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Piston Corer – Ø110 mm

Manual

**KC** Denmark A/S

Research Equipment  
Limnology • Oceanography • Hydrobiology

## Piston Corer – Ø110 mm

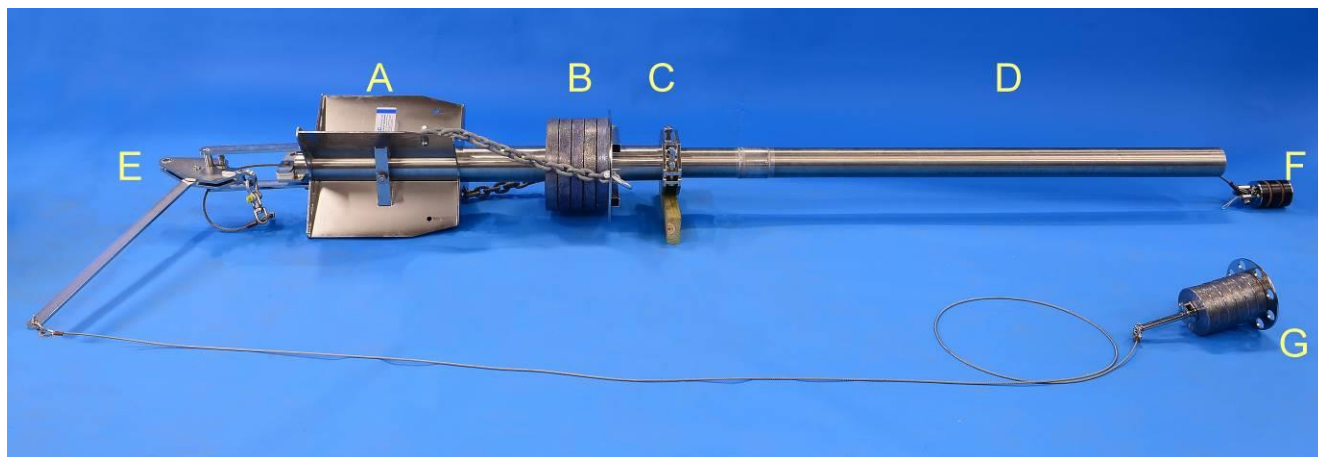


### Caution

**The Piston Corer is very dangerous in unskilled hands, and you must take serious precautions to avoid accidents.**





**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.**

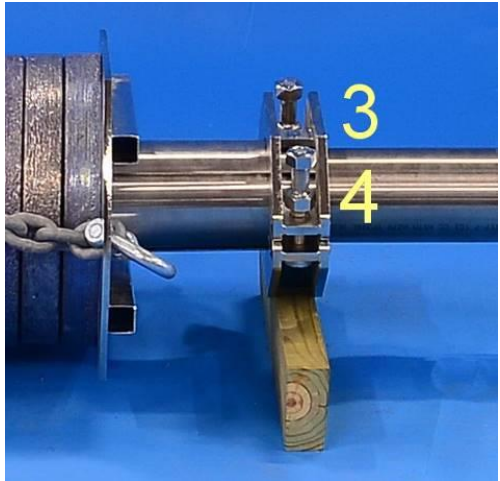


**Never walk under the piston corer, when lifted by the winch.**



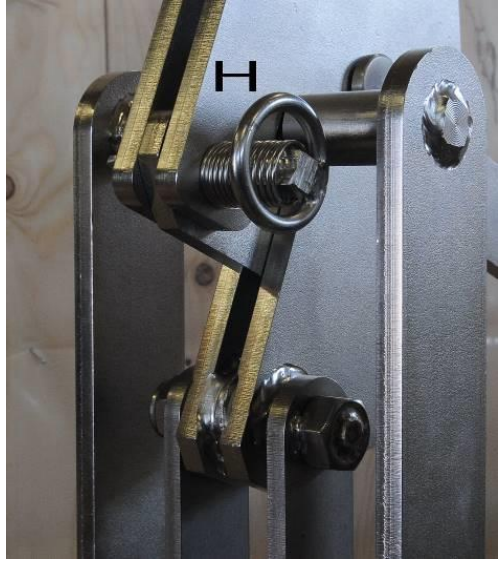



A complete setup of the piston corer consists of:

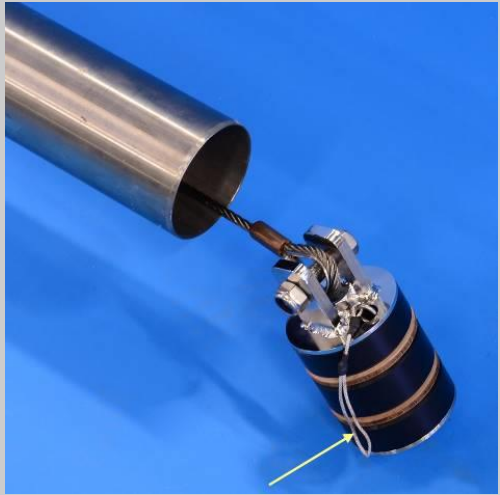
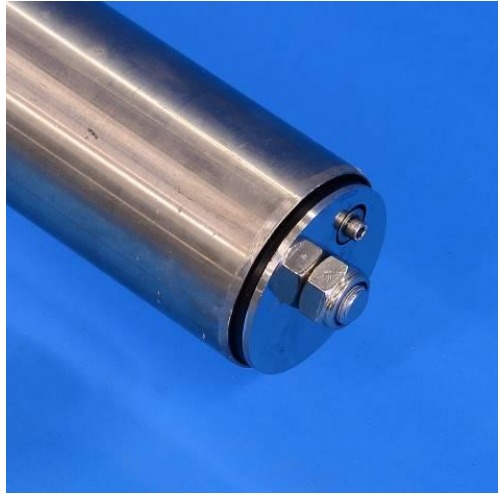

- A – Main rack
- B – Lead weights (standard delivery comes with 2 weights)
- C – Locking device for the sample tube
- D – The sample tube (stainless steel or PVC tube)
- E – The Kullenberg Releaser
- F – The piston for the sample tube + steel wire
- G – Weight station for the Kullenberg releaser

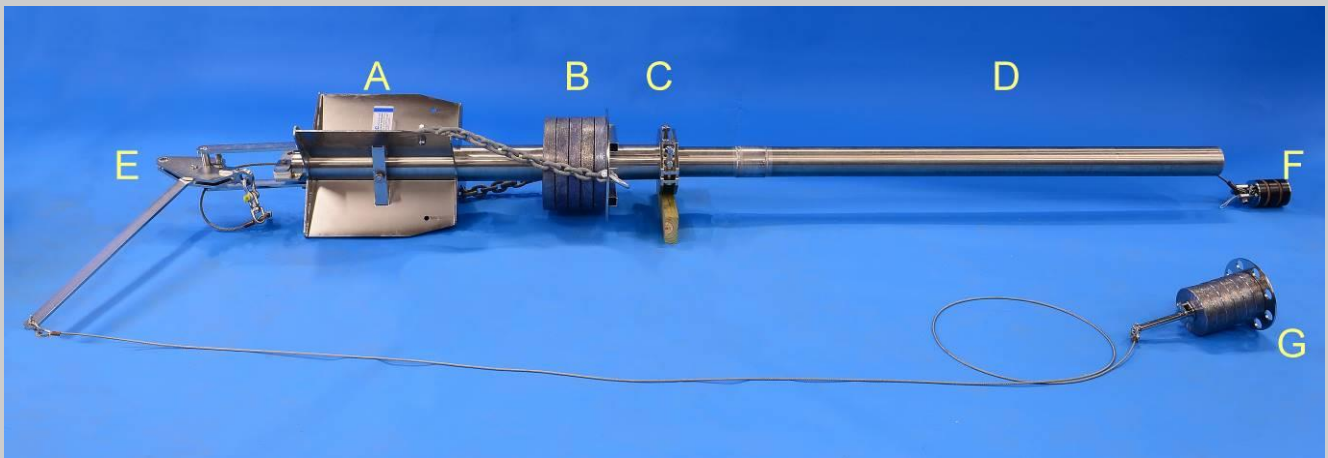
Item	Preparation	
1	The main rack with steering fins has 2 pcs M20 bolts; they must be fastened.	
2	<p>Add the necessary number of lead weights (B) on the main rack (A). Then mount the supporting frame with its 2 pcs. of chains with shackles (do not forget control check).</p> <p>Standard delivery comes with 2 lead weights, each 28 kg. The rack supports a maximum of 10 lead weights.</p>	
3	Secure the platform for the lead weights with chains and shackles.	
4	<p>Push the corer-tube (D) app. 30 cm into the main rack (A) and mount safely. Tighten the bolts on the bracket (C).</p> <p>The PVC tube, outer diameter of 110 mm, will fit for the main rack; the steel tube has an outer diameter of 104 mm only. The steel tube has 2 reinforcements: #1 will fit for the main rack and #2 is required for the tube detacher, item 14 and 15.</p>	

5	Tighten the M20 bolts 3 and 4 to secure the sample tube. Do not over tighten as you may cause deformation to the tube.	
6	A wire-tightener made of 2 pcs PE-HD plastic plates is at the top of the main rack. Loosen the bolts and nuts and separate the white plastic plates.	
7	Add the Kullenberg releaser to the top of the rack.	

8	Correct mounting of the Kullenberg releaser	
9	 <p><b>Caution</b></p> <p>Lift the release arm until the lock fits for the square hole, insert and lock. Mount the security lock (H) for the Kullenberg to avoid any unattended release.</p>	
10	<p>Guide the wire (with the swivel in front) through the main rack and the corer tube. The swivel must remain at top of the main rack).</p> <p>To ensure the piston will be in right position during the sample taking, adjust the wire tightener, so the wire can be moved easily by hand. Check that the piston remains in the core tube, when the corer is in vertical position.</p>	



11	Before inserting the piston at the bottom of the tube, make sure the white cord does not get stuck by the piston.	
12	Push the piston into the tube having a free space of 3-4 cm from the end of the tube; on the photo, the piston remains 5-6 cm to have a correct insertion.	
13	Connect the weight station to the Kullenberg releaser.	

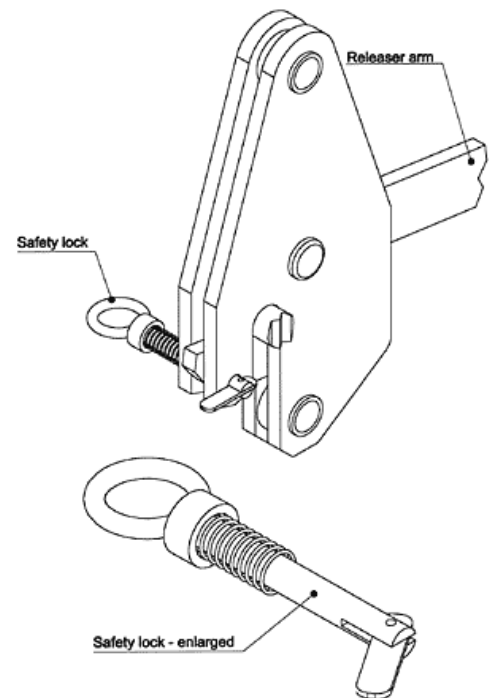


Correct assembly of the piston corer. The piston "F" has not been inserted into the tube.

## Deployment

14

With the piston corer hinged outboard the ship, remove the safety-lock (pos. 14 and annex D) and the piston corer is ready for use.



15

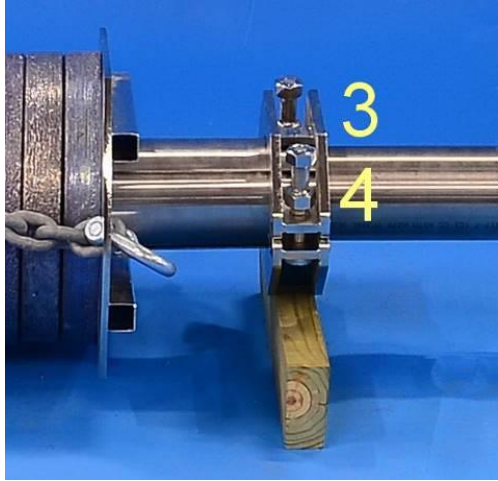

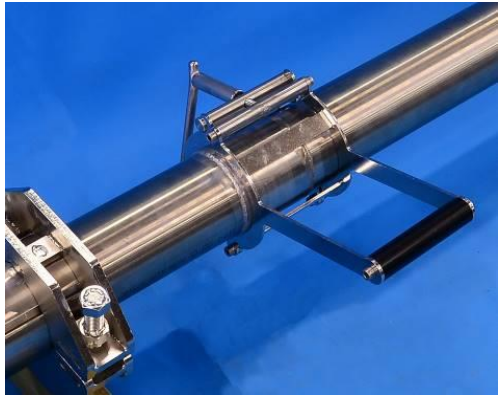




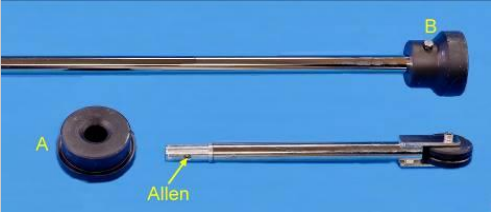

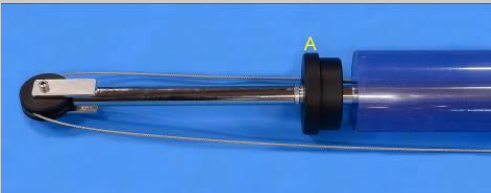
**Caution**



**WARNING: Never remove the safety lock before the piston corer is outboard the ship. It poses great danger for personnel to remove the safety lock inboard the ship.**

16	Deploy the piston corer with a reasonable speed. For a detailed description, see next item.	
17	<p>The piston corer takes up to 2 m deep undisturbed samples from soft sediment and up to 4 m deep samples from muddy sediment.</p> <p>An AISI 316 stainless steel heavy-duty releaser (pos. 1), based on the Kullenberg principle, is mounted at the top. Up to 10 lead weights (pos. 4) of 28 kg each can be mounted. The upper part of the corer is made of AISI 316 stainless steel.</p> <p>The corer tube (pos. 9) is made either of AISI 316 stainless steel (Ø104/Ø99 mm) or of transparent PVC plastic (Ø110/Ø99 mm). At the end of the releaser hook (pos. 1) the 30 kg release weight (pos. 7) is mounted.</p> <p>At the bottom of the corer tube, a piston (pos. 8) with a leather seal is positioned. The piston is connected to the releaser (pos. 1) by an Ø 8mm stainless steel AISI 316 wire. During the deployment the corer tube (pos. 9) is released 1,7 meter above the sediment as the releaser weight reaches the sediment surface.</p> <p>The wire (pos. 8), which has a slack of about 1 meter, allows the corer tube to fall free until the piston (pos. 7) is activated just before the corer tube enters the sediment. The total weight load can regulate the depth of penetration. (pos. 4).</p> <p>When the sample is to be retrieved, the tube is positioned at two trestles and a piston rod, operated by an AISI 316 stainless steel ratchet, presses out the sediment sample for slicing.</p> <p>Standard delivery comes with a 2 m sample tube; using another length of tube requires a wire set (pos. 6 and 8) with a corresponding length.</p>	



<b>Emptying the corer tube</b>		
18	When the piston corer is redrawn and placed on the ship's deck with the sample inside, then unscrew the bolts 3 and 4 and remove the sample tube.	
19	The tube detacher helps you removing the corer tube if you cannot do it by hand. Attach it to the tube, tight the handle and now you can turn/push the sample tube.	
20	If you cannot remove the sample tube by hand, use the tube detacher. For the steel tube it will only fit on the reinforcement, see item 4, pos. 2.	

<p>21</p>	<p>Place the corer tube horizontally on 2 trestles or on deck.  If you cannot remove the piston due to heavy vacuum, pull the white cord to align the vacuum.</p>	
<p>22</p>	<p>Fasten the ratchet device by means of A and B; see item 27; it will only fit on the steel tube's reinforcement. For the PVC tube it will fit anywhere.</p>	
<p>23</p>	<p>Insert piston B at the end of the sample tube and then slide adapter A down the steel tube. The smallest part of the adapter must point towards the sample tube.</p>	
<p>24</p>	<p>Insert the tube with the wheel at opposite end of the steel tube; the tube has a small hole. Align this hole over the Allen screw; unscrew the Allen screw counterclockwise to lock the tubes.</p>	
<p>25</p>	<p>The adapter A will fit into the sample tube to centre the piston rod during ejection.</p>	

26	The adapter A is now in the correct position.	
27	<p>Push D and release C; now the lock for the wire has been disabled, pull out the wire E and guide it over the wheel, see item 24/25. Attach the snap hook at the end of the wire to the eye F.</p> <p>Push C into opposite position and by turning the handle forth and back, you will now force the piston through the sample tube ejecting the sample.</p>	

### Maintenance and storing

All parts of the piston corer can be rinsed using salt water or fresh water.

Before storing, we recommend a thoroughly cleaning with fresh water, and all moveable parts must be moved individually to ensure all dirt and sediment have been removed.

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

When working with 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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