

 SARNIA REFINERY	GASTEC GV-100/110S SAMPLING PUMP OPERATION		
	Department: Environmental, Health & Safety		
	Document Owner: Manager, Environment, Health & Safety		Document Contact: Occupational Hygienist
Document Number: 4000-ZPR-HMOENVCA-022452	Issue Date: 11/28/2018	Revision Number: 2	Next Review Date: 08/28/2021

Purpose and Scope:	<p>This procedure provides the operator of the Gastec GV-100S and GV-110S Sampling Pumps with step-by-step instructions to ensure safe and accurate operation of the instrument.</p>
	<p style="text-align: center;"><u>NOTE</u></p> <p>The difference between the two sampling pumps is the presence of a pump stroke counter. The GV-110S Sampling Pump is equipped. The GV-100S Sampling pump is not. The GV-110S Sampling Pump is a warehouse stock item (mm#1000079424).</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>GV-100S</p> </div> <div style="text-align: center;">  <p>GV-110S</p> </div> </div>
Personal Protective Equipment (PPE) Required:	<p>Normal mandatory PPE for working in process areas required. Additional PPE may be required as per Refinery Standards and applicable Material Safety Data Sheets (MSDS).</p>

GASTEC GV-100/110S SAMPLING PUMP OPERATION

Document Number: 4000-ZPR-HMOENVCA-022452	Issue Date: 11/28/2018	Revision Number: 2	Next Review Date: 08/28/2021
---	----------------------------------	------------------------------	--

PROCEDURE INSTRUCTIONS

1.0	Perform a Pump Leakage Test.	1.1	Push the pump's handle all the way in and ensure the flow finish indicator (on the end of the handle) is white.
		1.2	Insert an unbroken detector tube into the rubber inlet of the pump.
		1.3	Align the ▲ 100 guide mark on the handle with the red line on the back plate.
		1.4	Securely hold the sampling pump and pull the handle all the way out to the locked position.
		1.5	Ensure the flow finish indicator is no longer white and wait one minute.
		1.6	Ensure the flow finish indicator is still not white, carefully unlock the handle by turning it slightly and guide it back gradually (the handle will attempt to spring back quickly due to the vacuum in the pump cylinder).
			<p><u>WARNING</u></p> <p>This step is especially important when used in cold (<0°C) weather as rubber components may shrink leading to pump leakage.</p> <p>If the flow finish indicator does not behave as described above or the handle does not spring back when unlocked after one minute, do not use the pump. Tag it appropriately and notify SIM.</p>

GASTEC GV-100/110S SAMPLING PUMP OPERATION

Document Number: 4000-ZPR-HMOENVCA-022452	Issue Date: 11/28/2018	Revision Number: 2	Next Review Date: 08/28/2021
---	----------------------------------	------------------------------	--

2.0	Select the Appropriate Detector Tube and Prepare for Sampling.	2.1	Select the Gastec detector tube type most appropriate for the target substance and presumed concentration.
		2.2	Ensure the expiry date (printed on the box) has not passed.
		<p><u>WARNING</u></p> <p>Do not use an expired detector tube.</p> <p>The temperature of the tube should be kept above 0°C.</p> <p>When used in cold weather, tubes should be carried inside the jacket and removed immediately prior to use.</p>	
		2.3	Review the information sheet for the detector tube to understand: <ul style="list-style-type: none"> • The expected colour change • Potential interference from other contaminants • The number of pump strokes required.
3.0	Break off Both Ends of the Detector Tube Immediately Before Measurement.	3.1	Insert the detector tube end straight into the tube tip breaker and rotate the tube for one full turn so that the diamond cutter of the tube tip breaker scratches the entire circumference of the tube end.
		3.2	Hold the detector tube firmly at a point close to the tube tip breaker and bend the tube toward the handle to break the tube tip.
		3.3	When two tubes are to be used in series, break off both ends of both tubes and connect the ends of the tubes marked with a © using the provided rubber connector.

GASTEC GV-100/110S SAMPLING PUMP OPERATION

Document Number: 4000-ZPR-HMOENVCA-022452	Issue Date: 11/28/2018	Revision Number: 2	Next Review Date: 08/28/2021
---	----------------------------------	------------------------------	--

4.0	Collect the Sample.	4.1	Push the pump handle all the way in.
		4.2	If you are using a sampling pump that is equipped with a pump stroke counter (i.e., GV-110S), set the counter to “0” by turning the metal ring clockwise as far as it will go.
		<u>NOTE</u> The white arrow should be pointing at the “0.”	
		4.3	Insert the detector tube into the rubber inlet of the pump with the arrow on the tube pointing toward the pump.
		<u>NOTE</u> The arrow shows the direction of airflow through the tube.	
		4.4	Align the red line on the back plate with the ▲ 100 or ▲ 50 guide mark on the handle, as appropriate.
		<u>NOTE</u> The ▲ 100 guide mark indicates a full pump stroke. The ▲ 50 guide mark indicates a half pump stroke.	
		4.5	Direct the tube end to the point of measurement, hold the sampling pump securely and pull the handle all the way out to the locked position.
4.6	Wait until the flow finish indicator returns to white, indicating that the sampling is complete.		

GASTEC GV-100/110S SAMPLING PUMP OPERATION

Document Number: 4000-ZPR-HMOENVCA-022452	Issue Date: 11/28/2018	Revision Number: 2	Next Review Date: 08/28/2021
---	----------------------------------	------------------------------	--

		4.7	<p>If additional pumpstrokes are required, unlock the handle by turning it slightly and repeat Steps 4.1 through 4.6.</p> <p align="center"><u>NOTE</u></p> <p>If you are using the GV-110S sampling pump, the pump stroke counter will automatically advance each time the handle is pulled all the way out for a full pump stroke. It will not advance for a half pump stroke.</p>
5.0	Determine the Concentration.	5.1	<p>Immediately remove the tube and read the scale at the end of the colour change.</p> <p align="center"><u>NOTE</u></p> <p>If the colour change is uneven or gradual, the reading should be taken at the visual mid-point of the change.</p> <p align="center"><u>WARNING</u></p> <p>Those afflicted by colour vision deficiency may be unable to read the tube accurately.</p>
		5.2	<p>Multiply the indicated value by the appropriate correction factor to obtain the true concentration.</p>
END OF PROCEDURE			

GASTEC GV-100/110S SAMPLING PUMP OPERATION

Document Number: 4000-ZPR-HMOENVCA-022452	Issue Date: 11/28/2018	Revision Number: 2	Next Review Date: 08/28/2021
---	----------------------------------	------------------------------	--

REVISION LOG

Date (MM/DD/YYYY)	Revision	Section	Comments	Editor (Name)
02/08/2013	0	All	New Procedure	M. Courteaux
11/17/2015	-		Document reviewed. No changes required.	M. Courteaux
02/19/2016	1	1.0	Added warning statement about the importance of the leak test step when used in cold weather.	M. Courteaux
		2.0	Added direction within warning statement to keep the temperature of the tubes above 0°C.	
11/28/2018	2	5.0	Added warning statement about colour vision deficiency causing potential inability to read tube concentration.	M. Chipman



The following individuals have approved and signed this document.

UserName: Todd Murray (toddmurray)

Title: Mgr EH&S Sarnia Refinery

Date: Thursday, 29 November 2018, 06:56 AM Mountain Time

Meaning:

=====