



---

# Changes to chapter 11

## Anchor Handling & MOU Moving

Marine Operasjoner i Praksis 2024

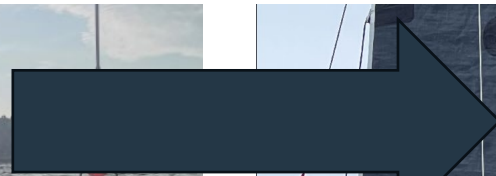
**Joachim N. Rabben**  
Marine Superintendent  
Technical Services Marine Operations  
Odfjell Drilling

# Agenda



1. «Breaking news»
  2. New home page – short introduction
  3. How to give feedback
  4. Update - Framework/ principle
  5. Past → Future – simplify content
  6. Definitions
  7. Clear deck policy
  8. New: Handling of mooring chain
  9. New: Use of Grommets
  10. New: Quick Release Mooring Connector
  11. New: Use of Swivel during Anchor Handling Operations
  12. Other updates
-

# Breaking News – Change of rep. to steering committee



J. Johannessen

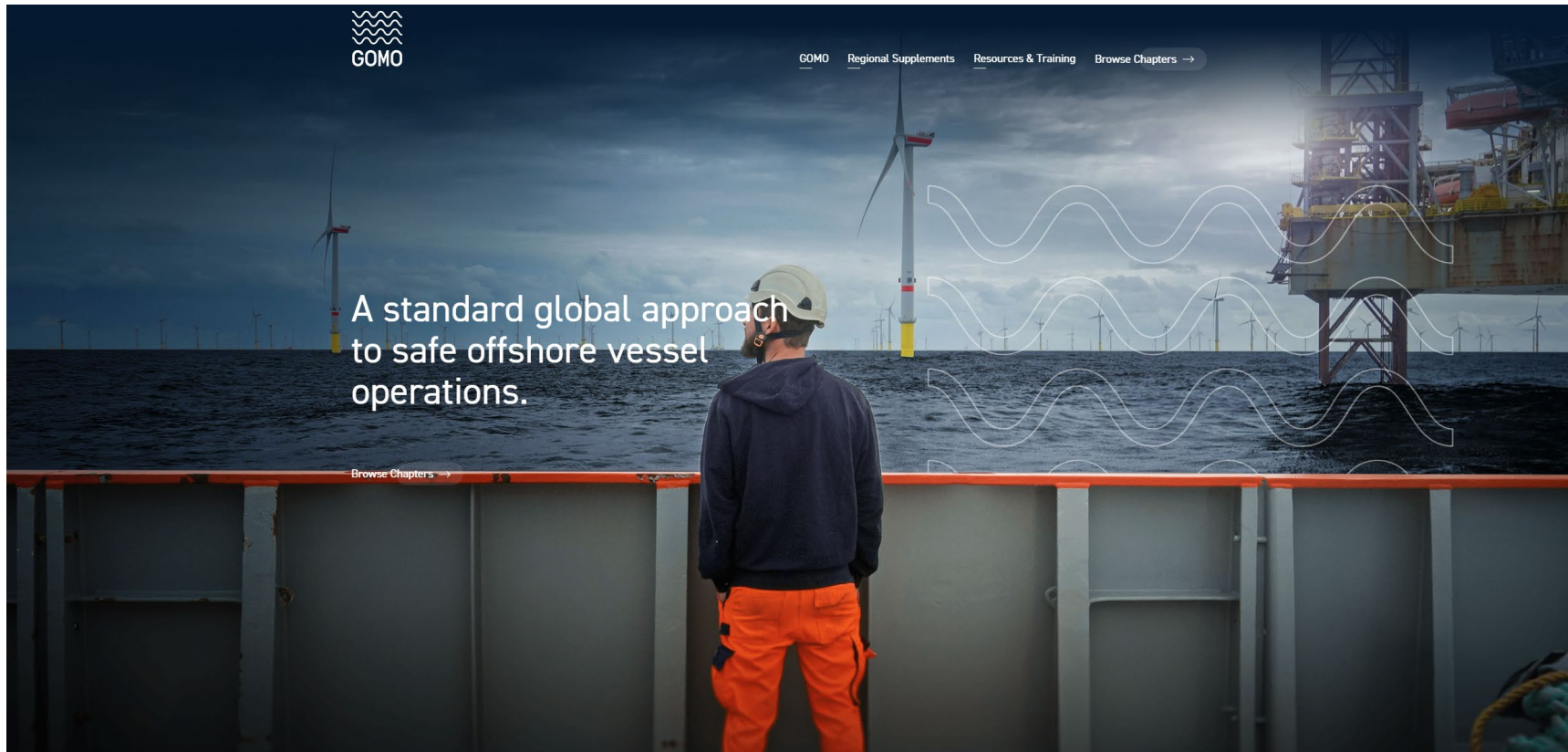
Permanent Steering Group								
NSA	Offshore Norge	Danish Shipping	Element nl	OEUK	UK CoS	MSF	IMCA	OCIMF
T Sagebakken	S Hertzberg	A Tossio	W Woudstra	G Skinner	R Merrylees	E Simpson	R Purser	G Coles
F Arnoldsson	O S Andersen	S Enemark	R Dick		P Aylott			

# Breaking News – Change of rep. to steering committee



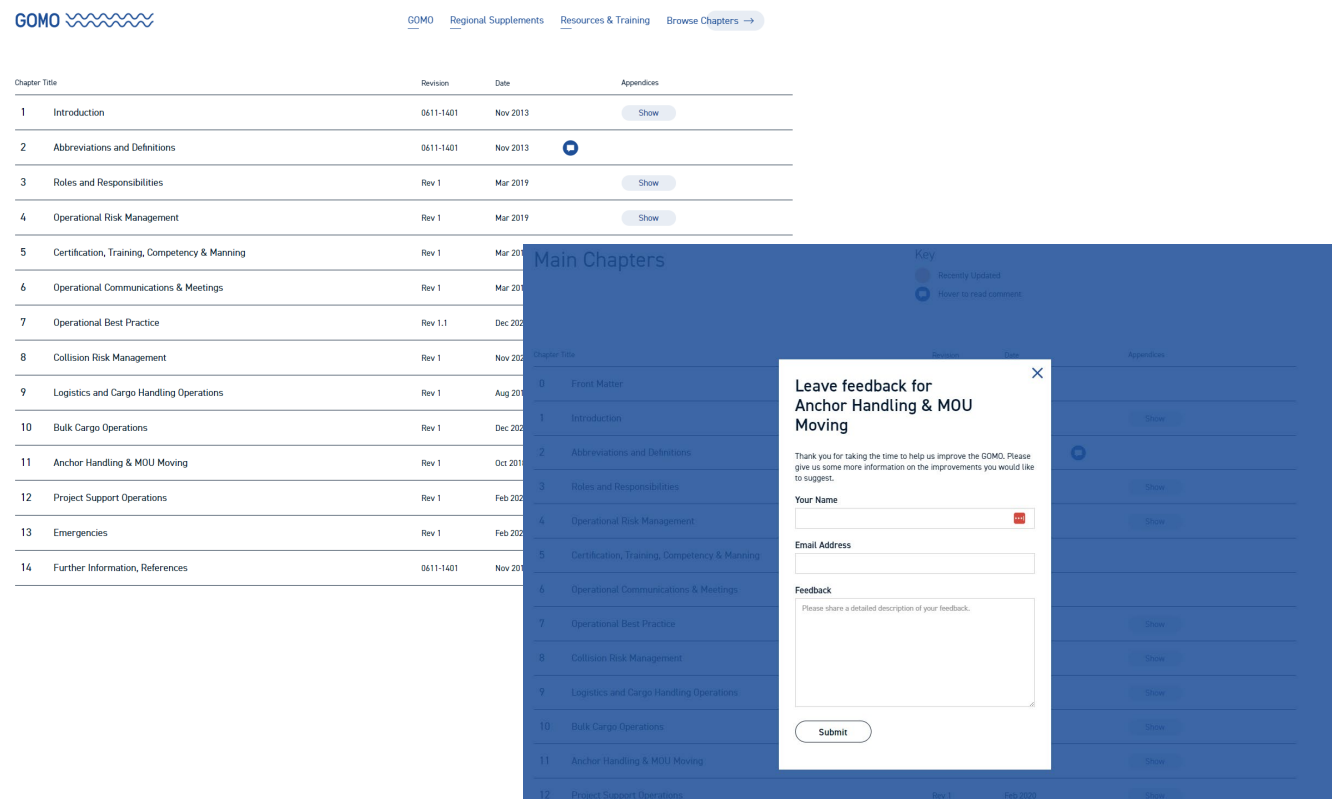
- GOMO

- Steering committee – Norwegian representative from the operators
- A standard global approach to safe offshore vessel operations



# New home page

- New home page launched autumn 2023
- General update – significant change in layout
- Easier / better overview
- Easier to update each chapter
- Easier to give feedback on content
- Q&A possibility implemented
- Subscribe function – get news / updates
- [GOMO \(g-omo.info\)](http://g-omo.info)



The screenshot shows the GOMO website interface. At the top, there is a navigation bar with the GOMO logo and links for 'Regional Supplements', 'Resources & Training', and 'Browse Chapters'. Below this is a table listing various chapters with their titles, revision numbers, dates, and 'Show' buttons. A blue circle highlights the 'Anchor Handling & MOU Moving' chapter. A 'Main Chapters' sidebar is visible on the right. A feedback form overlay is open, titled 'Leave feedback for Anchor Handling & MOU Moving', with fields for 'Your Name', 'Email Address', and a 'Feedback' text area, along with a 'Submit' button.

Chapter Title	Revision	Date	Appendices
1 Introduction	0611-1401	Nov 2013	Show
2 Abbreviations and Definitions	0611-1401	Nov 2013	Show
3 Roles and Responsibilities	Rev 1	Mar 2019	Show
4 Operational Risk Management	Rev 1	Mar 2019	Show
5 Certification, Training, Competency & Manning	Rev 1	Mar 2019	Show
6 Operational Communications & Meetings	Rev 1	Mar 2019	Show
7 Operational Best Practice	Rev 1.1	Dec 2020	Show
8 Collision Risk Management	Rev 1	Nov 2020	Show
9 Logistics and Cargo Handling Operations	Rev 1	Aug 2020	Show
10 Bulk Cargo Operations	Rev 1	Dec 2020	Show
11 Anchor Handling & MOU Moving	Rev 1	Oct 2018	Show
12 Project Support Operations	Rev 1	Feb 2020	Show
13 Emergencies	Rev 1	Feb 2020	Show
14 Further Information, References	0611-1401	Nov 2013	Show

11 Anchor Handling & MOU Moving

Rev 1

Oct 2018

Show

Leave Feedback



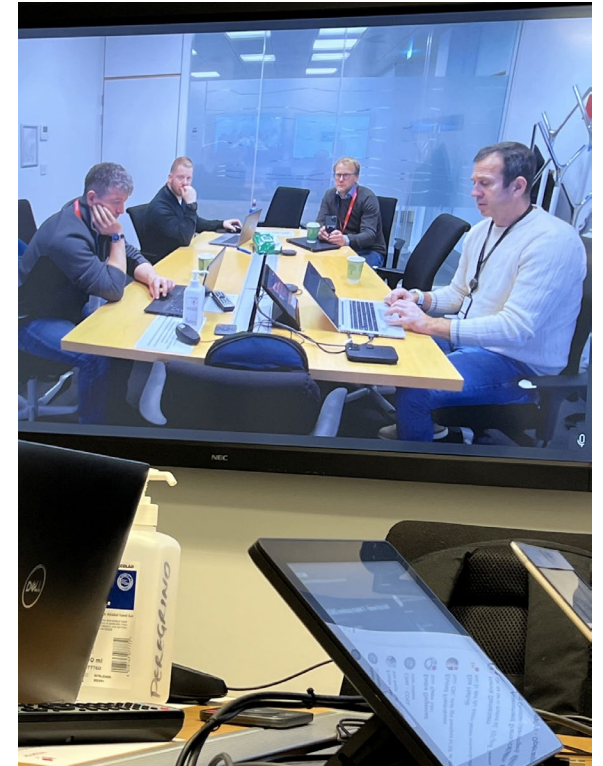
# Update - Framework / principle



- Last updated in 2018 (The document in GOMO which has been due for update longest)
  - 2018 Revision was carried out by representatives from Norway and UK(4 vs. 1)
  - 2023 Revision was carried out by representatives from Norway and UK(4 vs. 1)
- **Simplify content**
- Clarify unclear parts in the documents wrt definitions
- Update according to how we execute AH operations in 2023
- Operational content and examples moved to Appendix
- The document will be sent out for consultation – recommend that shipping-companies and rig-owners have operational review and feedback
- Planned review was completed 12/2023 – Waiting for steering committee for implementation



Norges  
Rederiforbund  
Norwegian  
Shipowners'  
Association



- GOMO Chapter 11  
Anchor Handling & MOU Moving
- Notify the relevant authorities about the planned operations in advance or according to requirements
  - The operator shall specify minimum horizontal and vertical distances to infrastructure, pipelines and vulnerable natural seabed resources on the seabed for anchors and anchor lines.
  - Is responsible for ensuring adequate planning (including contingencies) and risk assessment of the entire anchor handling and towing operation
  - Provide weather forecasts and relevant data
  - For an MOU move, Operator will normally be responsible for vessel and MOU chartering to meet the requirements in the scope of work.
  - To provide the vessel management company and vessels with details of maximum calculated loads for the operation.
  - Obtain positioning equipment and positioning personnel, if applicable
  - Obtain equipment supplier and equipment supplier personnel, if applicable
  - Inform subcontractors in advance about the planned mobilisation and commencement of mooring operation. Notification should be made as early as possible.
  - Send notification to all involved parties of the work specification, risk management, load list, mobilisation plans, contingency plans and single point of contact in sufficient time.
  - Arrange the place and time to perform. Coordinate HSEQ briefing of the operator's HSEQ expectations and MOU management company for presentation of work specification ideally: the meeting shall be held in advance onshore with the operating company inviting all relevant parties, i.e., CIM, Vessel Masters, Marine Rep, QC, positioning and mooring equipment representative
  - Arrange on site visit of the operator's representatives for verification of the marine operations.
  - Provide the required documentation from anchor installation to rig owner, anchor positions; and ensure, the length during installation, verify that the mooring system is installed in accordance with the planned operation.
- 11.2.2 MOU Management Company
- Notify authorities of MOU departure and arrival in accordance with local requirements.
  - Ensure the MOU is adequately manned by qualified and competent personnel, as required in the work specification, taking into account hours of rest requirements and the work specification.
  - Provide personnel, as required, to cover 24/7 operation.
  - Ensure arrangements for provision of additional back-up mooring equipment, if required, are in place.
  - Obtain equipment supplier and equipment supplier personnel, if applicable.
  - Ensure the mooring system components have the required capabilities as specified in the mooring analysis and certification validity for the required period.
  - Ensure that mooring analysis and work specification for both pre-lay and MOU move is

Revision 2: 2023

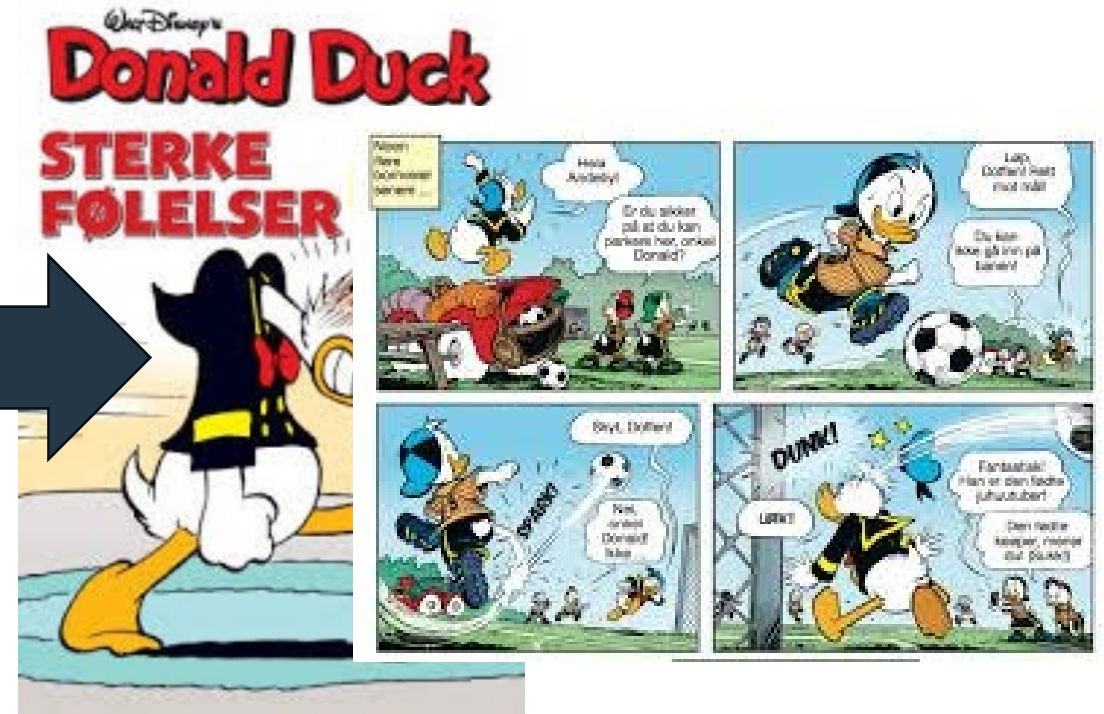
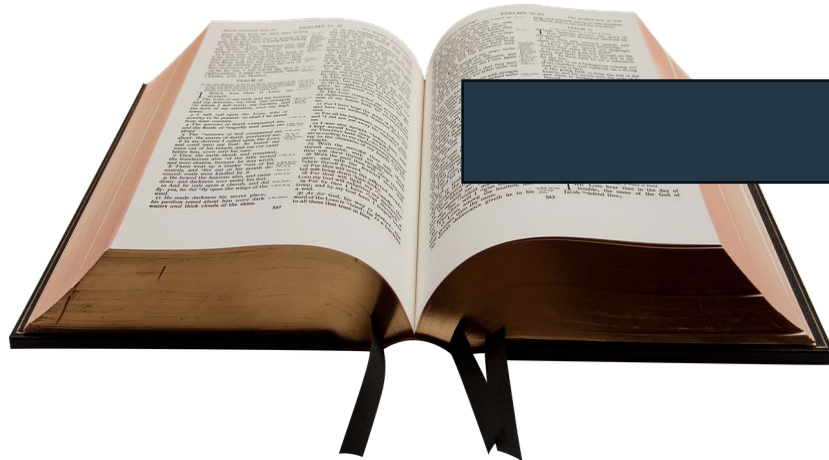
UNCONTROLLED WHEN PRINTED

Page 11-7

Agge Karl Lambrechts  
Sjømester, Operasjonstolk

- Agge Karl Lambrechts  
Kan vi samle alle koronasaker i felles ordlyd, dersom det skal være med?
- Agge Karl Lambrechts  
Følg og å dette det som er strøket over
- Agge Karl Lambrechts  
Dette gjelder protokoll, og kun i Norge, eller? Det er uansett ikke som er med på operasjon, og angår sitt ansvar å sikre at installasjon er gjort på anstendig måte og i henhold til plan.

# Past → Future – Simplify content



Chapter 11 – rev 2. - 20% reduction in content (31 → 25 pages)

Appendix 11-A - 44% increase in content (18 → 26 pages)

Reduce/delete content that is of no use, added content of importance

## Should – Shall – May

### Ref. abbreviations list:

**Should** - Refers to good practice and highly recommended action

**Shall** - A mandatory action

**May** - An optional action

Unclear parts should now be clear, it may ( -or not) be understood, but shall be followed



# Clear deck policy

## 11.1.2 Clear deck definition.

All vessels engaged in Anchor Handling operations shall have a clearly defined clear deck policy. Clear deck policy shall assure that the risk of exposure to personnel is reduced to a minimum during anchor handling operations.

The Master is responsible for assuring that this philosophy is implemented and adhered to.

**Note:**

*It is recommended to install a remote indication (e.g. Clear Deck warning light) close to all exits from accommodation to deck, that can be activated from bridge when clear deck is active.*

# Handling of mooring chain

## Mob/demob & offshore requirements

- Reduce risk of damage to mooring chain
- More guidance is added to ensure best practise
- Extra measures when handling high-grade chain R5
  - Isolate chain from stern roller by use of fiber during installation and recovery
  - Alternatively isolate ICCP

More in line with other requirements (DNV-RU-OU-0300)

### 9 Handling of Mooring Chain

#### 9.1 Mobilization and Demobilization of Mooring chain

- Onshore handling of mooring chain should be performed in such way that it reduce any risk for damage to the equipment.
- Mooring equipment Owner handling procedure, or base specific procedure should be adhered to.
- AHV shall ensure that the chain is not pulled over edges where the chain may snatch.
- The spooling speed shall be adjusted to ensure a smooth transfer. It is good practice to have visual inspection during transfer to and from chain locker.

#### 9.2 Offshore Handling of Mooring Chain

The following shall be considered:

- Use of tension monitoring and collection of data [within winch equipment capabilities] for submission to equipment supplier.
- Load applied to mooring chain on the stern roller shall not exceed 30% MBL [due to fatigue concerns].
- When possible, avoid applying loads greater than 30% MBL to chain secured in jaws or on chain wheel.
- Shark jaws are designed for stoppering / hanging off chain, not for the application of power to a system e.g. during prelay testing or anchor recovery.
- Use an appropriately sized chain wheel
- A worn chain wheel will allow the chain to slip, exposing it to shock loading.
- Water cooling at stern roller.
- When possible, remove twists from chain
- MBL of twisted chain is reduced.
- Twisted chain more likely to disengage from chain wheel.
- Where possible, avoid leading chain around sharp edges
- Snagging can apply shock loads to the chain.
- When pulling chain directly from chain lockers, consider the bending radius at the chain locker opening.
- High grade chain may require extra handling precautions e.g. electrical isolation – follow job-specific work specification.

**Note:** when handling high-grade chain, a fibre/polyester rope + connections or similar electric isolating means shall be inserted in the line [in the sea, below stern roller] to isolate the mooring line from the AHV stern roller during tensioning/recovery. Alternatively, the AHV ICCP system shall be switched off minimum 6 hours prior to start of operations and remain off during the entire anchor handling operation.

	Tonnage as a percentage of mooring chain MBL			
	20%	30%	50%	65%
84mm R4 [734Te]	146Te	220Te	367Te	477Te
84mm R5 [858Te]	171Te	257Te	429Te	577Te

# Handling of mooring chain

## 9.3 Anchor Retrieval Recommendations

Factors to consider during anchor retrieval operations:

- Testing and recovery of anchors should be done using AHV winch tension control system.
- Be aware of the effect of vessel dynamics on a stiff system, e.g. during anchor recovery. There is no sag in the system to absorb shock loads, so the load peaks must be dissipated via other means.
- Maximum installation / recovery load shall not exceed 50% of the MBL of the weakest component in the line.
- Should the peak loads exceed 65% of MBL during operation, the affected component shall be tagged, returned to base and subject to CVI / NDT prior to further use [applicable when not in contact with AHV stern roller].
- During retrieval operations, vessel dynamics may increase the actual tension [compared with bollard pull reading] by a factor exceeding two.

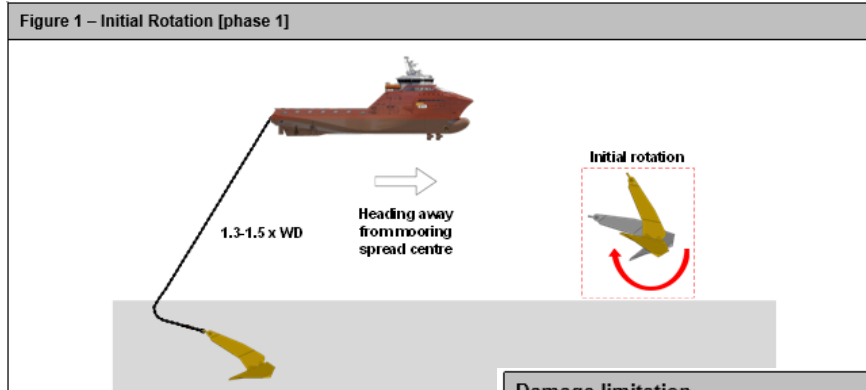
**More in line with other requirements (DNV-RU-OU-0300)**

**See presentation from Steve Farrell ab. Recovery and his contribution to this chapter of GOMO.**

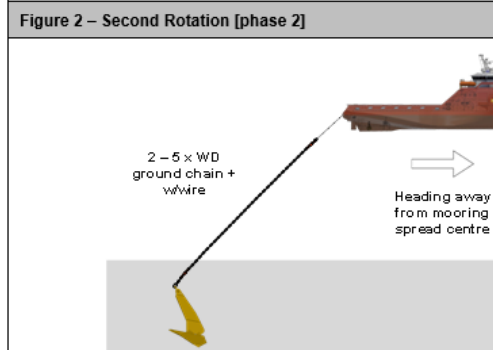
**Damage avoidance – should consider the following factors :**

- **Soil characteristics**
- **Timing**
- **Direction of pull**
- **Pay out**
- **Seamanship**
- **Tension Control**
- **Application of Power**

# Handling of mooring chain



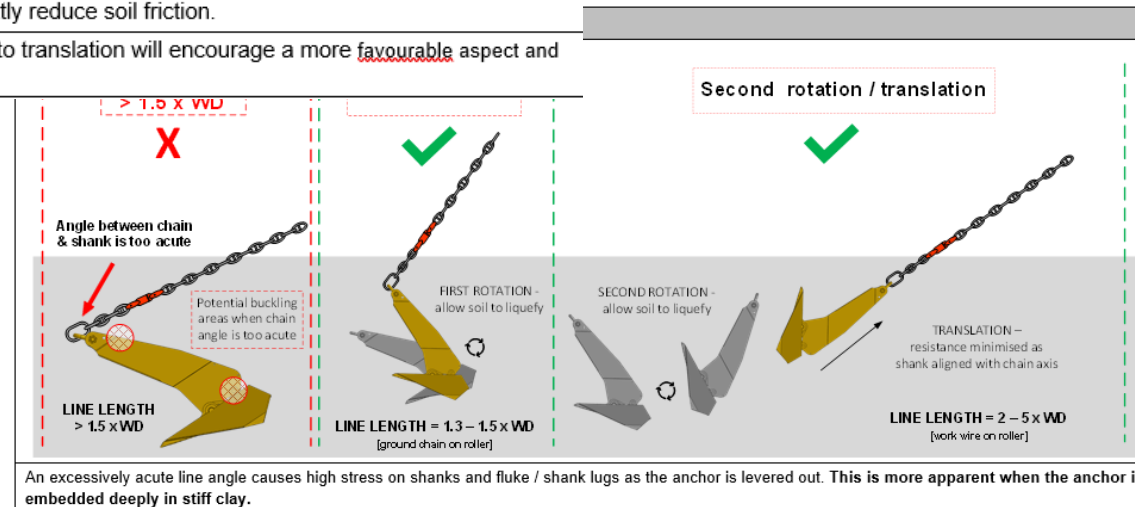
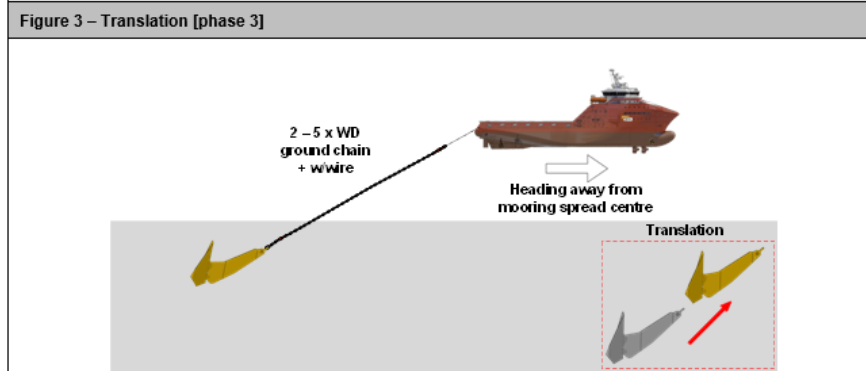
Operational phases		
<b>When pulling an anchor out backwards, the number of phases of the operation is dependent on how deep the anchor is buried.</b>		
Phase 1	Initial dislodgement	1.3-1.5 x WD.
		Low power <30% MBL of mooring chain if it is on the roller. 100-150Te to allow liquefaction / equalisation beneath fluke.
<b>For an anchor at the mudline, phase 1 successfully executed will often break the anchor out cleanly.</b>		
Phase 2	Second rotation	2-5 x WD.
		W/wire or chafe chain on roller [higher tensions can be applied].
Anchor rotates.		
/ 5min increments.		



**Damage limitation**

**The three-phase approach to backwards retrieval is crucial for deeply embedded anchors [especially in dense soils]. A shallow-buried anchor may break out at phase 1. However, the cautious approach should still be followed in the interests of damage limitation.**

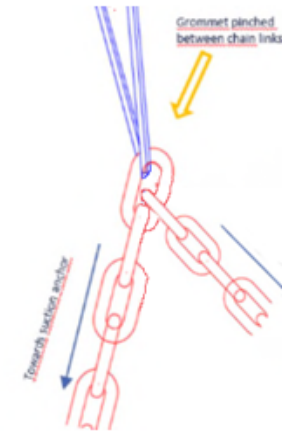
- Increasing power to breakout tension immediately will induce the buried anchor to translate [i.e. lift out of the seabed] in its original aspect. The angle of force application, accumulated soil weight and soil friction will result in extremely high tensions.
- Allowing the soil to liquefy will greatly reduce soil friction.
- Allowing the anchor to rotate prior to translation will encourage a more favourable aspect and angle of force application.



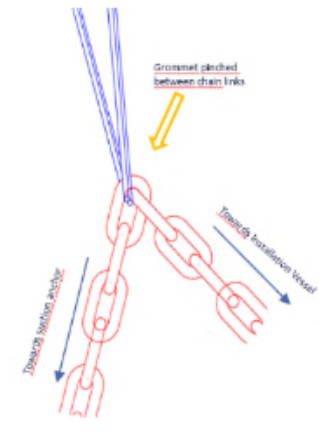
## 10 Use of grommets

In case a wire grommet is to be used in rigging and holdback operations, the below shall be paid attention to:

- Wire grommets are particularly vulnerable when used in connection with equipment that can cause pinching of the wire.
- Avoid the use of a grommet or wire when there is risk of pinching or wedging
- Should a grommet/wire be used ensure that it is correctly installed and verify visually in correct position during and after taking of load. See Fig A.
- Plan for and include in the procedures, where the red markings identifying the butt and tuck zones should be positioned and ensure understood by all personnel.
- Ensure the skew loading effect is included in the rigging calculation when using a doubled grommet.



**Fig A. Correct position of grommet**



**Fig. B Incorrect position of grommet**

*In Fig. B, the location of the grommet causes it to be pinched and crushed by the chain links. This may rapidly reduce the capacity of the grommet and have led to accidents.*

*The lifting assembly may be subject to rapid load changes/shock loads during operation – so when a grommet is laid in double one turn will take all initial shock load in case of sudden movements. A pinched wire will not benefit from a double configuration and hence the capacity to withstand a shockload may be greatly reduced.*

# Quick release mooring connector

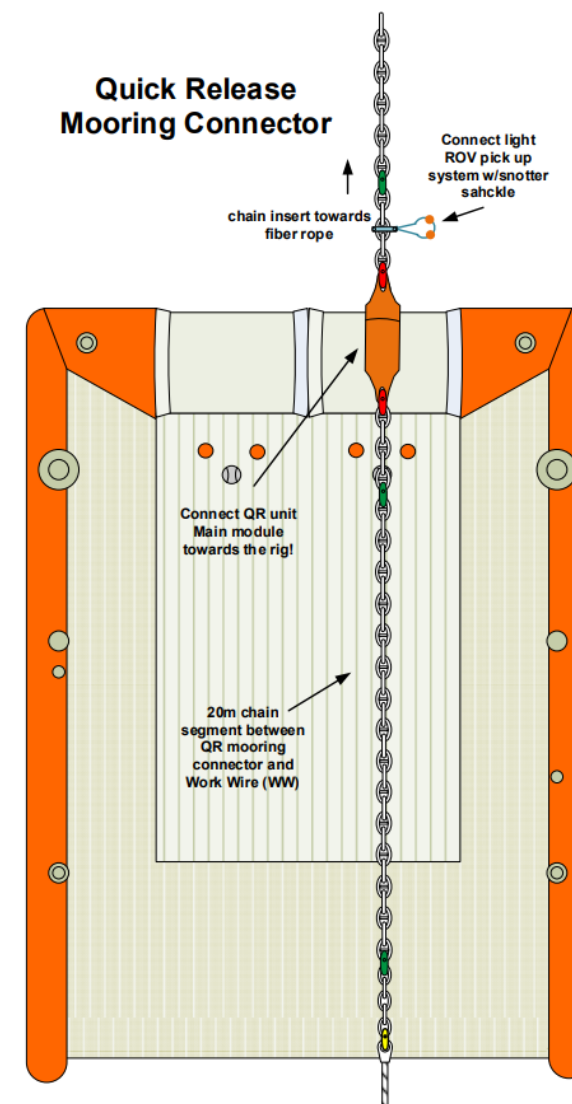
## 11 Quick Release Mooring Connector

Quick Release Mooring Connector system is a component that is installed in the mooring line, enable remotely release of the mooring line. This can be done from the rig or a vessel.

Handling of Quick Release Mooring Connector system:

- When the Quick Release unit is assembled it can be handled on deck the same way as normal chain and accessories. Particular attention should be given when handling the Quick Release mooring connector whilst disassembled.
- When recovering the open Quick Release mooring connector to deck the internals are exposed vulnerable to damage. Consideration should be given to the vessels position and heading relative to the mooring line when recovering the system over the stern roller.
- For planning and installation, it is recommended to overboard the Quick Release mooring connector before AHV receive rig chain. Good practice is to use an extra chain segment, e.g. 20m, connected between the Quick Release mooring connector and rig chain, to avoid damage and unwanted release during operation.

**Note: Handling and operation of the equipment should be in accordance with the Manufacturers operating procedure.**



# Use of swivel during Anchor Handling Operation

## 12 Use of swivel during Anchor handling Operation

Torque can be introduced when a midline connection in a line under axial load is jawed off. As the weight is transferred to the jaws, the axial load is reduced on the line above the jaws.

If the top-end component is ordinary lay wire [e.g., AHV work wire], this effect can result in the wire spinning on deck. If there is no swivel in the system, the wire will "pigtail" and the connecting link will become "cocked" by the stored energy in the system.

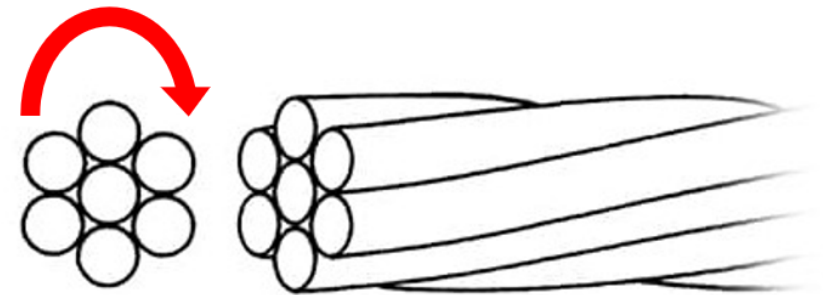
When torque is stored in a component, it will not necessarily be evenly distributed along its length. Torque will often be stored at one end of long wire or fibres that have been exposed to torsional forces.

The rotation experienced by a wire as the axial load is reduced explains why a wire that has been used for high-tension operation must be de-tensioned before demobilising, in order to ensure crew safety. In deep water this can be done by hanging the unweighted wire over the stern roller. In shallow waters it can be done by 2 AHVs stern-to-stern.

A swivel connected at the correct point [e.g., AHV work wire to mooring component] will enable the torque to bleed off while the deck is clear. When a line is jawed off and the axial load reduced, the deck should remain clear until the wire has finished rotating.

### Torsion in mooring components

Tensile load =  
torque OR torsion



Axial load = weight OR line tension

## Other updates

**Winch Operation: Emergency Release & Emergency Stop**

**Considerations for Deeper Water**

**Considerations for shallow water**

**Special operations – Fixed floating installations**

**Jack-up Operations**

A mooring operation shall be considered “shallow water” when there is insufficient sag in the system to absorb the AHV dynamics during a crucial job phase.



## GOMO Sponsors



**Thank you**