Gas and Liquid Charging Systems

High Pressure Gas Burettes

Parr offers a series of high pressure burettes intended to introduce gas (commonly hydrogen) to a reactor at a constant pressure. The burettes consist of a high pressure reservoir equipped with an inlet valve, a pressure gage and a relief valve. A constant pressure regulator with a check valve, a connecting hose and a support stand are included with each pipette.

The amount of gas consumed in a reaction can be determined by knowing the volume of the high pressure reservoir and observing the pressure drop in the reservoir during a reaction.

Parr high pressure burettes can be furnished in various sizes as shown in the adjoining table, each with a regulator to deliver gas to the reactor over the designated pressure range. The moles of gas shown in the table represent the amount of hydrogen that will be held in the burette at the maximum pressure. The deliverable volume will be a function of the difference in pressure between the pipette and the reactor. The size of the burette should be selected as large enough to provide sufficient gas to complete the reaction while still maintaining sufficient pressure in the burette to force gas into the reactor. Reservoirs with larger volumes are available as are regulators with different delivery ranges. Modifications can be made to these basic systems to add an internal thermocouple to the reservoir and/or a pressure transducer for digital readout and/or recording.

High Pressure Gas Burette

Burettes					
			Delivery Pressure Range		
Burette Volume mL	Max Pressure psi	Total H_2 Volume Moles	0-1800 psi	0-1200 psi	0-700 psi
150	1800	0.8	A2280HC	A2280HC2	A2280HC3
300	1800	1.5	A2281HC	A2281HC2	A2281HC3
500	1800	2.6	A2282HC	A2282HC2	A2282HC3
1000	1800	5.1	A2283HC	A2283HC2	A2283HC3
2250	1800	11.5	A2284HC	A2284HC2	A2284HC3
500	5000	7.1	A2285HC	A2285HC2	A2285HC3

Liquid Metering Pumps

Liquid metering pumps are the more appropriate way to introduce liquids into a reactor or vessel at elevated pressures on a continuous basis as opposed to the batch process for which the liquid filling pipettes are commonly used. A wide variety of pumps are available to meet various pressure, flow, and control requirements. The pumps listed below cover some of the more common pressure and flow requirements associated with Parr reactors and pressure vessels. The pumps described under these catalog numbers include an inlet filter, a reverse-flow check valve and the outlet tubing to the reactor. Special pumps can be furnished to meet requirements outside the range of these pumps.

Liquid Metering Pumps				
Part No.	Flow Rate mL/min	Pressure Max. psi	Wetted Material	Remote Control 0-10 VDC
A2286HC	0.01-10	2500	PEEK	No
A2287HC	0.01-10	5000	Stainless	No
A2288HC	0.04-40	1500	Stainless	No
A2289HC	0.01-10	5000	Stainless	Yes
A2290HC	0.04-40	1500	Stainless	Yes
A2291HC	1.0-80	5000	Stainless	No

Liquid Charging Pipettes

To introduce liquids into reactors or vessels at elevated pressures, the most economical way is to use a pressure pipette as a secondary vessel. Liquid is forced into the reactor from the pipette by applying gas pressure to the pipette greater than the pressure within the vessel. If the passages in the connecting line are large enough, slurries or catalyst suspensions can also be charged into the reactor in this manner.

The pipettes listed below offer a choice of volumes and are rated for pressures to 1800 psi. They include a nitrogen filling connection for attachment to a nitrogen tank. More elaborate pipette systems can be assembled to special order to include additional fittings, such as a pressure gage for the pipette, a pressure relief valve or a large opening ball valve. Special pipettes can also be furnished for higher pressures to 5000 psi.

Liquid Charging Pipettes		
Part No.	**Pipette Volume mL**	**Pressure Rating psi**
A2113HC3	50	1800
A2113HC4	150	1800
A2113HC	300	1800
A2113HC2	1000	1800