Autoclave Engineers
Division of Snap-tite, Inc.

Autoclave Engineers
Providing Tools for Research and Industry

2,000 and 4,000 ml ZipperClave® Stirred Reactor

At a Glance

Volume:	2,000 ml or 4,000 ml
Vessel MAWP:	2,200 psi @ 450° F
(Design Pressure)	(151 Bar @ 232° C)
Material of Construction:	316 Stainless Steel or Hastelloy C-276

Principle of Operation

The Autoclave Engineers' ZipperClave® Reactor has been designed to provide the researcher with a reliable quick-opening closure. The main seal of the reactor is an O-ring available in many different materials. The 2,000 ml and 4,000 ml units are identical in design except for the depth of the reactor. Conversion kits are available between the two sizes. Many combinations of standard components are available. The cover of the unit remains fixed in the stand to permit opening of the vessel without disassembling any process connections. The body is easily removed and drops away from the cover.

General Specifications

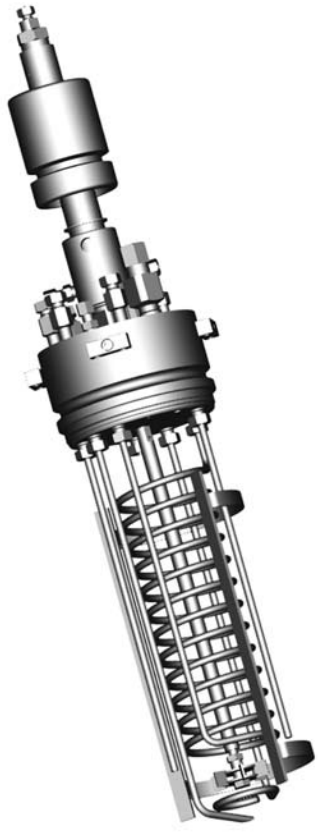
Maximum Allowable Working Pressure (MAWP)
2,200 psi @ 450° F*
(151 x Bar @ 232° C)*

Minimum Design Metal Temperature (MDMT)
-20° F @ 2,200 psi
(-29° C @ 151 Bar)

Maximum Recommended Operating Pressure (MROP)
Varies based on gage, transducer, and rupture disk selection. Refer to Ordering Guide for Details.

Critical Dimensions:	2,000 ml	4,000 ml
Inside Diameter:	5.0" (127 mm)	5.0" (127 mm)
Straight Wall:	6.06" (153 mm)	12.31" (312 mm)

Approximate Dimensions:	Floor Stand
Overall Height**:	59.4" (1508 mm)
Width:	30.0" (762 mm)
Depth:	38.0" (965 mm)



4,000 ml ZipperClave® Reactor Internals

* 450° F (232° C) rating is vessel mean wall temperature. Actual Process temperature will be lower.
** Overall height based on belt driven units. For actuals see standard drawings.

Stirred Reactors

2,000 and 4,000 ml ZipperClave® Stirred Reactors Connection Schedule

All of the connections shown are provided. For any accessories not ordered, the corresponding connection will be plugged. All connections (except safety head) are adapted from an AE high temperature F437 Flat Bottom connection to the "External" connection listed below.

Opening	Purpose	Internal	External	Location
"A"	Charging Port	3/8" Port	3/8" Tube	Cover Top
"B"	Gas Inlet	1/4" Tube	1/4" Tube	Cover Top
"C"	Sparge Tube	1/4" Tube	1/4" Tube	Cover Top
"D" & "H"	Cooling Coil (1/8 FNPT at cover)	1/4" Tube	1/4" Tube	Cover Top
"E"	Thermowell	1/4" Tube	None	Cover Top
"F"	Safety Head (F750FB at Cover)	None	3/8" FNPT	Cover Top
"G"	Vent and Pressure Indication	None	1/4" Tube	Cover Top
"J"	Blow Pipe	1/4" Tube	1/4" Tube	Cover Top
"K"	Liquid Sample	1/4" Tube	1/4" Tube	Cover Top
"L"	MagneDrive® Agitator	None	AE Special	Cover Top

Technical Specifications

Autoclave Engineers provides a variety of optional accessories to custom configure each reactor. See the ZipperClave® Stirred Reactor Ordering Guide to configure a reactor for a specific application.

Seal Materials: Buna-N, Ethylene-Propylene, PTFE, Viton®, Silicone, or Kalrez® O-rings.
Approvals: Optional CE Mark.
Stand: Floor Stand Only.
Body Lift: None or Manual Jack.
Agitator: MagneDrive® MAG075-01 Series with 7 in-lb (0.79 N-m) static torque, Purebon® (carbon graphite) bearings, or MagneDrive® MAG075-02 Series with 16 in-lb (1.8 N-m) static torque, Purebon® (carbon graphite) bearings.
Motors: 1/2 HP (0.37 KW) General Purpose DC with either: 90 V Armature (120 V unit), or 180 V Armature (240 V unit).
1/2 HP (0.37 KW) Explosion-Proof DC with either: 90 V Armature (120 V unit), or 180 V Armature (240 V unit).
Air Motor with manual or electric speed adjustment.
Impeller Styles: AE Dispersimax, Straight Turbine, Axial Flow-Up, or Axial Flow-Down; All 2.0 inch (50.8 mm) diameter.
Baffle: Two (2) blade spring loaded baffle bar (removable).
Speed Sensor: Magnetic Sensor General Purpose, or Intrinsically-Safe Magnetic Sensor (Barrier Required)
Heating: Furnaces: 120 VAC, Single Phase or 240 VAC, Single Phase; 2,000 ml- 1,500 Watt, 4,000 ml - 3,000 Watt.
Jacket: Removable, Spiral Baffled with O-ring Seals.

Internal Accessories Available:
Liquid Sample Tube,1/4" Valve
Blow Pipe, 1/4" Valve
Sparge Tube, 1/4" Valve
Cooling Coil, 1/4" Tube
Process Thermocouple, Type J or K

External Accessories Available:
Vent Valve,1/4" Valve
2.5" (63.5 mm) Dial Pressure Gage - Multiple ranges available
Pressure Transducers - Range Dependent on Gage
One or Two Gas Inlet, 1/4" Valves, Shared Connection
Catalyst Charging Valve, 3/8" Tube with 1/4" port
External Thermocouple, Type J or K
1/2" Port Manual Flush Valve

Supporting Information

Please refer to the following sections of the catalog for complimentary products and additional technical details.

- "ZipperClave® Stirred Reactor Ordering Guide" - Provides a step-by-step guide on how to configure the ZipperClave® Reactor to a specific application.
- " Instrumentation" - Details Autoclave Engineers' full line of control options for temperature, pressure, and speed.
- "Agitation" - Provides additional specifications on the MagneDrive® magnetic agitator and available impeller systems.
- "Pressure Vessels" - Provides details on the ZipperClave® vessel assembly.
- "Stirred Reactor Selection Guide" - Provides general information on all of Autoclave Engineers' stirred reactors.

[1] Viton® and Kalrez® are registered trademarks of DuPont Dow Elastomers.
[2] Purebon® is a registered trademark of Pure Carbon.

Autoclave Engineers
Division of Snap-tite, Inc.

8325 Hessinger Drive
Erie, Pennsylvania 16509-4679 USA
PH: 814-860-5700 FAX: 814-860-5811
email: aeclave_sales@snap-tite.com
www.autoclaveengineers.com

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