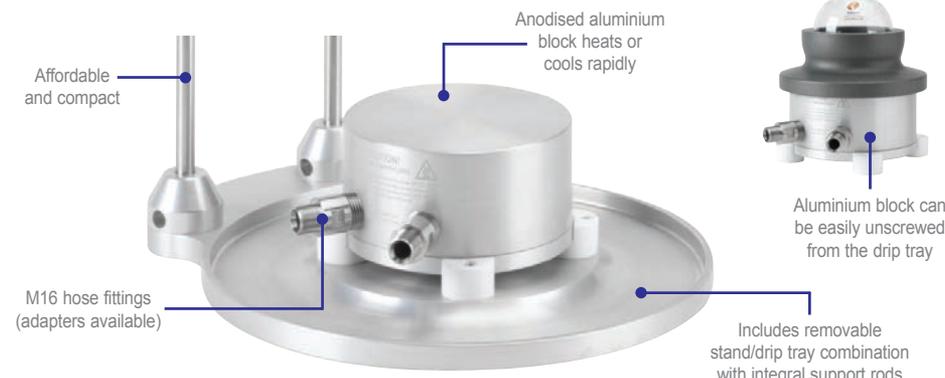
Breeze™ Heating/Cooling Work Station

When combined with a circulator, the compact Breeze provides rapid heating/cooling and is ideal for applications requiring precise control by solution temperature

Designed as an add-on module for the Carousel 6 Plus and Tornado, Breeze creates a parallel process reactor for controlled heating and cooling. Breeze is ideal for applications that require fast and precise solution temperature control, such as crystallisation studies.

Features

- Thermofluid -85°C to +235°C providing a solution temperature of -30°C to +165°C.
- 135mm ø top plate integrates with the Carousel 6 Plus, Tornado, and Heat-On.
- Breeze's small internal volume ensures a quick response to changes in thermofluid temperature.



Breeze with 250ml Heat-On, stand and overhead stirrer

Storm™ Heating/Cooling Work Station

Combined with a suitable circulator, Storm can provide controlled steady state heating and cooling

Designed as an add-on module for the Carousel 6 Plus and Tornado combination, Storm creates a powerful parallel process reactor for controlled heating and cooling, making it the ideal process optimisation and development tool.

Features

- Thermofluid -85°C to +235°C providing a solution temperature -65°C to +200°C.
- 135mm ø top plate integrates with the Carousel 6 Plus, Tornado and Heat-On.
- Unique internal design maximises heat transfer whilst the insulated outer case reduces heat loss and prevents contact with hot/cold thermofluid.



Storm with Carousel 6 Plus, Tornado, overhead stirrer and PTFE insulating plate



Carousel 6 Plus locates on to the Storm without tools

GreenHouse Work-Up provides rapid sequential and parallel purification in a 24 well MTP footprint using standard filtration, phase separation and SPE columns.

Designed to make your parallel chemistry work-up and purification quick and easy. See page 18.



GreenHouse Plus Parallel Synthesiser™

The GreenHouse Plus provides 24 heated and stirred glass reactions with volumes from 0.5ml to 7ml. The combined reflux and additions head allows for convenient additions or withdrawals whilst maintaining an inert atmosphere



GreenHouse Plus brings all the benefits in productivity of parallel synthesis at a fraction of the cost of automated systems. Holding 24 glass reaction tubes in a removable reaction block with the same footprint as a standard microtitre plate (MTP), the GreenHouse Plus facilitates rapid transfer of samples by multi-channel pipettor or robotic systems.

Features

- Powerful stirring and rapid heating to 150°C.
- Removable water-cooled reflux head.
- Perform reactions under an inert atmosphere.
- Easy viewing of tube contents during experiments.
- Nickel-plated aluminium offers excellent chemical resistance.



Optional HDPE cooling reservoir for chilled reactions to -78°C using dry ice and acetone

Designed for the synthesis of small compound libraries and drug discovery

Heated directly by the stirring hotplate with optional digital control and Pt1000 temperature sensor.

Water-cooled aluminium reflux head with nickel condensing fingers provides efficient refluxing within individual glass reaction tubes.

Combined reflux and additions head allowing for convenient additions or withdrawals whilst refluxing.

A choice of septum mats are available.

Cylindrical glass gas enclosure provides visibility of all 24 reaction tubes with no need to lean into the fume hood.

From synthesis to evaporation in

Provides 24 heated and stirred glass reaction positions with a reaction volume of 0.5 to 7ml.

'V-Mag' technology uses a vertically positioned stirring bar to maximise the uniformity of the stirring within each reaction tube.

Control and log your chemistry



No electrical or moving parts ensures maintenance-free operation. Easy to operate and set up.

Round aluminium base transmits heat evenly to all positions. Compact size has small bench-top footprint and is easy to store.

Utilises single rotating magnetic field of the hotplate stirrer to stir all 24 positions.

Carousel Stirring Hotplate offers higher temperature, more powerful stirring and digital control.

Fits on a standard Carousel Stirring Hotplate.



Combined reflux and additions head with nickel condensing fingers



GreenHouse Plus allows additions and withdrawals through sealing mats



Reaction block fits directly into Genevac vacuum centrifuges



GreenHouse Blowdown Evaporator™

Parallel evaporation of samples in 8 or 24 vials, tubes and microtitre plates

Features

- Precise control of inert gas flow combined with digital control of heating carefully evaporates your samples.
- Interchangeable plates with either 8 or 24 hollow blowdown pins deliver an equal flow of gas to each tube, vial or well.
- The absence of a vacuum avoids bumping, protecting the sample during evaporation.
- Nickel-plated aluminium offers excellent chemical resistance.
- Easy viewing of samples during evaporation.
- Optional flowmeter precisely controls flow of inert drying gas.

Compatible with:

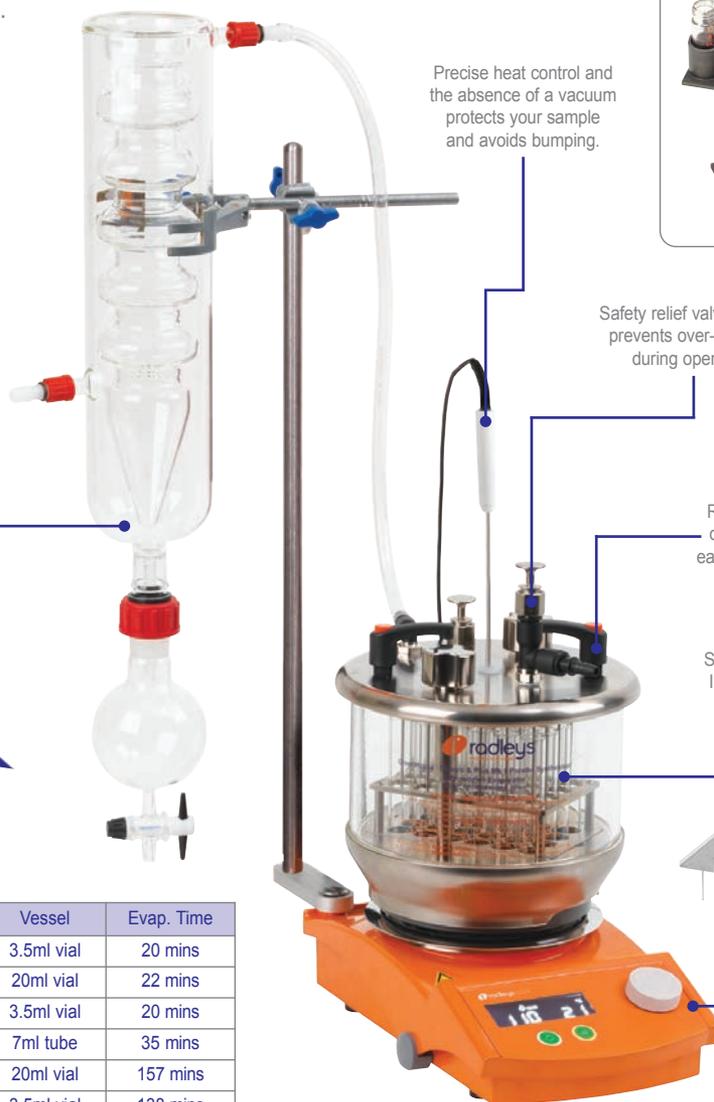
- 7ml GreenHouse tubes
- 8 or 24 position vial racks
- 13mm, 13.8mm, 15mm, 24.3mm & 27.8mm Ø vials
- 8 or 24 well microtitre plates



Control and log your chemistry

Enclosed design contains evaporating solvent, allowing subsequent trapping and collection of solvent via a high performance glass condenser.

a single compact system



Evaporate 8 vials, each containing 5ml of methanol, in only 22 minutes

Typical Evaporation Times

Solvent	Samples	Volume	Vessel	Evap. Time
Methanol	24	2ml	3.5ml vial	20 mins
Methanol	8	5ml	20ml vial	22 mins
Acetonitrile	24	2ml	3.5ml vial	20 mins
Acetonitrile	24	2ml	7ml tube	35 mins
Water	8	5ml	20ml vial	157 mins
DMF	24	2ml	3.5ml vial	138 mins
DMF	24	2ml	7ml vial	145 mins

40°C Base Temperature. Flowrate 10 l/min (8 well), 20 l/min (24 well)

Blowdown system with 24 pin plate, standard GreenHouse base, reaction block and 7ml tubes.

Insert the adapter into the GreenHouse base to accept vial racks or titre plates...

...or use the dedicated, low profile, Blowdown base.



Insert the adapter into the GreenHouse base



GreenHouse base and 24 position vial rack



GreenHouse base and 8 position vial rack



GreenHouse base and 24 position MTP



Blowdown base and 24 position vial rack



Blowdown base and 8 position vial rack



Blowdown base and 24 position MTP

24 Position Parallel Work-Up

Designed to make your parallel chemistry work-up and purification quick and easy.

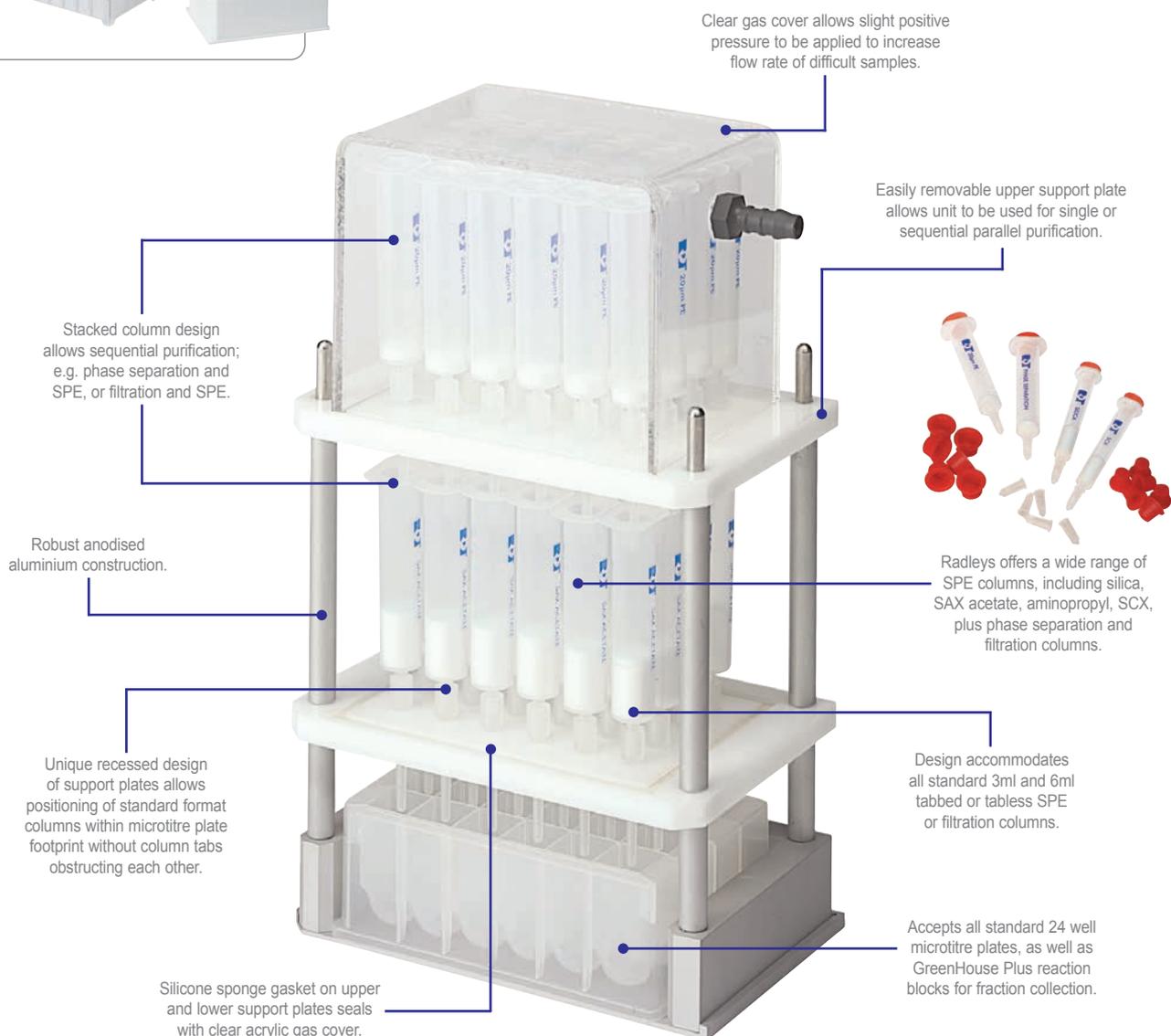


GreenHouse Work-Up Station™

Rapid, sequential, parallel purification in a 24 well, microtitre plate footprint using standard 3ml or 6ml filtration, phase separation and SPE columns

Features

- Innovative, stacked column design allows sequential purification e.g. phase separation and SPE or filtration and SPE.
- Removable, upper support plate allows unit to be used for single or sequential purification.
- Clear gas cover allows pressure to be applied to increase flow rate of difficult samples.
- Accommodates all standard 3ml and 6ml tabbed or tabless SPE or filtration columns.
- Accepts all standard 24 well microtitre plates, as well as GreenHouse reaction blocks for fraction collection.
- Full range of filtration, phase separation and SPE columns including silica, SCX, aminopropyl and SAX acetate.



Carousel Work-Up Station™

Easy-to-use, the Carousel Work-Up Station reduces post-synthesis bottlenecks

Features

- The Carousel Work-Up Station facilitates parallel or sequential work-up of up to 12 samples, using filtration, phase separation, liquid/liquid extraction or SPE techniques.
- The Carousel Work-Up Station accepts 12 x 70ml columns loaded into one of two identical stackable racks.
- The lower rack supports 12 corresponding Carousel reaction tubes or standard 1 inch boiling tubes for subsequent sample collection.
- SpeediFlow Booster increases flow rates to speed up your work-ups.

12 Position Parallel Work-Up

Designed to make your parallel chemistry work-up and purification quick and easy.



Use under gravity or with the SpeediFlow Booster, which allows pressurisation of individual columns to increase flow rates and speed up your work-ups.

Aluminium racks are exceptionally stable, with good access and visibility of all columns and tubes.

Each position is numbered 1 to 12 for ease of identification. The racks will only locate in one orientation.

Accepts 70ml columns including 20µm filtration, phase separation, liquid/liquid extraction, silica, SCX, aminopropyl and SAX acetate.

Unique design uses no taps, valves or drip needles, making assembly and operation fast and simple. Minimises cleaning time and consumable costs.

Vacuum-free operation makes removal of collection tubes easy, prevents drying of columns and reduces the risk of bumping.

Accepts 12 x Carousel reaction tubes or standard 1 inch boiling tubes.

An optional 3rd rack can be stacked above the 2nd rack for sequential work-up.



To locate a second rack on top of the first, pull out the spring loaded knob and rotate 90°.

Ergonomically designed, lightweight aluminium racks are easy to load with collection tubes or work-up columns.

Identical racks lock together for ease of operation or transportation from location to location.

Removal of adapters is simple



Pull out the locking pin, release the handle...



...and the adapter can be easily pulled out.



SpeediFlow Adapters



Optional removable adapters are available for use with 15ml, 25ml, 70ml and 150ml columns plus the Whatman AutoCup

Jacketed Reaction System Quick Guide

					
Jacketed Reaction Systems		Reactor-Ready	Reactor-Ready Duo	Reactor-Ready Pilot	Lara CLR
Custom/Bespoke Reaction Systems	Reaction System Kits	Lab Reactor	Dual Lab Reactor	Pilot Scale Lab Reactor	Controlled Lab Reactor
Custom designed reaction systems and frameworks	Traditional reactor kits with floor or bench standing frameworks	Innovative, reactor work station. Rapid vessel exchange.	Innovative, two vessel reactor work station. Rapid vessel exchange.	Innovative pilot scale reactor work station. Rapid vessel exchange.	With integrated stirrer, remote control and optional software. Rapid vessel exchange.
100ml to 50 litre	100ml to 20 litre	100ml to 5 litre	100ml to 5 litre	5 litre to 20 litre	100ml to 10 litre
-70°C to +230°C	-70°C to +230°C	-70°C to +230°C	-70°C to +230°C	-70°C to +230°C	-70°C to +230°C
User Profile					
Chemists or chemical engineers requiring a custom reaction system for a specific application	Chemists requiring a standard reaction system with basic features	Chemists requiring an off-the-shelf, pre-configured, easy to use glass lab reactor	Chemists requiring a multi-vessel or parallel off-the-shelf, pre-configured, easy to use glass lab reactor	Chemists or chemical engineers working in process development, scale-up, pilot and kilo labs	Chemists or chemical engineers requiring an automated reactor to accommodate a variety of vessel volumes & designs
Key Features					
Custom vessels and framework designed to your specifications	Features all traditional reactor components	Reactor work station that can be easily used for different vessels and experiments	Set up two vessels in parallel, in series or independently	Reactor work station that can be easily used for different vessels and experiments	Automated model includes software, data hub and PC controller
In-house design and manufacturing	Traditional robust metal frameworks, fittings and clamps	Convenient and quick reactor exchange and stirrer alignment	Convenient and quick reactor exchange and stirrer alignment	Convenient and quick reactor exchange and stirrer alignment	Innovative reactor clamp allows rapid reactor exchange with lid in-situ
Complex multiple vessel set-ups and software control available	Bench-top and floor standing options	Off-the-shelf, quick to set up, easy to use and with a variety of vessel volumes	Off-the-shelf, quick to set up, easy to use and with a variety of vessel volumes	Off-the-shelf, quick to set up, easy to use and with a variety of vessel volumes	Integrated self aligning overhead stirring with digital speed and torque display
Choice of materials including glass, hastelloy, stainless steel and PTFE	Can be customised to integrate other accessories and software control	Wide range of standard or custom vessels, accessories and software control	Wide range of standard or custom vessels, accessories and software control	Wide range of standard or custom vessels, accessories and software control	Wide range of standard or custom vessels, accessories and software control

AVA Lab Control Software and Data Hub	
	Control and log your reaction system - improved productivity and safety
	Run unattended experiments safely. Reduce manual errors
	Four software levels to suit your application and budget
	Data Hubs can be used to connect up to 16 x RS232 devices
	

Custom/Bespoke Reaction Systems - 100ml to 50 litres

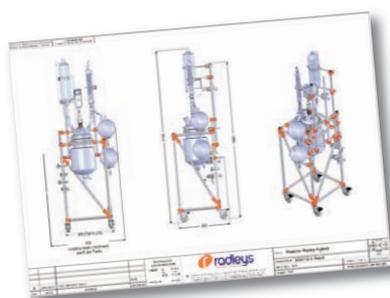
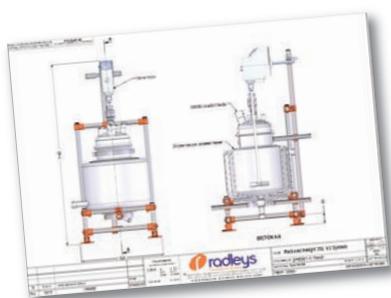
Jacketed reaction systems designed to meet your specifications

Radleys are experts in the design and manufacture of exceptional quality scientific glassware. We have a long history (over 45 years) of working with chemists and chemical engineers in the leading industrial and academic research facilities around the world. Whether you require a multi-vessel process rig, a small benchtop reactor or a complex parallel set-up, our team of design engineers and scientific glassblowers will be pleased to help with your project.

Simply tell us what you need

The combination of features and design variations is almost limitless. Please contact our technical specialists or your local Radleys distributor to discuss your requirements.

In-house
design and
manufacture of
vessels



In-house design and manufacture of custom glass reaction vessels and frameworks



A recent installation of six 30 litre jacketed reaction systems in Shanghai, China

Scope of our services

- In-house design and manufacture
- Frameworks and supports
- Thermoregulators, chillers and circulators
- Overhead stirrers, sensors and probes
- Datalogging and software control
- Installation and training

Vessels

- Single or vacuum jacketed
- Jacketed vessels to 50 litres
- Vacuum jacketed vessels to 20 litres
- Tall, squat or process vessel geometries
- Cylindrical or spherical vessels
- Split jackets and optical windows
- Conical, dish or hemispherical vessel bottoms
- Stainless steel, hastelloy or PTFE vessels
- Vessels with optical windows or split jackets
- Vessels with fixed or removable filters or sinters
- Glass or PTFE lids

Systems

- Multi-reactor systems for parallel synthesis
- Fermenters, bioreactors and photoreactors
- Condensers, distillation assemblies, scrubbers

Accessories

- Thermoregulators with supply and servicing
- Thermofluids, hoses and adapters
- Overhead stirrers: electric or air-powered



A custom parallel system and framework, with control software installed in Germany



Control and log your reaction system with AVA Laboratory Control Software



Reactor-Ready™ Lab Reactor - 100ml to 5 litres

Swap reaction vessels in minutes, **not** hours



Reactor-Ready is designed as a universal reactor work station, with a range of easily interchangeable vessels from 100ml to 5 litres, which can be configured to suit the chemistry and scale needed for each project. Easy to use, this one unique framework can replace many, saving money and fume hood space.

Features

- Rapid, tool-free vessel exchange with quick-release vessel clamp and hose couplings.
- Range of single and vacuum jacketed vessels from 100ml to 5 litres.
- Process vessels to mimic larger scale plant or manufacturing reactors.
- Accepts all leading brands of overhead stirrer and allows easy, tool-free adjustment.
- Triple support stand features heavy-duty stainless steel support rods for stability.
- Self-aligning stirrer coupling engages without the need for tools.
- Innovative hose manifolds allow easy thermofluid drain down.
- Temperature range: -70°C to +230°C.
- Wide range of accessory glassware including condensers, dropping funnels etc.
- Optional software allows you to log and control stirrers, circulators, balances, pumps, temperature sensors and other devices.



Swap vessels in minutes, **not** hours



Unique vessel clamp

- Self-centering
- Quick-release

• Change vessels in minutes

Simple stirrer alignment

- Slide and glide
- Set and lock

Hose couplings

- Quick-release
- Connect in seconds
- Chemical-resistant PEEK

Patented stirrer coupling

- Drop in
- No tools
- No fuss

Convenient vessel kits make buying vessels and accessories easy and cost effective

Standard vessels

- 100ml to 5 litres
- Vacuum jacketed option
- Glass accessories to match

Process vessels

- Mimic plant scale geometry
- 100ml to 5 litres
- Vacuum jacketed option
- Glass accessories to match

Individual manifolds

- Easy connection
- Easy drain-down
- Reduces stress on vessel sidearms

Interchangeable vessels



A choice of popular stirrer paddles



Reactor-Ready™ Duo Lab Reactor - 100ml to 5 litres

All the benefits of Reactor-Ready with two vessels in parallel or series

Reactor-Ready Duo shares the same unique features as Reactor-Ready, but holds two independent jacketed glass reaction vessels. The system can be configured to operate with a single thermoregulator controlling the jacket temperature of both vessels simultaneously or with two thermoregulators controlling the temperature of each vessel independently.

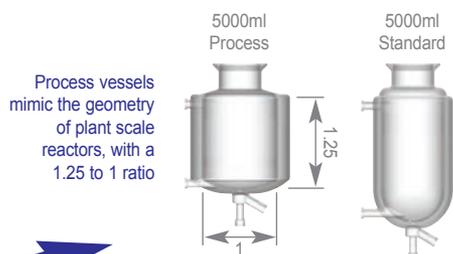
Features

- Rapid exchange of both vessels independently, with quick-release vessel clamp and hose couplings.
- Choice of manifold kits allow two vessels to run from a single thermoregulator or two separate thermoregulators.
- System accepts two overhead stirrers which can be moved independently.



Applications

- Parallel synthesis or reaction optimisation: use similar or different size vessels and vary stirring speed, stirrer shape and temperature between vessels.
- Two stage reaction: transfer reactant from one vessel to the other using vacuum or a pump.
- Single reaction vessel: using the second vessel as either a receiving or feed vessel (where reagents can be pre-heated or pre-cooled prior to addition).
- Use optional AVA software to control fluid transfer between vessels.



Process vessels mimic the geometry of plant scale reactors, with a 1.25 to 1 ratio



Control and log your chemistry

ava
lab control software



between systems

Unique vessel clamp

- Supports two vessels
- Change vessels independently
- Change vessels in minutes

Vessels

- 100ml to 5 litres
- Combine different volumes
- Vacuum jacketed option
- Process and standard geometry

Thermofluid manifolds

- Choice of two manifold kits: single circulator manifolds and double circulator manifolds

Simple stirrer alignment

- Set and lock
- Independent stirring for each vessel

Patented stirrer coupling

- Drop in
- No tools
- No fuss

Hose couplings

- Quick-release
- Connect in seconds
- Chemical-resistant PEEK

Strong framework

- Heavy duty base
- Solid s/steel support rods
- Large drip tray

Supports two glass reaction vessels of different or similar volume from 100ml to 5 litres



Similar vessel sizes with double circulator manifold kit



Different vessel sizes with double circulator manifold kit



Similar vessel sizes with single circulator manifold kit



Different vessel sizes with single circulator manifold kit

How to order Reactor-Ready Pilot

1. Select the Reactor-Ready Pilot Core.



2. Choose the lid you require (custom options available).



3. Choose the vessel kits you need.



4. Select the overhead stirrer you need.



5. If you need a thermoregulator, hoses, hose adapters, thermofluid or accessory glassware, then select from the accessory list.



6. If you need automation, add AVA Software and Data Hub.



Reactor-Ready™ Pilot - 5 to 20 litres

Replace multiple reactor set-ups with a single, universal pilot scale system with interchangeable vessels that can be swapped in minutes, **not** hours

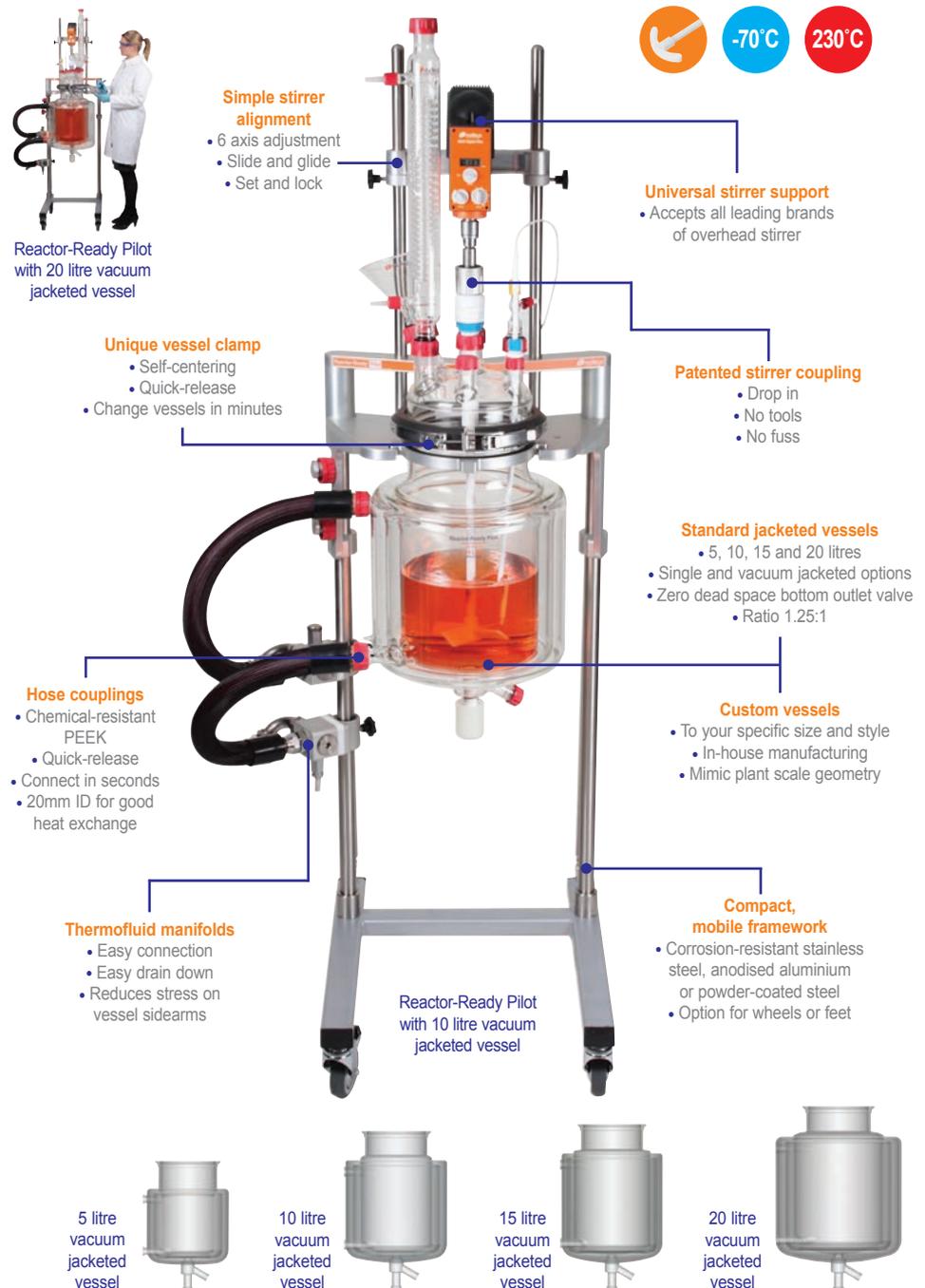
Reactor-Ready Pilot is ideal for process development, scale-up, pilot and kilo labs.

Features

- Rapid vessel exchange with quick-release vessel clamp and wide bore hose couplings.
- Range of single and vacuum jacketed vessels from 5 litres to 20 litres.
- Vessels have 1.25 to 1 ratio of internal height to diameter to mimic plant scale reactors.
- DN200 vessel flange.
- Accepts all leading brands of overhead stirrer and allows easy, tool-free adjustment.
- Compact stainless steel framework accepts all vessel sizes.
- Self-aligning stirrer coupling engages without the need for tools.
- Temperature range: -70°C to +230°C.
- Innovative hose manifolds allow easy thermofluid drain down.



Reactor-Ready Pilot with 20 litre vacuum jacketed vessel



Lara™ Controlled Lab Reactor - 100ml to 10 litres

An automated lab reactor for standard and custom jacketed reaction vessels

Lara is a versatile research tool, allowing chemists to use a single work station for a range of vessels and projects. Using AVA Software it enables users to control, log, repeat and share recipes or experiments.

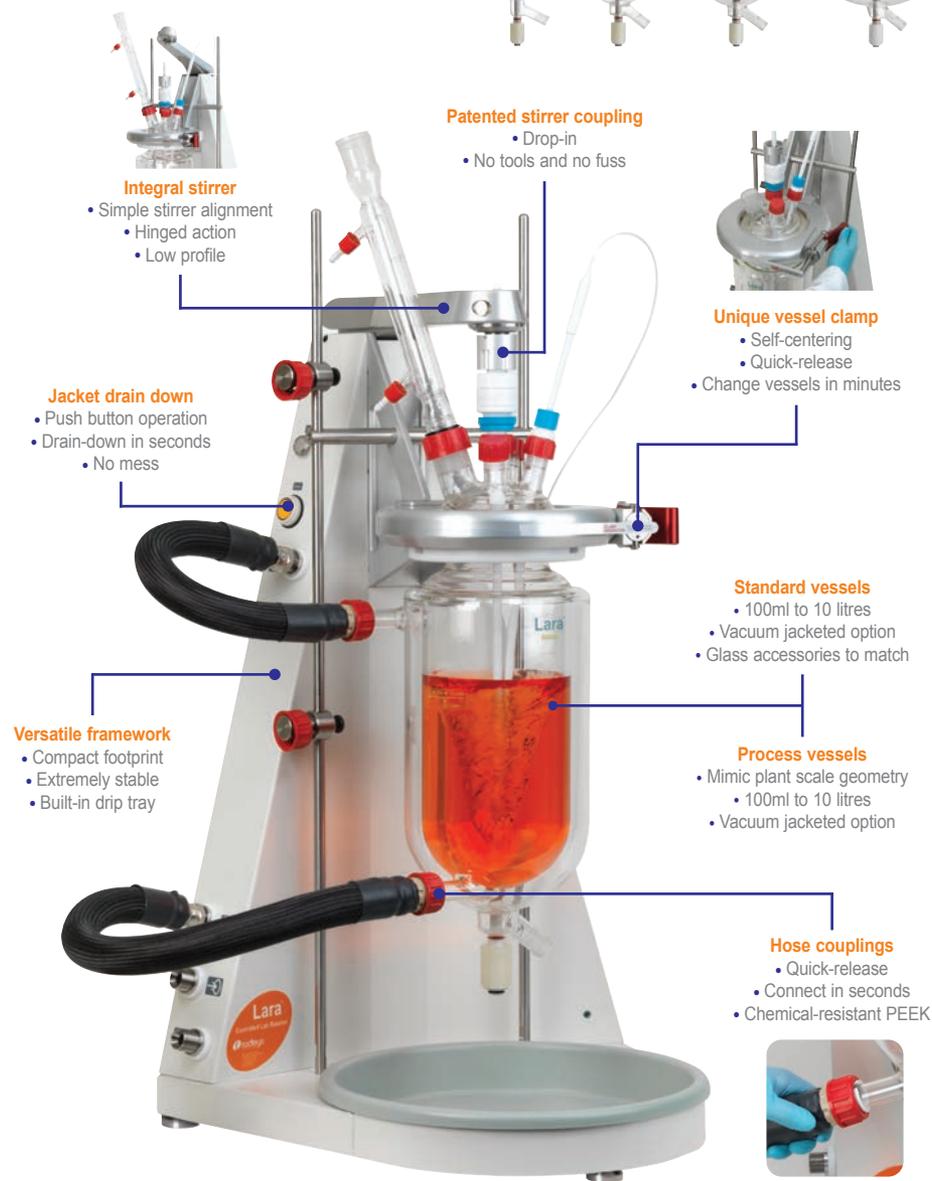
Choice of two Lara models:

- Lara - includes AVA control software, Data Hub and computer.
- Lara Lite (without software) - lower cost option which includes LCD remote control for stirrer speed and monitoring of torque.



Hardware and vessel features

- Integrated, low profile self-aligning stirrer (controlled by software or remote control).
- Single and vacuum jacketed vessels from 100ml to 10 litres.
- Range of process vessels to mimic larger scale plant or manufacturing reactors.
- Easy to order vessel kits with temperature probes and stirrer paddles matched to the vessel.
- Temperature range: -70°C to +230°C.



Bespoke vessels and accessories

If there is not a vessel or stirrer from our standard range that meets your requirements, then we will be happy to make it for you. The list of options are almost endless, but here are some of our favourites:

- Split jackets and optical windows.
- Vessels with conical, dish or hemispherical bottoms.
- Fixed or removable baffles.
- Custom glass or PTFE lids.
- Vessels and lids modified to accept various PAT probes.
- Glass, metal and PTFE stirrer paddles.





AVA Software - smart automation, tracking and control

From a single stirring hotplate to a multi-device jacketed reaction system

Automating your chemistry saves time, money and improves safety

NEW

Advantages of software automation:

- Improve productivity - free up valuable research time
- Record, share and analyse experimental results
- Repeat experiments accurately for reproducible and consistent results
- Share results between users to improve research and collaboration

Enhanced safety:

- Run unattended experiments safely
- Reduce manual errors
- Set apparatus safety limits to prevent accidents
- Configure audio and visual alarms



Use AVA software to:

- Eliminate time-consuming, manual data recording
- 'Track and Repeat' what you do, as you do it and repeat in the experiment Scheduler
- Visualise results for rapid analysis and reporting
- Link devices for dual control e.g. pump and balance for gravimetric additions
- Control up to four experiments in parallel

Level 1



Control and log stirring hotplates

Level 2



Control and log stirring hotplates and overhead stirrers

Level 3



Control and log overhead stirrers and circulators

Level 4



Control and log reaction systems with multiple devices

Download & try the software for FREE at www.radleys.com

Learn how the features of AVA work:

- Simulate control of devices
- Set up apparatus and control experimental schedules
- Share setups and schedules with other AVA users
- Analyse results and create reports for real or simulated data

Four software levels to suit your application and budget

Each level determines the type of devices that can be controlled and logged by AVA.



	ava level 1 lab control software	ava level 2 lab control software	ava level 3 lab control software	ava level 4 lab control software
Stirring Hotplates	•	•	•	•
Temperature Sensors	•	•	•	•
Overhead Stirrers		•	•	•
Circulators			•	•
Peristaltic Pumps				•
Syringe Pumps				•
Vacuum Pumps				•
Balances				•
pH Sensors				•
Gas Flow Controllers				•

AVA Software - control and log common laboratory apparatus and processes

AVA tracks what you do, as you do it, so you can easily repeat the experiment to optimise your chemistry

Select your Apparatus setup

Add and control single or multiple devices

Name devices and set parameters

Select Direct control...

Automatic reports

Export CSV data

Enhanced safety

- Set individual device warning alarms
- Set emergency shutdown if a sensor limit is exceeded
- Create safety feedback loops
- Set user-definable limits for all devices

Graph selected data

Event Log records all actions and notes

'Track and Repeat'

- Track what you do, as you do it and record all actions
- Repeat and refine the schedule to optimise the experiment
- Automate manual process with ease and without any programming knowledge

...or Schedule control

AVA Driver Library

- AVA includes a library of pre-configured driver files allowing easy integration with a wide range of 3rd party devices.
- Radleys also provide a 'New Driver Configuration Service'.



AVA Care Support

- Free support for 1st year
- Free priority email and telephone support
- Free set-up and application support
- Free software updates during support period, keeping software current, regardless of which level is purchased



Data Hub - integrate RS232 devices

Using the Data Hub, AVA can connect, control and log data from multiple 3rd party devices with an RS232 interface.

Choose from two Data Hub models:

- 4 Port Data Hub - 4 x RS232 ports and 2 x Pt100 sensor ports
- 2 Port Data Hub - 2 x RS232 ports and 2 x Pt100 sensor ports
- Combine up to 4 Data Hubs to increase capacity

Data Hubs include:

- 2 or 4 x RS232 serial ports
- 2 x Pt100 temperature sensor ports, with LEMO connection
- 1 x Ethernet port
- 1 x Serial and 2 x Ethernet cables



2 and 4 x RS232 port options



Power & Ethernet Connection



Pt100 Temp. Sensor Ports

RS232 Serial Ports

International Distributors

Australia

In Vitro Technologies Pty
t: 1300 156 862
f: 1300 552 004
e: care@invitro.com.au
www.invitro.com.au
Contact: Peter Woolf

Belgium and Luxembourg

Analix Scientific Instruments
t: +32 9 243 77 20
f: +32 9 243 77 20
e: kdr@analix.be
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Contact: Ken DeRoover

Bosnia-Herzegovina

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