

Series 4570/80 High Temperature/High Pressure Reactor Systems

Series Number:

4570/80

Type:

**High Temperature
High Pressure**

Stand:

**Bench Top,
Floor Stand or
Cart**

Vessel Mounting:

**Moveable or
Fixed Head**

Vessel Sizes, mL:

250-5500

Standard Pressure
MAWP Rating, psi (bar):

**3000 (200) 4580
5000 (345) 4570**

Maximum Operating
Temperature, °C:

500 w/ FG Flat Gasket

Parr offers a number of different reactors in the 4570 and 4580 Series in a variety of sizes and with different mountings for operating pressures to 5000 psi (345 bar) and temperatures to 500 °C.

4571 - 4572 Reactors

These are 1000 and 1800 mL moveable head reactors mounted in movable carts.

4577 - 4578 Reactors

These are 1000 and 1800 mL fixed head reactors mounted on a floor stand with pneumatic lift.

4575 - 4576A Reactors

These are 500 and 250 mL bench top reactors with 5000 psi (345 bar) and 500 °C ratings. They are available as either moveable or fixed head vessels.

4581 - 4582 Reactors

These 1 gallon (3.75 L) and 1.5 gallon (5.5 L) reactors are designed for 3000 psi (200 bar) maximum pressure with a 500 °C maximum working temperature and mounted on movable carts.

4583 - 4584 Reactors

These are 1 gallon (3.75 L) and 1.5 gallon (5.5 L) fixed head reactors mounted on floor stands with pneumatic lift.

All of these reactors have been designed with suitable valves, fittings and modifications to the vessel itself to operate at the higher temperature and pressure ratings.

Flat, flexible graphite (FG) gaskets are used for temperatures in the higher range to 500 °C. These can be replaced with PTFE gaskets for procedures in which the temperature will not exceed 350 °C. All cart and floor stand models use ceramic fiber heaters to achieve the higher operating temperatures.



Model 4577 High Temperature/High Pressure Reactor, Floor Stand, Fixed Head 1000 mL with Heater and Pneumatic Lift.



The Series 4570/80 High Temperature/High Pressure Reactors come in three configurations, from left to right: Bench Top (250 & 500 mL Only), Floor Stand, and Cart.



| Series 4570/80 Pressure Reactor System Specifications | | | | | | |
|---|------------------------------------|------|---------------------------|------|-------------------------|-------|
| Shaded bar indicates specifications that change within series. | | | | | | |
| Model No. – Moveable Vessel | 4571 | 4572 | 4581 | 4582 | 4575B | 4576B |
| Model No. – Fixed Head | 4577 | 4578 | 4583 | 4584 | 4575A | 4576A |
| Reactor Mounting | Cart / Floor Stand | | Cart / Floor Stand | | Bench Top | |
| Sizes, mL | 1000 | 1800 | 3750 | 5500 | 500 | 250 |
| Maximum Pressure, MAWP | 5000 psi (345 bar) | | 3000 psi (200 bar) | | 5000 psi (345 bar) | |
| Maximum Temperature | | | | | | |
| with FG Flat Gasket | 500 °C | | | | | |
| Vessel Details | | | | | | |
| Closure (Cap Screws) | Split Ring (12) | | Split Ring (16) | | Split Ring (8) | |
| Valves Mounted | Head | | | | | |
| Valve Connections | 1/4" NPT Female | | | | | |
| Magnetic Stirrer, Model No. | A1120HC | | A1180HC | | A1120HC | |
| Maximum Torque | 16 Inch-Pounds | | 60 Inch-Pounds | | 16 Inch-Pounds | |
| Impeller(s), 6-Blade (4-blade) | 2 (2" dia.) | | 2 (3.5" dia.) | | 2 (1.38" dia.) | |
| Pressure Gage, Size | 4.5 inches | | | | | |
| Range | 0-5000 psi (345 bar) | | | | | |
| Temperature Measurement | Thermowell | | | | | |
| Cooling Coil | Included | | | | | |
| Style | Serpentine | | Serpentine | | Single Loop | |
| Bottom Drain Valve | 1" NPS (Floor stand supports only) | | | | | |
| Heater Style | Ceramic | | | | | |
| Heater Power, Watts | 2800 | 2800 | 2800 | | 1000 | |
| Stirrer Motor, Variable Speed | 1/4 hp | | 1/2 hp | | 1/8 hp | |
| Electrical Supply | | | | | | |
| Volts, AC | 230 | | 230 | | 115 or 230 | |
| Maximum Load, amps, 115 / 230 | 13 | 14 | 15 | | 12 / 6 | |
| Vessel Dimensions | | | | | | |
| Inside Diameter, inches | 3.75 | | 5.5 | | 2.5 | |
| Inside Depth, inches | 6.2 | 10.5 | 9.7 | 15 | 6.6 | 3.2 |
| Weight of Moveable Vessel, pounds | 70 | 85 | 100 | 130 | 35 | 29 |
| Weight of Fixed Vessel, pounds | 85 | 100 | 120 | 160 | 37 | 31 |
| Reactor Dimensions | | | | | | |
| Moveable Width x Depth x Height, in. | Cart: 35 x 18 x 50 | | Cart: 35 x 18 x 50 | | Bench Top: 17 x 24 x 42 | |
| Fixed Width x Depth x Height, in. | Floor Stand: 20 x 31 x 75 | | Floor Stand: 20 x 31 x 75 | | | |
| Moveable Weight w/Controller, pounds | 245 | 265 | 325 | 355 | 125 | 120 |
| Fixed Weight w/Controller, pounds | 265 | 285 | 345 | 375 | 127 | 122 |
| Spare Parts Kit | 4579B | | 4589B | | 4579D | |
| Other options available. See Ordering Guide, visit www.parrinst.com , or call for more information. | | | | | | |

Series 4570/80 High Temperature/High Pressure Reactor Systems

INDEX TO OPTIONS

| OPTIONS | PAGE |
|---------------------------|------|
| Certification | 9 |
| Materials of Construction | 10 |
| Magnetic Drive | 14 |
| Gaskets & Seals | 18 |
| Stirrer Motor | 104 |
| Rupture Disc | 110 |
| Pressure Gage | 111 |
| Cooling Coil | 115 |
| Bottom Drain Valve | 116 |
| 4848 Reactor Control | 91 |
| 4838 Temperature Control | 94 |
| 4871 Process Control | 95 |

CUSTOM OPTIONS

| | |
|------------------------------|-----|
| Stirrers | 106 |
| Heaters | 102 |
| External Valves and Fittings | 117 |
| Solids Charging Ports | 114 |
| Condensers | 109 |
| Electrical Glands | 122 |
| Catalyst Addition Device | 114 |
| Catalyst Baskets | 108 |
| Relief Valves | 111 |
| Windows | 121 |
| Gear Drives | 104 |
| Explosion Proof Options | 119 |
| Sample Collection Device | 116 |

ACCESSORIES

| | |
|------------------|-----|
| Liners | 115 |
| Spare Parts Kits | 122 |
| Pressure Hoses | 118 |
| Check Valves | 117 |
| Liquid Pipettes | 113 |
| Gas Burettes | 113 |



Model 4581 High Temperature/High Pressure Reactor, with One Gallon Moveable Vessel, and a 4848 Reactor Controller with optional Expansion Modules.



Model 4576A HT/HP Reactor, Fixed Head Bench Top, with 250 mL Vessel.



Model 4575B High Pressure/High Temperature 500 mL Moveable Vessel Assembly.

Series 4570/80 Ordering Guide



The Order No. for the Base System is: **457__ or 458__ -FG-M or HD-SS-115 or 230-VS__-5000-4848**

A composite identification number to be used when ordering a 4570 or 4580 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 | Size | Vessel Style |
| 4571 | 1000 mL | Moveable Head, Cart |
| 4572 | 1800 mL | Moveable Head, Cart |
| 4575B | 500 mL | Moveable Head, Bench Top |
| 4576B | 250 mL | Moveable Head, Bench Top |
| 4575A | 500 mL | Fixed Head, Bench Top |
| 4576A | 250 mL | Fixed Head, Bench Top |
| 4577 | 1000 mL | Fixed Head, Floor Stand |
| 4578 | 1800 mL | Fixed Head, Floor Stand |
| | | |
| 4581 | 1.0 Gallon | Moveable Head, Cart |
| 4582 | 1.5 Gallon | Moveable Head, Cart |
| 4583 | 1.0 Gallon | Fixed Head, Floor Stand |
| 4584 | 1.5 Gallon | Fixed Head, Floor Stand |

| B Gasket / Maximum Temperature | |
|---------------------------------------|----------------------------------|
| -FG | Flexible Graphite Gasket, 500 °C |
| -T | PTFE Compression Gasket, 350 °C |

| C Materials of Construction | |
|------------------------------------|------------------------------|
| -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* |
| -ZR | Zirconium Grade 702* or 705* |

* Maximum temperature limited.

| D Magnetic Stirrer Drive for 4575-76 Only | |
|--|-------------------------------------|
| -M | General Purpose, 16 in-lb |
| -FMD | Footless, General Purpose, 16 in-lb |

| E Magnetic Stirrer Drive for 4571-4584 Only | |
|--|---------------------------------------|
| -M | General Purpose, 16 in-lb |
| -HD | Heavy Duty, 60 in-lb |
| -XHD | Extra Heavy Duty, 120 in-lb |
| -FMD1 | Footless, 16 in-lb. |
| -FMD2 | Footless, Heavy Duty, 60 in-lb |
| -FMD3 | Footless, Extra Heavy Duty, 120 in-lb |

| F Mag. Drive Material of Construction | |
|--|-----------------------------------|
| -No Symbol | Same Material As Vessel |
| -MOC Symbol | Indicate Material of Construction |

| G Electrical Supply | |
|----------------------------|--------------------------|
| -115 | 115 VAC (4575-4576 Only) |
| -230 | 230 VAC |

| H Motor Option | |
|-----------------------|---|
| -VS .12 | Variable Speed, 1/8 hp (4575-4576 Only) |
| -VS .25 | Variable Speed, 1/4 hp |
| -VS .50* | Variable Speed, 1/2 hp |
| -XP .25 | Explosion Proof Variable Speed, 1/4 hp |

| | |
|----------|--|
| -XP .50* | Explosion Proof Variable Speed, 1/2 hp |
| -AM .25 | Air Motor, 1/4 hp (4575-4576 Only) |
| -AM .50* | Air Motor, 1/2 hp |
| -GDD | Geared Direct Drive (Fixed Head Unit Only) |

* For use with Heavy Duty (HD) Magnetic Stirrer Drive.
Only available on 230V systems.

| I Pressure Gage | |
|------------------------|--------------------|
| -2000 | 2000 psi / 137 bar |
| -3000 | 3000 psi / 200 bar |
| -5000 | 5000 psi / 345 bar |

| J Bottom Drain Valve | |
|-----------------------------|--|
| -No Symbol | No Bottom Drain Valve |
| -BDV | Bottom Drain Valve (Not available on 250 mL or Bench Top Systems.) |

| K 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 |

| L 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 |

| M 4848 Cooling Control: Solenoid Valve Module | |
|--|---------|
| -SVM1 | 115 VAC |
| -SVM2 | 230 VAC |

| N Custom Options (List All Desired) | |
|--|---------------------------|
| -AS | Anchor Stirrer |
| -SB* | Static Catalyst Basket |
| -GE | Gas Entrainment Stirrer |
| -RC | Reflux Condenser |
| -RTC | Reflux Take-off Condenser |
| -BF | Baffles |

* Not available on 250 mL vessels

| O Certifications | |
|-------------------------|----------------------------------|
| -No Symbol | No Certification |
| -ASME | ASME Certification |
| -CE/PED | European Community Certification |
| -CH | China Certification |
| -P | Parr Certification |

| P Spare Parts Kit | |
|--------------------------|--|
| -4579B | Spare Parts Kit for 4571, 4572, 4577, 4578 |
| -4589B | Spare Parts Kit for 4581, 4582, 4583, 4584 |
| -4579D | Spare Parts Kit for 4575B, 4576B, 4575A, 4576A |