



Issued by:

SOP No:

Approval:

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SUBJECT: Online Chlorine Analyzer Calibration

1.0 SCOPE AND PURPOSE

This procedure will provide step-by-step instructions for staff on how to adjust the chlorine residual value on a Prominent Dulcometer D1C Analyzer, Prominent DiaLog DACa Analyzer and the Prominent DiaLog DACb Analyzer.

2.0 TRIGGER

Daily checks and investigation of chlorine residual changes or alarms.

3.0 RESPONSIBILITIES

This procedure applies to all operations staff. This procedure is to be carried out after all appropriate QA/QC lab procedures have been completed on the instrument and documented.

4.0 REFERENCES AND FORMS

- Procedure for Disinfection:

Every free chlorine residual analyzer installed for the purpose of monitoring a primary disinfection process utilizing free chlorine residual, must be calibrated at a frequency necessary to ensure appropriate operation of the analyzer within a quality control band of plus/minus 0.05 mg/L at a chlorine concentration up to and including 1.0 mg/L or plus/minus 5.0% at a chlorine concentration greater than 1.0 mg/L.

- Operating instructions for Prominent Dulcometer D1C Analyzer
- Prominent Dulcotest CTE 1
- Prominent Dulcotest CLE 3.1
- Safe Drinking Water Act @ www.e-laws.gov.on.ca
- Ontario Water Resources Act @ www.e-laws.gov.on.ca
- Occupational Health and Safety Act @ www.e-laws.gov.on.ca

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5.0 EQUIPMENT AND SUPPLIES

- Colorimeter 2
Chlorine standards
Free/total DPD powder pillows
Lint free cloths/wipes

6.0 SAFETY REQUIREMENTS

- Dealing with hazardous chemicals - refer to safety data sheet (SDS) for appropriate PPE required
12% sodium hypochlorite solution
DPD powder pillows
Site sampling safety

7.0 PROCEDURE

Daily Online Chlorine Analyzer Checks:

The following steps must be completed on a daily basis at all of the treatment and distribution facilities by a licensed operator:

- Check the flow of the Prominent Analyzer to ensure it is within the targeted range of 50 to 60 L/hr.
Verify the chlorine residual value on the analyzer is accurate using a DPD test by sampling the water that feeds the analyzer.
If the sampled value differs from the analyzer value by more than +/- 0.05 mg/L when the residual is <= 1 mg/L or +/- 5% when > 1 mg/L, repeat the DPD test to verify the first reading.

Example:

If the residual is 1mg/L = +/- 0.05 mg/L difference is acceptable.
If the residual is 1.6 mg/L, 5% of the value = 0.08 mg/L difference is acceptable.

- Check the pH value of the analyzer. If the residual reading is fluctuating a lot and causing the analyzer value to have large swings, further investigation into the pH probe may be required.
If the DPD value of the repeat test still differs from the analyzer value as referenced in step 3, an adjustment is required for the analyzer.

If the DPD value of the repeat test is within an acceptable range, an adjustment is NOT required.

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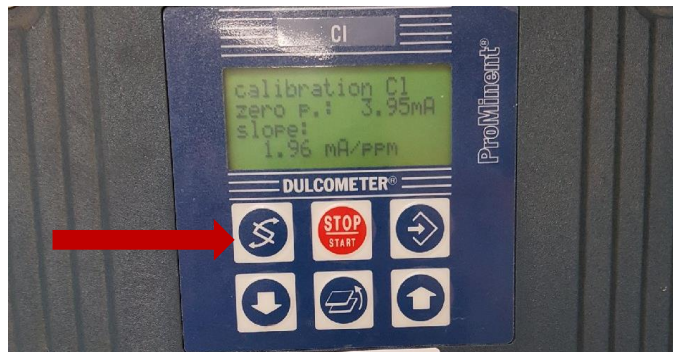
Calibrating the Online Chlorine Analyzers:

Complete the below steps for the type of chlorine analyzer that is currently being calibrated:

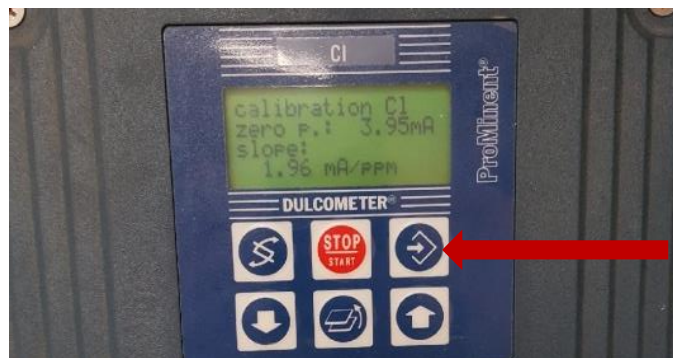
All adjustments must be documented on the onsite log sheets/log books and in the control room log book and must include the date, time, results of chlorine residual tests and the initials of the operator performing the work.

Prominent Dulcometer D1Ca Analyzer

- 1) Press the top left push-button (change display) on the analyzer until the screen shows the milliamp value.



- 2) Press the top right push-button (enter) on the analyzer display once (for reduced menu mode) or twice (for complete menu mode) so that the DPD value is flashing.



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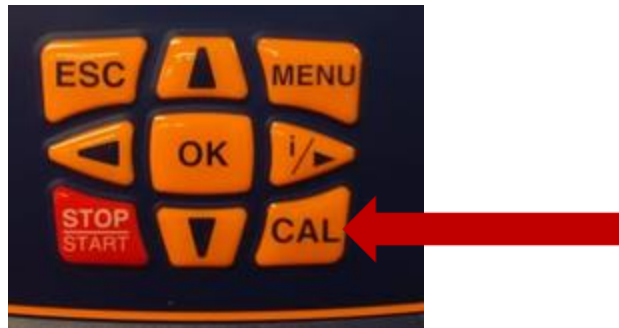
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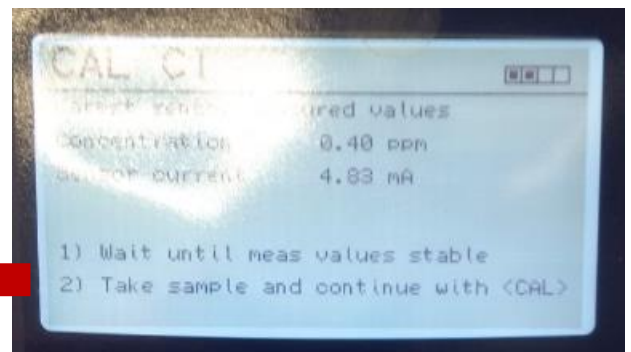
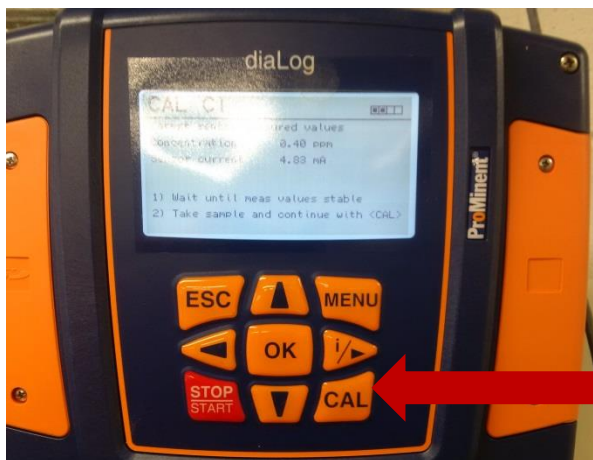
- 3) Use the ↑ or ↓ arrow keys to adjust the value on the display so that it equals the DPD chlorine test result.
- 4) After adjusting the reading on the analyzer display, exit by pressing the top right push-button (enter) twice or until you return to the main screen (mg/L display).
- 5) If adjustments cannot be made to the analyzer due to a calibration error or other please notify the senior operator or delegate immediately and record all analyzer issues in the log book.

Prominent DiaLog DACb and DACa Analyzers

- 1) Press the CAL push button on the bottom right.



- 2) Select the "Chlorine Channel" and press OK.
- 3) Select "Slope Calibration" and press OK.
- 4) Press "CAL" which will then present a screen with option to adjust the residual



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- 5) Press OK to change the value.
- 6) A screen will come up to edit the residual value. Use the ↑ or ↓ arrow keys to edit the value and ← or → arrow keys to select the digit. Adjust the value on the display so that it equals the DPD chlorine test result.
- 7) Press OK.
- 8) An info screen will appear. Press “CAL” to get past this.



- 9) A “Calibration Successful” screen will come up. To exit, press “CAL” to complete the process and then press “ESC” to return to the main screen.
- 10) Document all adjustments in the appropriate log book including the DPD residual value, date, time and operator initials.
- 11) If a probe requires maintenance, request that maintenance personnel check the mA value to ensure that a probe change is necessary or not. Reference the appropriate mA value to that stated in the user manual.
 - All probe replacements must be entered into the OWAM program (maintenance program).
 - Verify stock when replacing a probe and notify for reorder if required.

9.0 TRAINING TO EMPLOYEES

All staff shall review this SOP. Any questions/clarifications can be addressed by the lead staff.

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