

**DOKUMENT TITTEL:** Technical User Manual for BB4394 MultiDog Lifting 13,5t  
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## TECHNICAL DOCUMENT

### OBJECTIVE

The objective of this document is to present a comprehensive technical description of the Blue Logic MultiDog lifting tool. Relevant technical aspects for information and familiarization are covered as well as detailed technical data.

### ABSTRACT

The Blue Logic MultiDog connector is designed in accordance with DNV-ST-273 Portable Offshore Units, Type E and FOR-2009-05-20-544 Forskrift om maskiner

### REVISION CHANGE/RECORD

REV	REASON FOR REVISION/ DESCRIPTION OF CHANGES
01	FOR CONSTRUCTION

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## 1. INTRODUCTION

This document is an operation and maintenance manual for the MultiDog connector. The manual includes safe handling and check point for lifting and recovery operations supported by ROV or Divers. Before operation read this document carefully.

### 1.1. DOCUMENT USE

This document shall be used as a general information for all aspects related to safe use, installation, removal, maintenance and storage of the MultiDog Connector.

### 1.2. REFERENCES

Latest revision of the following documents:

Id.	Doc. No	Originator	Document Title
/01/	BB4394	Blue Logic	MultiDog Lifting 13,5 WLL Male Mech 3 Dog
/02/	BB4432	Blue Logic	Guide Post for MultiDog Rec Fluid Transfer

### 1.3. ABBREVIATIONS

ROV: Remotely Operated Vehicle



## 2. TECHNICAL DESCRIPTION

The MultiDog is a quick connect/disconnect lifting device designed for use by ROV and diver. The MultiDog is designed in accordance with DNVGL-ST-2.7-3 Type E and FOR-2009-05-20-544 Forskrift om maskiner and categorized as lifting equipment. It can be used for single point lifting or as part of a lifting spread. The MultiDog is not qualified for personnel lifting or permanent installed anchoring systems. Yearly re-certification required.

### 2.1. GENERAL

The MultiDog is equipped with a locking mechanism to be activated by sliding the locking-sleeve axially to shift between open and locked position. The locking-sleeve has a secondary safety lock to keep position when the MultiDog is put in locked or open mode.

The female locking mechanism consist of 3 locking dogs keeping the male connector in a firm grip. Figure 1 shows the connector in closed and secured position. Male connector shown with bolt for soft sling.

The locking-sleeve has integrated return-spring holding the locking system in locked position. Hence the connector must be lifted by gripping the locking-sleeve in order to open the male connector for mating the female part.

The safety-lock is opened by rotating counterclockwise.

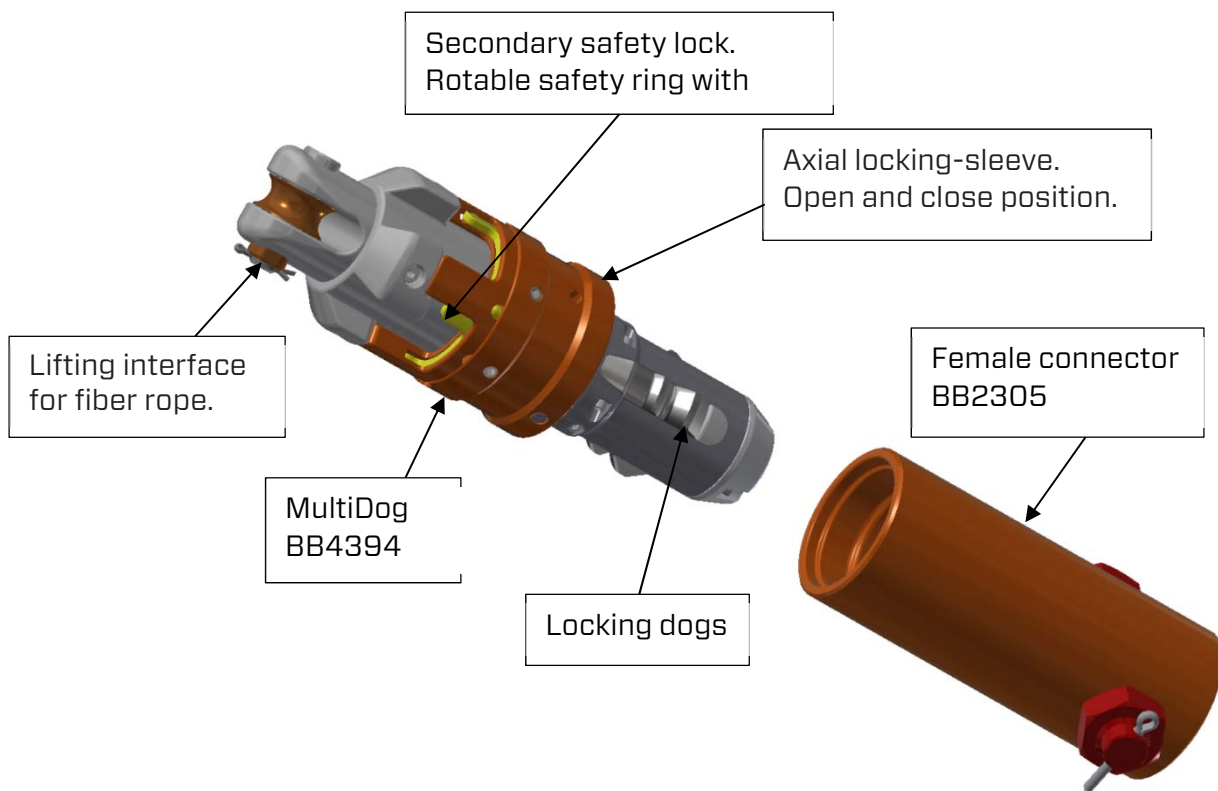


Figure 1 MultiDog male and female connector

## 2.2. MULTIDOG BB4394

Lift capacity WLL	13,5	Ton
Total length	430	mm
Max diameter	125	mm
Weight in air	21	kg
Grip diameter min	125	mm
Depth rating	N/A	
Rope diameter	20	Mm
Material, body	S165M	
Material, locking dogs	S165M	
Locking mechanism	S165M	
Other components	SS/OM7	
End-piece	POM	



Figure 2, MultiDog

2.3. FEMALE CONNECTOR BB2305

Lift capacity WLL	13,5	Ton
Total length	285	mm
Max diameter	115	mm
Weight in air	12	Kg
Sling interface	TBA	Ton
Shackle pin	13,5	Ton
Depth rating	N/A	MSW
Material	S165M	

Optional designs of the female connector available upon request.



*Figure 3 Female connector*

## 2.4. SAFETY PRECAUTIONS

- Read and understand user manual.
- Verify valid lifting certificate.
- Control checkpoints as described below.
- MultiDog BB4394 and BB2305 shall only be used as described in this manual
- Verify that safety lock is in locked position whenever connected to the female connector, ref section 2.5.
- Use required PPE when handling and operating the MultiDog.
- When safety-lock is de-activated, the locking sleeve shall always position itself to locked (lowermost) position.
- Safety-lock shall always be in locked position prior to any lifting.
- Check for damages/deformations of all locking dogs and surrounding parts on the MultiDog.
- Any damages/failures to be inspected by certified personnel.
- Hose down the connector using fresh water after use and prior to storage/transportation.
- Risk for crush injuries if handled incorrectly.



### Risk areas for crush injury:

- **Between locking sleeve and female connector when locking sleeve enters locked position by gravity.**
- **Whenever rotating safety lock to open position, i.e. counterclockwise**








2.5. PREPARATION AND FUNCTION VERIFICATION

Step No.	Description
1.	Fix the Multidog BB4394 to crane hook.
2.	Check MultiDog BB4394 and female connector for damages/failures.
3.	<p>Push and twist the safety lock counterclockwise to open position.</p> <p><b>CAUTION: Crush injury risk!</b></p> <p>Push lock (yellow) to rotate to open position.</p> <div data-bbox="676 792 1374 1160"><p data-bbox="863 1126 963 1160">Locked</p><p data-bbox="1171 1126 1246 1160">Open</p></div>
4.	<p>Lift the locking sleeve to release and lift the MultiDog out of the female connector.</p> <div data-bbox="802 1323 971 1977"></div>



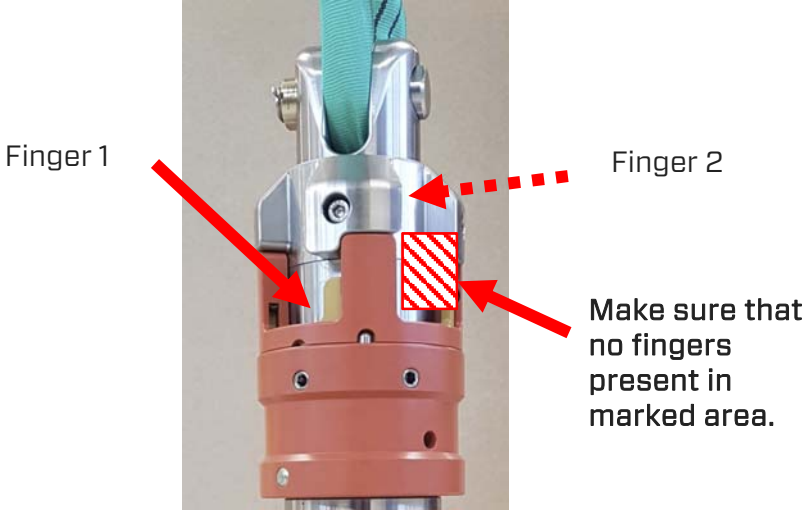
Step No.	Description
5.	<p>Lower the MultiDog back into the female connector and verify that the indicator-ring is aligned with the top of the female connector.</p> <div data-bbox="625 535 1342 815"><p data-bbox="1046 573 1342 674">Indicator ring aligned with top of female connector.</p></div>
6.	<p><b>CAUTION:</b> <b>Risk for crush injury between locking sleeve and female connector when locking sleeve falls into lower position for locking!</b></p> <div data-bbox="788 1012 1059 1453"></div>
7.	<p>Activate secondary safety lock by rotating the yellow ring clockwise to locked position.</p> <div data-bbox="793 1568 975 1921"></div>

**2.6. MULTIDOG OPERATION USING ROV**

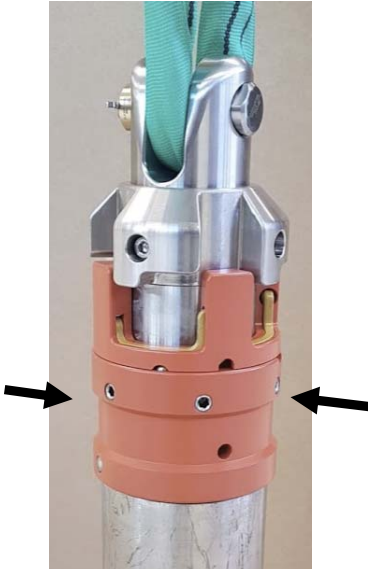
The connector is designed for single manipulator operation for lock and release. If the female connector is in non-fixed mode, the ROV’s grabber arm should be used to keep in position.

The ROV manipulator must be able to grip a diameter of at least 130mmm. 3-finger claw regarded as most suitable for this operation.

**2.6.1. Disconnecting MultiDog BB4394 from Female Connector**

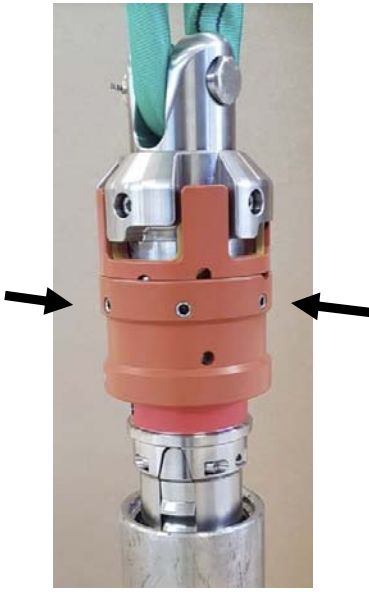
Step No.	Description
1.	<p><b>Note: Reduce claw-force for this operation.</b></p> <ul style="list-style-type: none"> <li>- Open manipulator claw and position fingers as shown below.</li> <li>- Open safety lock by rotating yellow ring counterclockwise.</li> </ul> <div style="text-align: center;">  </div>




Step No.	Description
2.	<p>With the safety lock in unlocked mode, the connector is ready for release..</p> <ul style="list-style-type: none"><li>- Open claw and grip around the locking sleeve as shown below. The MultiDog will be released once the sleeve is lifted to upper position.</li></ul> <p><b>NOTE:</b> It is not possible to release the MultiDog if the lifting line is tensioned.</p> 

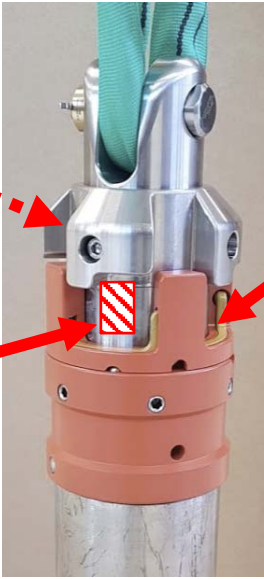
Step No.	Description
3.	<p>The MultiDog is kept in open position as long as the locking sleeve is held in a vertical orientation.</p> <div data-bbox="715 526 1086 1111" data-label="Image"> </div>

2.6.2. Connecting MultiDog BB4394 to Female Connector

Step No.	Description
	<ul style="list-style-type: none"> <li>- Hold the MultiDog by the locking sleeve.</li> <li>- If the female connector is non-fixed, hold it in position using the ROV's grabber arm.</li> <li>- The MultiDog is open when held in vertical orientation.</li> <li>- Insert the MultiDog into the female connector and verify smooth entering.</li> </ul> <div style="text-align: center;">  </div>

Step No.	Description
	<ul style="list-style-type: none"> <li>- Hold locking sleeve in vertical orientation.</li> <li>- Let go of the locking sleeve and verify correct locking.</li> <li>- Verify no gap between locking sleeve and female connector after correct mating, ref. below figure.</li> </ul> <div style="text-align: center;">  </div>



Step No.	Description
4.	<p data-bbox="347 383 963 416"><b>Note: Reduce claw-force for this operation.</b></p> <ul data-bbox="491 456 1374 521" style="list-style-type: none"><li>- Grab the MultiDog by the claw as indicated in below picture.</li><li>- Activate the safety lock by rotating the yellow ring clockwise.</li></ul> <div data-bbox="525 584 1235 1160"><p data-bbox="552 730 667 763">Finger 2</p><p data-bbox="1129 808 1235 842">Finger 1</p><p data-bbox="528 931 699 996">No fingers in this area!</p></div>



Step No.	Description
5.	<p data-bbox="491 383 1177 416">- MultiDog connected and safety lock engaged.</p> 

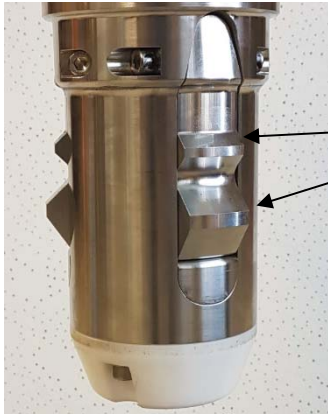
### 3. MAINTENANCE

1. Some build-up of salt and debris is anticipated after use and may cause failures. Remove the white endcap by unscrewing the bolts (3 off).
2. Rinse the MultiDog thoroughly using fresh water.



3. Inspect the hinge-bolts for the locking dogs, re-tighten if required. The locking dogs shall be able to move freely.





Inspect surface for damages, irregularities that may reduce capacity.

These surfaces shall be smooth. Picture showing damaged surface.



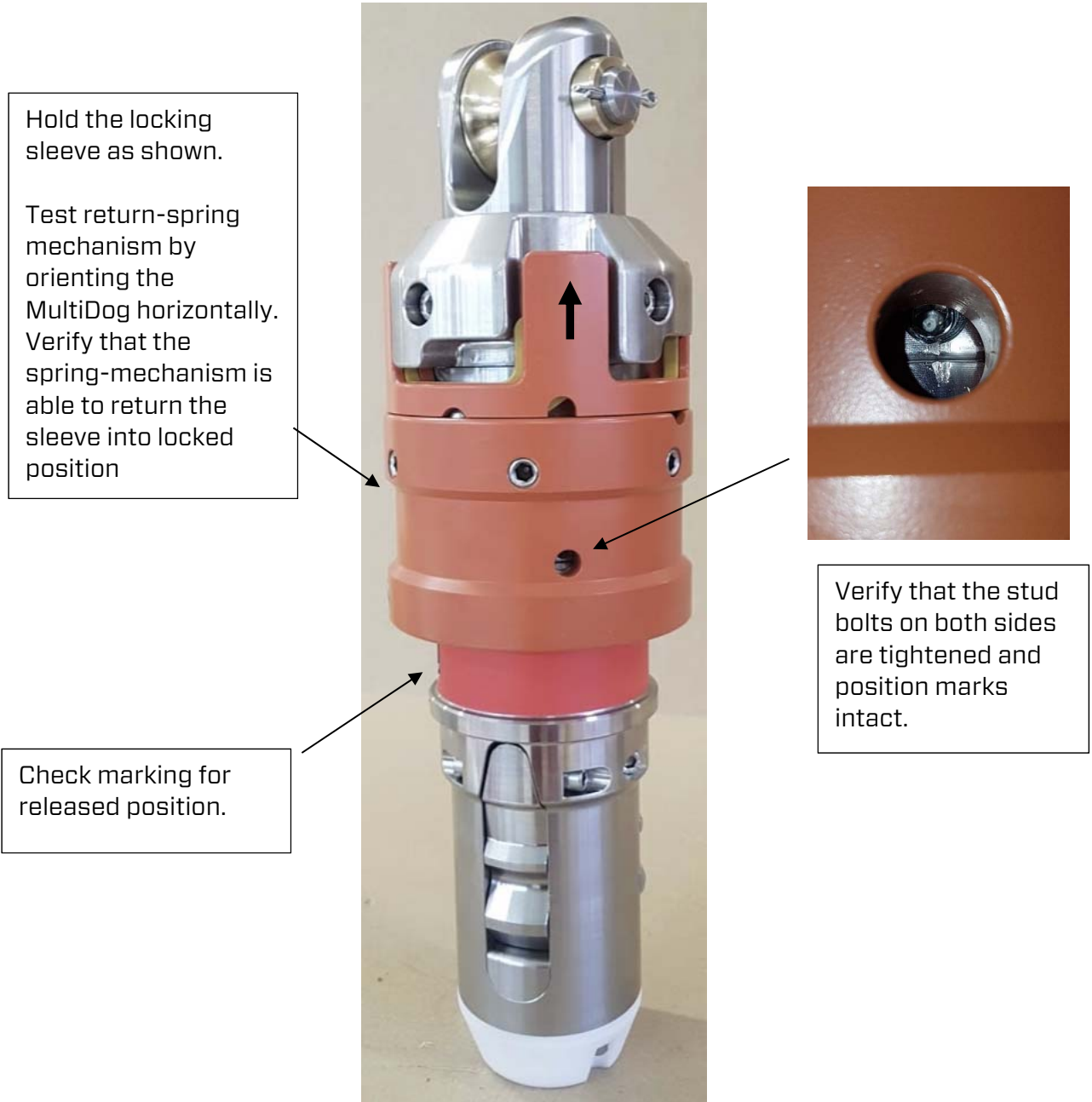


Figure 5 MultiDog in open position

4. Remove the white endcap, 3 bolts, to get access to the support plate below the locking dogs. Make sure that the plat is properly secured, retighten bolts in below picture if required.



## 4. APPENDIX

**4.1. MULTIDOG LIFTING 13,5 WLL MALE MECH 3 DOG**

Blue Logic drawing BB4394.

## 4.2. GUIDE POST FOR MULTIDOG REC FLUID TRANSFER

Blue Logic drawing BB4432