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100 & 300 ml

EZE-Seal Stirred Laboratory Reactor

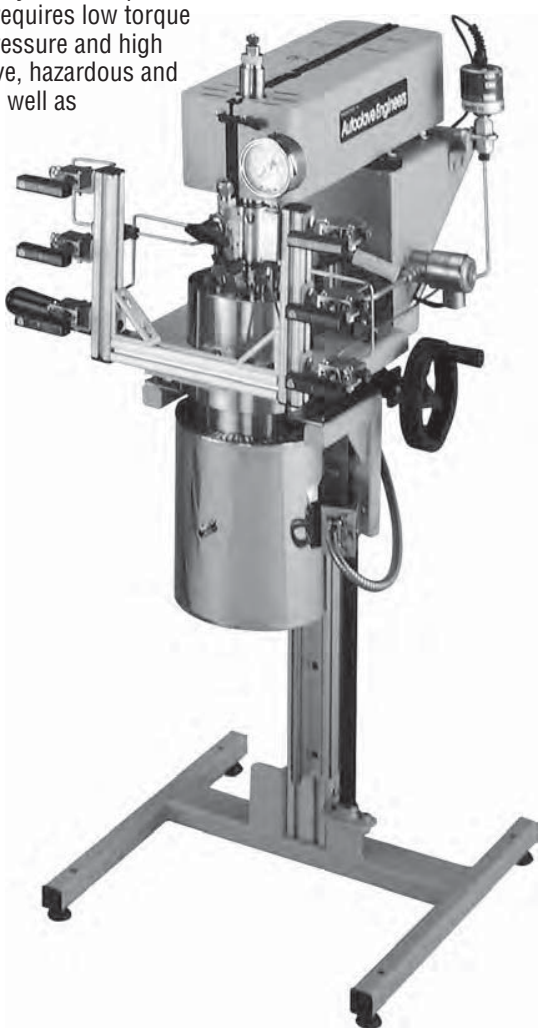
At a Glance

Volume: 100 ml & 300 ml

Material of Construction: 316 Stainless Steel & Hastelloy© C-276

Design Pressure: 3,300 psi @ 850° F
(227 bar @ 454°C)

Applications: The EZE-Seal® stirred laboratory reactor operates at high pressure and high temperature yet requires low torque for sealing. It offers easy access for high pressure and high temperature, chemical synthesis of corrosive, hazardous and very reactive chemicals / petrochemicals as well as solvothermal reactions.



Principle of Operation

The Parker Autoclave Engineers' EZE-Seal Reactor has been designed to provide the researcher with an interchangeable 2-piece vessel design. The 100 ml and the 300 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.

Features

- Versatile product configuration.
- Operating pressures as high as 2850 psi @ 850º F (196 bar @ 454º C)
- Open vessel and remove body without disassembling pressure connections
- Available worldwide to meet codes such as ASME, CE, CRN
- Interchangeable bodies, 100 and 300 ml

General Specifications

Design Pressure
3,300 psi @ 850° F* (227 Bar @ 454° C)*

Minimum Design Metal Temperature (MDMT)
-20° F @ 3,300 psi (-29° C @ 227 Bar)

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

Critical Dimensions:	**100 ml**	**300 ml**
Inside Diameter:	1.81" (46mm)	1.81" (46 mm)
Straight Wall:	2.75" (70 mm)	6.69" (170 mm)
Approximate Dimensions:	**Short Bench Top**	**Tall Bench Top**
Overall Height**	34.4" (874 mm)	38.7" (988 mm)
Width:	16.0" (406 mm)	16.0" (406 mm)
Depth:	26.3" (667 mm)	26.3" (667 mm)

* 850° F (454° 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.

300 ml EZE-Seal Reactor Internals

Connection Schedule

All of the connections shown will be provided. For any accessories not ordered, the corresponding connection will be plugged. All connections at cover are AE high temperature F437 Flat Bottom adapted to the "Topside Of Cover" connection listed below.

Opening Label	Purpose	Internal	External	Location
A	Charging Port	0.19" port	3/8" O.D. Tube	Cover Top
B	Gas Inlet	None	1/8" O.D. Tube	Cover
C	Blow Pipe or Sparge Tube	1/8" O.D. tube	1/8" O.D. Tube	Cover
D & H	Cooling Coil	1/8" O.D. tube	1/8" FNPT	Cover
E	Vent and Pressure Indication	None	1/8" O.D. Tube	Cover
F	Safety Head	None	1/8" FNPT	Cover Top
G	Thermowell	1/8" O.D. tube	0.062" port	Cover Top
J	Liquid Sample	1/8" O.D. tube	1/8" O.D. Tube	Cover
K	MagneDrive® Agitator	None	AE Special	Cover Top

Technical Specifications

Parker Autoclave Engineers provides a variety of optional accessories to custom configure each reactor. See the EZE-Seal Stirred Reactor Ordering Guide to configure a reactor for a specific application.

Seal Materials: Metal Gasket (vessel material, silver plated), Buna-N, Ethylene-Propylene, PTFE, Viton®, Silicone or Kalrez® O-rings

Approvals: Optional ASME code stamp, Canadian Registration or CE Mark

Stand: Short Bench Top or Tall Bench Top (adds 4.25", 108 mm)

Body Lift: None or Manual Jack

Agitator: MagneDrive® Model MAG075-01 Series with 7 in-lb (0.79 N-m) of static torque, MagneDrive® Model MAG075-02 Series with 16 in-lb (1.8 N-m) of static torque, Purebon® (Carbon Graphite) bearings or Fluoropolymer with graphite fiber.

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 electronic speed adjustment.

Impeller Styles: AE Dispersimax, Straight Turbine, Axial Flow -Up, or Axial Flow -Down; All 7/8" (22.2 mm) diameter.

Baffle: One (1) Single Blade Baffle attached to the top cover is included.

Speed Sensor: Magnetic Sensor, General Purpose or Intrinsically -Safe (Barrier Required).

Heating: Furnaces: 120 VAC, Single Phase or 240 VAC, Single Phase; 1,200 Watt. Jacket: Removable, Spiral Baffle with O-Ring Seals.

Internal Accessories Available:

Liquid Sample Tube, 1/8" Valve
Blow Pipe, 1/8" Valve
Sparge Tube, 1/8" Valve
Cooling Coil, 1/8" Tube
Process Thermocouple, Type J or K

External Accessories Available:

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

Supporting Information

The following Engineering drawings are available upon request from Autoclave Engineers for more detailed technical information.

Drawing Number 40A-8362 - Bench Top/Light Floor Motor Options (Air and DC motors)
Drawing Number 30B-0792 - Belt Drive Assembly (AC Motor)
Drawing Number 30A-9638 - Manual Screw Jack Assembly

Drawings				Drawing Title
316 Stainless Steel		Hastelloy® C-276		
100 ml	300 ml	100 ml	300 ml	
40A-8337	40A-8336	40A-8671	40A-8681	General Arrangement
	40A-8120		40A-8668	Reactor Assembly
30A-9605		30B-0382		MagneDrive Assembly
30A-9640		30B-0479		Valve Arrangement

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

- "***Instrumentation***" - Details Parker Autoclave Engineers' full line of control options for temperature, pressure, and speed.
- "***Agitation***" - Provides additional specifications on the MagneDrive® magnetic agitator as well as available impeller systems.
- "***Pressure Vessels***" - Provides details on the EZE-Seal Vessel Assembly.
- "***Stirred Reactor Selection Guide***" - Provides general information on all of Parker Autoclave Engineers' stirred reactors.

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

Ordering Guide

Base Reactor	A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W

Part Number Example: **E010SSA0010A101A002121E1101X** *(See chart below)*

Base Reactor	
E010	100 ml EZE-Seal Closure
E030	300 ml EZE-Seal Closure
A A - Vessel Material	
SS	316 Stainless Steel
HC	Hastelloy C-276
B - Seal Material	
► A	Metal Gasket, 850° F (454° C)*
B	Buna-N O-ring, 250° F (121° C)*
C	EPR O-ring, 300° F (149° C)*
D	PTFE O-ring, 400° F (204° C)*
E	Viton® O-ring, 450° F (232° C)*
F	Silicone O-ring, 400° F (204° C)*
G	Kalrez® O-ring, 500° F (260° C)*
C - Flush Valve	
► 0	None
2	Body Bottom Connection
D - Approvals Available	
► 0	None Required
1	ASME Code Stamp
2	CE Marking including PED
3	Canadian Registration
E - Stand	
0	None
► 1	Short Bench Top
2	Tall Bench Top
F - Body Lift Mechanism	
► 0	None
1	Manual Jack
2	Manual Jack - CE
G - MagneDrive Agitator	
X	No MagneDrive
A	MAG07501
C	MAG07502
F	MAG07501 (100 ml Disperimax Only)
H - Bearings	
0	No Bearings
► 1	Carbon Graphite
2	Fluoropolymer w/Graphite Fiber**
I - Speed Sensors	
► 0	None
1	General Purpose
2	Intrinsically-Safe
J - Motor/Belt Guard/Brackets	
0	None
► 1	90 VDC General Purpose
2	180 VDC General Purpose
3	90 VDC XP, Non-CE
4	180 VDC XP, Non-CE
5	Air, Manual Speed Adjust
6	Air, Automatic Speed Adjust
K - Impellers/Shaft/Baffles	
X	No Impeller
► A	AE Dispersimax
B	Turbine
C	Axial-Up
D	Axial - Down
L - Liquid Sample	
► 0	None, Plugged Connection
1	Sample Tube Only
2	Sample Tube with Manual Valve
5	Sample Tube with Filter + Valve

M - Blow Pipe	
► 0	None, Plugged Connection
1	Blow Pipe Only
2	Blow Pipe with Manual Valve
N - Sparge Tube	
0	None, Plugged Connection
1	Sparge Tube Only
► 2	Sparge Tube with Manual Valve
O - Cooling Coil	
0	None, Plugged Connection
► 1	Cooling Coil Only
2	Cooling Coil w/ Manual Valve
3	Cooling Coil w/120 V Solenoid Valve
4	Cooling Coil w/240 V Solenoid Valve
P - Process Thermocouple	
0	None, Plugged Connection
1	Thermowell Only
► 2	Thermowell w/Type "K" T/C
3	Thermowell w/Type "J" T/C
Q - Vent Valve	
0	None, Plugged Connection
► 1	Vent with Manual Valve
R - Pressure Gauge/Transducer	
A	600 psi Gauge Only, (450 psi MOP)+
B	1,000 psi Gauge Only, (750 psi MOP)+
C	2,000 psi Gauge Only, (1,500 psi MOP)+
D	3,000 psi Gauge Only, (2,250 psi MOP)+
► E	5,000 psi Gauge Only, (2,850 psi MOP)+
G	600 psi Gauge/Transducer, (450 psi MOP)+
H	1,000 psi Gauge/Transducer, (750 psi MOP)+
J	2,000 psi Gauge/Transducer, (1,500 psi MOP)+
K	3,000 psi Gauge/Transducer, (2,250 psi MOP)+
L	5,000 psi Gauge/Transducer, (2,850 psi MOP)+
M	7,500 psi Gauge/Transducer, (4,740 psi MOP)+
N	600 psi Gauge/Transducer, (450 psi MOP)+
► P	1,000 psi Gauge/Transducer, (750 psi MOP)+
Q	2,000 psi Gauge/Transducer, (1,500 psi MOP)+
R	3,000 psi Gauge/Transducer, (2,250 psi MOP)+
S	5,000 psi Gauge/Transducer, (3,870 psi MOP)+
S - Heating/Cooling	
0	None
1	120 VAC Furnace
► 2	240 VAC Furnace
3	120 VAC Purgeable Furnace
4	240 VAC Purgeable Furnace
5	Baffled Removable Jacket
T - Gas Inlet	
0	None, Plugged Connection
1	Gas Inlet w/ Manual Valve
2	Gas Inlet w/ Two Manual Valves
U - Charging Port	
0	None
► 1	3/8" Manual Valve
2	3/8" Manual Valve & 8 ml Charging Cartridge
3	3/8" Manual Valve & 20 ml Charging Cartridge
4	Reflux Condensor
V - External Thermocouple	
0	None
1	Type K
2	Type J
W - Tool Kit	
X	None
T	Tool Kit

► *Standard Equipment Included* * *Temperature limits are suggested. Actual performance will vary with chemical compatibility* ** *Carbon Graphite Cover Bearing*

+ *MOP = Maximum Operating Pressure*

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