# ADDENDUM

## Model 360C Flame Photometer

## Part No. 360 00 209

The Model 360C Flame Photometer differs from the Industrial Model in that the detector response is “linearised” when the Sodium filter is selected.

There are a few operational conditions which have to be observed if the linearisation function is to deliver results within the following specification (which assumes the samples have been diluted with de-ionised water as indicated below).

### Measuring Calcium

The Model 360 has a Calcium filter as standard. It must be noted however that in a propane/air flame there is not sufficient energy to break Calcium Phosphate bonds which may occur within samples. In these samples a pre-treatment protocol must be used.
With other Calcium samples chelation with EDTA or extraction with Mehling’s 3 solution may be indicated. You should also be aware of interference with Calcium determinations if Sodium is present in your samples.

## M360C Specifications

**Measurement Range**

Na Serum:- 110 to 170 mmol/l
Na Urine:- 0 to 200 mmol/l

**Linearity**

Na Serum:- within ±2 mmol/l
Na Urine:- within ±4 mmol/l

**Reproducibility**

Na (140mmol/l) better than 1.5% CV
K (5mmol/l) better than 1.5 % CV
K (80mmol/l) better than 1.5% CV
Li (1.5mmol/l) better than 2.5%CV

**Dilution Factor**

Na serum/urine: 1 in 200 with de-ionised water
K serum: 1 in 200 with de-ionised water
K urine: 1 in 1000 with de-ionised water
Li serum: 1 in 50 with de-ionised water

**Note:** The above is correct for use with Propane or Butane.

Results obtained from 20 replicates of the same sample, aspirating the sample for 20 seconds, then air for 10 seconds.

**Note:** For Li determinations, the blank and standard solutions must contain similar levels of Na, K and Ca to those present in physiological samples.

To achieve the stated specification the flame must be alight for a minimum of 15 minutes, with diluent being aspirated. (For a brand new, newly installed unit, that stabilisation time may need to be increased to 45 minutes).

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## Operational Guidelines

1. The air pressure regulator should be adjusted to give a pressure of 11psi indicated on the pressure gauge mounted in the front panel of the Model 360 “gas pod”. The Sodium filter should be selected (the Na LED will be illuminated and flashing). The coarse gain control has to be set to position three.

2. With the flame lit and left to stabilise for at least fifteen minutes with water being aspirated continuously, aspirate your blank and set the display to zero using the blank control. Aspirate your standard e.g. 140mmol/l Sodium which has been diluted 1 in 200, wait for at least 20 seconds and set the displayed reading to 140 using the fine gain control. Recheck the blank and adjust to read 0 if necessary, recheck the standard and adjust the fine control if necessary for a display of 140. Repeat this process until 0 and 140 are obtained. Now aspirate a 50% dilution of the diluted 140mmol/l standard and observe the displayed reading. You should get between 66 and 74. If the reading is higher than 74, check the dilution was correct. If it was, check the uptake rate of the Atomiser. As a guide, it may be necessary to adjust the air pressure to achieve a linear response as follows:

| Atomiser uptake (measured at 11psi) | Set air Pressure for linear response to - |
|---|---|
| 2.0g in 30 seconds | 12 |
| 2.2g in 30 seconds | 11 |
| 2.4g in 30 seconds | 10 |

3. Check the system is now giving a linear response, that the blank gives a reading of 0 after 20 seconds and the standard gives a reading of 140 after 20 seconds. Present each unknown (diluted) sample for 20 seconds and then note the reading in mmol/l. You may find the display hold button helpful here.

Experience in use will determine how frequently the calibration needs to be checked.

## Shutdown Procedure:- Having checked all your samples.

1. Aspirate deproteinising solution diluted 1 in 100 with de-ionised water for one minute.
2. Aspirate de-ionised water for 2 minutes.
3. For short term shutdown (two hours) switch off the instrument power switch and switch off the compressor.
4. For a longer term shutdown (overnight) turn off the fuel gas supply at source. When the flame on LED is extinguished, switch off the power switch and the compressor. This ensures the fuel pressure in the fuel tubing is at a minimum.

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