

Series Number:

# 4790

Type:  
**Micro**

Stand:  
**Bench Top**

Mounting Style:  
**Moveable or  
Fixed Head**

Sizes, mL:  
**25, 50, 100**

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

High Pressure (HP)  
MAWP Rating, psi (bar):  
**5000 (345)**

Standard Maximum  
Operating Temp., °C:  
**225 w/ FKM O-ring**  
**300 w/ FFKM O-ring**  
**350 w/ PTFE Flat Gasket**

High Temperature (HT) /  
High Pressure (HP)  
Maximum Operating  
Temperature, °C:  
**500 w/ FG Flat Gasket**  
**(Fixed Head Only)**

## Series 4790 Pressure Vessels, 25-100 mL

**These small pressure vessels** are a good choice for chemists working with very expensive materials or materials only available in small amounts. They will also appeal to users who wish to minimize the risks associated with hazardous materials or reactions by restricting the reactants or products to a minimum. Use of the Series 4790 Vessels also helps minimize the quantities of waste products which may require special disposal procedures. The 4790 Vessels are now available in high pressure (5000 psi) or high pressure/high temperature (500 °C) versions.

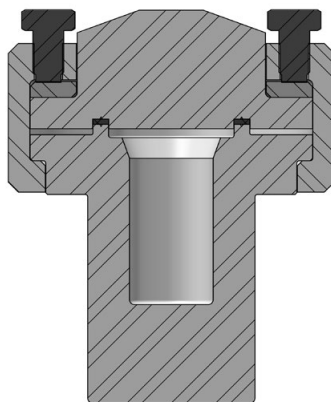
These micro vessels have been designed to provide as many of the features of the larger vessels as possible in the limited space available. The standard head fittings include a gage, rupture disc, thermocouple, and valves. Optional cooling is available with aluminum block heaters with cooling capability, welded jackets, or cold fingers.

The vessels are offered in both fixed head and moveable head vessel styles with choices of a self sealing O-ring for temperatures up to 225 °C or with FFKM O-ring for temperatures to 300 °C or with a flat PTFE flat gasket for temperatures to 350 °C, or with an FG Flexible Graphite gasket for temperatures to 500 °C with the HP/HT option (for fixed head versions only). A split ring closure is standard.

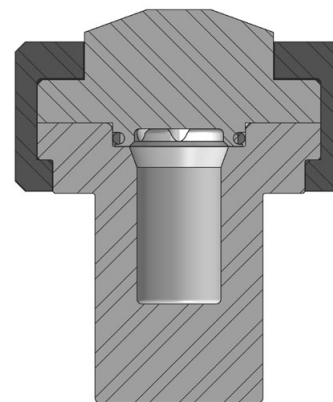
All three volumes use the same bench top ceramic fiber heater.

These micro vessels can be easily converted from one size to another by simply substituting a larger or smaller cylinder and the corresponding internal fittings.

The support system can also be readily adapted to accept any of the vessels from the 4790 Series Vessels. The opportunity to modify these small reactors is restricted because of the limited head space available.



4790-25mL Cross Section  
with Flat Gasket Seal



4790-25mL Cross Section  
with O-ring Seal



4790-100mL-VGR-DVD Moveable Head Vessel with PTFE Flat Gasket

# 4790

| Series 4790 Pressure Vessel Specifications  |   |           |           |
|---|---|-----------|-----------|
| Shaded bar indicates specifications that change within series.  |   |           |           |
| Model Number  | 4790  |           |           |
| Approximate Volume, mL  | 25  | 50        | 100       |
| <b>Maximum Pressure (MAWP)</b>  |   |           |           |
| Standard Rating   | 3000 psi (207 bar, 200 bar for CE orders)   |           |           |
| High Pressure (HP)  | 5000 psi (345 bar)  |           |           |
| High Pressure/High Temperature (HP/HT)  | 5000 psi (345 bar)  |           |           |
| <b>Maximum Temperature</b>  |   |           |           |
| with FKM O-ring   | 225 °C  |           |           |
| with FFKM O-ring  | 300 °C  |           |           |
| with PTFE Flat Gasket   | 350 °C  |           |           |
| with Flexible Graphite Flat Gasket (HP/HT only)   | 500 °C  |           |           |
| <b>Vessel Details</b>   |   |           |           |
| Mounting Style  | Moveable or Fixed Head (HP/HT option requires Fixed Head)   |           |           |
| Closure   | Split-Ring (6 Compression Bolts for Flat Gasket, no Compression Bolts for O-ring) or Screw Cap (O-ring seal only)   |           |           |
| Head Opening Options  | One head opening (1/8" NPT*, 1/4" NPT*, "A" socket, or rupture disc assembly port)<br>Ports for valve, gage, rupture disc, and thermocouple (VGR**)<br>Custom port option (Contact our technical sales department to discuss options) |           |           |
| Maximum Head Openings   | 5 (Dependent on opening size, and required fittings)  |           |           |
| Valve Connections   | 1/8" NPT Male (standard rating), 1/4" NPT Male (HP), 1/4" NPT Female (HP/HT)  |           |           |
| Pressure Gage, Size   | 3.5 inches  |           |           |
| Range, Standard Temperature   | 0-3000 psi (207 bar)  |           |           |
| Range, HP & HP/HT   | 0-5000 psi (345 bar)  |           |           |
| Temperature Measurement   | Fixed Thermocouple (Thermowell for special alloys)  |           |           |
| Cooling (optional)  | Cold Finger   |           |           |
| * NPT ports are not available for vessels with a High Temperature (HT) rating. ** 4790HPHT requires VGR.  |   |           |           |
| <b>Stand and Heater (optional)</b>  |   |           |           |
| Stand Type  | Heater Only (standard rated and HP vessels only) and Bench Top Stand with Heater (required for HT vessels)  |           |           |
| Heater Style (Standard rating & HP)   | Ceramic Fiber Heater  |           |           |
| Heater Power, Watts   | 700   | 700       | 350       |
| Maximum Load, amps, 115V / 230V   | 6 / 3   | 6 / 3     | 3 / 2     |
| Heater Style (HP/HT)  | Ceramic Fiber Heater  |           |           |
| Heater Power, Watts   | 700   |           |           |
| Maximum Load, amps, 115V / 230V   | 6 / 3   |           |           |
| <b>Weight and Dimensions</b>  |   |           |           |
| Cylinder I.D. x Depth, inches   | 1.0 x 2.0   | 1.3 x 2.3 | 1.3 x 4.6 |
| Vessel Assembly w/ Moveable Head, Weight, pounds**  | 16  | 15        | 16        |
| Vessel Assembly w/ Fixed Head, Weight, pounds**   | 17  | 17        | 18        |
| Cylinder Weight, pounds   | 3.5   | 3.1       | 4.2       |
| ** Vessel Assembly weight varies based on head configuration choice and fitting options.<br>Weights shown are based on vessels with valve, gage, rupture disc, thermocouple, and double valve assembly. |   |           |           |
| Other options available. See Ordering Guide, visit <a href="http://www.parrinst.com">www.parrinst.com</a> , or call for more information.   |   |           |           |

Series Number:

# 4790

## Series 4790 Pressure Vessel Systems

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### Controller

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4790-100mL-HP/HT Fixed Head Vessel

Model 4790-25mL Vessel  
w/ Double Valve Assembly

# Series 4790 Ordering Guide

An example order number for a vessel in this series is: **4790-25mL-T-SS-3000**

A composite identification number to be used when ordering a 4790 Series Pressure Vessel System 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 Vessel Volume

|            |  |
|------------|--|
| -No Symbol | 3000 psi / 207 bar, 200 bar for CE orders @ 350 °C |
| -HP        | 5000 psi / 345 bar @ 350 °C                        |
| -HPHT      | 5000 psi / 345 bar @ 500 °C                        |

## B Vessel Volume

|        |                 |
|--------|-----------------|
| -25mL  | 25 mL, 1" ID    |
| -50mL  | 50 mL, 1.3" ID  |
| -100mL | 100 mL, 1.3" ID |

## C Head Mounting Style

|            |  |
|------------|--|
| -No Symbol | Moveable Head (Standard configuration) |
| -FH        | Fixed Head (Required for HP/HT rating) |

## D Gasket / Maximum Temperature

|     |  |
|-----|--|
| -T  | PTFE Flat Gasket, 350 °C                                 |
| -OV | FKM O-ring, 225 °C                                       |
| -OK | FFKM O-ring, 300 °C                                      |
| -FG | Flexible Graphite Flat Gasket, 500 °C (HPHT option only) |

## E Materials of Construction

|        |                      |
|--------|----------------------|
| -SS    | T316 Stainless Steel |
| -C20   | Alloy 20*            |
| -MO    | Alloy 400*           |
| -IN600 | Alloy 600            |
| -IN625 | Alloy 625            |
| -HB    | Alloy B-2 / B-3*     |
| -HC    | Alloy C-276          |
| -NI    | Nickel 200           |
| -TI2   | Titanium Grade 2*    |
| -TI4   | Titanium Grade 4*    |
| -ZR702 | Zirconium Grade 702* |
| -ZR705 | Zirconium Grade 705* |

\* High temperature option not available.  
See page 10 or 24 for complete list of available alloys.

## F Head Configuration

|      |  |
|------|--|
| -RD  | Rupture port with rupture disc assembly & disc   |
| -1/8 | One head opening, 1/8" NPT port, plugged   |
| -1/4 | One head opening, 1/4" NPT port, plugged   |
| -A   | One head opening, "A" socket   |
| -VGR | Valve on gage adapter, pressure gage, rupture disc assembly, & thermocouple (includes thermowell for special alloys) |
| -NS  | Non-standard, custom head opening  |

## G Optional Fittings & Custom Options (Check all needed)

|        |  |
|--------|--|
| -VD    | Single Valve on head with dip tube (VGR Required)          |
| -DVD   | Double Valve Assembly on head with dip tube (VGR Required) |
| -CF    | Cold Finger  |
| -4310A | Gage Block Assembly (for head with "A" socket opening)     |
| -CAD   | Internal Catalyst Addition Device                          |
| -XCAD  | External Catalyst Addition Device                          |
| -SCP   | Solids Charging Port (Ball Valve)                          |
| -RC    | Reflux Condenser   |
| -RTC   | Reflux/Take-Off Condenser                                  |
| -WJ    | Welded Jacket  |

## H Pressure Gage

|            |   |
|------------|---|
| -No Symbol | Single Valve on head with dip tube (VGR Required) |
| -5000      | 5000 psi / 345 bar                                |
| -3000      | 3000 psi / 207 bar                                |
| -2000      | 2000 psi / 138 bar                                |
| -1000      | 1000 psi / 69 bar                                 |
| -600       | 600 psi / 40 bar                                  |
| -200       | 200 psi / 14 bar                                  |
| -100       | 100 psi / 7 bar                                   |

## I Stand and Heater Options

|            |   |
|------------|---|
| -No Symbol | None  |
| -NS        | Heater only, no stand (Temperatures up to 350 °C) |
| -BTS       | Bench Top Stand with Heater                       |

See Section "G" for Welded Jacket option

## J Controller

|       |  |
|-------|--|
| -4838 | PID Control, Ramp & Soak Programming, and Data logging with Software (RS-485 to USB cable not included). For use with one additional display module.           |
| -4848 | PID Control, Ramp & Soak Programming, and Data logging with Software. (RS-485 to USB cable not included). For use with up to three additional display modules. |

See Chapter 6 for complete list of Controller options.

## K Controller Options (Check all needed)

|          |  |
|----------|--|
| -PDM     | Pressure Display Module  |
| -HTM     | High Temperature Cut Off Module  |
| -ETLM    | External Temperature Limit Module  |
| -SVM     | Solenoid Valve Module (for cooling control)                              |
| -A1925E4 | RS-485 to USB Cable for 4838/4848 Controller (required for data logging) |
| -A1925E6 | RS-485 to USB Converter, isolated, 30-ft                                 |
| -A2208E  | RS-485 Daisy Chain for Multiple Controllers (Must be used with A1925E6)  |
| -A3504HC | SpecView Software Package for 4838/4848 Controller                       |

## L Electrical Supply for Heater and/or Controller

|            |            |
|------------|------------|
| -No Symbol | None       |
| -115       | 115V Power |
| -230       | 230V Power |

## M Certifications

|            |                    |
|------------|--------------------|
| -No Symbol | No Certification   |
| -ASME      | ASME Documentation |
| -CE        | CE Documentation   |
| -P         | Parr Certification |

Please note that all options and combinations are not compatible with all models.