

Multi water sampler shown with accessories (optional)

Multi Water Sampler 12 syringes each 50 ml

Model 100.210

Manual

KC Denmark A/S

Research Equipment
Limnology • Oceanography • Hydrobiology

Multi Water Sampler, 12 x 50 ml




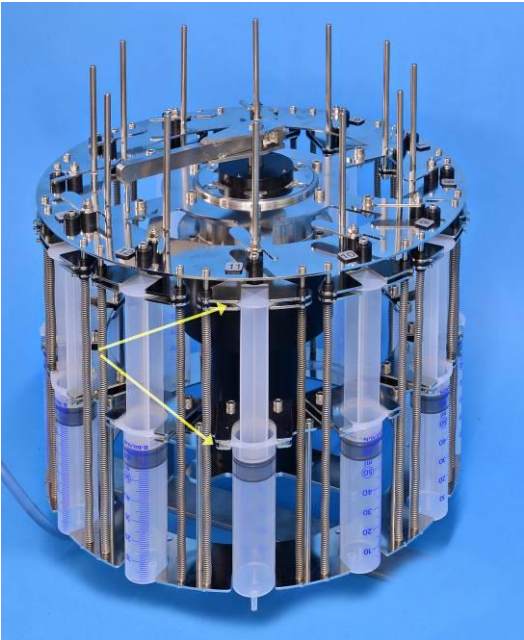
Caution

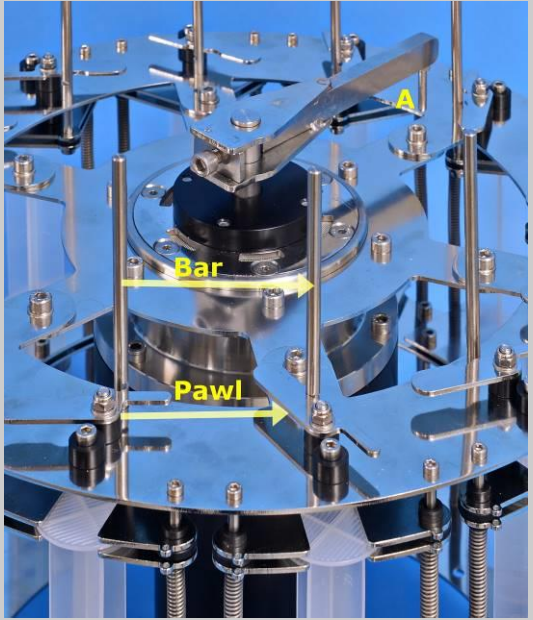
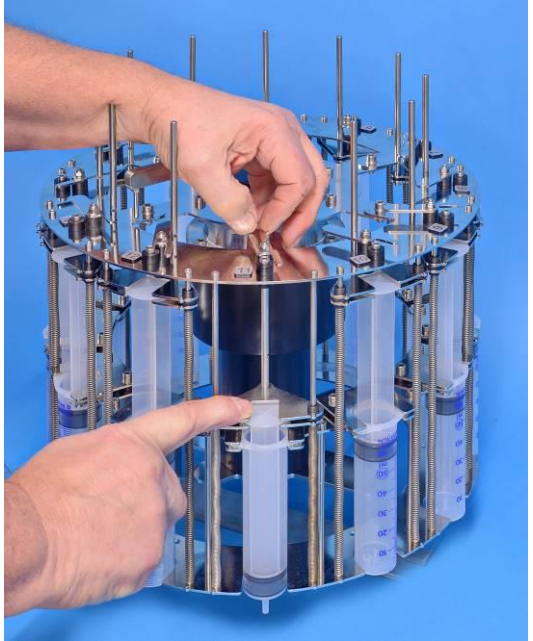

IMPORTANT:


The system itself is rated for 6000 m depth. The maximum useable depth depends on the actual battery cylinder. Model 100.217 (standard delivery) is only for 4000 m depth and for 6000 m, model 100.226 is required.

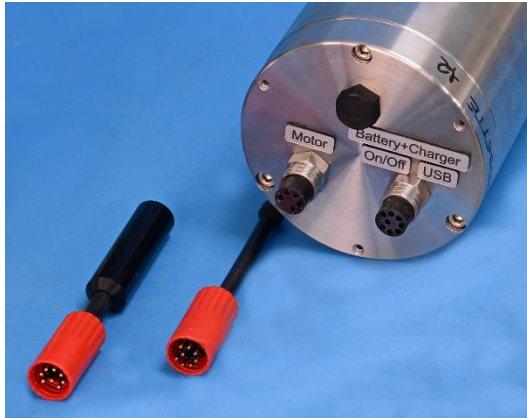
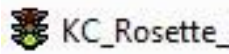

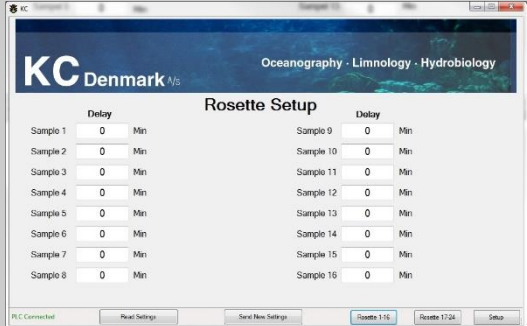
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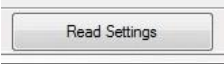
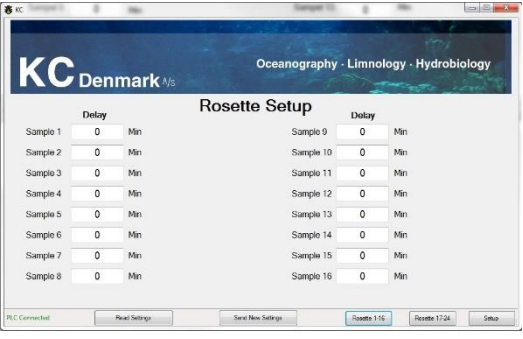

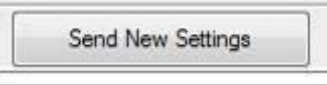

Item	Description	
1	<p>A complete system requires the following items:</p> <ul style="list-style-type: none">• 100.210 – The multi water sampler• 60.010 – Time lapse trigger incl. tablet and preinstalled software• 100.217 – Battery cylinder (4000 m) with room for time lapse trigger (or 100.226 for 6000 m)• 100.230 – Cable from battery cylinder to motor• 100.234 – Plug for activating the timer• 100.235 – Battery charger (not shown on photo)• 100.236 – Cable for programming	

Loading the sampler		
2	<p>Insert the syringes, one by one, into the slots as shown on the photo.</p>	

<p>3</p>	<p>Every syringe has a corresponding pawl and vertical bar; once loaded it holds the syringe's piston in closed position.</p> <p>When the programmed software reaches the first time set, the motor moves one-step forward, releasing a single syringe. The arm "A" releases the syringe by pushing the pawl to a side, so the spring-loaded bar pulls the syringe's piston backwards allowing a sample to be taken.</p>	 <p>A close-up photograph of the mechanical assembly. A yellow arrow labeled 'Bar' points to a vertical rod. Another yellow arrow labeled 'Pawl' points to a small lever mechanism. A third yellow arrow labeled 'A' points to a larger arm at the top of the assembly.</p>
<p>4</p>	<p>The syringes is loaded one by one, by pushing the holder downwards; at the same time turn the pawl to hold the bar in its lower position.</p>	 <p>A photograph showing a person's hands interacting with the device. One hand is pushing down on the top of the syringe holder, while the other hand is turning a component on the side. Several syringes are visible in the holder.</p>
<p>5</p>	<p>Three syringes have been loaded so far.</p>	 <p>A photograph showing the device with three syringes loaded into the holder. The syringes are blue and white, and the holder is yellow.</p>

6	Pos. 6 is now loaded and secured correctly; pos. 5 is still in unloaded position.	
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Programming																																																											
7	<p>Connect the 5-conductor cable from the motor to the battery cylinder.</p> <p>Charge the battery inserting the 8-conductor cable to the Battery Charger connector. A fully discharged battery requires charging for 8-10 hours, approx. The charger contains advanced electronics preventing overcharging even if connected for a long time.</p> <p>The SubConn connectors requires to be greased with Molykote, see recommendations on page 7-10.</p> <p>The photo shows the programming plug (to the left) and a dummy for the SubConn connector (optional).</p>																																																										
8	The tablet comes with pre-installed software for the programming. Once charged replace the charger cable with the USB cable and connect to USB on the tablet.																																																										
9	Run the KC program on the tablet's desktop.																																																										
10	<p>The software detects the hardware and the label "PLC Connected" (located at the screens lower, left corner) turns green.</p> 	 <table border="1" data-bbox="1010 1499 1533 1822"> <thead> <tr> <th colspan="3">Delay</th> <th colspan="3">Rosette Setup</th> <th colspan="3">Delay</th> </tr> </thead> <tbody> <tr><td>Sample 1</td><td>0</td><td>Min</td><td>Sample 9</td><td>0</td><td>Min</td></tr> <tr><td>Sample 2</td><td>0</td><td>Min</td><td>Sample 10</td><td>0</td><td>Min</td></tr> <tr><td>Sample 3</td><td>0</td><td>Min</td><td>Sample 11</td><td>0</td><td>Min</td></tr> <tr><td>Sample 4</td><td>0</td><td>Min</td><td>Sample 12</td><td>0</td><td>Min</td></tr> <tr><td>Sample 5</td><td>0</td><td>Min</td><td>Sample 13</td><td>0</td><td>Min</td></tr> <tr><td>Sample 6</td><td>0</td><td>Min</td><td>Sample 14</td><td>0</td><td>Min</td></tr> <tr><td>Sample 7</td><td>0</td><td>Min</td><td>Sample 15</td><td>0</td><td>Min</td></tr> <tr><td>Sample 8</td><td>0</td><td>Min</td><td>Sample 16</td><td>0</td><td>Min</td></tr> </tbody> </table>	Delay			Rosette Setup			Delay			Sample 1	0	Min	Sample 9	0	Min	Sample 2	0	Min	Sample 10	0	Min	Sample 3	0	Min	Sample 11	0	Min	Sample 4	0	Min	Sample 12	0	Min	Sample 5	0	Min	Sample 13	0	Min	Sample 6	0	Min	Sample 14	0	Min	Sample 7	0	Min	Sample 15	0	Min	Sample 8	0	Min	Sample 16	0	Min
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11	<p>If "PLC Connected" turns red, there is no connection. Follow these instructions:</p> <ol style="list-style-type: none"> 1. Disconnect USB cable and battery supply if connected. 2. Close Program on tablet. 3. Connect USB cable to tablet and KC timer. 4. Click the KC icon on tablet. 	
12	<p>Assuming the connection is correct you are now ready to program the individual delays.</p> <p>Click on the icon "Read Settings" </p>	
13	<p>The sampler has a short delay of 1 min. for the first sample. If delay for sample 1 is set to "0", the sampler starts immediately after the delay.</p> <p>If you estimate that, the deployment to the desired depth takes 5 minutes you may enter the value "5".</p> <p>All remaining samples may have various delays between every sample. You can enter an individually delay in the range of 1 min. to 600 hours for every sample but keep in mind, that the battery capacity may be insufficient for very huge delays which may be repeated several times.</p>	
14	<p>For a sampler having 24 syringes you must click the icon "Rosette 17-24" for adding the remaining delays.</p>	
15	<p>When programming is finished, press button "Send New Settings"</p>	
16	<p>Once you are ready to deploy the sampler, start the time lapse trigger by inserting the programming plug.</p>	

Maintenance		
17	Wash all parts thoroughly with fresh water. For maintenance of the SubConn connectors, see pg. 7-10.	



SubConn® Handling instructions

Follow these instructions carefully to ensure correct use of your SubConn® connectors.

Handling

- Connectors must be greased with Molykote 44 Medium before every mating
- Always grease O-rings on BH, BCR and FCR connectors with Molykote 111
- Disconnect by pulling straight out, not at an angle
- Do not pull on the cable and avoid sharp bends at cable entry
- When using a bulkhead connector, ensure that there are no angular loads
- Make sure to apply the recommended torque when tightening bulkhead nuts
- SubConn® connectors should not be exposed to extended periods of heat or direct sunlight. If a connector becomes very dry, it should be soaked in fresh water before use

Scan to access
SubConn® greasing
and cleaning
instruction videos



Greasing products



Molykote 44 Medium

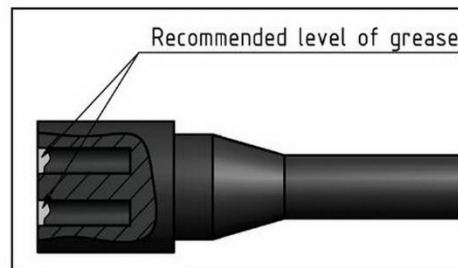


WD-40
or similar products



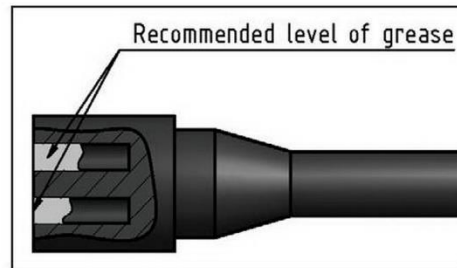
Compound
or similar greasing
products

Greasing and mating above water (dry mate)



- Connectors must be greased with Molykote 44 Medium before every mating
- A layer of grease corresponding to a minimum of 1/10 of the socket depth should be applied to the female connector
- The inner edge of all sockets should be completely covered, and a thin transparent layer of grease left visible on the face of the connector
- After greasing, fully mate the male and female connector in order to secure optimal distribution of grease on all pins and in the sockets
- To confirm that grease has been sufficiently applied, de-mate and check for grease on every male pin. Then re-mate the connector

Greasing and mating under water (wet mate)



- Connectors must be greased with Molykote 44 Medium before every mating
- A layer of grease corresponding to approximately 1/3 of a socket depth should be applied to the female connector
- All sockets should be completely sealed, and a transparent layer of grease left visible on the face of the connector
- After greasing, fully mate the male and female connector and remove any excess grease from the connector joint

Cleaning products



- * General cleaning and removal of any accumulated sand or mud on a connector should be performed using spray based contact cleaner (isopropyl alcohol)
- New grease must be applied again prior to mating

Use of Loctite

- Always use Loctite 5910 to lock non-metallic (PEEK) connectors
- For locking metallic connectors, the use of Loctite 243 is recommended



COAX connector

- Only grease the rubber parts - do not grease coax pin and socket
- Do not mate under water. To be used with locking sleeves only

Bulkhead Connectors - Tightening force

Type	Material	Rec. Torque - Nm
3/8" - 24 UNF	Brass, aluminium	4.0
	Stainless steel, titanium	6.0
	PEEK	2.0
7/16" - 20 UNF	Brass, aluminium	10.0
	Stainless steel, titanium	14.0
	PEEK	4.2
1/2" - 20 UNF	Brass, aluminium	15.0
	Stainless steel, titanium	21.0
	PEEK	5.2
5/8" - 18 UNF	Brass, aluminium	29.0
	Stainless steel, titanium	41.0
	PEEK	10.0
3/4" - 16 UNF	Brass, aluminium	44.0
	Stainless steel, titanium	63.0
	PEEK	15.0
7/8" - 14 UNF	Brass, aluminium	60.0
	Stainless steel, titanium	80.0
	PEEK	20.0
1" - 14 UNF	Brass, aluminium	75.0
	Stainless steel, titanium	100.0
	PEEK	25.0

Recommended oil for pressure balanced systems

- MacArtney recommend DC-200/350 or PMX-200/350 in oil compensated systems

11-2018

Safety Regulations

KC Denmark A/S is not, and cannot be held, responsible for any damage(s) made to equipment or to operators who ignore safety precautions or because of misuse or wrong operation.



Caution

Disconnect power supply to avoid any unattended operation causing accident to personnel and multiple water sampler.

An expert maintenance technician fully familiar with the attendant hazards must only do all maintenance, inspection and repairs.

Persons charged with working on the multiple water sampler and its accessories must be trained specially for the purpose with special abilities and experience in this area as well as being equipped with the appropriate tools and individual safety equipment. Failure to meet these requirements constitutes a risk to personal health and safety and economic damages.

When working on the unit in areas, which are difficult to access or hazardous, ensure to take adequate safety precautions for the operator and others in compliance with the provisions of law on health and safety at work.

Replace worn component with original spare parts.

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KC Denmark A/S

Research Equipment
Limnology • Oceanography • Hydrobiology

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