

## Volume Calibration Check of the accuro®, Model 31, and Quantimeter pumps

Dräger does not make reference to a volume calibration of the pumps. The volume of the pump will not change unless the pump is leaking. There are no mechanical parts experiencing frictional wear that would constitute a volume change. The key to the proper operation of the pump is to conduct regular leak tests using unopened Dräger tubes. This information is covered in the instruction manuals and the accuro® Leak Test and Calibration Check document. If the pump is leaking, most leaks are corrected by simply replacing the exhaust valve.

The volume calibration of the pump can be checked by the soap bubble method, using the Model 31 Volume Test Kit, part number 4052543. Other film calibrators, including graduated burettes can be used, provided calibration lines exist for 95, 100, and 105 ml. Pumps must not deviate more than +/- 5% from the prescribed 100 ml. Lubricate the inside of the calibrator with the soap solution; otherwise the bubble will break on a dry calibrator.

### accuro® & Model 31

- Set-up soap bubble calibrator.
- Insert an opened Dräger detector tube in the pump and connect it to the hose from the top of the calibrator.
- Carefully compress the bellows to raise the bubble to the zero mark.
- Upon “zeroing” the bubble, completely compress the bellows and release.
- The bubble will rise in the column of the calibrator.
- The pump is calibrated properly, if the bubble has risen within +/- 5 ml (from 95 to 105 ml) of the 100 ml graduation.
- Normally a pump that fails the calibration check is leaking.

### Quantometer 1000

- Set-up soap bubble calibrator.
- Connect an opened Dräger detector tube to the hose from the top of the calibrator.
- The arrow on the detector tube should point toward the pump.
- Use a manually operated pump or aspirator bulb to carefully raise the bubble to the zero mark.
- Set the Quantimeter to one stroke.
- Connect the detector tube to the Quantimeter and depress the “Start” button.
- The bubble will rise in the column of the calibrator.
- The pump is calibrated properly, if the bubble has risen within +/- 5 ml (from 95 to 105 ml) of the 100 ml graduation.
- Normally a pump that fails the calibration check is leaking.

*Note: During the calibration check, the pump and volume measuring device (calibrator, burette) must be at the same temperature.*

