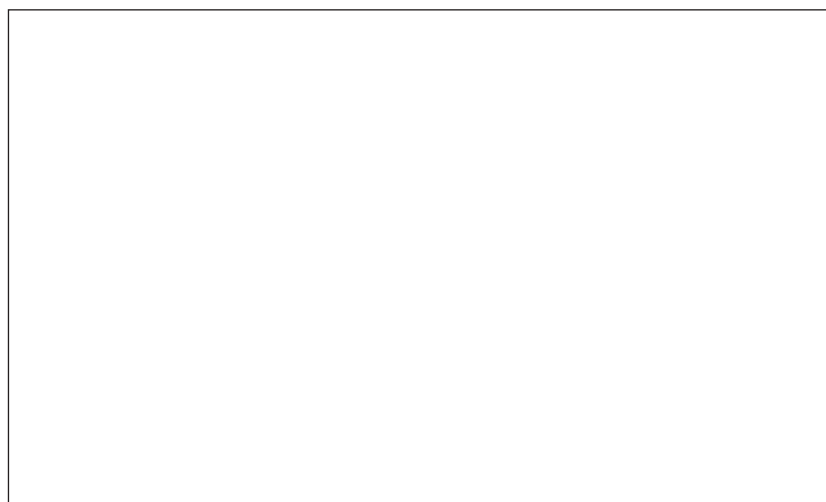


Instructions

StarFish™ Multi-Experiment Work Station



Your Local Distributor



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Thank you for purchasing your StarFish Multi-experiment Work Station

Please read this Instruction Manual thoroughly before operating your unit.

Introduction

The StarFish is a highly affordable system that enables you to perform productive heating and stirring experiments using existing glassware and stirring hotplates.

The StarFish's innovative modular design accepts round-bottomed flasks, test tubes and vials and can be used with most leading brands of stirring hotplate. This versatile system offers the flexibility to heat and stir the contents of different vessel types simultaneously, with an optional clamping system to hold accessory glassware, such as condensers and soxhlet extractors.

Small footprint

Uses less space than multiple heating and stirring set-ups

Versatility

Accommodates a wide range of vessel types and accessory glassware

Productivity

Allows you to heat and stir multiple experiments in parallel

Safer cleaner working

Eliminates the need for oil baths

Money saving

Allows you to use existing labware more productively



Warranty

The StarFish includes one year full parts and labour warranty from date of original purchase. Warranty will only be valid if a completed **Warranty Email Back** is returned within 1 month of date of purchase (see last page).

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 StarFish.

	Warning Applies when there is a possibility of personal injury.
	Important Note Alerts the user to important facts.

Important WARNINGS

Please read these instructions completely before using your StarFish multi-experiment work station.

Operate only in a fume cupboard with protective safety sash.

During and after heating take care not to touch the aluminium reaction block.

Always ensure that the StarFish heated base has cooled sufficiently before removal from the hotplate.

Please ensure all heated vessels have suitable pressure relief.

It is not recommended to heat any sealed vessel.

Maximum recommended operating temperature is dependent upon stirring hotplate used.

To avoid the build up of lime scale in the water distribution manifold, please avoid the use of hard water.



Important Note

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

Products and Accessories

Cat No.	Description	Qty
Carousel Stirring Hotplates		
RR91200	Carousel Standard Stirring Hotplate 230v UK Plug	1
RR91203	Carousel Tech Stirring Hotplate 230v UK Plug	1
RR91206	Carousel Tech Stirring Hotplate + Pt1000 230v UK Plug	1
RR91291	Carousel Tech Package 230v UK Plug <i>Includes Tech Stirring Hotplate, Pt1000 S/Steel Sensor, Pt1000 Clamping System.</i>	1
RR91204	Carousel Advanced Stirring Hotplate 230v UK Plug	1
RR91205	Carousel Advanced Stirring Hotplate + Pt1000 230v UK Plug	1
<i>Hotplates available in other voltages and plug formats, please add /EURO or /USA to end of Cat No.</i>		
Pt1000 Temperature Sensors and Accessories		
RR91226	Pt1000 S/S Temperature Sensor	1
RR91227	Pt1000 Glass Coated Temperature Sensor	1
RR91228	Temperature Sensor Holder	1
RR91235	Pt1000 Clamping System - support rod and cable guide	1
RR91236	Pt1000 Clamping System - support rod and cable guide (for bath from 3 to 5 litres)	1
RR91229	Temp Sensor Support Rod (13mm x 425mm)	1
RR71127	Temp Sensor Support Rod (13mm x 500mm)	1
RR71125	Temp Sensor Support Rod (13mm x 340mm)	1
RR71120	Support Rod Hotplate Adapter (extension plate)	1
StarFish Base Plates, Handles and Support Rods		
RR95010	StarFish Base Plate 135mm (for Radleys & IKA)	1
RR95020	StarFish Base Plate 145mm (for Heidolph)	1
RR95040	StarFish Base Plate 184 x 184mm (for Cimarec)	1
RR95100	StarFish Base Plate Handles (Pair)	1
RR95665	650mm Rod	1
RR95666	650mm Split Rod	1
RR95980	Adjustable Spanner	1
MonoBlocks		
RR95125	MonoBlock for 3 x 500ml Flasks	1
RR95130	MonoBlock for 5 x 250ml Flasks	1
RR95135	MonoBlock for 16 x 25mm Tubes	1
RR95140	MonoBlock for 16 x 24mm Tubes	1
RR95145	MonoBlock for 40 x 16mm Tubes	1
RR95150	MonoBlock for 40 x 12mm Tubes	1
RR95152	MonoBlock for 16 x 28mm Vials	1
RR95155	MonoBlock for 20 x 21mm Vials (4 dram)	1
RR95160	MonoBlock for 40 x 17mm Vials (2 dram)	1
RR95165	MonoBlock for 40 x 15mm Vials (1 dram)	1
RR95170	MonoBlock for 40 x 12mm Vials (2ml)	1
PolyBlocks		
RR95230	PolyBlock for 1 x 250ml Flask	1
RR95235	PolyBlock for 3 x 25mm Tubes	1
RR95240	PolyBlock for 3 x 24mm Tubes	1
RR95245	PolyBlock for 9 x 16mm Tubes	1
RR95250	PolyBlock for 9 x 12mm Tubes	1
RR95252	PolyBlock for 3 x 28mm Vials	1
RR95255	PolyBlock for 3 x 21mm Vials (4 dram)	1
RR95260	PolyBlock for 7 x 17mm Vials (2 dram)	1
RR95265	PolyBlock for 9 x 15mm Vials (1 dram)	1
RR95270	PolyBlock for 9 x 12mm Vials (2ml)	1
Reducing Inserts		
RR95330	150ml Flask Insert	1
RR95335	100ml Flask Insert	1
RR95340	50ml Flask Insert	1
RR95345	25ml Flask Insert	1
RR95350	10ml Flask Insert	1
RR95355	5ml Flask Insert	1

Products and Accessories

Cat No.	Description	Qty
Universal Clamp Spares and Accessories		
RR95400	Telescopic 5-way Clamp with Velcro	1
RR95405	Telescopic 3-way Clamp with Velcro	1
RR95410	Telescopic 5-way Clamp with Silicone Strap and Long Handle	1
RR95415	Telescopic 3-way Clamp with Silicone Strap and Long Handle	1
RR95450	RR95400 to RR95410 Conversion Kit	1
RR95412	Clamp Long Handle	1
RR95430	Self-Adhesive Velcro Pads	10
RR95432	Strap Securing Pins	10
RR95440	Velcro Loop Strips 200mm	5
RR95442	Silicone Strap 200mm	5
RR95444	Viton Strap 200mm	5
StarFish Distribution Manifolds		
RR95500	Water Manifold with connectors	1
RR95510	Gas/Vacuum Manifold with connectors	1
RR95535	Tubing for Manifold outlets 15m x 6.4mm	1
RR95540	Tubing for Manifold inlets 15m x 8mm	
PTFE Magnetic Stirring Bars		
RR98075	Cross Shape Stirring Bar 10mm	40
RR98091	Cross Shape Stirring Bar 16.5mm RE	20
RR95910	Cross Shape Stirring Bar 30mm	5
RR95905	Cylindrical Stirring Bar 8mm	40
RR98113	Cylindrical Stirring Bar 12mm RE	20
RR98070	Octagonal Stirring Bar 13mm	20
RR99607	Pivot Ring Stirring Bar 12x4.5mm	40
RR98071	Pivot Ring Stirring Bar 12x6mm	40
RR99613	Pivot Ring Stirring Bar 15mm	40
RR98096	Elliptical Stirring Bar 10mm RE	40
RR98097	Elliptical Stirring Bar 15mm RE	20
RR99064	Elliptical Stirring Bar 25mm RE	10
RR95920	Oval Stirring Bar 40mm	5
RR95921	Oval Stirring Bar 50mm	5
RR95915	Hub Stirring Bar 45mm	1
RR95916	Hub Stirring Bar 62mm	1
RR95917	Hub Stirring Bar 70mm	1
RR95925	Spinning Stirring Bar 31mm	1
RR95926	Spinning Stirring Bar 44mm	1
RR95927	Spinning Stirring Bar 57mm	1
RR98095	PTFE Magnetic Stirring Bar Evaluation Kit	30
RR71200	PTFE Magnetic Stirring Bar Evaluation Kit - for flasks	10
RR98094	PTFE Magnetic Stirring Bar Retriever 350mm	1
RR98114	Magnetic Stirring Bar Restrainer	1
Test Tubes		
RR94005	24x150 T/Tube with Rim (Medium Wall)	100
RR94010	24x150 T/Tube without Rim (Medium Wall)	100
RR94015	16x100 T/Tube with Rim (Medium Wall)	100
RR94020	16x100 T/Tube without Rim (Medium Wall)	100
RR94025	12x100 T/Tube with Rim (Medium Wall)	100
RR94030	12x100 T/Tube without Rim (Medium Wall)	100
Round Bottom Flasks		
RR94040	500ml Round Bottom Flask 24/29 Socket	5
RR94050	250ml Round Bottom Flask 24/29 Socket	5
RR94055	250ml Round Bottom Flask 19/26 Socket	5
RR94060	150ml Round Bottom Flask 24/29 Socket	5
RR94065	150ml Round Bottom Flask 19/26 Socket	5
RR94070	100ml Round Bottom Flask 24/29 Socket	5
RR94075	100ml Round Bottom Flask 19/26 Socket	5
RR94080	50ml Round Bottom Flask 24/29 Socket	5
RR94085	50ml Round Bottom Flask 19/26 Socket	5
RR94090	25ml Round Bottom Flask 24/29 Socket	5
RR94095	25ml Round Bottom Flask 19/26 Socket	5
RR94100	10ml Round Bottom Flask 14/23 Socket	5
RR94105	10ml Round Bottom Flask 10/19 Socket	5
RR94110	5ml Round Bottom Flask 14/23 Socket	5
RR94115	5ml Round Bottom Flask 10/19 Socket	5

Products and Accessories

Cat No.	Description	Qty
Round Bottom Flasks with Sidearm		
RR94145	500ml R/B Flask 24/29 with 19/26 Sidearm	1
RR94150	250ml R/B Flask 24/29 with 19/26 Sidearm	2
RR94155	100ml R/B Flask 24/29 with 19/26 Sidearm	2
RR94160	50ml R/B Flask 14/23 with 14/23 Sidearm	2
RR94165	25ml R/B Flask 14/23 with 14/23 Sidearm	2
Condensers		
RR94180	Liebig Condenser 208mm 19/26	1
RR94185	Liebig Condenser 250mm 24/29	1
RR94190	Liebig Condenser 250mm 29/32	1
RR94195	Coil Condenser 165mm 19/26	1
RR94200	Coil Condenser 165mm 24/29	1
RR94205	Coil Condenser 165mm 29/32	1
RR94210	Allihn Condenser 250mm 19/26	1
RR94215	Allihn Condenser 250mm 24/29	1
RR94220	Allihn Condenser 250mm 29/32	1
Soxhlet		
RR94230	20ml Soxhlet 19/26 Cone 24/29 Socket	1
RR94235	40ml Soxhlet 24/29 Cone 29/32 Socket	1
RR94240	60ml Soxhlet 24/29 Cone 34/25 Socket	1
RR94245	100ml Soxhlet 24/29 Cone 40/38 Socket	1
Right Angle Adapters		
RR94260	Adapter B19 Cone to SQ13 Screwthread	5
RR94265	Adapter B24 Cone to SQ13 Screwthread	5
RR94270	Adapter B29 Cone to SQ13 Screwthread	5
RR94275	Adapter B34 Cone to SQ13 Screwthread	5
Beakers		
RR94350	250ml Beaker	10
RR94355	150ml Beaker	10
RR94360	100ml Beaker	10
RR94365	50ml Beaker	10
Conical Flasks		
RR94380	250ml Conical Flask Narrow Neck	10
RR94385	150ml Conical Flask Narrow Neck	10
RR94390	100ml Conical Flask Narrow Neck	10
RR94395	50ml Conical Flask Narrow Neck	10
Dropping Funnels		
RR94450	250ml Dropping Funnel 19/26	1
RR94455	100ml Dropping Funnel 19/26	1
RR94460	50ml Dropping Funnel 14/23	1
Vials		
RR94300	4 Dram Vial 21x70mm	200
RR94310	2 Dram Vial 17x60mm	200
RR94320	1 Dram Vial 15x45mm	100
RR94330	2ml Vial 12x35mm	1000

Set-Up and Operation - Heating and Stirring

Select the correct StarFish base plate for your stirring hotplate

The current range of StarFish base plates have been designed specifically for the most popular brands of stirring hotplate. These are Radleys, Heidolph, IKA, Cimarec, Eyela and Stuart. Stirring hotplates from other manufacturers can be used as long as the base plate fits securely onto the top plate, thereby maintaining good thermal contact with the surface of the heated top plate.

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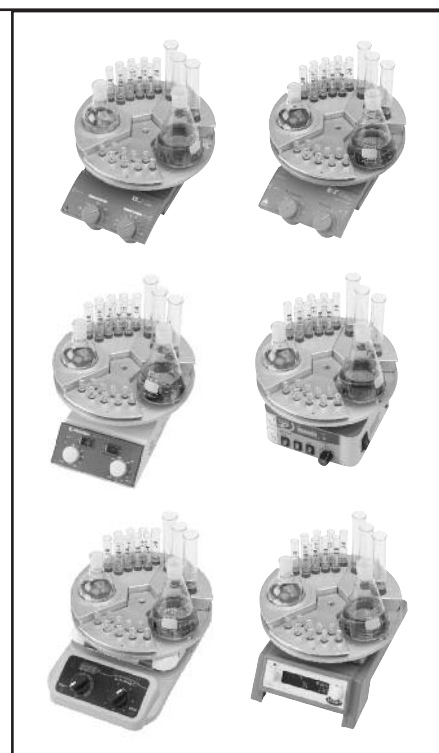
Important Note

Please see page 16 for assistance in selecting the correct base plate for your stirring hotplate.



Warning

Selecting the wrong base or an ill fitting base for your stirring hotplate could result in the StarFish being unstable or giving poor heating performance.



Optimising the temperature performance of your StarFish

The heating performance of your StarFish will be affected by:

1. The limit of the maximum operating temperature of the stirring hotplate.
2. Heating power (Watts) of the stirring hotplate.
3. Flatness of the top plate on the stirring hotplate.
4. Ambient temperature.
5. Load to be heated.
6. Maximum housing temperature of the stirring hotplate.
7. Whether you use a separate temperature sensor (probe) see overleaf.



Warning

When placing oil baths, sand baths or aluminium blocks etc. onto a stirring hotplate the increased surface area will reflect heat back to the stirring hotplate. In such instances care should be taken to ensure that the hotplate's external housing does not exceed the maximum temperature recommended by the manufacturer. Such overheating can cause damage to internal and/or external parts and lead to failure of your stirring hotplate.



Warning

Always refer to the manufacturer's operating instructions for your stirring hotplate before using it with the StarFish to be sure of any limitations or safety restrictions.

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Important Note

Please note that typically hotplates should be set between 5°C and 15°C above the boiling point of the solvent to achieve a gentle reflux.

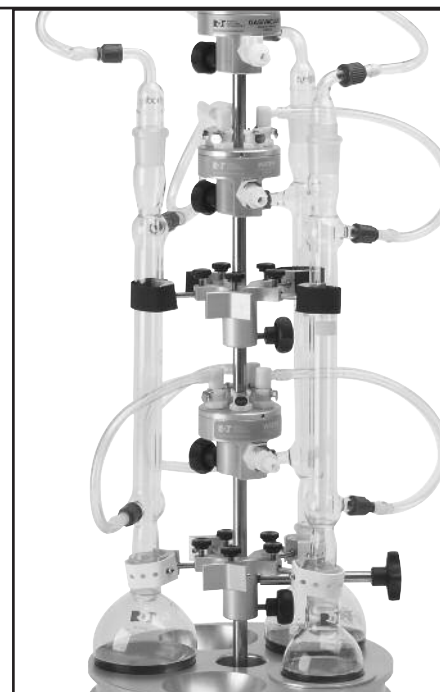


Set-Up and Operation - Heating and Stirring

Using a separate temperature probe

For accurate temperature control of your block and/or solution temperature we recommend using a temperature probe such as the **PT1000 s/s Temperature Sensor (RR91226)**.

All StarFish blocks feature a hole (3.5mm ID) for inserting a temperature probe.



Optimising the stirring performance of your StarFish

The StarFish system uses the single rotating magnetic field of the stirring hotplate to stir all vessel positions. The various StarFish blocks have been optimised to work with leading brands of stirring hotplates.

The stirring performance of your StarFish will be affected by:

1. The limit of the maximum stirring speed of the stirring hotplate.
2. Power and size of the magnet within the stirring hotplate.
3. Selection of an appropriate magnetic stirring bar for your chosen vessel
4. Viscosity of sample.



Wide choice of magnetic stirring bars

Selection of an appropriate magnetic stirring bar for your chosen vessel is key to the performance of stirring within the StarFish.

For full listing of suitable stirring bars for StarFish please see page 17.



Set-Up and Operation - Base Plate and Optional Handles

Locating the StarFish base plate on the stirring hotplate

The recess in the base plate is designed to locate on the top plate of the stirring hotplate. Ensure that the top plate is dust and grit free thereby ensuring good contact between the hotplate surface and the underside of the base plate.

The base plate design allows it to be easily lifted on and off the stirring hotplate as required.

Optional insulated handles (RR95100) can be fitted to facilitate the removal of the assembly whilst hot (see below).



Fitting optional insulated handles to base plate

Optional insulated handles facilitate the convenient removal of the base plate.

These handles are insulated from the base plate by a PEEK spacer which allows the base plate to be picked up when hot. The handles also allow the base plate to be placed on to a suitable laboratory surface without causing damage by the heat of the base plate.

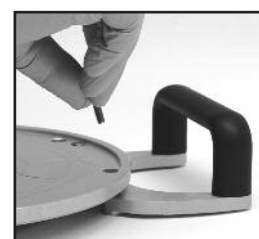
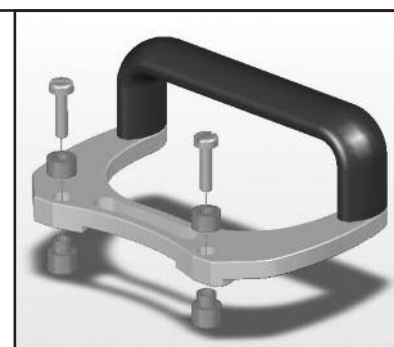


Warning

When lifting using the handles, always be sure to touch only the insulated handle and not the metal plate, which may be too hot to touch and may cause injury.

The handles are fitted to the base plate with two screws (see exploded view at right).

1. The handles are fitted with captive nuts retained in PEEK bushes which insert into the aluminium base of the plate handle and then protrude through the upper surface.
2. PEEK spacers are then located from above on to each of the two protruding bushes.
3. To fit the handle, present the handle plate to the underside to the base plate.
4. A fixing screw is then inserted from the top, through the base plate top, through the PEEK spacer and then screws into the captive nut located in the lower peak bush screwed securely with a flat-head screwdriver.
5. The same procedure is then repeated for the other handle.



Warning

Repeated heating and cooling of the base plate and handles may cause the handles to loosen with time. Always check handles are tight before each use.



Warning

Extreme caution should always be used when lifting hot vessels or objects. Please check with your laboratory safety officer to ensure that you are complying with all relevant safety procedures.



Many laboratories do not permit the handling of hot liquids or objects and therefore the use of the optional StarFish handles may not be permitted within such a laboratory.

Set-Up and Operation - Locating MonoBlocks and PolyBlocks

Locating MonoBlocks on to the base plate

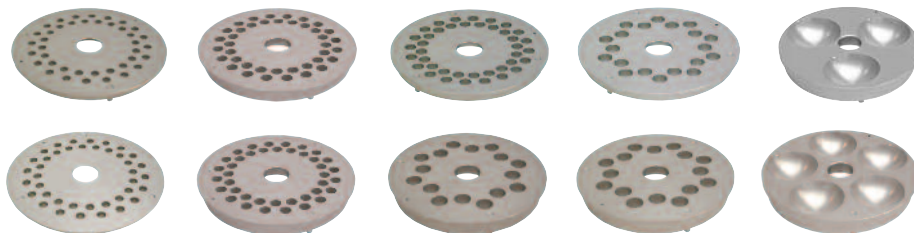
The MonoBlocks are designed to locate on to the StarFish base plate to give a secure base for your experiments.

1. Select the appropriate MonoBlock for your chosen vessels. Each MonoBlock is designed for a specific size of glassware and is identified accordingly with engraving on the side of the block.
2. Present the MonoBlock to the base plate and place your fingers around the top rim of the MonoBlock.
3. Rotate MonoBlock until the three feet of the MonoBlock locate into the holes in the base plate.
4. The MonoBlock will drop down to allow good thermal contact with the base plate.



Warning

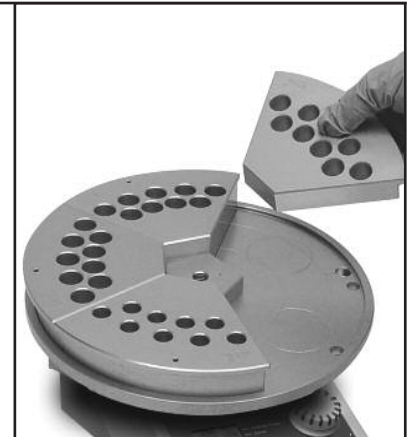
Take care not to catch your fingers between the base plate and MonoBlock.



Locating PolyBlocks on to the base plate

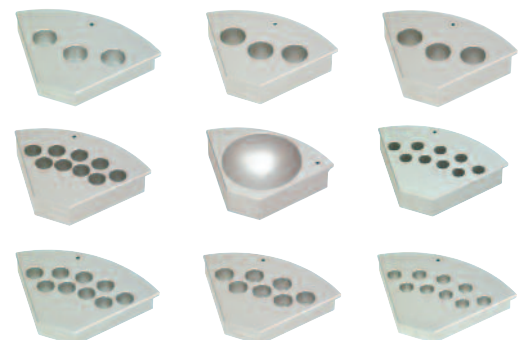
The PolyBlocks are designed to locate on to the StarFish base plate to give a secure base for your experiments.

1. Select the appropriate PolyBlocks for your chosen vessels - note that it is possible to mix different sized blocks simultaneously. Each PolyBlock is designed for a specific size of glassware and is identified accordingly with engraving on the side of the block.
2. Place the PolyBlock onto the base plate with the flat edge of the PolyBlock against one of the flats of the pentagonal centre post.
3. Ensure that the Polyblock is completely contained within the rim of the base plate to allow good thermal contact.



Warning

Take care not to catch your fingers between the base plate and PolyBlock.



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Important Note

Please see pages 15 (StarFish Quick Selection Guide) for assistance in selecting the appropriate MonoBlocks and PolyBlocks.

Set-Up and Operation - Aluminium Flask Inserts

Aluminium inserts are designed to adapt the 250ml MonoBlock or PolyBlock to accept 5ml, 10ml, 25ml, 50ml, 100ml, 150ml and 250ml round bottomed flasks.

1. Select appropriate insert. The insert size is engraved on the rim.
2. Place correct insert in the 250ml well, taking care to make sure it is fully located.

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The aluminium inserts are designed in such away that should the flask fall over it will still remain supported at such an angle as to retain the typical working volume of that flask. However we recommend the use of the **RR95410** Telescopic 5-Way Clamp inc. Silicone Strap + long handle, when using any round bottomed flasks.



5ml Aluminium Insert
RR95355



10ml Aluminium Insert
RR95350



25ml Aluminium Insert
RR95345



50ml Aluminium Insert
RR95340



100ml Aluminium Insert
RR95335



150ml Aluminium Insert
RR95330

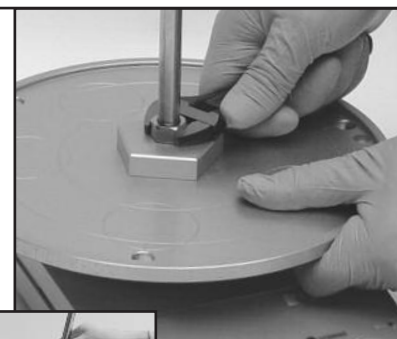
3. When clamping smaller flasks the use of a glass joint adapter to extend the neck of the flask will assist in clamping.



Fitting central support rod to base plate

There are a choice of two support rods: the **RR95665** 650mm one piece rod and the two piece **RR95666** 650mm split rod. The split rod allows for shorter assemblies.

1. Screw the rod into the tapped central hole at the centre of the base plate.
2. Using a suitably sized adjustable spanner, tighten the captive nut attached to the rod to securely mount the rod to the base assembly.



Warning

It is important to ensure that the rod is tightened securely using a spanner, otherwise the assembly may unscrew and become unstable during use.



Set-Up and Operation - Telescopic Clamps

Use of telescopic clamps

The StarFish clamping system is designed to neatly and conveniently support round bottom flasks and condensers etc. when used with PolyBlocks and MonoBlocks. Each clamp features telescopic arms with adjustable straps, which enable the clamping of a wide range of glassware diameters. For most applications, two clamps are used, to secure flask necks at the bottom, and condensers at the top.

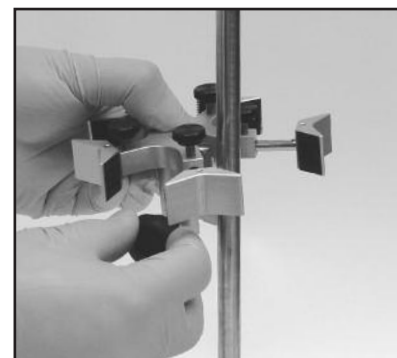
1. Present clamp to rod. It may be necessary to extend the arms nearest to the slotted opening to allow the support rod to pass through to centre of the clamp.
2. Position at the desired height and tighten boss thumbwheel.
3. Adjust length of telescopic arms to maintain centre point of glassware above wells in base plate.
4. The glassware is retained by placing the strap around the glassware and fixing it to the outside surface each side of the clamp end piece.



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Important Note

When clamping smaller flasks, the use of a glass joint adapter to extend the neck of the flask may assist in clamping.



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Important Note

The telescopic arms are retained within the body of the clamp in normal use. To remove the arm, completely unscrew the arm-fixing thumbwheel.

Choice of clamps

There are 4 clamp options available:

RR95400 Telescopic 5-way Clamp inc Velcro

RR95405 Telescopic 3-way Clamp inc Velcro

RR95410 Telescopic 5-way Clamp inc Silicone Strap + Long Handle

RR95415 Telescopic 3-way Clamp inc Silicone Strip + Long Handle

The 3-way clamps are suitable for use with RR95125 MonoBlock for 3 x 500ml Flasks. The 5-way clamps are for RR95130 MonoBlock for 5 x 250ml Flasks, including with flask inserts for smaller volumes.

The clamps with silicone straps are recommended for the lower position. They grip glassware and are very durable. The silicone clamps have a handle for lifting the clamp with secured glassware away from the heat.

The Velcro straps can be used for the upper clamp. They are designed to not grip glassware tightly, allowing condensers to slide through the straps when glassware is lifted (by the silicone clamp), whilst still offering some support.



Warning

The Velcro straps are not suitable for suspending unsupported glassware. The Velcro can be weakened by exposure to high temperatures, chemical vapours or sunlight.

Set-Up and Operation - Telescopic Clamps

Velcro straps and pads are consumable items that should be replaced as required.

RR95430 Replacement Self Adhesive Velcro Pads (Pack of 10)

RR95440 Replacement Velcro Loop Strips 200 mm (Pack of 5)

It is possible to convert from a Velcro clamp to a silicone clamp using:

RR95450 RR95400 to RR95410 Conversion Kit – comprising:

RR95412 Clamp Long Handle

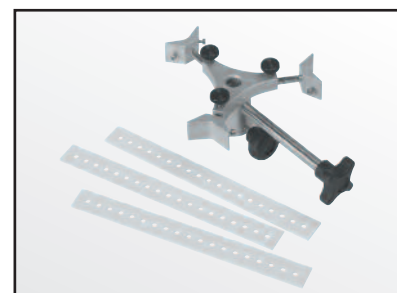
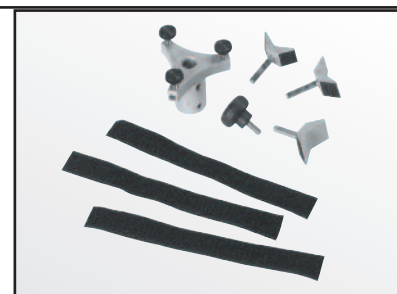
RR95432 Strap Securing Pins (Pack of 10)

RR95442 Silicone Strap 200 mm (Pack of 5)

Replacement silicone straps may be purchased. We additionally offer Viton straps as an alternative to the silicone straps, for increased chemical resistance.

RR95442 Silicone Strap 200 mm (Pack of 5)

RR95444 Viton Strap 200 mm (Pack of 5)



Set-Up and Operation - Water Distribution Manifolds

Water Distribution Manifold

Water Distribution Manifolds have been designed to allow coolant from a single source to be evenly distributed to up to five condensers and then the flow re-combined to one outlet pipe. Two manifolds are used in each system, one to distribute water to the condensers and one to collect coolant for recirculation or to drain.

1. Confirm that the manifolds are Water Manifold RR95500 rather than Gas/Vacuum Manifolds. The Water Manifold is identified by the label and fitted with a female connector on the side of the manifold body.

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Important Note

Water Manifold RR95500 is fitted with a female inlet/outlet connector, whilst the Gas/Vacuum Manifold RR95510 is fitted with a male inlet/outlet connector. This prevents incorrect connection of fluid and gas supplies.

2. Place both Water Manifolds over the top of support rod and slide down to the desired position and fix with the thumbwheel. (It does not matter which way up the manifolds are fitted to the support rod.)
3. Push the the large barbed connector RR95525 (supplied with the Water Manifold) into your water inlet tubing. (For suitable tubing please order RR95540 - 8mm x 15m clear Tygon Tubing.)

NB. The RR95525 connector has a 9.5mm OD barb with an 6.4mm bore and accepts flexible tubing with an 8mm ID.

4. Now the tubing is connected to the RR95525 connector, insert it into the female connector on the side of the lower of the two Water Manifolds. It will click in place.
5. Repeat the procedure with the water outlet/drain tubing, connecting it to the RR95525 connector on the upper of the two Water Manifolds.
6. Connect the tubing from each of your condenser inlets to a right-angled connector RR95520 (5 are supplied with each Water Manifold). (For suitable tubing please order RR95535 - 6.4mm x 15m clear Tygon Tubing.)

NB. The RR95520 right-angled connector has a 6.4mm OD barb with an 3.2mm bore and accepts flexible tubing with an 6.4mm ID.

7. Now the tubing is connected to the RR95520 right angled connector, insert it into any one of the five female connectors on the top of the lower Water Manifold. It will click in place.
8. Repeat the procedure with the with the upper Water Manifold, connecting each of the condenser outlets to the manifold. For best results coolant should always enter the bottom of you condenser and exit at the top.
9. A water flow rate of at least 1.5 litres per minute should be used to maintain even distribution to each condenser.

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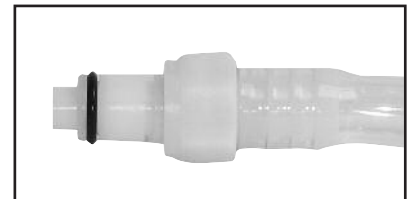
Important Note

All of the connectors feature leak-proof shut-off valves that are automatically closed when the couplings are parted. This enables the manifold to be used with any number of condensers (up to five) without daisy-chaining.

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Important Note

To avoid the build-up of lime scale in the Water Distribution Manifold, please avoid the use of hard water.



Set-Up and Operation - Gas/Vacuum Distribution Manifold

Gas/Vacuum Distribution Manifold

Gas/Vacuum Distribution Manifolds have been designed to allow gas or a vacuum from a single source to be evenly distributed to up to five vessels.

1. Confirm that the manifold is Gas/Vacuum Manifold RR95510 rather than a Water/Coolant Manifold. The Gas/Vacuum Manifold is identified by the label and fitted with a male connector on the side of the manifold body.

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Important Note

Water Manifold RR95500 is fitted with a female inlet/outlet connector, whilst the Gas/Vacuum Manifold RR95510 is fitted with a male inlet/outlet connector. This prevents incorrect connection of fluid and gas supplies.

2. Place the Gas/Vacuum Manifold over the top of support rod and slide down to the desired position and fix with the thumbwheel. (It does not matter which way up the manifold is fitted to the support rod.)
3. Push the large barbed connector RR95530 (supplied with the Gas/Vacuum Manifold) into your gas inlet tubing. (For suitable tubing please order RR95540 - 8mm x 15m clear Tygon Tubing.)

NB. The RR95530 connector has a 9.6mm OD barb with an 6.4mm bore and accepts flexible tubing with an 8mm ID.

4. Now the tubing is connected to the RR95525 connector, insert it into the male connector on the side of Gas/Vacuum Manifold. It will click in place.
5. Connect the tubing from each of your vessels to a right-angled connector RR95520 (5 are supplied with each Gas/Vacuum Manifold). (For suitable tubing please order RR95535 - 6.4mm x 15m clear Tygon Tubing.)

NB. The RR95520 right-angled connector has a 6.4mm OD barb with an 3.2mm bore and accepts flexible tubing with an 6.4mm ID.

7. Now the tubing is connected to the RR95520 right angled connector, insert the connector into any one of the five female connectors on the top of the Gas/Vacuum Manifold. It will click in place.



Warning

The manifold can be used for both vacuum and gas purging.

The maximum operating pressure is 3psi above atmospheric pressure and a vacuum of approximately 150 to 125mbar.

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Important Note

All of the connectors feature leak-proof shut-off valves that are automatically closed when the couplings are parted. This enables the manifold to be used with any number of vessels (up to five) without daisy-chaining.

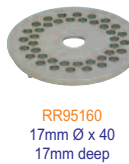


StarFish Quick Selection Guide

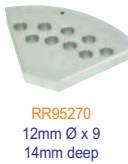
Base plates, handles and rods



MonoBlocks for test tubes and vials



PolyBlocks for test tubes and vials



MonoBlocks, PolyBlocks and aluminium inserts for flasks



Manifolds and clamps



StarFish Quick Selection Guide

Test tubes, flasks, condensers and soxhlets



Magnetic stirring bars



Warranty – Email Back

sales@radleys.co.uk

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Date of Purchase	
Supplier's Name and Address	
Product Batch/Serial No. (if shown)	
Your Details	
Mr	Mrs
Miss	Ms
Dr	Prof
Name	
Position	
Dept	Building
Organisation	
Address 1	
Address 2	
Town/City	County/State
Country	Post/Zip Code
Telephone	Ext Fax
Email	Website

Type of Organisation; please tick all boxes relevant					
<input type="checkbox"/> Academic Institution	<input type="checkbox"/> Consumer Goods	<input type="checkbox"/> Defence/Military/Forensic	<input type="checkbox"/> Government	<input type="checkbox"/> Manufacturing/Industrial	<input type="checkbox"/> Polymers/Plastics
<input type="checkbox"/> Animal Health/Zoology	<input type="checkbox"/> Contract Lab	<input type="checkbox"/> Environmental/Water	<input type="checkbox"/> Hospital/Pharmacy	<input type="checkbox"/> Nuclear/Gas/Electric	<input type="checkbox"/> Process Engineering
<input type="checkbox"/> Agrochemical	<input type="checkbox"/> Contract Synthesis	<input type="checkbox"/> Flavours/Fragrances	<input type="checkbox"/> Instrum/Elect & Mech	<input type="checkbox"/> Petrochemical/Oil	<input type="checkbox"/> Research Institute
<input type="checkbox"/> Chemical Manufacture	<input type="checkbox"/> Cosmetics	<input type="checkbox"/> Food/Beverages	<input type="checkbox"/> Lab Equip Dealer/Mnf	<input type="checkbox"/> Pharma/Biotech/API	<input type="checkbox"/> Other.....
Areas of Interest; please tick all boxes relevant					
<input type="checkbox"/> Analytical Chemistry	<input type="checkbox"/> Chromatography	<input type="checkbox"/> Estate & Facilities	<input type="checkbox"/> Health & Safety	<input type="checkbox"/> Organic Chemistry	<input type="checkbox"/> QC/QA
<input type="checkbox"/> Automation/HTS	<input type="checkbox"/> Clinical/Medical/Pathology	<input type="checkbox"/> Food & Agriculture	<input type="checkbox"/> Inorganic/Metallurgy	<input type="checkbox"/> Parallel Chem/Combi-Chem	<input type="checkbox"/> Sales & Marketing
<input type="checkbox"/> Biochemistry	<input type="checkbox"/> Construction	<input type="checkbox"/> Formulation	<input type="checkbox"/> Liquid Handling/MicroPlates	<input type="checkbox"/> Polymers & Oils	<input type="checkbox"/> Separation/SPE
<input type="checkbox"/> Biological Sciences	<input type="checkbox"/> Drug Discovery	<input type="checkbox"/> Geology	<input type="checkbox"/> Material Science	<input type="checkbox"/> Process Dev/Scale-up	<input type="checkbox"/> Support/Engineering
<input type="checkbox"/> Catalysis	<input type="checkbox"/> Environmental Health	<input type="checkbox"/> Glassblower	<input type="checkbox"/> Medical Devices	<input type="checkbox"/> Process Safety/Calorimetry	<input type="checkbox"/> Temperature Control
<input type="checkbox"/> Other.....	<input type="checkbox"/> Medicinal Chemistry	<input type="checkbox"/> Purchasing/Stores	<input type="checkbox"/> Veterinary		

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Benchtop and Hotplates	Parallel Reaction Stations	Software
<input type="checkbox"/> Findenser Air Condenser	<input type="checkbox"/> Carousel 12 Plus Reaction Station	<input type="checkbox"/> AVA Lab Control Software
<input type="checkbox"/> Heat-On Block System	<input type="checkbox"/> Cooled Carousel 12 Reaction Station	<input type="checkbox"/> Level 1/2
<input type="checkbox"/> Cool-It Insulated Bowls	<input type="checkbox"/> Carousel 6 Plus Reaction System	<input type="checkbox"/> Level 3/4
<input type="checkbox"/> StarFish Work Station	<input type="checkbox"/> Cooled Carousel 6 Plus Reaction Station	<input type="checkbox"/> Data Hub
<input type="checkbox"/> Carousel Stirring Hotplates	<input type="checkbox"/> Carousel Work-Up Station	Automated Reaction Stations
<input type="checkbox"/> Overhead Stirrers	<input type="checkbox"/> GreenHouse Plus Parallel Synthesiser	<input type="checkbox"/> Mya 4 Reaction Station
Jacketed Lab Reactors	<input type="checkbox"/> GreenHouse Work-Up Station	Other
<input type="checkbox"/> Reactor-Ready Lab Reactor	<input type="checkbox"/> GreenHouse Blowdown Evaporator	<input type="checkbox"/> Huber.....
<input type="checkbox"/> Reactor-Ready Duo Lab Reactor	<input type="checkbox"/> Tomado Overhead Stirring System	<input type="checkbox"/> Heidolph.....
<input type="checkbox"/> Reactor-Ready Pilot Lab Reactor	<input type="checkbox"/> Breeze Heating/Cooling Work Station	<input type="checkbox"/> Other.....
<input type="checkbox"/> Custom Jacketed Reaction Systems	<input type="checkbox"/> Storm Heating/Cooling Work Station	