Global Davit GmbH

Survival- & Deck Equipment

TRAINING COURSE

for

TECHNICIANS

subject :

Life saving systems made by

Global Davit GmbH

objective :

Obtaining of the Global Davit
"certified representative" certificate

Version 1.3

Directory

Global Davit GmbH, Graf-Zeppelin-Ring 2, 27211 Bassum, Phone +49 (0)4241 93350, Fax +49 (0)4241 933525, E-Mail info@global-davit.de, www.global-davit.de

Version 1.3 dd 15.02.2016

1 Global Davit GmbH

Global Davit GmbH has late 1999 been founded to meet the specific demands of Life Saving equipment for both Merchant and Passenger Vessels, together with "special" systems designed for marine research vessels.

The company supplies her products to shipyards all over the world.

The office is situated in Bassum (near Bremen), Germany, from where all activities are coordinated. The staff has at least more than 15 years experience in the above mentioned activities with Davit Systems within the Industry.

In tight cooperation, all engineering, informative documents are produced by Maritime Design Office in The Netherlands.

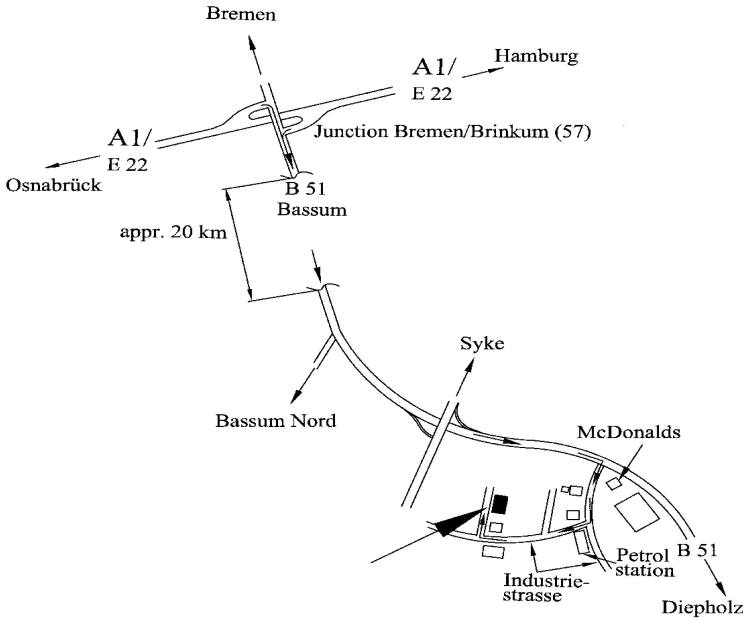
Global Davit offers the complete range of systems, such as liferaft cranes, rescue boat cranes, combined rescue boat /liferaft / stores cranes, gravity davits, winches and cranes for stores/hose handling as well as cranes for multi-purposes.

On her own premises **Global Davit** has her own testing facilities for davits, winches and cranes. All products are inspected, tested and approved by the major inspection agencies and national authorities involved.

Before transportation Global Davit can install, in her own workshop full corrosion protection by adding complete paint systems based on any paint brand desired.

Global Davit offers her support and services through an expanding international network of agents and associated companies.

1.1. Route description



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2 Safety and health instructions

The personnel, responsible for installing, operating and maintaining life saving equipment must be or become well acquainted with the content of this training manual in order to:

- avoid any malfunctioning or create any pollution due to incorrect maintenance
- ensure and guarantee the reliability of the equipment
- avoid any possible risk to people
- avoid any possible risk to themselves

2.1 Malfunctioning or pollution

Future mal-functioning can only be prevented by following the instructions concerning disassembly and assembly as stated in this manual. Should you feel unease or should you think that:

- instructions are missing
- instructions are not clear

do not hesitate to contact us.

A lot of davit systems do not function on gravity only. The SOLAS-option allowing mechanical stored power" is often translated into "hydraulic stored power". These davit systems incorporate hydraulic accumulators containing an average of 35 litres of oil at pressures up to 300 bars.
Wrong operation may cause pollution up to an area of a football-field!

2.2 Reliability of life saving systems

It is obvious that the reliability of life saving systems must be guaranteed; people's life's are depending on it!
After finishing your works, clear the surrounding, remove any additional lashing / securing device that you may have installed and check and double-check the usability of the system. Test the reliability of the system before leaving.

2.3 Safety of People in general

First of all: the ideal working area is one without by-standers which are unfamiliar with davit systems in general.
Further it is of great importance to avoid any sudden movements and/or rotations of the equipment or part of the equipment. For achieving this:

- boats must be securely lashed
- davit systems must be securely locked in the stowed position

before starting any service and/or maintenance activities.
Never operate a davit system with a crowd around.

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2.4 Personal safety, general

In order to avoid any personal injury the following simple safety precautions should be taken. They are simple clothes only, but are of great importance and should be worn always:

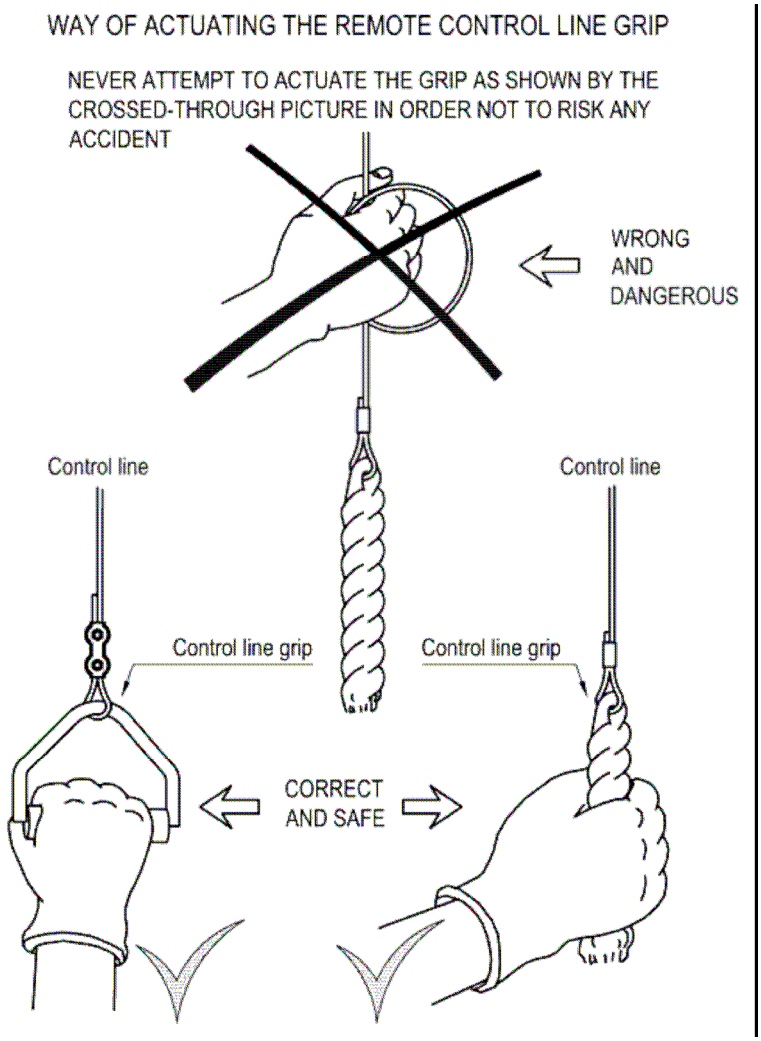
- safety helmet
- gloves
- strengthened shoes
- safety glasses (when grinding etc.)

An overall in, preferably, bright colours is recommended.

When servicing davit systems, especially during oil change jobs and even when using a suitable receptacle, it is unavoidable that grease or oil is spilled.
Clean these spots immediately using a degreasing agent suitable for cleaning operations: they may cause unexpected injuries.

Do clean your working area immediately!

For reason of personal safety never attempt to wrap the control line round fingers or hand, for any obstruction on the outside could lead to serious injuries then. Use the control wire grip only as shown.



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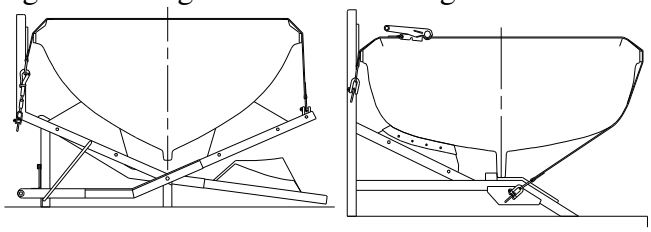
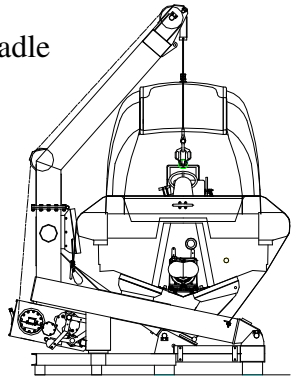
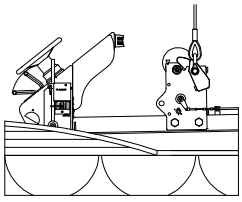
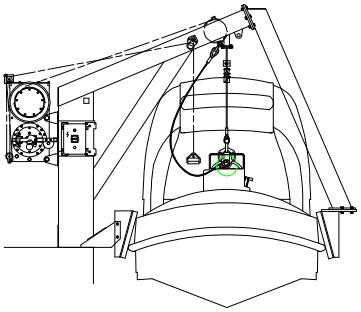
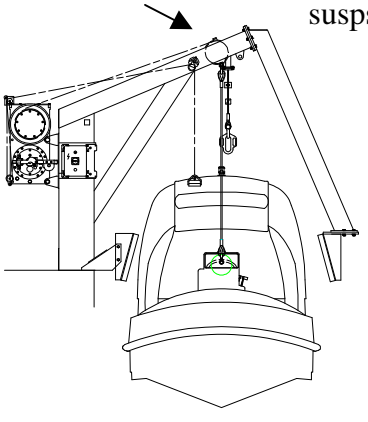
<table>
<tr><td></td><td>Securing method when working on:
Winch brakes / boat hooks / suspension</td><td colspan="2">Suitable for</td></tr>
<tr><td rowspan="2">all small rescue boats supported by fixed chocks, foldable chocks or chocks incorporated in the system</td><td>Make sure boat is well supported in its cradle and tighten lashing before commencing
  </td><td>Rms.S.
Fhs.R.
Fhs.R.L.
Fhs.R.L.S
Fhs.R.S.
Rhp.
Rhp.HC.
Rhs.
Rhs.HC.
Rhs.L.
Rhs.L.S
Rhs.S.</td><td>Rhl.
Rhp.
Rhs.
Rhs.L.S.
Rhs.L.
Rmes.L.S.
Rmes.S
Rml.
Rms.
Rms.L.
Rms.L.s
Rhs.S</td></tr>
<tr><td>Make sure boat is well supported in its cradle
And tighten lashings before commencing
  </td><td colspan="2">Rhp</td></tr>
<tr><td>all small rescue boats without lashings</td><td> 
Mount the maintenance sling on to this point before lowering the boat
Then dismount the rescue boat suspsion
 
  </td><td colspan="2">Rsp.O.</td></tr>
</table>

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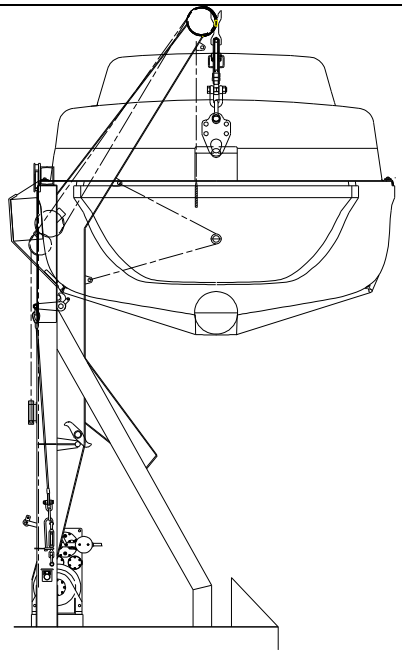
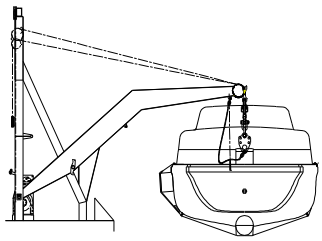
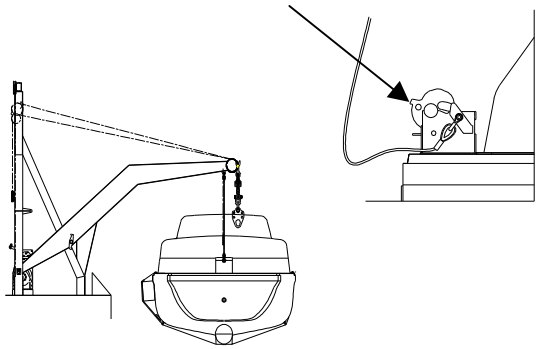
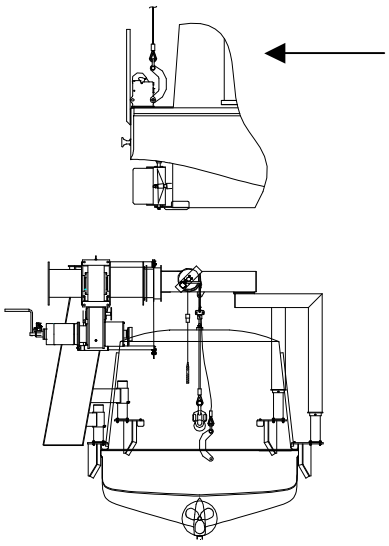
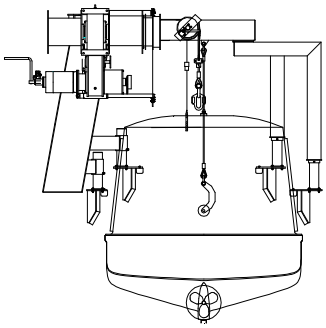
<table>
<tr><td></td><td colspan="2">Securing method when working on:</td><td>Suitable</td></tr>
<tr><td></td><td>Winch brake</td><td>Boat hooks / suspension</td><td>for</td></tr>
<tr><td rowspan="2">life / rescue boats supported by lashings</td><td> 
Tighten the arm lashing before commencing</td><td> 
Bring the system to the outboard Position. Then fasten the maintenance slings to this point before releasing the boat hooks.
  </td><td>Glp.FP.
Glp.MP.
Glp.RT.
Gsp.FP.
Gsp.MP.
Gsp.RT.
Glp.FPh.
Glp.FLh.
Gsp.FPh.
Gsp.FLh.</td></tr>
<tr><td>all big rescue boats without lashings</td><td colspan="2">Winch brakes / boat hooks / suspension
 
Mount the maintenance slings on to this point before lowering the boat.
Then loosen the rescue boat suspension
  </td><td>Gsp.O.</td></tr>
</table>

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3 Delivery spectrum, system

through the years the delivery spectrum of **Global Davit** has ceasingly increased to the present status. The spectrum, presently, includes:

3.1 Systems for small life saving craft (with single point suspension) and at limited outreach (R_{max} is approx. 4,5 m)

All the systems, as specified below, are generally executed with a manually or electrically driven winch of the type 01 kNm, 02 kNm, 04 kNm or 08 kNm. The electrically driven hoisting speed (if installed) exceeds 0,3 m/sec

Group	Sub-group	Type	description
Slewing cranes without slewing ring. Available crane sizes: 05tm, 10tm and 15 tm	System based on manual slewing	Lms.	Liferaft systems
		Lms.S.	Liferaft systems with additional Stores handling facility
		Lmes.S.	Liferaft systems with additional electric slewing and Stores handling
		Rms.	Rescue boat systems
		Rmes.S.	Rescue boat systems with additional electric slewing and Stores handling
		Rms.L	Rescue boat / Liferaft systems
		Rmes.L.S	Rescue boat / Liferaft systems with additional electric slewing and Stores handling facility
		Rms.S.	Rescue boat systems with additional Stores handling facility
		Rms.L.S.	Rescue boat / Liferaft systems with additional Stores handling facility
	System based on hydraulic slewing (read: "mechanical stored power")	Rhs.	Rescue boat systems
		Rhs.L.	Rescue boat / Liferaft systems
		Rhs.S.	Rescue boat systems with additional Stores handling facility
		Rhs.L.S.	Rescue boat / Liferaft systems with additional Stores handling facility
Pivoting systems	System based on manual pivoting	Lml.	Liferaft luffing systems
		Rml.	Rescue boat luffing systems
	System based on hydraulic pivoting (read: "mechanical stored power)	Rhl.	Rescue boat luffing systems
		Rhp.	Rescue boat pivot systems
Fixed systems	System based on outboard stowage of the life saving craft	Rsp.O.	Rescue boat systems for Off-shore platforms

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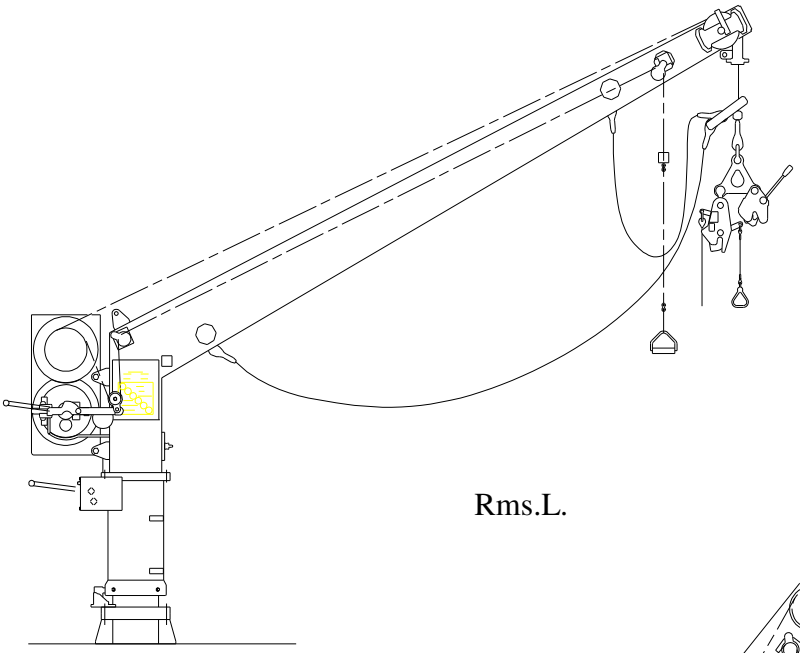
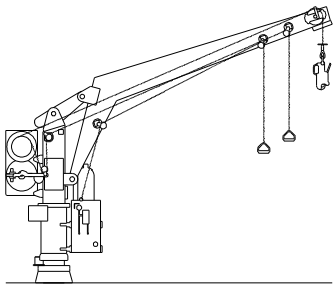
3.1.1 Typical example slewing system

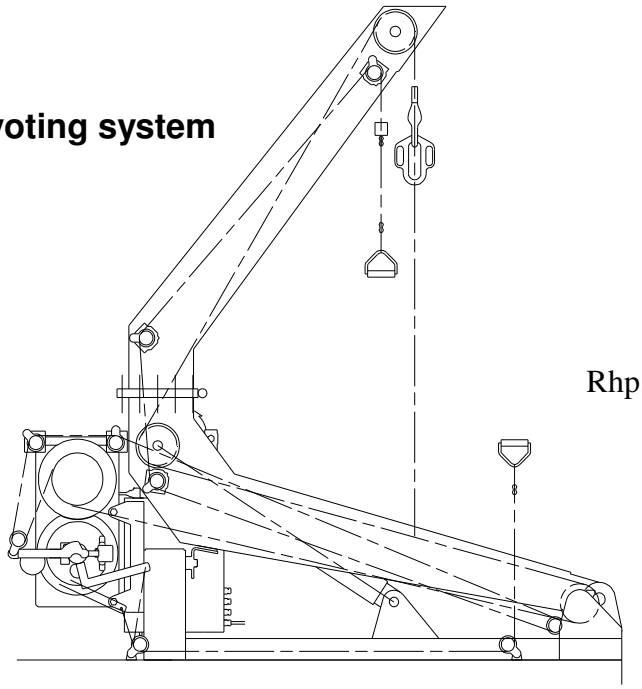


Rms.L.



Rms.T.

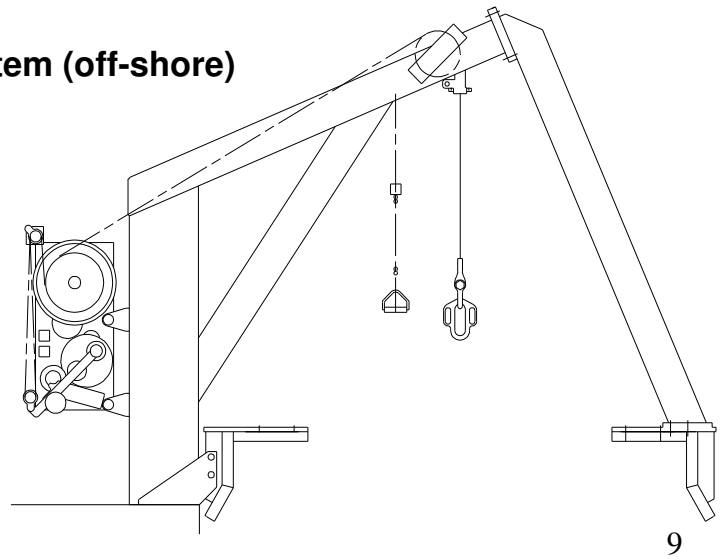
3.1.2 Typical example pivoting system



Rhp..

3.1.3 Typical example fixed system (off-shore)

Rsp.O



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3.2 Systems for bigger life saving craft (with single point suspension) and/or at bigger outreach

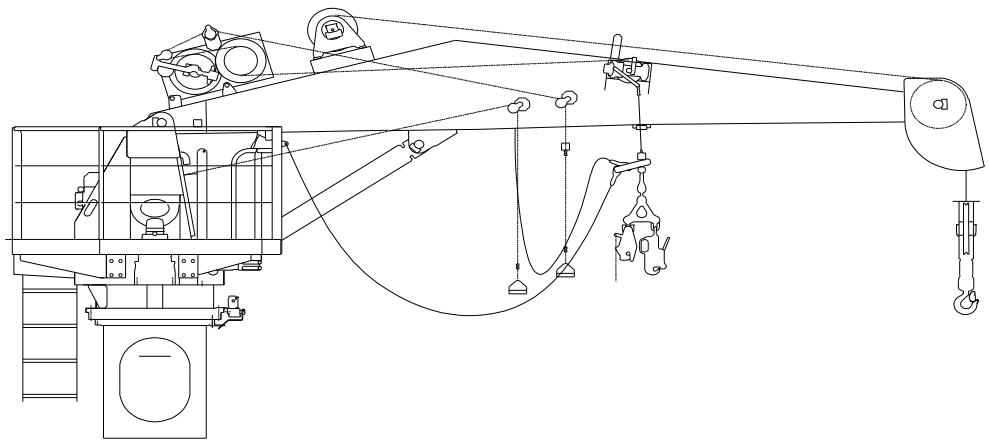
All the systems, as specified below, are generally only available with a hydraulic turning- out mechanism (with or without "mechanical stored power" features) and are executed with:

- a hydraulically driven winch of the type 02 kNm, 06 kNm or 08 kNm for lifeboat handling
- a manually or electrically driven winch of the type01 kNm, 02 kNm, 04 kNm or 08 kNm for the handling of the rescue boat / life raft.

The hoisting speed of the lifeboat may vary between 0,08 m/sec and 0,15 m/sec. The electrically driven hoisting speed (of the rescue boat) exceeds 0,3 m/sec, for fast rescue boat systems 0,8m/sec.

Group	Sub-group	Type	description
slewing cranes with slewing ring. Available crane size: 24tm, 36tm, 55tm and 80tm	System based on hydraulic slewing	Fhs.	Free-fall lifeboat system
		Fhs.S.	Free-fall lifeboat system with additional Stores handling facility
	System based on hydraulic slewing (read: (mechanical power")	Fhs.L.	Free-fall lifeboat / Liferaft system
		Fhs.L.S.	Free-fall lifeboat / Liferaft system with Stores handling facility
		Fhs.R.	Free-fall lifeboat / Rescue boat system
		Fhs.R.S.	Free-fall lifeboat / Rescue boat system with Stores handling facility
		Fhs.R.L.	Free-fall lifeboat / Rescue boat / Liferaft system
		Fhs.R.L.S.	Free-fall lifeboat /Rescue boat / Liferaft systems with Stores handling facility
		Rhs.	Rescue boat systems
		Rhs.L.	Rescue boat / Liferaft systems
		Rhs.L.	Rescue boat systems with additional Stores handling facility
		Rhs.L.S	Rescue boat / Liferaft systems with additional Stores handling facility
wave compensation system	System based on hydraulic pivoting with stored power (read: "mechanical power")	Rhs.HC..	Fast rescue boat slewing systems, with wave compensation features
		Rhp.HC.	Fast rescue boat pivot systems, with wave compensation features

3.2.1 Typical example slewing system



Fhs.R.L

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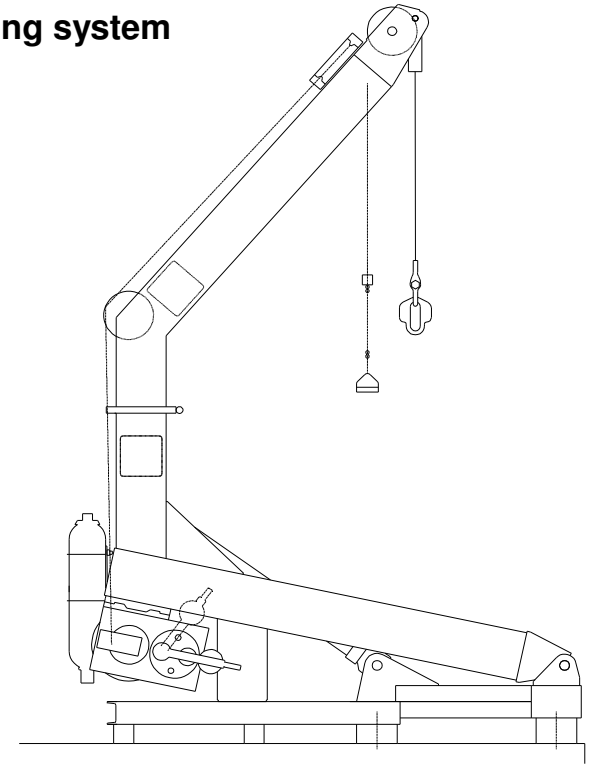
3.2.2 Typical example pivoting system



Rhp

3.3 System for life saving craft (with two-point suspension) using winch and wire falls

All the systems, as specified below, do generally work on gravity only and are executed with:

- an electrically driven winch of the type 07 kNm, 10 kNm, 14 kNm, 20 kNm or 26 kNm for lifeboat and/or rescue boat handling
- The hoisting speed of the lifeboat exceeds 5 m/min (0,08 m/sec)
- The hoisting speed of the rescue boat exceeds 18 m/min (0,3 m/sec)

group	sub-group	type	description
Davit system cargo vessel	Embarkation inboard (=stowed) position	Gsp.FP.	Free-standing Pivot system
		Gsp.MP.	Multiple Pivot system
		GSP.RT.	Roller track system
Davit system passen ger vessel	Embarkation outboard (=lowering) position	Glp.FP.	Free-standing Pivot system
		Glp.MP.	Multiple Pivot system
		Glp.RT.	Roller track system
Off-shore platforms	System based on outboard stowage of the life saving craft	Gsp.O.	Free-standing system for Off-shore platforms

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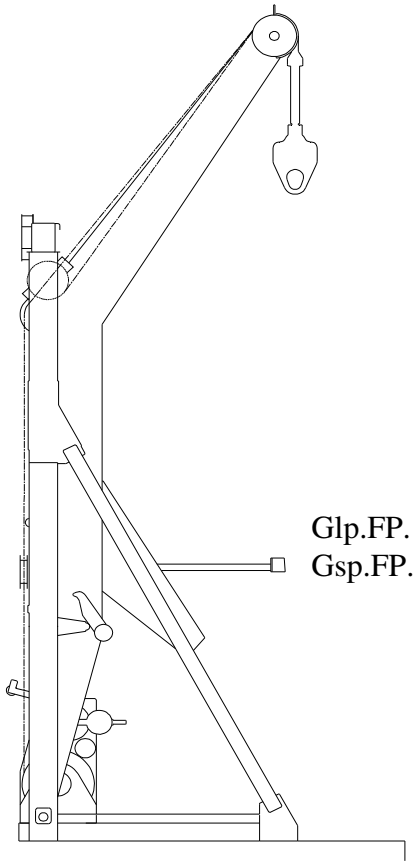
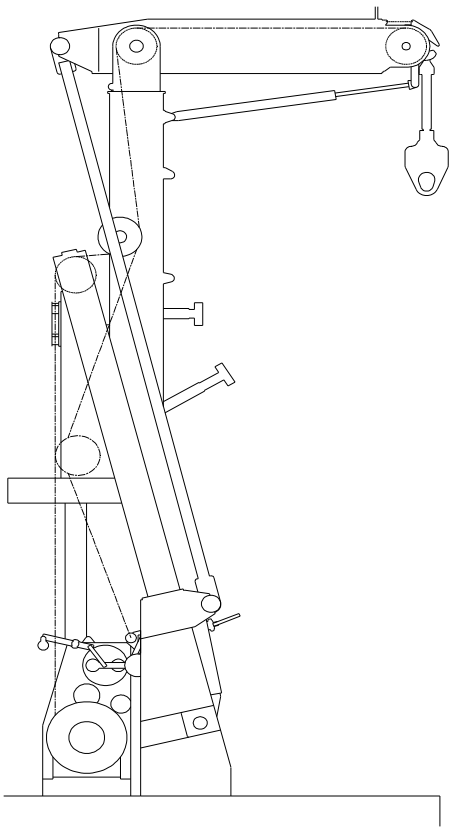
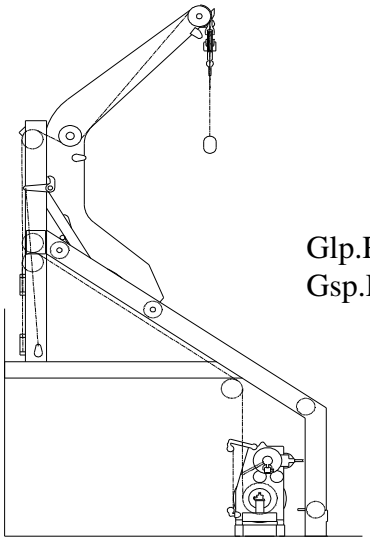
Typical gravity davit systems



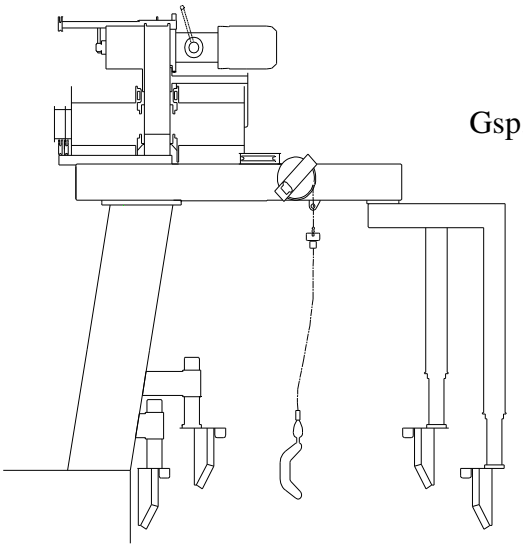
Glp.FP.
Gsp.FP.



Glp.MP.
Gsp.MP.



Glp.RT.
Gsp.RT.



Gsp.O.

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Version 1.3 dd 15.02.2016

3.4 Systems for life saving craft (with two point suspension) and hydraulically supported (read “mechanical stored power”)

The above mentioned gravity davit systems do have one disadvantage: the overall height exceeds often the ship's requirements.

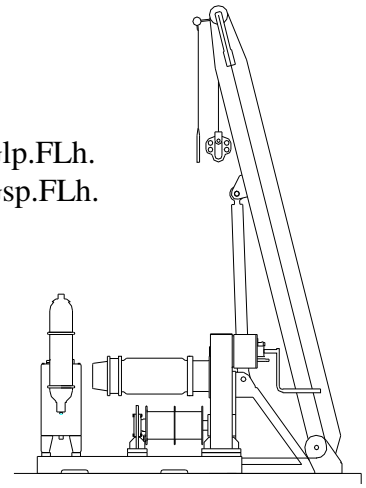
By adding hydraulic cylinders, improving the turning-out features of the system, this overall height can be dramatically reduced.

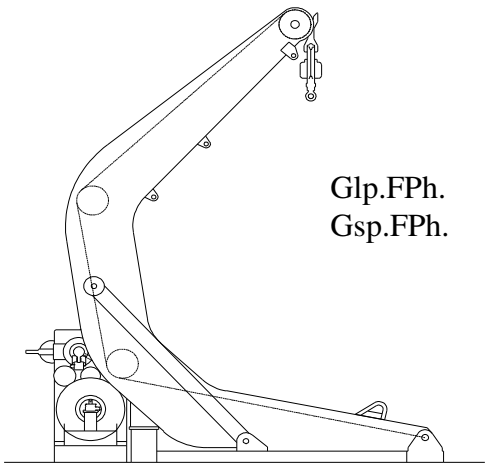
The systems are available with the same winches as the "normal" gravity davits.

Group	**Sub-group**	**Type**	**description**
Cargo vessel	Embarkation inboard (=stowed) position	Gsp.FLh.	Free-standing Luffing system, hydraulically supported
Cargo vessel	Embarkation inboard (=stowed) position	Gsp.FPh.	Free-standing Pivot system, hydraulically supported
Other vessel	Embarkation outboard (=lowering) position	Glp.FLh.	Free-standing Luffing system, hydraulically supported
Other vessel	Embarkation outboard (=lowering) position	Glp.FPh.	Free-standing Pivot system, hydraulically supported

3.4.1 Typical examples gravity davit system hydraulically supported

Glp.FLh.
Gsp.FLh.





Glp.FPh.
Gsp.FPh.

3.5 Identification

Each of the above mentioned systems is executed with a "system identification plate". Being supplied as a complete system only, this plate is installed on the davit arm and contains appropriate information for system identification (see also chapter "Identification plate").

Global Davit GmbH, Graf-Zeppelin-Ring 2, 27211 Bassum, Phone +49 (0)4241 93350, Fax +49 (0)4241 933525, E-Mail info@global-davit.de, www.global-davit.de

3.6 Type code explanation

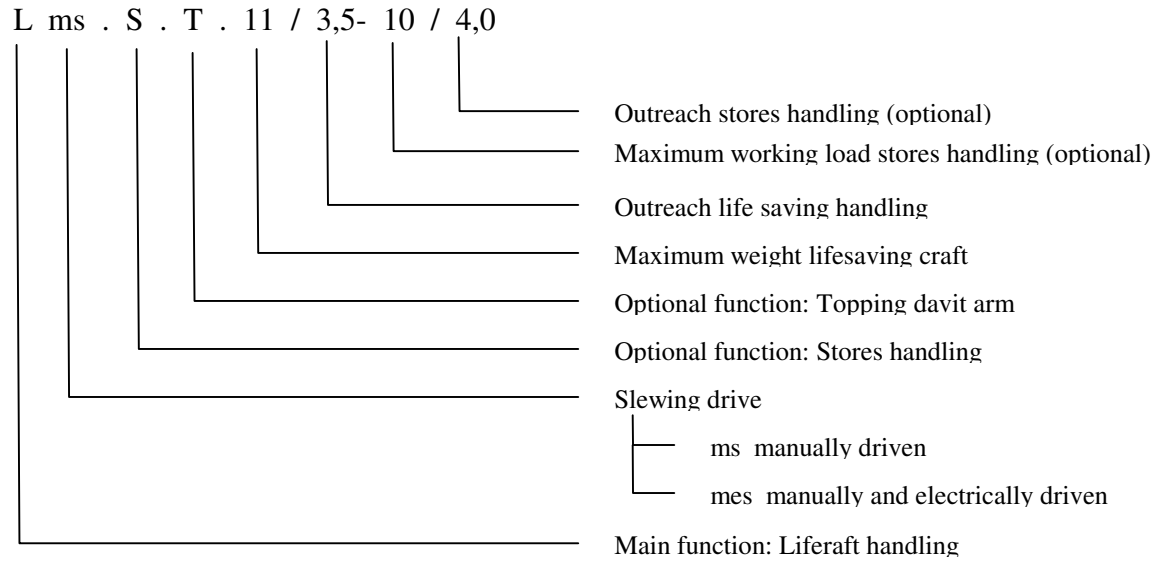
Each type code reveales the following information:

- main function of the system
- turning-out drive (single point suspended life saving craft) or the embarkation position (two-point suspended life saving craft)
- any additional / optional function of the system
- maximum weight of the life saving craft in fully equipped and boarded condition
- outreach of the system when launching the life saving craft

All loads and distances have been stated:

- all weights in kN (kg/100)
- all distances in [m]

Slewing systems with main objective: Liferaft handling



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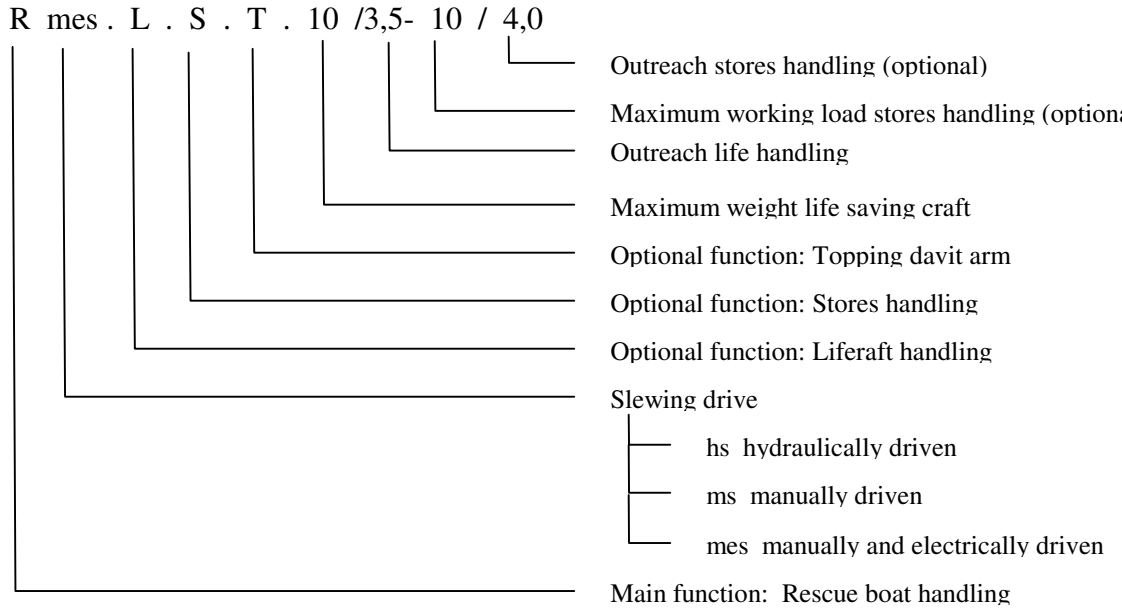
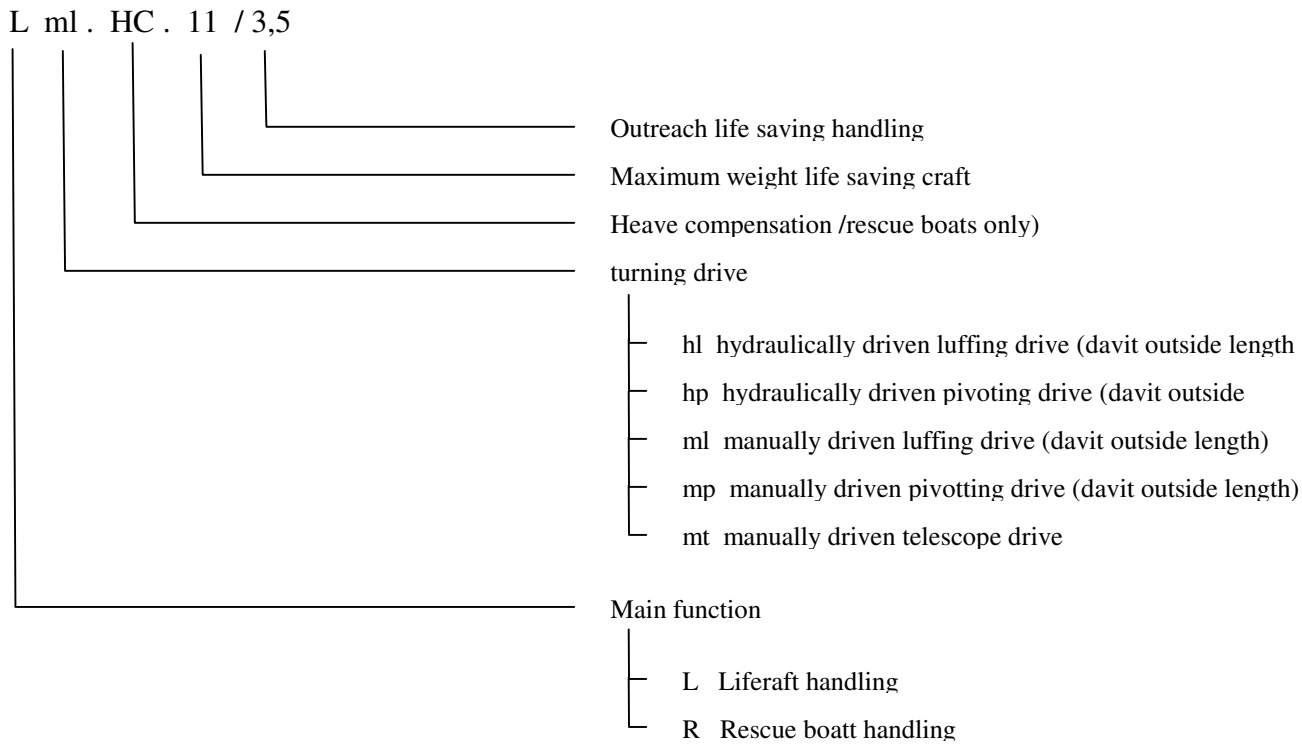
Slewing systems with main objective: Rescue boat handling



Luffing / pivoting system



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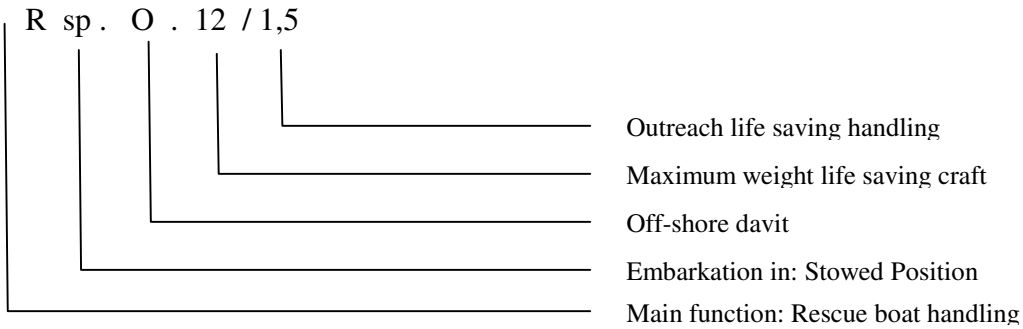
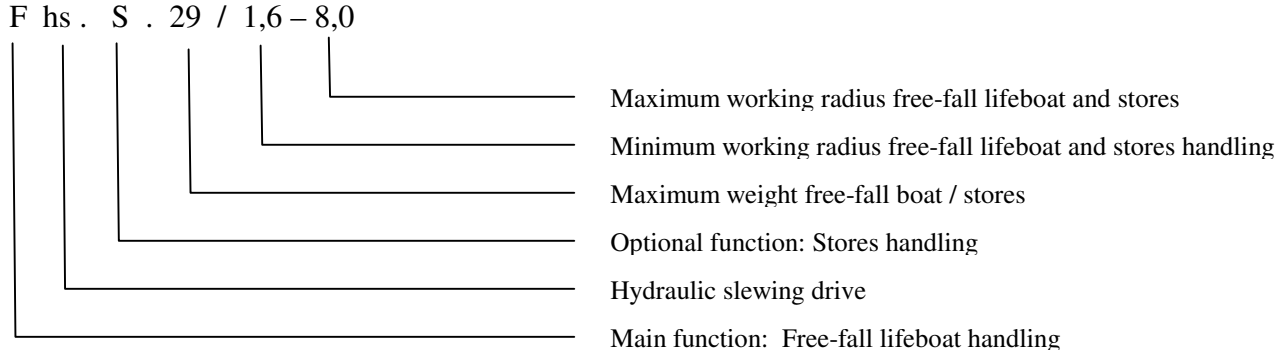
Fixed systems

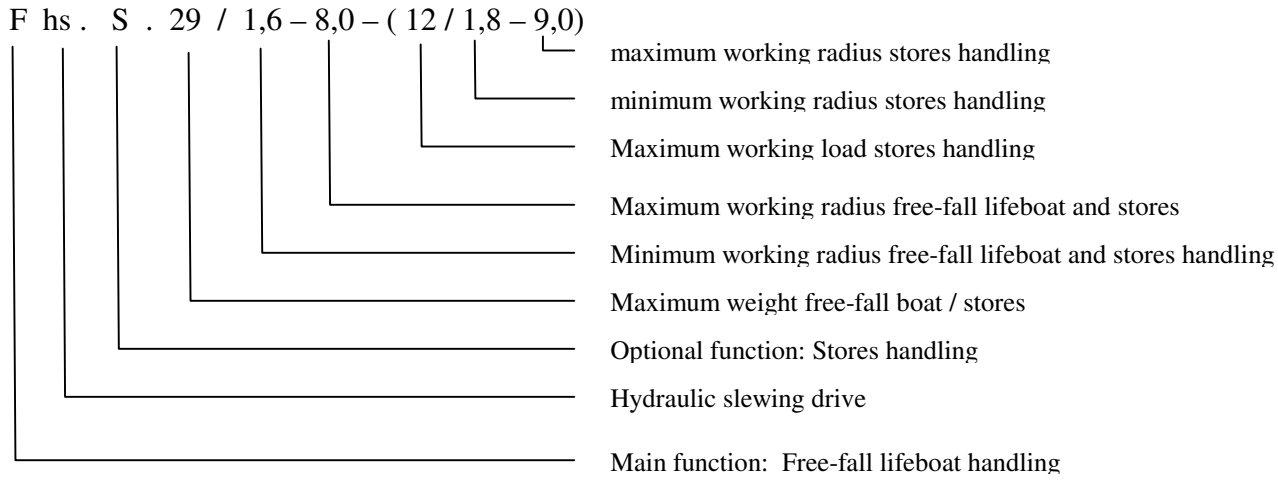


Slewing systems with main objective: Free-fall lifeboat handling

Version with only one winch installed



Version with two winches installed



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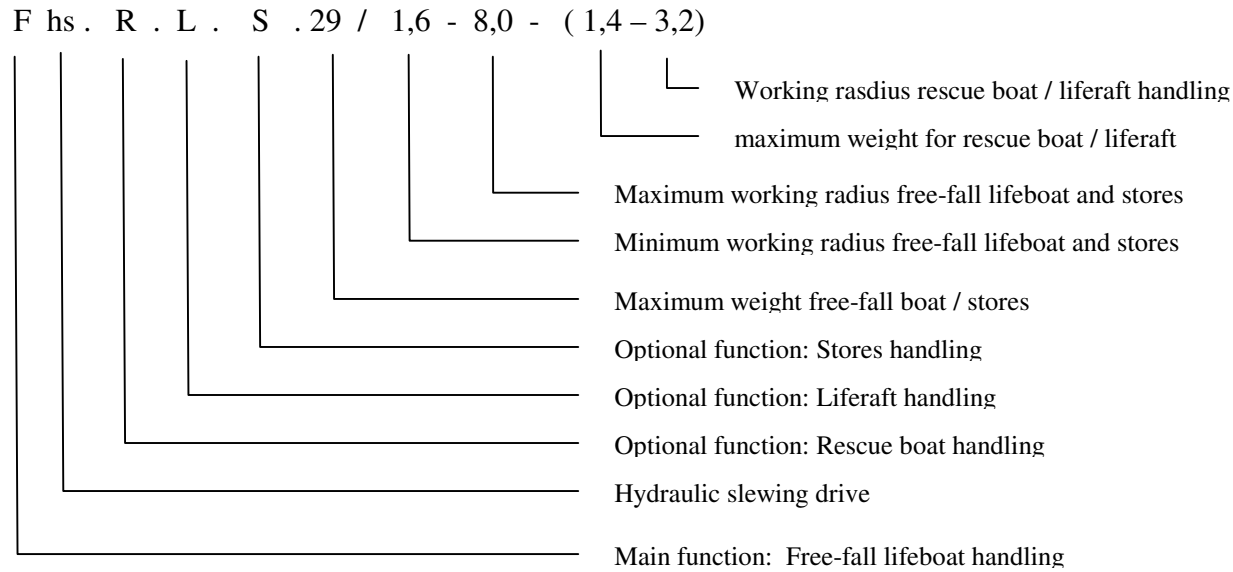
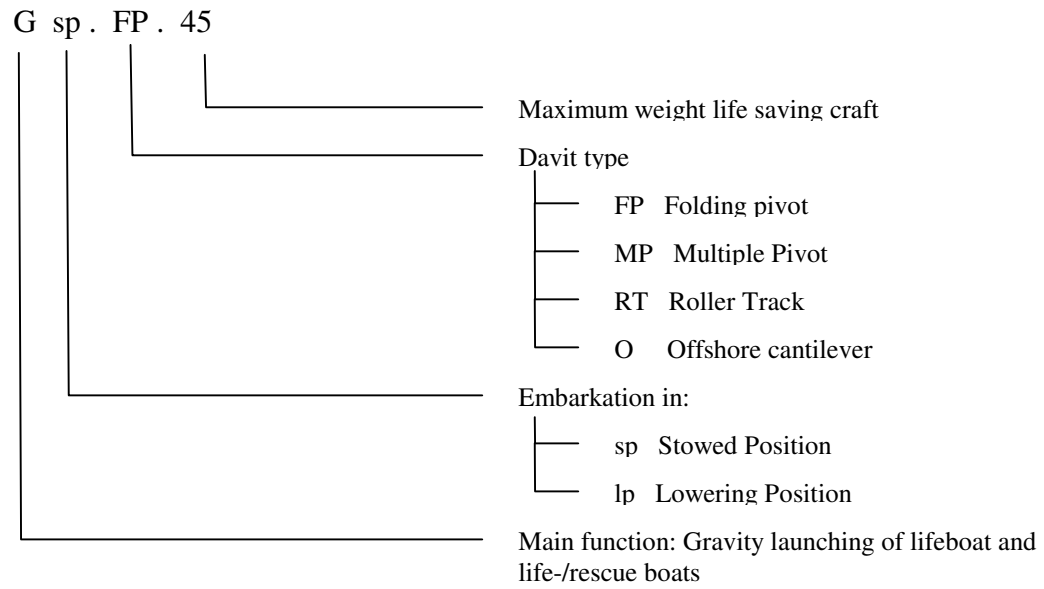
Slewing system with main objective: multiple life saving craft handling



Gravity system using winch and falls with main objective:
Lifeboat and Life-/Rescue boat handling



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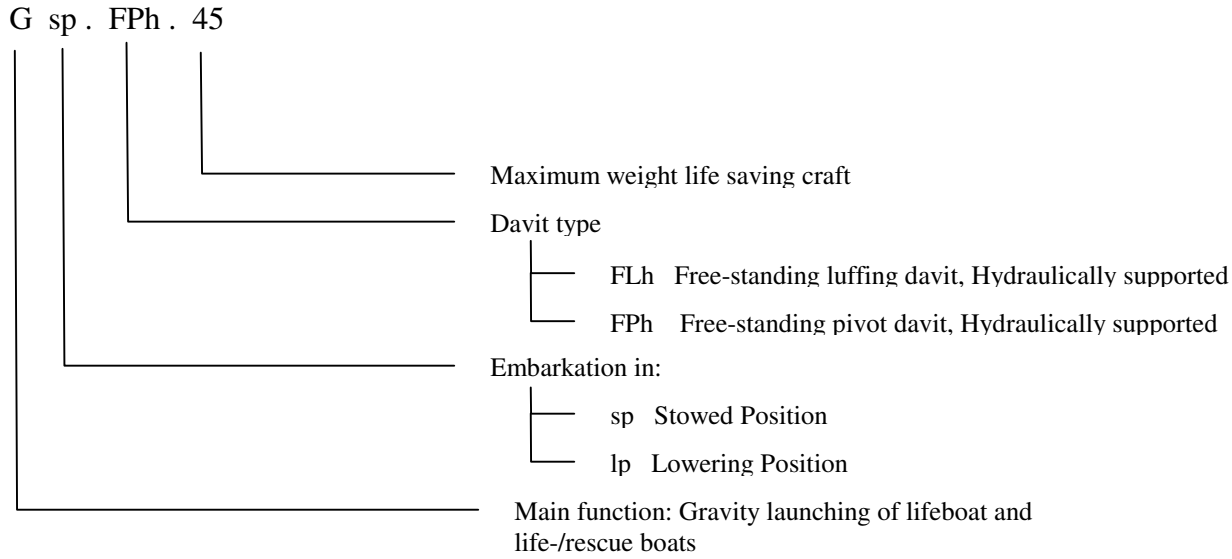
Gravity system using winch and falls, hydraulically supported:
With main objective: Lifeboat and Life-/Rescue boat handling



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4 Delivery spectrum, components

Many Global Davit components used as OEM parts in competitors davit systems like :

- liferaft and rescue boat winches
- lifeboat and life-/rescue boat winches
- on-load release hooks for rescue boats

Identification of such a winch or hook as a Global Davit product may, in these cases, be difficult.

However: each **Global Davit** winch and/or hook is acompanied by a "system identification plate" as well as a separate instruction manual. Retrieval of this manual on board is highly important

4.1 Liferaft and rescue boat winches type 01 kNm, 02 kNm, 04 kNm and 08 kNm and fast rescue boat winches W05HC and W08HC

Each life raft and/or rescue boat system (for craft with a single point suspension) contains a:

- manually driven winch (life raft handling)

or a:

- electrically driven winch with a hoisting speed of minimum 18 m/min (0,3 m/sec) (rescue boat handling)

Each of these winches may be executed with a quick return device for fast retrieval of the empty hook and prepare the launching system for the handling of a second life saving craft.

This quick return device is situated inside the drum.
The **Global Davit** life raft and rescue boat winch program contains winches:

- W01 kNm with maximum line pull of approx. 1.100 kg
- W02 kNm with maximum line pull of approx. 1.400 kg
- W04 kNm with maximum line pull of approx. 2.400 kg
- W08 kNm with maximum line pull of approx. 4.000 kg

The fast rescue boat winches W05HC and W08HC allows beside the wave compensation features a hoisting speed of 0.8m/sec.

4.2 Lifeboat and life-/rescue boat winches type 07 kNm, 10 kNm, 14 kNm, 20 kNm and 26 kNm

Each lifeboat and life-/rescue boat system (for craft with two point suspension) contains a:

- electrically driven winch with hoisting speed of minimum 5 m/min (0,08 m/sec) (lifeboat handling)

or a:

- electrically driven winch with a hoisting speed of minimum 18 m/min (0,3 m/sec) (rescue boat handling)

Each of these winches is, due tot the design of the life saving craft, executed with two drums and an additional feature for hoisting by manual power. Additionally a hand wheel for the lowering of the empty suspensions may be incorporated.

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The **Global Davit** lifeboat and life-/rescue boat winch program contains winches:

- W07 kNm with maximum line pull of approx. 4.000 kg
- W10 kNm with maximum line pull of approx. 5.500 kg
- W14 kNm with maximum line pull of approx. 6.500 kg
- W20 kNm with maximum line pull of approx. 8.500 kg
- W26 kNm with maximum line pull of approx. 11.000 kg

4.3 Free-fall lifeboat winches type 02 kNm, 06 kNm and 08 kNm

Each free-fall lifeboat contains a:

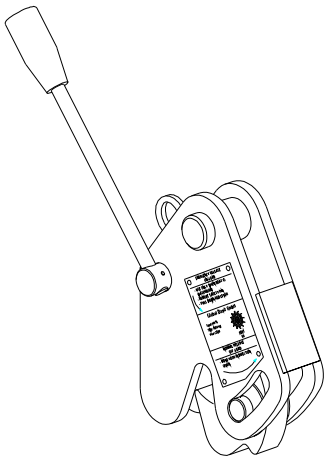
- hydraulically driven winch with hoisting speed of minimum 0,06 m/sec (lifeboat handling)

The **Global Davit** free-fall lifeboat winch program contains winches:

- WS02 kNm with maximum line pull of approx. 2.200 kg
- WS06 kNm with maximum line pull of approx. 3.400 kg
- WS08 kNm with maximum line pull of approx. 4.400 kg

4.4 On-load release hooks for rescue boats

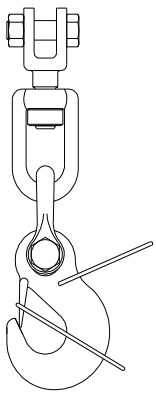
NOTE: No longer useable according to IMO resolution MSC.320(89) and IMO resolution MSC.1/Circ.1392



Each single point suspended rescue boat is suspended by a on-load / off-load release hook.
The **Global Davit** rescue boat hook program contains hooks:

- HR.15 for a maximum boat weight of 1.500 kg
- HR.40 for a maximum boat weight of 4.000 kg

4.5 Off-load release hooks for rescue boats



For special demands **Global Davit** has a off-load release hook for rescue boats:

- HRN.12 for a maximum boat weight of 1.200 kg
- HRN.28 for a maximum boat weight of 2.800 kg

4.6 Identification

Each of the above mentioned components is executed with a "component identification plate". Examples can be found later in this booklet (see chapter "Identification plate").

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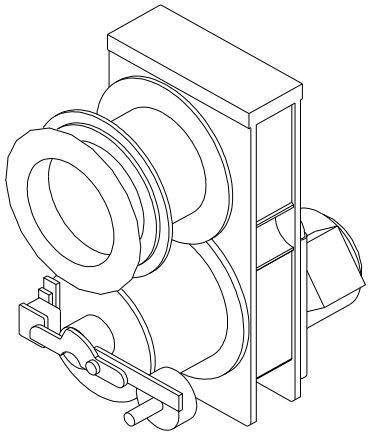
Version 1.3 dd 15.02.2016

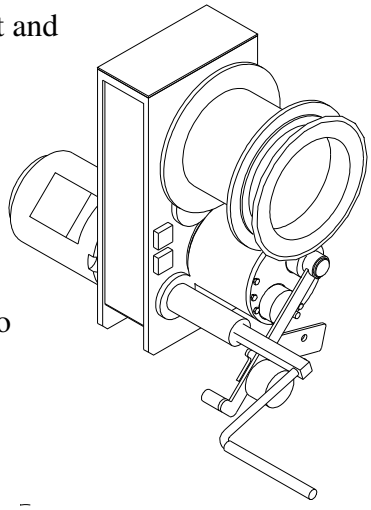
4.7 Design / main components

Design whise and thus also components whise the above mentioned winches should be categorized a bit different:



1. the first "family" of winches is formed by the two smallest winches from the (single point suspended) life raft / rescue boat handling program.
These winches are the 01kNm, 02 kNm and the 04 kNm.

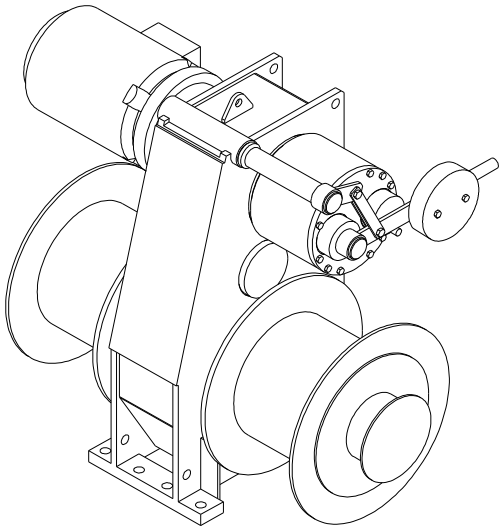
2. the second "family" of winches is formed by the:
   - biggest winch from the (single point suspended) life raft and rescue boat program.

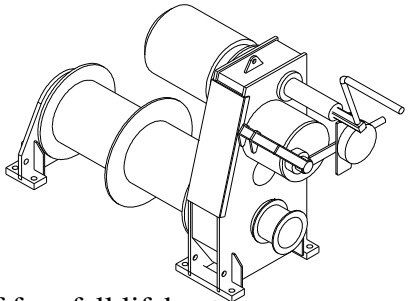


This winch is the 08 kNm (with one single section drum) in combination with the:
   - smallest winch from the lifeboat & life-/rescue boat handling program

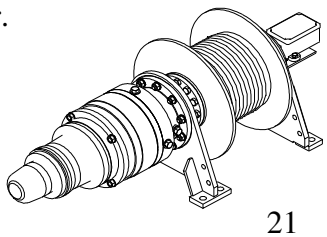
This winch is the 07 kNm (with one double section drum or two drums).

3. the third "family" of winches is formed by the bigger winches from the lifeboat and life-/rescue boat handling program. These winches are the 10 kNm up to the 26 kNm. All these winches contain one double section drum or two separate drums.





4. the last family of winches is formed by the winches for the handling of free-fall lifeboats. Basically these are stores handling winches with increased safety factor.



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5 How to get a checklist for Service

Each of the **Global Davit** products carries a "system identification plate". Examples of these plates can be found below.

Noticing the previous chapter, it may be obvious that **Global Davit** can only support and assist you upon system identification. For a proper identification the following options are available:

- vessel built at / Yard's hull number / type of system / location on board

Example	*Yard*	*Global Davit SY*
	Hull	*8554*
	System	*liferaft crane*
	Location	*starboard*

The first two data are normally available on each vessel.

- data as mentioned on the "system identification plate"

examples

Global Davit GmbH	
TYPE	: Rhs.L.S.21/3,6-40/3,0-20/4,5
SWL	: 2100 / 4000 / 2000 kg
ORDER	: 0405A11
YEAR	: 2006

Global Davit GmbH	
TYPE	: W07R
SWL	: 33,4 kN
ORDER	: 0302A05
YEAR	: 2002

- instruction manual / reference number of arrangement drawing / type of

Example	*manual*	*0408A01*
	drawing	*6-2006*
	System	*liferaft crane*
	Location	*starboard*

- IMO-reference number of vessel / type of system / location on board

Example	*IMO ref.*	*IMO 1234567*
	System	*liferaft crane*
	Location	*starboard*

The first reference is available on ships build later than 1996

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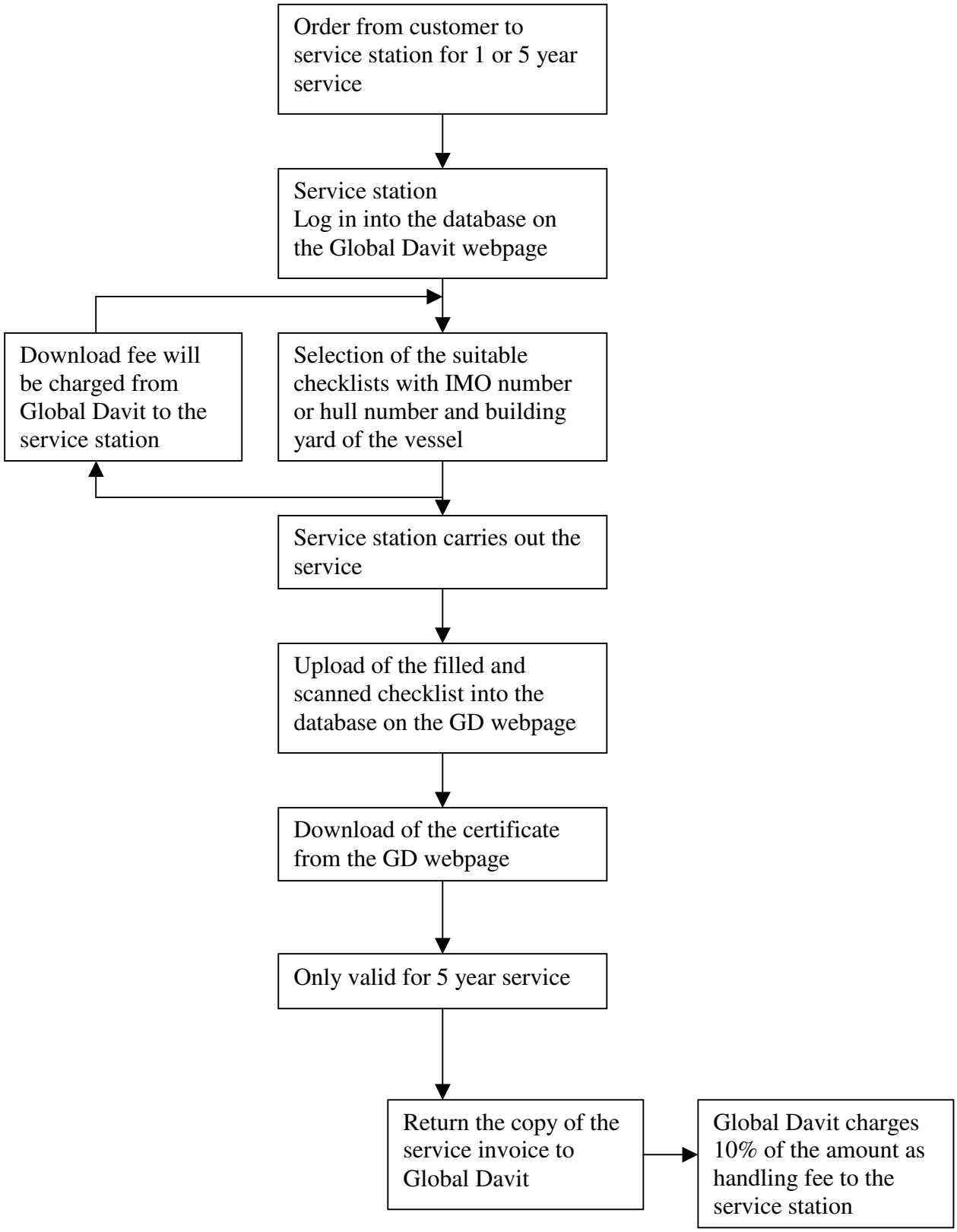
The service station has returned the signed contract and received the Login (username and password) data.



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6 Maintenance schedules

For visualisation, simplifying and clarifying of the various items that have to be inspected on a regular basis maintenance schedules have been made based on the maintenance plans of the various systems.

Systems and sub-systems
Each davit system contains a number of, often standardized, sub-systems. An overview of the various systems can be found in chapter 3. An overview of the various sub-systems can be found in chapter 4.

Maintenance intervals
The maintenance schedules have been made for the following maintenance intervals:

- weekly, to be conducted by the crew under supervision of a senior ship's officer
- monthly, to be conducted by the crew under supervision of a senior ship's officer
- yearly, to be conducted by the crew under supervision of a certified representative of the manufacturer
- 5-yearly, to be conducted by a certified representative of the manufacturer

Certified representatives
A person has only the status of "certified representative" if:

- the person's employer has the status of "recognized service station"
- the person has attended to the "course for technicians" and has been certified accordingly
- the person is still under contract of the "recognized service station"
- the certification of the "recognized service station" and of the "certified representative" are still valid. Information about the validity of both certificates can be found on the engineers personal certificate.

Certificate after yearly and 5-yearly maintenance
Of each davit system a "survey & test" report on our internet portal available.

A copy of the specific "survey & test" report should be carried on board by the engineer who has to perform the maintenance.
Upon termination:

- the "survey & test" report has to be filled in by the engineer
- the "survey & test" report has to be signed by the engineer and the ship's master
- a copy of the "survey and test" report has to remain on board for inserting in the maintenance log
- a copy of the "survey and test" report has to be passed to Global Davit for processing

Tools and spareparts
You can find an overview for the tools that are needed for maintenance in chapter 11. For spareparts that always have to be on hand see chapter 12.

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Operation & maintenance manual
For every (Davit) system or Global Davit component what is used as OEM part there should be an "Operation & maintenance" manual onboard of the ship. The "Operation & maintenance" manual describes specific information about the (Davit) system with serial/order number. The "maintenance schedule" in this manual refers often to the "Operation & maintenance" manuals.

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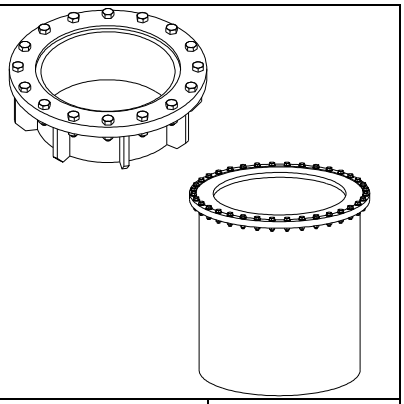
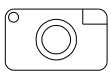
6.1 Pedestal alternatively Foundation frame / Foundation bolts

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week			
	1 month	– check drainage holes and clean if required – check corrosion / conservation		
Crew + maker's representative	1 year	– check drainage holes and clean if required – check corrosion / conservation. Comment if required.		
Makers representative	5 years	– check drainage holes and clean if required – check corrosion / conservation. Comment if required. – check weldings between equipment and deck as well as system welds. Report to Global Davit if required. – check condition of foundation bolts (if any).		

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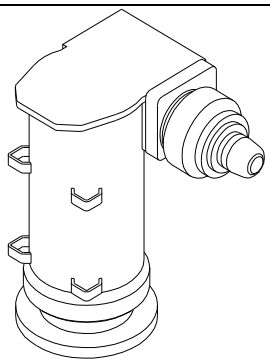
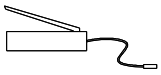
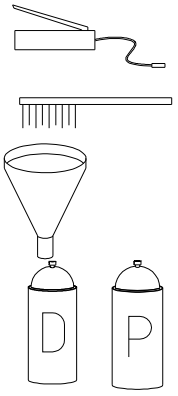
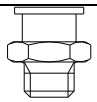
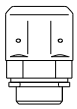
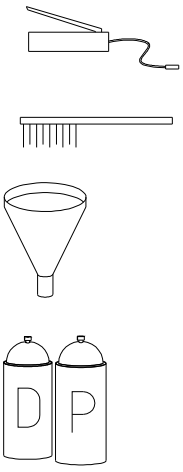
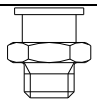
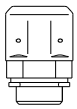
6.2 Column / Slewing gear / Frame (stool or track)

6.2.1 Column / Slewing gear (05/./15)

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– check corrosion, deformation, depression and conservation.		
	1 month	– check corrosion, deformation, depression and conservation. – grease lower bearing through the lubrication nippels. – grease worm gear (internal gear) through the lubrication nippel.		
Crew + maker's representative	1 year	– check corrosion, deformation, depression and conservation. – grease lower bearing through the lubrication nippels. – grease worm gear (internal gear) through the lubrication nippel. – remove cover of slewing gear and check condition of worm drive and internal gears. Report to Global Davit if required. – supervise: change oil of the external slewing gear, for quality and quantity see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation", see chapter 10.4. – replace breather on external slewing gear if required.		 Oil onboard / By vessel 
Makers representative	5 years	– check corrosion, deformation, depression and conservation. – grease lower bearing through the lubrication nippels. – grease worm gear (internal gear) through the lubrication nippel. – remove cover of slewing gear and check condition of worm drive and internal gears. Report to Global Davit if required. – supervise: change oil of the external slewing gear, for quality and quantity see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation", see chapter 10.4. – replace breather on external slewing gear if required. – check system welds. Report to Global Davit if required.		 Oil onboard / By vessel 

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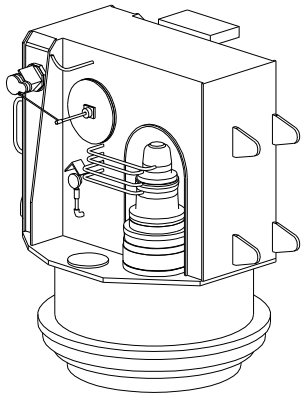
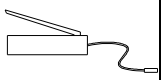
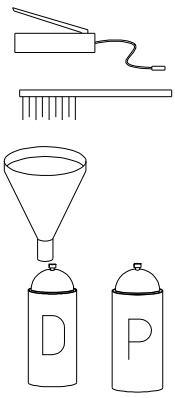
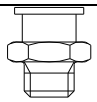
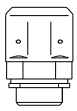
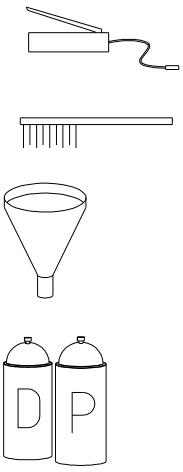
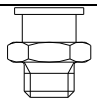
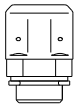
6.2.2 Column / Slewing gear (24/./80)

<table>
<tr><th>Performed by</th><th>Time period</th><th>Job description</th><th colspan="2">  </th></tr>
<tr><td rowspan="2">Crew + senior ship's officer</td><td>1 week</td><td>– check corrosion, deformation, depression and conservation.</td><td>Tools / consumables</td><td>Replacement parts</td></tr>
<tr><td>1 month</td><td>– check corrosion, deformation, depression and conservation.
– grease slewing ring bearing through the lubrication nippels.</td><td>  </td><td></td></tr>
<tr><td>Crew + maker's representative</td><td>1 year</td><td>– check corrosion, deformation, depression and conservation.
– grease slewing ring bearing through the lubrication nippels.
– replace grease nipples if required.
– supervise: change oil of the external slewing gear(s), for quality and quantity see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation" see chapter 10.4.
– replace breather(s) on external slewing gear(s) if required.</td><td>  </td><td> 
Oil onboard / By vessel
  </td></tr>
<tr><td>Makers representative</td><td>5 years</td><td>– check corrosion, deformation, depression and conservation.
– grease slewing ring bearing through the lubrication nippels.
– replace grease nipples if required.
– supervise: change oil of the external slewing gear(s), for quality and quantity see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation" see chapter 10.4.
– replace breather(s) on external slewing gear(s) if required.
– check system welds. Report to Global Davit if required.</td><td>  </td><td> 
Oil onboard / By vessel
  </td></tr>
</table>

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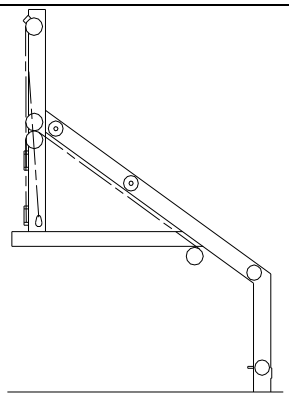
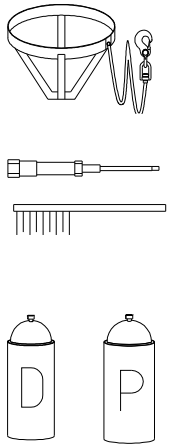
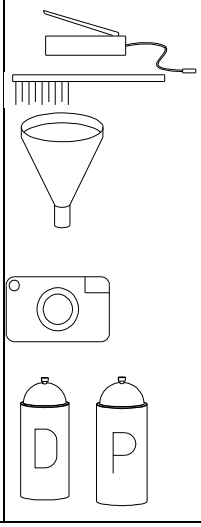
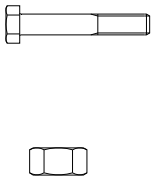
6.2.3 Frame (Stool or track)

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– check corrosion, deformation, depression and conservation.		
	1 month	– check corrosion, deformation, depression and conservation.		
Crew + maker's representative	1 year	– check corrosion, deformation, depression and conservation. – check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary. – Check system welds especially at connection ground, walls and at winch foundations		
Makers representative	5 years	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – check corrosion, deformation, depression and conservation. – check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary. – remove bolted parts if necessary for optimum conservation. Replace connectables if required. – Check system welds especially at connection ground, walls and at winch foundations		

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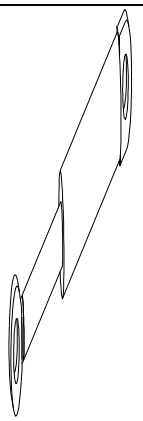
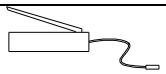
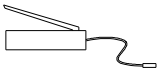
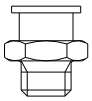
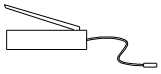
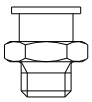
6.3 Turning-out / luffing cylinder

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	–		
	1 month	– check corrosion, deformation and conservation. – check for- and resolve leakage. – grease spherical ball bearings of cylinders.		
Crew + maker's representative	1 year	– check corrosion, deformation and conservation. – check for- and resolve leakage. – grease spherical ball bearings of cylinders. – replace grease nipples if required.		
Makers representative	5 years	– check corrosion, deformation and conservation. – check for- and resolve leakage. – grease spherical ball bearings of cylinders. – replace grease nipples if required.		

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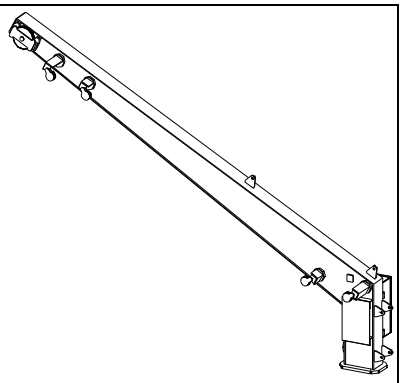
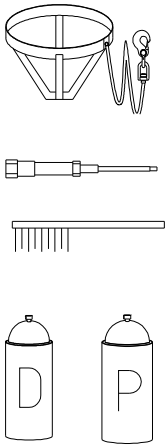
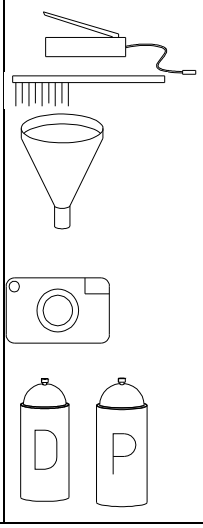
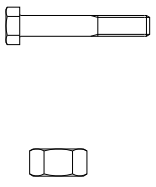
6.4 Davit arms / Sheaves and Sheave houses

6.4.1 Davit arms / Sheaves and Sheave houses (05/./15)

<table>
<tr><td>Performed by</td><td>Time period</td><td>Job description</td><td colspan="2">  </td></tr>
<tr><td rowspan="2">Crew + senior ship’s officer</td><td>1 week</td><td>– check corrosion, deformation, depression and conservation.</td><td>Tools / consumables</td><td>Replacement parts</td></tr>
<tr><td>1 month</td><td>– check corrosion, deformation, depression and conservation.</td><td></td><td></td></tr>
<tr><td>Crew + maker’s representative</td><td>1 year</td><td>– make sure boat is well supported in its cradle and tighten lashing before commencing.
– check corrosion, deformation, depression and conservation.
– check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary.
– Check if sheaves turning free</td><td>  </td><td></td></tr>
<tr><td>Makers representative</td><td>5 years</td><td>– make sure boat is well supported in its cradle and tighten lashing before commencing.
– check corrosion, deformation, depression and conservation.
– check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary.
– remove bolted parts if need be for optimum conservation. Replace connectable if required.
– check system welds especially at arm/column connection and at winch foundation. Report to Global Davit if required.
– Check if sheaves turning free</td><td>  </td><td>  </td></tr>
</table>

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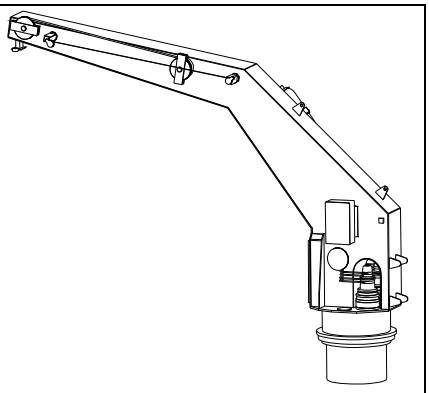
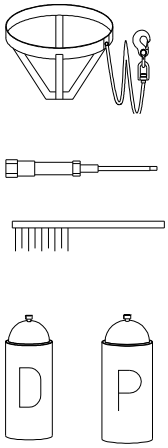
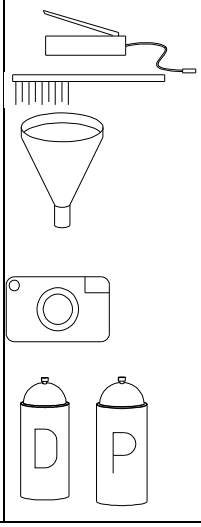
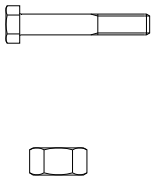
6.4.2 Davit arms / Sheaves and Sheave houses (24./.80)

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– check corrosion, deformation, depression and conservation.		
	1 month	– check corrosion, deformation, depression and conservation.		
Crew + maker's representative	1 year	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – check corrosion, deformation, depression and conservation. – check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary. – Check if sheaves turning free		
Makers representative	5 years	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – check corrosion, deformation, depression and conservation. – check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary. – remove bolted parts if need be for optimum conservation. Replace connectable if required. – check system welds especially at arm/column connection and at winch foundation. Report to Global Davit if required – Check if sheaves turning free.		

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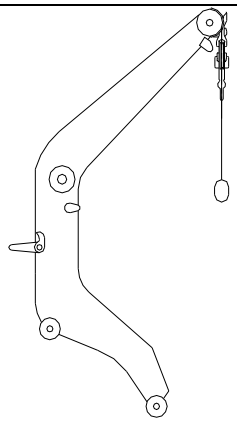
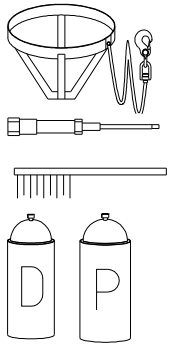
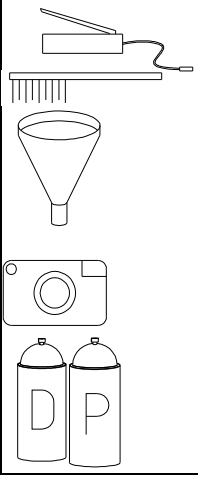
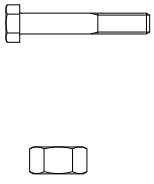
6.4.3 Davit arms for Pivot- / Roller track davits

<table>
<tr><td>Performed by</td><td>Time period</td><td>Job description</td><td colspan="2">  </td></tr>
<tr><td rowspan="2">Crew + senior ship’s officer</td><td>1 week</td><td>– check corrosion, deformation, depression and conservation.</td><td>Tools / consumables</td><td>Replacement parts</td></tr>
<tr><td>1 month</td><td>– check corrosion, deformation, depression and conservation.</td><td></td><td></td></tr>
<tr><td>Crew + maker’s representative</td><td>1 year</td><td>– make sure boat is well supported in its cradle and tighten lashing before commencing.
– check corrosion, deformation, depression and conservation.
– check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary.
– Check if sheaves turning free</td><td>  </td><td></td></tr>
<tr><td>Makers representative</td><td>5 years</td><td>– make sure boat is well supported in its cradle and tighten lashing before commencing.
– check corrosion, deformation, depression and conservation.
– check corrosion spots especially at difficult accessible areas (behind starter box, sheaves, load sign, winch, wire rope guides, etc.). Make comment to ship's crew if necessary.
– remove bolted parts if need be for optimum conservation. Replace connectables if required.
– check system welds especially at arm/column connection and at winch foundation. Report to Global Davit if required.
– Check if sheaves turning free</td><td>  </td><td>  </td></tr>
</table>

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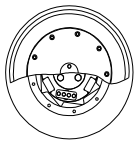
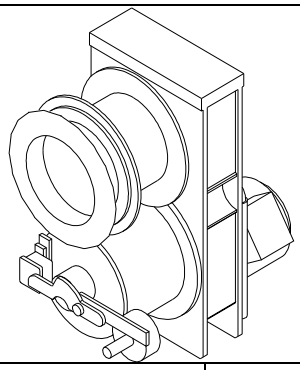
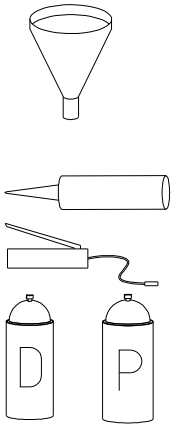
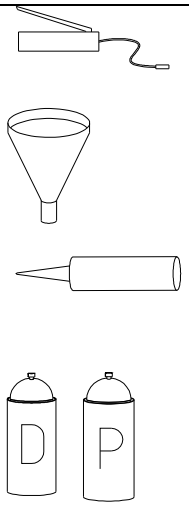
6.5 Winches

6.5.1 Boat winch W02, W04 and W08 / Quick recovery device in drum

Performed by	Time period	Job description	Quick return housing   Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– check corrosion and conservation.		
	1 month	– check corrosion and conservation. – check oil level and deterioration of lubricating oil. – check for unusual noise. – check wire end cotter on looseness.		
Crew + maker's representative	1 year	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **do not start the motor with engaged hand crank** – check corrosion and conservation. – supervise: change oil. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation", see Chapter 10.4. – check for unusual noise. – remove cover of quick return housing and inspect free-wheel levers. Grease if required. Use "bond and seal" before re-assembly. – check wire end cotter on looseness. – check on corrosion at and functionality of the safety levers at the hand crank input. Both levers should return to neutral upon release.		Oil onboard / by vessel
Makers representative	5 years	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **do not start the motor with engaged hand crank !** – check corrosion and conservation. – supervise: change oil. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation", see Chapter 10.4. – check for unusual noise. – remove cover of quick return housing and inspect free-wheel levers. Grease if required. Use "bond and seal" before re-assembly. – check wire end cotter on looseness. – check on corrosion at and functionality of the safety levers at the hand crank input. Both levers should return to neutral upon release.		Oil onboard / by vessel

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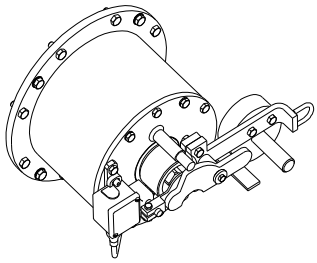
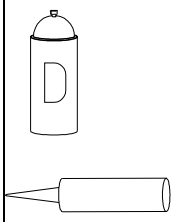
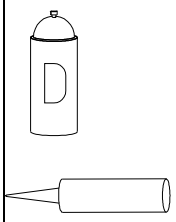
6.5.2 Winch brake system W02, W04 and W08

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week			
	1 month			
Crew + maker's representative	1 year	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **disconnect power supply** – check and inspect the brake systems; replace parts if necessary. – the inspection methods (when to change parts) of centrifugal brakes and stop brakes are described in detail in - Chapter 7 (winch W02 and W04) - Chapter 8 (winches W08) – make sure all components are clean and free of oil/grease (use degreaser) before starting re-assembly. – before mounting back the brake cover use "bond and seal" to seal of the cover (do not use seal on silicon base). – check availability of spare brake parts see for quantity "Operation & maintenance" manual.	Chapter 7 Chapter 8 	Chapter 7 Chapter 8
Makers representative	5 years	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **Disconnect power supply** – check and inspect the brake systems; change brake parts according to **Global Davit GmbH** requirements – the inspection methods (when to change parts) of centrifugal brakes and stop brakes are described in detail in - Chapter 7 (winch W02 and W04) - Chapter 8 (winches W08) – make sure all components are clean and free of oil/grease (use degreaser) before starting re-assembly. – before mounting back the brake cover use "bond and seal" to seal of the cover (do not use seal on silicon base). – check availability of spare brake parts see for quantity "Operation & maintenance" manual.	Chapter 7 Chapter 8 	Chapter 7 Chapter 8

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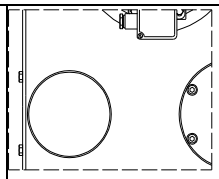
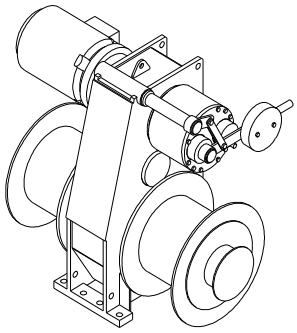
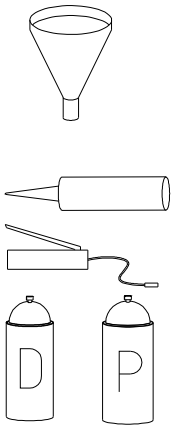
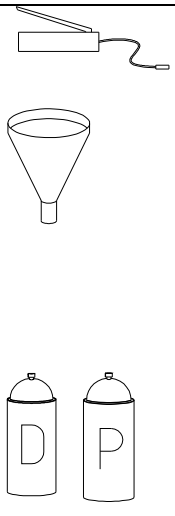
6.5.3 Boat winch W07 – W26

Performed by	Time period	Job description	Tools / consumables	Replacement parts
		 Hand wheel		
Crew + senior ship's officer	1 week	– check corrosion and conservation.		
	1 month	– check corrosion and conservation. – check oil level and deterioration of lubricating oil. – check for unusual noise. – check wire end cotter on looseness.		
Crew + maker's representative	1 year	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **do not start the motor with engaged hand crank !** – check corrosion and conservation. – supervise: change oil. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation", see Chapter 10.4. – check for unusual noise. – Check function of hand wheel if any (only for winches 20 and bigger) – check wire end cotter on looseness. – check on corrosion at and functionality of the safety levers at the hand crank input. Both levers should return to neutral upon release.		Oil onboard / by vessel
Makers representative	5 years	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **do not start the motor with engaged hand crank !** – check corrosion and conservation. – supervise: change oil. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation", see Chapter 10.4. – check for unusual noise. – Check function of hand wheel if any (only for winches 20 and bigger) – check wire end cotter on looseness. – check on corrosion at and functionality of the safety levers at the hand crank input. Both levers should return to neutral upon release.		Oil onboard / by vessel

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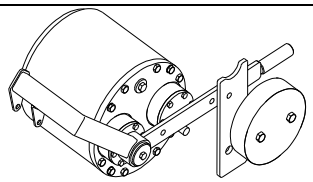
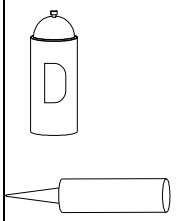
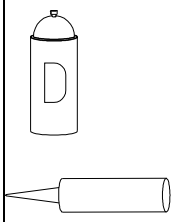
6.5.4 Winch brake system W07 - W26

Performed by	Time period	Job description		
Crew + senior ship's officer	1 week		Tools / consumables	Replacement parts
	1 month			
Crew + maker's representative	1 year	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **Disconnect power supply** – check and inspect the brake systems; replace parts if necessary. – - the inspection methods (when to change parts) of centrifugal brakes and stop brakes are described in detail in - Chapter 8 (winch 07) - Chapter 9 (winches 10-26) – make sure all components are clean and free of oil/grease (use degreaser) before starting re-assembly. – before mounting back the brake cover use "bond and seal" to seal of the cover (do not use seal on silicon base). – check availability of spare brake parts see for quantity "Operation & maintenance" manual.	Chapter 8 Chapter 9 	Chapter 8 Chapter 9
Makers representative	5 years	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – **Disconnect power supply** – check and inspect the brake systems; change brake parts according to **Global Davit GmbH** requirements – the inspection methods (when to change parts) of centrifugal brakes and stop brakes are described in detail in - Chapter 8 (winch 07) - Chapter 9 (winches 10-26) – make sure all components are clean and free of oil/grease (use degreaser) before starting re-assembly. – before mounting back the brake cover use "bond and seal" to seal of the cover (do not use seal on silicon base). – check availability of spare brake parts see for quantity "Operation & maintenance" manual.	Chapter 8 Chapter 9 	Chapter 8 Chapter 9

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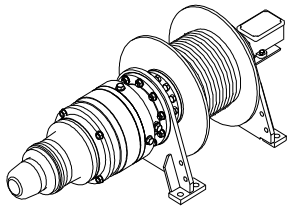
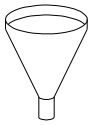
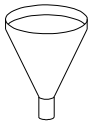
6.5.5 Free-fall lifeboat / Stores handling winch WS02, WS06 and WS08

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week			
	1 month	– check corrosion and conservation. – check oil level and deterioration of lubricating oil. – check for unusual noise. – check wire end cotter on looseness		
Crew + maker's representative	1 year	– **make sure boat is well supported in the track and check lashing before commencing.** – check corrosion and conservation. – supervise oil change. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation" see Chapter 10.4. – check for unusual noise. – check wire end cotter on looseness.	 	Oil onboard / by Vessel
Makers representative	5 years	– **make sure boat is well supported in the track and check lashing before commencing.** – check corrosion and conservation. – supervise oil change. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation" see Chapter 10.4. – check for unusual noise. – check wire end cotter on looseness.	 	Oil onboard / by Vessel

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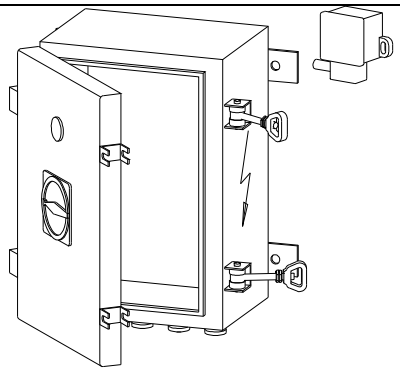
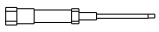
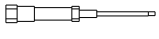
6.6 Elektric system

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– check wiring towards starter box and from there to electric motor, limit switches and remote control unit (if any).		
	1 month	– check wiring towards starter box and from there to electric motor, limit switches and remote control unit (if any). – check condition and functioning of the electric motor and limit switches. The motor should not start if any of the switches has been activated. – check wiring inside starter box and check on water tightness.		
Crew + maker's representative	1 year	– check wiring towards starter box and from there to electric motor, limit switches and remote control unit (if any). – check condition and functioning of the electric motor and limit switches. The motor should not start if any of the switches has been activated. – check wiring inside starter box and check on water tightness. – check availability of spare fuses and bulbs. Quantities are stated in the "Operation & maintenance" manual.		Fuses / Bulbs
Makers representative	5 years	– check wiring towards starter box and from there to electric motor, limit switches and remote control unit (if any). – check condition and functioning of the electric motor and limit switches. The motor should not start if any of the switches has been activated. – check wiring inside starter box and check on water tightness. – check availability of spare fuses and bulbs. Quantities are stated in the "Operation & maintenance" manual.		Fuses / Bulbs

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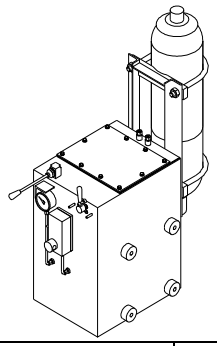
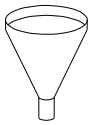
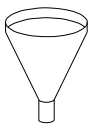
6.7 Hydraulic system

6.7.1 Hydraulic system

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– check for any leakage. – check oil level.		
Crew + senior ship's officer	1 month	– check for any leakage. – check oil level. – check oil level and deterioration of lubricating oil. – check for unusual noise.		
Crew + maker's representative	1 year	– check for any leakage. – check oil level. – supervise oil change. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation" see chapter 10.4. – check for unusual noise. – check quality of hoses and couplings. – check operation force when: o activating the main valve (cock valve). o operating the valve for turning out. – check position of hydraulic valve lever after releasing (should have returned to neutral).		Oil onboard / by vessel
Makers representative	5 years	– check for any leakage. – check oil level. – supervise oil change. For quantity and quality see the "Operation & maintenance" manual. Oil to be supplied by the Vessel according the "Oil recommendation" see chapter 10.4. – check for unusual noise. – check quality of hoses and couplings. – check operation force when: o activating the main valve (cock valve). o operating the valve for turning out. – check position of hydraulic valve lever after releasing (should have returned to neutral).		Oil onboard / by vessel

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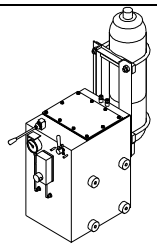
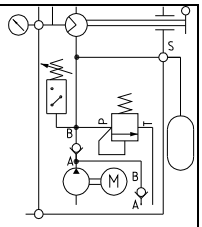
6.7.2 Hydraulic system (“stored power “additional)

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship’s officer	1 week	– check the pressure in the hydraulic accumulator by placing the main valve in the "open" position. Pressure will instantly be visible on the manometer.		
	1 month	– check the pressure in the hydraulic accumulator by placing the main valve in the "open" position. Pressure will instantly be visible on the manometer check oil level. – during turning-out test (6.15) the pressure will decrease gradually. From a certain value (the gas-prefill value) it will drop to 0 bars. Compare this value with value in the "Operation & Maintenance" manual. – check for unusual noise. – check if the electric motor starts automatically. – check if the alarm light is activated and remains activated as long as the pressure is too low. If not make a report.		
Crew + maker’s representative	1 year	– check the pressure in the hydraulic accumulator by placing the main valve in the "open" position. Pressure will instantly be visible on the manometer check oil level. – during turning-out test (6.15) the pressure will decrease gradually. From a certain value (the gas-prefill value) it will drop to 0 bars. Compare this value with value in the "Operation & Maintenance" manual. – check for unusual noise. – check if the electric motor starts automatically. – check if the alarm light is activated and remains activated as long as the pressure is too low. If not make a report. – Check starting pressure of pump see “Operation & maintenance” manual – check stopping pressure of pump see "Operation & maintenance" manual.		
Makers representative	5 years	– check the pressure in the hydraulic accumulator by placing the main valve in the "open" position. Pressure will instantly be visible on the manometer check oil level. – during turning-out test (6.15) the pressure will decrease gradually. From a certain value (the gas-prefill value) it will drop to 0 bars. Compare this value with value in the "Operation & Maintenance" manual. – check for unusual noise. – check if the electric motor starts automatically. – check if the alarm light is activated and remains activated as long as the pressure is too low. If not make a report. – Check starting pressure of pump see “Operation & maintenance” manual – check stopping pressure of pump see "Operation & maintenance" manual.		

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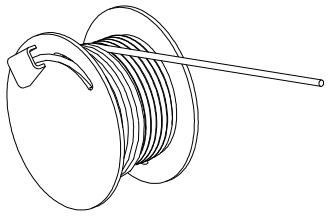
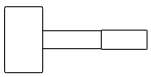
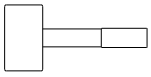
6.8 Wire rope

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week			
	1 month	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – check wear, breakage of strands and corrosion of the full length of the wire rope. check oil level. – grease the full length of the wire rope.		
Crew + maker's representative	1 year	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – check wear, breakage of strands and corrosion of the full length of the wire rope. – check the wire rope especially around the area's of the sheaves, guides and jockey pulley. – the wire rope should be changed if : o break of elemental wire was observed. o 7% reduction of nominal diameter was observed. o kink or looseness of ply was observed o erosion/corrosion was observed. o wire rope is older than 5 years. – see for type wire rope the "general arrangement" drawing in the "Operation & maintenance" manual. – supervise: grease the full length of the wire rope.	 	Wire rope
Makers representative	5 years	– **make sure boat is well supported in its cradle and tighten lashing before commencing.** – Check last wire rope change (If wire rope older than 5 years the wire rope must be changed) – check wear, breakage of strands and corrosion of the full length of the wire rope. – check the wire rope especially around the area's of the sheaves, guides and jockey pulley. – the wire rope should be changed if : o break of elemental wire was observed. o 7% reduction of nominal diameter was observed. o kink or looseness of ply was observed o erosion/corrosion was observed. o wire rope is older than 5 years. – see for type wire rope the "general arrangement" drawing in the "Operation & maintenance" manual. – supervise: grease the full length of the wire rope.	 	Wire rope

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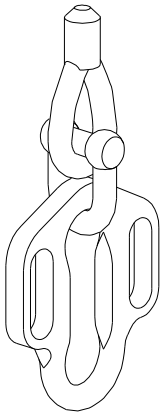
6.9 Hooks

6.9.1 Rescue boat hook (On-load / Off-load release hook), link

<table>
<tr><td>Performed by</td><td>Time period</td><td>Job description</td><td colspan="2" rowspan="2">  </td></tr>
<tr><td rowspan="2">Crew + senior ship's officer</td><td>1 week</td><td>– Check wear, corrosion and conservation</td><td>Tools / consumables</td><td>Replacement parts</td></tr>
<tr><td>1 month</td><td>– Check wear, corrosion and conservation</td><td></td><td></td></tr>
<tr><td>Crew + maker's representative</td><td>1 year</td><td>– Check wear, corrosion and conservation
– check conditions of shackles and securing splints. SPLINTS MUST BE INSTALLED IN EACH SHACKLE PIN!</td><td></td><td></td></tr>
<tr><td>Makers representative</td><td>5 years</td><td>– Check wear, corrosion and conservation
– check conditions of shackles and securing splints. SPLINTS MUST BE INSTALLED IN EACH SHACKLE PIN!</td><td></td><td></td></tr>
</table>

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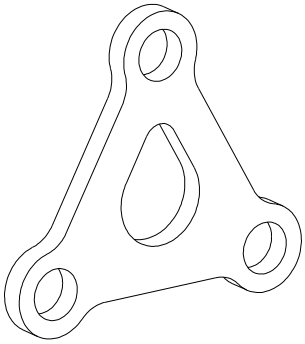
6.10 Suspension, Lashing and Life lines

6.10.1 Plate link (multiple hook suspension link)

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and conservation		
	1 month	– Check wear, corrosion and conservation		
Crew + maker's representative	1 year	– Check wear, corrosion and conservation – check conditions of shackles and securing splints. SPLINTS MUST BE INSTALLED IN EACH SHACKLE PIN!		
Makers representative	5 years	– Check wear, corrosion and conservation – check conditions of shackles and securing splints. SPLINTS MUST BE INSTALLED IN EACH SHACKLE PIN!		

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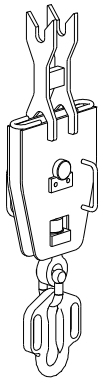
6.10.2 Block

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and conservation		
	1 month	– Check wear, corrosion and conservation		
Crew + maker's representative	1 year	– Check wear, corrosion and conservation – check conditions of shackles and securing splints. SPLINTS MUST BE INSTALLED IN EACH SHACKLE PIN!		
Makers representative	5 years	– Check wear, corrosion and conservation – check conditions of shackles and securing splints. SPLINTS MUST BE INSTALLED IN EACH SHACKLE PIN!		

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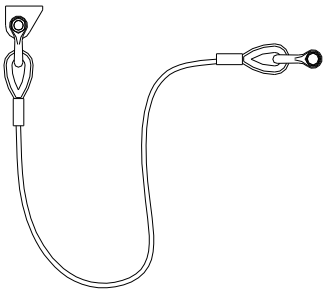
6.10.3 Maintenance slings

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and looseness		
	1 month	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – Remove dirt (also salt deposits) on moving parts.		
Crew + maker's representative	1 year	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – Remove dirt (also salt deposits) on moving parts		
Makers representative	5 years	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – Remove dirt (also salt deposits) on moving parts		

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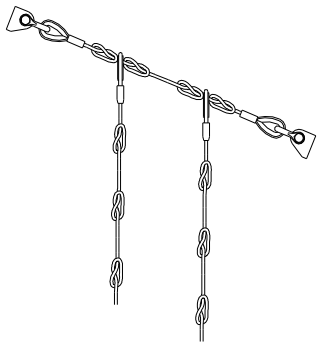
6.10.4 Life lines

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and looseness		
	1 month	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – check functionality of spanner. Remove dirt (also salt deposits) on moving parts.		
Crew + maker's representative	1 year	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – check functionality of spanner. Remove dirt (also salt deposits) on moving parts. – check lashing belts on wear or damage.		
Makers representative	5 years	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – check functionality of spanner. Remove dirt (also salt deposits) on moving parts. – check lashing belts on wear or damage.		

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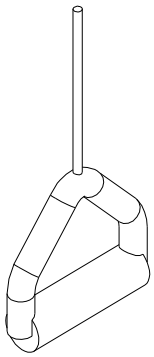
6.11 Remote control

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear and corrosion		
	1 month	– Check wear and corrosion		
Crew + maker's representative	1 year	– Check wear and corrosion – check moving condition. – **NOTE: Greaseing is not required** – check operation force when lifting the: o operation valve for turning-out. o brake lever of the winch for lowering via the remote control. – check position of hydraulic valve lever and brake lever after releasing of the remote control. Both should have returned to neutral.	G	
Makers representative	5 years	– Check wear and corrosion – check moving condition. – supervise: grease blocks and wire where required. – check operation force when lifting the: o operation valve for turning-out. o brake lever of the winch for lowering via the remote control. – check position of hydraulic valve lever and brake lever after releasing of the remote control. Both should have returned to neutral.	G	

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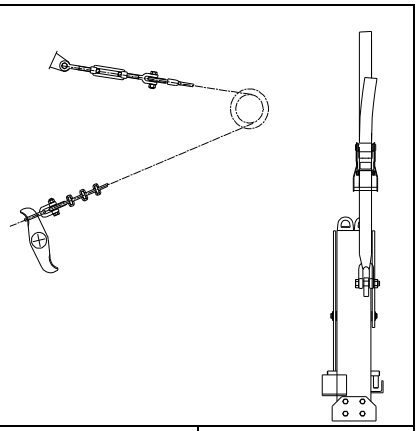
6.12 Lashing / Boat chocks

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and looseness		
	1 month	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – check functionality of spanner. Remove dirt (also salt deposits) on moving parts.		
Crew + maker's representative	1 year	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – check functionality of spanner. Remove dirt (also salt deposits) on moving parts. – check lashing belts on wear or damage.		
Makers representative	5 years	– **make sure boat suspension is firmly attached to the hook. Tighten wire rope before commencing.** – Check wear, corrosion and looseness – check functionality of spanner. Remove dirt (also salt deposits) on moving parts. – check lashing belts on wear or damage.		

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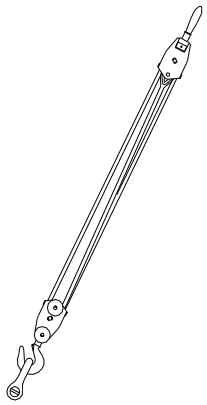
6.13 Bowsing- /Tricing system

6.13.1 Bowsing system

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and conservation		
	1 month	– Check wear, corrosion and conservation		
Crew + maker's representative	1 year	– Check wear, corrosion and conservation – Check wear and quality of manilla cables		
Makers representative	5 years	– Check wear, corrosion and conservation – Check wear and quality of manilla cables		

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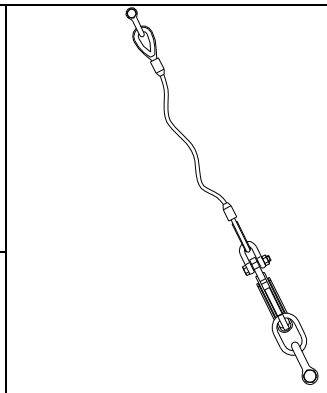
6.13.2 Tricing system

Performed by	Time period	Job description		
			Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and conservation		
	1 month	– Check wear, corrosion and conservation		
Crew + maker's representative	1 year	– Check wear, corrosion and conservation – Check wear and quality of wire ropes		
Makers representative	5 years	– Check wear, corrosion and conservation – Check wear and quality of wire ropes		

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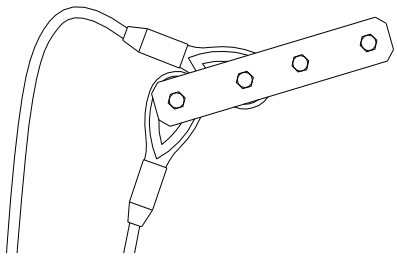
6.14 Jockey Pulley

Performed by	Time period	Job description	 Tools / consumables	Replacement parts
Crew + senior ship's officer	1 week	– Check wear, corrosion and conservation		
	1 month	– Check wear, corrosion and conservation		
Crew + maker's representative	1 year	– Check wear, corrosion and conservation – Check wear and quality of manila cables		
Makers representative	5 years	– Check wear, corrosion and conservation – Check wear and quality of manila cables		

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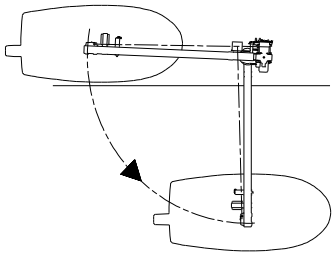
6.15 Test

6.15.1 Dynamic test, empty boat

Performed by	Time period	Job description		
Crew + senior ship's officer	1 week		Tools / consumables	Replacement parts
	1 month	**This test is only allowed above water!!** – bring the empty life saving craft from inboard to outboard position (and vica versa), following the instructions as stipulated in the "Operation & maintenance" manual. – lower the empty craft over a distance of approximately 5 meters. Hoist with the electric motor (if any) and check functioning of limit switch.		
Crew + maker's representative	1 year	**This test is only allowed above water!!** – bring the empty life saving craft from inboard to outboard position (and vica versa), following the instructions as specified in the "Operation & maintenance" manual. – lower the empty craft over a distance of approximately 5 meters. Hoist with the electric motor (if any) and check functioning of limit switch.		
Makers representative	5 years			

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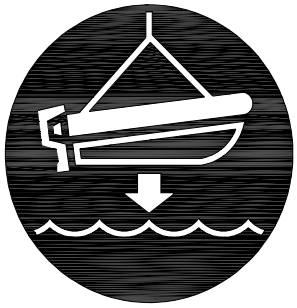
6.15.2 Dynamic test, 110% of SWL

<table>
<tr><td rowspan="2">Performed by</td><td>Time periode</td><td>Job description</td><td colspan="2" rowspan="2">  </td></tr>
<tr><td rowspan="2">1 week</td><td rowspan="2"></td></tr>
<tr><td rowspan="2">Crew + senior ship’s officer</td><td>Tools / consumables</td><td>Replacement parts</td></tr>
<tr><td>1 month</td><td></td><td></td><td></td></tr>
<tr><td>Crew + maker’s representative</td><td>1 year</td><td></td><td></td><td></td></tr>
<tr><td>Makers representative</td><td>5 years</td><td>This test is only allowed above water!!
– bring the davit system from the inboard to the outboard position:
o with a load as indicated in the "Operation & maintenance" manual.
o following the instructions as stipulated in the same manual.
– lower the load to the water level.
– reduce the load down to the hoisting weight before commencing recovery.</td><td></td><td></td></tr>
</table>

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7 Brake system winches W01, W02 and W04

For a clear visualisation of the various actions which are required for inspection of any brake , will be described and shown in the next paragraphs

CAUTION:
Make sure boat is well supported in its cradle and tighten lashing before commencing.

Use this procedure for a visual inspection of the stop brake system

Use this procedure for a visual inspection of the stop- and centrifugal brake system

Use this procedure for replacing parts of the centrifugal brake system

Use this procedure for replacing the pads of the stop brake

Use this procedure for replacing the spring of the stop brake

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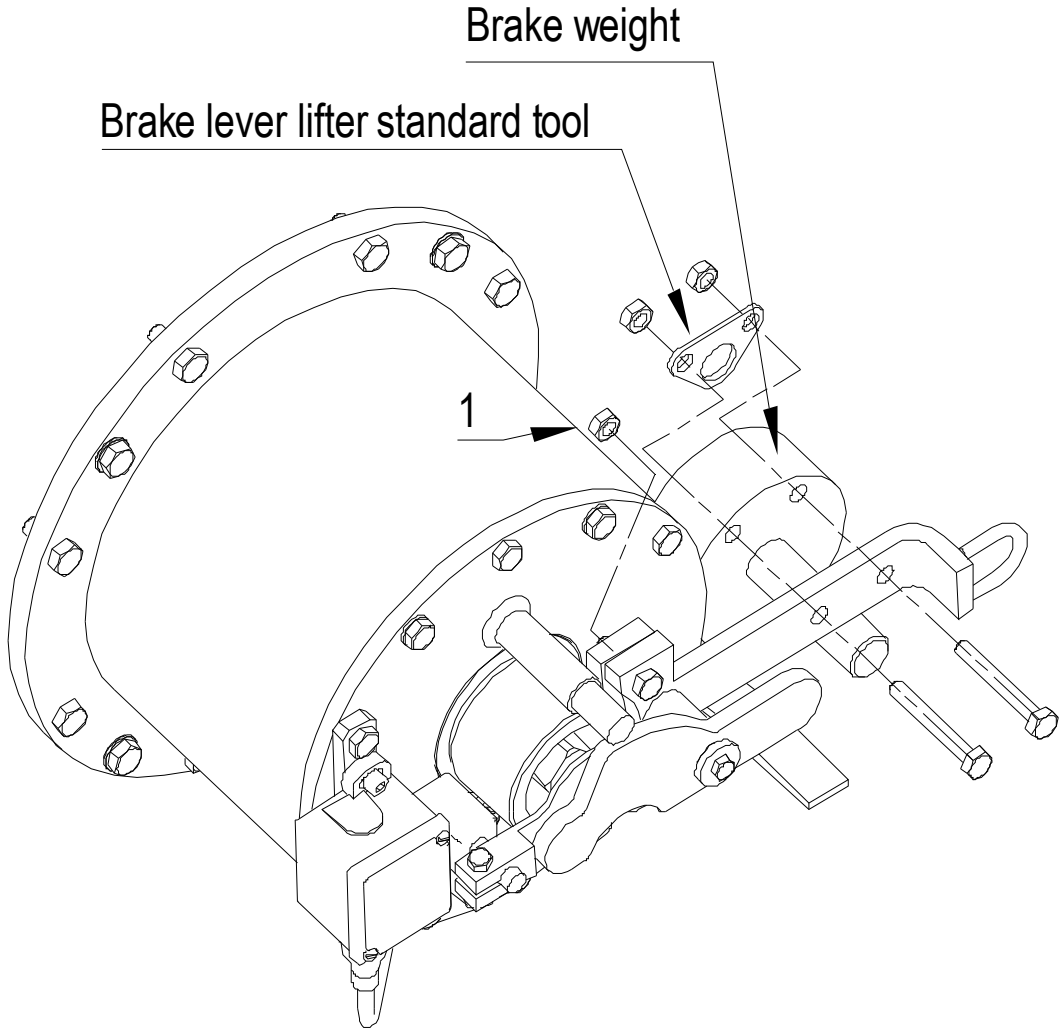
7.1 Brake cover removal procedure

Step 1 of 5



Procedure description:	
- Remove brake weight for better handling. - Remove nut (1), NOT the bolt, from upper bolt at brake lever support (1). **Remark:** Check if standard tool is available and still functional	
Tools to be used:	
	2 * wrench 16 – 19 mm

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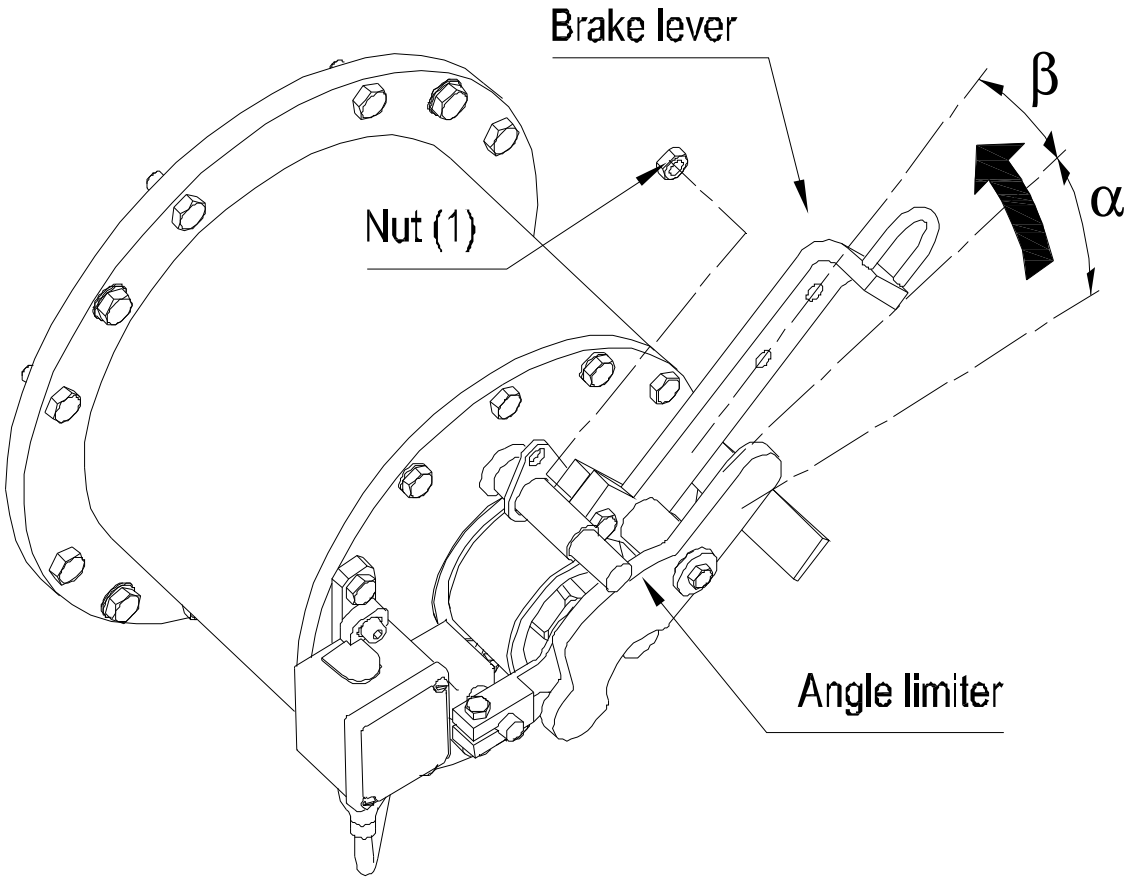
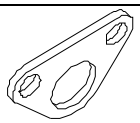
Step 2 of 5



Procedure description:
-Place "brake lever tool" between the end of bolt in the brake lever and the brake lever angle limiter. Mount nut (1) to secure the position of the brake lever. (Make sure the brake lever is lifted to the end.) **Remark:** Angle α is the free rotating angle. α should be approx 20°. When α is less then 10°, the brake pads are worn out. The spring is compressed during angle β. This will be increasingly heavy towards the end.
Remark:

	Brake lever lifter tool

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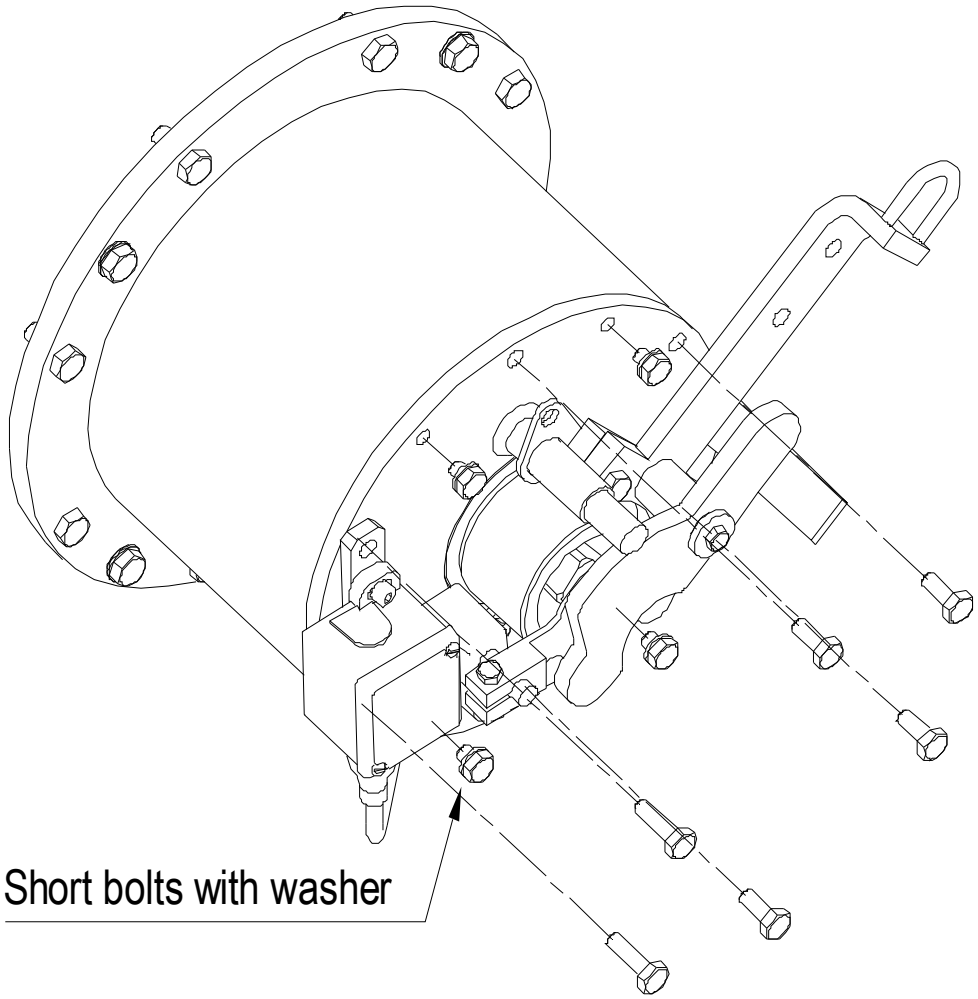
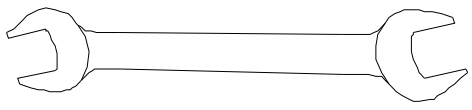
Step 3 of 5



Procedure description:	
- Loosen all bolts. The bolts with washers are to protect the threaded holes. **Remark:** -	
Remark:	
	2 * Wrench 16 – 19 mm

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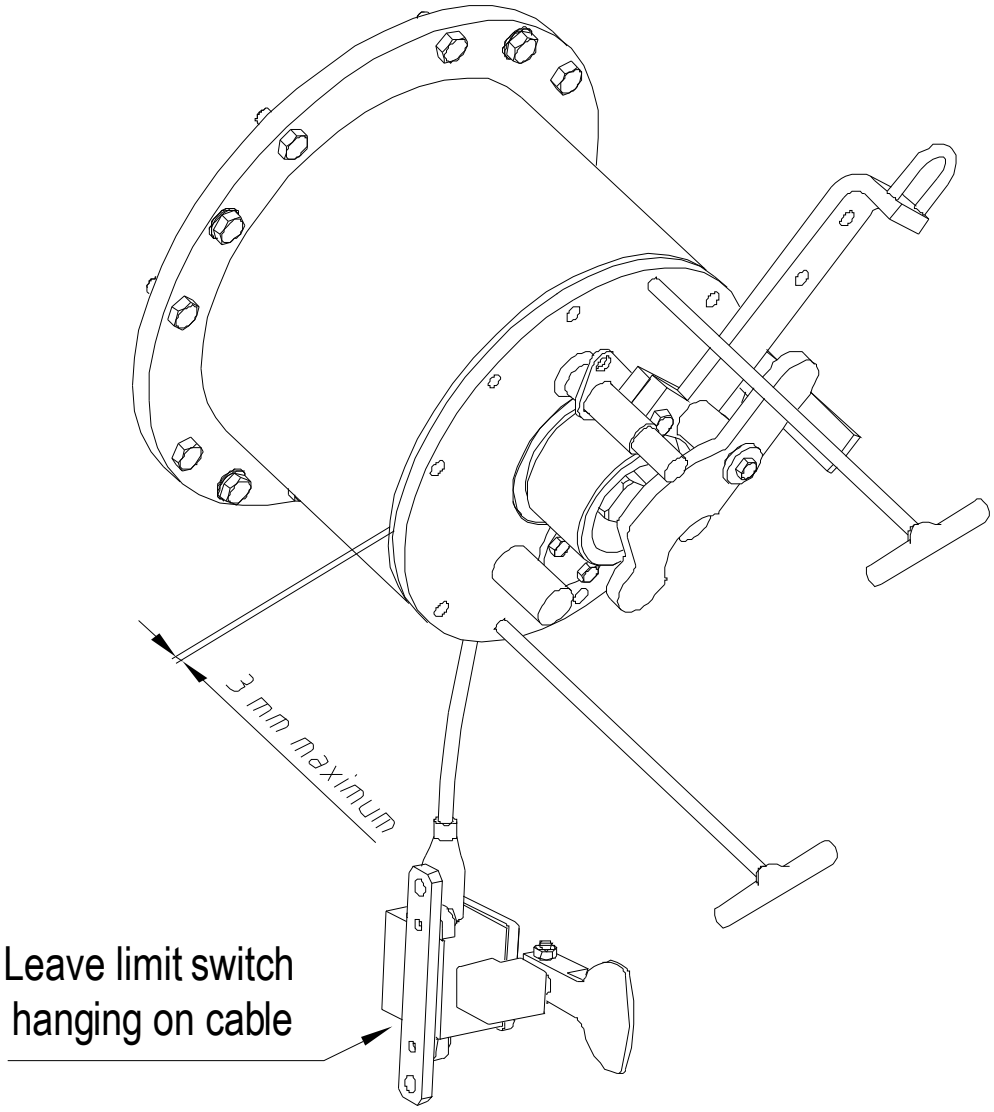
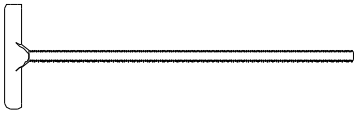
Step 4 of 5



Procedure description:
- Use the handles to lift the brake cover. **Caution:** - When brake cover will not "break free" within 3 mm. In this case the brake pads are not free. Pulling out the brake cover by force will damage the brake pads beyond repair. **NOTE: Use always the hand crank via dismantling the cover of stop break housing, to protect the stop break pads onto damages. Method: Via dismantling the cover turn the hand crank permanently left and right**
Remark:

	2 * Handle

Step 5 of 5

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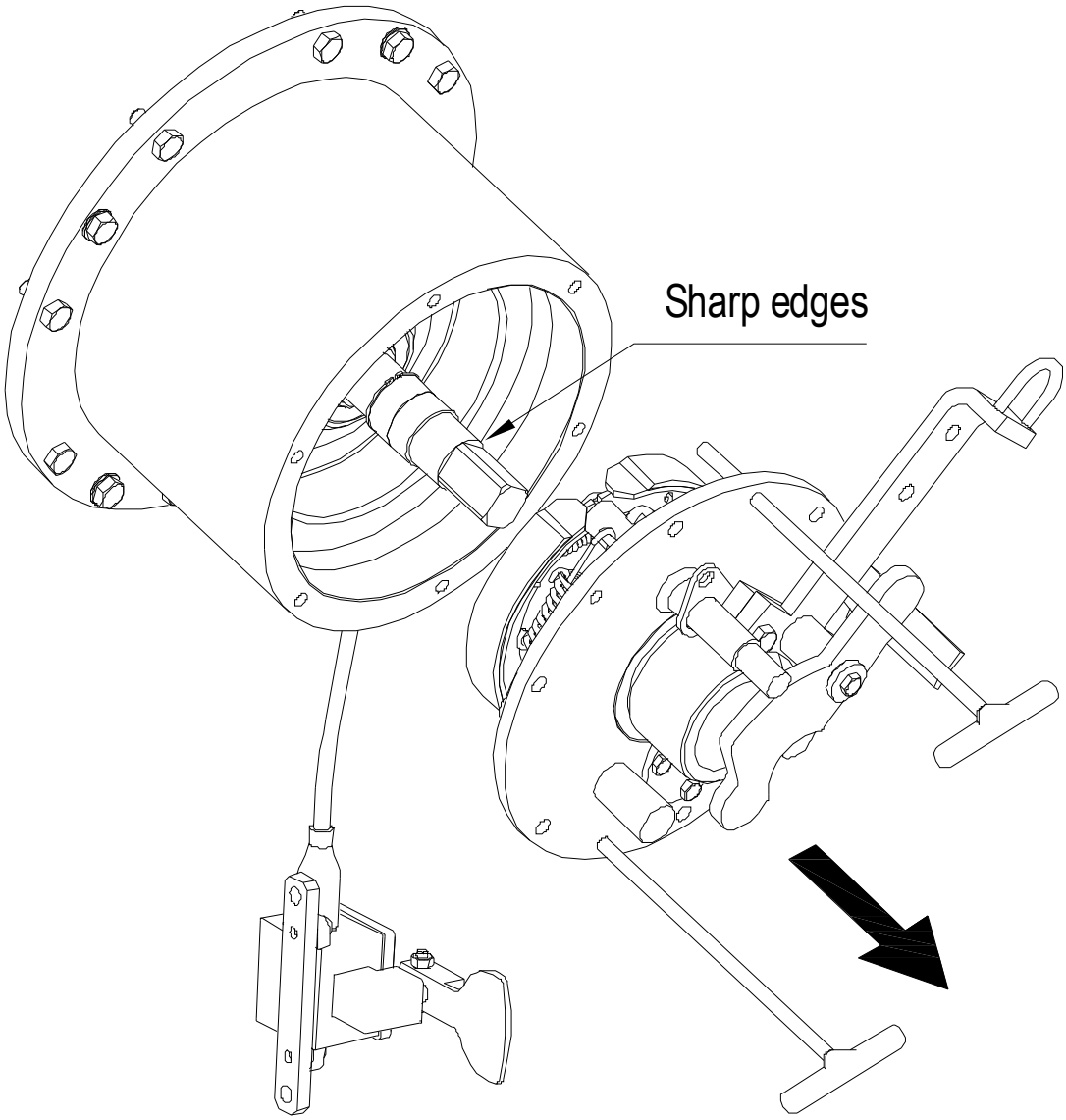
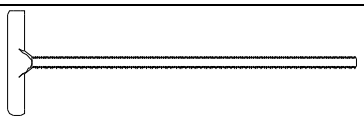


Procedure description:	
- Pull out the brake cover. **Caution:** The brake cover is heavy. Use the brake lever as lifting point. Take great care of any sharp edges in way of seal during.	
Remark:	
	2 * Handle

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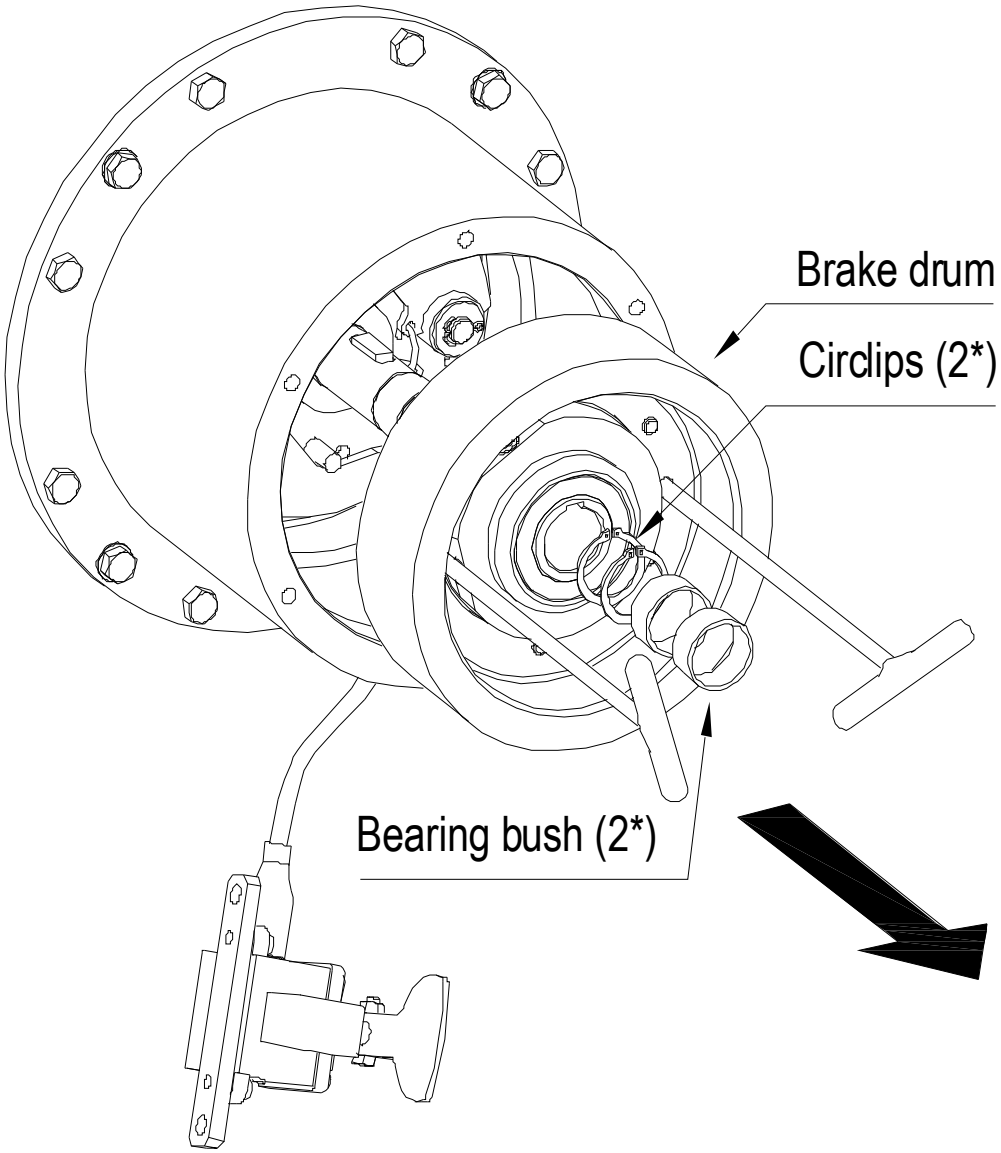
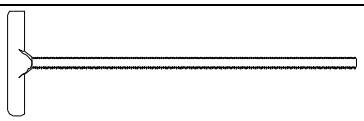
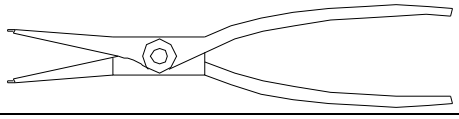
7.2 Brake drum removal procedure

step 1 of 1



Procedure description:	
- Remove needle roller bushes remove circlips. - Place handles and pull out brake drum with free wheel unit. **Remark:** Make sure bushes are greased during re-assembly.	
Remark:	
	2 * Handle
	Circlip pliers

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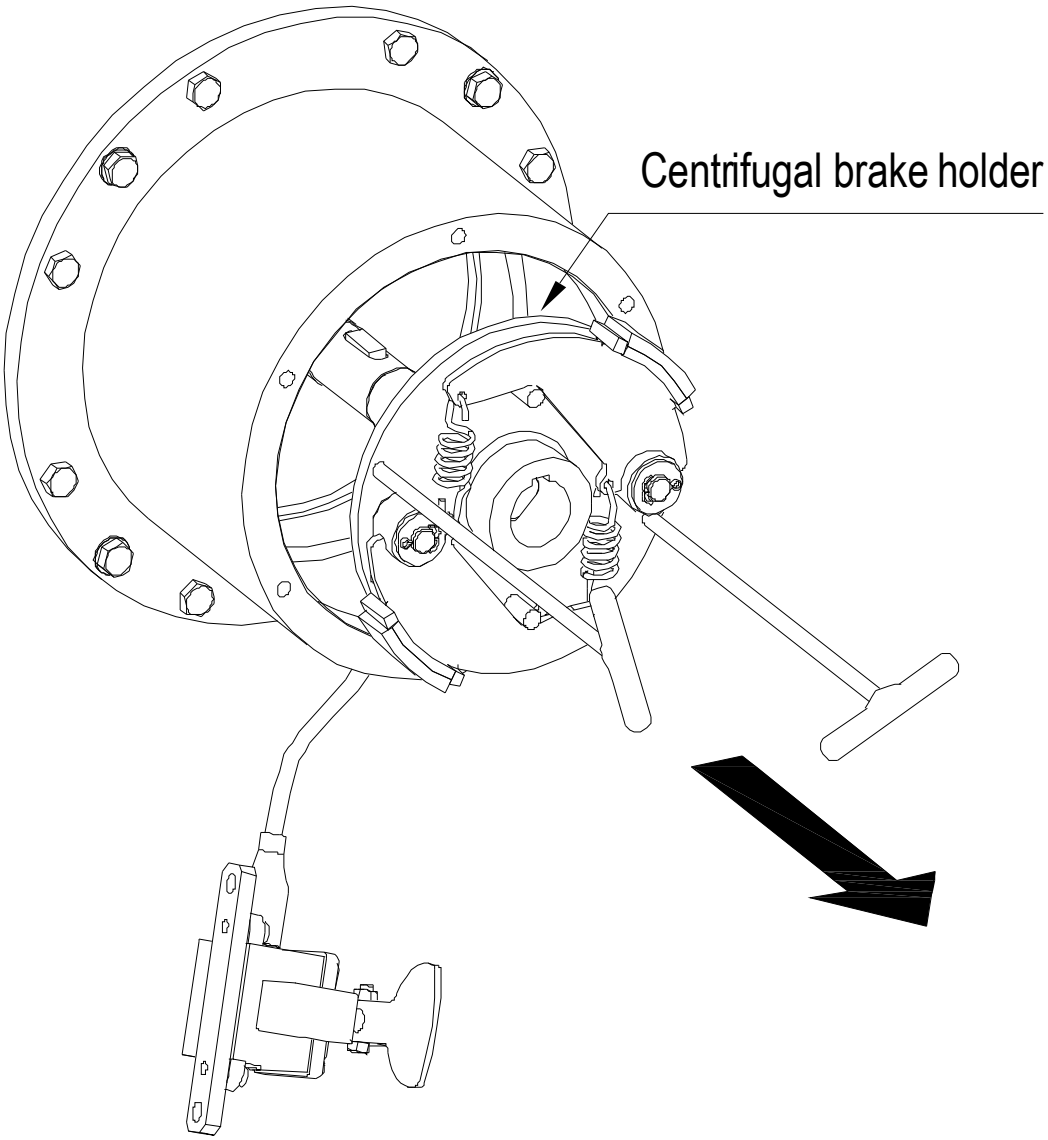
7.3 Centrifugal brake holder removal

step 1 of 1



Procedure description:	
- Pull out holder for inspection or replacement of centrifugal brake pads. **Remark:**	
Remark:	
	2 * Handle

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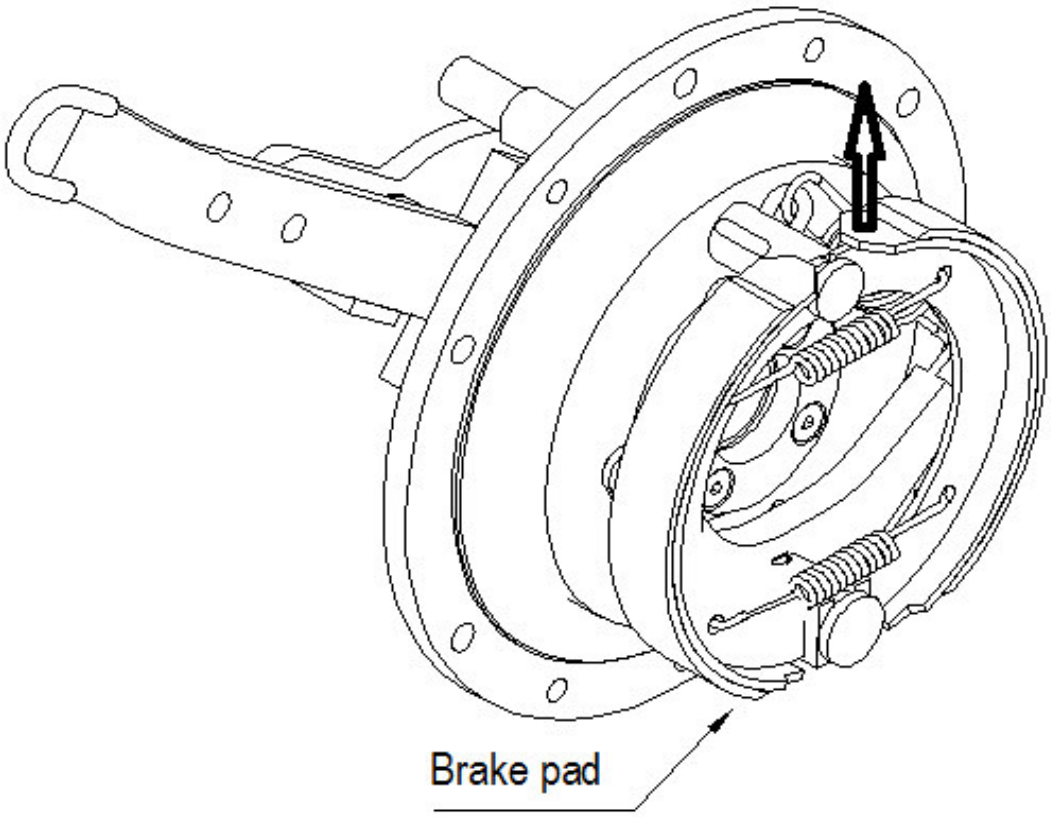
7.4 Replacement of stop brake spring procedure

Step 1 of 1



Procedure description:	
- Remove brake pads by applying gently pressure in way of the arrows **Remark:** Keep brake pad material always grease free. Apply grease on the all hinges and springs	
Tools to be used:	

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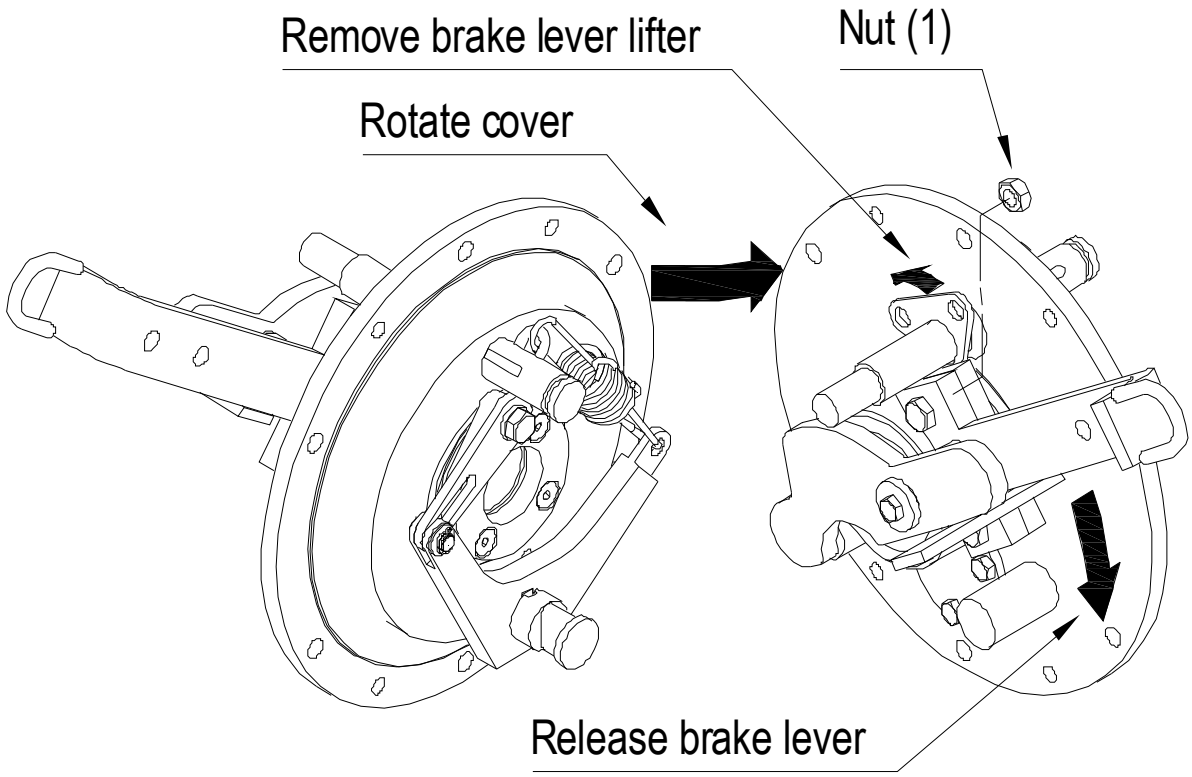
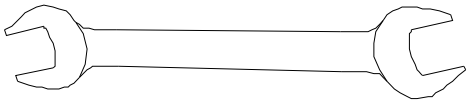
7.5 Replacement of stop brake spring procedure

Step 1 of 4



Procedure description:	
- Rotate cover to reach the front side. - Remove the nut (1) and release the brake lever **Remark:**	
Tools to be used:	
	Wrench 16 - 19mm

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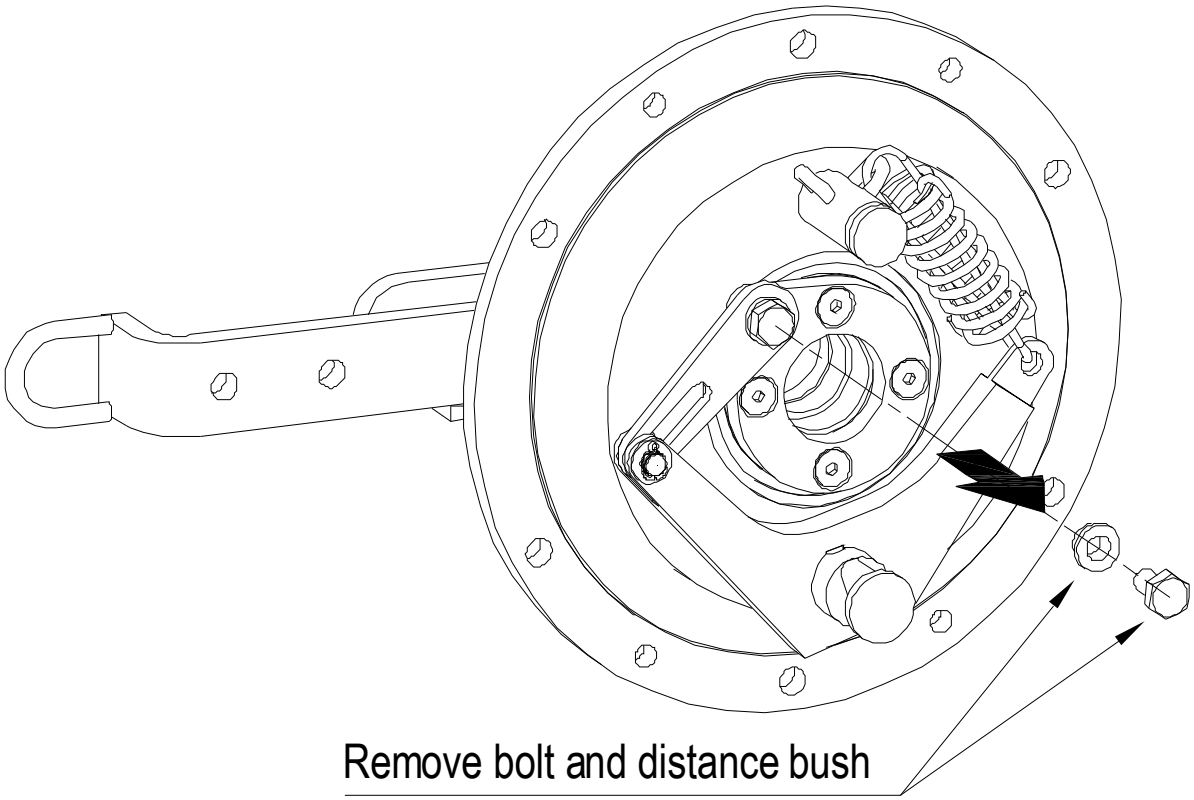
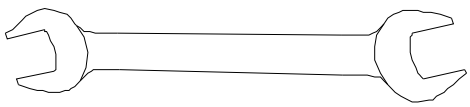


Procedure description:	
- Remove bolt and distance bush as indicated. - Once removed, place the bolt and bush back to avoid losing them **Remark:** The spring applies pressure on the joints. Be careful not to shoot parts away. Use grease on all hinges and joist during re-assembly.	
Tools to be used:	
	Wrench 16 - 19mm

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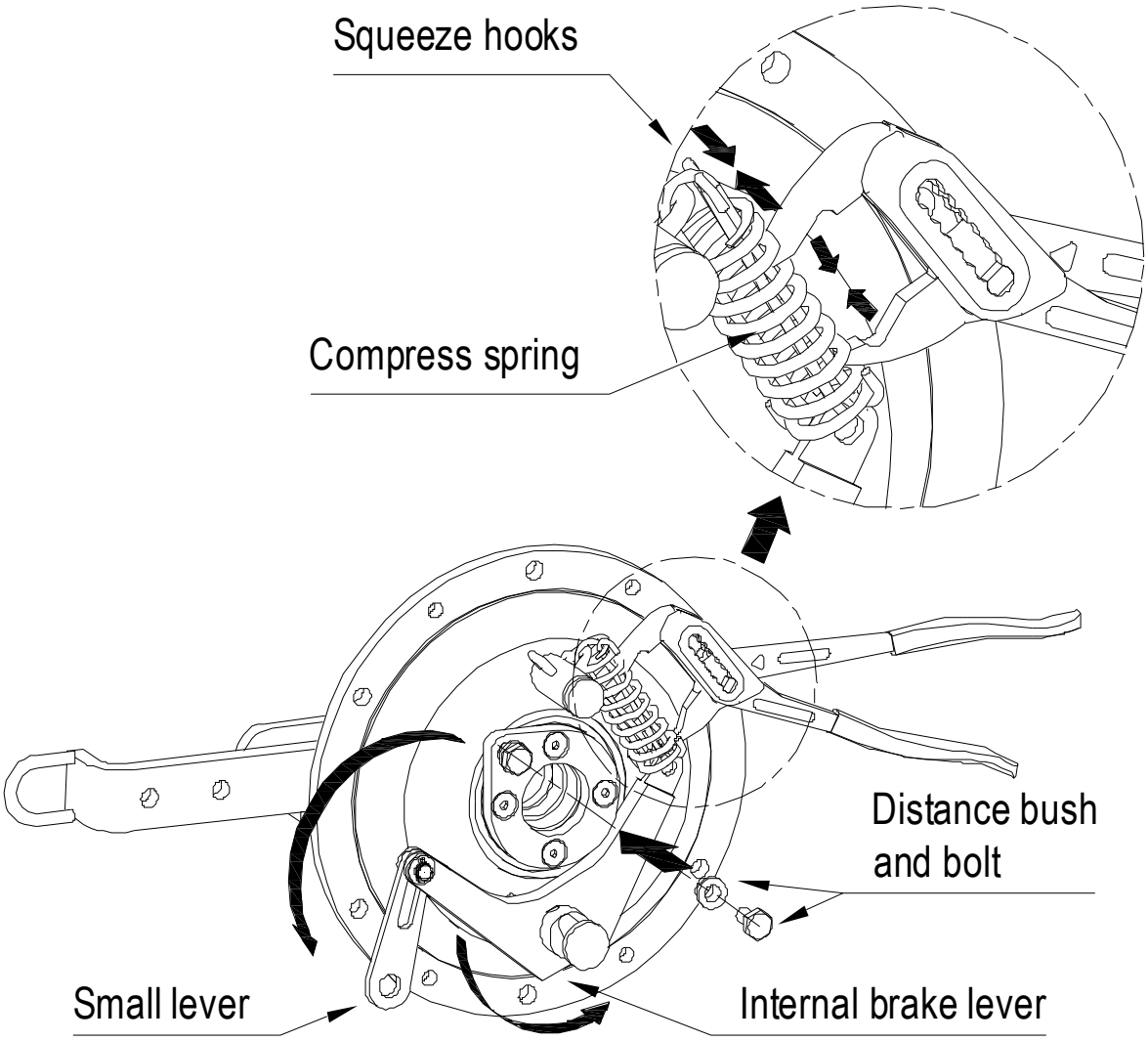
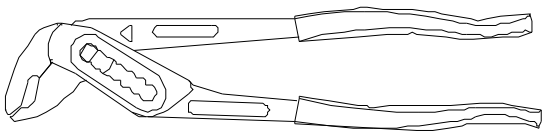
Step 3 of 4



Procedure description:
- Rotate the internal brake lever as much as possible to unload the spring. - Apply pressure to some windings of the spring with adjustable-joint pliers. - Squeeze the hooks together as indicated in the detail section. **Remark:** The spring applies pressure on the joints. Be careful not to shoot parts away. Use grease on all hinges and joist during re-assembly.
Tools to be used:

	Adjustable – joint pliers

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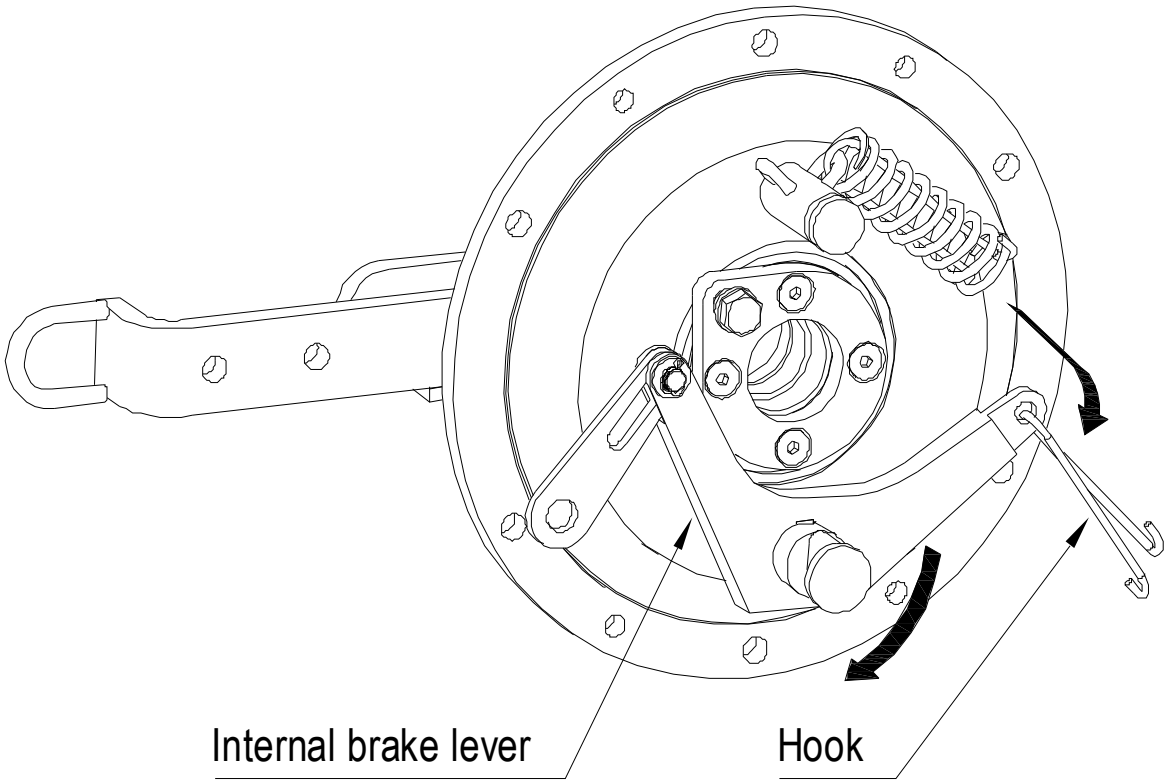
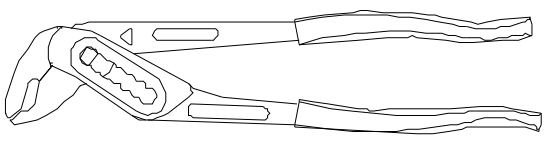
Step 4 of 4



Procedure description:
- Pull out the hook - Pull the spring, by squeezing the other hooks, out. - Remove the hooks and replace them with a new set of hooks and spring **Remark:** Use the same procedure in reversed order for re-assembly. Apply grease on all moving parts, joints and hinges.
Tools to be used:

	Adjustable – joint pliers

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8 Brake system winches W07 and W08

For a clear visualisation of the various actions which are required for inspection of any brake , will be described and shown in the next paragraphs

CAUTION:
Make sure boat is well supported in its cradle and tighten lashing before commencing.

Use this procedure for a visual inspection of the stop brake system

Use this procedure for a visual inspection of the stop- and centrifugal brake system

Use this procedure for replacing parts of the centrifugal brake system

Use this procedure for replacing the pads of the stop brake

Use this procedure for replacing the spring of the stop brake

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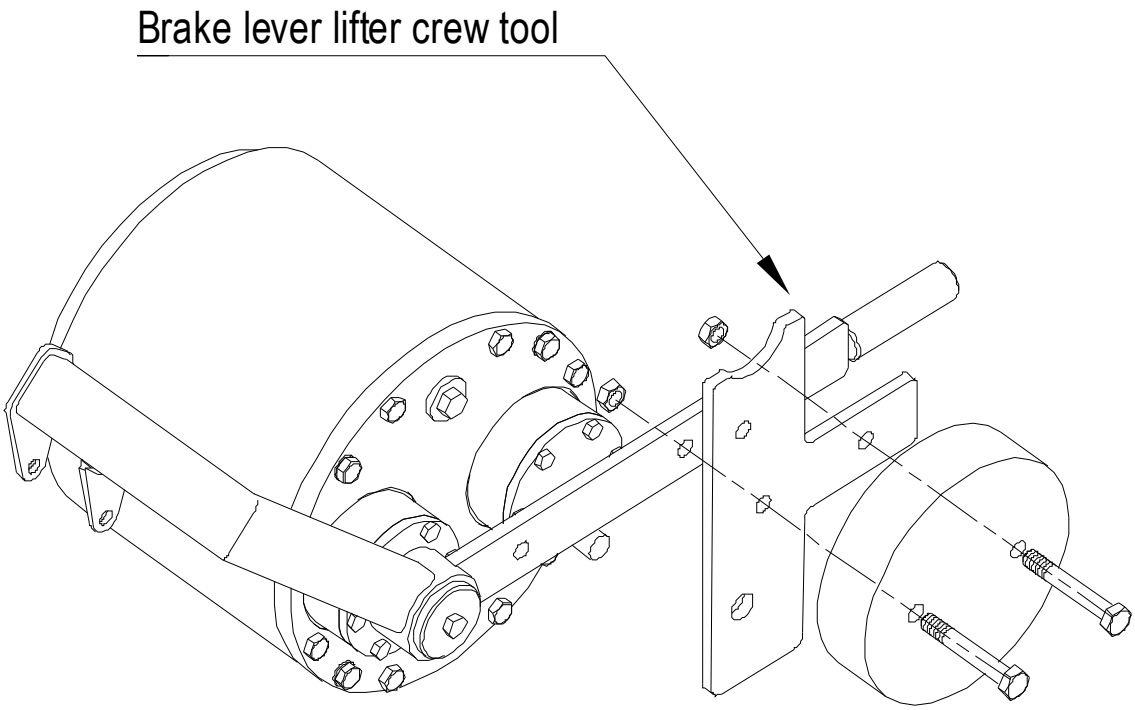
8.1 Brake cover removal

Alternative A Step 1 of 5



Procedure description:
- Remove brake weight for better handling. - Remove nut (1), NOT the bolt, from upper bolt at brake lever support (1). **Remark:** Check if standard tool is available and still functional
Tools to be used:

	2 * Wrench 16- 19 mm

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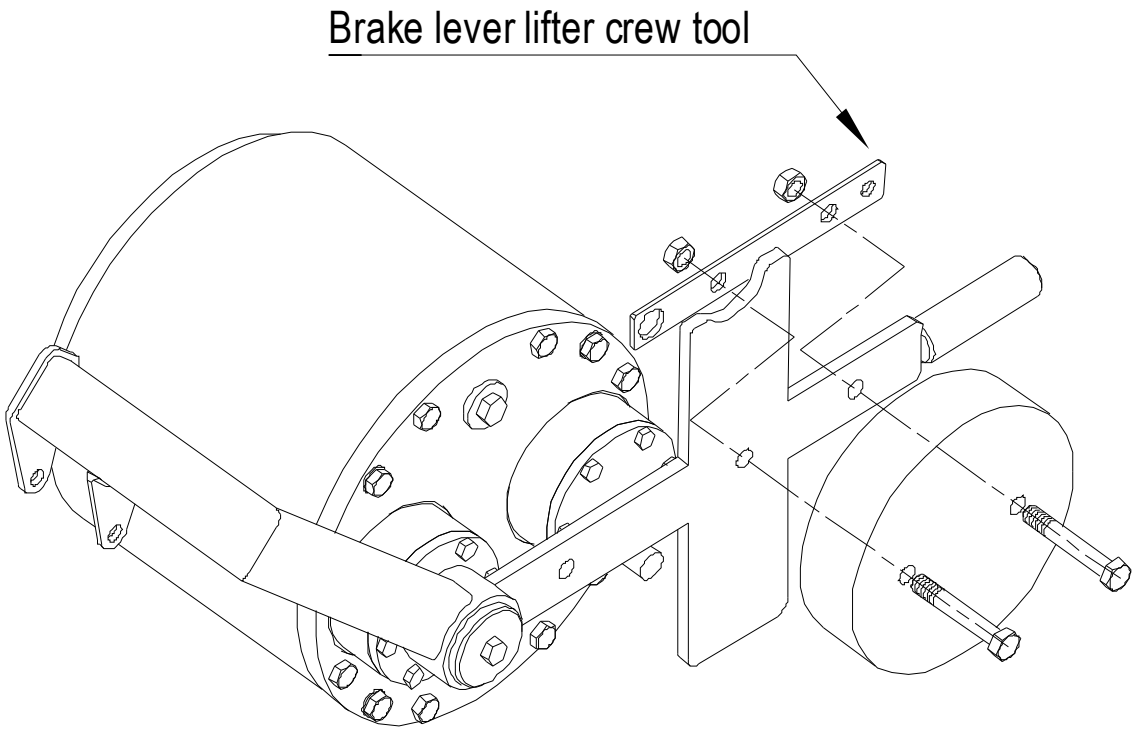
Alternative B Step 1 of 5



Procedure description:	
- Remove brake weight for better handling. - Remove nut (1), NOT the bolt, from upper bolt at brake lever support (1). **Remark:** Check if standard tool is available and still functional	
Tools to be used:	
	2 * Wrench 16- 19 mm

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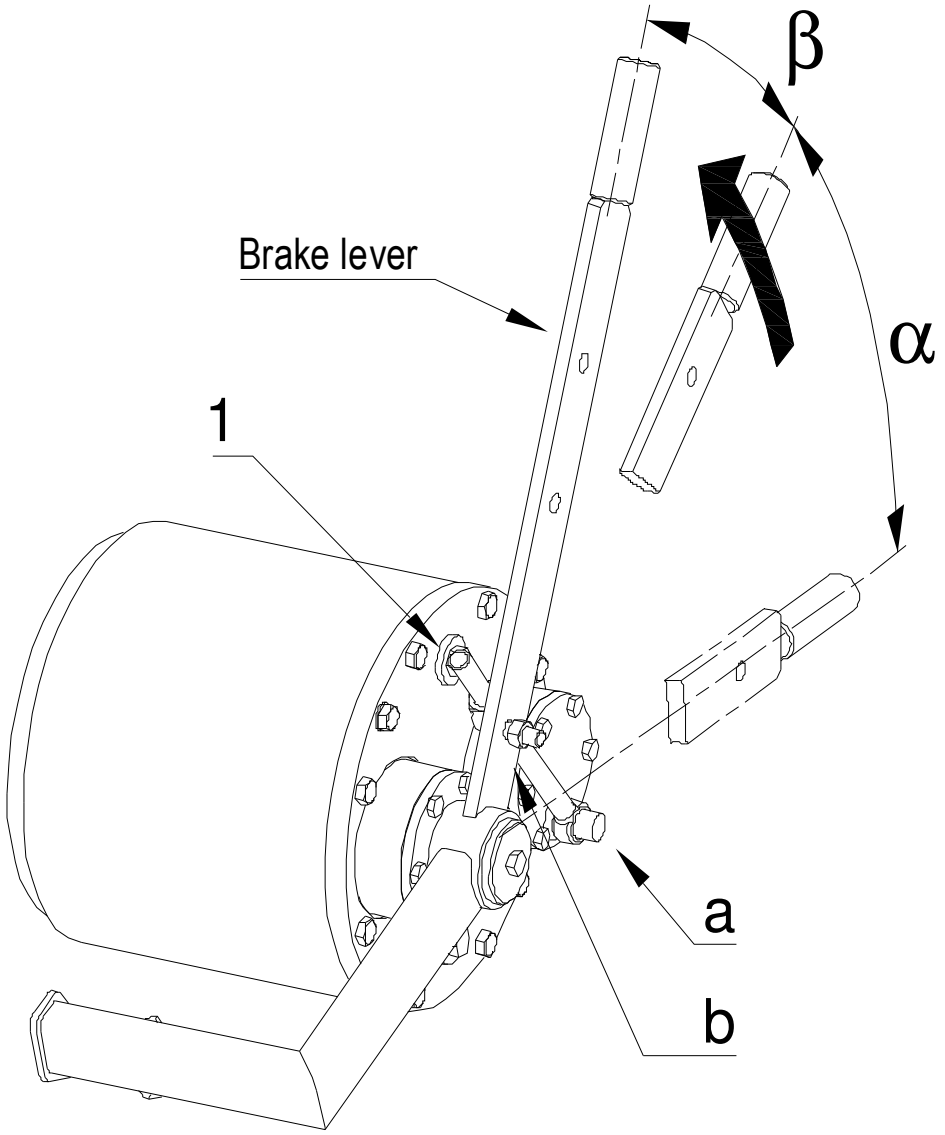
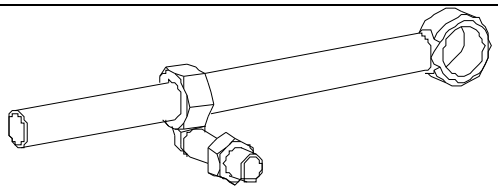
Step 2 of 5



Procedure description:
- Place "brake lever tool" between the end of bolt in the brake lever (b) and the brake lever angle limiter (a). Mount nut (1) to secure the position of the brake lever. (Make sure the brake lever is lifted to the end.) **Remark:** Angle α is the free rotating angle. α should be approx 20°. When α is less then 10°, the brake pads are worn out. The spring is compressed during angle β. This will be increasingly heavy towards the end.
Tools to be used:

	Brake lever lifter tool

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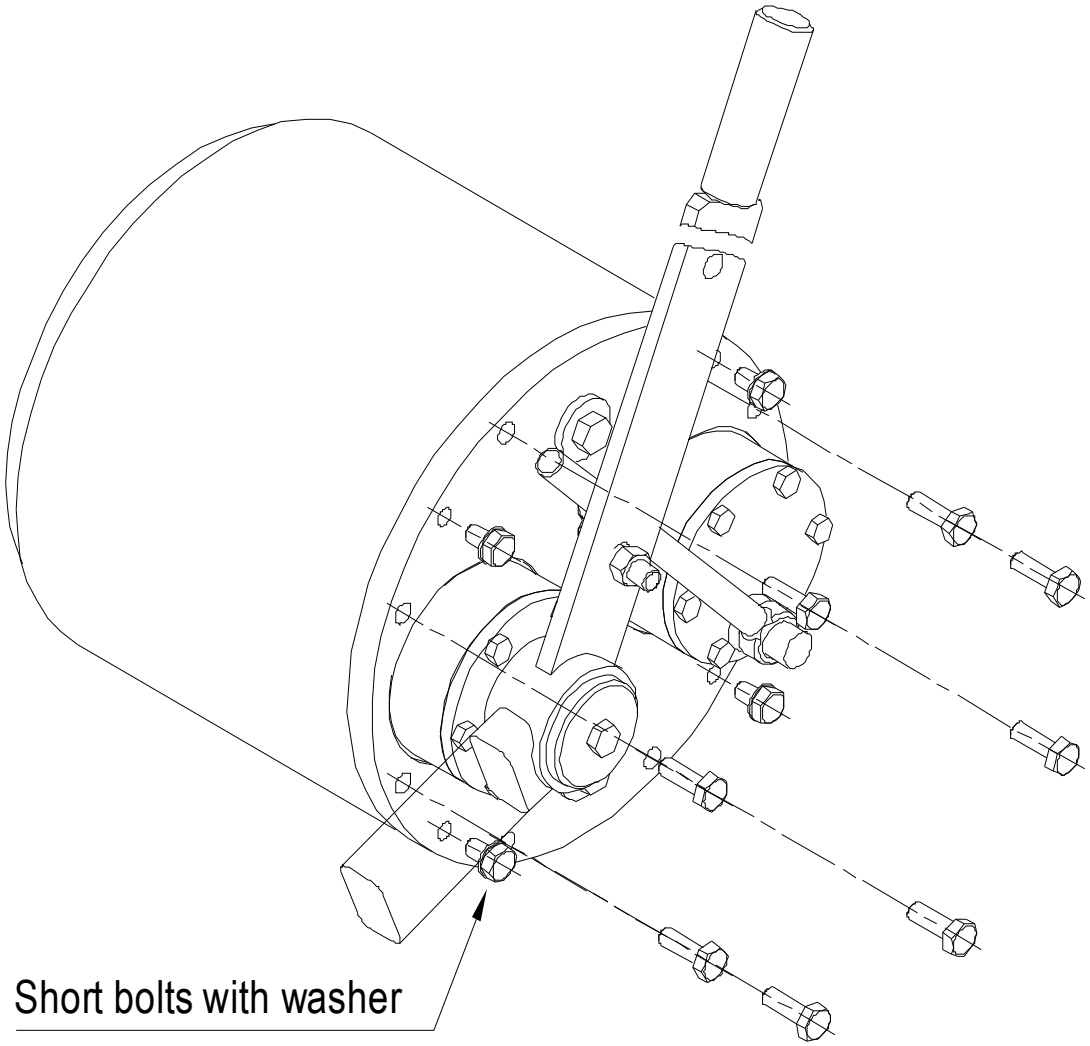
Step 3 of 5



Procedure description:
- Loosen all bolts. The bolts with washers are to protect the threaded holes. **Remark:** -
Tools to be used:

	2 * Wrench 16 - 19 mm

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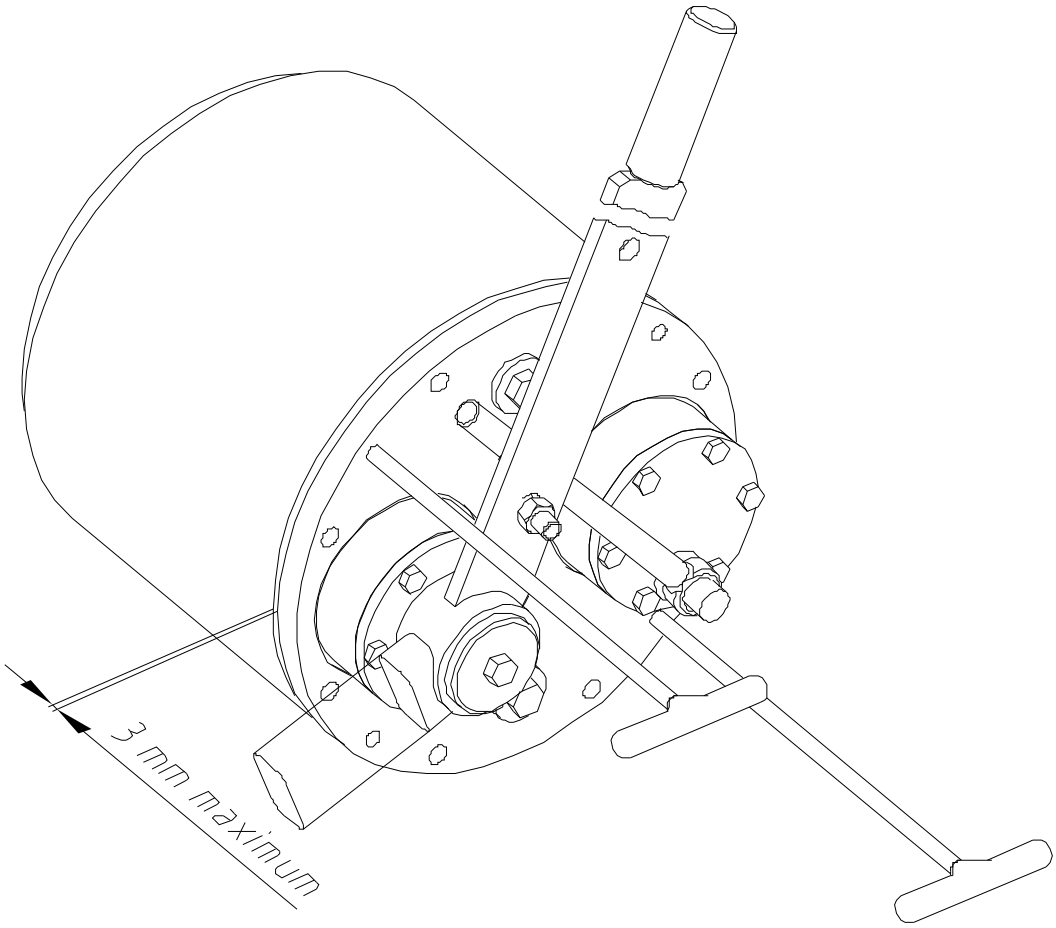
Step 4 of 5



Procedure description:
- Use the handles to lift the brake cover. **Caution:** When brake cover will not "break free" within 3 mm. In this case the brake pads are not free. Pulling out the brake cover by force will damage the brake pads beyond repair.
Tools to be used:

	2 * Handle

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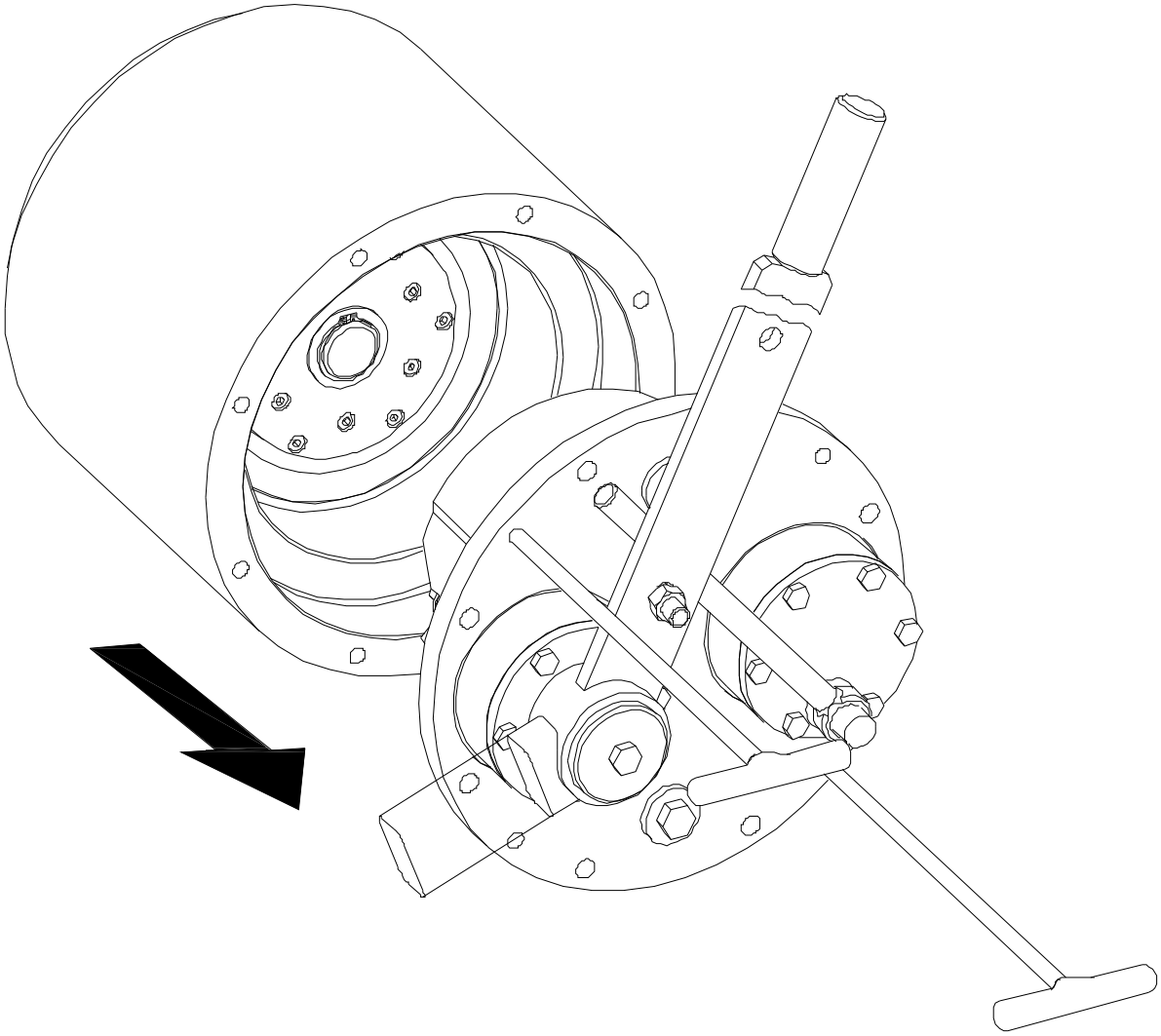
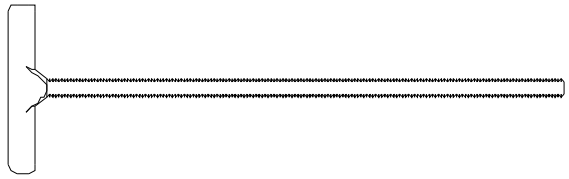


Procedure description:
- Pull out the brake cover. **Caution:** The brake cover is heavy. Use the brake lever as lifting point.
Tools to be used:

	2 * Handle

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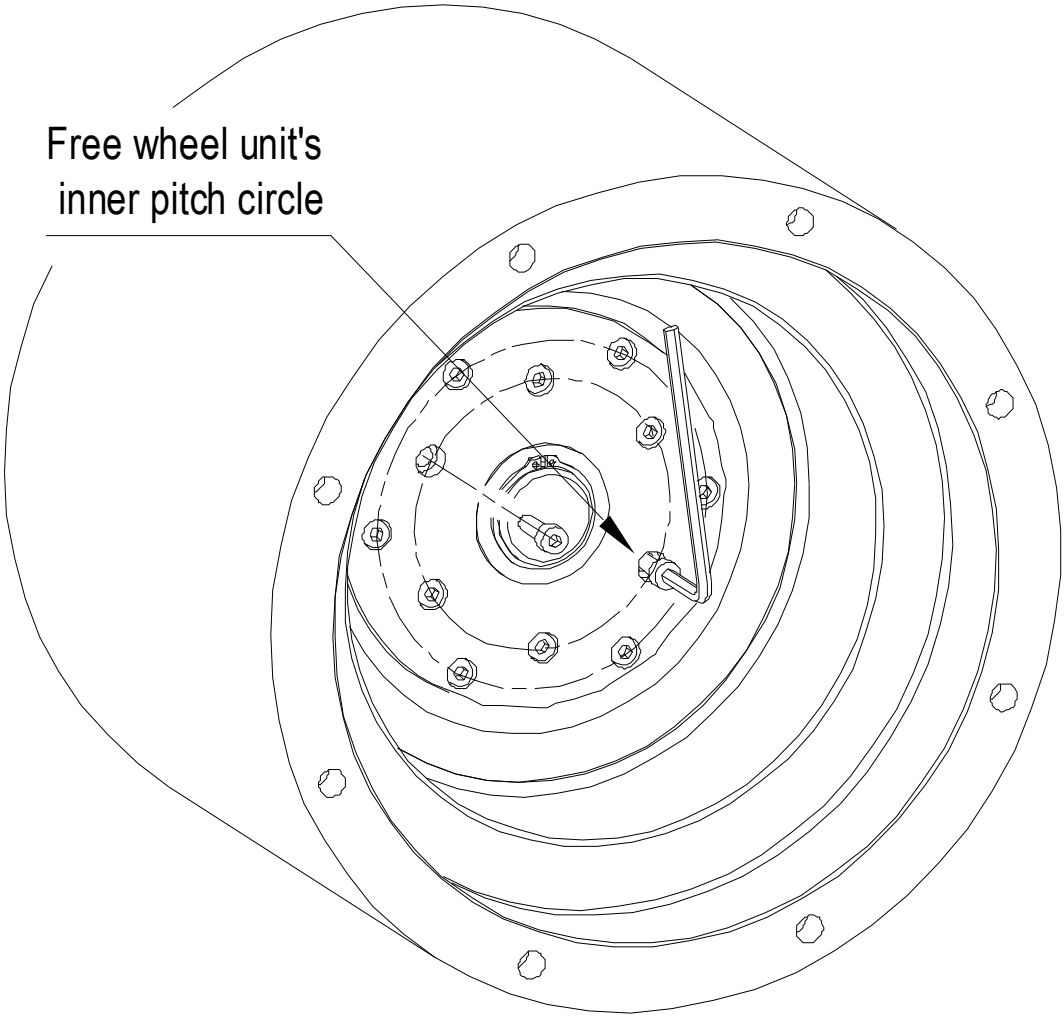
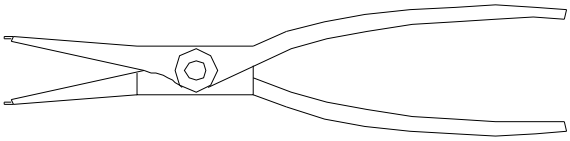
8.2 Brake drum removal procedure

Step 1 of 2



Procedure description:	
- Remove circlips,. - Place handles and pull out brake drum with free wheel unit. **Caution:** Make sure bushes are greased during re-assembly.	
Tools to be used:	
	Socket head wrench
	Circlip pliers

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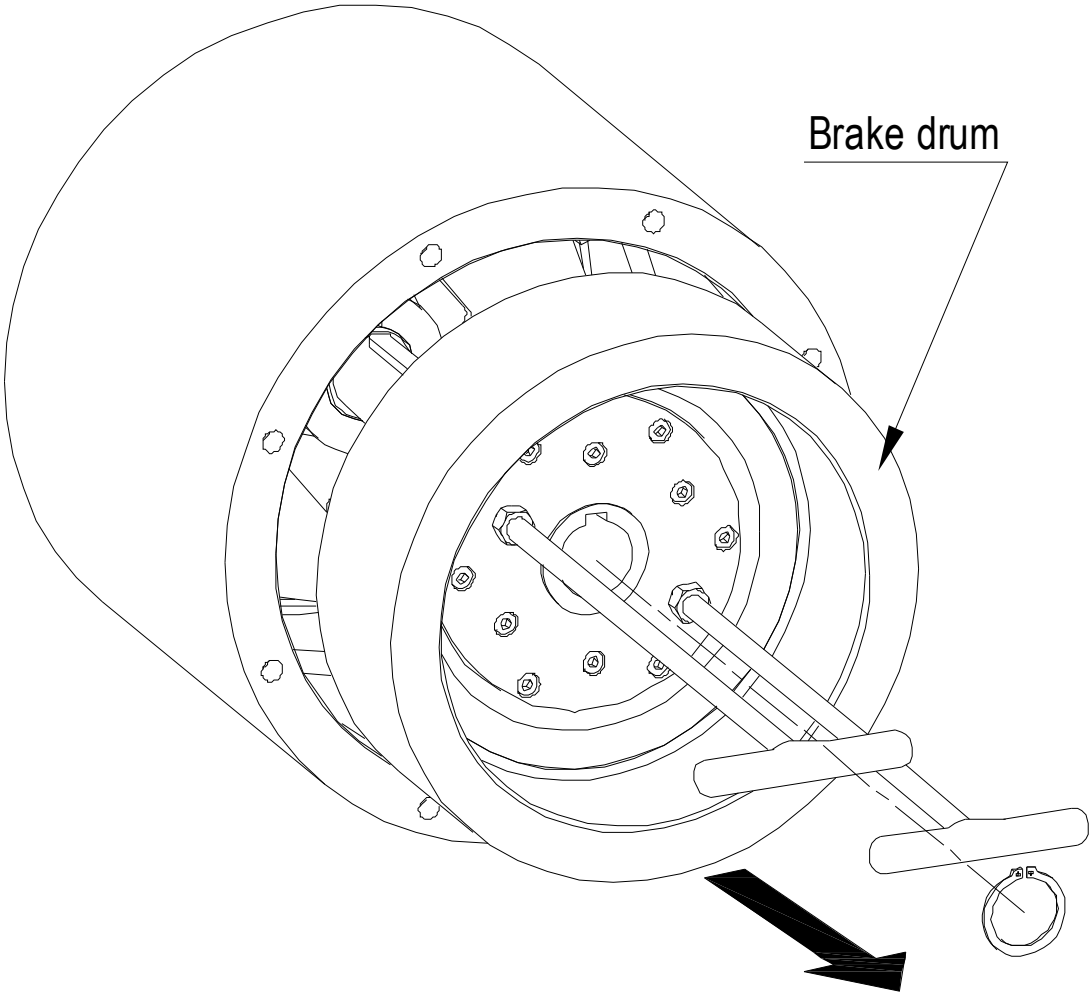
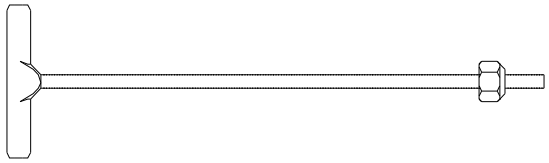
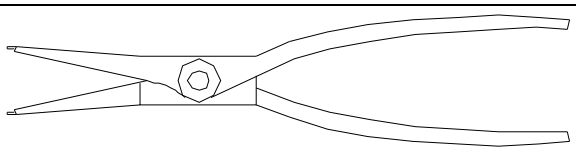
Step 2 of 2



Procedure description:	
- Place handles and pull out brake drum with free wheel unit. **Caution:**	
Tools to be used:	
	2 * Handle + adaptor piece
	Circlip pliers

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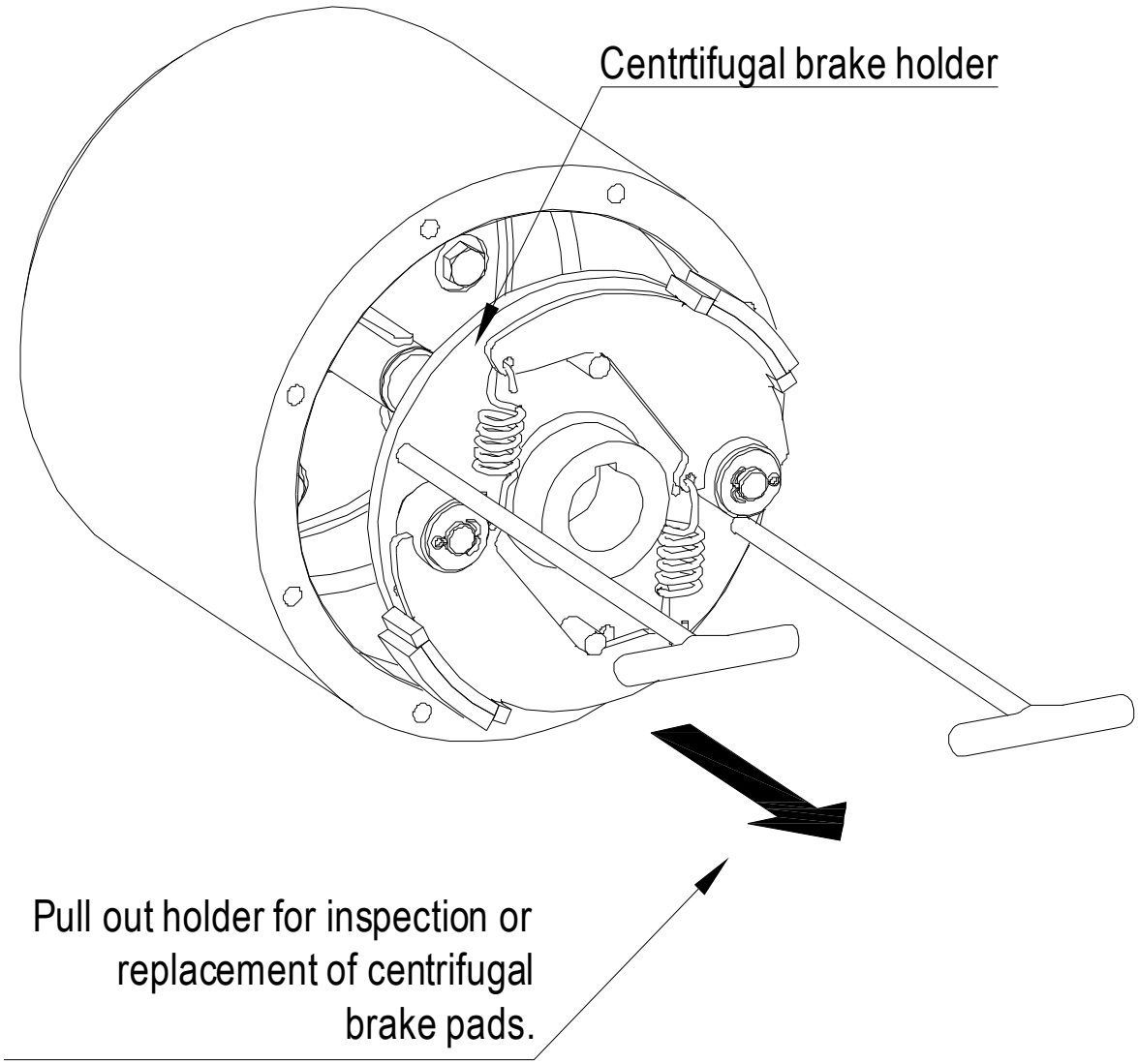
8.3 Centrifugal brake holder removal procedure

Step 1 of 1



Procedure description:	
- Pull out holder for inspection or replacement of centrifugal brake pads. **Caution:**	
Tools to be used:	
	2 * Handle

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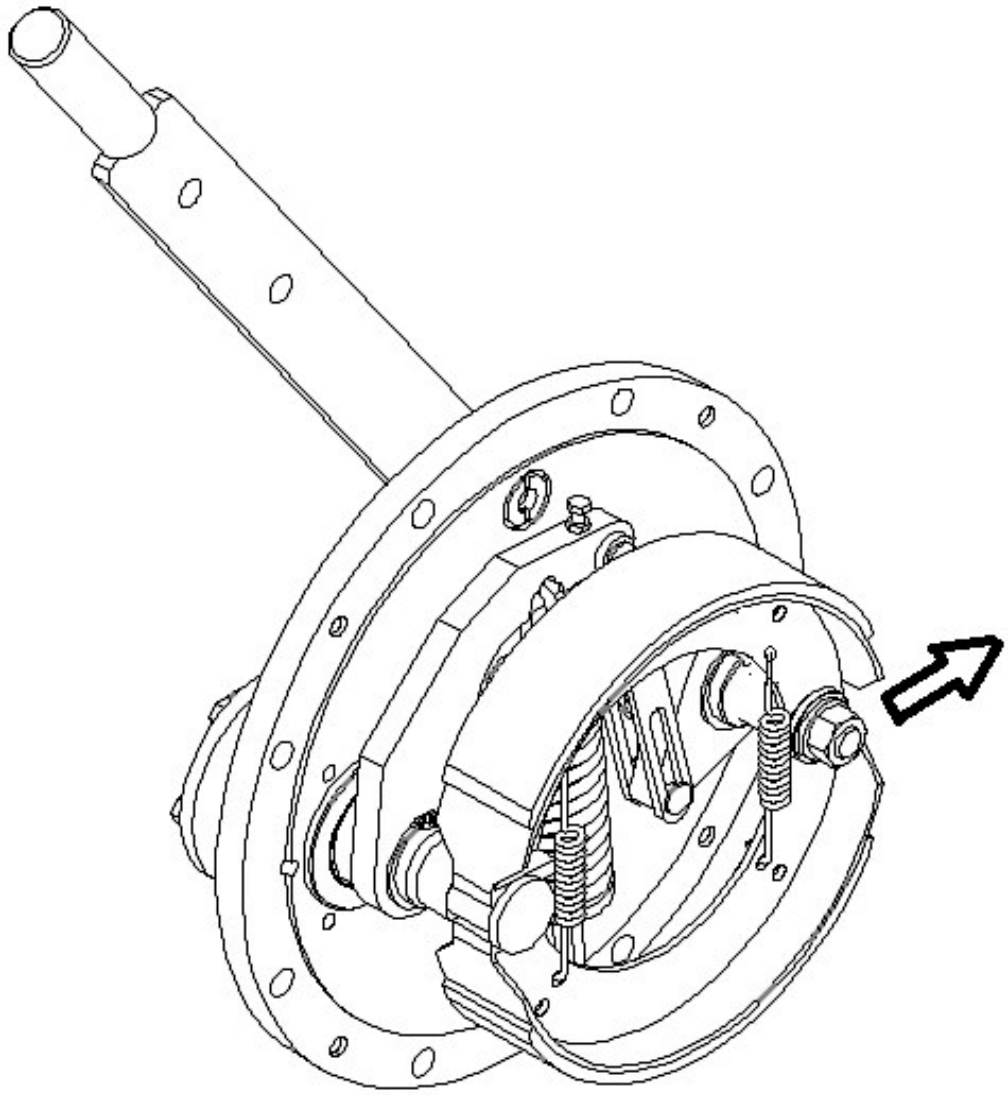
8.4 Brake pad removal procedure

Step 1 of 2



Procedure description:	
- Remove nut and washers. (DO NOT Remove springs) - Remove brake pads. **Remark:** Check if brake pads should be replaced.	
Tools to be used:	
	Wrench 16 - 17 / 24 mm

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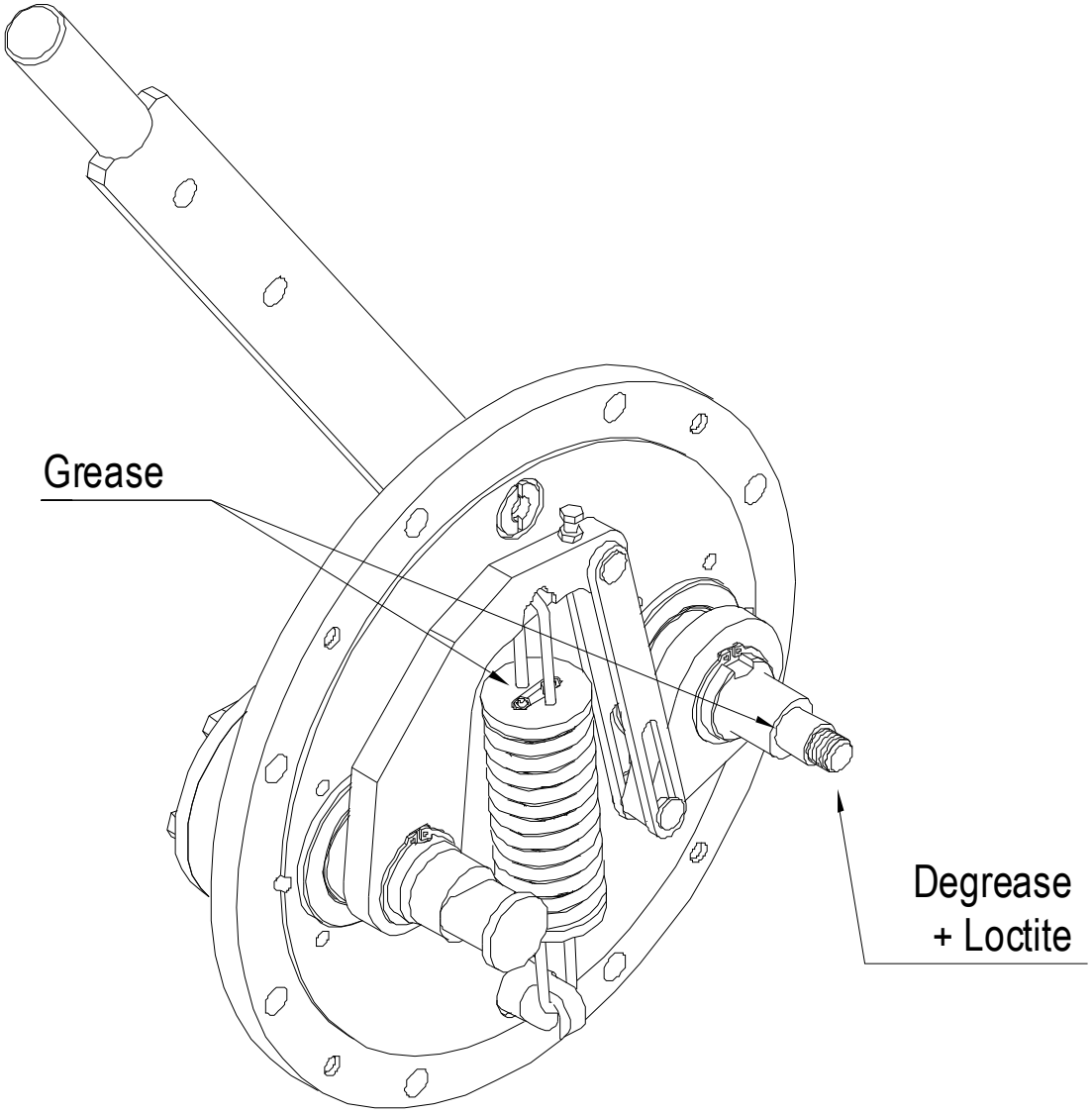
Step 2 of 2



Procedure description:	
- Clean and degrease thread for assembly of nut during reassambly process. - Use Loctite for nut during re-assembly. **Remark:** Use grease on brass bearing washers and other moving parts during re-assembly.	
Tools to be used:	
	Steel brush

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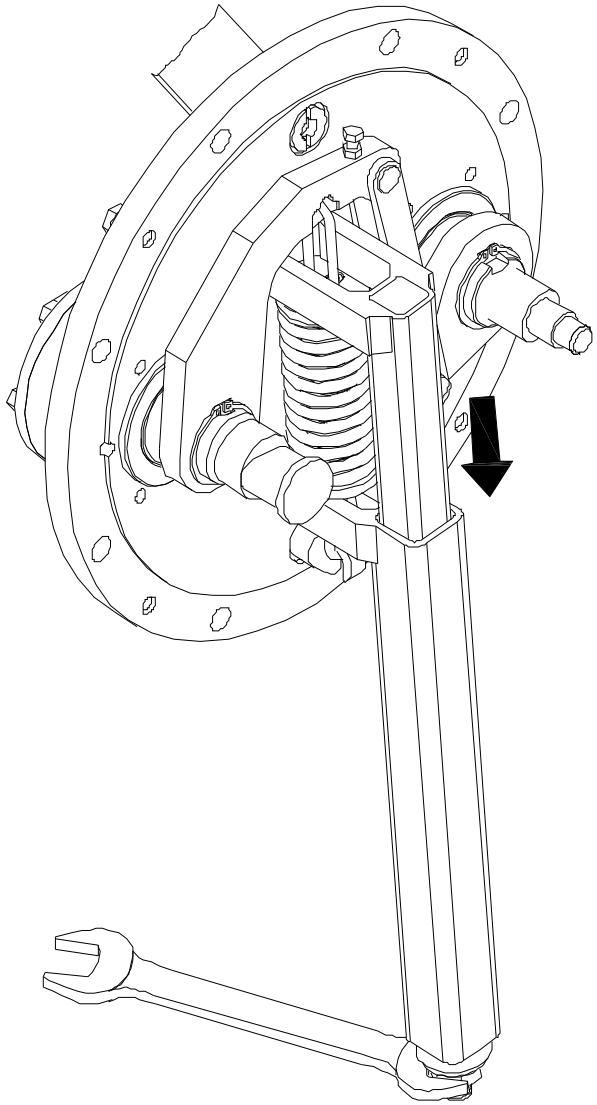
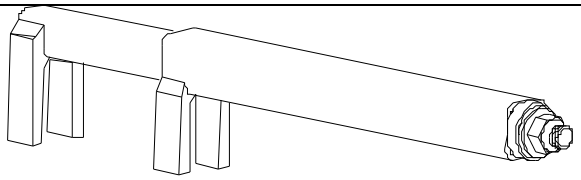
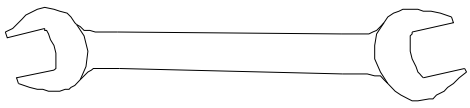
8.5 Replacement of stop brake spring procedure



Procedure description:	
- Mount spring compressor. - Bring spring to maximum compression by use of wrench. **Remark:** The spring applies pressure on the joints. Be careful not to shoot parts away. Use grease on all hinges and joist during re-assembly.	
Tools to be used:	
	Spring compressor
	Wrench 24 mm

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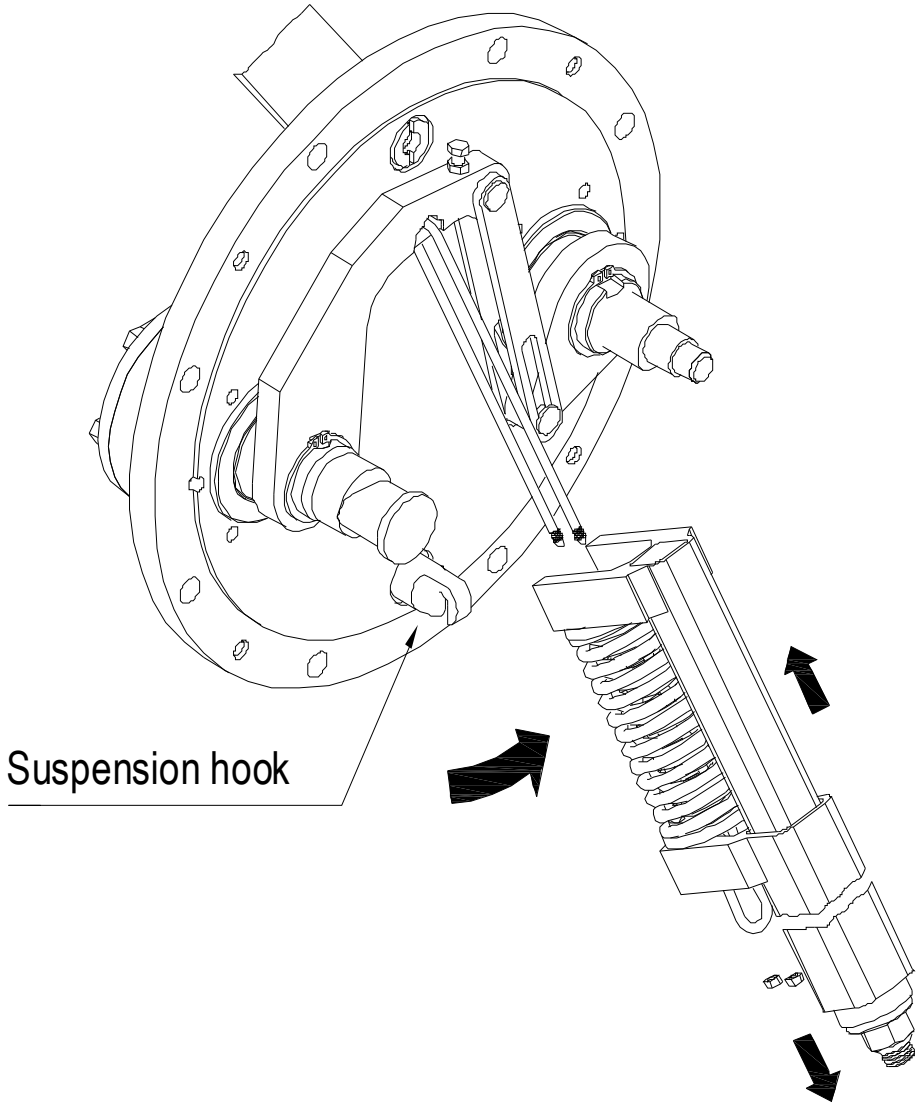
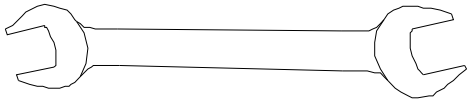
8.6 Replacement of stop brake spring procedure



Procedure description:
- Remove spring unit from suspension hook. - Shift spring compressor upwards to make way for removing nuts. - Remove nuts M5 and Remove spring unit completely. **Remark:**
Tools to be used:

	Wrench 8 mm

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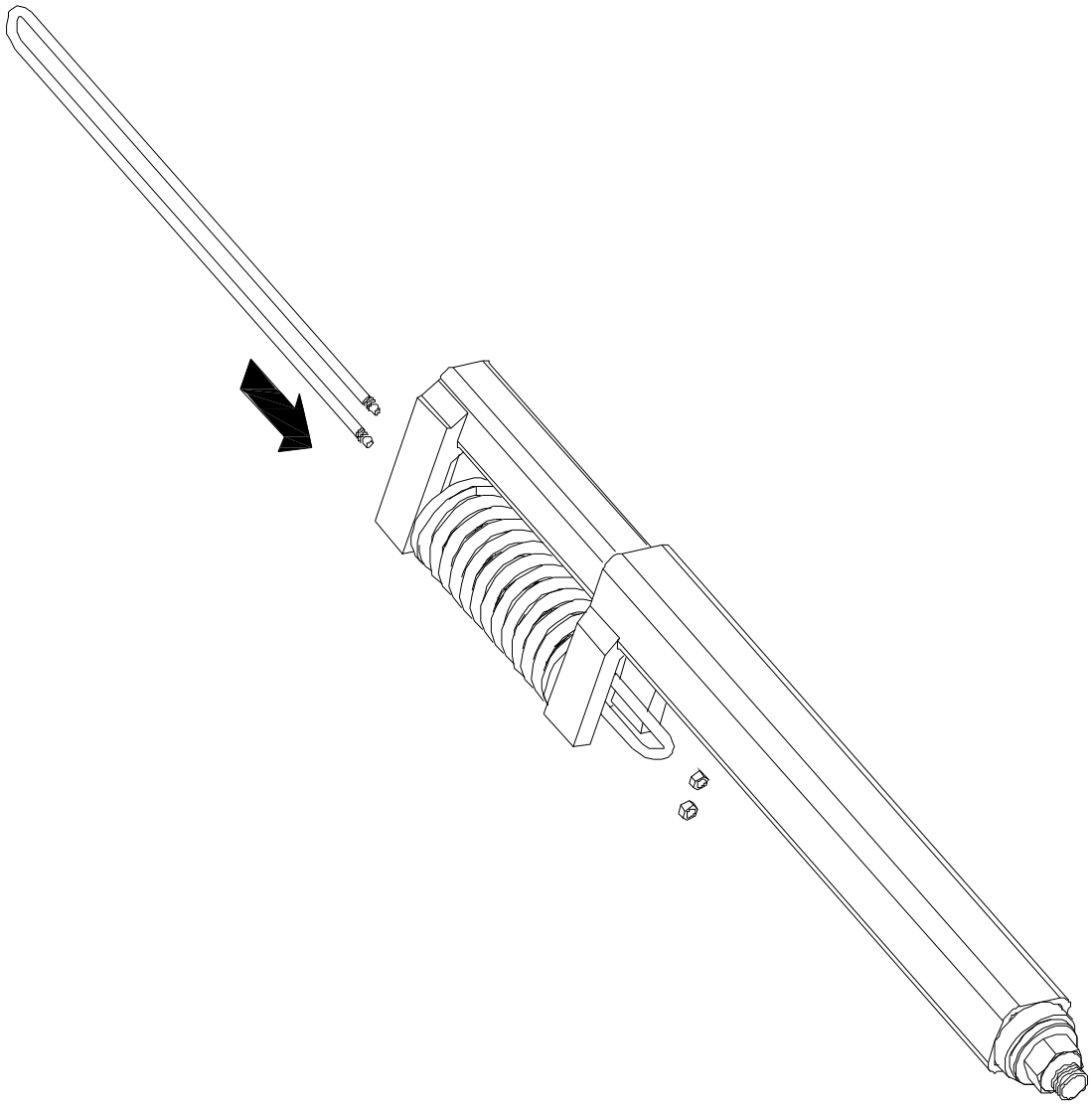
8.7 Replacement of stop brake spring procedure



Procedure description:	
- Mount long U-bracket. - Mount nuts on long U-bracket. **Remark:**	
Tools to be used:	
	Wrench 8 mm

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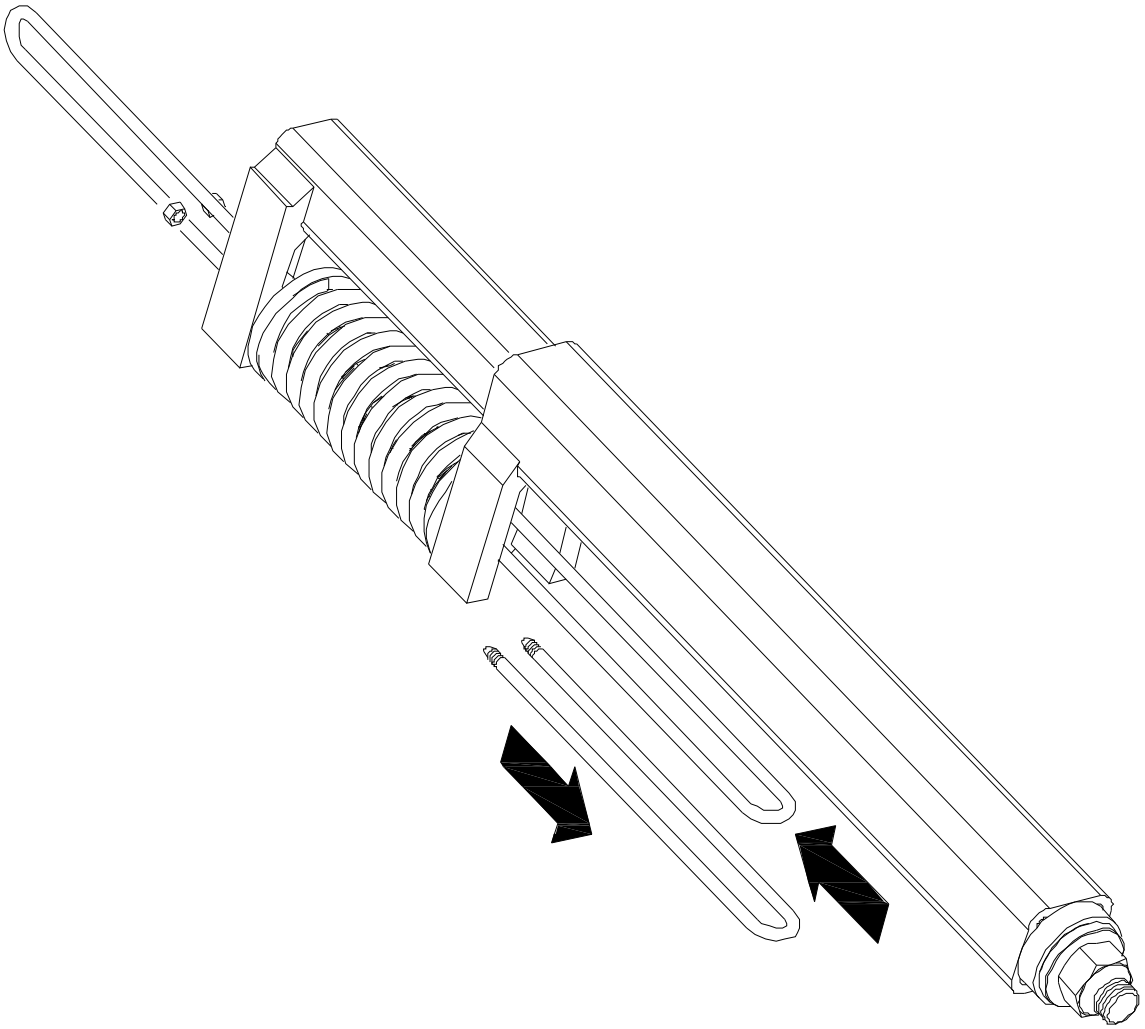
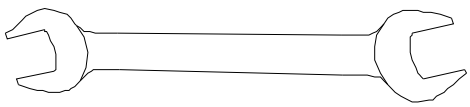
8.8 Replacement of stop brake spring procedure



Procedure description:
- Rotate the internal brake lever as much as possible to unload the spring. - Apply pressure to some windings of the spring with adjustable-joint pliers. - Squeeze the hooks together as indicated in the detail section. **Remark:** Place nuts M5 for extra safety.
Tools to be used:

	Wrench 8 mm

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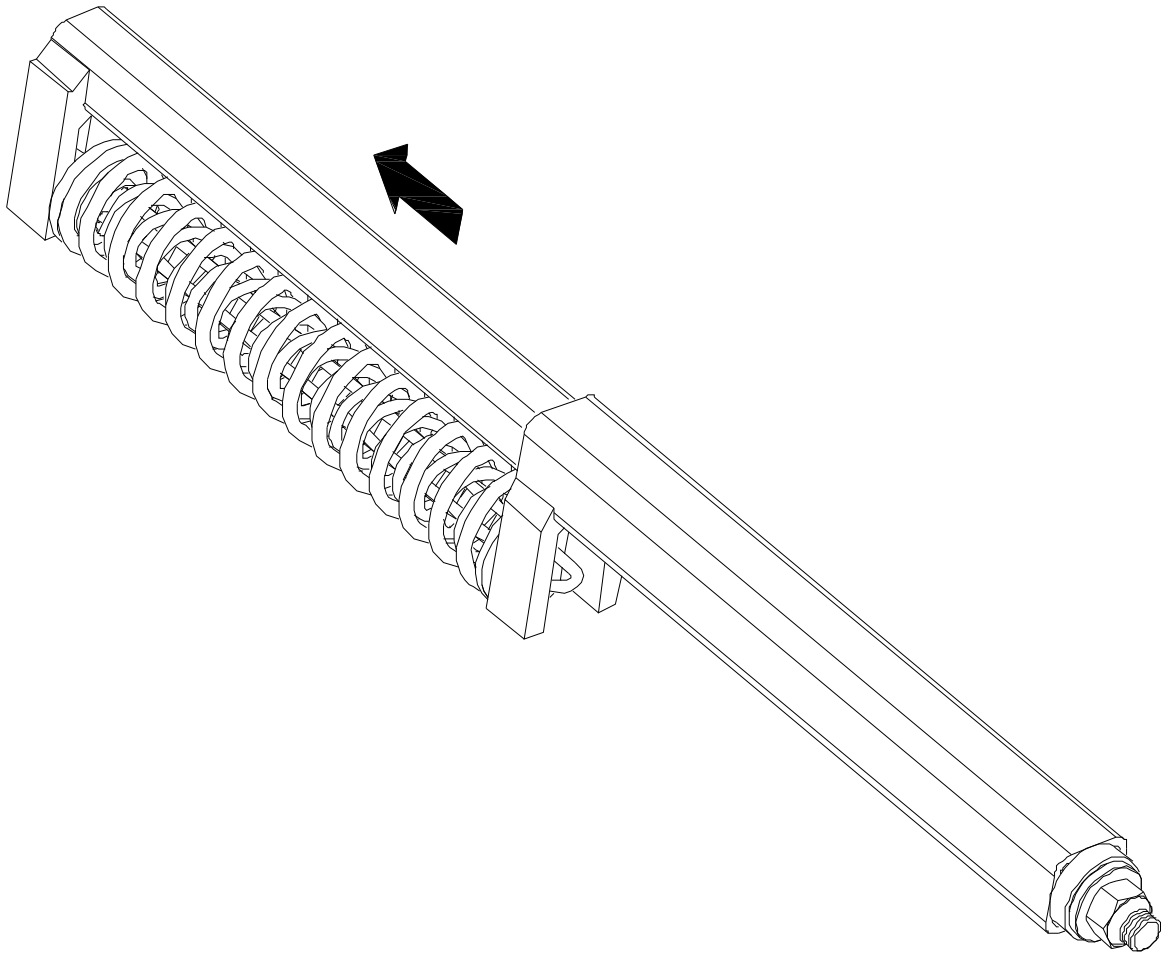
8.9 Replacement of stop brake spring procedure



Procedure description:	
- Decompress spring unit. **Remark:**	
Tools to be used:	
	Wrench 24 mm

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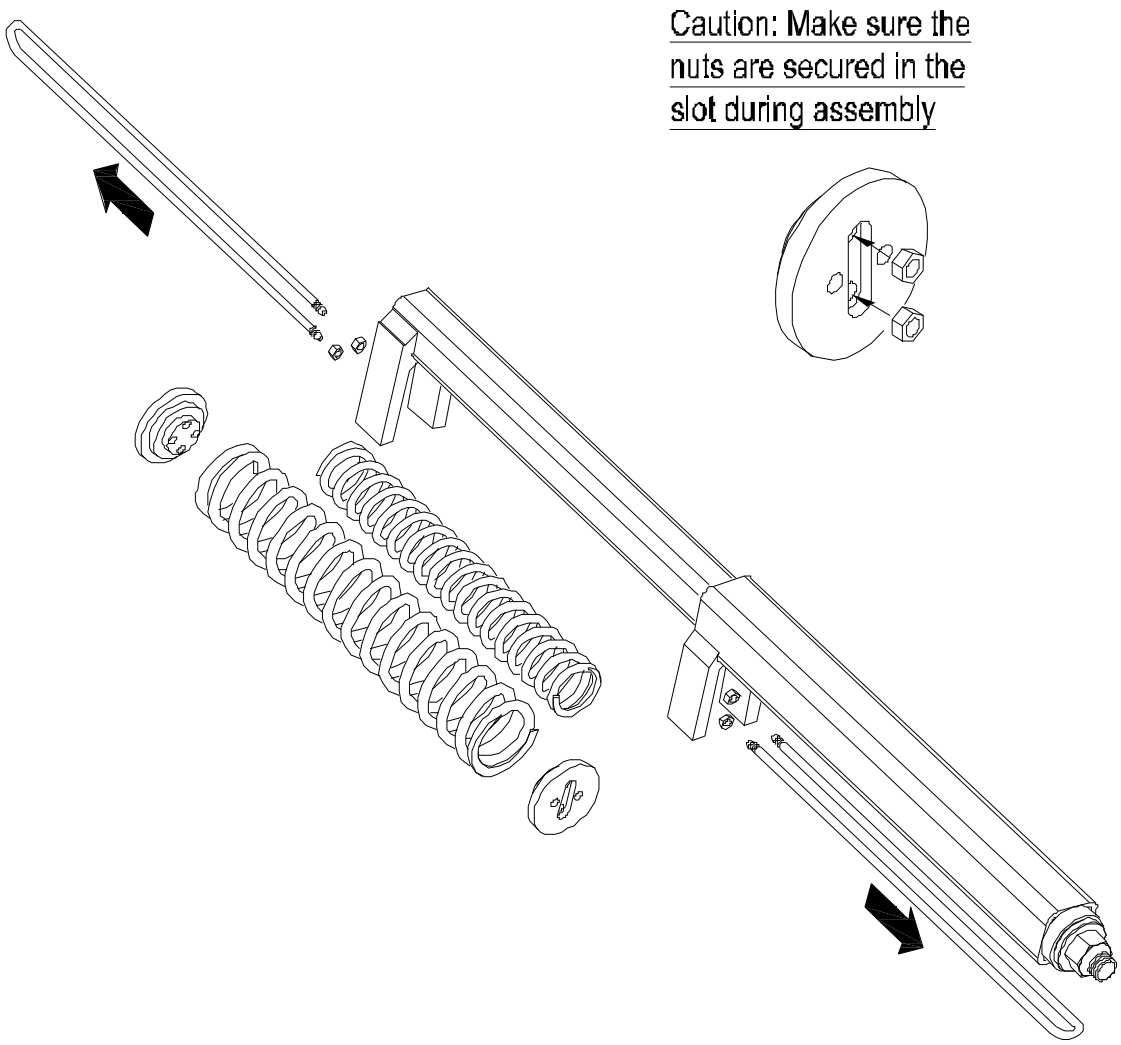
8.10 Replacement of stop brake spring procedure



Procedure description:	
- Dismount nuts on both U-brackets. - Remove Long U-brackets. - Replace springs and follow instructions in reversed order to mount new springs **Remark:** Make sure the nuts are secured in the slot during assembly.	
Tools to be used:	
	Wrench 8 mm

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9 Brake system winches W10 and W26

For a clear visualisation of the various actions which are required for inspection of any brake , will be described and shown in the next paragraphs

CAUTION:
Make sure boat is well supported in its cradle and tighten lashing before commencing.

Use this procedure for a visual inspection of the stop brake system

Use this procedure for a visual inspection of the stop- and centrifugal brake system

Use this procedure for replacing parts of the centrifugal brake system

Use this procedure for replacing the pads of the stop brake

Use this procedure for replacing the spring of the stop brake

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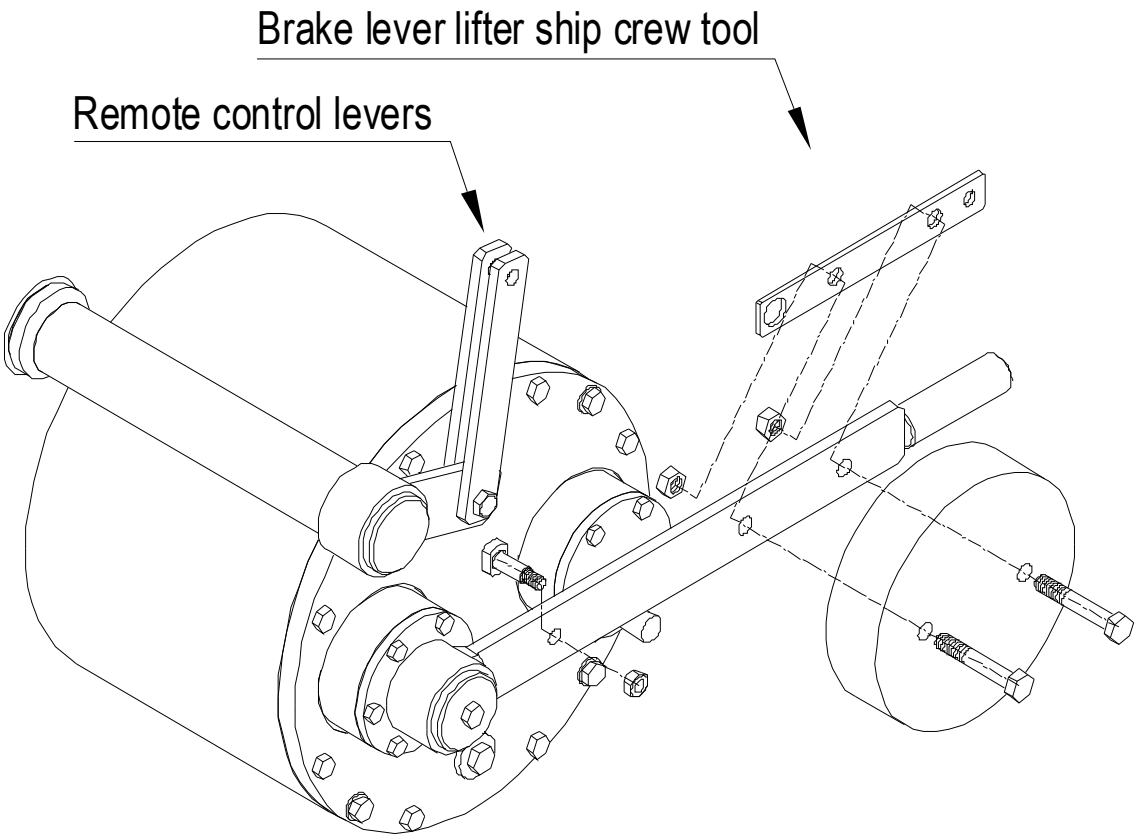
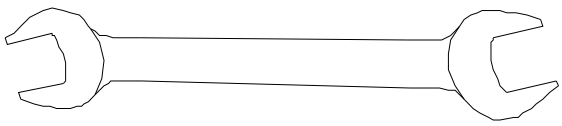
9.1 Brake cover removal

Alternative A Step 1 of 5



Procedure description:
- Remove brake weight for better handling. - Remove nut (1), NOT the bolt, from upper bolt at brake lever support (1). **Remark:** Check if standard tool is available and still functional
Tools to be used:

	2 * Wrench 16- 19 mm

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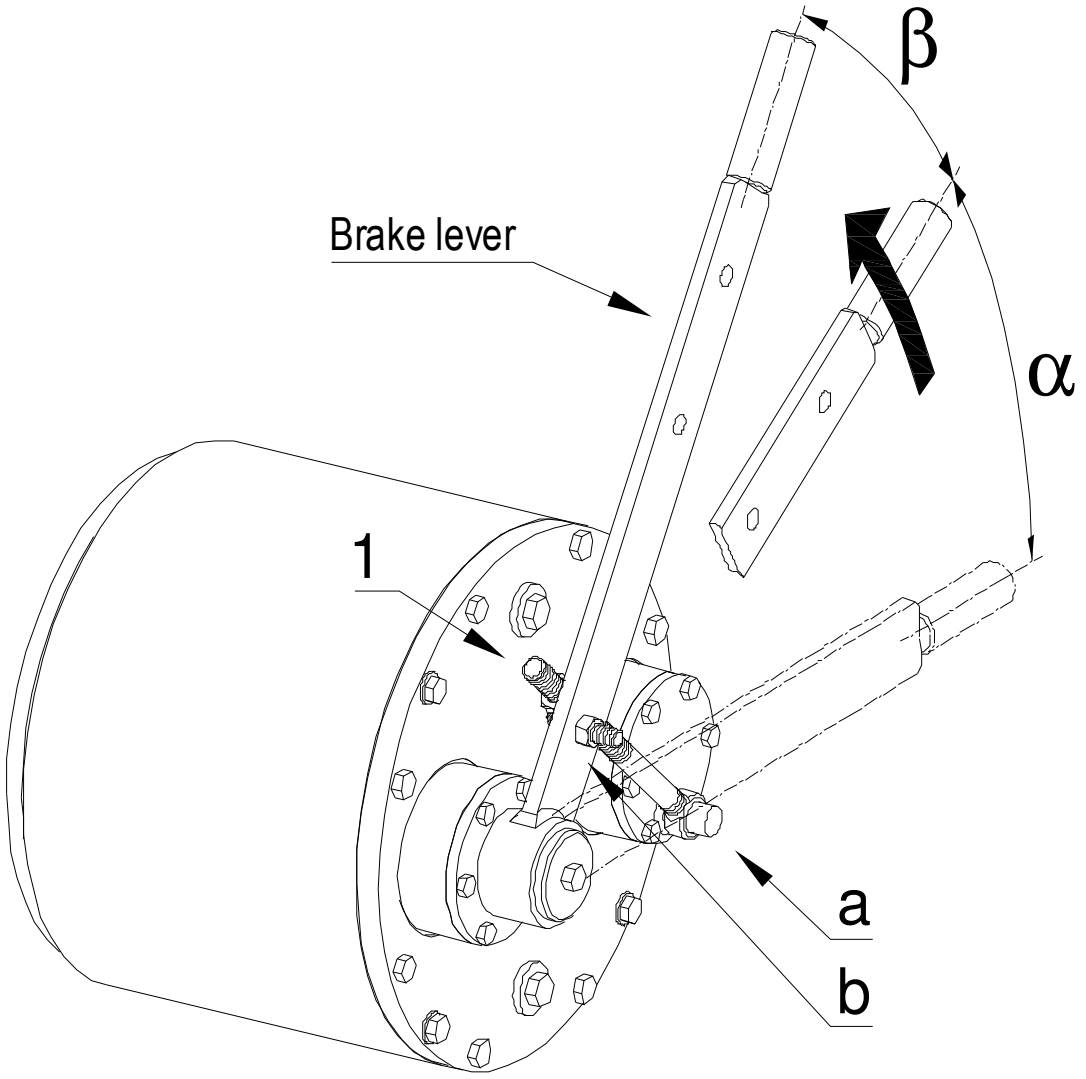
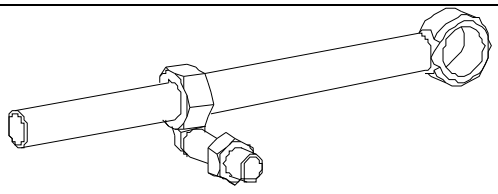
Step 2 of 5



Procedure description:
- Place "brake lever tool" between the end of bolt in the brake lever (b) and the brake lever angle limiter (a). Mount nut (1) to secure the position of the brake lever. (Make sure the brake lever is lifted to the end.) **Remark:** Angle α is the free rotating angle. α should be approx 20°. When α is less then 10°, the brake pads are worn out. The spring is compressed during angle β. This will be increasingly heavy towards the end.
Tools to be used:

	Brake lever lifter tool

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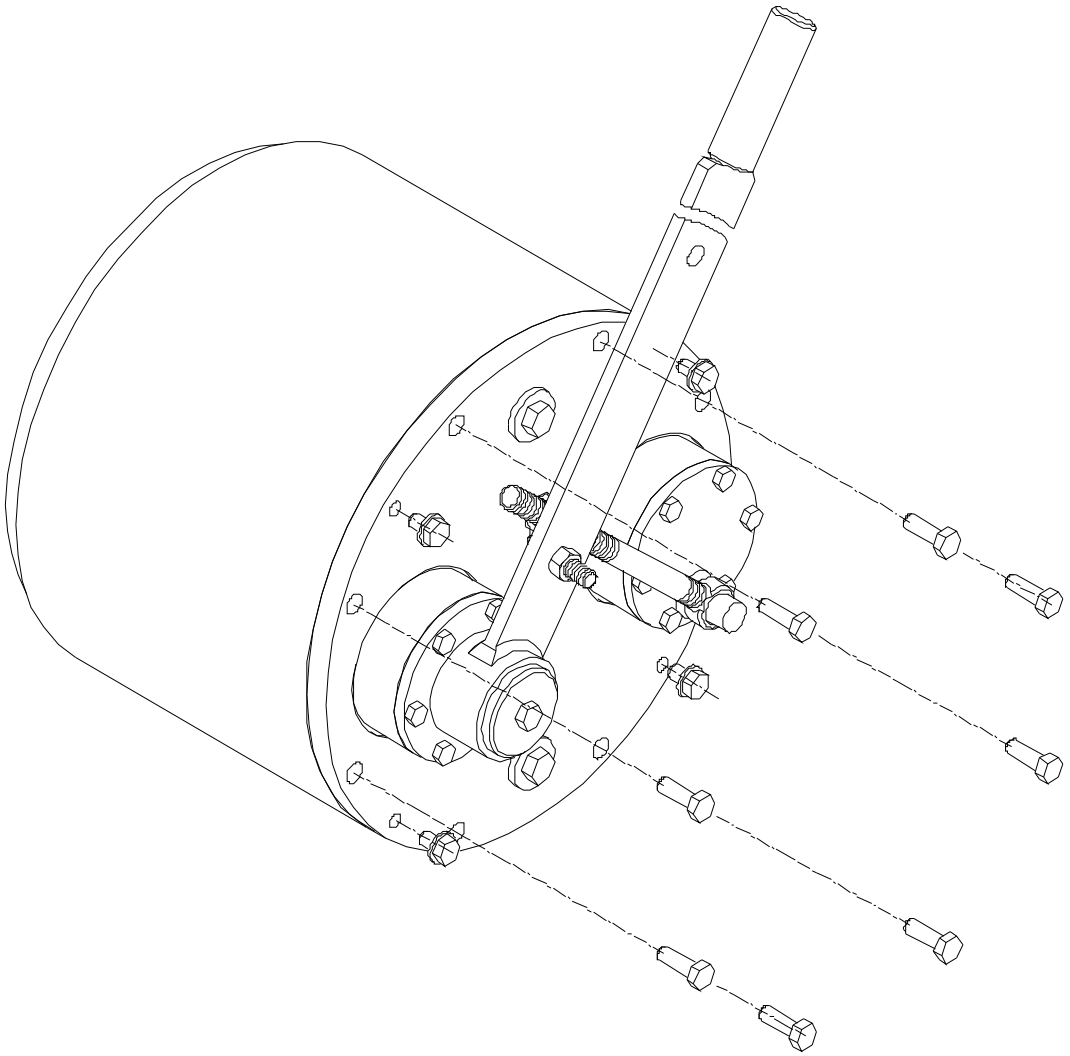
Step 3 of 5



Procedure description:	
- Loosen all bolts. The bolts with washers are to protect the threaded holes. **Remark:**	
Tools to be used:	
	2 * Wrench 16 - 19 mm

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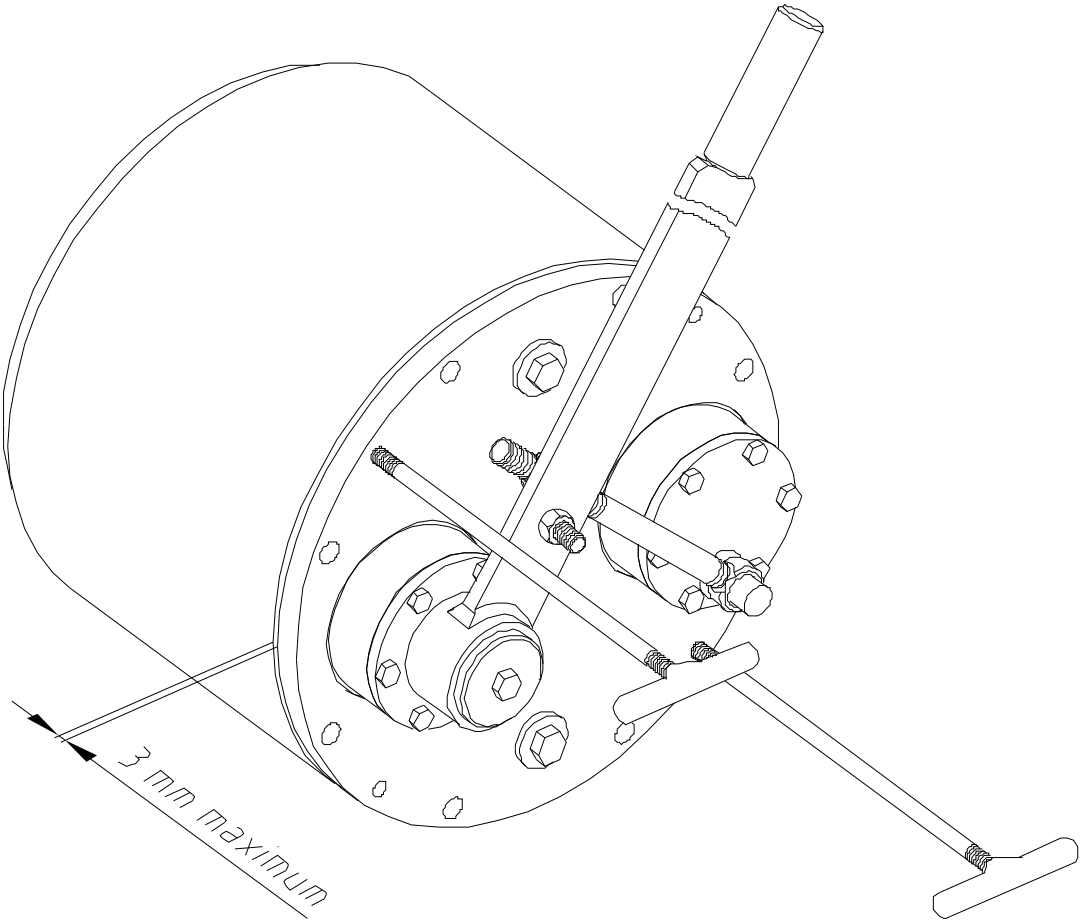
Step 4 of 5



Procedure description:
- Use the handles to lift the brake cover. **Caution:** When brake cover will not "break free" within 3 mm. In this case the brake pads are not free. Pulling out the brake cover by force will damage the brake pads beyond repair.
Tools to be used:

	2 * Handle

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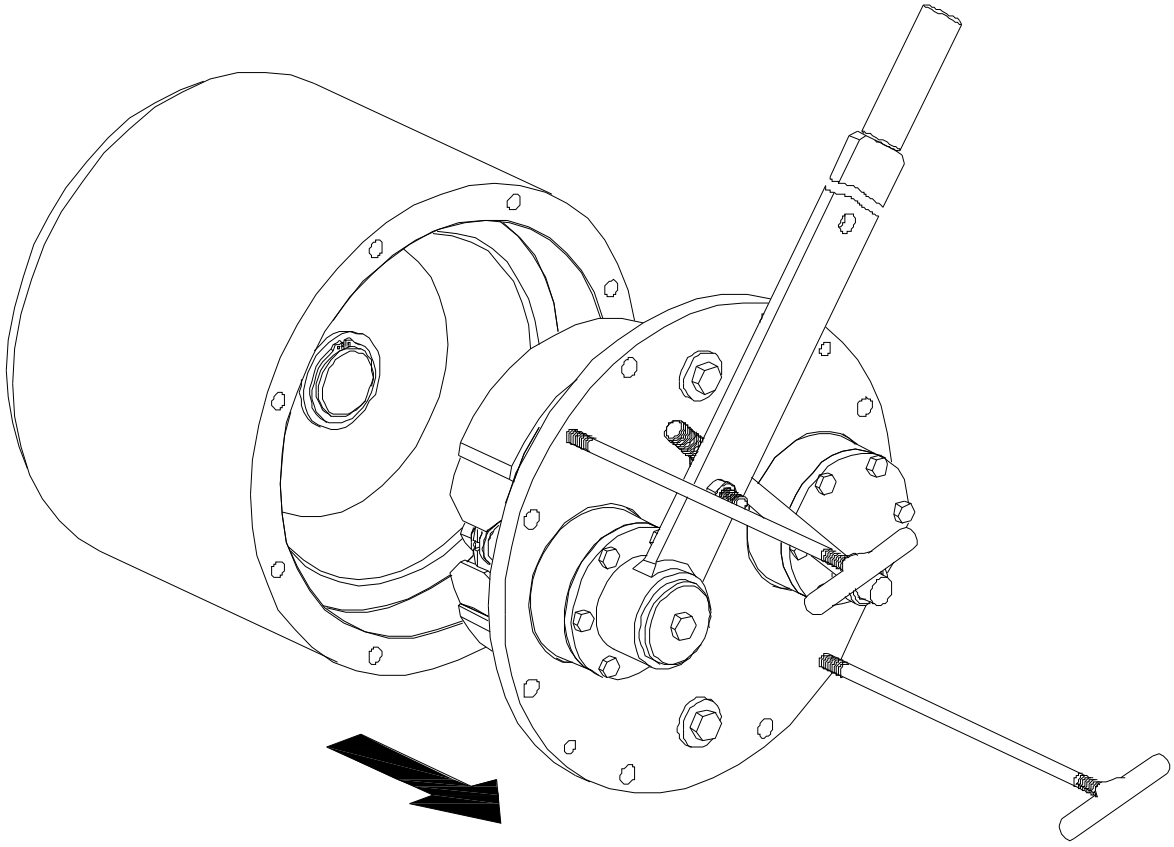
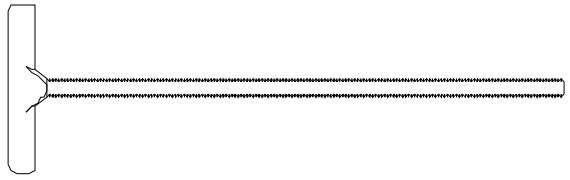
step 5 of 5



Procedure description:	
- Pull out the brake cover. **Caution:** The brake cover is heavy. Use the brake lever as lifting point.	
Tools to be used:	
	2 * Handle

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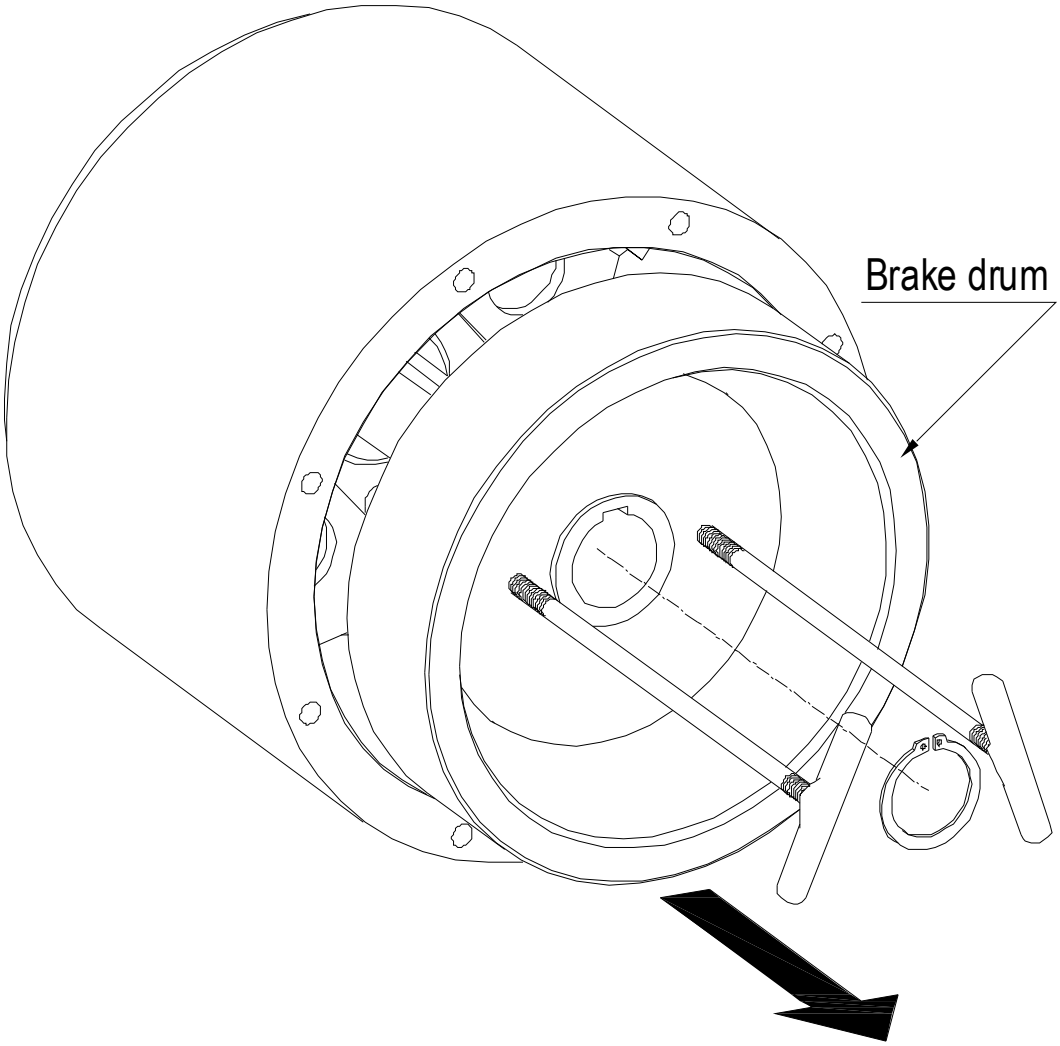
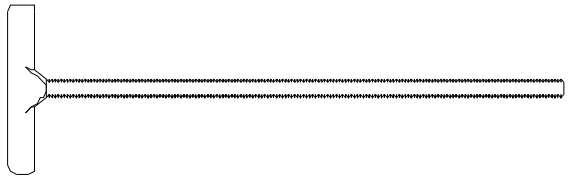
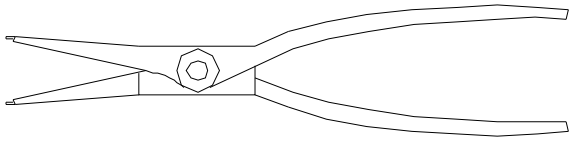
9.2 Brake drum removal procedure

Step 1 of 1



Procedure description:	
- Remove circlips,. - Place handles and pull out brake drum. **Caution:** Make sure bushes are greased during re-assembly.	
Tools to be used:	
	2 * Handle
	Circlip pliers

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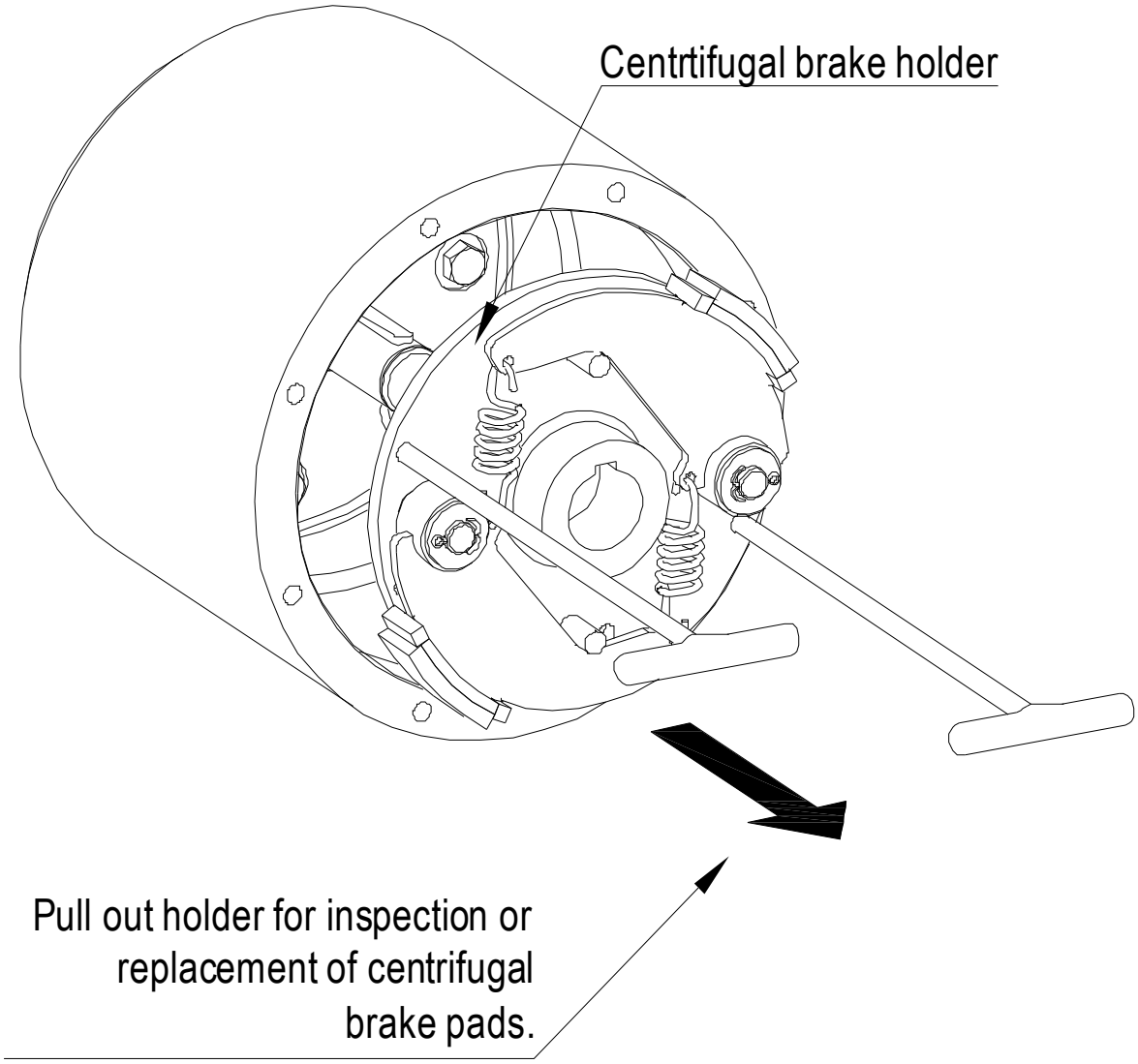
9.3 Centrifugal brake holder removal procedure

Step 1 of 1



Procedure description:	
- Pull out holder for inspection or replacement of centrifugal brake pads. **Caution:**	
Tools to be used:	
	2 * Handle

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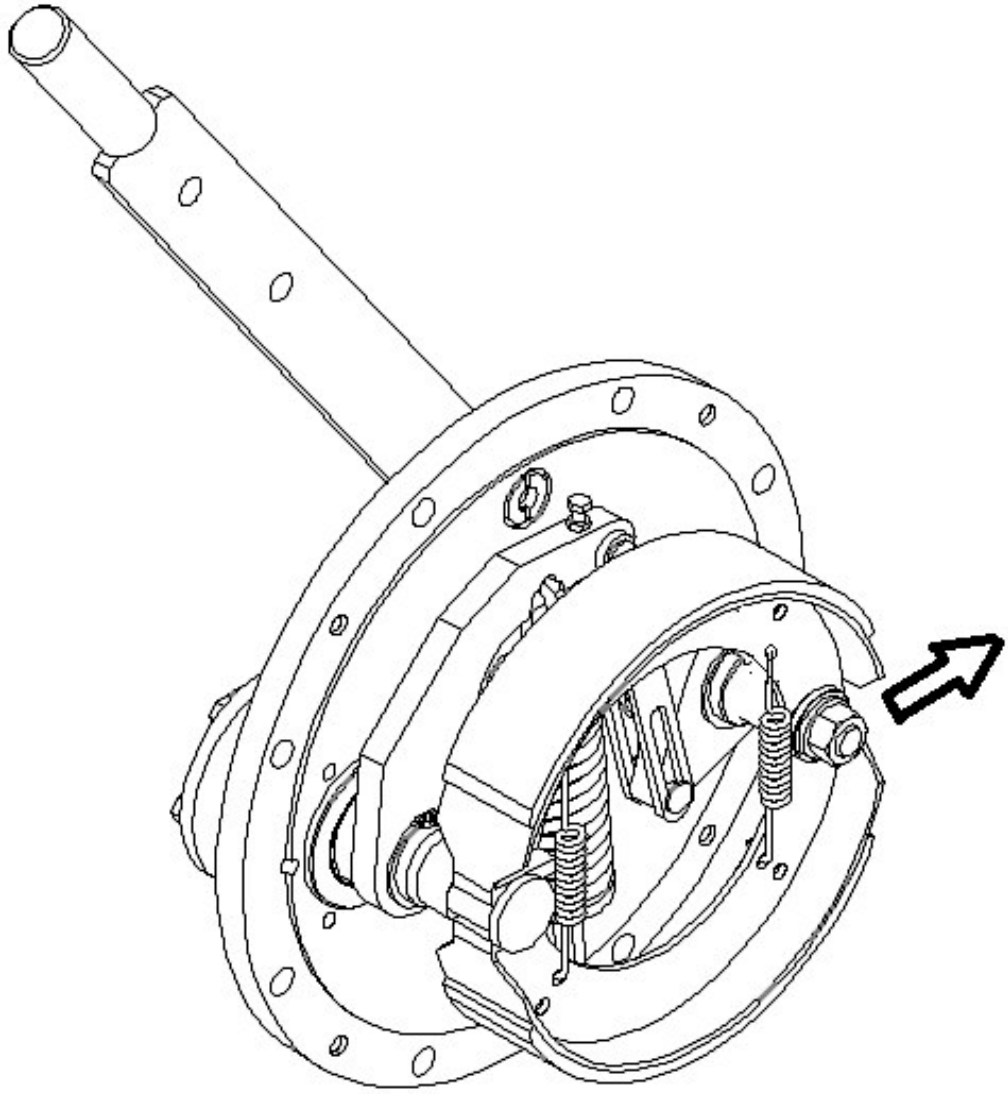
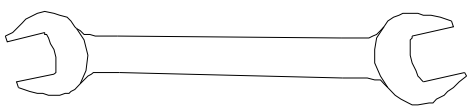
9.4 Brake pad removal procedure

Step 1 of 2



Procedure description:	
- Remove nut and washers. (DO NOT Remove springs) - Remove brake pads. **Remark:** Check if brake pads should be replaced.	
Tools to be used:	
	Wrench 19 / 24 mm

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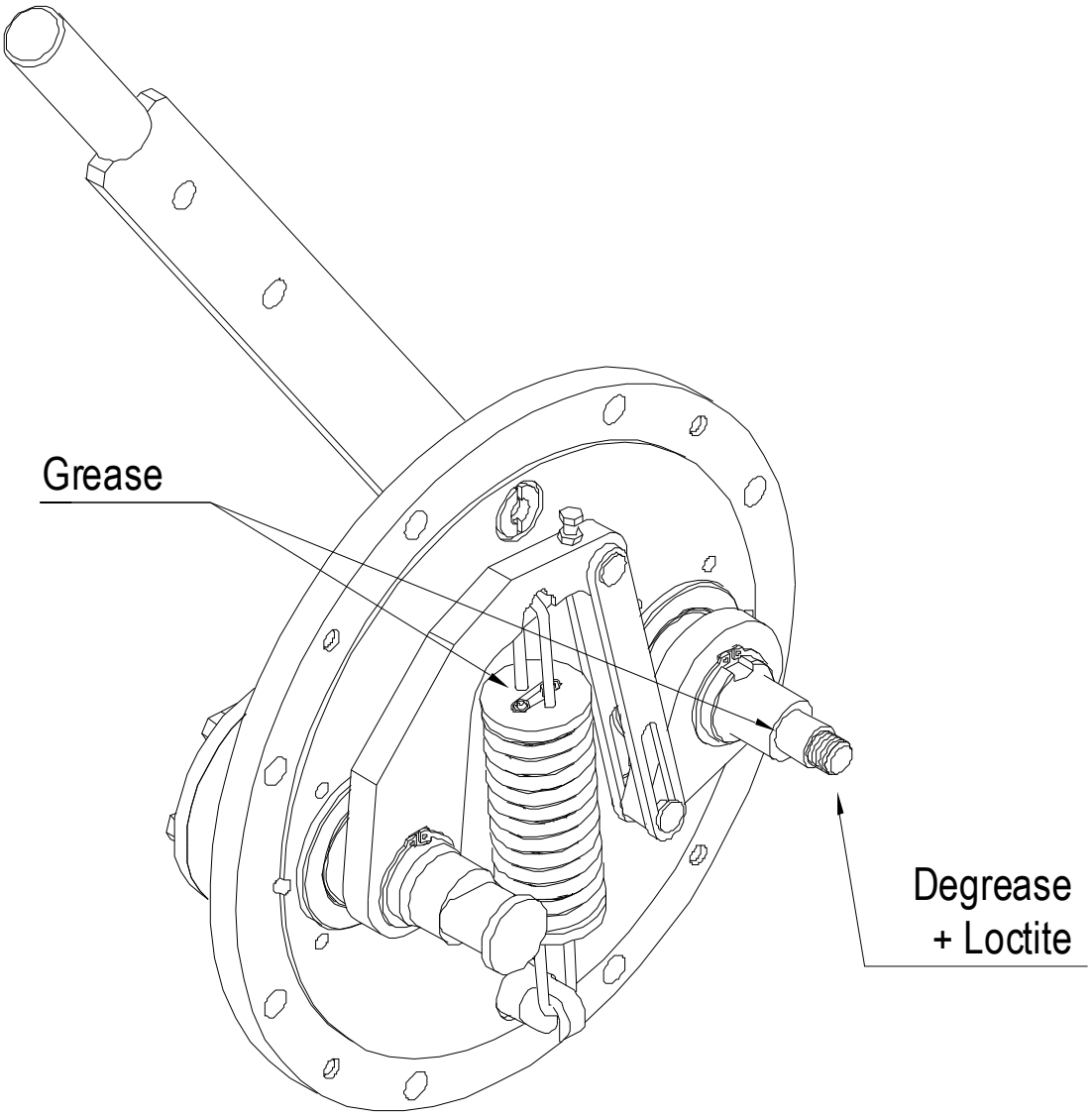
Step 2 of 2



Procedure description:	
- Clean and degrease thread for assembly of nut during reassambly process. - Use Loctite for nut during re-assembly. **Remark:** Use grease on brass bearing washers and other moving parts during re-assembly.	
Tools to be used:	
	Steel brush

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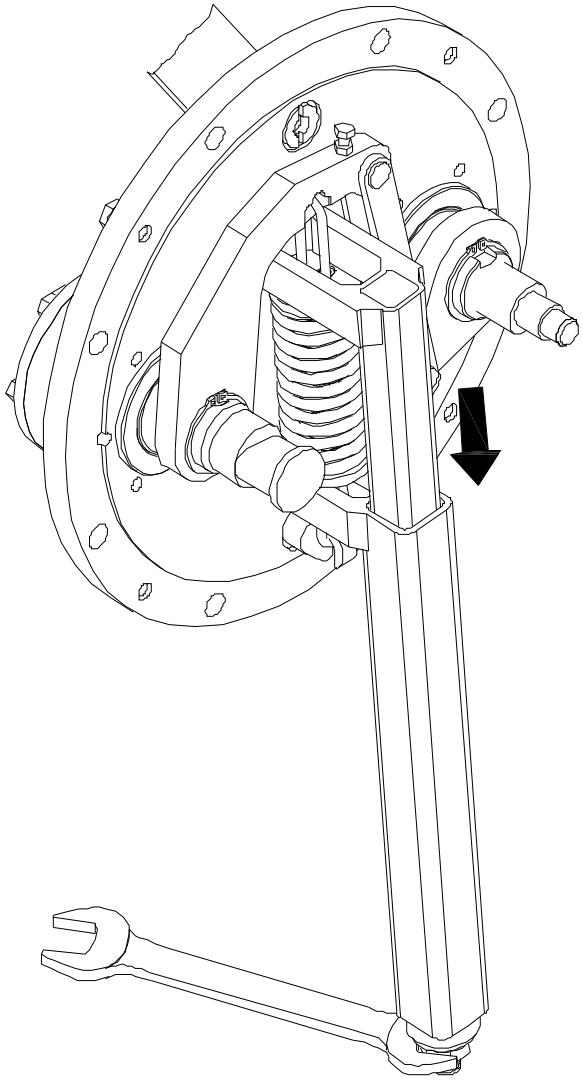
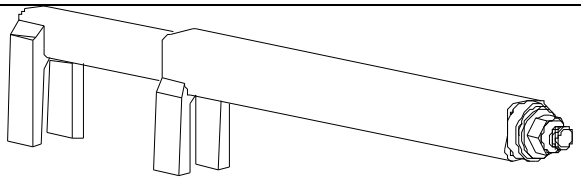
9.5 Replacement of stop brake spring procedure

Step 1 of 6



Procedure description:
- Mount spring compressor. - Bring spring to maximum compression by use of wrench. **Remark:** The spring applies pressure on the joints. Be careful not to shoot parts away. Use grease on all hinges and joist during re-assembly.
Tools to be used:

	Spring compressor
	Wrench 24 mm

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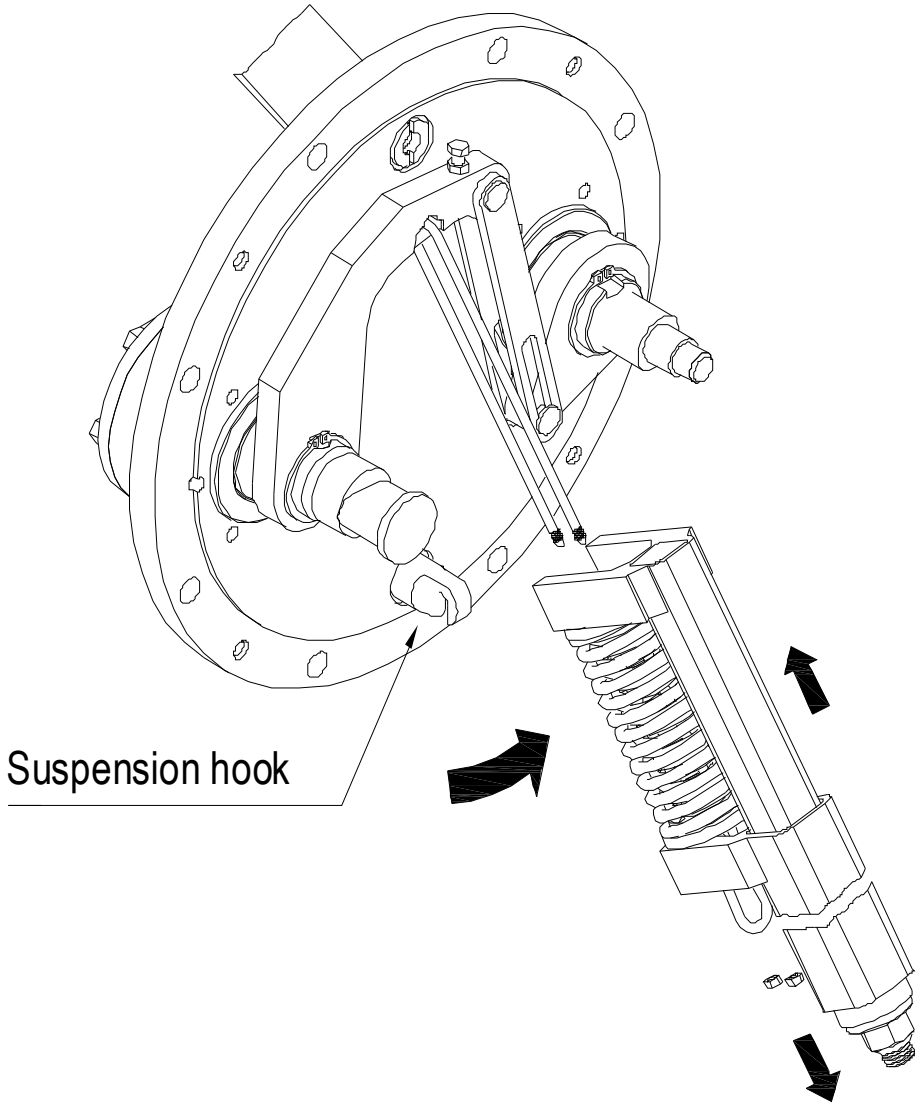
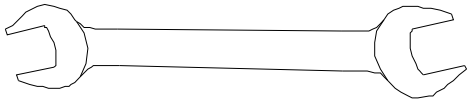
Step 2 of 6



Procedure description:
- Remove spring unit from suspension hook. - Shift spring compressor upwards to make way for removing nuts. - Remove nuts M5 and Remove spring unit completely. **Remark:**
Tools to be used:

	Wrench 8 mm

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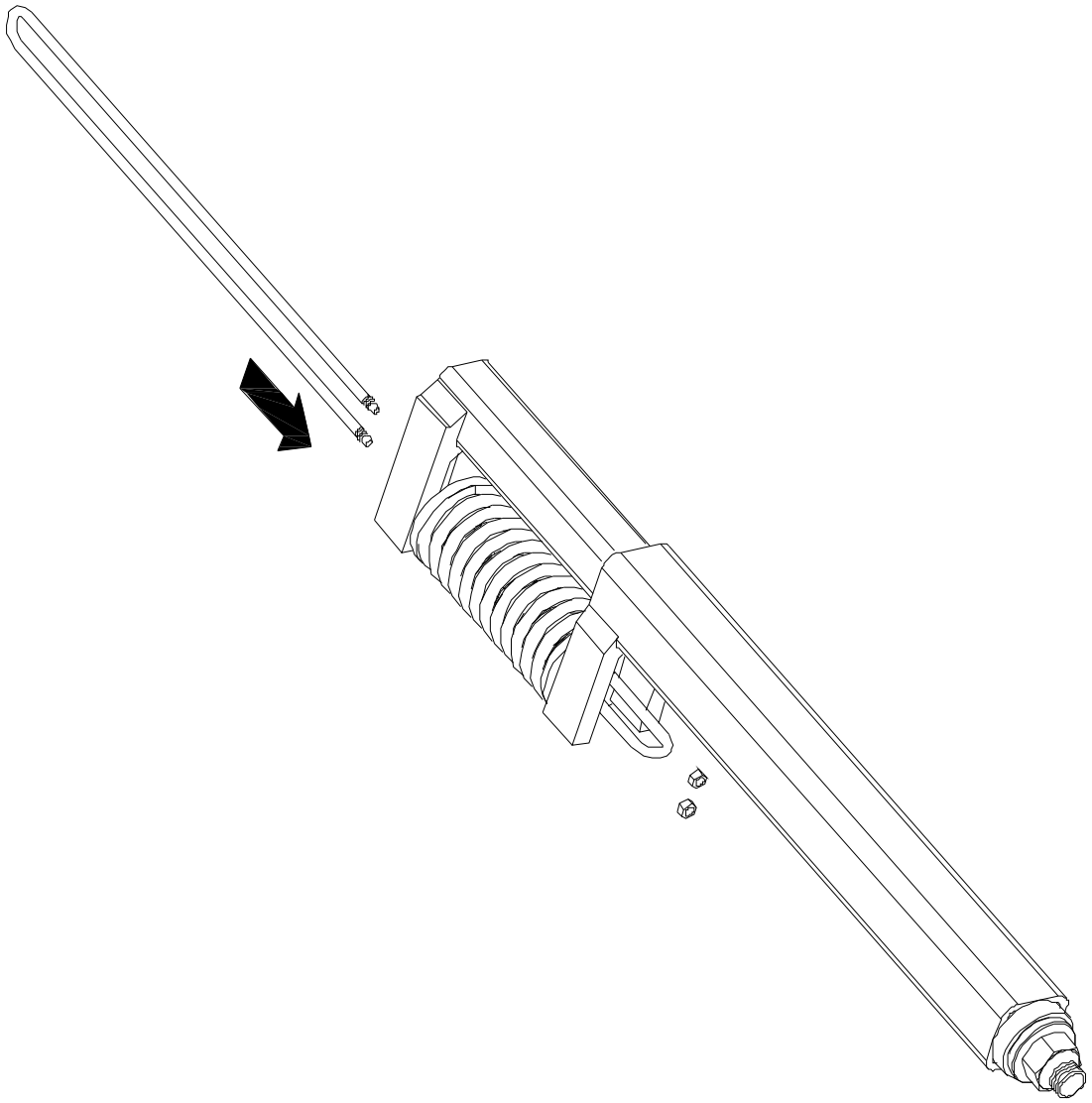
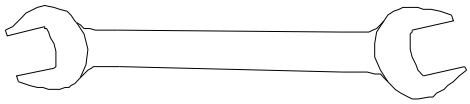
Step 3 of 6



Procedure description:	
- Mount long U-bracket. - Mount nuts on long U-bracket. **Remark:**	
Tools to be used:	
	Wrench 8 mm

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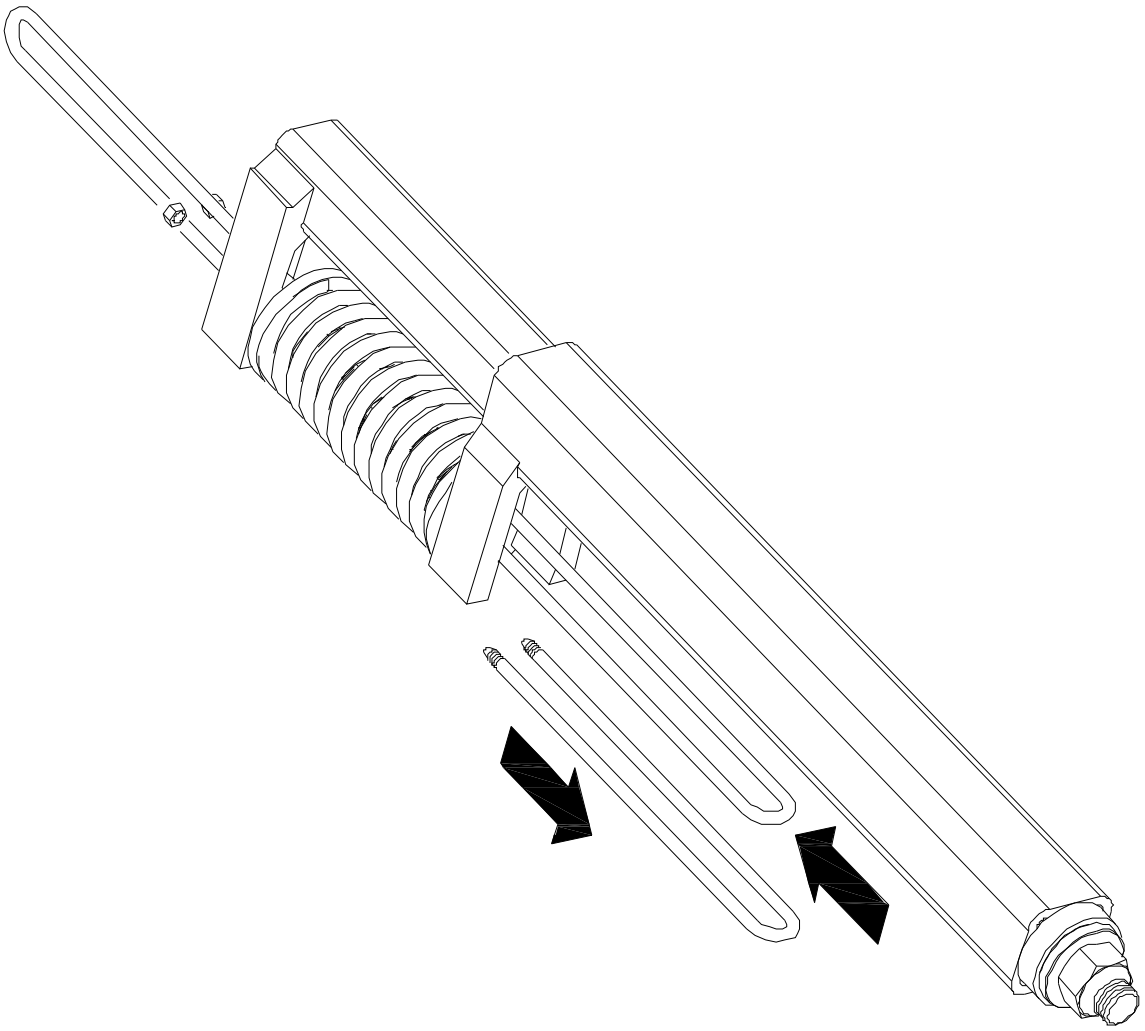
Step 4 of 6



Procedure description:
- Rotate the internal brake lever as much as possible to unload the spring. - Apply pressure to some windings of the spring with adjustable-joint pliers. - Squeeze the hooks together as indicated in the detail section. **Remark:** Place nuts M5 for extra safety.
Tools to be used:

	Wrench 8 mm

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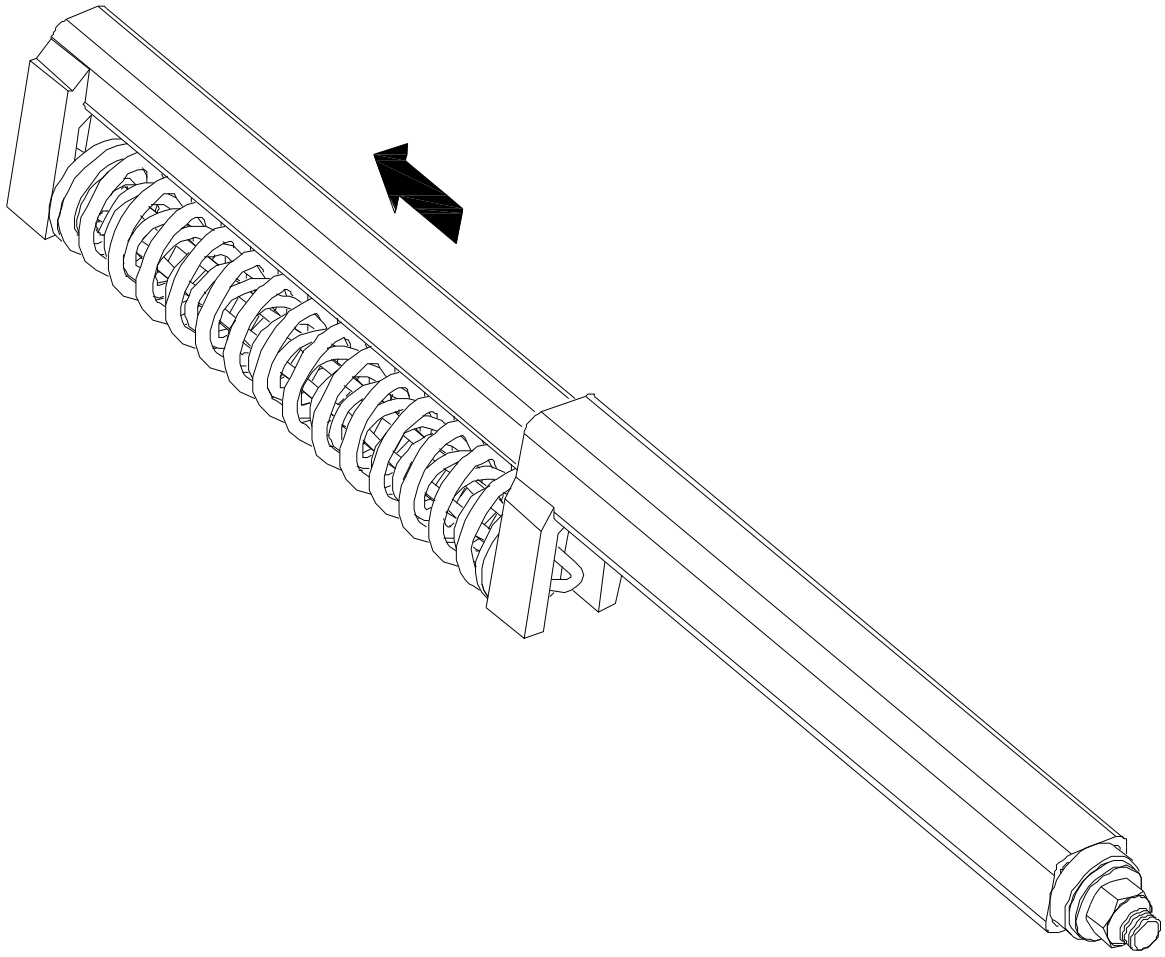
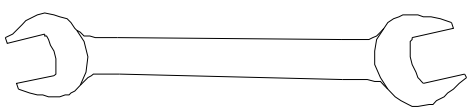
Step 5 of 6



Procedure description:	
- Decompress spring unit. **Remark:**	
Tools to be used:	
	Wrench 24 mm

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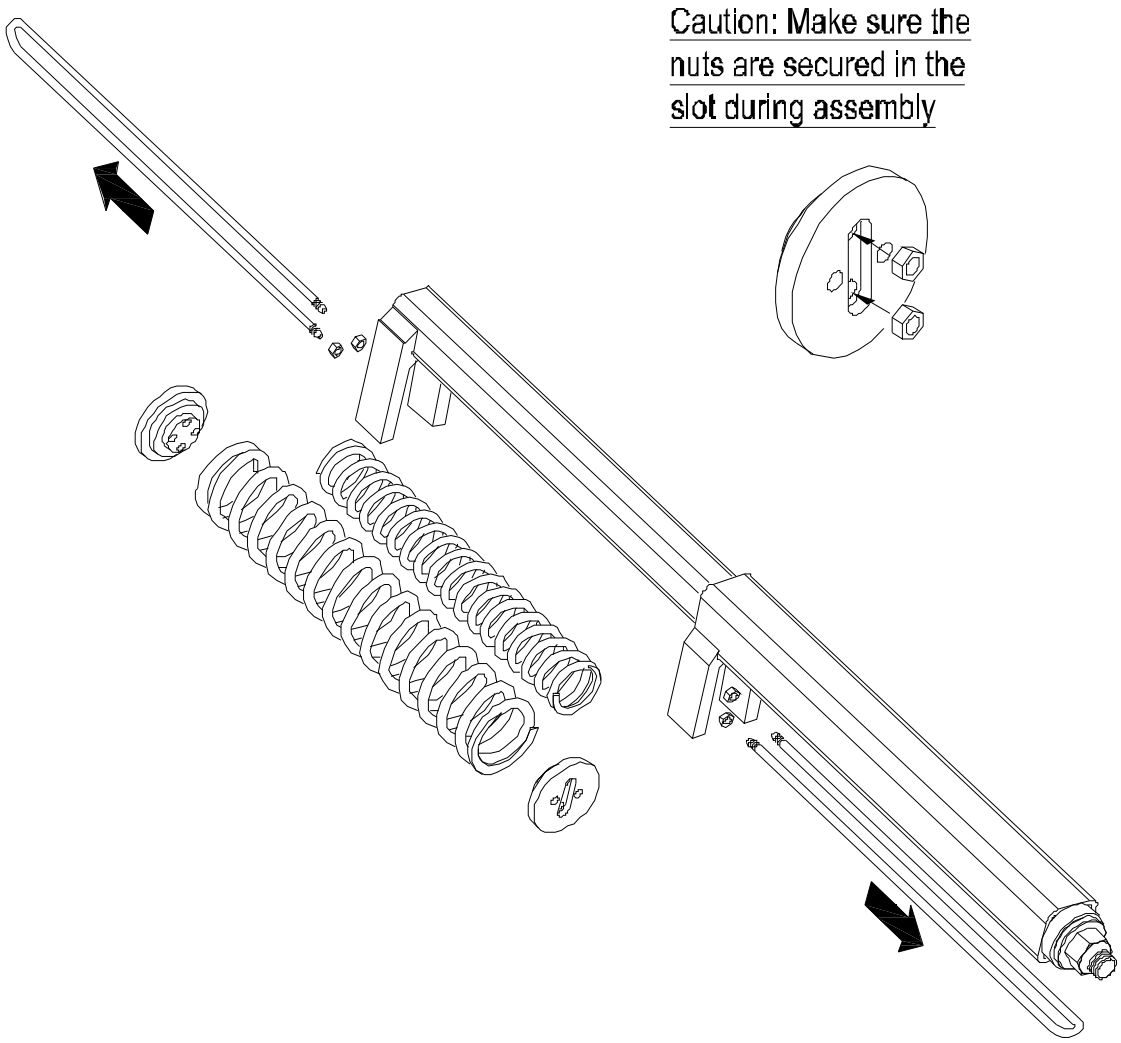
Step 6 of 6



Procedure description:
- Dismount nuts on both U-brackets. - Remove Long U-brackets. - Replace springs and follow instructions in reversed order to mount new springs **Remark:** Make sure the nuts are secured in the slot during assembly.
Tools to be used:

	Wrench 8 mm

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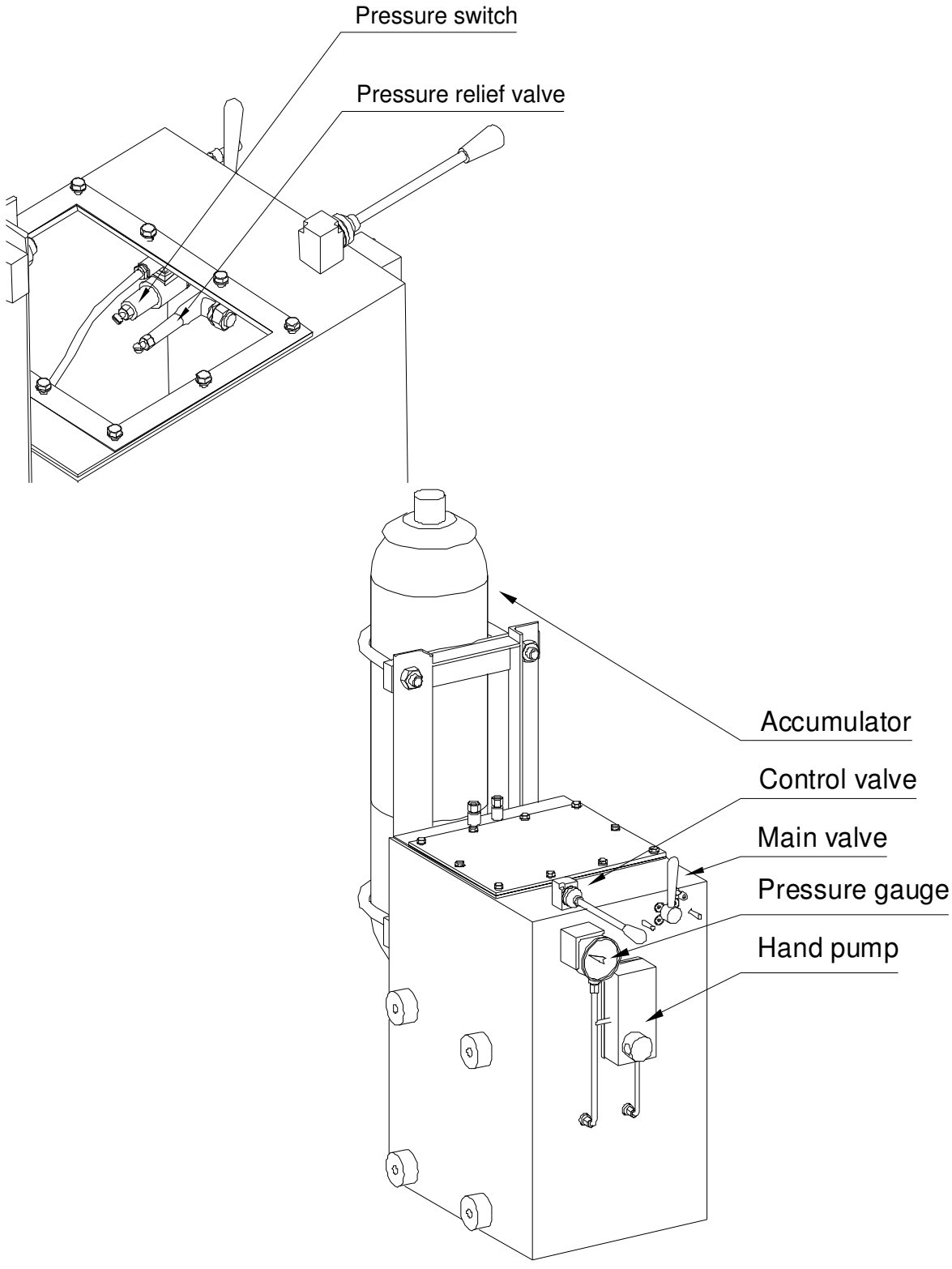
10 Information sheets

10.1 Stored power unit / accumulator



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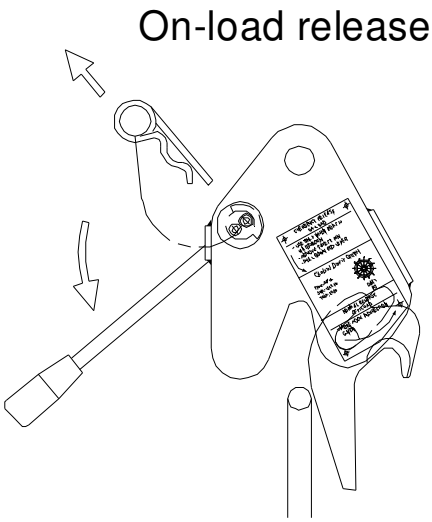
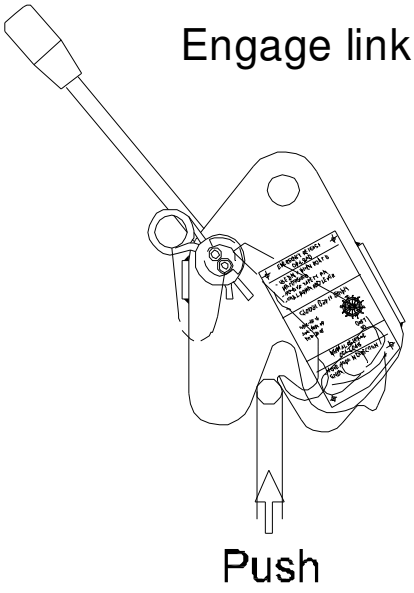
10.2 Rescue boat hook HR





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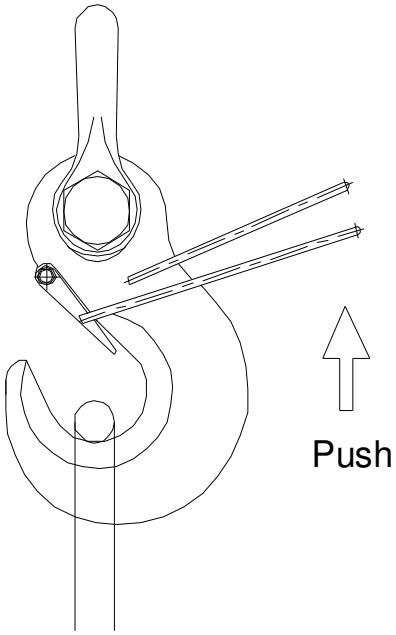
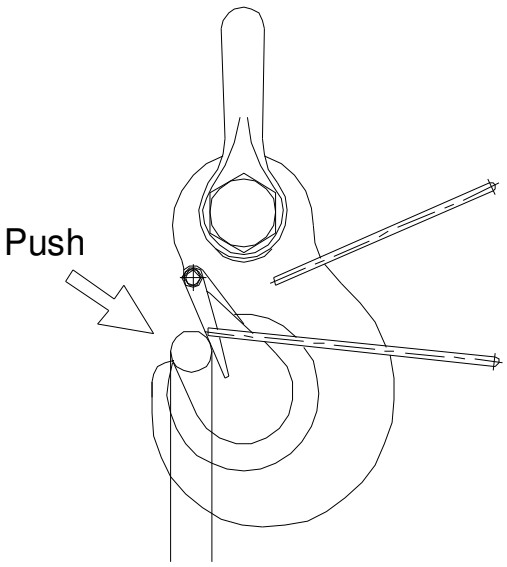
10.3 Rescue boat hook HRN

Off-load release



Engage link



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10.4 Lubrication / Hydraulic oil recommendation

APPLICATION POINT	RECOMMENDATION	SYSTEM	POSITION	Q'TY / SYSTEM
GEAR BOX OF BOAT WINCH	ISO VG CL 68	W02/W04	vertical	1,1 ltr
			horizontal	5,0 ltr
		W07	deck	6,0 ltr
		W08	vertical	3,2 ltr
		W10/W14	on deck	7,0 ltr
		W20/W26		9,0 ltr
GEAR BOX OF SLEWING GEAR		slewing cranes	on the column	see the instruction manual
FREEWHEEL OF BOAT WINCH	ISO VG 15 HLP	W02/W04	in brake house	lifetime filled
		W07		
		W08		
		W10/W14	on crank shaft	
		W20/W26		
HYDRAULIC SYSTEM		various types	see system	see the instruction manual
GREASE NIPPLES	Grease with EP additives NLGI-class 2	various crane types	slewing columns	1,5 kg
			slewing rings	2,5 kg
			cylinder heads	0,5 kg
WIRE ROPE FALLS	Wire falls grease according to lubricant / oil maker's standard	all types	on winch drum	1,0kg/30m

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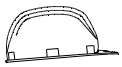
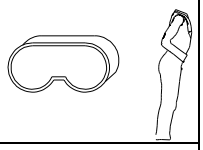
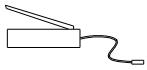
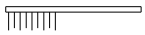
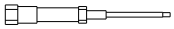
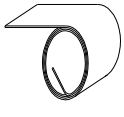
11 Tools

11.1 Standart tools

Description	**Articel no.**	**pc**	
Safety helmet			
Safety climbing gear			
Gloves			
Strengthened shoes			
Safety glases			
Grease pump with grease type NLGI – class 2 with EP additives			
Digital photo camera (send in only pictures when situation is critical)			
Open–end spanner nr 5,5–24			
Socket wrench nr 5–10			
Wire brush			
Adjustable – joint pliers			
Circlip pliers			
Screwdrivers with different sizes and heads			
Sandpaper			

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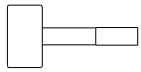
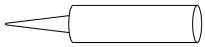
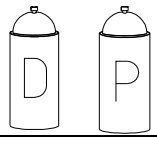
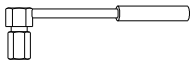
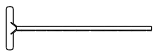
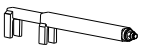
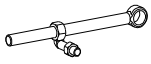
Description	**Articel no.**	**pc**	
Hammer			
Bond en seal (liquid sealant) *do not use silicone based Material*			
Degreaser / cleaner			
Rattle keys 8−24			
Grease can standard grease			
Funnel			
Adjustable spanner			

11.2 Special Global Davit tools

Description	**Artikcel no.**	**Pc**	
Handle (Pulling bar) M10	4-2205	2	
Adaptor piece	4-2204	2	
Spring compressor	3-2344b	1	
Brake lever lifter tool	4-2210	1	

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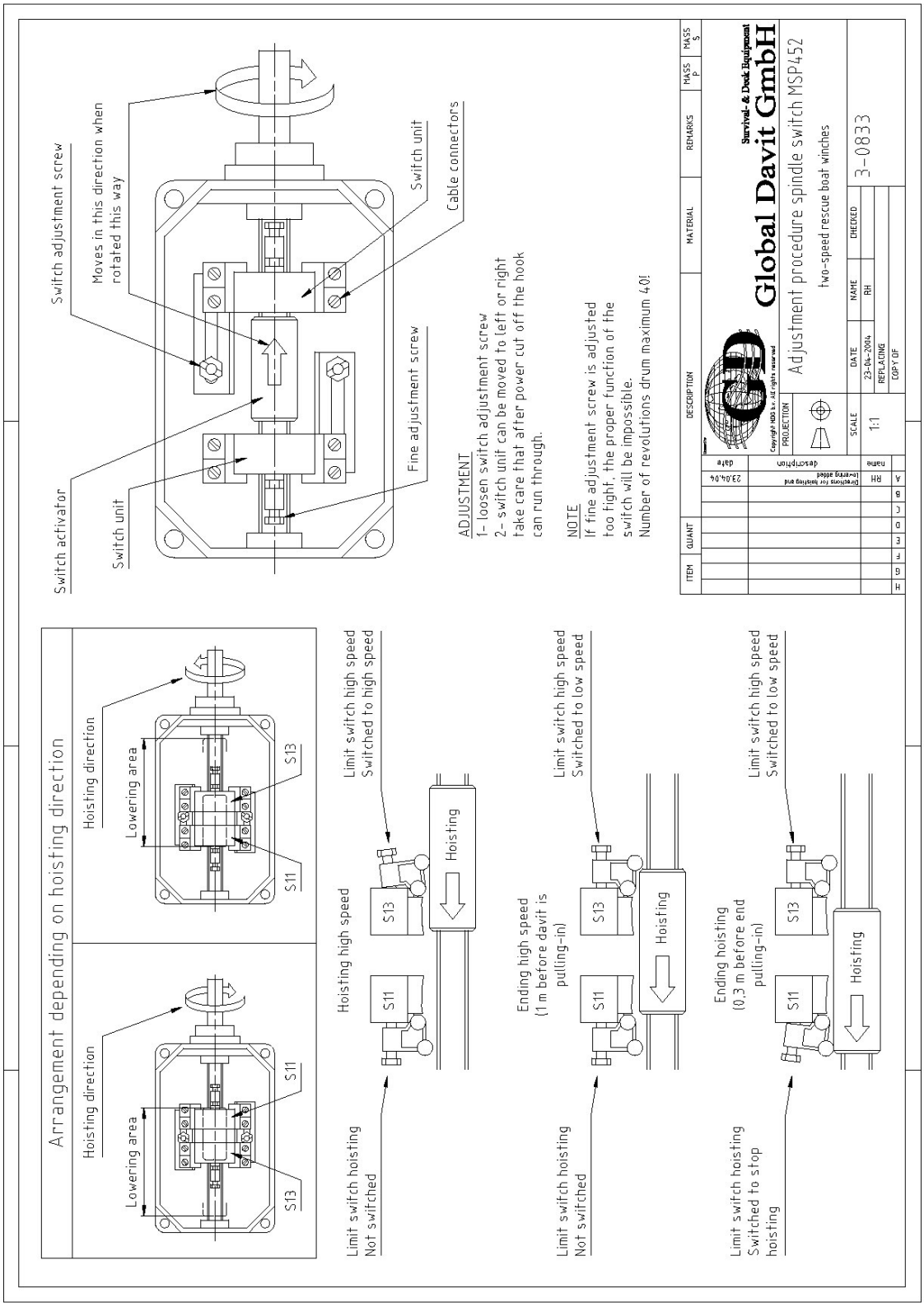
12 How to adjust the different type of limit switches

12.1 Adjustment procedure spindle switch MSP 452 (two-speed boat winch)



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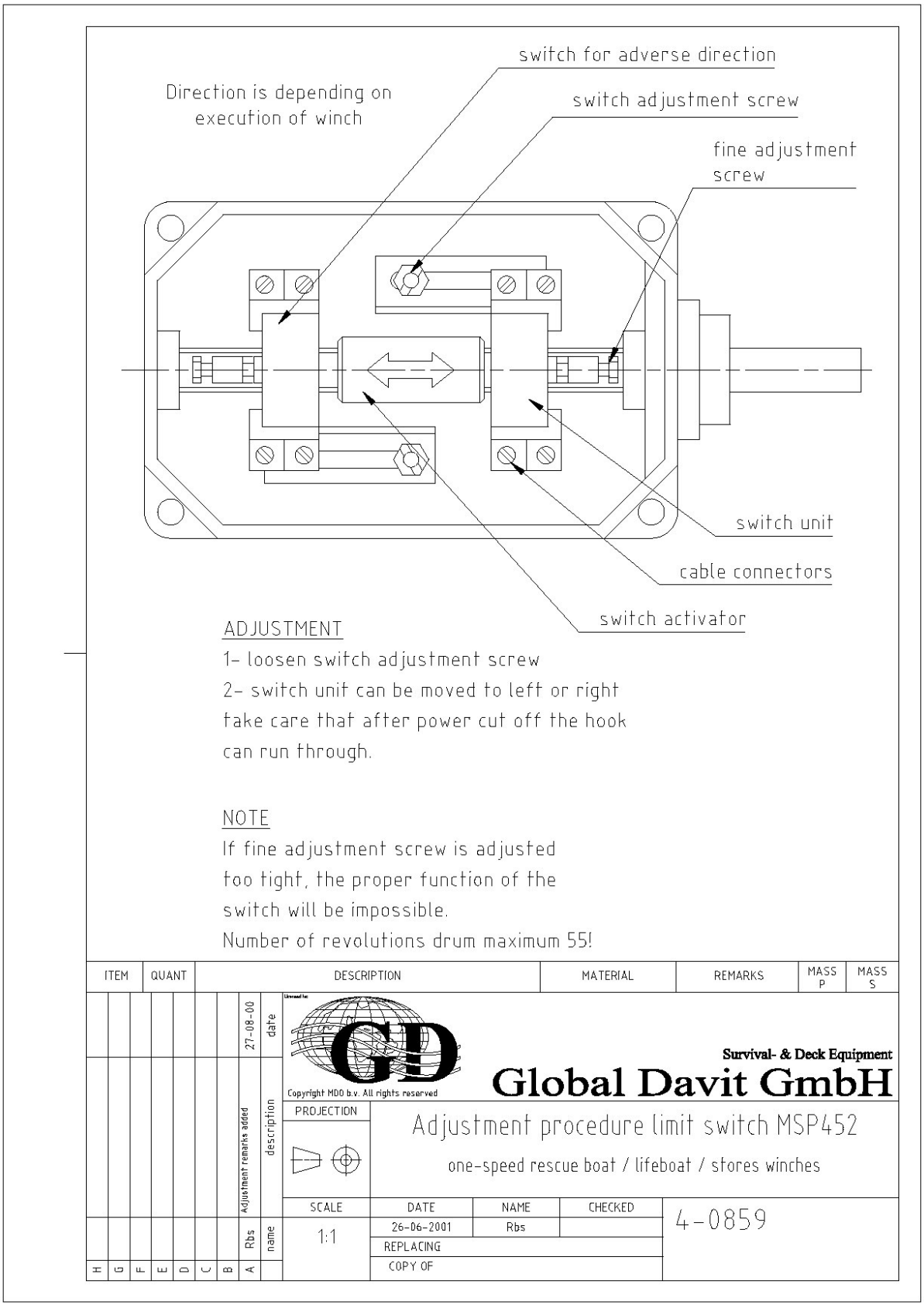
12.2 Adjustment procedure spindle switch MSP 452 (one-speed)



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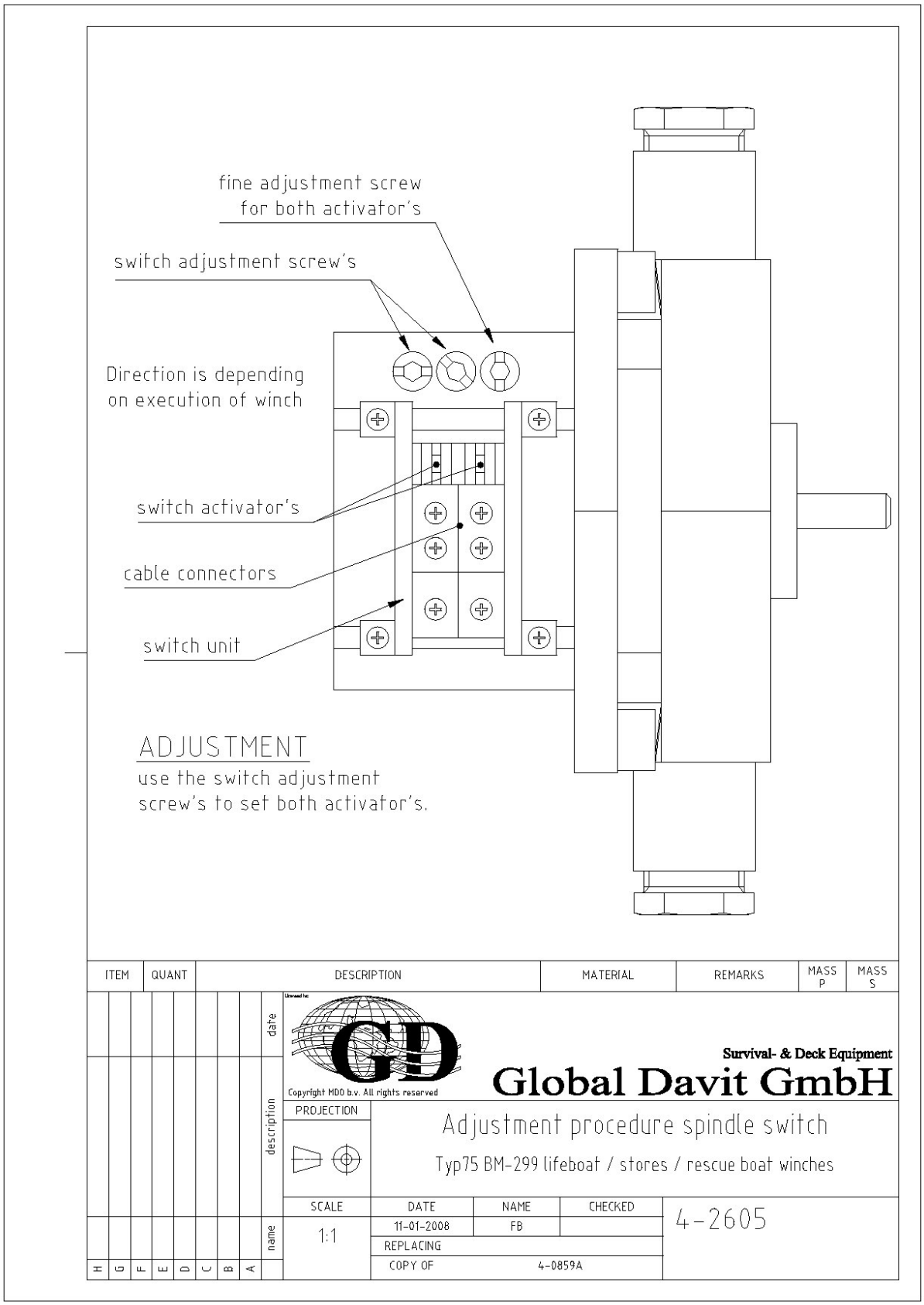
12.3 Adjustment procedure spindle switch 75 BM 299 (two-speed boat winch)



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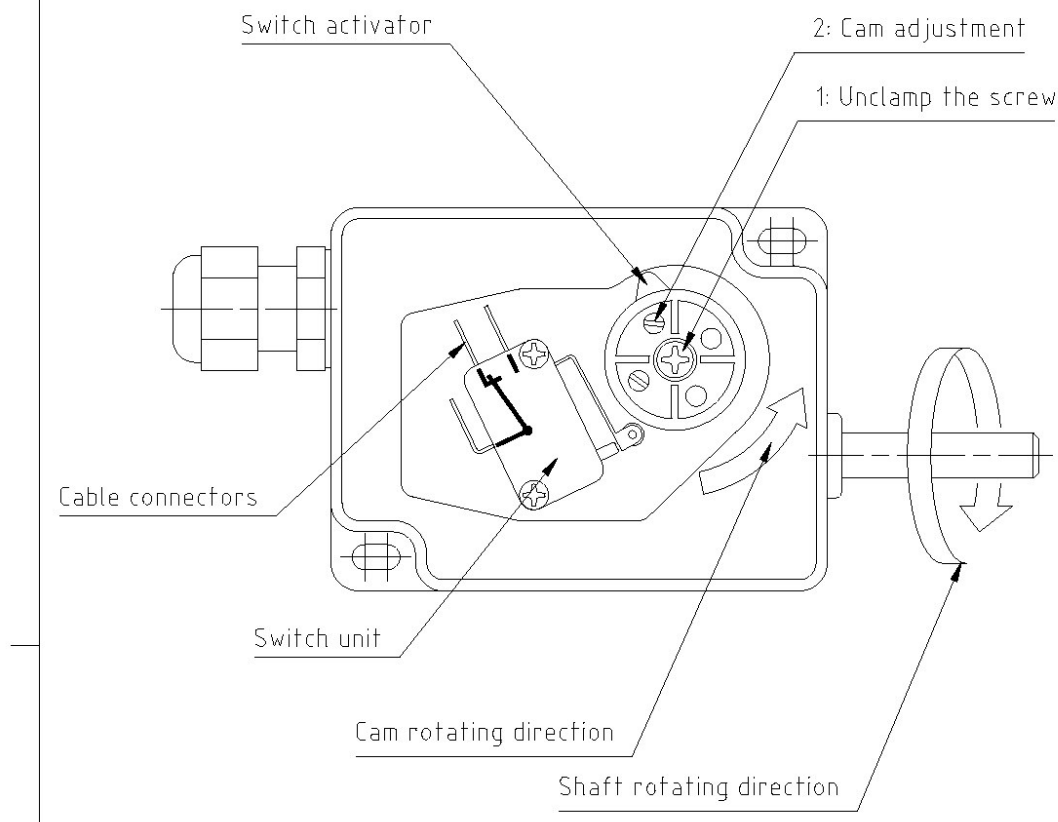
12.4 Adjustment procedure spindle switch MF2C (life boat winch)



ITEM	QUANT	DESCRIPTION	MATERIAL	REMARKS	MASS P	MASS S

Survival- & Deck Equipment

Global Davit GmbH

PROJECTION

Adjustment procedure spindle switch MF2C

lifeboat winches

SCALE	DATE	NAME	CHECKED	
1:1	15-02-2005	Rbs		4-1964
	REPLACING			
	COPY OF			

date | description | name

H G F E D C B A

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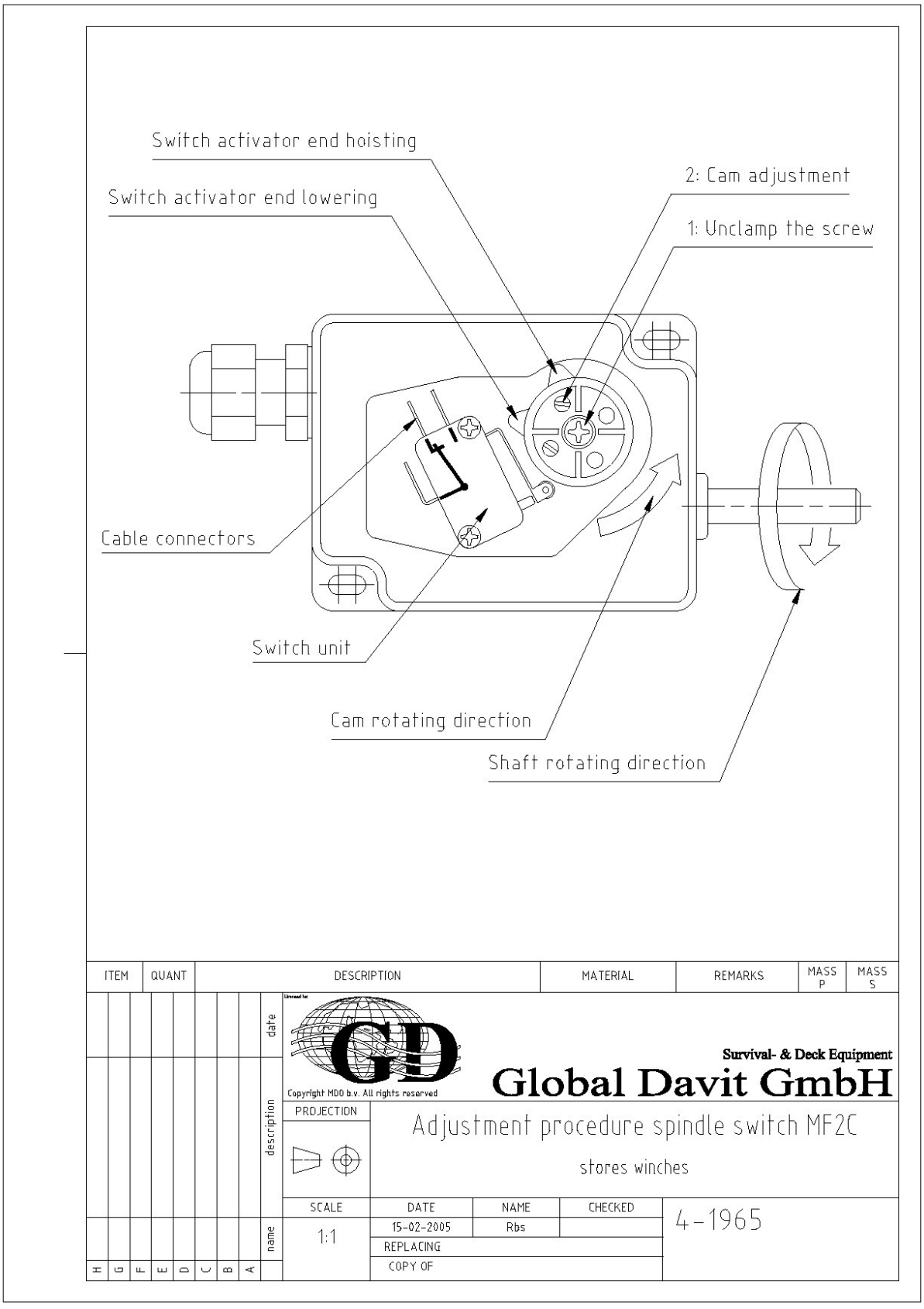
12.5 Adjustment procedure spindle switch MF2C (stores winch)



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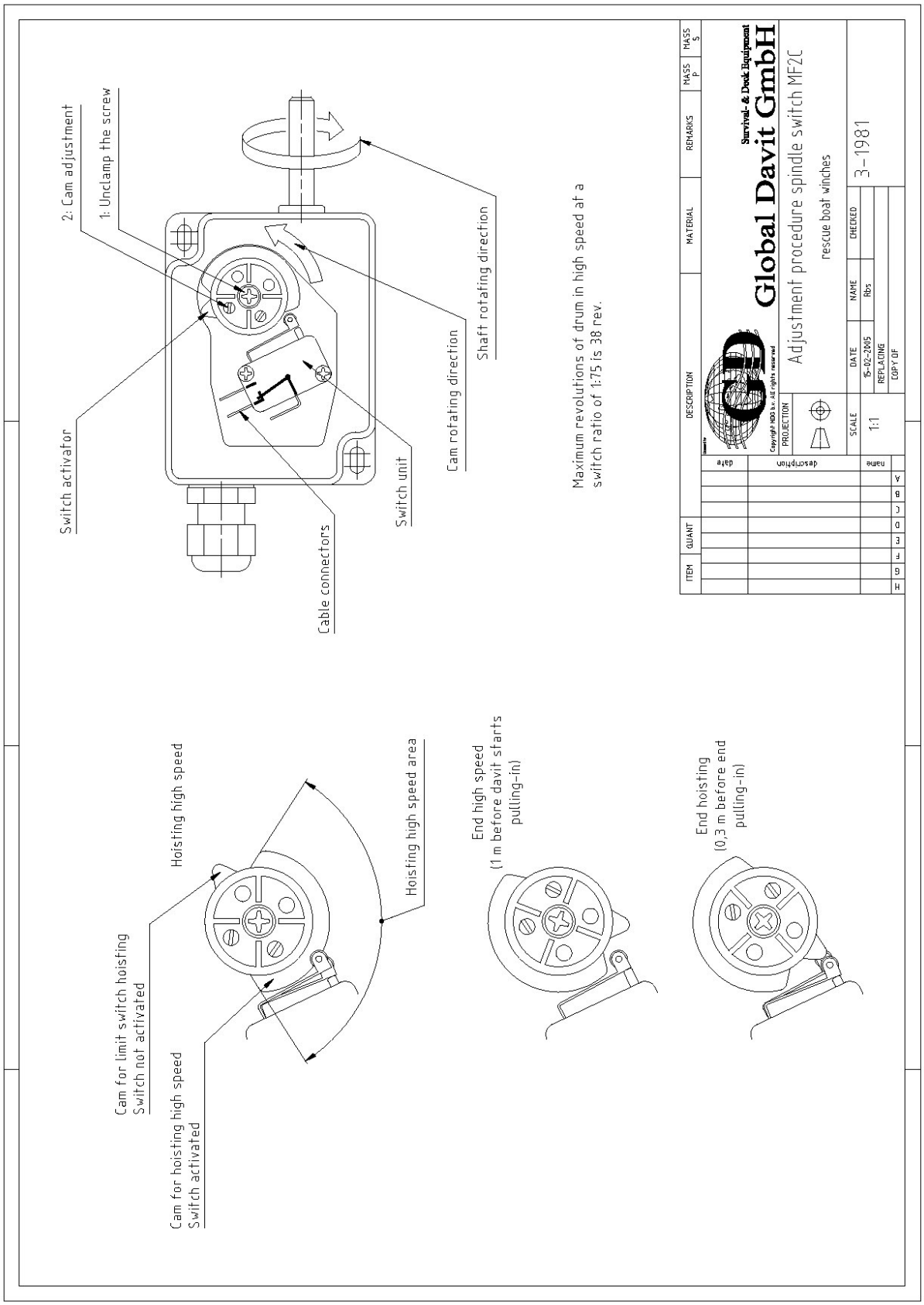
12.6 Adjustment procedure spindle switch MF2C (rescue boat winch)



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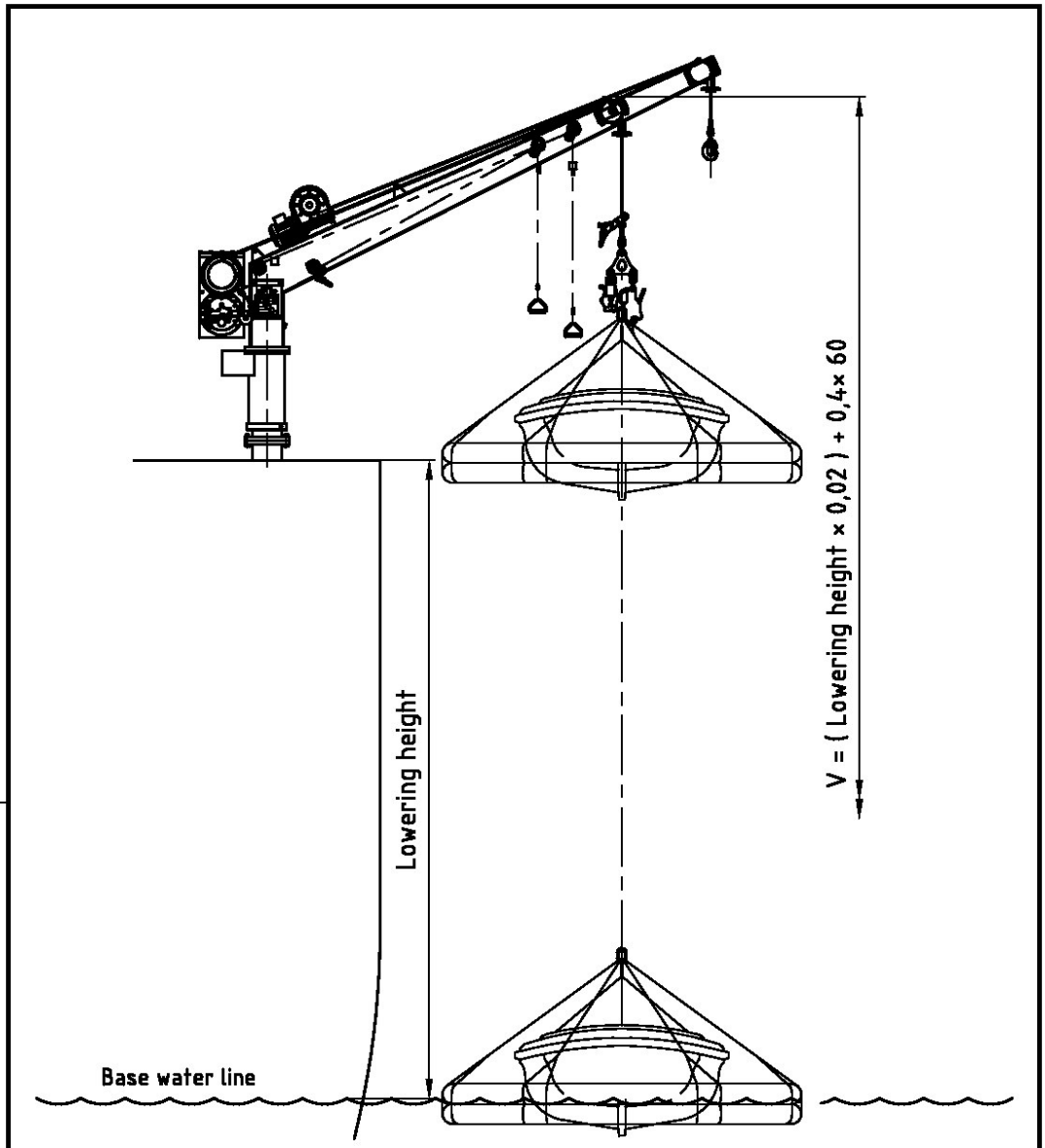
13 Determination lowering speed



ITEM	QUANT	DESCRIPTION	MATERIAL	REMARKS	MASS

Maritime Design Office

PROJECTION

Determination lowering speed

SCALE	DATE	NAME	CHECKED	
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	REPLACING			
	COPY OF	4-1056		

date / description / name

H G F E D C B A

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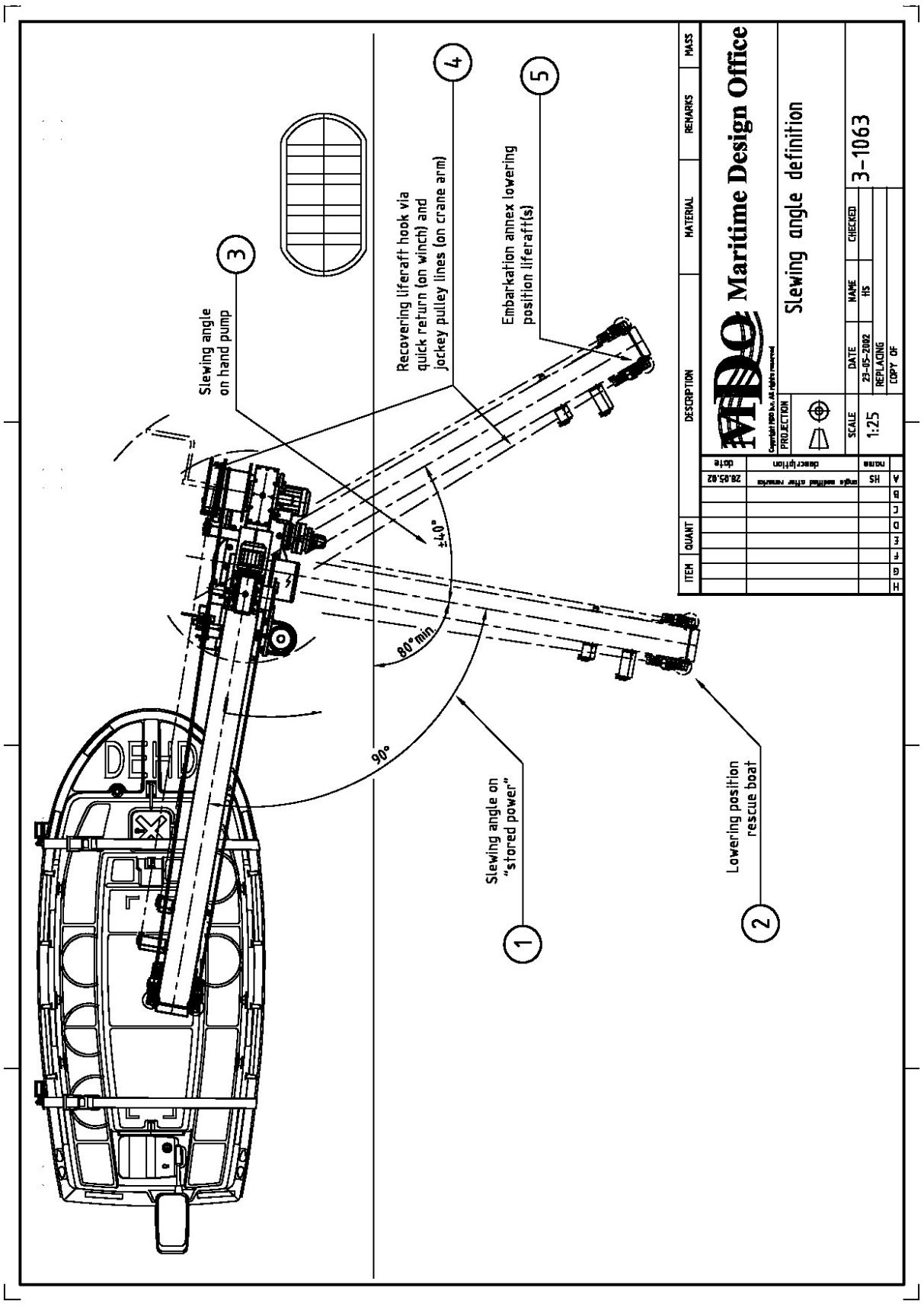
14 Slewing angle definition



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15 Lubricant / Oil recommondation

LUBRICATION / HYDRAULIC OIL RECOMMENDATION

Ambient temperature for -30 up to +50 degree C

	Oil bath lubricated winches		Hydr. brakes	Slewinggear	Slewingring lubrication	Nipple lubrication	Wire rope lubrication	Hydraulic units
	Toothgear	Wormgear	Freewheel units					
BP	Bartran HV 68	GR-XP 68	Energol SHF-LT 15	Bartran HV 68	Energrease OG	Energrease - MM-EP 2 LS 3	Energrease PR 3 Energol WRP	Bartran HV 15
CASTROL	Hyspin AWH-M 68	Alpha SP 68	Hyspin AWH-M 15	Hyspin AWH-M 68	Spheerol SX 2	Spheerol EPL 2	Spheerol SX 2	Hyspin AWH-M 15
CHEVRON	Mechanism LPS 68	Gear compound EP 68	Mechanism LPS 15	Mechanism LPS 68	Open Gear Lubricant 250 NC	Dura-Lith grease EP2	Open Gear Lubricant 250 NC	Mechanism LPS 15
ELF	Visga 68	Epona Z68	Visga 15	Visga 68	Epexa MO2	Epexa 2	Cardrexa DC1	Visga 15
ESSO	Univis N 68	Spartan EP 68	Univis N 15	Univis N 68	Cazar K 2	Beacon EP 2	Cazar K 2	Univis N 15
MOBIL	DTE 16M	Mobilgear 626	DTE 11M	DTE 16M	Mobilux 3	Mobilux 2 Mobilux EP 2	Mobilarma 798	DTE 11M
SHELL	Tellus T68	Omala 68	Tellus T15	Tellus T68	Malleus Fluid C	Alvania grease - EP2 R3	Malleus Fluid C Cardium Compound C	Tellus T15
TEXACO	Rando HD 68	Meropa 68	Rando HD-Z 15	Rando HD 68	Texclad Premium 2	Multifak EP 2	Texclad 2 Crater 2x Fluid	Rando HD-Z 15

Remarks :
Lubricants have been developing unceasingly;
it is advisable to consult your lubricant supplier,
in particular whenever operation at extremes of temperature should be envisaged.

ITEM	QUANT	DESCRIPTION	MATERIAL	REMARKS	MASS

name	description	date
A FdJ	al. for hydraulic units	17.03.05

Global Davit GmbH
Survival- & Deck Equipment

Lubricant / Oil recommendation

PROJECTION	SCALE	DATE	NAME	CHECKED	
	-	26.03.1999	FdJ		3-0088
		REPLACING			
		COPY OF			Standard

Global Davit GmbH, Graf-Zeppelin-Ring 2, 27211 Bassum, Phone +49 (0)4241 93350, Fax +49 (0)4241 933525, E-Mail info@global-davit.de, www.global-davit.de

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