

QRS Spirometers Calibration Information

Calibration Procedure

Note: Every QRS spirometer is calibrated before leaving the factory to ATS specifications.

The Orbit, SpiroCard and SpirOxCard are tested using a three-liter syringe and the ATS technique for testing. This technique calls for three liters of air to be injected at three different speeds. Air is injected over one second, three seconds and six seconds. The unit must pass at all three speeds to be considered ready for sale. Any unit that does not is adjusted until it can do so.

The QRS Sensaire spirometer is also calibrated using the ATS technique for testing. In addition, a Standard calibration check is run as well. This technique calls for the injection of 3-liters of air in a simulated exhale. Finally, each Sensaire also undergoes testing using four of the most difficult ATS waveforms (PW 3, PW 12, PW 17 and PW 19) to pass. Each unit must also show correct values for these waveforms in order to be considered ready for sale.

Calibration Need

All QRS spirometers use pre-calibrated, disposable mouthpieces. These mouthpieces are individually calibrated during production using the same equipment LDS Hospital uses to validate spirometers against the American Thoracic Society's Recommendations for the Standardization of Spirometry.

Although the ATS recommends you calibrate your spirometers daily, and again every time you move your equipment, this doesn't apply to spirometers that utilize pre-calibrated mouthpieces. We hope (and expect) that the ATS standards committee will address this in the next revision of the standards. Until then, we understand there is some confusion as to the need or requirement for field calibration of QRS spirometers.

It is our opinion that when you enter the calibration factor into the spirometer, you are essentially calibrating it. We do understand you are trusting that the QRS mouthpieces are calibrated accurately. While we would like you to trust us 100%, we realize that your own quality standards within your clinic may require validation of all equipment.

QRS does not routinely sell 3-liter calibration syringes with our spirometers. The calibration test on our spirometers is only a calibration check. There is no way to field calibrate QRS spirometers. QRS has over 3,000 spirometers in use around the world and have found the devices will not require recalibration unless they sustain physical damage or are dropped (as stated in our user's manual). In these situations, you should perform a calibration check and only if that calibration check fails should you contact QRS and make arrangements for us to recalibrate at the factory.

Some customers may prefer to do periodic calibration checks on our spirometers and mouthpieces to make sure they are within the acceptable range. We encourage this and have a built-in standard and ATS 3-speed calibration check in all our spirometry software.

For those customers that want to purchase a calibration syringe, they could check calibration on every mouthpiece before it is used. We believe this is overkill and essentially repeats what we have performed during production. Another method that is used by some of our customers is to randomly select a mouthpiece for a calibration check every time a new bag of mouthpieces is opened. Many customers of ours report after doing this for a period of time, they eventually stopped because they found the mouthpieces to never be out of calibration. However, this method would provide a quality control system that should ensure any organization of the quality results they receive from QRS spirometers.