FRV40-226-027-010

REV 1

DESCRIPTION, OPERATION, INSTALLATION AND MAINTENANCE INSTRUCTIONS

Encapsulated Liferafts and Davits
Model: Davit: SRR360/3,65/21 Winch: 08-02 HVStop

Halter Marine, Inc.
13085 Seaway Rd.
P.O. Box 3029
Gulfport, MS 39505
50-SPNA-1-00031

PUBLISHED BY DIRECTION OF NOAA

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31 October 2007

RECORD OF CHANGES

Change No.	Date	Title and/or Brief Description	Signature of Validating Officer
REV 1	**08/05/04**	**MODIFIED TO INCLUDE LAUNCHING INSTRUCTIONS**	
REV 2	**10/29/07**	**MODIFIED DAVIT AND WINCH**	

APPROVAL AND PROCUREMENT RECORD PAGE

APPROVAL DATA FOR: FRV40-226-027-010

TITLE OF MANUAL: Encapsulated Liferafts and Davits
APPROVAL AUTHORITY: NOAA

Contract Number	Ship Applicability	Qty Of Manuals	Building Yard
50-SPNA-1-00031	FRV40-226	2 EA	Halter Marine Inc.

REMARKS:

CERTIFICATION: It is hereby certified that FRV40-226-027-010 to be provided under contract 50-SPNA-1-00031 has been approved by the approval data shown above.

Date:_____
Chand, LLC
Mathews, LA 70375
CAGE CODE: 0D5X4

VALIDATION PERFORMANCE

Title of Publication

Encapsulated Liferafts and Davits

Contractor	Sub-Contractor (If Performing Validation)
Halter Marine, Inc.	

Contract No.(s) and Purchase Orders, If Applicable
50-SPNA-1-00031

Chapter	Section	Paragraph	Date Validation Completed	Check here if Not Validated

Contents of this manual have been validated and certified to be applicable to the equipment furnished under the above procurement as specified for Validation.

Name & Authority of Validating Officer: **Signature of Validating Officer:**

FOREWORD

This manual is intended to clearly and accurately reflect the actual configuration of the installed equipment described for the FRV40-226-027-010 Encapsulated Liferafts and Davits. Users are urged to report instances noted wherein the manual does not achieve this objective.

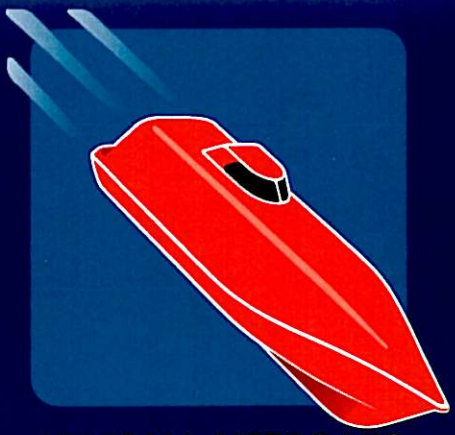
This technical manual provides the instructions necessary to operate, to perform maintenance on and troubleshooting of the Encapsulated Liferafts and Davits. The text is broken down as follows:

MANUFACTURING RECORD BOOK

Davit SA3,5 / Winch W50RS
Davit SRR360 / Winch 08-02

SCHAT HARDING

LIFEBOATS



FREEFALL LIFEBOATS

CRUISE TENDERS

MOB/FRC SYSTEMS

DAVITS & WINCHES

AFTER SALES

Client: HALTER MARINE INC.
Project: Repeat H.1953

umoe

Schat-Harding Reference: 2049022

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Davit type: SRR360/3,65/21

Winch type: 08-02 H/V STOP

schat-harding reserve the right to change or alter the contents of this manual

umoe

D781.011015

Edition: 06/04/2005

INSTRUCTION MANUAL

- INDEX -

DAVIT TYPE: SRR 360 / 3.65 / 21

ON BOARD:

SCHAT-HARDING REFERENCE:

DOCUMENT SECTION

DRAWING SECTION

S R R D A V I T

- PARTICULARS -

DESTINATION

.....

DAVIT AND WINCH DATA

Davit Type	**SRR /360/3,5/21**
Winch Type	08-02 ..... "STOP"
Safe Working Load	
Liferaft Mode	21 ..... kN
Safe Working Load - Winch	25 ..... kN

WIRE ROPE FALL DATA

Construction / Type	Notor HP
Minimum Breaking Load	147 ..... kN
Diameter	12 .....mm
Length	40 ..... m

LIFERAFT DATA

Manufacturer / Type	N/A
Total Weight (including Equipment and Personnel)	up to 1500 ..... kg
Maximum No - Lowering **.....**	**25** ..... persons **(TWENTY-FIVE)**

Schat-Harding Reference -

INTRODUCTION TO UMOE SCHAT-HARDING AS

The company was founded in 1985 with the objective of developing the position of the old HARDING AS as the world's leading manufacturer of evacuation systems for shipping and offshore.
Umoe Schat-Harding AS with its subsidiary companies:
Umoe Schat-Harding BV - Holland
Umoe Schat-Harding Ltd - U.K.
Umoe Schat-Harding GmbH - Germany
Umoe Schat-Harding Inc. - USA - Canada
Umoe Schat-Harding Pt. Ltd. - Singapore
have a total of 370 employees, of which 50 are engineers, the company develops, manufactures and sells all types of survival craft.

Our range includes:
- Rescue boat
- Partially enclosed survival craft
- Fully enclosed survival craft
- Combined cruise tenders/survival craft
- Free fall survival craft
- Winches for the entire range
- Davits for the entire range

Our two modern and well-equipped factories are located on Norway's West Coast between Bergen and Haugesund. The main office and the production of davits, winches and equipment for our free-fall steel offshore survival craft are in Rosendal, while the GRP survival crafts are manufactured at our factory at Ølve.

The name Harding has implied quality and innovation in safety and rescue equipment for years. Schat-Harding has developed a comprehensive and entirely new generation of survival crafts, winches and davits. Development is a continuous process and our products are continually updated based on the experience derived from thousands of deliveries to cruise ships, freighters, drilling rigs and production platforms around the world.

Norwegian creativity and quality are the hallmarks of our products. We hope that you are pleased with the equipment as well as with the manual.

THE MANUAL

This manual has been prepared in accordance with applicable regulations. The plans and data have been examined for compliance with the following:

- SOLAS 74 as amended to date, Revised Chapter III as published by IMO as Resolution MSC.47(66) of 4 June 1996, Regulations 4, 34, 35 and 36.
- The International Life-Saving Appliance (LSA) Code referenced by Regulation III/34 above and as published by IMO as Resolution MSC.48(66) dated 4 June 1996.
- IMO Resolution A.689 (17), Testing of Life-Saving Appliances, Part 1 as amended by MSC/Circus. 596 and 615, IMO Resolution MSC.54(66) dated 30 May 1996, and furthers amendments including MSC/Circ.809.

The purpose of the manual is to ensure that the entire crew of the ship or installation becomes acquainted with the safety equipment, and that they know how to proceed in the event of an emergency so that the survival craft can be used correctly. In addition to the procedures for entering, lowering and manoeuvring, emphasis is placed on correct conduct on board the survival craft, assistance and use of the equipment.

Schat-Harding AS does not assume any responsibility for damages resulting from the use of the manuals, and reserves the right to make changes in the manual without giving any form of notice.

Enquiries may be directed to our Service Department:

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NORWAY	E-mail	schat-harding@umoe.no

NOTE!
Due to the many different types in our range of products, some of the sketches may not correspond exactly to the system described in the manual. The principles and procedures are however correct.

UMOE SCHAT-HARDING SERVICE CENTERS

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SRR (LIFERAFT) DAVIT
- DESCRIPTION -

The davit is designed to handle inflatable life rafts in compliance with current regulations.

The davit is capable of handling inflatable life rafts with a safe working load as specified on the "Particulars" page (code LAP).

The liferaft, loaded with up to its full complement of personnel and equipment, is lowered under gravity.

The "light" hook or unmanned raft is recovered to the embarkation level by manual cranking.

The davit normally comprises of a welded structure, incorporating the associated winch, slewing gear, wire rope fall, and appropriate release hook and ancillary equipment.

Before personnel are allowed to board the davit arm has to be slewed out into the launch position by manual cranking. The slewing gear is self-braking. Liferaft canister must be transferred into the outboard launching position before being inflated.

One person can actuate the launching mechanism, either from a position on deck adjacent to the winch or by use of a remote control gear from within the liferaft.

The lowering speed is well within the minimum and maximum parameters authorised by both the International Convention and National Administrations. The rate of descent is automatically governed in order not to exceed the maximum limit.

The ARH suspension hook, if supplied by Schat-Harding, automatically releases the liferaft when waterborne.

If the davit is to designed for the launch of multiple life rafts then an extra cranking “quick-return (QR)” facility is fitted to enable the "light" hook to be rapidly recovered.

Details and operation of the automatic release hook (ARH), if supplied by Schat-Harding, are contained on pages coded ARH.

All of the equipment is suitable for use in a marine environment.

OPERATION AND SAFETY PRECAUTIONS:

It is essential that the equipment be operated correctly at all times. To this end, the operators must be fully conversant and trained in all aspects of the davit system operation, especially those concerning safety.

MAINTENANCE

Instructions for the maintenance of the davit system, including all ancillary equipment, are incorporated in this manual.

To ensure the davit system provides a long and reliable service whilst remaining in a safe condition, it is essential that the maintenance instructions detailed in this manual are carried out at the recommended intervals. A record must be kept of the maintenance undertaken by completing the record charts provided. See pages coded IPC and IMRR.

SAFETY DEVICES

The launching appliance incorporates statutory safety devices to ensure that:

a. The crank handle cannot rotate during the lowering phase. The mechanism prevents fitting of the crank handle so long as the hand brake is in the released condition. Conversely, operation of the hand brake is not possible when the hand crank is inserted.

b. On cessation of manual cranking operations, the handle does not kick back because an instantaneous, self-locking mechanism is fitted.

c. The liferaft cannot be prematurely released prior to becoming waterborn e.

SRR (LIFERAFT) DAVIT
- OPERATION -

GENERAL

The instructions of the liferaft manufacturer must be read in conjunction with this document. The combined instructions will enable the officer in charge of emergency procedures to produce, if deemed necessary, the vessels own concise instructions that are familiar to operators.

The accompanying drawings reflect the actual situation onboard and therefore form an integral part of the manual. Consult drawings whenever precise details are required.

PREPARATION

As appropriate, slew davit arm into out-board position by manual cranking.

Retrieve release hook inboard with the aid of the tricing line (if fitted) or a boat hook.

Engage hook onto liferaft suspension link and lock actuating mechanism. Slip liferaft stowage link and wind in on winch hand crank to transfer canister into outboard launch position. Secure liferaft painter and bowsing lines inboard.

Secure bowsing lines of liferaft boarding flap to suitable cleats.

Inflate when clear of deck edge. Bowse-in when ready for embarkation.

Check liferaft is fully inflated to ensure that safe boarding and launching can proceed.

BOARDING

The person in charge of embarkation is to ensure personnel carefully board the liferaft, preferably with shoes off. Ensure personnel are sitting and liferaft is properly balanced.

Immediately before lowering away – ensure that all personnel are prepared for launching and then release raft bowsing lines.

LAUNCHING PROCEDURE

NOTE:
Liferaft must only be manned with up to the approved number of personnel.

To commence launch procedure the manual brake on the winch has to be lifted.

This operation is initiated either from a position on deck adjacent to the winch or, alternatively, by exerting a pressure on a remote control wire from within the liferaft.

WARNING:
When using remote control gear from within liferaft, always use the operating handle provided - never wind the wire around hand or wrist as a serious accident may result.

Remote control:

"STOP" type gives continuous brake control from within the liferaft all the way down to the water. Releasing the pressure on the remote control wire allows the manual brake to re-apply and stop the descent of the liferaft.

If Schat-Harding ARH hooks is supplied - just prior to reaching water, pull the actuating cord to set the hook to automatic release.

Once waterborne, liferaft is automatically released from the hook, clear the site.

In case the trip line is not activated before reaching water, or in the unlikely event the hook fails to operate automatically, utilise the manual release mechanism.

MULTIPLE LIFERAFT LAUNCHING

There is no need to alter davit arm position for subsequent launches.

Whilst one raft is being launched prepare the next one.

After recovery of the light hook onboard (see "Recovery" section below) engage hook on suspension link of subsequent liferaft(s) and repeat above procedure.

RECOVERY

The manual recovery gear enables the "light" hook or an unmanned raft to be recovered to embarkation level.

In the event of a Multi-launch Liferaft appliance being fitted, identified by an extra hand crank facility at the winch drum end, the "light" hook can be rapidly recovered. This method is substantially faster than using the standard recovery mode.

The hook is can be retrieved inboard by using a tricing line (if fitted) or boat hook.

Ensure that the davit is left in a state of operational readiness at all times.

LIFERAFT
AUTOMATIC RELEASE HOOK (A R H)

GENERAL

This Schat-Harding release hook meets official Maritime Authorities' requirements for hooks to be used with davit launched inflatable life rafts or similar type craft.

The release hook is adequately dimensioned to support up to 25-person life rafts with a maximum davit load not exceeding 2220 kg.

Fitted to the running end of the raft fall and set for automatic release, the hook is capable of performing the following modes of release operations:

Automatic release of the waterborne raft by the incorporated mechanism, which is immediate and complete, premature or accidental, releases being prevented ;

Manual release of the waterborne raft should e g due to a towing strain a significant load on the hook be maintained, or in the unlikely event of the automatic system failure.

CAUTION

Dimensions of suspension shackle or ring to be within limits as stated on page 3.

TECHNICAL DESCRIPTION

Please see the accompanying illustration for the hook parts nomenclature and item numbers.

Apart from spacer pinned side plates and small ancillary gear, the release hook comprises the essential hook proper along with the automatic and manual release mechanisms.

The automatic release mechanism employs an actuating mechanism controlled accumulator of mechanical energy, so designed that - with the actuating lever in the cocked position - the incorporated compression spring makes the hook snap open as soon as its load decreases below a pre-determined limit.

The same actuating lever serves a dual purpose of providing - along with an instruction plate - for a clear indicator of the mechanism locked (safe) or set (cocked) positions; an intermediate position is not possible.

The actuating mechanism operating hand grip, suspended by a flexible stainless steel cord from the lever end, is conspicuously marked in signal red colour to contrast with the surroundings.

The same handgrip, inserted in its inverted position by the free end fitted pin into a hole at the load-relieved hook corner (see illustration). Makes part of a simple yet efficient manual release mechanism; the pin of the multiple purpose grip may as well be used for the removal of possible snow or ice formations.

A maximum of ease of maintenance has been achieved by a careful choice of marine environment resisting non-corrodible materials. All functional or load-bearing parts are made from easy to maintain polished stainless steel with the exception of the spring container and the associated roller pin made from quality bronze and the compression spring.

PARTICULARS

ITEM	IMPERIAL OR U S	METRIC UNITS
Maximum working load (force)	5 067 ..... lbs.	23.00 ..... kN
Static proof load .. (2.5 * MWL)	12 667 ..... lbs.	57.50 ..... kN
Dimensions (lanyard omitted)	$11^{57}/_{64}$" x $6^{37}/_{64}$" x $2^{5}/_{64}$"	302 x 167 x 53 ... mm
Total weight (approximately)	12.12 ..... lbs.	5.5 ..... kg
A R mode : ..... hook load limit	44.5 ..... lbs.	0.198 ..... kN
A R mode : ..... actuating force	23.6 ..... lbs.	0.105 ..... kN

OPERATION

Please see the accompanying illustration for the hook installation details.

A one-person handling requirement has been met with all of the modes involved with the hook operation.

To open the hook, actuate the lever to transfer it from the locked into the cocked position; subsequently, the hook can be pulled open by hand.

To engage the hook on the (raft) suspension link, lead the open hook on to the link and close it by applying a hand push to the hook back; lock the release mechanism by subsequently transferring the lever into the up (safe lock) position.

It should be noted that both the automatically and the manual modes of hook release operation have to be preceded by setting the release mechanism i e by exerting a sharp pull at the cord hand grip until the actuating lever snaps from the locked into the cocked position.

The manual release; 1) Insert handgrip in hook corner hole
2) Pull backwards (see picture on page E 4 / 4 ARH)

MAINTENANCE

To keep the release hook operational, lubricate all pivots as necessary.

Every three to six months check and as necessary ensure that:
- There is no build-up of salt, dirt, or any other contaminant ;
- A clean, good working condition of all components is maintained;
- All mechanisms move freely;
- No paint has been applied.

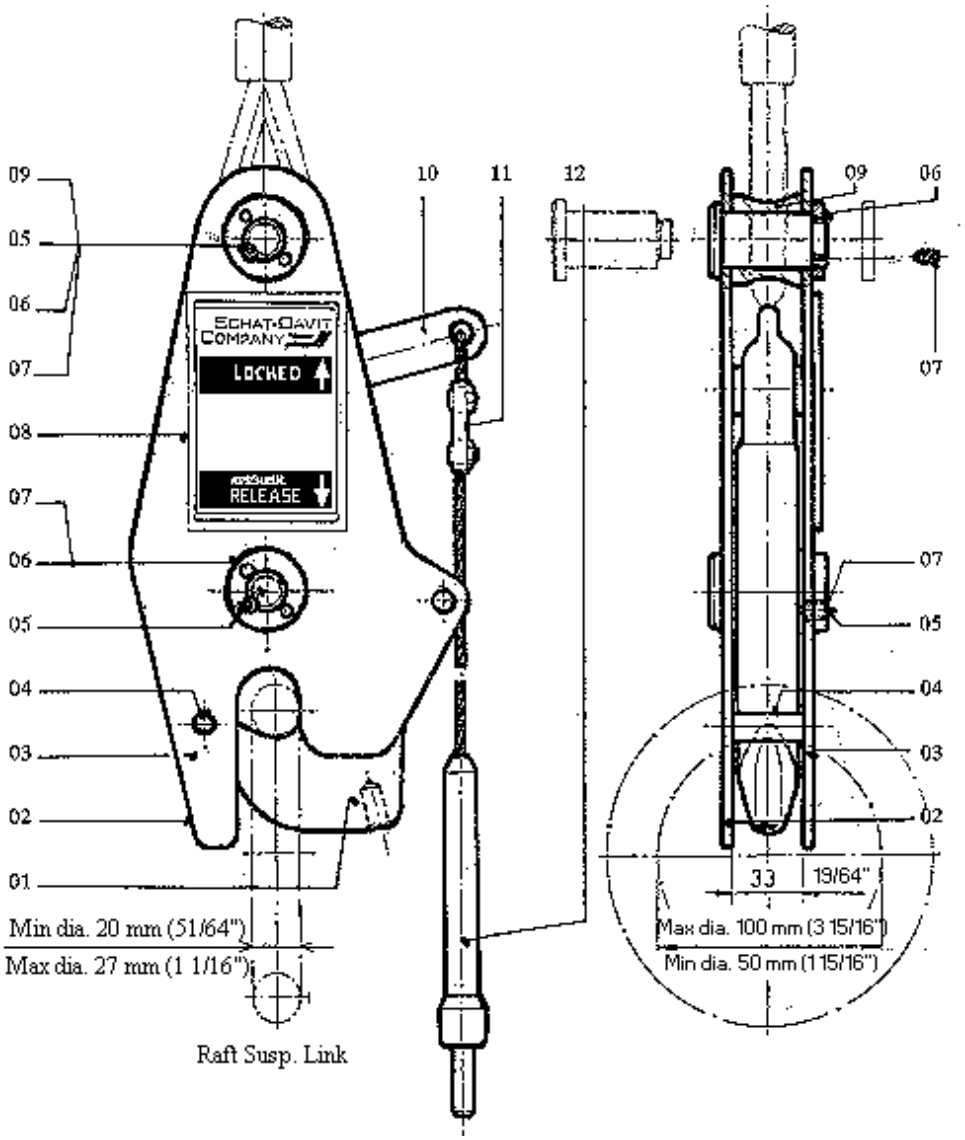
An open hook construction provides for an eased access to main hook components without any need for disassembly.

It is advisable to keep the release hook covered when not in use.

Should the release hook fail to function properly or appear damaged, it should be returned to the nearest Schat-Harding office or agent.

At least every two years, it is advisable to have each hook specimen subjected to a full overhaul including functional and load tests.

LIFERAFT
AUTOMATIC RELEASE HOOK (A R H)



HOOK INSTALLATION DETAILS

Disassemble as follows:

- Top lock nut ..... (07);
- Top nut ..... (06);
- Top bolt ..... (05);
- Suspension bush ..... (09).

Place bush (09) into spliced eye of corresponding raft fall, re-insert bush to oppose plate openings, and re-fit the components in reverse sequence of operations

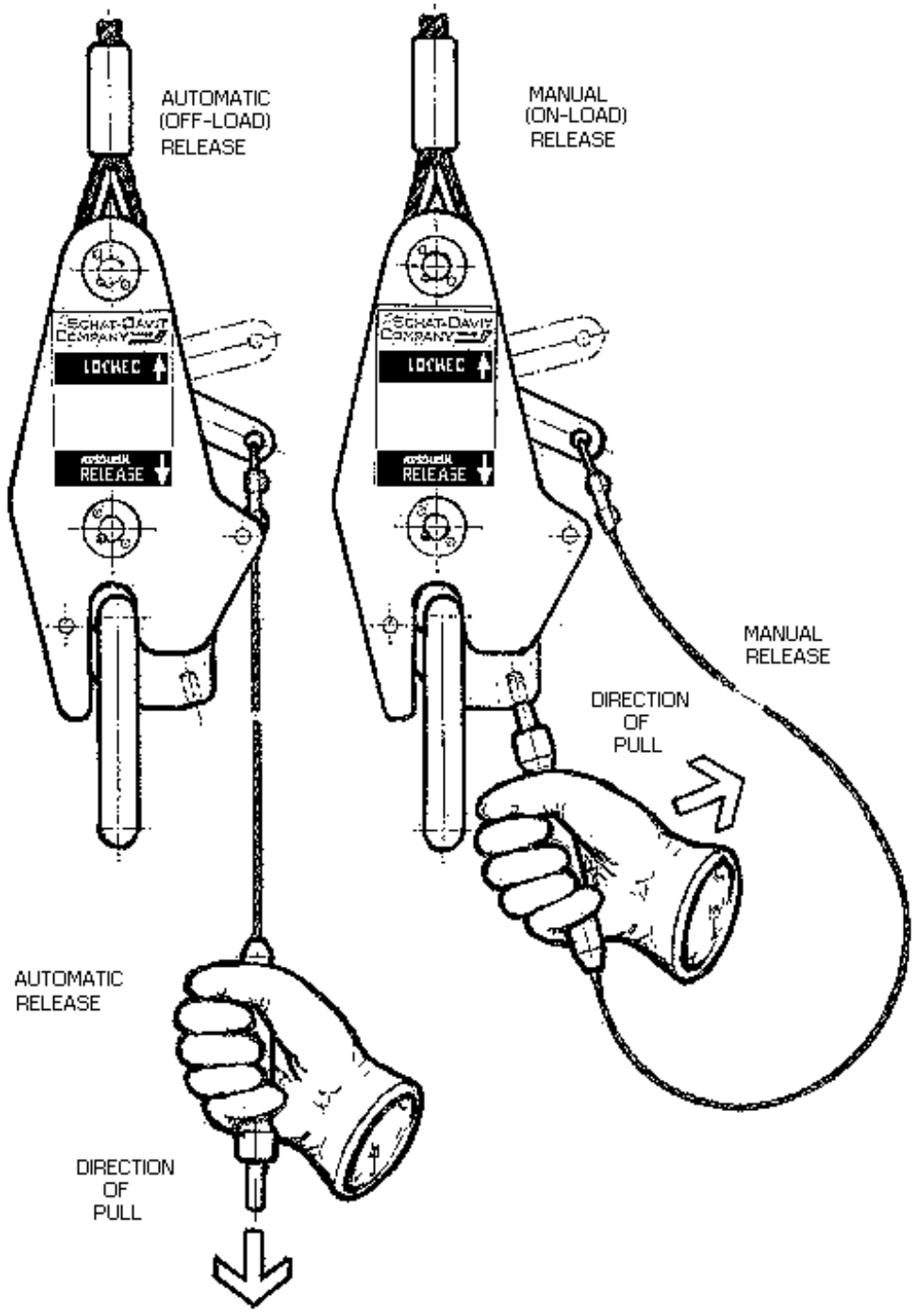
Re-tighten screw (07) to lock nut (06).

LIST OF HOOK PARTS

ITEM	COMPONENT	Qty.
01	Hook	1
02	Side Plate	1
03	Side Plate	1
04	Spacer Pin	2
05	Bolt	2
06	Round Nut	2
07	M 5 Lock Screw	2
08	Indicator Plate	1
09	Suspension Bush	1
10	Release Mechanism	1
11	Press Lock Connector	1
12	Actuating Cord Grip	1

AUTOMATIC RELEASE HOOK (A R H)

RELEASE OF LIFERAFT FROM LAUNCHING APPLIANCE



<u>N B:</u>
REMEMBER THAT IN BOTH AUTOMATIC AND MANUAL RELEASE MODES THE ACTUATING LEVER HAS TO BE COCKED IN THE AUTOMATIC RELEASE POSITION JUST BEFORE LIFERAFT ENTERS THE WATER

MANUAL BRAKE GEAR
ECCENTRIC MECHANISM CONTROLLED

GENERAL

Primarily developed for use with manually operated winches such as those of life-raft davits, below brake gear can likewise make part of adequately sized powered winches employing incorporated electric induction motors or even (auxiliary) portable motor units.

To comply with the statutory requirements as imposed on winches associated with life-saving launch and recovery appliances, the brake gear allows for permissible loads to be lowered under the influence of gravity alone, their descent voluntarily stopped, and / or the load to be safely held.

The rate of lowering speed is situated well within the International Convention adopted minimum and the National Administration established maximum speed limits; the rate of speed is automatically governed in order not to exceed the maximum limit.

To that purpose, the fully automatically governor brake gear employs a pair of lined brake shoes, pivotable on a carrier disc keyed on to the brake carrier shaft and drawn to each other by traction springs. Commencing with a certain rotational speed of the carrier shaft. The spring effort is overcome by the corresponding resultant of the centrifugal force exerted on the shoes. So that the brake shoe linings are forced to engage with the inner face of the enveloping brake drum, the radial force and hence the brake torque being directly proportional to the speed of rotation and so to the rate of lowering speed. Weighted, leading or trailing pattern of the brake shoes along with one of a number of amply sized springs are selected to suit the parameters given.

The manual brake gear employs a most reliable. Weighted control handle actuated, eccentric mechanism controlled, single brake shoe to develop the necessary braking power as a result of effort exerted via the brake shoe lining on the associated brake wheel, with this type of winches doubling as the governor brake carrier. The brake re-applies automatically on discontinuing the (Dead Man type) handle actuation i.e., on re-setting the handle down on to its rest support (on releasing it).

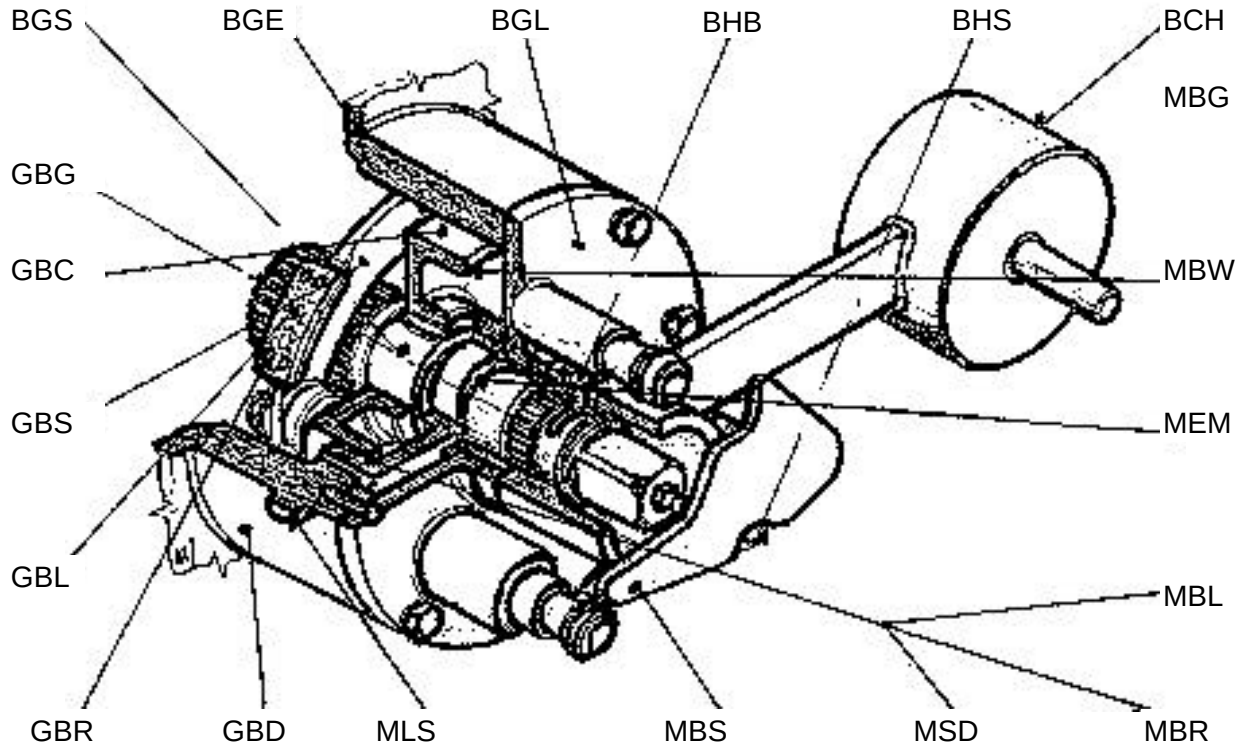
The manual recovery gear is back-kick proof as a result of an instantaneous self-locking action of the eccentric brake control mechanism. Free manual cranking operation is enabled by virtue of the same mechanism capacity of allowing for the brake shaft to over-run (idle) in the hoisting direction of rotation with the manual brake applied. As a result of frictional effort experienced between the brake wheel and the shoe lining at the beginning of this procedure. The brake shoe slightly turns on the eccentric and thus lifts off the brake wheel, self-releasing the brake without any external assistance needed as long as the cranking operation is maintained. On discontinuing the operation, the manual brake automatically, instantly, and fully re-applies as above.

The brake carrier shaft doubles as an extension of the winch gear train required to provide for the manual recovery gear; the corresponding spindle extension is to that purpose squared to accommodate the hand crank. As a result of a lock pin along with an ample configuration or shape of the spindle entry shielding mechanical safety device. The hand crank cannot be inserted in situ as long as the manual brake handle extremity is lifted; accordingly, it is ensured that moving parts of the winch during the launching procedure cannot rotate the crank handle of the manual recovery gear.

The above safety device doubles as a cam to actuate an electrical inter-lock safety device of possible powered winches to prevent forced crank handle rotation during powered recovery.

FUNCTIONAL DESCRIPTION OF THE MANUAL BRAKE GEAR

The below perspective cut-away view displays the associated brake gear parts; right-handed configuration of the brake controls is shown the left handed one is symmetrical.



The MBG manual brake gear employs the MEM eccentric mechanism controlled MBS lined single brake shoe, brought into contact with the MBW brake wheel doubling as the GBC governor brake gear carrier.

The BCH brake control handle is splined on to the MEM eccentric control mechanism enclosing the BGS brake shaft in a way so as to allow for the a free rotation of the latter. An ample fit is provided to allow for the MBS brake shoe to pivot on the bronze MEM mechanism.
In the brake applied condition, the MBL brake shoe lining is pressed into contact with the MBW brake wheel, itself reliably keyed on to the BGS brake gear carrier shaft; momentum of the BCH brake control handle extremity fitted counter-weight provides for the necessary braking power.

The MBS brake shoe is at its outer extremity provided with an amply sized groove engaging with the flattened round MLS lock stud welded into the MBE manual brake enclosure so as to project into its interior; the enclosure doubles as the GBD governor brake drum.

The corresponding BGS shaft end is pinion machined to engage with the winch gear train to the purpose of transmission of the brake power on to the winch drum.

With the winch drum adequately loaded, the brake shaft and the brake wheel tend to rotate so as to descend the load. The rotation is however limited just to a slight turn as a result of the above groove of the MBS brake shoe coming to butt against the protruding MLS stud, the brake shoe following the brake wheel due to the frictional force involved.

As soon as the butting contact has been established, momentum of the weighted BCH handle will restore the initial condition of the MBS brake shoe being pressed by the eccentric mechanism against the MBW brake wheel with the brake re-applied as a result.

If the momentum of the weighted BCH brake handle exceeds that of the winch drum load, the BCH handle will come down to rest on the BHS support in which position an equilibrium of the two moments, the braking torque being defined by the load torque, will result.

If however the opposite will happen, so the BCH brake will lift off the support. The amount of displacement being conditioned by the free space between the MLS stud and the (opposite as regards the above) corresponding groove edge; in this position both moments will equalise, the braking torque being now defined by the weighted handle torque. N B : It is essential for proper brake working that in this event the brake handle lifts off the support; this condition must be periodically checked as put in the BRAKE ADJUSTMENT section. No adequate braking power would be obtained in the negative.

LOWERING BY GRAVITY

To the purpose of load descent, the winch manual brake has to be released by maintaining the control handle actuated position. As a result of the load applied, the winch drum is bound to revolve in the lowering direction, the rate of speed being automatically governed in order not to exceed the permissible maximum limit.

Brake release is achieved via actuation of the BCH control handle by raising the weighted extremity: as soon as the contact pressure between the brake shoe lining and the brake wheel is sufficiently relieved, the winch barrel (or: drum) applied load makes the latter. The winch gear train and the brake gear revolve and hence the load descend. On discontinuing the brake controls actuation the brake immediately and fully re-applies.

MANUAL RECOVERY

To the purpose of transmission on to the winch drum of the braking power needed, the BGS brake shaft accommodating both the MBG manual and the GBG governor brake gears is provided with a pinion engaging with the winch gear train.

The other end of the BGS spindle, extended to the exterior of the BGL brake enclosure lid, is amply squared to accept a hand crank enabling its dual purpose of doubling as an efficient manual recovery gear. The same spindle extension serves the purpose of a possible (auxiliary) portable motor drive.

To hoist loads, the MRC hand crank has to be inserted on to the above squared spindle extension by lifting the mechanical safety device - see below; an arrow marks the cranking direction.

By virtue of the design of the eccentric brake control mechanism, no simultaneous brake release is necessitated during the recovery procedure, and full braking power automatically and immediately re-applies to safely hold the load as soon as the recovery operation is discontinued. The same mechanism renders the manual cranking operation back-kick proofed.

For safety reasons, the squared spindle entry is shielded by a mechanical safety device preventing insertion of the hand crank on to the spindle and thus possible manual cranking operation to be carried out as long as the brake is being released; on the other hand. The brake cannot be released as long as the hand crank is inserted. As a result of this, the winch moving parts during the procedure of load descent cannot rotate the crank handle.

In the course of the recovery procedure, the governor brake gear is inactive as a result of the BGS carrier rate of rotational speed remaining situated below the limit at which the governor brake commences to work.

POWERED RECOVERY

In the event of the powered mode of load recovery used, the same safety device serves the purpose of an electrical inter-lock safety device to prevent the crank handle from being rotated by moving winch parts during the recovery procedure. In the hypothetical event of accidentally attempting to release the brake or even to insert the hand crank. The amply configured (mechanical) safety device plate is forced to shift upwards and so to turn the (electrical) safety device actuator as a result of which the motor control and the power circuits are disconnected

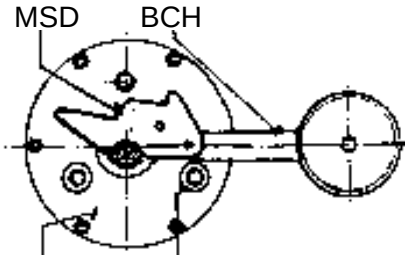
[For obvious reasons, correct adjustment of the electrical safety device has to be ensured by periodical checks covering both the electrical circuitry and properly tightened condition of the corresponding actuator (lever) set screw].

Similarly to the above, this mode of operation may be performed without having to simultaneously release the brake; in the course of this procedure, the eccentric control mechanism allows for a free wheeling rotation of the winch parts concerned.

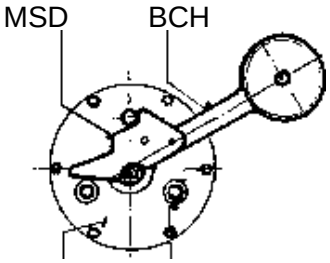
To recover loads by electric power, all that is necessary is to keep the corresponding (UP, ON, I or green marked, on-load start) motor control button depressed as appropriate.

MODES OF OPERATION

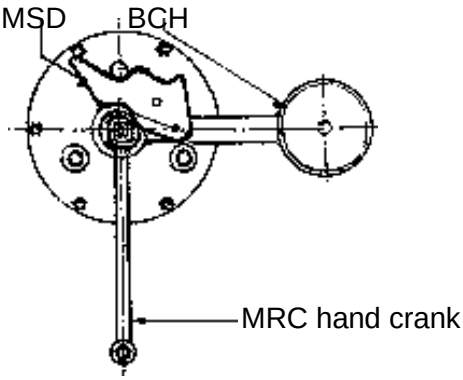
Brake Application
[Brake control handle in neutral rest position]



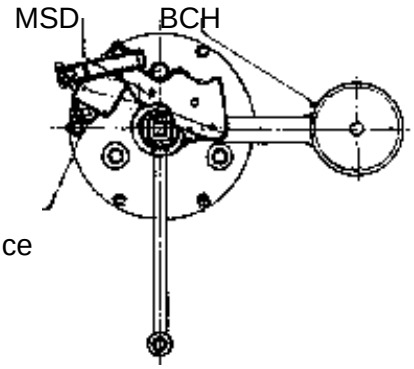
Brake Release
[MSD device locked in position preventing insertion of hand crank]



Manual Cranking Operation
[Insertion of manual recovery crank locks BCH handle in brake applied position



Powered / Manual Modes Inter-Lock
[Motor control and power circuits [disconnected by electrical safety device]



MANUAL BRAKE GEAR - ADJUSTMENT

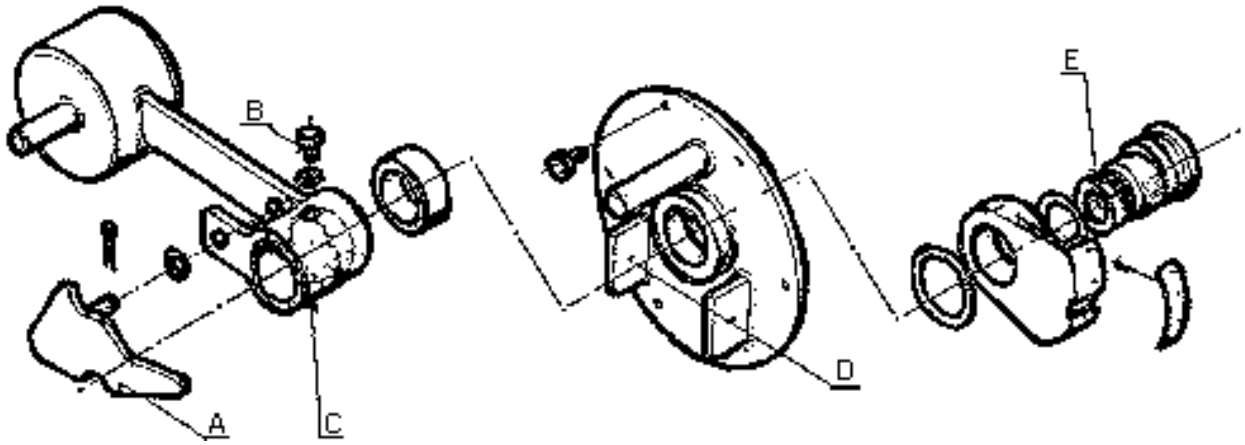
GENERAL

In the course of each braking procedure, the brake lining and the corresponding counter part are subjected to a wearing process so that after a number of braking procedures occurred, an adjustment to restore the initial reliable braking condition appears necessary.

FUNCTIONAL CHECKS

Reliable brake functioning can be checked in compliance with the following directions; to illustrate the procedure, the accompanying exploded view shows the corresponding brake parts.

First, try to turn the inserted hand crank reversibly as regards the arrow marking on the winch, i.e., as if to lower by cranking. This should not be possible but when applying a very



heavy effort on to the crank handle.
Experiencing a slipping tendency instead would however indicate that the brake functional i.e., friction faces have become contaminated by lubricant in which event the brake parts concerned must be cleaned first.

With the davit arms assuming full stowage end position and the craft griped (or an equivalent arrangement), load the winch by applying an appropriate effort to the crank handle as arrow marked on the winch. Subsequently, remove the crank and return the MSD mechanical safety device actuator item A back in front of the squared spindle extension (as it initially was). If all is correct, the BCH brake control handle extremity should raise, clearing the BHS rest support item D by at least 3 millimetres, 16 mm being the maximum to be experienced.

As soon as this clearance value drops below 3 mm, the brake has to be re-adjusted as follows.

BRAKE ADJUSTMENT

Remove BHB bolt item B from the splined BHH brake handle hub item C;

With the aid of an appropriate marking pencil or equivalent, mark the position of the above hub with respect to MEM eccentric item E;

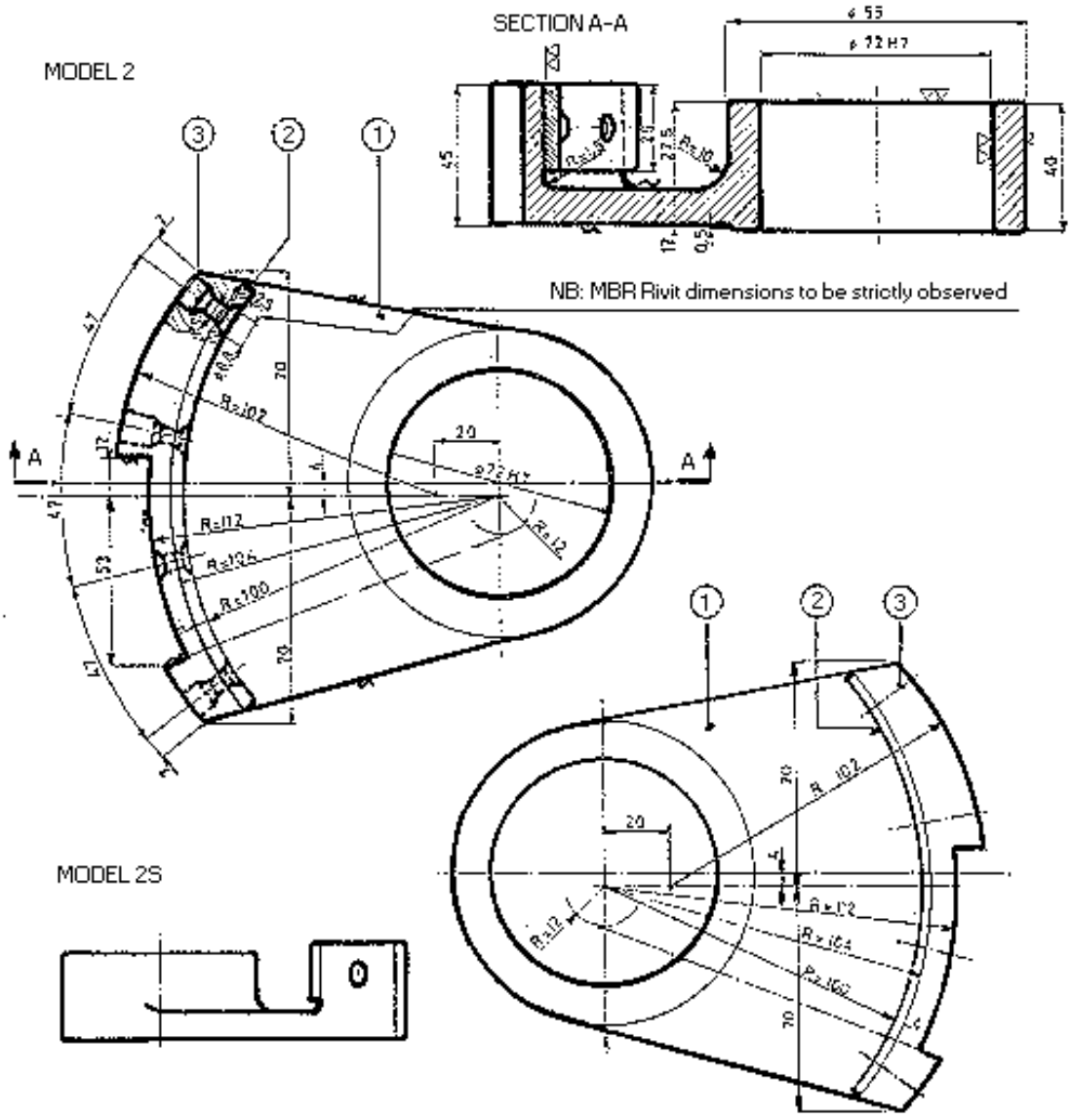
Withdraw brake handle from eccentric;

Re-insert BCH brake handle on to MEM eccentric spline, turning it by one tooth further in a way so as to increase the clearance between the BCH handle and the BHS rest support; sub-sequently, lock it by BHB bolt item B;

If as a result of several preceding adjustments made BHB bolt item B cannot any longer fit into the corresponding slot inside the MEM eccentric item E, so the brake lining has been worn down to such an extent that it has to be replaced.

REPLACEMENT OF THE BRAKE SHOE LINING
(Please notes the illustration below.)

At the occasion of replacing the MBL brake shoe lining, it is advisable to check the condition of the remaining brake gear parts as well.

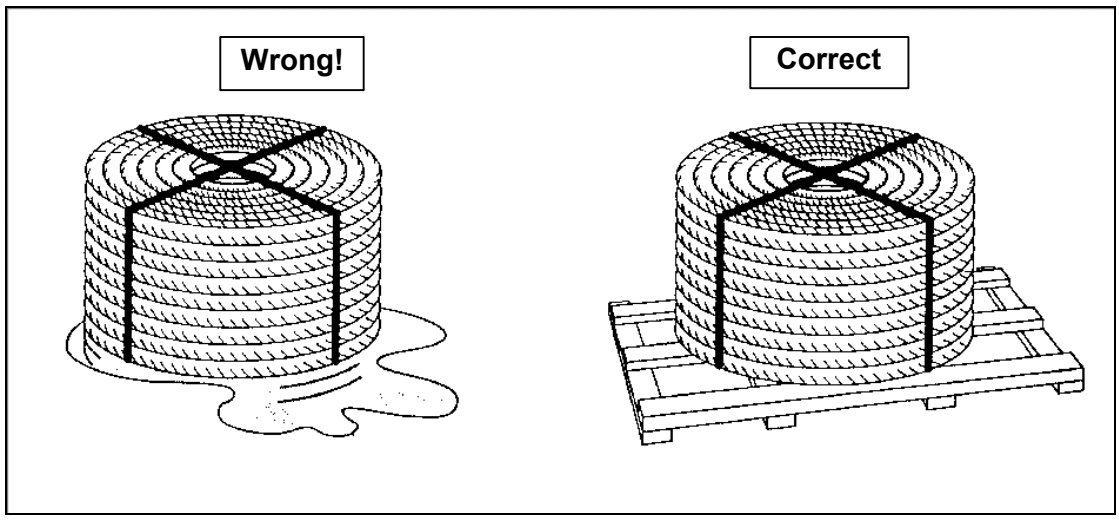


MANUAL BRAKE SHOE Drawing No C-1887-L

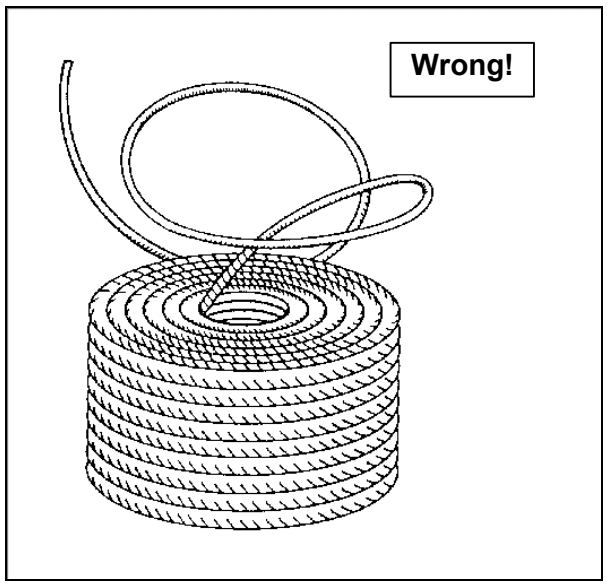
1) Brake Shoe Material: Nodular 94 cast iron.
2) MBL Lining 28 x 4 x 145 Material: Steel ST-35.29.
3) Four 5 Dia MBR Rivets Material: Mu St 34

HANDLING OF WIRE ROPES

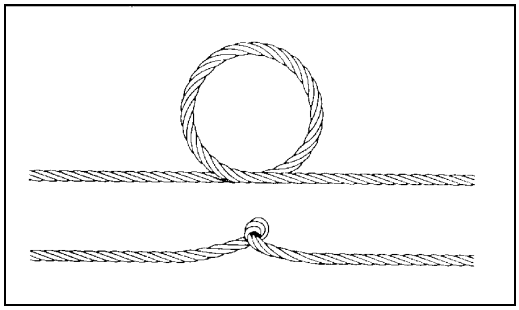
Wire ropes should be handled with utmost care. Faulty handling may have very bad consequences, in that the life period may be considerably shortened. On arrival of a steel coil or reel, check for damage. Store in a dry atmosphere, at any rate on a dry surface; a wooden support will do. During prolonged storage a regular check for corrosion is recommended.



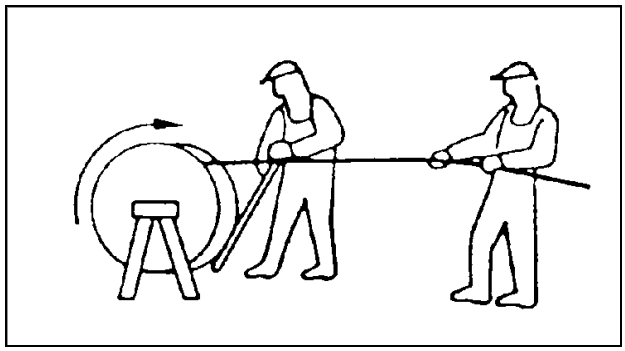
You will no doubt be aware how unpleasant it is - figuratively - when a rope is kinked. A definite purpose can suddenly not be realised and, not seldom, with far reaching consequences. In a literal sense a kinked rope may cost you a lot of money, but, what is far more important, you lose control over your safety. Therefore, be it for this reason alone, a wire rope should be handled with utmost care.

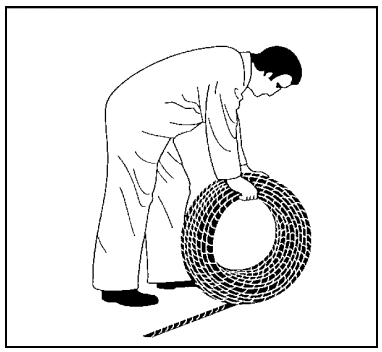


Never uncoil reels this way, which will invariably lead to kinks.



Reels with a bar put through the flange holes, resting on two supports, are ideal.

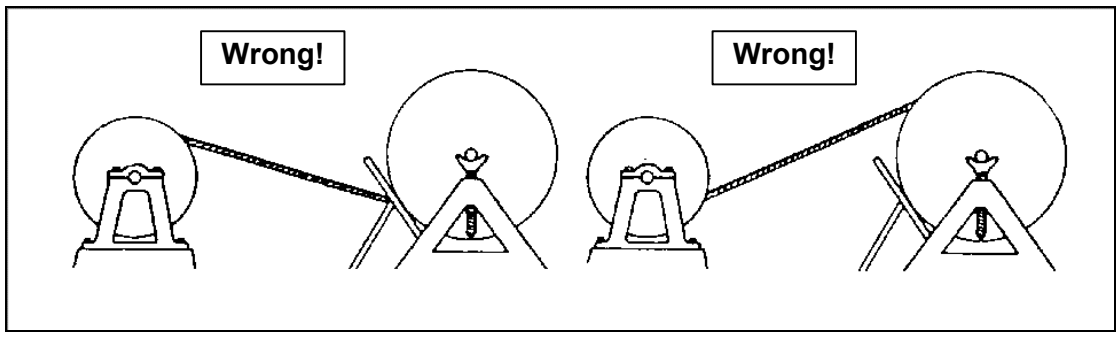


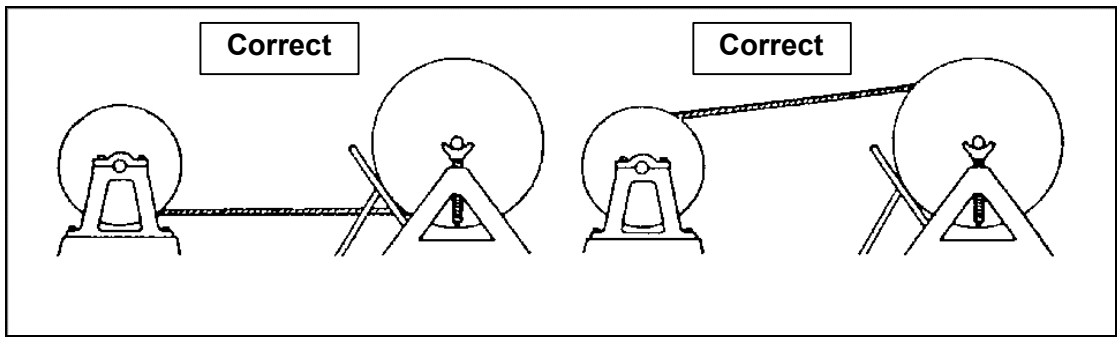


If no rotary table is available on which to place the coil, the coil is to be “unrolled”.

Another important condition is that during transport the coil or reel must not bump against sharp objects, such as loose stones, etc.; sand and mud are also evildoers. This is likewise important during unreeling.

If a rope is to be rewound from a reel to a drum, this should be done from the bottom of the reel to the bottom of the drum, or from the top of the reel to the top of the drum. This prevents reverse bending action of the strands, and minimises wear.



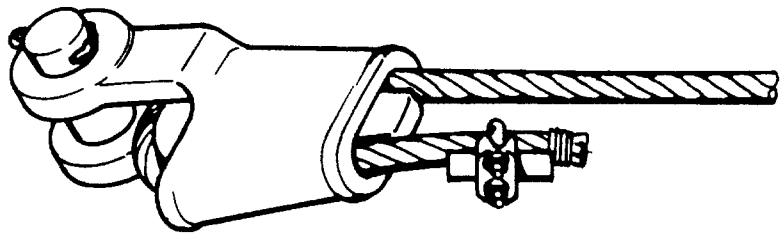


When a rope is cut off, the strands tend to twist back. To prevent this from happening, the rope should be seized immediately after being cut off. For this purpose use soft iron wire or a strand of some iron wires.

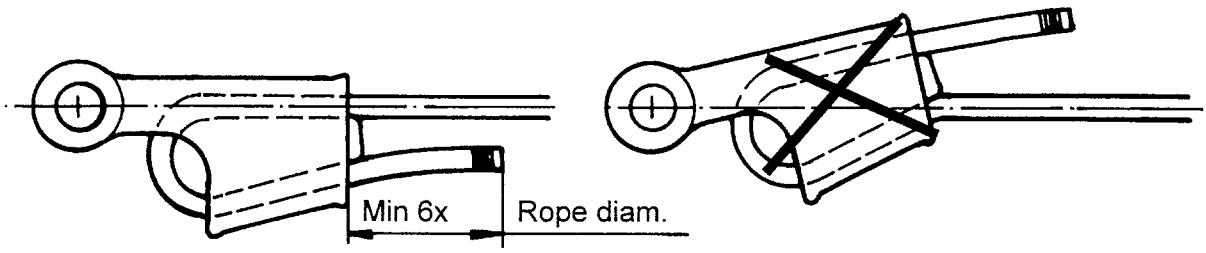
Fatigue, wear and/or corrosion may reduce the safety of a wire rope to below an acceptable minimum. For this reason a regular check is recommended. This will also prevent a rope from being replaced before it is necessary.

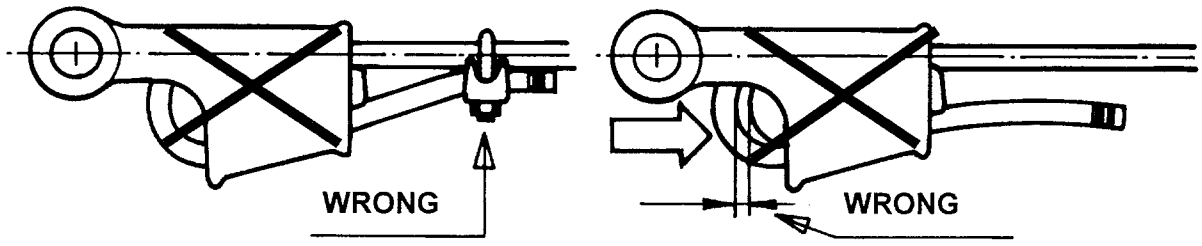
schat-harding

INSTRUCTIONS FOR MOUNTING WEDGE SOCKET



THE ONLY CORRECT MOUNTING

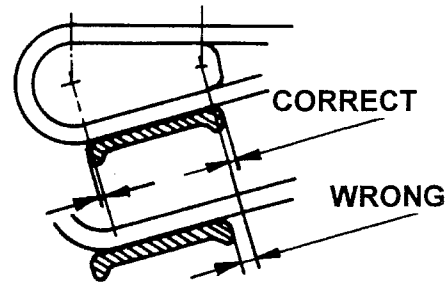




WARNING

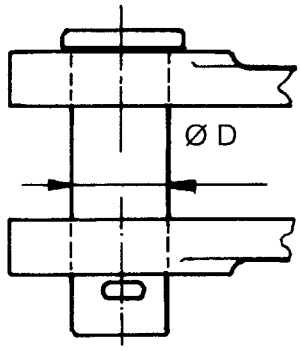
- **Loads may slip or fall if the Wedge Socket is not properly installed**
- **A falling load can seriously injure or kill.**
- **Read and understand these instructions before installing the Wedge Socket.**
- **Do not side load the Wedge Socket.**
- **Apply first load to fully seat the Wedge and Wire Rope in the socket. This load should be of equal or greater weight than loads expected in use.**

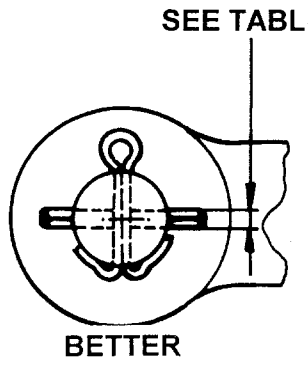
Check if the socket has the correct size for the wire rope diameter.



Shaft Ø D	20 - 30	Up to 35	Up to 40	Up to 50
Pin = Hole Ø H8	6	6	8	8
L. Pin	20	25	25	30

Two Dowel pins according DIN 1481 Mat. : Stainless steel A 1





NOTE ! This construction is fully safe. A stainless steel split pin on his own, is the absolute minimum.

WARNING AND APPLICATION INSTRUCTIONS FOR SPLICING IN WITH WIRE ROPE CLIPS

W A R N I N G

- Failure to read, understand, and follow these instructions may cause death or serious injury.
- Read and understand these instructions before using clips.
- Match the same size clip to the same size wire rope.
- Prepare wire rope end termination only as instructed.
- Do not use with plastic coated wire rope.
- Apply first load to test the assembly. This load should be of equal or greater weight than loads expected in use. Next, check and retighten nuts.

The wire rope clip should be fitted to the wire rope as shown schematically in the figures.

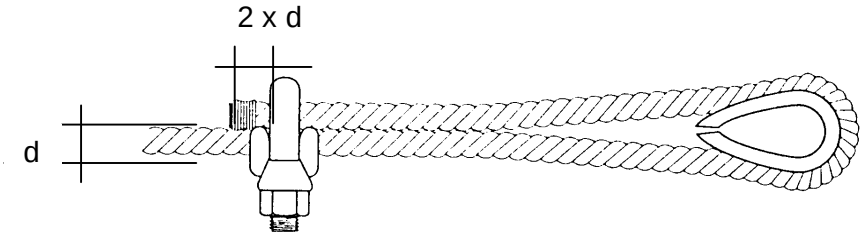


Figure 1. **RIGHT**

Turn back required amount of rope from thimble or loop. Apply first clip 2 x d(wire rope diameter) from dead end of rope. Apply U-Bolt over dead end of wire rope - live end rests in saddle. Tighten nuts evenly, alternate from one nut to the other.

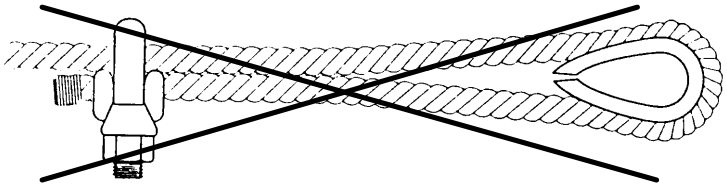


Figure 2. **WRONG**

Never saddle a dead horse!

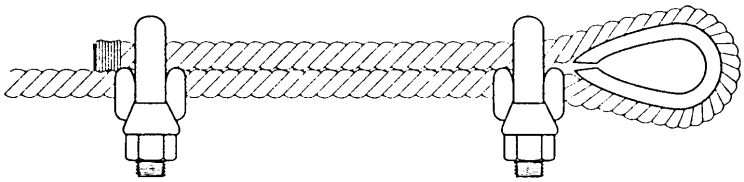


Figure 3. **RIGHT**

When two clips are required, apply the second clip as near the loop or thimble as possible. Tighten nuts evenly. When more than two clips are required, apply the second clip as near the loop or thimble as possible, turn nuts on second clip firmly, but do not tighten.

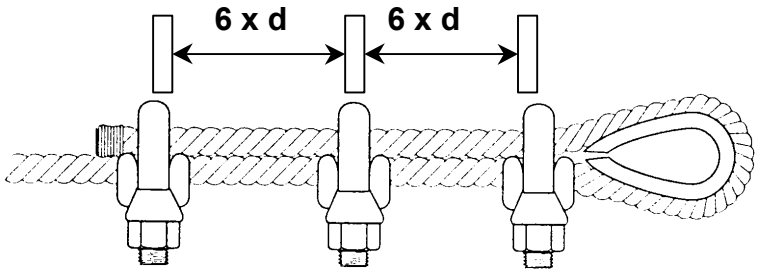
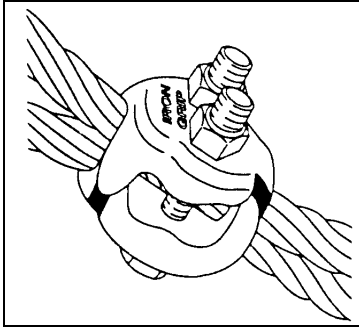


Figure 4. **RIGHT**

When three or more clips are required, space additional clips equally between first two - take up rope slack - fully tighten nuts on each U-Bolt evenly, alternating from one nut to the other.



NOTE!
When using this type of wire rope clips, it's impossible to mount them wrong.

WARNING. Never use clips in hoisting wires. (For lashings only)

DIAMETER OF WIRE ROPE	QUANTITY OF CLIPS
UP TO AND INCLUDING ø 22 mm	3
OVER ø 22 mm , UP TO AND INCLUDING 32	4

GOVERNOR BRAKE GEAR

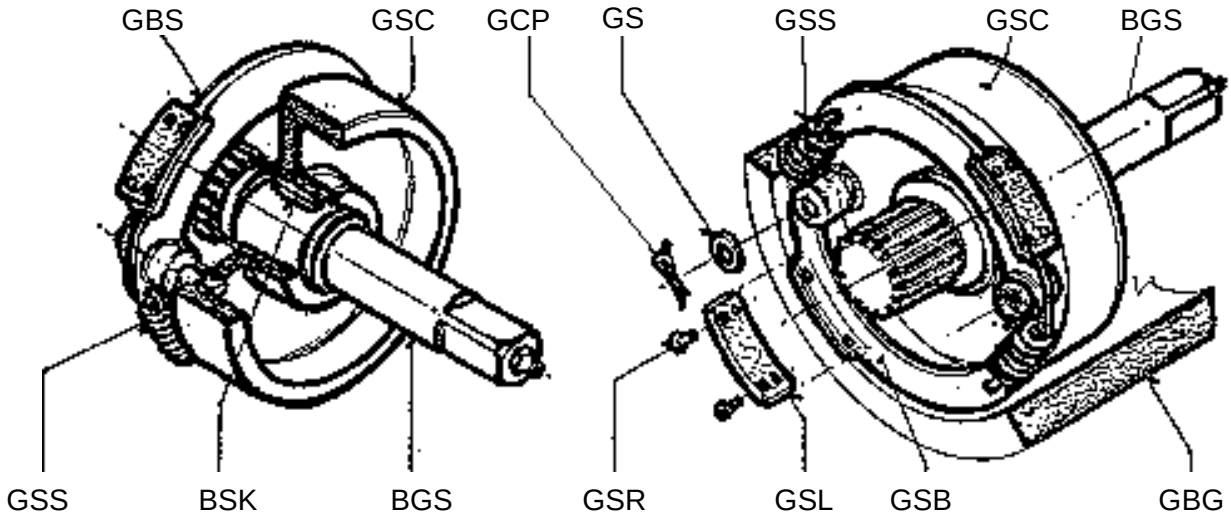
GENERAL

In the course of the procedure of launching survival or rescue craft, the rate of lowering speed has to be situated within a range limited on the one side by the minimum rate of speed. As defined in the 1983 Amendments to the international Convention for the Safety of Life at Sea of 1974, London, and on the other side by the national Administration adopted maximum speed limit.

DESCRIPTION

To the above purpose, a governor brake gear is incorporated in the winch design, employing a single (or as the case be multiple) set of suitable material lined pair of pivotable brake shoes. Fitted to a rotational carrier disc and brought into contact with a stationary brake drum to develop the necessary brake torque.

In the great majority of application of the single-set governor brake gear, the brake shoes are fitted to the rear of the manual brake wheel (the brake disc - see description of the manual brake gear). An independent disc is on the other side used in the event of the multiple (dual or triple) shoe set employing brake gears. To satisfy a wide range of the speed rate required, (side) weighted brake shoe sets are used as necessary.



The GBS brake shoes, pivotable on the GSC brake shoe carrier, are attracted to each other by the GSS traction springs. Commencing with a certain speed of rotation of the BGS brake shaft - itself depending on the lowering speed of the load - the (corresponding resultant of the) spring effort exerted on the brake shoes is exceeded by the centrifugal force. The GBL brake linings are pressed into contact with the inner face of the GBD brake drum, bringing about an efficient braking effort in a positively progressive dependence on the lowering speed of rotation.

In the course of the load recovery procedure, the governor brake gear is not working. The reason being that the rotational speed of the BGS brake shaft never achieves the critical limit, necessary for the centrifugal force to surpass the corresponding spring effort resultant; as a result, the brake shoe linings stay away from the inner face of the brake drum.

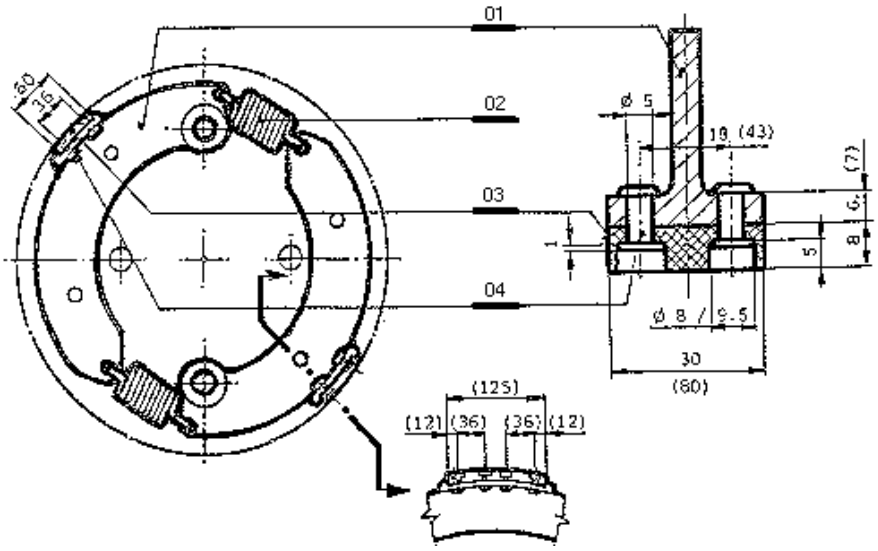
GOVERNOR BRAKE GEAR MAINTENANCE

GENERAL

The brake shoe linings should be periodically checked for wear and, on reaching their maximum permissible thickness following from the accompanying illustration, they should be replaced in observation of the prescribed properties of both the linings and the rivets.

The period of time between two successive checks depending preponderously on the frequency and way of operation, ambient conditions and other factors, a generally acceptable value is difficult to be prescribed. As a rule, the linings should be checked for wear every 25 launching procedures or once a year, whichever comes first; an optimum interval will however be only found by own experience of trial and error.

At the occasion of the above visual inspection, condition of the other brake parts should be inspected as well and measures taken as appropriate.



		GOVERNOR BRAKE SHOE ASSEMBLY			ITEM		
GBS	-	Governor Brake Shoe	-		-		- 01
GTS	-	G Brake Traction Spring	-		-		- 02
GBL	-	G Brake Shoe Lining	-	60 x 30 x 8 (125 x 80 x 8)	-	Ferodo	- 03
GBR	-	Governor Brake Rivet	-	B 5 x 15 MS	-	DIN 7338	- 04

NOTE:

- ***Bracketed () particulars apply to a heavier brake variant -***
- ***Single shoe set shown - Double or double lined sets used as necessary -***
- ***Four (eight) rivets per brake lining apply -***
- ***Dimensions and properties of parts to be replaced should be strictly observed -***
- ***Springs to be treated with corrosion inhibiting lubricant prior to each assembly -***

DIRECTIONS FOR USE OF BREVINI EPICYCLIC GEARS

STARTING UP

Be sure that the various plugs are in proper position: breather on the top; drain (magnet fitted, 'emptying') plug at the bottom; level gauge in the middle position for horizontal gears, and in the top position for vertically positioned units.

As a rule, the winch is supplied already filled with oil; please follow the text below for the gearbox maintenance.

LUBRICATION

Under normal conditions of operation, use of gear lube oils containing E P additives, displaying a viscosity index VI of at least 95, and having a viscosity grade VG, expressed ac-cording to I S O 3448 standard, in compliance with the accompanying SRL selection of recommended lubricants.

Under extreme conditions of operation e g in all cases when temperatures under minus 30 degrees Centigrade are likely to be experienced, please contact the manufacturer or a represent-active recognised by him.

It is advisable to check the oil level every week. If more than 10 % of the total oil capacity has to be topped up (added), check the gear enclosure for oil leakage.

Do not mix oils of different types even if of the same make; never mix mineral and synthetic oils.

The oil contents should be changed when hot in order to prevent build up of sludge deposits and the enclosure interior rinsed out - see NOTE.

The first oil change should be made after the running-in time - i e on reaching the first ap-proximately 50 (30 to 100) hours of operation.

Before filling up the gear case again, wash it out with mineral oil.

Further oil changes should be made every 250 working hours, and at least every 12 months. In the cases of heavy-duty cycles (high loads, shocks, high temperatures, humid environment), even shorter intervals should be kept between two successive changes; contact then the manufacturer.

- General rules referred to the oil volume to be filled in -
- Gear units positioned with output shaft horizontally: fill to centre line of unit;
- Gear units positioned with output shaft vertically: fill up unit completely;

re-check oil level when the oil has reached working temperature.

- The oil level must be checked when the gear is not running.

MAINTENANCE

Check periodically the fixation bolts are properly tightened and that the good alignment situation between gear and machine is kept.

Once a week look at the oil level: even if each unit is fitted with seals, there may be some leakage, quite dangerous for the life of the entire unit.
Also inspect the magnet plugs, and clean them thoroughly; should you note heavy metal particles deposit, contact the manufacturer.

If the machine is stopped for long time (up to 1 - 2 months), it is necessary to rotate it once each 1 - 2 weeks to dive into oil gears and bearings, protecting them from corrosion.

For longer periods of inactivity (out of service), it is recommended to fill the gear case completely with oil.

NOTE:
Please contact your lubricant supplier for information on the flushing oil to be used to the purpose of rinsing out the gear enclosure interior.

The oil volume to be filled in is in each particular event stated on the accompanying winch drawing or the relevant lubrication chart.

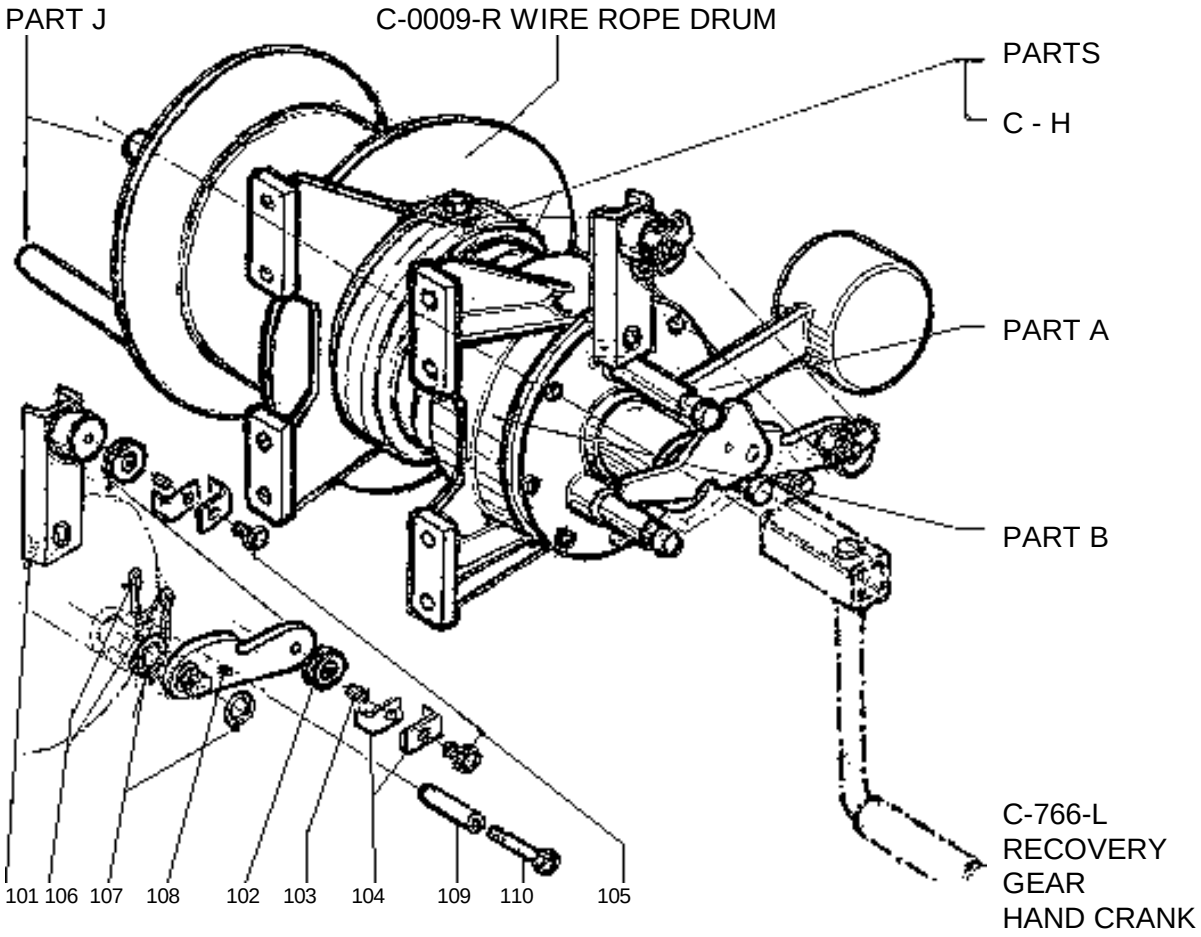
If a bevel gear is incorporated to the epicyclic gear - the winch drawing refers - it is lubricated by the same lubricant; the bevel gear oil capacity then invariably amounts for 2 extra litres.

Finally, please note that very light oil is used in all cases of incorporated reverse rotation self-locking devices lubricated by the same oil bath as the gearing itself.

EXPLODED VIEW OF
EPICYCLIC GEARED RADIAL DAVIT WINCH

[RIGHT HANDED WINCH SHOWN]

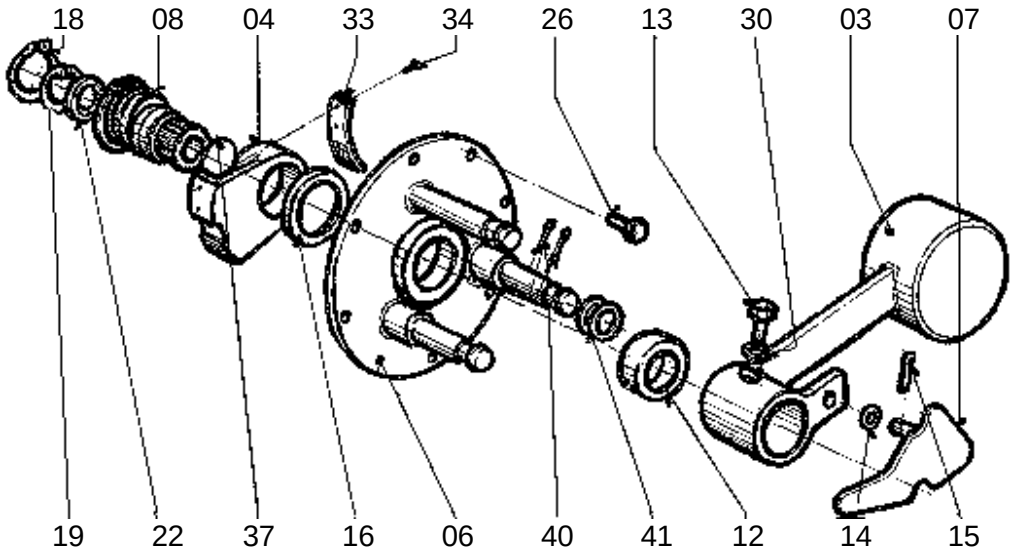
POSITION OF FEET DEPENS ON THE WAY OF BOLTING THE WINCH TO THE DAVIT



NON - STOP LAUNCHING
PAWL CONTROL MECHANISM - "LET GO" GEAR

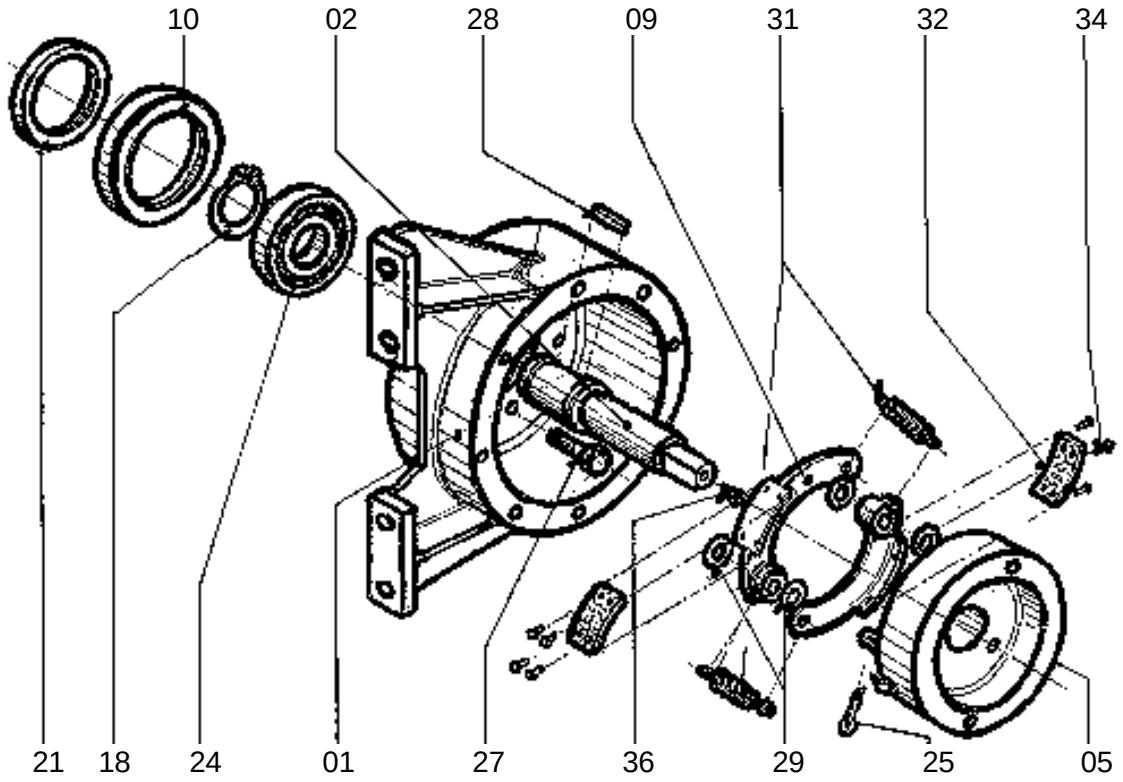
No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No(Grade)	Item No
1	R.C. Bracket	(& A-1509-01)		D-0004-R-02/03	101
2	R.C. Sheave			A-1509-04	102
2	Bush			A-1509-05	103
4	Bow			A-1509-02	104
2	Bolt	M 8 x 20	Stainless St	A-1509-03	105
2	Split Pin	3 Ø x 60	Copper	D-0004-R-09	106
2	Ring			D-0004-R-08	107
1	Pawl			B-2188-L	108
1	Bush			D-0004-R-11	109
1	Bolt	M 12 x 120	DIN 931	8.8	110

PART A - MANUAL BRAKE GEAR



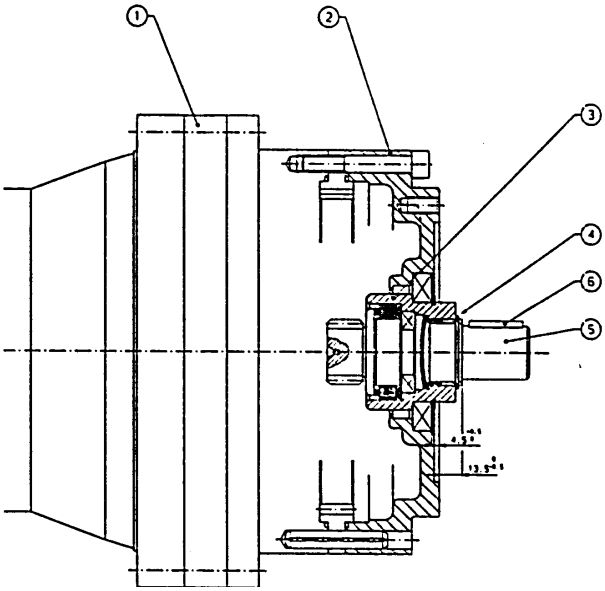
No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	Brake Control handle	"Let Go"		B-0009-R	03
1	Manual Brake Shoe	RH or LH		C-1887-L	04
1	Brake Gear Lid	"Let Go"		D-0004-R	06
1	Safety Device Plate	RH or LH		B-1274-L-01	07
1	Eccentric			B-1272-L	08
1	Ring			B-1274-L-06	12
1	Bolt			B-0009-R	13
1	Plain Washer			B-1274-L-04	14
1	Cotter Pin	Copper 3 **f** x 30	DIN 94		15
1	Ring			B-1324-L-14	16
2	Circlip	A 55 x 2	DIN 471		18
1	Circlip	J 50 x 2	DIN 472		19
1	Oil Seal	G 40 x 50 x 4	INA		22
7	Hexagon Head Screw	M 12 x 25	DIN 938	8.8 Grade	26
1	Lock Ring	12 **f**		Nylon	30
1	Manual Brake Lining			C-1887-L-02	33
4	Manual Brake Rivet	5 **f** Steel		C-1887-L-03	35
1	O Ring	57.1 x 3.53		D-0006-R-20	37
2	Cotter Pin	3 **f** x 60		D-0004-R-09	40
2	Ring			D-0004-R-08	41

PART B - GOVERNOR BRAKE GEAR



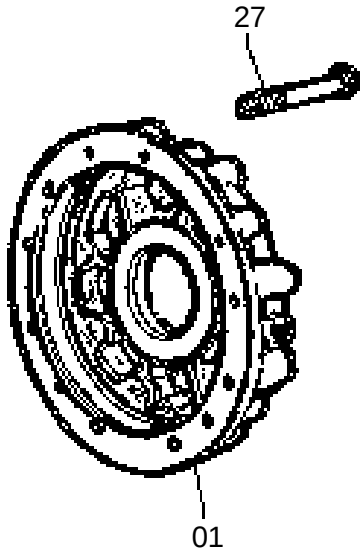
No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	Governor Brake Drum	"Let Go"		D-0005-R	01
1	Brake Gear Shaft			D-0007-R	02
1	Brake Disc	RH or LH		C-1694-L	05
2	Governor Brake Shoe	(C-877-L if any)		C-884-L	09
1	Spacer Ring			A-0006-R	10
1	Circlip	A 55 x 2	DIN 417		18
1	Oil Seal	BA 60 x 85 x 8	DIN 3760		21
1	Bearing	55.90.18	SKF 6011	2 RS	24
2	Cotter Pin	3 **f** x 30	DIN 94		25
8	Hexagon Head Screw	M 10 x 25	DIN 933	8.8 Grade	27
1	Flat Key	A 14 x 9 x 35	DIN 6885-1		28
4	Ring	30 / 17 **f** x 2		D-0006-R15	29
2	Governor Brake Spring			C-884-L-02	31
2	Governor Brake Lining			C-884-L-03	32
8	Governor Brake Rivet	5 **f** Bronze		C-884-L-04	34
1	Lubrication Nipple	m 10 x 1		D-0006-R-19	36

PART C - NON REVERSE CLUTCH "FREE-WHEEL"UNIT



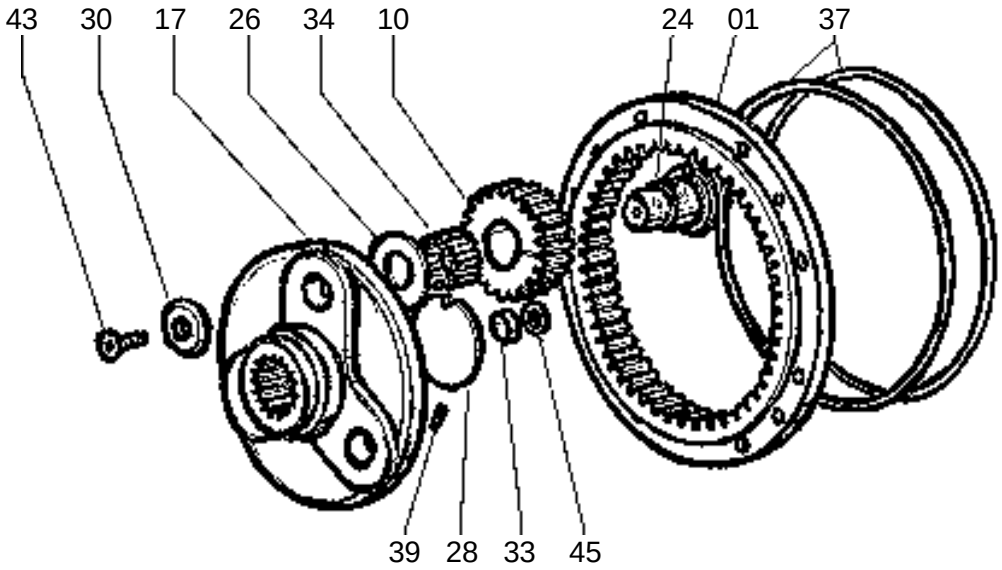
Item No	Description	Type	Quantity
1	Reduction Unit	ED-2065 MR	1
2	Flange		1
3	Freewheel Unit		1
4	Circlip		1
5	Connecting Shaft		1
6	Key (10 x 8 x 32)		1

PART D - INPUT FLANGE



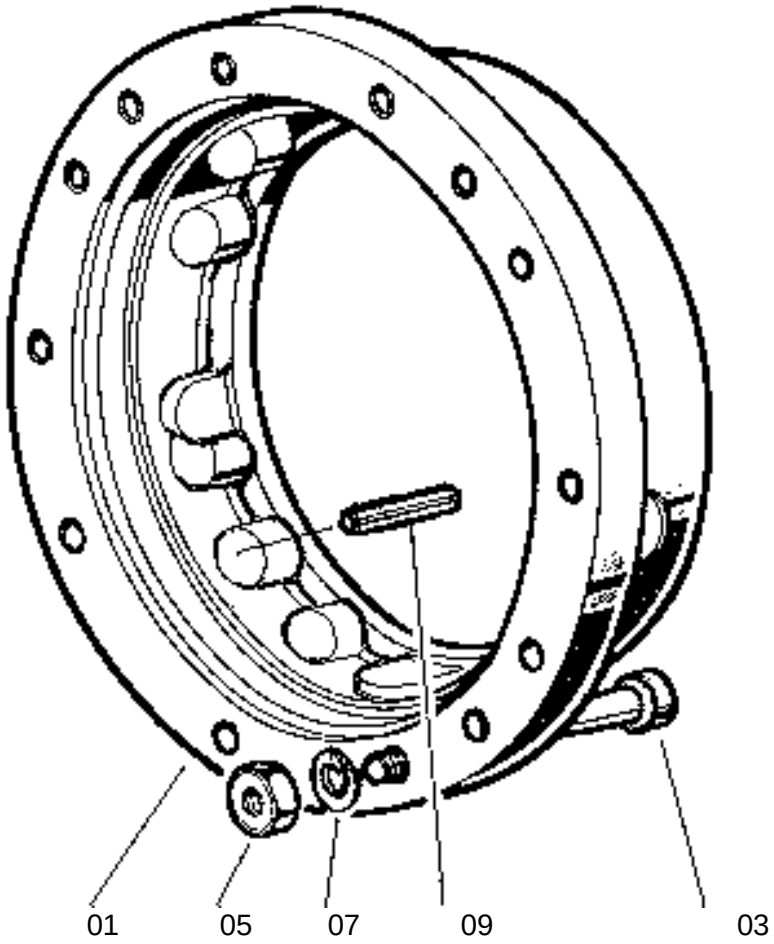
No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	Input Flange	342/077.1/4000			01
8	Hex Socket Head Screw	M 10 x 70 462/121.0/0000	DIN 912	8.8 Grade	27

PART E - SPEED REDUCTION GEAR (14S)



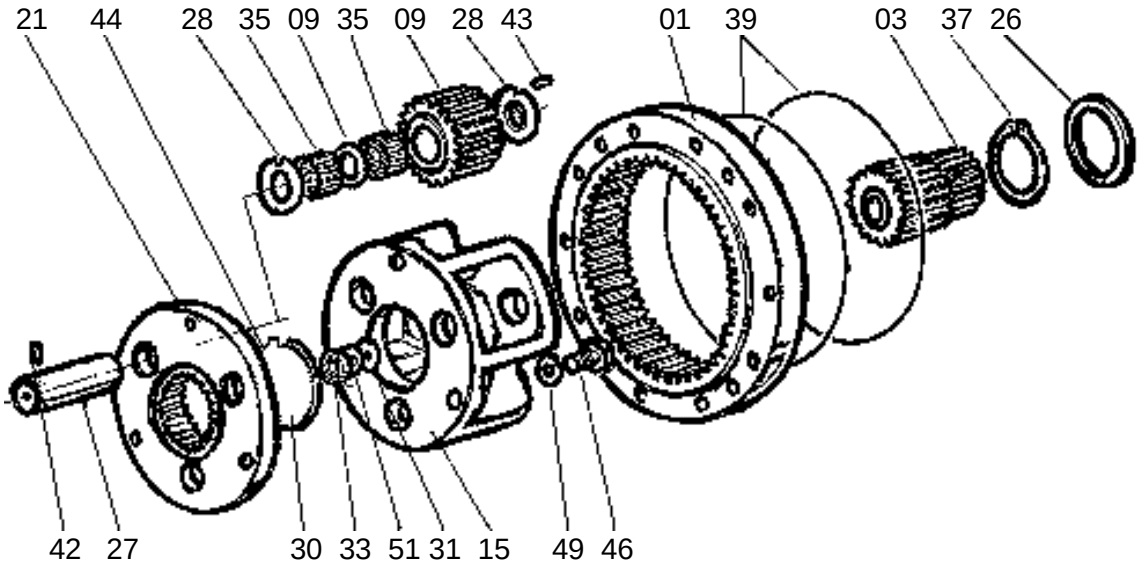
No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	(Outer Ring) Geared Rim	320/010.2/1100		C-0004-R	01
3	Planetary Gear Wheel	325/016.4/0300		i = 7.25 : 1	10
1	Planet Carrier	345/058.3/1800		i = 7.25 : 1	17
3	Gear Wheel Pin	315/008.4/0100			24
3	25 **f** Ring	361/001.4/0900			26
1	Plate	373/070.4/0800			28
3	Ring	372/070.4/0800			30
1	Bearing	6.19.6	SKF 626	421/024.0/0000	33
90	Cylinder Roller	3.5 **f** x 19.8	DIN 5402	427/046.0/0000	34
2	O Ring	2 - 170		412/209.0/0000	37
1	Slotted Spring Pin	4 **f** x 10	DIN 1481	438/209.0/0000	39
3	Countersunk Bolt	M 8 x 20	DIN 7997	8.8 Grade	43
1	Spring Washer	A 10.5	DIN 137	463/084.0/0000 469/009.0/0000	45

PART F - INTERMEDIATE FLANGE RIM



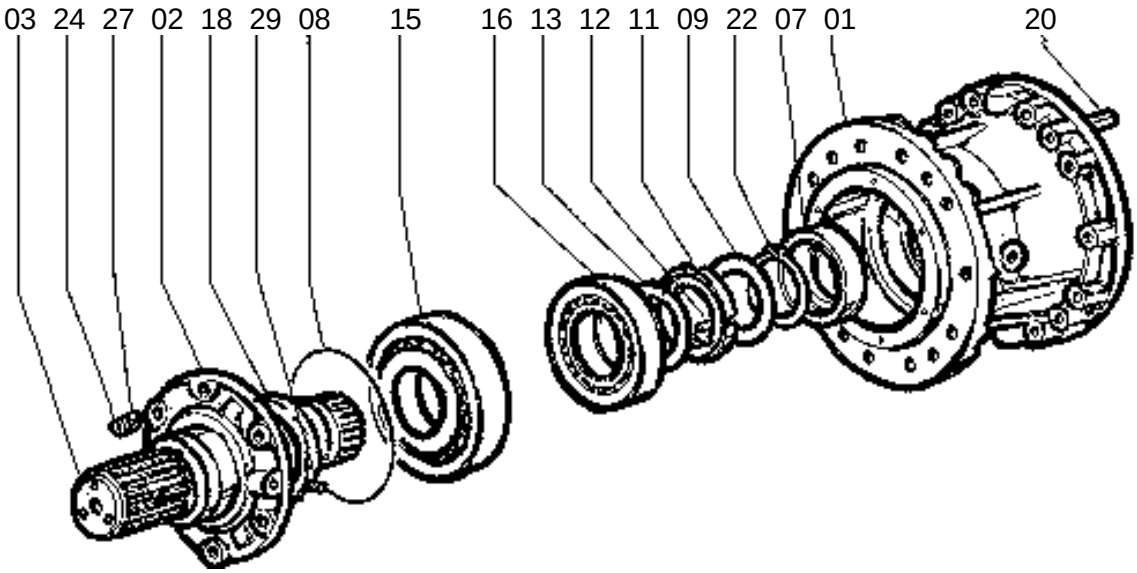
No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	Intermediate Flange	342/009.2/4000 036.2			01
10	Hex Socket Head Screw	M 12 x 90	DIN 912	8.8 Grade	03
10	Hexagon Nut	M 12	DIN 934	8 Grade	05
10	Plain Washer	A 13	DIN 125	468/016.0.0000	07
4	Slotted Spring Pin	12 **f** x 60	DIN 1481	438/196.0/000	09

PART G - SPEED REDUCTION GEAR (DK 9)



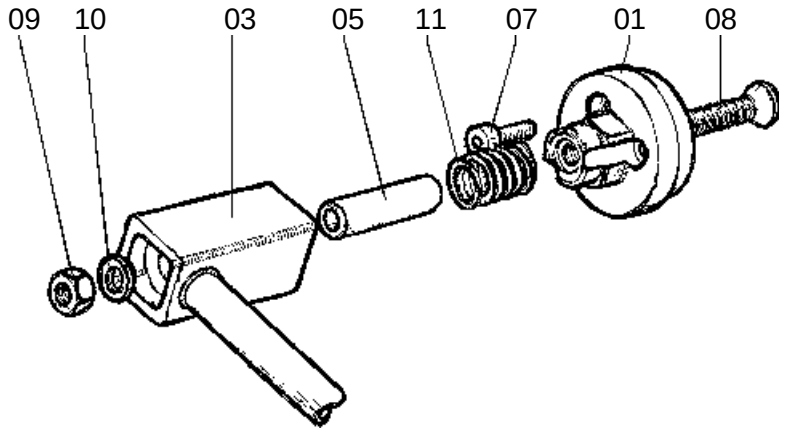
No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	(Outer Ring) Geared Rim	320/019.2/1100			01
1	Sun Pinion	327/107.4/0300		i = 6 : 1	03
3	Planetary Gear Wheel	325/029.4/0000		i = 6 : 1	09
1	Planet Carrier	345/176.2/4200		i = 6 : 1	15
1	Planet Carrier Flange	341/026.3/1500		i = 6 : 1	21
1	Spacer Ring	363/013.4/6400			26
3	Gear Wheel Pin	315/013.4/0100			27
6	Recessed Plate	361/004.4/0900			28
3	Spacer Ring	363/069.4/0900			29
1	Recessed Plate	373/009.4/0800			30
1	Spacer Ring	363/061.4/6200			31
1	Bearing	10.26.8	SKF 6000		33
180	Cylinder Roller	3.5 **f** x 23.8	DIN 5402	427/048.0/0000	35
1	Circlip	A 57 x 2	DIN 471	431/061.0/0000	37
2	O Ring	2 - 175		412/217.0/0000	39
3	Slotted Spring Pin	5 **f** x 12	DIN 1481	437/129.0/0000	42
6	Slotted Spring Pin	4 **f** x 10	DIN 1481	438/209.0/0000	43
1	Slotted Spring Pin	4 **f** x 8	DIN 1481	438/140.0/0000	44
3	Hexagon Head Screw	M 12 x 30	DIN 933	461/137.0/0000	46
3	Spring Washer	A 13	DIN 127	468/016.0/0000	49
1	Disc Spring	12.2 **f** 25 x 0.9	DIN 2093	481/030.0/0000	51

PART H - OUTPUT SUPPORT



No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	Support	352/066.1/4200			01
1	Flange	354/174.2/4000			02
1	Output Shaft	311/137.3/0600		C-0003-R	03
1	Spacer Ring	363/015.4/6300			07
1	O Ring	2 - 251		412/341.0/0000	08
1	Spacer Ring	363/016.4/6400			09
1	Lock Nut	KM 15M 75 x 2	SKF	369/001.4/0000	11
1	Key			369/001.4/0000	12
1	Lock Ring	MB 15	SKF	362/002.4/6400	13
1	Bearing	75.130.27.25	SKF 30 215	422/141.0/0000	15
1	Bearing	75.130.41	SKF 33 215	422/139.0/0000	16
1	Oil Seal	85 x 120 x 12	DIN 3760	411/335.0/0000	18
4	Slotted Spring Pin	12 **f** x 60	DIN 1481	438/430.0/0100	20
1	Circlip	A 72 x 2.5	DIN 471	431/071.0/0000	22
6	Hex Socket Head Screw	M 8 x 25	DIN 912	8.8 Grade 461/078.0/0000	24
6	Elastic Ring	8.4 **f**		468/012.0/0000	27
1	Screw Plug	1/8”Gas	DIN 908	451/022.0/0000	29

PART J - RAPID RECOVERY GEAR



No Off	Part Denomination	Dimension (Remark)	Standard No	Drawing No (Grade)	Item No
1	Cover Lid			A-0008-R	01
1	Rapid Recovery Crank			C-0007-R	03
1	Bearing Bush			A-0007-R	05
3	Int. Hex Socket Head Screw	M 10 x 25	DIN 7984	8.8 Grade	07
1	Countersunk Bolt	M 12 x 105	DIN 963 A		08
1	Hexagon Nut	M 10	DIN 934	8 Grade	09
1	Plain Washer	A 10.5	DIN 125		10
1	Compression Spring				11

INSPECTION PRIOR TO COMMISSIONING

1. Check silicagel, or equivalent, desiccant bag is removed from the winch gear-case.

2. Check winch gear-case for correct oil level. (Fill up with oil until it starts flowing out of the level plug opening).

3. Check sheaves are properly lubricated.

4. Make sure wire rope falls are properly lubricated. (Greased or sprayed with appropriate preservative as per lubricant supplier's chart.)

5. Be sure wire rope falls are correctly reeved through sheaves and evenly wound on to the winch drum.

6. Check secure and correct attachment of wire rope falls onto winch drum. (Wire rope clamp bolts, or similar arrangements, in winch drums are tightened up).

7. Ensure manual brake is in fully applied (on) position.

8. Check manual brake for proper working. (Barrel minimum loaded, release brakes by rotating control lever and re-apply it again).

9. Check manual recovery gear (hand crank) for proper working.

10. Check that electric power supply is available to winch.

11. Check correct function of manual / powered recovery inters lock safety device. No power is available as long as hand crank is inserted.

SAFETY NOTE
All personnel must be well clear of crank handle reach, prior to depression of push button.

12. Check correct function of limit switches (end position and any other). (Rotate actuator lever by hand until cut-off click is heard or felt).

13. Check wire rope falls and links are correctly engaged on survival craft release hook(s).

14. Make sure limit switches are properly adjusted to cut-off power approximately 150 to 200 millimetres from stowed end position (highest position). (lower craft to a level at which the switches respond and raise craft towards the stowed position

15. Be prepared to stop the winch on the EMERGENCY STOP button if the limit switches should fail.
16. Be sure reeving pattern of launching mechanism remote control line is correct and clamp bolts are tightened up.

17. Check proper working of the launching mechanism remote control gear (from within the craft).

18. Prepare boat and appliance for installation tests following Surveyor's instructions.

INSPECTION / MAINTENANCE PROGRAMME

WEEKLY - INSPECTION / MAINTENANCE

1. Visual inspection for operational readiness.

2. Gripe lines to be checked for slackness and tightened as necessary.

MONTHLY - INSPECTION / MAINTENANCE

1. All oil bath lubricated winches and any other reduction gears are to be checked for leakage and oil level restored as necessary.

2. All grease lubricated pivots, bearings, etc, to be checked for proper lubricating condition.

3. Winch manual brakes to be function tested, both direct and remote controlled. (All necessary safety precautions must be taken).

4. Visual examination of wire ropes for deterioration. (Made in compliance with rules established by the national administration).

5. Check operation and working of all safety devices and limit switches.

THREE - MONTHLY - INSPECTION / MAINTENANCE

Inspection to be executed in accordance with “IMRR’’ Document.

SIX - MONTHLY - INSPECTION / MAINTENANCE

Inspection to be executed in accordance with “IMRR” Document.

ANNUAL - INSPECTION / MAINTENANCE

Inspection to be executed in accordance with “IMRR” Document.

BI - ANNUAL - INSPECTION / MAINTENANCE

Inspection to be executed in accordance with “IMRR” Document.

EVERY 30 MONTHS (2 ½ YEARS) - INSPECTION / MAINTENANCE

Inspection to be executed in accordance with “IMRR” Document.

EVERY 5 YEARS - INSPECTION / MAINTENANCE

Inspection to be executed in accordance with “IMRR” Document.

NOTES:

1. Subsequent inspection/maintenance cycles should be recorded on pages in “IMRR (REP)” Document with applicable year being defined. It is suggested that copies of these pages, to be used for record purposes, be reproduced locally.

2. The intervals are based on the average condition of use. Shorter intervals may bedew necessary since experience and actual usage determine the optimum inspection/maintenance programmes.

NB! The intervals between inspection/maintenance periods must not be extended. The ship owner/operator will bear the entire responsibility for any accident or malfunction caused by extension of intervals between inspection/maintenance periods.

3. Several instruction documents, issued by the manufacturer, are incorporated in the manual and provide an invaluable source of information with regard to maintenance.

4. The falls may have to be replaced before scheduled date if their condition is not acceptable to the Surveyor.

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS

Annual Inspection and Maintenance in year -1- of Operation

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brakes function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS

Annual Inspection and Maintenance in year -2- of Operation

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brakes function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS

Annual Inspection and Maintenance in year -3- of Operation

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Winch gear train and bearings. Check for corrosion and damage					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brakes function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Manual boat hooks and raft hooks serviced					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					
Wire rope falls turned end for end					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS

Annual Inspection and Maintenance in year -4- of Operation

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brake function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS

Annual Inspection and Maintenance in year -5- of Operation (page 1 / 2)

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Renewed hoisting wire ropes.					
Checked griping lines for slackness and tightened as necessary.					
Renewed griping/bowsing wire ropes.					
Renewed remote control wires.					
Gear train of winches checked on corrosion or damage.					
Greased all lubrication points.					
Changed all oil seals and bearings of winches					
Changed roller ratchet of winches					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Winch brake linings renewed.					
Winch manual brakes function tested, direct and remote control.					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS

Annual Inspection and Maintenance in year -5- of Operation (page 2 / 2)

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked servicing of manual boat hooks and raft hooks.					
Checked static testing of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS (for reproduction only)

Annual Inspection and Maintenance in year: 6 / 11 / 16 / 21 of Operation (indicate appropriate year)

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brakes function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS (for reproduction only)

Annual Inspection and Maintenance in year: 7 / 12 / 17 / 22 of Operation (indicate appropriate year)

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brakes function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS (for reproduction only)

Annual Inspection and Maintenance in year: 8 / 13 / 18 / 23 of Operation (indicate appropriate year)

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Winch gear train and bearings. Check for corrosion and damage					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brakes function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Manual boat hooks and raft hooks serviced					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					
Wire rope falls turned end for end					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS (for reproduction only)

Annual Inspection and Maintenance in year: 9 / 14 / 19 / 24 of Operation (indicate appropriate year)

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Checked gripe lines for slackness and tightened as necessary.					
Greased all lubrication points.					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Brake linings inspected for wear.					
Winch manual brake function tested, direct and remote control.					
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked operation of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS (for reproduction only)

Annual Inspection and Maintenance in year: 10 / 15 / 20 / 25 of Operation (page 1 / 2) (indicate appropriate year)

Confirmation of execution of maintenance by signatures				Installation Date:	
Description	3 months	6 months	9 months	12 months	Remarks
Checked for intermediate weekly and monthly inspections.					
Visually inspected for operational readiness.					
Checked condition of wires for damage.					
Renewed hoisting wire ropes.					
Checked griping lines for slackness and tightened as necessary.					
Renewed griping/bowsing wire ropes.					
Renewed remote control wires.					
Gear train of winches checked on corrosion or damage.					
Greased all lubrication points.					
Changed all oil seals and bearings of winches					
Changed roller ratchet of winches					
Checked all winches for leakage of oil and refilled as necessary					
Changed oil bath in winches and gearboxes.					
Winch brake linings renewed.					
Winch manual brakes function tested, direct and remote control.					

INSPECTION-, MAINTENANCE- AND REPAIR RECORDS – DAVITS (for reproduction only)

Annual Inspection and Maintenance in year: 10 / 15 / 20 / 25 of Operation (page 2 / 2) (indicate appropriate year)

Confirmation of execution of maintenance by signatures					Installation Date:
Description	3 months	6 months	9 months	12 months	Remarks
Checked operation and working of limit switches.					
Checked operation and working of safety devices.					
Checked rotation of sheave in lower block.					
Checked servicing of manual boat hooks and raft hooks.					
Checked static testing of manual boat hooks and raft hooks.					
Checked electrical equipment for operational readiness.					
Hydrostatic release units to be re-tested and serviced					

MAINTENANCE AND REPAIR INSTRUCTIONS

GENERAL

Launching appliances are mechanical devices. Like all machines, if they are to retain their efficiency, they must be regularly inspected and maintained in good working order, lubrication being of primary importance and hence deserving particular attention.

Remember - prevention is always better than cure.

A summary of scheduled inspection and maintenance activities are detailed in the accompanying Inspection, Maintenance and Repair Records (IMRR) document. In which a record inspection and maintenance is to be kept.

Among other things, the programme covers inspection of both the davit and winch where attached to ships structure as well as to each other if that is the case. Loose securing bolts must be re-tightened using correct torque as per drawing or usual practise. Welds particularly those of deck attachments of all load bearing parts, i.e., davits, winches, eye-plates, pulley brackets or sheave blocks, etc., are to be inspected for cracks. Weld repairs are to be undertaken without delay by a suitably qualified certificate welder. The usual welding precautions must be taken to protect adjacent equipment, e.g., wire ropes, cabling, etc., and do not forget the other side of the bulkhead.

SAFETY NOTE
When overhauling or re-revving winches and/or davits, the gripe gear slip links should be lashed and the maintenance pins inserted to lock davit arms to the pedestal in order to enable safe detachment of the boat falls. In the event that maintenance slings are provided, the boat must be suspended on these slings. Immediately after all work has been completed unlash slip links and remove maintenance pins - stow safely away for future use.

SAFETY NOTE
Never use track ways of roller type davits as a convenient place for storing loose gear, not even on a temporary basis. Never use projecting parts of the equipment as securing points for lines or similar.

SAFETY NOTE
Damaged grease nipples must be replaced immediately. It is recommended that a small circle in contrasting colour, e.g., signal red, should be painted around each nipple to facilitate ease of location during maintenance.

LUBRICATION

Details on lubrication are given on latter pages of this document and a list of lubricants, including suitable equivalents, is in the “SRL” document.

Some equipment may have specific requirements. These will be detailed in the manufacturer's instructions.

ELECTRICAL EQUIPMENT

1. Cable leads should be checked for secure fastening and condition of the insulation layer.

2. Motor starter cabinets should have a moisture-free interior proving good sealing condition. If this is not the case defective seals and anti-condensation heaters should be inspected and repaired/replaced as necessary. The cabinet lock and hinges should be kept well lubricated.

3. Electric switches should be inspected and tested. What is also important is to check the correct working of all manual/powered operational inter-lock safety devices and reset as necessary. Leavers for the davit seat incorporated arm or cradle end position of limit switches should move easily. Moving the leaver by hand and running the motor at the same time, to make sure that electric power is cut off before damage to equipment can happen should check how the switch is working.

4. The pilot lamp in the cabinet door which shows you how to use the anti-condensation heater should be checked if it is working correctly. If the lamp is not working, it should be replaced.

WINCH

1. All oil bath levels are to be checked by removing the level plug.

2. Simultaneously, the nipple-lubricated parts should receive a single pump of grease, extra greasing is not necessary and in the instance of the brake unit undesirable.

3. The brake linings are normally secured to the brake shoe by countersunk rivets the heads of which are sunk below the surface of the lining. The linings are inspected one's a year, or every 25 launches - whichever comes first, and have to be replaced if worn down to within 1 millimetre of the rivet/screw heads. Never let the linings wear down to the rivet head, as this will cause damage to the brake drum, and with possibility of a malfunction.

4. When replacing the linings and other brake parts use only original spare parts. Check in particular that the rivet/screw heads are well below surface of the new lining. It is suggested that a complete brake shoe assembly, or at a minimum linings and rivets, are held as onboard spares.

5. In operation both manual and governor brake gears must be kept in good condition and the linings kept clean from oil or grease. This because we don't want any injury to personnel or damage to the equipment.

SAFETY NOTE
Important - do not over lubricate the nipples on the brake control mechanism.

6. In good working order the winch should over-run after the boat is waterborne to give slack in the wire rope fall, if not, check free running condition of bearings, etc.

7. In the course of each lowering procedure, it is natural for the brake gear enclosure to heat up as a result of friction, therefore be wary of touching the brake drum. During launching drill or tests, the brake should be allowed to cool down before lowering again.

8. Provided the boat is securely griped and the davit cradles/arms locked, it is good practice to release the winch brake to unload the wire rope falls. Subsequently, ensure that the weighted brake control handle ("Dead Man" type) always re-engages the brake under its own momentum.

9. Every two years, clean the brake drum and gear case interiors, carefully lubricate all journals, bearings and other moving parts as appropriate. Replace all gaskets to ensure a leak free seal and fill with clean oil.

10. At the same occasion, dismantle the electric motor. Clean both the interior and heat dissipation ribs. Check general condition and, in particular, the bearings. Re-lubricate or, if necessary, replace bearings. Re-assemble motor and test correct operation of winch.

LUBRICATION OF FULLY OR PARTIALLY EXPOSED EQUIPMENT'S

In this group, wire ropes and screw threaded mechanisms of standing part compensation gear, slip hooks of gripe gear and tricing pendants, spindle gear, stretching screws, swivels, etc., are unprotected whereas worm or toothed wheel gears of radial davits are enclosed.

1. Good adhesion, high film strength, load carrying capacity, penetration and ease of application together with water washout; corrosion, wear and ageing resistance are all key requirements.

2. A number of semi-fluid lubricants have been developed by some oil companies to be used along with more consistent ones, the recommended "NLGI" consistency grade extends from 2 to 00.

3. The components must be kept properly lubricated over the whole length and when re-lubricating it is advisable to have a spindle fully run through the nut to ensure distribution along the whole spindle.

4. A similar treatment is also applicable to slewing gear in radial davits.

5. When re-lubricating wire ropes, the least accessible sections deserve particular attention. Pre-heating of the lubricant may improve the penetration into the wire ropes. Consult the instructions supplied by the lubricant manufacturer for the best method of application.

6. Track ways of roller type davits in those areas of the "U" channel sections which lead the cradle rollers should be kept lubricated with a non-drip grease lubricant.

7. Bolts, which secure the skates to the gunwale, should also be regularly lubricated.

GREASE LUBRICATED CAM OR SPRING CLUTCHES

Where grease lubrication of these reverse rotation, self-locking clutches is required by the winch design, in lieu of oil bath lubrication, a continuous film of lubricant to be ensured at all times.

DAVIT STRUCTURE

1. All sheaves and roller wheels/pivots must rotate freely on their bearings.

2. Unless fitted with nipples, self-lubricating, plastic bushed bearings do not require any lubrication. However, it is necessary to thoroughly oil the friction faces both on installation and on re-assembly following overhaul.

3. The wooden chocks or equivalent filling pieces fitted to the cradle/arm must not exceed the designed dimensions as this could overload the boat hull.

4. Track ways of roller type davits should be kept lubricated with a non-drip grease lubricant.

5. Moving parts of bottle-screws, turnbuckles, slip hooks, lower block sheaves, swivels and all small moving parts must be kept free of paint and well lubricated.

6. Gripe gear levers should move freely in a complete circle when the arms are in the outboard position. Equivalent moving parts should perform similarly.

GRIPING GEAR

1. To prevent localised areas of damage, wear and/or corrosion to boats of glass fibre or light alloy construction wire rope griping lines are to be covered with proofed canvas or plastic hosing where they come into contact with the hull. Be aware that acute angles may require particular attention.

2. Griping gear shackles, triangles, rigging screws, quick-release slip hooks, ropes and attachments and one-man release span rope should be inspected for wear and damage.

3. All of the above parts should be properly lubricated to ensure they operate freely and smoothly.

4. To ensure reliable working of the griping gear system, the griping levers spanning release wire ropes must be kept under tension unless a launch or recovery is in progress.

SAFETY NOTE
Those griping ropes, which are not permanently attached to the davit arms or track way, should be secured to prevent loss overboard during launch/recovery operations.

PAINTING

Degradation of this means preservation results in the on-set of corrosion to steel structures, evident by the appearance of paint coat bubbles followed by rust stains.

1. All signs of rust have to be removed. The affected area must then be cleaned up, primed and painted in accordance with manufacturer's instructions.

2. Negligent painting is the most frequent source of trouble, resulting in malfunctions, in a launching appliance. This applies particularly to gravity davits.

SAFETY NOTE

When painting, it is absolutely essential to ensure that no paint is deposited onto lubrication nipples, bearings or any other moving part in such a way as to impede freedom of movement.

3. Remember that certain areas of launching appliances, like track ways of relevant types of gravity davits, require designed clearances to be maintained to ensure their reliable working. Repeated application of coats of paint to these critical areas often results in a malfunction of equipment, this is an extremely dangerous situation and must be avoided. When these areas require re-preservation the existing paint must first be removed.

4. It is good practice to restore the red marking ring around all lubrication nipples following re-preservation.

WIRE ROPE FALLS AND OTHER WIRE ROPES

1. Wire rope falls are reeved in compliance with equipment reeving instructions. Falls must be neatly wound onto winch barrel, turns must not over-ride one another else the boat will not stow evenly.

2. The load bearing side of wedge attachments must be aligned with the load transmitting end of the wedge attached part of the wire rope, i.e., the dead end wedge side must be angled with respect to the one above. The dead end of wire rope must be fastened by at least two correctly orientated (the wider, nut fitted, clamp face adjacent to the rope live end, neither reverse nor even staggered attachment) "Bull-Dog Grip" wire rope clamps. An alternative system may be applicable.

3. In the event of double point suspension system, both lower fall blocks or links should engage the associated arm/cradle stops simultaneously. To this end, a turn buckle mechanism is provided in the falls standing part (dead end) for the purpose of levelling both boat (and fall) ends should the falls stretch unevenly or coil incorrectly.

4. The wire ropes to save unnecessary wear, should be kept slackened off slightly when the boat is stowed and correctly griped. Simultaneously, check the condition of the associated end links, wire rope clamps, rigging screws, etc. Any loose shackle bolts must be tightened immediately.

5. The falls and all other wire ropes should be kept well lubricated. Pre-heating of the lubricant may improve the penetration into the wire ropes.

SAFETY NOTE

White lead or paint must never be used as this chokes the sheave bearings.

6. On every occasion that a wire rope is turned or replaced attention should be paid to proper fall reeving. When replacing the falls, providing no changes have been made to either davit or boat, the correct breaking strength, construction, diameter and length should be ascertained and ordered to comply with the initial wire rope supply.

GREASE LUBRICATION AND PROPERTIES

GENERAL REQUIREMENTS

1. With the exception of electric motor or other long-term lubricated roller type bearings, lubrication should be carried out in accordance with the periodic routines laid down in the “IMMR” document.

GENERAL PURPOSE / NIPPLE LUBRICATION OF BEARINGS OR SIMILAR COMPONENTS

1. Nipples are used for lubrication of various bearings on both the davit and associated winch, such as rollers or arm pivots, sheave axle pins, brake gear, recovery, slewing or luffing gear, as well as gear-wheel and other shafts.

2. Apart from the above qualities, the lubricant used should possess good lubricator dispensability, i.e., pumpability and flow characteristics as well as load bearing properties.

3. To facilitate location, it is advisable to paint a small ring in contrasting colour, i.e., and signal red, around each nipple.

4. With the exception of the brake shaft lubrication point, nipple lubrication should be generously applied using a high-pressure grease gun lubricator, filled with clean, appropriate grease. In general terms, a proper lubricated condition is achieved when the fresh lubricant is forced out of the bearing bush.

SAFETY NOTE
With regard to brake shaft lubrication due care must be taken to avoid over-greasing to avoid the possibility of contamination to the brake linings by excess grease.

5. A choked feed line is a problem, which must be rectified immediately. Remove the nipple and clear the feed line until the grease flows freely. Ensure that the bearing served by this feed line is in good condition and not suffered any damage through grease starvation. Replace nipple and charge line with grease, ensuring that it reaches the bearing.

6. Lubricants displaying the National Lubricating Grease Institute (NLGI) consistency grade of 2 (ASTM/25°C work penetration figure of 220 - 295mm/10) are best suited to comply with the above requirements.

FAULT TRACING AND RECTIFICATION

The tables below give guidance to recognise, trace and rectify possible causes of malfunctions on the launching appliance:

FAULT TRACED	RECTIFICATION

BOAT LOWERING SPEED TOO FAST

Dismantle brake housing to check governor brake shoes.

Governor brake linings contaminated by grease or oil.	Clean or renew linings as necessary.
Governor brake linings worn down to shoe material.	Renew linings.

BOAT LOWERING SPEED TOO SLOW

Checks free running of sheaves and/or winch.

Sheaves not running freely.	Clean sheaves, if necessary, and lubricate.
Winch not running freely.	See next table.

RUNNING CONDITION OF WINCH SUSPECT

Check general condition and Lubrication State of winch, if good, examine for mechanical damage.

Oil level too low.	Replenish as necessary.
Oil too viscous.	Change oil bath.
Foreign matter in gear case.	Drain oil. Remove foreign matter and clean out gear case. Refill with clean oil.
Broken or damaged gear teeth.	Investigate cause. Renew gear wheel.
Bearings and shafts - rusty and/or corroded. Bearing failure.	Clean and, if necessary, renew. Investigate cause. Renew bearing.
Broken springs in roller clutch. Clutch jammed mechanically.	Investigate cause. Renew springs. Investigate cause. Renew clutch.

BRAKE GEAR WILL NOT HOLD LOAD

Dismantle manual brake housing to examine brake lining and/or non-reverse mechanism.

Manual brake lining contaminated by oil or grease.	Clean or renew lining as necessary.
Manual brake lining worn down.	Renew lining.
Non-reverse clutch not working correctly. See Note below.	Investigate cause. Renew clutch.

NOTE
Under normal conditions, the mechanism should resist movement in lowering direction with the manual brake "ON" (engaged). On winches equipment with manual falls un-winding wheel, this can be checked by trying to rotate this wheel in lowering direction without releasing the manual brake, if this is possible, the inner or outer race are badly indented and the clutch must be renewed without delay. On winches not equipped with un-winding wheel, trying to rotate in lowering direction by inserting and using the hand crank can check correct mechanism functioning.

GRAVITY DAVIT ARMS FAIL TO RUN-OUT WITH THE MANUAL BRAKE RELEASED

As a result of: Not following standard procedures or another problem.

Davit cradles or arms are locked by safety bars left in place after maintenance. (The safety bars do not form part of the launching appliance but solely as a safety precaution employed during maintenance routines).	Remove safety bars.
Failures of remove boat-griping gear.	Remove griping gear.
If davit arms still do not run out, lock them to davit seat by inserting safety bars	Check winch is running freely in lowering direction.
Apply an appropriate load (1.5kN or 250lbs should normally be adequate) to the falls to check if	Winch runs freely in lowering direction with the manual brake released.
If winch is running freely then	The davit arms transfer system is to be checked.
Davit arm pivot or roller pins and/or axle pins of boat fall sheaves are stuck fast with paint.	The items concerned must have all paint removed, cleaned, lubricated and replaced.
Failure due to possible misalignment of components sustained by the davits as a Result of damage, cargo handling, weather or other reason.	Contact the davit manufacturer.

SAFETY GUIDELINES

Schat-Harding policy is to produce survival equipment with the safety aspect given high priority.

When an accident occurs, investigation may reveal the cause and pinpoint what should have been done to prevent the accident. This can only provide HINDSIGHT. The purpose of a good safety program is to prevent the accident from happening in the first place. This can be accomplished by the use of FORESIGHT and knowing the results of our actions when working around a ***Schat-Harding*** product.

General safety reminders

THINK SAFETY - WORK SAFELY

1. The employer is responsible for selecting competent and qualified employees. ***Schat-Harding*** conducts training classes. We strongly suggest that you enrol your employees.

2. Manuals are provided with each ***Schat-Harding*** product. The product user should have these manuals available for personnel working on the product.

3. Guards and shields are to be in place at all times.

4. All employees should be aware of first aid facilities and be encouraged to use them, regardless of the severity of the injury.

5. Employees should be encouraged to report any hazardous conditions to their supervisors.

6. Fire prevention must be practised, and fire protection must be available to prevent the loss of life, personal injury, and to protect property.

7. Personal protective devices, such as protective footwear and safety glasses, should be used.

8. Users must have available adequate lifting facilities capable of lifting within the safe load limits, and appropriate slings and hitches.

9. The employer must insist that his employees study this safety information, and make sure that safety is practised.

LIFTING EQUIPMENT AND LIFTING TIPS

Remember that your first responsibility is to practice safety. Before you begin any lift, we suggest you go through a ***mental checklist***. Ask yourself questions like the following:

1. What is the weight of the load?

2. What type of accessory, hitch or connection is required?

3. Will the lift be a straight lift or is an angled rig required? This determination will affect the lifting capability of the accessory.

4. Are the slings free of kinks, knots or broken strands?

5. Is proper clearance available to make the lift safely?

Because the type of hoisting equipment at each customer's facility is unknown to ***Schat-Harding***, these instructions are written with the intent of being general rather than specific, however these safety rules will apply.

We suggest some ***lifting tips***:

1. Never lift more than the rated capacity of the hoisting equipment.

2. If there is doubt, have the hoisting equipment inspected for safe operating conditions. Inspect all slings. Do not take chances, if in doubt, check with the proper authority.

3. Balance load in sling before lifting more than a few centimetres. Distribute load evenly.

4. Use a sling large enough for the load.

5. Clarify hand signals with co-workers. If signals are not understood, make no move until they are clarified.

SELECTION OF RECOMMENDED LUBRICANTS
ELECTION DES LUBRIFIANTS RECOMMANDES
USWAHL EMPHOHLENER SCHMIERMITTEL

OIL COMPANY	GENERAL PURPOSE GREASE NIPPLES / BEARINGS	WIRE ROPES SPINDLES AND SLEWING GEAR	HYDRAULIC SYSTEMS / EPICYCLIC GEARED WINCH / AIR MOTOR GEARS	JOINT WINCH GEAR AND N R CLUTCH LUBRICATION	SPUR. HELICAL OR WORM GEARED WINCHES OR SLEW GEARS
CIE DE PETROLES	APPLICATION GENERALE GRAISSEURS PALIERS	CABLES METALLIQUES TIGES FILETEES ENGRENAGES OU VIS SANS FIN	TREUILS A ENGRE-NAGES EPICYCLO-ÏDEAUX CARTER MOTEURS PNEUMATIQUES	COMMUNE DESEN-GRENAGES ET ANTIDEVIREURS INDEPENDENTS	TREUILS OU DISPOSITIPS D'ORIENTATION A ENGRENAGES ET/ OU VIS SANS FIN
ÖL GESELLSCHAFT	MEHRZWECKEFETT NIPPEL LAGER	DRAHTSEIL SPINDEL ZAHNRAD bzw. SCHNECKEN GETRIEBE	WINDEN PLANETEN GETRIEBE LUFTMOTOR GETRIEBEKASTEN	W. MIT GETRIEBE UND RÜCKLAUF-SPERREN UNABHÄNGIGE RÜCKLAUFSPER.	WINDEN UND DREHWERKE MIT ZAHNRAD- bzw. SCHNECKEN GETRIEBE

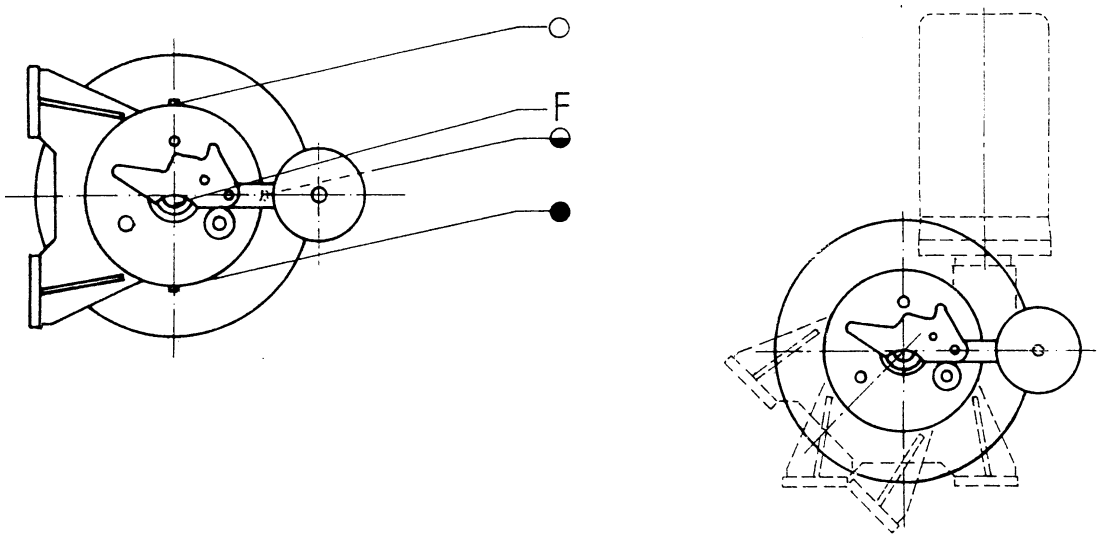
FREQUENCY: EVERY SIX TO TWELVE WEEKS OIL BATH CHANGE ONCE A YEAR
FREQUENCE: TOUTES SIX A DOUZE SEMAINES ECHANGE D'HUILE: UNE FOIS PAR AN
FREQUENZ: JEDE SECHS BIS ZWÖLF WOCHEN ÖLWECHSEL; EINMAL PRO JAHR

BP	**ENERGREASE MM-EP 2**	**ENERGOL WRP**	**BARTRAN HV 32**	**ENERGOL SHF-LT 15**	**ENERGOL GR-XP 150 GR-XP 220**
Castrol	**SPHEEROL AP 3**	**GRIPPA 355**	**HYSPIN AWH 32**	**HYSPIN AWH 15**	**ALPHA SP 150**
Chevron Gulf	**DURA-LITH EP 2**	**OPEN GEAR LUB 250 NC CHEVRON RUST PREVENTIVE**	**MECHANISM LPS 32**	**MECHANISM LPS 15**	**GEAR COMPOUND EP 150 EP LUBRICANT R 150**
elf	**EPEXA 2 MO 2**	**CARDREXA DC 1**	**VISGA 32**	**SPINELF 10**	**EPONA Z 150**
Esso	**BEACON 2 3**	**SURETT FLUID NX FLUID BEACON 2 or 3**	**UNIVIS HP32**	**NUTO H 5**	**SPARTAN EP 150**
FINA	**MARSON L2A**	**CABLINE 2750 FLUID**	**HYDRAN TSX 32**	**HYDRAN 10 TS**	**GIRAN 150**
Mobil	**MOBILUX EP 2**	**MOBILARMA LT MOBILTAC 81**	**DTE OIL 13 M**	**DTE OIL 11 M**	**MOBILGEAR 629**
SHELL	**ALVANIA R 3**	**MALLEUS GL 205**	**TELLUS T 32**	**MORLINA 10**	**OMALA 150 or 220**
TEXACO	**MULTIFAK EP 2**	**CRATER SPECIAL 2 X FLUID**	**RANDO HD-Z-32**	**RANDO HD-Z-15**	**MEROPA 150**

EQUIVALENTS MAY BE USED WITHOUT PRECONCENT
EQUIVALENTS DES LUBRIFIANTS PEUVENT ETRE UTILISES SANS CONCERT PREALABLE
GLEICHWERTIGE SCHMIERMITTEL KÖNNEN OHNE VORHERIGE ABSTIMMUNG VERWENDET WERDEN

WINCH LUBRICATION CHART

RAFT WINCH



OIL LUBRICANT IN COMPLANCE WITH ISO 3448. VISCOSITY GRADE VG 10.
LUBRICANT SELECTION FOR-20 UP TO+50 DEG C. AMB. TEMPERTURE

BRAND :	TYPE :	NIPPLE LUBRIC. :
BP	ENERCOL SHF - LT 15	ENERGREASE NM - EP 2
CASTROL	HYSPIN AWH 15	SPHEEROL AP 3
CHEVRON	MECHANISM LPS 15	DURA-LITH GREASE EP 2
ELF	SPINELF 10	EPEXA 2 or MO 2
ESSO	NUTO H 5	BEACON 2 or 3
MOBIL	DTE OIL 11	MOBILUX 2 or EP 2
SHELL	TELLUS R OIL 10	ALVANIA GREASE R 3 RHODINA GR 2
TEXACO	RANDO OIL HD-Z-15	MULTIFAX EP 2
GULF		GULFCROWN 6REASE No. 2
FINA		MARSON L 2

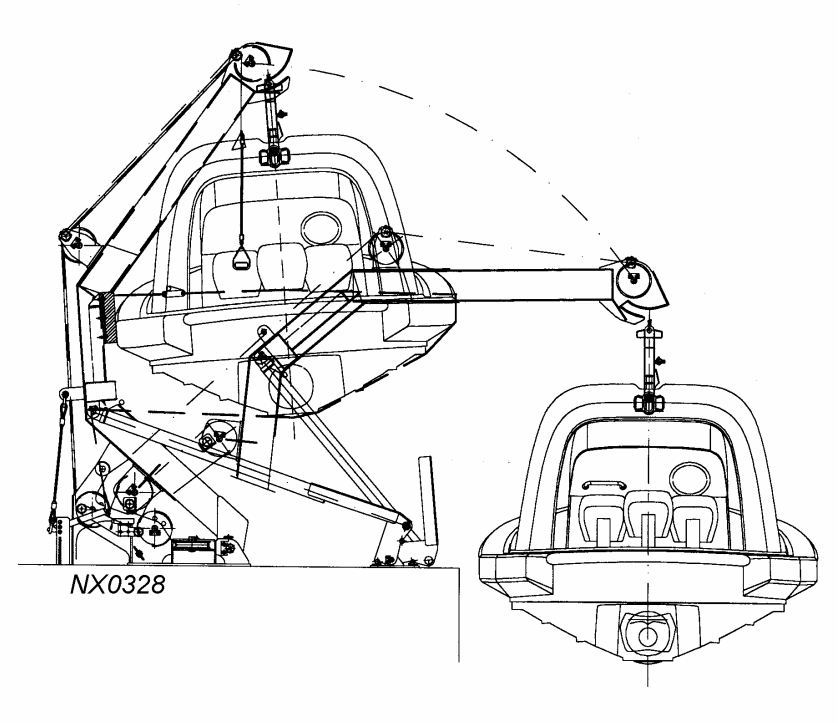
F **Nipple lubrication**
○ **Filling plug**
◒ **Oil level plug**
● **Drain plug**

THIS CHART REFERS TO WINCH TYPES:

MANUAL 2,5L.OIL		ELECTRIC 6,5L.OIL		MANUAL 3L.OIL		ELECTRIC 8L.OIL	
08-01		08-05	08-15	13-01			
08-02			08-22	13-02			
08-10				13-03		13-07	
08-17			08-26	13-04			
08-18		08-09	08-28	13-10			
08-19		08-11		13-13			
08-27							
		08-14					

SCHAT HARDING

INSTALLATION, OPERATION AND MAINTENANCE MANUAL



DAVIT TYPE **WINCH TYPE**

SA 3.5 **W50-RS**

WITH ON/OFF-LOAD RELEASE HOOK

Art. No. D781.20031 ***Schat-Harding*** Edition no.: 040610

1.0 INTRODUCTION

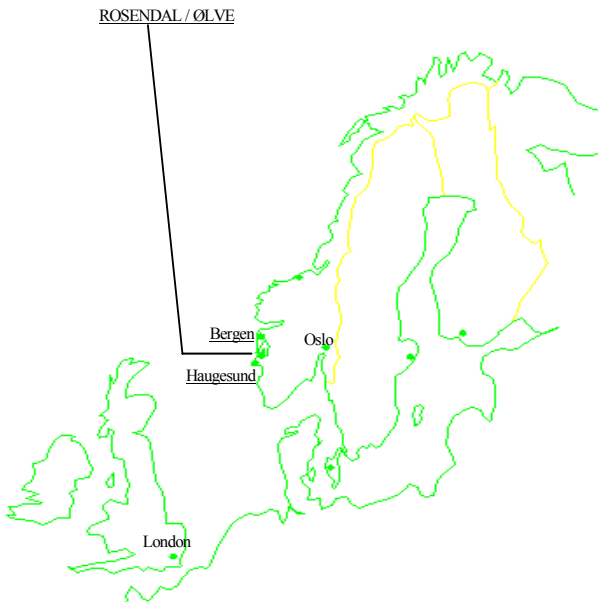
1.1 INTRODUCTION TO SCHAT-HARDING AS

The company was founded in 1985 with the objective of developing the position of the old HARDING AS as the world's leading manufacturer of evacuation systems for shipping and offshore.
Umoe Schat-Harding AS with its subsidiary companies:
Umoe Schat-Harding BV - Holland
Umoe Schat-Harding Ltd - U.K.
Umoe Schat-Harding GmbH - Germany
Umoe Schat-Harding Inc. - USA - Canada
Umoe Schat-Harding Pt. Ltd. - Singapore
have a total of 370 employees, of which 50 are engineers, the company develops, manufactures and sells all types of survival craft. Our range includes:

Our range includes:
- Open survival craft
- Partially enclosed survival craft
- Fully enclosed survival craft
- Combined cruise tenders/survival craft
- Free fall survival craft
- Winches for the entire range
- Davits for the entire range

Our two modern and well-equipped factories are located on Norway's West Coast between Bergen and Haugesund. The main office and the production of davits, winches and equipment for our free-fall steel offshore survival craft are in Rosendal, while the GRP survival crafts are manufactured at our factory at Ølve.

The name Harding has implied quality and innovation in safety and rescue equipment for years. Schat-Harding has developed a comprehensive and entirely new generation of survival crafts, winches and davits. Development is a continuous process and our products are continually updated based on the experience derived from thousands of deliveries to cruise ships, freighters, drilling rigs and production platforms around the world.



Norwegian creativity and quality are the hallmarks of our products. We hope that you are pleased with the equipment as well as with the manual.

1.2 THE MANUAL

This manual has been prepared in accordance with applicable regulations. The plans and data have been examined for compliance with the following:

- SOLAS 74 as amended to date Regulations III/ 4 and 34.
- The International Life-Saving Appliance (LSA) Code Regulation VI/6.1 .
- IMO Resolution MSC.81(70) Part 1 .

The manual has been prepared to give guidance in the erection, use and maintenance of davit equipment. It should therefore be readily accessible for the technical staff at the yard and onboard the ship during operation.

The manual must not be copied, reproduced or otherwise employed without first obtaining written permission from Schat-Harding AS.

Schat-Harding AS does not assume any responsibility for damages resulting from the use of the manuals, and reserves the right to make changes in the manual without giving any form of notice.

Enquiries may be directed to our Service Department:

SCHAT-HARDING AS
N-5470 ROSENDAL
NORWAY

Telephone Int. +47 53 48 36 00
Fax Int. +47 53 48 36 01
E-mail *schat-harding@umoe.no*

NOTE !
Due to the many different types in our range of products, some of the sketches may not correspond exactly to the system described in the manual. The principles and procedures are however correct.

Care has been taken to ensure that the manual adheres as closely as possible to the delivery in question. Development, changes in official rules and special features of individual deliveries may make it necessary to alter some details.

Although we reserve the right to make constructional alterations, these cannot be considered to have retroactive effect.

It is pointed out that a piece of equipment described in the manual is not necessarily supplied as standard.

1.3 GENERAL SAFETY GUIDELINES

SCHAT-HARDING, stands for SAFETY which tells our customers that we are occupied with the safety of everybody. As this is an installation and maintenance manual, we are interested in giving safety reminders to both installation personnel and crew that are involved with maintenance and use of our systems.

When an accident occurs, investigation may reveal the cause and pinpoint what should have been done to prevent the accident. This can only provide HINDSIGHT. The purpose of a good safety program is to prevent the accident from happening in the first place. This can be accomplished by the use of FORESIGHT and knowing the results of our actions when working around a UMOE SCHAT-HARDING product.

GENERAL SAFETY REMINDERS

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2. Manuals are provided with each UMOE SCHAT-HARDING product. The product user should have these manuals available for personnel working on the product.

3. Guards and shields are to be in place at all times.

4. All employees should be aware of first aid facilities and be encouraged to use them, regardless of the severity of the injury.

5. Employees should be encouraged to report any hazardous conditions to their supervisors.

6. Fire prevention must be practised and fire protection must be available to prevent loss of life, personal injury and to protect property.

7. Personal protective devices, such as protective footwear and safety glasses should be used.

8. Users must have available adequate lifting facilities capable of lifting within the safe load limits, also appropriate slings and hitches.

9. The employer must insist that his employees study this safety information and practice safety.

Lifting Equipment and Lifting Tips

Remember that your first responsibility is to practice safety. Before you begin any lift, we suggest you go through a **mental checklist**. Ask yourself questions like the following:

1. What is the weight of the load?

2. What type of accessory, hitch or connection is required?

3. Will the lift be a straight lift or is an angled rig required? This determination will affect the lifting capability of the accessory.

4. Are the slings free of kinks, knots or broken strands?

5. Is proper clearance available to make the lift safely?

Because the type of hoisting equipment at each customer's facility is unknown to UMOE SCHAT-HARDING, these instructions are intended to be general rather than specific, however these safety rules will apply. We suggest some **lifting tips**:

1. Never lift more than the rated capacity of the hoisting equipment.

2. If in doubt, have the hoisting equipment inspected for safe operating conditions. Inspect all slings. Do not take chances, if in doubt, check with the proper authority.

3. Balance load in sling before lifting more than a few centimetres. Distribute load evenly.

4. Use a sling large enough for the load.

5. Clarify hand signals with co-workers. If signals are not understood, make no move until they are clarified.

1.4 CONTENTS:

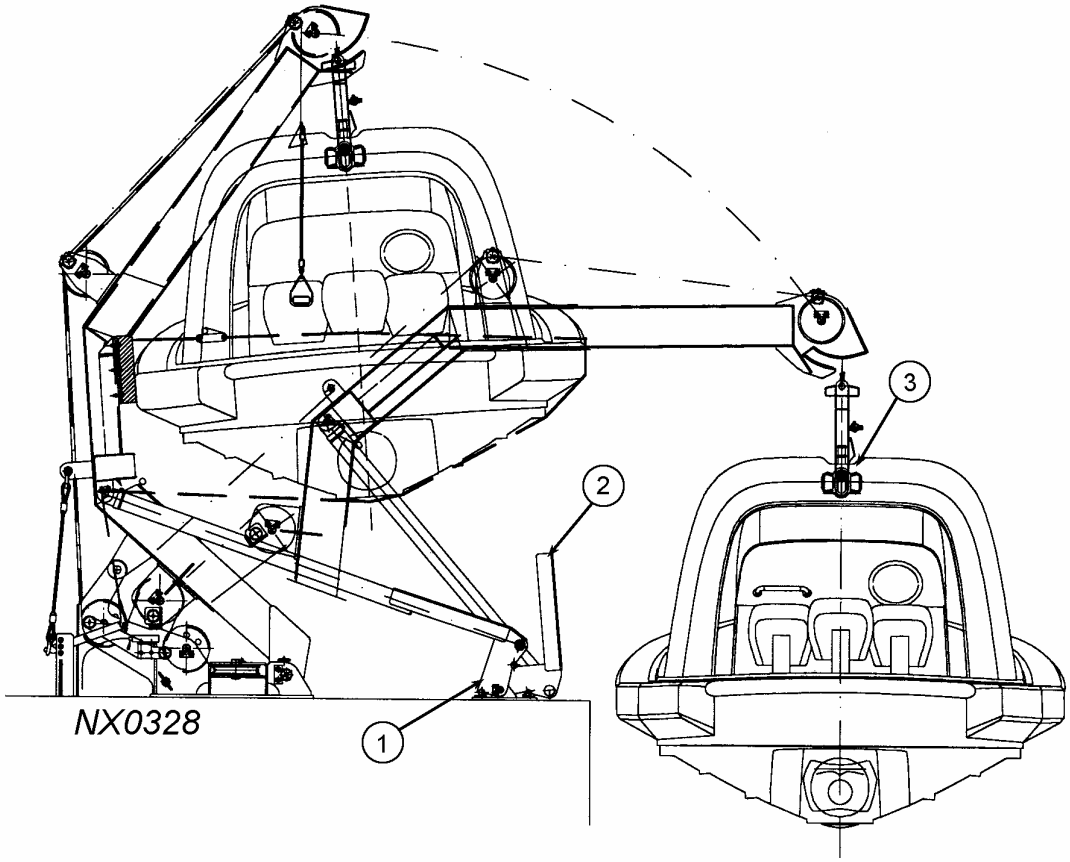
CONTENT CONT.

APPENDIX:

2.0 DESCRIPTION

2.1 GENERAL DESCRIPTION

Article II. **Fig. 1**



Davit is designed so that the lifeboat can be boarded when in the stowed position.
Out swinging of davit is accomplished due to weight of boat with the assistance of two contraction/ stretch elements. Contraction/stretch elements also function as guides to prevent the rotation of the boat.

The normal winch type to be used with this davit type is denoted as W50-RS with a maximum hoisting capacity of 5 tons.

The descent from the lowering position to the sea is under controlled conditions as is the hoisting speed.

2.2 SPEEDS

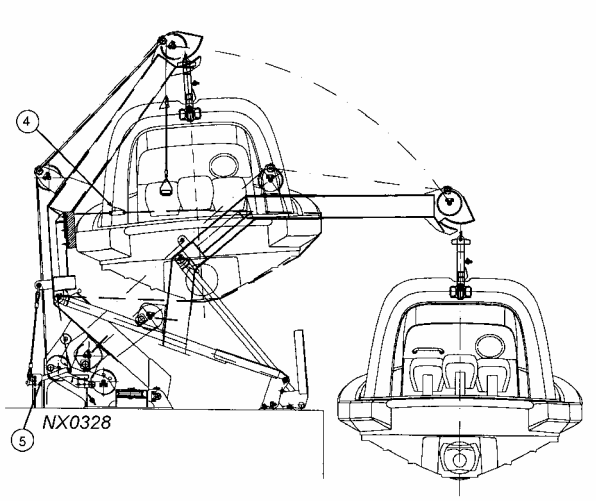
The designed and approved speeds are as follows:

Lowering speed:	90 m/min (max.)
Hoisting speed loaded:	9/18 m/min.

2.3 RELEASE OF LASHINGS

Before the lowering sequence can start, the lashing webbing straps must be released. This is carried out by releasing the four quick release handles locking the strops (item 4). Two lashings around the boat which should be released after the two lashings for longitudinal movement have been released. (Longitudinal strops are an option). This will release the survival craft from the davit and through the mechanism (item 5) free the davit from the deck so that the lowering process can commence. Item 5 is a lever and wire mechanism which holds the davit firmly in the stowed position.

Fig. 2



2.4 FALL WIRE END LINK

When the survival craft is in the stowed position the end link is automatically stowed on the davit hook rest, thus allowing the fallwire to release tension when brake arm is lifted.

2.5 HOISTING CONTROL

For hoisting there is a push button control, this is positioned on the deck at the shipside ensuring the operator 100% visual contact during the hoisting operation.

2.6 TECHNICAL DATA

See Appendix for technical specification.

Test of Davit Arrangement Before Delivery

a. Static strength is tested at 2.2 x W (120 % over-loading) with a tension corresponding to the winch strength. The test is done with the davit in lowering position and with vertical tension.

b. After the test, a visual inspection is performed to check that the arrangement has not suffered permanent deformations. NDT control of stress exposed weldings.

c. An inspector appointed by the approving authority is present to witness the tests.

d. After inspection and testing the launching arrangement is marked with:
- Stamp and firm name of the inspector appointed
- T.L. (Test Load)
- S.W.L. (Safe Working Load)
- Manufacturer's serial number
- Date and initials of inspector
- Prototype approval number of Directorate of Shipping

3.0 INSTALLATION

3.1 DAVIT ARM

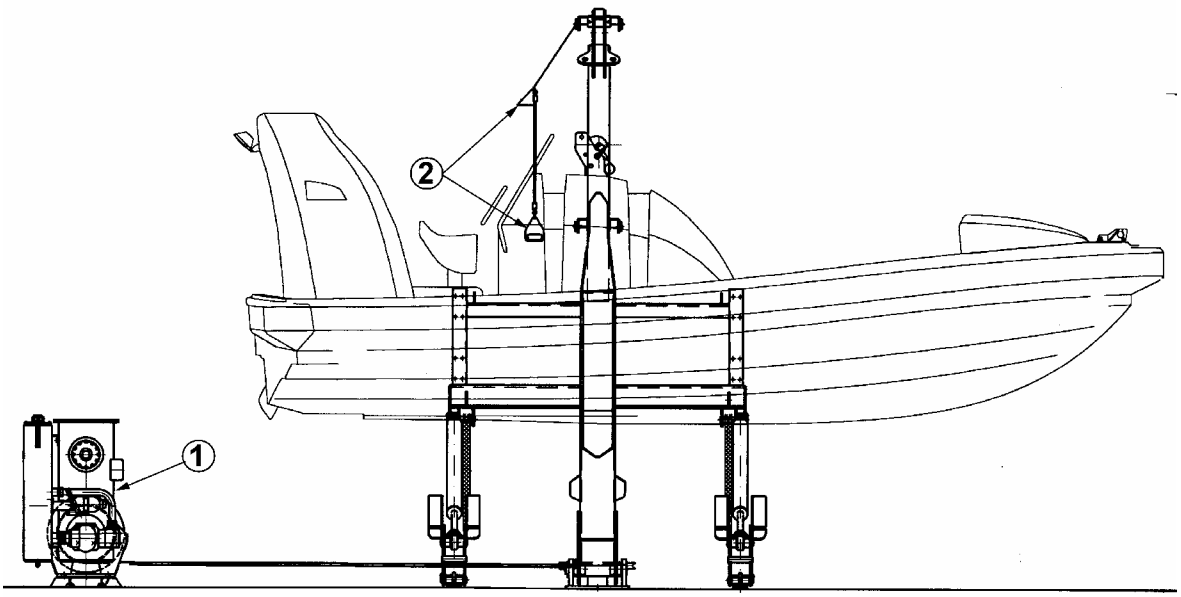
The davit arm is a welded fixed construction that pivots on the deck foundation in-board of the survival craft centre of gravity. The davit arm has two out-riggers welded so that they give support to the craft and fixture for the two spring loaded contraction guide rods.

3.2 LASHING ARRANGEMENT

Lashing arrangements and boat support are the last pieces of equipment to be mounted onto the davit, however final positioning may be necessary which may differ from that given on the drawing "Lashing Arr."

3.3 WINCH POSITION

Fig. 3



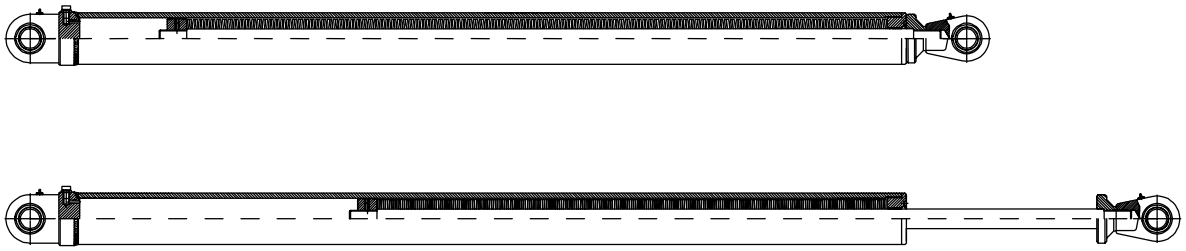
Customer specifies final positioning of the winch (item 1). Two criteria must be considered:

a. Maximum angle from winch to first pulley must not be greater than 3 degrees.
b. Sufficient height between deck and keel of survival craft.

Standard position and foundation requirements can be found on the general arrangement drawing.

3.4 SPRING LOADED GUIDE RODS

Fig. 4



The spring loaded guide rods have two main functions:

a. If the ship has a list of up to 20 degrees in-board, the weight of the survival craft will partially be resting on the davit so preventing the davit from swinging out, the spring loaded guide rods will contract, once the lashings and the brake on the winch has been released, these will in effect pull the davit arm towards the ships side. Once the guide rods have reached the end of their travel gravity will take over, plates (item 1, fig. 1) will swivel to their outer position and the davit will continue rotating until it reaches the lowering position.

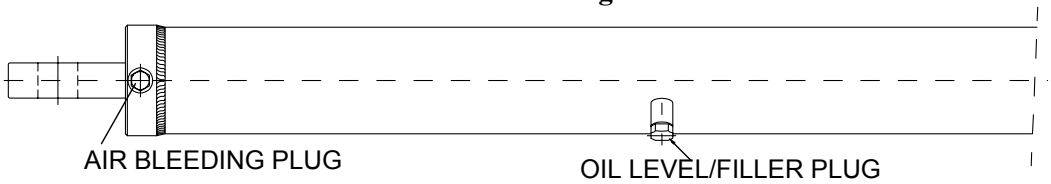
b. To guide the survival craft out without rotation or swing. Welded to the plates (item 1, fig.1) are two stop arms (item 2, fig. 1) these will be in the vertical position when the davit is in the lowering position to prevent the survival craft from coming into contact with the deck.

WARNING!

The spring loaded guide rods must only be disassembled from the davit when the davit is in the lowering position. Each spring loaded guide rod has a contraction tension of approx. 2.4 ton. , these at installation must be fitted with the davit arm at the lowering position

When filling oil the spring loaded guide rods must be in the contracted position, i.e. the davit must be in the lowering position (pos. 2, fig. 1).

Fig. 5



NOTE: The air bleeding plugs are sent separate from the guide rods and must be fitted on completion of davit installation.

4.1 LOWERING OF THE SURVIVAL CRAFT

1. The survival craft should always be housed in the stowed position (pos. 1, fig. 1) with the lashing firmly secured in place. Boarding the boat is recommended in the stowed position.

2. A painter line of correct length and strength should be installed between craft's "painter release hook" fitted on the bow and proper connection point on ship. The painter line should once be adjusted during installation of the davit and craft, so that the length is fixed.

3. By releasing the four quick release levers on the lashing webbing strops (item 4, fig. 2) the survival craft is freed from the davit, the webbing strops which two of are fixed to two lever and wire mechanism (item 5, fig. 2) will at the same time release the davit from the deck.

4. The craft is now in the ready state to swing out; operator can now commence the lowering procedure by operating the brake arm. The brake arm is released from the "on position" by either the operator lifting the arm or by operating the remote handle on the davit (item 2, and fig. 3) which through a pulley system raises the brake arm. With the brake released on the winch the davit arm will move by gravity assisted by the two spring loaded guide rods.

5. If the craft was not boarded at the stowed position (pos.1, fig.1) it can now be boarded at the lowering position, (pos.2, fig.1) when the craft has reached the side of the ship. Great care to be taken, since craft now is not secured. In extreme trim/list condition Schat- Harding recommends: boarding in stowed position.

6. The survival craft is now free to descend to the sea, this is accomplished when the operator pulls again on the remote control for the winch brake (item 2, fig. 3), the speed of the winch will automatically increase to the descending controlled speed, the operator should at all times hold this wire taut and not release it until survival craft hook (item 3, fig. 1) have been removed, the operator can control the descent by slackening the wire, (do not let go of the handle as wind or waves could make it difficult to recover). The hook is an on/offload hook release type.

7. After the hook is removed the painter can be released from the craft by releasing the painter release hook. Then craft can move away from ships side.

Note: The system is designed to operate at a ship speed of up to 5 knots. Schat- Harding recommends: Never operate the winch/davit during training/maintenance situations when ship is moving.

4.2 HOISTING OF THE SURVIVAL CRAFT

1. Connect the painter to the painter release hook on craft.

2. When the survival craft is attached to the hook, ensuring that there is no twisting of rigging equipment.

3. The operator on deck at the shipside can then proceed with the hoisting by pushing the button in starter box.

4. The survival craft with the crew is hoisted to the stowed position (pos. 1, fig.1) and then the crew can disembark by climbing down the rungs provided on the davit.

5. The davit arm will stop approximately 200 mm from the stowed position because of the limit switch which will stop the winch motor. To complete stowage, the hand crank on winch has to be connected and operated.

6. Survival craft must be secured with lashings (item 4, fig. 2). Two around the boat to the tightening mechanism (item 5, fig.2). These will at the same time as holding the boat in the stowed position hold the davit firmly in position to the deck. The other two lashing strops are to hold the boat from longitudinal movement. Winch crank handle must be stowed in the correct place.

7. When the craft is in the stowed position with lashings in position, the brake on the winch should be released so relieving the tension on the fall wire. This is undertaken so as not to have wire stretch.

4.3 HOISTING OF RESCUE BOAT WITH FOUL WEATHER RECOVERY SLING

1. Ensure that the release hook is reset. Foul weather recovery sling should be pulled in to the link of the fall wire. (item 4, fig.4.3) Ensuring that there is no twist in the fall wire of the davit. Hook in slings in release hook in the boat.

2. Crew in the rescue boat should sit down and the operator on deck at the ships side can proceed with the hoisting by operating the switch in electrical starter box.

3. The rescue boat can be disembarked at two positions. At deck level or in stowed position. If disembarkation is on deck level the rescue boat should be secured with two lines to the deck. For disembarkation in stowed position the foul weather slings should be removed. See below procedure.

4. Hoist boat up until "Hanging Off" can be mounted. At this position the "Hanging Off" should be mounted between the davit and the eye of the hook of the rescue boat. (item 1, fig. 4.3) This is accomplished in the following manner:

   a) The "Hanging Off" Band Strap (item 1, fig. 4.3) must be attached to the davit arm with a shackle (item 5, fig. 4.3).

   b) D-shackle in "Hanging Off" Band Strap should be connected with the eye of the hook of the rescue boat (item 3, fig. 4.3).

   c) The rescue boat is then lowered until the rescue boat is hanging in the Hanging off Band Strap.

   d) The Foul Weather Sling (item 4, Fig. 4.3) is then removed from the hook and the link.

   e) The link is lowered allowing them to be engaged in the release hook of the rescue Boat.

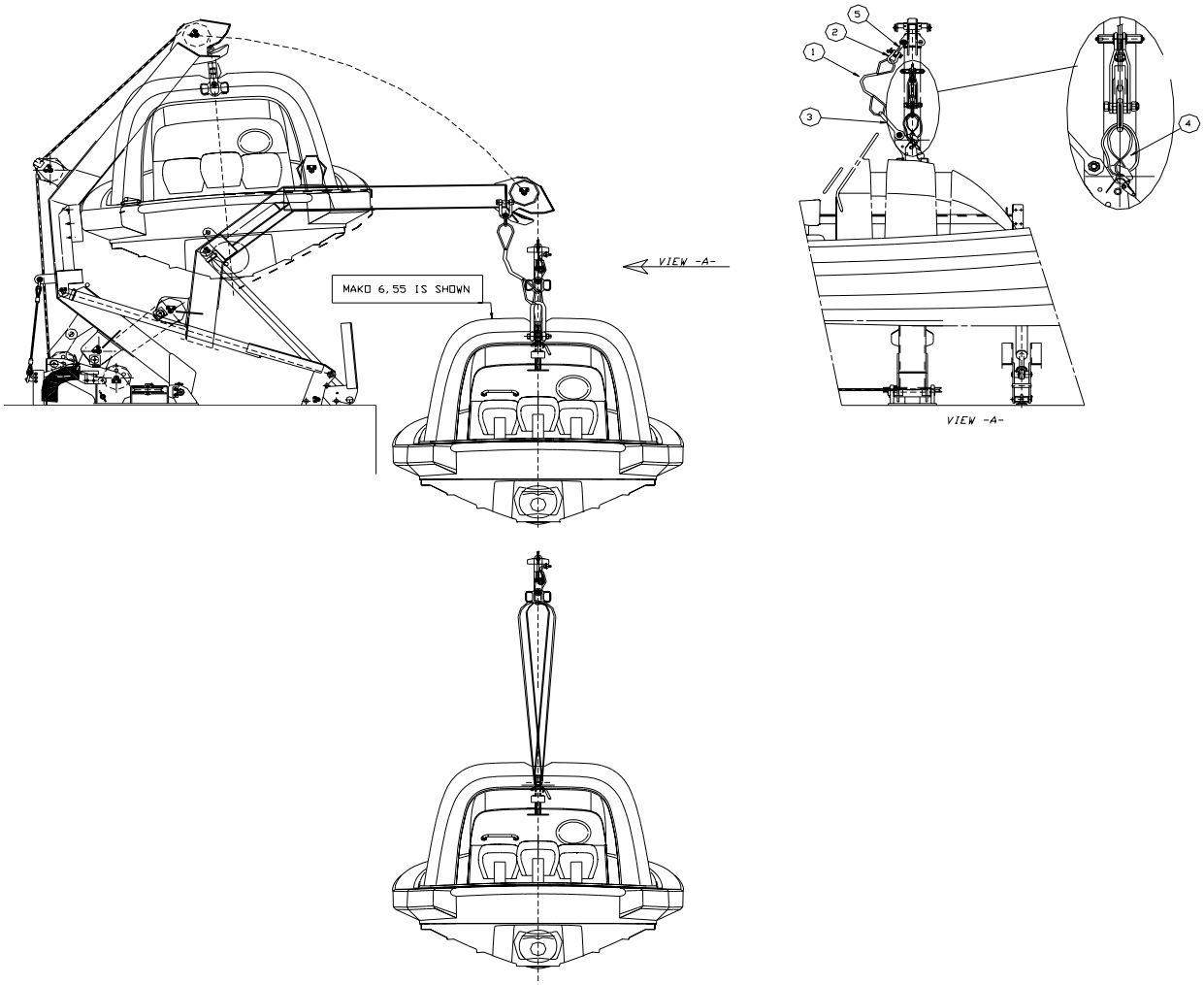
   f) The rescue boat is hoisted allowing the "Hanging Off" Band Strap (item 1, Fig. 4.3) to be removed from rescue boat hook eye.

5. Hoist the rescue boat and turn in the davit by operating the electrical control box.

6. The davit arm will stop approximately 100 mm from the stowed position because of the limit switch that will stop the winch motor. To complete stowage, the hand crank on winch has to be connected and operated .

7. The rescue boat must be secured with lashings. Winch crank handle must be stowed in the correct place.

8. When the rescue boat is in the stowed position, the lashings should be firmly secured, and the fall wire tension may, if necessary, be eased slightly by operating the winch brake.



TAKE CARE!
Maximum load of foul weather recovery sling and Hanging Off Band Strap is:
Fully loaded boat 6 persons, or 300-kg loose equipment and 2 persons.

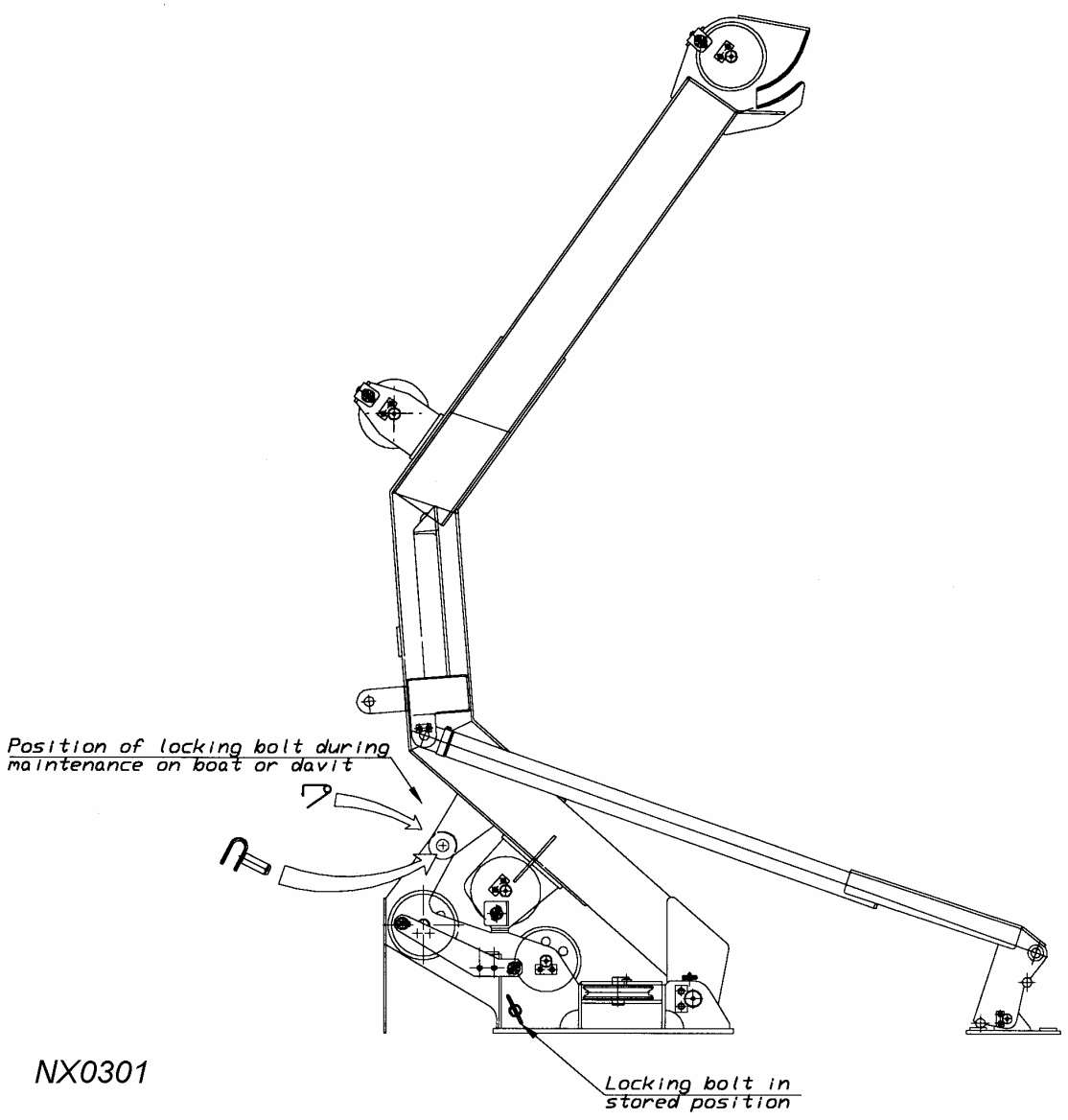
5.0 MAINTENANCE & LUBRICATION

For the total efficiency and the reliability of the launch system periodic maintenance and lubrication must be carried out. UMOE SCHAT-HARDING AS recommends the following procedure to be adopted:

a. Six monthly intervals

Before starting maintenance activities, safety bolt should be placed. The safety bolt will protect any movement of the davit arm See fig. 13.
Spring loaded guide rods should never be dismounted with davit in stowed position.

Fig. 6



5.1 WELDING

All welded constructions and joints must be examined to ensure that there are no cracks or possible fractures which may cause the launch system to malfunction.

All the major fabrication work would have been inspected before leaving the UMOE SCHAT-HARDING AS workshop. But, because of the possibility of damage during transportation, installation or storage, it is important that inspection is carried out on installation completion, every six months and whenever possible before craft drill on board.

The following procedure is recommended for repairing welding defects:

a. Clean the welded area to be repaired by machining, grinding or cutting.

b. Ensure that all dirt, scale, rust, oil or moisture is not present. The repair should be carried out as soon as possible after discovery.

c. Where applicable, stress relieving should be carried out after any welding, if it is regarded as necessary.

d. Welding to be carried out by qualified welders.

e. Surrounding areas must be protected while repairs are carried out.

5.2 PAINTING

Areas requiring paint must be cleaned, primed and painted. Such areas can be detected by checking for rust formation, cracks and blisters. Surrounding areas should be protected and special care should be taken to ensure that no paint comes into contact with greasing facilities e.g. grease nipples.

5.3 WIRE FALL

Wire fall should be checked paying particular attention to damaged strands, twisting or fraying. Lubricate wires with grease as recommended on the lubrication chart. These should be greased by covering the wire surface with a thin layer of grease applied by brush. In areas with high humidity and temperatures wire lubrication should be carried out every 4 to 6 months as required. Too much grease on the wires will cause problems with grease on the deck. Falls used in launching should be turned end to end at intervals of not more than 30 months and be renewed when necessary due to deterioration of falls or at intervals of not more than five years, whichever is the earlier.

5.4 SHEAVES

Sheaves should rotate freely and be free of any restrictions, lubricate through grease nipples in the sheave pins, ensure that the sheaves are free of cracks and that the rims have not had undue wear.

5.5 RIGGING EQUIPMENT

With this type of davit it is necessary to supply webbing strops. It is therefore important that this equipment is inspected paying attention to damaged strands, twisting or fraying.

5.6 LIMIT SWITCHES

These are to be checked for secure mounting and that no damage has been done to the glands or cables.

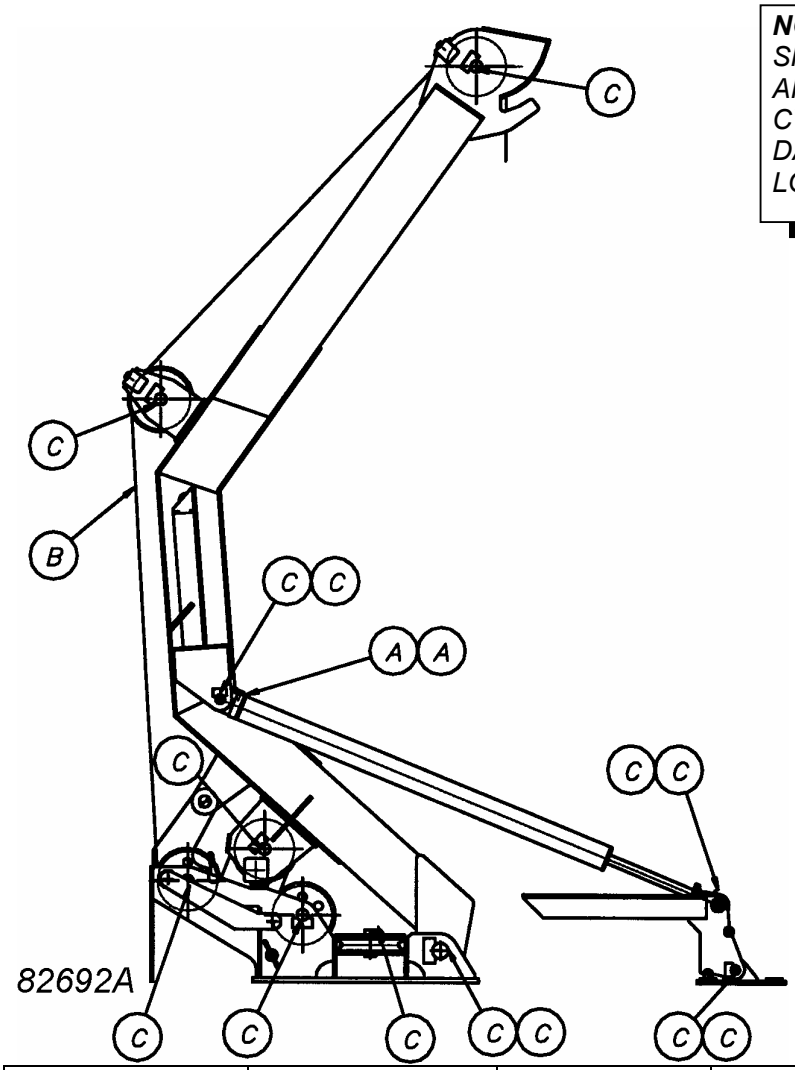
5.7 WINCH

Ref. Winch manual.

5.8 SPRING LOADED GUIDE RODS

Every six months the guide rods should be visually checked for damage to cylinder rods. Oil level must be controlled with the davit in the outswung position (pos. 2, fig. 1).
Remove filler/inspection plug. Fill until oil overflows from filler hole.

Fig. 7



NOTE!
SPRING LOADED GUIDE RODS ARE CONTRACTED BEFORE CYLINDER IS FILLED WITH OIL. DAVIT SHOULD BE IN LOWERING POSITION.

POSITION	***A***	***B***	***C***
INTERVAL	***6 M.***	***6 M.***	***ii) 6 M.***
COMPONENT	*SPRING LOADED GUIDE RODS*	*WIRE*	*BEARINGS WIRE SHEAVES*
APPLICATION	*HYDR. OIL*	*GREASE*	*GREASE*
VOL.	*1 L*	*0,5 KG.*	*0,25 KG.*
N. OFF	*1*	*1*	*6*
LUBR. HYDRO/TEXACO	*Hydr. Oil special 32*	*Float-coat*	*Multipak EP2*
LUBR. STATOIL	*Hydraway HVXA32*	*BP Stemkor L*	*Uniway EP2N*
LUBR. SHELL	*Tellus T32*	*Malleusc*	*Alvania Grease EP2*
LUBR. NOROL	*X-HR22*	*Drevfett 0*	*Norol Universal Grease*
LUBR. MOBILE	*DTE 13*		*Mob. Lux2* *Mob. Plex 47*
LUBR. ESSO	*Univis HP 32*	*Surret Fluid*	*Beacon 2*
LUBR. BP	*Bartran HV-32*	*Stemkor L*	*Grease XRB2EP*
LUBR. CASTROL	*Hyspin Awh32*		*Spheerol EPL2*
LUBR. GULF	*Hydr. Oil L32*		*Gulf-pride SF*

6.0 RECOMMENDED SPARE PARTS

Recommended spare parts for an operational period of two years:

ITEM	QTY	PART NAME	ARTICAL NUMBER
1	10	Grease nipples R 1/8"	0290.00609
2	1	Limit switch end hoisting	0460.02219
3	2	Bushing Ø 60/60	0061.159094
5	2	Breathing plug	0378.18469

UMOE SCHAT-HARDING AS

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

WINCHES
W-SERIES

AL

Approved

Art. no. : W781.00010

Edition no.: 02.02.2007

Introduction to Umoe Schat-Harding As (USH)

The company was founded in 1985 with the objective of developing the position of the old HARDING AS as the world's leading manufacturer of evacuation systems for shipping and offshore.
Umoe Schat-Harding AS with its subsidiary companies:

Umoe Schat-Harding BV	- Holland	Umoe Schat-Harding Pt. Ltd.- Singapore
Umoe Schat-Harding Ltd	- U.K.	Umoe Schat-Harding spol.s.r.o- Czech Rep.
Umoe Schat-Harding GmbH	- Germany	Umoe Schat-Harding Boatbl. Co. - China
Umoe Schat-Harding Inc.	- USA - Canada	

have a total of ca 600 employees, the company develops, manufactures and sells all types of survival craft.

Our range includes:
- Open survival craft
- Partially enclosed survival craft
- Fully enclosed survival craft
- Combined cruise tenders/survival craft
- Free fall survival craft
- Winches for the entire range
- Davits for the entire range

Our modern and well-equipped factories are located on Norway's West Coast, Czech Republic and in China. The main office is located in Rosendal, the production of davits, winches and equipment for our free-fall steel offshore survival craft are in Slany – Czeck Rep., while the GRP survival crafts are mainly manufactured at our factory at Ølve and some in Qingdao in China.

schat-harding

The name Harding has implied quality and innovation in safety and rescue equipment for years. Schat-Harding has developed a comprehensive and entirely new generation of survival crafts, winches and davits. Development is a continuous process and our products are continually updated based on the experience derived from thousands of deliveries to cruise ships, freighters, drilling rigs and production platforms around the world.

Norwegian creativity and quality are the hallmarks of our products. We hope that you are pleased with the equipment as well as with the manual.

The Manual

This manual has been prepared in accordance with applicable regulations. The plans and data have been examined for compliance with the following:

- SOLAS 74, Chapter III as amended to date.
- The International Life-Saving Appliance (LSA) Code
- IMO Resolutions MSC.81(70)

The purpose of the manual is to ensure that the entire crew of the ship or installation becomes acquainted with the safety equipment, and that they know how to proceed in the event of an emergency so that the survival craft can be used correctly. In addition to the procedures for entering, lowering and manoeuvring, emphasis is placed on correct conduct on board the survival craft, assistance and use of the equipment.

Although the survival craft will be operated by trained personnel, everybody is urged to acquaint themselves with the manual. A copy should be readily available in the crew mess and living quarters, in addition to the one that is placed in the craft.

The manual must not be copied, reproduced or otherwise employed without first obtaining written permission from Umoe Schat-Harding AS.

Umoe Schat-Harding AS does not assume any responsibility for damages resulting from the use of the manuals, and reserves the right to make changes in the manual without giving any form of notice.

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NOTE !
Due to the many different types in our range of products, some of the sketches may not correspond exactly to the system described in the manual. The principles and procedures are however correct.

CONTENTS

1. GENERAL DESCRIPTION

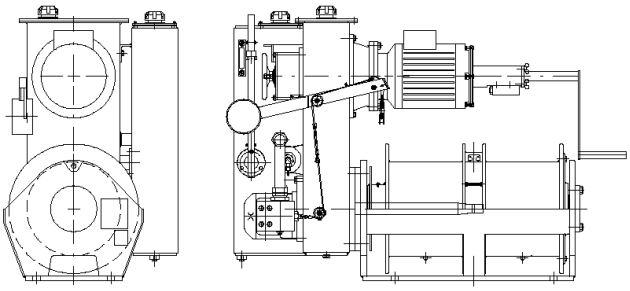
1.1 Different executions

This manual is describing the W-series of life/rescue boat winches fabricated by Umoe Schat-Harding AS.

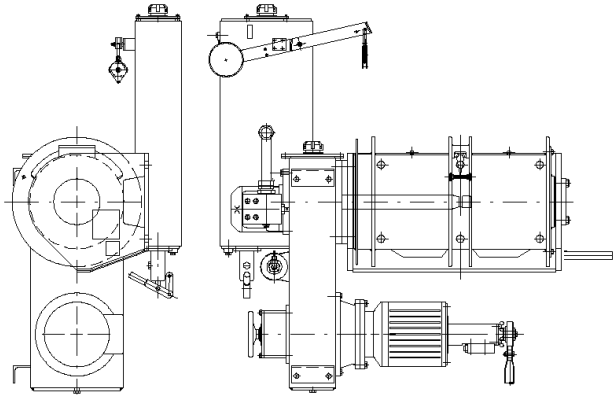
The W-series of winches are built in 4 different sizes with safe working loads from 50-150 kN, denoted W50, W80, W120 and W150. For exact capacity refer to technical specification. Please note that the safe working load (SWL) of a winch is calculated for a certain wire dimension and a certain number of layers.

For different wire configurations a new SWL should be calculated, making sure that maximum torque (SWM) is not exceeded.

The winches are built in two different executions, one standard version for deck mounting and one offshore version for vertical mounting, see fig. 1. The main difference is the rotation of the drum frame and the chain casing. The offshore version is denoted, Wxx(x) O.



TYPICAL STANDARD WINCH
FOR DECK MOUNTING



TYPICAL OFFSHORE WINCH
FOR VERTICAL MOUNTING

Fig. 1 NX0559

The W-winches are also delivered with different hoisting speeds according to various requirements from authorities/customers.

The variation in hoisting speed is accomplished by changing the speed of the prime mover (normally electric motor) or changing the ratio in the winch differential gearbox.

Lifeboat winches (denotation Wxxx L, Wxxx OL) are normally delivered with a hoisting speed of approx. 5-6 m/min.

Rescue boat winches for single fall wire hoisting, denoted Wxxx R or Wxxx OR, have hoisting speed > 18 m/min. and rescue boat winches for twin-fall wire hoisting, denoted Wxxx R2 (Wxxx OR2), have hoisting speed > 36 m/min.

For exact hoisting speed for an actual winch see certificate delivered together with the winch.

There may be other abbreviations for special purpose winches and the whole denotation and also serial number should be quoted to identify the winch. This information can be found in the winch certificate and on a signboard located on the winch itself.

1.2 Major winch parts

The winch consists of following major parts (fig. 2).

1. Winch drum with integrated planetary gearbox.

2. Lowering brake system (speed controller) consisting of a hydraulic pump connected directly to the drum shaft, oil tank and throttle block.

3. Secondary gear in way of a planetary gearbox used as a differential gearbox connected to the drum shaft by a duplex chain.

4. Multiple disc stop/holding brake connected to the output shaft of the differential gearbox.

5. Prime mover (normally an electric motor) connected to the input shaft of the differential gearbox.

6. Brake release system consisting of a hydraulic accumulator, brake valve (operated by a brake lever) and charging system for the accumulator (pipe from lowering brake/emergency hand pump).

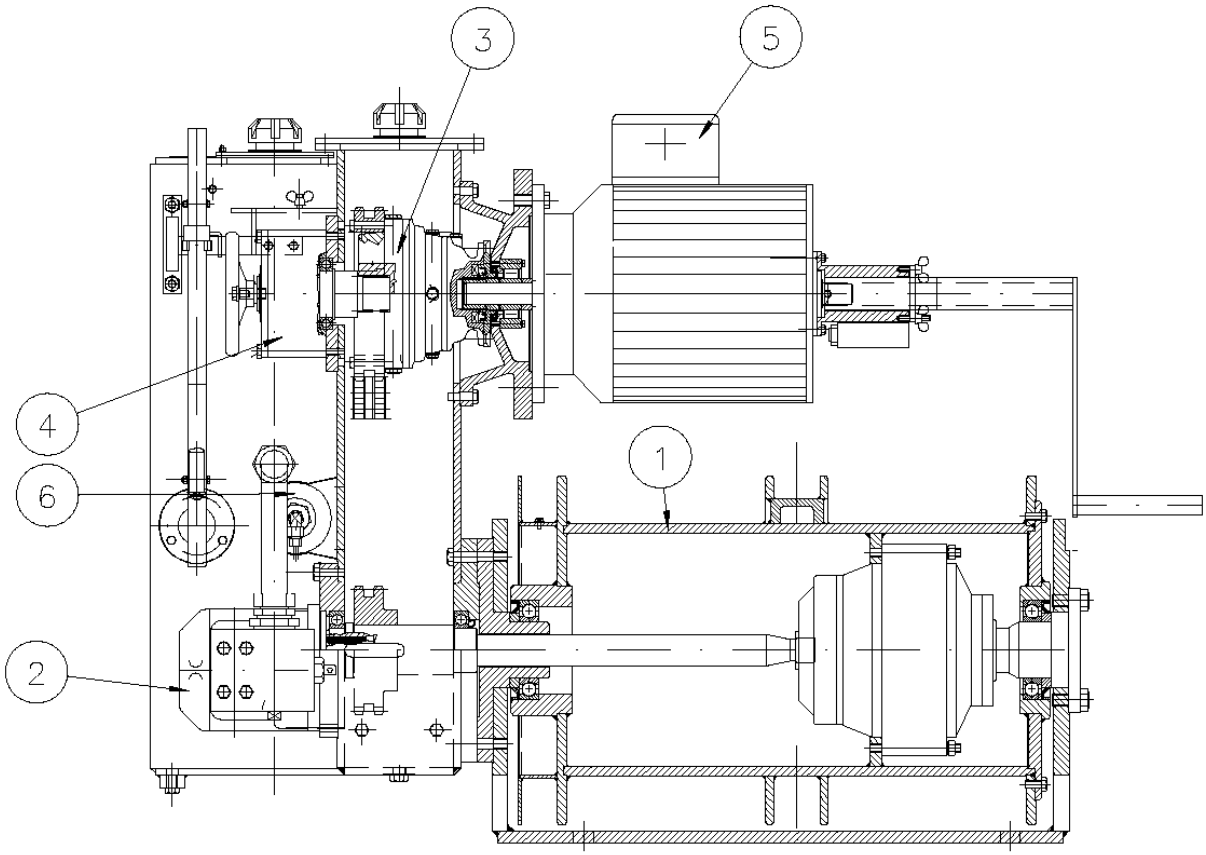


Fig. 2 NX0559

1.3 Principle of working

1.3.1 Load supported by the winch

The torque from the wirefall(s) is transmitted via the drum gearbox and chain to the housing of the differential gearbox.

The input shaft of this gearbox is locked in lowering direction by a locking device that freewheels - in one direction - and the output shaft is connected to the stop/holding brake. This brake is a hydraulically released, spring engaged multiple disc brake.

1.3.2 Gravity lowering

For the W-winches the lowering is normally powered by gravity.

By lifting the brake lever the brake valve is operated and hydraulic pressure from the accumulator will disengage the stop/holding brake. The output shaft and housing of the differential gearbox will be free to rotate and the load will be lowered. The hydraulic pump (lowering brake) connected to the drumshaft will also rotate and the lowering speed will be controlled by a throttle in the pressure line of the pump.

1.3.3 Hoisting

The input shaft of the differential gearbox is free to rotate in hoisting direction and with stop/holding brake engaged and prime mover powered the load of the winch will be hoisted.

Please note that the prime mover is normally powered to lift the lifeboat with crew, not a fully loaded lifeboat.

1.3.4 Hoisting by hand

The winch is normally supplied with a hand crank. By connecting this to the non-driving end of the prime mover, hoisting by hand can be achieved.

Either a mechanical or electrical device is fitted to prevent the hand crank rotating during powered hoisting.

In case of a hydraulic prime mover the hand hoisting is normally accomplished by a hand pump located at the power pack.

1.3.5 Electric lowering (option)

The winch may be delivered with electric lowering capability.

In this case the anti return lock on the input shaft of the differential gearbox is located at the non-driving end of the electric motor and connected to this by an electric magnetic brake.

Other solutions may be used for hydraulic powered winches.

2 INSTALLATION

2.1 Handling of the winch

See fig. 3.

The winches are equipped with 3 lifting points located in the drum frame and a 3 part lifting sling should be used for handling of the winch.

Weight of the winch can be found in the technical specification.

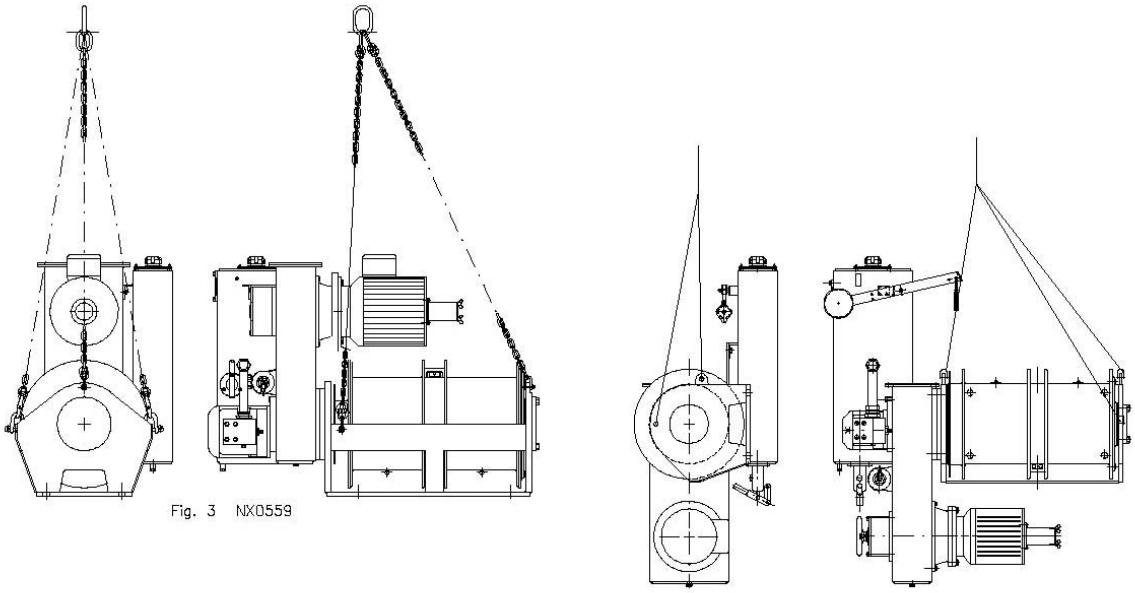


Fig: 3

2.2 Mounting

Unless otherwise instructed, the winch should be mounted in accordance with the general arrangement drawing for the davit equipment, which incorporates a foundation plan with measurements.

Foundation bolts to be torque tightened using a torque wrench.

Following torque's to be used:

Screw diameter 30 mm:	1310 Nm	(133 kpm)
Screw diameter 24 mm:	665 Nm	(68 kpm)

Check if the base is twisted. Gaps between winch and base should not exceed 0,5 mm. With bigger gap, shims to be used.

2.3 Fall wires

The wirefalls shall be connected to the winch drum by a wedge lock. The free wire ends to be secured by a wire clamp. See fig. 4.

See also davit general arrangement drawing.

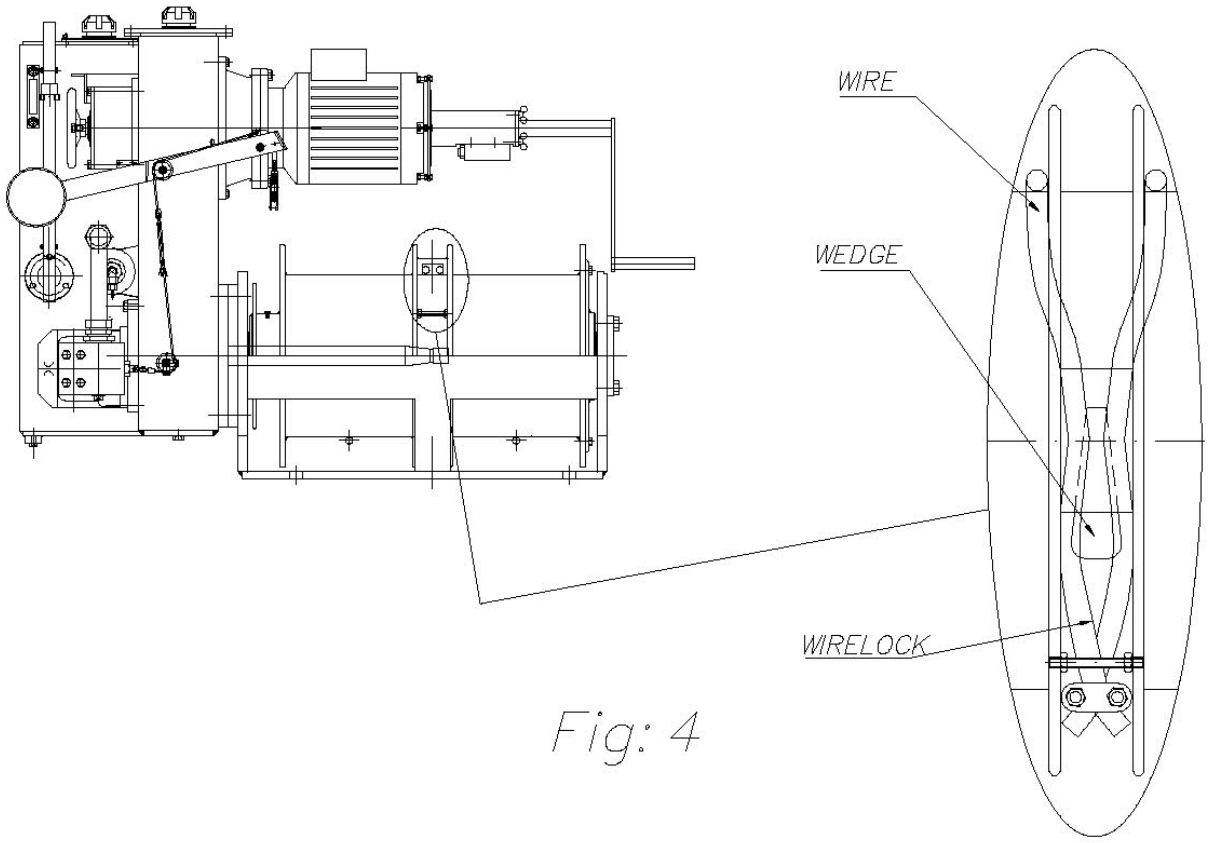


Fig: 4

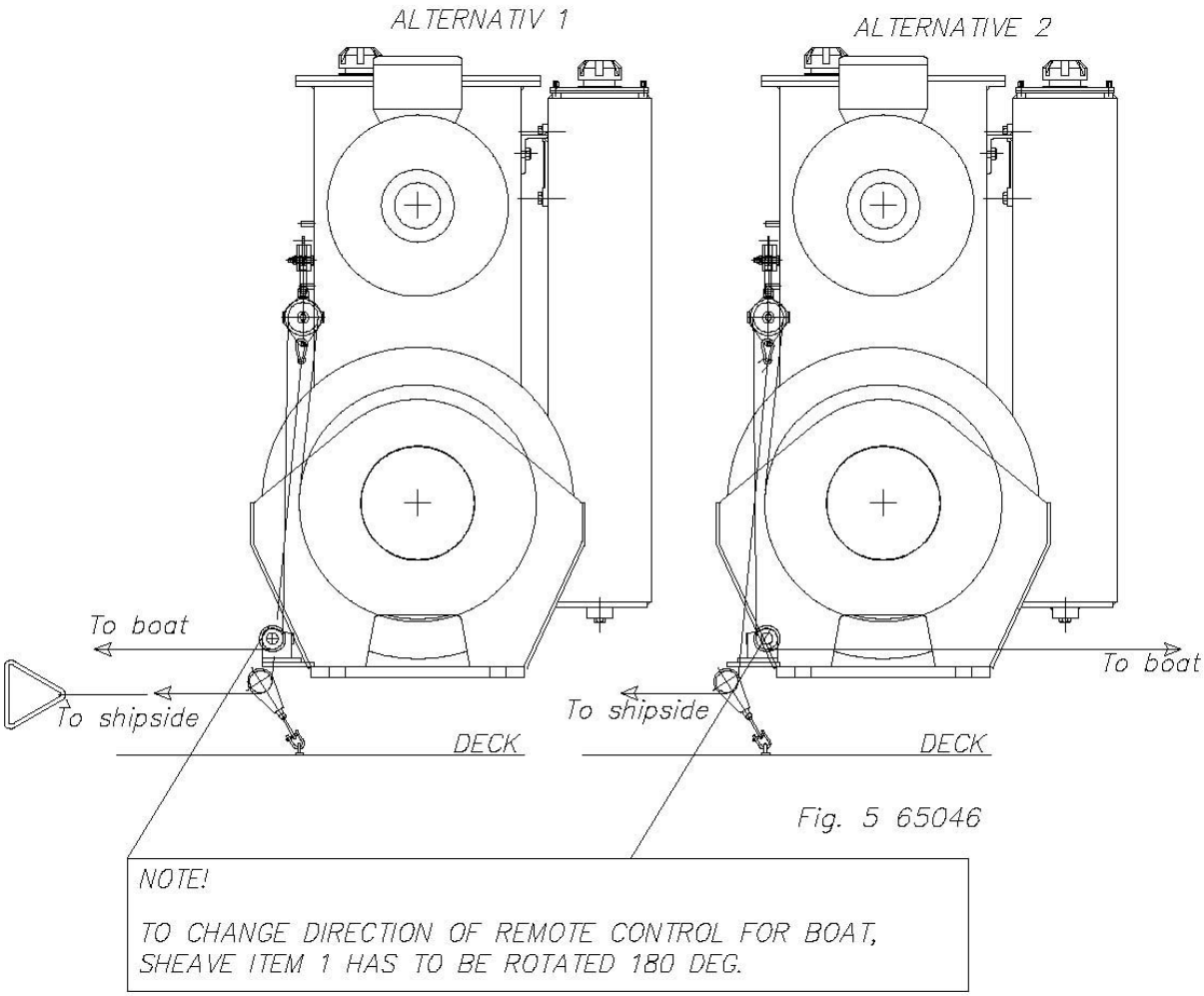
2.4 Remote control, winch brake

The winch drums are equipped with a separate drum part for remote control wire.

The end of the wire shall be fixed to the drum with a cable fitting and routed via the sheave located on the brake lever to a sheave on the drum frame.

For more detailed information, refer to davit remote control drawing.

See fig. 5.



2.5 Power supply

For power supply, see separate drawings. Please carefully check the direction of rotation during initial start up and later reconnecting of cables.

The anti return lock located on motor shaft will obstruct rotation in wrong direction and the power should be shut off immediately and direction of rotation should be changed.

2.6 Lubrication

The winches planetary gearboxes are lifetime lubricated by the factory.

The chain casing are normally delivered dry and should be filled with correct oil before initial start-up.

For further information see chapter 4.

2.7 Hydraulic lowering brake

The winch is delivered without hydraulic oil in the lowering brake system and oil must be filled before initial start-up.

For further information see chapter 4.

2.8 Adjustment of lowering speed

See chapter 3.1.

2.9 Limit switch, hand crank

The winches are normally equipped with a limit switch that cuts off the power supply to the electrical motor when the hand crank is inserted. The limit switch is delivered separately.

For mounting instructions, see drawing “Limit switch arr. W-winches”.
For cabling, see drawing “El. diagram”

3 OPERATION

3.1 Lowering by gravity

See also chapter 1.3.2.

The W-series of winches are normally equipped with a 2-speed lowering system with exception for winches for fixed davits such as the outrigger davits for offshore.

The 2-speed lowering facility is achieved by using a restrictor block in the pressure line of the hydraulic pump (lowering brake) with two bores inside. One bore is a direct bore with a fixed restrictor for the low speed. (These restrictors will be refer to as throttles).

Adjustment of the low speed is possible by changing the throttle, but should not be done by other than Umoe Schat-Harding's personnel.

In the second bore is located a slide valve and an adjustable throttle. The slide valve can be operated from the lifeboat via the remote control system, thus increasing the lowering speed.

By operating the slide valve oil is directed through the adjustable throttle and high lowering speed will be achieved.

Adjustment of lowering speed shall be done during installation, according to the requirements from the authority in question and shall be checked when rectifying the equipment.

Adjustment is achieved by turning the adjustment screw located on the underside of the throttle block. Turn out the screw to increase the speed.

Adjustment shall be done with the slide valve fully open and with a load in the davit corresponding to the actual weight of a fully loaded lifeboat. Please note that a change of the fixed throttle for low speed also will influence the high speed and that readjustment of the high speed is required after change of the fixed throttle.

After adjustment the adjustment screw must be sealed.

3.1.1 Modes of operation.

See fig. 5 and 6.

Lowering can normally be activated from 3 positions

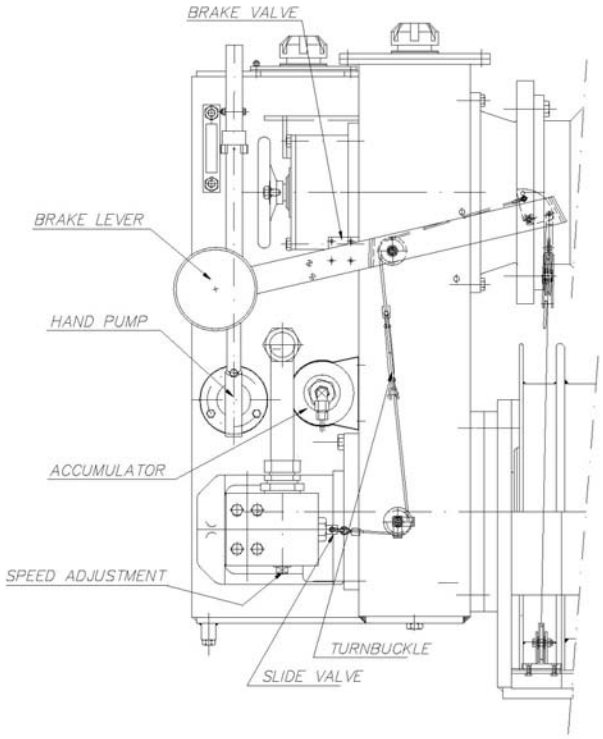


Fig.6

1. <u>Locally at the winch</u>

   By lifting the brake lever the brake valve will open and the winch will turn out at low speed.

2. <u>From the lifeboat</u>

   By pulling the remote control handgrip gently the brake lever will be lifted and brake valve opens. The winch will turn out at low speed. This mode should always be used during the outswing of the davit.

As soon as the lowering blocks/hooks have left the davit head, pull harder (this opening the slide valve) and high speed will be achieved.

On winches with one lowering speed the slide valve is fixed in open position and max. speed will be achieved by lifting the brake lever.

Lowering can be stopped at any time by releasing the pull of the handgrip.

Hydraulic power necessary for disengaging the brake is “stored” in the accumulator and is generated by the hydraulic pump (lowering brake) during lowering.

The capacity of the accumulator is sufficient for 25-30 brake actions.

If the accumulator for some reasons is discharged, a few strokes with the hand pump will ensure enough pressure to release the brake.

In emergency situations and with boarding in stowed position, it is recommended to charge the system by a few strokes with the hand pump before boarding the lifeboat.

There should be a marked difference in pulling force between low and high speed.

If not, the wire connecting the slide valve and the brake lever is probably too tight. Release by adjusting the turnbuckle. The wire should be slack when the brake lever is in rest position.

The fixing point of the wire at the brake lever can also be adjusted further out to give a bigger pulling force for the high speed.

3. <u>From the shipside</u>

If required the winch brake can be controlled from the ship side by a wire connected directly to the block located on the brake lever.

To avoid jam between the different remote control wires, the wire to the ship side should only be connected when used.

3.2 Powered hoisting

See also the electrical diagram.

The winches are normally delivered with a push button box for hoisting control. This should be located at the ship side where the operator can see the lifeboat from it is waterborne till it is in stowed position.

The davit is equipped with limit switch(es) cutting the power to the winch before the davit reaches its inboard position.

The last part of the inswing shall be done by the hand crank.

3.3 Hoisting by hand

Insert the Handcrank in the crank adapter at the non-driving end of the electric motor.

For hydraulic winches the hand crank is normally substituted by a hand pump located on the power pack.

A mechanical device (freewheel or driving dog) on the hand crank or a limit switch on the crank adapter is supplied to prevent the hand crank rotating during powered hoisting.

Note: For safety reasons always disconnect the hand crank when not used.

3.4 Powered lowering (option)

The winch may be equipped with the facility of lowering by use of the prime mover.

If an electric motor is used, a push button for lowering will be located in the push-button box at the ship side. For hydraulic winches, the lowering will be operated by a directional valve.

Please note that electric lowering usually is intended for empty lifeboat with crew and should not be used for fully loaded lifeboats in an emergency situation.

3.5 Pay-off wheel

The winch is equipped with a pay-off wheel located on the brake shaft.

Lift brake lever to brake disengaged position and the drum can be turned in lowering direction by turning the pay-off wheel.

4 MAINTENANCE

See fig. 7.

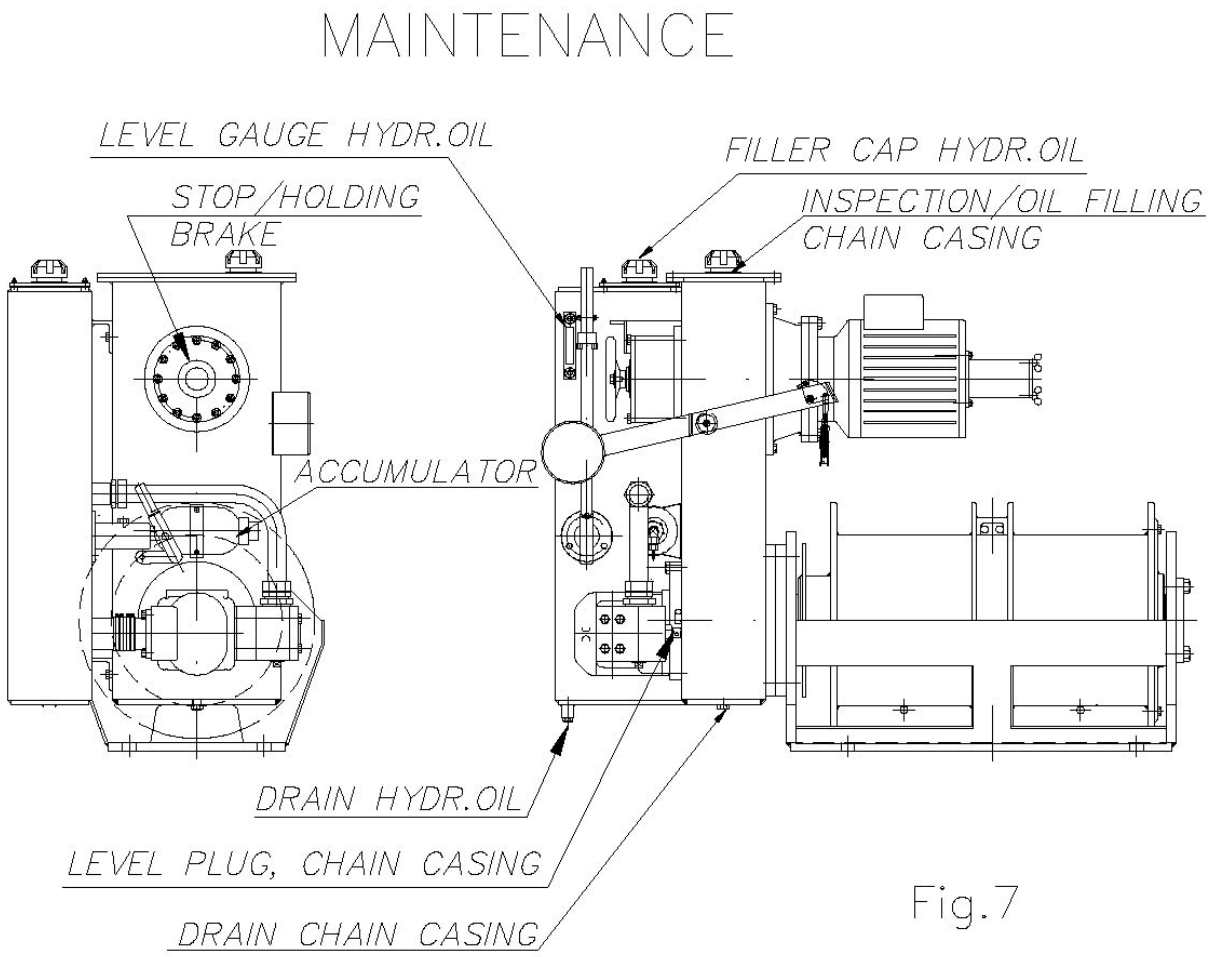
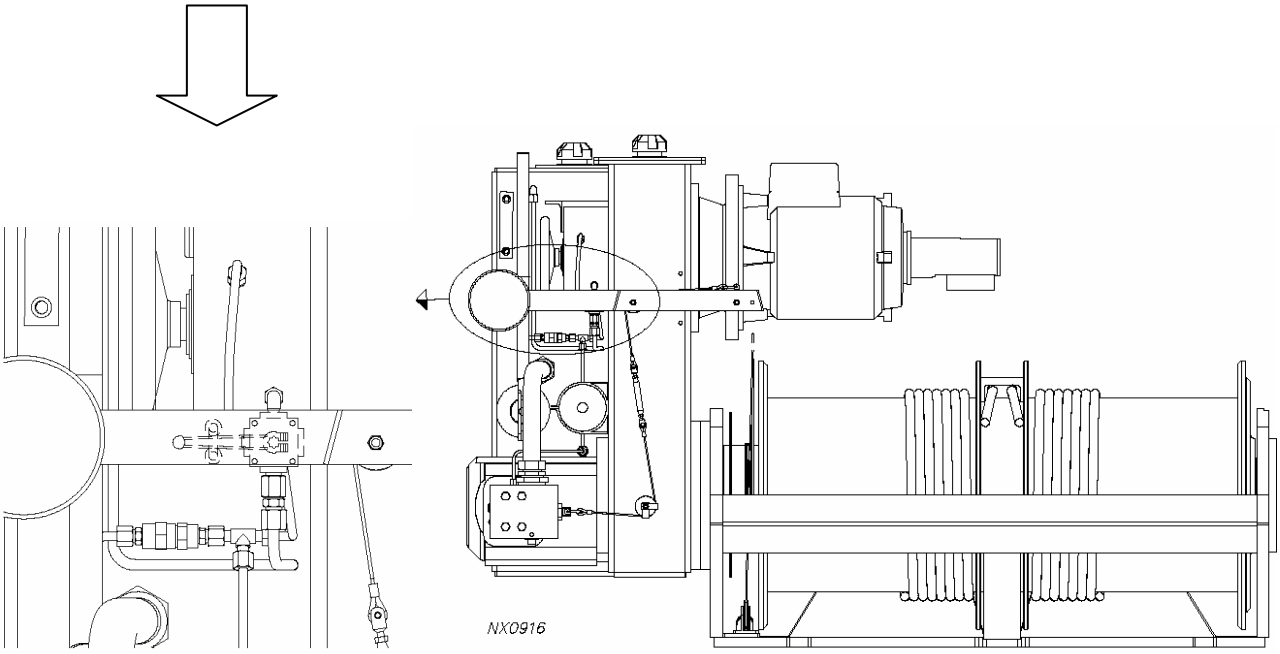


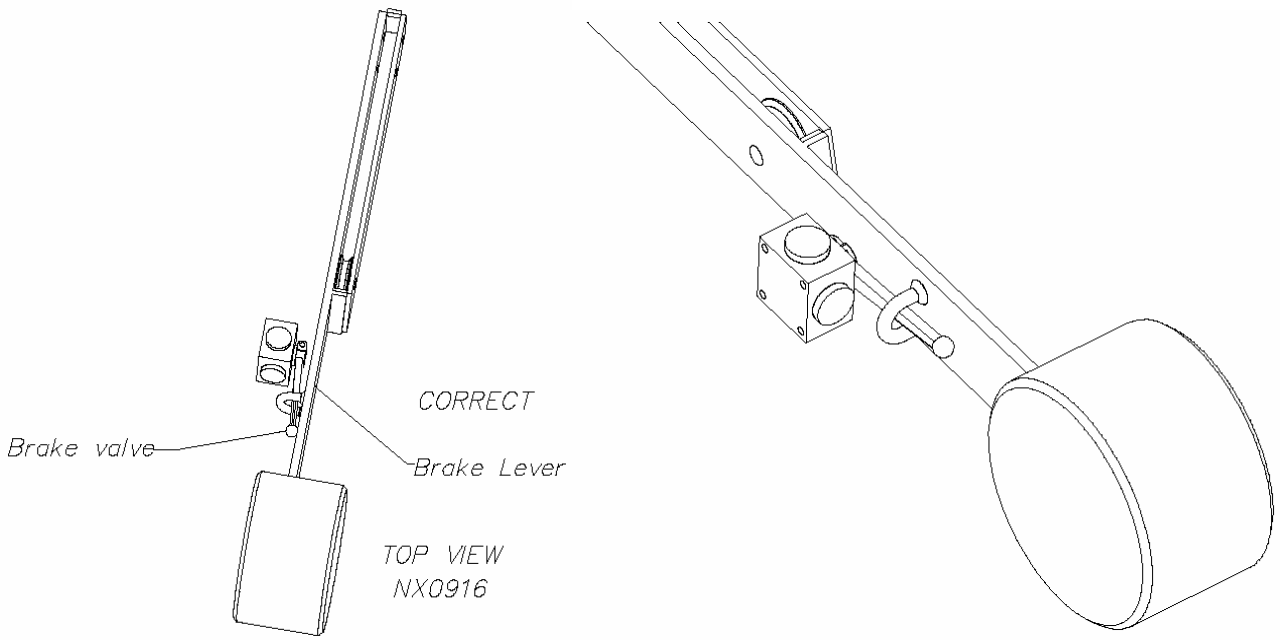
Fig.7

	HYDRAULIC BRAKE / OIL		*CHAIN CASING*	*PLANETARY GEARS*
QUANTITY	60 L	125 L (W120F)	12 L (17 L for W....O)	LIFETIME-LUBRICATED
BP	BARTAN HV32		BARTAN HV32	
CASTROL	HYSPIN AWH-M32		HYSPIN AWH-M32	
ESSO	UNIVIS HP 32		UNIVIS HP 32	
MOBIL	DTE 13M		DTE 13M	
STATOIL	HYDRAWAY HVX A32	MERETA 32	HYDRAWAY HVX A32	MERETA 220
FINA	HYDRAN HV32		HYDRAN HV32	
SHELL	TELLUS T32		TELLUS T32	OMALA HD220

Brake Release System

Check the function of the brake release system by visual examination of the brake lever and brake valve.
Check that the brake lever is not damaged or bent and that the brake arm is interacting easily with the brake valve in open and closed position.





The planetary gearboxes (drum gearbox and differential gearbox) are lifetime lubricated by the supplier and need normally not to be refilled except after major overhauls.

Major items for maintenance are the hydraulic system and the chain.

4.1 Maintenance

According to current regulations, the winch shall be inspected and serviced thoroughly every year by Umoe Schat-Harding AS, or other person trained and certified by Umoe Schat-Harding. Repairs or replacement of part should be carried out in accordance with Umoe Schat-Harding requirements and standards. (Refer to the recommendation on SOLAS 1974 as amended, chapter III Reg. 20 and MSC Cir 1206).

Periodic maintenance should be executed according to enclosed table.

Item	During lifeboat drill	Every 6 months	Every year
Brake release system	Check function Check for leaks		
Hydraulic oil	Check for water contamination		Change oil
Accumulator			Check recharge of nitrogen. Refill if necessary.
Chain case oil		Check level	Change oil
Chain			Check for wear Check slack

4.2 Accumulator

The accumulator is pre-charged to 50 bar with nitrogen inside a bladder located in the accumulator, and it is recommended to supply a tool kit for checking the recharge/refilling of nitrogen.

When checking the pre-charged pressure, the accumulator must be empty on the oil side.
To empty the accumulator use following procedure:

- With the lifeboat safety secured in the davit, release the brake by lifting brake arm a number of times until the accumulator is discharged.

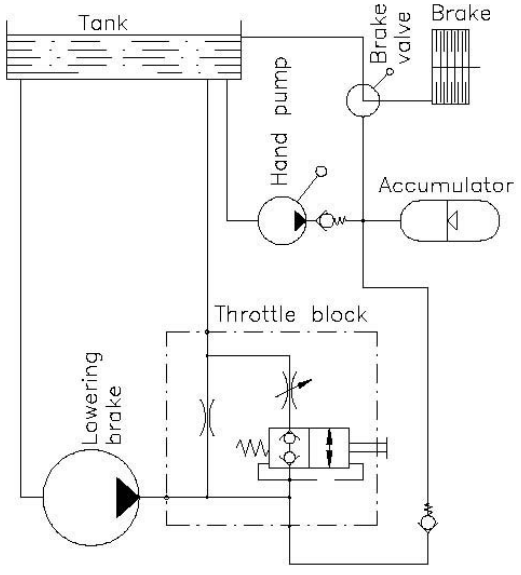
It is possible to hear when the brake stops disengaging. If not, (with brake lever in open position) check if the brake is disengaged by operating the pay off wheel located on the brake shaft.

If a tool kit for checking of nitrogen is not available on board following procedure can be used:

- With empty accumulator on oil side recharge with 3-4 strokes of the hand pump (brakelever in locked position) and the brake should now be operating again.

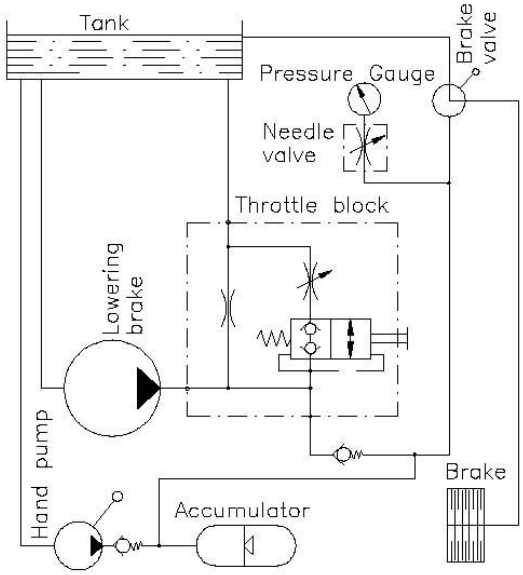
If not, the accumulator should be checked and recharged by authorized personnel.

TYPICAL STANDARD WINCH FOR DECK MOUNTING
HYDRAULIC DIAGRAM



BRAKE VALVE AND SPEED CONTOLLER
ARE OPERATED FROM LIFEBOAT/SHIPSSIDE.
Fig.8

TYPICAL OFFSHORE WINCH FOR VERTICAL MOUNTING
HYDRAULIC DIAGRAM



BRAKE VALVE AND SPEED CONTOLLER
ARE OPERATED FROM LIFEBOAT/SHIPSSIDE.
Fig.8

4.3 Hydraulic lowering brake

Great care should be taken to ensure that the hydraulic oil tank is filled up. Periodically open the drain plug located at the bottom of the tank to check for water contamination.

The oil should be changed once a year.

W A R N I N G

Do not open the drain plug if the oil is hot. Oil will be warm after intensive use of the winch.
Before opening of the drain plug the oil filler cap on the top of the oil tank should be opened to prevent oil pressure in the oil tank.

4.4 Oil level in chain casing

Check periodically by opening the level plug located on the side of the casing. Top up if necessary.

4.5 Chain

Check visually once a year. See fig. 9.

The slack of the chain should not extend 45-50 mm.

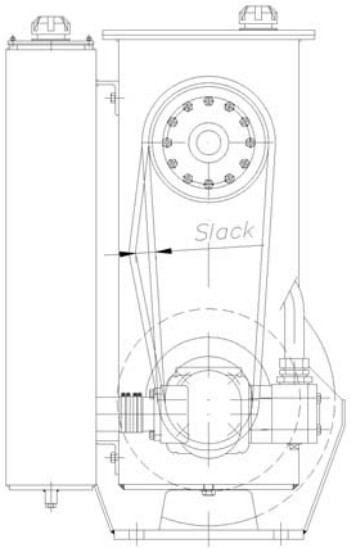


Fig.9

4.6 Stop/holding brake

The brake used is a multiple disc brake.

No seal is fitted between chain casing and the brake and oil from the chain casing will penetrate into the brake housing, this lubricates the inner parts of the brake and the friction discs. The brake needs normally no maintenance/adjustment except for change of brake discs when worn out.

4.7 General

Visual checks for oil leakage should be done regularly.

Take care during repainting not to paint the sheaves/shafts in remote control system.

5 SERVICE CENTRE AND PARTNERS

Schat-Harding has skilled authorized service personnel, all well trained and with great experience ready to assist our world wide customers that have equipment under our brand names. Our employees are ready to assist you with technical information, expedite delivery of spare parts, training of crew, quotations for refurbishing of old equipment, safety analysis or whatever your needs are with respect to lifesaving equipment.
We are here to maintain your safety onboard.

Schat-Harding service centers

Address	e-mail	Phone	Fax
Norway Umoe Schat-Harding As 5470 ROSENDAL, NORWAY	spareparts@schat-arding.com service@schat-harding.com claims@schat-harding.com	(47) 53 48 36 00	(47) 53 48 36 01
The Netherlands Umoe Schat-Harding BV St.Laurensdreef 37 3565 AJ UTRECHT THE NETHERLANDS	sales@schat-harding.nl	(31) 30 26 44 200	(31) 30 26 44 299
United Kingdom Umoe Schat-Harding Ltd. Mumby Road , Gosport , Hampshire PO12 1AR, U.K.	spares@schat-harding.co.uk service@schat-harding.co.uk claims@schat-harding.co.uk	(44) 2392 581 331	(44) 2392 582 565
Singapore Umoe Schat-Harding (F.E.) Pte Ltd. 20 MacTaggart Road #08-02 Khong Guan Industrial Building SINGAPORE 368079	spares@schatharding.com.sg service@schatharding.com.sg	(65) 6 383 1067	(65) 6 383 1031
USA Umoe Schat-Harding Inc. 912 Highway 90 East, New Iberia, LOUISIANA 70560, USA	sales@schathardinginc.com	(1) 337 365 5451	(1) 337 367 2816
Canada Umoe Schat-Harding Inc. 16160-78B Avenue Surrey, British Columbia V3S 7H9 CANADA	schatharding@telus.net	(1) 604 54 30 849	(1) 604 54 30 829
China Umoe Schat-Harding Boatbl.Co.Ltd Hetao Port, Chengyang District P.C.266113 QINGDAO, CHINA	service@schat-harding.cn	(86) 532 87026257\219	(86) 532 87026250
Czech Republic Umoe Schat-Harding spol.s.r.o. Po. box 115, ul. Netovická 353 , 274 01 SLANY, CZECH REPUBLIC	umoe@umoe.cz	(420) 312 515 102	(420) 312 522 598
Germany Umoe Schat-Harding GmbH Kaddenbusch 3 25578 Dägeling , GERMANY	sales@schat-harding.de	(49) 4821 40393 0	(49) 3821 40393 20

Appointed Schat-Harding Service Partners:

See updated list of Schat-Harding authorised service suppliers on the WEB site :
www.schat-harding.com

PRESERVATION OF WINCHES

INSTRUCTION OF PRESERVATION DURING TRANSPORT AND STORAGE

1. Winches

Winches are delivered fully protected against corrosion.

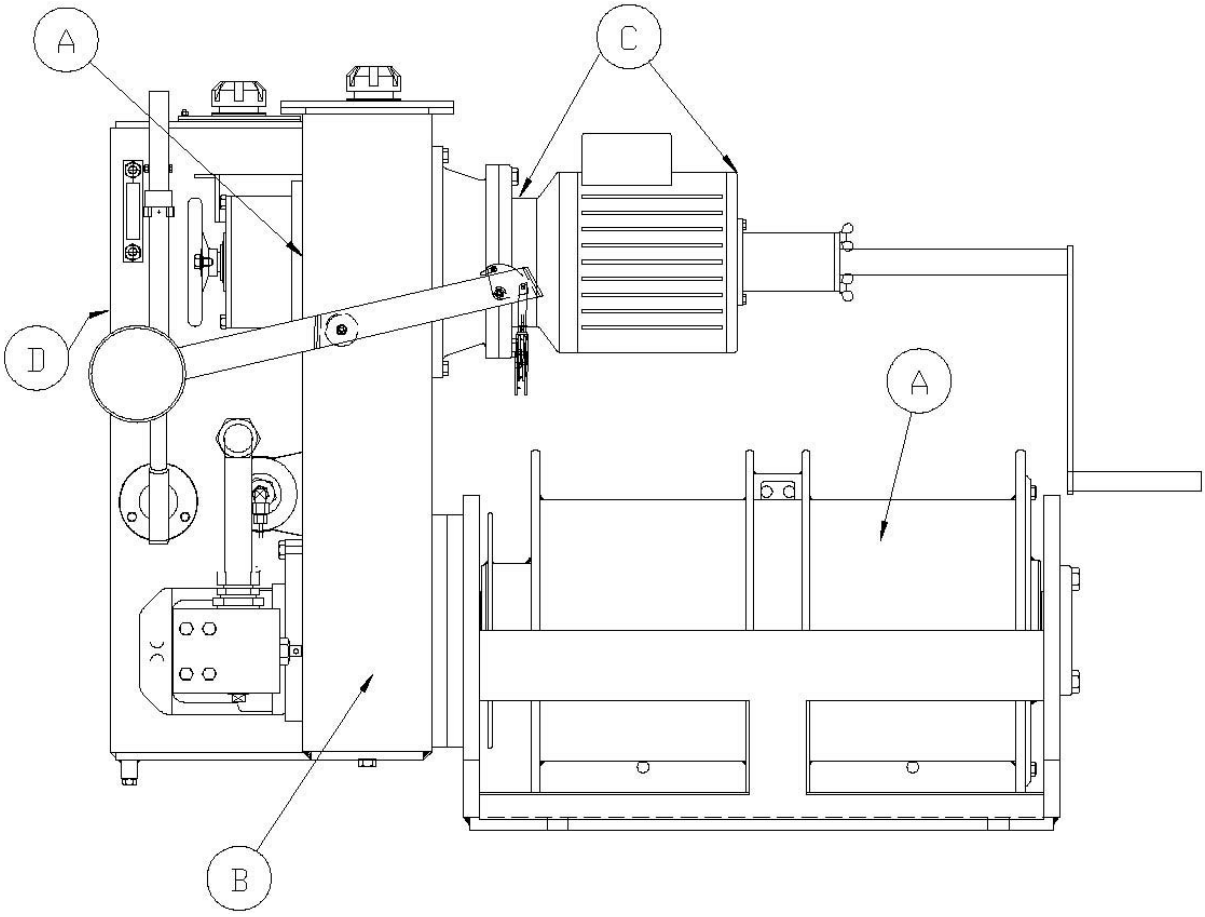
Non painted comp. are protected with “Tectyl 506”.

The winch gearboxes (2 items planetary gearboxes) are lifetime lubricated and needs normally no attention. The chain casing is filled up with Hydraway HVXA 32. Before start-up, check oil level in chain casing and refill, if necessary.

2. Electric motor

When the winches are stored outdoor in varying weather, heat element shall be connected with power. The el. motor shall also be turned some turners once in the month. The el. motor shall be covered against dust when stored outdoors. If there are no el. cables connected, take care that cable glands on el. motor are closed.

LUBRICATION CHART



Interval	Head	Pos.	Comp.	Appliqué	Vol.(1)	No off	Shell	Statoil
Lifetime	-	A	Planetary gears	Oil	-	2	-	Mereta 220
12 M	-	B	Chain casing	Oil	12 ltr. 17 ltr. W...O	1	Tellus T32	Hydraway HVXA 32
12 M	-	C	El.motor	Grease	-	2	Rhodina EP2	UniWay LI 62
12 M	-	D	Oil tank	Oil	60 ltr.	1	Tellus T32	Hydraway HVXA 32
12 M	-	D	Oil tank W120F	Oil	125 ltr.	1	-	MERETA 32

Oil type Ref. Fig.7

3. TYPE OF PERIODICAL INSPECTION OF WINCHES

M: Monthly 2M: Every second month Y: Every year 2Y: Every second year

Winch type:	Building no.:

Type	Checking point	Checking date:					
Y	1. Drain lubr. oil and refill (chain casing)						
Y	2. Renew corrosion inhibitor on non painted parts						
Y	3. Hydraulic oil (ref. page 18 of 24, maintenance manual)						

Notes:

Sign.: _____

SCHAT-HARDING

INSPECTION-, MAINTENANCE- AND REPAIR MANUAL

DAVITS
WINCHES

schat-harding reserve the right to change
or alter the contents of this manual

umoe

AL

Sign.

1.0 INTRODUCTION

1.1 INTRODUCTION TO UMOE SCHAT-HARDING AS

The company was founded in 1985 with the objective of developing the position of the old HARDING AS as the world's leading manufacturer of evacuation systems for shipping and offshore. Umoe Schat-Harding AS with its subsidiary companies:

Umoe Schat-Harding sro - Czech Republic
Umoe Schat-Harding BV - Holland
Umoe Schat-Harding Ltd - U.K.
Umoe Schat-Harding GmbH - Germany
Umoe Schat-Harding Inc. - USA – Canada
Umoe Schat-Harding Pt. Ltd. – Singapore
Umoe Schat-Harding Boatbl. Co. - China

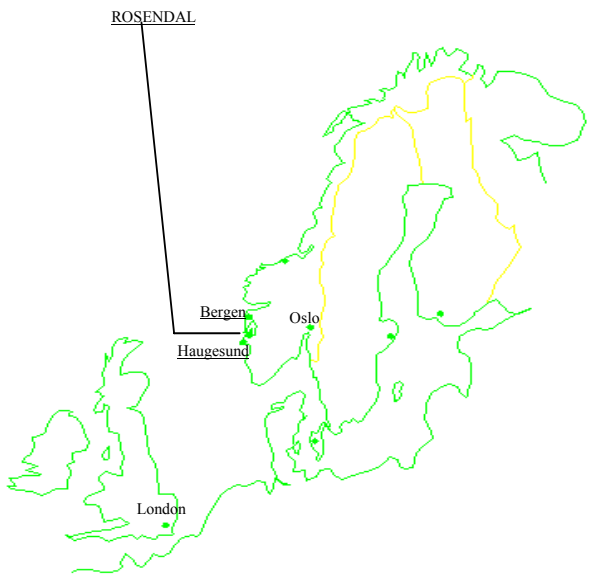
have a total of 600 employees, the company develops, manufactures and sells all types of survival craft.

Our range includes:
- Open survival craft
- Partially enclosed survival craft
- Fully enclosed survival craft
- Combined cruise survival crafts/survival craft
- Free fall survival craft
- Winches for the entire range
- Davits for the entire range

Our modern and well-equipped factories are located on Norway's West Coast, Czech Republic and in China. The main office is located in Rosendal, the production of davits, winches and equipment for our free-fall steel offshore survival craft are in Slany – Czeck Rep., while the GRP survival crafts are mainly manufactured at our factory at Ølve and some in Qingdao in China.

The name Harding has implied quality and innovation in safety and rescue equipment for years. Schat-Harding has developed a comprehensive and entirely new generation of survival crafts, winches and davits. Development is a continuos process and our products are continually updated based on the experience derived from thousands of deliveries to cruise ships, freighters, drilling rigs and production platforms around the world.

Norwegian creativity and quality are the hallmarks of our products. We hope that you are pleased with the equipment as well as with the manual.



1.2 THE MANUAL

This manual has been prepared in accordance with applicable regulations as IMO's (International Maritime Organisation), SOLAS 1974 Regulations as amended to date and The International Life-Saving Appliance (LSA) Code as amended to date.

This manual gives detailed instructions for maintenance of davit and winch, this manual should be considered as a supplement of the davit and winch manual. Both manuals should therefore be readily accessible for the technically staff at the yard and onboard the ship during operation.

The manual includes inspection records for 5 years. In the sixth year you should start with the record of year 1. This mains that the records repeating every 5 years. We advice you to copy these records and use this for your inspections.

According to current regulations, the equipment shall be inspected and serviced thoroughly every year by Umoe Schat-Harding AS, or other person trained and certified by Umoe Schat-Harding (Acc. MSC Cir 1206). It is our pleasure to help you with this maintenance.

Schat-Harding AS does not assume any responsibility for damages resulting from the use of the manuals, and reserves the right to make changes in the manual without giving any form of notice.

This manual must not be copied, reproduced or otherwise employed without first obtaining written permission from Schat-Harding AS. (With exception of enclosed Repair Records).

Enquiries may be directed to our Service Department:

SCHAT-HARDING AS
N-5470 ROSENDAL
NORWAY

Telephone Int. +47 53 48 36 00
Fax Int. +47 53 48 36 01
E-mail ***schat-harding@umoe.no***

1.3 SAFETY GUIDE LINES

Schat-Harding policy is to produce survival equipment with the safety aspect given high priority. As this is a maintenance manual, we are interested in giving safety reminders to both installation personnel and crew that are involved with maintenance and use of our systems.

When an accident occurs, investigation may reveal the cause and pinpoint what should have been done to prevent the accident. This can only provide HINDSIGHT. The purpose of a good safety program is to prevent the accident from happening in the first place. This can be accomplished by the use of FORESIGHT and knowing the results of our actions when working around an SCHAT-HARDING product.

General safety reminders
THINK SAFETY - WORK SAFELY

1. The employer is responsible for selecting competent and qualified employees. SCHAT-HARDING conducts training classes. We strongly suggest that you enrol your employees.

2. Manuals are provided with each SCHAT-HARDING product. The product user should have these manuals available for personnel working on the product.

3. Guards and shields are to be in place at all times.

4. All employees should be aware of first aid facilities and be encouraged to use them, regardless of the severity of the injury.

5. Employees should be encouraged to report any hazardous conditions to their supervisors.

6. Fire prevention must be practised, and fire protection must be available to prevent the loss of life, personal injury, and to protect property.

7. Personal protective devices, such as protective footwear and safety glasses, should be used.

8. Users must have available adequate lifting facilities capable of lifting within the safe load limits, and appropriate slings and hitches.

9. The employer must insist that his employees study this safety information, and make sure that safety is practised.

Lifting Equipment and Lifting Tips

Remember that your first responsibility is to practice safety. Before you begin any lift, we suggest you go through a **mental checklist**. Ask yourself questions like the following:

1. What is the weight of the load?

2. What type of accessory, hitch or connection is required?

3. Will the lift be a straight lift or is an angled rig required? This determination will affect the lifting capability of the accessory.

4. Are the slings free of kinks, knots or broken strands?

5. Is proper clearance available to make the lift safely?

Because the type of hoisting equipment at each customer's facility is unknown to SCHAT-HARDING, these instructions are written with the intent of being general rather than specific, however these safety rules will apply.

We suggest some **Lifting Tips**:

1. Never lift more than the rated capacity of the hoisting equipment.

2. If there is doubt, have the hoisting equipment inspected for safe operating conditions. Inspect all slings. Do not take chances, if in doubt, check with the proper authority.

3. Balance load in sling before lifting more than a few centimetres. Distribute load evenly.

4. Use a sling large enough for the load.

5. Clarify hand signals with co-workers. If signals are not understood, make no move until they are clarified.

1.4 CONTENTS:

2.0 INSPECTION / MAINTENANCE PROGRAMME

2.1 WEEKLY - INSPECTION / MAINTENANCE

1. Visual inspection for operational readiness.

2. Gripe lines/lashings to be checked for slackness and tightened as necessary.

2.2 MONTHLY - INSPECTION / MAINTENANCE

1. All oil baths lubricated winches and any other reduction gears are to be checked for leakage and oil level restored as necessary.

2. All grease lubricated pivots, bearings, etc, to be checked for proper lubricating condition.

3. Winch manual brakes to be function tested, both direct and remote controlled. (All necessary safety precautions must be taken).

4. Visual examination of wire ropes for deterioration. (Made in compliance with rules established by the national administration).

5. Check operation and working of all safety devices and limit switches.

2.3 THREE - MONTHLY - INSPECTION / MAINTENANCE

Inspection to be executed in accordance with "Repair Records" enclosed as appendix.
Inspection interval is 3 monthly and the Repair Records will repeated itself after 5years.
According to current regulations, the launching system shall be inspected and serviced thoroughly every year by Umoe Schat-Harding AS, or other person trained and certified by Umoe Schat-Harding (Refer to the MSC Cir 1206).
Every 5 years shall launching system upon completion of the examination be subjected a dynamic test of the winch brake.

NOTES:

1. Subsequent inspection/maintenance cycles should be recorded on Repair Records Document (enclosed as appendix) with applicable year being defined. It is suggested that copies of these pages, to be used for record purposes, be reproduced locally.

2. The intervals are based on the average condition of use. Shorter intervals may bedew necessary since experience and actual usage determine the optimum inspection/maintenance programmes.

NB! The intervals between inspection/maintenance periods must not be extended. The ship owner/operator will bear the entire responsibility for any accident or malfunction caused by extension of intervals between inspection/maintenance periods.

3. Several instruction documents, issued by the manufacturer, are incorporated in the manual and provide an invaluable source of information with regard to maintenance.

4. The falls may have to be replaced before scheduled date if their condition is not acceptable to the Surveyor.

3.0 MAINTENANCE AND REPAIR INSTRUCTIONS

3.1 GENERAL

Launching appliances are mechanical devices. Like all machines, if they are to retain their efficiency, they must be regularly inspected and maintained in good working order, lubrication being of primary importance and hence deserving particular attention.

Remember - prevention is always better than cure.

A summary of scheduled inspection and maintenance activities are detailed in the accompanying Inspection, Maintenance and Repair Records (enclosed as appendix) document. In which a record inspection and maintenance is to be kept.

Among other things, the programme covers inspection of both the davit and winch where attached to ships structure as well as to each other if that is the case. Loose securing bolts must be re-tightened using correct torque as per drawing or usual practise. Welds particularly those of deck attachments of all load bearing parts, i.e., davits, winches, eye-plates, pulley brackets or sheave blocks, etc., are to be inspected for cracks. Weld repairs are to be undertaken without delay by a suitably qualified certificate welder. The usual welding precautions must be taken to protect adjacent equipment, e.g., wire ropes, cabling, etc., and do not forget the other side of the bulkhead.

SAFETY NOTE
When overhauling or re-revving winches and/or davits, the gripe gear slip links should be lashed and the maintenance pins inserted to lock davit arms to the pedestal in order to enable safe detachment of the boat falls. In the event that maintenance slings are provided, the boat must be suspended on these slings. Immediately after all work has been completed unlash slip links and remove maintenance pins - stow safely away for future use.

SAFETY NOTE
Never use track ways of roller type davits as a convenient place for storing loose gear, not even on a temporary basis. Never use projecting parts of the equipment as securing points for lines or similar.

SAFETY NOTE
Damaged grease nipples must be replaced immediately. It is recommended that a small circle in contrasting colour, e.g., signal red, should be painted around each nipple to facilitate ease of location during maintenance.

SAFETY NOTE
Major adjustments or other major maintenance work must be carried out and inspected by qualified Umoe Schat-Harding personnel.

3.2 LUBRICATION

Details on lubrication are given on latter pages of this document and a list of lubricants, including suitable equivalents, is given in Appendix for Selection of recommended lubricants.

Some equipment may have specific requirements. These will be detailed in the manufacturer's instructions manuals of your products.

3.3 ELECTRICAL EQUIPMENT

The following instructions are generally acceptable ones meant for guidance only; particular manufacturers may impose more detailed and / or specific maintenance instructions, as a rule accompanying this manual to the extent available.

3.3.1 ELECTRICAL MOTORS

Unless otherwise agreed, electric motors are delivered fitted to the winch following their quality acceptance procedure already carried out at the manufacturers.

Prior to put the motor into operation. The insulation resistance between the motor windings and the frame should be assessed. And compared with the required one. If less than specified, possibly due to it having been stored in a damp environment for some time. The motor should be kept warm and dry until the resistance has risen to the required figure.

The motor must be connected in accordance with the electrical circuit. And, if available, wiring diagrams using cables of adequate size to carry the full load current. And the starting current without excessive voltage drop (the starting current can be four to seven times the full load current depending on motor speed when the motor is switched direct-on-line).

When despatched from the manufacturer the motor is fully lubricated. If, however, the motor has been in storage for some time, it is recommended that the bearings be re-lubricated (on motors with re-lubricating facilities only) and run for a few minutes to ensure even distribution of lubricant.

DO NOT OVER-LUBRICATE. IT IS ESSENTIAL THAT SOLELY CLEAN LUBRICANT BE USED. DIRT AND GRIT RUIN BEARINGS. ENSURE THAT THE MOTOR FRAME IS PROPERLY EARTHEN.

Every six months, condition of the commutator and the brushes should be checked and the components serviced as follows.

The commutator surface should be cleaned with a soft cloth dampened with a petroleum distillate and any debris removed from the grooves between the segments.

Brushes should be cleaned with a soft rag. It must then be ensured that they move freely in their housings At the same occasion, the motor should be freed of any accumulation of dirt and grit.

3.3.2 STARTER GEAR

1. Cable leads should be checked for secure fastening and condition of the insulation layer.

2. Motor starter cabinets should have a moisture-free interior proving good sealing condition. If this is not the case defective seals and anti-condensation heaters should be inspected and repaired/replaced as necessary. The cabinet lock and hinges should be kept well lubricated.

3. Levers for the davit seat incorporated arm or cradle end position of limit switches should move easily. Moving the lever by hand and running the motor at the same time, to make sure that electric power is cut off before damage to equipment can happen should check how the switch is working.

4. The pilot lamp in the cabinet door which shows you how to use the anti-condensation heater should be checked if it is working correctly. If the lamp is not working, it should be replaced.

Every two months, the following servicing activities are desirable to be carried out.

Inter-locking contacts should be checked for cleanliness and correct adjustment.

All current carrying contacts should be provided with a smear coating of petroleum jelly.

DO NOT APPLY OIL OR GREASE.

Isolating switch shaft bearings should be grease lubricated if fitted with lubricators.

If fitted, oil dashpots should be cleaned and filled to level required.

3.3.3 LIMIT SWITCHES

Limit switches should be serviced every six months.

The switch mechanisms are readily accessible for servicing.
All that is necessary is to apply a thin coating of grease lubricant to the moving parts as required and to inspect for damaged components.

Electric switches should be inspected and tested. What is also important is to check the correct working of all manual/powered operational inter-lock safety devices and reset as necessary.

There are only two assemblies on the electrical side, a one piece moulded contact block and the contact arm itself. As they are interchangeable on all models, replacement is a simple matter.

Smear petroleum jelly on all current carrying contacts.

In case inductive limit-switches are mounted, visual inspection on damaging is required. This type of switches needs no maintenance. Limit switches should be clean and without paint. Replace switch if damaged or if switches are not functioning.

Do not apply oil or grease.
Remove and replace covers carefully to maintain watertight integrity.

3.4 HYDRAULIC EQUIPMENT

1. All hydraulic arr.: check once a month hydraulic oil levels and refill if necessary.
2. Check filter and oil once a year. Oil should be clean of water contain < 500 PPM. Replace filter if necessary.
3. Check hydraulic equipment on leakage, tighten couplings or replace parts if necessary.

SAFETY NOTE
Never adjust pressure settings

POWER PACK

1. Check operating pressure, normally max. Pressure will be not higher than 250 bar.
2. Check if relief valve works normally, 270 bar.
3. Check that oil temperature not exceeds 72 ^{0} C.

NOTE
MORE DETAIL INFORMATION IS GIVEN IN HYDRAULIC INSTRUCTIONS MANUAL THAT IS DELIVERED TOGETHER WITH THE DAVIT.

3.5 WINCH (General)

1. All oil bath levels are to be checked by removing the level plug.

2. Simultaneously, the nipple-lubricated parts should receive a single pump of grease, extra greasing is not necessary and in the instance of the brake unit undesirable.

3. In operation both manual and governor brake gears must be kept in good condition and the linings kept clean from oil or grease. This because we don't want any injury to personnel or damage to the equipment.

4. In good working order the winch should over-run after the boat is waterborne to give slack in the wire rope fall, if not, check free running condition of bearings, etc.

5. In the course of each lowering procedure, it is natural for the brake gear enclosure to heat up as a result of friction, therefore be wary of touching the brake drum. During launching drill or tests, the brake should be allowed to cool down before lowering again.

6. Provided the boat is securely griped and the davit cradles/arms locked, it is good practice to release the winch brake to unload the wire rope falls. Subsequently, ensure that the weighted brake control handle ("Dead Man" type) always re-engages the brake under its own momentum.

7. Every two years dismantle the electric motor. Clean both the interior and heat dissipation ribs. Check general condition and, in particular, the bearings. Re-lubricate or, if necessary, replace bearings. Re-assemble motor and test correct operation of winch.

WINCH (Centrifugal brake)

8. The brake linings are normally secured to the brake shoe by countersunk rivets the heads of which are sunk below the surface of the lining. The linings are inspected one's a year, or every 25 launches - whichever comes first, and have to be replaced if worn down to within 1 millimetre of the rivet/screw heads. Never let the linings wear down to the rivet head, as this will cause damage to the brake drum, and with possibility of a malfunction.

9. When replacing the linings and other brake parts use only original spare parts. Check in particular that the rivet/screw heads are well below surface of the new lining. It is suggested that a complete brake shoe assembly, or at a minimum linings and rivets, are held as onboard spares.

10. Every two years, clean the brake drum and gear case interiors, carefully lubricate all journals, bearings and other moving parts as appropriate. Replace all gaskets to ensure a leak free seal and fill with clean oil.

SAFETY NOTE
Important - do not over lubricate the nipples on the brake control mechanism.

WINCH (Hydraulic brake)

11. The planetary gearboxes (Drum gearbox and differential gearbox) are lifetime lubricated by the supplier and need normally not to be refilled except major overhauls.

12. It could be necessary to recharge/refill the accumulator bladder with nitrogen. For this purpose a special tool kit is required.

13. Great care should be taken to ensure that the hydraulic oil tank is filled up periodically. To check the correct operation of the brake, open the drain plug located at the button of the tank to check for water contamination.

3.6 LUBRICATION OF FULLY OR PARTIALLY EXPOSED EQUIPMENT'S

In this group, wire ropes and screw threaded mechanisms of standing part compensation gear, slip hooks of gripe gear and tricking pendants, spindle gear, stretching screws, swivels, etc., are unprotected whereas worm or toothed wheel gears of radial davits are enclosed.

1. Good adhesion, high film strength, load carrying capacity, penetration and ease of application together with water washout; corrosion, wear and ageing resistance are all key requirements.

2. The components must be kept properly lubricated over the whole length and when re-lubricating it is advisable to have a spindle fully run through the nut to ensure distribution along the whole spindle.

3. A similar treatment is also applicable to slewing gear in radial davits.

4. When re-lubricating wire ropes, the least accessible sections deserve particular attention. Pre-heating of the lubricant may improve the penetration into the wire ropes. Consult the instructions supplied by the lubricant manufacturer for the best method of application.

5. Track ways of roller type davits in those areas of the "U" channel sections which lead the cradle rollers should be kept lubricated with a non-drip grease lubricant.

6. Bolts, which secure the skates to the gunwale, should also be regularly lubricated.

7. Spring-loaded tension units should be kept oiled at all times, corrosion can reduce/stop function. For furthers details refer to section for maintenance in the manual which follows the product.

SAFETY NOTE!

Do not dismount tension units before reading the operation/maintenance, which follows the product.

3.7 GREASE LUBRICATED CAM OR SPRING CLUTCHES

Where grease lubrication of these reverse rotation, self-locking clutches is required by the winch design, in lieu of oil bath lubrication, a continuous film of lubricant to be ensured at all times.

3.8 DAVIT STRUCTURE

1. All sheaves and roller wheels/pivots must rotate freely on their bearings.

2. Unless fitted with nipples, self-lubricating, plastic bushed bearings do not require any lubrication. However, it is necessary to thoroughly oil the friction faces both on installation and on re-assembly following overhaul.

3. The wooden chocks or equivalent filling pieces fitted to the cradle/arm must not exceed the designed dimensions as this could overload the boat hull.

4. Track ways of roller type davits should be kept lubricated with a non-drip grease lubricant.

5. Moving parts of bottle-screws, turnbuckles, slip hooks, lower block sheaves, swivels and all small moving parts must be kept free of paint and well lubricated.

6. Gripe gear levers should move freely in a complete circle when the arms are in the outboard position. Equivalent moving parts should perform similarly.

3.9 GRIPING GEAR

1. To prevent localised areas of damage, wear and/or corrosion to boats of glass fibre or light alloy construction wire rope griping lines are to be covered with proofed canvas or plastic hosing where they come into contact with the hull. Be aware that acute angles may require particular attention.

2. Griping gear shackles, triangles, rigging screws, quick-release slip hooks, ropes and attachments and one-man release span rope should be inspected for wear and damage.

3. All of the above parts should be properly lubricated to ensure they operate freely and smoothly.

4. To ensure reliable working of the griping gear system, the griping levers spanning release wire ropes must be kept under tension unless a launch or recovery is in progress.

SAFETY NOTE
Those griping ropes, which are not permanently attached to the davit arms or track way, should be secured to prevent loss overboard during launch/recovery operations.

3.10 PAINTING

Degradation of this means preservation results in the on-set of corrosion to steel structures, evident by the appearance of paint coat bubbles followed by rust stains.

1. All signs of rust have to be removed. The affected area must then be cleaned up, primed and painted in accordance with manufacturer's instructions.

2. Negligent painting is the most frequent source of trouble, resulting in malfunctions, in a launching appliance. This applies particularly to gravity davits.

SAFETY NOTE
When painting, it is absolutely essential to ensure that no paint is deposited onto lubrication nipples, bearings or any other moving part in such a way as to impede freedom of movement.

3. Remember that certain areas of launching appliances, like track ways of relevant types of gravity davits, require designed clearances to be maintained to ensure their reliable working. Repeated application of coats of paint to these critical areas often results in a malfunction of equipment, this is an extremely dangerous situation and must be avoided. When these areas require re-preservation the existing paint must first be removed.

4. It is good practice to restore the red marking ring around all lubrication nipples following re-preservation.

3.11 WIRE ROPE FALLS AND OTHER WIRE ROPES

1. Wire rope falls are reeved in compliance with equipment reeving instructions. Falls must be neatly wound onto winch barrel, turns must not over-ride one another else the boat will not stow evenly.

2. The load bearing side of wedge attachments must be aligned with the load transmitting end of the wedge attached part of the wire rope, i.e., the dead end wedge side must be angled with respect to the one above. The dead end of wire rope must be fastened by at least two correctly orientated (the wider, nut fitted, clamp face adjacent to the rope live end, neither reverse nor even staggered attachment) "Bull-Dog Grip" wire rope clamps. An alternative system may be applicable.

3. In the event of double point suspension system, both lower fall blocks or links should engage the associated arm/cradle stops simultaneously. To this end, a turn buckle mechanism is provided in the falls standing part (dead end) for the purpose of levelling both boat (and fall) ends should the falls stretch unevenly or coil incorrectly.

4. The wire ropes to save unnecessary wear, should be kept slackened off slightly when the boat is stowed and correctly griped. Simultaneously, check the condition of the associated end links, wire rope clamps, rigging screws, etc. Any loose shackle bolts must be tightened immediately.

5. The falls and all other wire ropes should be kept well lubricated. Pre-heating of the lubricant may improve the penetration into the wire ropes.

SAFETY NOTE
White lead or paint must never be used as this chokes the sheave bearings.

6. On every occasion that a wire rope is turned or replaced attention should be paid to proper fall reeving. When replacing the falls, providing no changes have been made to either davit or boat, the correct breaking strength, construction, diameter and length should be ascertained and ordered to comply with the initial wire rope supply.

3.12 ON/OFF-LOAD HOOK

To ensure the hook remains operational it is essential that regular maintenance routines be carried out. The open hook design provides easy access to main components without any need for disassembly. It is advisable to keep hook covered when not in use.

Lubricate all pivot points at monthly intervals. Intervals between lubrication may be reduced if considered necessary.

Six Monthly Inspection

1. No build-up from salt water spray, dirt or any other contaminant is evident.

2. A clean, good working condition of all parts is maintained

3. The safety pin and associated parts move freely

4. No paint has been applied that will endanger hook operation

NB! Except for the need to have the release controls conspicuously marked in a signal red colour, **no paint is to be applied**.

Annually Service:

Full service of hook to be conducted by the manufacturer's representative or a person trained and certified by the manufacturer. Function and load test with empty boat on completion.

The above maintenance is based on average conditions of use. A shorter interval e.g. three monthly, may be deemed necessary by actual usage and operational conditions.

According to current regulations, the installation shall be serviced at intervals not exceeding five years (Refer to the recommendation on SOLAS, 1996 Amendments, chapter III Reg. 20).

3.13 GREASE LUBRICATION AND PROPERTIES

With the exception of electric motor or other long-term lubricated roller type bearings, lubrication should be carried out in accordance with the periodic routines laid down in the "Repair Records" document (enclosed as appendix).

3.13.1 GENERAL PURPOSE / NIPPLE LUBRICATION OF BEARINGS OR SIMILAR COMPONENTS

1. Nipples are used for lubrication of various bearings on both the davit and associated winch, such as rollers or arm pivots, sheave axle pins, brake gear, recovery, slewing or luffing gear, as well as gear-wheel and other shafts.

2. Apart from the above qualities, the lubricant used should possess good lubricator dispensability, i.e., pumpability and flow characteristics as well as load bearing properties.

3. To facilitate location, it is advisable to paint a small ring in contrasting colour, i.e., and signal red, around each nipple.

4. With the exception of the brake shaft lubrication point, nipple lubrication should be generously applied using a high-pressure grease gun lubricator, filled with clean, appropriate grease. In general terms, a proper lubricated condition is achieved when the fresh lubricant is forced out of the bearing bush.

SAFETY NOTE
With regard to brake shaft lubrication due care must be taken to avoid over-greasing to avoid the possibility of contamination to the brake linings by excess grease.

5. A choked feed line is a problem, which must be rectified immediately. Remove the nipple and clear the feed line until the grease flows freely. Ensure that the bearing served by this feed line is in good condition and not suffered any damage through grease starvation. Replace nipple and charge line with grease, ensuring that it reaches the bearing.

6. Lubricants displaying the National Lubricating Grease Institute (NLGI) consistency grade of 2 (ASTM/25°C work penetration figure of 220 - 295mm/10) are best suited to comply with the above requirements.

4.0 SERVICE CENTRE AND PARTNERS

Schat-Harding has skilled authorized service personnel, all well trained and with great experience ready to assist our world wide customers that have equipment under our brand names. Our employees are ready to assist you with technical information, expedite delivery of spare parts, training of crew, quotations for refurbishing of old equipment, safety analysis or whatever your needs are with respect to lifesaving equipment.
We are here to maintain your safety onboard.

Schat-Harding service centers

Address	e-mail	Phone	Fax
Norway Umoe Schat-Harding As 5470 ROSENDAL, NORWAY	spareparts@schat-arding.com service@schat-harding.com claims@schat-harding.com	(47) 53 48 36 00	(47) 53 48 36 01
The Netherlands Umoe Schat-Harding BV St.Laurensdreef 37 3565 AJ UTRECHT THE NETHERLANDS	sales@schat-harding.nl	(31) 30 26 44 200	(31) 30 26 44 299
United Kingdom Umoe Schat-Harding Ltd. Mumby Road , Gosport , Hampshire PO12 1AR, U.K.	spares@schat-harding.co.uk service@schat-harding.co.uk claims@schat-harding.co.uk	(44) 2392 581 331	(44) 2392 582 565
Singapore Umoe Schat-Harding (F.E.) Pte Ltd. 20 MacTaggart Road #08-02 Khong Guan Industrial Building SINGAPORE 368079	spares@schatharding.com.sg service@schatharding.com.sg	(65) 6 383 1067	(65) 6 383 1031
USA Umoe Schat-Harding Inc. 912 Highway 90 East, New Iberia, LOUISIANA 70560, USA	sales@schathardinginc.com	(1) 337 365 5451	(1) 337 367 2816
Canada Umoe Schat-Harding Inc. 16160-78B Avenue Surrey, British Columbia V3S 7H9 CANADA	schatharding@telus.net	(1) 604 54 30 849	(1) 604 54 30 829
China Umoe Schat-Harding Boatbl.Co.Ltd Hetao Port, Chengyang District P.C.266113 QINGDAO, CHINA	service@schat-harding.cn	(86) 532 87026257\219	(86) 532 87026250
Czech Republic Umoe Schat-Harding spol.s.r.o. Po. box 115, ul. Netovická 353 , 274 01 SLANY, CZECH REPUBLIC	umoe@umoe.cz	(420) 312 515 102	(420) 312 522 598
Germany Umoe Schat-Harding GmbH Kaddenbusch 3 25578 Dägeling , GERMANY	sales@schat-harding.de	(49) 4821 40393 0	(49) 3821 40393 20

Appointed Schat-Harding Service Partners:
See updated list of Schat-Harding authorised service suppliers on the WEB site :
www.schat-harding.com

Umoe Schat-Harding As
Member of the Umoe Group
N-5470 Rosendal, Norway

umoe

Type: 08-02 H
Order No: 2049822
Serial No: 1418/06
Certiticate No:
Type Appr. No: 160.163/1/0
TM: 7.66 kNm
SWM: 4.27 kNm
Date: 23.12.06
Control:
Product: WINCH-96

1410/06
160.163/1/0
SWM: 4.27 KNM
23.12.06

Product: WINCH-96

1409/08

160.163/1/0

S.W.L. 6.87 K.N.M

29.02.06

Umoe Schat-Harding As
Member of the Umoe Group
N-5470 Rosendal, Norway

umoe

Type: 08-02 H

Order No: 2049022

Serial No: 1410/06

Certificate No:

Type Appr. No: 160.163/1/0

TM: 7.00 kNm

SWM: 4.67 kNm

Date: 2.02.06

Control:

Product: WISC II-96

1410/06
160.163/1/0

Umoe Schat-Harding As
Member of the Umoe Group

N-5470 Rosendal, Norway

umoe

Type: 08-02 U

Order No: 2249222

Serial No: 1409/06

Certitificate No:

Type Appr. No: 160.163/1/0

TM: 7.00 kNm

SWM: 4.67 kNm

Date: 23.02.06

Control:

Product: WINCH-96

1409/06

160.163/1/0

MAIN DATA:

YARD / OWNER: Halter Marine Inc./ NOAA
THE SHIP TO BE REGISTERED IN: US
CERTIFYING AUTHORITY: USCG
YARDS P.O. NR.: VM16357

DAVIT MAIN DATA:

LOWERING SPEED: Max.54 m/min.
PROTOTYPE APPROVED LOAD: SWL= 21 kN
APPROX. TOTAL WEIGHT OF ONE SET OF DAVITS w / WINCH (EXCLUSIVE LIFEBOAT) 1200kg.

RESCUEBOAT SPECIFICATION:

MAKER: xxxxx
TYPE: xxxxx
WEIGHT OF BOAT WITH EQUIPMENT: (WE) xxxxx kg.
WEIGHT OF PERSONS: (6) xxxxx kg.
TOTAL LOWERING WEIGHT: (WF) xxxxx kg.
MAX. HOISTING WEIGHT: (WU) xxxxx kg.

MAIN DIMENSIONS (loa x boa x h) x x mm.

RAFT SPECIFICATION:

WEIGHT OF RAFT WITH EQUIPMENT: (WE) 200 kg.
WEIGHT OF PERSONS: (25) 1875 kg.
TOTAL LOWERING WEIGHT: (WF) 2140 kg.
MAX. HOISTING WEIGHT: (WU) xxxxx kg.

WINCH MAIN DATA:

TYPE: 08-02
PROTOTYPE APPROVED MOMENT: 4,65 kNm.

MAX. REACTION FORCES ARE BASED ON:

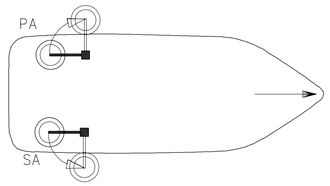
MAX. DAVIT LOAD: 2140 kg.

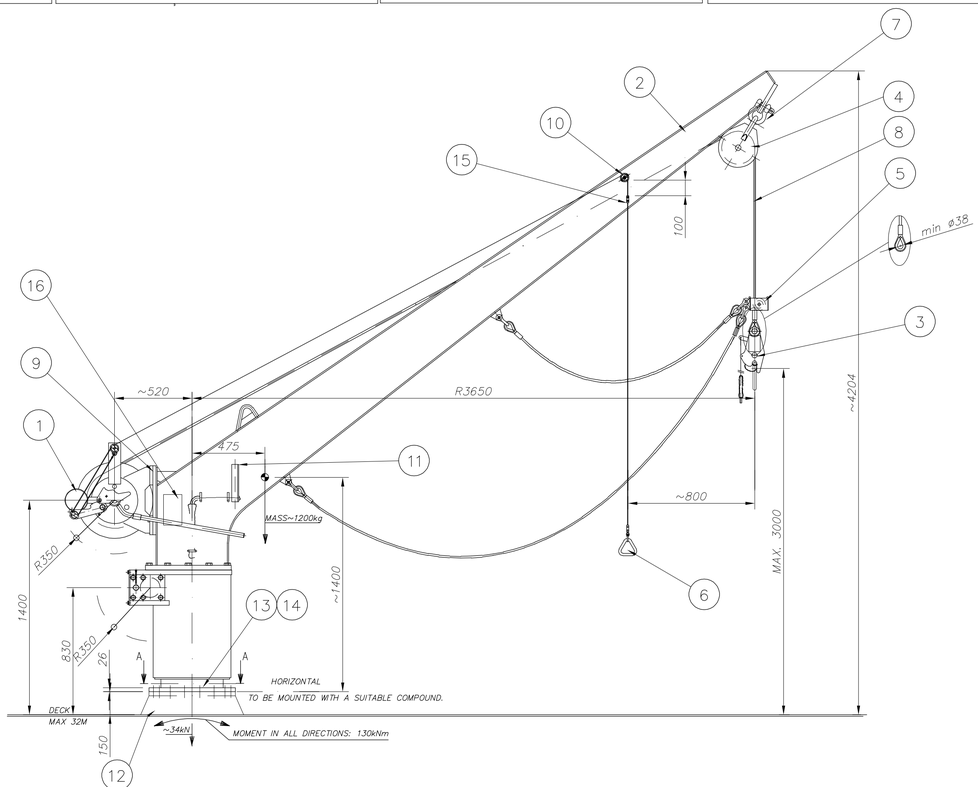
MAX. 20° LIST 10° TRIM (ONLY LOWERING)

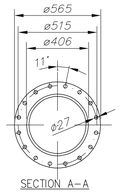
MAX. STATIC REACTION FORCES:

Mw = 40 kNm.
Mb = 101 kNm.

KEY PLAN



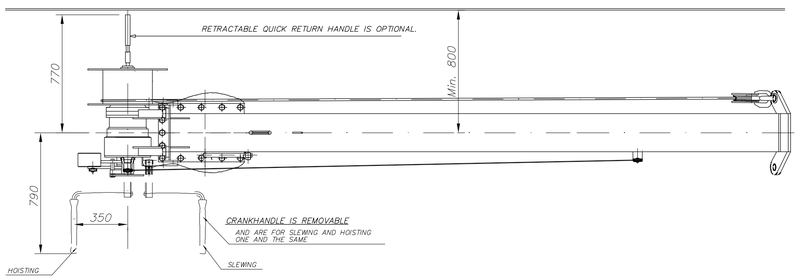




SECTION A-A

TAG INFO PEDESTAL:

Job Number: M282
Item Number: M282-583
Model Number: FOUNDATION SRR
Serial Number: xxxxxxxxx SA
Serial Number: xxxxxxxxx PA
Purchase Order Line Item Number: 5
Purchase Order Number: V11051
Vendor Name: Umoe Schat-Harding



EXECUTION SA HAS BEEN DRAWN.
EXECUTION PA IS IN OPPOSITE HAND.

SAFE WORKING LOAD = 21kN
FACTORY TESTLOAD = 2.2x21kN = 46.2kN

TAG INFO LIFERAFT DAVIT WITH WINCH:

Job Number: M283
Item Number: M283-583
Model Number: SRR360/3,65/21
Serial Number: xxxxxxxxx SA
Serial Number: xxxxxxxxx PA
Purchase Order Line Item Number: 1
Purchase Order Number: VM16357
Vendor Name: Umoe Schat-Harding

○ = Equipment delivered with certificate.
X = Yard supply. Not included in standard delivery from UMOE SCHAT-HARDING AS

	SWL. min.kN.	BL. min.kN.	TL. min.kN.	Item no.	Quantity	Description	Material	Art. no.	Remarks	kg.pr. unit
				16	1	MARKING DRAWING		N65622		
				15	1	WIRE GRIP ø3	RF	0740.06089		
				14	16	HEX. LOCK NUT M24	10 Galv.		DIN 982	
				13	16	HEX. SCREW M24x90	10.9 Galv.		DIN 931	
				12	1	FOUNDATION		N94099		
				11	1	CRANK HANDLE		N73224		
				10	1	SHEAVE HOUSE		N93526		
				9	8	HEX. SCREW M20x40	10.9 Galv.		DIN 933	
○	24.5	147		8	1	WIRE ø12 NOTOR HP L=40m				
○	83,4	500		7	1	BOW SHACKLE 8.5T				1.2
				6	1	TRIP LINE F/REMOTE CONTR. Type B, L=8m		N73740		
				5	1	ARR. JOCKEY PULLEY		N94012		
				4	1	UPPERBLOCK		N94036		
○	23	138	57.5	3	1	AUT. RELEASE HOOK ARH.23		N94100		5.5
○	21		46,2	2	1	DAVIT ASSEMBLY		N65465		
○	25		37,5	1	1	WINCH 08-02-V LET GO ø=324 L=220		N83120		240

10.11.05 JP — Appr. by; Check. by; Date, sign.
Date 07.07.04 — Name JP — Projection
Checked HR — Approved EH — Scale 1:20 A1
ORDER W/FOUNDATION — Mark
1 — Rev.
Reference NB2917 — Calculation

SCHAT HARDING

SRR360/3,65/21 GENERAL ARRANGEMENT Halter Marine Inc.

Replacement for : — Replaced by :

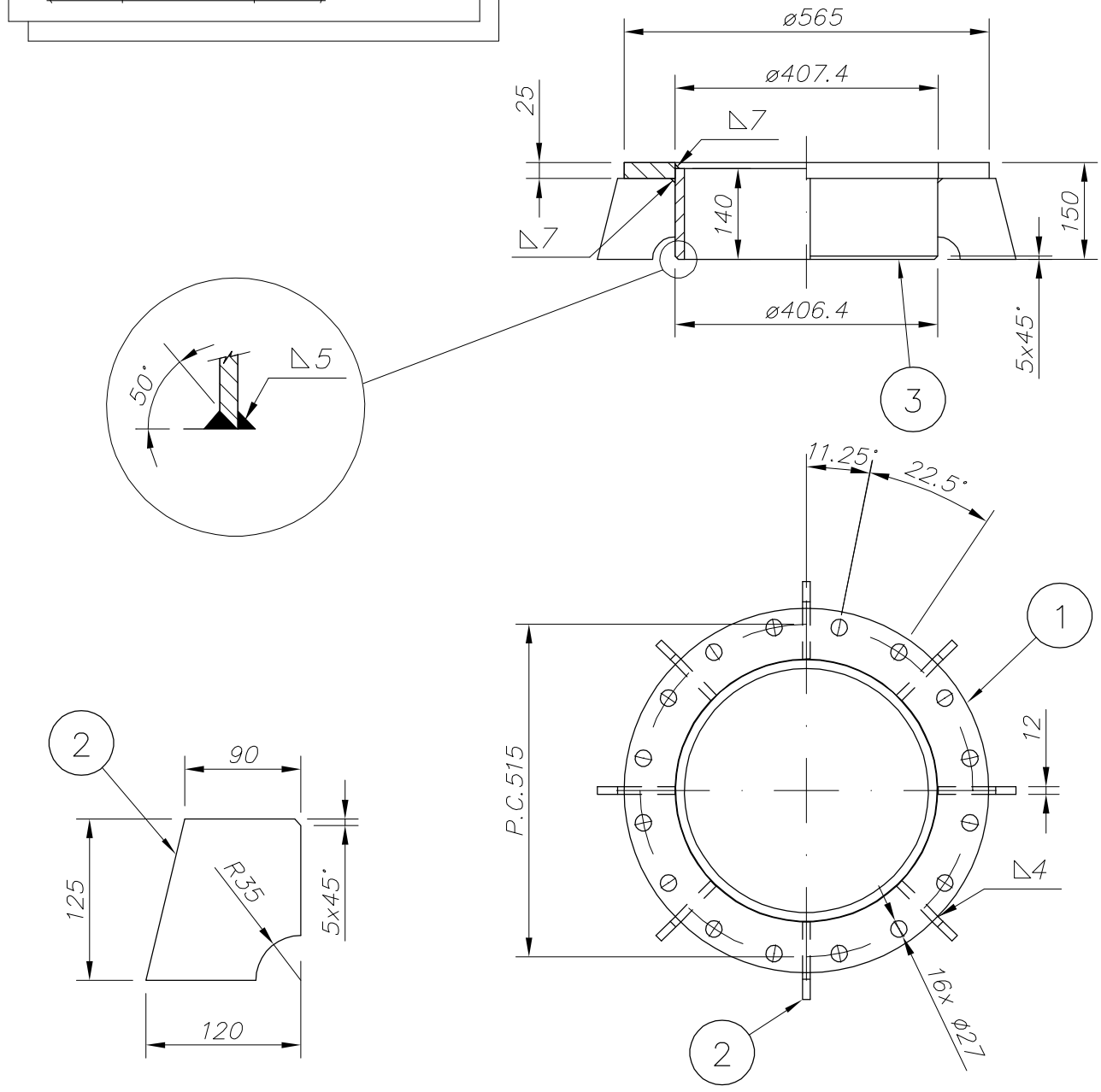
NB3411

O.no 204902-2

Item no.	Quantity	Description	Material	Art. no.	Remarks	kg.pr. unit
1	1	PLATE 25 ø565/ø407.4	NVE 36	0111.20659		25
2	8	PLATE 12 125x120	NVE 36	0111.20459		1
3	1	PIPE ø406.4x16.7 L=140	API 5L	0131.45529	Grade B	22

Total mass ~ 55 kg

(Mass in partlist = mass per item)



schat-harding

Rev.	Mark	Date, sign.	Check. by	Appr. by

FOUNDATION
SPMOB/SRR

N94099

Date	Name	Projection
01.10.01	JL	

Checked	Approved	Scale	Reference	Calculation	Repl. for :	Replaced by :
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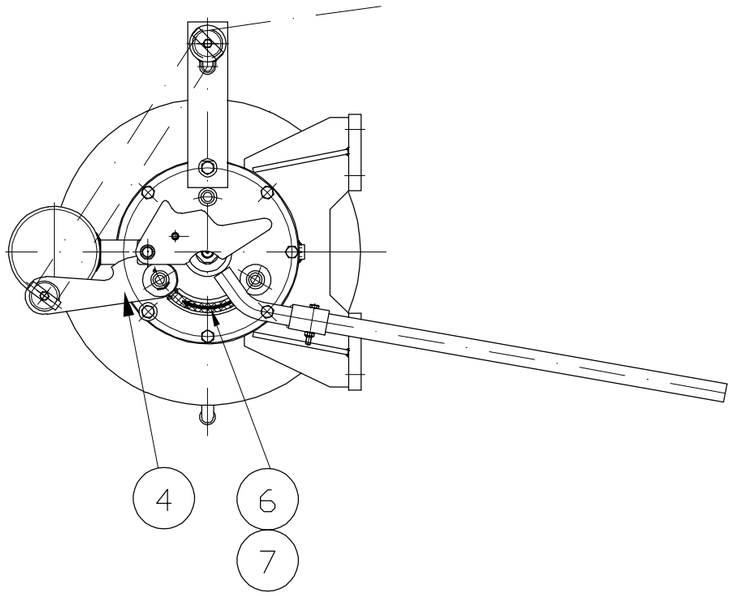
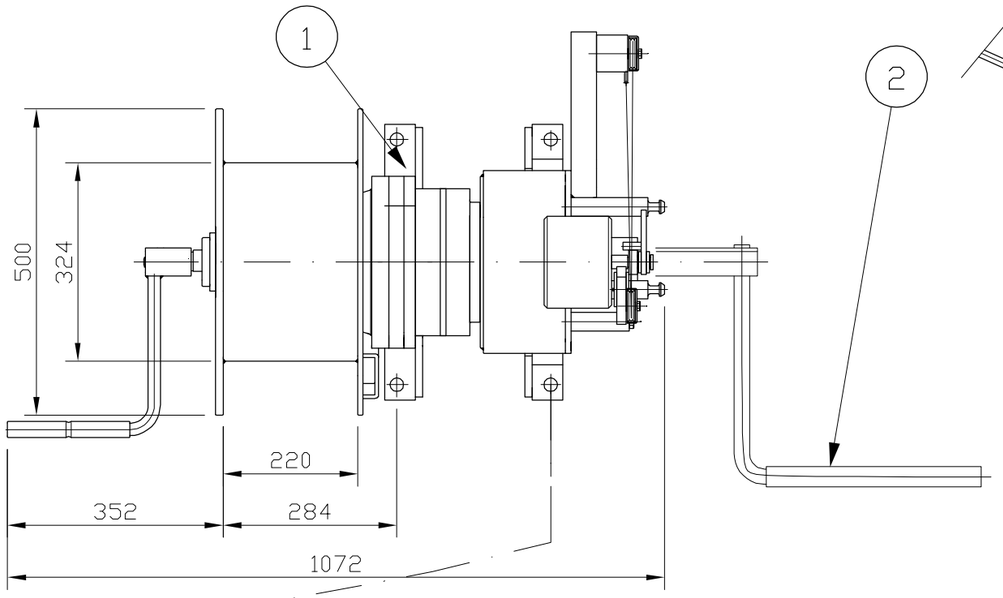
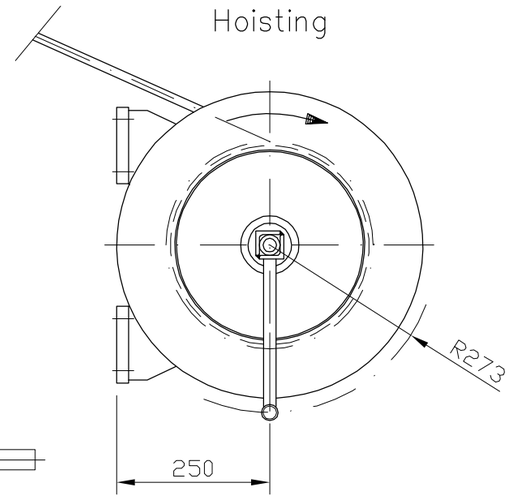
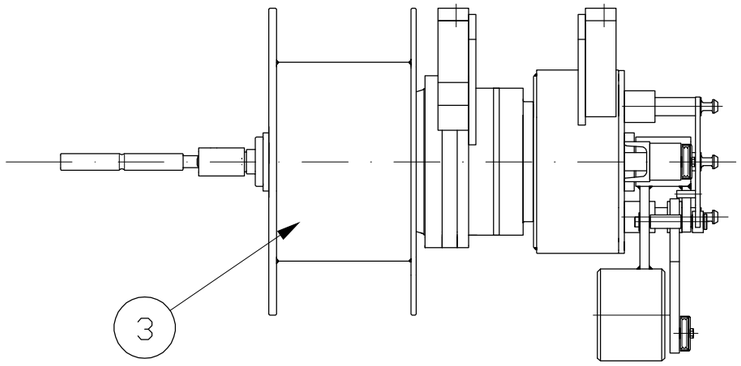
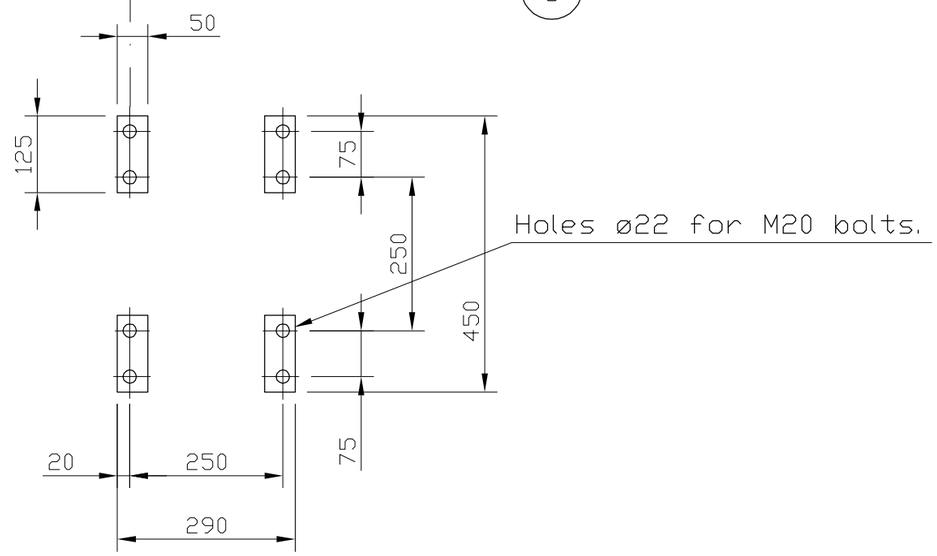










Item no.	Quantity	Description	Material	Art. no.	Remarks	kg.pr. unit
7	4	PLATESCREW COUNTERS. 4.8X13	A4	0216.00109		
6	1	INSTRUCTION PLATE		N93332		
5	1	CENTRIFUGAL BRAKE (Let go)		N73197-04		
4	1	REMOTE CONTROL (Let go)		N65014		
3	1	WEDGE Kile		N93404		
2	1	CRANKHANDLE		N73225		
1	1	WINCH ASSEMBLY		N65013		

Appr. by

Check. by

Date, sign.

Date 11.02.97 | Name L.Holmedal | Projection

Checked PMS | Approved PF | Scale 1:10

schat-harding

Mark

WINCH 08-02 V OUTLINE DRAWING

Replacement for :

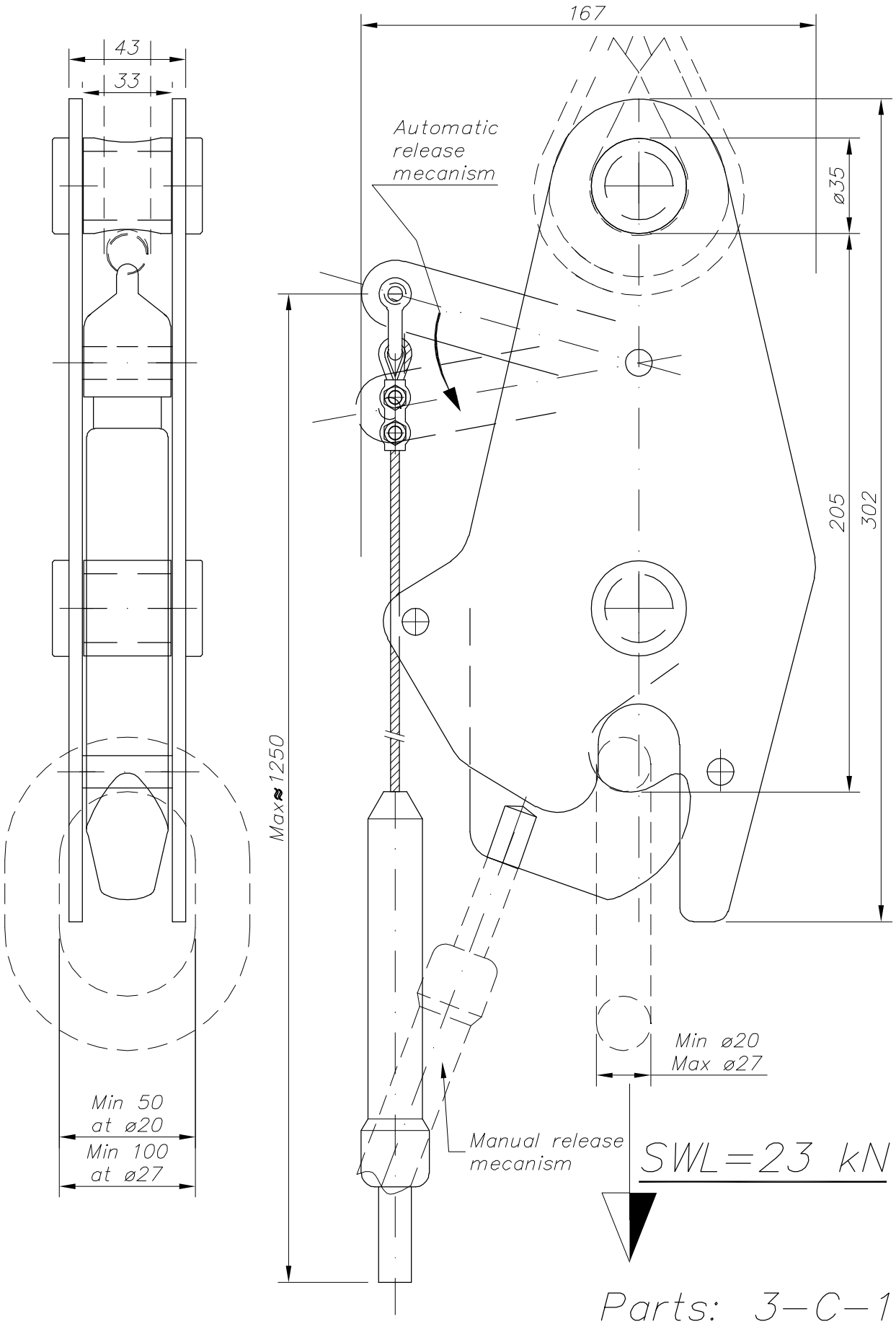
Replaced by :

N83120

Rev.

Reference B-0006-R\B

Calculation



Parts: 3–C–112

schat-harding

Rev.	Mark	Date, sign.	Check. by	Appr. by

ARRANGEMENT AUT.
RELEASE HOOK
ARH. 23

N94100

Date	Name	Projection
03.10.01	JL	

Checked	Approved	Scale	Reference	Calculation	Repl. for :	Replaced by :
JJB	PF	1: 2	3–A–158			

Art.no.3015.71209

MAIN DATA:

YARD / OWNER: Halter Marine Inc. / NOAA
THE SHIP TO BE REGISTERED IN: USA
CERTIFYING AUTHORITY: USCG
YARDS P.O. NR.: VM16.357

DAVIT MAIN DATA:

LOWERING SPEED: 3,2 m/min.
PROTOTYPE APPROVED LOAD: 3500 kg
APPROX. TOTAL WEIGHT OF ONE SET OF DAVITS w / WINCH (EXCLUSIVE LIFEBOAT) 3000 kg.

RESCUEBOAT SPECIFICATION:

MAKER: OCEAN TECHNICAL SERVICES, INC.
TYPE: O - TECH 5.6
WEIGHT OF BOAT WITH EQUIPMENT: (WE) xxxx kg.
WEIGHT OF PERSONS: (6) 450 kg.
TOTAL LOWERING WEIGHT: (WF) xxxx kg.
MAX. HOISTING WEIGHT: (WU) xxxx kg.

MAIN DIMENSIONS (loa x boa x h) xxxx x xxxx x xxxx mm.
HEIGHT OF HOOK ABOVE KEEL: 1870 mm.

WINCH MAIN DATA:

TYPE: W 50 RS
PROTOTYPE APPROVED MOMENT: M= 11700Nm.
HOISTING SPEED 60Hz: 20 m/min.
LOWERING SPEED: Adjustable up to 90 m/min.
MAX. LOWERING HEIGHT. 40 m

ELECTRIC MOTOR DATA:

TYPE:	160 L 21
VOLTAGE:	3x600V, 60Hz
CURRENT: (IN)	24,9/19,7 A
CURRENT: (IS)	202,4/138,6 A
EFFECT:	20/15 KW

MAX.STATIC REACTION FORCES:

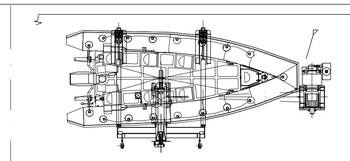
Ax: 17.47 kN
Ay: 43.17 kN
Bx: 32.26 kN
By: 38.85 kN

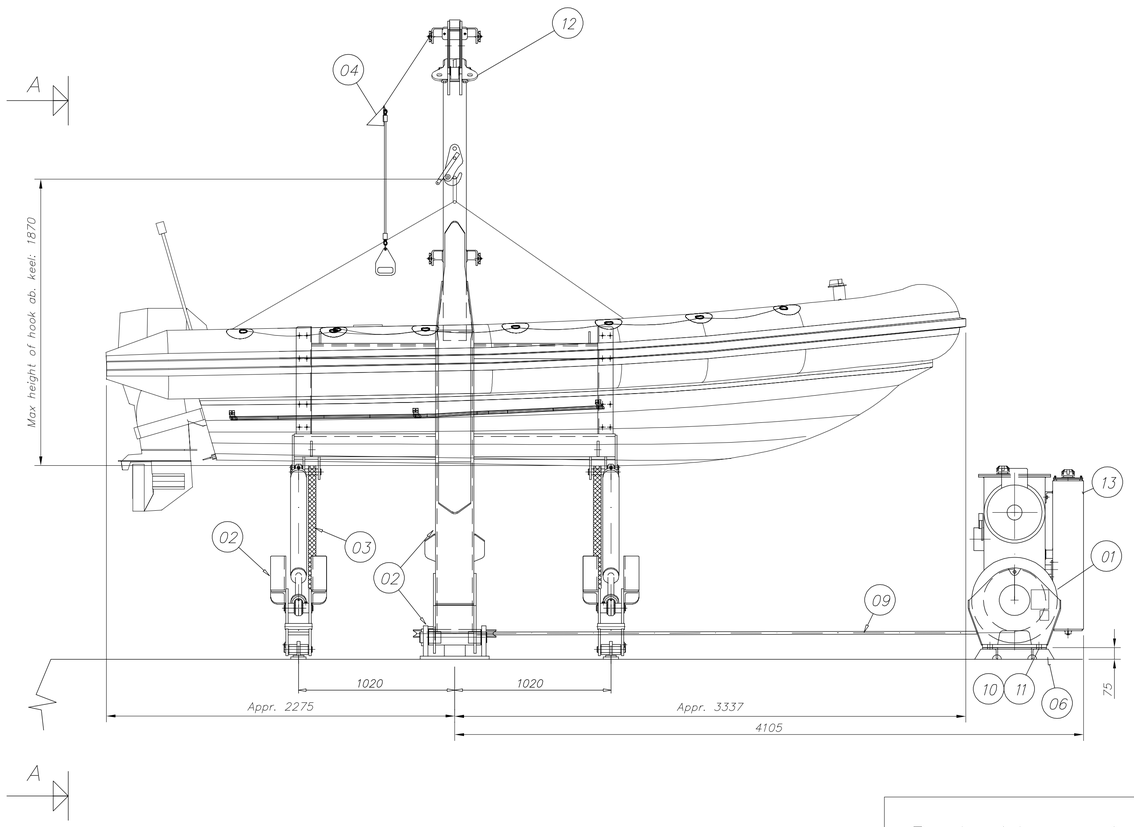
MAX. REACTION FORCES ARE BASED ON:

MAX. LIFEBOAT WEIGHT: 3500kg.
SELFWEIGHT OF THE LAUNCHING ARRANGEMENT: (approx) 1400kg.
WEIGHT OF WINCH: 1350kg.

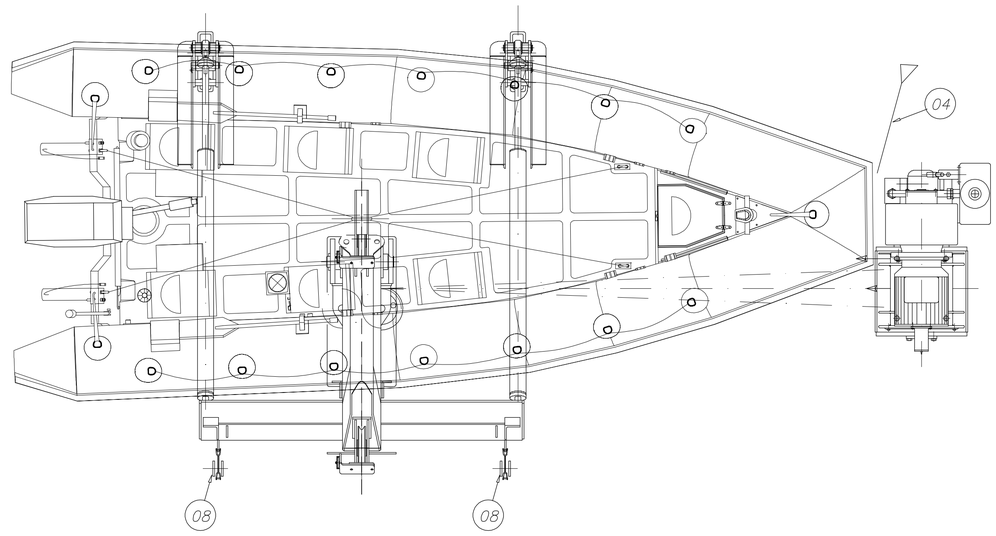
TAG INFO RESCUE WINCH:

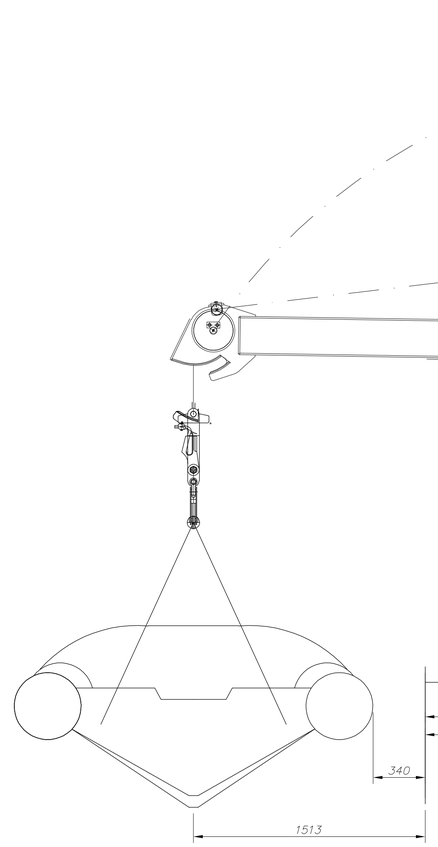
Job Number: M283
Item Number: M283-583
Model Number: SA 3,5
Serial Number: xxxxxxxxx
Purchase Order Line Item Number: 1
Purchase Order Number: VM16.357
Vendor Name: Umoe Schat-Harding





Port side version





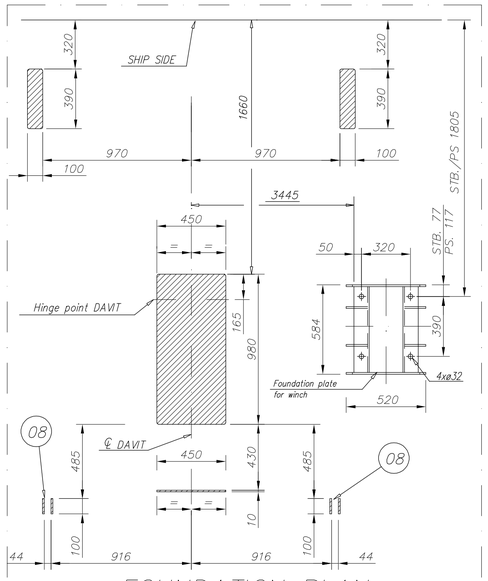
VIEW: A–A

NOTE!
Vent plug to be mounted after the tension element is mounted on the davit.

Horizontal

Locking bolt in stored position. To be used only durig maintenance on boat or davit

○ = Equipment delivered with certificate.
X = Yard supply. Not included in standard delivery from UMOE SCHAT-HARDING AS.



FOUNDATION PLAN:
Material: 52-3

SWL. min.kN	BL. min.kN	TL. min.kN	Item no.	Quan-lity	Description	Material	Art. no.	Remarks	kg.pr. unit
○ 63,8	382,6		15	1	SHACKEL TYPE H SWL 6.5T		0740.00119		
○ 25,0	150,0		14	1	RELEASE HOOK RRH 25		3015.71369		
			13	1	EL.SCHEMA		204902-N73330		
○ 34.4	241		12	1	Foul weather recovery hanging off arr.		NB2060		
			11	4	HEX.HEAD SCREW M30x90	8.8	0202.42309	DIN931	
			10	4	HEX.LOCK NUT M30	8.8	0230.06069	DIN985	
○ 40.2	241		09	1	WIRE ø18 35x7 L=30M	GALV.	0170.20879		
			08	2	BRACKET FOR LASHING		92629		
○ 34.4	206	85.8	07	1	ENDLINK W/WEDGE		93305		
X			06	1	WINCH FOUNDATION		NB3168		
			05	1	LIMIT SWITCH ARR.		72964		
			04	1	REMOTE CONTROL ARR.		N73265		
			03	1	LASHING ARR.		NB2049		
○ 34.4	155	75.6	02	1	DAVIT ASSEMBLY		64659		
○ 51	230	76.5	01	1	WINCH W 50 RS		NB3412		

Appr. by
Check. by
Date, sign.
Mark
Rev.
Date 10.11.05 | Name JP | Projection
Checked HR | Approved EH | Scale 1:20 A1
Reference NB2916 | Calculation

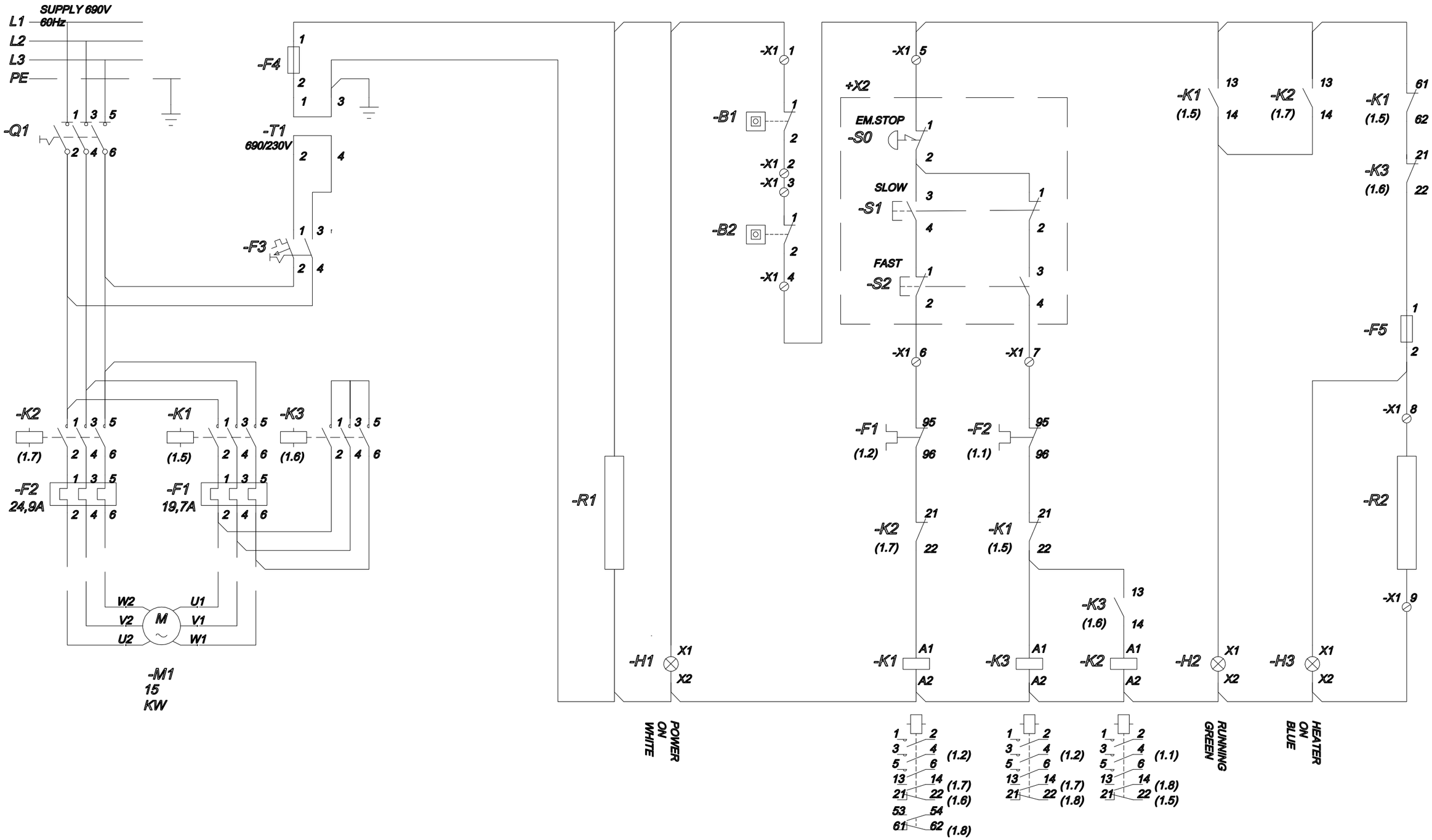
SCHAT HARDING

SA3,5/W50RS/OCEAN SPRINT 5,6
GENERAL ARRANGEMENT
Halter Marine Inc.

Replacement for : | Replaced by :

NB3413

O.No 204902-2



ITEM	DESCRIPTION	DWG.No
+X1	STARTERPANEL	204902-N83201
+X2	PUSHBUTTONBOX	83102 A

ITEM	DESCRIPTION		LOCATION	
	INDUCT. LIMIT SWITCH TELEMECANIQUE	MECANICAL LIMIT SWITCH STAHL 80701-1-HR311	DAVIT	WINCH
B1	X			X
B2	X		X	

				Original	N73330	Date	01.02.2006
				Repl. for.		Perf. by	WW
				Repl. of		Appr. by	MB
Ver.	Revision	Date	Sign.	Ver.		Norm	NEK400

SCHAT HARDING

W50
RS
EL.DIAGRAM
HALTER MARINE
PROJ.No, 2049022

YIT BUILDING SYSTEMS AS
6504 KRISTIANSUND
Phone: 715 65 400 Fax: 715 65 420

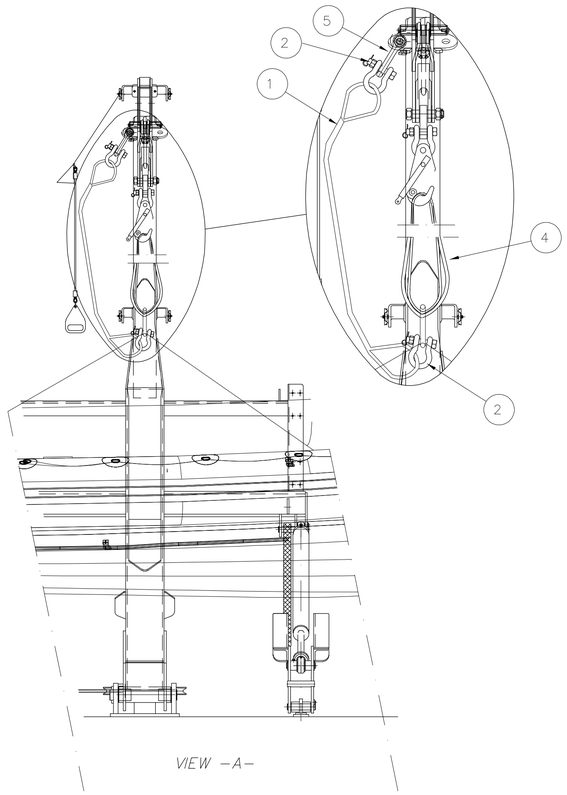
Project no. P1651.00082

Scale 1:1 A3

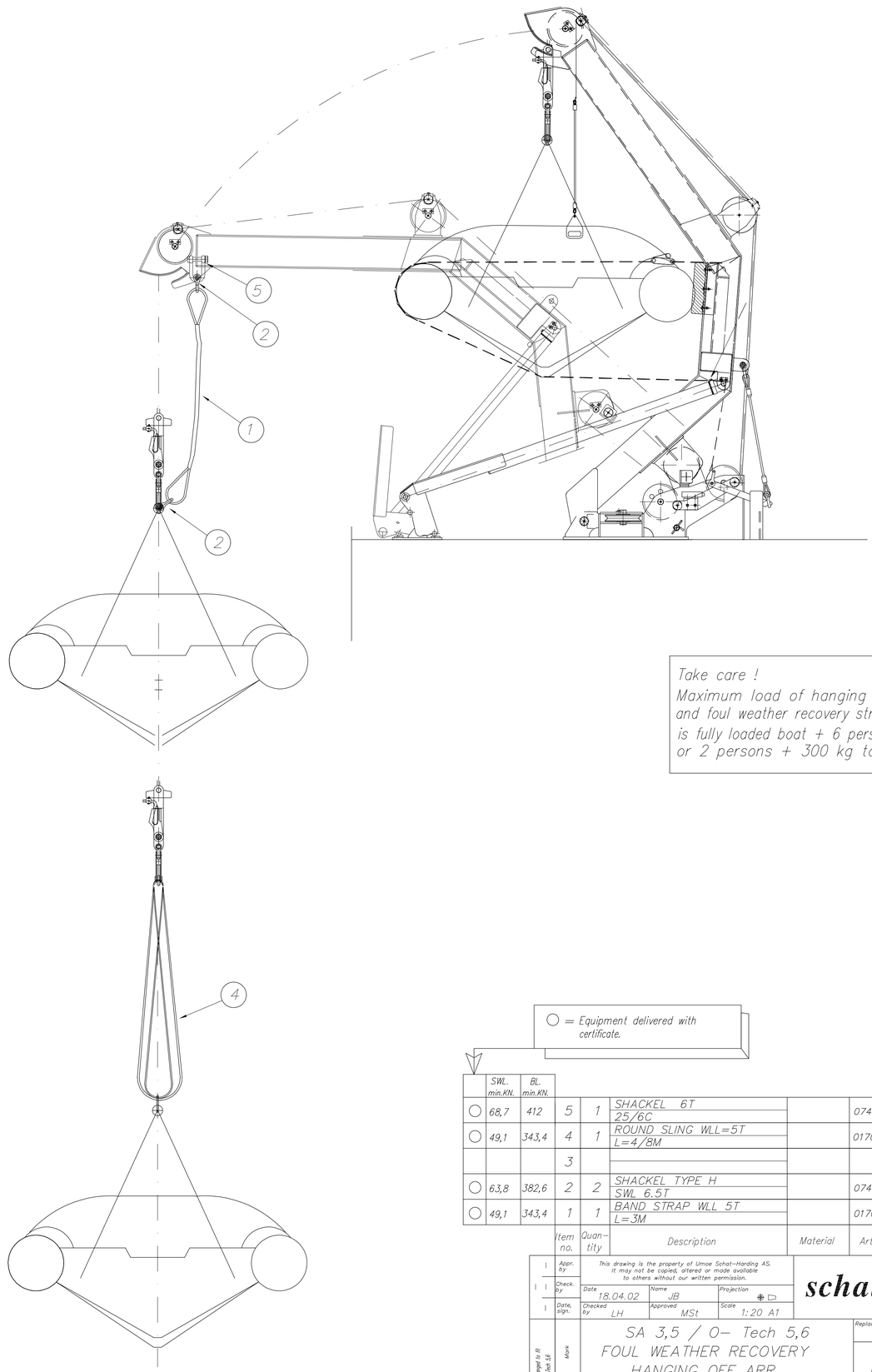
Drawing no. 204902-N73330

Page 1

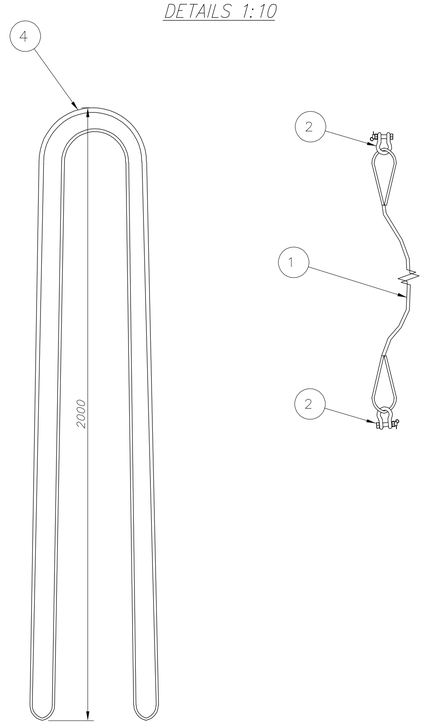
N.pg.



VIEW –A–



DETAILS 1:10



Take care !
Maximum load of hanging off strap
and foul weather recovery strap,
is fully loaded boat + 6 persons,
or 2 persons + 300 kg tools.

○ = Equipment delivered with certificate.

	SWL. min.KN.	BL. min.KN.	Item no.	Quan-tity	Description	Material	Art. no.	Remarks	kg.pr. unit
○	68,7	412	5	1	SHACKEL 6T 25/6C		0740.01129	FRAM ALLOY	
○	49,1	343,4	4	1	ROUND SLING WLL=5T L=4/8M		0170.50222		
			3						
○	63,8	382,6	2	2	SHACKEL TYPE H SWL 6.5T		0740.00119		
○	49,1	343,4	1	1	BAND STRAP WLL 5T L=3M		0170.49169		

Appr. by
Check. by
Date, sign.

Date 18.04.02 | Name JB | Projection
Checked by LH | Approved MSt | Scale 1:20 A1

schat-harding

Changed to fit D-Net S.P.
Mark
Rev.

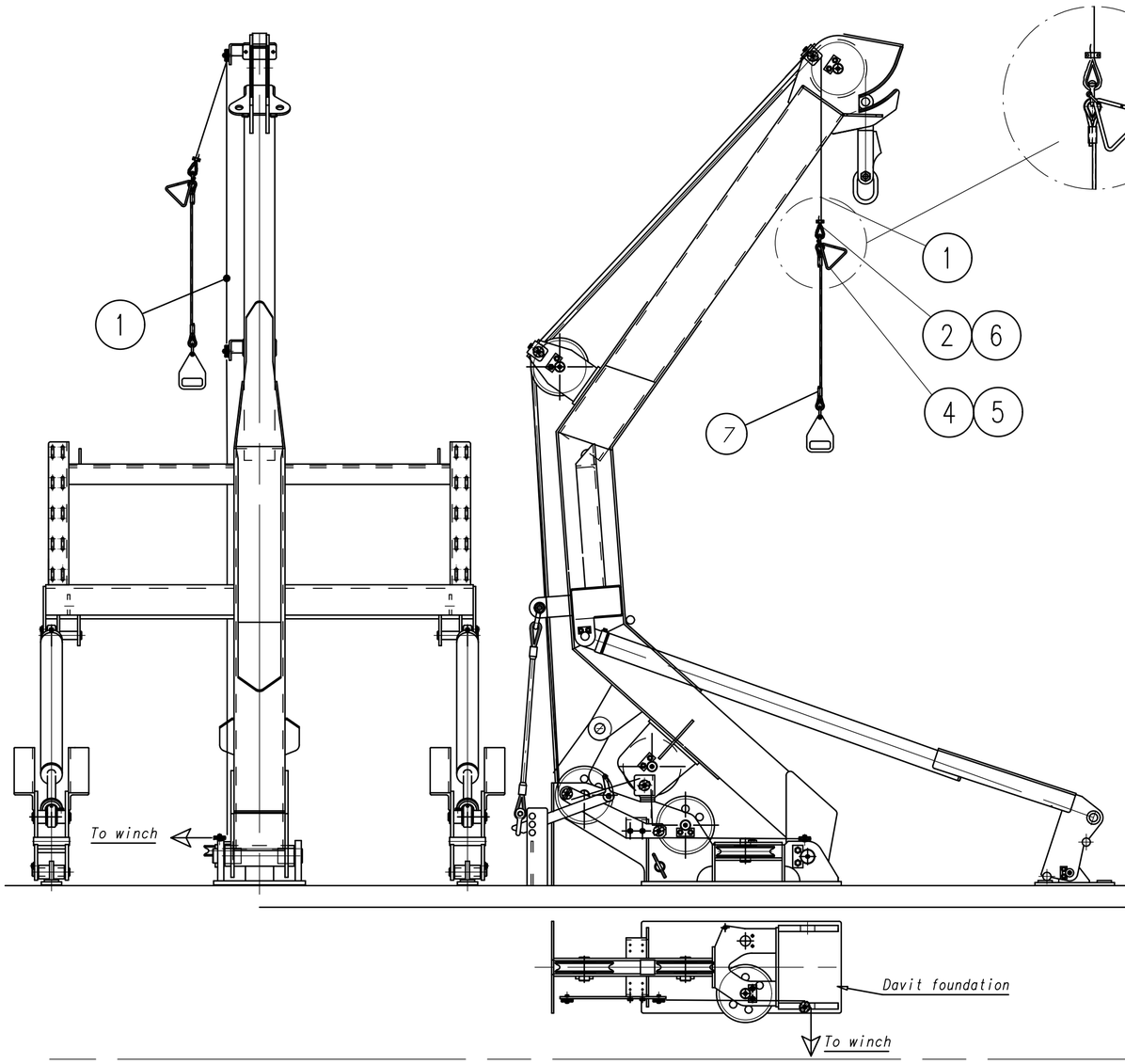
SA 3,5 / 0– Tech 5,6
FOUL WEATHER RECOVERY
HANGING OFF ARR.

Reference N65346A | Calculation

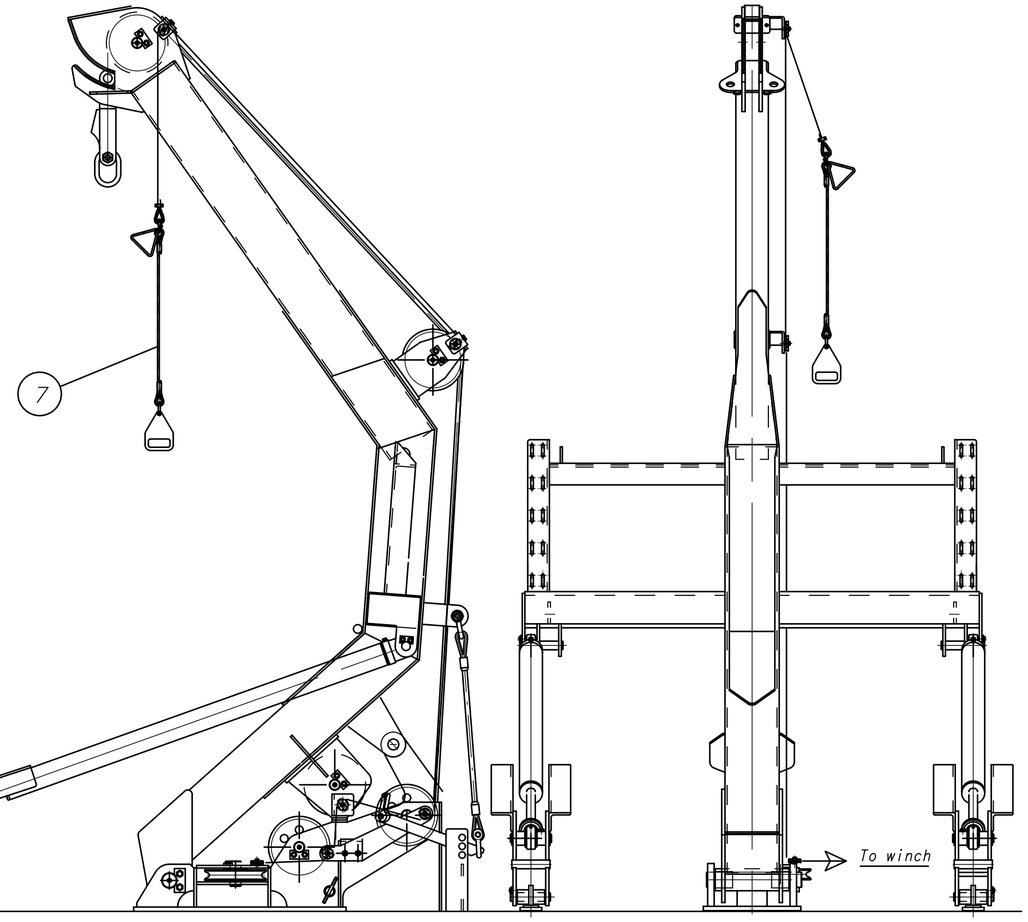
Replacement for: | Replaced by:

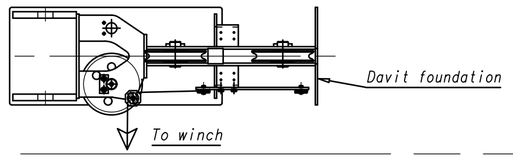
NB2060

Typical PORT. side installation.

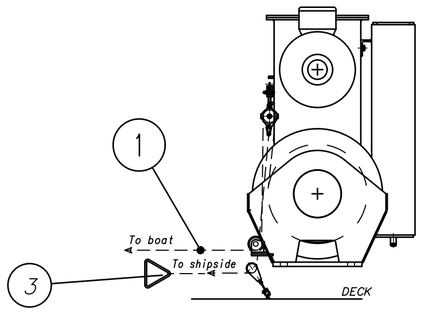


Typical ST.B. side installation.





Remote control to shipside (Principal sketch)



Item no.	Quantity	Description	Material	Art. no.	Remarks	kg.pr. unit
7	1	EXTRA REMOTECONTROL WIRE		N93801		
6	1	THIMBLE 3mm Kause 3mm	St.Steel	0740.21229		
5	1	SCHACKLE 1/4" D-TYPE Sjakkel 1/4" D-type	St.Steel	0740.02349		
4	1	HANDGRIP Handtak		91706		
3	1	REMOTE CONTROL Fjernkontroll		Incl.on winch	Drw. 65046	
2	2	WIREROPE CLAMP 3,2 mm Wire klemme	St.Steel	0740.06089		
1	1	WIRE ROPE Ø3,0 L=60m Wire	St.Steel	0170.20039		

Rev.	Mark	Appr. by	Check. by	Date, sign.
E	NEW EDITION OF DAVIT WITH SAFETYBOLT	LH	JUH	22.03.01
D	Pos.4 changed, Pos.7 altered	PF	JUB	26.10.00
C	Pos. 7 added. Lenght pos.1	RVS	JUB	30.03.00
B	Changed handgrip	JB	JUB	18.11.99
A	Lenght added pos. 1	JB	PMS	03.03.99

Date 04.07.97 | Name LH | Projection

Checked HKE | Approved PF | Scale 1:20

schat-harding

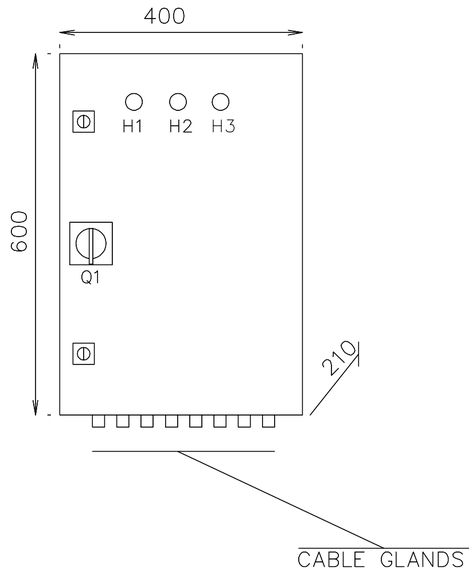
SA 3,5/3,5(II)/W-WINCH REMOTE CONTROL Fjernkontroll

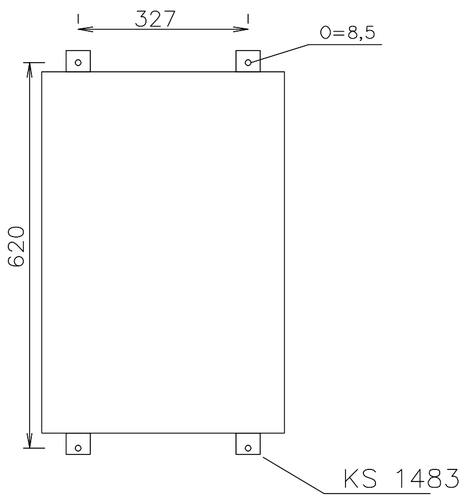
Reference HC-8299 | Calculation

Replacement for : | Replaced by :

N73265 E

ENCLOSURE





COMPONENT LISTS

QNT	ID. NO.	DESCRIPTION	MANUFACTURER	TYPE
1		ENCLOSURE	RITTAL	KS 1446 + KS 1483
1	F1	THERMAL RELAY	TELEMECANIQUE	LRD22
1	F2	THERMAL RELAY	TELEMECANIQUE	LRD32
2	F3	MCB 690V	ABB	S222K2
1	F4	FUSE	SIBA	5x20 2A
1	F5	FUSES	SIBA	5x20 1A
2	F4–F5	FUSEHOLDER	PHOENIX	UK5–HESI
1	H1	SIGNALLAMP GREEN	TELEMECANIQUE	XB4–BVM3
1	H2	SIGNALLAMP ORANGE	TELEMECANIQUE	XB4–BVM6
1	H3	SIGNALLAMP WHITE	TELEMECANIQUE	XB4–BVM1
1	K1	CONTACTOR	TELEMECANIQUE	LC1D32P7 + LAD11
1	K2	CONTACTOR	TELEMECANIQUE	LC1D38P7 + LAD11
1	K3	CONTACTOR	TELEMECANIQUE	LC1D38P7
1	Q1	ISOLATING SWITCH	ABB	OT63 E3
1	R1	HEATER	ØGLÆND	HGK 010 10W
1	T1	TRANSFORMER	OTF	TS–96/46 600/230VAC 150VA
9	X1	TERMINALS	PHOENIX	UK 2,5 N
2		CABLE GLANDS	SCHLEMMER–TEC	PG 13,5 POLYAMID
3		CABLE GLANDS	SCHLEMMER–TEC	PG 16 POLYAMID
3		CABLE GLANDS	SCHLEMMER–TEC	PG 29 POLYAMID

Appr. by			
Check. by	Date 09.09.2004	Name WW	Projection
Date, sign.	Checked MB	Approved SMH	Scale %

SCHAT HARDING

Mark

W50RS
STARTERPANEL
HALTER MARINE H–1953

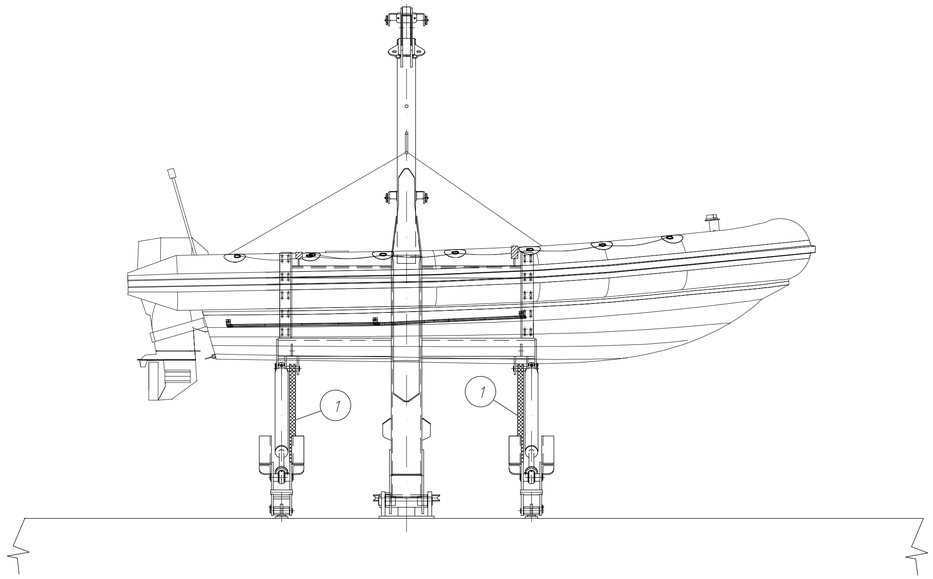
Replacement for :

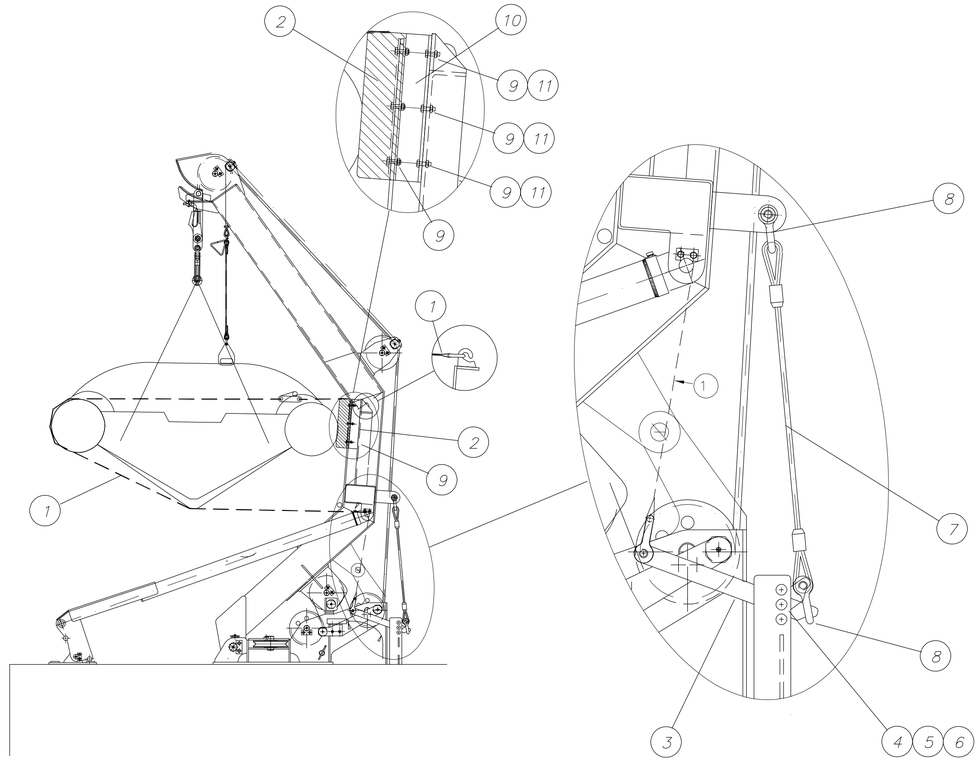
Replaced by :

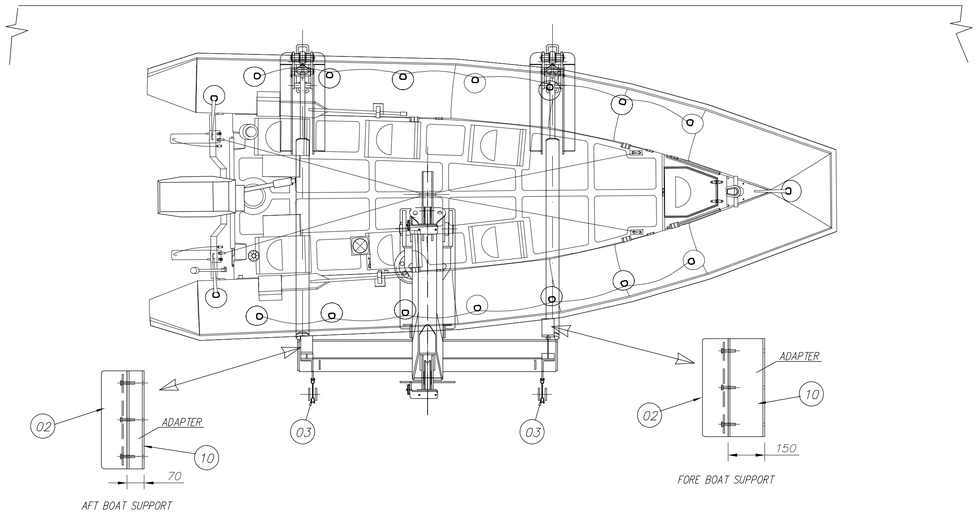
204902–N83201

Rev. | Reference | Calculation

YIT BUILDING SYSTEMS AS
+47 71 56 54 00







Detail: pos. 1

Lenght to be adjusted.

Item no.	Quantity	Description	Material	Art. no.	Remarks	kg.pr. unit
11	6	HEX.SCREW M10x30	A4	0201.08609	DIN933	
10	1	ADAPTER FOR BOAT SUPPORT		NC0666		
9	12	HEX. LOCK NUT M10	GALV.	0230.05949	DIN985	
8	6	SHACKLE "H" (SWL=3,25T)		0740.00879		
7	2	STRAP (Galv. 6x24+7FC) ø14 L=970 SWL=1,46T	Galv.	0170.50509		
6	2	HEX. LOCK NUT M30	8,8	0230.06069	DIN985	
5	2	HEX.SCREW M30x90	8,8	0202.42309	DIN931	
4	4	WASHER M30	A4	0240.05909	DIN125	
3	2	LEVER ARM		3140.04002	82707	
2	2	BOAT SOPPORT (FENDERING)		N93540		
1	2	LASHING GEAR B=50 L=500(T) + 9500(K)		0170.50309		

Appr. by | Check. by | Date, sign.

Date 02.04.02 | Name JB | Projection

Checked JP | Approved MSt | Scale 1:25

schat-harding

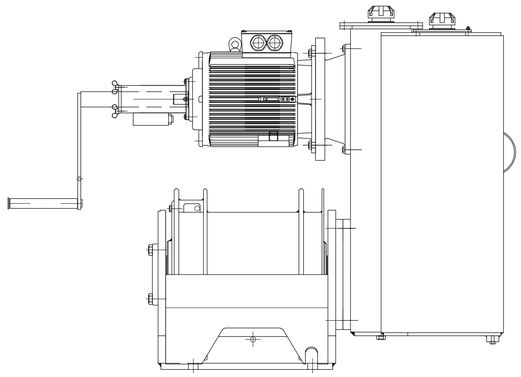
Adapter for fender added | Mark | Rev.

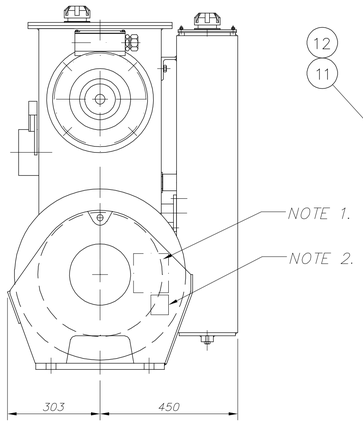
LASHING ARRANGEMENT SA 3,5 / O-Tech 5,6 Halter Marine Inc.

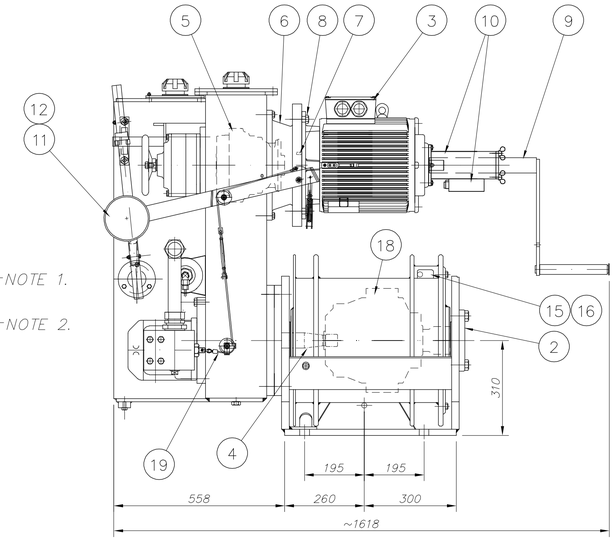
Reference N65196 C | Calculation

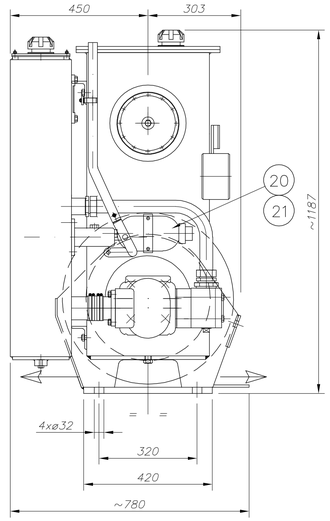
Replacement for : | Replaced by :

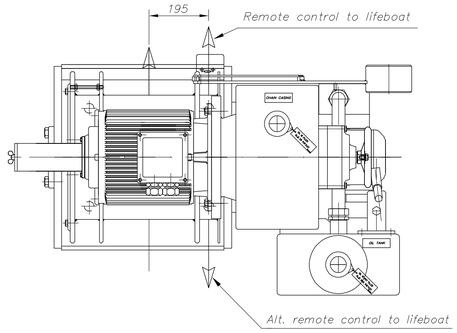
NB2049

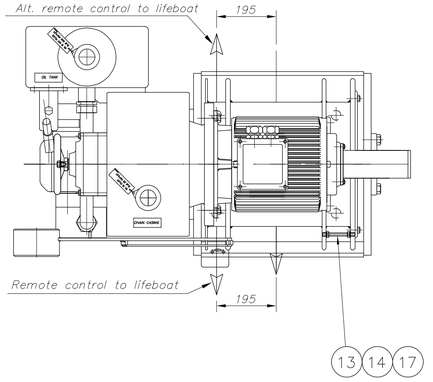












Item no.	Quan-tity	Description	Material	Art. no.	Remarks	kg.pr. unit
21	1	Tube reduser on Accumulator		0371.11479		
20	1	Accumulator		0370.57229		
19	1	Wire w/2 thimbles ø3 L=270		3200.10529		
18	1	Planetary gearbox		2020.30109		
17	2	Washer M10	A4	0240.05709	DIN 125	
16	1	Wedge f/ wirelock Ø18–20		N93935		
15	1	Wire rope clamp 18/20mm	Galv.	0740.03099	DIN 741	
14	2	Hex.nut M10	A4	0230.00609	DIN 934	
13	1	Threaded rod M10x107	A4	0210.87229	DIN 975	
12	1	Remote control		65046		
11	1	Brake arm assembly		83123		
10	1	Limit Switch Arr.		N83757		
9	1	Hand Crank		2016.05035		
8	4	Hex.head screw M16X45	8.8	0202.18609	DIN 933	
7	1	Distance ring See pos.46. assembly drw.		93320		
6	1	Adapter for el. motor		64922		
5	1	Planetary gearbox		2020.30239		
4	1	Main shaft		73207		
3	1	El. motor 7BA 160 L21		0464.10889	600V/60Hz	
2	1	Drum unit		64965		
1	1	Winch assembly		N65425		

NOTE 1.
Placing Product test plate Winch:
holes to be drilled ø3,2 mm 10mm deep.
and to be fastened with
ø3,2mm x 9,5mm St.less st. pop nails.

NOTE 2.
Placing : plate CE– mark.

TAG INFO RESCUE WINCH:

Job Number: _ _ _ _ _ _ _ _ _ _ M283
Item Number: _ _ _ _ _ _ _ _ _ _ M283–583
Model Number: _ _ _ _ _ _ _ _ _ _ W 50 RS
Serial Number: _ _ _ _ _ _ _ _ _ _ xxxxxxxxx
Purchase Order Line Item Number: _ _ _ _ 1
Purchase Order Number: _ _ _ _ _ _ _ _ VM16357
Vendor Name: _ _ _ _ _ _ _ _ _ _ Umoe Schat–Harding

Appr. by			
Check. by			
Date, sign.	Date 10.11.05	Name JP	Projection
	Checked HR	Approved EH	Scale 1:10 A1

SCHAT HARDING

Mark

W50RS
OUTLINE DRAWING
Halter Marine Inc.

Replacement for :
Replaced by :

NB3412

Rev.

Reference NB2915
Calculation

O.No 204902–2

MANUFACTURING RECORD BOOK

SRR 360/3,65/21 – SA3,5

CLIENT	**HALTER MARINE, INC.**
PURCHASE ORDER NO	**VM16357**
PROJECT NAME	**Repeat of 1953**
SCHAT-HARDING REFERENCE	**2049022**

I N D E X

2. **Quality Plan (I & T Plan)**

Davit

Winch

3. **Packinglist**

4. **Manuals**

- Installation, Operation and Maintenance Manual
- Inspection-, Maintenance- and Repair Manual

5. **Name Plate Data**

Davit

Winch

6. **Relevant Drawings**

NB3411 – General Arrangement SRR360/3,65/21

N94099 – Foundation drawing

N83120 – Winch 08-02 outline drawing

N94100 – Release Hook ARH. 23

NB3413 – General Arrangement SA3,5

204902-N73330 – El. Schema

NB2060 – Hanging off arrangement

N73265 – Remote Control

204902-N83201 - Starterpanel

NB2049 – Lashing Arrangement

NB3412 – Winch W50RS outline drawing

U. S. Department of Homeland Security
United States Coast Guard
Certificate of Approval

Coast Guard Approval Number: 160.163/1/0

Expires: 08 July 2009

LIFERAFT LAUNCHING APPLIANCE (SOLAS)

UMOE SCHAT-HARDING AS
N-5470 ROSENDAL
NORWAY

Type SRR360/3.65/21 slewing liferaft launching appliance with type 08-02 winch; maximum safe working load 2145 kg (4720 lb) on a single fall.

Evaluated, tested and found to be in compliance with the IMO LSA Code (Res. MSC.48(66)), section 6.1.5, and IMO Res. A.689(17) (as amended through Res. MSC.81(70)), sections 1/8.1.1 through 8.1.7. Suitable for use with liferafts of up to 25 persons capacity.

Identifying Data: General arrangement dwg. N65466D, assembly dwg.. N65465, davit arm dwg. N65617B, slewing gear dwg. N65434B, winch 08-02 outline dwg. N83120, and associated detail drawings as referenced thereon.

Approval valid only for equipment produced at the above location, and at Umoe Schat-Harding spol. s.r.o., Ouvalava 554, 274 01 Slaný, Czech Republic.

Supersedes previous certificate dated 26 June 2000 to reflect change in approval holder (formerly Umoe Schat-Harding Inc., New Iberia, LA) and manufacturing locations, and to update identifying data.

*** END ***

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 8th DAY OF JULY 2004, AT WASHINGTON D.C.

J. G. LANTZ
Chief, Lifesaving and Fire Safety Standards Division
BY DIRECTION OF THE COMMANDANT, U.S.C.G.

Order no.: 2049022

SCHAT HARDING

WORKSHOP CERTIFICATE FOR DAVIT

Davit type:	SRR 360/3,65/21	Serial no.:	1221 / 06
S.W.L.:	21,00 kN/arm	TL = 2,2 x S.W.L.:	46,20 kN/arm

Mark on davit:

Type:	SRR 360/3,65/21
Order no.:	2049022
Serial no:	1221 / 06
Certificate no.:	
Type Appr.No.:	USCG:160.163/1/0
SWL:	21,00 kN/arm.
TL:	46,20 kN/arm.
Date/year:	28.02.06
Insp:	

Client/Yard: Halter Marine INC.

Address:

Building no.: N/A

1. This Davit is built in accordance with Chapter III of the International Convention of Safety of Life at Sea – SOLAS 1974, as amended.

2. The Davit is tested in accordance with IMO Resolution MSC81 (70), Part 2, Section 6 and to Umoe Schat-Harding AS`s Quality Management System.

3. Onboard tests are to be carried out on the ship or platform in accordance with IMO Resolution MSC. 81(70), Part 2.

Test to be witnessed by an exclusive surveyor to USCG.

Slany, date:
Umoe Schat-Harding
QC 28.02.2006

Manufacturer S-H VV Vaclav Vagner QC Inspector

LT Heather Mattern
Surveyor to USCG

Umoe Schat-Harding spol. s r.o.
Member of the Umoe Group

Netovická 353, P. O. BOX 115
274 01 Slaný, Czech Republic
E-mail: umoe@slany.cz
Tel.: +420 312 515 100 Fax: +420 312 522 598

Order no.: 2049022

SCHAT HARDING

WORKSHOP CERTIFICATE FOR DAVIT

Davit type:	SRR 360/3,65/21	Serial no.:	1220 / 06
S.W.L.:	21,00 kN/arm	TL = 2,2 x S.W.L.:	46,20 kN/arm

Mark on davit:

Type:	SRR 360/3,65/21
Order no.:	2049022
Serial no:	1220 / 06
Certificate no.:	
Type Appr.No.:	USCG:160.163/1/0
SWL:	21,00 kN/arm.
TL:	46,20 kN/arm.
Date/year:	28.02.06
Insp:	

Client/Yard: Halter Marine INC.

Address:

Building no.: N/A

1. This Davit is built in accordance with Chapter III of the International Convention of Safety of Life at Sea – SOLAS 1974, as amended.

2. The Davit is tested in accordance with IMO Resolution MSC81 (70), Part 2, Section 6 and to Umoe Schat-Harding AS`s Quality Management System.

3. Onboard tests are to be carried out on the ship or platform in accordance with IMO Resolution MSC. 81(70), Part 2.

Test to be witnessed by an exclusive surveyor to USCG.

Slany, date:

Umoe Schat-Harding
QC 28.02.2006

Manufacturer

S-H VV

Vaclav Vagner
QC Inspector

LT Heather Mattern
Surveyor to USCG

Umoe Schat-Harding spol. s r.o.
Member of the Umoe Group

Netovická 353, P. O. BOX 115
274 01 Slaný, Czech Republic
E-mail: umoe@slany.cz
Tel.: +420 312 515 100 Fax: +420 312 522 598

Dexim, družstvo
Balasova 1251, 27401 Slaný
tel 312591576, 312591066, fax 312591022

Cerificate of conformity

Umoe Schat-Harding, s.r.o. Ouvalova 551 274 01 Slaný Czech republic

Certificate no	**06_0012**
Date	**23/1/2006**
Order no	**NOBG 060 030**

Item no./ číslo artiklu:	0170.20399
Serial no./ výrobní číslo:	60109 - 60110
Quantity/množství :	2 off
Description/ popis:	Single leg wire rope sling , thimbe eye one end, other end plain, dia. 12 mm, length 40 m
Nominal diameter/ Jmenovitý průměr:	12,0 mm
Actual diameter/ skutečný průměr:	12,41 mm
Length/ délka:	40 m
Construction, surface treatment/ konstrukce, povrchová úprava:	28 x 7 , NOTOR HP, galvanized, non - rotating
Minimu breaking load/ zaručená únosnost :	147 kN
Test load/ zkušební zatížení:	148,318 kN
Pull test no./ číslo tahové zkoušky:	009_24_1
Factor of safety/ koeficient bezpečnosti:	6 : 1
Safety working load/ bezpečná pracovní zátěž:	2,5 t
Standard/ norma:	NOTOR HP
Supplier's certificate no./ číslo certifikátu dodavatele:	85446
No. of manufacturer/ číslo výrobce:	6377/02
Thimble/očnice:	B DIN 6899 dia. 12 mm
Ferrule/ objímka:	DIN 3093 form A

Signature/podpis : Stanislav Trsek

UMOE SCHAT HARDING s.r.o. Slaný
PŘÍJEM ZBOŽÍ 3
DATUM: 26.1.06
PODPIS:

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041 FAX: 312 510 040
DIČ CZ00550370

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312510041, 312510042, fax 312510040

Certificate of conformity

We certifie that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0478**
Order number	**NOBG 050 798**
Date	**26/10/2005**

Item no	Catalogue no or description of gear	Quantity	Working load limit (WLL)
0740.00129	Green pin Standard shackles G-4163, size 25 x 28, bow type with nut and cotter pin, safety factor 6 : 1, WLL 8,5 t Manufacturer´s certificate no. M 162 310 Tracebility code Bs 6 N CE/bow, Bs 6 M/pin	5 pcs	8,5 t

Signature : S. Trsek

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041, FAX: 312 510 041
DIČ CZ00550670

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 2.11.
PODPIS:

SCHAT HARDING

CERTIFICATE OF INSPECTION AND TESTS A.R.H. 23

EC Type Approval MED0150093

United States Coast Guard Type Approval 160.170/2/2

Transport Canada Type Approval T.C.243-008-005

Arrangement drawing		Certificate/Serial number
3-A-158		19131

The hook has been designed to meet chapter III of the 1983 amendments to SOLAS '74, resolution MSC.6(48), adopted 17 June 1983, and has been tested in conformity with IMO Resolution MSC. 81(70) adopted 11 December 1998.

On the premises of Umoe Schat-Harding B.V. the **AUTOMATIC RELEASE HOOK** has been subjected to the following tests.

IN-HOUSE INSPECTION

MSC.81(70) part 2.
6.2.1 A non destructive test (X-ray) on the cast steel hook is established.

MSC.81(70) part 1
Actuating force: required force to set for automatic release, is measured and between 150-250 N.

Automatic release: the hook releases a load (F) < 30 kg > = 9 kg. when activated and gradually unloaded.

Non-accidental release: it is not possible to release a mass of >=55 kg from the hook, either by heavy pull on tripline or by agitating the test load.

Manual release force: it is possible to release a mass of 175 kg with normal effort by means of the inserted hand grip.

Securing force: less than 120 N.

The hook has been tested with a ring of Ø 27 mm.

LOAD TEST **MSC.81(70) part 2 6.2.2.**

Safe Working Load : 23 kN

Static load test : 57.5 kN

Witnessed by : Lloyd's Register EMEA EC. No. 0038

Surveyor's name : Mr. P.G de Vries

Remarks:
Hook is initially intended for S-H stock

schat-harding b.v. Representative	**Surveyor's stamp & signature**
SCHAT HARDING	Lloyd's Register EMEA P.G. de Vries Amsterdam Office Lloyd's Register
Date: 27-09-2005	Date: 10-10-2005

UMOE SCHAT HARDING s.r.o. Glaný
PŘÍJEM ZBOŽÍ 2
DATUM: 31.10.05
PODPIS:

SCHAT HARDING

DECLARATION OF CONFORMITY

ISSUED IN ACCORDANCE WITH THE

MARINE EQUIPMENT DIRECTIVE 96/98/EC, MODULE B/F

This is to certify that in compliance with the
Council Directive 96/98/EC of 20 December 1996 on marine equipment, as amended
(Currently by Commission Directive 98/85/EC of 11 November 1998, Commission Directive 2001/53/EC of 10 July 2001, Commission Directive 2002/75/EC of 2 September 2002 and European Parliament and Council Directive 2002/84/EC of 5 November 2002).

Unoe Schat-Harding B.V.
St. Laurensdreef 37 – 3565AJ Utrecht
Netherlands

declares that the product detailed below conforms to type as described in the
EC Type Examination Certificate N°

MED 0150093

Issued by: Lloyd's Register Verification, London.
A name plate with conformity mark has been affixed to the product

Product Description	:	**Automatic Off Load Raft Release Hook**
Product Type	:	**ARH23**
Serial Number	:	**19131**

♦♦♦

This equipment is built according to Chapter III of the International Convention for the Safety of Life at Sea (SOLAS) 1974, as amended up to and including the LSA Code and tested in accordance with IMO Res. 81(70), part 2	
Static load test Reg. 6.2.2	**2,5 x Safe Working Load**
Operational test Reg. 6.2.3	**Each release hook is submitted to an operational test with a mass equivalent to the safe working load being applied. The release arrangement is demonstrated and checked to ensure that the automatic release hook will not release while the load is still applied.**

♦♦♦

SCHAT HARDING

stamp

Test date : 10-10-2005

Signature :

Name : J. Klaverstijn

Title : Technical manager

SCHAT HARDING

CERTIFICATE OF INSPECTION AND TESTS A.R.H. 23

EC Type Approval MED0150093

United States Coast Guard Type Approval 160.170/2/2

Transport Canada Type Approval T.C.243-008-005

Arrangement drawing		Certificate/Serial number
3-A-158		19333

The hook has been designed to meet chapter III of the 1983 amendments to SOLAS '74, resolution MSC.6(48), adopted 17 June 1983, and has been tested in conformity with IMO Resolution MSC. 81(70) adopted 11 December 1998.

On the premises of Umoe Schat-Harding B.V. the **AUTOMATIC RELEASE HOOK** has been subjected to the following tests.

IN-HOUSE INSPECTION

MSC.81(70) part 2.
6.2.94 A non destructive test (X-ray) on the cast steel hook is established.

MSC.81(70) part 1
Actuating force: required force to set for automatic release, is measured and between 150-250 N.

Automatic release: the hook releases a load (F) < 30 kg > = 9 kg. when activated and gradually unloaded.

Non-accidental release: it is not possible to release a mass of >=55 kg from the hook, either by heavy pull on tripline or by agitating the test load.

Manual release force: it is possible to release a mass of 175 kg with normal effort by means of the inserted hand grip.

Securing force: less than 120 N.

The hook has been tested with a ring of Ø 27 mm.

LOAD TEST **MSC.81(70) part 2 6.2.2.**

Safe Working Load : **23** kN

Static load test : **57.5** kN

Witnessed by : **Lloyd's Register EMEA EC. No. 0038**

Surveyor's name : **Mr. P.G de Vries**

Remarks:
Hook is initially intended for S-H stock

UMOE SCHAT HARDING s.r.o. Slaný
PŘÍJEM ZBOŽÍ 3
DATUM: 9.1.06
PODPIS:

schat-harding b.v. Representative	**Surveyor's stamp & signature**
SCHAT HARDING	Lloyd's Register Verification Limited Amsterdam Office — Lloyd's Register
Date: 18-11-2005	Date: 28-11-2005

SCHAT HARDING

DECLARATION OF CONFORMITY

ISSUED IN ACCORDANCE WITH THE

MARINE EQUIPMENT DIRECTIVE 96/98/EC, MODULE B/F

This is to certify that in compliance with the
Council Directive 96/98/EC of 20 December 1996 on marine equipment, as amended
(Currently by Commission Directive 98/85/EC of 11 November 1998, Commission Directive 2001/53/EC of 10 July 2001, Commission Directive 2002/75/EC of 2 September 2002 and European Parliament and Council Directive 2002/84/EC of 5 November 2002).

Unroe Schat-Harding B.V.
St. Laurensdreef 37 – 3565AJ Utrecht
Netherlands

declares that the product detailed below conforms to type as described in the
EC Type Examination Certificate N°

MED 0150093

Issued by: Lloyd's Register Verification, London.
A name plate with conformity mark has been affixed to the product

Product Description	:	**Automatic Off Load Raft Release Hook**
Product Type	:	**ARH23**
Serial Number	:	**19251 up to and including 19370**

♦♦♦

This equipment is built according to Chapter III of the International Convention for the Safety of Life at Sea (SOLAS) 1974, as amended up to and including the LSA Code and tested in accordance with IMO Res. 81(70), part 2	
Static load test Reg. 6.2.2	**2,5 x Safe Working Load**
Operational test Reg. 6.2.3	**Each release hook is submitted to an operational test with a mass equivalent to the safe working load being applied. The release arrangement is demonstrated and checked to ensure that the automatic release hook will not release while the load is still applied.**

♦♦♦

SCHAT HARDING

stamp

Test date : 28-11-2005

Signature :

Name : J. Klaverstijn

Title : Technical manager

U. S. Department of Homeland Security
United States Coast Guard
Certificate of Approval

Coast Guard Approval Number: 160.163/1/0

Expires: 08 July 2009

LIFERAFT LAUNCHING APPLIANCE (SOLAS)

UMOE SCHAT-HARDING AS
N-5470 ROSENDAL
NORWAY

Type SRR360/3.65/21 slewing liferaft launching appliance with type 08-02 winch; maximum safe working load 2145 kg (4720 lb) on a single fall.

Evaluated, tested and found to be in compliance with the IMO LSA Code (Res. MSC.48(66)), section 6.1.5, and IMO Res. A.689(17) (as amended through Res. MSC.81(70)), sections 1/8.1.1 through 8.1.7. Suitable for use with liferafts of up to 25 persons capacity.

Identifying Data: General arrangement dwg. N65466D, assembly dwg.. N65465, davit arm dwg. N65617B, slewing gear dwg. N65434B, winch 08-02 outline dwg. N83120, and associated detail drawings as referenced thereon.

Approval valid only for equipment produced at the above location, and at Umoe Schat-Harding spol. s.r.o., Ouvalava 554, 274 01 Slaný, Czech Republic.

Supersedes previous certificate dated 26 June 2000 to reflect change in approval holder (formerly Umoe Schat-Harding Inc., New Iberia, LA) and manufacturing locations, and to update identifying data.

*** END ***

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 8th DAY OF JULY 2004, AT WASHINGTON D.C.

J. G. LANTZ
Chief, Lifesaving and Fire Safety Standards Division
BY DIRECTION OF THE COMMANDANT, U.S.C.G.

Order no.: 2049022

SCHAT HARDING

WORKSHOP CERTIFICATE FOR WINCH

Winch type:	08-02 V	Serial no.:	1409 / 06
S.W.M.:	4,67 kNm	TM = 1,5 x S.W.M.:	7,00 kNm

Mark on Winch:

Type:	08-02 V
Order no.:	2049022
Serial no:	1409 / 06
Certificate no.:	
Type Appr.No.:	USCG: 160.163/1/0
TM:	7,00 kNm.
SWM:	4,67 kNm.
Date/year:	23.02.06
Insp:	

Client/Yard: Halter Marine INC.

Address:

Building no.: N/A

1. This Winch is built in accordance with Chapter III of the International Convention of Safety of Life at Sea – SOLAS 1974, as amended.
2. The Winch is tested in accordance with IMO Resolution MSC81 (70), Part 2, Section 6 and to Umoe Schat-Harding AS's Quality Management System.
3. Onboard tests are to be carried out on the ship or platform in accordance with IMO Resolution MSC. 81(70), Part 2.

Test to be witnessed by an exclusive surveyor to USCG.

Slany, date:
Umoe Schat-Harding
QC 23.02.2006

Manufacturer S-H VV Vaclav Vagner QC Inspector

LT Brian H. Province
Surveyor to USCG

Umoe Schat-Harding spol. s r.o.
Member of the Umoe Group

Netovická 353, P. O. BOX 115
274 01 Slaný, Czech Republic
E-mail: umoe@slany.cz
Tel.: +420 312 515 100 Fax: +420 312 522 598

Order no.: 2049022

SCHAT HARDING

WORKSHOP CERTIFICATE FOR WINCH

Winch type:	08-02 H	Serial no.:	1410 / 06
S.W.M.:	4,67 kNm	TM = 1,5 x S.W.M.:	7,00 kNm

Mark on Winch:

Type:	08-02 H
Order no.:	2049022
Serial no:	1410 / 06
Certificate no.:	
Type Appr.No.:	USCG: 160.163/1/0
TM:	7,00 kNm.
SWM:	4,67 kNm.
Date/year:	23.02.06
Insp:	

Client/Yard: Halter Marine INC.

Address:

Building no.: N/A

1. This Winch is built in accordance with Chapter III of the International Convention of Safety of Life at Sea – SOLAS 1974, as amended.
2. The Winch is tested in accordance with IMO Resolution MSC81 (70), Part 2, Section 6 and to Umoe Schat-Harding AS`s Quality Management System.
3. Onboard tests are to be carried out on the ship or platform in accordance with IMO Resolution MSC. 81(70), Part 2.

Test to be witnessed by an exclusive surveyor to USCG.

Slany, date:
Umoe Schat-Harding
QC 23.02.2006

Manufacturer S-H VV Vaclav Vagner
QC Inspector

LT Brian H. Province
Surveyor to USCG

Umoe Schat-Harding spol. s r.o.
Member of the Umoe Group

Netovická 353, P. O. BOX 115
274 01 Slaný, Czech Republic
E-mail: umoe@slany.cz
Tel.: +420 312 515 100 Fax: +420 312 522 598

U. S. Department of Homeland Security
United States Coast Guard
Certificate of Approval

Coast Guard Approval Number: 160.132/88/0 Expires: 28 September 2010

LIFEBOAT DAVIT (SOLAS)

UMOE SCHAT-HARDING AS
N-5470 ROSENDAL
NORWAY

Type SA 3.5 or SA 3.5 II rescue boat davit with tension spring assist; maximum safe working load 3500 kg on a single fall.

Evaluated, tested and found to be in compliance with the IMO LSA Code (Res. MSC.48(66)), section 6.1, and IMO Res. A.689(17) (as amended through Res. MSC.81(70)), sections 1/8.1.1 through 8.1.7.

Identifying Data: Davit Assembly dwg. 64659 I, Gen. Arrangement dwgs. N65189 F, N65309 D, N65374 F, N65611 A, and N65696, and Davit Arm dwg. 64611 O (SA 3.5); Davit Assembly dwg. N65186 F, Gen. Arrangement dwgs. N65230 F, and Davit Arm dwg. N65185 D (SA 3.5 II); and associated approved detail drawings as referenced thereon.

Manufacturing location: Umoe Schat-Harding spol. s.r.o., Ouvalava 554, 274 01 Slaný, Czech Republic.

Extends previous certificate dated 28 September 2000, updates identifying data, reflects addition of SA 3.5 II variant, and reflects new manufacturing location.

*** END ***

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 28th DAY OF SEPTEMBER 2005, AT WASHINGTON D.C.

J. G. LANTZ
Chief, Lifesaving and Fire Safety Standards Division
BY DIRECTION OF THE COMMANDANT

Order no.: 2049022

SCHAT HARDING

WORKSHOP CERTIFICATE FOR DAVIT

Davit type:	SA 3,5	Serial no.:	1126 / 06
S.W.L.:	34,34 kN/arm	TL = 2,2 x S.W.L.:	75,54 kN/arm

Mark on davit:

Type:	SA 3,5
Order no.:	2049022
Serial no:	1126 / 06
Certificate no.:	
Type Appr.No.:	USCG:160.132/88/0
SWL:	34,34 kN/arm.
TL:	75,54 kN/armm.
Date/year:	28.02.06
Insp:	

Client/Yard: Halter Marine INC.

Address:

Building no.: N/A

1. This Davit is built in accordance with Chapter III of the International Convention of Safety of Life at Sea – SOLAS 1974, as amended.
2. The Davit is tested in accordance with IMO Resolution MSC81 (70), Part 2, Section 6 and to Umoe Schat-Harding AS`s Quality Management System.
3. Onboard tests are to be carried out on the ship or platform in accordance with IMO Resolution MSC. 81(70), Part 2.

Test to be witnessed by an exclusive surveyor to USCG.

Slany, date:
Umoe Schat-Harding
QC **28.02.2006**

Manufacturer	Vaclav Vagner QC Inspector	LT Heather Mattern Surveyor to USCG

S-H VV

Umoe Schat-Harding spol. s r.o.
Member of the Umoe Group

Netovická 353, P. O. BOX 115
274 01 Slaný, Czech Republic
E-mail: umoe@slany.cz
Tel.: +420 312 515 100 Fax: +420 312 522 598

Dexim, družstvo
Balasova 1251, 27401 Slaný
tel 312591576, 312591066, fax 312591022

Cerificate of conformity

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate no	**06_0009**
Date	**11/11/2006**
Order no	**NOBG 060 052**

Item no./ číslo artiklu:	0170.20879
Serial no./ výrobní číslo:	60165
Description/ popis:	Wire rope 35 x 7, non-rotating, plain ends, tapered
Nominal diameter/ Jmenovitý průměr:	18,0 mm
Actual diameter/ skutečný průměr:	18,510 mm
Length/ délka:	1 x 30 m
Construction, surface treatment/ konstrukce, povrchová úprava:	35 x 7 , non-rotating, galvanized
Lay/ vinutí:	RHOL
Tensile strength/ pevnost v tahu:	1960 N/mm^2
Minimum breaking load/ min mez přetržení:	238 kN
Actual breaking load/ skutečná mez přetržení:	261,35 kN
Pull test no./ číslo tahové zkoušky:	004_10_1
Factor of safety/ koeficient bezpečnosti:	6 : 1
Safety working load/ bezpečná pracovní zátěž:	39,6 kN
Supplier's certificate no./ číslo certifikátu dodavatele:	20032709
No. of manufacturer/ číslo výrobce:	132.390

Signature/podpis : Stanislav Trsek

UMOE SCHAT HARDING s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 15.2.06
PODPIS:

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041 FAX: 312 510 040
DIČ CZ00550370

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312510041, 312510042, fax 312510040

Certificate of conformity

We certifie that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0358**
Order number	**NOBG 050 655**
Date	**20/9/2005**

Item no	Catalogue no or description of gear	Quantity	Working load limit (WLL)
0740.00119	Green pin Standard shackles G-4163, size 22 x 25, bow type with nut and cotter pin Factor of safety 6 : 1, WLL 6,5 t 24 off Tracebility code Bs 6 E CE/pin Bs 6 P CE/bow Manufacturerś certificate no. M 165 980 1 off Tracebility code Bs 6 N CE/ bow Bs 6 D CE/ pin Manufacturerś certificate no. M 164 820	25 off	6,5 t

Signature : S. Trsek

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041, FAX: 312 510 041
DIČ CZ00550370

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 13.10.
PODPIS:

schat-harding

CERTIFICATE OF INSPECTION AND TESTS R.R.H. 25

EC Type MED 0050101

Arrangement drawing	Intended for	Serial number
		R25
8-A-430		242

The hook has been designed to meet chapter III of the 1983 amendments to SOLAS '74, resolution MSC.6(48), adopted 17 June 1983, rules 41.7.6 and 47.3.2, and has been tested in conformity with IMO Resolution A.689(17), adopted 6 November 1991.

The hook is intended to be fitted to the boat fall to fit to a rescue boat's bridle ring.

On the premises of Schat-Harding the **RESCUEBOAT RELEASE HOOK** has been subjected to the following tests.

FUNCTION TEST

Engage/disengage:

A link with 27 mm section, manual, with normal effort.

On-load release:

Release of the link, fully loaded, is possible, by means of the pushing chain system.

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 2.4.04
PODPIS:

LOAD TEST

Safe Working Load: **25** kN

Static load test : **62,5** kN

Witnessed by: Lloyd's Register of Shipping
EC.No. 0038

Surveyor's name: Mr T.J. Henstra

Remarks: Hook is initially intended for S-H stock

schat-harding b.v. Representative	Surveyor's stamp & signature
SCHAT-HARDING umoe	LR GRO 0203022 (TH) Lloyd's Register HAREN/GRONINGEN T.J. Henstra
date: 24-05-2002	Date: 10-06-2002

schat-harding

DECLARATION OF CONFORMITY

issued in accordance with the

MARINE EQUIPMENT DIRECTIVE 96/98/EC

This is to certify that in compliance with the European Council Directive 96/98/EC of 20 December 1996 on marine equipment and Commission Directive 98/85/EC of 11 November 1998 amending Council Directive 96/98 EC on marine equipment:

schat-harding b.v.

Declares that the product, conforms to the type described in the EC Type Examination Certificate, issued by a Notified Body.
A nameplate with conformity mark has been affixed to the product.

Product description	**Rescue Boat Release Hook**
Product Type	**RRH 25**
Serial Numbers(s)	**202 up to and including 251**
EC Type certificate	**MED 0050101**
Modules used*	**B+F**

* Assessment modules as described in the MED 96/98/EC

Tests have been conducted to IMO Resolution: MSC 81 (70) part 2

Regulation No.	Description :	Date of test
6.2.2	Static load test on 2.5 x S.W.L.	24-05-2002

Position : Technical Manager

Name : H. Klaverstijn

S-H stamp

Signed :

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312510041, 312510042, fax 312510040

Certificate of conformity

We certifie that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0638**
Order number	**NOBG 050 995**
Date	**29/12/2005**

Item no	Catalogue no or description of gear	Quantity
0740.02539	Crosby's "New & Improved" Wedge Socket S-421T Wire rope dia. 3/4" Tracebility codes: Basket 182 5X, Pin 1FD (cert. no.05121413)	5 off

Signature: S. Trsek

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 18.1.06
PODPIS:

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041 FAX: 312 510 040
DIČ CZ00550370

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312591576, 312591066, fax 312591022

Certificate of conformity

We certifie that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0617**
Date	**12/12/2005**
Order no	**NOBG 051 016**

Item no	Catalogue no or description of gear	Quantity	Minimum breaking load limit (MBL)
0170.50509	Single leg wire rope sling with thimble eyes both ends, conical aluminium sleeves, nominal diameter 14,0 mms, overall length 0,970 m. WLL 1,46 t Factor of safety 6 : 1 Serial nos. 10601 -10604 Nominal diameter 14,0 mm Tensile strength 1770 Mpa Construction 6 x 24 + 7FC, RHOL, galvanized, dry Wire rope certificate no. 00.02022.116 Aluminium sleeves conical type Talurit T-Konit, diameter 14,0 mms Thimble Heavy duty stub end Size 14 mm Galvanized , G-6120	4 off	9,9 t

Signature: S. Trsek

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041 FAX: 312 510 040
- DIČ CZ00550370

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 3
DATUM: 30.12.
PODPIS:

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312510041, 312510042, fax 312510040

Certificate of conformity

We certifie that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0651**
Order number	**NOBC 050 654**
Date	**29/12/2005**

Item no	Catalogue no or description of gear	Quantity	Working load limit (WLL)
0740.00879	Green pin Standard shackles G-4163, size 16 x 19, bow type with nut and cotter pin Factor of safety 6 : 1 Tracebility codes: Bow - Bs 6 N CE Pin - Bs 6 M Manufacturer´s certificate no. M 161 390	20 pcs	3,25 t

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 12.1.06
PODPIS:

Signature: S. Trsek

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041 FAX: 312 510 040
DIČ CZ00550370

FOUL W.R./HANGING OFF ARR.

1/3

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312591576, 312591066, fax 312591022

Certificate of conformity

We certific that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0111**
Date	**27/4/2005**
Order no.	

Item no	Catalogue no or description of gear	Quantity	Minimum breaking load
3150.07739	Webbing sling MC-2-5000/3,soft eyes both ends, WLL 5 t , length 3 m, serial nos. 289450002 289450005, 289450006, 289450010 289450013, 289450016, 289450017 289450018, 289450019, 289450023 289450024, 289450037, 289450037 289450047, 289450048, 289450076 289450077, 289450079, 289450080 289450082, 289450083, 289450084 289450085, 289450086, 289450090 289450091, 289450092, 289450094 293940001, 293940006, 293940007 293940012, 293940018, 293940019 293940021, 293940022, 293940023 293940024, 293940025, 293940027 293940030, 293940032, 293940033 293940035 293940037	44 pcs	35 t

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 28.4.05
PODPIS:

Signature: Stanislav Trsek

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041, FAX: 312 510 041
DIČ CZ00550370

FOUL W.R./HANGING OFF ARR.

Certificaat van polyester hijsbanden
CERTIFICATE OF WEBBINGSLINGS

Nr. 28945

CE 2/3

Ondergetekende verklaart namens zijn firma, dat onderstaande gegevens juist zijn en dat het onderzoek en de beproeving werden uitgevoerd door een bevoegde persoon.
The undersigned certifies on behalf of his company, that below particulars are correct and that examination and test were carried out by a competent person.

Afnemer Purchaser	Hijsband(en) geleverd aan: Liftingsling(s) supplied to:	DEXIM DRUZTVO Balasova 1251 27401 SLANY CZECH REPUBLIC
Afmetingen Dimensions	Gemeten breedte: Measured width:	150mm
	Gemeten dikte: Measured thickness:	6mm
	Werkende lengte: Working length:	3,0 mtr.
Constructie Construction	Type band: Type of sling:	WEBBINGSLING B150
	Aansluitmiddelen: End fittings:	Geen
Materiaal Material	Band: Webbing:	100 % Polyester
	Naaigaren: Sewing yarn:	100 % Polyester
Kenmerk Identification	Kleur: Colour:	
	Serienummer: Serial no.:	289450000 t/m 0095
	Min. Breekkracht: Min. Breaking strength:	35 TON
	Veilige werklast: Working Load Limit:	5 ton
Opmerkingen Remarks	Toepassing: Application:	LASHING
	Veiligheidsfaktor: Safetyfactor:	7:1
	Produktiedatum: Date of manufacturing:	11/2002
	Naam en adres fabrikant: Name and adress of manufacturer:	INDUWEB GRONINGEN

☐ BETREFT NIEUWE BANDEN ☐ KEURING- CERTIFICERING VAN GEBRUIKTE BANDEN

Firmastempel leverancier:/Stamp of Supplier:

Datum:/Date: 12-11-02

Handtekening:/Signature

Geproduceerd volgens de Europese Machinerichtlijn voor hijsbanden/ rondstroppen EN 1492-1 / 1492-2

Certificaat van polyester hijsbanden
CERTIFICATE OF WEBBINGSLINGS

Nr. 29394

CE 3/3

Ondergetekende verklaart namens zijn firma, dat onderstaande gegevens juist zijn en dat het onderzoek en de beproeving werden uitgevoerd door een bevoegde persoon.
The undersigned certifies on behalf of his company, that below particulars are correct and that examination and test were carried out by a competent person.

Afnemer Purchaser	Hijsband(en) geleverd aan: Liftingsling(s) supplied to:	DEXIM DRUZTVO Balasova 1251 27401 SLANY CZECH REPUBLIC
Afmetingen Dimensions	Gemeten breedte: Measured width:	150mm
	Gemeten dikte: Measured thickness:	6mm
	Werkende lengte: Working length:	3,0 mtr.
Constructie Construction	Type band: Type of sling:	WEBBINGSLING B150
	Aansluitmiddelen: End fittings:	Geen
Materiaal Material	Band: Webbing:	100 % Polyester
	Naaigaren: Sewing yarn:	100 % Polyester
Kenmerk Identification	Kleur: Colour:	
	Serienummer: Serial no.	293940000 t/m 0039
	Min. Breekkracht: Min. Breaking strength:	35 TON
	Veilige werklast: Working Load Limit:	5 ton
Opmerkingen Remarks	Toepassing: Application:	LASHING
	Veiligheidsfaktor: Safetyfactor:	7:1
	Produktiedatum: Date of manufacturing:	1/2003
	Naam en adres fabrikant: Name and adress of manufacturer:	INDUWEB GRONINGEN

☐ BETREFT NIEUWE BANDEN ☐ KEURING- CERTIFICERING VAN GEBRUIKTE BANDEN

Firmastempel leverancier:/Stamp of Supplier:

Datum:/Date:12-01-03

Handtekening:/Signature

Geproduceerd volgens de Europese Machinerichtlijn voor hijsbanden/ rondstroppen EN 1492-1 / 1492-2

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312510041, 312510042, fax 312510040

Certificate of conformity

We certifie that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0358**
Order number	**NOBG 050 655**
Date	**20/9/2005**

Item no	Catalogue no or description of gear	Quantity	Working load limit (WLL)
0740.00119	Green pin Standard shackles G-4163, size 22 x 25, bow type with nut and cotter pin Factor of safety 6 : 1, WLL 6,5 t 24 off Tracebility code Bs 6 E CE/pin Bs 6 P CE/bow Manufacturerś certificate no. M 165 980 1 off Tracebility code Bs 6 N CE/ bow Bs 6 D CE/ pin Manufacturerś certificate no. M 164 820	25 off	6,5 t

Signature : S. Trsek

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041, FAX: 312 510 041
DIČ CZ00550370

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 13. 10.
PODPIS:

Dexim, družstvo
Balasova 1251, 27401 Slaný, Czech republic
tel 312 591 576, 312 591 066, fax 312 591 022

Certificate of conformity

We certifie that the products shown below complies with the E.C.C. Supply of Machinery(Safety) Regulations

Umoe Schat-Harding, s.r.o.
Ouvalova 551
274 01 Slaný
Czech republic

Certificate number	**05_0609**
Date	**5/12/2005**
Order no.	**NOBG 050 921**

Item no	Catalogue no or description of gear	Quantity	Working load limit (WLL)
0170.50222	Round sling DU-50/8, circumference 8,0 m Factor of safety 7 : 1 Serial nos: 2350070045- 2350070049 Manufacturers certificate no. 235007	5 pcs	5,0 t

Signature. S. Trsek

DEXIM DRUŽSTVO
BALASOVA 1251
274 01 SLANÝ
TEL.: 312 510 041 FAX: 312 510 040
DIČ CZ00550370

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 2
DATUM: 14.12.
PODPIS:

FOUL W.R./HANGING OFF ARR.

Kjættingfabriken AS

FORM .4

Our order 31528
Customer Dexim, druzstvo
Your order 102 02

Test Certificate

Test Certificate no: **K131290**

Test and examination of chains, chain slings, rings, hooks, shackles or similar gear.

Distingguishing mark	Description of gear.	Traceability mark	Quantity tested	Date for test	Pr.force KN	WLL,SWL Tonn
25/6C	25/6C Shackle with nut pin, Long type	GBH-2A	5	18.09.2002	118	6,0
25/6C	25/6C Shackle with nut pin, Long type	GBH-2B	13	18.09.2002	118	6,0
25/6C	25/6C Shackle with nut pin, Long type	GBH-2B	30	20.08.2002	118	6,0

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 1
DATUM:
PODPIS:

Not to be heattreated

(7) Were the items described herein tested and thereafter examined by a competent person and found to be free from cracks, flaws or other defects?. Yes

(8) Name and address of manufactor or supplier. Kjættingfabriken AS

(9) Name and address of public service,association,company or firm. performing the test and examination. Kjættingfabriken AS

(10) Position of signatory of public service,association,company or firm. Inspectbr

I certify on behalf of the mentioned above that the informations are correct.
Actual product comply with the health and safety requirements of the Machine Directive.
89/392/EEC, 91/368/EEC, 93/44/EEC ,93/88/EEC.

Date 2002/11/06

pr.Kjættingfabriken AS
Aage Jakobsen
sign
Aage Jakobsen

Kjættingfabriken AS
3790 Helle
Telefon: 35985880
Telefaks: 35985890
Org. No.:NO 981 299 000 MVA
Bankgiro: 7177 0513 302
Avd. Oslo
Prof. Birkelandsvei 24A 1081 Oslo
Telefon: 23178400
Telefaks: 23178401
Avd. Finnsnes
Strandveien 120,9300 Finnsnes
Telefon: 77840643
Telefaks: 77841724

U. S. Department of Homeland Security
United States Coast Guard
Certificate of Approval

Coast Guard Approval Number: 160.115/49/0 Expires: 07 December 2010

LIFEBOAT WINCH (SOLAS)

UMOE SCHAT-HARDING AS
N-5470 ROSENDAL
NORWAY

W-series hydraulic life/rescue boat winches; maximum SWL is 5,200 kg for W50-series, 8,155 kg for W80-series, 12,000 kg for W120/CW120-series, 15,000 kg for W150-series.

Evaluated, tested, and found to be in compliance with the IMO LSA Code (Res. MSC.48(66)), section 6.1.4.7, and IMO Res. A.689(17) (as amended through Res. MSC.81(70)), sections 1/8.1.1 through 8.1.7.

Identifying Data: Approved drawing list std. 34 dated 19.12.05 and CD ref.: **W50-range-34, 19.12.2005** (W50-series); drawing list std. 25 dated 06.12.04 and CD ref.: **W80-range-30, 19.12.2005** (W80-series); drawing list std. 9 dated 15.05.02 and CD ref.: **W120-range-09, 15.05.2002** (W120-series); drawing list std. 10 dated 07.06.01 (CW120-series); approved outline dwg. 83081, assembly dwg. 64997, and drum unit dwg. 64990 (W150-series); and associated approved detail drawings as referenced thereon.

Approval valid only for equipment manufactured at the above location, or at Umoe Schat-Harding spol. s.r.o., Ouvalava 554, 274 01 Slaný, Czech Republic.

Extends previous certificate dated 7 December 2000, updates identifying data to reflect drawing revisions and additional product executions, and adds additional manufacturing location.

*** END ***

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 7th DAY OF DECEMBER 2005, AT WASHINGTON D.C.

J. G. LANTZ
Chief, Lifesaving and Fire Safety Standards Division
BY DIRECTION OF THE COMMANDANT

Order no.: 2049022

SCHAT HARDING

WORKSHOP CERTIFICATE FOR WINCH

Winch type:	W50RS	Serial no.:	1203 / 06
S.W.M.:	11,7 kNm	TM = 1,5 x S.W.M.:	17,6 kNm

Mark on Winch:

Type:	W50RS
Order no.:	2049022
Serial no:	1203 / 06
Certificate no.:	
Type Appr.No.:	USCG:160.115/49/0
TM:	17,6 kNm.
SWM:	11,7 kNm.
Date/year:	28.02.06
Insp:	

Client/Yard: Halter Marine INC.

Address:

Building no.: N/A

1. This Winch is built in accordance with Chapter III of the International Convention of Safety of Life at Sea – SOLAS 1974, as amended.
2. The Winch is tested in accordance with IMO Resolution MSC81 (70), Part 2, Section 6 and to Umoe Schat-Harding AS`s Quality Management System.
3. Onboard tests are to be carried out on the ship or platform in accordance with IMO Resolution MSC. 81(70), Part 2.

Test to be witnessed by an exclusive surveyor to USCG.

Slany, date:
Umoe Schat-Harding
QC 28.02.2006

Manufacturer	Vaclav Vagner QC Inspector	LT Heather Matteri Surveyor to USCG

S-H VW

Umoe Schat-Harding spol. s r.o.
Member of the Umoe Group

Netovická 353, P. O. BOX 115
274 01 Slaný, Czech Republic
E-mail: umoe@slany.cz
Tel.: +420 312 515 100 Fax: +420 312 522 598

LÖNNE

Test certificate

our order.....: 790355
date.....: 22.2.06
certificate no.....: T96160M-404/4

your order.....: **NOBE040229/P2049022**
mark.....: **HALTER MARINE**

UMOE SCHAT-HARDING SPOL S.R.O
NETOVICKA 353
274 01 SLANY CZ

motortype.....: **7BA160L21**
mounting.....: B5

output (kW).....: 15/20
duty.....: S2-10MIN

speed (min-1).....: C-CW - 1752/3522

voltage (Vac).....: Δ/YY 600

nominal current (A).....: 20/25

power factor cos.phi.....: 4/4 load 0,84/0,91

efficienty (%).....: 4/4 load 88,2/85,2

insulation class.....: F

protection class.....: IP 56 WITHOUT FAN AND FANCOVER

moment of inertia J (kgm) .: 0,054
mass (kg)..... .....: 116
frequency (Hz).....: 60
starting torque d.o.l. (%)..... 246/234
no load current (A).....: 11,9/10,5
starting current d.o.l. (%)..... 524/538
temp.rise surface (K)..... 52,4/53,8
temp.rise windings (K)..... 68/85

anti condensation heating : consumption (W).....: 1 X 40 voltage (V).....: 220

marine classfication.: amb.temp.....: 45 C

high voltage dielectric test between phases and earth during 1 min (Vac)...: **2000**
overload test during 15 seconds overtoad torque (% FLT).....: **160**
vibration severity according NEN/ISO 2373-1974 (half key)..... class "N" or as specified below.

bearings DE/NDE...: 6309-C3 6309-C3
spesial features.....: spesialshaft DE/NDE 35mm/33mm

motor serial numbers: **UD0602/244080-001-1**

UMOE SCHAT HARDING
s.r.o. Slaný
PŘÍJEM ZBOŽÍ 3
DATUM. 22.2.06
PODPIS.

LÖNNE

Schat-Harding
N-5470 Rosendal, Norway
Tel. +47.53 48 36 00
Fax. + 47.53 48 36 01

Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [SRR360/3,65/21]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávky čísl.: / Order Nr.:	*Jméno loděnice* / Yard name:	*Trup čísl.:* / Hull Nr.:	*Číslo kupní objednávky/* P.O. Nr.	*Sériové čís.:* / Serial Nr.:	*Počet sad* / Quantity of sets:	*Certifikát/* Certificate:	*Kontrola* / Inspection:	*Číslo typového osvědčení* / Type approval No.:
2049022	Halter Marine	VM16357	052448	1220 - 1221/06	2 sets SRR360/3,65/21	USCG	USCG	160.163/1/0

a	b	c	d	e	f		G		*Činnost* / Action (h)			*Podpis* / Sign. for filing (k)	i
No	*Popis činnosti* / Activity description	ISO9001:2000 Rev.	96/98/EC Rev.	*Příručka jakosti* Quality Manual	*Postupy/instrukce* / Procedures/ instructions		*Popis kritérií pro přijetí* / Description of acceptation citeria / *Popis kontrolních dokumentů* / Description of verifying documents		Výrobce/ Manufacturer	Certifikační orgán/ Certification Authority	Zákazník/ Customer	*Odpovědná osoba*/ Responsible person / *Datum,iniciály, podpis*/ Date, initials, signature	*Namátková kontrola kontrolora jakosti* / Sampling by QC / *Datum, iniciály, podpis*/ Date, initials, signature
1.	*Přezkoumání objednávky* / **Contract review**	(7.2.2)		(7)	500.08.01	*Přezkoumání objednávky*/ Contract review		*Kontrolní list zakázky* / Contract check list	H+S+F			12.1.06	
2.	*Příprava objednávky* / **Order preparing**	(7.5.2)		(7)		*Příprava objednávky* / Order preparing		*List o aktuálním stavu* / Status list	S+F			13.1.06	
3.	*Technická příprava* / **Technical preparation**	(7.5.2/7.5.3)		(2+7)		*Databáze produktů* / Product database	AR.02.018	*Kontrolní list, objednávka nebo schválený prototyp*/ Check list, order or prototype approval.				17.1.06	
4.	*Nákup od dodavatelů, kooperace*/ **Purchasing supplier / contracting**	(7.4)		(2+7)	500.07.01 500.07.03	*Nákup* / Purchasing *Sledování dodavatelů*/ Follow up supplier		*Nákupní objednávka(y)* / Purchase order(s)	S+RS			22.2.	
5.	*Vstupní kontrola dodavatele/kooperace*/ **Receiving insp. supplier /contracting**	(4.7)		(7)	500.07.02	*Vstupní kontrola* / Receiving inspection		*Přepravní dokumenty/ balící listy* / Transport doc./ Packing lists/	S			22.2.	
								Dokumenty/ certifikáty / Documents/certificates.	S+F			22.2	
6.	*Výroba* **Production**	(7.5.3)		(2+7)	500.06.01	*Sledovatelnost výroby*/ Traceability production	500.06.03 SJ.05.108	*Materiálové certifikáty* / Material certificates	S			22.2.06	
								Sledování materiálu / Traceability list materials	S+F			22.2.06	
7.	*NDT kontrola* / **NDT-Control**	(7.5.1/7.5.2) (8.1/8.2.4)		(2+7+8)	500.11.01	*Svařování* / Welding *Kriteria přijetí*/ Acceptance criteria	Drawing [see drw.list]	*Sledování svářečů* / Traceability welders	S			22.2.06	
								NDT zpráva / NDT-report	H+W+S+F			22.2.06	
8.	*Ochrana povrchu* / **Surface protection**	(7.5.1/7.5.2) (8.1/8.2.4)		(2+7)	500.13.01 500.13.02	*Ochrana povrchu*/ Surface protection *Čištění povrchu*/ Cleaning of surface		*Kontrolní list pro ochranu povrchu*/ Checklist surface treatment	S+F			22.2.06	
9.	*Kontrola během montáže* / **Inspection during assembly**	(7.5.1/7.5.2) (8.1/8.2.4)		(2+7+8)		*Kontrola během montáže*/ Inspection during Assembly	SJ.05.047	*Kontrolní list pro montáž -na výrobní čísla.* / Assembly report list per serial number	H+W+S+F			22.2.06	
10.	*Kontrola / Inspekce/- Testování* / **Control/Inspection/ Testing**	(7.5.1/7.5.2) (8.1/8.2.4)	***Dodatek* / Annex B**	(2+7+8)	500.09.06 500.15.114	*Testování výložníků - navijáků - háků* / Testing Davit/ winch/ Hook	SJ.05.052	*Testovací zpráva -na výrobní čísla* / Test report per serial number	H+W+S+F	H+W+S+F (1)		22.2.06	
11.	*Certifikace* / **Certification**	(8.1/8.2.4)	***Dodatek* / Annex B**	(2+7+8)	500.15.26	*Certifikace výrobku* / Certifying of product		*Prohlášení o shodě* / Declaration of conformity / *Dílenský certifikát* / workshop certificate	H+W+S+F	H+W+S+F (1)		N/A 22.2.06	

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Plán jakosti pro výložníky / naviják / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [SRR360/3,65/21]

Datum vydání (den/měsíc/rok) / Edition date: |03/01/06|

Objednávka čísl.: / Order Nr.:	*Jméno loděnice* / Yard name:	*Trup čísl.:* / Hull Nr.:	Číslo kupní objednávky/ P.O. Nr.	*Sériové čís.:* / Serial Nr.:	*Počet sad* / Quantity of sets:	*Certifikát/* Certificate:	*Kontrola* / Inspection:	*Číslo typového osvědčení* / Type approval No.:
2049022	Halter Marine	VM16357	052448	1220 - 1221/06	2 sets SRR360/3,65/21	USCG	USCG	160.163/1/0

12.	*Balení, doprava, ochrana* / **Packing, shipment preservation**	(7.5.1/7.5.5)		(7)	500.07.06	*Balení, doprava* / Packing, shipment		*Balící list objednávky* / Order packing list	H+S+F			22.2.06	
13.	*Kniha výrobních záznamů(KVZ)* / **Manufacture Record Book (MRB)**	(4.2.4)	***Dodatek* / Annex B** ***Modul* / Module D**	(7)	AR.05.003	*Kniha výrobních záznamů* / Manufacture record book *Výložník - naviják- hák* / Davit/Winch/Hook	AR.05.002	*Kniha výrobních záznamů (KVZ)* / Manufacture Record Book (MRB)	S+H			09.03.06	

***Kniha výrobních záznamů je kompletní a všechny neshody jsou uzavřeny* / MRB is completed and all non-conformities are closed:**

Datum/ Date: 09 / 03 / 20 06

Podpis/ Sign.:

Kontrolor jakosti/ Quality Controller

Kódy /**Codes:**
- H: Hold */podržet*
- W: Witnessing */ověření*
- S: Signing */podpis*
- RS: Return signed */podepsat a vrátit*
- F: Filing in manufacturing record book (MRB)*/ vyplnit v knize výrobních záznamů*
- (1): Except MED module D approval */kromě MED modul D osvědčení*

Všeobecné postupy/ instrukce /**General procedures/ instructions:**
- a) Non-conformance / *Neshoda* AR.07.002/3 + 500.14.02/03/04
- b) Change order / *Změna objednávky* AR.03.001
- c) Claims / *Reklamace* AR.07.001

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [08-02]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / **Order Nr.:**	*Jméno loděnice* / **Yard name:**	*Trup čísl.:* / **Hull Nr.:**	Číslo kupní objednávky/ **P.O. Nr.**	*Sériové čís.:* / **Serial Nr.:**	*Počet sad* / **Quantity of sets:**	*Certifikát/* **Certificate:**	*Kontrola* / **Inspection:**	*Číslo typového osvědčení* / **Type approval No.:**
2049022	**Halter Marine**	**VM16357**	**052448**	**1409 - 1410/06**	**2 pcs 08-02**	**USCG**	**USCG**	**160.163/1/0**

a	b	c	d	e	f		G		Činnost / **Action (h)**			*Podpis* / **Sign. for filing (k)**	i
No	*Popis činnosti* / **Activity description**	**ISO9001:2000 Rev.**	**96/98/EC Rev.**	*Příručka jakosti* **Quality Manual**	*Postupy/instrukce* / **Procedures/ instructions**		*Popis kritérií pro přijetí* / **Description of acceptation citeria** *Popis kontrolních dokumentů* / **Description of verifying documents**		**Výrobce/ Manufacturer**	Certifikační orgán/ **Certification Authority**	*Zákazník/* **Customer**	*Odpovědná osoba/* **Responsible person** *Datum,iniciály, podpis/* **Date, initials, signature**	*Namátková kontrola kontrolora jakosti* / **Sampling by QC** *Datum, iniciály, podpis/* **Date, initials, signature**
1.	*Přezkoumání objednávky* / **Contract review**	**(7.2.2)**		**(7)**	500.08.01	*Přezkoumání objednávky/* Contract review		*Kontrolní list zakázky* / Contract check list	H+S+F			22.1.06	
2.	*Příprava objednávky* / **Order preparing**	**(7.5.2)**		**(7)**		*Příprava objednávky* / Order preparing		*List o aktuálním stavu* / Status list	S+F			3.1.06	
3.	*Technická příprava* / **Technical preparation**	**(7.5.2/7.5.3)**		**(2+7)**		*Databáze produktů* / Product database	AR.02.018	*Kontrolní list, objednávka nebo schválený prototyp/* Check list, order or prototype approval.				5.1.06	
4.	*Nákup od dodavatelů, kooperace/* **Purchasing supplier / contracting**	**(7.4)**		**(2+7)**	500.07.01 500.07.03	*Nákup* / Purchasing *Sledování dodavatelů/* Follow up supplier		*Nákupní objednávka(y)* / Purchase order(s)	S+RS			22.2.06	
5.	*Vstupní kontrola dodavatele/kooperace/* **Receiving insp. supplier /contracting**	**(4.7)**		**(7)**	500.07.02	*Vstupní kontrola* / Receiving inspection		*Přepravní dokumenty/ balicí listy* / Transport doc./ Packing lists/	S			22.2.06	
								Dokumenty/ certifikáty / Documents/certificates.	S+F			22.2.06	
6.	*Výroba* **Production**	**(7.5.3)**		**(2+7)**	500.06.01	*Sledovatelnost výroby/* Traceability production	500.06.03 SJ.05.108	*Materiálové certifikáty* / Material certificates	S			22.2.06	
								Sledování materiálu / Traceability list materials	S+F			22.2.06	
7.	*NDT kontrola* / **NDT-Control**	**(7.5.1/7.5.2) (8.1/8.2.4)**		**(2+7+8)**	500.11.01	*Svařování* / Welding *Kriteria přijetí/* Acceptance criteria	Drawing [see drw.list]	*Sledování svářečů* / Traceability welders	S			22.2.06	
								NDT zpráva / NDT-report	H+W+S+F			22.2.06	
8.	*Ochrana povrchu* / **Surface protection**	**(7.5.1/7.5.2) (8.1/8.2.4)**		**(2+7)**	500.13.01 500.13.02	*Ochrana povrchu/* Surface protection *Čištění povrchu/* Cleaning of surface		*Kontrolní list pro ochranu povrchu/* Checklist surface treatment	S+F			22.2.06	
9.	*Kontrola během montáže* / **Inspection during assembly**	**(7.5.1/7.5.2) (8.1/8.2.4)**		**(2+7+8)**		*Kontrola během montáže/* Inspection during Assembly	SJ.05.043	*Kontrolní list pro montáž -na výrobní čísla.* / Assembly report list per serial number	H+W+S+F			22.2.06	
10.	*Kontrola / Inspekce/- Testování* / **Control/Inspection/ Testing**	**(7.5.1/7.5.2) (8.1/8.2.4)**	***Dodatek* / Annex B**	**(2+7+8)**	500.09.06 500.15.114	*Testování výložníků - navijáků - háků* / Testing Davit/ winch/ Hook	SJ.05.061	*Testovací zpráva -na výrobní čísla* / Test report per serial number	H+W+S+F	H+W+S+F (1)		22.2.06	
11.	*Certifikace* / **Certification**	**(8.1/8.2.4)**	***Dodatek* / Annex B**	**(2+7+8)**	500.15.26	*Certifikace výrobku* / Certifying of product		*Prohlášení o shodě* / Declaration of conformity / *Dílenský certifikát* / workshop certificate	H+W+S+F	H+W+S+F (1)		N/A 20.2.06	

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [08-02]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / Order Nr.:	*Jméno loděnice* / Yard name:	*Trup čísl.:* / Hull Nr.:	Číslo kupní objednávky/ P.O. Nr.	*Sériové čís.:* / Serial Nr.:	*Počet sad* / Quantity of sets:	*Certifikát/* Certificate:	*Kontrola* / Inspection:	*Číslo typového osvědčení* / Type approval No.:
2049022	Halter Marine	VM16357	052448	1409 - 1410/06	2 pcs 08-02	USCG	USCG	160.163/1/0

12.	*Balení, doprava. ochrana* / **Packing, shipment preservation**	(7.5.1/7.5.5)		(7)	500.07.06	*Balení, doprava* / Packing, shipment		*Balicí list objednávky* / Order packing list	H+S+F			22.2.06	
13.	*Kniha výrobních záznamů(KVZ)* / **Manufacture Record Book (MRB)**	(4.2.4)	***Dodatek* / Annex B *Modul* / Module D**	(7)	AR.05.003	*Kniha výrobních záznamů* / Manufacture record book *Výložník - naviják- hák* / Davit/Winch/Hook	AR.05.002	*Kniha výrobních záznamů (KVZ)* / Manufacture Record Book (MRB)	S+H			09-03-06	

***Kniha výrobních záznamů je kompletní a všechny neshody jsou uzavřeny* / MRB is completed and all non-conformities are closed:**

Datum/ Date: 04 / 03 / 20 06

Podpis/ Sign.:

Kontrolor jakosti/ Quality Controller

Kódy /**Codes:**

H: Hold */podržet*
W: Witnessing */ověření*
S: Signing */podpis*
RS: Return signed */podepsat a vrátit*
F: Filing in manufacturing record book (MRB)/ *vyplnit v knize výrobních záznamů*
(1): Except MED module D approval */kromě MED modul D osvědčení*

Všeobecné postupy/ instrukce /**General procedures/ instructions:**

a) Non-conformance / *Neshoda* AR.07.002/3 + 500.14.02/03/04
b) Change order / *Změna objednávky* AR.03.001
c) Claims / *Reklamace* AR.07.001

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [08-02]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / **Order Nr.:**	*Jméno loděnice* / **Yard name:**	*Trup čísl.:* / **Hull Nr.:**	Číslo kupní objednávky/ **P.O. Nr.**	*Sériové čís.:* / **Serial Nr.:**	*Počet sad* / **Quantity of sets:**	*Certifikát/* **Certificate:**	*Kontrola* / **Inspection:**	*Číslo typového osvědčení* / **Type approval No.:**
2049022	**Halter Marine**	**VM16357**	**052448**	**1409 - 1410/06**	**2 pcs 08-02**	**USCG**	**USCG**	**160.163/1/0**

a	b	c	d	e	f		G		Činnost / **Action (h)**			*Podpis* / **Sign. for filing (k)**	i
No	*Popis činnosti* / **Activity description**	**ISO9001:2000 Rev.**	**96/98/EC Rev.**	*Příručka jakosti* **Quality Manual**	*Postupy/instrukce* / **Procedures/ instructions**		*Popis kritérií pro přijetí* / **Description of acceptation citeria** *Popis kontrolních dokumentů* / **Description of verifying documents**		**Výrobce/ Manufacturer**	Certifikační orgán/ **Certification Authority**	*Zákazník/* **Customer**	*Odpovědná osoba/* **Responsible person** *Datum,iniciály, podpis/* **Date, initials, signature**	*Namátková kontrola kontrolora jakosti* / **Sampling by QC** *Datum, iniciály, podpis/* **Date, initials, signature**
1.	*Přezkoumání objednávky* / **Contract review**	**(7.2.2)**		**(7)**	500.08.01	*Přezkoumání objednávky/* Contract review		*Kontrolní list zakázky* / Contract check list	H+S+F			22.1.06	
2.	*Příprava objednávky* / **Order preparing**	**(7.5.2)**		**(7)**		*Příprava objednávky* / Order preparing		*List o aktuálním stavu* / Status list	S+F			3.1.06	
3.	*Technická příprava* / **Technical preparation**	**(7.5.2/7.5.3)**		**(2+7)**		*Databáze produktů* / Product database	AR.02.018	*Kontrolní list, objednávka nebo schválený prototyp/* Check list, order or prototype approval.				5.1.06	
4.	*Nákup od dodavatelů, kooperace/* **Purchasing supplier / contracting**	**(7.4)**		**(2+7)**	500.07.01 500.07.03	*Nákup* / Purchasing *Sledování dodavatelů/* Follow up supplier		*Nákupní objednávka(y)* / Purchase order(s)	S+RS			22.2.06	
5.	*Vstupní kontrola dodavatele/kooperace/* **Receiving insp. supplier /contracting**	**(4.7)**		**(7)**	500.07.02	*Vstupní kontrola* / Receiving inspection		*Přepravní dokumenty/ balicí listy* / Transport doc./ Packing lists/	S			22.2.06	
								Dokumenty/ certifikáty / Documents/certificates.	S+F			22.2.06	
6.	*Výroba* **Production**	**(7.5.3)**		**(2+7)**	500.06.01	*Sledovatelnost výroby/* Traceability production	500.06.03 SJ.05.108	*Materiálové certifikáty* / Material certificates	S			22.2.06	
								Sledování materiálu / Traceability list materials	S+F			22.2.06	
7.	*NDT kontrola* / **NDT-Control**	**(7.5.1/7.5.2) (8.1/8.2.4)**		**(2+7+8)**	500.11.01	*Svařování* / Welding *Kriteria přijetí/* Acceptance criteria	Drawing [see drw.list]	*Sledování svářečů* / Traceability welders	S			22.2.06	
								NDT zpráva / NDT-report	H+W+S+F			22.2.06	
8.	*Ochrana povrchu* / **Surface protection**	**(7.5.1/7.5.2) (8.1/8.2.4)**		**(2+7)**	500.13.01 500.13.02	*Ochrana povrchu/* Surface protection *Čištění povrchu/* Cleaning of surface		*Kontrolní list pro ochranu povrchu/* Checklist surface treatment	S+F			22.2.06	
9.	*Kontrola během montáže* / **Inspection during assembly**	**(7.5.1/7.5.2) (8.1/8.2.4)**		**(2+7+8)**		*Kontrola během montáže/* Inspection during Assembly	SJ.05.043	*Kontrolní list pro montáž -na výrobní čísla.* / Assembly report list per serial number	H+W+S+F			22.2.06	
10.	*Kontrola / Inspekce/- Testování* / **Control/Inspection/ Testing**	**(7.5.1/7.5.2) (8.1/8.2.4)**	***Dodatek* / Annex B**	**(2+7+8)**	500.09.06 500.15.114	*Testování výložníků - navijáků - háků* / Testing Davit/ winch/ Hook	SJ.05.061	*Testovací zpráva -na výrobní čísla* / Test report per serial number	H+W+S+F	H+W+S+F (1)		22.2.06	
11.	*Certifikace* / **Certification**	**(8.1/8.2.4)**	***Dodatek* / Annex B**	**(2+7+8)**	500.15.26	*Certifikace výrobku* / Certifying of product		*Prohlášení o shodě* / Declaration of conformity / *Dílenský certifikát* / workshop certificate	H+W+S+F	H+W+S+F (1)		N/A 20.2.06	

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [08-02]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / Order Nr.:	*Jméno loděnice* / Yard name:	*Trup čísl.:* / Hull Nr.:	Číslo kupní objednávky/ P.O. Nr.	*Sériové čís.:* / Serial Nr.:	*Počet sad* / Quantity of sets:	*Certifikát/* Certificate:	*Kontrola* / Inspection:	*Číslo typového osvědčení* / Type approval No.:
2049022	Halter Marine	VM16357	052448	1409 - 1410/06	2 pcs 08-02	USCG	USCG	160.163/1/0

12.	*Balení, doprava. ochrana* / **Packing, shipment preservation**	(7.5.1/7.5.5)		(7)	500.07.06	*Balení, doprava* / Packing, shipment		*Balicí list objednávky* / Order packing list	H+S+F			22.2.06	
13.	*Kniha výrobních záznamů(KVZ)* / **Manufacture Record Book (MRB)**	(4.2.4)	***Dodatek* / Annex B *Modul* / Module D**	(7)	AR.05.003	*Kniha výrobních záznamů* / Manufacture record book *Výložník - naviják- hák* / Davit/Winch/Hook	AR.05.002	*Kniha výrobních záznamů (KVZ)* / Manufacture Record Book (MRB)	S+H			09-03-06	

***Kniha výrobních záznamů je kompletní a všechny neshody jsou uzavřeny* / MRB is completed and all non-conformities are closed:**

Datum/ Date: 04 / 03 / 20 06

Podpis/ Sign.:

Kontrolor jakosti/ Quality Controller

Kódy /**Codes:**

H: Hold */podržet*
W: Witnessing */ověření*
S: Signing */podpis*
RS: Return signed */podepsat a vrátit*
F: Filing in manufacturing record book (MRB)/ *vyplnit v knize výrobních záznamů*
(1): Except MED module D approval */kromě MED modul D osvědčení*

Všeobecné postupy/ instrukce /**General procedures/ instructions:**

a) Non-conformance / *Neshoda* AR.07.002/3 + 500.14.02/03/04
b) Change order / *Změna objednávky* AR.03.001
c) Claims / *Reklamace* AR.07.001

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [SA3,5]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / **Order Nr.:**	*Jméno loděnice* / **Yard name:**	*Trup čísl.:* / **Hull Nr.:**	*Číslo kupní objednávky/* **P.O. Nr.**	*Sériové čís.:* / **Serial Nr.:**	*Počet sad* / **Quantity of sets:**	*Certifikát/* **Certificate:**	*Kontrola* / **Inspection:**	*Číslo typového osvědčení* / **Type approval No.:**
2049022	**Halter Marine**	**VM16357**	**052448**	**1126/06**	**1 set SA 3,5**	**USCG**	**USCG**	**160.132/88/0**

a	b	c	d	e	f		G		*Činnost* / **Action (h)**			*Podpis* / **Sign. for filing (k)**	i
No	*Popis činnosti* / **Activity description**	**ISO9001:2000 Rev.**	**96/98/EC Rev.**	*Příručka jakosti/* **Quality Manual**	*Postupy/instrukce* / **Procedures/ instructions**		*Popis kritérií pro přijetí* / **Description of acceptation citeria** *Popis kontrolních dokumentů* / **Description of verifying documents**		**Výrobce/ Manufacturer**	**Certifikační orgán/ Certification Authority**	*Zákazník/* **Customer**	*Odpovědná osoba/* **Responsible person** *Datum,iniciály, podpis/* **Date, initials, signature**	*Namátková kontrola kontrolora jakosti* / **Sampling by QC** *Datum, Iniciály, podpis/* **Date, initials, signature**
1.	*Přezkoumání objednávky* / **Contract review**	**(7.2.2)**		**(7)**	500.08.01	*Přezkoumání objednávky/* Contract review		*Kontrolní list zakázky* / Contract check list	H+S+F			22.2.06	
2.	*Příprava objednávky* / **Order preparing**	**(7.5.2)**		**(7)**		*Příprava objednávky* / Order preparing		*List o aktuálním stavu* / Status list	S+F			3.2.06	
3.	*Technická příprava* / **Technical preparation**	**(7.5.2/7.5.3)**		**(2+7)**		*Databáze produktů* / Product database	AR.02.018	*Kontrolní list, objednávka nebo schválený prototyp/* Check list, order or prototype approval,				7.2.06	
4.	*Nákup od dodavatelů, kooperace/* **Purchasing supplier / contracting**	**(7.4)**		**(2+7)**	500.07.01 500.07.03	*Nákup* / Purchasing *Sledování dodavatelů/* Follow up supplier		*Nákupní objednávka(y)* / Purchase order(s)	S+RS			22.2	
5.	*Vstupní kontrola dodavatele/kooperace/* **Receiving insp. supplier /contracting**	**(4.7)**		**(7)**	500.07.02	*Vstupní kontrola* / Receiving inspection		*Přepravní dokumenty/ balící listy* / Transport doc./ Packing lists/	S			22.2.	
								Dokumenty/ certifikáty / Documents/certificates.	S+F			22.2.	
6.	*Výroba* **Production**	**(7.5.3)**		**(2+7)**	500.06.01	*Sledovatelnost výroby/* Traceability production	500.06.03 SJ.05.108	*Materiálové certifikáty* / Material certificates	S			22.2.06	
								Sledování materiálu / Traceability list materials	S+F			22.2.06	
7.	*NDT kontrola* / **NDT-Control**	**(7.5.1/7.5.2)** **(8.1/8.2.4)**		**(2+7+8)**	500.11.01	*Svařování* / Welding *Kriteria přijetí/* Acceptance criteria	Drawing [see drw.list]	*Sledování svářečů* / Traceability welders	S			22.2.06	
								NDT zpráva / NDT-report	H+W+S+F			22.2.06	
8.	*Ochrana povrchu* / **Surface protection**	**(7.5.1/7.5.2)** **(8.1/8.2.4)**		**(2+7)**	500.13.01 500.13.02	*Ochrana povrchu/* Surface protection *Čištění povrchu/* Cleaning of surface		*Kontrolní list pro ochranu povrchu/* Checklist surface treatment	S+F			22.2.06	
9.	*Kontrola během montáže* / **Inspection during assembly**	**(7.5.1/7.5.2)** **(8.1/8.2.4)**		**(2+7+8)**		*Kontrola během montáže/* Inspection during Assembly	SJ.05.040	*Kontrolní list pro montáž -na výrobní čísla.* / Assembly report list per serial number	H+W+S+F			22.2.06	
10.	*Kontrola / Inspekce/- Testování* / **Control/Inspection/ Testing**	**(7.5.1/7.5.2)** **(8.1/8.2.4)**	***Dodatek* / Annex B**	**(2+7+8)**	500.09.06 500.15.114	*Testování výložníků - navijáků - háků* / Testing Davit/ winch/ Hook	SJ.05.051	*Testovací zpráva -na výrobní čísla* / Test report per serial number	H+W+S+F	H+W+S+F (1)		22.2.06	
11.	*Certifikace* / **Certification**	**(8.1/8.2.4)**	***Dodatek* / Annex B**	**(2+7+8)**	500.15.26	*Certifikace výrobku* / Certifying of product		*Prohlášení o shodě* / Declaration of conformity / *Dílenský certifikát* / workshop certificate	H+W+S+F	H+W+S+F (1)		22.2.06	

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [SA3,5]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / Order Nr.:	*Jméno loděnice* / Yard name:	*Trup čísl.:* / Hull Nr.:	Číslo kupní objednávky/ P.O. Nr.	*Sériové čís.:* / Serial Nr.:	*Počet sad* / Quantity of sets:	*Certifikát/* Certificate:	*Kontrola* / Inspection:	*Číslo typového osvědčení* / Type approval No.:
2049022	Halter Marine	VM16357	052448	1126/06	1 set SA 3,5	USCG	USCG	160.132/88/0

12.	*Balení, doprava, ochrana* / **Packing, shipment preservation**	(7.5.1/7.5.5)		(7)	500.07.06	*Balení, doprava* / Packing, shipment		*Balicí list objednávky* / Order packing list	H+S+F			22.2.06	
13.	*Kniha výrobních záznamů(KVZ)* / **Manufacture Record Book (MRB)**	(4.2.4)	***Dodatek* / Annex B *Modul* / Module D**	(7)	AR.05.003	*Kniha výrobních záznamů* / Manufacture record book *Výložník - naviják- hák* / Davit/Winch/Hook	AR.05.002	*Kniha výrobních záznamů (KVZ)* / Manufacture Record Book (MRB)	S+H			09.03.06	

***Kniha výrobních záznamů je kompletní a všechny neshody jsou uzavřeny* / MRB is completed and all non-conformities are closed:**

Datum/ Date: 09 / 03 /20 06

Podpis/ Sign.:

Kontrolor jakosti/ Quality Controller

Kódy /**Codes:**
- H: Hold */podržet*
- W: Witnessing */ověření*
- S: Signing */podpis*
- RS: Return signed */podepsat a vrátit*
- F: Filing in manufacturing record book (MRB)/ *vyplnit v knize výrobních záznamů*
- (1): Except MED module D approval */kromě MED modul D osvědčení*

Všeobecné postupy/ instrukce /**General procedures/ instructions:**
- a) Non-conformance / *Neshoda* AR.07.002/3 + 500.14.02/03/04
- b) Change order / *Změna objednávky* AR.03.001
- c) Claims / *Reklamace* AR.07.001

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [W50RS]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / Order Nr.:	*Jméno loděnice* / Yard name:	*Trup čísl.:* / Hull Nr.:	Číslo kupní objednávky/ P.O. Nr.	*Sériové čís.:* / Serial Nr.:	*Počet sad* / Quantity of sets:	*Certifikát/* Certificate:	*Kontrola I* Inspection:	*Čísla typového osvědčení* / Type approval No.:
2049022	Halter Marine	VM16357	052448	1203/06	1 pc W50RS	USCG	USCG	160.115/49/0

a	b	c	d	e	f		G		Činnost / Action (h)			Podpis / Sign. for filing (k)	I
No	*Popis činnosti* / Activity description	ISO9001:2000 Rev.	96/98/EC Rev.	*Příručka jakosti* Quality Manual	*Postupy/instrukce* / Procedures/ Instructions		*Popis kritérií pro přijetí* / Description of acceptation criteria / *Popis kontrolních dokumentů* / Description of verifying documents		Výrobce/ Manufacturer	Certifikační orgán/ Certification Authority	Zákazník/ Customer	*Odpovědná osoba*/ Responsible person / *Datum,iniciály, podpis*/ Date, initials, signature	*Namátková kontrola kontrolora jakosti* / Sampling by QC / *Datum, iniciály, podpis*/ Date, initials, signature
1.	*Přezkoumání objednávky* / Contract review	(7.2.2)		(7)	500.08.01	*Přezkoumání objednávky*/ Contract review		*Kontrolní list zakázky* / Contract check list	H+S+F			22.1.06	
2.	*Příprava objednávky* / Order preparing	(7.5.2)		(7)		*Příprava objednávky* / Order preparing		*List o aktuálním stavu* / Status list	S+F			22.1.06	
3.	*Technická příprava* / Technical preparation	(7.5.2/7.5.3)		(2+7)		*Databáze produktů* / Product database	AR.02.018	*Kontrolní list, objednávka nebo schválený prototyp*/ Check list, order or prototype approval.				6.1.06	
4.	*Nákup od dodavatelů, kooperace*/ Purchasing supplier / contracting	(7.4)		(2+7)	500.07.01 500.07.03	*Nákup* / Purchasing *Sledování dodavatelů*/ Follow up supplier		*Nákupní objednávka(y)* / Purchase order(s)	S+RS			22.2	
5.	*Vstupní kontrola dodavatele/kooperace*/ Receiving insp. supplier /contracting	(4.7)		(7)	500.07.02	*Vstupní kontrola* / Receiving inspection		*Přepravní dokumenty/ balící listy* / Transport doc./ Packing lists/	S			22.2	
								Dokumenty/ certifikáty / Documents/certificates.	S+F			22.2	
6.	*Výroba* Production	(7.5.3)		(2+7)	500.06.01	*Sledovatelnost výroby*/ Traceability production	500.06.03 SJ.05.108	*Materiálové certifikáty* / Material certificates	S			22 2 06	
								Sledování materiálu / Traceability list materials	S+F			22.2.06	
7.	*NDT kontrola* / NDT-Control	(7.5.1/7.5.2) (8.1/8.2.4)		(2+7+8)	500.11.01	*Svařování* / Welding		*Sledování svářečů* / Traceability welders	S			22.2.06	
						Kriteria přijetí/ Acceptance criteria	Drawing [see drw.list]	*NDT zpráva* / NDT-report	H+W+S+F			22.2.06	
8.	*Ochrana povrchu* / Surface protection	(7.5.1/7.5.2) (8.1/8.2.4)		(2+7)	500.13.01 500.13.02	*Ochrana povrchu*/ Surface protection *Čištění povrchu*/ Cleaning of surface		*Kontrolní list pro ochranu povrchu*/ Checklist surface treatment	S+F			22.2.06	
9.	*Kontrola během montáže* / Inspection during assembly	(7.5.1/7.5.2) (8.1/8.2.4)		(2+7+8)		*Kontrola během montáže*/ Inspection during Assembly	SJ.05.038	*Kontrolní list pro montáž -na výrobní čísla.* / Assembly report list per serial number	H+W+S+F			22.2.06	
10.	*Kontrola / Inspekce/- Testování* / Control/Inspection/ Testing	(7.5.1/7.5.2) (8.1/8.2.4)	***Dodatek* / Annex B**	(2+7+8)	500.09.06 500.15.114	*Testování výložníků - navijáků - háků* / Testing Davit/ winch/ Hook	SJ.05.061	*Testovací zpráva -na výrobní čísla* / Test report per serial number	H+W+S+F	H+W+S+F (1)		22.2.06	
11.	*Certifikace* / Certification	(8.1/8.2.4)	***Dodatek* / Annex B**	(2+7+8)	500.15.26	*Certifikace výrobku* / Certifying of product		*Prohlášení o shodě* / Declaration of conformity / *Dílenský certifikát* / workshop certificate	H+W+S+F	H+W+S+F (1)		N/A 22.2.06	

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Plán jakosti pro výložníky / navijáky / háky / QA-Plan Davit/Winch/Hook

Podle / According NS-EN ISO9001

Typ výrobku / Product type [W50RS]

Datum vydání (den/měsíc/rok) / Edition date: [03/01/06]

Objednávka čísl.: / Order Nr.:	*Jméno loděnice* / Yard name:	*Trup čísl.:* / Hull Nr.:	Číslo kupní objednávky/ P.O. Nr.	*Sériové čís.:* / Serial Nr.:	*Počet sad* / Quantity of sets:	*Certifikát/* Certificate:	*Kontrola* / Inspection:	*Číslo typového osvědčení* / Type approval No.:
2049022	Halter Marine	VM16357	052448	1203/06	1 pc W50RS	USCG	USCG	160.115/49/0

12.	*Balení, doprava, ochrana* / **Packing, shipment preservation**	(7.5.1/7.5.5)		(7)	500.07.06	*Balení, doprava* / Packing, shipment		*Balicí list objednávky* / Order packing list	H+S+F			22.02.06	
13.	*Kniha výrobních záznamů(KVZ)* / **Manufacture Record Book (MRB)**	(4.2.4)	***Dodatek* / Annex B *Modul* / Module D**	(7)	AR.05.003	*Kniha výrobních záznamů* / Manufacture record book *Výložník - naviják- hák* / Davit/Winch/Hook	AR.05.002	*Kniha výrobních záznamů (KVZ)* / Manufacture Record Book (MRB)	S+H			09.03.06	

***Kniha výrobních záznamů je kompletní a všechny neshody jsou uzavřeny* / MRB is completed and all non-conformities are closed:**

Datum/ Date: 09 / 03 / 20 06

Podpis/ Sign.:

Kontrolor jakosti/ Quality Controller

*Kódy /***Codes:**
- H: Hold */podržet*
- W: Witnessing */ověření*
- S: Signing */podpis*
- RS: Return signed */podepsat a vrátit*
- F: Filing in manufacturing record book (MRB)*/ vyplnit v knize výrobních záznamů*
- (1): Except MED module D approval */kromě MED modul D osvědčení*

*Všeobecné postupy/ instrukce /***General procedures/ instructions:**
- a) Non-conformance / *Neshoda* AR.07.002/3 + 500.14.02/03/04
- b) Change order / *Změna objednávky* AR.03.001
- c) Claims / *Reklamace* AR.07.001

PACKING LIST - DAVIT TYPE - SRR360-3,65-21

Delivery equipment:			*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	2
2	x	SRR360-3,65-21	Halter Marine	Gen. Arr. drawing	NB3411	Total volume in CB meters	16,8
2	x	08-02 H/V Let Go	5801 Elderferry Road	P.O.: No.:	VM16357	Total net weight in Kg	2800
Boat type		Delivery time:	Moss Point MS 39563 US	Country of origin	Czech rep.	Total gross weight in Kg	2820
			USA	Project name/hull no.		Packing list revision	D

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	No off pckg`s	Quantity pckg	Quantity total	Weight, net pckg	Weight, net total	Weight, gross pckg	Weight, gross total	Volume CB m. pckg	Volume CB m. total
1		1-16	NB3411			Davit Arm Compl. W/ equip.	2	2	2	1350	2700	1350	2700	8,2	16,4
2						Pallet/Foundation/Loose eq.	1	1	1	100	100	120	120	0,4	0,4

NOTES:

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PACKING LIST - DAVIT TYPE - SRR360-3,65-21

Delivery equipment:			*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	2
2	x	SRR360-3,65-21	Halter Marine	Gen. Arr. drawing	NB3411	Total volume in CB meters	16,8
2	x	08-02 H/V Let Go	5801 Elderferry Road	P.O. No.:	VM16357	Total net weight in Kg	2800
Boat type		Delivery time:	Moss Point MS 39563 US	Country of origin	Czech.rep.	Total gross weight in Kg	2820
			USA	Project name/hull no.		Packing list revision	D

Storage codes		Dimensions in cm, LxWxH:	570 x 80 x 180			schat-harding
Outdoor storage, elevated from soil on drained area		Volume in CB meters, each pckg:	8,2			N-5470 Rosendal, Norway.
Indoor		Net weight in kg, each pckg:	1350	Pckg dwg:	NX0463	Tel. +47 53 48 36 00
Air-conditioned storage, conditions separately defined		Weight kg gross, each pckg:	1350	Pos. no.:	1	Fax +47 53 48 36 01

No. off package of this equipment 1

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
1		1 no	N65471			Davit Arm Compl. W/ equip.	2	1	2					
		2	N65465	A		Davit Assembly	2	1	2	X				
	N65434				2	Slewing gear	2	1	2	X	Mounted on davitarm			
	0202.40209				3	Hex.screw M24x60, DIN 933	26	13	26		Mounted on davitarm			
						Type Plate	2	1	2		Mounted on davitarm			
						Plate for test data	2	1	2		Mounted on davitarm			
		1	N83120			Winch 08 - 02 - V Let Go	1	1	1	X	Mounted on davitarm			
		1	N83086			Winch 08 - 02 - H Let Go	1	1	1	X	Mounted on davitarm			
	0170.20399	8				Wire ø12 Notor HP L=40m	2	1	2	X	Mounted on davitarm 06 - 0012			
	3015.71209	3	N94100			Aut.release hook ARH23	2	1	2	X	Mounted on davitarm			19131 19333
	3-C-120					Tripline compl. For ARH	2	1	2		Included in hook			

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
		4	N94036	A		Upperblock	1	1	1	X	Mounted on davitarm			
	0740.00129	7				Shackle H SWL=8.5T	1	1	1	X	Mounted on davitarm 05-04,01			N
		5	N94012	A		Arr. Jockey Pulley, Complete	2	1	2		Mounted on davitarm			
	0170.50059				1	Rope ø12, L=4,2m, Nylon	2	1	2		Mounted on davitarm			
	0170.50039				2	Rope ø12, L=2,2m, Nylon	2	1	2		Mounted on davitarm			
	0740.10458				4	Shackle 1/2", Galvanized	8	4	8		Mounted on davitarm			
	C-2280				5	Block jockey pulley, Galv	2	1	2		Mounted on davitarm			
		6	N73740			Tripline for rem.contr.Type B					Mounted on davitarm			
	0740.02349				1	Shackle D-Type 1/4" St.less	4	2	4		Mounted on davitarm			
	0740.21229				2	Thimble for wire ø3,2mm	4	2	4		Mounted on davitarm			
	0740.06089				3	Wire rope clamp 4mm	6	3	6		Mounted on davitarm			
	0170.20039				4	Wire rope ø3,2 7x19, L=8,5m	2	1	2		Mounted on davitarm			
	91706				5	Hand grip	2	1	2		Mounted on davitarm			
	04312	9				Hex.screw M20x40 DIN933	8	8	8		Mounted on davitarm			
		10	N93526	A		Sheave house	1	1	1		Mounted on davitarm			
		11	N73224	B		Crankhandle	2	1	2		Mounted on davitarm			

During reception of this delivery, the buyer (customer) is required to examine the goods with the intention to see whether there are any missing parts, quantitative or qualitative. In case of any complaints, this has to be informed at once, and not later than 8 days from reception. Visible damage to the goods (ex. detriment on packing) or missing parts, have to be noted on transportation documents. If there is any damage on the goods, the buyer has to claim the transport agency for compensation.

Date / Sign.: 21.2.06 / Manager of Packing

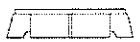
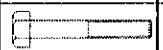
Date / Sign.: 21.2.06 / Quality Controller

PACKING LIST - DAVIT TYPE - SRR360-3,65-21

Delivery equipment:	*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	2
2 x SRR360-3,65-21	Halter Marine	Gen. Arr. drawing	NB3411	Total volume in CB meters	16,8
2 x 08-02 H/V Let Go	5801 Elderferry Road	P.O. No.:	VM16357	Total net weight in Kg	2800
Boat type / Delivery time:	Moss Point MS 39563 US	Country of origin	Czech.rep.	Total gross weight in Kg	2820
	USA	Project name/hull no.		Packing list revision	D

Storage codes		Dimensions in cm, LxWxH:	120 x 80 x 40			schat-harding
Outdoor storage, elevated from soil on drained area		Volume in CB meters, each pckg:	0,4			N-5470 Rosendal, Norway.
Indoor		Net weight in kg, each pckg:	100	Pckg dwg:	NX0463	Tel. +47 53 48 36 00
Air-conditioned storage, conditions separately defined		Weight kg gross, each pckg:	120	Pos. no.:	2	Fax +47 53 48 36 01

No. off package of this equipment 1

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
2						Packed in wooden box	1	1	1					
		12	N94099			Foundation	2	1	2 ✓					
	0202.40819	13				Hex.bolt M24x90, DIN 931	32	16	32 ✓		10.9			
	30925	14				Hex.lock nut M24, DIN 982	32	16	32 ✓		10			
						Tools for ARH hook	2	1	2 ✓					
						Instruction card ARH hook	2	1	2 ✓					
			N73742			Instruction poster	2	1	2 ✓					
						Drawings:								
			NB3411			General Arr.			✓					
			N83120			Winch 08 - 02 - V Let Go			✓					
			N83086			Winch 08 - 02 - H Let Go			✓					
			N94100			Automatic release hook			✓					
			N94099			Foundation			✓					
			N73742			Instruction poster			✓					

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.

During reception of this delivery, the buyer (customer) is required to examine the goods with the intention to see whether there are any missing parts, quantitative or qualitative. In case of any complaints, this has to be informed at once, and not later than 8 days from reception. Visible damage to the goods (ex. detriment on packing) or missing parts, have to be noted on transportation documents. If there is any damage on the goods, the buyer has to claim the transport agency for compensation.

_____ / _____

Date / Sign.: 21.2.06 / Manager of Packing

Date / Sign.: 21.2.06 / Quality Controller

PACKING LIST - DAVIT TYPE - SA3,5

Delivery equipment:			*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	4
1	x	SA3,5	Halter Marine	Gen. Arr. drawing	NB3413	Total volume in CB meters	21,0
1	x	W 50 RS	5801 Elderferry Road	P.O.: No.:	VM16357	Total net weight in Kg	2660
Boat type		Delivery time:	Moss Point MS 39563 US	Country of origin	Czech.rep.	Total gross weight in Kg	2700
			USA	Project name/hull no.		Packing list revision	22

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	No off pckg`s	Quantity pckg	Quantity total	Weight, net pckg	Weight, net total	Weight, gross pckg	Weight, gross total	Volume CB m. pckg	Volume CB m. total
1		1	NB3412			Pallet w/ Winch	1	1	1	1100	1100	1120	1120	1,5	1,5
2		2	64659	I		Davitarm Assembly SA3,5	1	1	1	980	980	980	980	18,2	18,2
3		2				Pallet w/ equipment	1	1	1	310	310	330	330	1,1	1,1
4		2-15				Crate w/loose equipment	1	1	1	240	240	270	270	0,3	0,3

NOTES:

schat-harding N-5470 Rosendal, Norway. Tel. +47 53 48 36 00 Fax +47 53 48 36 01

PACKING LIST - DAVIT TYPE - SA3,5

Delivery equipment:			*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	4
1	x	SA3,5	Halter Marine	Gen. Arr. drawing	NB3413	Total volume in CB meters	21,0
1	x	W 50 RS	5801 Elderferry Road	P.O.: No.:	VM16357	Total net weight in Kg	2660
Boat type		Delivery time:	Moss Point MS 39563 US	Country of origin	Czech.rep.	Total gross weight in Kg	2700
			USA	Project name/hull no		Packing list revision	22

Storage codes	
Outdoor storage, elevated from soil on drained area	X
Indoor	
Air-conditioned storage, conditions separately defined	

Dimensions in cm, LxWxH:	135 x 80 x 140		
Volume in CB meters, each pckg:	1,5		
Net weight in kg, each pckg:	1100	Pckg dwg:	NX0401
Weight kg gross, each pckg:	1120	Pos. no.:	1

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No. off package of this equipment 1

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
1		1	NB3412			Pallet w/Winch								
		1	NB3412			Winch W 50 RS	1	1	1 ✓	X				
	0740.03099				15	Wire clamp 18/20mm	1	1	1 ✓		DIN 741			
	N93935				16	Wedge for wire lock 18-20mm	1	1	1 ✓		On winch dwg.			
			65046	C		Remote Control Winch incl.:								
	93456				1	Block	1	1	1 ✓		Mounted on winch			
	0210.18849				11	Countersunk screw M6 x 20	2	2	2 ✓		Mounted on winch			
	0230.05409				12	Hex.Lock nut M6, DIN 985	2	2	2 ✓		Mounted on winch			
		6	N83168	B		Winch foundation					Yard supply			

During reception of this delivery, the buyer (customer) is required to examine the goods with the intention to see whether there are any missing parts, quantitative or qualitative. In case of any complaints, this has to be informed at once, and not later than 8 days from reception. Visible damage to the goods (ex. detriment on packing) or missing parts, have to be noted on transportation documents. If there is any damage on the goods, the buyer has to claim the transport agency for compensation.

Date / Sign.: 20.2.06 / [signature]
Manager of Packing

Date / Sign.: 20.2.06 / [signature]
Quality Controller

PACKING LIST - DAVIT TYPE - SA3,5

Delivery equipment:			*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	4
1	x	SA3,5	Halter Marine	Gen. Arr. drawing	NB3413	Total volume in CB meters	21,0
1	x	W 50 RS	5801 Elderferry Road	P.O.: No.:	VM16357	Total net weight in Kg	2660
Boat type		Delivery time:	Moss Point MS 39563 US	Country of origin	Czech.rep.	Total gross weight in Kg	2700
			USA	Project name/hull no.		Packing list revision	22

Storage codes		Dimensions in cm, LxWxH:	215 x 204 x 415		
Outdoor storage, elevated from soil on drained area		Volume in CB meters, each pckg:	18,2		
Indoor		Net weight in kg, each pckg:		Pckg dwg:	NX0401
Air-conditioned storage, conditions separately defined		Weight kg gross, each pckg:	980	Pos. no.:	2

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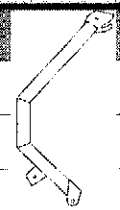
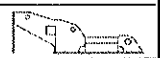
No. off package of this equipment 1

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
2		2	64659	1	1	Davit arm Assembly SA3,5	1	1	1	X				
	64665	2	64659	I	2	Foundation f/ Davit Arm	1	1	1		mount on davit			

During reception of this delivery, the buyer (customer) is required to examine the goods with the intention to see whether there are any missing parts, quantitative or qualitative. In case of any complaints, this has to be informed at once, and not later than 8 days from reception. Visible damage to the goods (ex. detriment on packing) or missing parts, have to be noted on transportation documents. If there is any damage on the goods, the buyer has to claim the transport agency for compensation.

Date / Sign.: 20.2.06 / Manager of Packing

Date / Sign.: 20.2.06 / Quality Controller

PACKING LIST - DAVIT TYPE - SA3,5

Delivery equipment:			*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	4
1	x	SA3,5	Halter Marine	Gen. Arr. drawing	NB3413	Total volume in CB meters	21,0
1	x	W 50 RS	5801 Elderferry Road	P.O.: No.:	VM16357	Total net weight in Kg	2660
Boat type		Delivery time:	Moss Point MS 39563 US	Country of origin	Czech.rep.	Total gross weight in Kg	2700
			USA	Project name/hull no.		Packing list revision	22

Storage codes	
Outdoor storage, elevated from soil on drained area	X
Indoor	
Air-conditioned storage, conditions separately defined	

Dimensions in cm, LxWxH:	220	x 80	x 60
Volume in CB meters, each pckg:	1,1		
Net weight in kg, each pckg:	310	Pckg dwg.	NX0401
Weight kg gross, each pckg:	330	Pos. no.:	3

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No. off package of this equipment 1

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
1		2				Pallet w/ equipment	1	1	1					
	N65742				3	Tension element	2	2	2					
	72963				4	Guiding for boat	2	2	2					

During reception of this delivery, the buyer (customer) is required to examine the goods with the intention to see whether there are any missing parts, quantitative or qualitative. In case of any complaints, this has to be informed at once, and not later than 8 days from reception. Visible damage to the goods (ex. detriment on packing) or missing parts, have to be noted on transportation documents. If there is any damage on the goods, the buyer has to claim the transport agency for compensation.

_____ / _____

Date / Sign.: 20.2.06 / [signature]
Manager of Packing

Date / Sign.: 20.2.06 / [signature]
Quality Controller

PACKING LIST - DAVIT TYPE - SA3,5

Delivery equipment:			*Shipping Mark:*	Schat-Harding o.no.:	2049022	Total package (pckg) no.:	4
1	x	SA3,5	Halter Marine	Gen. Arr. drawing	NB3413	Total volume in CB meters	21,0
1	x	W 50 RS	5801 Elderferry Road	P.O.: No.:	VM16357	Total net weight in Kg	2660
Boat type		Delivery time:	Moss Point MS 39563 US	Country of origin	Czech.rep.	Total gross weight in Kg	2700
			USA	Project name/hull no.		Packing list revision	22

Storage codes	
Outdoor storage, elevated from soil on drained area	
Indoor	X
Air-conditioned storage, conditions separately defined	

Dimensions in cm, LxWxH:	100 x 50 x 55		
Volume in CB meters, each pckg:	0,3		
Net weight in kg, each pckg:	240	Pckg dwg:	NX0401
Weight kg gross, each pckg:	270	Pos. no.:	4

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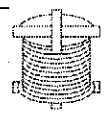
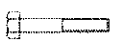
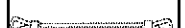
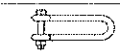
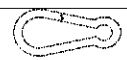
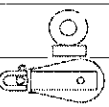
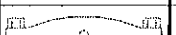
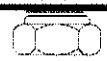
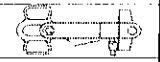
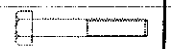
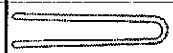
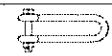
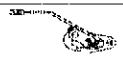
No. off package of this equipment

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
4		2-15				Goods without engagement								
	72962		64659	I	5	Found. f/Guiding/Tens.el.	2	2	2					
	0170.20879	9				Wire galv. Ø18, 35x7,L=30m	1	1	1	X	06-0009			
		3	NB2049			Lashing arrangement								
	30589				1	Lashing gear B=50,L=500+9500	2	2	2					
	N93540				2	Boat supports (for+aft)	2	2	2					
	82707				3	Lever arm	2	2	2					
	0240.06019				4	Washer M30, DIN 125	4	4	4					
	0202.42309				5	Hex.screw M30x90, DIN 931	2	2	2					
	0230.06069				6	Lock nut M30, DIN 985	2	2	2					
	0170.50509				7	Strap,ø14, L=970,SWL1,46T	2	2	2	X	05-0617			
	0740.00879				8	Shackle "H" w/nut,SWL3,25T	6	6	6	X	05-0651			N
	0230.05609				9	Hex. Lock nut M10, DIN 985	12	12	12					
	NC0666				10	Adapter	1	1	1					

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
	0201.08609				11	Hex.screw M10x30, DIN 933	6	6	6					
		4	N73265	E		Remot control arr. Including:								
	0170.20039				1	Wire rope ø3,0 L=60m	1	1	1					
	0740.06089				2	Wire grip f/ ø3 mm	2	2	2					
	91706				4	Handgrip	1	1	1					
	0740.02349				5	Shackle St.less 1/4" "D"-type	1	1	1					
	0740.21229				6	Thimble 3mm	1	1	1					
	N93801				7	Extra wite w/handgrip,complete	1	1	1					
	65046		N73265	E	3	Remot control arr. Winch Incl.:								
	0520.06309				2	Carabine hook	3	3	3					
	0230.06489				3	Eye nut M8	2	2	2					
	0740.27179				4	Pulley block	2	2	2					
	0170.20039				6	Wire ø3mm, L=8m	1	1	1					
	0740.02349				7	Shackle St.less 1/4" "D"-type	2	2	2					
	0740.21229				8	Thimble 3mm	2	2	2					
	91706				9	Handgrip	1	1	1					
	0740.06089				10	Wire grip f/ ø3 mm	4	4	4					
		5	72964	C		Limit switch Arr. Including:								
	92628				1	Plate	1	1	1		mount.on davit			
	0460.02249				2	Limit switch	1	1	1		in starter panel			
	0206.04109				3	Slotted cheese h. Scr. M5x50	4	4	4		DIN 84			
	0202.08809				4	Hex. Screw M10x35, DIN 933	2	2	2		mount.on davit			

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
	0230.05949				5	Lock Nut M10, DIN 985	2	2	2 ✓		mount.on davit			
		7	93305	A		Endlink w/wedge	1	1	1 ✓	X	05-0638			
		8	92629	A		Bracket for Lashing	2	2	2 ✓					
	0230.06069	10				Lock Nut M30, DIN 985	4	4	4 ✓					
	0202.42309	11				Hex. Screw M30x90, DIN 931	4	4	4 ✓					
		12	N65346	A		Foul W.R./Hanging off Arr. Incl.:								
	0170.49169				1	Band strap WLL 5T, L=3m	1	1	1 ✓	X	05-0111			
	0740.00119				2	Shackle "H" w/nut,SWL=6,5T	2	2	2 ✓	X	05-0358			P
	0170.50222				4	Round sling WLL 5T,L=4/8m	1	1	1 ✓	X	05-0609			
	0740.01129				5	Shackle 6T 25/6C Fram Alloy	1	1	1 ✓	X	K 131290			
	204902-N73330	13				El. Diagram Including:								
	204902-N83201				X1	Starter panel	1	1	1 ✓					
	83102			B	X2	Push button box	1	1	1 ✓					
	0460.02249					Limit switch	1	1	1 ✓		in starter panel			
	3015.71369	14	8-A-430			Release hook RRH 25	1	1	1 ✓	X	242			
	0740.00119	15				Shackle "H" w/nut,SWL=6,5T	1	1	1 ✓	X	05-0358			P
			N83252			Instruction poster	1	1	1 ✓					

Pckg No.	Schat-Harding part no.	G.A. pos no	Sub dwg. no.	Rev.	Pos.	Description of goods	Quantity pckg	set	total	Certif	Note/certificate	Sketch	Rest	Respons.
						Drawings								
			NB3413			General Arr.			✓					
			64659	I		Davit assembly			✓					
			NB3412			Winch outline drw.			✓					
			NB2049			Lashing Arr			✓					
			N73265	E		Remote Control Arr.			✓					
			65046	C		Remote Control Arr. Winch			✓					
			72964	C		Limit Switch Arr.			✓					
			N83168	B		Foundation for Winch			✓		Yard supply			
			93305	A		Endlink			✓					
			NB2060			Foul weath.recov./Hang. off Arr.			✓					
	204902-N73330					El. Diagram			✓					
	204902-N83201			A		Starter panel			✓					
	83102			B		Push Button Box			✓					
			N83252			Instruction poster			✓					

During reception of this delivery, the buyer (customer) is required to examine the goods with the intention to see whether there are any missing parts, quantitative or qualitative. In case of any complaints, this has to be informed at once, and not later than 8 days from reception. Visible damage to the goods (ex. detriment on packing) or missing parts, have to be noted on transportation documents. If there is any damage on the goods, the buyer has to claim the transport agency for compensation.

_____ / _____

Date / Sign.:
20.2.06 / Jim

Manager of Packing

Date / Sign.:
20.2.06 / Marin

Quality Controller