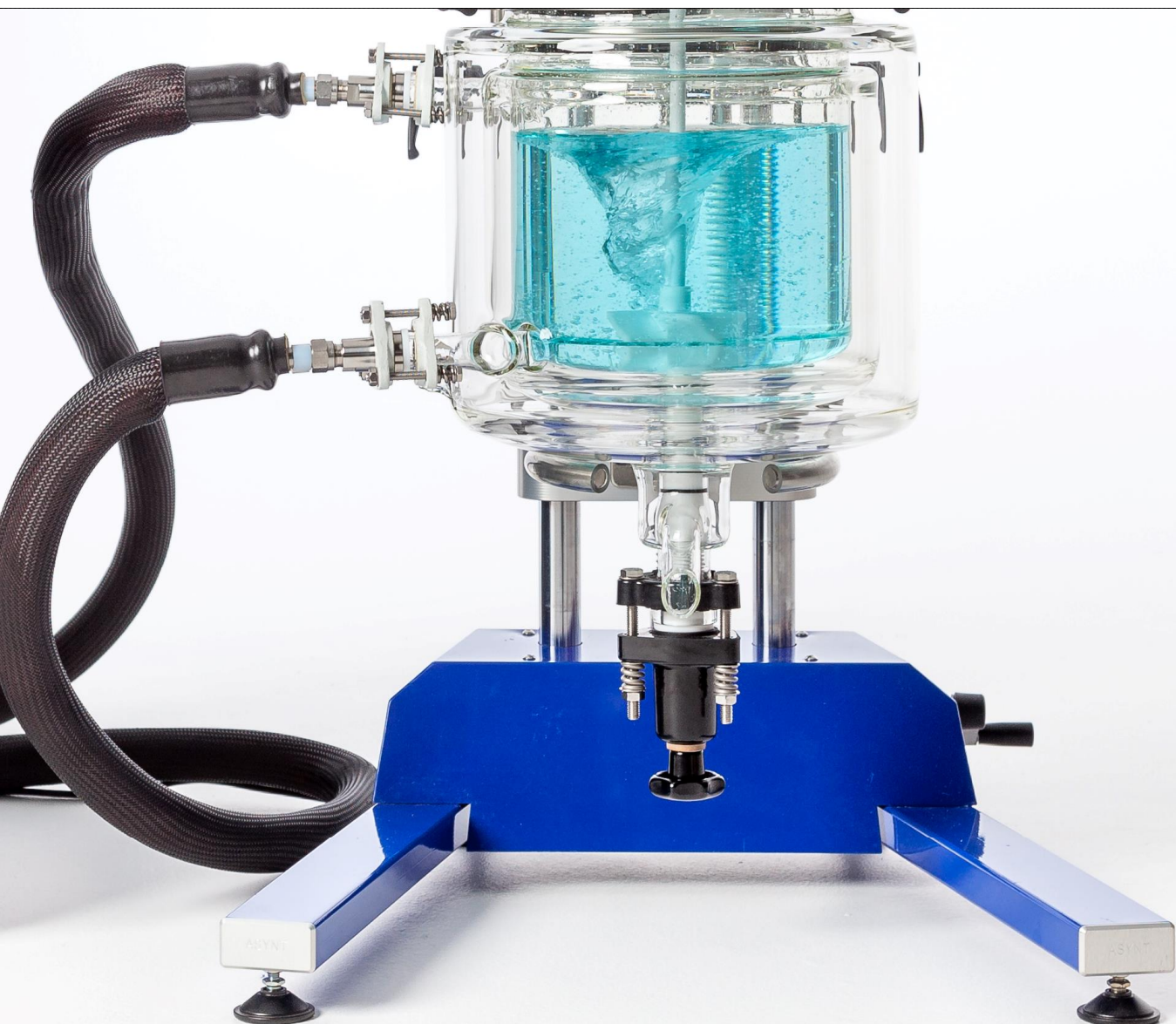




Asynt ReactoMate CLR

Safe scale up from bench top to pilot scale



A fresh outlook in chemistry technologies



ReactoMate CLR systems - index

Designed by chemists, the ReactoMate CLR system is built to enable precise control of reaction variables, simple manipulation of the vessel and connected apparatus, and the safest possible working conditions.

1: Vessels

- ⇒ Single or vacuum jacketed vessels
- ⇒ Choose from 100 ml to 5,000 ml Bench Top vessels
- ⇒ Choose from 10,000 ml to 50,000 ml Pilot Scale vessels



2: Stirrer Paddles

- ⇒ PTFE
- ⇒ Glass
- ⇒ Stainless Steel



3: Vessel Lids

- ⇒ PTFE
- ⇒ Glass
- ⇒ Stainless Steel



4: Baffles

- ⇒ Bespoke designs
- ⇒ Systems designed with IPOS
- ⇒ Combine with temperature measurement





5: Support Systems

- ⇒ Basic Support (up to 50,000ml)
- ⇒ Easy Support (up to 5,000 ml)
- ⇒ Super Safe Support (up to 30,000 ml)

6: Automation

- ⇒ Reaction control software from J-Kem Scientific allows you to log and control ancillary apparatus

7: Circulators

- ⇒ Configure for use with all the leading brands of circulators

Grant huber Julabo LAUDA

8: Overhead Stirring

- ⇒ Choose the ideal overhead stirrer to suit your application.

9: Further Options

- ⇒ Thermal fluid manifolds
- ⇒ Drip tray for your chosen support
- ⇒ Lockable casters for your chosen support
- ⇒ Larger diameter/high temperature run-off valves



ReactoMate CLR systems

1: Vessels

- ⇒ A wide range of options to suit all needs:
 - ⇒ Precision manufactured borosilicate glass vessels, with flange as specified by you from 100ml to 30,000ml as standard.
 - ⇒ Vacuum jacketed option providing the ultimate performance for heating and for cooling.
 - ⇒ Regular or squat shaped vessels
 - ⇒ All ReactoMate CLR packages come with the appropriate clamps, seals, and supports required for safe working
 - ⇒ Zero dead space PTFE run off valve as standard
 - ⇒ Amber vessels available for light sensitive work.



2: Stirrer Paddles

- ⇒ Features and options include:
 - ⇒ PTFE
 - ⇒ Glass
 - ⇒ Stainless Steel
- ⇒ Choose from a wide range of shapes and styles; anchor, retreat curve, turbine or propeller styles.
- ⇒ Bespoke stirrer design to your specification also available
- ⇒ Utilise the research of IPOS (Innovative Physical Organic Solutions) consultancy services with guidance on stirring and the complexities associated with optimising and scaling-up laboratory processes.

3: Lids

- ⇒ Choose from a range of materials and ports:
 - ⇒ Standard kits include a PTFE lid
 - ⇒ Custom PTFE lids available to your specification
 - ⇒ Custom glass lids available to your specification
 - ⇒ 60/100/150/200mm PTFE lids with 7 or 8 ports

4: Baffles

- ⇒ Simple baffles are available which connect to the reactor lid or can be combined with the temperature measurement. More effective bespoke baffles can be provided and adhere to the optimum design sought with IPOS.



5: Support Systems

- ⇒ With options to suit all CLR systems and all budgets:
 - ⇒ Three standard support frames to suit all vessel sizes from small desk top to pilot scale vessels.
 - ⇒ Design specification for your system will include likely future requirements so we don't under or over sell a support system.
 - ⇒ The **Basic Support options** will suit all vessel sizes we supply.
This is a simple support structure best suited to those with strict budgetary limits. For vessels up to 3,000ml a simple heavy duty retort stand is offered with stainless steel construction with powder coated steel base. For vessels from 5,000ml we will fabricate a scaffolding-type support system with limited user adjustability, using stainless steel and powder coated fittings.
 - ⇒ The **Easy Support** suits vessels up to 5,000 ml
This is a modern, secure stand with excellent stability and visibility.
 - ⇒ The **Super Safe Support** suits vessels up to 30,000 ml
This is an incredibly robust, chemically resistant, support system with built-in lifting mechanism offering easy raising/lowering of vessels with one hand. With a compact footprint that is perfect for the modern confined laboratory space and allows larger vessels to be used in a restricted space. We would recommend this for vessels of 5,000ml upwards.
 - ⇒ Customise these support systems as desired with locking casters, drip trays, alternative run off valves etc.



BASIC



EASY



SUPER SAFE

Dimensions (all approximate)	Basic	Easy	Super Safe
Height	100cm	100cm	110cm
Footprint (w/o vessel)	35 x 30 cm	40 x 30 cm	50 x 60 cm



ReactoMate CLR systems

6: Automation

- ⇒ Automate your ReactoMate CLR system with Control Software from J-Kem Scientific. The nature of the Reaction Controller is that the sensors it is configured to read (pH probe, thermocouple, etc) and the instruments it is configured to control (chillers, stirrers, pumps, etc) can be changed by the user as research needs to change.
- ⇒ Control reaction variables from a single Excel-like interface
- ⇒ Multi-step ramps for
 - ⇒ Reaction temperature
 - ⇒ Reagent additions
 - ⇒ Mixing
- ⇒ Solution pH control
- ⇒ Add multiple reagents based on Time/Temperature/Pressure
- ⇒ User definable alarms for all reaction parameters. Define alarm response, including emergency shutdown.
- ⇒ Ideal for methods development and reaction optimization
- ⇒ Exactly reproduce reaction conditions for production runs
- ⇒ Methods storage and recall

The screenshot displays the main control interface of the J-KEM Scientific KEM-Pump Software. At the top, there are tabs for 'Reaction Controller', 'pH Stat', 'Timed Addition', 'Multi-Reagent Delivery', 'Concurrent Addition', 'Parallel Addition', 'Program Builder', 'Pump Manual Control', and 'User Suggested Programs'. Below this, there are several control panels:

- Reagent Addition Program:** Includes a table for reagent steps and a 'Start Control' button.

Step	Reagent Port	Addition Volume (ml)	Addition Rate (ml/min)	Pause (min)	Refill Rate (ml/min)	TC 1 Limit (oC)	pH Limit	Volume Added (ml)
Step 1	B	10.0	1.0	0.0	62.5	65		
Step 2	C	2.0	0.2	5.0	62.5	65		
Step 3	D	2.0	2.0	0.0	62.5		7.0	
Step 4	E	20.0	1.5	0.0	62.5			
Step 5	F	10.0	0.1	0.0	62.5			
Step 6				0.0	62.5			
- Chiller Temperature Program:** A table for temperature steps.

Step	Starting Temp (oC)	Ending Temp (oC)	Step Time (min)	Hold Time (min)
Step 1	23	0	1	25
Step 2	0	-10	0.01	0.0
Step 3				0.0
- Stirring Program:** A table for stirring steps.

Step	Speed (rpm)	Duration (min)	Direction
Step 1	200	60	Clockwise
Step 2	300	10	Clockwise
Step 3			Clockwise
Step 4			Clockwise

This screenshot shows a detailed view of the reagent addition process. It includes a 'Volume Delivered' display showing 8.958 mL and a 'Running...' status. The interface is divided into several sections:

- Experiment Setup:**
 - Pump:** Inlet Port A, Outlet Port B, Addition Volume: 125 mL, Addition Rate: 12 mL/min, Fill Rate: 62.50 mL/min.
 - Intellect:** For Addition, use Pump: Pump 1, Pump 2, Pumps 1 & 2.
 - Flush System Following Addition:** Port: C, Volume: mL, Rate: mL/min.
- Temperature Control:**
 - Enable TC 1 on the Infinity Controller: 25.0 oC.
 - Pause the addition if the solution temperature falls BELOW (oC): 0.0.
 - Pause the addition if the solution temperature rises ABOVE (oC): 70.0.
- pH Control:**
 - Enable the pH probe on the Infinity Controller: 7.00.
 - Pause the addition if the solution pH falls BELOW pH: 6.0.
 - Pause the addition if the solution pH rises ABOVE pH: 13.0.
 - Select how the solution temperature is measured:
 - Use Infinity Thermocouple TC 1:
 - Use Manual Temperature (oC): 23.0:

At the bottom, it shows 'Maximum Delivery Rate : 87.500 mL/min' and 'Minimum Delivery Rate : 0.750 mL/min'.

7: Circulators

- ⇒ We can help you to configure your ReactoMate CLR system to work with heating/cooling systems that you already have.
- ⇒ We can provide advice on circulator systems from:
 - ⇒ Grant, Huber, Julabo, Lauda, Thermal Exchange
 - ⇒ Our chemists will work with you to ensure that the circulator supplied is correctly specified to suit your requirements.
 - ⇒ We can advise on and supply all connectors, tubing and fluids required for ongoing use in your laboratory.

8: Overhead stirrers

- ⇒ We recommend the use of IKA overhead stirrers and offer many options to meet your requirements. Our chemists will work with you to ensure that your needs are met. Some key examples of these are:
 - ⇒ **IKA Eurostar 40 digital**
For quantities up to 25 l (H₂O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 - 2000 rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.
 - ⇒ **IKA Eurostar 100 digital**
Powerful laboratory stirrer for highly viscous applications and intensive mixing for quantities up to 100 l (H₂O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 - 1300 rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.
 - ⇒ **IKA RV 28 digital**
Powerful, mechanically controlled laboratory stirrer designed for highly viscous applications for quantities up to 80 l (H₂O). It is suitable for intensive mixing for use in laboratories and pilot plants. The stirrer comes equipped with a protection for overheating of the motor by means of self-locking temperature limiter. Additionally, to secure bowls, a stirring shaft protection and clamping fixture are optionally available.



ReactoMate CLR systems

Bench-top ReactoMate CLR

Because life in the modern laboratory is complicated enough already, we have set out a series of ReactoMate CLR Bench-top kits which give you everything you need to set up a working reaction station.

We then give you the opportunity to customise the design and make adjustments to suit your individual needs so that you receive a system that works the way that you want it to.

Our chemists appreciate that the needs of your lab will change and grow, which is why our ReactoMate CLR support systems cover many size vessels. You can rely on us to offer the optimum system for your requirements. Forgive us if we ask a lot of questions; we want your ReactoMate CLR system to be perfect!



- ⇒ These standard Bench-top ReactoMate CLR systems include the following:
- ⇒ The support system of your choice (Basic / Easy / Super Safe)
 - ⇒ A PTFE lid (you can easily upgrade to include a custom glass lid)
 - ⇒ A jacketed reaction vessel with zero dead space valve of your chosen size (100/250/500/1000/2000/3000/5000 ml) with olive side arm adapters. You can change these for MD16 fittings at no extra cost if required for connection to a circulator.
 - ⇒ Clamp and O-ring for sealing the lid to the vessel
 - ⇒ PT100 temperature probe
 - ⇒ PTFE turbine stirrer guide and shaft
 - ⇒ Choose your overhead stirrer or circulator, if required, from the large array available.

RM-100	<p>Vessel size: 100ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 24/-, Port size: 1/2+NPT</p> <p>Side Port 1: 10° x 10° Compound angle, Taper joint 19/-, Port size: 1/2+NPT</p> <p>Side Port 2: 10° x 10° Compound angle, Taper joint 19/-, Port size: 1/2+NPT</p> <p>Side Port 3: 10° x 10° Compound angle, Taper joint 19/-, Port size: 1/2+NPT</p> <p>Stirrer Shaft: 8mm diameter, 400mm length, 30mm rotor diameter</p>
RM-250	<p>Vessel size: 250ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 24/-, Port size: 1/2+NPT</p> <p>Side Port 1: 10° x 10° Compound angle, Taper joint 19/-, Port size: 1/2+NPT</p> <p>Side Port 2: 10° x 10° Compound angle, Taper joint 19/-, Port size: 1/2+NPT</p> <p>Side Port 3: 10° x 10° Compound angle, Taper joint 19/-, Port size: 1/2+NPT</p> <p>Stirrer Shaft: 8mm diameter, 400mm length, 30mm rotor diameter</p>

RM-500	<p>Vessel size: 500ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 24/- Port size: 3/4+NPT Side Port 1: Vertical, Taper Joint 24/-, Port size: 3/4+NPT Side Port 2: 10° Angle, Taper joint 24/-, Port size: 3/4+NPT Side Port 3: 10° Angle, Taper joint 19/-, Port size: 3/4+NPT Side Port 4: 10° x 10° Compound Angle, Taper Joint 24/-, Port size: 3/7+NPT</p> <p>Stirrer Shaft: 8mm diameter, 400mm length, 30mm rotor diameter</p>
RM-1000	<p>Vessel size: 1000ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 24/- Port size: 3/4+NPT Side Port 1: Vertical, Taper Joint 24/-, Port size: 3/4+NPT Side Port 2: 10° Angle, Taper joint 24/-, Port size: 3/4+NPT Side Port 3: 10° Angle, Taper joint 19/-, Port size: 3/4+NPT Side Port 4: 10° x 10° Compound Angle, Taper Joint 24/-, Port size: 3/7+NPT</p> <p>Stirrer Shaft: 10mm diameter, 550mm length, 70mm rotor diameter</p>
RM-2000	<p>Vessel size: 2000ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 24/- Port size: 3/4+NPT Side Port 1: Vertical, Taper Joint 24/-, Port size: 3/4+NPT Side Port 2: 10° Angle, Taper joint 24/-, Port size: 3/4+NPT Side Port 3: 10° Angle, Taper joint 19/-, Port size: 3/4+NPT Side Port 4: 10° x 10° Compound Angle, Taper Joint 24/-, Port size: 3/7+NPT</p> <p>Stirrer Shaft: 10mm diameter, 550mm length, 70mm rotor diameter</p>
RM-3000	<p>Vessel size: 3000ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 24/- Port size: 3/4+NPT Side Port 1: Vertical, Taper Joint 24/-, Port size: 3/4+NPT Side Port 2: 10° Angle, Taper joint 24/-, Port size: 3/4+NPT Side Port 3: 10° Angle, Taper joint 19/-, Port size: 3/4+NPT Side Port 4: 10° x 10° Compound Angle, Taper Joint 24/-, Port size: 3/7+NPT</p> <p>Stirrer Shaft: 10mm diameter, 650mm EX length, 70mm rotor diameter</p>
RM-5000	<p>Vessel size: 5000ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 29/- Port size: 1+NPT Side Port 1: Vertical, Taper joint 24/-, Port size: 1+NPT Side Port 2: Vertical, Taper joint 29/-, Port size: 1+NPT Side Port 3: 10qAngle, Taper joint 45/-, Port size: 1+NPT Side Port 4: 10° x 10° Compound Angle, Taper Joint 29/-, Port size: 1+NPT</p> <p>Stirrer Shaft: 10mm diameter, 650mm EX length, 70mm rotor diameter</p>
RM-5000-S	<p>Vessel size: 5000ml squat jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 34/- Port size: 1+NPT Side Port 1: Vertical, Taper joint 29/-, Port size: 1+NPT Side Port 2: Vertical, Taper joint 29/-, Port size: 1+NPT Side Port 3: 10qAngle, Taper joint 29/-, Port size: 1+NPT Side Port 4: 10° x 10° Compound Angle, Taper Joint 29/-, Port size: 1+NPT Side Port 5: 10° Angle, Taper joint: 45/-, Port size 1.5+NPT</p> <p>Stirrer Shaft: 12mm diameter, 650mm EX length, 80mm rotor diameter</p>



ReactoMate CLR systems

Pilot ReactoMate CLR

We offer the ReactoMate Pilot CLR systems to encompass vessels from 10,000 ml to 30,000 ml as standard but we are able to offer sizes in excess of this as a custom-made option. We can also offer these in alternative materials.

The ReactoMate CLR system offers a compact footprint and its height adjustment facility helps to allow it to fit in many standard fume hoods.

In our chemists experience, when a greater capacity is required there is often a necessary concession made to visibility and to ease of use, however this is not the case with ReactoMate CLR Pilot. Our highly chemical resistant stand allows you access and visibility from every angle, and gives you the ability to move your vessel up and down with only one hand. This innovative and secure stand makes it far easier to charge vessels in a lower position and drain the vessel post synthesis with it raised.

As with the smaller bench-top systems, our standard kits come with all the necessary clamps, o-rings, stirrer shafts and guides, and PT100 probe. We will work with you to select the best overhead stirrer and circulator to suit your requirements.





- ⇒ Our ReactoMate CLR Pilot systems include the following:
 - ⇒ The support system of your choice (Basic / Super Safe)
 - ⇒ A PTFE lid (you can easily upgrade to include a custom glass lid)
 - ⇒ A jacketed reaction vessel with zero dead space valve of your chosen size (10,000/ 20,000/ 30,000 ml) with olive side arm adapters. You can change these for MD16 fittings at no extra cost if required for connection to a circulator.
 - ⇒ Clamp and O-ring for sealing the lid to the vessel
 - ⇒ PT100 temperature probe
 - ⇒ PTFE stirrer guide and shaft
 - ⇒ Choose your overhead stirrer or circulator, if required, from the large array available.

RM-10000	<p>Vessel size: 10,000ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 34/-, Port size: 1+NPT Side Port 1: Vertical, Taper joint: 29/-, Port size: 1+NPT Side Port 2: Vertical, Taper joint: 29/-, Port size: 1+NPT Side Port 3: 10° Angle, Taper joint: 29/-, Port size: 1+NPT Side Port 4: 10o x 10o Compound angle, Taper joint: 29/-, Port size: 1.5+NPT</p> <p>Stirrer Shaft: 12mm diameter, 750mm EX length, 80mm rotor diameter</p>
RM-20000	<p>Vessel size: 20,000ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 34/-, Port size: 1+NPT Side Port 1: Vertical, Taper joint: 29/-, Port size: 1+NPT Side Port 2: Vertical, Taper joint: 29/-, Port size: 1+NPT Side Port 3: 10° Angle, Taper joint: 29/-, Port size: 1+NPT Side Port 4: 10o x 10o Compound angle, Taper joint: 29/-, Port size: 1.5+NPT</p> <p>Stirrer Shaft: 16mm diameter, 750mm EX length, 100mm rotor diameter</p>
RM-30000	<p>Vessel size: 30,000ml jacketed reaction vessel with zero dead space valve, olive side arms.</p> <p>PTFE Lid: Centre port: Vertical, Taper joint: 34/-, Port size: 1+NPT Side Port 1: Vertical, Taper joint: 29/-, Port size: 1+NPT Side Port 2: Vertical, Taper joint: 29/-, Port size: 1+NPT Side Port 3: 10° Angle, Taper joint: 29/-, Port size: 1+NPT Side Port 4: 10o x 10o Compound angle, Taper joint: 29/-, Port size: 1.5+NPT</p> <p>Stirrer Shaft: 16mm diameter, 750mm EX length, 100mm rotor diameter</p>



Asynt

<http://www.asynt.com/product-category/controlled-lab-reactors/>

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