500 & 1000 ml

ZipperClave® Stirred Reactor

At a Glance

Volume: 500 & 1,000 ml

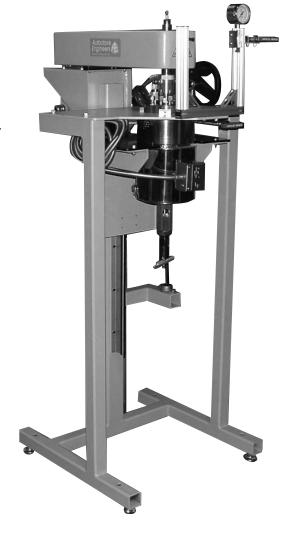
Material of

Construction: 316 Stainless Steel & Hastelloy® C-276

Design Pressure: 2,200 psi @ 450° F

(151 bar @ 232° C)

Applications: The Zipperclave® laboratory reactor is opened without tools using a single quick release. This reactor design is ideal for experiments where the cover must be removed for cleaning, inspection, loading/unloading.



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 500 ml and 1,000 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.



Features

- Easy, toolless quick opening and closing vessel
- · Versatile product configuration
- Operating pressures as high as 1894 psi @ 450° F (131 bar @ 232° C)
- Open vessel and remove body without disassembling pressure connections
- · Available worldwide to meet codes such as CE, CRN

General Specifications

Design Pressure

2,200 psi @ 450° F* (151 Bar @ 232° C)*

Minimum Design Metal Temperature (MDMT)

-20° F @ 2,200 psi (-29° C @ 151 Bar)

Maximum Operating Pressure (MOP)

Varies based on gauge, transducer and rupture disk selection. Refer to Ordering Guide for Details.

Critical Dimensions:	500 ml	1000 ml
Inside Diameter:	3.0" (76mm)	3.0" (76 mm)
Straight Wall:	4.59" (116 mm)	8.71" (221 mm)

Approximate

 Dimensions:
 Tall Bench Top
 Floor Stand

 Overall Height**
 38.7" (988 mm)
 59.4" (1002 mm)

 Width:
 16.0" (406 mm)
 30.4" (762 mm)

 Depth:
 26.3" (667 mm)
 38.0" (965 mm)



1,000 ml ZipperClave® 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 F437 Flat Bottom adapted to the "Topside Of Cover" connection listed below.

Opening Label	Purpose	Internal	External	Location
A	Charging Port	3/8" port	3/8" O.D. Tube	Cover Top
В	Gas Inlet	3/16" O.D. Tube	1/8" O.D. Tube	Cover Top
C	Sparge Tube	3/16" O.D. Tube	1/8" O.D. Tube	Cover Top
D&H	Cooling Coil	3/16" O.D. Tube	1/4" O.D. Tube	Cover Side
E	Vent and Pressure Indication	None	1/8" O.D. Tube	Cover Side
F	Safety Head	None	1/8" FNPT	Cover Top
G	Thermowell	3/16" O.D. Tube	None	Cover Top
J	Blow Pipe	3/16" O.D. Tube	1/8" O.D. Tube	Cover Top
K	Liquid Sample	3/16" O.D. Tube	1/8" O.D. Tube	Cover Top
L	MagneDrive [®] Agitator	None AE Special Co		Cover Top

^{* 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.

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: Tall Bench Top or Floor Stand. **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). 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 1.25 inch (31.8 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 or 240 VAC, Single Phase; 500 ml - 550 Watt, 1,000 ml - 1,100 Watt. Jacket: Removable, Spiral Baffled 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" Valve 2.5" (63.5 mm) Dial Pressure Gage - Multiple ranges available Pressure Transducers - Range Dependent on Gauge One or Two Gas Inlet, 1/8" Valves, Shared Connection Catalyst Charging Valve, 3/8" Tube with 3/8" port External Thermocouple, Type J or K 1/2" Port Manual Flush Valve (Requires Floor Stand) Bottom port 3/16" (centered AE F437FB connection)

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.

¹Viton® and Kalrez® are registered trademarks of DuPont Dow Elastomers.

Technical Specifications

Supporting Information

² Purebon® is a registered trademark of Pure Carbon.

Ordering Guide

Ba	se R	leact	or	Α	Α	В	C	D	E	F	G	Н	1	J	K	L	M	N	0	P	Q	R	S	T	U	٧

Part Number Example: **Z050SSA0010A101A002121D1101X** (See chart below)

M - Blow Pipe

Base React Z050	
	500 ml Zipperclave
Z100	1000 ml Zipperclave
A A - Vesse	
SS	316 Stainless Steel
HC	Hastelloy C-276
B - Seal Ma	
B	Buna-N O-ring, 250° F (121° C)*
C	EPR 0-ring, 300° F (149° C)*
D	PTFE O-ring, 400° F (204° C)*
E	Viton® 0-ring, 450° F (232° C)*
F	Silicone O-ring, 400° F (204° C)*
G	Kalrez® 0-ring, 500° F (260° C)*
C - Flush V	
▶ 0	None
1	1/2" Flush Valve
2	Body Bottom Connection
	als 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
3	Light Duty Floor
F - Body Li	ft Mechanism
▶ 0	None
1	Manual Jack
2	Manual Jack - CE
G - Magnel	Drive Agitator
Х	No MagneDrive
Α	MAG07501
С	MAG07502
H - Bearing	S .
0	No Bearings
▶ 1	Carbon Graphite
2	Fluoropolymer w/Graphite Fiber
I - Speed S	ensors
▶ 0	ensors None
▶ 0	ensors None General Purpose
► 0 1 2	ensors None General Purpose Intrinsically-Safe
► 0 1 2 J - Motor/B	ensors None General Purpose Intrinsically-Safe elt Guard/Brackets
► 0 1 2 J - Motor/B	ensors None General Purpose Intrinsically-Safe lelt Guard/Brackets None
► 0 1 2 J - Motor/B 0 ► 1	ensors None General Purpose Intrinsically-Safe lelt Guard/Brackets None 90 VDC General Purpose
► 0 1 2 J - Motor/B 0 ► 1	Rone General Purpose Intrinsically-Safe lett Guard/Brackets None 90 VDC General Purpose 180 VDC General Purpose
► 0 1 2 J - Motor/B 0 ► 1 2 3	ensors None General Purpose Intrinsically-Safe lett Guard/Brackets None 90 VDC General Purpose 180 VDC General Purpose 90 VDC XP, Non-CE
D 0 1 2 1 2 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1	ensors None General Purpose Intrinsically-Safe leit Guard/Brackets None 90 VDC General Purpose 180 VDC General Purpose 90 VDC XP, Non-CE
▶ 0 1 2 J - Motor/B 0 ▶ 1 2 3 4 5	ensors None General Purpose Intrinsically-Safe elt Guard/Brackets None 90 VDC General Purpose 180 VDC General Purpose 90 VDC XP, Non-CE 180 VDC XP, Non-CE Air, Manual Speed Adjust
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► 0 1 2 J - Motor/B 0 ► 1 2 3 4 5 6 K - Impelle X ► A	ensors None General Purpose Intrinsically-Safe elt Guard/Brackets None 90 VDC General Purpose 180 VDC General Purpose 90 VDC XP, Non-CE 180 VDC XP, Non-CE Air, Manual Speed Adjust Air, Automatic Speed Adjust rs/Shaft/Baffles No Impeller AE Dispersimax Turbine
► 0 1 2 J - Motor/B 0 ► 1 2 3 4 5 6 K - Impelle X ► A B	ensors None General Purpose Intrinsically-Safe elt Guard/Brackets None 90 VDC General Purpose 180 VDC General Purpose 90 VDC XP, Non-CE 180 VDC XP, Non-CE 180 VDC XP, Non-CE Air, Manual Speed Adjust Air, Automatic Speed Adjust rs/Shaft/Baffles No Impeller AE Dispersimax Turbine Axial-Up
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► 0 1 2 J - Motor/B 0 ► 1 2 3 4 5 6 K - Impelle X ► A B C D L - Liquid S	Rone Roneral Purpose Intrinsically-Safe Lelt Guard/Brackets None 90 VDC General Purpose 180 VDC General Purpose 180 VDC XP, Non-CE 180 VDC XP, Non-CE Air, Manual Speed Adjust Air, Automatic Speed Adjust Institution of the Manual Speed Adjust Institutio
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▶ 0 None, Plugged Connection 1 Blow Pipe only 2 Blow Pipe with Manual Valve N - Sparge Tube 0 0 None, Plugged Connection 1 Sparge Tube with Manual Valve 0 - Cooling Coil 0 0 None, Plugged Connection ▶ 1 Cooling Coil W/120 V Solenoid Valve 2 Cooling Coil w/120 V Solenoid Valve 4 Cooling Coil w/120 V Solenoid Valve P - Process Thermocuple 0 0 None, Plugged Connection 1 Thermowell Only ▶ 2 Thermowell W/Type "K" T/C 3 Thermowell W/Type "K" T/C 3 Thermowell W/Type "K" T/C 3 Thermowell W/Type "K" T/C 4 Thermowell W/Type "K" T/C 3 Thermowell W/Type "K" T/C 4 Thermowell W/Type "K" T/C 4 Thermowell W/Type "K" T/C 4 Fressure Gauge/Transducer A 600 psi Gauge/Transducer A 600 psi Gauge/Transducer C </th <th>IVI - DIUW PIĮ</th> <th>he</th>	IVI - DIUW PIĮ	he
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▶ 2 Sparge Tube with Manual Valve O - Cooling Coil 0 None, Plugged Connection ▶ 1 Cooling Coil W/ Manual Valve 3 Cooling Coil w/120 V Solenoid Valve 4 Cooling Coil w/240 V Solenoid Valve P - Process Thermocouple One, Plugged Connection 1 Thermowell W/Type "K" T/C 3 Thermowell w/Type "J" T/C Q - Vent Valve One, Plugged Connection ▶ 1 Vent with Manual Valve R - Pressure Gauge/Transducer A 600 psi Gauge Only, (450 psi MOP)+ A 600 psi Gauge Only, (450 psi MOP)+ B 1,000 psi Gauge Only, (1,500 psi MOP)+ C 2,000 psi Gauge/Transducer, (450 psi MOP)+ C 3,000 psi Gauge/Transducer, (450 psi MOP)+ B 1,000 psi Gauge/Transducer, (450 psi MOP)+ J 2,000 psi Gauge/Transducer, (450 psi MOP)+ K 3,000 psi Gauge/Transducer, (750 psi MOP)+ K 3,000 psi Gauge/Transducer, (750 psi MOP)+ N 600 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 4 <td></td> <td></td>		
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	·	1 1 2
▶ 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 0 None, Plugged Connection 1 Thermowell w/Type "J" T/C 3 Thermowell w/Type "J" T/C Q - Vent Valve 0 0 None, Plugged Connection 1 Vent with Manual Valve R - Pressure Gauge/Transducer A 4 600 psi Gauge Only, (450 psi MOP)+ B 1,000 psi Gauge Only, (750 psi MOP)+ C 2,000 psi Gauge/Transducer, (450 psi MOP)+ B 1,000 psi Gauge/Transducer, (450 psi MOP)+ J 2,000 psi Gauge/Transducer, (750 psi MOP)+ K 3,000 psi Gauge/Transducer, (1,250 psi MOP)+ N 600 psi Gauge/Transducer, (750 psi MOP)+ P 1,000 psi Gauge/Transducer, (750 psi MOP)+		1
2 Cooling Coil w/Manual Valve 3 Cooling Coil w/120 V Solenoid Valve 4 Cooling Coil w/120 V Solenoid Valve P - Process Thermocouple 0 None, Plugged Connection 1 Thermowell Only ▶ 2 Thermowell w/Type "J" T/C 3 Thermowell w/Type "J" T/C 0 - 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)+ C 2,000 psi Gauge Only, (1,500 psi MOP)+ D 3,000 psi Gauge/Transducer, (450 psi MOP)+ H 1,000 psi Gauge/Transducer, (450 psi MOP)+ H 1,000 psi Gauge/Transducer, (450 psi MOP)+ K 3,000 psi Gauge/Transducer, (450 psi MOP)+ N 600 psi Gauge/Transducer, (1,500 psi MOP)+ N 600 psi Gauge/Transducer, (750 psi MOP)+ N 600 psi Gauge/Transducer, (750 psi MOP)+ P 1,000 psi Gauge/Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (750 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (1,500 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 Valve 2 Gas Inlet w/ Two Manual Valve 3 3/8" Manual Valve & 8 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		
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, (1,500 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)+ N 600 psi Gauge/Transducer, (2,250 psi MOP)+ N 600 psi Gauge/Transducer, (450 psi MOP)+ N 600 psi Gauge/Tsansducer, (450 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (750 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 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 & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		
## P - Process Thermocouple None, Plugged Connection		
P - Process Thermocouple ○ None, Plugged Connection 1 Thermowell Only ▶ 2 Thermowell w/Type "K" T/C 3 Thermowell w/Type "J" T/C Q - Vent Valve ○ 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, (1,500 psi MOP)+ B 1,000 psi Gauge/Transducer, (450 psi MOP)+ A 600 psi Gauge/Transducer, (750 psi MOP)+ B 1,000 psi Gauge/Transducer, (750 psi MOP)+ H 1,000 psi Gauge/Transducer, (750 psi MOP)+ K 3,000 psi Gauge/Tsnsducer, (2,250 psi MOP)+ N 600 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ S - Heating/Cooling ○ None ▶ 1 120 VAC Furnace 2 240 VAC Furnace 3 120 VAC Furnace 4 240 VAC Purgeable Furnace 5 Baffled Removable Jacket T - Gas Inlet ○ None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port ○ None 1 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, 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, (1,500 psi MOP)+ ■ H 1,000 psi Gauge/Transducer, (450 psi MOP)+ H 1,000 psi Gauge/Transducer, (750 psi MOP)+ K 3,000 psi Gauge/Transducer, (750 psi MOP)+ N 600 psi Gauge/Tsnsducer, (2,250 psi MOP)+ N 600 psi Gauge/Tsnsducer, (2,250 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ S • Heating/Cooling 0 None ▶ 1 120 VAC Furnace 2 240 VAC Furnace 3 120 VAC 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 & ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V • External Thermocouple		
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, (1500 psi MOP)+ C 2,000 psi Gauge Only, (1,500 psi MOP)+ ▶ D 3,000 psi Gauge/Transducer, (450 psi MOP)+ G 600 psi Gauge/Transducer, (450 psi MOP)+ H 1,000 psi Gauge/Transducer, (750 psi MOP)+ K 3,000 psi Gauge/Transducer, (1500 psi MOP)+ K 3,000 psi Gauge/Transducer, (2,250 psi MOP)+ N 600 psi Gauge/Ts Transducer, (2,250 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ Q 2,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 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 Valve U - Charging Port 0 None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	P - Process	Thermocouple
▶ 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, (1,500 psi MOP)+ C 2,000 psi Gauge Only, (1,500 psi MOP)+ E D 3,000 psi Gauge/Transducer, (450 psi MOP)+ G 600 psi Gauge/Transducer, (450 psi MOP)+ H 1,000 psi Gauge/Transducer, (1,500 psi MOP)+ J 2,000 psi Gauge/Is Transducer, (450 psi MOP)+ N 600 psi Gauge/Is Transducer, (450 psi MOP)+ P 1,000 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, (1,500 psi MOP)+ R 3,000 psi Gauge/Is Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/Is Transducer, (1,894 psi MOP)+ S - Heating/Cooling 0 O None 1 120 VAC Furnace 2	0	None, Plugged Connection
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, (1,500 psi MOP)+ G 600 psi Gauge/Transducer, (450 psi MOP)+ H 1,000 psi Gauge/Transducer, (450 psi MOP)+ J 2,000 psi Gauge/Transducer, (750 psi MOP)+ K 3,000 psi Gauge/Transducer, (450 psi MOP)+ N 600 psi Gauge/Tsansducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (750 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (750 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valve U - Charging Port O None 1 3/8" Manual Valve & ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	1	Thermowell Only
Q - Vent Valve 0	▶ 2	Thermowell w/Type "K" T/C
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/Transducer, (450 psi MOP)+ G 600 psi Gauge/Transducer, (450 psi MOP)+ H 1,000 psi Gauge/Transducer, (750 psi MOP)+ K 3,000 psi Gauge/Is Transducer, (450 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, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,894 psi MOP)+ S - Heating/Cooling 0 O None I 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 I	3	Thermowell w/Type "J" T/C
▶ 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/Transducer, (450 psi MOP)+ G 600 psi Gauge/Transducer, (750 psi MOP)+ H 1,000 psi Gauge/Transducer, (1,500 psi MOP)+ K 3,000 psi Gauge/Ts Transducer, (2,250 psi MOP)+ N 600 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,894 psi MOP)+ S - Heating/Cooling 0 O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/	Q - Vent Val	ve
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)+ C 2,000 psi Gauge Only, (1,500 psi MOP)+ D 3,000 psi Gauge/Transducer, (450 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/Tsansducer, (2,250 psi MOP)+ N 600 psi Gauge/IS Transducer, (2,250 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ Q 2,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ S - Heating/Cooling O None ▶ 1 120 VAC Furnace 2 240 VAC Furnace 2 240 VAC Furnace 3 120 VAC Purgeable Furnace 4 240 VAC Purgeable Furnace 5 Baffled Removable Jacket T - Gas Inlet O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 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, Plugged Connection
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, (1,894 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)+ N 600 psi Gauge/IS Transducer, (2,250 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ Q 2,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ S - Heating/Cooling O None ▶ 1 120 VAC Furnace 2 240 VAC Furnace 2 240 VAC Purgeable Furnace 4 240 VAC Purgeable Furnace 5 Baffled Removable Jacket T - Gas Inlet O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	▶ 1	Vent with Manual Valve
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, (1,894 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)+ N 600 psi Gauge/IS Transducer, (2,250 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ Q 2,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ S - Heating/Cooling O None ▶ 1 120 VAC Furnace 2 240 VAC Furnace 2 240 VAC Purgeable Furnace 4 240 VAC Purgeable Furnace 5 Baffled Removable Jacket T - Gas Inlet O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	R - Pressure	Gauge/Transducer
C 2,000 psi Gauge Only, (1,500 psi MOP)+ ▶ D 3,000 psi Gauge Only, (1,894 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/Tsnsducer, (2,250 psi MOP)+ N 600 psi Gauge/IS Transducer, (2,250 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ Q 2,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1500 psi MOP)+ S - Heating/Cooling O None ▶ 1 120 VAC Furnace 2 240 VAC Furnace 3 120 VAC Furnace 4 240 VAC Purgeable Furnace 4 240 VAC Purgeable Furnace 5 Baffled Removable Jacket T - Gas Inlet O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		
D 3,000 psi Gauge Only, (1,894 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, (2,50 psi MOP)+ N 600 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (750 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,894 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	В	1,000 psi Gauge Only, (750 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, (750 psi MOP)+ K 3,000 psi Gauge/Transducer, (2,250 psi MOP)+ N 600 psi Gauge/IS Transducer, (450 psi MOP)+ P 1,000 psi Gauge/IS Transducer, (450 psi MOP)+ Q 2,000 psi Gauge/IS Transducer, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	С	2,000 psi Gauge Only, (1,500 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, (2,50 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, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,894 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	► D	3,000 psi Gauge Only, (1,894 psi MOP)+
J 2,000 psi Gauge/Transducer, (1,500 psi MOP)+ K 3,000 psi Gauge/Transducer, (2,250 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, (1,500 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	G	
J 2,000 psi Gauge/Transducer, (1,500 psi MOP)+ K 3,000 psi Gauge/Transducer, (2,250 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, (1,500 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple	H	,
K 3,000 psi Gauge/Transducer, (2,250 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, (750 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & 8 ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		1
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, (1,894 psi MOP)+ S - Heating/Cooling O 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 O None, Plugged Connection ▶ 1 Gas Inlet w/ Manual Valve 2 Gas Inlet w/ Two Manual Valves U - Charging Port O None 1 3/8" Manual Valve & B ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		
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, (1,894 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 & B ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		
Q 2,000 psi Gauge/IS Transducer, (1,500 psi MOP)+ R 3,000 psi Gauge/IS Transducer, (1,894 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 & ml Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		
R 3,000 psi Gauge/IS Transducer, (1,894 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 & m I Charging Cartridge 3 3/8" Manual Valve & 20 ml Charging Cartridge 4 Reflux Condensor V - External Thermocouple		
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4 Reflux Condensor V - External Thermocouple	2	3/8" Manual Valve & 8 ml Charging Cartridge
V - External Thermocouple	3	3/8" Manual Valve & 20 ml Charging Cartridge
	4	Reflux Condensor
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8325 Hessinger Drive Erie, Pennsylvania 16509-4679 PH: 814-860-5700 FAX: 814-860-5811 e-mail: aeclave_sales@snap-tite.com www.autoclaveengineers.com

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

⁺ MOP = Maximum Operating Pressure