The World Leading Provider of High Pressure Equipment for Research and Industry since 1945!

100 & 300 ml

Bolted Closure Stirred Laboratory Reactor

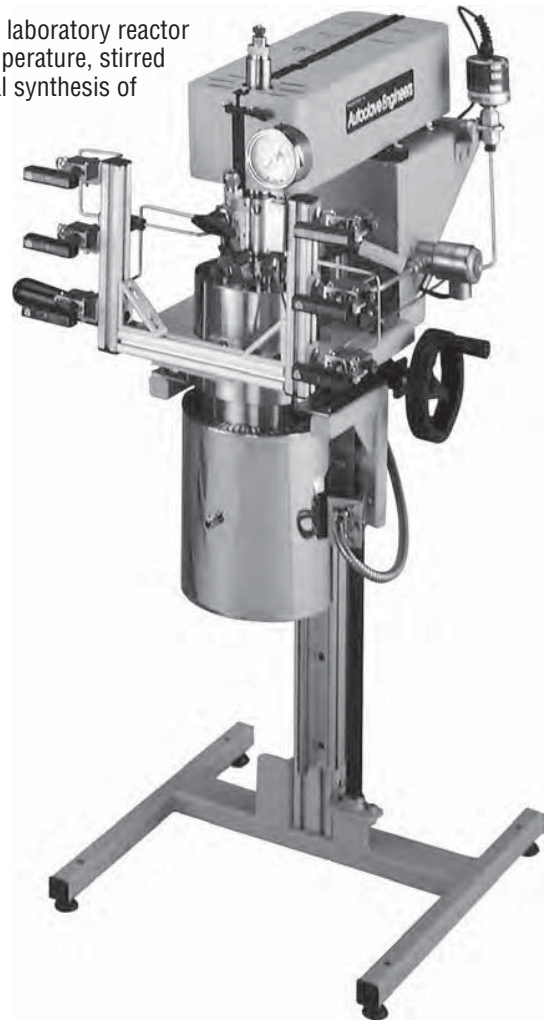
At a Glance

Volume: 100 ml & 300 ml

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

Design Pressure: 5,500 psi @ 650° F
(379 bar @ 343°C)

Applications: The bolted closure stirred laboratory reactor is a versatile high pressure and high temperature, stirred laboratory reactor. It is used for chemical synthesis of corrosive, hazardous and very reactive chemicals / petrochemicals as well as materials research.



Principle of Operation

The Parker Autoclave Engineers' Bolted Closure Reactor has been designed for reliable high pressure operation. The seal is a metal gasket machined from the same material as the vessel. 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 4740 psi @ 650º F (327 bar @ 343º C)
- Open vessel and remove body without disassembling pressure connections
- Available worldwide to meet codes such as ASME, CE, and CRN.

General Specifications

Design Pressure
5,500 psi @ 650° F* (379 Bar @ 343° C)*

Minimum Design Metal Temperature (MDMT)
-20° F @ 5,500 psi (-29° C @ 379 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**	34.8" (883 mm)	39.4" (1002 mm)
Width:	20.5" (522 mm)	20.5" (522 mm)
Depth:	26.2" (665 mm)	26.2" (665 mm)

* 650° F (343° 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 Bolted Closure Reactor Internals

Connection Schedule

All of the connections shown will be provided. For any accessories not ordered, the corresponding connection will be plugged.

Opening Label	Purpose	Opening or feature description on underside of cover	Opening or feature description on topside of cover	Entry Point	Smallest diameter orifice (nominal) in flow path
A	Charging Port	0.161" port	3/8" O.D. Tube	Cover Top	0.161"
B	Gas Inlet	Branched into **A**	1/8" O.D. Tube	Cover Side	0.062"
C	Blow Pipe or Sparge Tube†	1/8" O.D. tube	1/8" O.D. Tube	Cover Side	0.062" 0.031"†
D & H	Cooling Coil	1/8" O.D. tube	1/4" O.D. Tube	Cover Side	0.062"
E	Vent and Pressure Indication	Branched into **F**	1/8" O.D. Tube	Cover Side	0.062"
F	Safety Head	0.161" port	1/8" FNPT	Cover Top	0.161"
G	Thermowell‡	1/8" O.D. tube	3/32"Port‡	Cover Top	N/A
J	Liquid Sample or Sparge Tube†	1/8" O.D. tube	1/8" O.D. Tube	Cover Side	0.062" 0.031"†
K	MagneDrive® Agitator	1/2" O.D. Mixing Shaft	MagneDrive®	Cover Top	N/A

† The tube that forms the sparge tube is 1/8" O.D. and 1/16" I.D. with a plug in the end. Nine .031" diameter holes are drilled in the sparge ring to bubble gas into the reactor.

‡ The tube that forms the thermowell is 1/8" O.D. and 1/16" I.D. with a plug in the end. A 3/32" port is drilled in the cover to guide the thermocouple to the opening in the thermowell.

Technical Specifications

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

Seal Materials: Metal Gasket (vessel material), 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

Body Lift: None or Manual Jack

Agitator: 3300 RPM rated MagneDrive® MAG075-01 Series with 7 in-lb (0.79 N-m) static torque. 3300 RPM rated MagneDrive® MAG075-02 Series with 16 in-lb (1.8 N-m) static torque, 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) CE Mark. 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 (Supply with 35 SCFM of 40 psi compressed air minimum).

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

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

Speed Sensor: General Purpose or Intrinsically-Safe Magnetic Sensor (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 w or w/o valve (1/8" O.D. tube)
Blow pipe w or w/o valve (1/8" O.D. tube)
Sparge tube w or w/o valve (1/8" O.D. tube)
Cooling coil w or w/o valve (1/8" O.D. tube)
Process Thermocouple, Type J or K

External Accessories Available:
Vent Valve (1/8" O.D. tube)
2.5" (63.5mm) Dial Pressure Gauge - (Multiple ranges available)
Pressure transducers - range dependent on gauge
Inlet valves, (1/8" O.D. tube) either one or two on a shared connection
Catalyst charging valve 3/8" O.D. tube, 1/4" full bore opening
External thermocouple type J or K
Bottom port 3/16" (centered AE F437FB connection)

Supporting Information

The following Engineering drawings are available upon request from Parker 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		
100ml	300ml	100ml	300ml	
40C-0525	40A-8545	40C-0439	40A-8684	Bench Top Bolted Closure General Arrangement
	40A-8521		40A-8636	Bolted Closure Reactor
30A-9605	30A-9605	30B-0382	30A-0382	MAG 075 MagneDrive® Assembly
30A-9640	30A-9640	30B-0479	30A-0479	1/8" Valve Rack

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HASTELLOY® is a registered trademark of Haynes International Inc. Kokomo, IN

Note: Parker Autoclave Engineers, division of Snap-tite, Inc. reserves the right to substitute an equivalent material for trademarked material. Autoclave Engineers purchases substitute materials based on specification conformance, typically a widely accepted specification created by an industry standards organization.

Please refer to the following sections of the catalog for complimentary products and additional technical details. If your catalog is incomplete or out-of-date, feel free to register your name and download literature from Parker Autoclave Engineers web site. A good starting point is **www.autoclaveengineers.com** to reach the main page of Parker Autoclave Engineers reactor products.

Instrumentation - Details Parker 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 Bolted Closure vessel assembly.

Stirred Reactor Selection Guide - Provides general information on all of Parker Autoclave Engineers' stirred reactors

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: **B010SSA0010A101A002121E1101X** *(See chart below)*

Base Reactor	
B010	100 ml Bolted Closure
B030	300 ml Bolted Closure

A - Vessel Material	
SS	316 Stainless Steel
HC	Hastelloy C-276

B - Seal Material	
▶ A	Metal Gasket, 650° F (343° 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
1	Body Bottom Connection

D - Approvals Available	
▶ 0	None Required
1	ASME Code Stamp
2	CE Marking and 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 - 1/2 HP
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 w/ Manual Valve
5	Sample Tube w/Filter + Valve

M - Blow Pipe	
▶ 0	None, Plugged Connection
1	Blow Pipe Only
2	Blow Pipe w/ 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, (3,870 psi MOP)+
F	7,500 psi Gauge Only, (4,740 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, (3,870 psi MOP)+
M	7,500 psi Gauge/Transducer, (4,740 psi MOP)+
N	600 psi Gauge/IS Transducer, (450 psi MOP)+
P	1,000 psi Gauge/IS Transducer, (750 psi MOP)+
Q	2,000 psi Gauge/IS Transducer, (1,500 psi MOP)+
R	3,000 psi Gauge/IS Transducer, (2,250 psi MOP)+
S	5,000 psi Gauge/IS Transducer, (3,870 psi MOP)+
T	7,500 psi Gauge/IS Transducer, (4,740 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* * *Carbon Graphite Cover Bearing* *MOP = Maximum Operating Pressure*

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Parker Autoclave Engineers

信德迈科技(北京)有限公司 CNMEC Technology
地址：北京市朝阳区望京SOHO-T1-C座2115室
邮编：100102
*Tel: 010-8428 2935 | * Fax: 010-8428 8762
*手机：139 1096 2635
*电子邮件： sales@cnmec.biz
主页：http://www.cnmec.biz

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