

## Taking Samples

There are several reasons for taking samples. The two main ones are (1) to obtain solution or refrigerant concentration during unit troubleshooting and (2) sending a sample for laboratory analysis or in some cases, analyzing the sample at the job.

### Taking samples to obtain concentration during troubleshooting

#### Material Needed:

Spindle Valve Adapter  
 Allen Wrench (Metric 10mm)  
 Barbed Fitting (1/4" barb x 1/2" MPT)  
 Clear Vacuum Hose (YORK p/n 028-12514-000)  
 Hose Clamp  
 Pipe Sealant (Loctite 567)  
 Silicone Vacuum Grease (Dow Corning)  
 Plastic Bucket (2-5 gal.)  
 Hydrometer Flask (150 ml)  
 Hydrometers (YORK p/n 026-32366-000)  
 Vacuum Flask (Bel Art Products)  
 Protective Face Shield and Gloves

In order to troubleshoot an absorption unit, it is **essential** to know the concentration of the solution and refrigerant in various sections of the unit. The table below shows the sample points of a ParaFlow unit and what the samples mean.

#### Warning:

**When taking samples, wear a full face shield, protective gloves and apron to avoid the danger of hot solution splashing on the skin or eyes. Do not use glass sample flasks. Use polypropylene or other vacuum suitable, laboratory grade plastic.**

In order to take a sample from any point on the unit, it is necessary to connect the sample flask using the proper fittings and suitable vacuum tubing thread.

Be aware that if the unit is equipped with spindle-type valves for sampling, you must use a special spindle valve adapter fitting. The spindle valve has a straight thread. If you screw in a 1/2" pipe nipple, it may appear to work, however, there is a good possibility that it will leak. Do not take the chance.

If the sample point is in a positive pressure, it is relatively easy to take the sample. **Never assume that a sample point is in a positive pressure.** Units will vary. On "G" Model units, it is typical for the main solution pump (P1) discharge to be in a positive pressure. This is the case only when the pump is operating and turning in the correct direction. If you are not sure of a sample point pressure, assume it is in a vacuum or check the pressure with a pressure gage.

If the sample point is in a negative pressure, it will be necessary to evacuate the sample flask to a pressure

Sample Point	Valve No. <sup>1</sup>	Pressure <sup>2</sup>	Temperature <sup>2</sup>	Concentration <sup>4</sup>	Remarks
Solution leaving Absorber	V14	Normally a positive pressure	100°F	58-59%	Used for solution sample analysis
Solution leaving 2nd Stage Generator	V17	Vacuum	170-190°F	62-63%	Used to check 2nd stage performance
Solution leaving 1st Stage Generator	V18	Vacuum	140-160°F	64-65%	Used to check heat input
Refrigerant Pump Discharge	V11	Vacuum	45°F	< 2%	Blowdown if ≥ 2%
Strong Absorber Sprays (19GL-22GL only)	V25	Vacuum	120-130°F	62-63%	Seldom used for troubleshooting
Weak Absorber Sprays (19GL-22GL only)	V36	Sometimes positive-don't depend on it	105-115°F	60%	Seldom used for troubleshooting

1. Valve Numbers may not be uniform throughout product line. See valve location drawing and valve list on Factory Test Report.
2. Pressure is shown with all pumps running. Actual pressure may vary. Always assume that the sample point is in a vacuum.
3. Temperatures are only a general guide. Actual temperatures may vary depending on unit operation and actual sample valve on heat exchanger.
4. Concentrations shown are with unit at full load. Use only as a guide. Actual concentrations may differ.