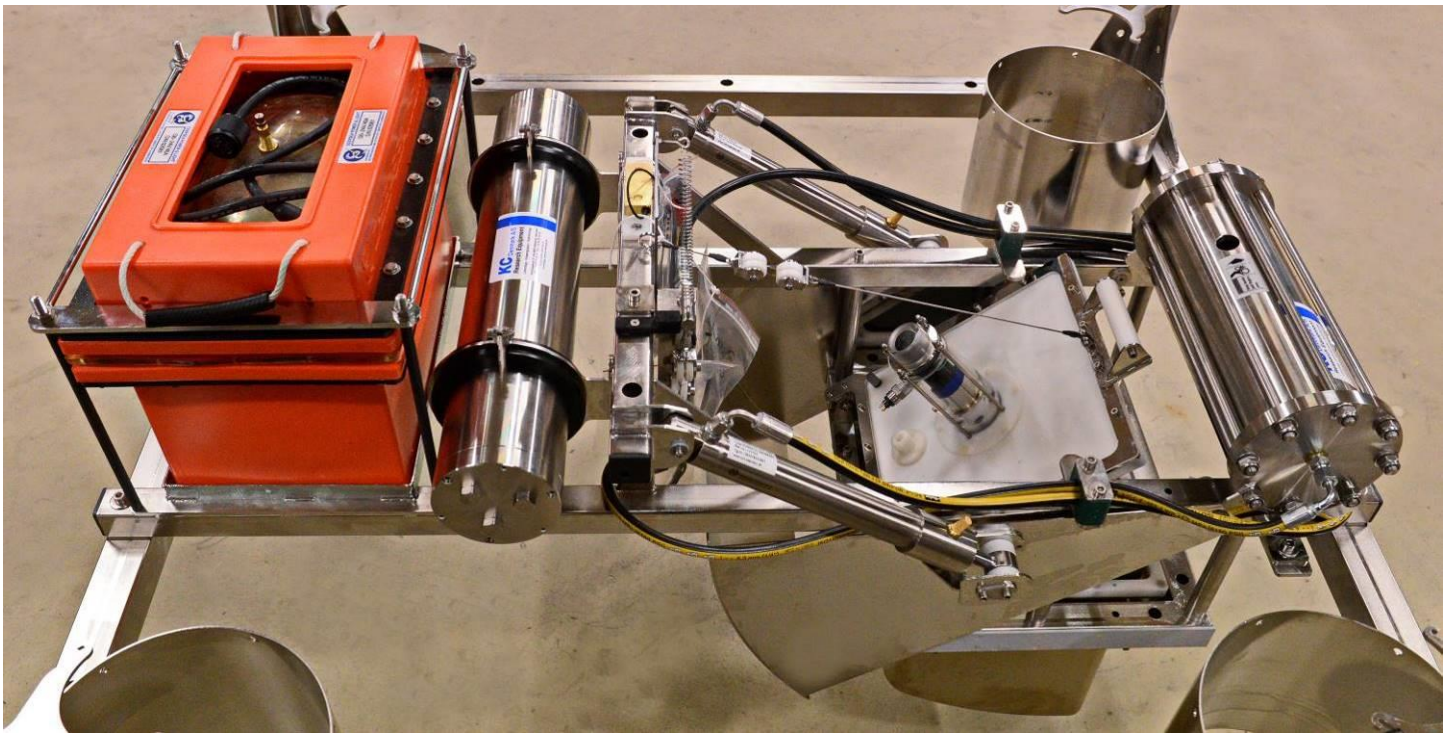


Benthic Chamber

Model 100.124

Manual

KC Denmark A/S

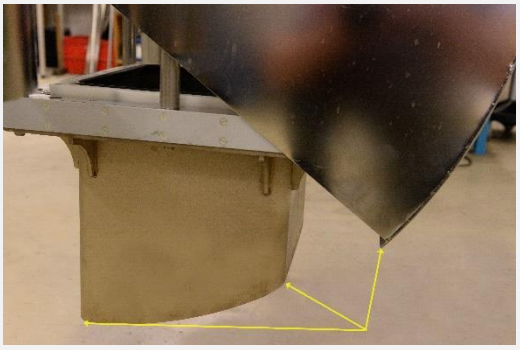
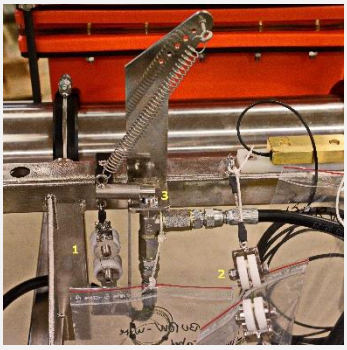
Research Equipment
Limnology • Oceanography • Hydrobiology

Benthic Chamber

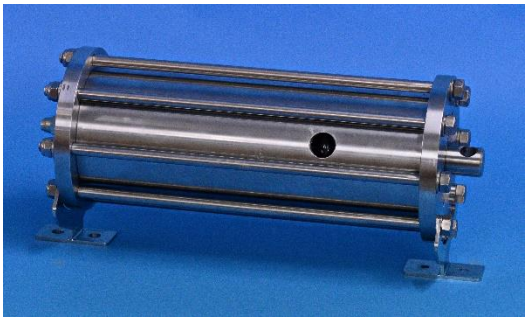
Caution

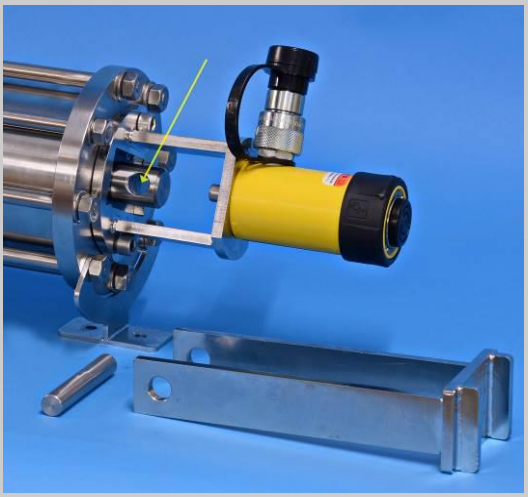
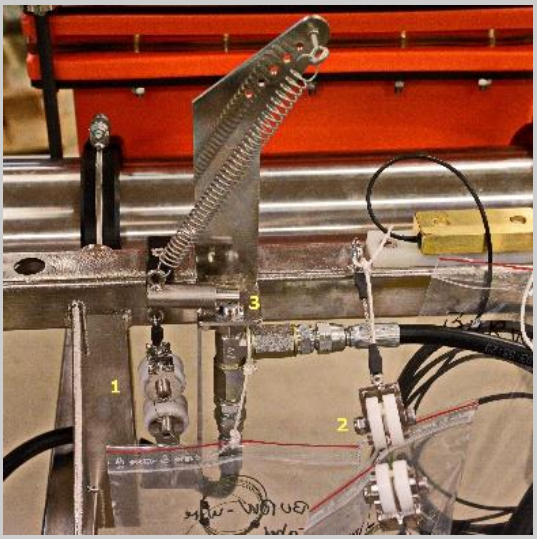
KC Denmark A/S is not, and cannot be held, responsible for any damage(s) made to equipment or to operators who ignore safety precautions or because of misuse or wrong operation.

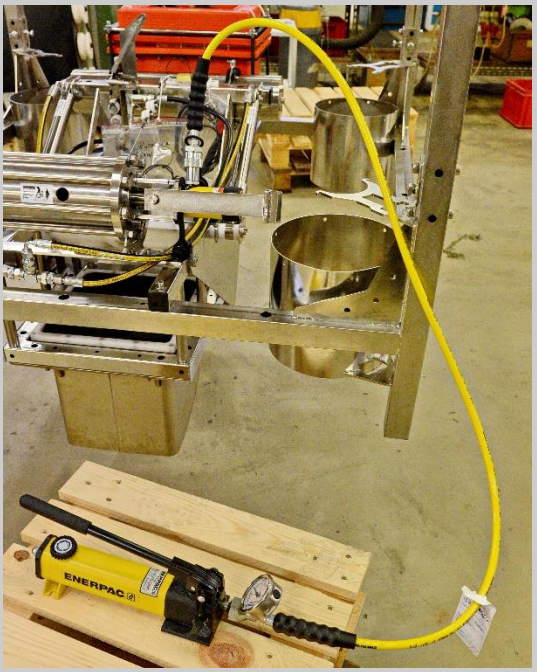
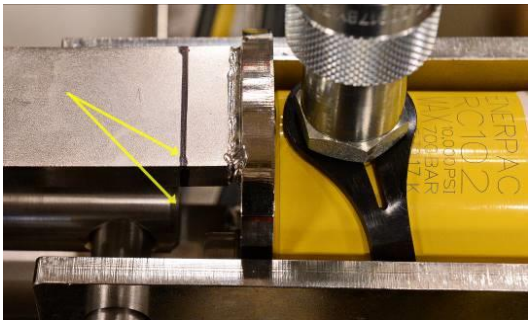
The below shown devices are very dangerous and may cause serious injury to people. Once loaded, the two burn wire systems "1" and "2" and the valve "3" holds both units. Breaking the wire "1" releases the shovel, while "2" releases the lid for the chamber.

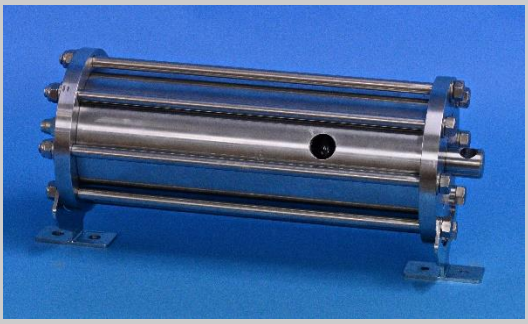
		
The cylinder contains a spring-loaded mechanism and it is activated once the hydraulic system is loaded.	When the hydraulic system is loaded, ensure that you keep all body parts out of the shown area.	Burn wire "1" and "2". Releasing "1" opens the valve "3", so the pistons closes the shovel.

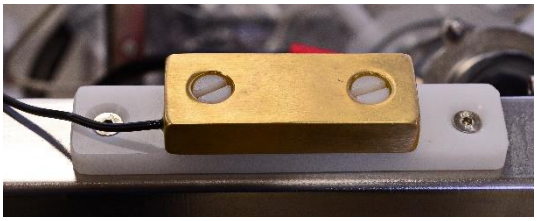
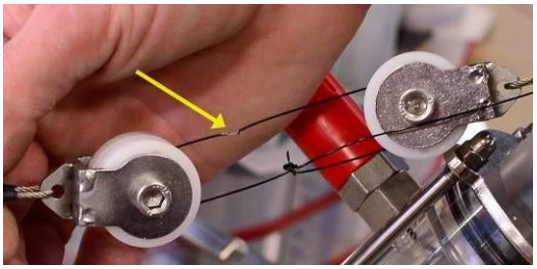
Item	Preparation	
1	Ensure that all batteries are fully charged. Connect the cables; each battery has engraved identification labels attached.	
2	Raise the lander so that there is enough space for the benthic chamber below the lower, transverse frame of the lander. Mount the rack on the lander frame and fasten it by means of 4 bolts and locking nuts. Before deployment, adjust the height of the legs to determine the chamber's penetration depth into the seabed.	

	Loading the hydraulic system	
3	Do the charging of the hydraulics, while all the components reside on the frame. Some of the units was removed from the frame to give a better overview of the individual components: The system consists of: 1. Power station 2. U-bracket 3. Locking pin 4. Single acting hydraulic cylinder 5. Bolts 6. 2 pistons, mounted on the shovel, see next item	
4	Two hydraulic pistons for the shovel.	
5	Caution The power station contains a very strong spring-loaded mechanism and do not stick fingers or any parts into the holes as a release causes serious injury/damages.	

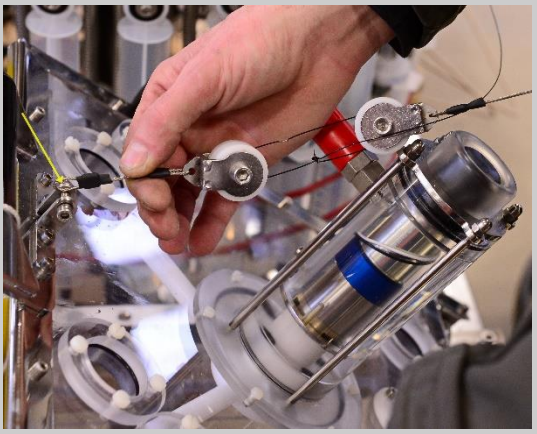
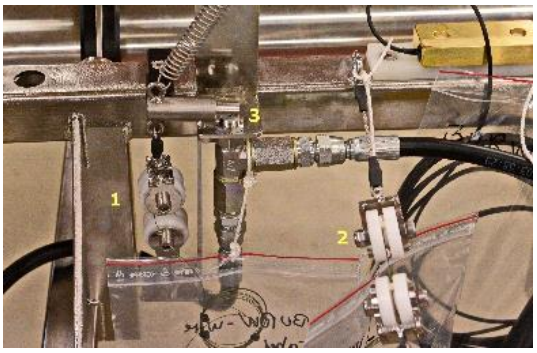
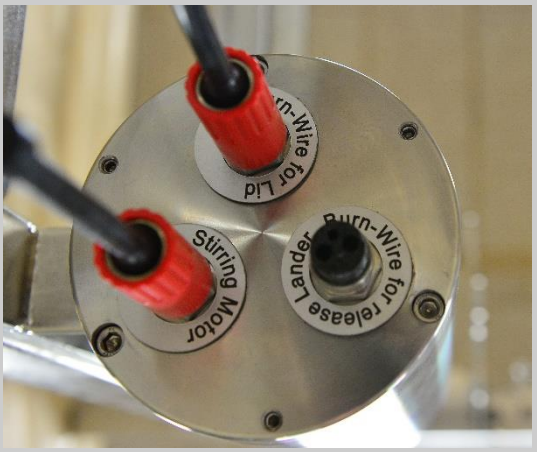
6	Ensure that the shafts hole is in correct position. Hold the single acting hydraulic cylinder "4" in horizontal position and fasten it with the bolts.	
7	Attach the U-bracket "2" and push the locking pin "3" through both holes in the bracket.	
8	Open the valve "3" in vertical position (shown in horizontal position).	

9	Connect the hand pump and move the handle forth and back applying pressure to the hydraulic cylinder "4".	
10	During the pumping, you will charge the spring-loaded mechanism in the pressure cylinder "1". Continue pumping until the piston aligns with the black line. See also next item. **Do not pump the unit beyond this point.**	
11	Maximum position for the piston. **Do not pump the unit beyond this point.**	
12	If the shovel does not move upwards during the pumping, you may push it upwards by hand or better with a wooden stick or similar. **Take care to avoid any unattended release, which may cause serious injury.**	

13	Disconnect the pump and remove the single acting hydraulic cylinder "4", the locking pin "3" and the U-bracket "2", leaving the cylinder as shown.	

	The Burn Wire System – How It Works	
14	The burn wire system operates in such a way that a voltage between the brass anode (negative) and a small piece of non-insulated burn wire (positive) causes a leakage current. When activated, the wire burns over and triggers a preset function. See page 13 for a schematic. The benthic chambers come with two individual burn wire systems: 1. Release of the hydraulic shovel 2. Closing the lid on the chamber	 

	Attach the Burn Wire	
15	A template for making correct length of the burn wire. Insert a wheel and attach the wire. Make a knot and scrape off the insulation for a distance of 6-8 mm.	

16	Burn wire for closing the benthic chamber. Raise the lid with the stirrer and attach the loop as shown.	
17	Burn wire "1" for releasing the shovel. Make sure, that the hydraulic system is charged. Attach the burn wire "1" and close the valve "3" (horizontal position).	
18	Connect the cables for: 1. The stirrer motor in the chamber 2. Burn wire for the chamber 3. Burh wire for releasing the lander	
19	Connect the power cable and the USB cable. Insert the cable into a PC and install the software. Start the software and program the parameters for closing the chamber's lid and release of the lander itself (if the acoustic releasers fail).	

	Deployment	
20	Remove the USB cable. Once you are ready to deploy the lander, insert the programming plug into the USB socket on the battery cylinder. The programmed delay will start with a delay of 1 min.	

	Maintenance	
21	The zinc anodes prevent corrosion and you must replace worn out anodes.	

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

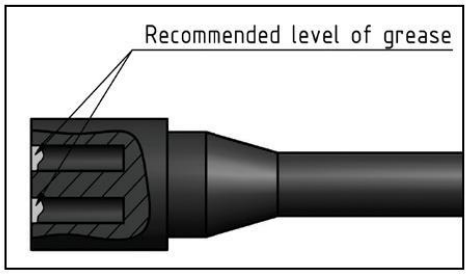
Greasing products

Molykote 44 Medium

WD-40
or similar products

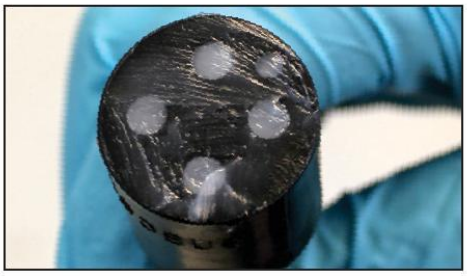
Compound
or similar greasing
products

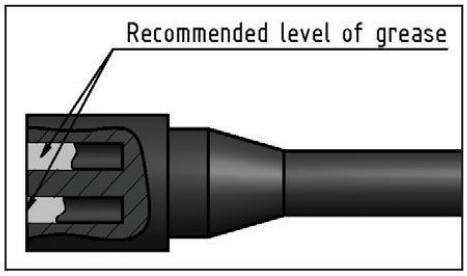
Greasing and mating above water (dry mate)



- 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

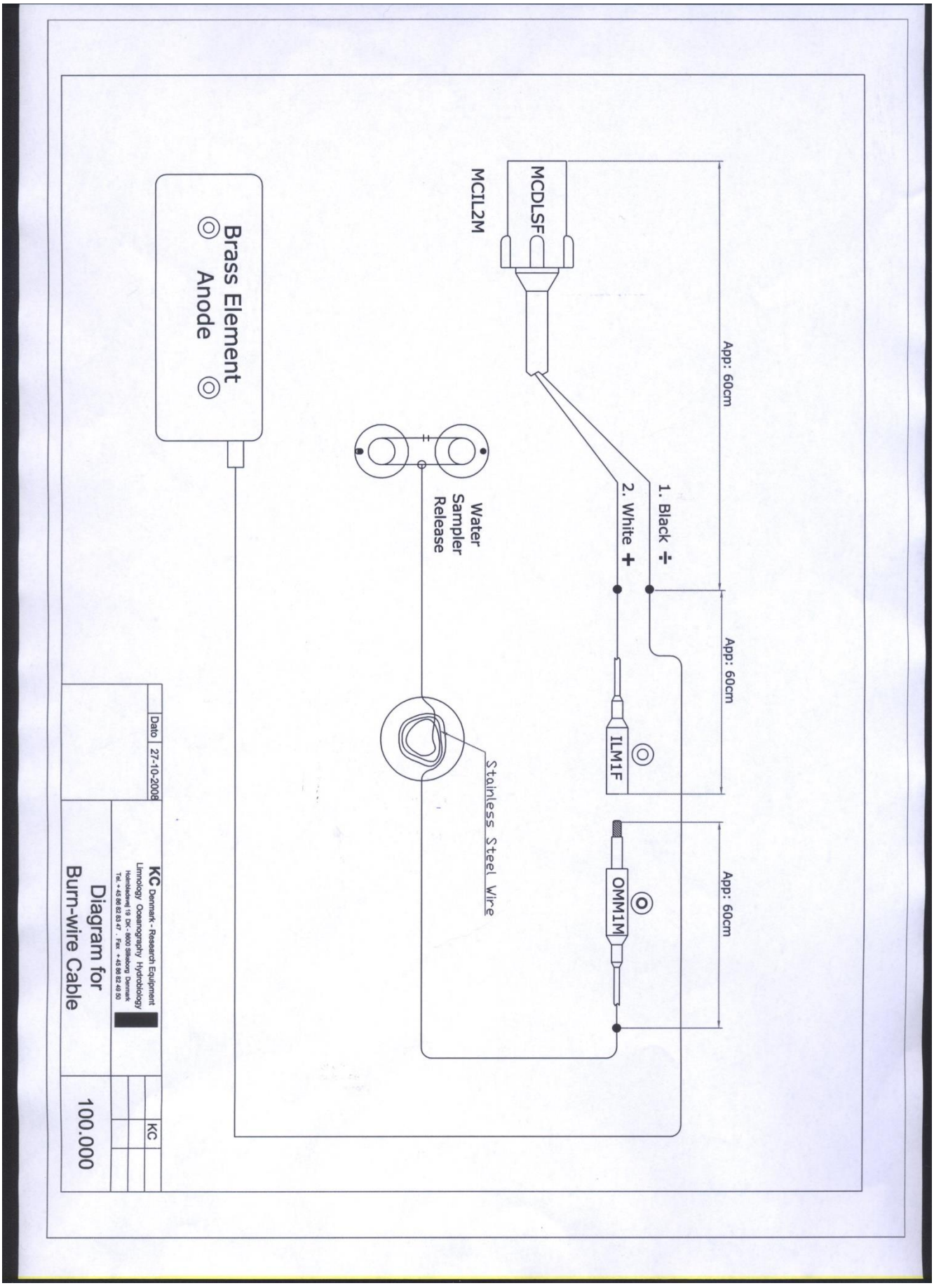
Bulkhead Connectors - Tightening force

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


App: 60cm
App: 60cm
App: 60cm
MCDLSF
MCIL2M
1. Black ÷
2. White +
ILM1F
OMM1M
Water
Sampler
Release
Stainless Steel Wire
Brass Element
Anode
Dato
27-10-2008
KC Denmark - Research Equipment
Limnology Oceanography Hydrobiology
Holmblaadvej 19 DK - 8600 Silkeborg Denmark
Tel. +45 86 82 49 47 . Fax +45 86 82 49 50
KC
Diagram for
Burn-wire Cable
100.000

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.

Disconnect power supply to avoid any unattended operation causing accident to personnel and winch.

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

Persons charged with working on the lander/benthic chamber and the 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. Use the lubricants (oil and grease) recommended by the manufacturer.

This benthic chamber is very dangerous in unskilled hands and you must take serious precautions to avoid accidents.

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Rev.: November 21, 2022 - lkj

KC Denmark A/S

Research Equipment
Limnology • Oceanography • Hydrobiology

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