Cation Profiles by Ion Chromatography (ASTM D 4327) – Li, Na, NH₄, K, Ca, Mg

Anion Profiles by Ion Chromatography (ASTM D 4327) – F, Cl⁻, NO₃, NO₂, PO₄, SO₄
Overview of Metrohm IC Connection Diagram
CMC’s 861 Advanced IC and 788 Sample Processor Connection

Flow Path in Metrohm 861 Advanced IC & 788 Sample Processor
Not showing H₂SO₄, H₂O circulation through peristaltic pump in IC)
CMC’s 861 Advanced IC and 788 Sample Processor Connection

Anion Chromatography
(Red box and arrow shows exclusion of portion and connection for Cation Chromatography)

Column: Metrosep A Supp 5 – 150/4.0, 61006520
Eluent: Na$_2$CO$_3$/NaHCO$_3$, Metrohm SNG-IC1102
Regenerant: 0.1M H$_2$SO$_4$ (3.7 ml conc. H$_2$SO$_4$ in 1L of DI Water)
Rinsing: Milli Q DI Water for Rinsing

Cation Chromatography
CO$_2$ Suppressor, Suppressor Module, H$_2$SO$_4$, DI H$_2$O, and Peristaltic Pump are not needed

Column: Metrosep C 6 – 100/4.0, 6.1051.410
Eluent: Nitric Acid (c= 1mol/L): 1.7 mmol/L; 3.4 ml/2L
Dipicoline Acid: 1.7 mmol/L, 568 mg/2L
No Regenerant solution is needed
Rinsing: Milli Q DI Water
1. Door to inner compartment
2. Connection purge valve
3. Connection for 6.2816.020 syringe for aspiration of the sample
4. Feedthrough for capillaries
5. Pilot lamp is on when the instrument is switched on
6. Bottle rack for holding supply bottles with eluent, regeneration solution, and rinsing solution
7. Opening for in- and outlets
8. Opening for in- and outlets
9. Connection for drain tube for discharge of spilled liquid from the bottle rack
10. Opening for in- and outlets
11. Opening for in- and outlets
12. Opening for detector cable
13. Knurled screw for fastening the rear panel
14. Detachable rear panel Access to the inner compartment
15. Transport security screws to secure the pump head when the instrument is transported
16. Mains switch to switch instrument on and off: I = ON 0 = OFF
17. Mains connection plug Main connection, see Section 2.4
18. Fuse holder Changing the fuses, see Section 2.4.2
19. Serial number
20. Analog output output for analogue signal
Figure 5: Interior of the IC 2.861.0040 (with permanently attached accessories, 1.733.0110 Detector block, suppressor module -MSM II- and 853 CO₂ Suppressor)

1. Door to inner compartment
24. Inlet capillary for injection valve
   PEEK capillary 6.1831.010,
   length L = 24 cm
25. Mounting rail
   for 6.2027.0X0 column holder
26. Column connection capillary
   6.1831.010 PEEK capillary,
   length L = 30 cm
27. Sample loop
   20 µL PEEK sample loop 6.1825.210
28. Injection valve
29. Aspirating tubing
   for samples
   PTFE tubing 6.1803.020,
   length L = 30 cm
30. Connection capillary to syringe
   6.1803.020 PTFE tubing,
   length L = 30 cm
31. PEEK coupling (6.2744.040)
32. Leak detector
33. Connection capillary
   6.1831.010 PEEK capillary,
   length L = 13 cm
34. Filter unit PEEK (6.2821.120)
35. Connection capillary
   6.1831.010 PEEK capillary,
   length L = 13 cm
36. Connection capillary
   6.1831.010 PEEK capillary,
   length L = 15 cm
37. Purge valve
38. Aspirating capillary
   Connection for 6.1834.010 aspirating tubing
39. Connection capillary
   Connection pump head – purge valve, fixed mounting
40. Pump head (6.2824.100)
41. Mounting rail
   for cartridge holder
42. Fastening screws
   for pump head 40
43. Connection capillary
   in pump head, fixed mounting
44. Inlet capillary for detector block
   PEEK capillary, fixed mounting
45. Detector block (1.732.0110)
46. Suppressor module -MSM II-
   (inlet and outlet capillaries are not shown)
47. Tubing cartridge (6.2755.000)
   for 6.1826.110 pump tubing
48. Contact pressure lever
   for adjusting the contact pressure
49. Holding clamp
   for locking the tubing cartridge into place
50. Snap-action lever
   for releasing the tubing cartridge
51. Pump drive
   roller head with contact rollers
52. Mounting pin
   for attaching the tubing cartridges
53. 853 CO₂ Suppressor
   (inlet and outlet capillaries are not shown)
Figure 16: Connection of separation column with suppressor module «MSM II»

- 50 Snap-action lever for releasing the tubing cartridge
- 51 Pump drive roller head with contact rollers
- 52 Mounting pin for attaching the tubing cartridges
- 73 Separating column
- 74 Column holder (6.2027.0X0)
- 75 Aspirating tubing for H₂O
- 76 Aspirating tubing for H₂SO₄
- 77 Coupling (6.2744.034)
- 78 Pump tubing (6.1826.110) for H₂SO₄
- 79 Pump tubing (6.1826.110) for H₂O
- 81 PEEK coupling with filter and tubing security device 6.2744.180
- 82 Suppressor inlet capillary for eluent
- 83 Suppressor outlet capillary for eluent
- 84 Suppressor inlet capillary for H₂O
- 85 Suppressor inlet capillary for H₂SO₄
- 86 Suppressor outlet capillary for H₂O
- 87 Suppressor outlet capillary for H₂SO₄
CMC’s 881 Compact IC Pro and 858 Sample Processor Connection MiVDT 4.0 Anion or Cation Configuration with Ultrafiltration
CMC’s 881 Compact IC Pro and 858 Sample Processor Connection
MiVDT 4.0 Anion or Cation Configuration with Ultrafiltration
Metrohm in-Vial Dilution Technique with Parallel-Dosino and Ultrafiltration for Anion Analysis

**Dilution: Sample Aspiration**

- A sample aliquot is aspirated into the Dilution Coil by the 10 mL Dosino. It is bracketed by small air gaps to prevent diffusion. The amount of UHP Water to complete the dilution precedes it in the Dilution Coil.
Metrohm in-Vial Dilution Technique with Parallel-Dosino and Ultrafiltration for Anion Analysis

Dilution: Dispensing Diluted Sample

- The Sample Aliquot and UHP Water to complete the dilution are dispensed into an empty sample vial.
Metrohm in-Vial Dilution Technique with Parallel-Dosino and Ultrafiltration for Anion Analysis

**Dilution: Mixing Diluted Sample**

- Diluted sample is aspirated and dispensed several times in the dilution vial to ensure a homogenous mixture.
Metrohm in-Vial Dilution Technique with Parallel-Dosino and Ultrafiltration for Anion Analysis

**Ultrafiltration**

- The 10 mL Sample Dilution Dosino draws the diluted sample from the vial and delivers it to the Ultrafiltration Cell. The 2 mL Filtrate Dosino simultaneously pulls the sample through the UF cell, filtering it and filling the sample loop.
Samples should be filtered to 0.45 µm before being introduced to the column to avoid particulate accumulation and contamination.

The Metrohm Ultrafiltration cell is a very effective way to do this in-line.

Cross-flow filtration prevents rapid formation of a filter cake.

Filters to 0.2 µm

Cost effective: 100+ samples on one filter

Increases column life and reduces chance of contamination.
The dilution transfer coil is rinsed. The sample transfer coil, Ultrafiltration Cell, and sample flow path are rinsed thoroughly.