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

Mini-Reactor

25, 50, 100 and 150 ml

At a Glance

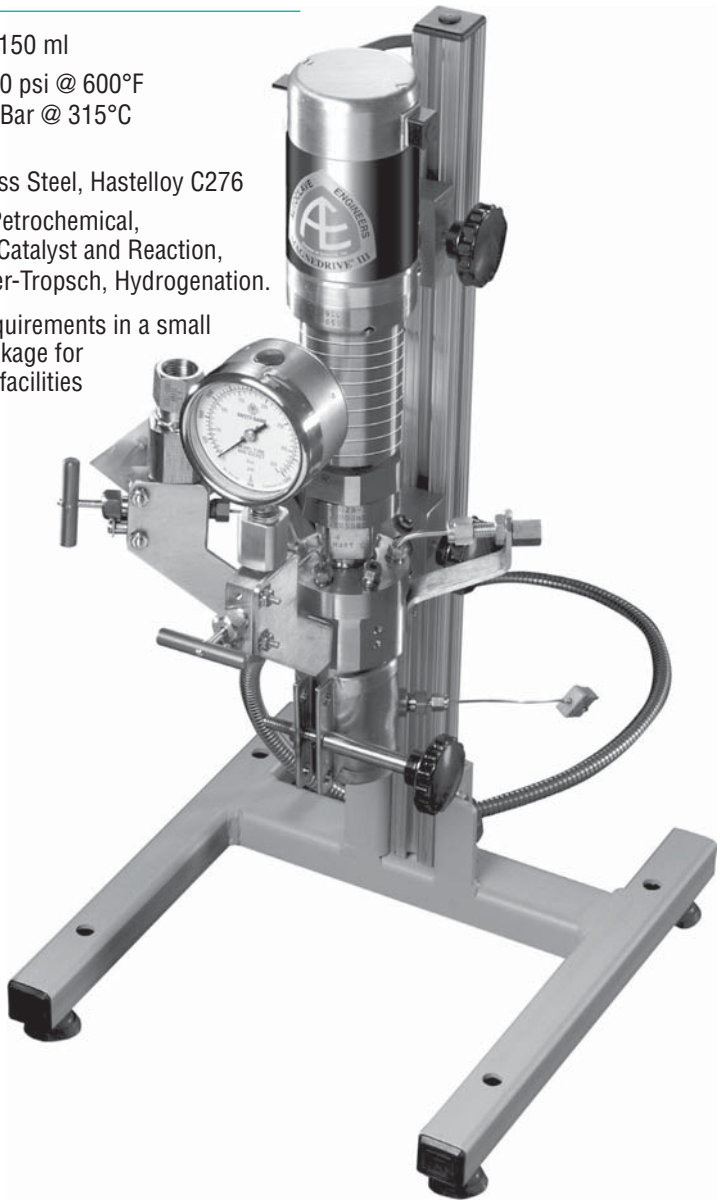
Volume: 25, 50, 100 and 150 ml

Operating Pressure: 3,000 psi @ 600°F
207 Bar @ 315°C

Material of Construction: 316 Stainless Steel, Hastelloy C276

Applications: Chemical, Petrochemical, Environmental including: Catalyst and Reaction, Kinetics Screening, Fischer-Tropsch, Hydrogenation.

Facilitating tomorrows requirements in a small proven stirred reactor package for **University** and **Research** facilities the world over.



Principle of Operation

The Parker Autoclave Engineers' Mini-Reactor is a highly capable design incorporating all features found in a full size laboratory reactor at reduced internal volumes. The low cost of full features makes the Mini-Reactor ideal for parallel studies. Lower volume reduces both reactant requirements and disposal costs. A smaller foot print reduces costly laboratory and fume hood requirements.

The 25, 50, 100 and 150 ml volumes share the same closure geometry and are interchangeable. The elastomer seal allows the Mini-Reactor to achieve high pressure with a finger-tight seal mechanism.

General Specifications

Critical Dimensions:

	25 ml	50 ml	100 ml	150 ml
Inside Diameter:	1.13" (28 mm)	1.38" (35 mm)	1.38" (35 mm)	1.63" (41 mm)
Inside Length:	2.03" (51 mm)	2.41" (61 mm)	4.66" (118 mm)	4.66" (118 mm)

Approximate Dimensions:

	1/25 Hp Motor	1/10 Hp Motor
Overall Height:	22" (553 mm)	24" (598 mm)
Width:	10" (254 mm)	10" (254 mm)
Depth:	12.25"(311 mm)	12.25" (311 mm)

** 600°F (315°C) rating is mean wall temperature. Actual process temperature will be lower. Temperature rating is dictated by the O-ring seal selected. See the Ordering Guide for details.*

The Mini-Reactor uses Parker Autoclave Engineers Mini-Valve Series and Tubing

MAGNEDRIVE III AGITATOR

• In-Line motor eliminates belts, reduces size, and creates nearly silent operation. • Compact design with up to 5 in-lb (565 N-mm) of static torque. • Designed for simple disassembly and maintenance. Bearings can be changed in seconds from top or bottom

Connection Schedule

All of the connections indicated below will be provided. If any accessory is not ordered, the corresponding connection will be plugged.

Opening	Purpose	External	Location
A	Pressure Gauge/Gas Inlet	SW125	Cover
B	Safety Head /Vent	SW125	Cover
C & **E**	Cooling Coil	SW125 Adapted to 1/4" FNPT	Cover
D	Thermocouple	SW125	Cover
F	Pressure Transducer/Blow Pipe/ Liquid Sample	SW125	Cover
G	Process	SW125	Body Bottom

Technical Specifications

Parker Autoclave Engineers provides a variety of optional accessories to custom configure your reactor. *See the Mini-Reactor Ordering Guide on the back cover to configure a reactor for your specific application.*

Seal Materials: Buna-N, EPR, PTFE Encapsulated Viton®, Viton® Silicone, Kalrez®, Chemraz®
Approvals: ASME Code Stamp, CE Mark, Canadian Registration
Stand: Bench Top
Body Lift: Not required
Agitator: MagneDrive® III agitator with 5 in-lbs of static torque.
Motors: 1/25 Hp DC variable speed or 1/10 Hp DC variable speed
Impeller Styles: AE Dispersimax® & Turbine (6-blade), Axial up & Axial down (4-blade)
Speed Sensor: General Purpose

Heating:	25 ml	50 ml	100 ml	150 ml
120V or 240V Electric Furnace:	200 Watt	200 Watt	400 Watt	400 Watt

Jacket: Removable, baffled with Viton® O-ring seals and 1/8" NPT connections.

Internal Accessories

Liquid Sample Tube with Filter, 1/8" valve
Blow Pipe, 1/8" valve
Cooling Coil
Process Thermocouple Type J or K

External Accessories

Gas Inlet, 1/8" valve
Vent Valve, 1/8"
2.5" (63.5 mm) Dial Pressure Gauge - Multiple ranges available.
Pressure Transducer - range dependent on gauge.
External Thermocouple Type J or K

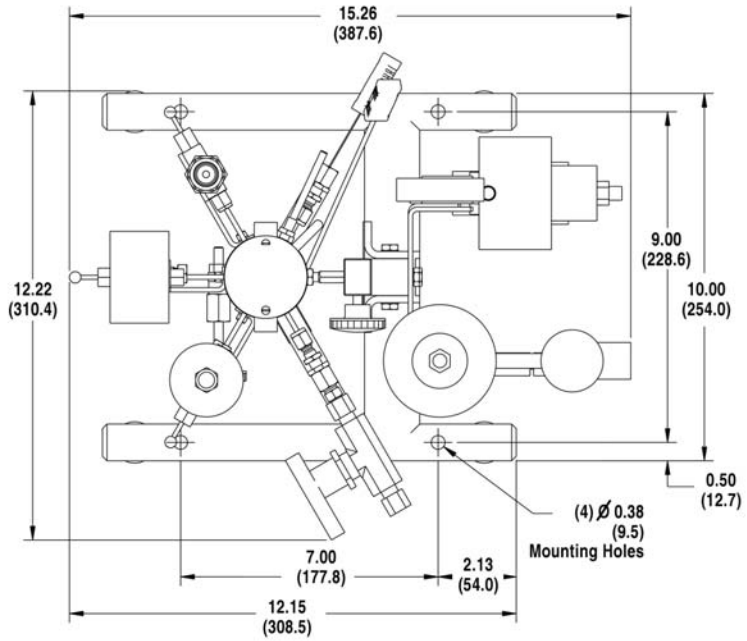
Supporting Information

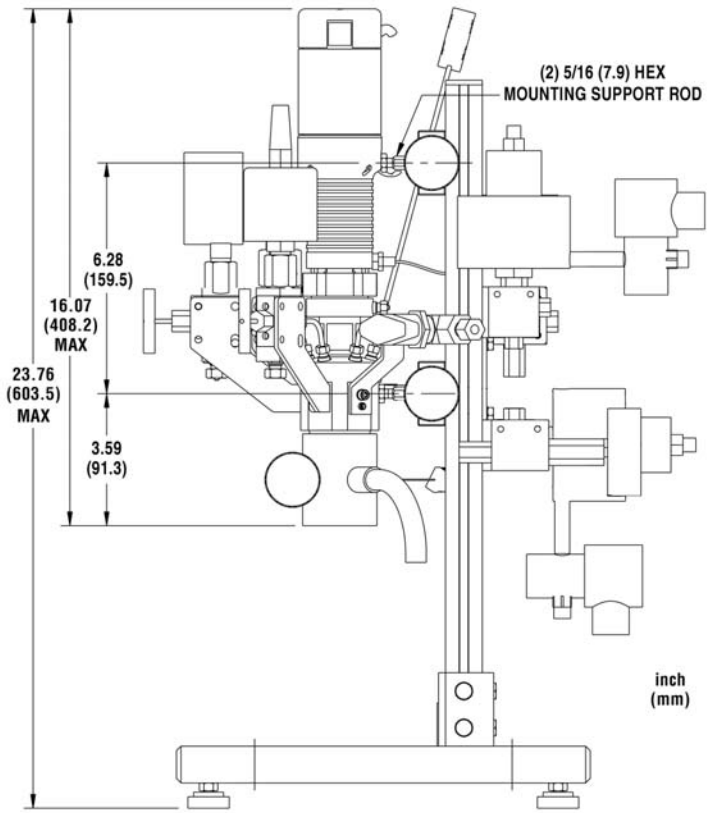
Drawing Details

Please refer to the following sections of the catalog for complimentary products and additional technical details. *See the Mini-Reactor Ordering Guide on the back cover to configure a reactor for your specific application.*

Mini-Reactor Drawings

316 Stainless Steel		Hastelloy C	
25 ml	Dwg. 40A-9939	**25 ml**	Dwg. 40A- 9940
50 ml	Dwg. 40A- 9752	**50 ml**	Dwg. 40A- 9824
100 ml	Dwg. 40A- 9753	**100 ml**	Dwg. 40A- 9825
150 ml	Dwg. 40C-0356	**150 ml**	Dwg. 40A- 9824





Ordering Guide

Volume	Pressure Vessel	MagneDrive	Internal Accessories	External Accessories
M_ _ _ _ _ -	_ _ _ _ _ _ -	_ _ _ _ _ _ -	_ _ _ _ _ _ -	_ _ _ _ _ _ _
AA	BCDEF	GHJKL	MNOPQ	RSTUVW

Part Number Example: **M002SS-B3101-E128A-31012-21D102** *(See chart below)*

NOTES:

1. HASTELLOY® is a registered trademark of Haynes International Inc.
2. Temperature limits are suggested. Actual performance will vary with chemical compatibility.
3. Viton® and Kalrez® are registered trademarks of DuPont Dow Elastomers.
4. Chemraz® is a registered trademark of Greene, Tweed.
5. Purebon® is a registered trademark of Morgan AM & T Inc.
6. Fluoropolymer bearings have a maximum recommended service temperature of 500°F (260°C).

Standard Equipment Included

* *Temperature limits are suggested. Actual performance will vary.*
** *Choose either sample tube or blow pipe.*
\+ *MROP may be further reduced by temperature and number of cycles.*

! WARNING !

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met. The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request).

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Base Reactors	
M002	25ml Mini-Reactor
M005	50ml Mini-Reactor
M010	100ml Mini-Reactor
M015	150ml Mini-Reactor

A - Vessel Material	
SS	316 Stainless Steel
HC	Hastelloy®1 C-276

B - Seal Material *	
▸ B	Buna-N O-ring *(Max. Temp. 250°F / 121°C)*
C	Ethylene-Propylene O-ring *(Max. Temp. 300°F / 149°C)*
D	PTFE (PTFE Encapsulated Viton®) *(Max. Temp. 450°F / 232°C)*
E	Viton® [3] *(Max. Temp. 450°F / 232°C)*
F	Silicone *(Max. Temp. 400°F / 204°C)*
G	Kalrez® [3] *(Max. Temp. 600°F / 315°C)*
H	Chemraz® [4] *(Max. Temp. 600°F / 315°C)*

C - Body Bottom	
▸ 0	None (No Connection)
3	1/8" SpeedBite

D - Approvals Available	
▸ 0	None Required
1	ASME Code Stamp
2	CE Mark and PED
3	Canadian Registration

E - Stand	
0	None
▸ 1	Bench Top

F - Body Lift Mechanism	
▸ 0	None

G - MagnaDrive Agitator	
▸ E	In-Line MagenDrive® III

H - Bearings	
▸ 1	Purebon [5]
2	Fluoropolymer with Graphite Fiber [6]

J - Speed Sensors	
▸ 0	None
1	General Purpose Hall Effect

K - Motor	
▸ 8	DC 1/25 Hp
9	DC 1/10 Hp

L - Impellers/Shaft/Baffles	
▸ A	Dispersimax® (6 blades)
B	Turbine (6 blades)
C	Axial-Up (4 blades)
D	Axial-Down (4 blades)
G	Robinson-Mahoney Catalytic Internals

M - Liquid Sample **	
▸ 0	None, Plugged Connection
1	Sample Tube Only
2	Sample Tube with Manual Valve
3	Sample Tube with Manual Valve and Filter

N - Blow Pipe**	
▸ 0	None, Plugged Connection
1	Blow Pipe Only
2	Blow Pipe with Manual Ball Valve

O - Sparge Tube	
▸ 0	None

P - Cooling Coil	
▸ 0	None, Plugged Connection
1	Cooling Coil Only
2	Cooling Coil with Manual Ball Valve
3	Cooling Coil with 120 Volt Solenoid Valve
4	Cooling Coil with 220 Volt Solenoid Valve

Q - Process Thermocouple	
0	None, Plugged Connection
▸ 2	Type "K" T/C
3	Type "J" T/C

R - Vent Valve	
0	None, Plugged Connection
▸ 1	Vent with Manual Ball Valve
4	Back Pressure - Digital (120 VAC)
5	Back Pressure - Digital (240 VAC)

S - Pressure Gauge/Transducer +	
A	0-600 psi Gauge (450 psi)
B	0-1,000 psi Gauge (750 psi)
C	0-2,000 psi Gauge (1,500 psi)
D	0-3,000 psi Gauge (2,250 psi)
▸ E	0-5,000 psi Gauge (2,500 psi)
G	0-600 psi Gauge & 1kpsi Transducer (450 psi)
H	0-1,000 psi Gauge & 1kpsi Transducer 750 psi)
J	0-2,000 psi Gauge & 3kpsi Transducer (1,500 psi)
K	0-3,000 psi Gauge & Transducer (2,250 psi)
L	0-5,000 psi Gauge & Transducer (2,500 psi)

T - Heating/Cooling	
0	None
▸ 1	120 VAC Furnace
2	220 VAC Furnace
5	Baffled Removable Jacket

U - Gas Inlet	
0	None, Plugged Connection
▸ 1	Gas Inlet with Manual Valve
4	Forward Pressure - Digital (120 VAC)
5	Forward Pressure - Digital (240 VAC)

V - Charging Valve	
▸ 0	None, Plugged Connection

W - External Thermocouple	
0	None
▸ 1	Type "K"
2	Type "J"

Parker Autoclave Engineers

CE

ISO-9001 Certified

Bulletin SR-MR-25/50/100/150

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