

Series 5500 High Pressure Compact Laboratory Reactors

Series Number:

5500

Type:
High Pressure Compact

Stand:
Bench Top

Vessel Mounting:
Moveable

Sizes, mL:
25-600

Standard Pressure
MAWP, psi (bar):
3000 (200)

Maximum Operating
Temperature, °C:
225 w/ FKM O-ring
275 w/ FFKM O-ring
350 w/ PTFE Flat Gasket



Parr Series 5500 HPCL Reactor and a 4848 Reactor Controller shown with optional Expansion Modules.

Familiar Parr Designs

All of the safety, convenience and reliability features which have been the hallmark of Parr pressure reaction equipment for more than 50 years have been incorporated into a new line of high pressure, compact laboratory reactors. (HPCL Reactors.)

The Series 5500 HPCL Reactors are based upon our popular micro and mini, Series 4590 & 4560 Reactors. There are several differences between these new reactors and their original counterparts. Primarily, these are:

1. A smaller, more compact magnetic drive is installed.
2. A smaller, more compact variable speed stirrer motor.
3. The larger support stand, overarm and motor have been eliminated.
4. An Aluminum Block Heater also serves as the support stand.

As a result of these changes, we are now able to offer these new reactors to users who do not require the wide variety of options and expandability provided by our Series 4500 Reactors at a significantly lower cost. These new designs will be welcomed by not only investigators with limited space or budgets, but also by investigators building multiple reactor installations for combinatorial chemistry or high throughput investigations.

The reaction vessels used in these new HPCL reactors are identical to the ones furnished in the Series 4590 Micro and Series 4560 Mini Reactors. HPCL Reactors use the popular Parr split ring closure. These vessels are rated for a maximum working pressure of 3000 psi. The maximum operating temperature is dependent upon the seal selected, PTFE gasket for up to 350 °C; with FKM O-ring to 225 °C or FFKM O-ring to 275 °C.



Series 5500 Pressure Reactor System Specifications									
Shaded bar indicates specifications that change within series.									
Model Number	5511	5512	5513	5521	5522	5523	5524	5525	
Sizes, mL	25	50	100	300	450	600	160	100	
Maximum Pressure	3000 psi (200 bar)								
Maximum Temperature									
with FKM O-ring	225 °C								
with FFKM O-ring	275 °C								
with PTFE Flat Gasket	350 °C								
Vessel Style									
	Moveable								
Reactor Mounting	Compact Bench Top								
Closure	Split Ring (6 Cap Screws for Flat Gasket) (0 Cap Screws for Quick Close)								
Valve Connections	1/8" Male NPT								
Maximum Torque, Inch-Pounds	2.5 (0.28 Nm)								
Impeller(s), 4-blade	1 (0.81" dia.)		1 (0.81" dia.)		2 (1.38" dia.)		1 (0.81" dia.)		
Pressure Gage, Size	3.5 inches								
Range	0-3000 psi (200 bar)								
Temperature Measurement	Fixed Thermocouple								
Cooling Coil	NA		Standard Single Loop			NA			
Optional Cooling Coil	Coldfinger		NA			Spiral			
Bottom Drain Valve	NA								
Heater Style									
	Aluminum Block (External Cooling Optional)								
Heater Power, Watts	700		1000		700		1000		
Stirrer Motor, Variable Speed	1/17 hp								
Electrical Supply									
Volts, AC	115 or 230								
Maximum Load, amps, 115 / 230	8 / 4		10 / 5		8 / 4		10 / 5		
Vessel Dimensions									
Inside Diameter, inches	1	1.3	1.3	2.5	2.5	2.5	2.5	2	
Inside Depth, inches	2	2.25	4.5	4	6	8	2	2	
Weight of Vessel, pounds	12	12	12	13	15	17	12	12	
Reactor Dimensions									
Width, inches w/o Controller	8.3								
Depth, inches	9.5								
Height, inches	23	23	25	23	25	27	23	23	
Weight, pounds	25	25	25	26	28	30	25	25	
Spare Parts Kit	5529SPK								
Other options available. See Ordering Guide, visit www.parrinst.com , or call for more information.									

Series 5500 High Pressure Compact Laboratory Reactors

The 25, 50, and 100 mL reactors are equipped with gas inlet and outlet valves, a liquid sampling valve, pressure gage, safety rupture disc, and internal thermocouple in addition to the internal stirrer. The 300, 450, and 600 mL reactors include an internal cooling loop in addition to these fittings.

New Magnetic Drive

To take advantage of the new technology available in magnets today, Parr has designed a new compact, magnetically-coupled stirrer drive especially for these smaller vessels. Tests show that this new drive is sufficient to stir reaction mixtures with viscosities up to 10,000 centipoise in a 600 mL reaction vessel.

Variable Speed Motor

A 1/17 hp variable speed motor provides stirring speeds adjustable from 0 to 1700 rpm. An optional tachometer pickup provides a signal to the optional tachometer display module which can be installed in the 4848 Controller.

Heater / Reactor Support

A heater also serves as the vessel support for the HPCL Reactors. This is an aluminum block style heater for excellent thermal uniformity. The cartridge heaters used in this heating block are easily replaced if required. A stainless steel heat shield is provided around the heating block. This style of heater/reactor support provides a very small footprint, ideal for limited bench space.

Model 4848 Temperature Controller

The Series 4848 Controller used with the standard Parr line of medium and high pressure reactors is also furnished for use with these reactors. The 4848 offers the user options for redundant temperature sensor and alarm, digital pressure readout, stirring speed display or control, motor load, and bi-directional digital communication (RS-485).

Alternate Controllers Available

A single 4871 Process Controller can control up to eight High Pressure Compact Laboratory Reactors.



High Pressure Compact Reactor Vessel, 100 mL.

Options

As shown in the ordering guide, a variety of options are available for these Series 5500 Reactors. In addition to the options described here, there are a number of additional accessories such as glass or PTFE liners, special stirrers, gages, gas and liquid feed systems, custom valves, etc., as described in the options section of this catalog.

Please remember that the Series 5500 reactors have been designed and packaged to provide the basic functions of these small laboratory reactors and not all of the options available for the more versatile Series 4500 Reactors can be incorporated into these units. Investigators who need explosion proof operation, jacketed vessels, bottom drain valves, high torque stirrers, catalyst baskets, etc., will need to start with a Series 4590 Micro Reactor or a Series 4560 Mini Reactor.



Series 5500 Ordering Guide

The Order No. for the Base System is: **55__-T-SS-115-VS-M-3000-4848**

A composite identification number to be used when ordering a 5500 Series Reactor can be developed by combining individual symbols from the separate sections below. For more information on how to use this ordering guide, please see page 27.

A Base Model

Model No.	Size	Cylinder, I.D.
5511	25 mL	1.0-inch
5512	50 mL	1.3-inch
5513	100 mL	1.3-inch
5521	300 mL	2.5-inch
5522	450 mL	2.5-inch
5523	600 mL	2.5-inch
5524	160 mL	2.5-inch
5525	100 mL	2.0-inch

B Gasket / Maximum Temperature

-OV	O-ring 225 °C
-OK	O-ring 275 °C
-T	PTFE Compression Gasket, 350 °C

C Materials of Construction (MOC)

-SS	T316 Stainless Steel
-MO	Alloy 400
-IN	Alloy 600
-HB	Alloy B-2
-HC	Alloy C-276
-CS	Alloy 20
-Ti2	Titanium Grade 2
-Ti4	Titanium Grade 4
-NI	Nickel 200
-ZR	Zirconium Grade 702 or 705

D Electrical Supply

-115	115 VAC
-230	230 VAC

E Motor

-VS	1/17 HP Variable Speed
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F Magnetic Stirrer Drive

-M	General Purpose Magnetic
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G Mag. Drive Materials of Construction

-No Symbol	Same Material As Vessel
-MOC Symbol	Indicate Material of Construction

H Pressure Gage

-3000	3000 psi / 200 bar
-2000	2000 psi / 137 bar
-1000	1000 psi / 70 bar
-600	600 psi / 40 bar
-200	200 psi / 14 bar
-100	100 psi / 7 bar

I Controller

-4848	PID Control, Ramp & Soak Programming, Motor Speed Control, and Data logging with Software
-A1925E4	Optional RS485 to USB Cable for 4848 Controller
-4871	Process Controller

J 4848 Expansion Modules

-TDM	Tachometer Display Module
-MCM	Tachometer w/Motor Control Module
-PDM	Pressure Display Module
-HTM	High Temperature Cut Off Module
-ETLM	External Temperature Limit Module
-MTM	Motor Torque Module

K 4848 Cooling Control: Solenoid Valve Module

-SVM1	115 VAC
-SVM2	230 VAC

L Custom Options (List All Desired)

-GE	Gas Entrainment Stirrer
-BF	Baffles
-SCP	Solids Charging Port
-CAD	Catalyst Addition Device (300 mL or larger only)
-RC	Reflux Condenser
-RTC	Reflux Take-off Condenser

M Certifications

No Symbol	No Certification
-ASME	ASME Certification
-CE-PED	European Community PED
-CE	European Community Standard (for EMC Compliance)

N Spare Parts Kit

-5529SPK	Spare Parts Kit for 5500 Series
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