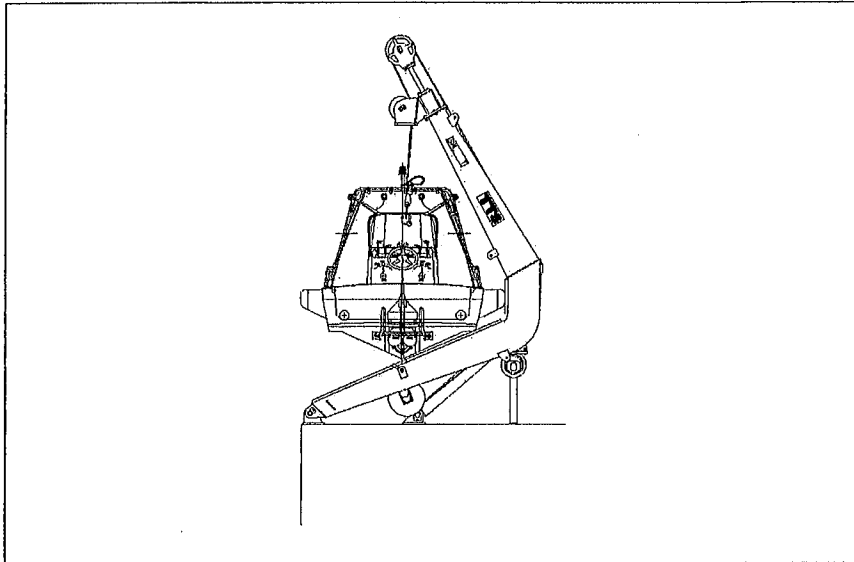


# USER MANUAL

## Main Data



Davit

HL9DP-A MOB3500 FR

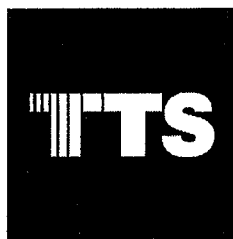
PACIFIC RICHFIELD MARINE PTE

Hull No.: 633

K5529

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## 2 MAIN DATA

The below stated speeds apply during maximum load and working radius against the stated heel plus trim conditions. A speed tolerance of +10% to -5% is within the accepted range and should be taken into consideration.

### 2.1 Technical Specification

#### *TTS Marine Cranes AS – Davit*

Type:	HL9DP-A MOB3500 FR
Machine number:	K5529
Lifting capacity (SWL):	3,5 T
Lifting speed at SWL:	0 - 50 m/min
Lowering speed:	0 – 50 m/min
Lifting height:	20 m
Swing out time:	~ 10 sec
List / trim:	20° / 10°
Weight of davit - theoretical w/o oil:	2,5 T

### 2.2 Hydraulic Pressure

Main pressure:	250 bar
Winch up:	230 bar
Jib out:	90 bar

### 2.3 Pump Capacity

Pump capacity:	1 x 110 l/min
----------------	---------------

## 2.4 EI. Motor Data

EI. data:	440 V / 60 Hz / 3 ph
Starter method:	DOL
Power rating continuous S1:	34,5 kW    57 A
Power rating S2-10% ID:	50 kW    83 A
Starting Current (DOL):	379 A
Rotational speed (approx.):	1760 rpm
Rotation seen from fan end:	CCW (See arrow-sign on fan end)
Enclosure:	IP 56
Insulation class:	F
Temp. rise class:	NA
Heater:	220V / 1ph
Power (approx):	2 x 40 W

## 2.5 External Connections

Electric connection - see drawing:	K5529EB1 K5529ES1
------------------------------------	----------------------

## 2.6 Restrictions in Use

Subject equipment must only be used for the prescribed purpose and within the specified limitations referred to in chapter 5.6. The operator must be qualified according to chapter 5.7.

Repairs and modifications must not be carried out without prior written approval from TTS Marine Cranes AS, except for the minor corrections that are described in the maintenance chapter. If such work is carried out by others; TTS Marine Cranes AS's procedures for this kind of work must be followed. Only approved materials and original spare parts must be used.

## 2.7 Restrictions in Guarantee

TTS Marine Cranes AS refuses all responsibility caused by breach of the restrictions described in the section above. The guarantee for good performance is strictly linked to the correct and careful application of the instructions in this user manual. If, during the warranty period, these restrictions are breached, the warranty/guarantee shall no longer be valid.

## 2.8 Name Plate

The nameplate is located at the main control platform.

**TTS**

SERIAL NO.

TYPE

YEAR

0575/  TTS Marine Cranes AS  
NORWAY

*Nameplate*

## 2.9 Certificates

Certificates are enclosed as separate attachments after this page.



# DET NORSKE VERITAS

## EC TYPE-EXAMINATION CERTIFICATE

*Application of:* Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2002/75/EC, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This certificate is issued by Det Norske Veritas under the authority of the Government of the Kingdom of Norway.

**CERTIFICATE NO. MED-B-2400**

This Certificate consists of 3 pages

*This is to certify that the product*

**Launching appliances using fall and winch (davits)**

*with the type designation(s)*

**HL9DP-A MOB3500**

*Manufactured by*

**TTS Marine ASA, Kristiansand  
KRISTLANSAND S, Norway**

*is found to comply with the requirements in the following Regulations/Standards:*  
Annex A.1, item No. A.1/1.21 and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation III/4, III/23, III/33, III/34 & X/3; LSA Code and 2000 HSC Code, 8.1, 8.5, 8.6 & 8.7.

*Further details of the product and conditions for certification are given overleaf.*

*Place and date*

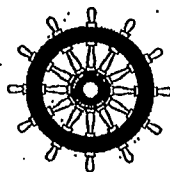
Høvik, 2004-06-02

for DET NORSKE VERITAS AS

Henning B. Karlsen

Manager, MTPNO370

Department Systems & Components



Notified Body No. 0575

*This Certificate is valid until*

2009-06-02

Ola E. Ruud

Surveyor



*DNV local office:*  
DNV Kristiansand S

*Notice: The certificate is subject to terms and conditions overleaf. Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended.*

*The Mark of Conformity may only be affixed to the product and a Declaration of Conformity may only be issued when the production/product assessment module referred to in the council directive, is fully complied with.*

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



# DET NORSKE VERITAS

## CERTIFICATE OF CONFORMITY-EC

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2002/75/EC, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This certificate is issued by Det Norske Veritas under the authority of the Government of the Kingdom of Norway.

**CERTIFICATE NO. MED-F-1698**

This Certificate consists of 1 page

*This is to certify that the*

**Launching appliances using fall and winch (davits)**

*with type designation and item/batch number*

**HL9DP-A MOB 3500**

Serial No. 5529

*Manufacturer*

**TTS Marine ASA, Kristiansand**  
KRISTIANSAND S, Norway

*is, by product verification in accordance with Module F in the Directive, found to comply with:*

Annex A.1, item No. A.1/1.21 in the Directive.

EC Type-Examination Certificate No. MED-B-2400

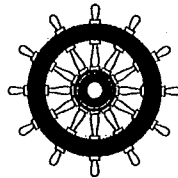
DNV Job Id.: EC-LS-273-52

DNV Assessment Report - Fabrication, dated: 2007-04-24

*Place and date*

Høvik, 2007-05-24

for DET NORSKE VERITAS AS



Notified Body No.: 0575

Ola E. Ruud  
Surveyor

Kristen Ulveseter

Manager, MTPNO370

Department Systems & Components

DNV local office:  
DNV Shanghai



POA 5



*Notice: Any significant changes made to this equipment may render this certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended.*

any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

<b>TTS-Marine ASA</b>		<b>TEST PROCEDURE</b>	
Client:		Doc. No.:	Sign.:
Description: HL9DP-A MOB3500 FR			Date:
P.O.No.:	HL Project no.: K5529		Appr.:
Machine no.:K5529		Drw. no.: K5529A01	Rev.:

The "HL9D/HL6D DAVIT" principle has been type approved before, and this type will therefore be tested on a horizontal substructure module in accordance with "Launching appliances using falls and winches, part 2, IMO Resolution MSC.81(70)"

1. Test emergency lowering in a horizontal position with maximum load 3500 kg.
2. Test emergency lowering in a horizontal position with minimum load 1900 kg.
3. Test the function for the hand pump in a horizontal position with 3500 kg load.

Note! Lifting the mobboat with a hand pump is time consuming and very onerous. There is, however, no demand of time for this operation.

4. Function test with 10% overload (3850) in a horizontal position. The product is tested by driving winch and cylinder several times.
5. Test winchbrake (static) in a horizontal position with 50% overload (5250 kg).
6. Static test with 2,2 x SWL (7700 kg).

The davit should be loaded with 2.2 x SWL once. This is done to level out unevenness in the steel structure of the davit.

7. Test the damp down cylinder with a load between 3000-3500 kg. Functional test.
8. The mooring-system is to be tested with 1000 kg. The test is being carried out by lifting the weight ca 0,5 m above the ground, thereafter the mooring-stick and the "winch-up" stick is being activated simultaneously. The load will fall to the ground, but the wire will tighten. Thereafter the mooring stick is to let go to control that the cargo is being lifted from the ground.

Sign.:

ok

ok

ok

ok

ok

ok

N/A

ok

The test was witnessed by the following persons:

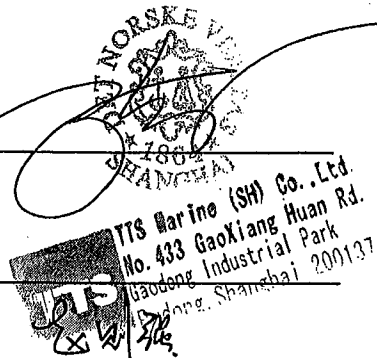
Date: 2007-04-24

Authority: Zhu Qingwen  
Name

Sign.

TMC: Zhao Zeqiang  
Name

Sign.





**TTS MARINE ASA – MARINE CRANES DIVISION,  
KRISTIANSAND**

**SAMSVARERKLÆRING  
DECLARATION OF CONFORMITY**

VI/We **TMC-KRISTIANSAND**, Barstølveien 26, N-4636 KRISTIANSAND, NORWAY  
Tel.+47 38 04 95 00, Fax +47 38 04 96 06

**erklærer at følgende produkt**  
declare that the following product

**Maskin navn**  
Machine name Davit.....  
**Maskin type**  
Machine type HL9DP-A MOB3500.....  
**Maskin Nr.**  
Machine No. K5529.....  
**Tekniske data**  
Technical data SWL=3500 kg.....

**som dekkes av denne erklæringen, er i overensstemmelse med følgende:**  
to which this declaration relates, is in conformance with the following:

**EU's direktiv 2002/75/EC vedr. Sikkerhetsutstyr beregnet for skip**  
EEC Directive 2002/75/EC on Marine Equipment – Life-saving appliances  
**EF's direktiv for elektromagnetisk kompatibilitet 89/336/EØF, 92/31/EØF**  
EEC EMC Directive 89/336/EEC, 92/31/EEC  
**DNV's typegodkjent sertifikat**  
DNV's EC type examination certificate

**Standarder benyttet**  
Standards applied IMO Res. 81 (70)

**Teknisk Kontrollorgan**  
Notified Body Det Norske Veritas AS.....

**EF-typeprøvingssertifikat nr.**  
EU-type examination certificate no. MED-B-2400.....

**For TMC-KRISTIANSAND**  
For TMC-KRISTIANSAND  
**Navn/Stilling**  
Name/Position VIDAR HANSEN / PROJECT MANAGER.....  
**Sted, Dato, Signatur**  
Place, Date, Signature Kristiansand / 29.01.07 / *Vidar Hansen*.....



# LÖNNE



## DATA SHEET

TTS MARINE AS

your order.....: 461281 K5524-36

4636 KRISTIANSAND

mark.....: 461281 K5524-36

motortype.....: 14BG 207-4AA96-Z200L  
mounting.....: B3B5  
protection class.....: IP 56  
insulation class.....: F

our order.....: 131606  
date.....: 30.01.07  
certificate no.....: 24411-AB.OIK

duty.....: S2-10MIN

moment of inertia J (kgm<sup>2</sup>): 0,2

mass (kg).....: 205

no load current (A).....: 23,2-20,9

starting torque d.o.l. (%): 154-158

temp.rise surface (K).....: 37,5-35,6

starting current d.o.l. (%): 486-492

temp.rise windings (K).....: 78,3-74,4

frequency (Hz).....: 50

frequency (Hz).....: 60

output (kw).....: 45

output (kw).....: 50

speed (min-1).....: C-CW - 1445

speed (min-1).....: C-CW - 1745

voltage (Vac).....: Δ 380

voltage (Vac).....: Δ 440

nominal current (A).....: 87

nominal current (A).....: 83

power factor cos.phi.....: 4/4 load 0,88

power factor cos.phi.....: 4/4 load 0,88

efficiency (%).....: 4/4 load 89,5

efficiency (%).....: 4/4 load 90,5

anti condensation heating : consumption (W): 2 X 40

voltage...(v).....: 230

marine classification.:

amb.temp.....: 45 C

high voltage dielectric test between phases and earth during 1 min (Vac)..... 2000

overload test during 15 seconds overload torque (% FLT).....: 160

vibration severity according NEN/ISO 2373-1974 (half key).....: class "N" or as specified below.

bearings DE/NDE...: 6312-C3 6312-C3  
special features.....: 3 X PTC-THERMISTORS 130C

S2-10MIN: 45Kw Y 690V 60Hz 48 Amp Cos 0,88 1720/MIN

motor serial numbers...: 0603/001142401 0609/009924207  
0604/002396401 0609/009924208  
0604/002396402 0609/009924209  
0604/002396403 0609/009924210  
0604/002396404 0609/009924212  
0609/009924201 0609/009924214  
0609/009924202

**Prøvesertifikat nr. 0000255472/010/2006**  
Test Certificate No.

13 NOV. 2006

Mottaker: TTS MARINE ASA

Kundens ordrenr: 460669/K5523-36

Resolvert:

Customer Order No:

Navn og adresse til fabrikant eller forhandler av tauet Name and address of the maker or supplier of the rope	CERTEX NORGE AS BJERKAS NÆRINGS-PARK BYGG 5 3471 SLEMMESTAD
Batch nr Batch no	Z52
Lengde Length	420 m
Diameter i mm Diameter in mm	15 mm
Nominal diameter Nominal diameter	15,5 mm
Konstruksjon Construction	34X7 MAXIPAC1
Overflatebehandling Surface treatment	
Stilling (trosse, kabel, høyre, venstre) Lay (hawser, cable, right, left)	RHL
Materialestype Quality of wire	1950 NMM2
Dato da tauprøven ble utført Date of test of sample of rope	100306
Aktuell bruddstyrke Actual breaking load	2174 T
Minimum bruddlast Minimum breaking load	2141 T
Tillatt arbeidsbelastning med angivelse av enhver gilt betingelse for denne, som f.eks. en minste skivediameter, en direkte belastning etc. Safe working load subject to any qualifying conditions, such as minimum pulley diameter, direct tensile etc.	
Navn og adresse til den institusjon, det selskap eller firma som utførte prøven Name and address of public service, association or firm making the test	OLIVEIRA SA
Stilling i ovennevnte institusjon, selskap eller firma som utførte prøven Position of signatory in public service, association or firm named above of person making the test	
	14 x 30 M

Vi attesterer herved at de ovennevnte oppgaver er riktige og at undersøkelsen og prøven ble foretatt av en kompetent person.

We certify that the above particulars are correct, and that a competent person carried out the examination and test.

02 OSLO den 27.10.06  
**CERTEX NORGE AS**

**CERTEX NORGE A.S**

Underskrift

Signature

**Bruksattest/Prøvesertifikat nr. 000255472/030/2006**

Test Certificate No.

Mottaker: TTS MARINE ASA

Kundens ordrenr: 460669/K5523-36

Receiver:

Customer Order No:

Kjenningsnr. eller merke Distinguishing number or mark	Angivelse av det som er prøvet Description of gear	Antall av det som er prøvet Number tested	Datum da prøven ble utført Date of test	Anvendt prøvevekt (last) tonn Proof load applied ton	Tillatt arbeidsbelastning tonn Safe working load ton
CXHD / CXGK	<p>WEDGE SOCKET 3004B 15-17 MM</p> <p>HOUSE MARKED CXGK WEDGE MARKED CXHD</p> <p>Tested by producer.</p> <p>Batch nr: CXHD / CXGK Sikkerhetsfaktor/safety factor: 5,00 Levert i henhold til/according to: maskindirektiv 522 Referanse til standard/ref standard: CERTEX * Av produsent/by producer MÅ IKKE VARMEBEHANDLES NOT TO BE HEAT-TREATED</p>	14	*	10	5

Navn og adresse til fabrikanten eller forhandlerne Name and address of makers or suppliers	CERTEX NORGE AS
Navn og adresse til den institusjon det selskap eller firma som utførte prøven og undersøkelsen Name and address of public service, association, company or firm performing the test and examination	CERTEX SVENSKA AB
Undertegnede's stilling i ovennevnte institusjon, selskap eller firma Position of signatory in public service, association, company or firm	

Vi attesterer at ovennevnte redskap ble prøvet og undersøkt den 27.10.06 og at undersøkelsen viste at redskapene utholdt belastningen uten å få skade eller formforandring og at den tillatte arbeidsbelastning av redskapen er som angitt i ovenstående rubrikk. Vi attesterer at ovennevnte utstyr er i SAMSVAR med maskindirektivet 522 utgitt av arbeidstilsynet.

We certify on the 27.10.06 and that the examination showed that the gear withstood the proof load without injury or deformation; and that the safe working load in this gear is as shown in the column above.

den 27.10.06

**CERTEX NORGE AS**

**CERTEX NORGE A.S**

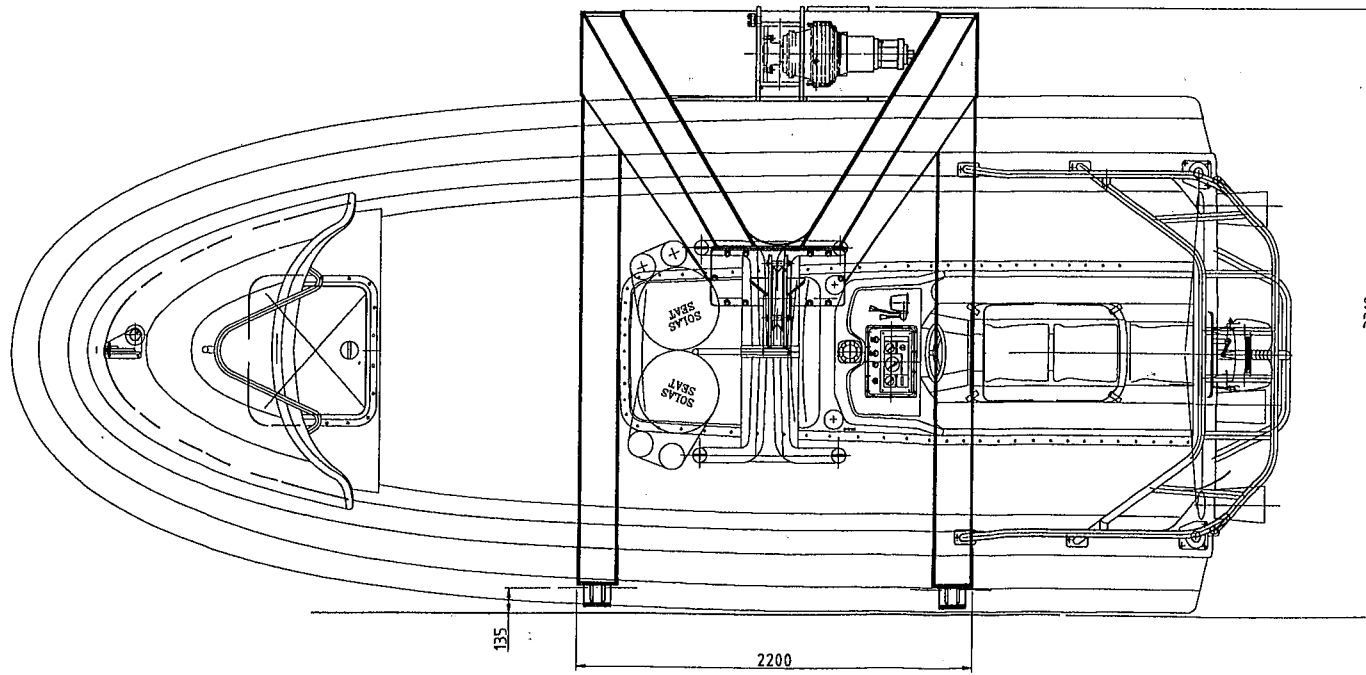
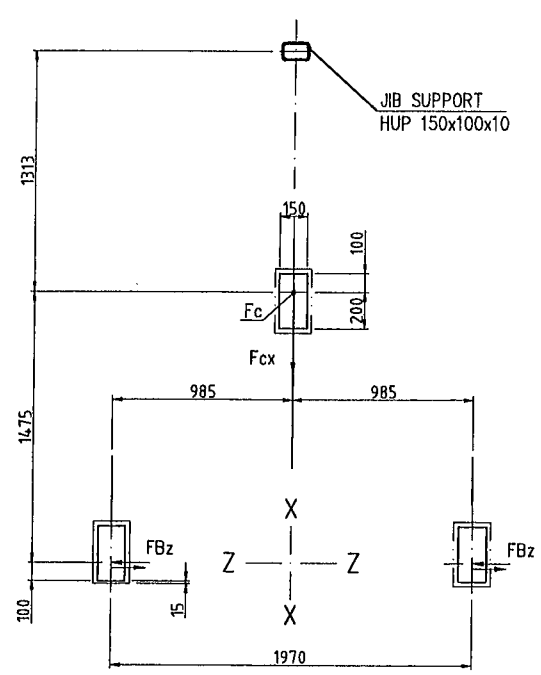
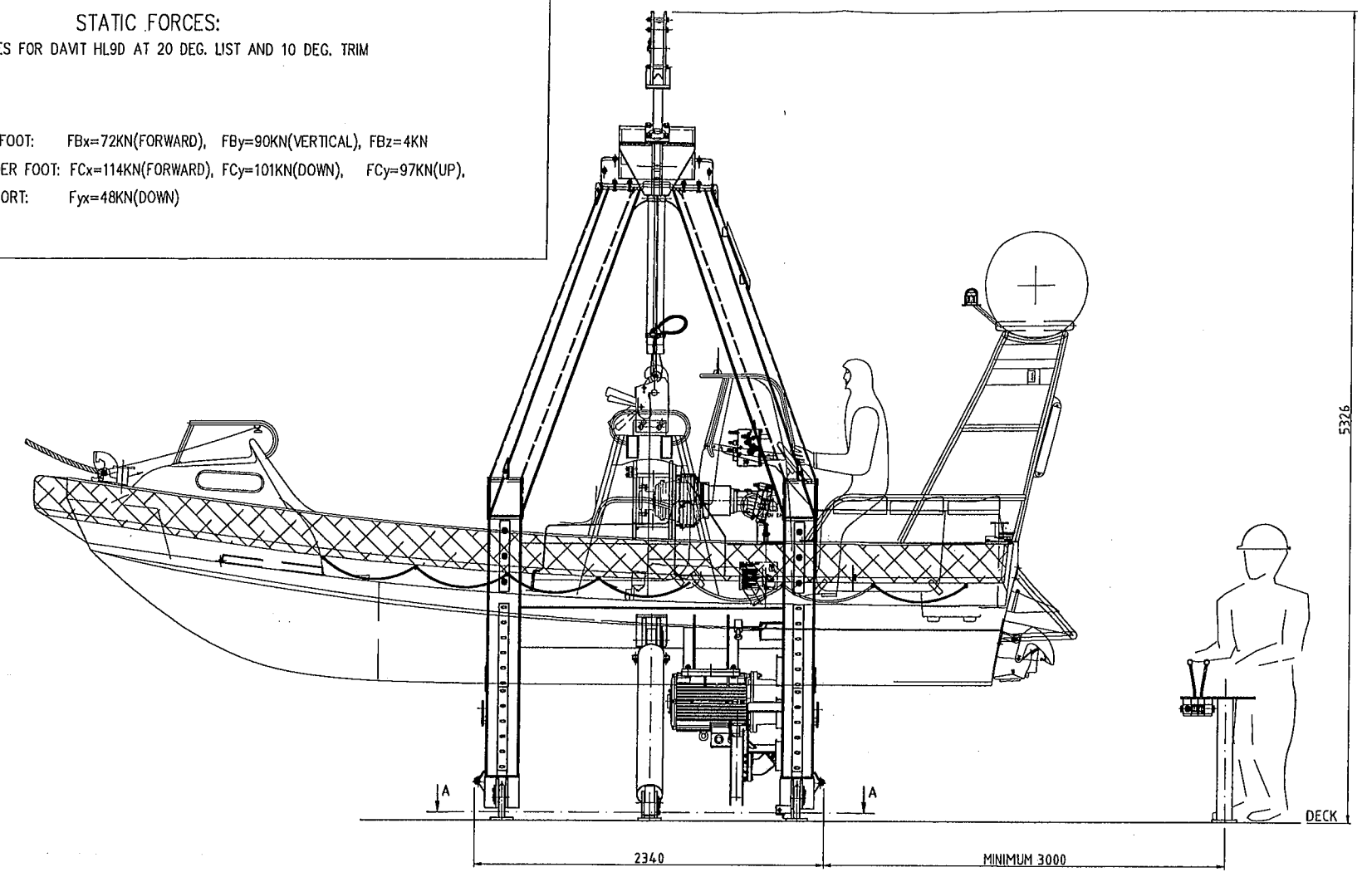
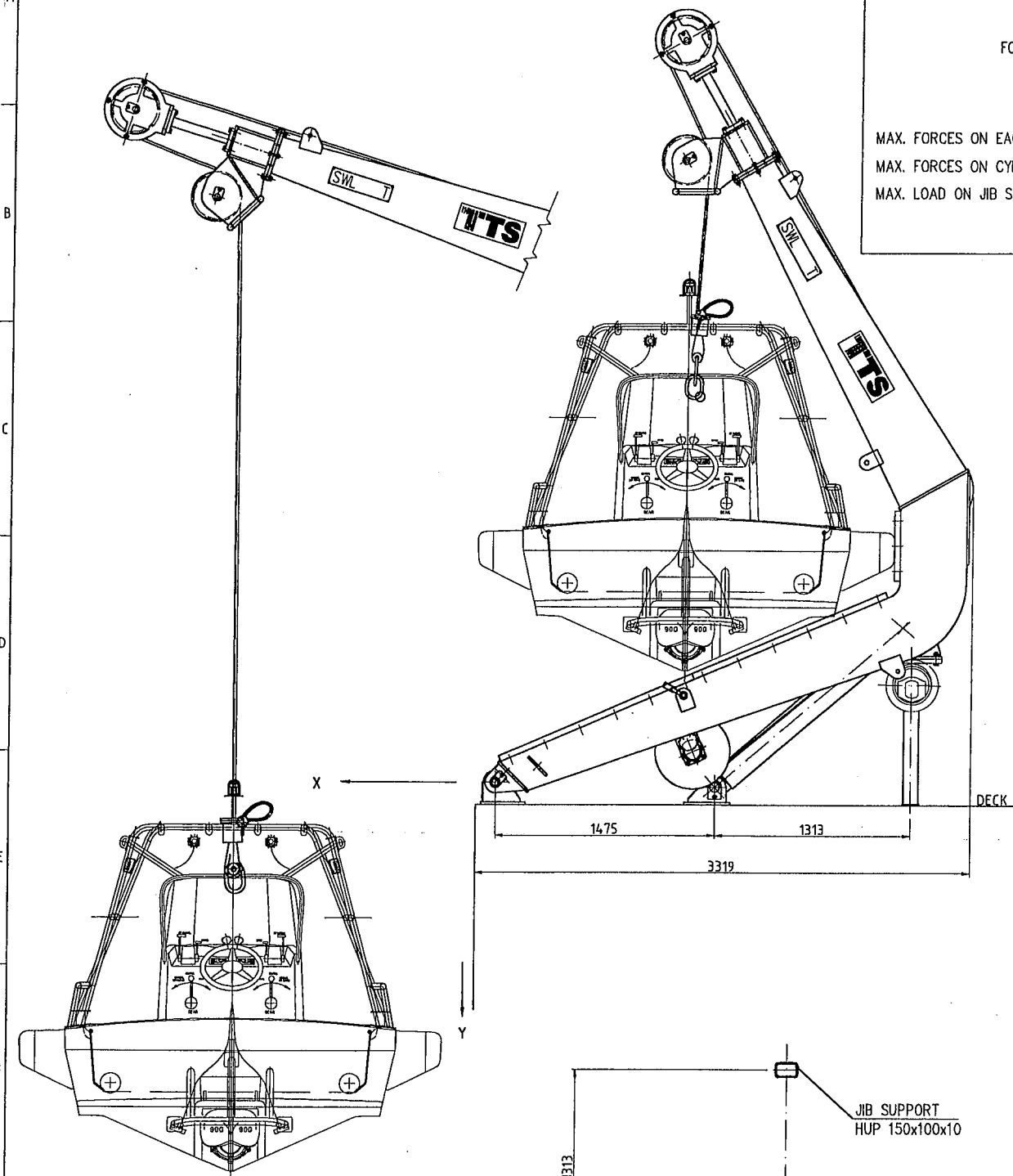
Underskrift

Signature

Rev.	Description of revision	Date / Sign.
0	INITIAL REVISION	27.11.07 VJH
1	AS BUILT	27.11.07 VJH

**STATIC FORCES:**  
FORCES FOR DAVIT HL9D AT 20 DEG. LIST AND 10 DEG. TRIM

MAX. FORCES ON EACH FOOT:  $F_{Bx}=72\text{KN}(\text{FORWARD})$ ,  $F_{By}=90\text{KN}(\text{VERTICAL})$ ,  $F_{Bz}=4\text{KN}$   
 MAX. FORCES ON CYLINDER FOOT:  $F_{Cx}=114\text{KN}(\text{FORWARD})$ ,  $F_{Cy}=101\text{KN}(\text{DOWN})$ ,  $F_{Cy}=97\text{KN}(\text{UP})$ ,  
 MAX. LOAD ON JIB SUPPORT:  $F_{yx}=48\text{KN}(\text{DOWN})$



Mob-boat: PRM  
MACHINE NO.: K5529

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Designed 28.08.06 VJH	Approved 27.11.07 VJH	Projection Scale 1:20
Drawn 28.08.06 VJH	Format A1	

**TTS Marine ASA**

Replaces: Replaced by:  
AutoCAD file: K5529G01.dwg  
Rev. 1

GENERAL ARRANGEMENT  
HL9DP-A MOB3500 FR  
DAVIT  
K5529G01

K5529G01.DWG PLOTTED BY VJH AT 11:23 NOV 21, 2007