



Overflow Top Reactor Sampler

U.S. Patent No. 6,546,819

SPD16.1.1
Rev. 2
6/03



- Draw contemporary samples from reactors and tanks requiring sample lift
- Designed specifically for Pharmaceutical and Chemical applications
- Unique standpipe overflow design eliminates sample flushing and prevents contamination of the vacuum source
- Designed with oversized valve ports to prevent plugging
- Easy to flush and disassemble
- All wetted parts made of high corrosion resistant materials

The ProSys Reactor Sampler is designed to take a representative sample from the top of a reactor vessel without contaminating the vacuum source used to draw the sample. This is accomplished with our unique standpipe overflow design.

A transparent glass sampling chamber encased with a plastic protective cover contains an internal standpipe that draws the sample from the vessel and overflows into the sample chamber when a controlled vacuum source is applied. The pressure differential between the standpipe and the vacuum/purge inlet and the large volume of overflow space in the sample chamber assures that the overflowing sample drops to the chamber and is not drawn to the vacuum/purge inlet. The last sample entering the sampler is the most representative and is saved for analysis.

This assembly is mounted on top of a multi-ported PTFE/Hastelloy[®] sampling valve assembly and a PTFE lined ball valve which can be attached to the reactor vessel through a single or double flange dip tube. The combined sampling valve and ball isolation valve provides for double block isolation from the reactor vessel. This allows sampling from vessels under vacuum or from pressurized vessels.

Features and Benefits

The Overflow Top Reactor Sampler has many features which improve the way you collect pharmaceutical and chemical samples.

FEATURES:

The last sample pulled into the sampling chamber is saved for analysis. This is fresh sample from the vessel, not stale sample trapped in the dip tube.

Glass sample chamber.

A double ball check on the sampling chamber outlet prevents sample overflow.

Construction is a combination of PTFE, borosilicate glass, and Hastelloy®.

A sampling valve and a ball isolation valve provide isolation from the reactor vessel.

Liquids and powders may be introduced through the Overflow Top Reactor Sampler.

BENEFITS:

Other samplers trap a large sample and discharge only a portion to the sample bottle which is likely to be non-representative. Guarantees a fresh sample.

Allows visual inspection during the sample filling process.

Prevents contamination of the vacuum lines by keeping the upper ball dry.

Allows easy cleaning while preventing contamination of the sample.

This feature provides for double block isolation from the reactor vessel, maximizing safety.

This allows both a solvent flush or a catalyst introduction through the sampler to the reactor vessel.



Top Reactor Sampler with containment of the bottle mount and needle sampler



Top Reactor Sampler in a stainless steel enclosure

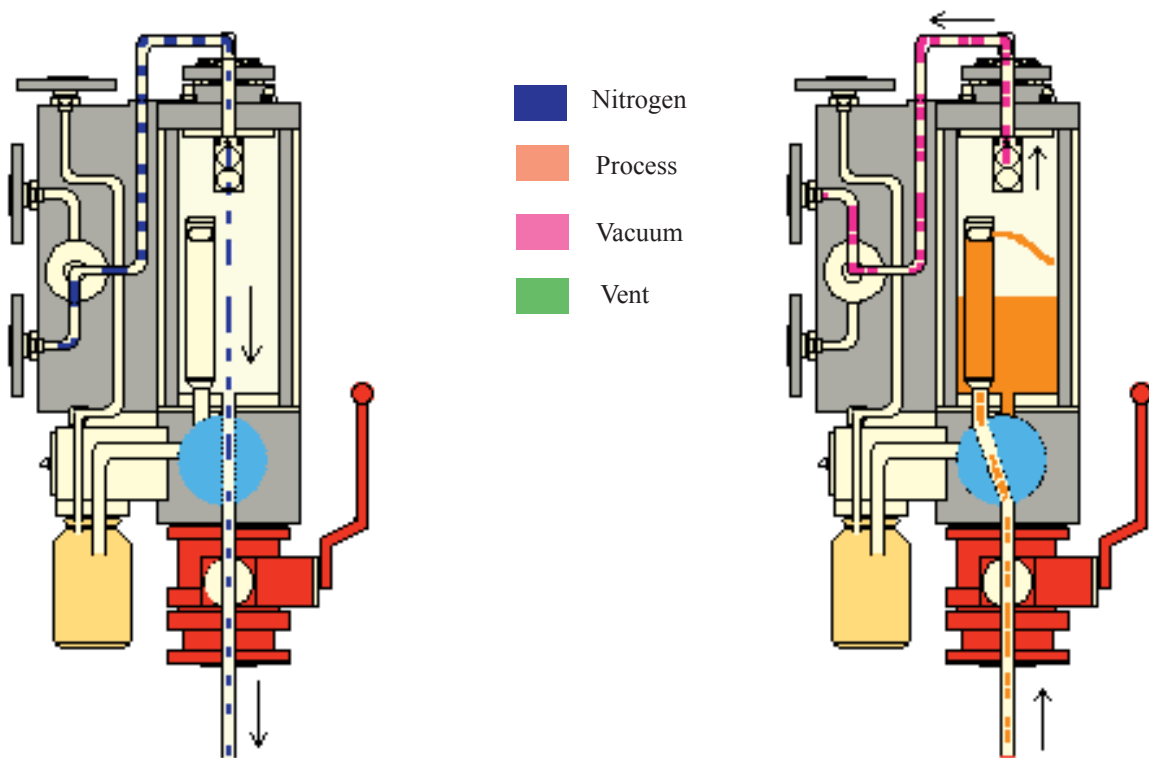


Top Reactor Sampler with tube stub sampler

Design Specifications

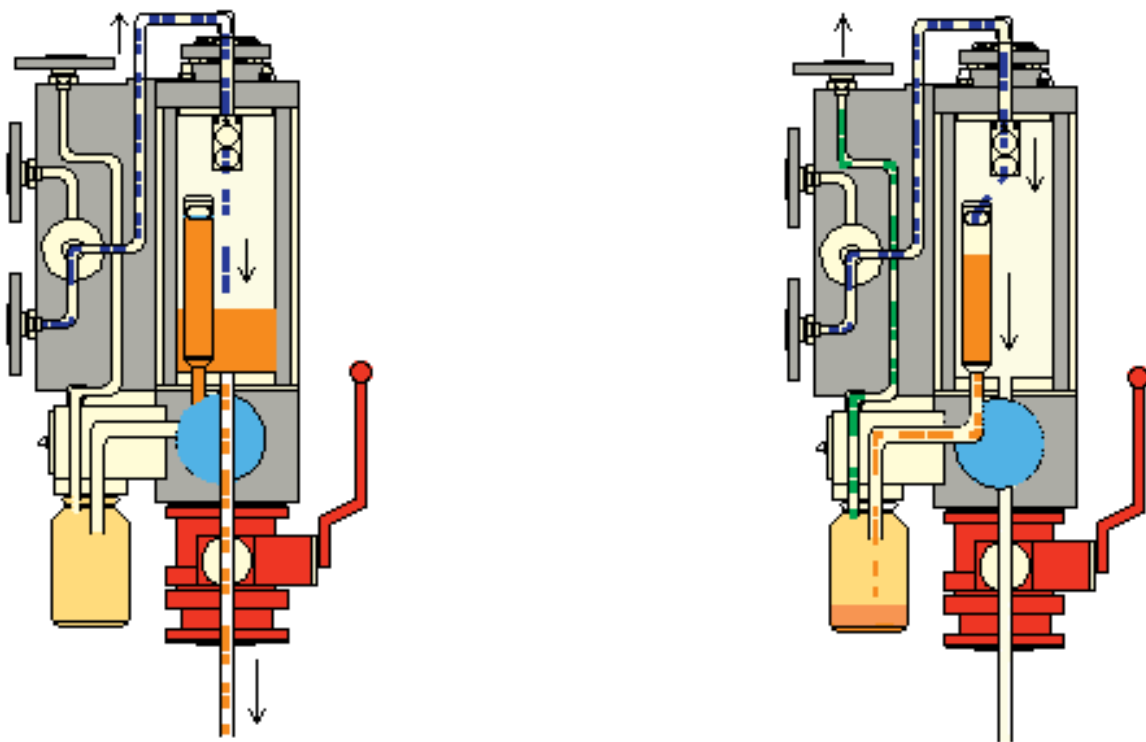
Pressure:	Vacuum to 145 psig (10 barg)	Temperature:	-22°F (-30°C)/356°F (180°C) Fluid 32°F (0°C)/140°F (60°C) Ambient
Wetted Materials:	PTFE, Hastelloy®, Borosilicate Glass	Utilities:	Regulated Vacuum and Purge Gas (N ₂ or Air)
Sample Size:	7 inch (178 mm) Sampler - 15 or 30 cc 10 inch (254 mm) Sampler - 55 or 100 cc		

Typical Steps in the Operation of the Overflow Top Reactor Sampler



STEP 1: Purge - The sampling chamber and dip tube are purged with nitrogen gas.

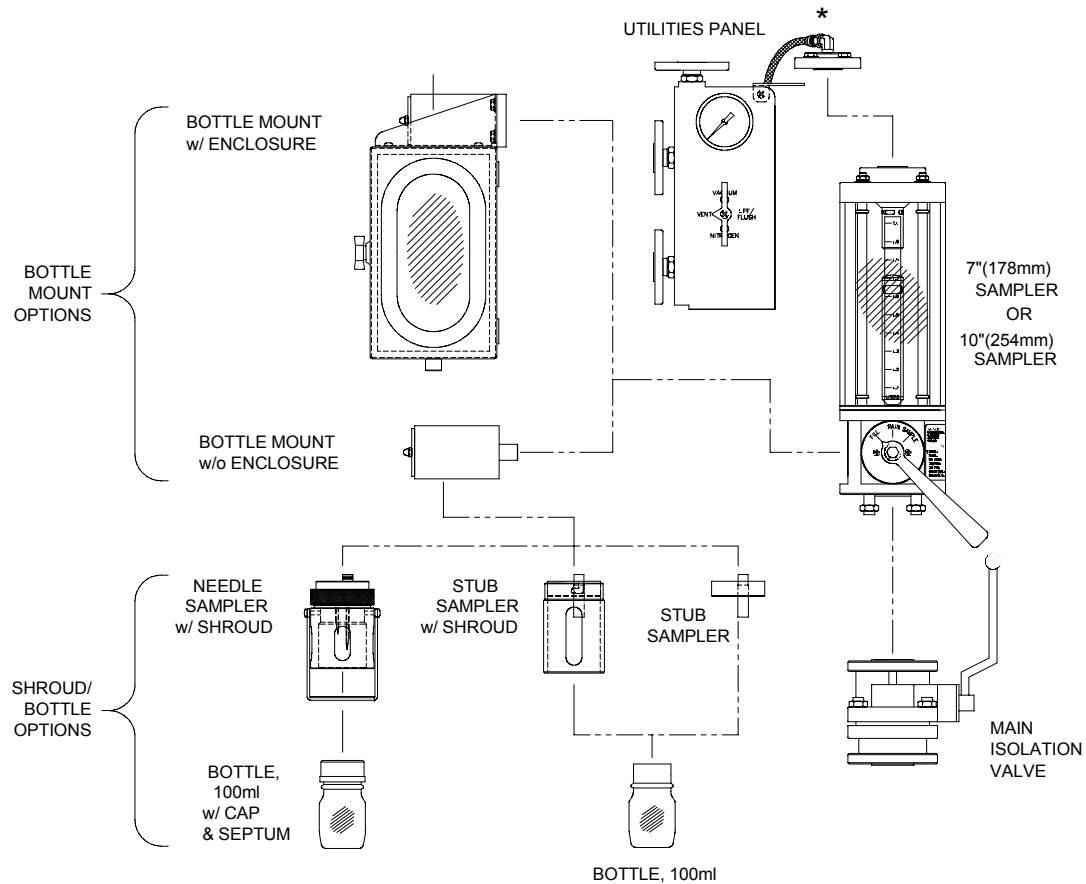
STEP 2: Fill - Vacuum is applied to the sampling chamber and the overflow fills the chamber until it is half filled. The standpipe is completely filled with sample.



STEP 3: Drain - The excess sample in the sampling chamber is drained back to the reactor vessel. Nitrogen may be used to push it back into the vessel and to keep the sampling chamber inert.

STEP 4: Sample - The fixed volume of fresh sample in the standpipe is diverted to the sample bottle. This transfer can be assisted with a nitrogen gas purge.

Top Reactor Options Matrix



* Educator assembly available for generating vacuum.

Hastelloy® is a registered trademark of Haynes International.

OPTIONS:

- Sampler 7" (178mm) or 10" (254mm) height.
- Tube stub assembly with or without shroud with 100 ml GL 45 bottle; other bottle sizes are available.
- Needle assembly to deliver into a septum sealed 100 ml GL 45 sample bottle; other bottle sizes are available.
- Sample enclosure for containment - NEMA 4 with safety glass.
- Utilities panel which includes the vent, vacuum, nitrogen and flush connections to operate the sampler.
- Dip tube to suit specific applications.
- Educator assembly to supply vacuum.

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