

## Guidance on calibration equipment: gas dilution calibrator, calibration gases, gas cylinder regulators.

The AQM 65 is calibrated by delivering diluted calibration gas to the AQM 65 inlet. Gas can be delivered using an **external gas dilution calibrator AirCal 1000**, or the **integrated gas dilution calibration system, AirCal 8000**.

Neither the Aircal 1000 nor the Aircal 8000 can deliver Ozone, Ozone must be delivered separately using an ozone calibrator, Aeroqual recommends the Model 306 Ozone Calibration Source from 2B Technologies.



Figure 1 The integrated AirCal 8000 for automated gas delivery



Figure 2 Left: 306 ozone calibrator from 2B Tech instruments, Right: Aeroqual Aircal 1000

## Choosing gas cylinder concentrations for the Aeroqual AirCal calibration systems.

The recommended cylinder concentrations are given in the last row of the table in green with (maximum and minimum) recommended cylinder concentrations given in brackets.

These concentrations are based on the dilution range that can be achieved with the AirCal 1000 and AirCal 8000 systems.

The AirCal systems can achieve dilution ratios between 50 and 500 times dilution.

So for a CO cylinder of 1000 ppm, the AirCal systems can produce concentrations between 20 ppm and 2 ppm which is ideal for the CO module.

If a gas dilution calibrator other than the Aeroqual AirCal system is being used, you must purchase a gas cylinder at a concentration which will allow you to deliver span gas at the appropriate concentration specified in the table.

When using a gas dilution system such as the AirCal 1000 or AirCal 8000, the balance gas in the cylinder can be Air or Nitrogen.

<b>AQM gas module</b>	<b>O3</b>	<b>CO2</b>	<b>NO2</b>	<b>NOx</b>	<b>CO</b>	<b>SO2</b>	<b>PID/NMHC</b>	<b>H2S</b>
Gas used for calibration	O3	CO2	NO2	NO or NO2	CO	SO2	Isobutylene	H2S
Gas module measurement range	0 to 0.5	0 to 2000 ppm	0 to 2 ppm	0 to 0.5 ppm	0 to 25 ppm	0 to 10 ppm	0 to 20 ppm	0 to 10 ppm
Recommend span gas concentration for calibration	0.08 to 0.150	1000 ppm	0.05 to 0.1	0.1 to 0.2	5 to 15 ppm	0.5 to 1.5 ppm	5 to 15 ppm	0.5 to 1.5 ppm
Recommended cylinder concentration when using AirCal 1000 or AirCal 8000 Recommended ppm (Minimum, Maximum)	N/A	N/A	20 ppm (10, 100)	20 ppm (10, 100)	1000 ppm (500, 5000)	20 ppm (10, 100)	1000 ppm (500, 5000)	20 ppm (10, 100)

### Choosing gas cylinder size for the AirCal 1000

Any gas cylinder size can be used for the AirCal 1000. Examples of small and large size cylinders being used with the AirCal 1000 are shown below.



Figure 3 The Air 1000 can be used with any size gas cylinder

### Choosing gas cylinder size for the AirCal 8000

Only small portable size gas cylinders can be used with the AirCal8000 because the cylinders are held in gas housing on the side of the AQM 65.

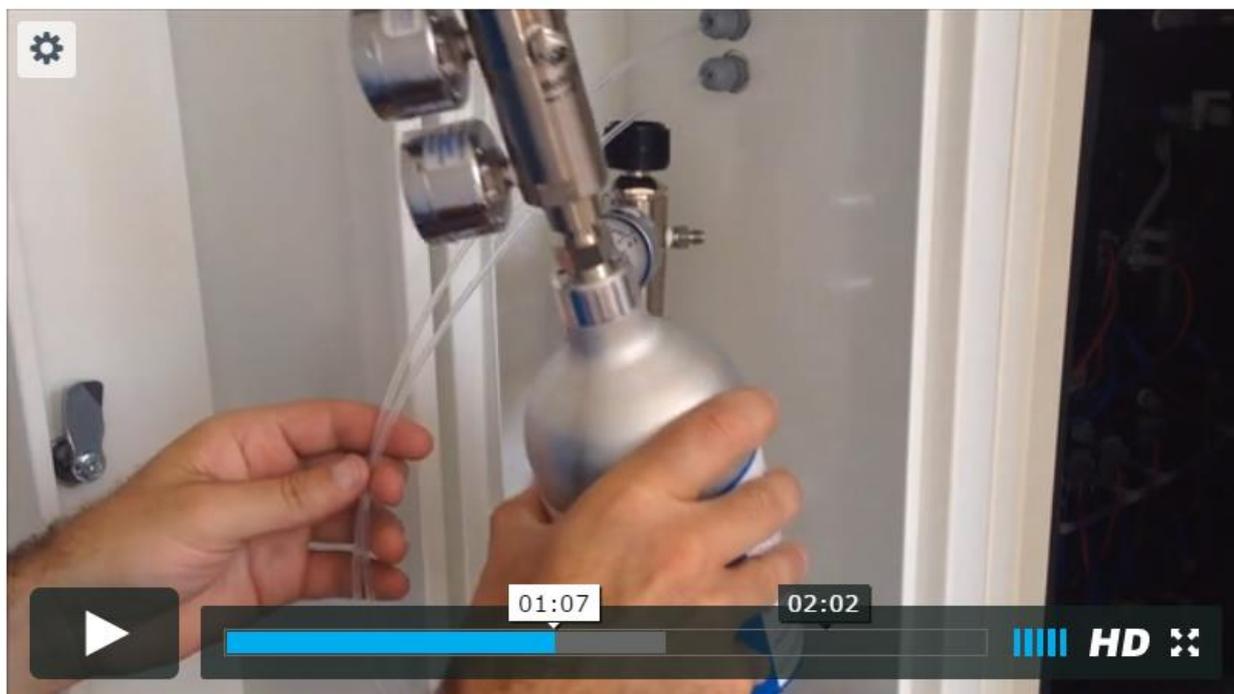


Figure 4 The AirCal 8000 has been designed to be used with small portable gas cylinders such as the 58L from Calgaz. See this video on the Aeroqual training website.

## Gas regulator supplied with AirCal 8000.

The AirCal 8000 does come with two gas regulators. The thread on the regulator supplied by Aeroqual is a 5/8" x 18 thread, (C10 fitting). This regulator fits the Calgaz range of gas cylinders 58L and 105S cylinders.

The AirCal 1000 does not come with regulators, but the regulators can be ordered separately from Aeroqual. Part number AIC GASREG01, shown in the image below.



## Calibration gas suppliers:

[www.calgaz.com](http://www.calgaz.com)

[www.stgas.eu/](http://www.stgas.eu/)

[www.gascoqas.com](http://www.gascoqas.com)

[www.mesaqas.com/](http://www.mesaqas.com/)