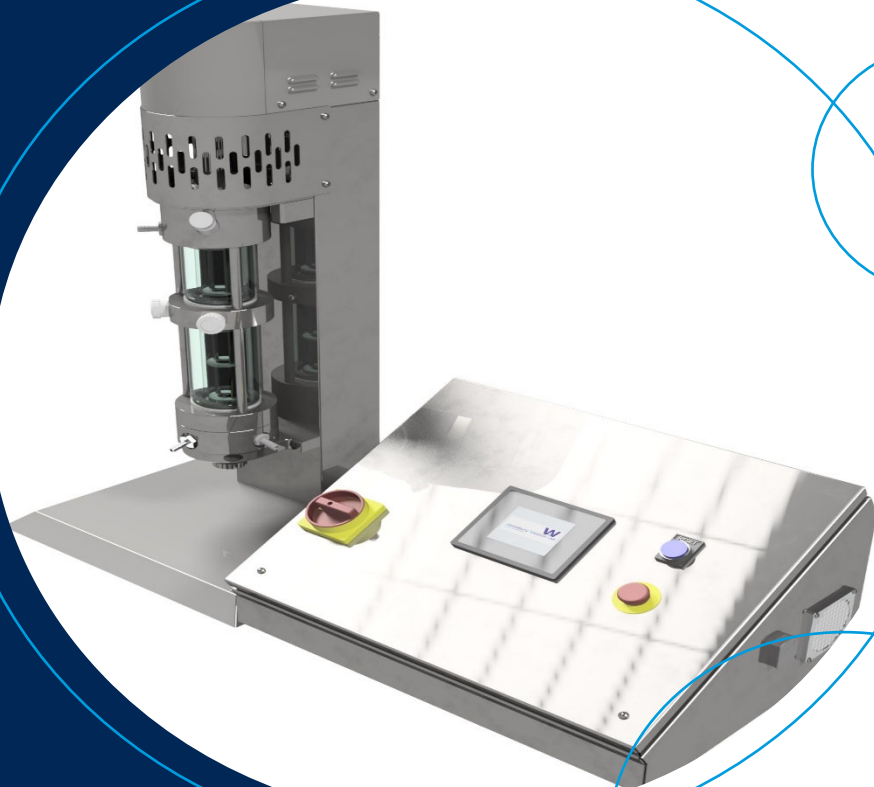


**TECHNICAL SPECIFICATION**  
**OSCILLATORY BAFFLED**  
**REACTOR / CRYSTALLISER**  
**(OBRC)**  
**DN25 & DN40**  
**LABORATORY EVALUATION**  
**UNITS**



## OVERVIEW

This Evaluation Reactor (OBR “Oscillatory Baffled Reactor”) has been manufactured for the intended use of evaluating the potential benefits of oscillatory baffled mixing with chemical reactions and crystallisations. It will allow the investigation of the fundamental kinetics and critical process parameters such as reactant ratios, cooling rates, temperatures, addition rates etc. and what benefits the baffled mixing can bring. It can be used as a direct substitute for a batch stirring of reactions or crystallisations. These results can then be taken, scaled up and validated in a COBR/COBC or scaled up to a larger OBR system.

The framework and vessel mountings are standardized to allow either a DN40 or DN25 vessel to be used.

### Operating Parameters:

	DN25 Vessel	DN40 Vessel
<b>Temperature Range:</b>	-20 °C ~ +120 °C	-20 °C ~ +120 °C
<b>Oscillator Frequency:</b>	0.1Hz ~ 6.0 Hz in 0.1 Hz increments	0.1 Hz ~ 6.0 Hz in 0.1 Hz increments
<b>Oscillator Stroke:</b>	5 mm ~ 40 mm in 1 mm increments	5 mm ~ 60 mm in 1 mm increments
<b>Operating Pressure:</b>	Ambient	Ambient
<b>Working Volume:</b>	110 ml	280 ml

Although the above conditions are individually possible, no guarantees can be given for any combination. The overall speed of the oscillation is limited by the linear motor and whilst, for example, 10mm at 6Hz is possible, 40mm at 6Hz may not be.

### Materials of Construction:

The wetted parts of the OBR are manufactured, as standard, from the following materials:

Glass Vessel:	Borosilicate 3.3
Interface Collar(s)	316L
Bottom Outlet Valve:	PEEK / FFKM / FEP
Splash Cap:	PTFE
Baffle String:	316L/PEEK

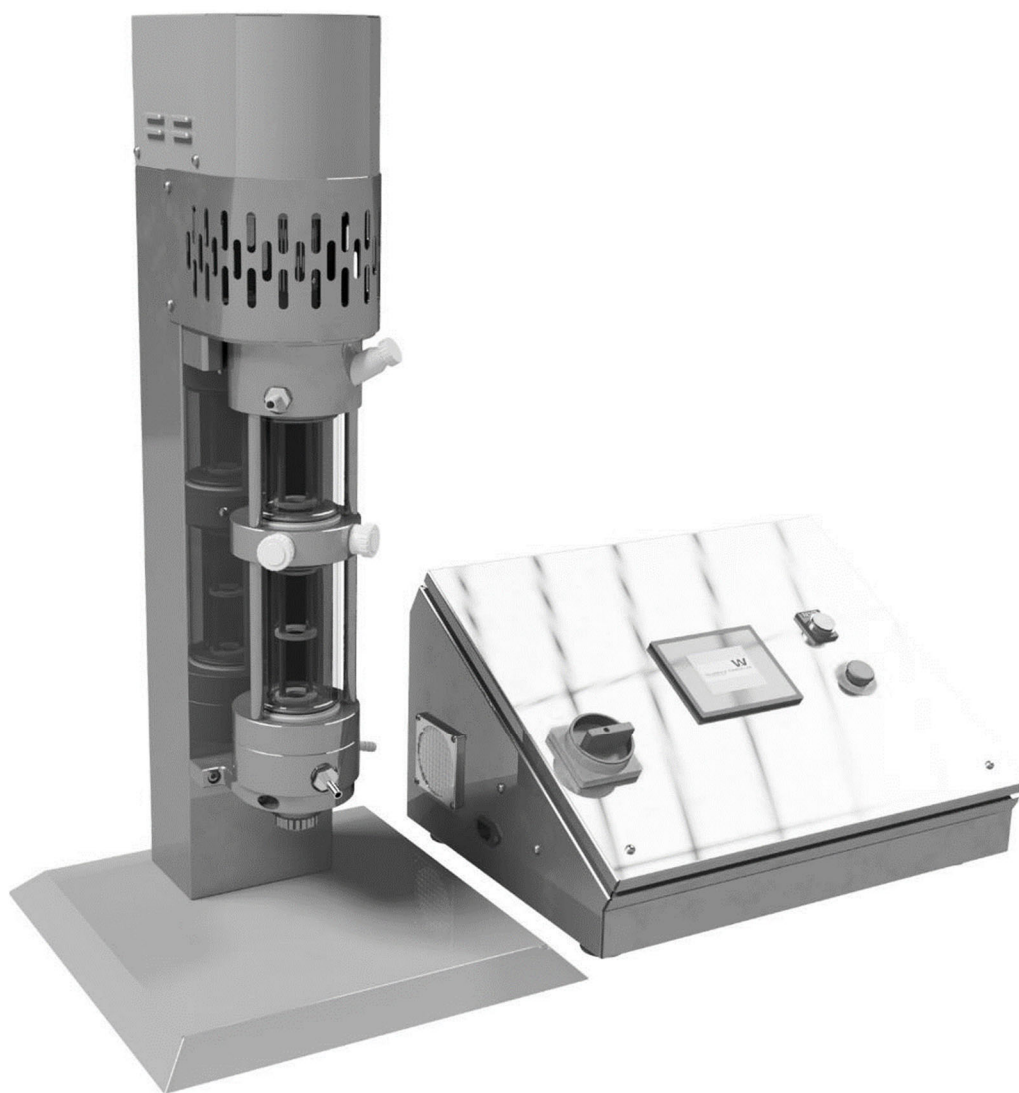
Alternative materials, where suitable, are available on request.

### Weights and Dimensions:

Reactor:	40kg, 410mm x 410mm x 815mm (width x depth x height)
Controls:	20kg, 525mm x 400mm x 310mm (width x depth x height)

### Reaction Vessel:

The Reaction Vessel comprises straight glass sections with 316L end caps and intermediate process insertion collars. The design is such that the smooth bore and minimal dead volume connection and sampling points allow the operator to work with heterogenous solids with a minimal hang-up. The intermediate process insertion collar can be used for sampling or PAT and can be supplied with a range of fittings to suit the operator's requirements. The reactor can be supplied with either a 25mm or 40mm diameter vessel to suit the end user's requirements. The vessel, end caps and intermediate collars are fully jacketed to achieve optimum temperature control throughout the reactor.



*Figure 1: OBR Vessel, support structure and control panel*

General Arrangement:

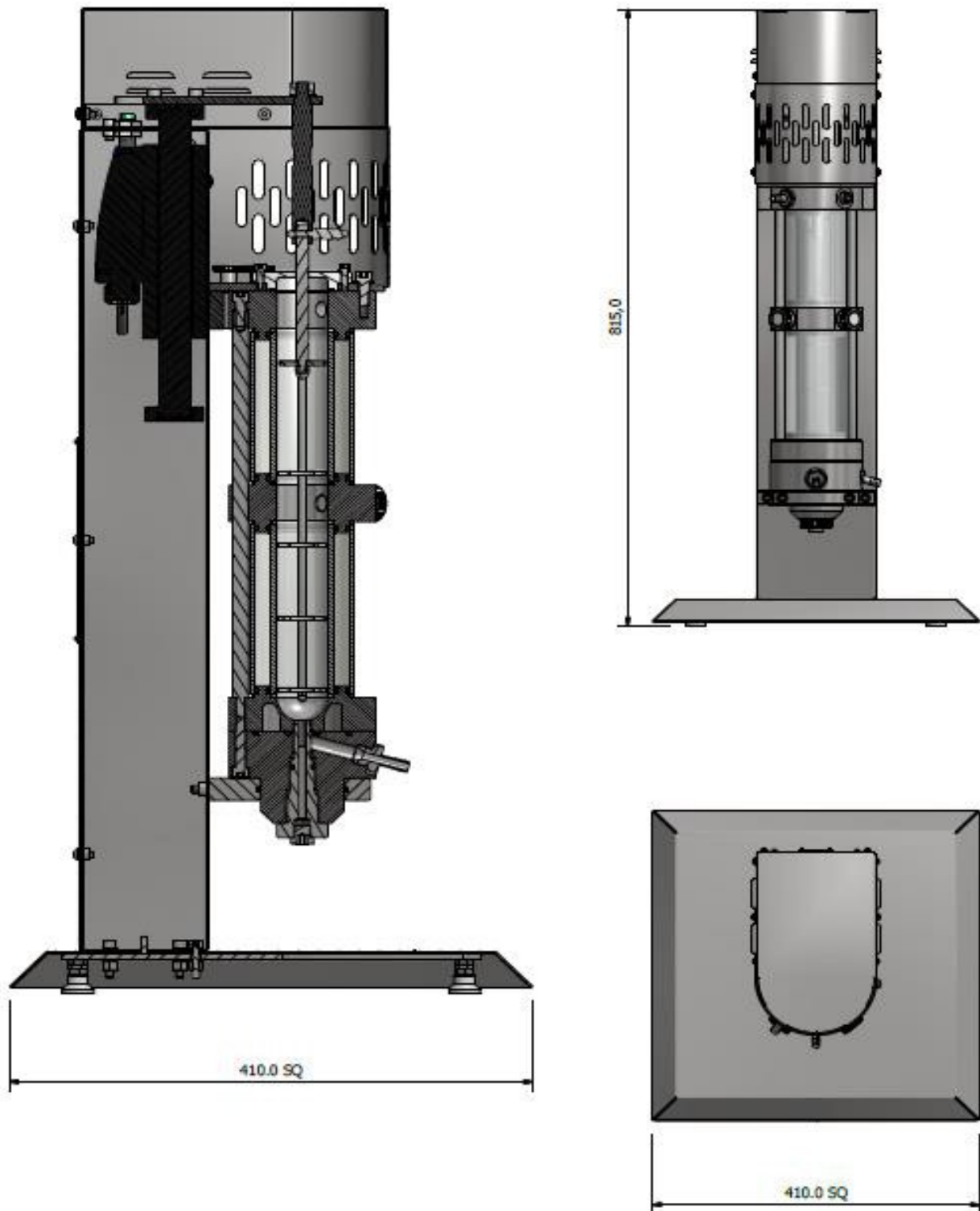


Figure 2: OBR40 General Arrangement

### Support Structure:

The reaction vessel is supported on a stainless-steel support structure. The rear stainless steel support structure encloses the drive mechanism and moving parts.

The vessel can easily be removed from the support structure for cleaning purposes.

### Drive System:

The drive system consists of a linear motor and controller, pre-programmed to allow the amplitude and frequency of the baffled agitator to be adjusted via the touch screen which is mounted on the control system cabinet.

The linear motor and all moving parts are built into the frame and enclosed behind the metal guard.

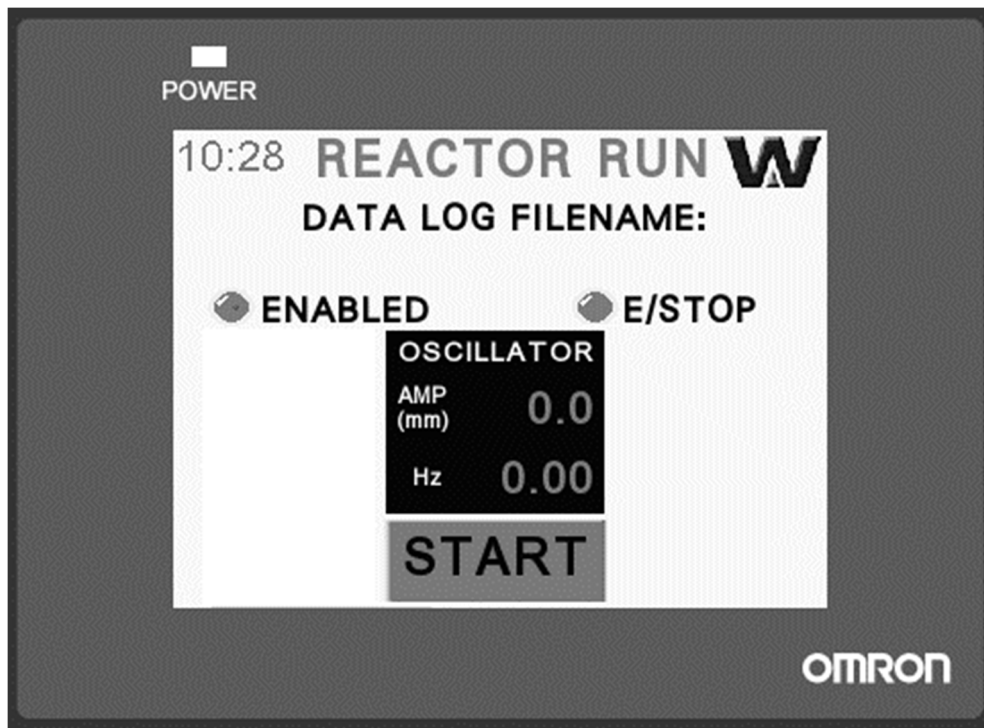
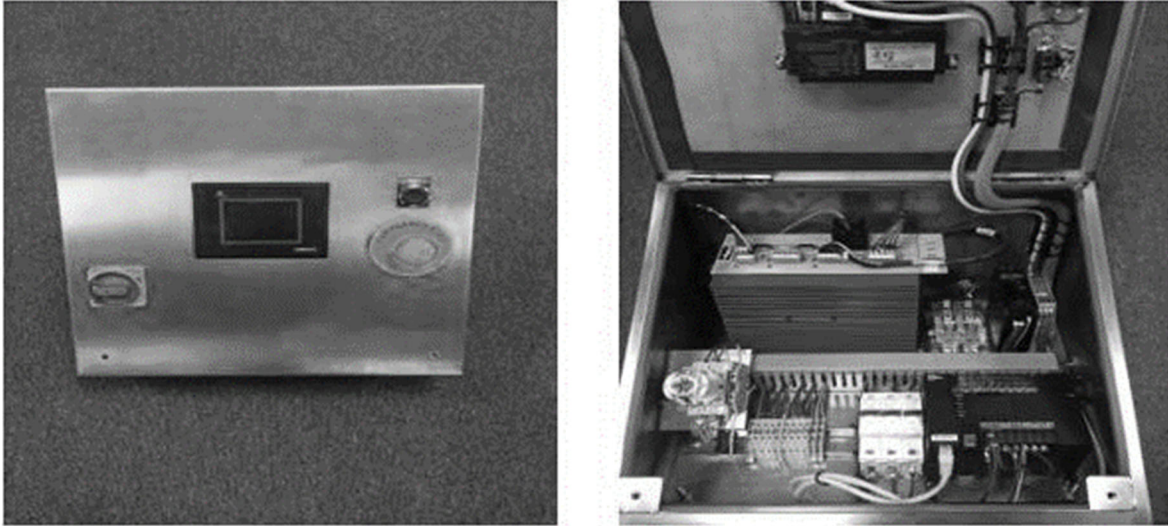


Figure 3: HMI Touchscreen Controls

### Control System:

The control system cabinet houses the PLC, drive controller, safety circuits (Emergency Stop) fuses and power isolator and an on-board touch screen to allow the control system to operate as a standalone unit without the need for an external laptop or PC.



*Figure 4: Control Panel*

### Electrical Specifications:

Supply: 1 phase, N and Bonded Earth, 230 Volts, 50Hz (alternative configurations are available on request).

The machine operating current is up to 10 Amps.

The supply to the control panel must be via an earthed mains connector. Temperature:  
The control system should be operated at an ambient temperature of between 0 and 50°C. (140°F).  
Storage should be within an ambient temperature range of 0 to 65 °C and a relative humidity range of 5 to 95% non-condensing.

### Documentation:

Each unit is supplied with one hard and one electronic copy of the documentation package which includes the following items:

- Operations and Maintenance Manual
- CE Declaration of Conformity
- General Arrangements and Parts Lists
- Electrical Schematic Drawings
- Proposal and Technical Specifications
- Safety Documentation

## Standards and Directives:

AWL's laboratory range of OBR's built as standard to meet the following directives:

EN 60204 – 1:2018  
Safety of Machinery - Electrical Equipment of machines.

EN 61000-6-4:2018  
Electromagnetic compatibility. Generic emissions standard for industrial environments

EN 61000-6-2:2016  
Electromagnetic compatibility. Generic immunity standards for industrial environments

## Options:

At or before the time of order the customer can choose from a range of options and extras including:

Increased operating temperatures Integrated feed pump.

Additional feed collars, process insertion points Bespoke feed collars to suit end user PAT.  
DCS control

Temperature-controlled transfers in/out Alternative materials of construction

## WHO WE ARE

Alconbury Weston Ltd (AWL) are at the forefront of the design, manufacture & supply of Continuous Processing Technologies & Systems.

We truly live and breathe inspiring innovation. In the past 8 years, we have taken the much-talked-about and highly anticipated continuous processing theories and turned them into a reality for use in the Chemical, Food and Pharmaceutical Industries today.

“The advance in technology is based on making it fit in so that you don't even really notice it”.

**Bill Gates**

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