

INSTRUCTION MANUALS
FOR
SPEEDCRANE DERRICK FITTED ON
THE BRIDGE FRONT OF
NAVAIDS TYPE 1100 VESSELS

When ordering Spare Parts List Please Quote
Job No. 1DG 6030-33

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S.W.L. SPEEDCRANE DERRICK

GENERAL DESCRIPTION

Speedcrane Derrick with a 3 part rapid reduction head, capable of lifting 7.0 tonnes on a single wire, 14.5 tonnes on 2 falls of wire and 20.0 tonnes on 3 falls of wire. The derrick is also capable of lifting 8.0 tonnes simultaneously on the auxiliary hoist, or alternatively 5 Tonnes simultaneously on the whip hoist. The auxiliary hoist and the whip hoist may be used simultaneously. In this lifting mode the main hoist will remain inoperative.

At the lower working angle of 20 degrees above the horizontal the working radius of the main hook will be approximately 17.5 metres. At the upper working angle of 75 degrees the hook radius will be approximately 5.0 metres.

The derrick will work to an outboard angle of 70 degrees on either side of the ship's centre line. At the lower working angle this will give an outreach clear of the ship's side of approximately 8.4 metres. The working radius of the auxiliary hook and whip hoist will be approximately 1.0 metres less than the main hook when working at the lower working angle.

The derrick is fitted with limit switches which ensure that it does not operate at angles outside its capabilities. These are fitted in a sealed box on the trunnion top.

All blocks have taper roller bearings fitted to sheaves. They are also fitted with 'Nilos' grease seals which minimise lubrication.

The winches which power the derrick are manufactured by Pacific Winches Ltd of Vancouver B.C. For duties see under "Description of Main Items."

The derrick is designed to work with a ship list of 10 degrees and trim by the stern of 2 degrees. The winch pulls are based on these parameters.

The derrick is designed to operate with its full load in sea state 2-3.

DERRICK

Approximately 20 metres long comprising a derrick tube complete with fabricated head and double blade heel fitting. All steel used in the manufacture is suitable for an environment temperature of minus 40 degrees centigrade.

TRUNNION

Cast steel top and bottom castings with taper roller bearings, pre-loaded to prevent brinelling. These bearings are grease lubricated. The trunnion crosspin runs on bronze bushes and is oil bath lubricated.

LIMIT SWITCHES

Are of Burgess type C.Q.R. and have CT2-A2 actuators. These switches are mounted in a watertight box on the trunnion top casting. The switches control the luffing and slewing motions of the derrick.

BLOCKS

All blocks are fabricated from steel. The sheaves are fitted with taper roller bearings and Nilos Grease seals.

ROPES

The main cargo hoist wire is 'Dyform 34LR' manufactured from steel having a tensile strength of 1770 kg/mm². The remainder of the wire is galvanised steel wire rope of 3 x 3/8 construction with a fibre core. These are right hand ordinary lay and manufactured from steel having an M.B.L. of 200 kg/mm².

WINCHES

Supplied by Pacific Winches Ltd, the duties are as follows:

<u>Main Hoist</u>	Capable of 8 tonnes at 44 m/min
	Capable of 4 tonnes at 88 m/min
	Light Line (7½ torque) 137 m/min

The above ratings are on the 3rd layer of wire and based on an availability of 100 HP.

Auxiliary Hoist

Capable of 8.5 tonnes at 23 m/min
Capable of 8.5 tonnes at 11.5 m/min
Capable of 8.5 tonnes at 2.5 m/min

The above ratings are on the second layer of wire and based on an availability of 60 HP.

Whip Hoist

Capable of 5 tonnes at 35 m/min
Capable of 3 tonnes at 60 m/min

The above ratings are on the 3rd layer of wire and based on an availability of 50 H.P.

Topping Winch

Capable of 9.0 tonnes at 34 m/min
Capable of 9.0 tonnes at 17.0 m/min
Capable of 9.0 tonnes at 4.0 m/min

The above ratings are on the 3rd layer of wire and based on an availability of 85 HP.

Slewing Winch

Capable of 6.0 tonnes at 33 m/min
Capable of 6.0 tonnes at 16.5 m/min
Capable of 6.0 tonnes at 3.6 m/min

The above ratings are based on an availability of 52 H.P. The slew winch is fitted with a dividing flange on the centre of the barrel.

Controls

All winch controls supplied by Pacific Winches.

LIMIT SWITCHES

FAULT FINDING INSTRUCTIONS FOR LIMIT SWITCHES

1. Should the derrick halt in mid-operation, land the load, (this can be done as the cargo winch is not affected by the switches) then using the override switch/button replace the derrick in its crutch.
2. Take off the limit switch box. Please note, when taking off the box lid proceed as follows:
Release holding down bolts
Lift box lid clear of locating pins
Turn box 45° to right or left
Lift clear of switches
3. Check for disconnected or loose wires.
4. Should the connections be in order, check the electrical circuit of the switch with a test meter as follows:
Disconnect wires, break circuit (or make circuit) by depressing actuator wheel. The terminals are numbered on the switches, refer to drawing DS 1395. If a switch circuit is faulty, replace the switch. This can be done quite simply by disconnecting actuator, again r
5. Should the electrical connection of the switch be in order, check the mechanical operation by depressing the actuator wheel. This should produce an audible 'click'. Check that the wheel "returns", that is, it does not stay inside the brass tube. Should this be so, dismantle the switch and lightly file the edges of the wheel recess until adequate clearance is achieved.
6. Should the derrick operate normally, but the lower limit, upper limit, etc., seems to operate at a higher angle (say 5° above its normal operating position) open the inspection plate, Item (16) on drawing DS 1395 and check that the crosspin lever, Item (13) has engaged properly with the slot on the crosspin.
7. Should the derrick /...

7. Should the derrick be lifted from the crutch, and the topping switches will not work, check that the cross pin lever has engaged in the slot as in 6 above, if not, push the cross pin lever towards the back of the trunion until it slides home.
8. Before replacing the box cover ensure that there are no loose items left inside as these can prevent the mechanism from working.

DESIGNATION DES INTERRUPTEURS DE LIMITE ET EXPLICATION DE LA FONCTION DE CHAQUE INTERRUPTEUR
LIMIT SWITCH DESIGNATION & AN EXPLANATION OF THE FUNCTION OF EACH SWITCH

CET INTERRUPTEUR COMMANDE LE RAYON MAXIMUM OU L'ANGLE
DE FONCTIONNEMENT LE PLUS PETIT
**LU:- THIS SWITCH CONTROLS THE MAXIMUM RADIUS
OR LOWEST WORKING ANGLE.**

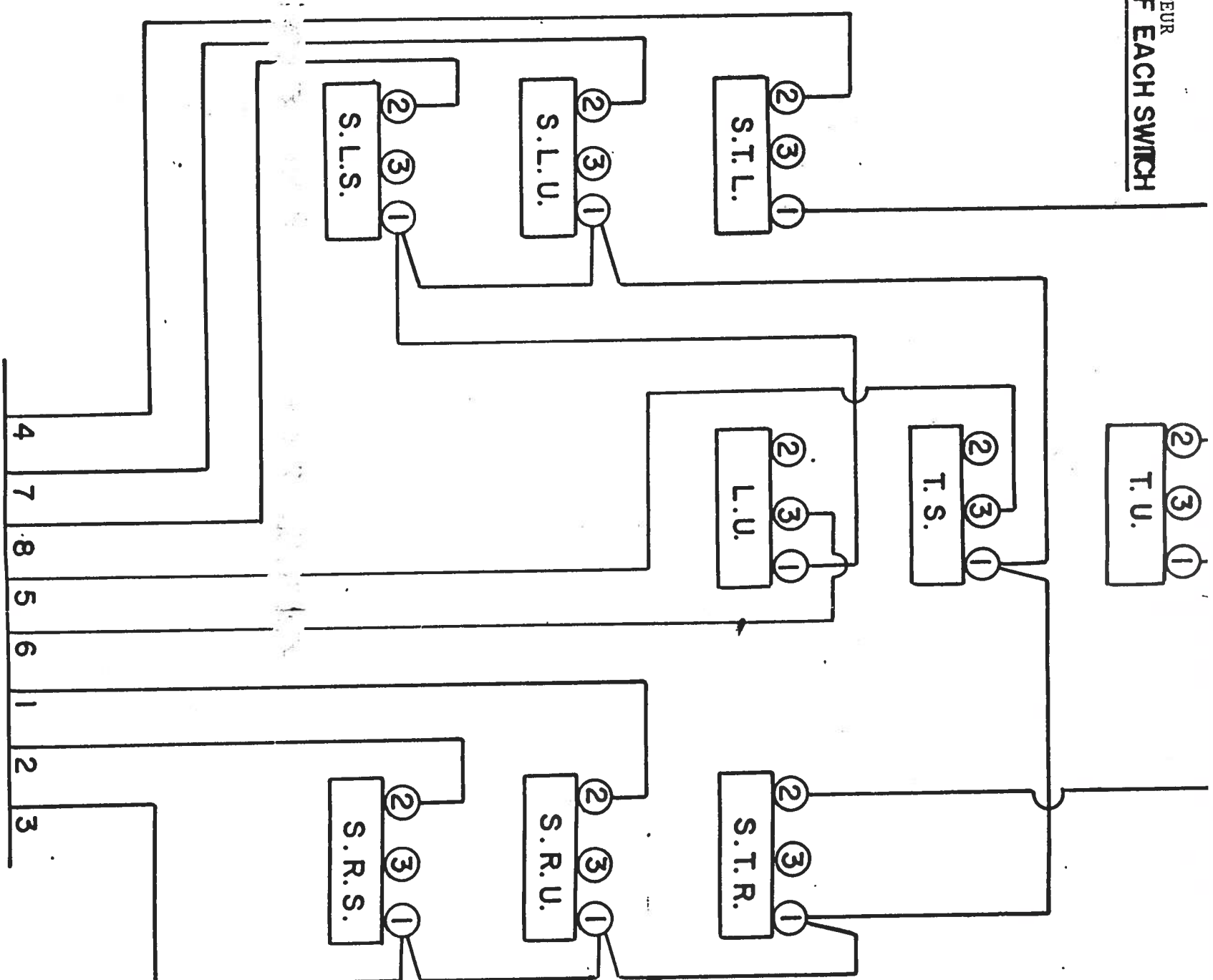
CET INTERRUPTEUR RALENTIT LA VITESSE DE LEVAGE
A MESURE QUE LE MAT DE CHARGE S'APPROCHE DU RAYON MINIMUM
**TS :- THIS SWITCH SLOWS DOWN THE TOPPING SPEED
AS THE DERRICK APPROACHES MINIMUM RADIUS.**

CET INTERRUPTEUR COMMANDE LE RAYON MINIMUM OU L'ANGLE DE
FONCTIONNEMENT LE PLUS GRAND
**TU :- THIS SWITCH CONTROLS THE MINIMUM RADIUS
OR HIGHEST WORKING ANGLE.**

CES INTERRUPTEURS RALENTISSENT LA VITESSE DE VIRAGE
A MESURE QUE LE MAT DE CHARGE S'APPROCHE DE LA POSITION
FINALE DE VIRAGE VERS LA GAUCHE OU VERS LA DROITE
**SLS & SRS :- THESE SWITCHES SLOW DOWN THE
SLEWING SPEED AS THE DERRICK APPROACHES
ULTIMATE SLEWING POSITION TO LEFT OR RIGHT.**

CES INTERRUPTEURS COMMANDENT LES POSITIONS FINALES
DE VIRAGE VERS LA GAUCHE OU VERS LA DROITE
**SLU & SRU :- THESE SWITCHES CONTROL THE ULTIMATE
SLEWING POSITIONS TO LEFT OR RIGHT.**

CES INTERRUPTEURS FONCTIONNENT CONJOINTEMENT AVEC
L'INTERRUPTEUR TU ET ARRETTENT LES MOUVEMENTS DE LEVAGE
ET DE VIRAGE DU MAT DE CHARGE QUAND
**STL & STR :- THESE SWITCHES WORK IN CONJUNCTION WITH
TU SWITCH AND STOPS THE TOPPING AND
IT IS IN HIGH WORKING POSITIONS.**



APPROVED
APPROVED

FILE

C.

DATE

LE A3

MATERIAL

TOLERANCES

JOHN HASTIE OF GREENOCK LTD.

KILBLAIN ENGINE WORKS
GREENOCK PA15 1TG

PROTECTIVE FINISH
FINITION DE PROTECTION

SURFACE FINISH
FINITION DE SURFACE

TITLE
LIMIT SWITCH WIRING
DIAGRAM
SCHEMA DE CÂBLAGE DES INTERRUPTEURS DE LIMITE

DRAWING NO. PLAN NO.

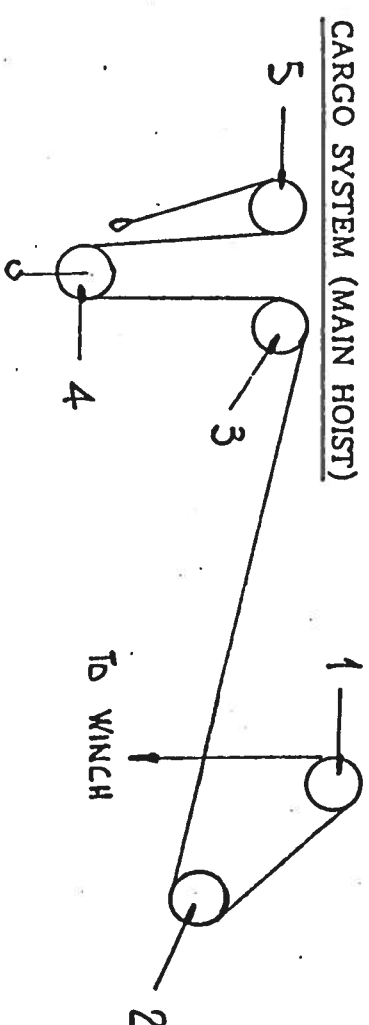
DS 1511

To be read in conjunction with drawings ASI280 and DS1392-1 and 2.

The derrick should be on the fore and aft centre line of the ship and all blocks should be attached at their respective positions as shown on drawing number ASI280.

It is essential that the rope has been properly unreveed from its wire rope reel or coil. The rope should be taken off a wire rope reel using a spinner or, if in a coil it should be flaked out on the deck to ensure that there are no kinks in the wire.

It may be found helpful if a fibre messenger rope is first reeved into the system by hand. The wire rope is then attached to the fibre rope, the fibre rope is then fastened to the winch barrel and the winch then used to pull the heavy wire through the system.

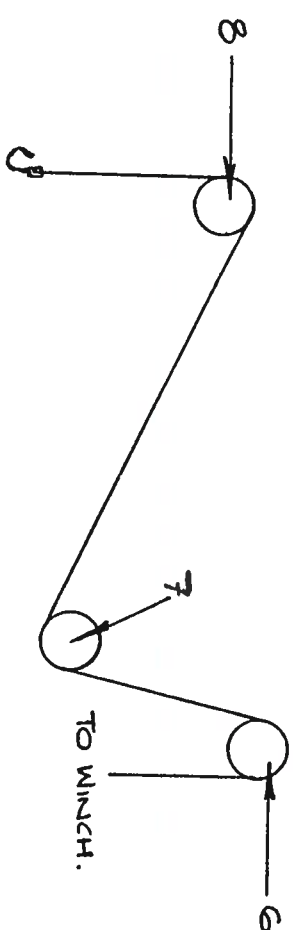


Take the plain end of the wire, pass it up and over the outermost derrick head then

reduction hook block (4). Continue back up to and over the innermost sheave (3) in the derrick head. The wire is then led back to the mast head and round block (2), along the face of the mast to block (1). It is then led down to the winch and fastened. Wind the wire on to the winch barrel until the thimble end of the rope can be secured to the front of the rapid reduction block (4).

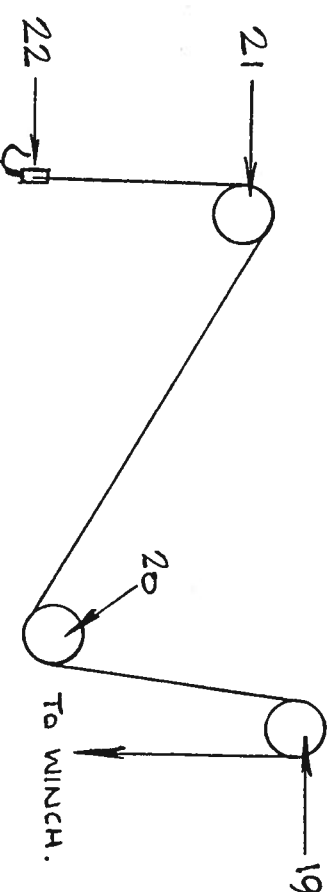
SECTION 3. RIGGING INSTRUCTIONS

AUXILIARY HOIST (PORT SIDE OF DERRICK)



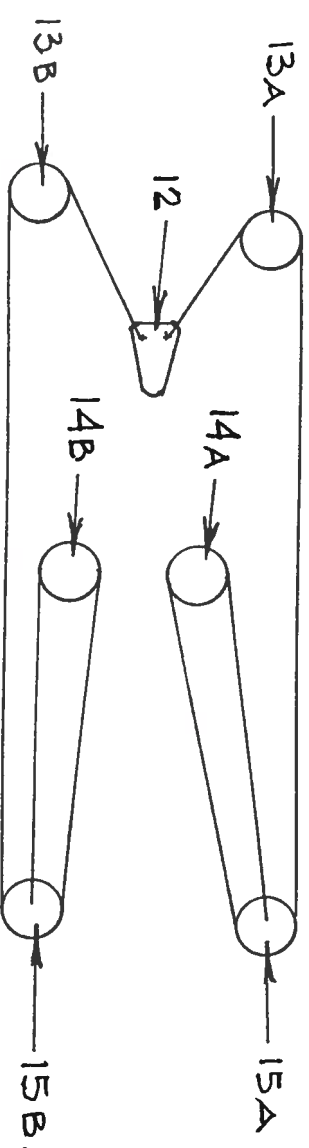
Take the plain end of the wire over sheave (8) at the port side of the derrick head. Lead the wire down parallel with the derrick tube to block (7) mounted at the heel of the derrick. Continue up to block (6) on the mast crossmember then down to the winch. Attach to the winch and wind the wire on to the barrel. Attach the ball weight and hook to the thimble end of the wire.

WHIP HOIST (STARBOARD SIDE OF DERRICK)



Take the plain end of the wire over sheaves (21) at the starboard side of the derrick head. Lead the wire down parallel with the derrick tube to block (20) mounted at the heel of the derrick. Continue up to block (19) on the mast crossmember then down to the winch. Attach the ball weight and hook (22) to the thimble end of the wire.

COMPENSATOR SYSTEMS



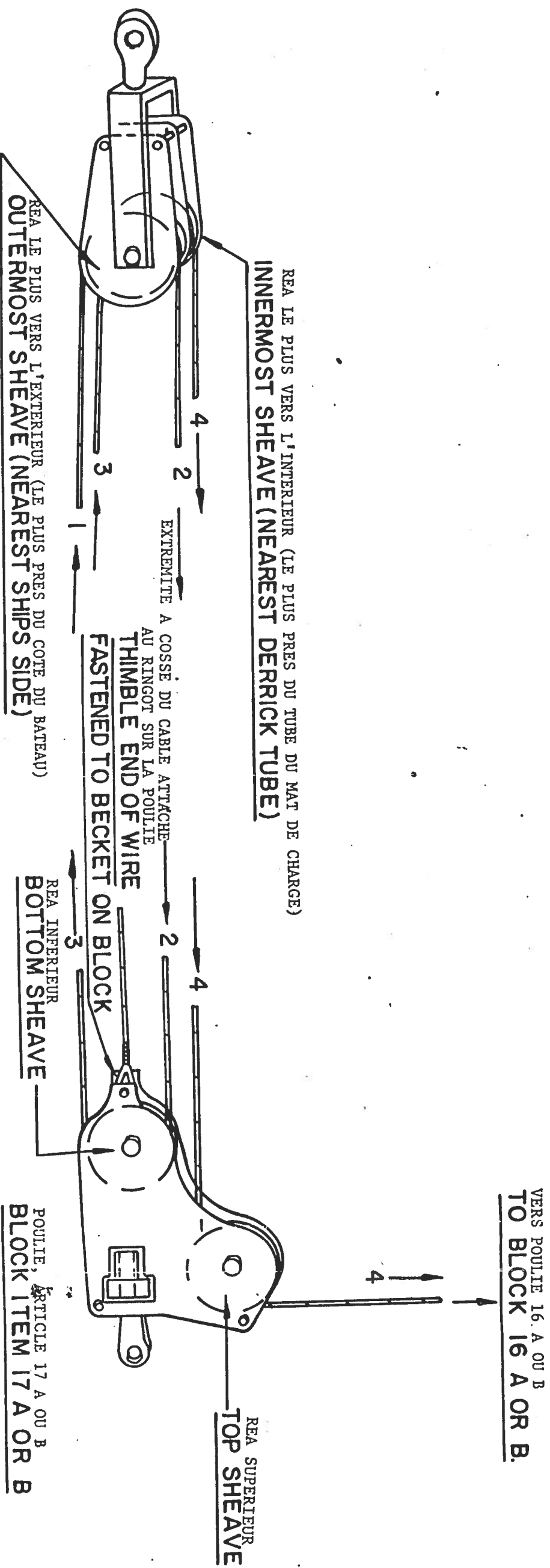
The starboard side compensator system blocks are suffixed 'A' and the port system blocks are suffixed 'B'.

Temporarily lash the Delta Plate (12) to the top of the derrick tube approximately 4 metres back from blocks 13A and 13B.

STARBOARD COMPENSATOR SYSTEM

Attach one end of wire rope to Delta Plate (12). Pass other end through block (13A) then to block (15A) (which will be lying on the deck.) Take the wire to block (14A) then back down to block (15A) and attach to the becket on block (15A).

ON
SUN



**POULIE
BLOCK**

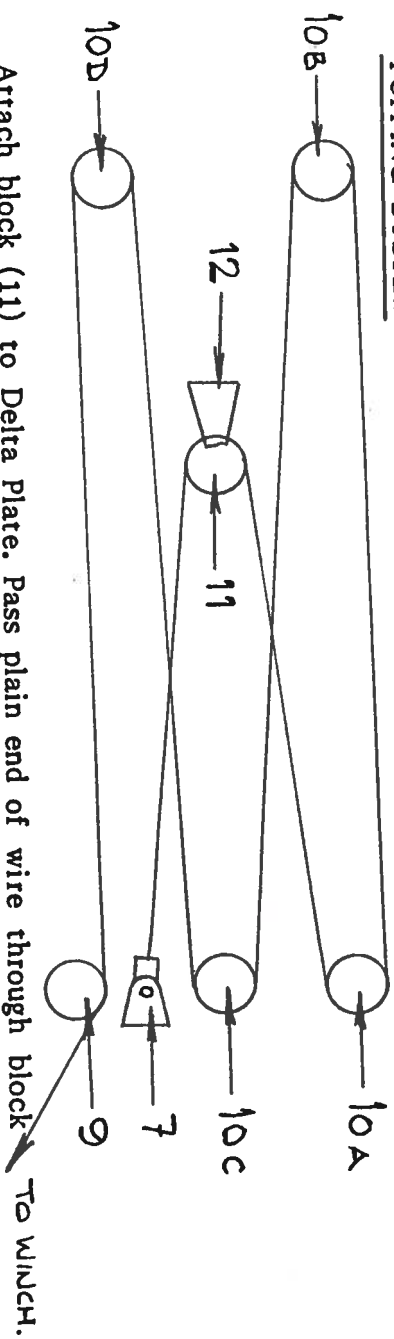
KED 21e				MATERIAL MATERIAU	TOLERANCES TOLERANCES	JOHN HASTIE OF GREENOCK LTD. — KILBLAIN ENGINE WORKS GREENOCK PAIS 11TG
C.				PROTECTIVE FINISH FINITION DE PROTECTION	SURFACE FINISH FINITION DE SURFACE	NAVAIDS TYPE: 1100
qcn	EXIG SYNE ISSUE	DESCRIPTION DESIGNATION	DATE DATE	SCALE N.T.S. P.A.S A L'ECHELLE	DIMENSIONS IN DIMENSIONS EN	TITLE TITRE ARRANGEMENT OF SLEWING PURCHASE DISPOSITION DU PALAN DE VIRAGE
	CERTIFIED CERTIFIE					
						DRAWING No. PLAN No. DS 1392-1

PORT COMPENSATOR SYSTEM

Repeat the sequence as used in rigging the Starboard System but substitute block numbers (13B), (14B) and (15B).

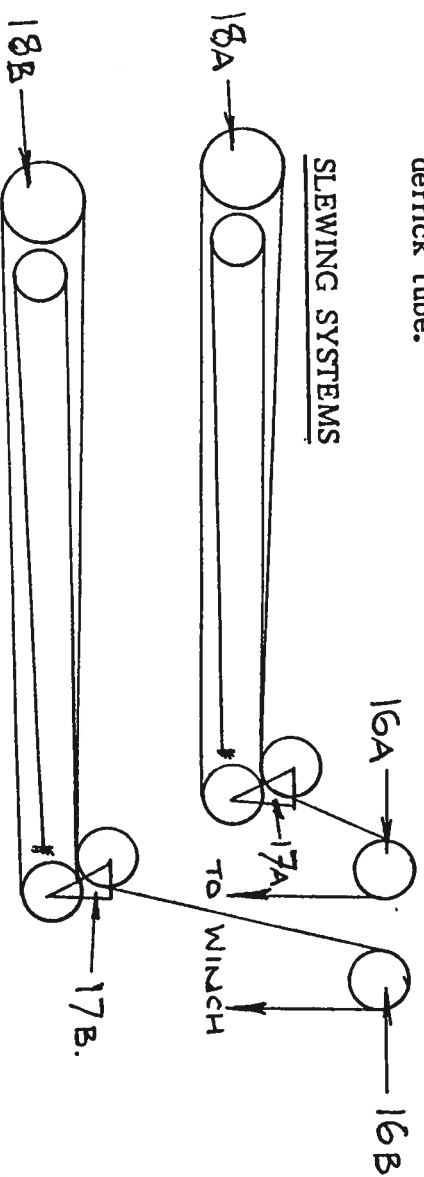
Note It may be necessary to remove the sheave pins and drop the sheaves on blocks 13, 14 and 15 to enable the thimble end of the rope to pass between the sheave and head fitting collar on the blocks.

TOPPING SYSTEM



Attach block (11) to Delta Plate. Pass plain end of wire through block (11) and lead back to block (10A) on the starboard side of the mast crossmember through block (10A) and lead to block (10B) on the starboard side of the derrick head. Lead back to block (10C) on top of the crossmember then to block (10D) on the port side of the derrick head. Lead the wire back to the mast head topping 'Dee' block (Item number 9) on the mast head and from there down to the topping winch. Attach the wire to the winch and spool on to the barrel until there is just sufficient left to allow attachment of the thimble end of the topping crossmember. Release the lashing holding the delta plate to the derrick tube.

SLEWING SYSTEMS



1 off starboard system having blocks suffixed 'A' and 1 off port system having blocks suffixed 'B'.

Before commencing to rig the slew systems, connect upper slew blocks, Items 18A and 18B to lower compensator blocks items 15A & B respectively.

STARBOARD SYSTEM

The following rigging sequence is described with all the blocks having their sheaves in the vertical plane.

Feed plain end of wire through outermost sheave (bottom side) on block (18A) (See drawing number DS 1392-1) and lead back to block (17A) entering between the sheaves, down and round the bottom sheave (See drawing number DS 1392-1). Take the wire back to block (18A) again entering the wire at the bottom of the sheave and coming off the top. The wire is then led to block item 17A entering between the sheaves but coming off the top sheave this time. Carry on up to block (16A) on the underside of the crossmember then take the wire down to the winch. Continue pulling wire through the system until there is just enough wire left to allow the thimble end of the wire to be connected to the becket on block (17A). (See drawing number DS 1392-1). Do not attach the wire to the winch barrel until the starboard system has been reeved.

PORT SYSTEM

Repeat the rigging sequence using blocks (16B) (17B) and (18B). Attach the port wire to the aft side of the adjustable half of the slew winch barrel. Wind on the wire until all the slack has been taken up in the port side slew system. Uncouple the adjustable half of the winch barrel by means of the countersunk screws on the barrel flange. Using an external means, prevent the adjustable half barrel from turning. Now attach the starboard wire to the forward side of the fixed half barrel and wind on the wire until all slack is taken up in the starboard system. Check that both half barrels contain the same amount of wire, if not, unwind wire from the drum that holds most wire until a similar amount is on both half barrels. Reconnect the two half barrels by refitting the 12 countersunk screws in the drum flange. Any remaining slack can be taken up by pulling in the topping wire.

The derrick is now ready for use.

TRUNNION

INSTRUCTIONS FOR DISMANTLING TRUNNION

REFER TO DRAWING NUMBERS DS 1394 AND DS 1395

1. Derrick to be in the stowed position and suitably supported at both ends of the derrick tube and made fast.
2. Slacken off all the wire rope systems so that no static load is being imposed on the derrick by the winches.
3. Make a witness mark on the head end of the crosspin in respect to its position with the fork end thus ensuring the crosspin is replaced in the same position (operation of the topping limit switches depend on this.)
4. Remove cover from limit switch box on trunnion top.
Please Note To remove cover proceed as follows:
Release holding down bolts, lift box clear of locating pins, turn box 45 degrees to the right or left and lift clear of switches.
5. Refer to drawing number DS 1395 and carefully note dimension 'A'.
Before removal, switch box and the wiring connections are numbered to respective switches. If this is not the case, do so - It will save a lot of time in the end.
7. Disconnect wiring to switches.
8. Refer to drawing number DS 1395 and remove items 1,2 and 3 complete with switches from stainless steel cable pipe. Also remove bobbin item 6.
9. Remove countersunk screws from trunnion top cover plate, carefully slide cover plate up and off the cable pipe. An oil seal is incorporated in the cover plate in way of the cable pipe.
10. Refer to /..

10. Refer to drawing numbers DS 1394 and drain oil from the reservoir by removing plug item 26.
 11. Remove end cap from crosspin by releasing central set screw.
 12. Remove the crosspin. Note: There are 'O' rings between the fork ends and the trunnion casting.
 13. The derrick heel can now be lifted clear of the trunnion.
 14. Remove the bolts holding the trunnion base to the trunnion seat and lift clear.
 15. Refer to drawing number DS 1394. Remove cap screws, item (20) and remove cover plate item (8) complete with cable pipe.
 16. Remove cap screws item (19) then pressure plate item (4).
 17. Remove cap screws item (21) and push item (6) split ring retainer towards the bearings, this allows the split rings item (5) which is in two halves to be removed. Lift off item (6) split ring retainer.
- Trunnion top item (1) and the bearings examined. Re-assembly is the reverse of above, however, refer to drawing DS 1395. After trunnion crosspin has been replaced, ensure that item (13) crosspin lever engages with the slot in the crosspin. Operation of the topping limit switches depends on this.

TRUNNION
DESCRIPTION, GENERAL ARRANGEMENT & PARTS LIST

The trunion is the link between the derrick and the ships structure. It is capable of taking all the static and dynamic loadings imposed by the derrick while working within its normal designed operating conditions. It also houses the electric switches which control the derrick within its designed operating parameters, i.e. when slewing and topping (luffing).

LUBRICANTS REQUIRED

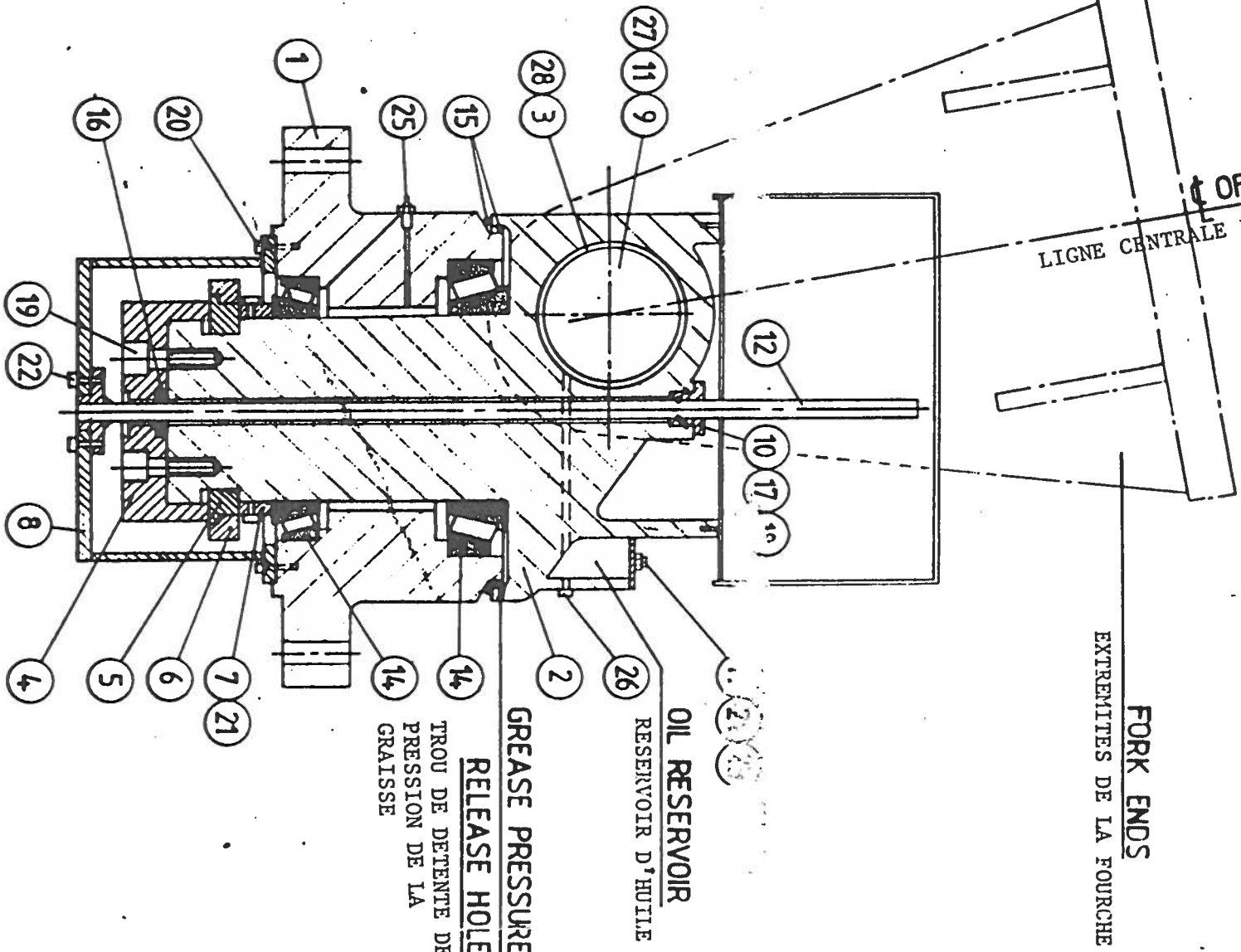
TRUNNION: For the tapes roller bearings use British Petroleum Grease, grade L.S.2 or equivalent. Bearings to be greased every 3 months until grease emerges from the release hole at the rear of the trunion. See drawing number DS 1394.

SHEAVES: Grease as per trunion. Sheaves to be greased every 3 months or as required.

DS 1394

DRAWING NO. PLAN NO.

PROJECTION EUROPEENNE

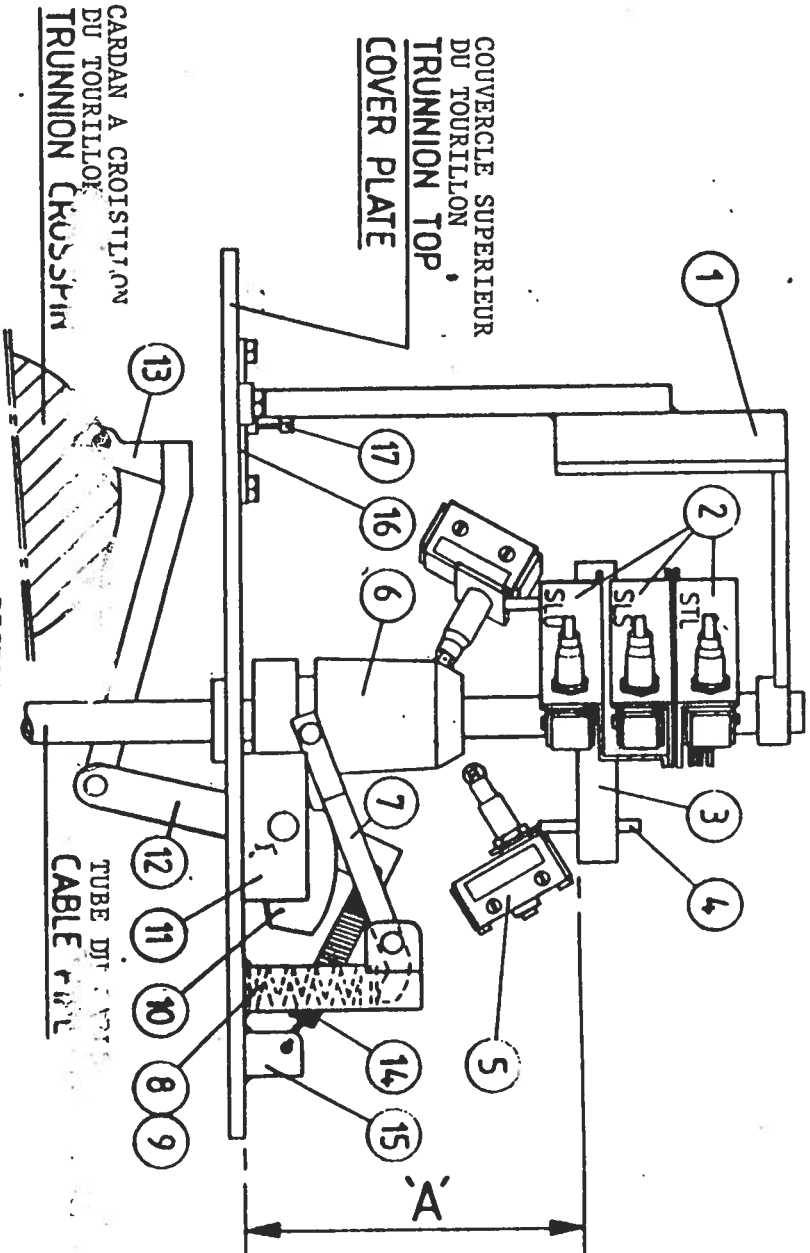


ITEM	DESCRIPTION
ARTICLE	DENOMINATION
1	TRUNNION BASE BASE DU TOURILLON
2	TRUNNION TOP PARTIE SUPERIEURE DU TOURILLON
3	CROSS PIN BUSHES COUSSINETS DE CARDAN A CROISILLON
4	BEARING RETAINING PLATE PLAQUE DE RETENUE DU PALIER
5	SPLIT RING BAGUE FENDUE
6	SPLIT RING RETAINER RETENUE DE LA BAGUE FENDUE
7	BEARING ADJUSTMENT RING BAGUE DE REGLAGE DU PALIER
8	BOTTOM COVER COUVERCLE INFERIEUR
9	CROSS PIN CARDAN A CROISILLON
10	GLAND PRESSE-ETOUPE
11	END CAP (FOR CROSS PIN) ~NOT SHOWN CHAPEAU D'EXTREMITE (POUR LE CARDAN A CROISILLON) - NE FIGURE PAS SUR LE PLAN
12	END CAP (FOR CROSS PIN) ~NOT SHOWN
13	COVER PLATE (FOR OIL RESERVOIR) COUVERCLE (POUR LE RESERVOIR D'HUILE)
14	'TIMKEN' TAPERED ROLLER BEARINGS PALIERS A ROULEAUX CONIQUES "TIMKEN"
15	'O' RINGS (BETWEEN BASE & TOP) JOINTS TORIQUES (ENTRE LA BASE ET LE SOMMET)
16	OIL SEAL GARNITURE D'ETANCHEITE A L'HUILE
17	'O' RING (FOR GLAND) JOINT TORIQUE (POUR LE PRESSE-ETOUPE)
18	" " "
19	S/H CAPSCREWS VIS A TETE CREUSE
20	" " "
21	" " "
22	" " "
23	" " "
24	FILLER PLUG BOUCHON DE REMPLISSAGE
25	GREASE NIPPLE RACCORD GRAISSEUR
26	DRAIN PLUG BOUCHON DE VIDANGE
27	RETAINING SCREW (FOR END CAP) ~NOT SHOWN VIS DE RETENUE (POUR LE CHAPEAU D'EXTREMITE) - NE FIGURE PAS SUR LE PLAN
28	'O' RINGS (FOR CROSS PIN) ~NOT SHOWN JOINTS TORIQUES (POUR LE CARDAN A CROISILLON) - NE FIGURE PAS SUR LE PLAN

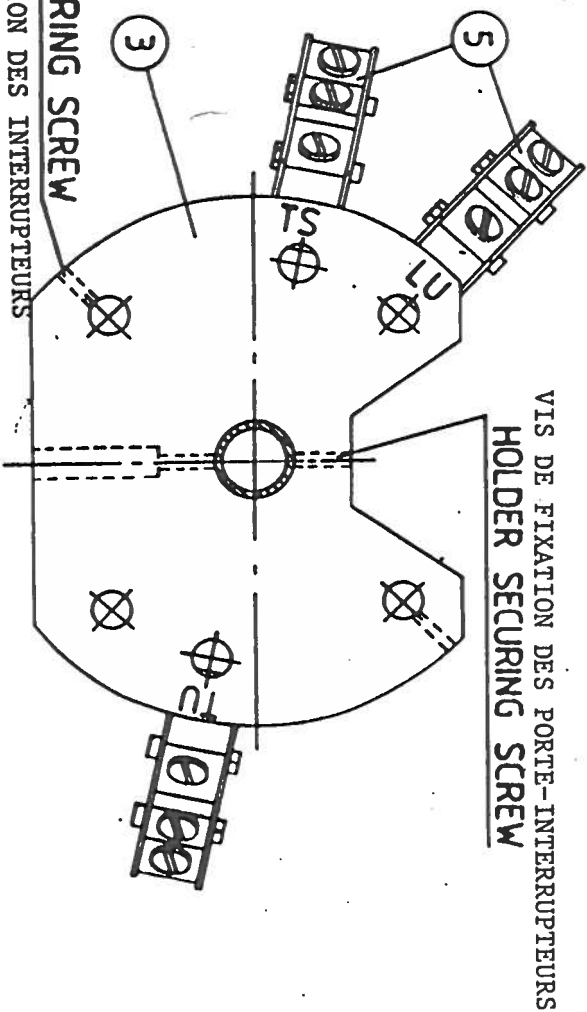
**JOHN HASTIE OF GREENOCK LTD. —
GREENOCK PA15 1TG**

TITLE	TITRE	DRAWING NO.	PLAN NO.
SECTIONAL ARREST OF TRUNNION		DS 1394	

DS 1394



DISPOSITION
ARRANGEMENT



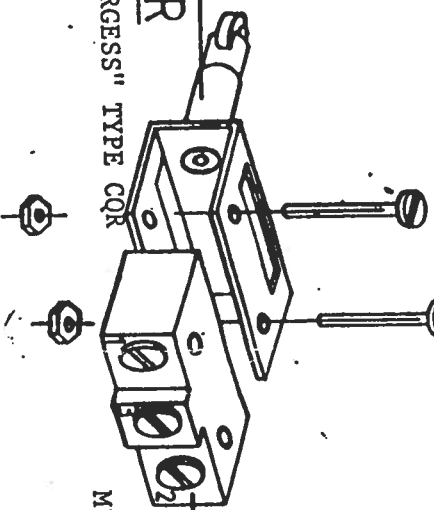
PLAN ON TOPPING SWITCH HOLDER

PLAN SUR LE PORTE-INTERRUPTEUR DE LEVAGE

ITEM	DESIGNATION
ARTICLE	DESIGNATION
1	SLEWING QUADRANT QUART DE CERCLE DE VIRAGE
2	SLEWING SWITCH HOLDERS PORTE-INTERRUPTEURS DE VIRAGE
3	TOPPING SWITCH HOLDER PORTE INTERRUPTEURS DE LEVAGE
4	TOPPING SWITCH ADJUSTING RODS TIGES REGLABLES D'INTERRUPTEUR DE LEVAGE
5	LIMIT SWITCHES INTERRUPTEURS DE LIMITE
6	BOBBIN BOBINE
7	BOBBIN OPERATING LEVER BRAS DE COMMANDE DE LA BOBINE
8	OPERATING LEVER SUPPORT TUBE TUBE DE SUPPORT DU BRAS DE COMMANDE
9	OPERATING LEVER RETURN SPRING RESSORT DE RAPPEL DU BRAS DE COMMANDE
10	CAM CAME
11	CAM AXLE SUPPORT SUPPORT D'AXE DE CAME
12	PIVOT & LEVER PIVOT ET BRAS
13	CROSSPIN LEVER CROSS SHIN
14	CAM AXLE TENSION SPRING RESSORT DE TENSION DE L'AXE DE CAME
15	TENSION SPRING ANCHOR ANCRE DU RESSORT DE TENSION
16	INSPECTION PLATE PLAQUE D'INSPECTION
17	CROSSPIN LEVER TRANSIT SCREW VIS DE TRANSIT DU BRAS DE CARDAN

NOTE :- THE LIMIT SWITCHES CONSIST OF TWO MAIN PARTS:
ie, ACTUATOR & MICRO-SWITCH (SEE BELOW)

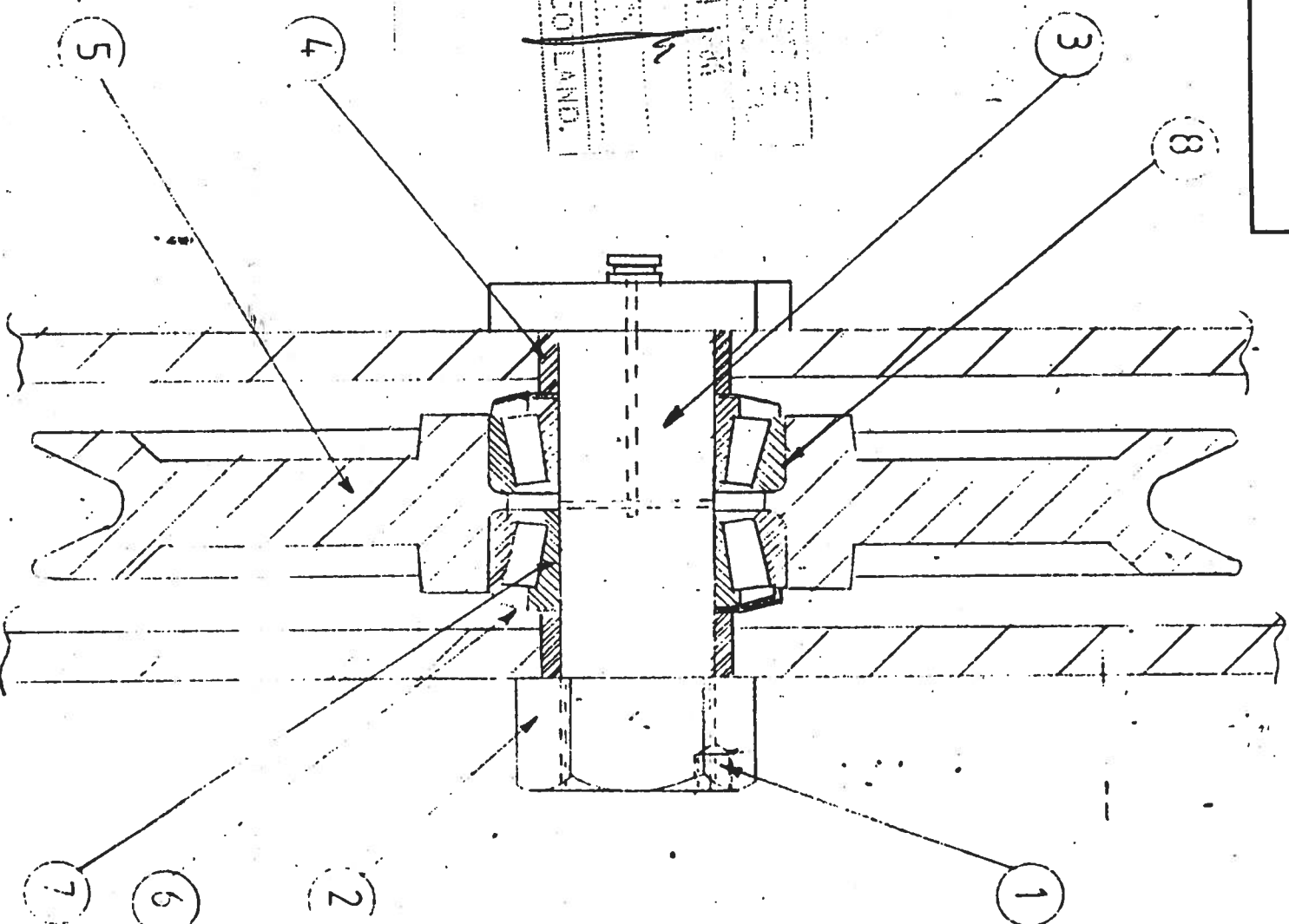
REMARQUE: LES INTERRUPTEURS DE LIMITE CONSISTENT EN DEUX PARTIES PRINCIPALES
LE DISPOSITIF DE MISE EN ACTION ET LE MICRO-CONTACT (VOIR CI-DESSUS)



DISPOSITIF DE MISE EN ACTION "BURGESS" TYPE CAR MICRO-CONTACT "BURGESS" TYPE CT2-A2

CHECKED VERIFIEE		MATERIAL	TOLERANCES	TITLE	DRAWING No.
TR TRACE				ARRG DISPOSITION DES INTERRUPTEURS DE LIMITE	PLAN NO. DS 1395
DRAWN DESINTE U.S.F.	ISSUE EMIS	DESCRIPTION DESIGNATION	PROTECTIVE FINISH		
	CERTIFIED	DATE	SCALE NTS.		
APPROVED APPROVE					
SUBMITTED SOU MIS					
WELD APPD. SOUDURE APPROVEE					
PLAN ON TOPPING SWITCH HOLDER					
PLAN SUR LE PORTE-INTERRUPTEUR DE LEVAGE					
JOHN HASTIE OF GREENOCK LTD. — KILBLAIN ENGINE WORKS GREENOCK PA15 1TG					

USED
ON



DISMANTLING & REASSEMBLY SHEAVE UNIT (ROLLER BEARINGS)

SINGLE SHEAVE BLOCK

1. UNSCREW & REMOVE SOCKET GRUB SCREW.
2. UNSCREW & REMOVE SHEAVE PIN NUT.
3. REMOVE SHEAVE PIN, ENSURE SHEAVE DOES NOT FALL OUT.
4. REMOVE ADJUSTMENT SLEEVES (IF FITTED).
5. REMOVE SHEAVE & BEARING ASSY.
- 6, 7. NOTE: NUTS RINGS & T.R. BEARING CUPS ARE LOOSE WHEN SHEAVE IS REMOVED FROM T.R. PLATES, CARE SHOULD BE TAKEN NOT TO DAMAGE THEM (IF REMOVED, STACK IN A SAFE PLACE).
8. T.R. BEARING CUPS ARE A PRESS FIT IN THE BORE OF THE SHEAVE AND IT SHOULD NOT BE NECESSARY TO REMOVE THEM UNLESS REPLACEMENT BEARINGS ARE TO BE FITTED.

REVERSE THE ABOVE PROCESS FOR REASSEMBLY
[SEE NOTE 5100A]

MULTI SHEAVER BLOCKS

PROCEED AS ABOVE BUT SLEEVES TO BE REMOVED AS PINS ARE WITHDRAWN THROUGH EACH DIVISION PLATE.

NOTE

ENSURE NUT 2 IS CORRECTLY TIGHTENED FOR SHEAVE ADJUSTMENT & SOCKET GRUB SCREW 1 IS FITTED.

CERT'D		MATERIAL		TOLERANCE		CONTRACTOR	JOHN HASTIE OF GREENOCK LTD.	SECURITY CLASSIFICATION	UNCLASSIFIED
CHECKED		FINISH		SURFACE ROUGHNESS		M.O.D.(N)		CONTRACTOR'S DRG. No.	D.S 1006
DRAWN	JMC	DIMS. IN		SCALE		TITLE	DISMANTLING & REASSEMBLY SHEAVE UNIT (T.R. BRGS).	SERVICE DRAWING No./SHT. No.	A
JMC		CHANGE		ISSUE		PUNCH CARD TITLE			3

CCGS Laurier
Heel Pin Removal Procedure

Master's Copy

CCGS Laurier Speedcrane Derrick Heel Pin Removal Procedure

Date: 08 November 2004

Prepared by: Richard Kutcher, PEng

Scope

The procedure covers the preparation for, removal and reinstallation of the Speedcrane Derrick heel pin on CCGS Laurier.

References

1. Instruction Manuals for Speedcrane Derrick Fitted on the Bridge Front of Navais Type 1100 Vessels

Main Concerns

1. Maintaining longitudinal position of the derrick
2. Damage to heel pin bearing and seals

Procedure

1. The general instructions for this evolution are contained in Reference 1 and included here as Annex 'A'.
2. To ensure the longitudinal position of the derrick is maintained, two hold back chain blocks will be rigged from the derrick head to the capstan located on the focsle. One port and one stbd.
3. Minor aft-ward shifting of the derricks longitudinal position may occur. Should this be the case, a jacking arrangement has been designed and installed. This consists of a special yoke attached to a derrick tip lug and a 30 ton hydraulic jack which will permit the derrick to be jacked forward if necessary.
4. The heel pin end of the derrick will be supported by 3 chain blocks hung from lugs on the house front. The center chain block (10 ton) will be used for lifting the derrick and the side blocks will be used as safety's and for athwartships adjustment.
5. After the electrical connections have been removed the weight of the derrick will be taken up on the chain blocks.
6. The crosspin will be removed. Hydraulic jacks will be used push the pin out. ***The pin will not be hammered out.***

7. The derrick will be lifted clear of the heel pin casting and shored in place.
8. The final nuts securing the heel pin in place will be removed.
9. The heel pin securing bolts are welded to the top flange of the heel pin casting and will be used as jacking bolts for lifting the casting. Small hydraulic jacks will be placed under four of the heel pin securing bolts and used to carefully break the heel pin loose from it's seat and lift it vertically in a controlled manner to ensure there is no damage to the unit while lifting.
10. Once the heel pin casting is clear of it's seat it will be lifted by a crane and lowered to the deck for further disassembly in accordance with Reference 1 above.
11. Reassembly is the reverse of the above operation.

TO
A
R. McFadyen, PM 1100

FROM
DE
Y.M. Yip, AMFE

SECURITY - CLASSIFICATION - DE SÉCURITÉ
OUR FILE/NOTRE RÉFÉRENCE 9151-1100-3(AMFE)
YOUR FILE/NOTRE RÉFÉRENCE 9151-1100-11
DATE Oct. 28/87 (Rev.1)

SUBJECT
OBJET
RE: Type 1100 - Speedcrane
Recommended Procedures for Checking Brake Assembly

1. INTRODUCTION

From the inspection on the 3 hoist winches on the CCGS EDWARD CORNWALLIS in July 1987, the following mechanical defects and deficiencies on the brake assembly were identified.

- a) The splined hub (which carries the rotating friction disc pad) on all the three (3) winches had been grinding on the brake cover indicating that the splined hubs had never been set to their CORRECT positions when they were first installed on board. These hubs had been positioned too far out-board the gear casing and furthermore they were "locked in" by a redundant snubber screw. All snubber screws had been sheared to varying degrees of deformation upon tightening up the brake cover. One screw had been sheared to an off-set by as much as 3/32 inches, and the corresponding brake cover had a grinding mark of 1/8 inch deep. Incorrect position of the hub had caused difficulties in setting up the brakes, premature wear down of friction pad because of metal fillings and overheating of brake "shoes".
- b) The bores of the splined hub were bigger than the mating shaft diameters.
- c) Should oil leak through the oil seal, there is no indicator to warn the operator.

In this memorandum, the background information on the brake assembly is given in Section 2 and the reason(s) for each step of verification or remedial action is explained in Section 3. This is followed by a check list in Section 4.