kajaaniKAPPA Q
Technical manual

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kajaaniKAPPAQ analyzer
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- Kajaani Interface registration & upgrade (D05212)
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- Measuring unit
- Sweep module
- Ejector assembly
- Valve assembly
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Electronics block diagram

The Technical Manual is intended only for Metso Automation's authorized service personnel.

The material has been divided into several pdf files in order to keep the file size manageable. The cover lists the contents of each section.

The manual will be updated a few times a year. All updates will be indicated on this cover page, together with the date of the latest update.

This version released: July 2008

metso automation

Installing the shive screen

Parts required for installation (Fig. 1):
- A - shive screen.
- B - water valve
- C - check valve, 2 pcs
- Mounting bolts for screen

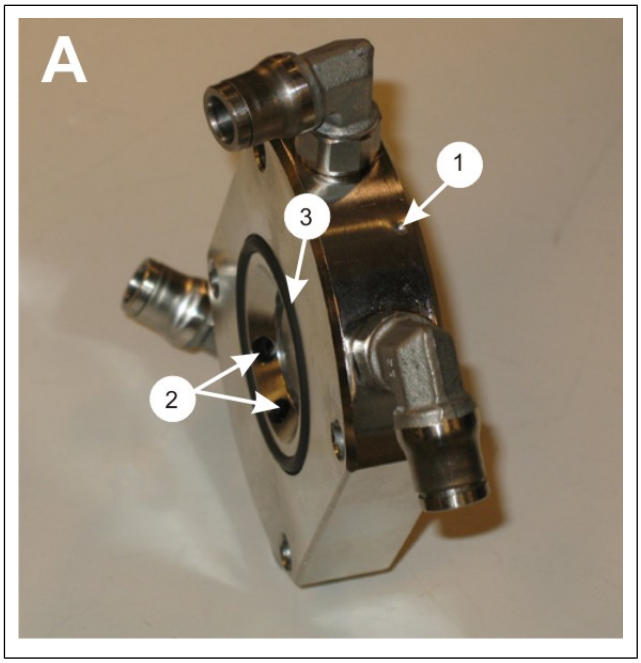


Fig. 1. Shive screen assembly: 1. hole direction indicators, 2. air holes, 3. O-ring.

Fig. 2. Water valve.

Adding a water valve

1. Open the plug (Fig. 3A, part 1) from the hot water valve block. Use a 24mm wrench. There are O-rings (part 2) on both sides of the valve block, be careful not to let them fall and get lost!
2. Install the valve (Fig. 3B, part 3). Press the valve and tighten with the wrench.

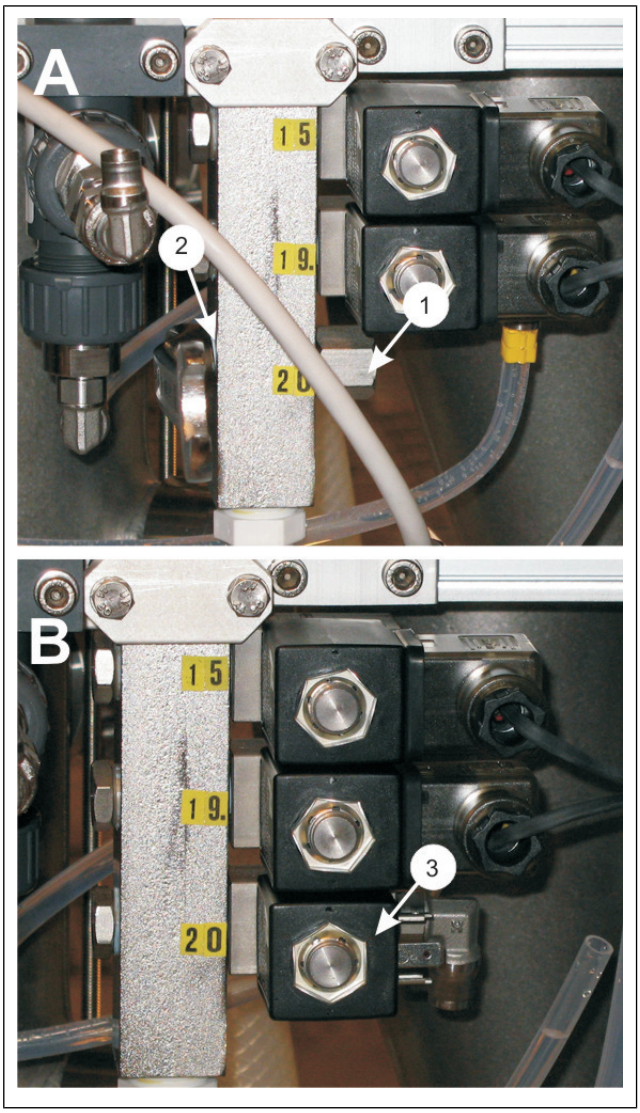


Fig. 3. Adding a water valve for shive screen.

Adding the shive screen.

1. Detach tubes (Fig. 4A, part 1) from the sample lline valve connectors.
2. Detach the valve. First loosen the bolts (part 2) and then unscrew the valve + actuator. Watch out for the valve O-rings, do not let them fall and get lost!
3. Detach the valve centering bushings (part 3, 4 pcs) and put the washers aside. You will need new, longer bolts to install the screen.
4. Place the screen against the assembly and fasten the centering bushings loosely at first (Fig. 4B). Make sure that the screen is in the right position.
5. Put the valve + actuator into position, using the centering bushings. Tighten the valve bolts crosswise (Fig. 4C).
6. Attach tubes to the valve.

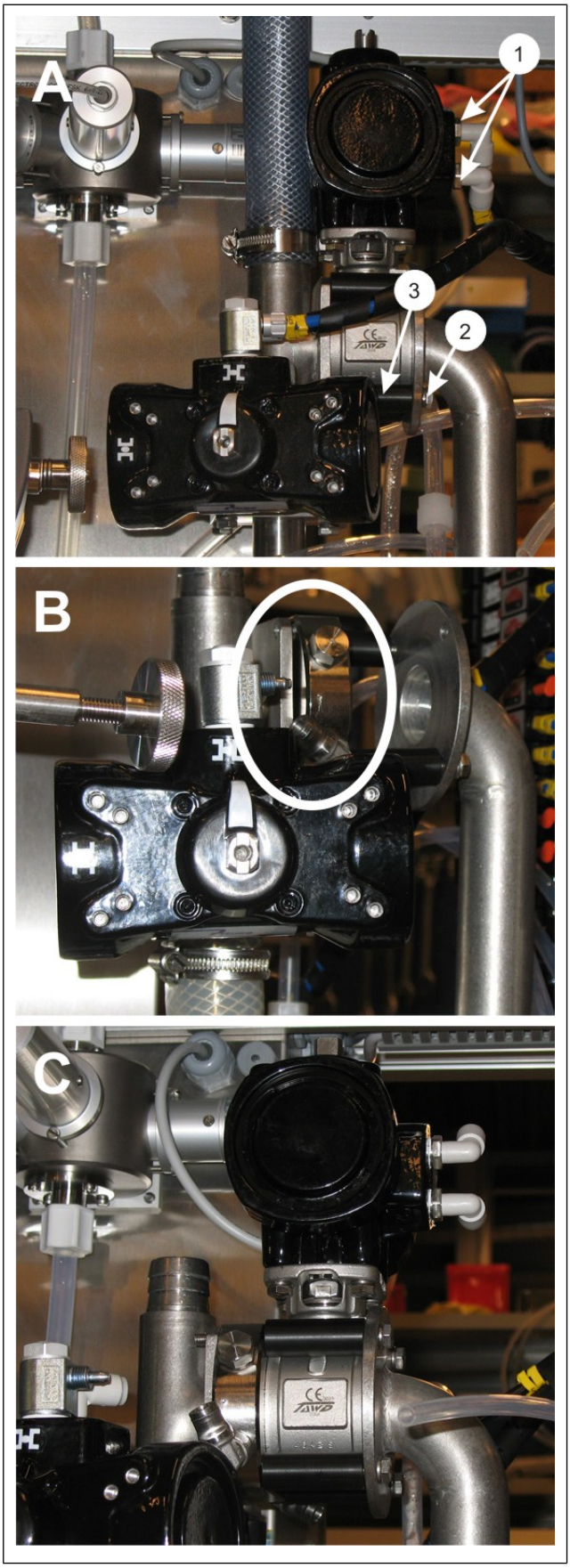


Fig. 4. Installing a shive screen to sample line valve assembly.

Installing check valves

1. Attach the plastic valve holders to the rail and then insert the valves to the holders.
2. Connect air tubes from check valves (Fig. 5) to air valve block, valves 1A and 9, and to the connectors in the shive screen (Fig. 6A). Plug connections 1B & 9B in the valve block.
3. Connect a water tube from the hot water valve (20_SLW) to the shive screen (Fig. 6B).

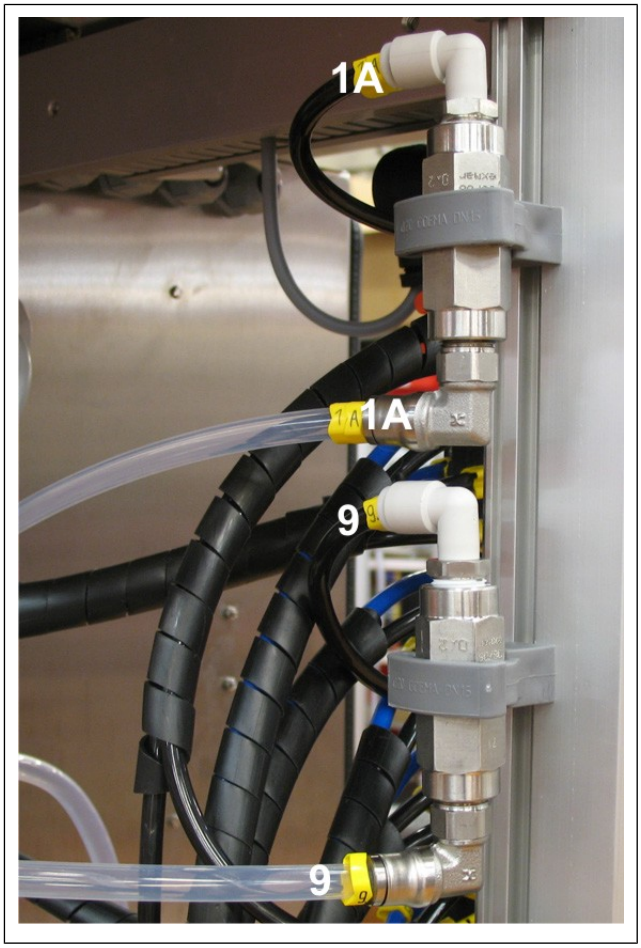


Fig. 5. Check valves.

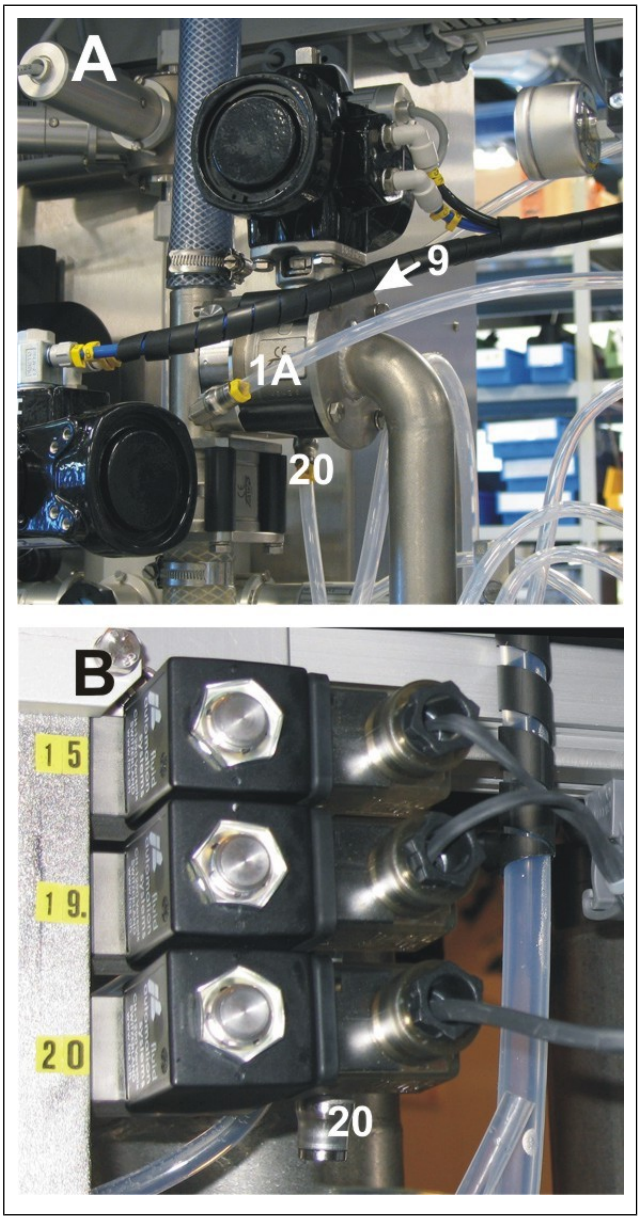


Fig. 6. Connections of water valve and shive screen.

Connection of water valve

1. Attach the valve cap (Fig. 7A, part 1) by pressing it on the valve while you tighten the screw on the cap.
2. Open the cable spiral and insert the cable into the spiral.
3. Lead the cable through the bushing (part 2) into the electronics box.
4. Open the cable conduit on the right-hand side of the electronics box. Be careful not to break the "fingers" of the conduit. Insert the cable along the rear wall and conduit to board IO2 (Fig. 7B, part 3) and connect as follows:
   - brown J7-4 (+)
   - blue J8-4 (-)

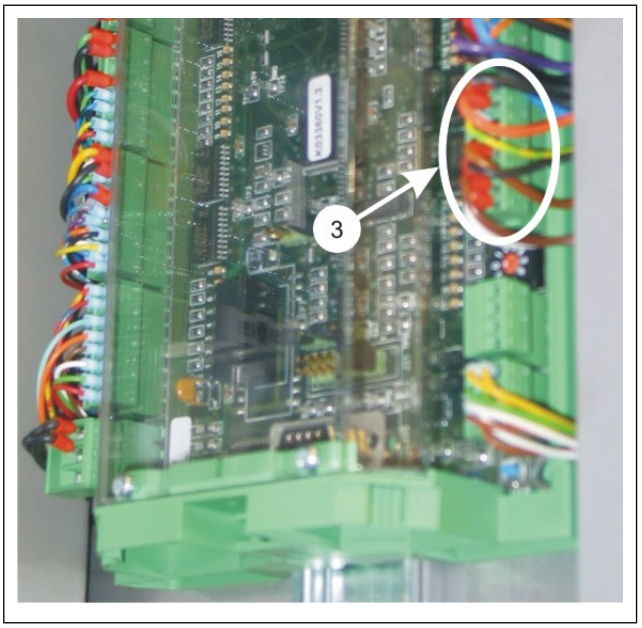


Fig. 7. Connection of water valve, shive screen.

Testing

After screen installation and connections, test the operation of the valves. Open the water and air supply lines, and switch the analyzer on. Choose "Diagn" -› "IO-test". Test the operation of valves 05_SLV, 20_WIW, 01_SCP and 09_SLP.

Installation of brightness cell

Parts required for installation (Fig. 1 & 2):

- A. Brightness measurement cell
- B. IO4 board
- C. Power supply
- D. Interference suppressor
- E. Cables to interference suppressor and power supply
- F. Xenon lamp assembly
- G. Detector
- H. Meas. cell mounting screws & serrated washers

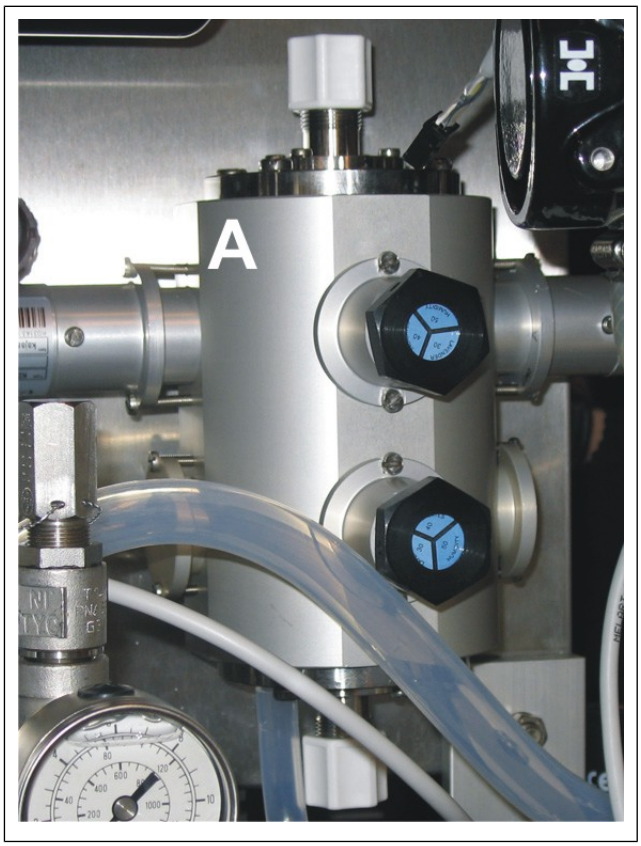


Fig. 1. Parts required for brightness cell installation: brightness measurement cell.

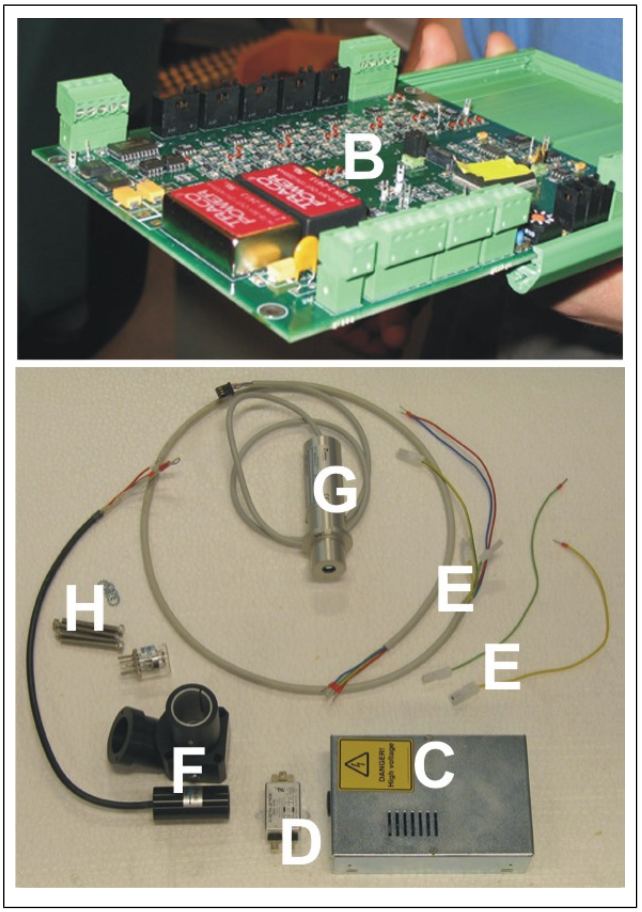


Fig. 2. Other parts required for brightness cell installation.

Brightness cell installation and tube connections

1. Open the brightness cell lead-through opening in the electronics box (Fig. 3A and 3B, 4 screws). Put the screws and O-ring aside for later use. You will need new serrated washers for the cell installation.
2. Detach the tube from the Kappa measurement cell (Fig. 4A) and from 2-way valve (Fig. 4B). Measure and bend a new tube section between the Kappa and Brightness measurement cells.
3. Move the O-ring to the brightness cell and place the cell on the hole.
4. Connect a 1/2" FEP tube from the Brightness cell to Kappa cell (make sure that the tube length is correct), then tighten the cell mounting screws from the electronics box.
5. Connect a 1/2" FEP tube from the Brightness cell (Fig. 4C) to the 2-way valve. Tighten the connectors with a 24 mm wrench.

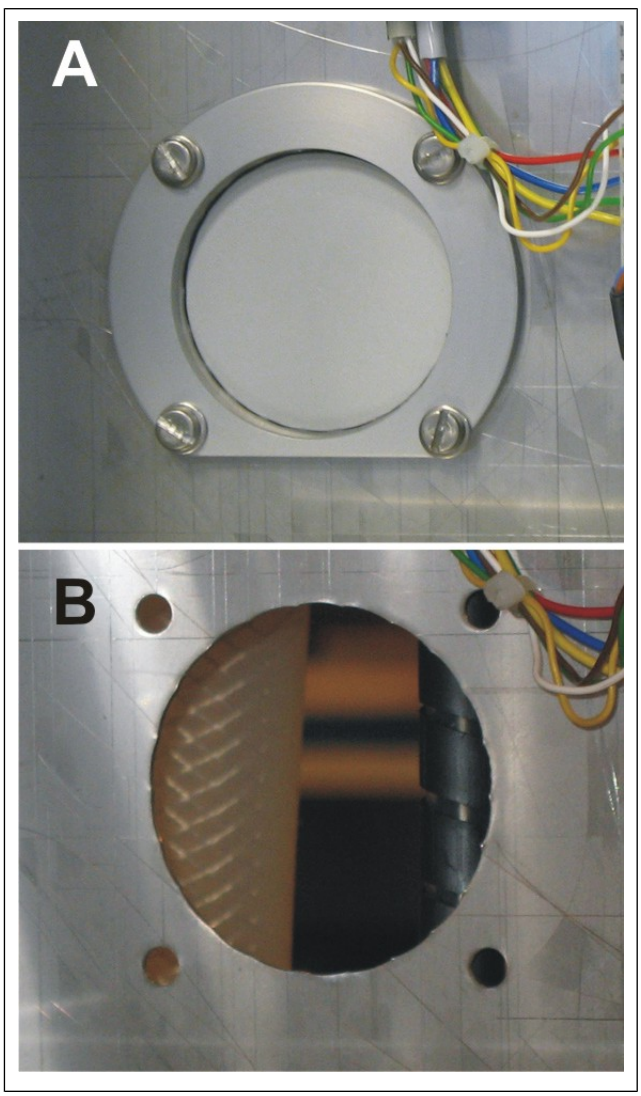


Fig. 3. Opening the hole for the Brightness cell.

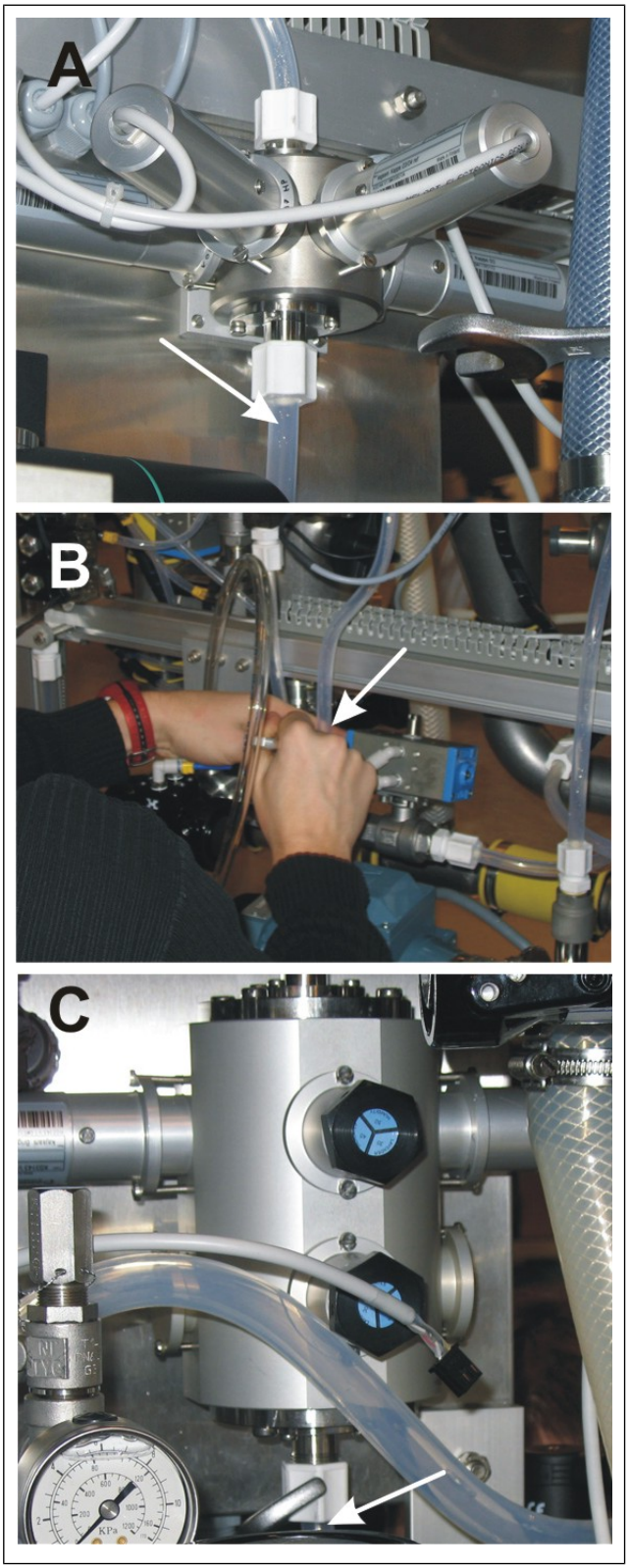


Fig. 4. Tube connections.

Mounting the power supply and interference suppressor.

1. Open the screws on the left-hand side wall of the electronics box. Put the washers and screws aside for later use.
2. Attach the interference suppressor to the box wall, right below the other suppressor (Fig. 5A).
3. Open the power supply cover and fasten the power supply to the wall of the box (Fig. 5B). Make sure that the suppressor cables are correctly connected to the power supply (Fig. 5B).

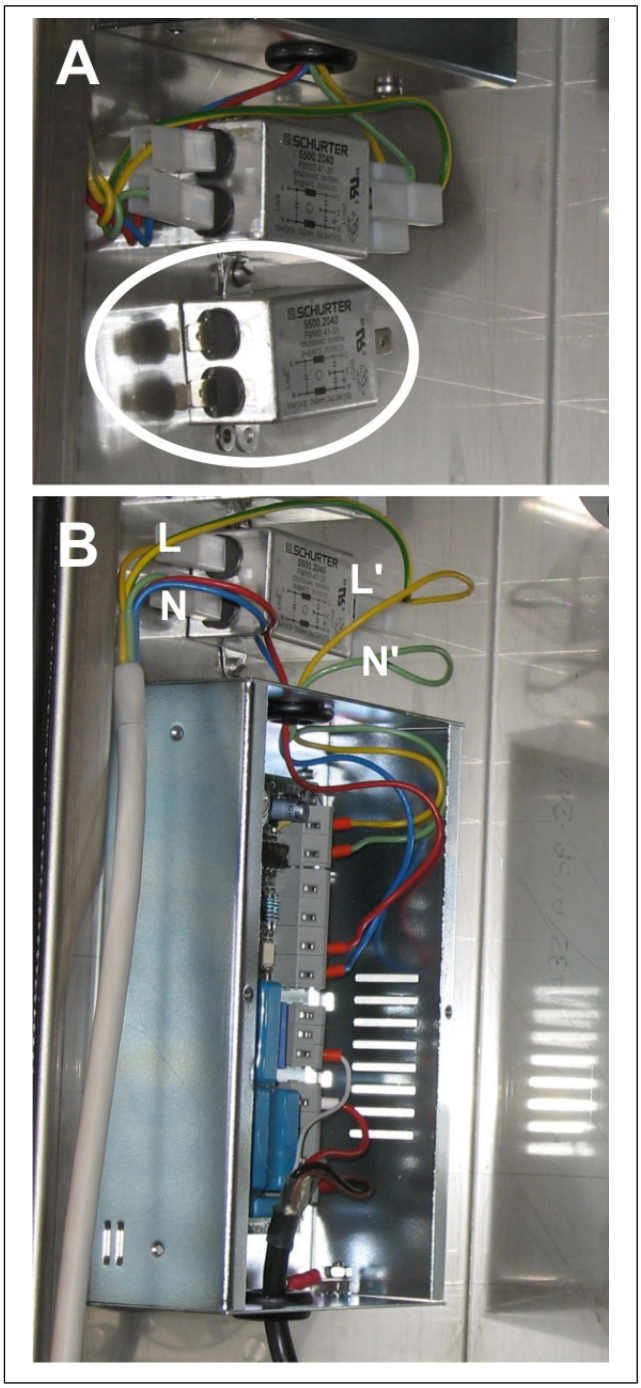


Fig. 5. Installing the interference suppressor and power supply.

Cabling

1. Connect cables to the suppressor. Yellow wire L & L' and green wire N & N'. Look at the connections off the upper suppressor!
2. Attach the IO4 board to the rail so that it rests on top of the terminal strip; see section on IO board installation for instructions.
3. On IO3 board, locate the bus cable connected to pin J4 and detach it from terminal strip P2, 11 & 12 (+) and P1, 31 & 32 (-).
4. A separate cable was delivered with the Brightness cell; connect it to board IO4 pin J4, and to terminal strip P2, 11 & 12 (+) and P1, 31 & 32 (-) (Fig. 6).
5. Connect the bus cable connected to board IO3, pin J4, to board IO4, pin J4.
6. Connect the board power cable to IO4, pin J16, and to terminal strip P2, 3 (+) and P1, 23 (-) (Fig. 7).

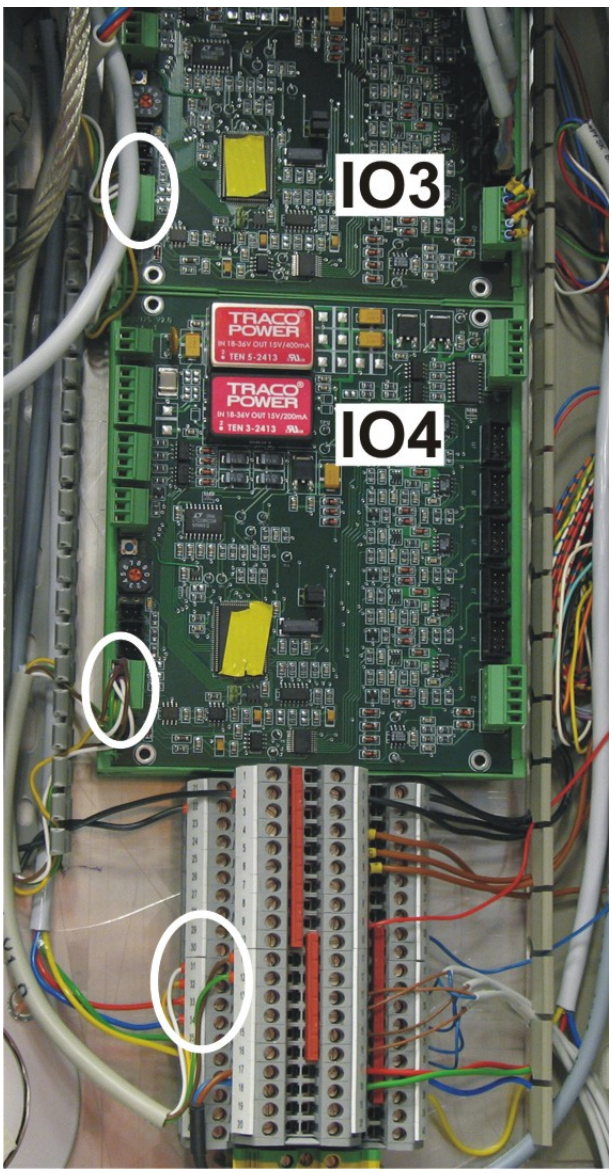


Fig. 6. Connections to IO board.

Installing Xenon lamp assembly and detector

1. Locate the Xenon lamp power cable, lead it from the power supply through the electronics box conduits to board IO4 and connect it to pin J28 as follows:
   - J28-1 yellow
   - J28-2 red
   - J28-3 blue
   - J28-4 green
2. Close the power supply cover, and fasten the Xenon lamp assembly to the rear wall with 4 screws (Fig. 8) . Put serrated washers under the screws.
3. Press the reference detector into the assembly, be careful not to damage the O-ring. Fasten the detector with 4x12 screws (2 pcs) and install the Xenon lamp (Fig. 9).
4. Working from the front side of the analyzer, open the installation hole on its rear wall. If necessary, round the detector cable connectors (cable from Brightness cell) so that they fit through the opening.
5. Connect the detector cables to board IO4 as follows (Fig. 7):
   - J1 Brite M
   - J3 Brite Cons
   - J5 Brite Ref

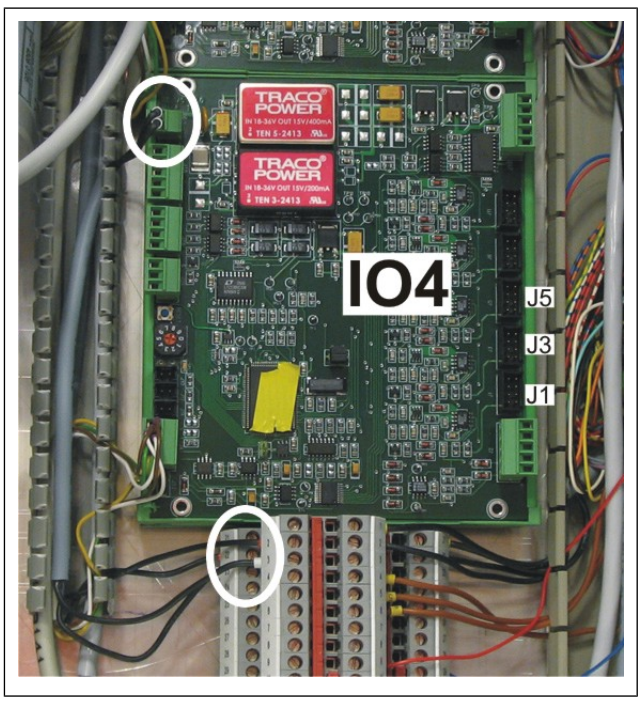


Fig. 7. Connection of board power and detectors.

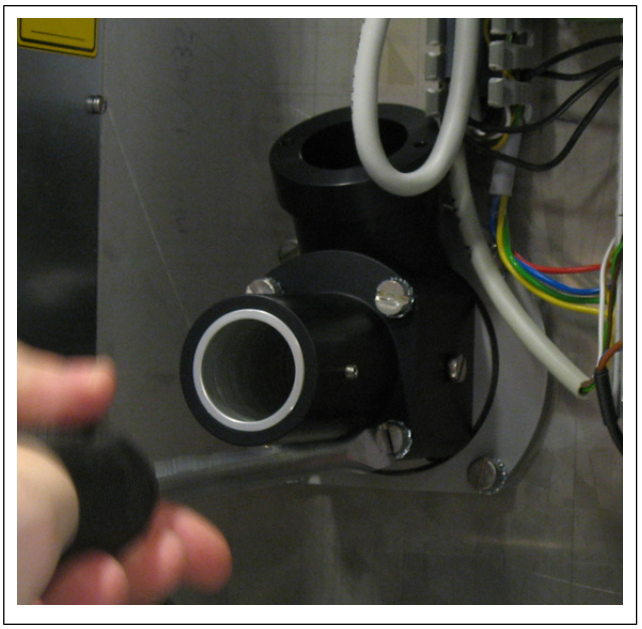


Fig. 8. Installing the Xenon lamp assembly.

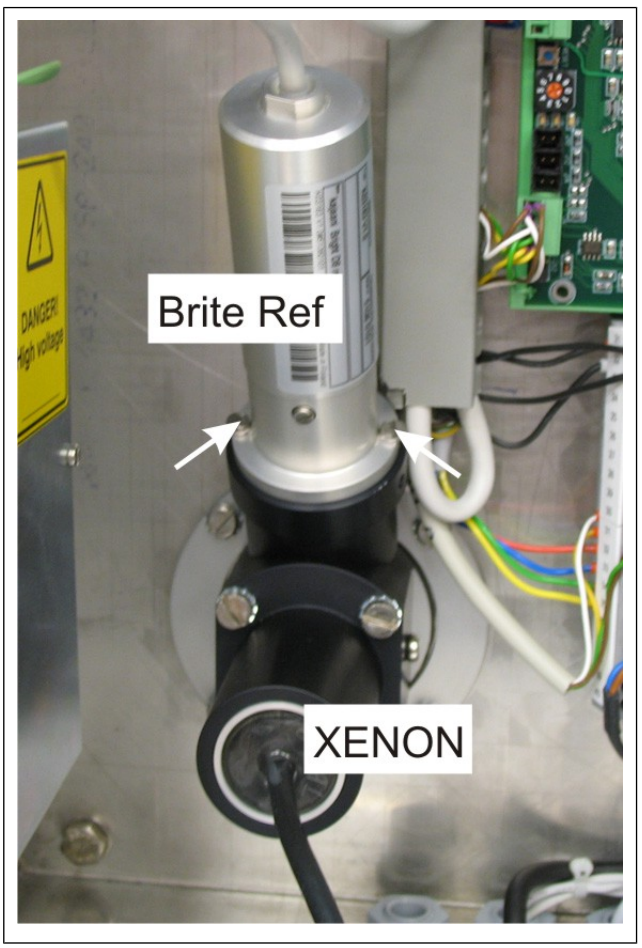


Fig. 9. Fastening Xenon lamp assembly and detector.

Testing

After installation and connections, test the operation of the measurement cell and valves. Open the water and air supply lines, and switch the analyzer on. Choose "Diagn" -› "IO-test".

Installing and removing an IO board

1. Make sure to insert the board in the right direction to its bracket (Fig. 10A & B).
2. Attach the board to the rail, press first the right side of the board against the rail.
3. If you need to remove a board from the rail, insert the tip of a screwdriver under the bottom left corner of the board bracket (Fig. 10C) and carefully pry the board loose.

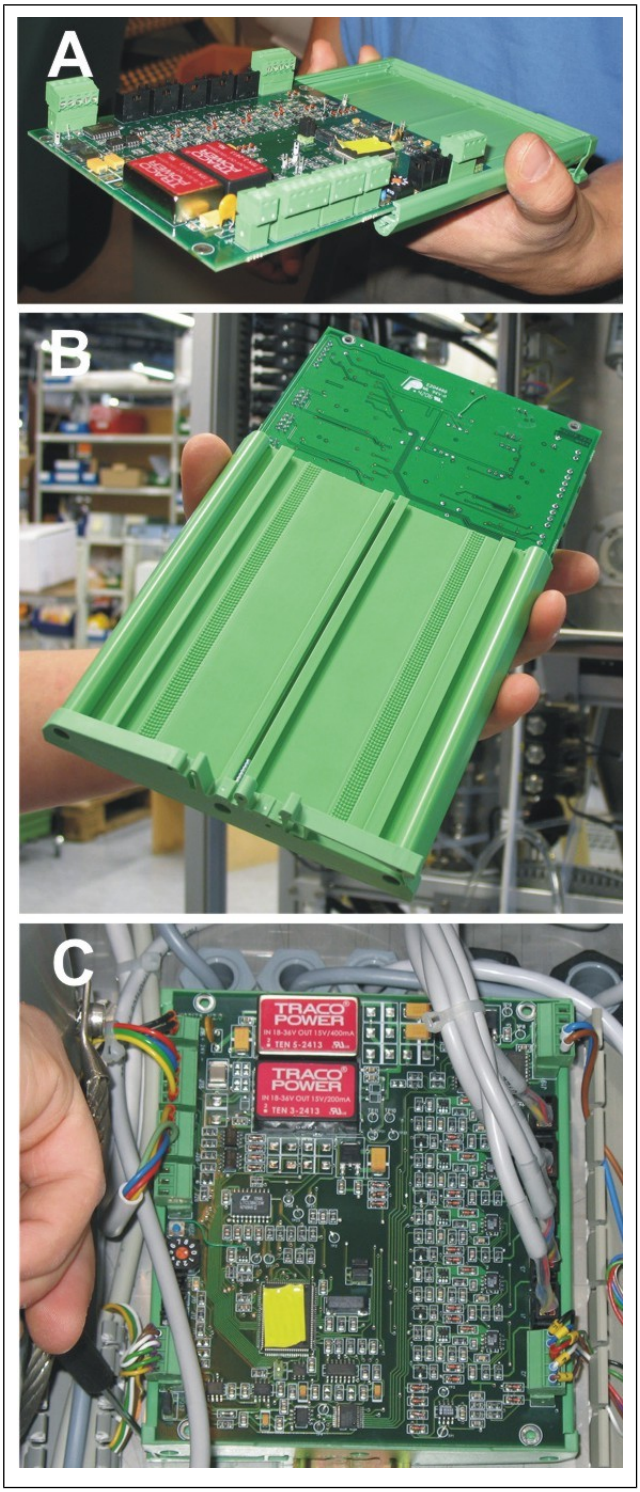


Fig. 10. Installing and removing an IO board.

Sweep module installation

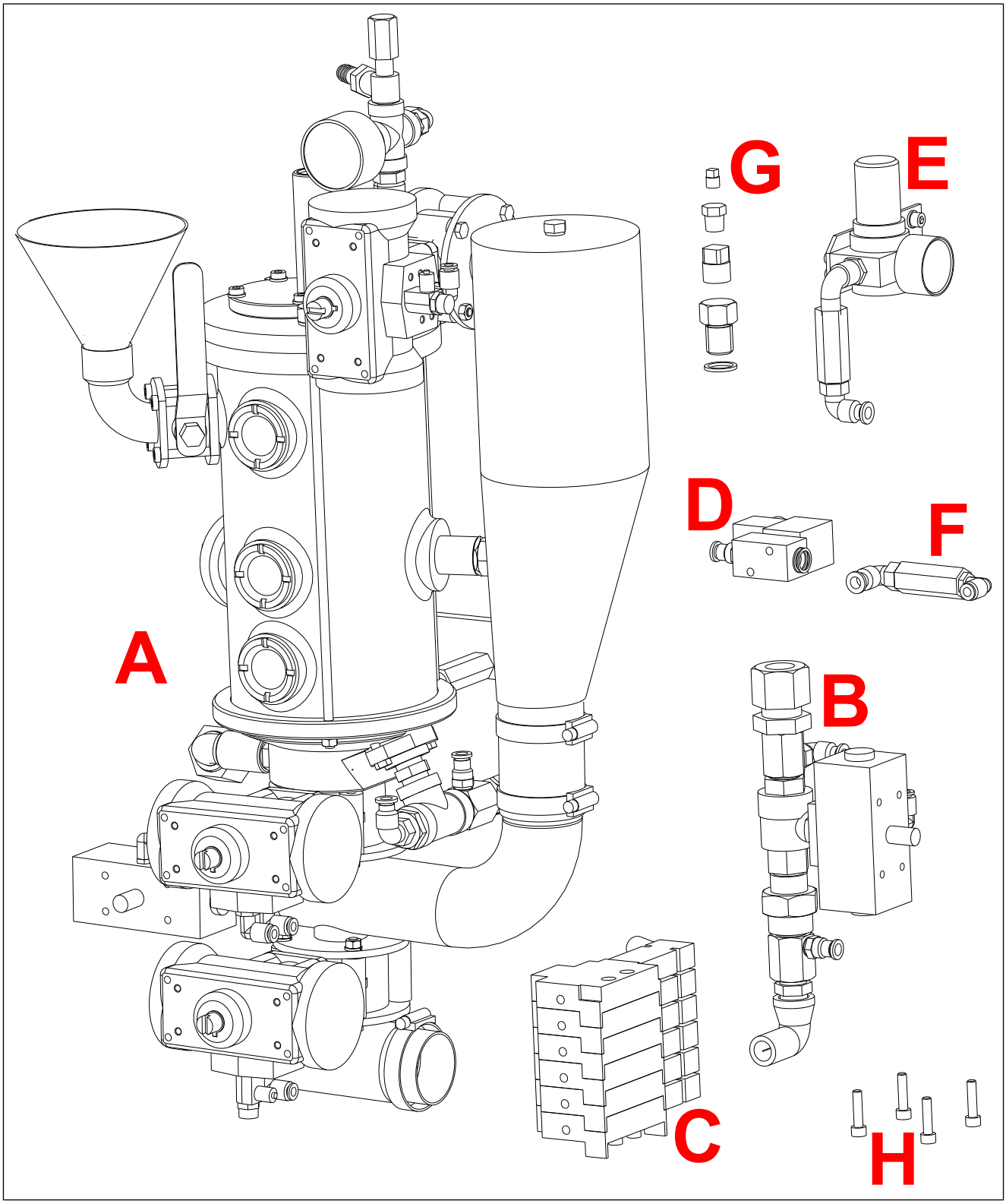


Fig. 1. Parts required for Sweep module installation: A - Sweep module, B - 2-way valve assembly, C - solenoid valve block, D - water valve, E - pressure regulator, F - check valve, G - plugs for washing chamber connectors, H - mounting bolts.

Before installation

1. If necessary, detach the cabinet doors from analyzer.
2. Remove the Allen screws on analyzer's right side wall (with a 5mm Allen key) and take off the wall. Put the screws aside, you will need them again later on.
3. Detach the level sensor cable and bushing (with a 5mm Allen key) from the washing chamber cover, and lift the sensor off (Fig. 2 and 3).
4. Detach the tubes from the chamber cover: safety valve FEP tube & tube 2A.
5. Detach the ejector tubes 14 and 29, also detach these from the manifold. Detach the ejector from the rear wall (Fig. 4).
6. Detach tubes 16, 17, 24, 25, 26 and from MARS valves the tubes 5, 6, 8, 10, 11 & 12.
7. Detach from the chamber the 3/4" FEP tube connected to the pump, and also the tubes between consistency sensor and pump.
8. Remove the discharge hose clamp from the top end of the hose. Detach the clamps of the 1" FEP tube and remove the tube. If the tube sits very tight, heat it gently to release it.
9. Loosen the clamps of the hose between discharge outlet and washing chamber, and remove this section.

Fig. 2. Detaching the level transmitter bushing.

Fig. 3. Lifting the transmitter out from washing chamber.

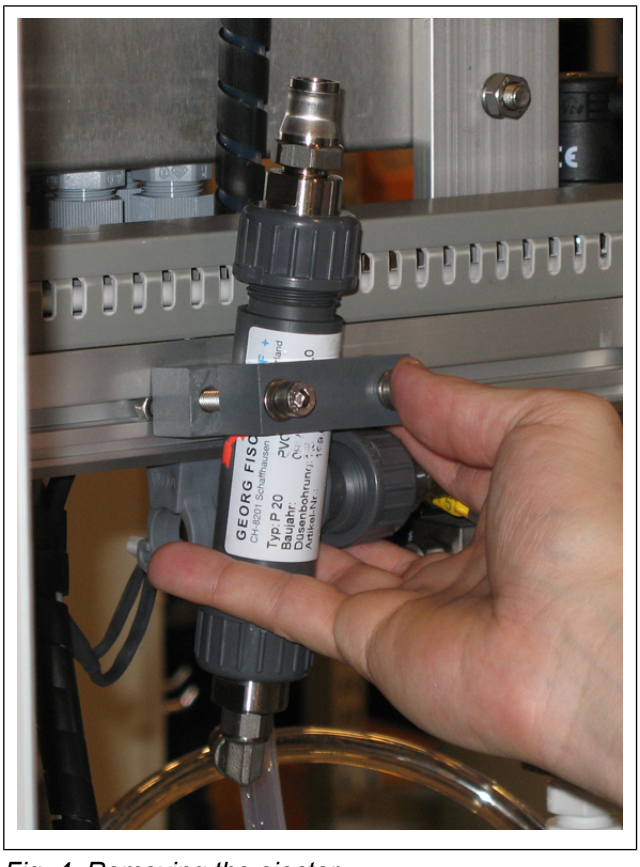


Fig. 4. Removing the ejector.

Detaching the washing chamber.

1. Before removing the assembly, make sure that you have detached all tubes from the washing chamber.
2. Put something on the bottom of analyzer's cabinet to protect it from scratches while the chamber is being removed.
3. Remove the prescreening valve assembly screws from the chamber cover (Fig. 5).
4. First open the fastening bolts (4 pcs) from the supports under the chamber. Then open the bolts of the upper supports. Hold the chamber in position while removing the last bolts!
5. Carefully lift the chamber out of the cabinet and place it on a solid table or other surface (Fig. 6).

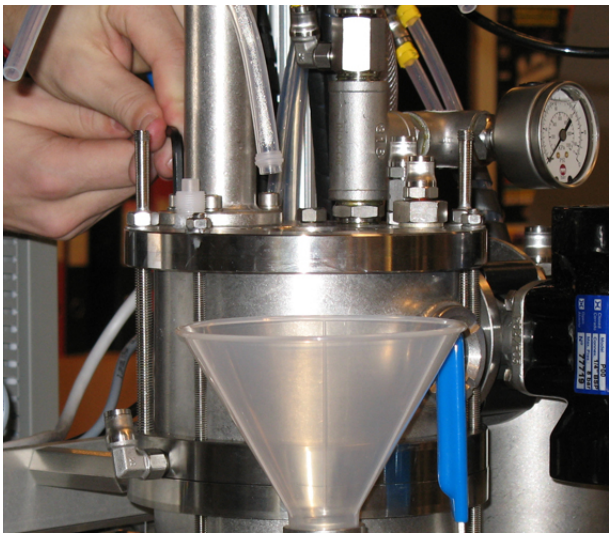


Fig. 5. Detaching the prescreening assembly from washing chamber cover.

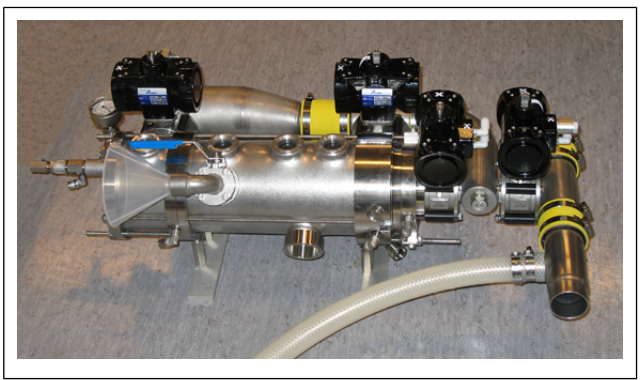


Fig. 6. Washing chamber, detached.

Releasing the valve from washing chamber.

1. Detach the valve + actuator from the chamber by loosening their aligning bushings (Fig. 8A). Handle the valve seals gently. (If the Sweep module delivery did not include this valve assembly, attach the removed valve to the Sweep module.)
2. After detaching the valve, also remove the aligning bushings. Put the washers aside, you will need them later. You will need new bolts to fasten the discharge outlet back.
3. Apply Gore-Tex tape to the seam to seal it. Apply the tape as shown in Fig. 8B and then cut off the extra tape. Fasten the discharge outlet to the chamber and tighten the bolts properly (Fig. 8C).
4. Turn the washing chamber's upper support around (Fig. 7A). Detach the lower support and also unscrew the hexagonal spacers to make more room for removing the connectors (Fig. 7B).

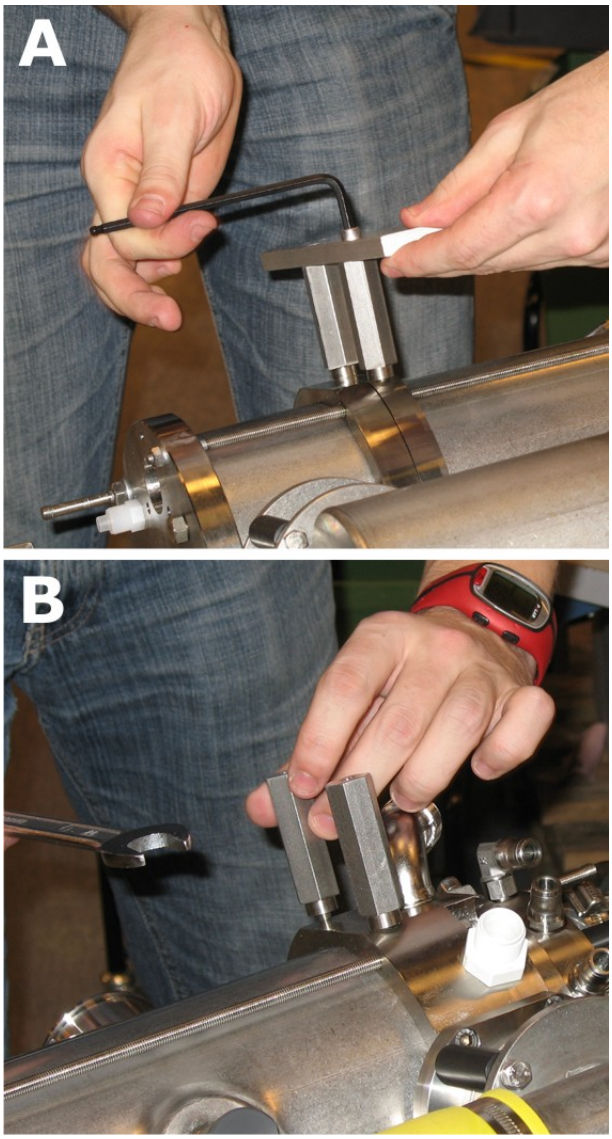


Fig. 7. Turning the supports around.

Fig. 8. Releasing the valve from washing chamber.

Removing connectors and adding a 2-way valve assembly.

1. Detach the pump's connector from the chamber. Use a hot air blast and a bar to unscrew the connector (Fig. 10A). Clean all dried glue from the connector hole (Fig. 10B).
2. Remove connectors (Fig. 10B, parts 1 & 2) from the chamber, clean their threads and close the holes with plugs (Fig. 9). Use Loctite 542 glue to ensure that the plugs stay tight.
3. Connect a branch tube to the 2-way valve assembly (Fig. 10C), use 577 Loctite glue to secure the connection.
4. Carefully fasten the assembly in position. Make sure that the actuator is horizontal and the connector perpendicularly in the middle of the support (Fig. 10D). Wait for about one hour to let the glue dry thoroughly. Then tighten the conical connector properly.
5. Fasten the hexagonal spacers of the support back, and screw the support to the spacers. Remember to turn the support around compared to its original position! Then tighten the spacers properly.

Fig. 9. Closing the connectors with plugs.

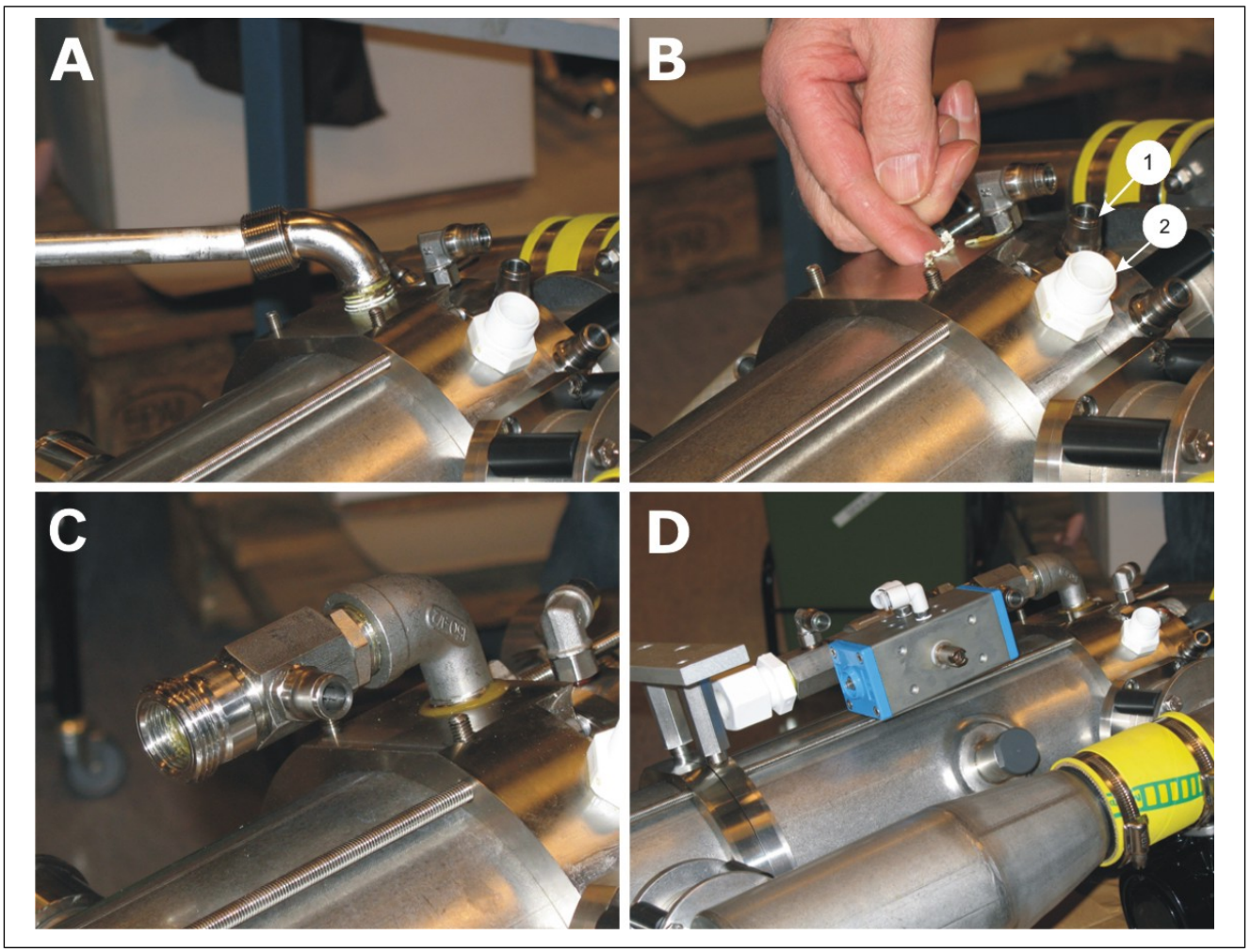


Fig. 10. Removing connectors and adding a 2-way valve assembly to washing chamber.

Installing a level switch

Unplug the hole of the level switch (Fig. 11A). Put the plug aside, you will need it later. Install the switch that you removed earlier from the Sweep module (Fig. 11B).

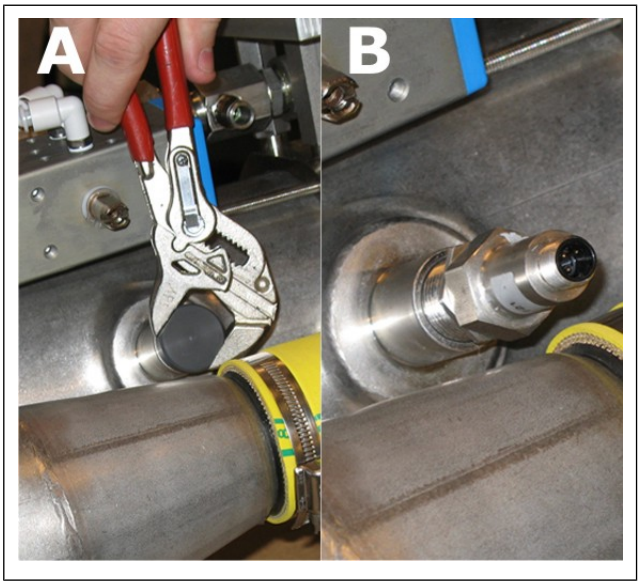


Fig. 11. Installing the washing chamber level switch.

Fastening the washing chamber

1. Make sure you have the mounting bolts at hand, and make sure there are no tubes caught behind the chamber.
2. Carefully place the chamber back in place. Support it in position and fasten it with the supports, first fasten the lower support at both sides. The distance from the right side to the edge of the support should be 83 mm (3 9/32").
3. Make sure that the chamber is exactly upright, not tilted in any way, and tighten the screws (Fig. 12, part 1) with an Allen key.
4. Close the ejector tube connector in the washing chamber with a plug (part 4).

Sweep module mounting

1. Attach the level transmitter bushing (removed earlier from washing chamber) to the Sweep module (Fig. 12, part 2).
2. Move the Communicator-i bracket out of the way to make more room for module installation.
3. Carefully lift the module into place. Support it while fastening. Make sure that you fasten the module to the right place: The distance from the left side to the edge of the support should be 65 mm (2 9/16").
4. Start from the top when fastening the module. Tighten the clamps of the connecting piece.
5. Make sure that the chamber is exactly upright, not tilted in any way, and tighten the screws (part 1) with an Allen key.

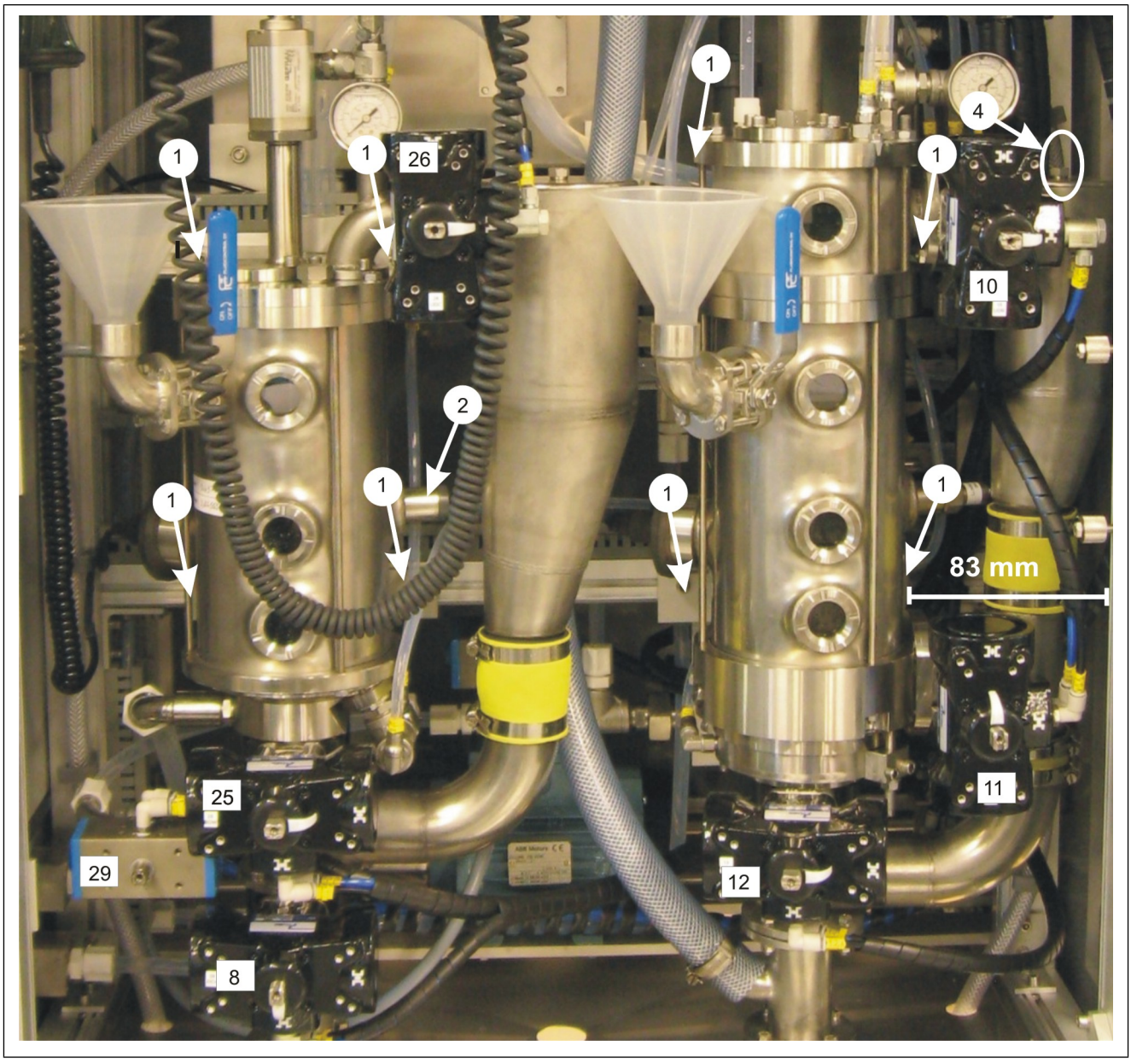


Fig. 12. Washing chamber and Sweep module installed to analyzer.

Tube connections 1

1. Connect a 3/4" FEP tube from Sweep module to pump (Fig. 13A). Cut and round the tube so that it fits well. If necessary, adjust the module position so that you can connect the tube. Tighten the connectors with a 34mm wrench.
2. Connect a 1/2" FEP tube from Sweep module to 2-way valve 29_WIV (Fig. 13B). The tube must fall towards the valve! Tighten the connectors with a 24 mm wrench.
3. Connect a 1/2" FEP tube from blockage removal valve (04_BLR) to Sweep module (Fig. 13C).
4. Connect a tube from consistency sensor to pump.

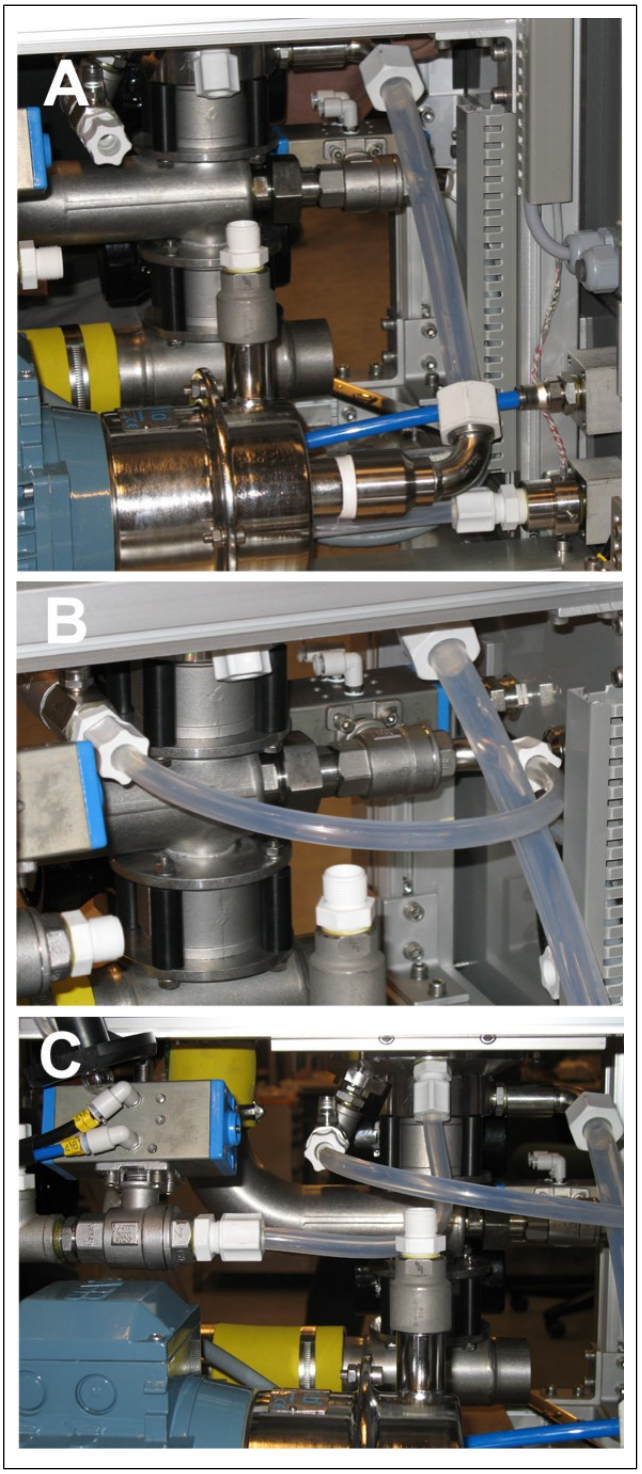


Fig. 13. Tubes between Sweep module, pump, and 2-way valve.

Tube connections 2

1. Connect a 1/2" FEP tube from the top of the module for sample transfer (Fig. 14A). Shape the tube so that its beginning is higher than the safety valve, and it then falls steadily all the way to the exchange valve (22_EXV). Tighten the connectors with a 34mm wrench.
2. Install the prescreening assembly to the washing chamber cover. Tighten the screws with a 5mm Allen key.
3. Shorten the discharge tube as necessary, and attach it in place (Fig. 14B). Tighten the tube with a clamp.
4. Take a suitable section of tube, and attach it between the assembly and sample line connector (Fig. 14C). Tighten the clamps.

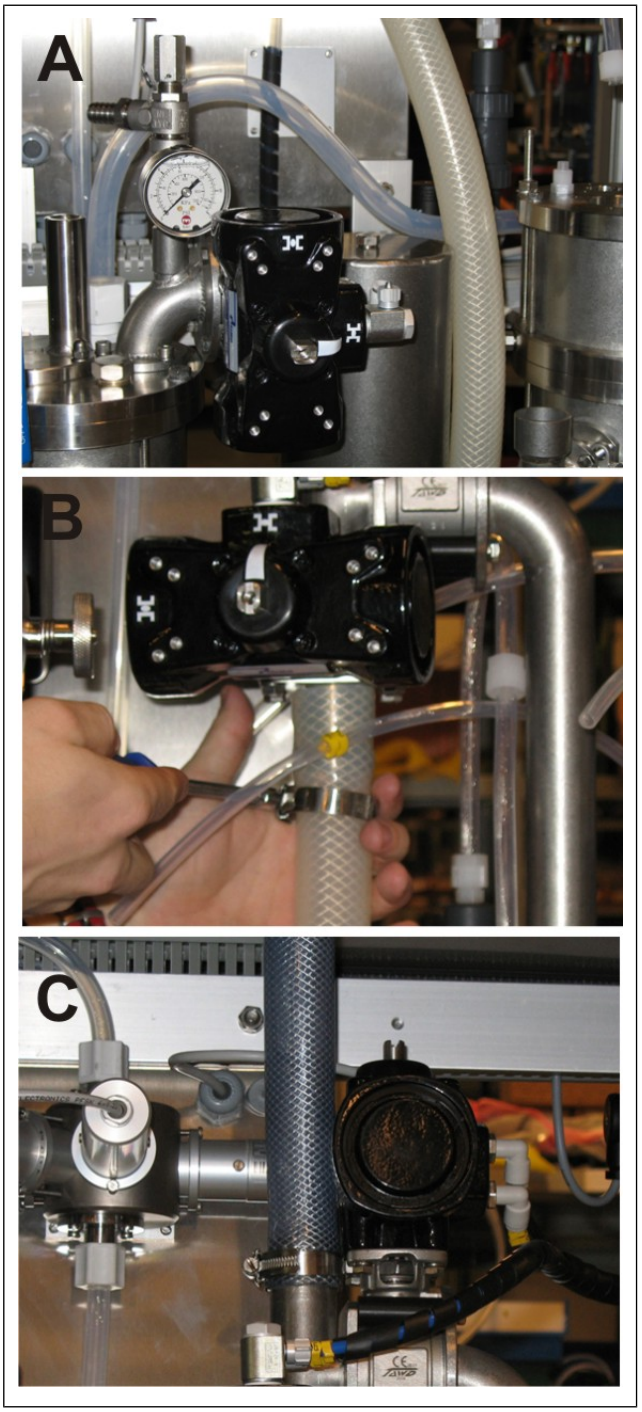


Fig. 14. Tubing to safety valve, connection of discharge and sample line tubes.

Installing level transmitter to Sweep module

1. Disassemble the transmitter detached earlier from the washing chamber: open its locking ring with a 2mm Allen key.
2. Detach the ring, floater, and cover from the transmitter.
3. Remove the plug from Sweep module cover. Open the screws (Fig. 15A, part 1, 4 pcs) to release the cover. Put the cover, screws, and plug aside for later use.
4. Fasten the washing chamber cover in position with Allen screws, and attach the plug taken from the Sweep module to it (Fig. 15B). Tighten the screws and plug.
5. Screw the transmitter to the detached Sweep module cover. Insert the floater to the transmitter. Make sure that the distance between floater and transmitter tip is 30 mm (1 3/16") and then fasten the locking ring in position (Fig. 15C).
6. Install the transmitter to the Sweep module, make sure that the O-ring is in position. Fasten the cover with screws and connect the sensor cable.

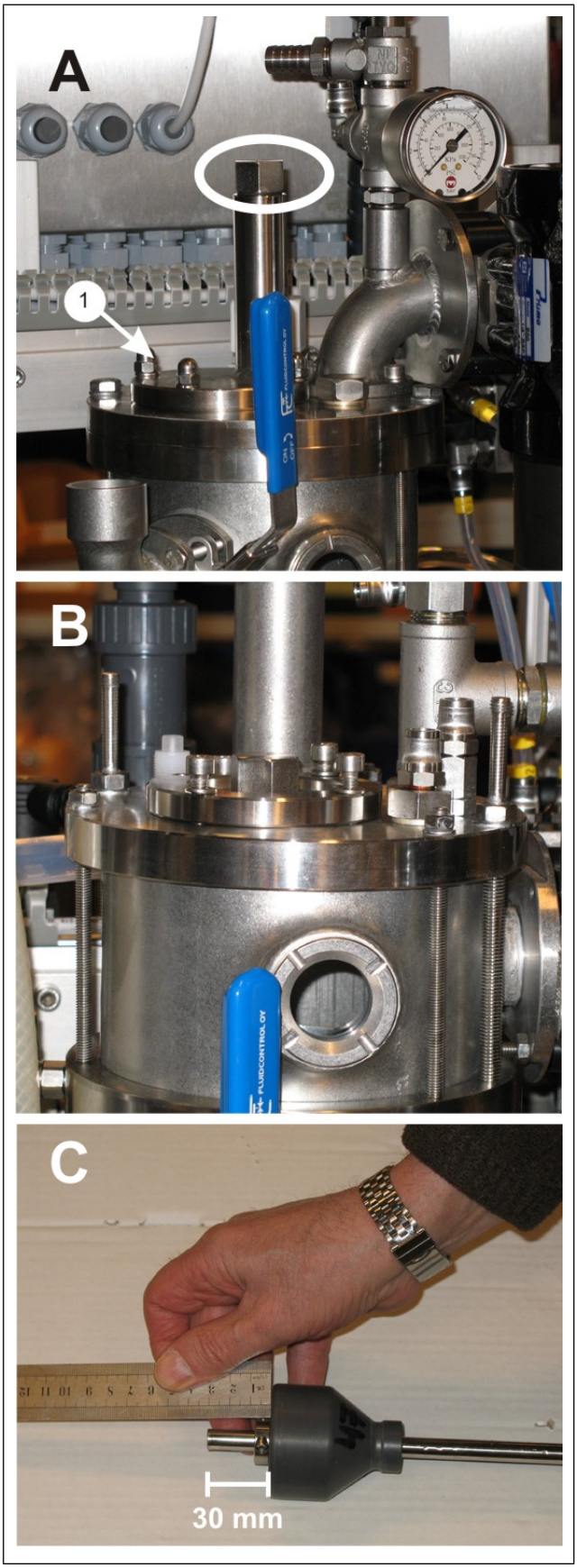


Fig. 15. Installing the level transmitter.

Adding a solenoid valve block

1. Detach the incoming air tube from the valve block (Fig. 16A).
2. Remove the support plate screw and pry the plate loose with a screwdriver (Fig. 16A). Be careful with the O-rings!
3. Open the cable conduit on the side. Be careful not to break the "fingers" of the plate!
4. Remove the cables of the 2 bottom valves from the conduit, and also remove these solenoid valves (35, 36) from the bottom of the valve block (Fig. Fig. B).
5. Connect the new solenoid valves to the valve block (Fig. 17A). When you hear a click, the valve block is properly in position. Be careful with the O-rings! Attach the two solenoid valves (detached earlier) to the bottom of the valve block.
6. Insert the cables into the conduit at the end of each valve.
7. Install the block support plate and air tube back.
8. Put the caps on the solenoid valves. Press the cap tightly against a valve and tighten the cap screw at the same time (Fig. 17B). NOTE: Look at the length of the cables and attach the caps in the corresponding order: shortest cable up, etc.

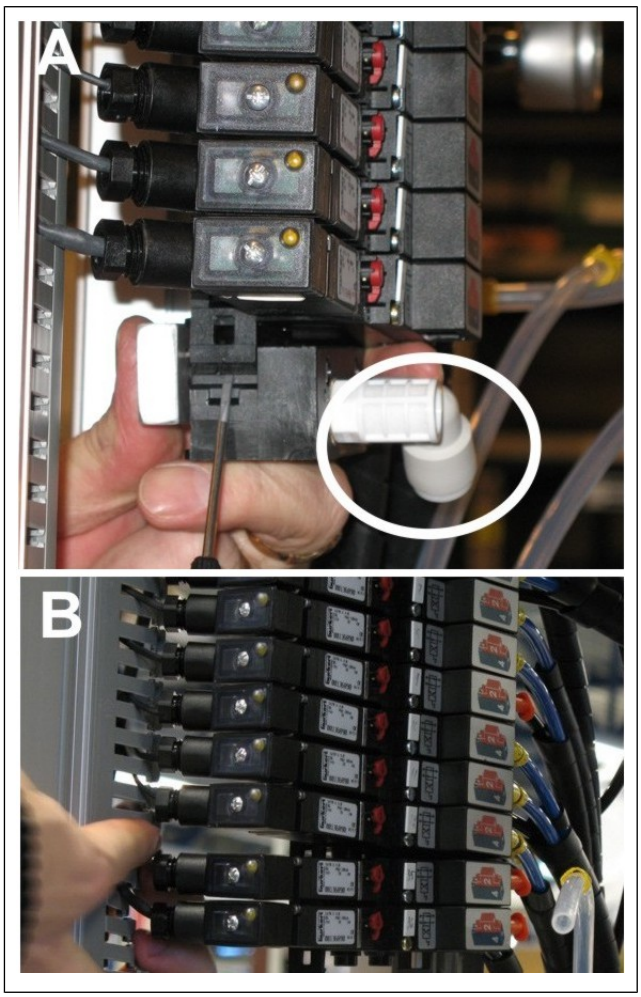


Fig. 16. Detaching the mounting plate and valves.

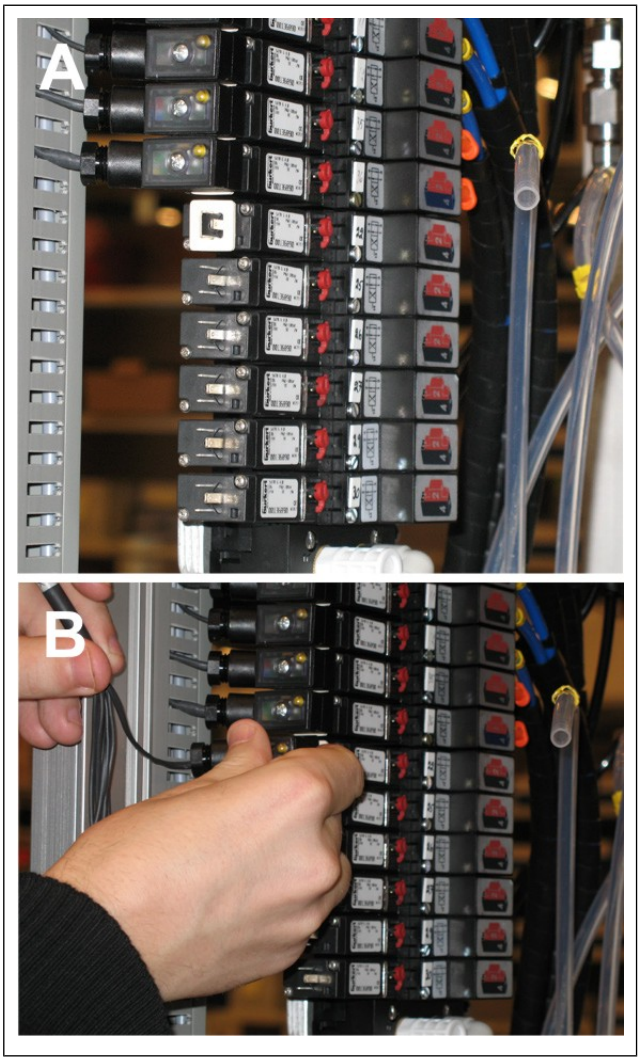


Fig. 17. Fastening the valve block and caps.

Connection of solenoid valve cables

1. Insert the cables through the top conduit to the lead-through bushings of the electronics cabinet.
2. Open the bushing and the cable conduits in the electronics cabinet. Insert the cables through the bushing (Fig. 18) and conduits to board IO2 (Fig. 19), then connect them according to Table 1:
3. NOTE: If you are not sure of the connection, measure the voltages!

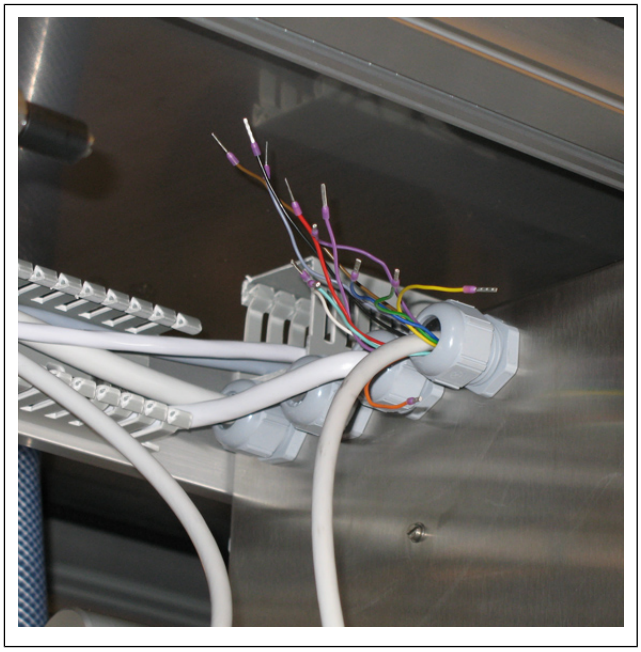


Fig. 18. Lead-through bushing, solenoid valves.

Table 1. Solenoid valve connections.

Connector:pin	Pair	Colour		Valve
J30:1	1	Red	+	22
J30:3	1	Blue	-	
J33:1	2	Green	+	25
J33:3	2	Yellow	-	
J34:1	3	White	+	26
J34:3	3	Black	-	
J35:1	4	Brown	+	27
J35:3	4	Violet	-	
J37:1	5	Orange	+	29
J37:3	5	Pink	-	
J38:1	6	Turquoise	+	30
J38:3	6	Grey	-	

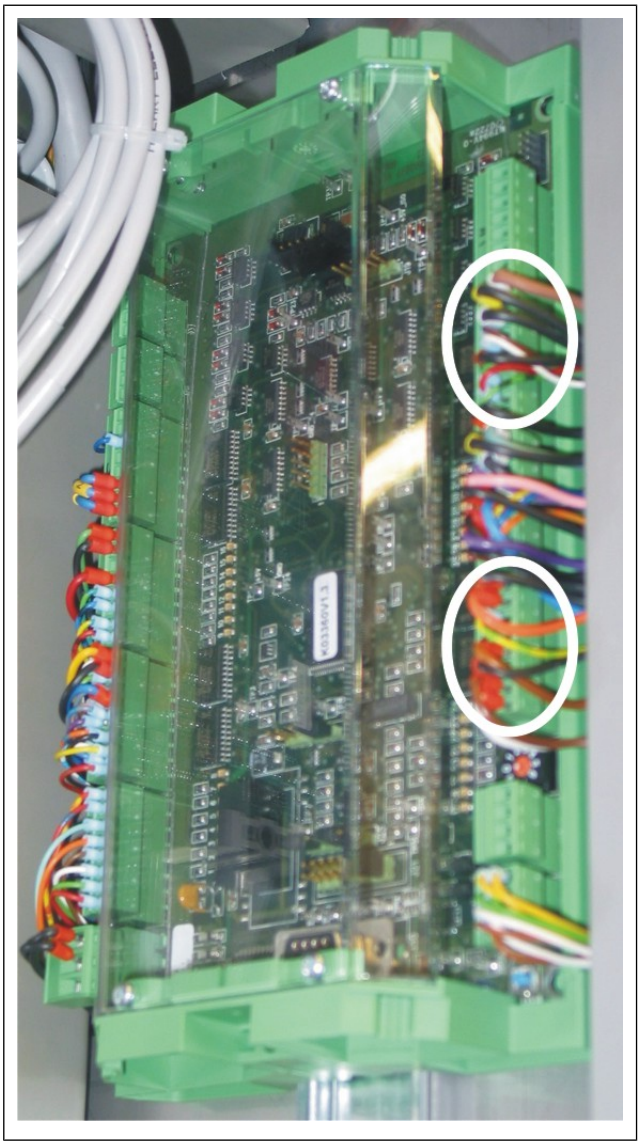


Fig. 19. Connecting cables to Binary I/O board.

Installing and connecting a solenoid valve for water

1. Open the plug of the cold water manifold. There are O-rings on both sides of the manifold, be careful not to let them fall and get lost!
2. Insert the valve and tighten its nut.
3. Attach the valve cap and tighten with a screw (Fig. 20).
4. Lead the cable through the conduit to electronics cabinet, and connect it to board IO2 as follows:
   - J9-4 (+)
   - J9- (-)
5. Change the water valve control connectio on IO2 board, from pin J3 (14_EJC) to pin J7(23_EXF).

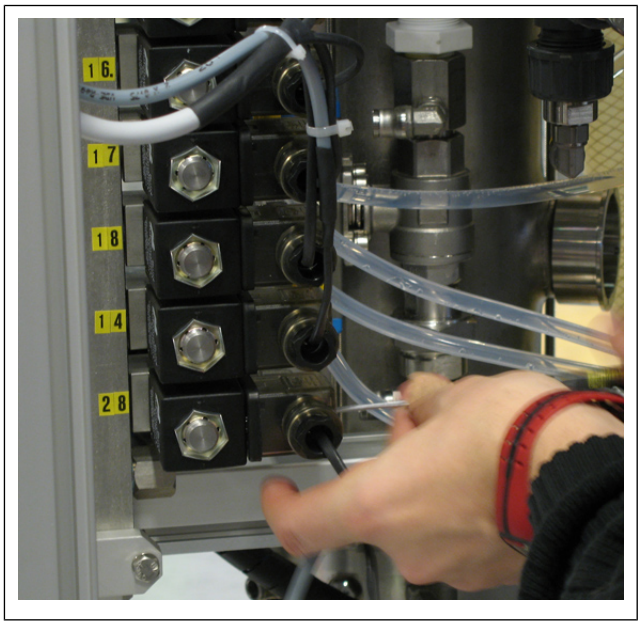


Fig. 20. Adding a solenoid valve for water, and attaching its cap.

Connection of level switch

1. Connect the level switch cable to the plug, and screw the plug to the chamber (Fig. 21A).
2. Lead the cable through the conduit and bushing to electronics cabinet (Fig. 21B). Connect the cable to board IO2 and to terminal strip as follows:
   - green J5-6
   - red (+) P2, 7
   - blue (-) P1, 27

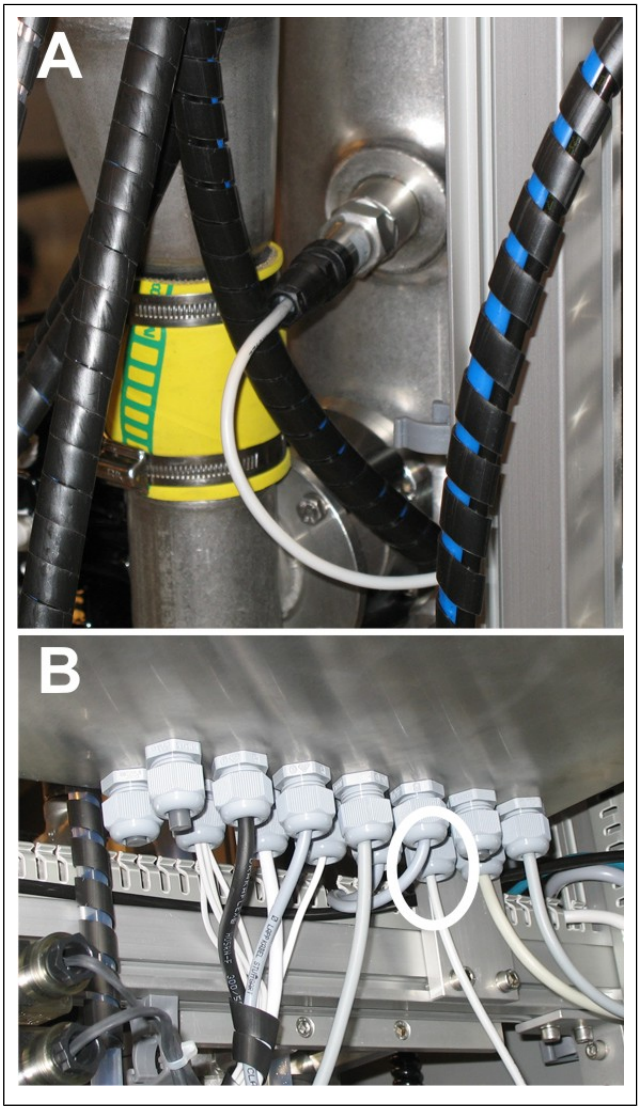


Fig. 21. Installing and connecting the washing chamber level switch.

Connection of Sweep module lamp

1. Press the lamp to the side of the module (Fig. 22A).
2. Open the bushing to electronics cabinet (Fig. 22B), lead the cable through the conduits to the board and connect as follows (Fig. 22C):
   - wire 1 (+) J9-7
   - wire 2 (-) J9-

NOTE: Washing chamber and Sweep module lamp cables are connected to the same connector.

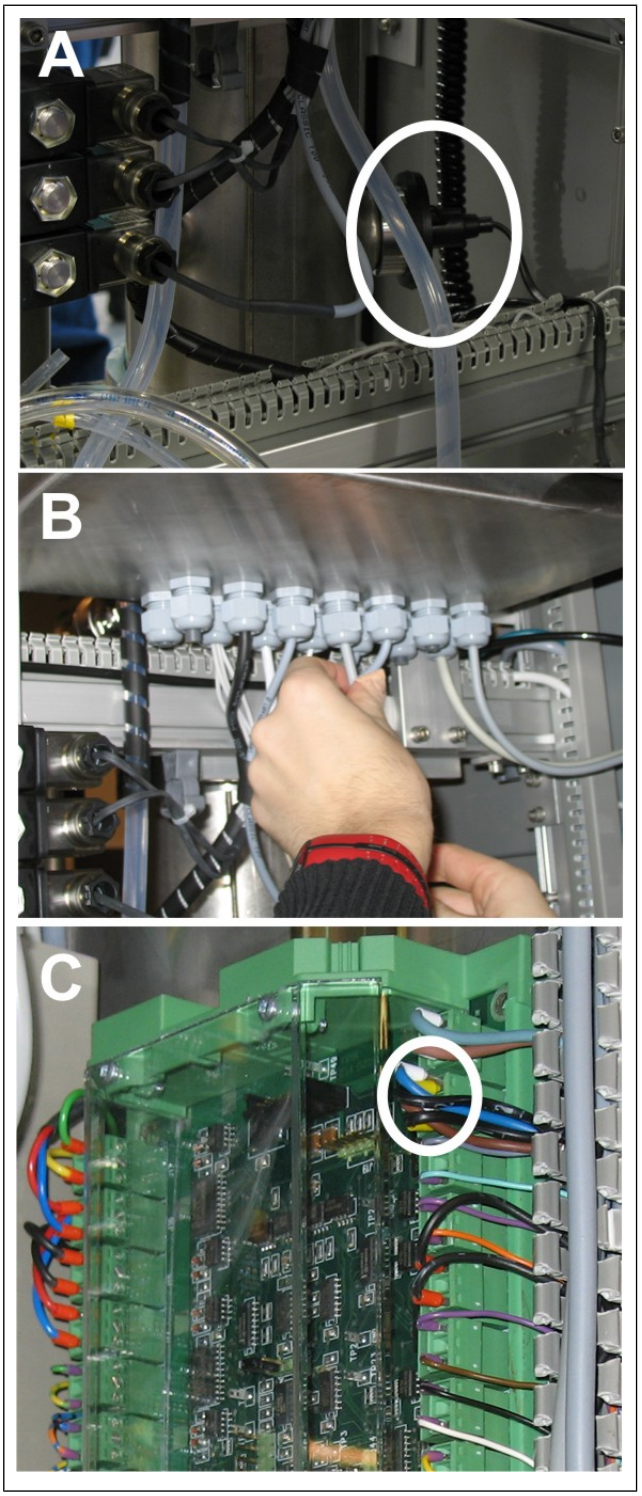


Fig. 22. Installing and connecting the Sweep module lamp.

Valve tube connections

1. Before connecting the valve tubes, install a pressure regulator to analyzer's left side wall, about 140 mm (5 1/2") from the top cover (Fig. 23). Install a check valve for the Sweep module to the lower horizontal frame bar, below the module electronics box (Fig. 24).
2. Connect pressure relief tubes to the safety valves (Fig. 25).
3. Connect air tube 2A from the pressure regulator to safety valve (Fig. 26). Also connect the washing chemical ejector tube (Fig. 26).
4. Connect tubes to the washing chamber MARS valve: 5, 6, 10, 11, 12.
5. Connect air tube 22A to exchange valve.
6. Connect air tube 30A to pressure regulator (close 30B with a plug) and from pressure regulator to Sweep module's safety valve.
7. Connect air tube 27A to safety valve (close 27B with a plug) and from safety valve to Sweep module's mixing air valve (Fig. 27).
8. Connect tubes to Sweep module's MARS valves 8 & 25, and to 2-way valve 29 (Fig. 27). Also connect tubes to valve 26.

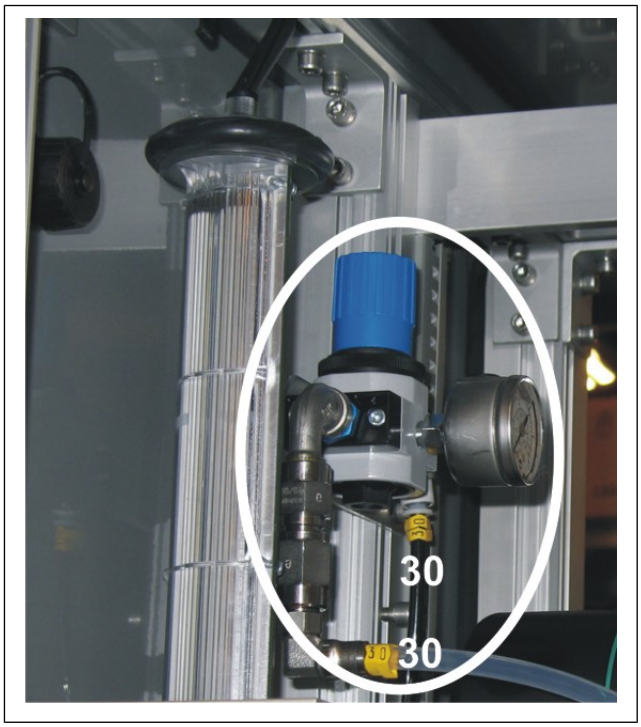


Fig. 23. Pressure regulator.

Fig. 24. Sweep module's check valve.

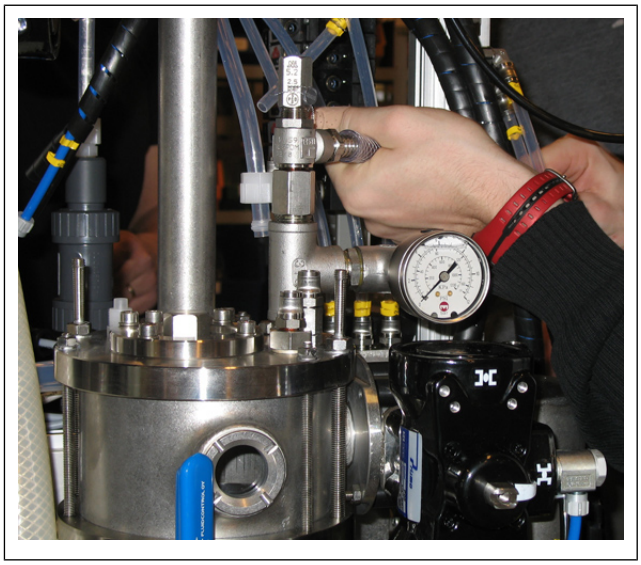


Fig. 25. Tube connections of safety valve.

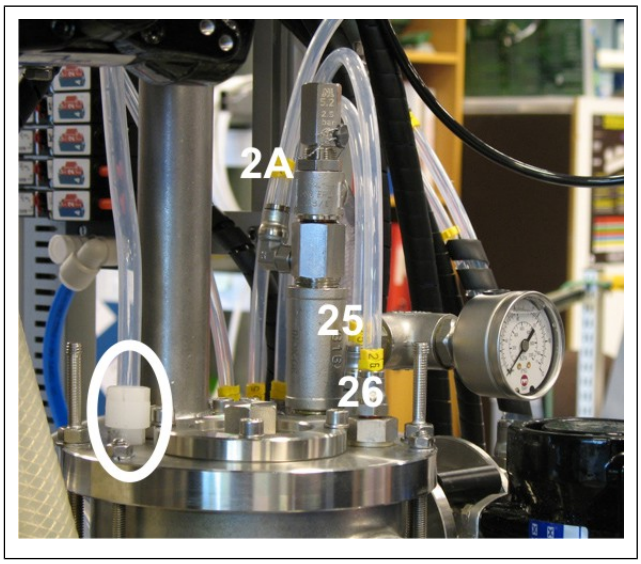


Fig. 26. Tube connections to washing chamber.

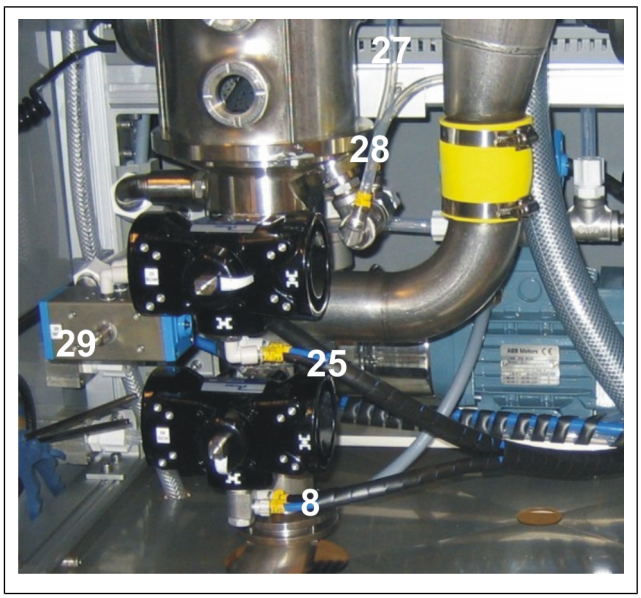


Fig. 27. Tube connections to Sweep module valves.

Tube connections to water valve

1. Connect tubes 24, 25 & 26 from water manifold to washing chamber (Fig. 26, 28 & 29).
2. Connect tubes 16 & 17 from washing chamber to water valves (Fig. 30, 31 & 32).
3. Connect tube 18 from the measuring loop flushing valve to water valve (Fig. 30).
4. Connect tube 23 from the exchange line flushing valve to water valve (Fig. 30).
5. Connect tube 28 from Sweep module to water valve (Fig. 27 & 30).

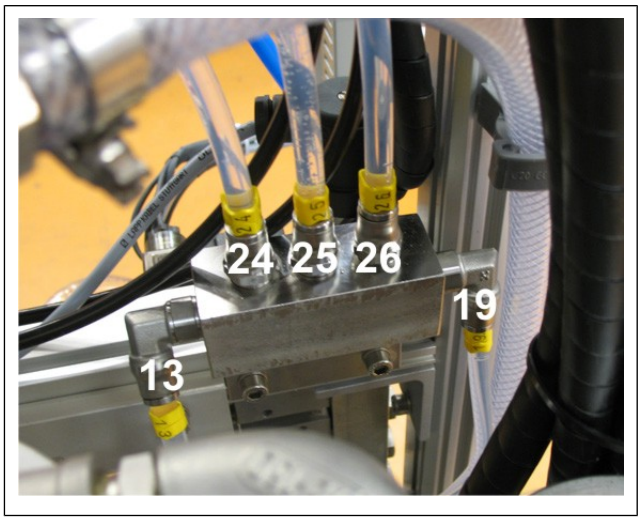


Fig. 28. Tube connections to manifold.

Fig. 29. Tube connections from manifold to washing chamber.

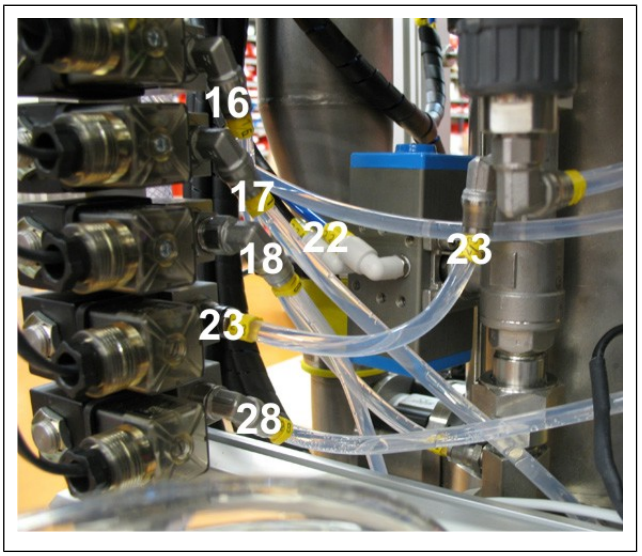


Fig. 30. Tube connections to water valve.

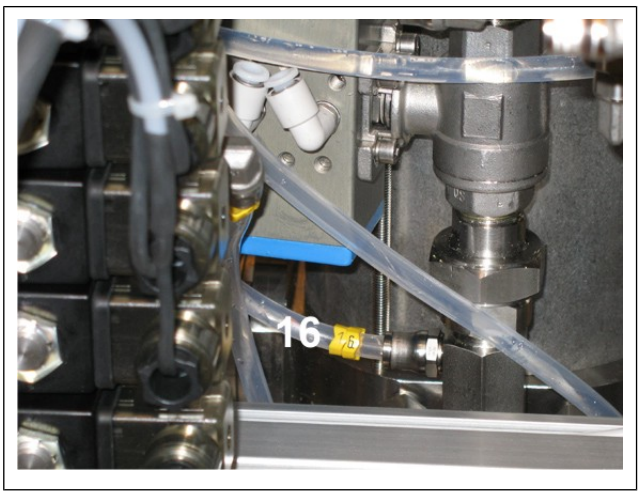


Fig. 31. Tube connection to valve 16 (water on the wire).

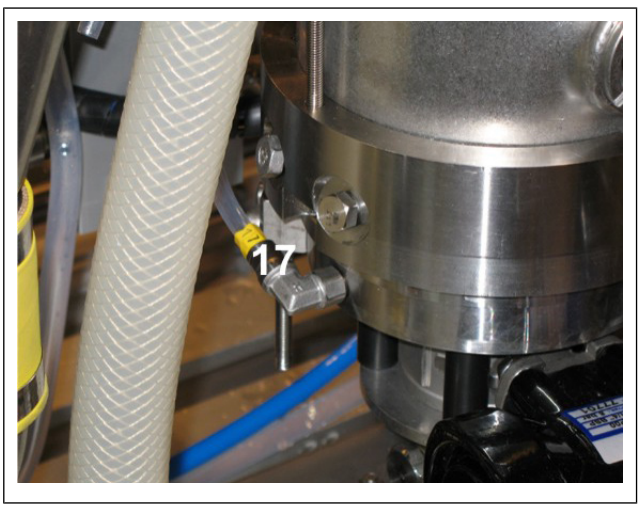


Fig. 32. Tube connection to valve 17 (water under the wire).

Ensuring tightness

Discharge

– Make sure that the discharge hose is properly supported and in the correct place.

Connecting instrument air and checking for leaks

– Connect the instrument air and make sure there are no leaks anywhere.

Connecting water and checking for leaks

– Connect the water pressures and make sure there are no leaks anywhere.

Checking valve operation

– Check the operation of all valves with Communicator-i: go to "Diagn" -› "IO-test". Check each control in turn by setting them OFF-ON-OFF. Make sure that the indicator LED of the selected valve lights up and the valve operates correctly. Make sure that the valve actuator turns in the right direction. Make sure there are no air or water leaks.
– Adjust the restrictor valves.

Adjusting chamber pressure

Washing chamber

– Set valve 10_UDR = ON. Set valve 2_WCP = ON. Make sure that valves 11_WRS = OFF & 12_WRW = OFF. Adjust air pressure to 2 bar (29 psi). Make sure that there are no leaks anywhere.
– Testing the safety valve: Open valve 3_PUW and make sure that the safety valve operates when pressure reaches 4 bar (58 psi). Open valve 10_UDR, and close valves 2_WCP and 3_PUW.

Sweep module

– Set valve 2_UDC = ON. Set valve 30_SWP = ON. Make sure that valves 25_BOV = OFF and 29_WIV = OFF. Adjust air pressure to 2 bar (29 psi). Make sure that there are no leaks anywhere. Open valve 26_UDC and close valve 30_MCP.
– Testing the safety valve: Open valve 30_SWP and make sure that the safety valve operates when pressure reaches 4 bar (58 psi). Open valve 26_UDC and close valve 30_SWP.

Testing and adjusting the sensors

Testing the level switch

– Run water into the chambers until the level reaches the sensor, and make sure that the switch status changes accordingly. Then drain out the water by opening valve 12_WRW.

Tuning and testing the level transmitter

NOTE: Make sure to drain all water from the measurement loop and pump before tuning!

1. Set the valves OFF.
2. Go to "Calibr" [F5] -› "Level transmitter" (Fig. 33).
3. Write down the "Level gain" and "Level offset" values from the display, and keep them in case you need to make corrections or cancel the operation. Here you can also enter the gain and offset values (if these are known).
4. Select "Calibr" [F3].
5. Press [F1] to select which transmitter you wish to calibrate.
6. Write an accurately weighed water volume (e.g. 2 kg) into the chamber, and enter the added water volume in field "Volume 1".
7. Start the pump for a moment to fill the measurement loop with water.
8. Select "Meas" [F3] -› "Meas level 1".
9. Write an accurately weighed water volume (e.g. 1.5 kg) into the chamber, and enter the total water volume in field "Volume 2" (e.g. 2 kg + 1.5 kg = 3.5 kg = "Volume 2").
10. Select "Meas" [F3] -› "Meas level 2".
11. Select "Calc" [F5], and the software will calculate the gain and offset. Select "Save" [F7] to start using the calculated values.
12. Select "Meas" [F3] -› "Meas volumes".
13. Go to menu "Config" [F3] -› "Analyzer parameters" (Fig. 34). To make sure that the level transmitter remains within its operating range, change the obtained values slightly: deduct 5% from the obtained "Measured max volume" and enter the result in field 5 "Volume max". In the same way, add 5% to the obtained "Measured min volume" and enter the result in field 6 "Volume min".
14. Press Save [F7] to save the changes.

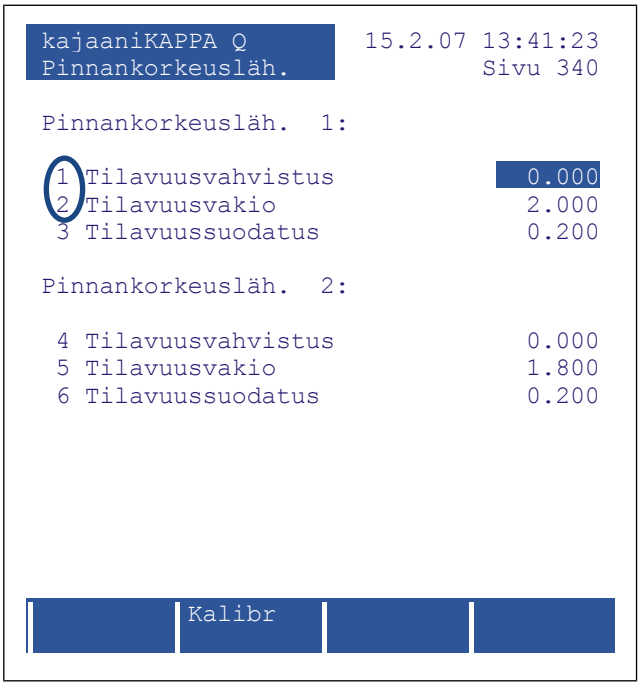
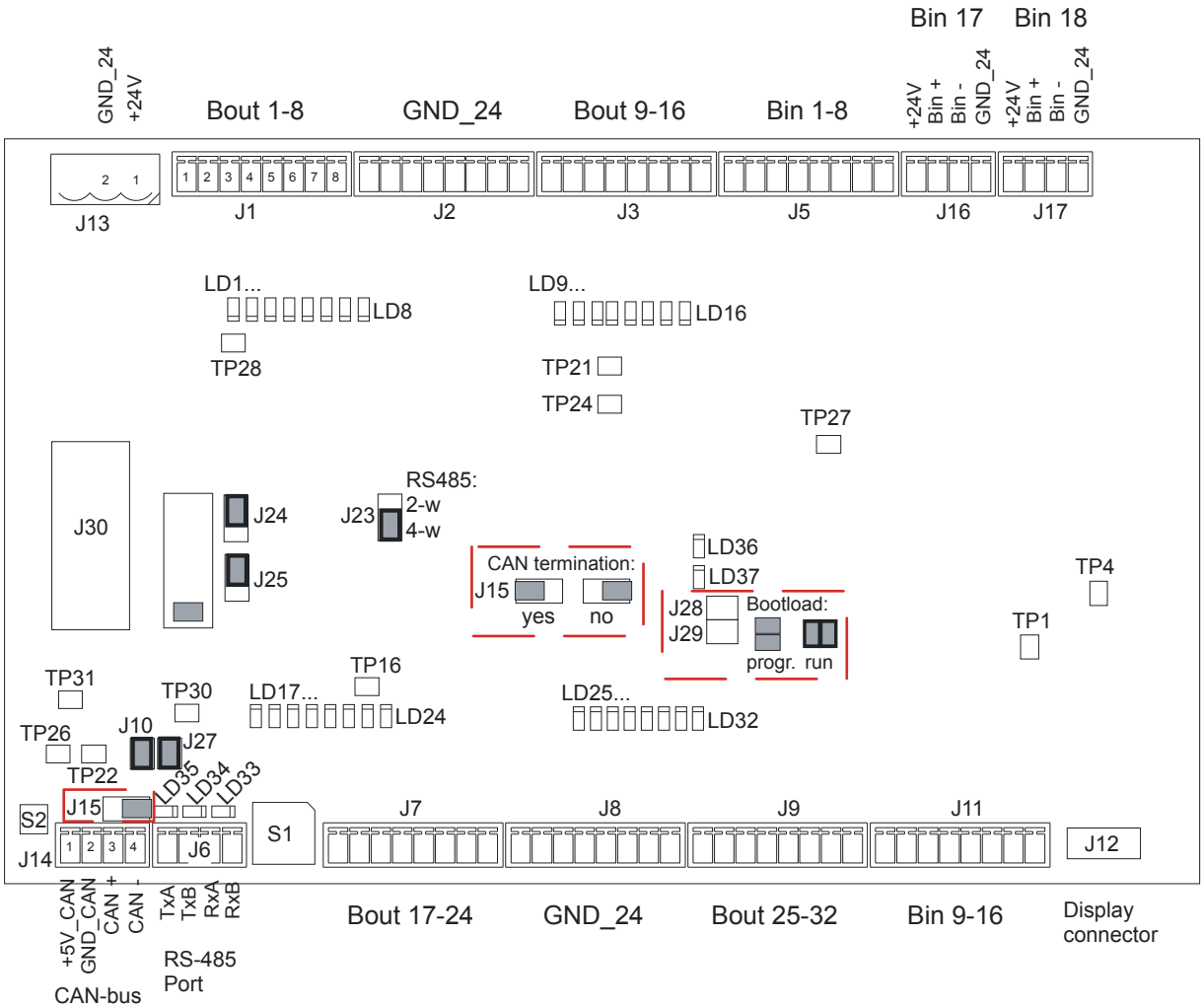


Fig. 33. "Level transmitter" page.

Fig. 34. "Analyzer parameters" page.

Connection diagram



AIR				
Connector:pin	Pair	Colour		Valve
J7:6	1	Red	+	22
J8:6	1	Blue	-	
J9:1	2	Green	+	25
	2	Yellow	-	
J9:2	3	White	+	26
	3	Black	-	
J9:3	4	Brown	+	27
	4	Violet	-	
J9:5	5	Orange	+	29
	5	Pink	-	
J9:6	6	Turquoise	+	30
	6	Grey	-	

COLD WATER				
Connector:pin	Pair	Colour		Valve
J9:4	1	Brown	+	28
	1	Blue	-	

DILUTION CHAMBER LIGHT				
Connector:pin	Pair	Number		
J9:7	1	1	+	
	1	2	-	

LEVEL SENSOR 2				
Connector:pin		Colour		
J5:6		Blue	Out	
Rail Connector				
7		Red	+	
27		Green	-	