



orb

effortless  
reactions



[www.syrris.com](http://www.syrris.com)

Unrivalled quality » Intuitive design » Exceptional value

## Benefits

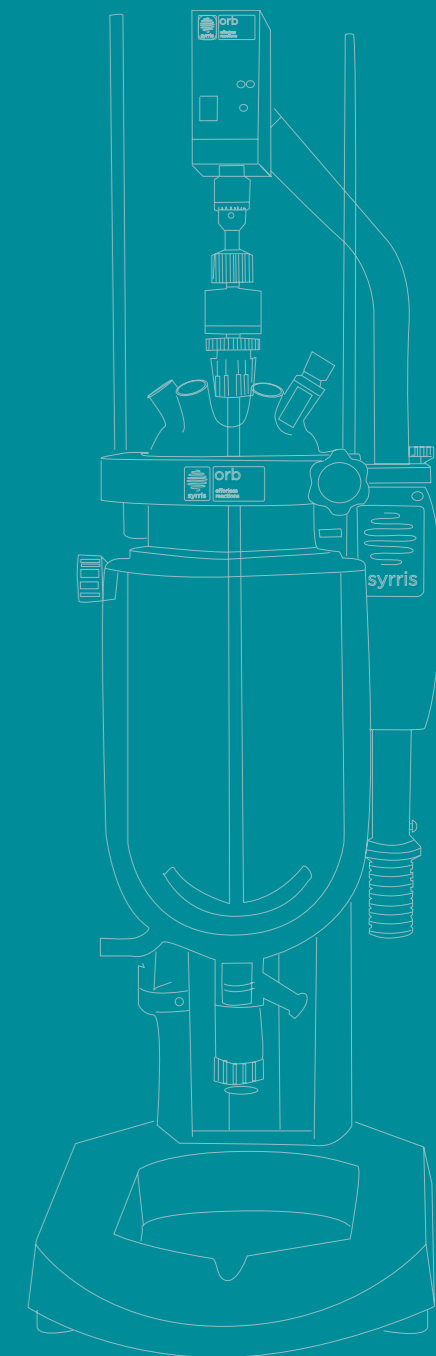
- **Quick vessel changes:** The unique vessel clamp mechanism allows quick and easy vessel changes.
- **Wide range of vessels:** 100ml, 250ml, 500ml, 1L, 2L, 5L and 10L round bottom and torispherical vessels, up to 5L vacuum jacketed vessels.
- **Rapid height adjustments:** Instant change of vessel height without tools.
- **Clever user friendly features:** Stirrer motor can be easily lifted and moved out of the way, easy vessel changes, no tools vessel height adjustments.
- **Maximum chemical resistance:** All wetted parts are glass or PTFE.
- **Wide temperature range:** -90°C to +250°C.
- **Pressure range:** Vacuum (50 mbara) to 0.25 barg.
- **Wide vessel access area:** Allows easy reagent additions, use of larger stirrers and wide range of accessories.
- **Upgrade to automation:** Add the Orb Reactor Master or PC software for total automation of reaction parameters.
- **Robust and reliable:** Built on Syrris' extensive experience, the Orb reactor system offers true value, ease of use and flexibility.

# orb

**Orb is a compact bench-top jacketed reactor system from Syrris.**

**Orb offers excellent value. Designed by chemists, Orb is a high-quality, user-friendly and reliable solution for batch reactions.**

**Orb allows rapid height adjustment and two clamp sizes to accommodate a wide range of vessel sizes from 100ml to 10L, which can be interchanged quickly. The system can be used for a wide range temperatures and is a true chemistry lab workhorse. A wide selection of accessories and upgrades for automation is available.**



easy set-up

orb

batch

jacketed

vessel

time

resistance

valve

value

chemical

compact

systems

synthesis

process

vessel

easy

adjustments

stirrer

easy

small

lab scale

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syrris

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# unrivalled quality, intuitive design, exceptional value

Orb's intuitive and thoughtful design makes using jacketed reactors easy. The compact design saves space and its robust, durable construction ensures longevity and reliability. Orb has been built to the highest quality with clever usability features and it represents excellent value for money for those requiring a batch chemistry system. Upgrades such as automation and oil drain are available for more sophisticated needs.

**Intuitive vessel clamp for easy vessel changes:** The clamp can be opened by turning the clamp knob. The vessel remains in place with the clamp open and can then be easily lifted out and replaced.

**Easy motor lift:** The simple mechanism allows the stirrer motor to be easily lifted and rotated out of the way for vessel changes. It then rotates back without further alignment.

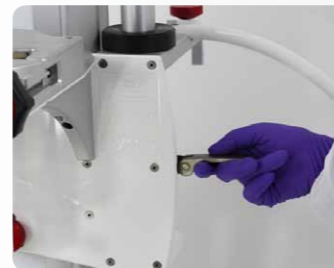
**No tools vessel height adjustments:** Pull the back panel knob and lift the panel to adjust the vessel height.

**Optional rapid oil drain:** With the push of a button, the oil drain unit quickly and safely drains oil from the jacketed reactor back into the circulator.

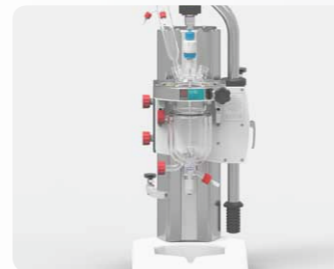
Clever clamp mechanism for quick vessel changes



Simple motor lift



No-tools vessel height adjustment



Optional rapid oil drain



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## Orb Features

### Stirrer motor

Wide choice stirrer motors: high speed (up to 2000RPM), high torque (up to 90Ncm), torque feedback, RS232 control and digital display stirrers

### Accessories

Choose from a wide range of accessories such as condensers, baffles, powder or pressure equalizing liquid funnels, port adaptors, stoppers etc.

### Quick connections

Thermo fluid connections made in seconds

### Oil Pipes

Premium oil pipes for higher temperature applications -90°C to +250°C, Budget oil pipes for temperatures from -40°C to +120°C

### Adjustable height

Instant change of vessel height without tools

### Wide range of stirrers

Different styles and lengths, glass or PTFE

### Bottom outlet valve

Spring loaded valve offers leak free sealing even at extremes of temperature and pressure

### Base

Sturdy yet compact base



### Easy motor lift

Lift and rotate stirrer motor out of the way

### 7 Port Lid

A wide range of port sizes in both vertical and compound angle configurations

### Quick clamp

No tools required to change jacketed vessels in seconds. DN100 clamp for 100ml, 250ml, 500ml, 1L and 2L vessels DN150 clamp for 1L, 2L, 5L and 10L vessels

### Temperature control

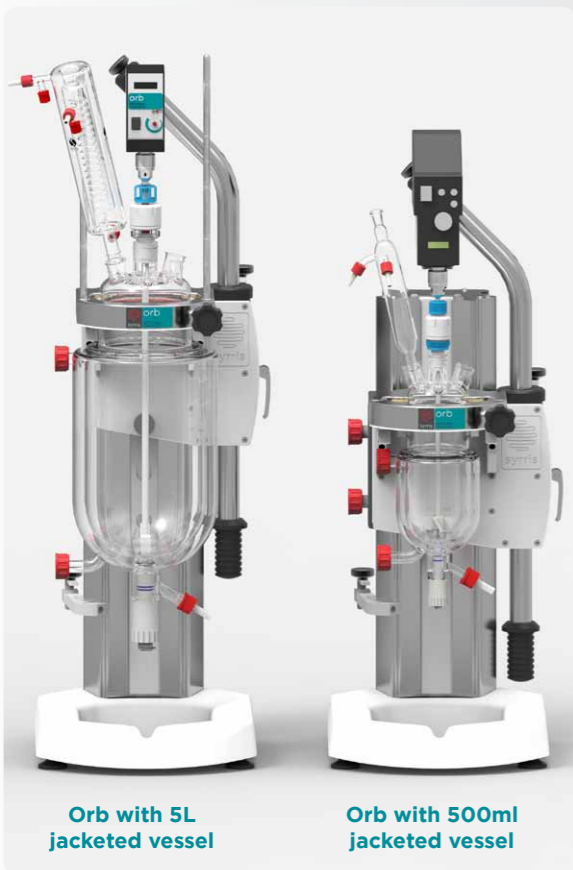
Temperature probes connected to the circulator offer accurate closed loop temperature control

### Jacketed vessels

100ml, 250ml, 500ml, 1 litre, 2 litre, 5 litre and 10 litre jacketed vessels or up to 5 litre vacuum jacketed

### Drip tray

For protection from spillages



Orb with 5L jacketed vessel

Orb with 500ml jacketed vessel

## Optional upgrades

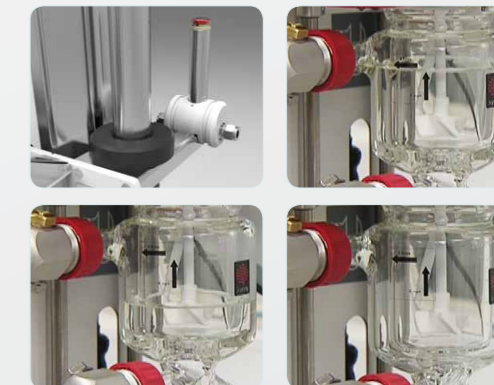
### Automation and data logging

Circulators, stirrers, thermocouples and RTDs from virtually any manufacturer can be controlled via Syrris Reactor Master. Data can be viewed in real time or downloaded to a USB memory stick as a csv file.



### Oil drain for convenience

Opt for a simple press button to drain thermo fluid for leak free vessel changes.

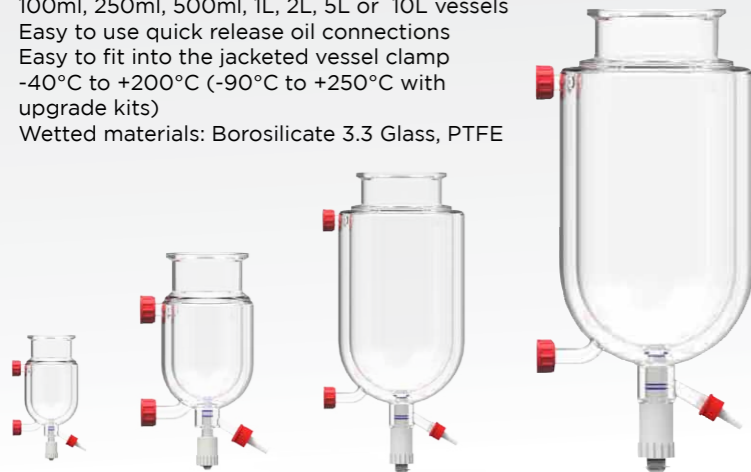


## Clamps, Vessels and Lids

Orb offers an extremely wide range of vessel sizes and profiles with or without vacuum jackets. The vessels, which are manufactured to the highest quality, feature quick oil connectors, sprung bottom outlet valves and a wide operating temperature range. Choose a DN100 Clamp (100ml to 2L) and/or DN150 Clamp (1L to 10L) which are easily interchanged.

### Round bottom or torispherical jacketed vessels

- 100ml, 250ml, 500ml, 1L, 2L, 5L or 10L vessels
- Easy to use quick release oil connections
- Easy to fit into the jacketed vessel clamp
- -40°C to +200°C (-90°C to +250°C with upgrade kits)
- Wetted materials: Borosilicate 3.3 Glass, PTFE



### Quick vessel changes

No tools clamp for changing jacketed vessels in seconds. DN100 clamp for 100ml, 250ml, 500ml, 1L and 2L vessels DN150 clamp for 1L, 2L, 5L and 10L vessels.



### High performance bottom outlet valve

The sprung bottom outlet valve has maximum chemical resistance and eliminates leaks even at extremes of temperature and pressure.



### Lids

7 port lid includes ports for the stirrer seal and guide, probes, sensors, condensers, additions, baffles or other devices. The US version has longer cones to fit longer US ground glass joints.



### Vacuum jacketed vessels

Ideal for extremes of temperature or ultimate temperature control and safety. Available in sizes: 100ml, 250ml, 1L, 2L and 5L. Wide temperature range: -40°C to +200°C (-90°C to +250°C with upgrade kits).



## Stirring

Orb offers a wide range of stirrer blades and stirrer motors. The innovative easy motor lift allows the stirrer motor to be rotated out of the way to enable easy lid, stirrer or vessel change. It can then be relocated without the need for alignment.

### Range of stirrer motors

The range of stirrers suit all budgets and cater for a wide range of requirements.

The stirrers include options for high speeds (up to 2000rpm\*), high torque (up to 90Ncm), torque feedback, RS232 control and digital display.

\* Actual RPM achievable is also dependent on the vessel size, fluid viscosity and stirrer geometry



### Easy motor lift

Simple motor lift - simply lift and move the stirrer motor out of the way.



### Range of stirrer blades

Choose from a range of stirrer blade lengths, styles (anchor, retreat curve impeller or 4 blade propeller) and materials (glass or PTFE).

PTFE stirrers have steel shafts for strength and a thick PTFE coating for chemical resistance. The glass stirrers are cut to length by Syrris before shipment.

Glass stirrers are ideal for work under vacuum. Custom profile stirrers are available on request.



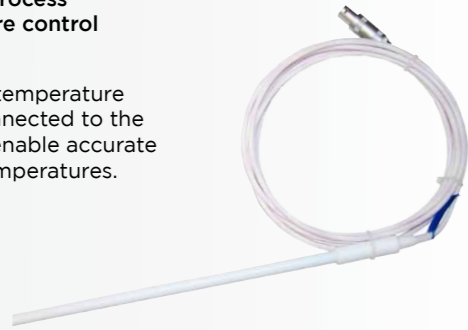


## Temperature Control

Orb is designed for accurate temperature control over the temperature range of  $-40^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$ . The temperature range can be extended to  $-90^{\circ}\text{C}$  or  $+250^{\circ}\text{C}$  with the low and high temperature upgrade kits. High efficiency vessels, accurate process temperature control and high performance circulators are available.

### Accurate process temperature control

In-reactor temperature probes connected to the circulator enable accurate process temperatures.



### High efficiency vessels

The design of Orb vessels is optimized for excellent heat transfer and temperature control.



### Wide range of high performance circulators

Orb is compatible with virtually any circulator.

Syrris offers the full series of Huber and Julabo circulators from affordable to high performance systems allowing a wide temperature range from  $-90^{\circ}\text{C}$  to  $+250^{\circ}\text{C}$ .

A range of insulated oil pipes are available in a variety of lengths from 0.6m to 3m.



## Upgrades: Automation

The Orb jacketed reactor system can be upgraded to perform automated experiments, even without a PC. Choose the Orb Reactor Master for full automation and data logging.

### Reactor Master for Automation

The Reactor Master automates Orb's temperature, stirring speed and quantity/timing of liquid additions.

It can perform experiments of up to 99 steps whilst logging all data.

All of this is controlled by the twist and click knob.

Data can be viewed in real time and downloaded to a USB memory stick as a .csv file.

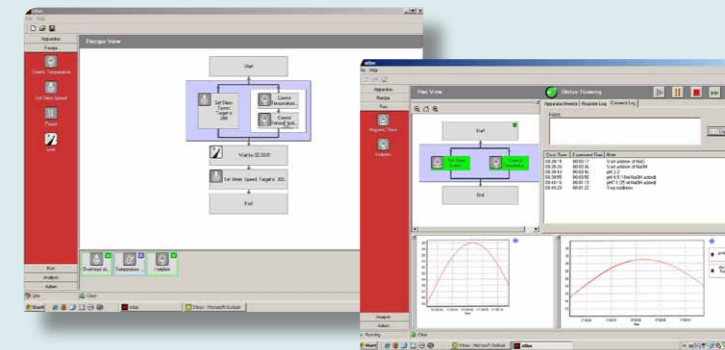


### Reactor Master PC Software

Reactor Master Software is an easy to use PC based application for control and analysis of Orb experiments.

Whole systems including stirrers, circulators, RTDs, pumps, balances etc. can be configured using virtually any manufacturer's apparatus.

The "drag and drop" interface means recipes can be created, changed and saved with a click of a mouse.



# Choose your system

Syrris Orb systems are flexible and easily customized to suit your application needs. Tick the boxes of the parts you need below and send off to us for a quote.

Tick your selections



### Orb base

Includes base frame, vessel clamp, drip tray and stirrer seal and guide.

1 Orb Base with DN100 Clamp

100ml, 250ml, 500ml, 1L, 2L vessels.  
Includes DN100 vessel clamp which enables use of the above vessel sizes.

2 Orb Base with DN150 Clamp

1L, 2L, 5L, 10L vessels.  
Includes DN150 vessel clamp which enables use of the above vessel sizes.

### Vessels and Lids



#### Torispherical Vessels

- 100ml
- 250ml
- 500ml
- 1L
- 2L
- 5L
- 10L

#### Round Bottom Vessels

- 100ml
- 250ml
- 500ml
- 1L
- 2L
- 5L
- 10L

#### Vacuum Jacketed Torispherical Vessels

- 100ml
- 250ml
- 500ml
- 1L
- 2L
- 5L

#### Jacketed Vessel 7 Port Lids

- UK (includes 7 x B ports)
- US (includes 7 x A ports)\*

\* The US version has longer cones to fit longer US ground glass joints.



### Stirrer Motor and Stirrers

#### Stirrer Motor

Orb Bronze  
110-2000 rpm, 18Ncm torque,  
no stirrer shaft adjustment

- UK
- US
- EU

Orb Silver  
50-1600rpm, 50Ncm torque,  
LCD screen, allows stirrer height  
adjustment

- 
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- 

Orb Gold  
50-1600rpm, 50Ncm torque,  
LCD screen, allows stirrer height  
adjustment, RS232

- 
- 
- 

#### Stirrer

- Anchor PTFE Stirrer
- Anchor Glass Stirrer
- PTFE Impeller Stirrer
- PTFE Adjustable 4 Blade Stirrer



### Circulators

#### Budget Circulator

Temperature ranges  
from -25°C to +125°C.  
Heating capacity  
1000w to 2000w, flow  
rates from 27l/min.

- 115V
- 230V

#### Premium Circulator

Temperature ranges  
from -40°C to +200°C.  
Heating capacity from  
1500w to 3000w. Flow  
rates from 27l/min to  
55l/min.

- 115V
- 208V
- 230V

Other circulators available for temperature ranges from -90°C to 250°C.



### Accessories

- Condenser
- Pressure Equalizing Funnels
- Support Rod
- RTD Probe
- Powder Addition Funnels
- Lid Port Stopper
- Baffles
- Lid Port Adapter (B19 to B28, B29 to B18 etc.)





**Orb is designed and manufactured by Syrris, the world's most advanced provider of laboratory scale chemistry systems.**

**Syrris' network of offices in the UK, USA, Japan, India and Brazil plus over 35 distributors worldwide offer local service and support.**

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