



# Stirred Reactors and Pressure Vessels

**Designing  
and Building  
Quality  
Pressure  
Apparatus  
for Over  
100 Years**

## Chapter 5



**This pdf is chapter five of our Catalog 4500.  
Please refer to all five chapters to make the  
proper equipment choice for your needs.**

**10**



# Non-Stirred Pressure Vessels

Series 4701 - 4714 Screw Cap Vessels 22 & 45 mL

Series 4740 HT/HP Vessels 25 & 75 mL

Series 4790 GP 25 - 100 mL

Series 4750 GP 125 - 200 mL

Series 4760 - 4770 GP 160 - 600 mL

Series 4650 HT/HP 250 - 1000 mL

Series 4600 - 4620 GP 1000 & 2000 mL

Series 4605 - 4626 HP 600 - 1200 mL

Series 4660 GP 1 & 2 Gallon

Series 4680 HT/HP 1000 - 1800 mL

Series 4670 HT/HP 1 - 1.5 Gallon

Series 4676 GP 10 - 20 Liter

Gage Block Assemblies  
Coned Pressure Fittings  
Vessel Heaters

## Non-Stirred Pressure Vessels

**P**arr offers a broad selection of non-stirred pressure vessels in convenient styles, sizes and pressure ranges for many laboratory uses. Recent additions to this line have included new sizes, new temperature and pressure

combinations and new self-sealing closures, all designed to provide convenient vessels for laboratory procedures that must be performed under pressure at elevated temperatures.

### Pressure Vessel Selection Procedure

The steps to be followed in selecting a non-stirred pressure vessel are similar to those used for a stirred reactor. Selection begins with the Guide to Non-Stirred Vessels, from which the user can identify the Model Number for vessels in a range of sizes with temperature and pressure

ratings suitable for the intended application. Detailed specifications and catalog numbers can then be found on the referenced page. After the specifications have been established, the options and accessories required to customize a complete pressure vessel system can be selected.

### Guide to Parr Non-Stirred Vessels

Model Number	Vessel Style	Vessel Size	Max. Press. psi (bar)	Max. Temp. °C	See Page Number
4701-4714	Screw Cap	22-45 mL	1700 (115)	250	118
4740-4742	High Pressure	25-75 mL	8500 (575)	540	119
4791-4793	Split Ring	25-100 mL	3000 (200)	350	120
4750-4755	Split Ring	125-200 mL	3000 (200)	350	121
4760-4774	Split Ring	160-600 mL	3000 (200)	350	122-123
4651-4653	High Pressure	250-1000 mL	5000 (345)	500	126
4605-4626	High Pressure	600-1200 mL	5000 (345)	350	125
4601-4622	Split Ring	1000-2000 mL	1900 (130)	350	124
4661-4664	Split Ring	1 & 2 gallon	1900 (130)	350	127
4681-4684	High Pressure	1000-1800 mL	5000 (345)	500	128
4671-4674	High Pressure	1 & 1.5 gallon	3000 (200)	500	129
4676-4679*	Split Ring	2.6 & 5 gallon	1900 (130)	350	130

\*May be modified for pressures to 5000 psi & temps to 500°C.



Model 4601, 1000 mL Vessel

## Blank Heads

Many of these non-stirred vessels are offered with a blank head with no drilled holes or fittings. These should be considered only as a starting point for custom built vessels as they do not include a safety rupture disc which good practice, safety codes, and common sense dictate should be installed on all pressure vessels. Users who take delivery of vessels without safety relief devices installed must also take the responsibility for installing adequate protective devices before the vessel is placed in service.



Parr General Purpose Vessels with Volumes from 22 to 2000 mL



Available Accessories Include Heaters, Temperature Controllers, Valves, Gage Block Assemblies, and Gas Filling Hoses

### Index to Non-Stirred Vessel Design Features, Options and Accessories

Primary Accessories	Reference Page
Heaters	76
Temperature Controllers	103-114
Gage Block Assemblies	131
Valves and Fittings	92

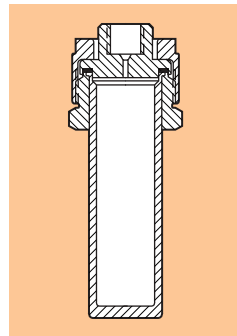
Options	Reference Page
Gasket Systems	20-21
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Pressure Gages	85
Rupture Disc	84
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Accessories*	Reference Page
Liners	90
Pressure Hoses	93
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Liquid Pipettes	89
Gas Filling Systems	86-88

\* May require modifications of vessel to install

# 4701-14

## Series 4701-4714 General Purpose Vessels: 22 & 45 mL



Cross Section 4711



Model 4701, 22 mL Vessel



Model 4714, 45 mL Vessel, with 4316 Gage Block Assembly

These are the smallest of the Parr General Purpose Pressure Vessels. They have a 1 inch inside diameter and are offered in two different lengths with volumes of 22 and 45 mL.

These vessels have a flat PTFE or flexible graphite gasket that is sealed with a screw cap. Special wrenches and bench sockets are offered for tightening these closures. The screw caps and bodies are made in brass or alloy steel. The brass parts can be used to 250 °C and the steel closures can be used to 300 °C. The maximum working pressure is 1700 psi (115 bar) for either closure material. The standard material of construction for these small,

inexpensive vessels is Type 304 Stainless Steel, but they are also available in all of the current materials of construction Parr provides.

There is room for a single opening on the head of these vessels. This is generally an "A" socket which will accept a 4316 Gage Block Assembly.

Blank heads and heads with 1/8 inch or 1/4 inch NPT female sockets are also available.

These vessels are normally heated in ovens, baths, or similar general purpose heating devices. Special heaters for these vessels are not available from Parr.

## Series 4740 High Pressure / High Temp. Vessels: 25 & 75 mL

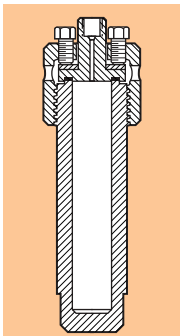
# 4740



Model 4740, 75 mL Vessel, with Gage Block Assembly



Model 4742, 25 mL Vessel, with Gage Block Assembly



Cross Section 4740

These are the smallest of Parr High Pressure, High Temperature vessels. They have a 1 inch inside diameter and offer volumes of 25 or 75 mL. These vessels are closed with an alloy steel screw cap which includes six cap screws to develop the sealing force on a flat, flexible graphite gasket. Interchangeable PTFE gaskets are also available for users who need the high pressure capabilities provided by these vessels, but who do not need to operate above 350° C. These vessels are available in all of the standard materials currently offered by Parr, although some of these materials will limit the maximum pressures and temperatures available.

Because of their small size and the nature of these vessels, they are normally heated in a furnace or similar general purpose heating device. When equipped with the standard high strength steel screw cap, the maximum temperature and pressure ratings will be severely limited if the screw cap is heated directly as well as the body of the vessel. Special high temperature alloys are available for users who wish to heat these vessels in furnace and take advantage of the full design temperature and pressure limits.

Only one head opening is available for these vessels. It is designed to accept the 4316 Gage Block Assembly. Extended connection tubes are available to keep the gage block away from the hot zone within a furnace. The bottom of the vessel can be fitted with a second opening for users who wish to install an internal thermocouple or an additional inlet or outlet.

### Series 4701-4714 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4701	4702	4711	4712	4703	4704	4713	4714
Sizes, mL	22		45		22			45
Maximum Pressure	1700 psi (115 bar)							
Maximum Temperature	250 °C		250 °C		300 °C			300 °C
Closure	Screw Cap-Brass		Screw Cap-Brass		Screw Cap-Steel			Screw Cap-Steel
Gasket	Flat - PTFE							
<b>Vessel Dimensions</b>								
Inside Diameter, inches	1.0							
Inside Depth, inches	1.6		3.8		1.6			3.8
Weight of Vessel, pounds	1		2		1			2
<b>Head Style</b>								
Opening	Blank	"A" Socket	Blank	"A" Socket	Blank	"A" Socket	Blank	"A" Socket
Thermowell	Not Available							
Heater	Not Available							
Maximum Head Openings	1							
Recommended Gage Block	NA	4316	NA	4316	NA	4316	NA	4316
Recommended Wrench	21AC4							
Recommended Bench Socket	A22AC3							

\*Note: Alternative heads with one 1/8" NPT or 1/4" NPT are available upon request.

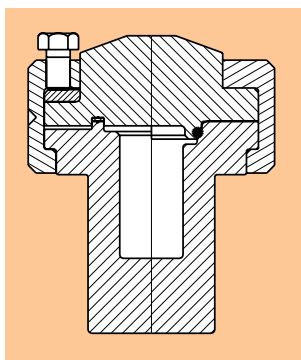
### Series 4740 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4740	4742
Sizes, mL	75	25
Maximum Pressure @ 350 °C	8500 psi (585 bar)	
Maximum Temperature	540 °C	
Max. Pressure at Max. Temp., psi (bar)	1850 (125)	
Closure (Cap Screws)	Screw Cap (6)	
Gasket	Flat - Flexible Graphite	
<b>Vessel Dimensions</b>		
Inside Diameter, inches	1.0	
Inside Depth, inches	5.6	1.7
Weight of Vessel, pounds	5	4
<b>Head Style</b>		
Opening	"A" Socket	
Thermowell	No	
Heater	Not Available	
Maximum Head Openings	1	
Recommended Gage Block	4316	

4790

## Series 4791 - 4793 General Purpose Vessels: 25 - 100 mL



Cross Section 4791  
(Showing Flat Gasket and  
O-ring Closure)

All 4790 Vessels come with dip tube, three valves, gage, rupture disc, and thermocouple.



Model 4791,  
25 mL Vessel



Model 4793,  
100 mL Vessel

## Series 4791 - 4793 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4791	4792	4793
Sizes, mL	25	50	100
Maximum Pressure	3000 psi (200 bar)		
Maximum Temperature			
with FKM O-Ring	225 °C Screw Cap or Split Rings		
with FFKM O-Ring	275 °C Screw Cap or Split Rings		
with PTFE - Flat Gasket	350 °C Split Rings		
Closure (Cap Screws)	Split-Ring (6)		
Gasket	Flat Gasket or O-Ring		
Valve Connections	3 - 1/8" NPT Male		
Pressure Gage Size	3.5 inches		
Range	0-3000 psi (200 bar)*		
Temperature Measurement	Fixed Thermocouple		
Additional Fittings	Dip Tube and Rupture Disc		
Heater			
Catalog Number	A2236HC	A2236HC	A2237HC
Heater Power Watts	400	400	350
Heater Style	Clamp-on	Clamp-on	Mantle
Vessel Dimensions			
Inside Diameter, inches	1.0	1.3	1.3
Inside Depth, inches	2.0	2.3	4.6
Weight of Vessel, pounds	7	7	8

\*Other options available. See Options Section and Ordering Guide.

4750

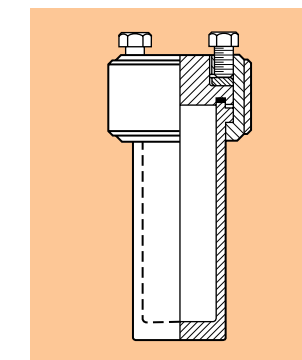
## Series 4750 General Purpose Vessels: 125 &amp; 200 mL



Model 4753, 200 mL Vessel, with  
4316 Gage Block Assembly



Model 4751, 125 mL Vessel, with  
4316 Gage Block Assembly



Cross Section 4750

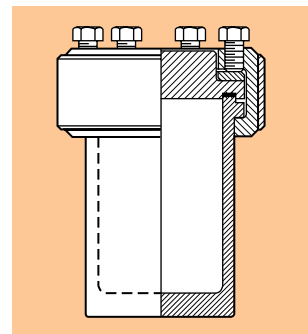
## Series 4750 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4750	4751	4754	4752	4753	4755
Sizes, mL	125			200		
Maximum Pressure	3000 psi (200 bar)					
Maximum Temperature	350 °C					
Closure (Cap Screws)	Split-Ring (6)					
Gasket	Flat - PTFE					
Vessel Dimensions						
Inside Diameter, inches	1.5					
Inside Depth, inches	4.5			7.0		
Weight of Vessel, pounds	4			5		
Head Style						
Opening	Blank	"A" Socket	"A" Socket	Blank	"A" Socket	"A" Socket
Thermocouple	No	No	Yes	No	No	Yes
Heater	Not Available					
Maximum Head Openings	2					
Recommended Gage Block	4316					

# 4760-74

## Series 4760-4774 General Purpose Vessels: 160 - 600 mL



Cross Section 4760



Model 4761,  
300 mL Vessel  
with 4316 Gage  
Block Assembly



Model 4761,  
300 mL Vessel  
with A281HC  
Adapter  
and A146VB  
Needle Valve



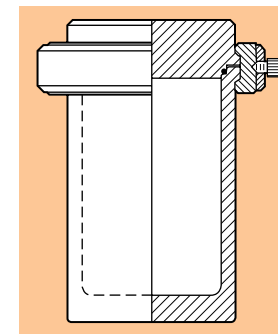
Model 4760,  
300 mL Vessel  
with Blank  
Head



Model 4766Q,  
300 mL Vessel,  
with A281HC  
Adapter, A146VB  
Needle Valve, and  
Thermocouple



Model 4768Q,  
600 mL Vessel,  
with 4316 Gage  
Block Assembly,  
and Thermocouple



Cross Section 4760Q

### Series 4760 - 4774 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4760(Q)*	4761(Q)*	4766(Q)*	4762(Q)*	4763(Q)*	4767(Q)*
Sizes, mL	300			450		
Maximum Pressure	3000 psi (200 bar)					
<b>Maximum Temperature</b>						
with FKM O-Ring	225 °C					
with PTFE - Flat Gasket	350 °C					
Closure (Cap Screws)	Split-Ring (6)					
Gasket	O-Ring - FKM or Flat - PTFE					
<b>Vessel Dimensions</b>						
Inside Diameter, inches	2.5					
Inside Depth, inches	4.0			6.0		
Weight of Vessel, pounds	9			10		
<b>Head Style</b>						
Opening	Blank	"A" Socket	"A" Socket	Blank	"A" Socket	"A" Socket
Thermowell	No	No	Yes	No	No	Yes
<b>Heater</b>						
Catalog Number	A2230HC			A2230HC2		
Wattage	400			590		
Style	Mantle					
<b>Mounting</b>	Bench Top					
<b>Maximum Head Openings</b>	5					
<b>Recommended Gage Block</b>	4316					

\*add the suffix Q to these catalog numbers to specify vessels with an O-Ring seal and a split ring pair without cap screws

### Series 4760 - 4774 Pressure Vessel Specifications

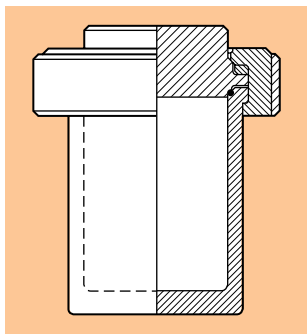
Shaded bar indicates specifications that change within series.

Model Number	4764(Q)*	4765(Q)*	4768(Q)*	4772(Q)*	4773(Q)*	4774(Q)*
Sizes, mL	600			160		
Maximum Pressure	3000 psi (200 bar)					
<b>Maximum Temperature</b>						
with FKM O-Ring	225 °C					
with PTFE - Flat Gasket	350 °C					
Closure	Split-Ring					
Gasket	FKM O-Ring or Flat - PTFE					
<b>Vessel Dimensions</b>						
Inside Diameter, inches	2.5					
Inside Depth, inches	8.0			2.0		
Weight of Vessel, pounds	11			7		
<b>Head Style</b>						
Opening	Blank	"A" Socket	"A" Socket	Blank	"A" Socket	"A" Socket
Thermowell	No	No	Yes	No	No	Yes
<b>Heater</b>						
Catalog Number	A2230HC3			A2235HC		
Wattage	400			500		
Style	Mantle			Clamp-on		
<b>Mounting</b>	Bench Top					
<b>Maximum Head Openings</b>	5					
<b>Recommended Gage Block</b>	4316					

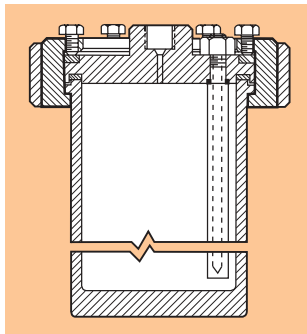
\*add the suffix Q to these catalog numbers to specify vessels with an O-Ring seal and a split ring pair without cap screws

# 4600-20

## Series 4600-4620 General Purpose Vessels: 1 & 2 Liters



Cross Section 4601Q



Cross Section 4621



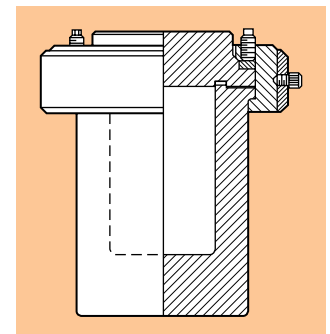
Model 4621, 1000 mL Vessel with PTFE Gasket, 4317 Gage Block Assembly and Thermowell



Model 4601, 1000 mL Vessel with Blank Head

# 4605-26

## Series 4605-4626 High Pressure Vessels: 600 & 1200 mL



Cross Section 4605



Model 4605— 600 mL Vessel

### Series 4600 - 4620 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4601(Q)*	4611(Q)*	4621(Q)*	4602(Q)*	4612(Q)*	4622(Q)*
Sizes, mL	1000			2000		
Maximum Pressure	1900 psi (130 bar)					
Maximum Temperature						
with FKM O-Ring	225 °C					
with PTFE - Flat gasket	350 °C					
Closure (Cap Screws)	Split-Ring (None*) or (6)					
Gasket	O-Ring - FKM or PTFE Flat Gasket					
<b>Vessel Dimensions</b>						
Inside Diameter, inches	4.0					
Inside Depth, inches	5.32			10.44		
Weight of Vessel, pounds	19			27		
<b>Head Style</b>						
Opening	Blank	"B" Socket	"B" Socket	Blank	"B" Socket	"B" Socket
Thermowell	No	No	Yes	No	No	Yes
<b>Heater</b>						
Catalog Number	4913					
Wattage	1500					
Style	Calrod					
Mounting	Bench Top					
Maximum Head Openings	6-10					
Recommended Gage Block	4317					

\*add the suffix Q to these catalog numbers to specify vessels with an O-Ring seal and a split ring pair without capscrews

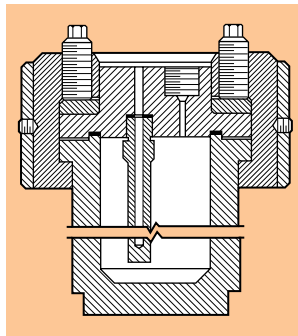
### Series 4605 - 4626 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4605	4615	4625	4606	4616	4626
Sizes, mL	600			1200		
Maximum Pressure	5000 psi (350 bar)					
Maximum Temperature	350 °C					
Closure (Cap Screws)	Split-Ring (8)					
Gasket	Flat - PTFE					
<b>Vessel Dimensions</b>						
Inside Diameter, inches	3.25					
Inside Depth, inches	4.7			9.8		
Weight of Vessel, pounds	45			60		
<b>Head Style</b>						
Opening	Blank	"B" Socket	"B" Socket	Blank	"B" Socket	"B" Socket
Thermowell	No	No	Yes	No	No	Yes
<b>Heater</b>						
Catalog Number	4913					
Wattage	1500					
Style	Calrod					
Mounting	Bench Top					
Maximum Head Openings	5-7					
Recommended Gage Block	4317					

# 4650

## Series 4650 High Pressure / High Temp. Vessels: 250 - 1000 mL



Cross Section 4651

Model 4651, 250 mL Vessel, with 4317 Gage Block Assembly



4652 High Pressure Vessel, 500 mL, in 4923 Heater with 4842 Temperature Controller

Series 4650 Pressure Vessel Specifications			
Shaded bar indicates specifications that change within series.			
Model Number	4651	4652	4653
Sizes, mL	250	500	1000
Maximum Pressure @ 350 °C	6000 psi (410 bar)		
Maximum Temperature	600 °C		
Max. Pressure at Max. Temperature	4200 (290)		
Closure (Cap Screws)	Split-Ring (8)		
Gasket	Flat - FG		
<b>Vessel Dimensions</b>			
Inside Diameter, inches	2.5		
Inside Depth, inches	3.25	6.63	13.13
Weight of Vessel, pounds	30	36	48
<b>Head Style</b>			
Opening	"B" Socket		
Thermowell	Yes		
<b>Heater</b>			
Catalog Number	4923	4923	4926
Wattage	1500	1500	2250
Style	Ceramic		
Mounting	Bench Top		
Maximum Head Openings	6		
Recommended Gage Block	4317		

## Series 4660 General Purpose Vessels: 1 & 2 Gallon

# 4660

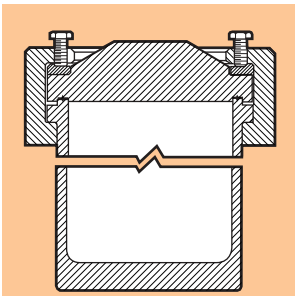


Model 4666Q, 2 Gallon Vessel, in 4929 Heater with 4842 Temperature Controller

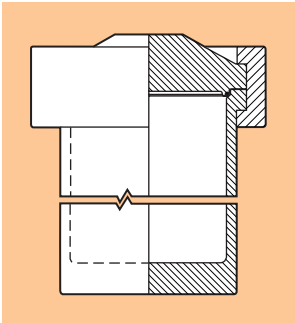


Model 4662Q, 1 Gallon Vessel, with Two Valves, Gage, Thermowell and O-Ring

Cross Section 4660



Cross Section 4660Q



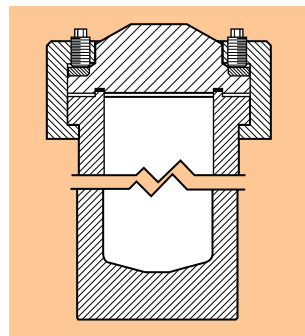
Series 4660 Pressure Vessel Specifications				
Shaded bar indicates specifications that change within series.				
Model Number	4661(Q)*	4662(Q)*	4665(Q)*	4666(Q)*
Sizes, Gallon (Liter)	1 (3.75)		2 (7.5)	
Maximum Pressure	1900 psi (130 bar)			
<b>Maximum Temperature</b>				
with FKM O-Ring			225 °C	
with PTFE Flat Gasket			350 °C	
Closure (Cap Screws)			Split-Ring (10)	
Gasket			Flat - PTFE	
<b>Vessel Dimensions</b>				
Inside Diameter, inches			6.0	
Inside Depth, inches	8.6		17.2	
Weight of Vessel, pounds	75	80	85	90
<b>Head Style</b>				
Opening	Blank	Valves & Gage	Blank	Valves & Gage
Thermowell	No	Yes	No	Yes
<b>Heater</b>				
Catalog Number	4928		4929	
Wattage	2250		3750	
Style			Calrod	
Mounting			Floor Stand	
Maximum Head Openings			12	

\*add the suffix Q to these catalog numbers to specify vessels with an O-Ring seal and a split ring pair without capscrews

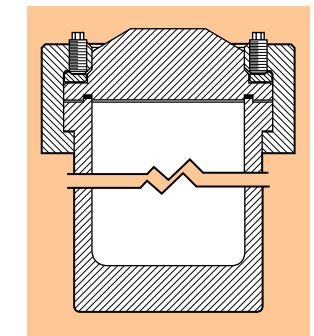


# 4680 Series 4680 High Pressure/High Temp. Vessels: 1 & 1.8 Liters

# 4670 Series 4670 High Pressure/High Temp. Vessels: 1 & 1.5 Gallon



Cross Section 4680-4683



Cross Section 4671-4674



Model 4681, 1000 mL Vessel, with Gage Block



Model 4681, 1000 mL Vessel, in 4931 Heater with 4842 Temperature Controller



Model 4674, 5800 mL Vessel, in 4934 Heater with 4842 Temperature Controller



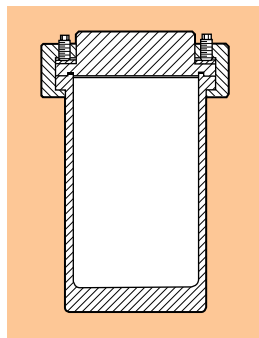
Model 4672, 3750 mL Vessel

Series 4680 Pressure Vessel Specifications				
Shaded bar indicates specifications that change within series.				
Model Number	4680	4681	4682	4683
Sizes, mL	1000		1800	
Maximum Pressure @ 350 °C	6000 psi (410 bar)			
Maximum Temperature	600 °C			
Max. Pressure at Max. Temperature	4200 (290)			
Closure (Cap Screws)	Split-Ring (12)			
Gasket	Flat - FG			
<b>Vessel Dimensions</b>				
Inside Diameter, inches	3.75			
Inside Depth, inches	6.12			10.5
Weight of Vessel, pounds	75			90
<b>Head Style</b>				
Opening	Blank	"B" Socket	Blank	"B" Socket
Thermowell	No	Yes	No	Yes
<b>Heater</b>				
Catalog Number	4931		4932	
Wattage	2300		2500	
Style	Ceramic Fiber			
Mounting	Floor Stand			
Maximum Head Openings	8			
Recommended Gage Block	4317			

Series 4670 Pressure Vessel Specifications				
Shaded bar indicates specifications that change within series.				
Model Number	4671	4672	4673	4674
Sizes, mL	3750		5800	
Maximum Pressure	3000 psi (200 bar)			
Maximum Temperature	600 °C			
Max. Pressure at Max. Temperature	2200 (150)			
Closure (Cap Screws)	Split-Ring (16)			
Gasket	Flat - FG			
<b>Vessel Dimensions</b>				
Inside Diameter, inches	5.5			
Inside Depth, inches	9.75			15.0
Weight of Vessel, pounds	100			120
<b>Head Style</b>				
Opening	Blank	Valves & Gage	Blank	Valves & Gage
Thermowell	No	Yes	No	Yes
<b>Heater</b>				
Catalog Number	4933		4934	
Wattage	3000		3500	
Style	Ceramic			
Mounting	Floor Stand			
Maximum Head Openings	12			

# 4670

## Series 4676 - 4679 General Purpose Vessels: 2.6 & 5 Gallons



Cross Section 4676-4679



Model 4677, 18.5 L Vessel, with Valves, Gage, and Thermowell

Model 4677, 18.5 Liter Vessel with Heater, and 4842 Temperature Controller

### Series 4676-4679 Pressure Vessel Specifications

Shaded bar indicates specifications that change within series.

Model Number	4676	4677	4678	4679
Sizes, Gallon (Liter)	5 (18.5)		2.6 (10)	
Maximum Pressure	1900 psi (130 bar)			
Maximum Temperature	350 °C			
Closure (Cap Screws)	Split-Ring (12)		Split-Ring (10)	
Gasket	Flat - PTFE			
<b>Vessel Dimensions</b>				
Inside Diameter, inches	9.5		7.5	
Inside Depth, inches	16.6		12.2	
Weight of Vessel, pounds	250		90	
<b>Head Style</b>				
Opening	Blank	Valves & Gage	Blank	Valves & Gage
Thermowell	No	Yes	No	Yes
<b>Heater</b>				
Style	Ceramic 3 Zone			
<b>Mounting</b>				
Maximum Head Openings	18		14	

## Gage Block Assemblies

Parr gage block assemblies combine the function of an:

- Inlet / Outlet Valve
- Pressure Gage
- Safety Rupture Disc

into a compact assembly which can be attached to the head of any pressure vessel with a single connecting tube. There is a threaded socket in the block for a gas connection with a pressure hose or tubing using a type "A" coned pressure fitting. Coned fittings are also used on the thick-walled tube which connects the block to the pressure vessel. The valve in this assembly controls the gas flow into the vessel and the gage shows the pressure in the vessel when the valve is closed. A rupture disc with a burst rating matched to the gage is installed in the block.

### Two Sizes

These gage block assemblies are made in two styles which differ only in the size of the pressure gage and the size of the tube connection to the

pressure vessel. The smaller 4316 Gage Block Assembly is usually furnished with a 3-1/2 inch diameter pressure gage and includes a 3 inch long connecting tube with type "A" coned fitting. This assembly is normally installed on pressure vessels up to 600 mL.

The 4317 Gage Block Assembly has a 4-1/2 inch diameter gage and type "B" coned fitting on a 3 inch long connecting tube. This assembly is normally installed on vessels of 1000 mL and larger.

The gage block, connecting tube and pressure gage on all of these assemblies are normally made of type 316 stainless steel, but they can also be made of Alloy 400 on special order. Longer tubes can be furnished on special order.

### Ordering Information

Part No.	Description
4316	with Type "A" Connector
4317	with Type "B" Connector

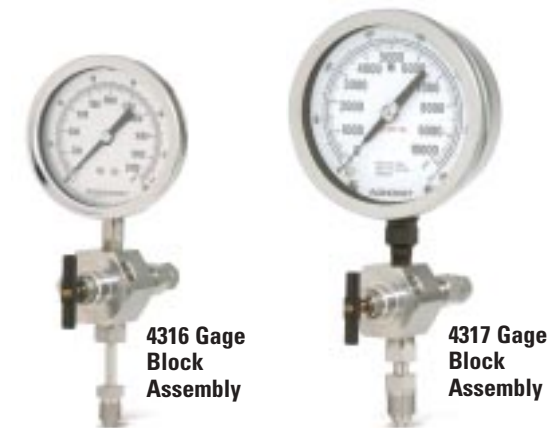
### Gages for Parr Pressure Vessels

Pressure Range	4-1/2" Diameter		3-1/2" Diameter	
	psi	bar	Gage Number	Gage Number
0-100	0-7		56HCPA	593HCP1AD
0-200	0-14		56HCPB	593HCP2AD
0-600	0-40		56HCPC	593HCP6AD
0-1000	0-70		56HCPD	593HCPD
0-2000	0-140		56HCPF	593HCPF
0-3000	0-210		56HCPG	593HCPG
0-5000	0-350		56HCPH	593HCP50AD
0-7500	0-517		56HCP75AD	NA
0-10000	0-700		56HCPK	NA

When ordering, specify the catalog number, pressure gage diameter and range.

### Available Gages

Any of the gages shown in this table can be installed on these gage block assemblies.

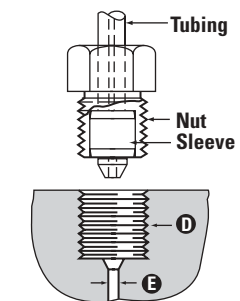


## Coned Pressure fittings

Gage Blocks, pressure hoses and other parts that are frequently removed from a pressure vessel are attached with a coned, socket type connector. The male segment of a coned fitting consists of a sleeve with a left-hand thread screwed onto a thick-walled tube, plus a compression nut to complete the assembly. When screwed into a mating socket these parts produce a rigid joint which will remain tight over a wide temperature and

pressure range, yet the joint can be made and broken repeatedly without destroying the sealing faces. No gasket or sealing tape is required. These fittings have the added advantage of behaving like union fitting, allowing the gage block, connecting tube or hose to remain stationary while the nut is tightened.

Parr coned pressure fittings are made in two sizes, identified as types "A" and "B", for 1/4 inch and 3/8 inch tubing, respectively.



### Coned Pressure Fittings

Type	A	B
Tube Size	1/4"	3/8"
Thread (D)	9/16 -18	3/4 -16
Bore (E)	3/32"	1/8"
Nut No.	35HC	326HC
Sleeve No.	40HC	366HC

## Vessel Heaters

**E**lectric heaters and automatic temperature controllers are available for most all Parr non-stirred vessels. Some small vessels are generally heated in an oven, bath, furnace or similar general purpose heater. The heaters furnished for non-stirred vessels are the same as those furnished for the stirred versions of the same size vessels. A full description of the different types of heaters is found on page 76. The catalog number of the standard heater designed for each of the non-stirred vessels is listed in the specifications for each vessel.

Custom heaters are also available for these vessels when it is necessary to meet explosion proof requirements, to accommodate installed windows or fittings, or to convert to a welded jacket for steam or oil heating.

### 4928 Floor Stand Heater with 4842 Temperature Controller for 4662, 1 Gallon Vessel

Furnished also with Other Heaters as:  
 4929 for 2 Gallon, 4666 Vessel  
 4930 for Series 4601-30 Vessels  
 4931-32 for Series 4680 Vessels  
 4933-34 for Series 4670 Vessels



### Temperature Controllers

The Series 4840 Temperature Controllers illustrated and described in Chapter 4 of this catalog are recommended for use with any of the non-stirred heaters. Special load handling circuitry must be included with the 4676-4679 vessels to handle their high power loads. Unless otherwise specified, these controllers are designed for use with Type J (iron-constantan) thermocouples.



4842 PID Temperature Control, with 4766 Vessel, and A2230HCEB Heater

Heater No.	Use with Vessel Nos.	Volts	Watts	Heater Style	Heater Mounting
A2230HCEB A2230HCEE	4760, 4761 4766	115 230	400	Rigid Mantle	Bench
A2230HC2EB A2230HC2EE	4762, 4763 4767	115 230	590	Rigid Mantle	Bench
A2230HC3EB A2230HC3EE	4764, 4765 4768	115 230	780	Rigid Mantle	Bench
A2235HCEB A2235HCEE	4772 thru 4777	115 230	500	Clamp-On	Bench
A2236HCEB A2236HCEE	4791 thru 4792	115 230	400	Clamp-On	Bench
A2237HCEB A2237HCEE	4793 4793	115 230	300	Rigid Mantle	Bench
4913EB 4913EE	4601 thru 4630	115 230	1500	Sheathed Element	Bench
4930EB 4930EE	4601 thru 4630	115 230	1500	Sheathed Element	Floor Stand / Cart
4928EE 4929EE	4661, 4662 4665, 4666	230 230	2550 3750	Sheathed Element	Floor Stand / Cart
4923EB 4923EE	4651, 4652	115 230	1500	Sheathed Element	Bench
4926EE	4653	230	3000	Sheathed Element	Bench
4931EE	4680, 4681	230	2300	Ceramic	Floor Stand / Cart
4932EE	4682, 4683	230	2500	Ceramic	Floor Stand / Cart
4933EE	4671, 4672	230	3000	Ceramic	Floor Stand / Cart
4934EE	4673, 4674	230	3500	Ceramic	Floor Stand

Alternate Fixed Head Stands/Heater are available on request.



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