

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

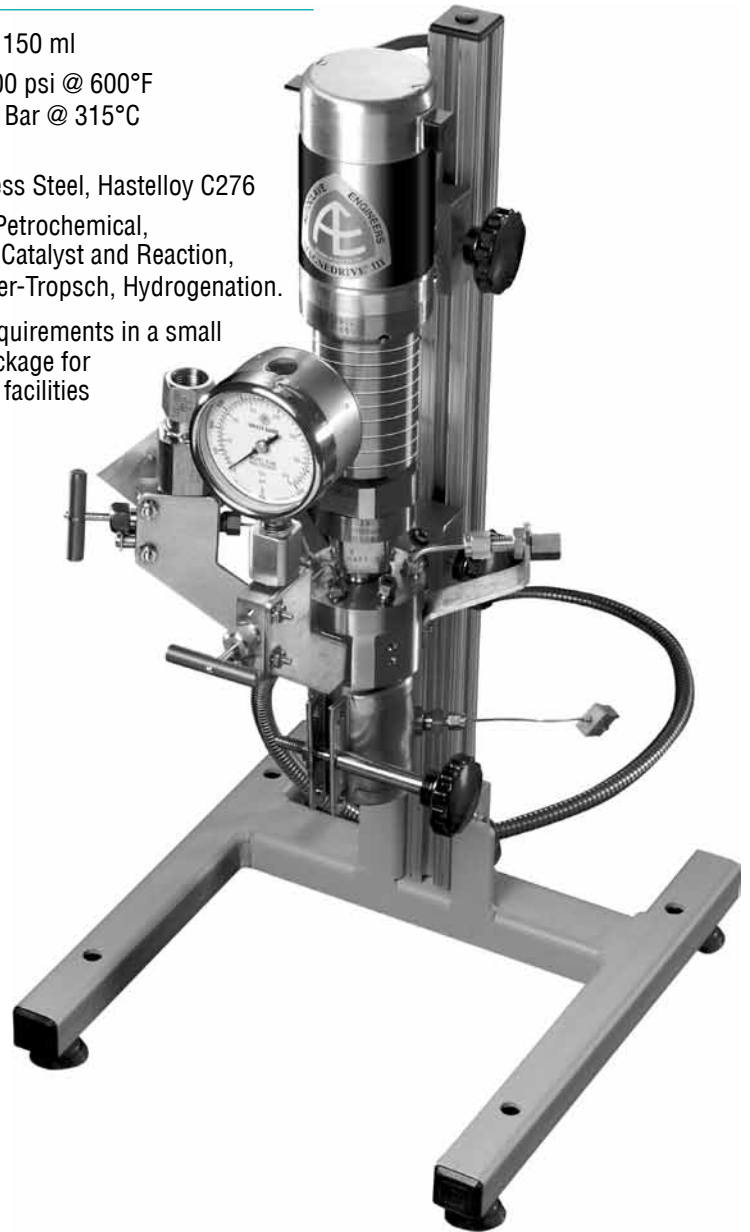
Volume: 25, 50, 100 and 150 ml

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.



Autoclave Engineers 

Division of Snap-tite, Inc.

Principle of Operation

The 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 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-m) 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

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

Technical Specifications

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

25 ml Dwg. 40A-9939

50 ml Dwg. 40A- 9752

100 ml Dwg. 40A- 9753

150 ml Dwg. 40C-0356

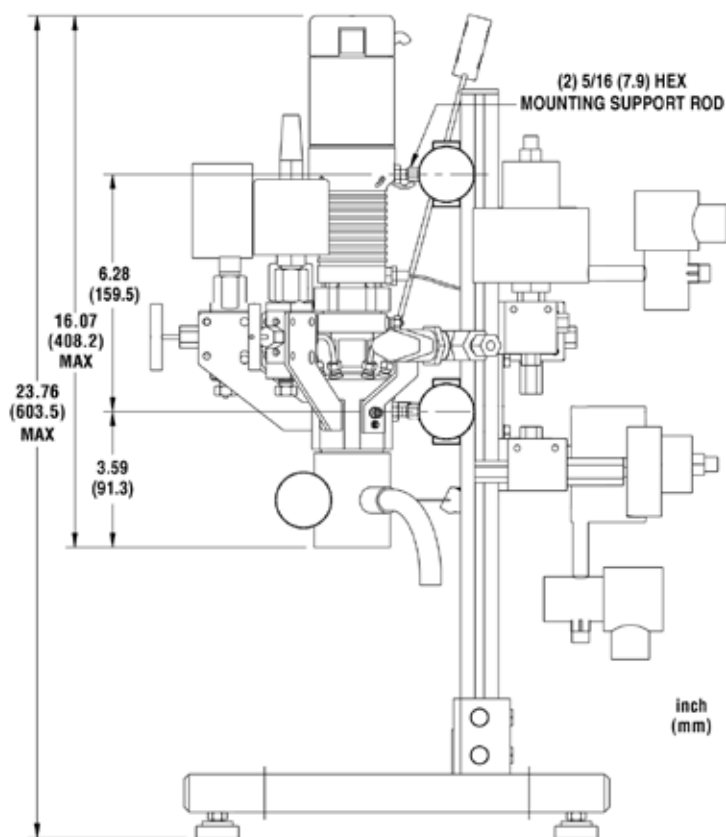
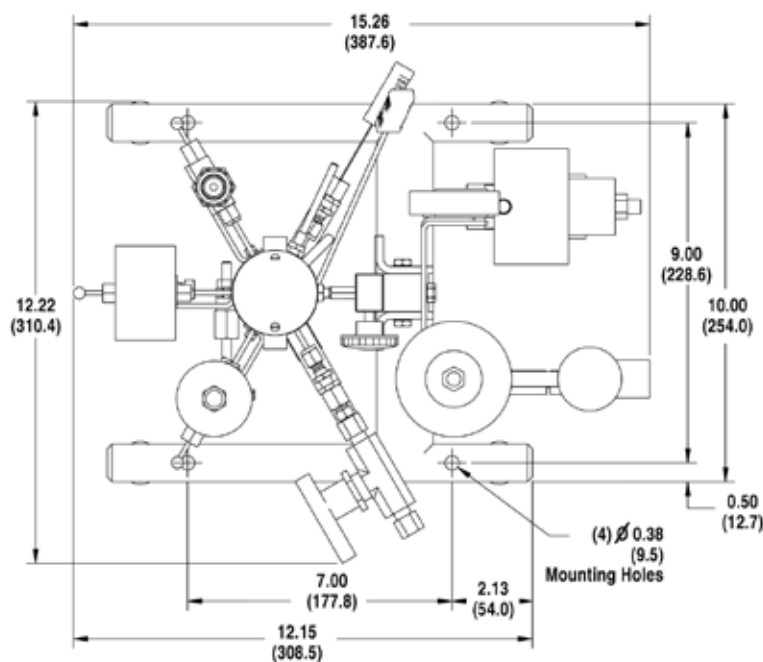
Hastelloy C

25 ml Dwg. 40A- 9940

50 ml Dwg. 40A- 9824

100 ml Dwg. 40A- 9825

150 ml Dwg. 40A- 9824



Supporting Information

Drawing Details

Ordering Guide

Volume Pressure Vessel MagneDrive Internal Accessories External Accessories
M - - - - -
AA BCDEF G HJKL MNOPQ RSTUVW

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

Base Reactors		N - Blow Pipe**	
M002	25ml Mini-Reactor	▶ 0	None, Plugged Connection
M005	50ml Mini-Reactor	1	Blow Pipe Only
M010	100ml Mini-Reactor	2	Blow Pipe with Manual Ball Valve
M015	150ml Mini-Reactor		
A - Vessel Material		O - Sparge Tube	
SS	316 Stainless Steel	▶ 0	None
HC	Hastelloy®1 C-276		
B - Seal Material *		P - Cooling Coil	
▶ B	Buna-N O-ring (Max. Temp. 250°F/121°C)	▶ 0	None, Plugged Connection
C	Ethylene-Propylene O-ring (Max. Temp. 300°F/149°C)	1	Cooling Coil Only
D	PTFE (PTFE Encapsulated Viton®) (Max. Temp. 450°F/232°C)	2	Cooling Coil with Manual Ball Valve
E	Viton® ³ (Max. Temp. 450°F/232°C)	3	Cooling Coil with 120 Volt Solenoid Valve
F	Silicone (Max. Temp. 400°F/204°C)	4	Cooling Coil with 220 Volt Solenoid Valve
G	Kalrez® ³ (Max. Temp. 600°F/315°C)		
H	Chemraz® ⁴ (Max. Temp. 600°F/315°C)	Q - Process Thermocouple	
C - Body Bottom		0	None, Plugged Connection
▶ 0	None (No Connection)	▶ 2	Type "K" T/C
3	1/8" SpeedBite	3	Type "J" T/C
D - Approvals Available		R - Vent Valve	
▶ 0	None Required	0	None, Plugged Connection
1	ASME Code Stamp	▶ 1	Vent with Manual Ball Valve
2	CE Mark and PED	4	Back Pressure - Digital (120 VAC)
3	Canadian Registration	5	Back Pressure - Digital (240 VAC)
E - Stand		S - Pressure Gauge/Transducer +	
0	None	A	0-600 psi Gauge (450 psi)
▶ 1	Bench Top	B	0-1,000 psi Gauge (750 psi)
F - Body Lift Mechanism		C	0-2,000 psi Gauge (1,500 psi)
▶ 0	None	D	0-3,000 psi Gauge (2,250 psi)
G - MagnaDrive Agitator		▶ E	0-5,000 psi Gauge (2,500 psi)
▶ E	In-Line MagenDrive® III	G	0-600 psi Gauge & 1kpsi Transducer (450 psi)
H - Bearings		H	0-1,000 psi Gauge & 1kpsi Transducer 750 psi)
▶ 1	Purebon ⁵	J	0-2,000 psi Gauge & 3kpsi Transducer (1,500 psi)
2	Fluoropolymer with Graphite Fiber ⁶	K	0-3,000 psi Gauge & Transducer (2,250 psi)
J - Speed Sensors		L	0-5,000 psi Gauge & Transducer (2,500 psi)
▶ 0	None	T - Heating/Cooling	
1	General Purpose Hall Effect	0	None
K - Motor		▶ 1	120 VAC Furnace
▶ 8	DC 1/25 Hp	2	220 VAC Furnace
9	DC 1/10 Hp	5	Baffled Removable Jacket
L - Impellers/Shaft/Baffles		U - Gas Inlet	
▶ A	Dispersimax® (6 blades)	0	None, Plugged Connection
B	Turbine (6 blades)	▶ 1	Gas Inlet with Manual Valve
C	Axial-Up (4 blades)	4	Forward Pressure - Digital (120 VAC)
D	Axial-Down (4 blades)	5	Forward Pressure - Digital (240 VAC)
G	Robinson-Mahoney Catalytic Internals	V - Charging Valve	
M - Liquid Sample **		▶ 0	None, Plugged Connection
▶ 0	None, Plugged Connection	W - External Thermocouple	
1	Sample Tube Only	0	None
2	Sample Tube with Manual Valve	▶ 1	Type "K"
3	Sample Tube with Manual Valve and Filter	2	Type "J"

NOTES:

- HASTELLOY® is a registered trademark of Haynes International Inc.
- Temperature limits are suggested. Actual performance will vary with chemical compatibility.
- Viton® and Kalrez® are registered trademarks of DuPont Dow Elastomers.
- Chemraz® is a registered trademark of Greene, Tweed.
- Purebon® is a registered trademark of Morgan AM & T Inc.
- 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.



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

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