SHELL NIGERIA
TENDER OPPORTUNITY: SALE OF FLEXIBLE COMPOSITE PIPE SYSTEM (FCP)
TENDER REF: DOC 469474849

1.0 INTRODUCTION

Shell Nigeria (SPDC & SNEPCo) has an equipment described as Flexible Composite Pipe System (FC)P for sale by auction to interested reputable organisation. The equipment is designed for deepwater intervention (well stimulation) but can also be used for alternative purposes.

The equipment is on offer for sale as a single unit or in modules to interested parties.

This equipment is currently stored in a location in Rivers state and is available for inspection to interested buyers.

2.0 Description of Materials

Description of the equipment with functional and technical specifications is attached.

3.0 MANDATORY REQUIREMENTS**

- To be eligible for this auction, interested buyers are required to have a functional email address and internet connection for online communication.

NIGERIAN CONTENT REQUIREMENTS

Auction will be between companies that are registered with Nigeria Corporate Affairs Commission (CAC)

Interested foreign organisation may apply in partnership with local companies.

4.0 Expression of Interest

Interested buyers are required to electronically submit Letter of Interest (LOI) to NGH869-F@shell.com. The email shall be titled "Letter of Interest – Tender DOC 469474849 – Sale of FCP

The LOI must be on the official letterhead of the prospective buyer with the following information.

- Company Name
- Contact email Address
- Phone number of contact person for the auction

5.0 CLOSING DATE

The LOI must be submitted before 1600 on 25 September 2020.

Dates for auctions will be communicated to interested buyers.

6.0 ADDITIONAL INFORMATION

- All cost incurred in registering and prequalifying for this exercise shall be borne solely by buyers.
- Prospective buyers must ensure that the name and contact details (email address and telephone number) of their company and authorized/responsible personnel is up-to-date in their company profile in the NJQS database.
- SNEPCo shall communicate only with authorized/responsible personnel of prequalified companies and not through unauthorized individuals or agents.
- This advertisement shall not be construed to be a commitment on the part of NNPC/SNEPCo to award any form of contract to any company and/or associated companies, sub-contractors or agents; nor shall it entitle any company submitting documents to claim any indemnity from NNPC/SNEPCo and/or any of its partners. NNPC/SNEPCo reserves the right to take final decision on any of the documents received for this exercise.

Please visit NipeX portal at www.nipex-ng.com for this advert and other information.

FCP System

1. Main Downline
2. Tensioner
3. Hydraulic Power Unit
4. Control Cabin
5. Jumper Reel

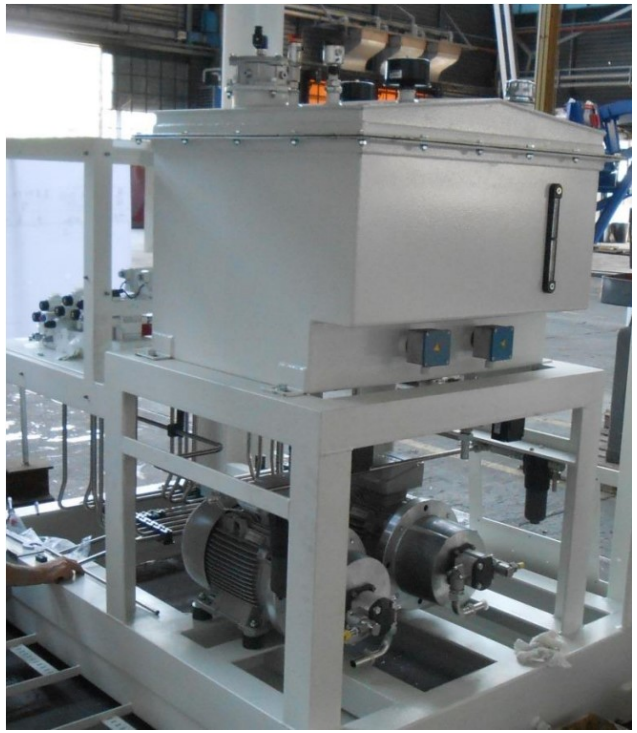
FCP System 1 - Downline Reel

Name	Downline Reel
Function	Intervention tool for deepwater well acid stimulation
Description	Reel is used for winching in/out 130 mm diameter and 1450m composite tubular. The equipment is suitable for offshore environment operation according to ISO13628-7.

FCP System 2 - Tensioner

Name	4 Nos Track Tensioner
Function	Helps deploy the main downline
Description	Provides gripping tension to downline

FCP System 3 - Hydraulic Power Unit



Name	Hydraulic Power Unit for Tensioner
Function	Powers the Tensioner
Description	Hydraulic Power Unit to power the tensioner

FCP System 4 - Control Cabin

Name	Tensioner Control Cabin
Function	Control Tensioner
Description	Computer interface to control the tensioner

FCP System 5 - Jumper Reel

Name	Jumper Reel
Function	Completes the connection to subsea equipment
Description	Reel is used for transport & winching 2 Nos in/out 130 mm diameter and 50m composite tubular. The equipment is suitable for offshore environment operation according to ISO13628-7.

FLEXIBLE COMPOSITE PIPE SYSTEM

FCP In Country Scope of Work Info Pack

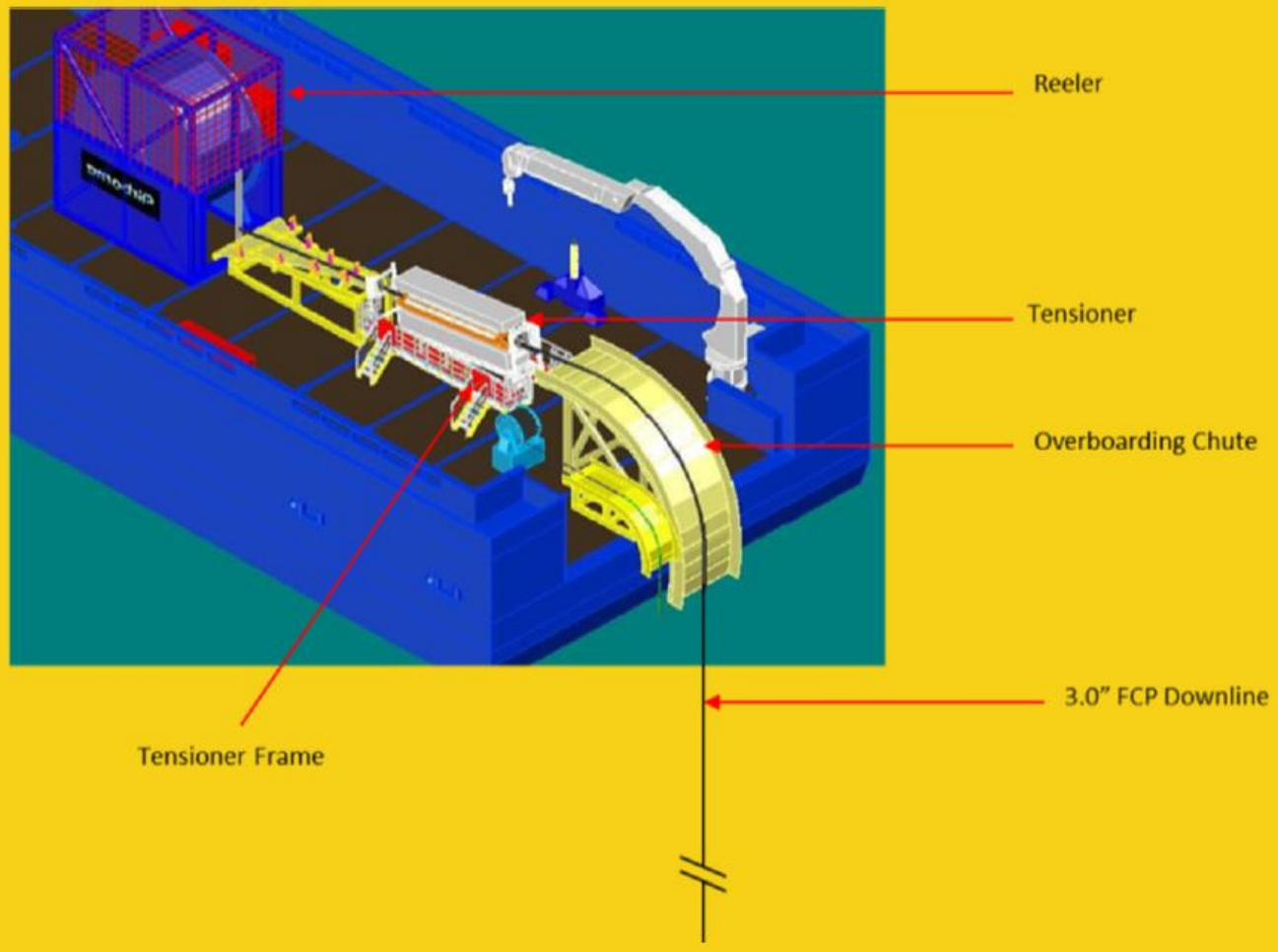
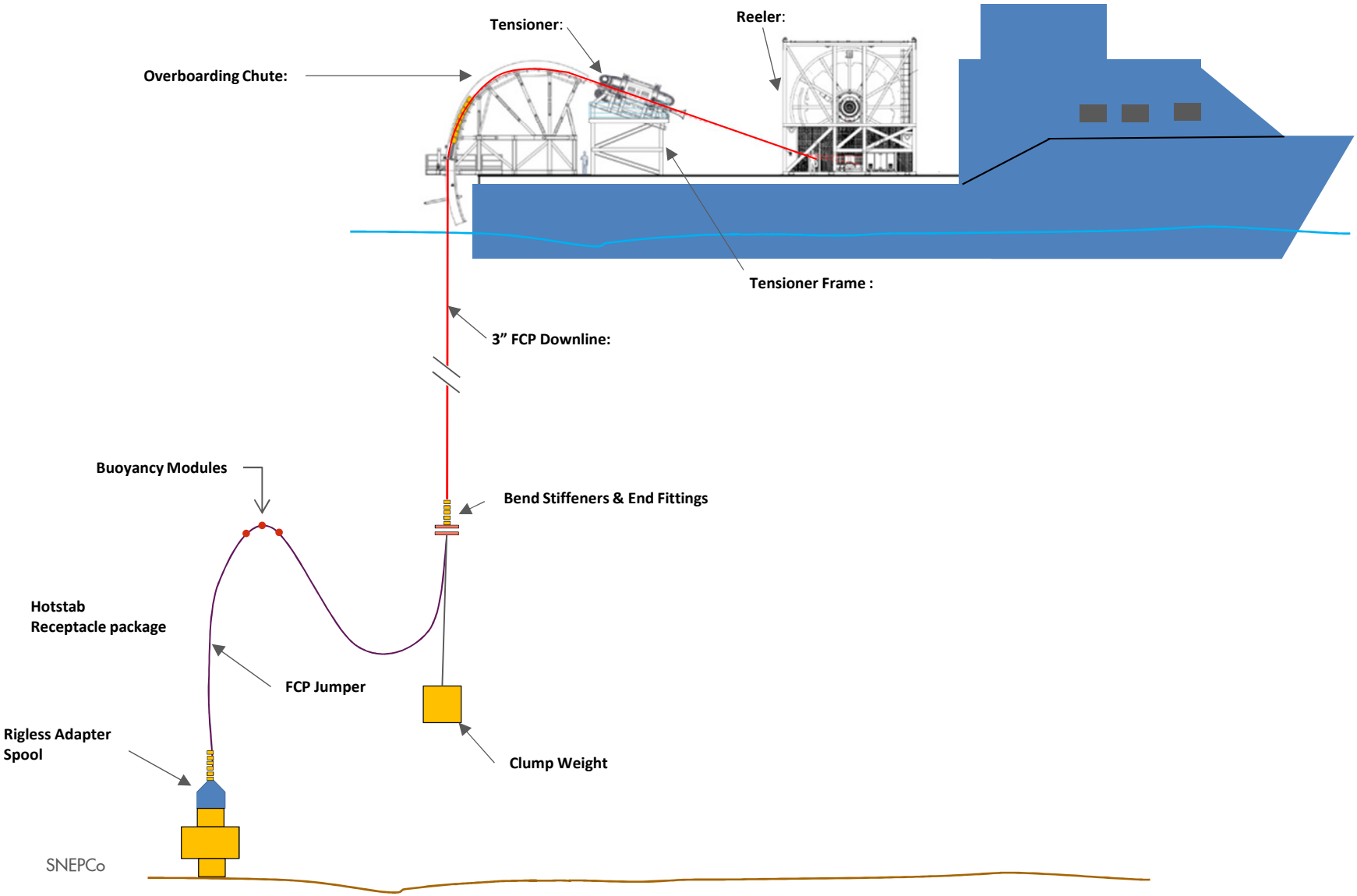


TABLE OF CONTENT

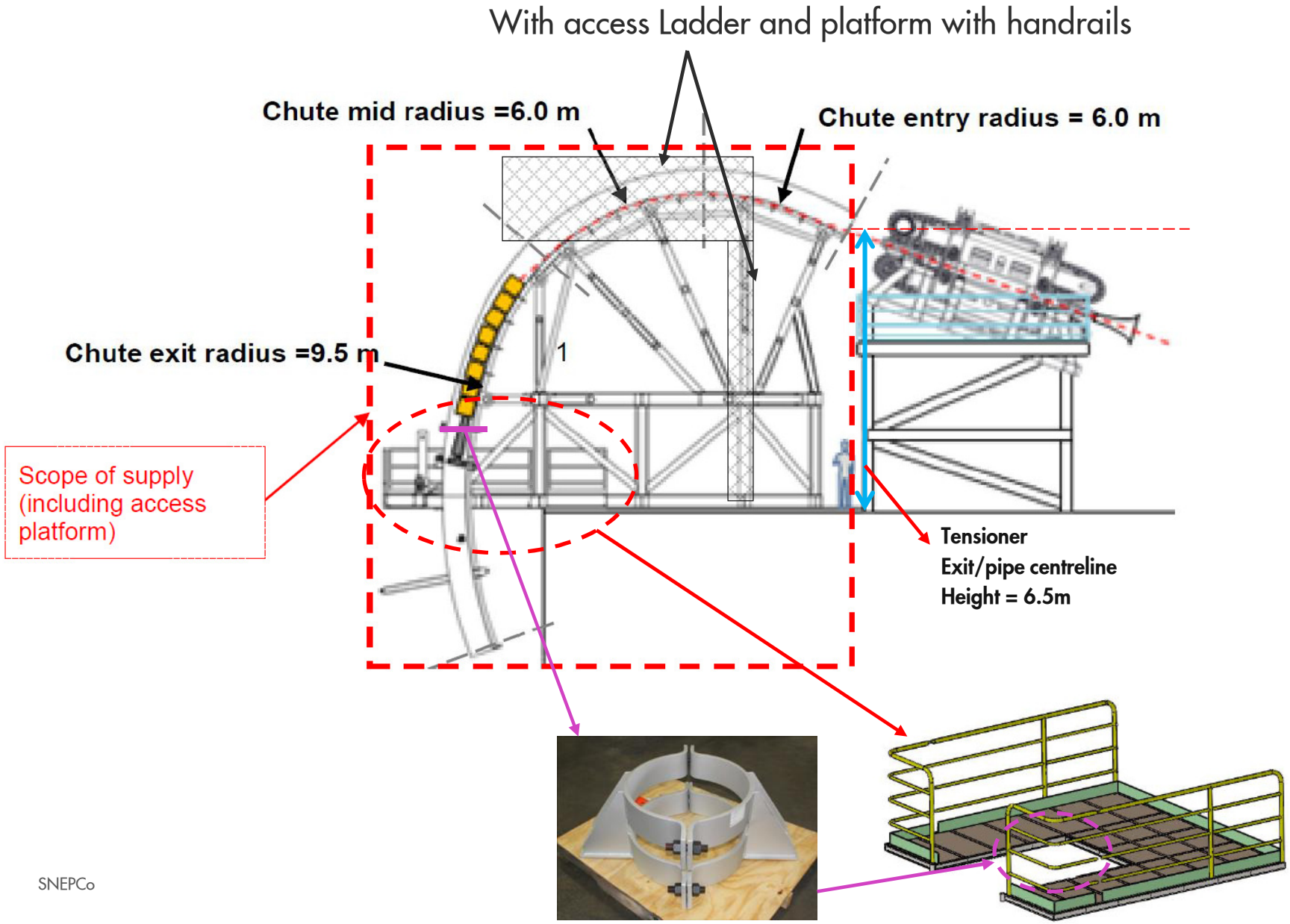
1.0
FCP OVERVIEW

FCP OVERVIEW (DEPLOYED MODE)

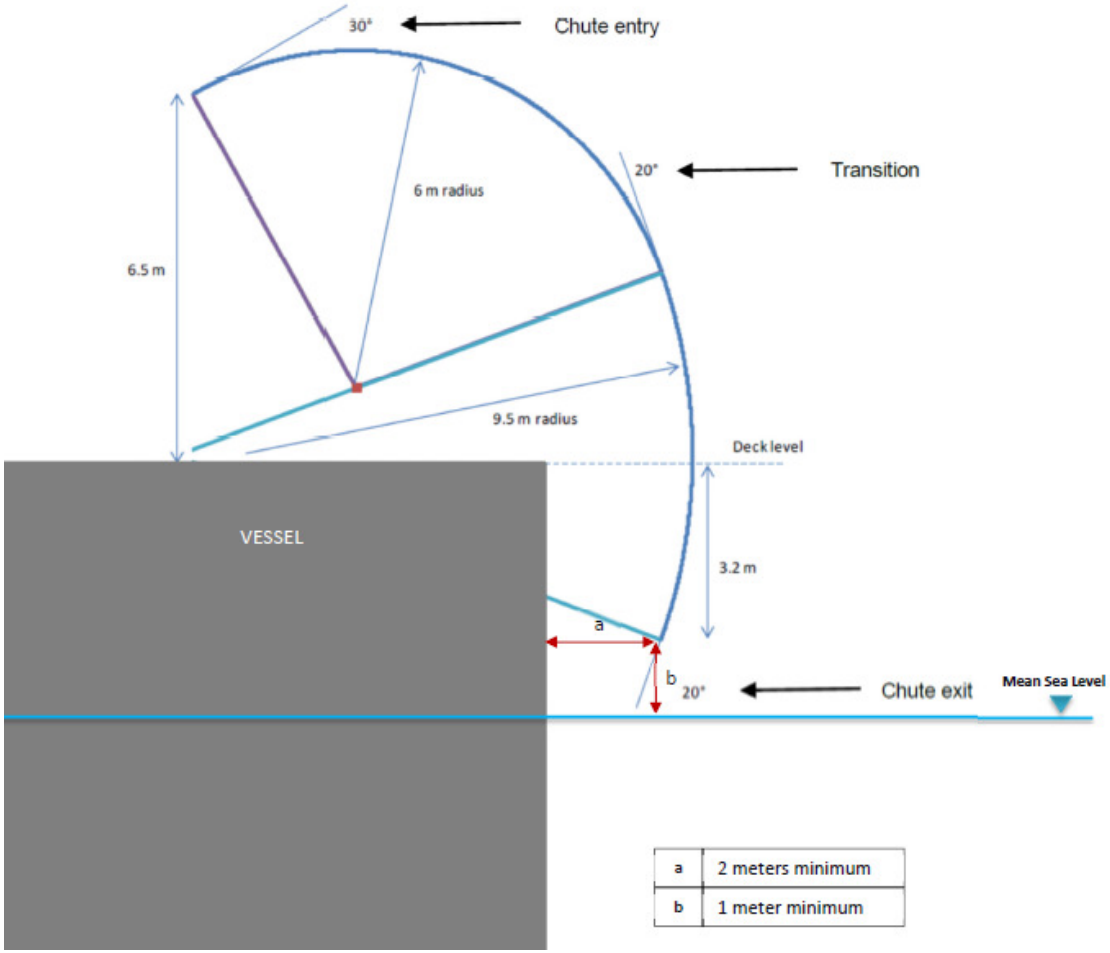


2.0
OVERBOARDING CHUTE

OVERBOARDING CHUTE



CHUTE SKETCH ANNOTATING KEY DIMENSIONS



a	2 meters minimum
b	1 meter minimum

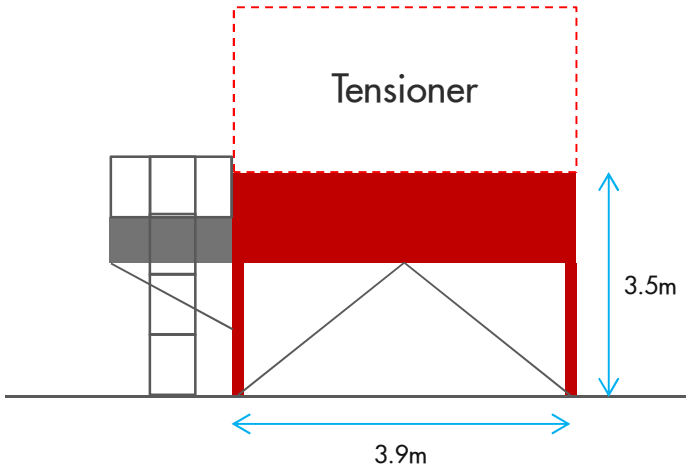
OVERBOARDING CHUTE - EXAMPLE

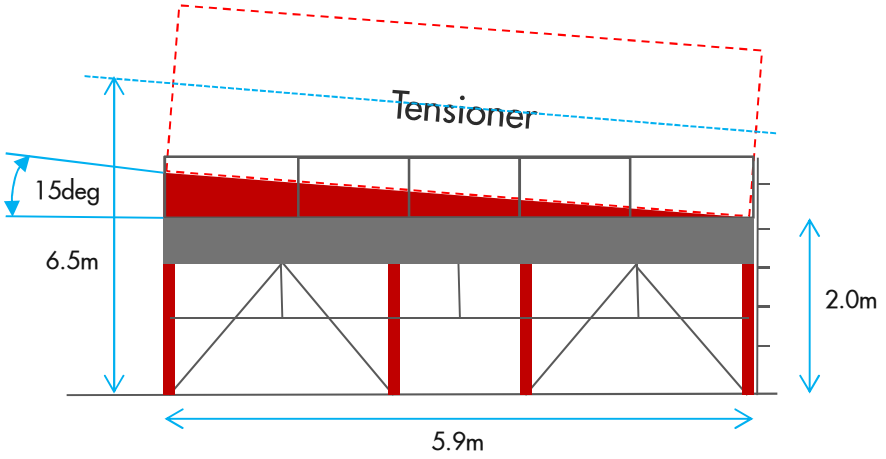
Figure 3 *Example of deployment chute from previous project (excluding access platforms)*

3

TENSIONER FRAME WITH RAMP

TENSIONER WITH RAMP'S APPROX. OUTER DIMENSIONS A

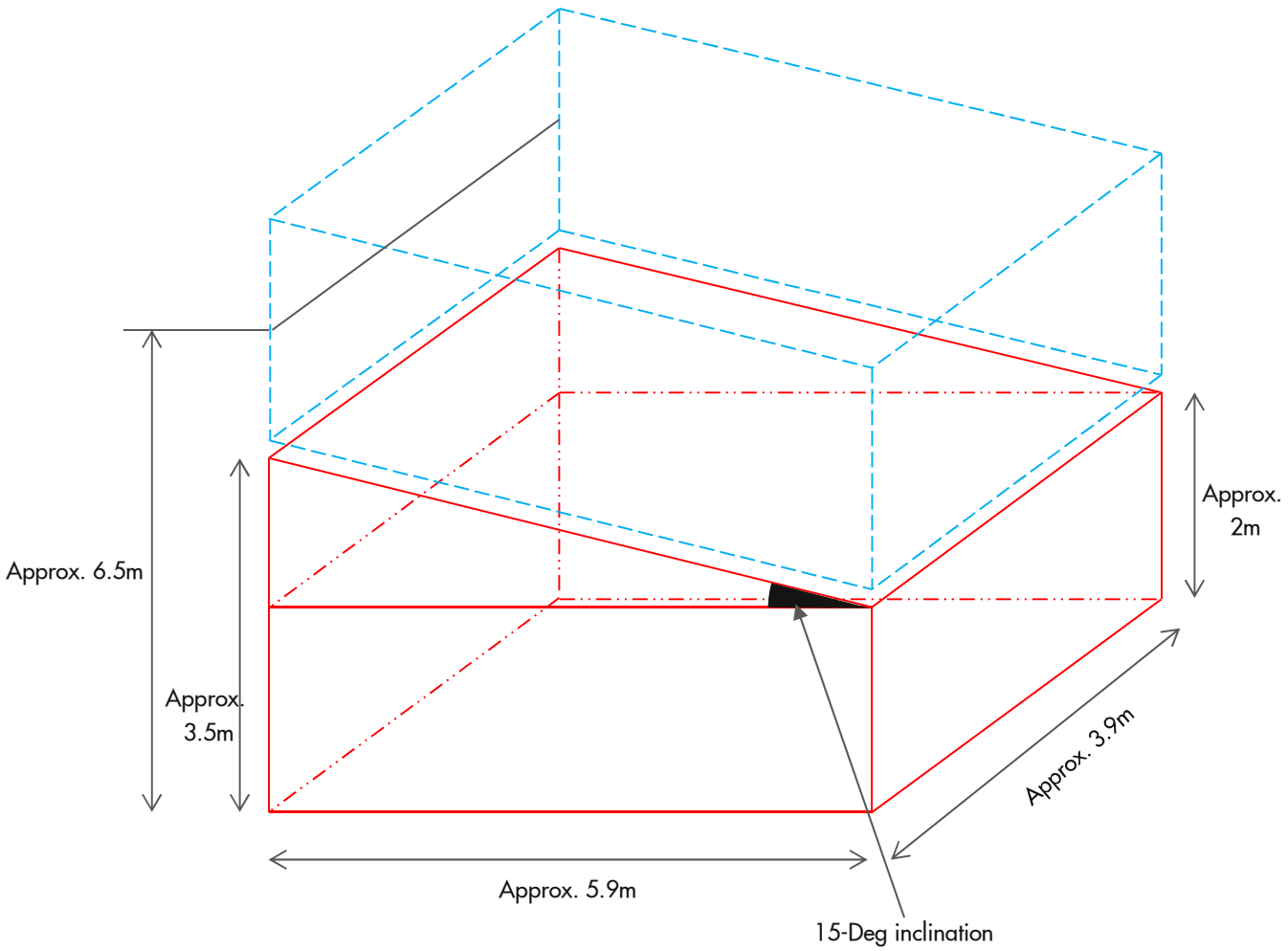




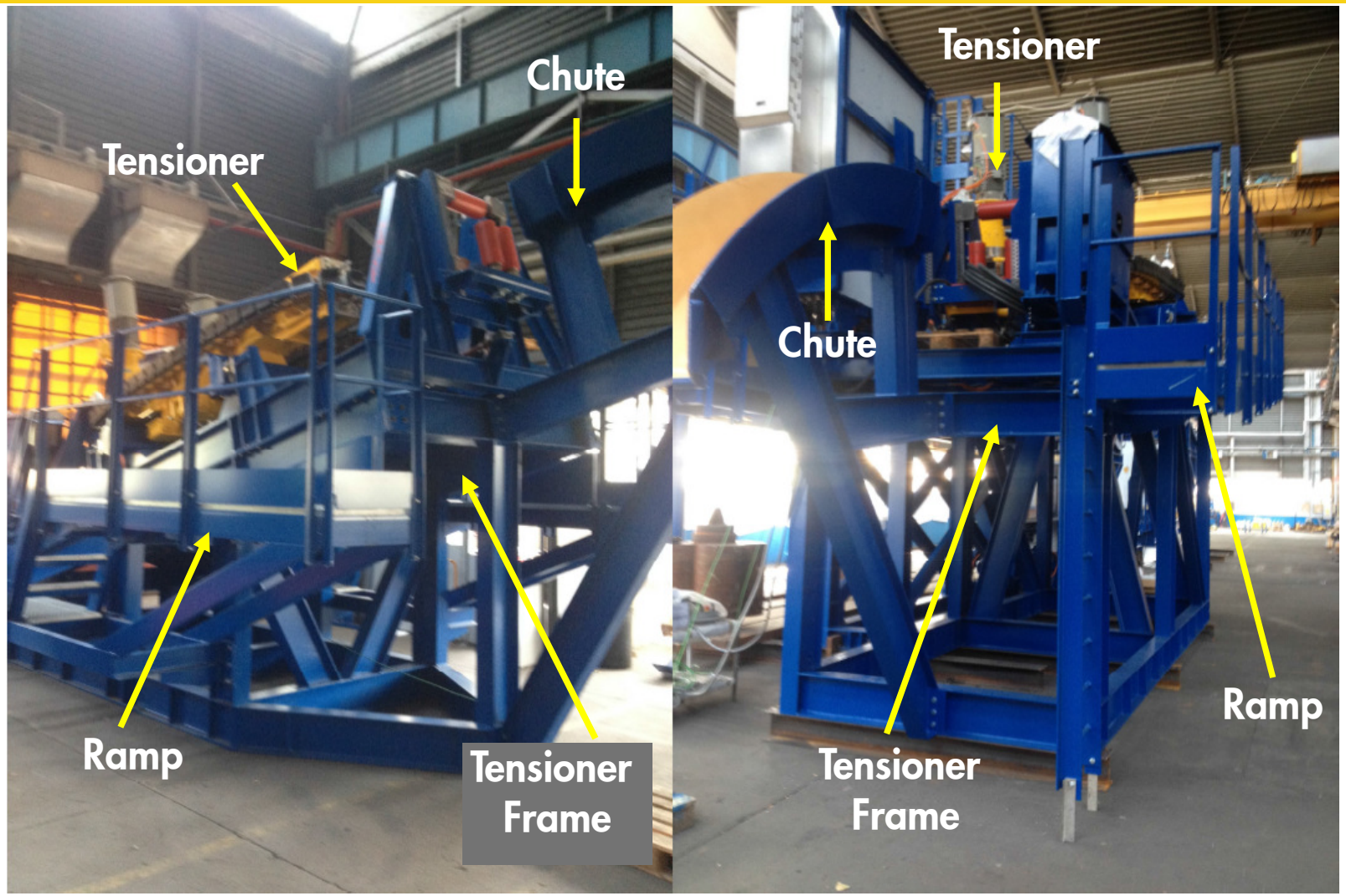
Other technical specifications:

1. **Height** - Suitable to achieve a height of 6.5m at tensioner exit measured at pipe centreline – see slides 10 & 11
2. **Platform accesses -** Platforms bolted around ramp topside, c/w handrails as per safety standards c/w 1 safety ladder at one side to grant safe access to platform
3. **Road transportability** - consisting of 2 boltable pieces to allow road transportation
4. **Lifting** - Ramp equipped with suitable lugs for lifting purposes (without tensioner on top)
5. **Coating** 340mm thickness, Colour: RAL 9002

TENSIONER WITH RAMP'S APPROX. OUTER DIMENSIONS B



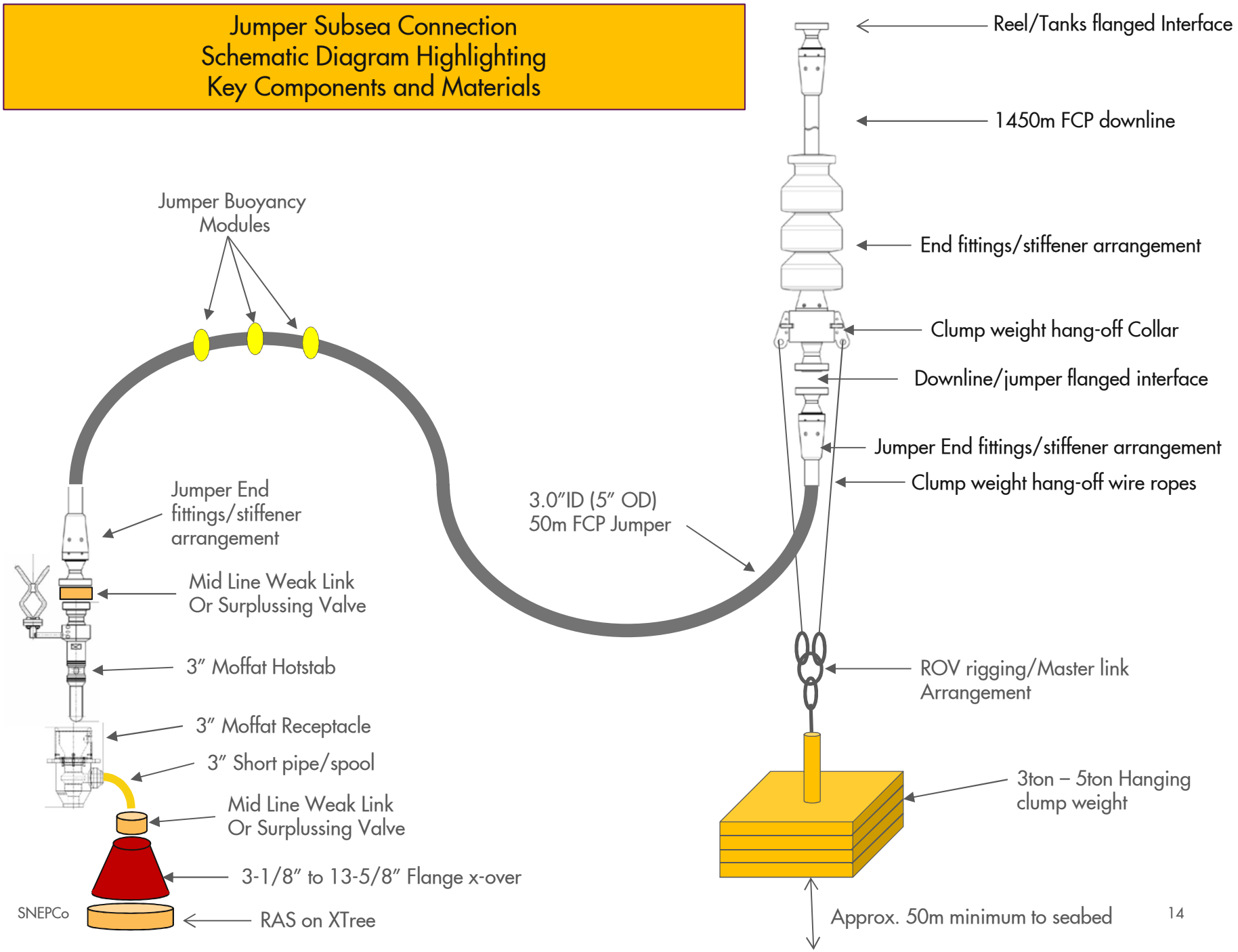
SAMPLE PHOTO - TENSIONER FRAME/RAMP/CHUTE



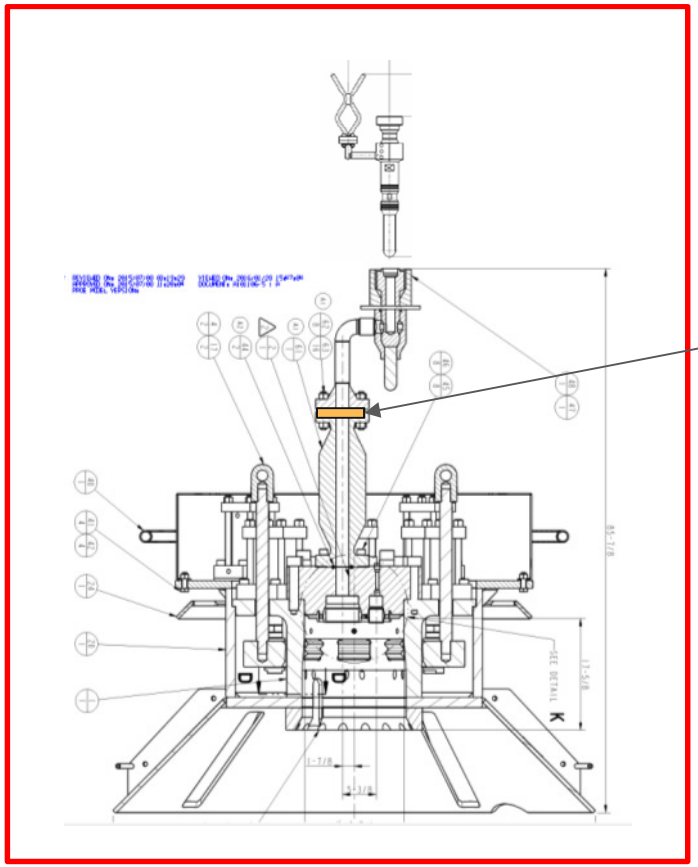
4

JUMPER SUBSEA INTERFACE PACKAGE

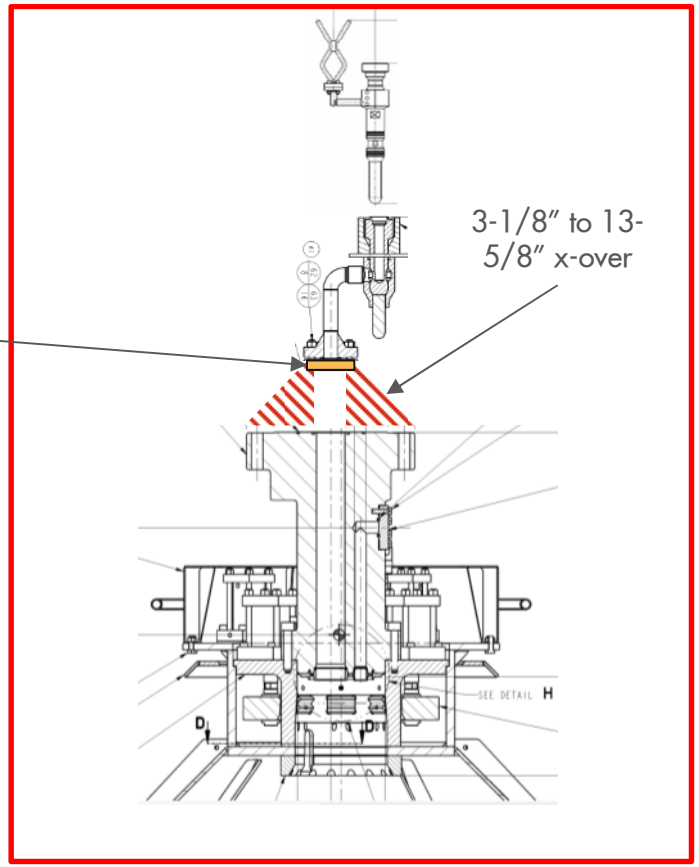
Jumper Subsea Connection Schematic Diagram Highlighting Key Components and Materials



TIC VS RAS



Mid Line
Weak Link
Or
Surplussing
Valve



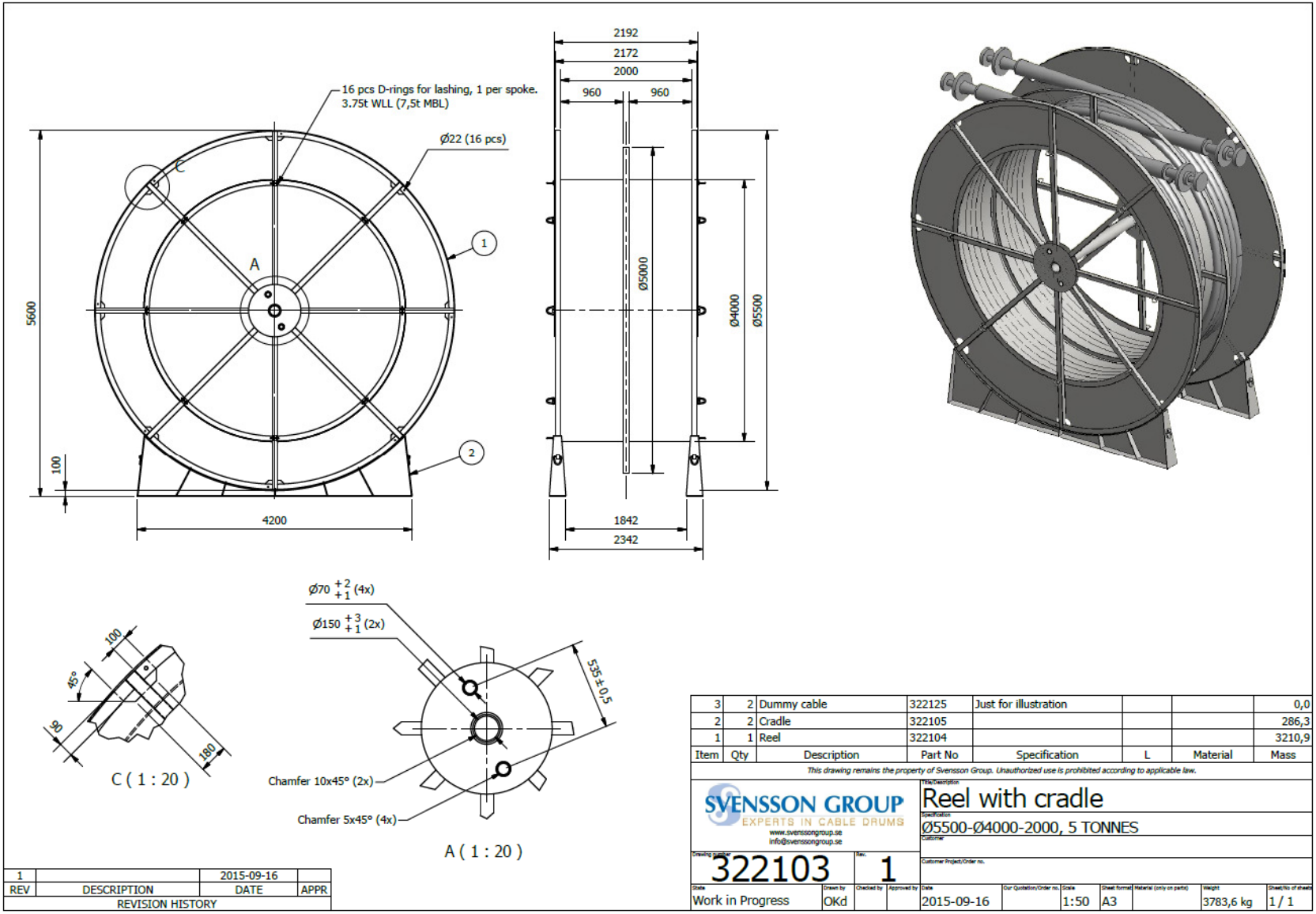
TIC

RAS

5

OFFSHORE USE CERTIFIED JUMPER REEL DRIVE SYSTEM

OFFSHORE USE CERTIFIED JUMPER REEL DRIVE SYSTEM



Item	Qty	Description	Part No	Specification	L	Material	Mass
3	2	Dummy cable	322125	Just for illustration			0,0
2	2	Cradle	322105				286,3
1	1	Reel	322104				3210,9

SVENSSON GROUP
EXPERTS IN CABLE DRUMS
www.svenssongroup.se
info@svenssongroup.se

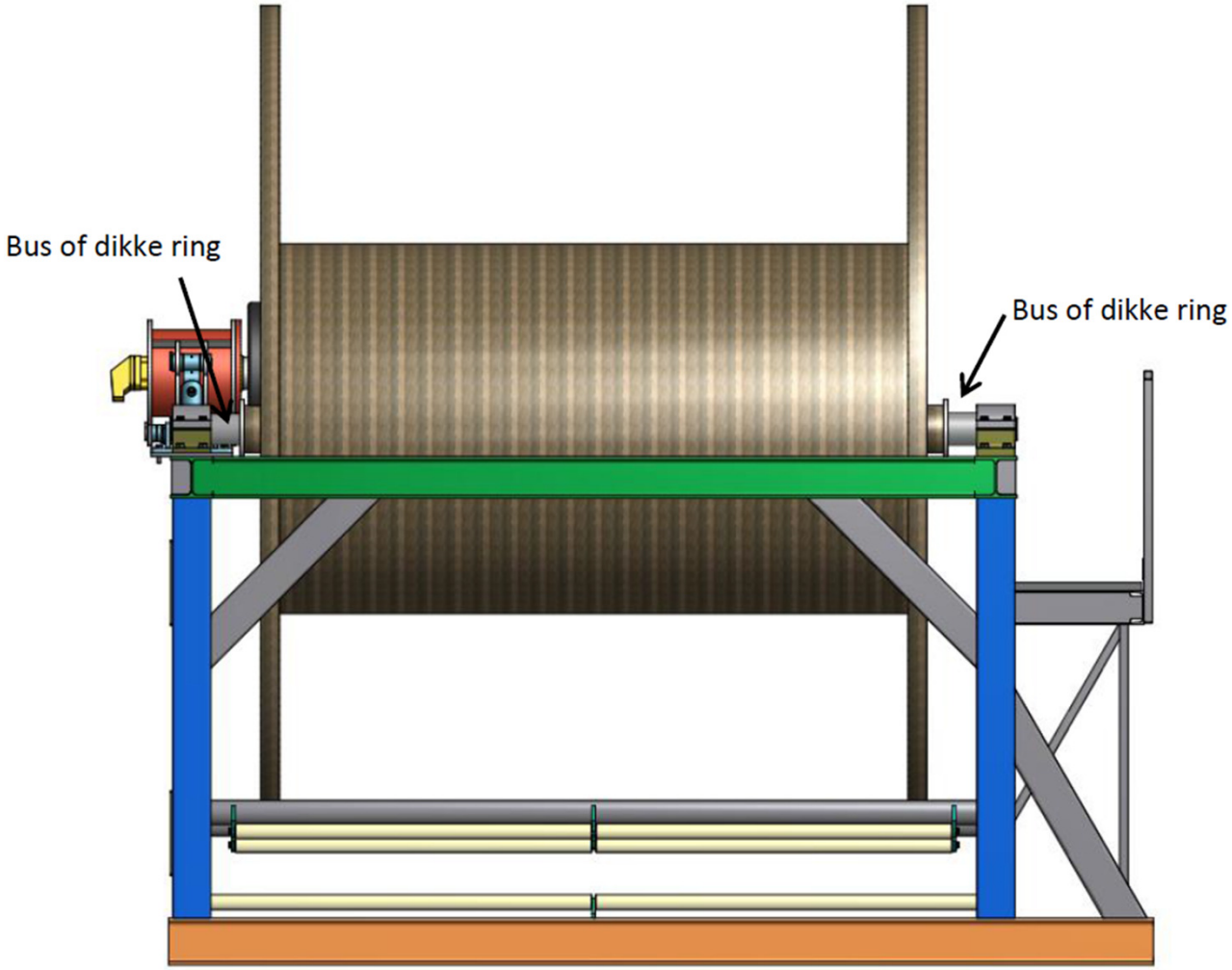
Title/Description: Reel with cradle
Specification: Ø5500-Ø4000-2000, 5 TONNES
Customer:
Customer Project/Order no.:
Drawing number: 322103
Rev.: 1

State	Drawn by	Checked by	Approved by	Date	Our Quotation/Order no.	Scale	Sheet format	Material (only on parts)	Weight	Sheet/No of sheets
Work in Progress	OKd			2015-09-16		1:50	A3		3783,6 kg	1 / 1

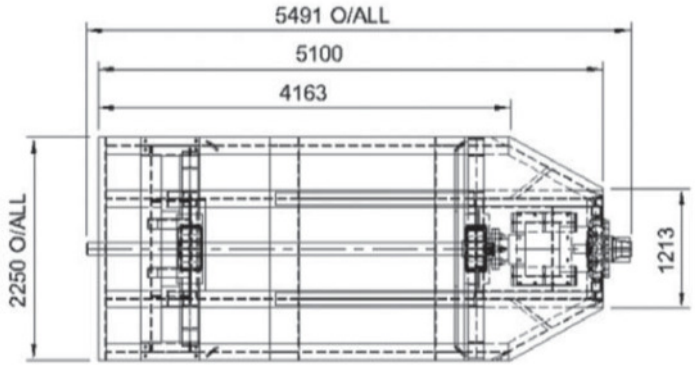
REV	DESCRIPTION	DATE	APPR
1		2015-09-16	

REVISION HISTORY

EXAMPLE OFFSHORE USE CERTIFIED JUMPER RDS B

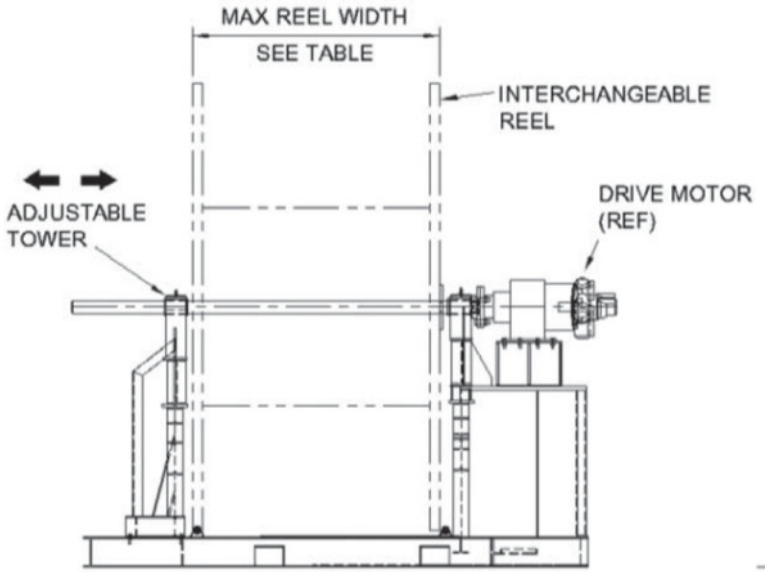


EXAMPLE OFFSHORE USE CERTIFIED JUMPER RDS C

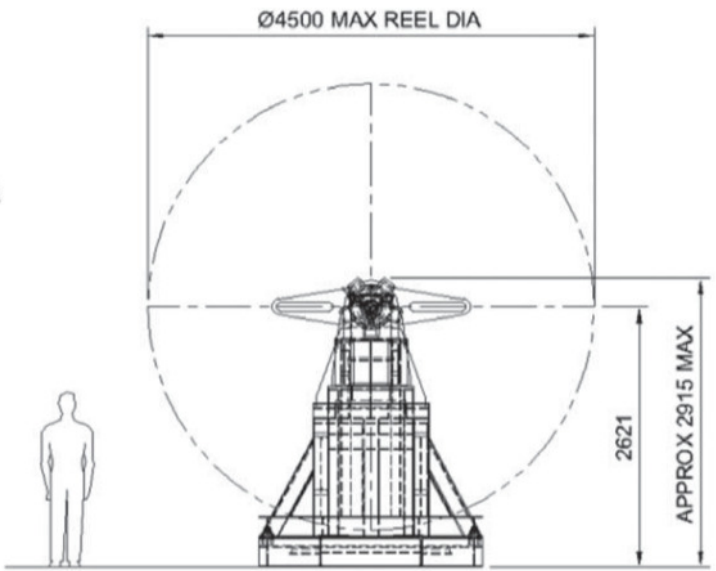


PLAN

	MAXIMUM REEL WIDTHS
NO BASE SPACERS FITTED	2490
BASE SPACERS FITTED	3370



ELEVATION



END ELEVATION

6

APPLICABLE CODES

APPLICABLE CODES

1. 0030 / ND Guidelines for Marine Transportations
2. DNVGL-OS-C101 Design of offshore steel structures, general - LRFD method
3. DNVGL-OS-B101 Metallic materials
4. EN 10204:2004 Metallic products - Types of inspection documents
5. DNV No 2.22 Standard for certification: Lifting appliances
6. ISO 14122 Safety of machinery – Permanent means of access to machinery
7. ISO 19901-3 Specific requirements for offshore structures -- Part 3: Topsides structure
8. ISO 19901-6 Specific requirements for offshore structures -- Part 6: Marine Operations
9. API-RP- 2A (21st edition) Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms — Working Stress Design
10. DNV Rules For Planning and Execution of marine Operations – or any superseding code ("VMO codes": DNV-OS-H101, -H102, and DNV-OS-H201 to -H206) when available.
11. ANSI/AISC 360-05 Specification for Structural Steel Buildings
12. AWS D1.1/D1.1M Structural Welding Code — Steel
13. ASTM A325 Standard Specification for High-strength bolts for structural steel joints
14. ASTM A563 Standard Specification for Carbon and Alloy Steel Nuts
15. ASTM F436 Standard Specification for Hardened Steel Washers
16. DEP 37.81.10.33 Structural Welding and inspection
17. DEP 37.19.00.12 Offshore Topsides Structures
18. DEP 37.19.10.30 Weldable Structural Steels for Fixed Offshore Structures

1 Information

This document indicates the requirements and scope of supply for the delivery of a DNV certified electric over hydraulic powered reel to hold a 3” downline.
Area of operation is offshore Nigeria.
In this document, the following definitions are applicable:

Vendor	Supplier of the reel
Contractor	Airborne Oil & Gas
Client	End user of the reel

1.1 Applicable codes

All work provided by the vendor shall comply with the statutory requirements for all equipment manufactured or sold within the European Ecomomic Area. The applicability of the various statutory requirements shall be assessed by the vendor. Applicable documents are listed, but are not limited to the documents below. Where editions or revisions are not referenced, the latest published edition shall apply.

1.	92/59/EEC	General Product Safety
2.	ASTM B.423	UNS 8825 Seamless Pipe and Tubing (cold worked, annealed condition)
3.	BS 6072	Method for Magnetic Particle Flaw Detection
4.	BS 6883	Cable for fixed wiring in ships and on mobile and fixed offshore units
5.	BS EN 287	Approval Testing of Welders for Fusion Welding
6.	BS EN 288	Specification and Approval of Welding Procedures for Metallic Materials
7.	BS EN 837	Pressure Gauges
8.	BS EN10 025	Specification steel
9.	DNV 2.7-3	Standard for certification: Portable offshore units
10.	IEC 529	Classification of Degrees of Protection Provided by Enclosures
11.	IEC 61892-3	Cables for offshore installation
12.	ISO 13628-7	Completion / Workover riser systems
13.	ISO 14001	Environmental Management Systems
14.	ISO 9001	Quality Systems – Model for Quality Assurance

15.	NAS 1638	Cleanliness requirements of parts used in hydraulic systems
16.	NORSOK M501	Surface preparation and protective coating
17.	SAE J343	Test Procedure for SAE 100R Series Hydraulic Hoses
18.	SAE J516	Hydraulic Hose Fittings
19.	SAE J517	Hydraulic Hoses

Vendor is to indicate compliance to the above standards or to indicate alternative codes / standards with the deviations to the above clearly stated.

2 Specifications of the downline

The downline has the following parameters:

Parameter	Requirement
Inner diameter	76 mm
Outer diameter	130 mm (+/- 2 mm)
Length	1450 m
Pressure rating	5000 psi
Factory acceptance test pressure	1.5 times pressure rating (7500 psi)
Downline weight on reel (empty)	23 Te (+/- 2 Te)
Downline weight on reel (water filled)	31 Te (+/- 3 Te)
Reel brake capacity	150 kN
Reel constant tension range required for the pipe	10 – 50 kN
Minimum bend radius on reel	4.65 m

Table 1: Downline properties

2.1 Fluids

1. Several fluids will be used in operation. Materials used shall be chemically and corrosion resistant against the fluids that will be used (see Appendix **A**).

2. The operational fluid temperature ranges from 0°C to 40°C.

3 Scope of Supply and requirements

3.1 General Requirements

1. Engineering, Procurement, Fabrication, Marking, Factory Acceptance Test, Packing and Preparation for transit of a Service Intervention Line multipurpose operational steel reel and its fully enclosed frame and pre-rigging with certified rigging. Spares and special tooling in expected format and deadline.

2. Required ancillary items and installation / removal tools required for operation shall be specified and included in the delivery.

3. The minimum design life of the downline reel assembly shall be 20 years in the operating environment.

4. The Vendor shall produce Load Test and Factory Acceptance Test Procedures for the downline reel assembly. These documents shall be approved by Contractor.

5. Loads and stresses applied to the equipment during testing will, by intention, exceed those that will be seen during normal service. Care must be taken to ensure that the design takes the worst case loading into account and that components are designed accordingly. Test loads and pressures shall be defined by relevant standards and codes of practice.

6. Reel, frame and ancillary items shall be CE marked.

7. The reel shall be able to continuously operate in temperatures ranging from as low as -10°C and up to 40°C.

8. The reel shall be bottom-spooled.

9. The reel shall be capable to support all anticipated static and dynamic loading associated with the deployment, operation and recovery of the downline.

10. Operation of the reel shall be possible at a minimum of 15° tilt in all directions.

3.2 Frame requirements

1. All sides of fully enclosed frame shall have covers/grating up to at least 3.5 meters from the bottom (see Figure 1).

2. Facilities to secure the frame (both deck and sea fastening) shall be included.

3. Lifting of the reel frame with downline will only be done onshore.

4. Lifting pad eyes etc. shall all be rated, tested and certified for fully loaded maximum operational conditions with downline installed on the reel while filled with water. No lifting or operational restrictions shall apply.

5. The reel frame is of modular skid type, no permanent installation.

6. The design of the reel frame shall be with a minimized foot print for reel frame whilst stable in an offshore environment. Vendor shall advise exact dimensions.

7. The roof of the reel shall be closed by plating. Anti skid shall be applied on the roof.

8. Tugger points shall be included at the sides of the reel for controlling the reel during lifting.

9. The vendor shall be responsible for the supply and testing of all lifting equipment including slings and pad eyes. All equipment shall have a proof load test certificate from an approved body.

10. An integrated ladder to the roof shall be applied in the frame (see Figure 1 and Figure 4). Anti-skid shall be applied on the ladder (steps).

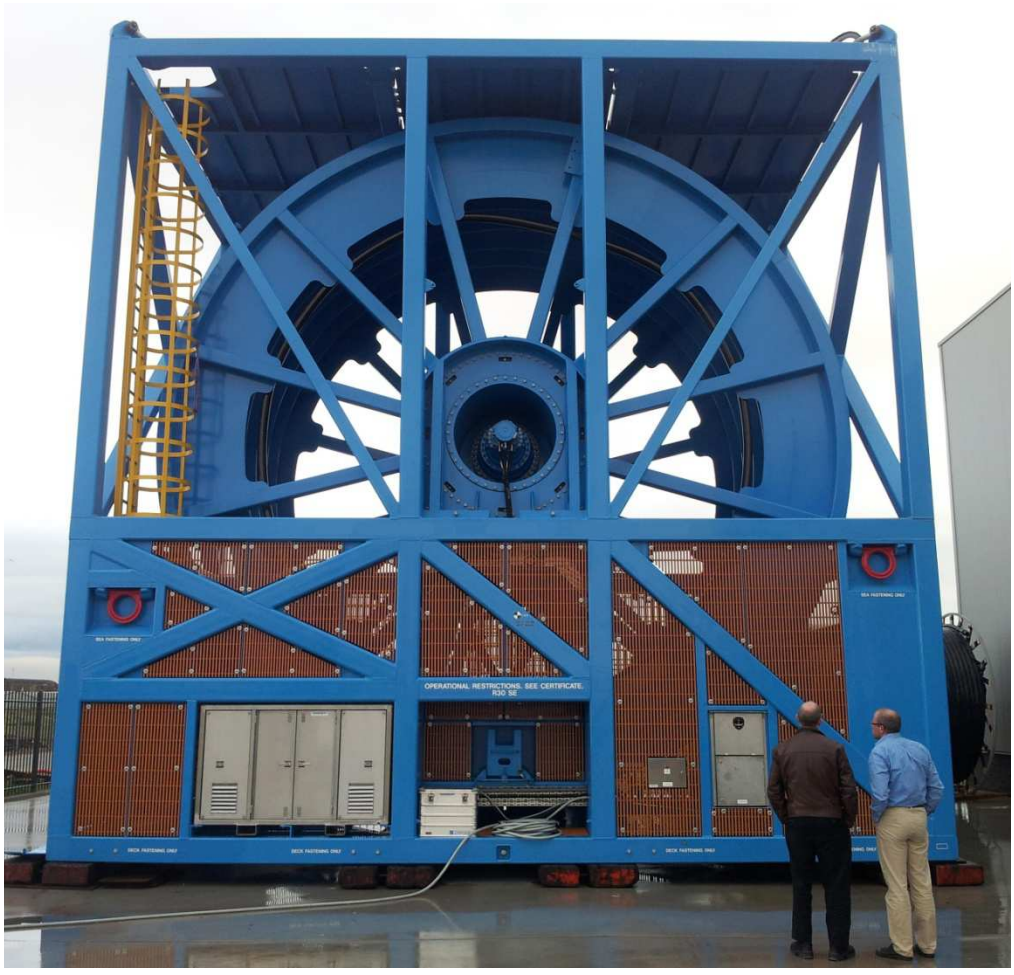


Figure 1 Example of a reeling unit.

3.3 Drum requirements

1. The drum shall be designed to hold a fluid filled pipe as specified in section 2.

2. The reel flange size is to be advised by Vendor. The flanges of the reel shall have a height so that at least 1 additional layer of pipe can be spooled, see Figure 3.

3. It shall be possible to store at least 100 m of additional pipe, without using the additional flange height mentioned in point 2 of this section.

4. The reel shall be able to store at least 20% additional length (290 m). The additional wrap of point 2 and the additional 100 meters of point 3, may be used.

5. Included shall be a swivel with the following properties:

   a) Swivel shall be rated at the same internal pressure as the downline (see section 2), also during rotation.

   b) Swivel shall be compatible with all specified fluids (see section 2.1).

   c) Swivel shall be tested during factory acceptance test to the factory acceptance test pressure specified in section 2, while rotating the reel.

6. Reel drum core shall be constructed with access to the inner pipe connections.

7. Drainage holes shall be applied at all spokes and ribs.

8. Lifting lugs shall be included inside the barrel on each rib and spoke. These will be used to attach mobile lifting gear. The capacity shall be at least 5 Te.

9. Anti skid shall be applied inside the barrel.

10. The barrel shall be equipped with a separator flange (see Figure 2), taking into account:

    a) The separator flange shall be plated. A dedicated opening shall allow the downline to pass through.

    b) The MBR limitations shall be maintained for downline with the secondary bending through the separator flange.

    c) At the connection of the downline, part of the flanges and bed plating shall be removable (see Figure 2). This shall leave sufficient space to manoeuvre and align the mating flanges and tighten the studbolts with a hydraulic torque wrench.

    d) Features shall be incorporated to secure the downline end fitting (weight is approximately 200 kg).

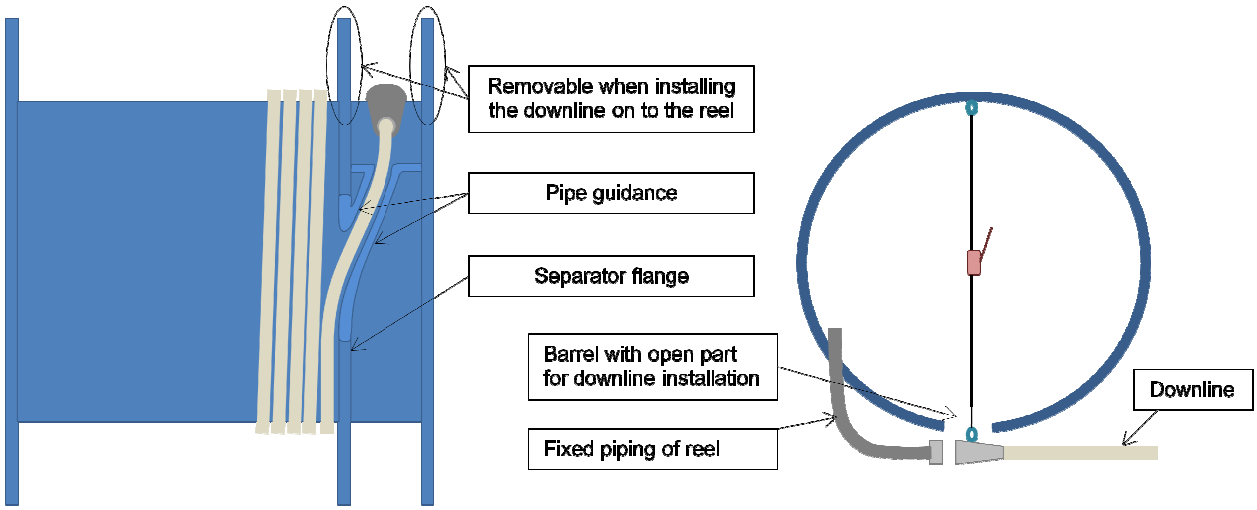


Figure 2: Schematic of barrel with separator flange. Note that the pipe end fitting requires sufficient access for connecting.

11. End fitting type (flange) of downline is yet unknown, this will be specified in the detailed design. Expected flange width is approximately 3 x the outer diameter of the pipe. Length of the downline end fitting is approximately 1000-1250 mm.

12. It shall not be possible for the downline to be in contact with sharp edges or protruding parts, since these can damage the downline.

13. Fixed piping shall be used to get from the downline mating flange to the swivel using bends with a minimum radius of 5 times the outer diameter of the pipe.

14. All pipe work must be fixed and clamped to mitigate the effect of vibration.

15. Space around the flange connection between downline end fitting and fixed piping shall be enough to accommodate tooling such as a hydraulic torque wrench.

16. The piping shall have an inner diameter equal to the downline +/- 5% (see section 2.1).

17. The piping shall be compatible with all fluids specified in section 2.1.

18. The amount of layers of downline on the reel is to be advised by vendor. Maximum number of wraps shall in no case exceed 4.

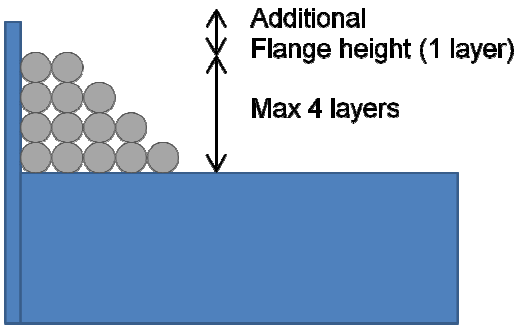


Figure 3: Maximum amount of layers is 4 and the flange height shall have a height to store at least 1 additional layer

Figure 4: Ladder and covered roof.

3.4 Drive train (Electric over hydraulic)

1. The drum shall be powered by an electric over hydraulic motor.
2. Power requirement shall be provided with quote.
3. Electric connection plug is TBD. Vendor to advise.
4. The continuous operating temperature of 40°C shall be taken into account in the design of the cooling system.

3.5 Control system

1. A control panel on the side of the reel, shall be installed with an as good as possible view on the levelwind and departure of the downline.
2. The reel shall have an additional cable type remote control (cable 25 meters length). The cable shall be flexible for moving around the reel.
3. The screens of the control panels shall be of sufficient size with high contrast and good visibility in direct sunlight.
4. Buttons of the control panels shall be large enough to control while wearing working gloves. This includes touch screen controls.

5. The drum shall be capable of being operated in both a manual mode as well as a constant tension mode.

   a) In manual mode, the drum rotation shall be controllable by joystick.

   b) In constant tension mode, the tension shall be adjustable within the range as specified in section 2.

6. Spool speed shall be 30 meters/minute at all CT settings.

3.6 Levelwind system

1. Levelwind shall be capable of bending the pipe in such a way that the width of the reel is kept to a minimum. The minimum bend radius of the pipe (not on reel), shall not be exceeded (see section 2 for the minimum bend radius and pipe stiffness).

2. The levelwind shall be capable of being operated in both a manual mode as well as an automatic mode.

3. Manual operation of the levelwind shall be joystick controlled.

4. The range of the levelwind shall be as indicated in Figure 5.

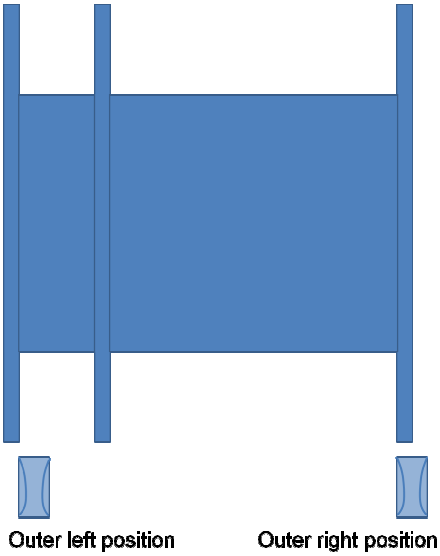


Figure 5: Levelwind range

3.7 Brake System & Mechanical Locking

1. A reel drum brake shall be included and shall be applied and released automatically.

2. The operating philosophy shall be fail safe, only to release the brake when pressure is applied to it.

3. Emergency stop time shall be max. 5 seconds to full stop.

4. There shall be manually inserted locking dogs between the reel drum and the reel frame, providing at least eight equal-spaced parking positions. When engaged in the reel drum the locking dogs will operate a failsafe switch, which will cut the motor power. It shall not be possible to operate the reel, whilst this lock is applied.

5. The reel drum shall not be accessible without having placed the reel into a safe condition.

6. Static brake capacity of the reel shall be advised by vendor. Minimum static brake capacity shall be as specified in section 2.

7. A visual indication shall be present when the brake is engaged (e.g. blinking light on the control panel or a clear indication on the screens of the control panel).

3.8 Ancillaries and additional requirements

1. Fall protection gear attachment points shall be applied on the roof.

2. The equipment shall be designed so that it is safe in use.

   a) All moving parts shall be provided with guards to protect operators.

   b) All items that contain stored energy shall be fitted with suitable warning labels.

   c) Controls shall be arranged so they are logically and ergonomically laid out for ease and safety of operation.

3. The vendor shall demonstrate that a safety review of the design has taken place with particular attention to loss of life or injury resulting from moving machinery.

4. Valves and gauges shall be identified by a stamped or engraved stainless steel tag wire locked to the component.

5. A counter shall be included in the software to keep track of the hours in operation.

6. A tarpaulin to cover entire reel shall be included in the delivery with the following properties:

   a) Tarpaulin shall be weather proof and shall consider the effects of heat and direct sun-light.

   b) The colour shall be white.

7. The reel shall be fitted with a lighting system to accommodate working in the dark.

8. Connector type (flange) to vessel pump is yet unknown. This interface shall be located at deck level.

9. All text on the reel shall be in English.

3.9 Building/Constructing requirements

1. The protective frame and drum shall be fabricated from low carbon steel in accordance with requirements stated in BS EN10 025.

2. All welds shall be continuous to prevent ingress of salt-laden moisture and internal corrosion of structural steel members.

3. The offshore paint system NORSOK M501 Coating system no. 1 shall be applied. A paint report shall be supplied.

4. The color of the finished equipment shall be White (RAL 9002) for all steel work.

5. All drives shall be guarded by plating.

6. The Vendor shall provide a cost-effective and proper noise control design of the supplied equipment.

7. The design shall, wherever possible, use field proven and tested components and materials, field proven in a similar capacity and environment.

8. Safety shall be a prime consideration during the design, construction, testing transportation and utilization of this equipment.

9. Consideration shall be given during the design of the equipment to ensure that it can be maintained and that individual components can be accessed and replaced in a safe and expedient manner.

10. The system shall provide high availability through simple design and a considered maintenance/testing programme. Particular attention should be paid to accommodation of a wide range of vibration frequencies and accelerations.

11. All pad-eyes shall have been MPI tested by a competent 3rd party.

12. If components are too heavy for manual lifting, lifting aids shall be provided.

A Appendix: Fluid cocktails

Fluid 1 – Ammonium Chloride Brine

Code	Chemical	Sub-content	Concentration
J285	Ammonium Chloride		0.417 llbs / gal
U066	Mutual Solvent	2-Butoxyethanol	10 vol %
F103	Surfactant		1 vol %
		Oxyalkylated Alkylalcohol	
		Propan-2-Ol	
		2-Butoxyethanol	
		1-Undecanol	
			Balance = Demi Water

Fluid 2 – 10% HCl

Code	Chemical	Sub-content	Concentration
A261	Corrosion Inhibitor		2 vol %
		Aromatic Ketones	
		Propan-2-Ol	
		Aromatic Hydrocarbon	
		Aliphatic Alcolhol Polyglycol Ether	
		Prop-2-Yn-1-Ol	
		Methanol	
		Formaldehyde	
A201	Inhibitor Aid		2 vol %
		Formic Acid	
		Water	
F103	Surfactant		1 vol %
		Oxyalkylated Alkylalcohol	
		Propan-2-Ol	
		2-Butoxyethanol	
		1-Undecanol	
L058	Iron reducing agent		0.01 llbs / gal
		Sodium Erythorbate	
H033	Hydrochloric Acid		27.3 vol%
U066	Mutual Solvent		5 vol %
		2-Butoxyethanol	

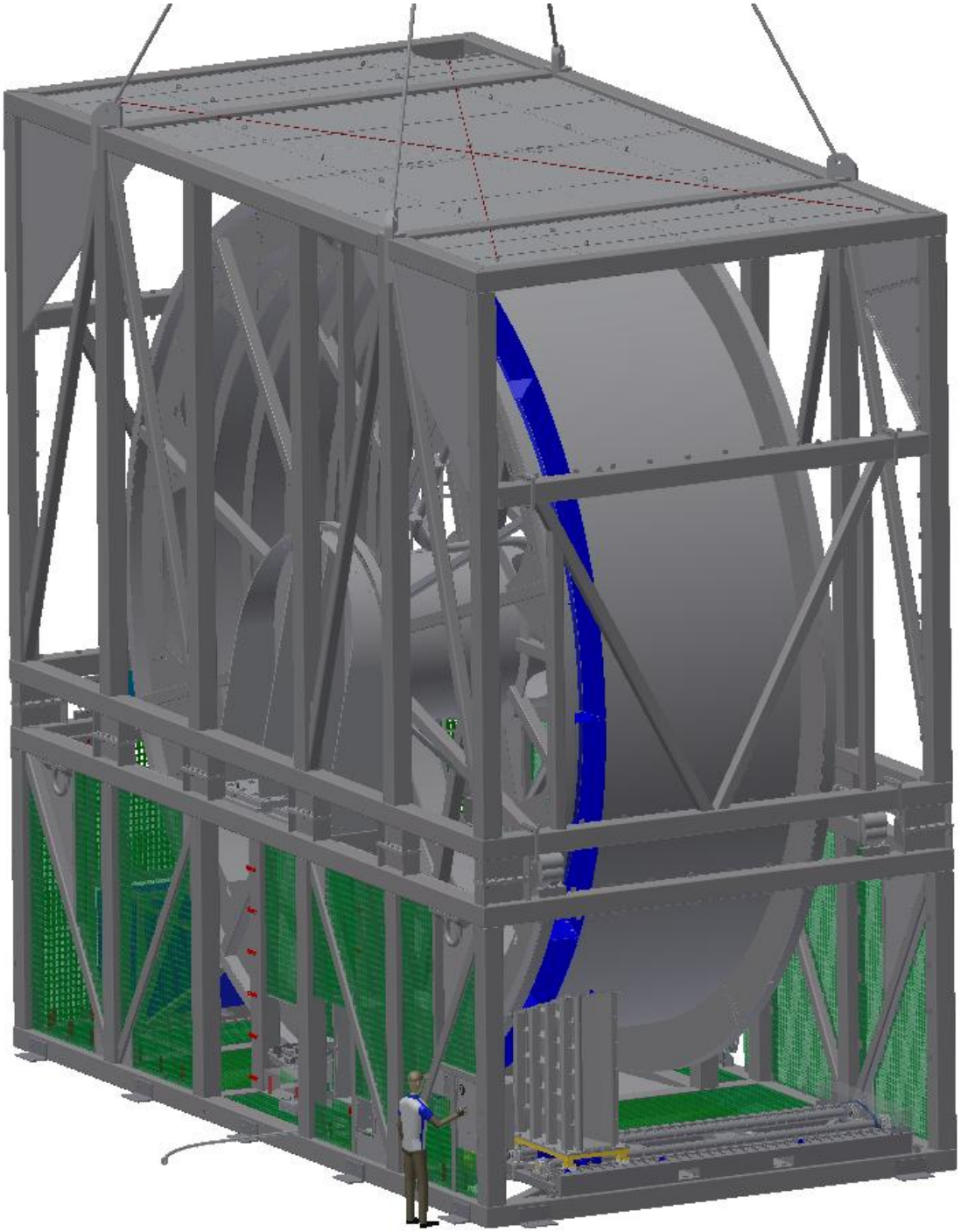
U042	Iron Chelating Agent		2.6 vol%
W054	Non emulsifying Agent		1 vol %
		Methanol	
		Propan-2-Ol	
		Xylene	
		Oxyalkalated Alcohols	
			Balance = Demi Water

Fluid 3 – 9:1 Mud Acid

Code	Chemical	Sub-content	Concentration
A261	Corrosion Inhibitor		2 vol %
		Aromatic Ketones	
		Propan-2-Ol	
		Aromatic Hydrocarbon	
		Aliphatic Alcolhol Polyglycol Ether	
		Prop-2-Yn-1-Ol	
		Methanol	
		Formaldehyde	
A201	Inhibitor Aid		2 vol %
		Formic Acid	
		Water	
F103	Surfactant		1 vol %
		Oxyalkylated Alkylalcohol	
		Propan-2-Ol	
		2-Butoxyethanol	
		1-Undecanol	
Y001	Ammonium biflouride		0.125 llbs / gal
L058	Iron reducing agent		0.01 llbs / gal
		Sodium Erythorbate	
H033	Hydrochloric Acid		27.1 vol%
U066	Mutual Solvent		5 vol %
		2-Butoxyethanol	
U042	Iron Chelating Agent		2.4 vol%
			Balance = Demi Water

TABLE OF CONTENTS

1 INTRODUCTION



1.1 Scope of Operation Manual

This document describes the operating procedures, maintenance and various other details related to the RF150 Reel and control system.
The Reel is used for winching in/out 130 mm diameter composite tubular.
The equipment is suitable for offshore environment operation according to ISO13628-7.

The reel is designed to wind in/wind out 1450m of Airborne composite tubular.
The reel will maintain tension on the tubular to avoid uncontrolled unwinding, and spool the tubular onto the drum.
Winding in/out of tubular will be mastered by a tensioner on operating vessel, and the reel will slave the in/out movement of the tensioner.
The reel is designed to hold 150000N static, that is the static braking capacity of the reel. In case of a tensioner failure, the tensioner is fail safe to hold the tubular. If required, the reel can statically hold the tubular, while the tensioner is disassembled, repaired and returned to service. Note however that the downline to reel interface is not designed to hold the entire 150000N. In order to hold the 150000N on the downline by the reel, 4 to 5 windings of downline should be present on the reel to create a capstan effect. Furthermore, the levelwind is not designed to cope with 150000N of tension in the levelwind and can fail when not properly aligned with the downline. It is therefore recommended not to use the reel to hold the tensile force in the downline when deployed.

The reel is NOT designed to dynamically stop the tubular if the tensioner fails, and does not hold the tubular.

1.2 **Abbreviations**

ADV	Advantec AS
ATW	Advantec Test Winch
CT	Constant Tension
DNV	Det Norske Veritas
EM	Emergency
ESD	Emergency Shut Down
FAT	Factory Acceptance Test
FDS	Functional Design Specification
GA	General Arrangement
HPU	Hydraulic Power Unit
ID	Inner Diameter
ISO	International Organization for Standardization
LCP	Local Control Panel
MBR	Minimum Bending Radius
MCCR	Mechanical Completion Check List
MGW	Max Gross Weight
OD	Outer Diameter
PI	Pressure Indicator
PO unit	Portable Offshore unit
PL	Punch List
PLC	Programmable Logic Controller
RCP	Remote Control Panel
RPM	Revolutions Per Minute
SJA	Safe Job Analysis
Ø	Diameter

1.3 Contact for Assistance

Manufacturer's name:	Advantec AS
Manufacturer's address:	Eldøyane Næringspark, Eldøyane 175, N-5411 STORD, NORWAY
Manufacturer's telephone no.:	+47 4000 5800

2 HEALTH, SAFETY AND ENVIRONMENT

2.1 General

Personnel and product safety are main objectives, and safety precautions must be taken prior to performing LCP & RCP operations.

All personnel involved in the operations should be informed about the safety procedures.

All personnel who may come into contact with hydraulic fluids or other chemicals must wear appropriate protective equipment, including safety gloves and goggles. All necessary precautions detailed in the relevant health and safety data sheets must be taken. The Hydraulic Fluid Safety & Environment data sheets are enclosed in Appendix A.

2.2 Safety Notes

2.2.1 Handling and Transportation

- The reels shall only be handled by use of the supplied certified lifting slings.
- During transportation, the sea and / or deck fastenings shall be used.

2.2.2 Testing

Only personnel who are familiar with this kind of equipment, and trained for such type of work, are recommended to perform testing.

2.2.3 Installation / Retrieval

During installation and retrieval of the reel, be aware of the weight, and place the reel on a suitable and secured surface.

Always check lifting slings for damage and yearly inspection before lifting.

Use provided deck fastening brackets once the reel is placed in the correct position. The brackets shall be bolted to the reel frame, two bolts on each bracket and each bracket welded to the deck.

2.2.4 Operation

SAFETY NOTICE

Relevant Health and Safety Procedures should be adhered to at all times during the operation of the LCP & RCP.

All operations and test activities should be reviewed for safety hazards prior to execution.

SAFETY NOTICE – HYDRAULIC

Ensure that no hydraulic pressure is applied to any of the connections before hydraulic couplings and hose number/ pressure ratings are confirmed.

SAFETY NOTICE – DOORS

Ensure that all doors placed in open position are safely secured to prevent human or mechanical injury.

SAFETY NOTICE – WORK AT HEIGHT

All work at heights, such as loosing/ fastening lifting sling, must be done by use of personal safety equipment.
Either use ladder inside reel frame / safety harness / safety wires on reel roof or mobile lifts with appropriate safety equipment.

SAFETY NOTICE – SPOOLING

Under spooling, beware of area in front of reel. Use of barriers is recommended to restrict access to the front of the reel. This in order to avoid personnel injuries due to moving parts.

2.2.5 Safety signs

For safety reasons the ADVANTEC equipment is marked (if applicable) with safety signs. Each sign indicates a possible danger zone. Keep the meaning of these safety signs in mind while working with ADVANTEC equipment. This will prevent dangerous situations and personal injuries.

This sign warns for moving machinery. Make sure that no body parts and/or clothing can get caught in the machinery

Grounding symbol

Also all safety instructions in this manual have been marked with caution signs. Please observe!

An explanation of the used earmarks is:

WARNING **Text which may be vital to ensure safe unit operation. Ignoring a WARNING may result in unsafe and potentially dangerous situations!**

NOTE **Text which gives additional, important information.**

CHECK **Text which gives a summary of details to check.**

2.2.6 Rear access door

The rear access door has to be closed while winding/unwinding to/from the reel. The rear access door is secured with interlock. If opened during operation, the reel will stop.

Ensure that any doors in open position are safely secured to prevent human or mechanical injury.

2.2.7 Maintenance

Only qualified personnel, with relevant training and competence, should perform maintenance on the reel. This is to prevent dangerous situations and/or damage to the equipment.

2.2.8 **Safety Check List**

Before retrieving and installing, the following checklist should be reviewed and signed out to avoid adverse events to personnel, environment and equipment.

To be checked	Checked out	Comments	Accepted
Reel frame for damages			
Drain plugs installed, reel frame			
Lifting Slings			
Lifting Ears for damages			
Doors secured			
Leakage from reel			
Tarpaulin not damaged			

3 TECHNICAL INFORMATION AND DATA

ADV frame S/N.	Description
ADV-RF-150-0001	RF150 Downline Reels

3.1 Technical Description

3.1.1 Interface Description

Interface between operation vessel and reel is specified in the table below.

Equipment	Description
Flow line	API 17D SV 3-1/8" 5M flange
Electrical	HAUGE HDP 3125-1 IP67

3.2 Technical Data

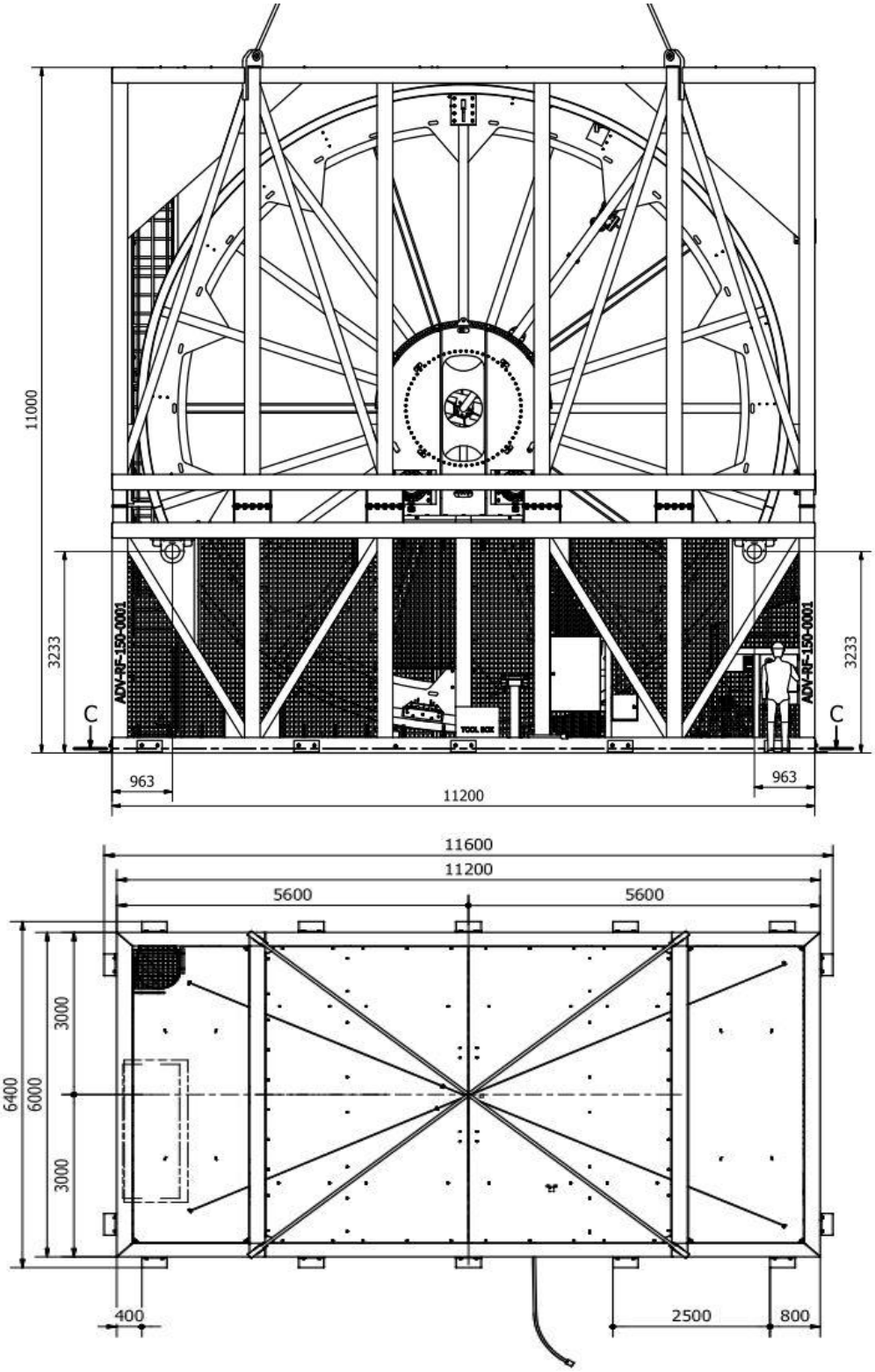
3.3 Technical Data S/N ADV-RF-150-0001

Description	Specification
Reel Dimensions (LxDxH)	6400 x 11600 x 11284mm
ADV Fabrication NO	ADV-RF-150-0001
ADV Serial No	ADV-RF-150-0001
Max unit Gross weight	150.000 kg
Tare weight	61.870 kg
Payload	88.130 kg
Weight HPU (with oil estimate)	1300 kg
Weight Spooling system (estimate)	4.200 kg
Weight drum total (estimate), Incl: Foundation, motor, motor drum intermediate flange etc. Excl: Downline	31.230 kg
Weight intermediate flange (estimate)	1500 kg
DNV 2.7-3 Type approval - Reel	DNV Project. No PP126936
DNV Certificate No	N1406CHT
DNV Approval Certificate for Lifting slings	S-8543
Lifting slings Certificate / Capacity SWL150000kg	11509358-1 Distinguishing number of mark 6X55(18/9+9/9/9/1)/7X17IWRC
Shackles (test cert. no) / Org.cert	11509358-1
Required Power supply	440VAC / 60Hz / 3 Phase / 100A Plug: HAUGE HDP 3125-1 IP67
Operator Control	Local and remote console
Drive system	Hydraulic motor, 2 off, Hagglunds CA 70 70 SB0NHC 02-28 + 2 off, Brake MDA 7-34

Technical Data, continued

Coating standard	NORSOK M-501, system No 1
Colour code	RAL 9002
Reel Operating Temperatures	-10 to 40 °C
Flowline Media Temperature	0 to 40 °C
Flowline connection	API 17D SV 3-1/8” 5M
Hydraulic Oil for HPU	Shell Tellus S2 V 46
Working pressure	345Bar / 5000 psi
IP Class for components are equal or better then	IP44
Max noise level	83 dB
Design speed	30 m/min
Drum inner diameter	9300 mm
Max tension	50 KN
Constant tension adjustable range	10–50 KN
Emergency stop time	Max 5 seconds
Downline entry	Bottom
Max brake force – Static	15.000 kg
Vertical outlet angle	18,6 degrees – see 40065-XD-002
Horizontal outlet angle (with downline S-shape effect)	18 degrees – see 40065-XD-002
Max side load on spooling assembly	21,04 KN – see 40065-XD-002

3.4 **Unit Dimensions**



The figure shows the overall dimensions of the reel.
See 40065-XD-001 and 40065-XD-002 GA drawings for further details.

3.5 **Restriction in Use**

WARNING

When operating on vessel, constant tension mode should always be used to avoid uncontrolled unwinding of the downline.
The reel is independently controlled. The reel must always be started and set to CT mode prior to starting movement of the downline. Hence – the reel will be a slave and follow movement of the downline.

Joystick operation might be used under other operation when tension is maintained by other equipment.

4 INSTALLATION RIGGING, MOBILIZATION AND DE-MOBILIZATION

4.1 Installation

When preparing the reel for use, place the unit in its intended place and mount the deck fastening brackets. They must be welded to the deck.

Item	Description	Miscellaneous	Status
1.	Position the unit on a level surface with a free line of operation of the downline.		
2.	Secure the unit on deck using the deck fastening brackets, with 2 bolts each bracket.	Tightening torque ref table Bolts M24, 28 off  Deck fastening bracket	

4.2 Mobilization and De-mobilization

When preparing the reel for operation and as a part of de-mobilization after operation, perform a general inspection to ensure reel integrity.
If errors are found during de-mobilization, log/initiate corrective actions as preparation for next operation.

When unit not in operation, the reel should be preserved in accordance with 40065-KA-003 and stored with tarpaulin cover installed.

4.2.1 **Mobilization and De-Mobilization Checklist**

On Mobilization and De-Mobilization, inspect in accordance with the Check list below.

To be checked	Checked out	Comments	Accepted
Check all deck fastening mounting bolts on reel module.			
Check Reel frame and drum for damages.			
Lifting slings. (Yearly certification)			
Temperature transmitters. (Yearly certification)			
Pressure transmitters. (Yearly certification)			
Leakages.			
Damages on hoses.			
Damages on LCP, RCP.			
Cleanliness.			
Sufficient lubricated.			
Drain plug connected.			
Doors secured.			

4.2.2 Parking of downline subsea end

4.2.2.1 Parking inside frame

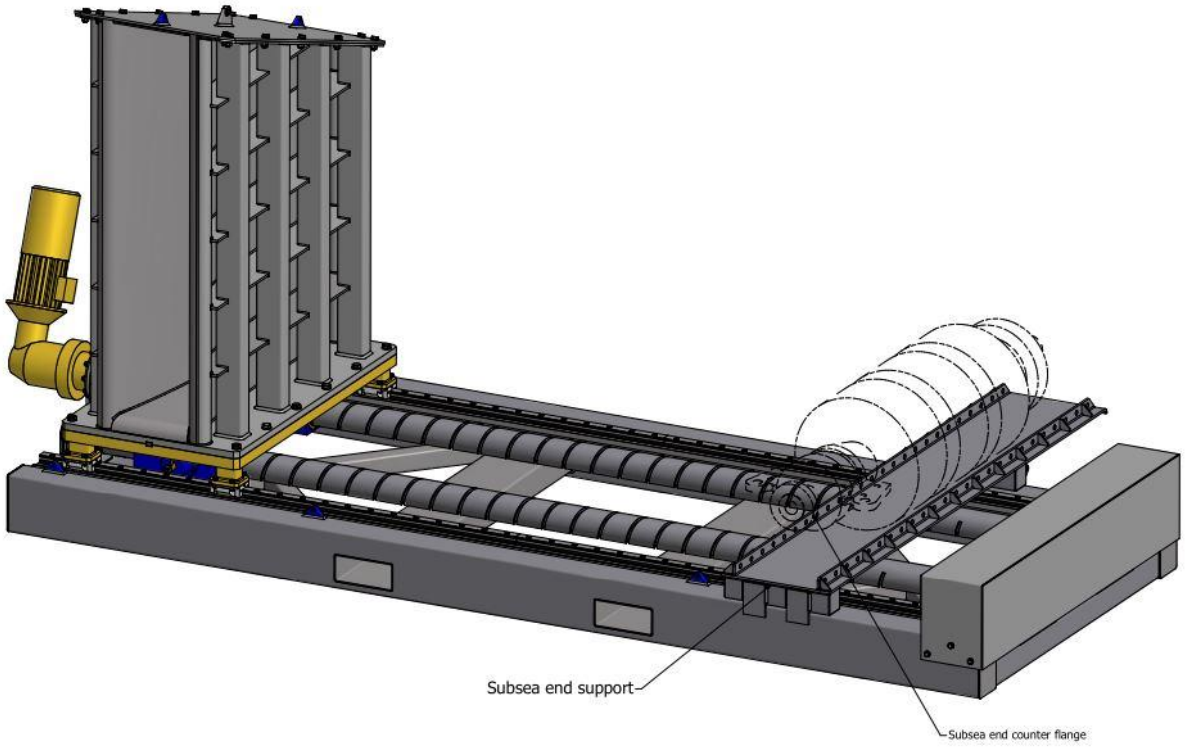
If found necessary when not in use, and under transport, the downline Subsea end might be parked inside the frame.

NOTE To avoid uncontrolled unwinding of the downline, maintain tension above 1000kg during winding and parking/securing the downline. Leaving the downline with no tension will lead to unwinding.

Storage of the subsea end is as follows:

- With the subsea end (with fitting and "bend restrictor/stiffener") "some meters" outside the reel funnel, stop winding and remove the "bend restrictor/stiffener" (if installed).
- Remove the top plate of the funnel. Lift and secure the downline clear of the funnel.
- Drive the funnel away from the downline.
- Reinstall the funnel top.
- Pick up the subsea end storage plate from the storage position and install and secure on spooling structure.
- Lower the downline to the storage plate.
- Continue winding in the downline until it is inside the frame. Note: observe that the downline is not damaged by sharp edges, bend etc. When the downline is inside the reel frame, rotate the drum until mechanical lock position is reached and engage mechanical lock.
- Secure the downline to the storage plate and maintain minimum 1000kg tension with straps from downline end cover plate.
- Remove equipment used during winding in.

When preparing for operation - reverse procedure above.



The figure shows the spooling system with the subsea end in storage position inside the frame.

4.2.2.2 Parking outside frame

If found necessary when not in use, the downline subsea end might be parked outside the frame as well.

NOTE To avoid uncontrolled unwinding of the downline, maintain appropriate tension during winding and parking/securing the downline. Leaving the downline with no tension could lead to unwinding.

Storage of the subsea end is as follows:

- With the subsea end (with fitting and bend restrictor/stiffener) "some meters" outside the reel funnel, stop winding and remove the bend restrictor (if installed).
- Drive the subsea end closer to the funnel and place appropriate protection material (e.g. wooden beams) between the subsea end and the funnel.
- Now close the gap between the subsea end and the funnel until contact.
- Use some strops to secure the subsea end to the steel beam above the funnel.
- Carefully transfer the force from the equipment used to hold the tension, to the funnel.
- Remove equipment used during winding in.

When preparing for operation - reverse procedure above.

The figure shows the spooling system with the subsea end in storage position outside the frame.

5 REEL START PREPARATION

5.1 Start preparation

5.1.1 Interface Preparation and Verification

Prior to start, verify electrical connection point is available and powered.

5.1.2 Pre-Start Testing

No specific test before start necessary.

5.1.3 Pre-Start Check List

The pre-start checklist consists of a procedure to be used daily before placing the unit in operation. Also, careful attention should be paid during actual operation of the unit to observe any defects which might appear between regular inspections especially those conditions which could possibly pose a safety hazard.

WARNING Do not operate the equipment until all malfunctions have been corrected or other temporarily corrective measures have been found for them.

WARNING Never handle cables, chains or hoses with bare hands, as broken or frayed armor wire strands can cause severe cuts. Always wear protective gloves in such cases.

WARNING Prevent damage to the hoses (for example do not kink the hoses, do not lead the hoses over sharp surfaces etc.) If a hose is damaged first have the hose replaced

NOTE Before connecting any quick connector scrupulously clean both male and female part of the quick connector.

NOTE Before disconnecting any hoses ensure that the hydraulic system is pressure relieved.

NOTE During rig down double check all hoses and cable to be disconnected. (Also check all unit connection bolts and clamps to be disconnected)

CHECK The hoses and wires have been marked to correspond with the appropriate connectors.

NOTE On the rear access door and on the mechanical lock, interlock system is installed. When the rear door is opened, or mechanical lock is engaged, the reel will shut down.

Reel pre-start Check List
To prepare the unit for operations, verify the following:

Item	Description	Miscellaneous	Status
1.	Check most recent operation/maintenance Journal for remarks (to be kept in the documentation box on the reel).		
2.	Verify mechanical lock in its stored position.		
3.	Check the Service interval table and ensure service points are followed. Lubricate if required.		
4.	Perform a general visually inspection of the reel for loose or missing parts, foreign objects, hydraulic leaks from lines or components, and structural damage.		
5.	Unwind the RCP cable (25m) and check for damages.		
6.	Open the doors on the HPU. Visual check for damage or leaks.		
7.	From the vessel deck. Check pipe spools, tubing, and hoses for leakage and damage.		
8.	If applicable: Verify that the downline is properly lined up with the vessel deck arch and tensioner system		
9.	Verify the reel is connected to an appropriate ground point.		
10.	Connect the reel to an appropriate electrical power supply.		
11.	Check LCP/RCP display. Interpret and take appropriate actions on Warnings, trips and information as applicable.		

6 OPERATION

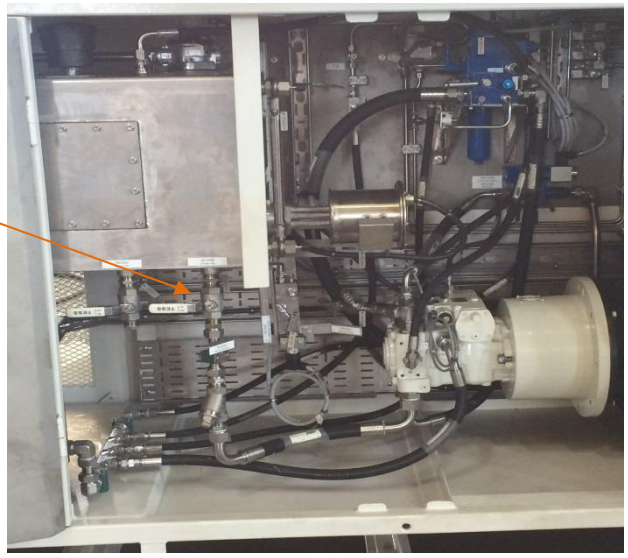
6.1 Start/Stop and Operation

6.1.1 Normal Start

A normal start can be performed by operating the “Hydraulic Pump Start” graphical push button on HMI. In order to start, no trips can be present. Alarms and trips are displayed on the screen.
See section 6.3 for alarm list.

Before starting the HPU, it’s important that the hydraulic oil supply valve (19V2502) from the hydraulic oil supply is open. This is placed just under the hydraulic tank near the hydraulic pump. See Figure below.

Hydraulic Oil supply valve (19V2502)



The figure shows the hydraulic oil supply valve 19V2502. White handle in closed position.

NOTE In temperature conditions below 15°C it is recommended to connect electrical power to the reel 30 minutes prior to starting the HPU. This will give time to heat the hydraulic oil prior to starting the HPU.
It is recommend to run the HPU for approximately 30 minutes before operating the reel, to stabilize hydraulic oil working temperature and viscosity

NOTE In temperature conditions close to 0°C make sure that the drum rotation encounter is free from ice, to prevent slipping of the encounter and jamming of the drum."

6.1.2 Normal Stop

A normal stop can be performed by operating the “Hydraulic Pump Stop” graphical push button on HMI.

6.1.3 Normal operation

Normal operation of the reel can be performed from two different places.
From a fixed LCP on the reel, and from a RCP which is connected to the reel via a 25 meter control cable.

6.1.3.1 Spooling system.

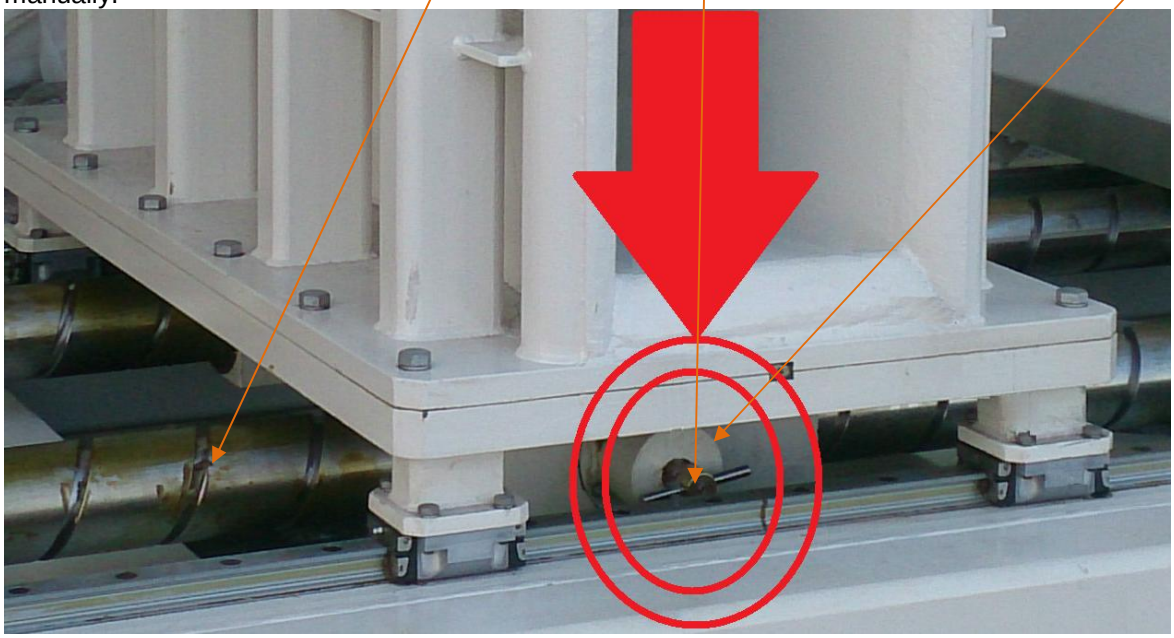
The reel is equipped with a spooling system to evenly spool the downline on the drum during wind-in. The downline enters the reel through a funnel on the spooling system. The funnel absorbs forces applied from the downline and guides/distributes the downline to the reel during winding in.

Two helicoiled spindles guide the downline evenly back and forth onto the drum. One spindle is driven by an electrical motor. A chain system between the spindles ensures simultaneous movement. A floating design funnel base allows movement that ensures even load distribution between the two spindles, and prevents jamming due to misalignment.

Under normal operation, with the reel motor rotating, the drum rotation speed and direction is registered and transferred to the spooling system electromotor, which rotates and moves the funnel accordingly.

The spooling system must be in line with the downline. Prior to inserting the downline in the funnel, align it with the correct position for the downline. Movement of the funnel is possible by independent operation of the spooling system electrical motor.

An alternative method is to release the “knifes” from both spindles.
To disengage the funnel from the spindles, pull out the handle on each of the levelwind system knife houses (shown in picture below). With both spooling knifes retracted from the spindles, the funnel can be moved manually.



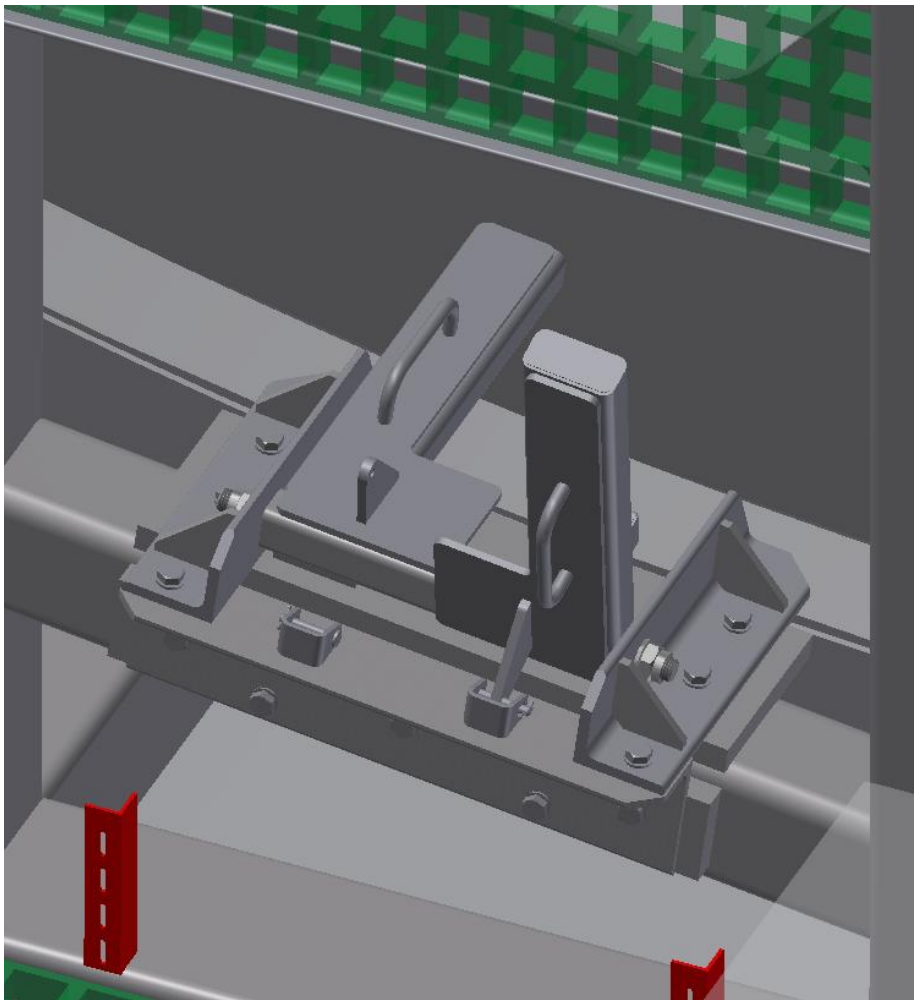
Re-engage the funnel by positioning the Handles a not ejected position. Drive the spindles slowly. Ensure both spooling knifes enters the spindle grooves.

NOTE Both spindle knifes must be positioned in the grooves before levelwind is to be used as intended.

NOTE Be careful not to damage the downline when moving the funnel independent from the drum with the downline through the funnel.

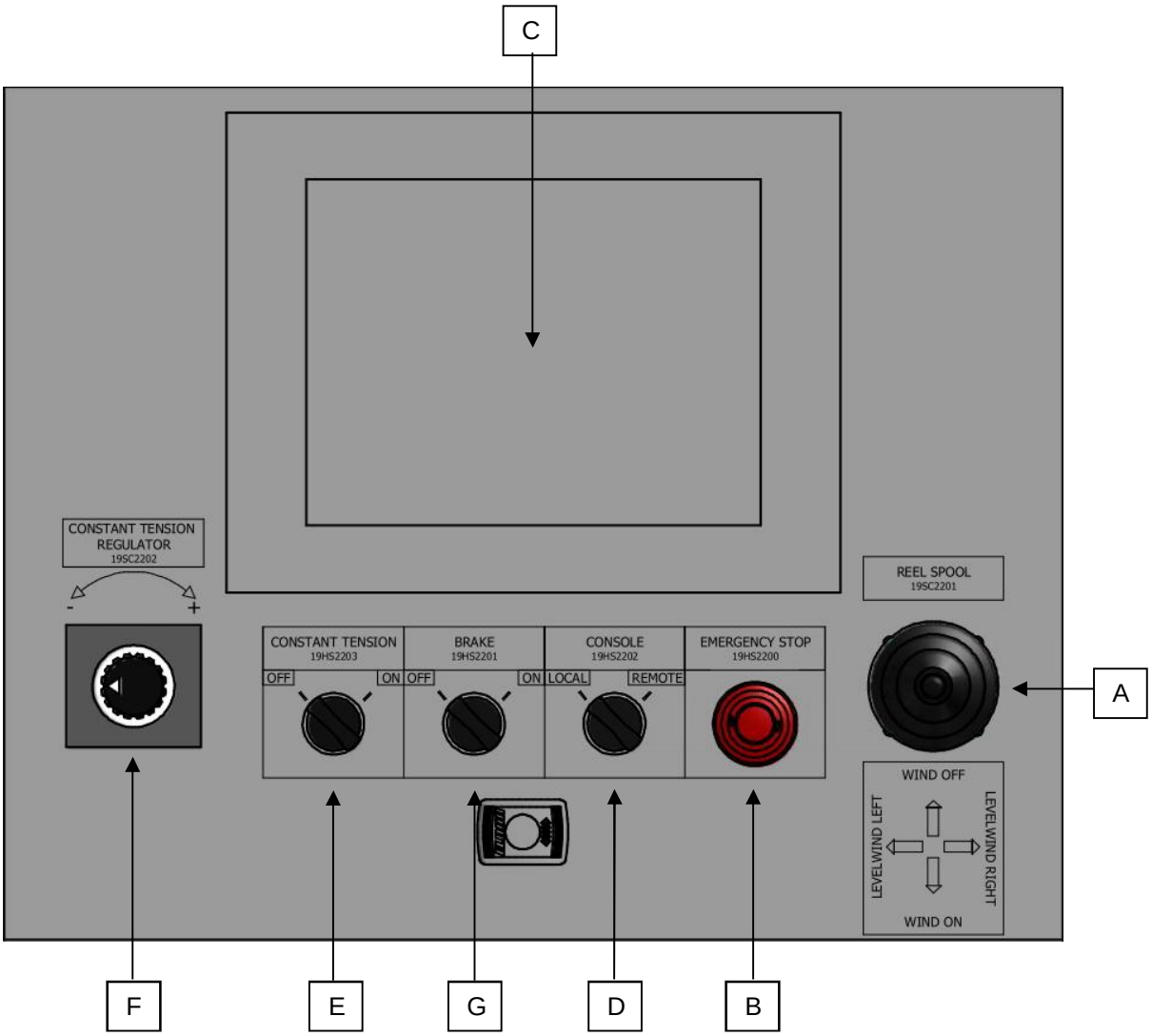
6.1.3.2 Mechanical lock

The unit is equipped with a mechanical lock. The mechanical lock consists of two arms that can be pushed in place to park the reel. When the first arm is pushed down, the reel will automatically slow down and the operator can slowly drive the reel in parking position. When the reel is in place and has stopped, the second arm shall be pushed down (the HPU will then shut down). The locking device is equipped with interlock. When both arms are engaged, the reel operation is disabled (HPU off). However the Levelwind can still be operated in manual (Ref 6.1.7.9 Levelwind control).



6.1.3.3 Local Control Panel

The LCP located on the motor side of the reel. The LCP is protected with a door, which can be locked when not in use.



Local Control Panel.

ID	Description	Function explanation
A	Reel control joystick	Use this joystick to change the drum direction and speed or the direction of the spooling system on the reel.
B	Emergency stop	Use this control to emergency stop the unit. Reset the control and the reel powers back up.
C	Display	For reel information, alarms and start/stop of hydraulic pump. The display gives information on pressure, temperature and tension.
D	Console selection	Use this control to select the console to work from. LOCAL / REMOTE

ID	Description	Function explanation
E	Constant tension control	Use this switch to activate or deactivate the Constant tension.
F	Constant tension regulator	Use this control to change the constant tension setting for the system. Move the dial clockwise to increase the Constant tension setting and move the dial counter clock wise to decrease the constant tension setting.
G	Brake switch	Use the brake switch to activate the brake. When activated, the hydraulic pressure on the brake circuit is dropped and brake activated. *Note: Brake function on brake switch is limited to the active control panel. However when using manual levelwind, the brake switch will also disable/enable manual levelwind.*

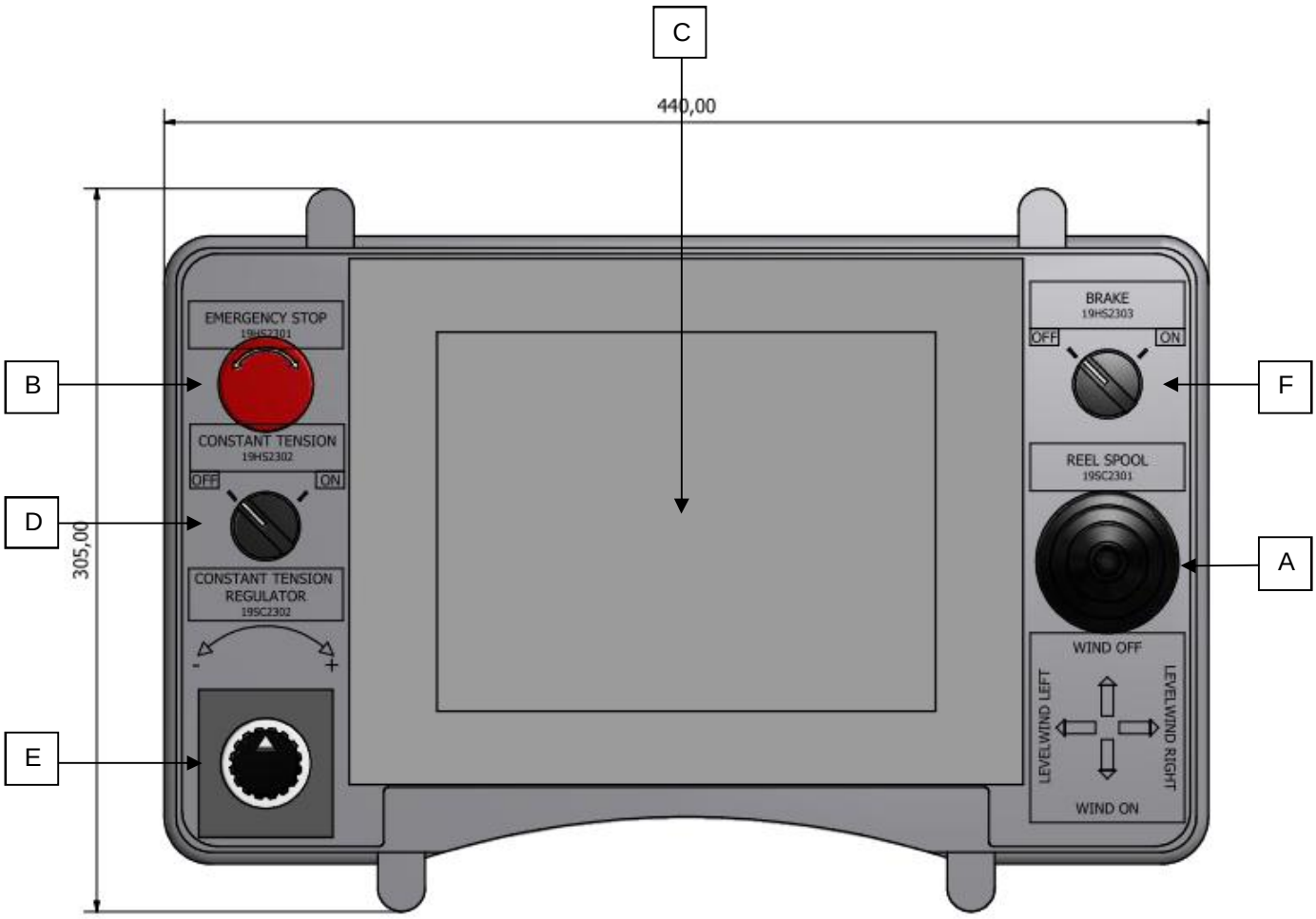
6.1.4 **Remote Control Panel**

The RCP is provided with cable enabling the operator to walk away from the reel.
The cable is permanently connected to the RCP, and RCP/cable is stored close to toolbox and LCP.
To activate the functions on the RCP:

- On the LCP activate the switch “CONSOLE, REMOTE/LOCAL” to REMOTE.
- When stopping usage of RCP / leaving the RCP.
    - Make sure the reel has come to a complete stop.
    - Set RCP brake switch to “ON” – this deactivates the joystick.
    - Set RCP CT regulator to Zero.
    - Deactivate RCP on the LCP.

Following the steps above will avoid unintended start of the reel if the RCP is rolling over.

Note: If Levelwind is to be used while the active panel has its brake switch on, then the levelwind has to be controlled from the inactive panel (then the inactive panels brake switch will enable/disable the manual levelwind control).



Remote Control Panel

ID	Description	Function explanation
A.	Reel control joystick	Use this control to change the spooling direction and spooling speed of the reel.
B.	Emergency stop	Use this control to emergency stop the unit. Reset the control and the reel powers back up.
C.	Display	For reel information, alarms and start/stop of hydraulic pump. The display gives information on pressure, temperature and tension.
D.	Constant tension control	Use this switch to activate or deactivate the Constant tension.
E.	Constant tension regulator	Use this control to change the constant tension setting for the system. Move the dial clockwise to increase the Constant tension setting and move the dial counter clock wise to decrease the constant tension setting.
F.	Brake switch	Use the brake switch to activate the brake. When activated, the hydraulic pressure on the brake circuit is dropped and brake activated. *Note: Brake switch function is limited to the active control panel.* *However when using manual levelwind, the brake switch will also disable/enable manual levelwind.*

6.1.5 Operation by Joysticks

- The joystick is used to control spooling direction and speed of the reel.
- The function of the joystick is the same from both control panels. (LCP and RCP).
- The joystick has no function if CT is selected, unless in manual override mode of the level wind.

6.1.6 Operation by CT

Instead of using the joystick when spooling in the downline, the CT system can be used. CT system will pull with a preset force.

The following described procedure is how to enable CT on active panel:

- Turn CT switch to on
- Turn the CT dial all the way counter clockwise (0Kg tension)
- Turn off the Brake switch
- Turn the CT dial clockwise until desired tension is visible at the HMI main screen

If CT activated:

When the downline is lifted from the seabed with the tensioner, the CT system on the reel will automatic wind in and maintain the beforehand set tension (CT).

When the downline is lowered toward the seabed with the tensioner, the CT system will start releasing the tension by unwinding downline by rotating the drum.

When the tensioner stops, the reel stops with a preset tension on the downline.

The function of the constant tension is the same from both control panels (LCP and RCP).
The main purpose for the CT system is to keep a constant tension on the downline. To operate the CT system, the selector for CT has to be in “ON” position.

NOTE To avoid uncontrolled unwinding of the downline, maintain tension above 1000kg during winding and parking/securing the downline. Leaving the downline with no tension will lead to unwinding.

WARNING The reel is following the movement of the vessel deck tensioner: If the vessel deck tensioner unwinds the downline at a speed exceeding 30m/min, the reel will keep the set constant tension, and follow the speed of the tensioner and unwind at a larger speed than reel design speed.
Over speeding might lead to damage and potentially reel breakdown

WARNING If the vessel deck tensioner winds in the downline at a speed exceeding 30m/min, the reel will only wind in at max design speed 30 m/min giving loss of tension and excessive downline on vessel deck

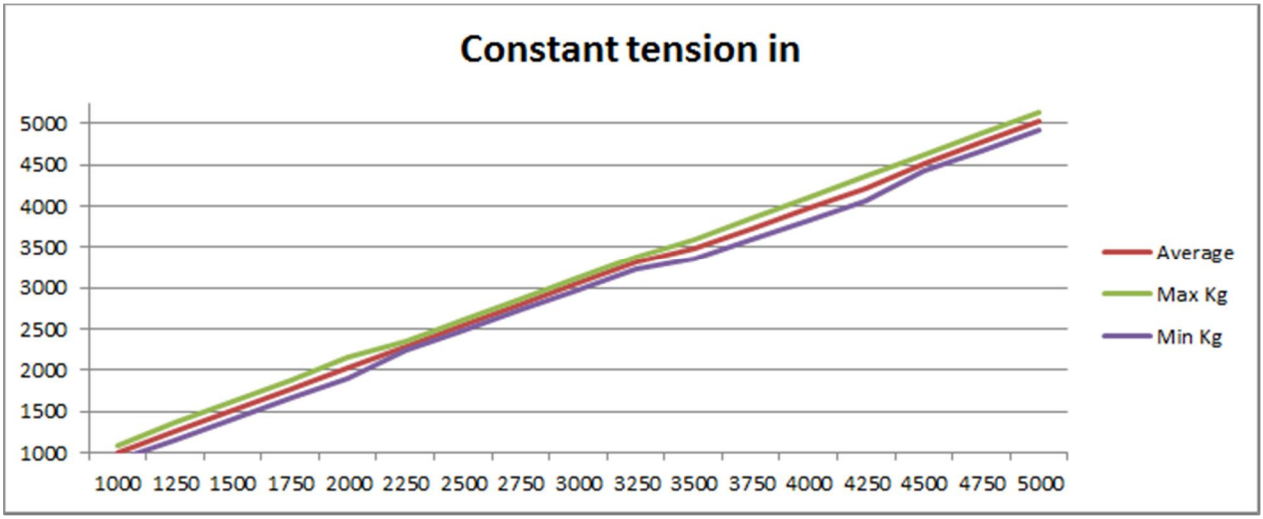
The CT is adjusted by turning the “Constant tension regulator” from LCP or RCP panel.
The regulator has a range from 0 to 3000/5000Kg, depending on what the system is set to. When turning the CT regulator clockwise, the tension is increased. The minimum tension required to make the reel rotate is 1000Kg. If CT is set below 1000Kg, the brake will be “ON” (visible on the main screen with a “Brake on” sign over both tension dials).

The maximum will be either tension approximately 3000 Kg or 5000 Kg.

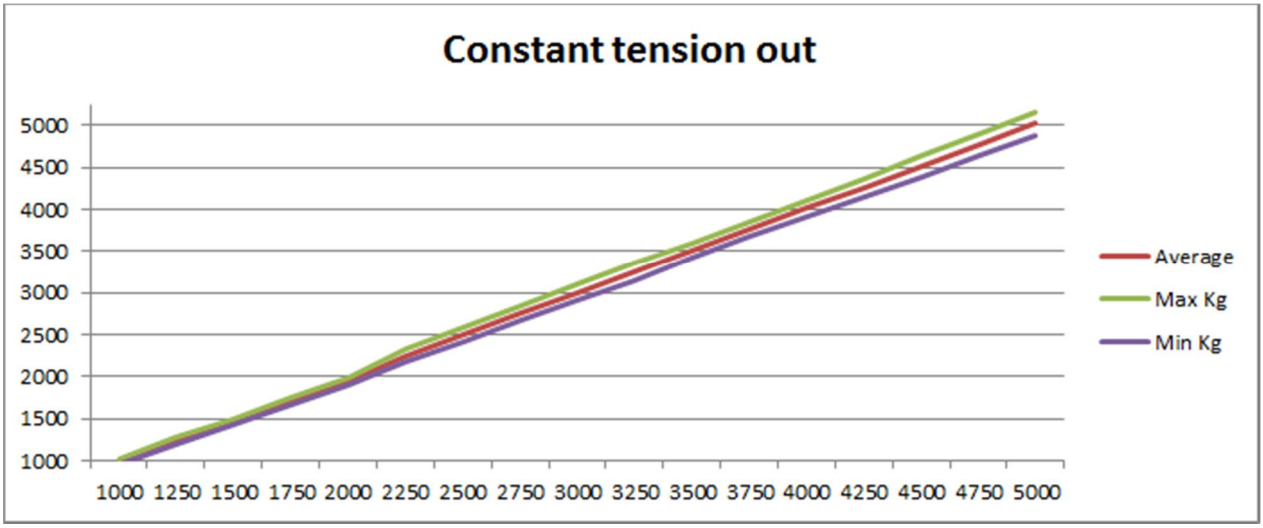
Ref 6.1.7.8 Max CT force control

Turning the CT regulator anticlockwise will decrease the tension. The figure shows the theoretical tension versus CT regulator.

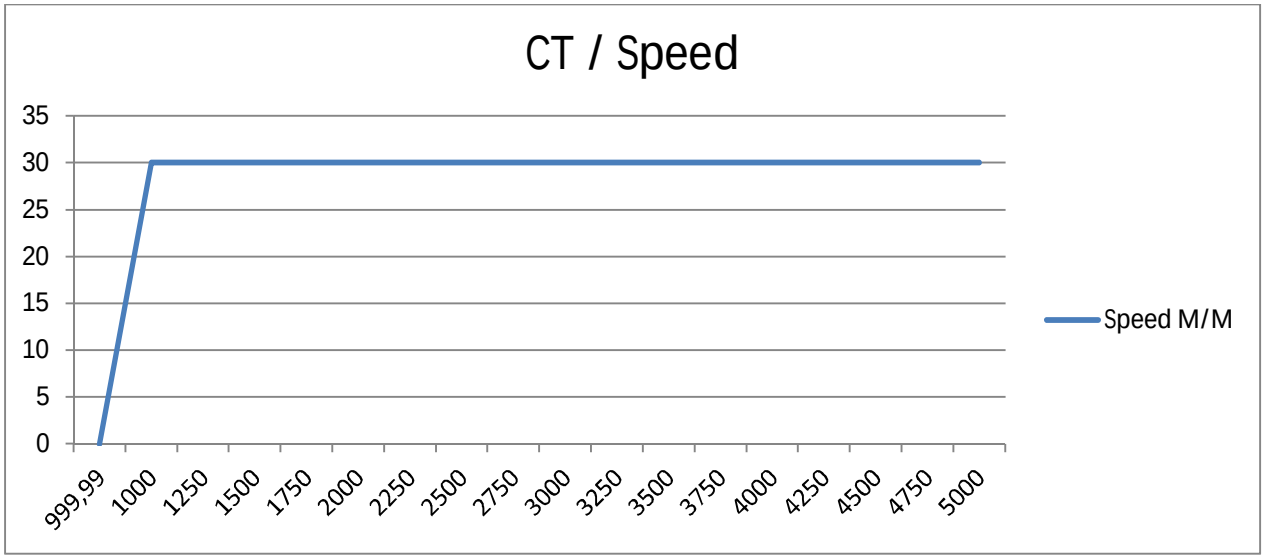
If the operators have a wish to change the range of the constant tension this has to be done by qualified personal in the PLC (Programmable Logic Controller).



The figure above gives the tension measured (kg) vs CT settings when winding in



The figure above gives the tension measured (kg) vs CT settings when pulling out.

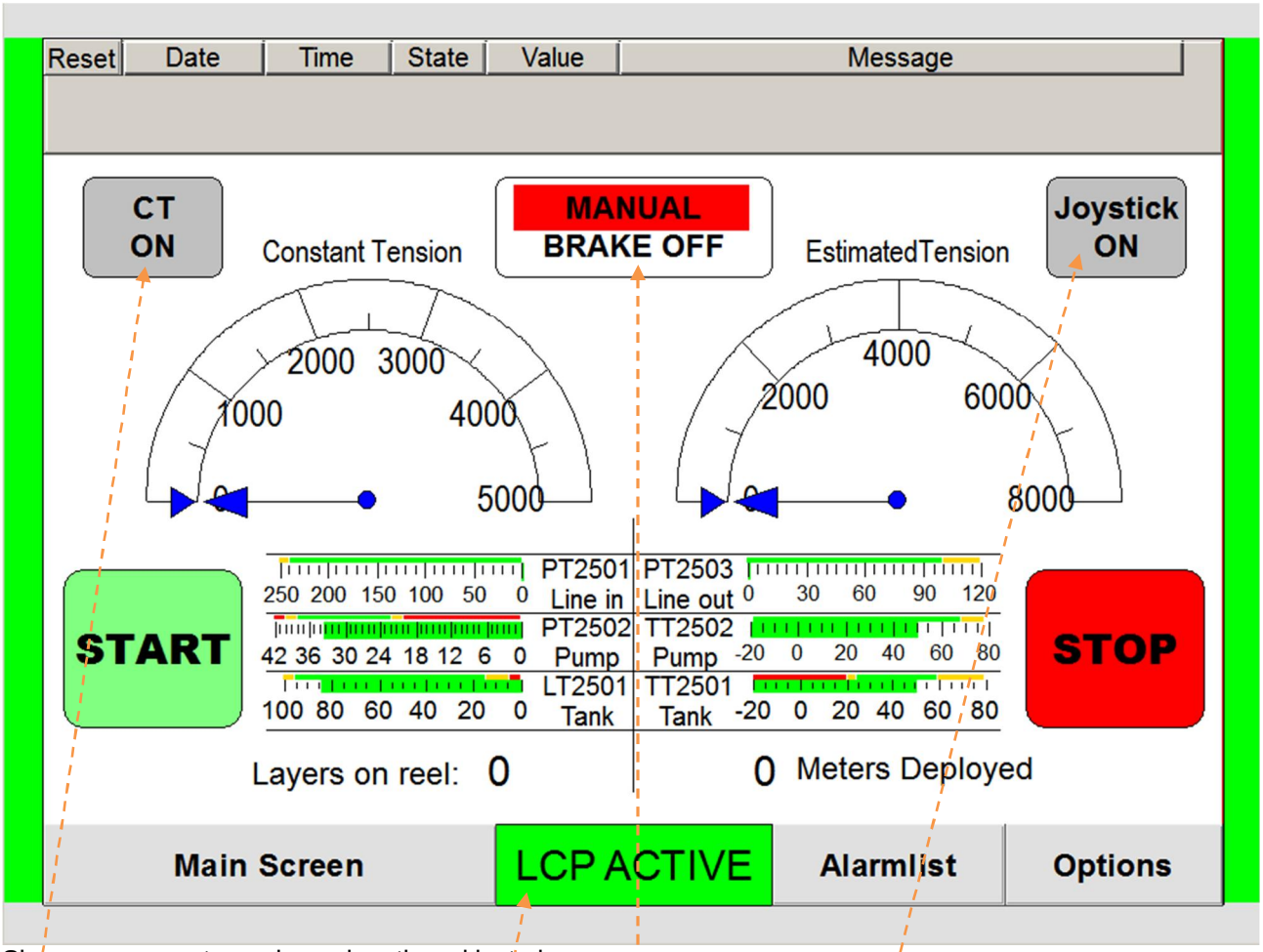


The figure above gives the reel speed (meter/minute) vs CT settings.

6.1.7 **Screen pictures**

The pictures below shows the screen displays on the LCP/RCP panels.
The information on the screen is self explaining, and the screens are touch screens.

6.1.7.1 Main Screen



Shows pressure, temp, layer, length and last alarm.

The CT on is only visible when CT is switched on and activated.

The Joystick on is only visible when Joystick is switched on CT Switch in off position) and activated (joystick will not be activated before it has been in neutral position).

The “Brake on” sign shows the Brake setting/mode on the first line and actual brake output/status on the second line. See 6.1.7.10 Brake statuses.

The panel status shows which panel has control and is green when looking at the controlling/activated panel. See 6.1.7.5 Panel statuses

If left and right border is steady green, then the motor is running. If they are flashing red, then the motor is tripped. When they are steady red the pump is stopped.

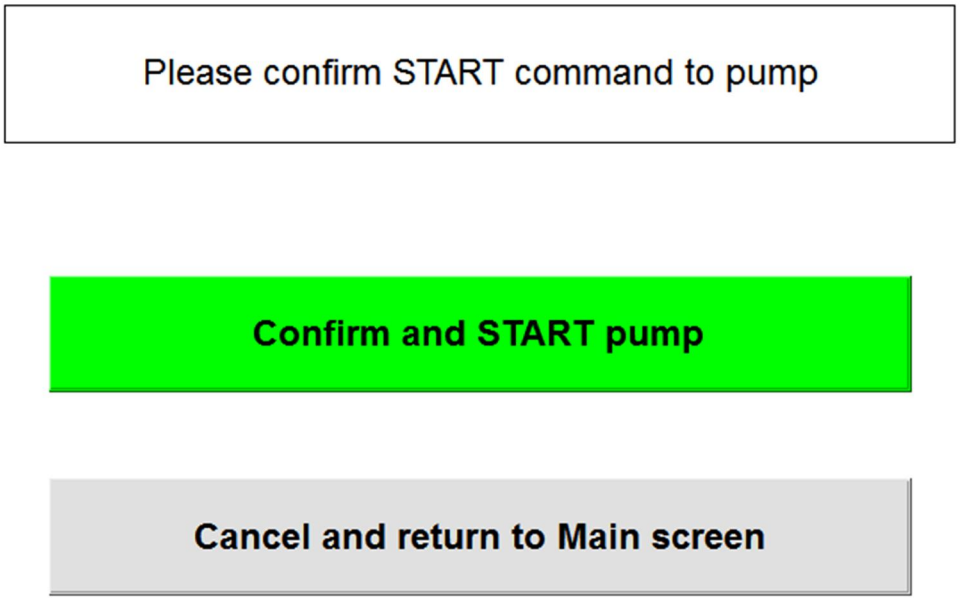
If top and bottom border is steady red, then there is an alarm present in the system. If there are flashing red, then there is an unacknowledged alarm present in the system.

When there is a PLC communication fault, then both vertical and horizontal borders will flash between yellow and red.

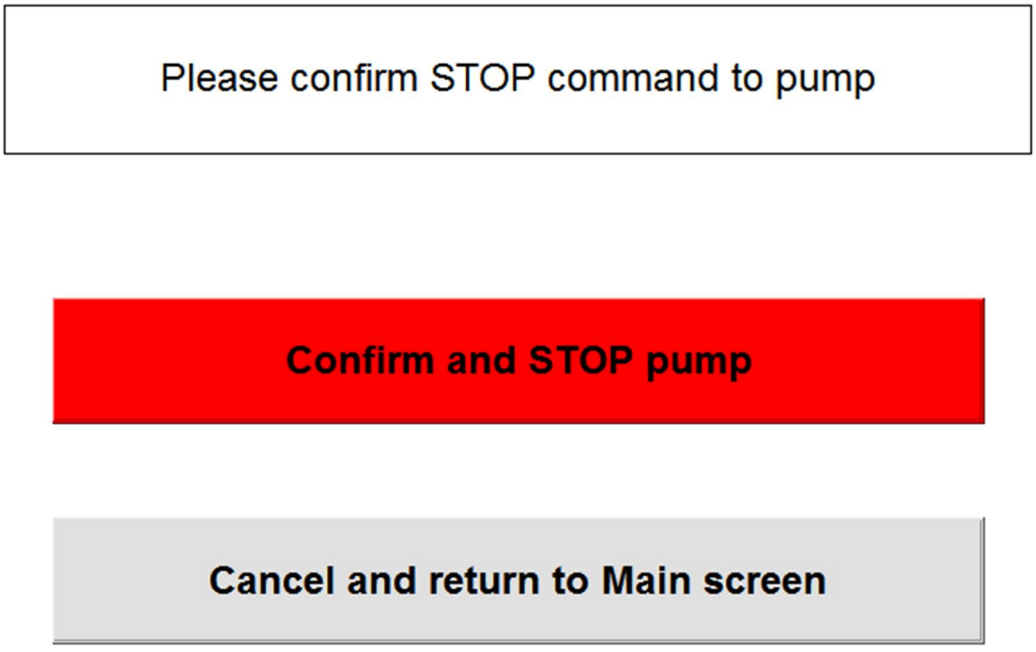
The hydraulicpump is operated from this screen by pressing start or stop. The start or stop command will be confirmed on a popup.

This screen is accessed by pressing “Main Screen”

6.1.7.1.1 Confirm start of pump



6.1.7.1.2 Confirm stop of pump

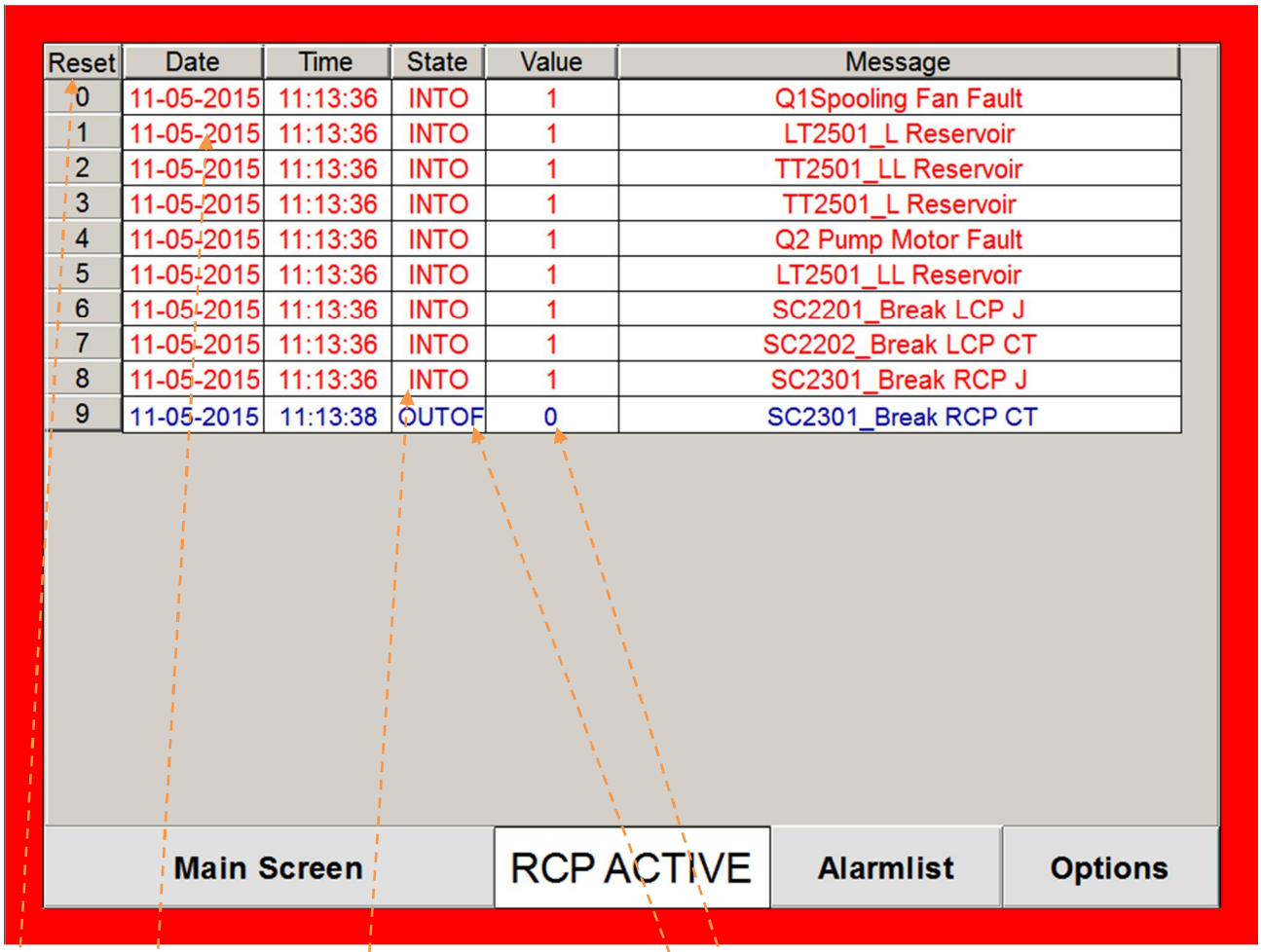


6.1.7.2 Panel Status

This example shows the 5 different panel statuses.

1 Status showing on RCP: LCP is the controlling/activated station
2 Status showing on RCP: RCP is the controlling/activated station
3 Status showing on LCP: RCP is the controlling/activated station
4 Status showing on LCP: LCP is the controlling/activated station
5 Status showing on RCP and/or LCP: Com failure to PLC

6.1.7.3 Alarm list



Shows active and inactive alarms with time stamp.
Alarm reset on the PLC can only be done from the controlling/activated panel.

The Reset button removes any inactive alarms and resets alarms in the PLC. Date and time will also reset.

Date and time shows the time the alarm entered the shown state or the last time they were reset.

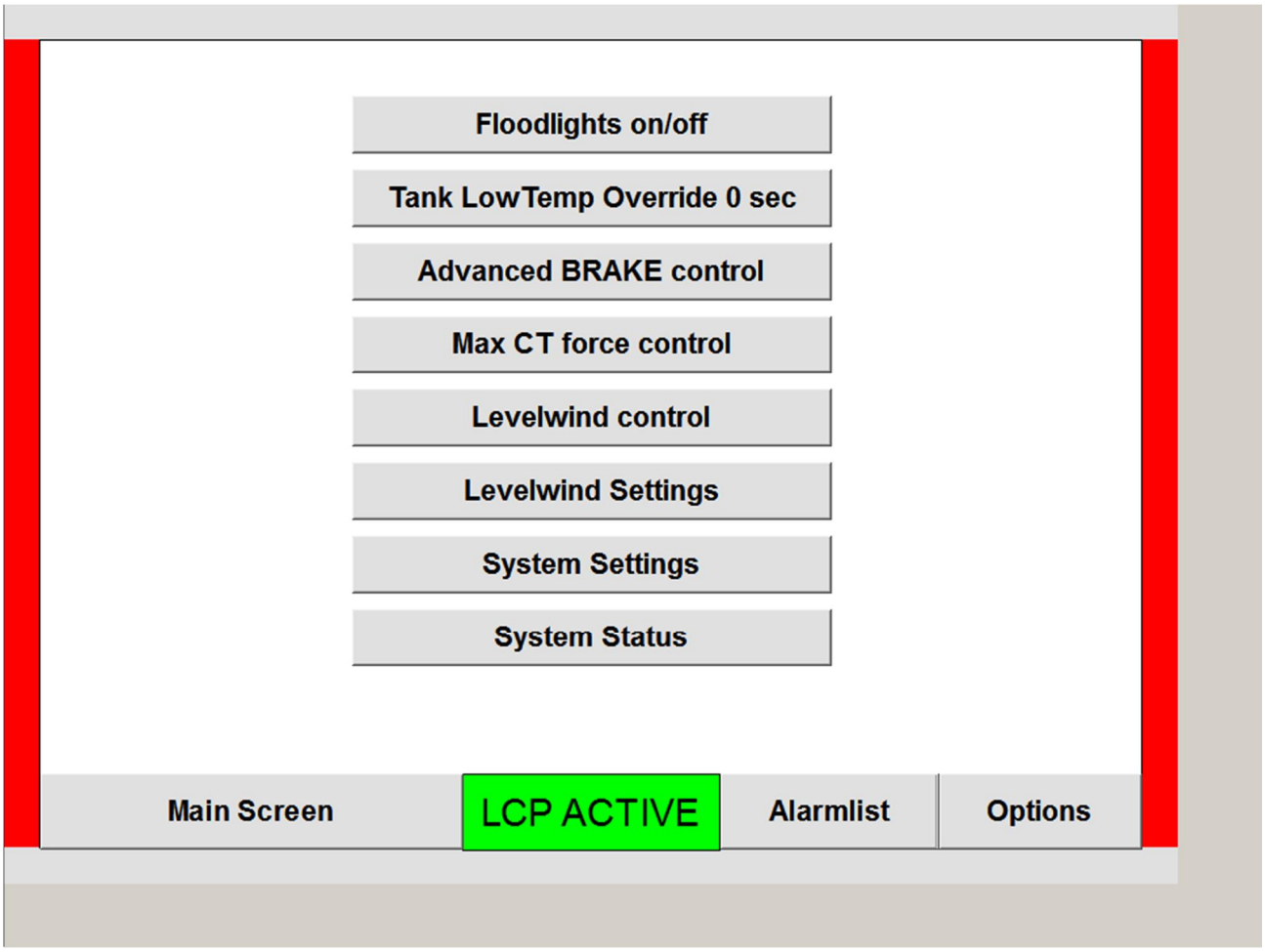
Active alarms are red and INTO as state.

Inactive alarms that are not reset with the reset button, are blue and OUTOF as state.

Value is simply the value of the alarm signal. Some are 1 when OK and 0 when in alarm state, others are 0 when OK and 1 when in alarm state.

This screen is accessed by pressing “Alarmlist"

6.1.7.4 Options

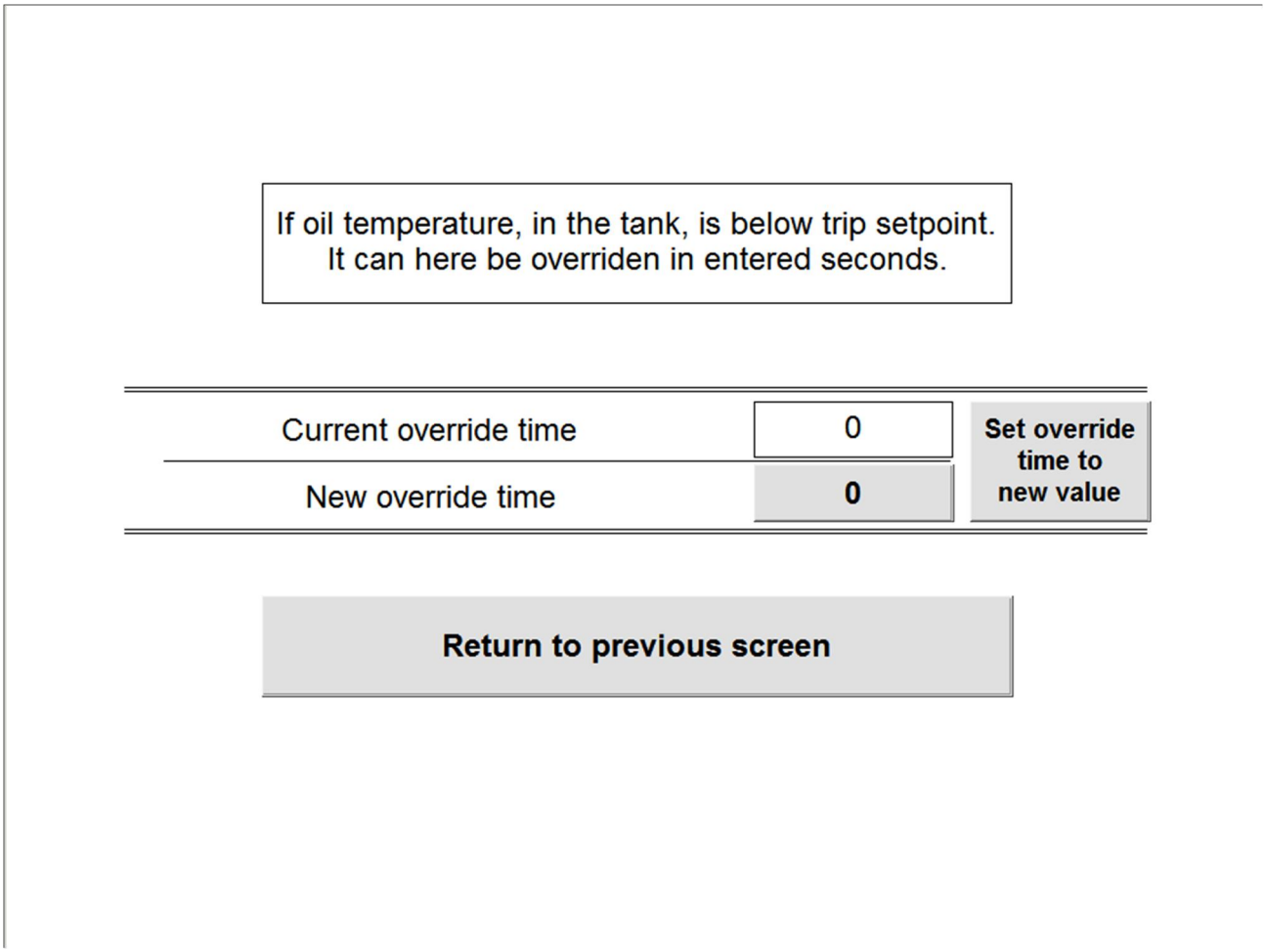


In this view adjustment and calibrations may be accessed. Also floodlights are turned on/off and Oil Tank low temperature trip can be overridden from this screen

Turn on/off floodlight
Link to “Tank Low temp Override”
Link to "Advanced BRAKE control" screen
Link to "Max CT force control" screen
Link to "Levelwind control" screen.
Link to "Levelwind Settings" screen.
Link to "System Settings" screen.
Link to "System Status screen

This screen is accessed by pressing “Options”.

6.1.7.5 Tank Low Temperature Override

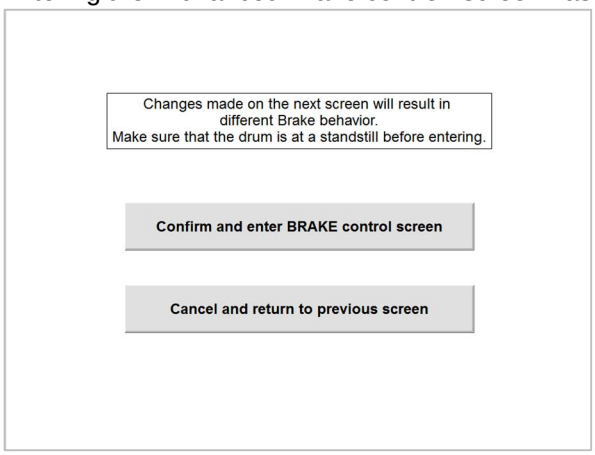


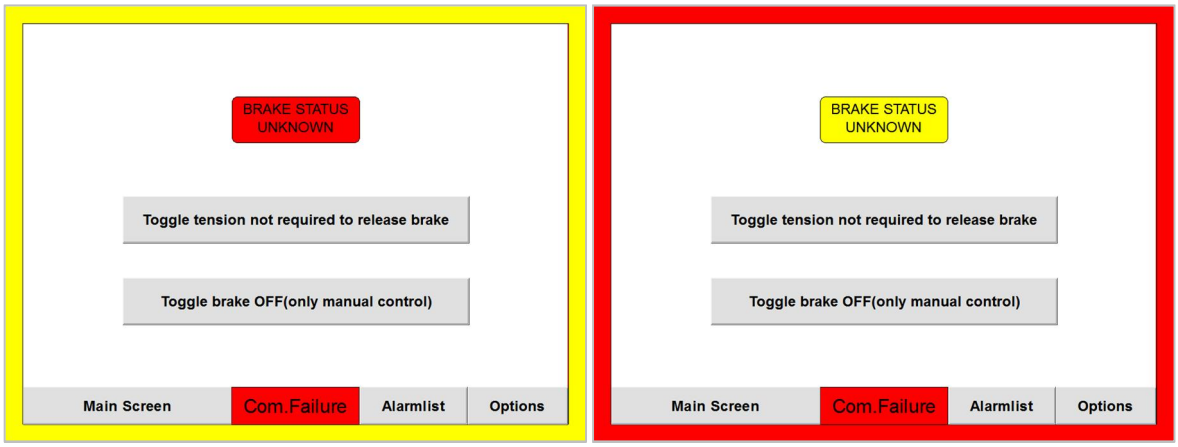
From here the Oil tank low temperature HPU trip can be overridden for a specified time in seconds.

This screen is accessed by pressing “Tank Low temp Override” on the “Options” screen.

6.1.7.6 Advanced Brake control

Entering the "Advanced Brake control" screen has to be confirmed.

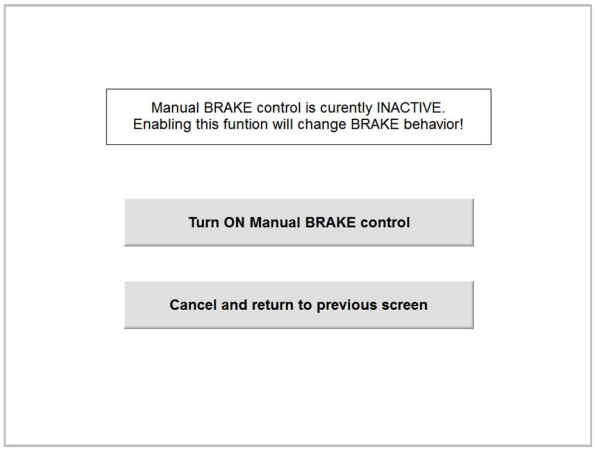




On this screen the brake behavior can be modified. The example above is with PLC communication fault.

Activating the "Toggle tension not required to release brake" will result in the brake function entering "Semi Auto" and the system will no longer require predefined tension to release brake.

Activating the "Toggle brake off" will result in the brake only turning on if the brake switch on the controlling/activated panel is on.

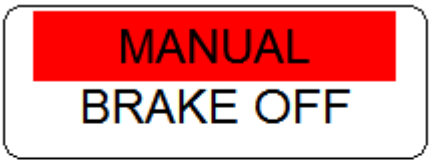


6.1.7.7 Brake statuses

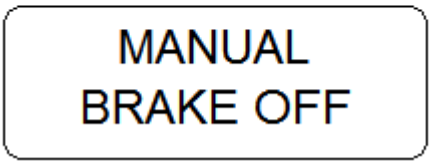
This example shows 4 (6) different brake statuses.

1a Brake status unknown.
Toggles between Red and Yellow with 1Hz.
Only when there is a PLC communication fault.

1b Brake status unknown.
Toggles between Red and Yellow with 1Hz.
Only when there is a PLC communication fault.

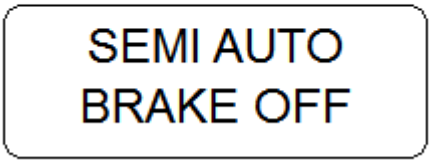


2a Brake in Manual and the brake is physically OFF
Toggles between Red and White on mode status only (with 1HZ). Brake status background is steady White when brake is off.



2b Brake in Manual and the brake is physically OFF
Toggles between Red and White on mode status only (with 1HZ). Brake status background is steady White when brake is off.

3 Brake in AUTO and the brake is physically ON
Steady Red when brake is on.



4 Brake in SEMI AUTO and the brake is physically OFF
Steady White when brake is off.

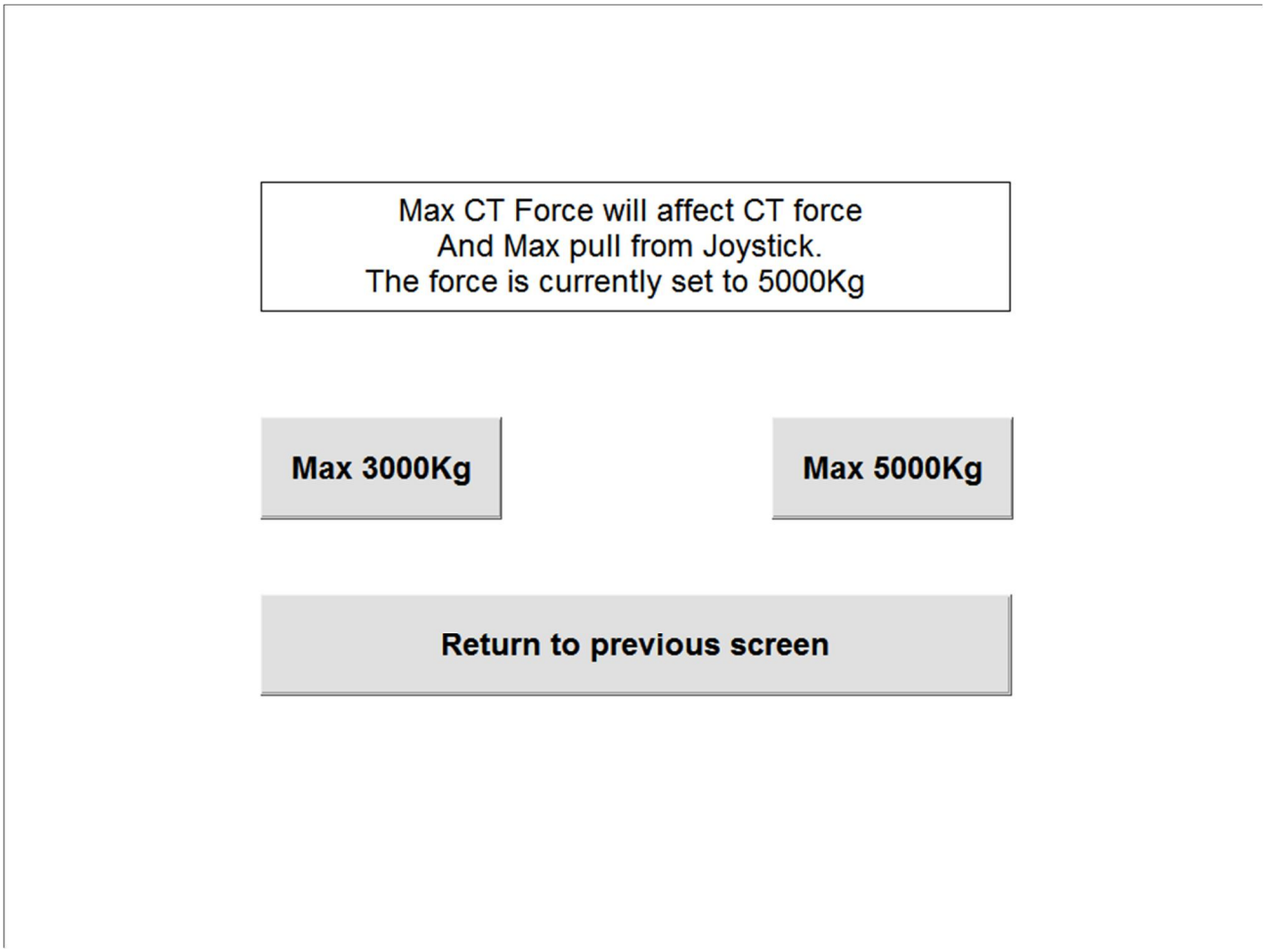
There are also other combinations possible, but this example explains them all.

Brake mode explanations:

AUTO :	When in AUTO mode, the brake will automatically engage when the pressure on PT2501 is below the calculated pressure for 1Tonn. Will not engage while reeling in.
SEMI AUTO :	When in SEMI AUTO mode, the brake will automatically engage if neither CT or Joystick is active.
MANUAL :	When in MANUAL mode, the brake will simply follow the active panels brake switch.

Note: The brake will never disengage while brake switch is in ON position, regardless of mode.

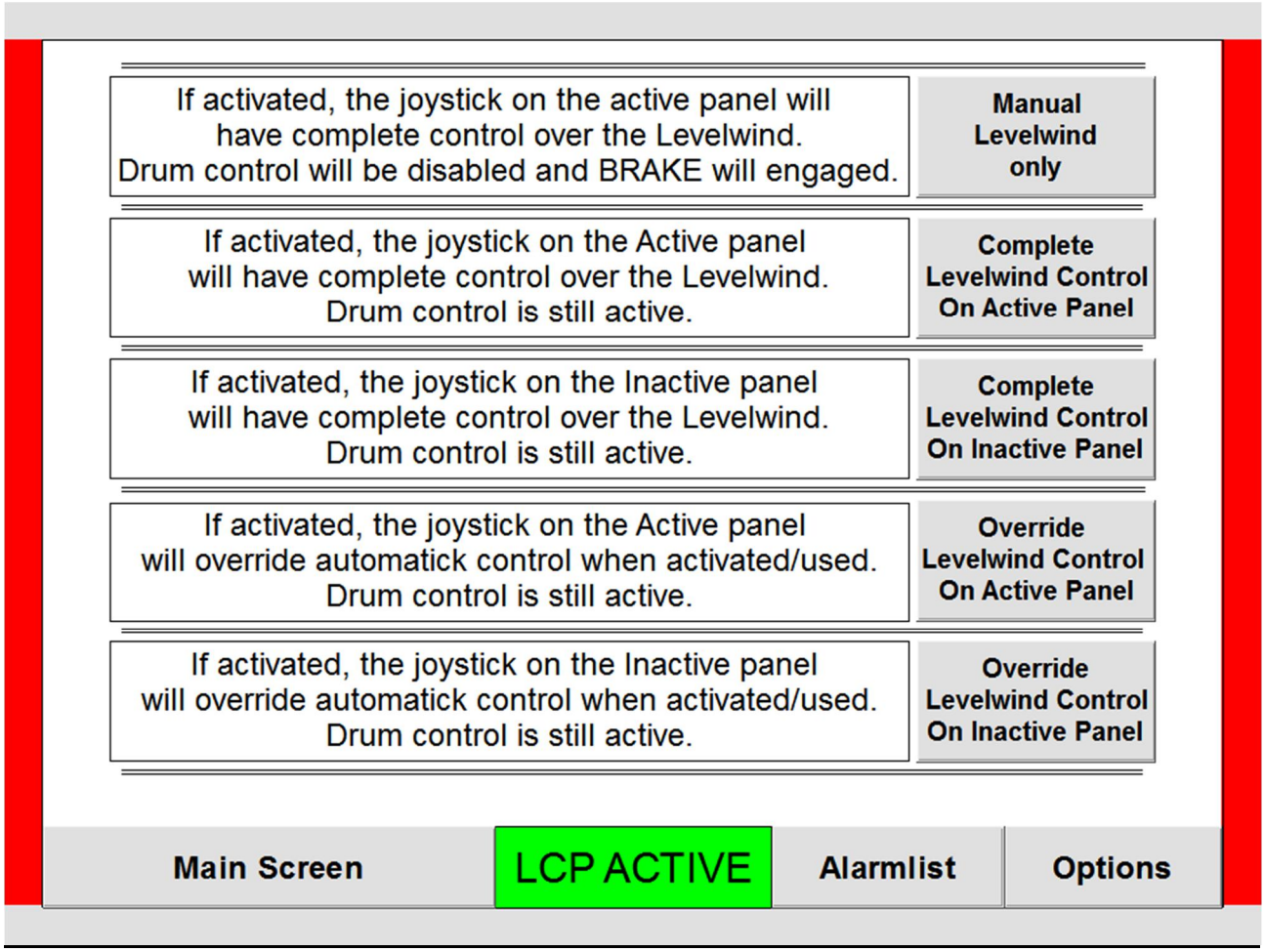
6.1.7.8 Max CT Force control



From here the Max CT force/tension can be chosen.

This screen is accessed by pressing Max CT Force control” on the “Options” screen.

6.1.7.9 Levelwind control



This screen is for activating manual control of the Levelwind system.
Changes can only be done from the controlling/activated panel.

The first button will activate control of the levelwind system only (Drum control will be deactivated), advisable to engage brake manually before activating.

The second button will let you operate drum and levelwind control at the same time from the active panel.

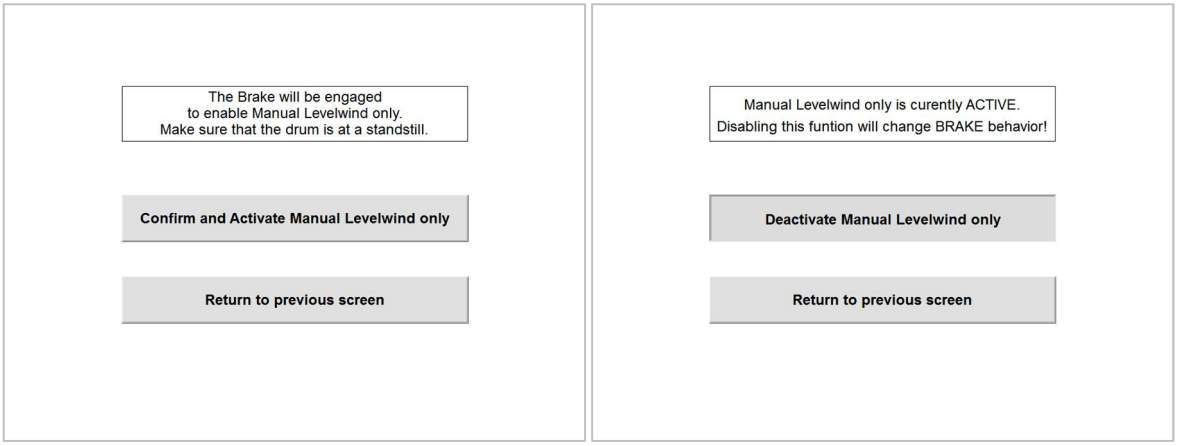
The third button will let you operate drum and levelwind control at the same time. Drum from the active panel and levelwind from the inactive panel.

The fourth button will let you operate drum and levelwind control at the same time from the active panel.
But here the levelwind system continues in auto when the joystick is released.

The fifth button will let you operate drum and levelwind control at the same time. Drum from the active panel and levelwind from the inactive panel.
But here the levelwind system continues in auto when the joystick is released.

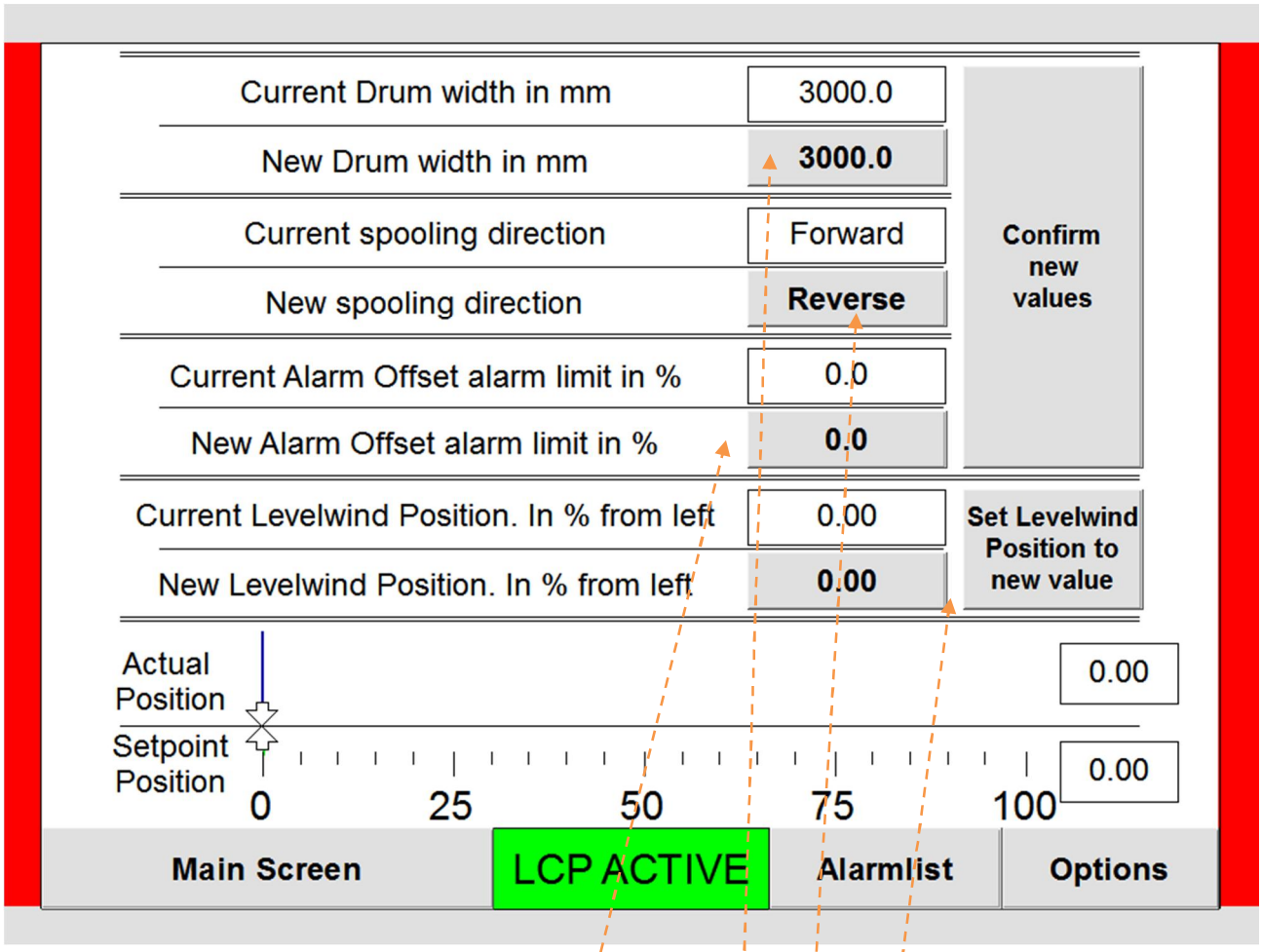
This screen is accessed by pressing “Levelwind control” on the Options screen

6.1.7.9.1 Manual levelwind only



Activating manual levelwind has to be confirmed to prevent unintended activating of the drum brake.

6.1.7.10 Levelwind Settings



Changes can only be done from the controlling/activated panel.

Space between drum flanges. Levelwind will travel this length minus pipe diameter.

This levelwind screw has only one track but the levelwind direction should still be checked before system is set in operation for the first time. If levelwind direction is wrong, change the direction by pushing the “normal levelwind” button.

Spool offset alarm limit in % of spooling width. If set to 0, then the alarm is disabled.

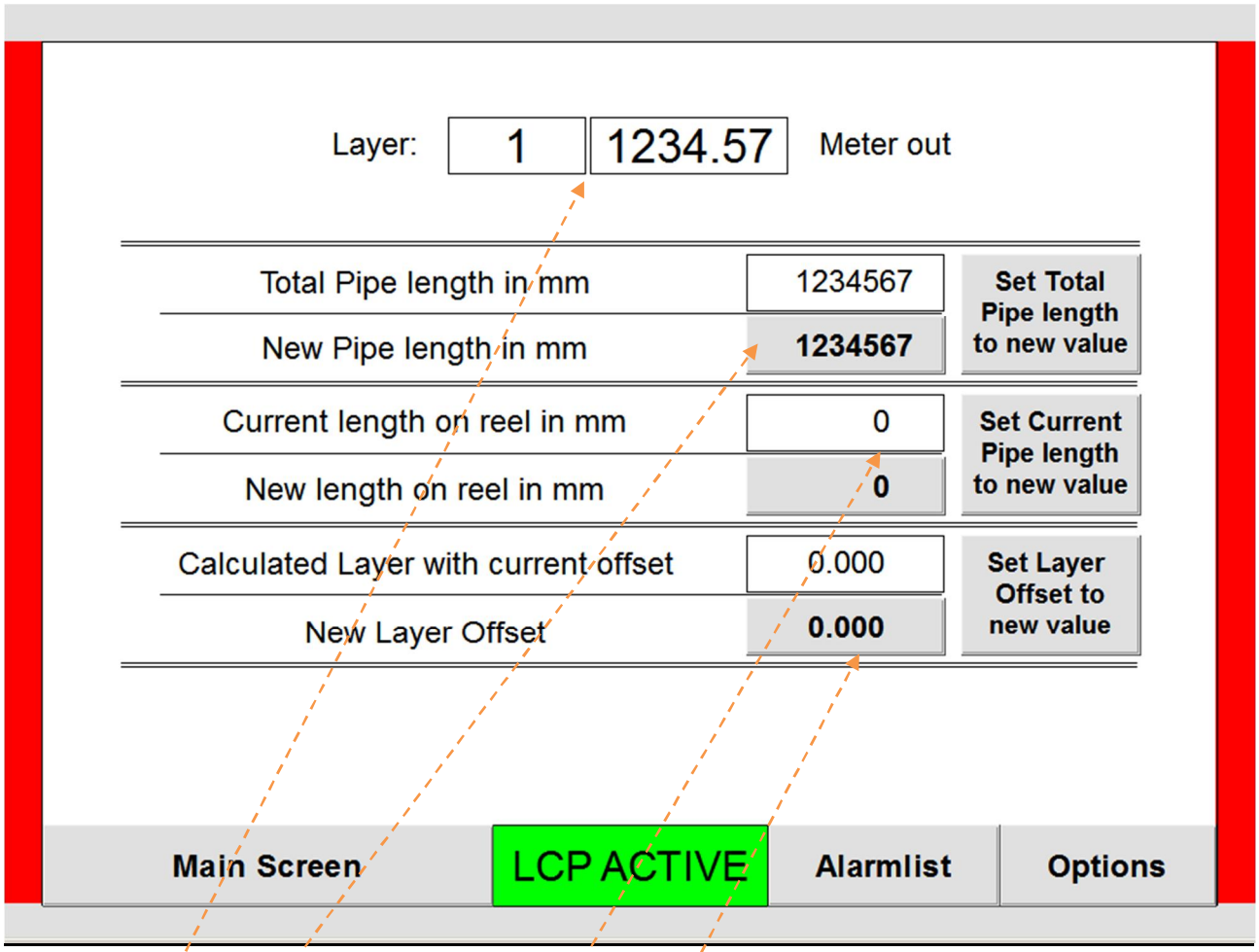
This function is to make corrections to the calculated actual levelwind position. This can be necessary if the spooling knifes has been released and the levelwind moved manually. Enter new spool position in %.

Example1: actual position 150mm (from left flange (start/0%) divided by
(drum width 1130mm – pipe diameter 130 mm) * 100. = 15%

Example2: actual position 150mm (from left flange (start/0%) divided by
(drum width 3000mm – pipe diameter 130 mm) * 100. = 5.2%

This screen is accessed by pressing “Levelwind settings” on the Options screen

6.1.7.11 System Settings



Changes can only be done from the controlling/activated panel.

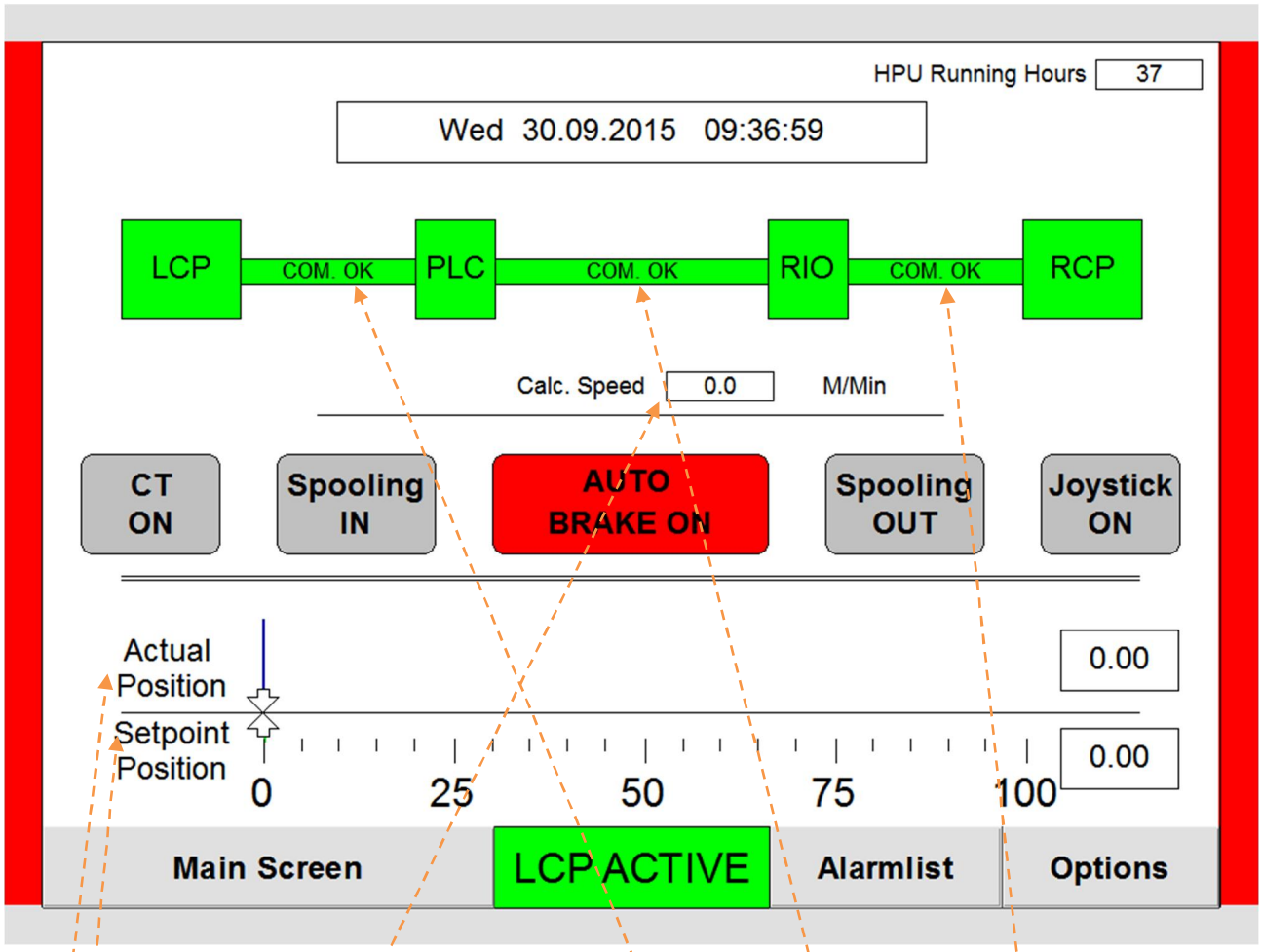
If the length is changed, then the set point for the levelwind position will change as well (the system uses the length to calculate spooling set point). Normally this should not be changed. But if the system has been driven in Manual mode, then the length and spool position calculation may be off.

The length is also used to calculate layer, and layer is used to calculate force/tension. If layer is wrong, then the tension calculation will be less accurate. The system applies more force on higher layers. If the system is to be driven in manual all the time, then length will only be a problem for the correct tension calculations (advisable to check that the system has enough force/tension to pull in the pipeline).

With this, the calculated layer can be modified without affecting the calculated length. It will however affect tension.

This screen is accessed by pressing “System settings” on the Options screen

6.1.7.12 System Status



Shows system statuses like PLC communication to/from panels, calculated speed, direction, time, HPU running hours, Brake status, levelwind position and levelwind "Set Point" (also indicates where the pipe is winded on from)

Communication status between system components. LCP to PLC, PLC to RIO and RIO to RCP. The RIO is placed in the RCP enclosure.

Calculated drum speed.

Actual position is the calculated position of the levelwind.

Setpoint position is the position the system has calculated that the levelwind should have (based on length of pipe on the drum), this is also the position the levelwind will follow when it is in auto.

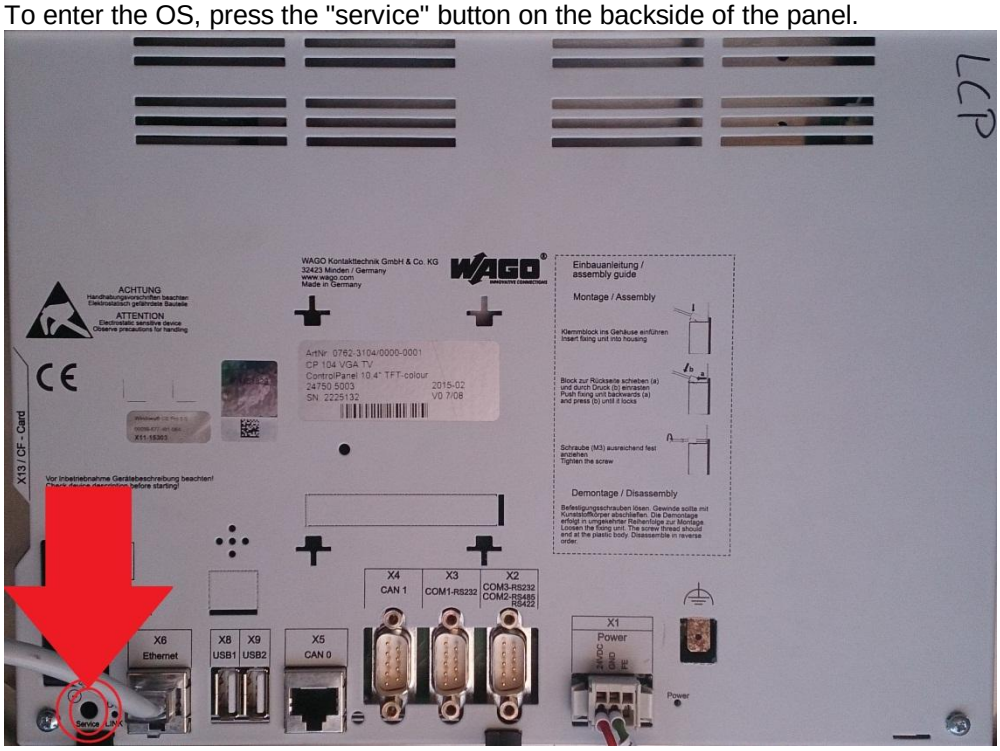
This screen is accessed by pressing “System Status” in "Options".

6.1.7.13 Set Time

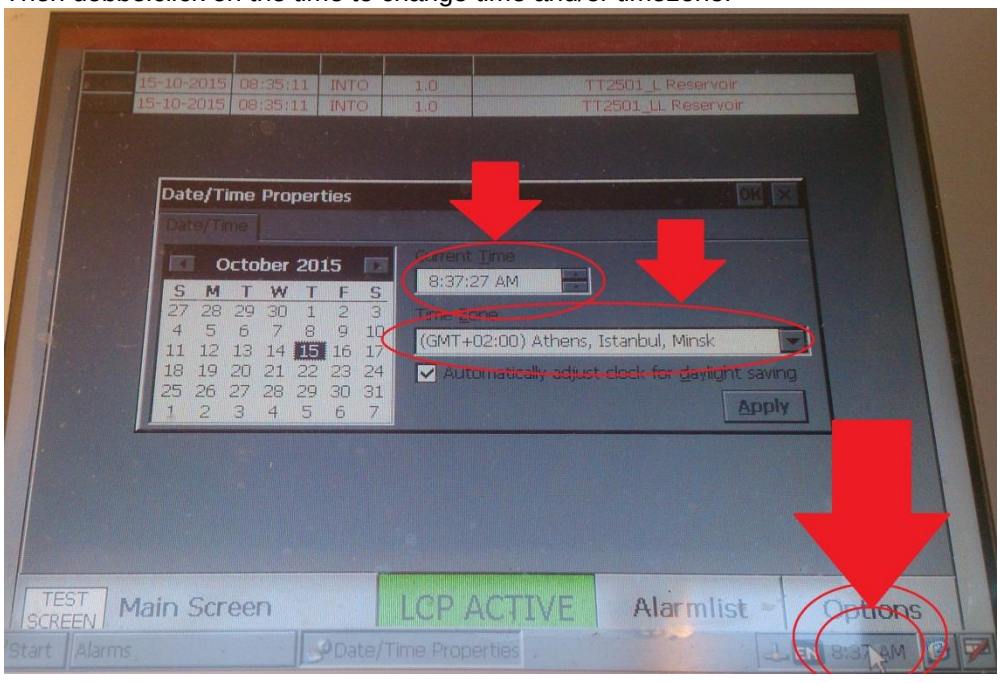
Time adjustment.

Time adjustment can only be done from the operating system that runs in the background.

To enter the OS, press the "service" button on the backside of the panel.



Then dobbelclick on the time to change time and/or timezone.



6.2 Disturbance of Operation

NOTE

To avoid uncontrolled unwinding of the downline, maintain tension above 1000kg during winding and parking/securing the downline. Leaving the downline with no tension will lead to unwinding.

WARNING

The brake design capacity is 15mT.
The spooling system design tension is 5mT
If ESD or brake switch is engaged, 15mT braking capacity is applied.
By engaging ESD or brake switch, structural damage to the spooling system might occur.

6.2.1 Emergency Stop

There are two ESD push buttons on the reel system. One is located on the LCP on the Reel, and one is located on the RCP. Emergency stop is activated by pushing one of these buttons. The emergency stop buttons work independent of what control panel that is active. The reel will stop within 5 seconds.

6.2.2 Brake switch

There are two brake switches on the reel system. One is located on the LCP on the Reel, and one is located on the RCP. The brake is activated by engaging one of these buttons.
Note: Brake switch function is limited to the active control panel.
The reel will stop within 5 seconds.
The brake switch and emergency stop button is on/off, that is: The brake force is NOT adjustable / chosen under operation.

6.2.3 Start after Emergency Stop

- Reset the push-stay Emergency Stop button by pulling it back out.
- If the Vertical banners on the HMI “Hydraulic pump status” are steady RED, then the reel is ready to start.
- If the horizontal banners are either flashing or steady red, then there is an alarm present on the reel. This will also be visible in the Alarm banner on main screen. Try first to reset the alarm by pushing the “Reset” graphical push button on HMI.
- If the vertical banners are flashing, check the alarm list for what causes the trip. When a trip alarm is present, then this has to be solved before the HPU can be started. See section 6.3 Alarm list.
- To start the HPU, operate the “Hydraulic Pump Start” graphical push button on HMI.

6.3 **Alarms**

The main system to use for troubleshooting is the alarm system. This section gives the alarm list.

Alarm List

Item	Message	Value	Type	Description
1.	19LT2501_H Reservoir	95 %	Warning	Oil level High
2.	19LT2501_L Reservoir	25 %	Warning	Oil level Low
3.	19LT2501_LL Reservoir	15 %	Trip	Oil level too Low
4.	19TT2501_HH Reservoir	80°C	Trip	Oil temperature in tank too High
5.	19TT2501_H Reservoir	60°C	Warning	Oil temperature in tank High
6.	19TT2501_L Reservoir	25°C	Warning	Oil temperature in tank Low
7.	19TT2501_LL Reservoir	20°C	Trip	Oil temperature in tank too Low
8.	19TT2502_H Pump	70°C	Warning	HPU temperature High
9.	19TT2502_HH Pump	80°C	Trip	HPU temperature too High
10.	19PT2501_H CT/Wind in	240 Bar	Warning	Line in pressure High
11.	19PT2502_HH Pump Press.	40 Bar	Trip	Auxiliary pressure too High
12.	19PT2502_H Pump Press.	38 Bar	Warning	Auxiliary pressure High
13.	19PT2502_L Pump Press.	22 Bar	Warning	Auxiliary pressure Low
14.	19PT2502_LL Pump Press.	20 Bar	Trip	Auxiliary pressure too Low
15.	19PT2503_H Wind out	100 Bar	Warning	Line out pressure High
16.	19PDS2501 Reservoir FS	ON/OFF	Warning	Oil filter clogged or oil too cold
17.	19PDS2502 Brake FS	ON/OFF	Warning	Oil filter clogged or oil too cold
18.	ZS2501 Door Open	ON/OFF	Trip	The rear door is open
19.	Left Drum Lock Engaged & Right Drum Lock Engaged	ON/OFF	Trip after 10 sec.	Both lockingbolts engaged
20.	Emergency Stop Active	ON/OFF	Trip	Emergency stop active or disconnected
21.	Q100 Pump Motor Fault	ON/OFF	Warning and Trip	HPU Motor ampere too high, Motor stops then system tripped
22.	Q101 Oil Cooler Fault	ON/OFF	Warning	Cooling fan ampere too high, coolingfan tripped
23.	Q102 Pump Motor High Temp	ON/OFF	Warning	HPU temperature high
24.	Q103 Levelwind fan fault	ON/OFF	Warning	Levelwind fan ampere too high, Levelwind fan tripped
25.	F101 Heater fault	ON/OFF	Warning	Heater fuse tripped
26.	U101 Phase fault	ON/OFF	Trip	Main supply Phase Fault
27.	Earth fault	ON/OFF	Warning	An Earth fault in the system
28.	Levelwind Motor High Temp	ON/OFF	Warning	Levelwind temperature high
29.	Levelwind out of sync	Adjustable	Warning	levelwind system out of synchronization.
30.	Communication fault PLC	ON/OFF	Warning	This screen does not communicate with the PLC
31.	Communication fault LCP	ON/OFF	Warning	LCP does not communicate with the PLC
32.	Communication fault RCP	ON/OFF	Warning	RCP does not communicate with the PLC
33.	Communication fault RIO	ON/OFF	Warning	RIO does not communicate with the PLC
34.	SC2202_Break LCP CT	ON/OFF	Warning	Wire break on LCP CT

Item	Message	Value	Type	Description
35.	SC2202_Short LCP CT	ON/OFF	Warning	Short circuit on LCP CT
36.	SC2201_Break LCP J X	ON/OFF	Warning	Wire break on LCP Joystick X axis
37.	SC2201_Break LCP J Y	ON/OFF	Warning	Wire break on LCP Joystick Y axis
38.	SC2201_Short LCP J X	ON/OFF	Warning	Short circuit on LCP Joystick X axis
39.	SC2201_Short LCP J Y	ON/OFF	Warning	Short circuit on LCP Joystick Y axis
40.	SC2202_Break LCP CT	ON/OFF	Warning	Wire break on RCP CT
41.	SC2202_Short LCP CT	ON/OFF	Warning	Short circuit on RCP CT
42.	SC2201_Break LCP J X	ON/OFF	Warning	Wire break on RCP Joystick X axis
43.	SC2201_Break LCP J Y	ON/OFF	Warning	Wire break on RCP Joystick Y axis
44.	SC2201_Short LCP J X	ON/OFF	Warning	Short circuit on RCP Joystick X axis
45.	SC2201_Short LCP J Y	ON/OFF	Warning	Short circuit on RCP Joystick Y axis

6.4 Hazard and Protection

This unit contains rotating parts and different fluids (reference to Lubrication data sheets) therefore always use safety equipment for personnel protection to avoid injuries or damage to personnel, equipment or environment. Also follow the recommendations in Chapter 2 Health, Safety and Environment

6.5 Qualifications and Training

Only qualified personnel should operate the unit. Only trained and qualified personnel should be responsible for training of new personnel/operators. Special attention should be paid to Chapter 2, Health, Safety and Environment.

WARNING This equipment may only be operated by personnel who have read technical instructions and are well known in the use of this equipment and contents of this manual

7 INSPECTION, MAINTENANCE & REPAIR

The equipment is designed to provide maximum service with minimum maintenance. Nevertheless, certain checks and maintenance operations have to be carried out in order to keep the units serviceable and in good condition.

The maintenance schedules are designed to provide a basis for a preventative maintenance schedule and an equipment status reporting system. These schedules should be adjusted to account for local working practices and operational considerations.

On a regular basis maintenance should be performed after table 7.1 Inspection Matrix.

WARNING Before doing any work on the unit, the operator must first disconnect the power supply, to ensure that it is out of service and take all necessary precautions against it being accidentally switched on again or its parts moving without warning.

For maintenance and repairs, always use original parts recommended from supplier and follow the spare part list.

7.1 Preventive Maintenance

7.1.1 Maintenance matrix

Authority requirements.
The owner/operator of the reel must at all times meet local authority requirements applicable for the PO unit. The PO unit is designed and approved by DnV standard for certification, DnV 2.7-3. Chapter 8 of DnV 2.7-3 gives the requirements for periodic examination, test and repairs.

NOTE **DnV requirements to be evaluated and implemented in conjunction with applicable local authorities' requirements.**

Authority maintenance requirements are:

- Not exceeding 12 months, PO unit periodic inspection per DnV 2.7-3 chapter 8.
- Not exceeding 12 months, lifting slings yearly certification.
- Not exceeding 12 months, temperature transmitters, yearly certification
- Not exceeding 12 months, pressure transmitters, yearly certification.

Recommended preventive maintenance
In addition to the authority and DnV requirements above, the table below gives the recommended preventive maintenance matrix.
Operator maintenance program must take into consideration local regulations and company policies when establishing maintenance program.

Item	Subject	Before & After every Operation campaign	20 Oper. hours	100 Oper. hours	200 Oper. hours	600 Oper. hours	1500 Oper. hours	2500 Oper. hours	If required (according to experience)
	GENERAL								
1.	**Lifting lugs.** **Mandatory.** Visual inspection after every operation. See operational restriction in PO unit certificate.								After every operation
2.	**General** Visual inspection. Check for leakage and damage on the unit	X							
3.	**Connection bolts** Check connection bolts on, gear, motor, diamond screw, chain system. Chapter 7.1.5			X					
4.	**Rear access door.** Lubricate Use Castrol Spheerol SX2								When required
5.	**Drum hydraulic motors** Lubricated by the hydraulic oil Shell Tellus S2 V 46								Contact vendor if there are any abnormalities
6.	**Drum bearings** Lubricate Use Castrol Spheerol SX2			X					
7.	**Electrical** General visual inspection of electrical installation.								Max 12 mths
8.	**Electrical cabinet (MCP) cooling fan** Check or rinse/change filter.								Max 12 mths
9.	**Pipe and Swivel** Rinse with fresh water and inspect								See notations further below
	HPU								
10.	Check Strainer on Hydraulic supply	X							
11.	Clean Strainer cartridge on Hydraulic supply				X				
12.	The HPU hydraulic pump (The HPU is lubricated by the hydraulic oil Shell Tellus S2 V 46)								Contact vendor if there are any abnormalities
13.	Change Hydraulic filter element on supply system								Max 12 mths /When alarm arise
14.	Change Hydraulic filter element on return system								Max 12 mths /When alarm arise
15.	Door hinges Lubrication Interflon paste HT 1200								X

Item	Subject	Before & After every Operation campaign	20 Oper. hours	100 Oper. hours	200 Oper. hours	600 Oper. hours	1500 Oper. hours	2500 Oper. hours	If required (according to experience)
16.	Calibration of pressure transmitters								Max 12 mths
17.	Calibration of temperature transmitters								Max 12 mths
	SPOOLING SYSTEM								
18.	Spindles bearing. Visual check for leakage. These are closed bearings and shall normally not need greasing. Use Castrol Spheerol SX2 if reqd.	X							
19.	Visual inspect the Spindles. Clean if required. Apply Castrol Spheerol SX2 if necessary	X							Max 12 mths
20.	Spooling Arrangement Gear. Change oil. Use Alpha SP 150			X (first time)				X	Max 12 mths
21.	Funnel runner blocks. Apply Castrol Spheerol SX2								Max 12 mths
22.	The spooling system chain Lubrication Castrol Spheerol SX2			X					
23.	Spooling knife house Lubrication Castrol Spheerol SX2			X					

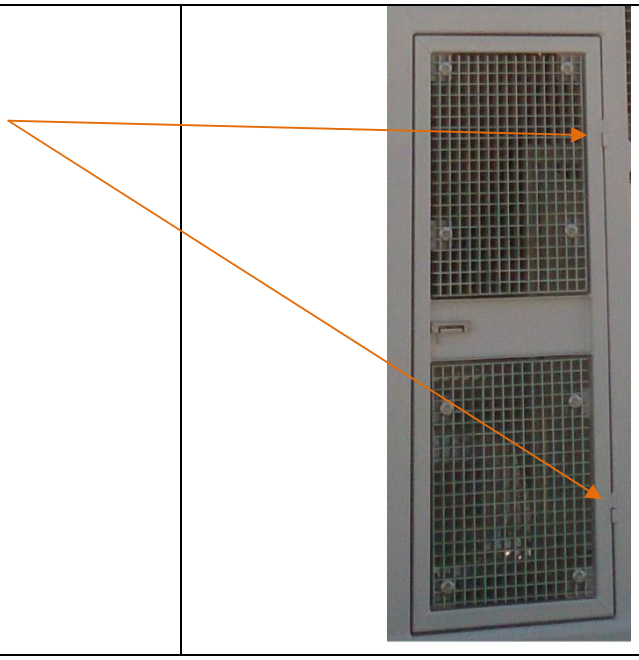
7.1.2 Maintenance instructions

The pictures below are included to assist execution when performing preventive maintenance.
Item number in this section is the same as items number in 7.1.1.

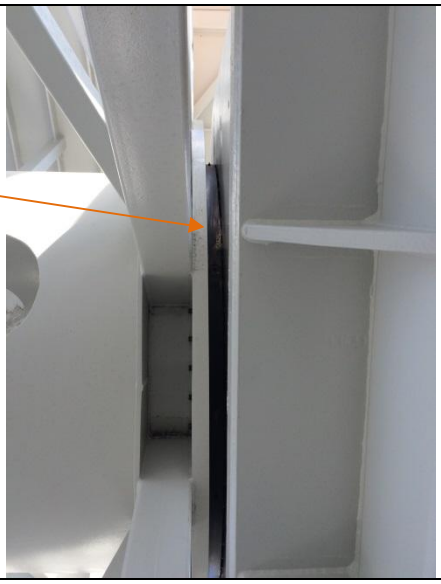
Item 1
All lifting points shall be thoroughly checked for cracks, deformation and other damages after each operation.
A 100% visual inspection shall be performed by a competent person. The inspection shall be logged, and the log shall be kept with the certificate.
Ref DnV design verification report – DnV project No PP126936

NOTE The inspection requirement is "between each operation" – that is, after operation – inspect the lugs.
Multiple lifts to move the reel from storage to quay; lift on board operation vessel, from vessel to quay and to storage is acceptable. A good practice is to always inspect the lugs during preparation for operation.

Item 4
Rear access door, hinge lubrication.



Item 6
Drum bearings

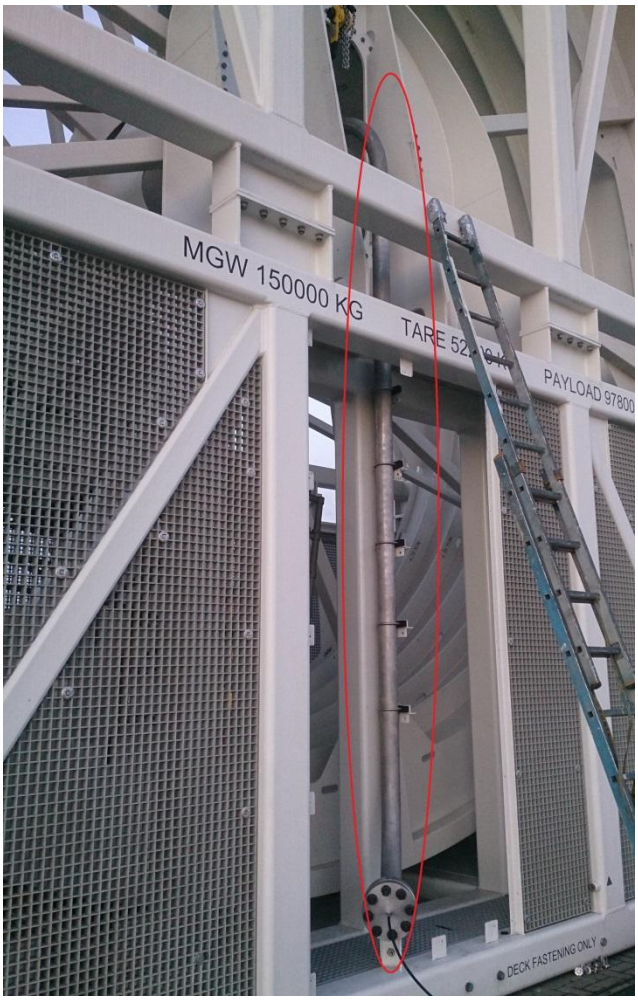


Item 7:
Continuous surveillance program of electrical system must be established by operator to prevent corrosion and degradation of the electrical system.
Preventing corrosion inside the electrical cabinets are done by replacing the humidity absorbing sponges or bags that are inside the electrical cabinets. Also by checking that the cabinet gaskets are whole.
Also see section 7.1.4.

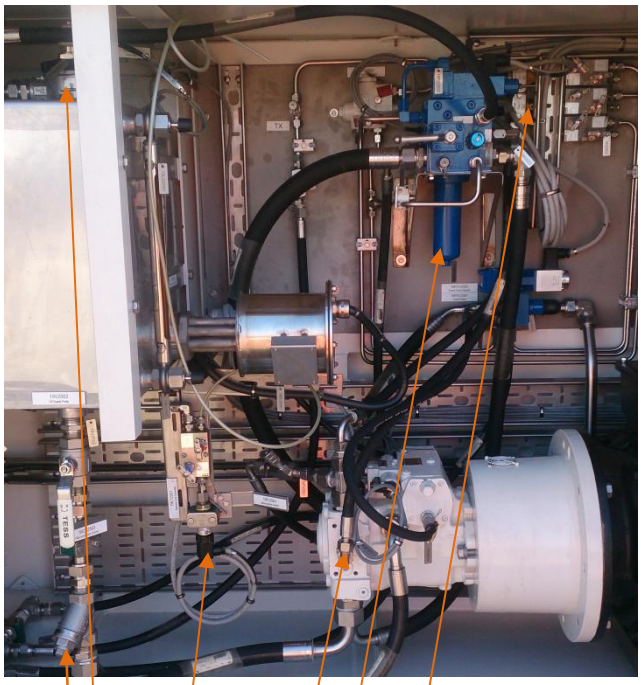
NOTE Open the electrical cabinet door only when strictly required to avoid humidity dust and dirt from entering. Ensure gaskets on cabinet door are in good condition.
Always close the LCP with cover when not in use.
Always store the RCP inside the toolbox when not in use.

Item 9:
The pipe and swivel are maintenance free when used with non-corrosive liquids.

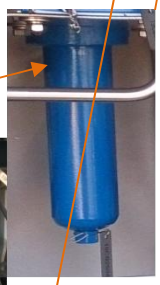
If corrosive liquids are used, then it is recommended to flush with fresh water after every use. It is also recommended to store it with fresh water after used with corrosive liquids, this to dilute any residual chemicals that may have been left and cracks or joints, thus reducing the risk of further corrosion.



HPU, items 10 to 17.
Item 14, hydraulic filter on return system is installed on the HPU tank, and the filter house itself is inside the tank.

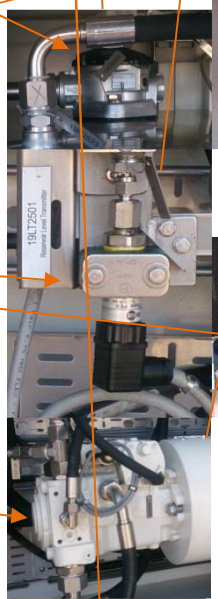


Item 14. Hydraulic filter Return System
19CB2501
Note: There is a hatch above the filter.



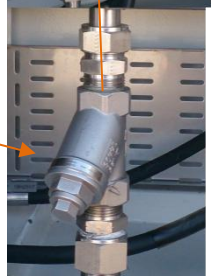
Item 13. Hydraulic filter Brake
19CB2504

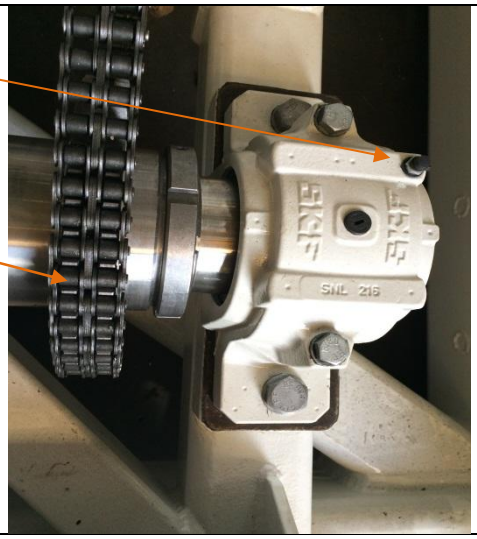
Item 16. and Item 17. Transmitters
19LT2501
19PT2501, 19PT2502, 19PT2503



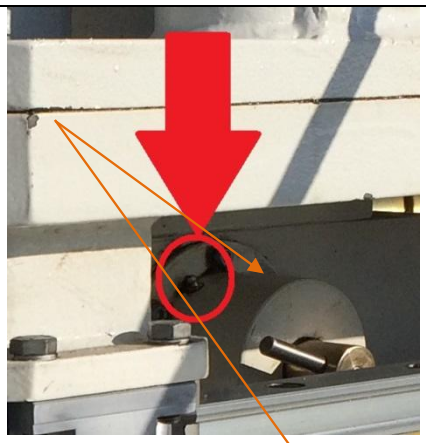
Item 12. Hydraulic Pump
19PB251

Item 10. and Item 11. Strainer
19CB2503

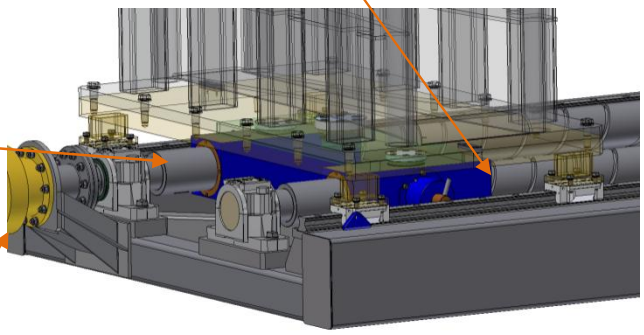


Item 18, Spindle bearing lubrication point. (Closed bearing – normally no lubrication required). **Item 22,** Chain lubrication.	

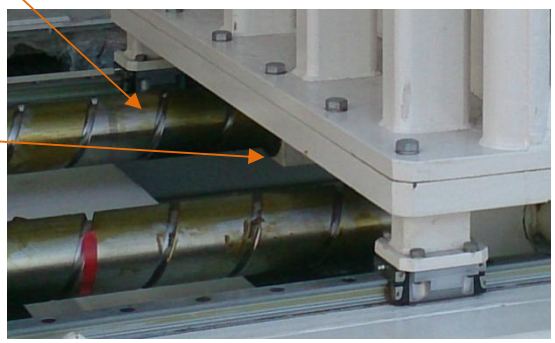
Item 23.
Spooling knife house lubrication (one each diamond screw).



Item 19.
Spindle cleaning and lubrication (2 ea).



Item 21.
funnel runner blocks (4 ea)



Item 20.
Spooling Arrangement Gear.

7.1.3 **Main bolt Connection (Torque table)**

The main components of the unit are interconnected using galvanised high strength construction bolts. To ensure proper connection, these bolts need to be tightened according to ISO 898-1 to a predetermined value (torque).

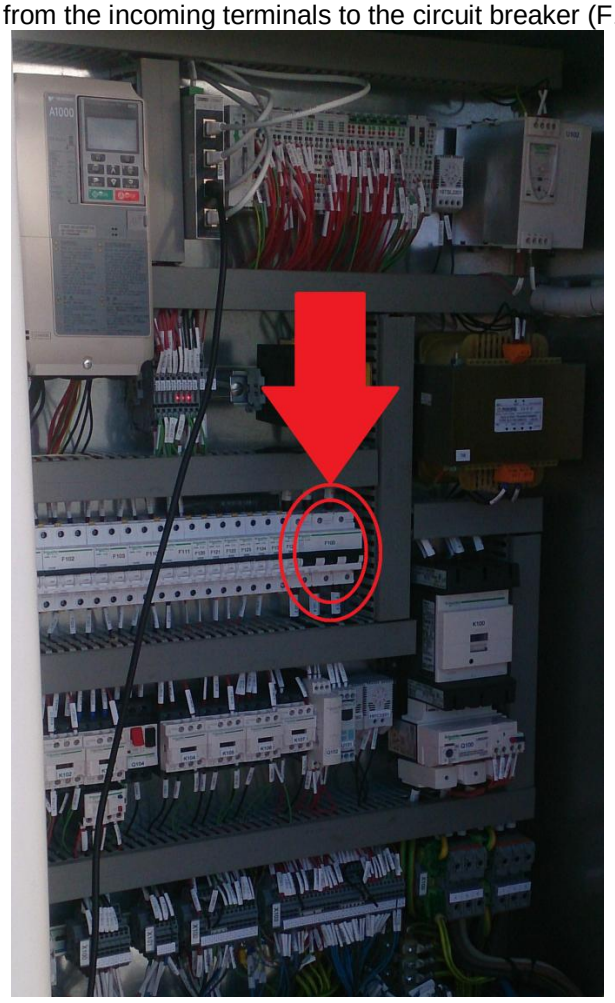
Description	Unit position	Size	Torque
Galvanized construction bolt	Bearing foundation Motor side	**M20**	319kN preload with torque wrench
Galvanized construction bolt	Bearing foundation swivel side	**M20**	319kN preload with torque wrench
Galvanized construction bolt	Bearing drum swivel Side	**M20**	319kN preload with torque wrench
Galvanized construction bolt	Bearing drum Motor Side	**M20**	319kN preload with torque wrench
Galvanized construction bolt	Gear drum motor side	**M24**	552 Nm
Galvanized construction bolt	Deck fastening brackets	**M24**	552 Nm
Galvanized construction bolt	Drum mechanical lock	**M16**	164 Nm
Galvanized construction bolt	Spooling frame installation to main frame	**M24**	552 Nm
Galvanized construction bolt	Top and Bottom frame assembly	**M24**	552 Nm
Galvanized construction bolt	HPU to main frame	**M10**	66 Nm
Galvanized steel bolts are lubricated with Molycote P-74 .			

7.1.4 **Maintenance of Electrical Equipment**

SAFETY NOTICE

During operation, all the electrical equipment in the Reel unit, and associated equipment that forms part of the Reel, but installed elsewhere on the vessel must be considered as electrically powered.

No attempt must be made to open up electrical components for service or maintenance without prior disconnection of power. Switching off F100 in the MCP cabinet is also OK. Then there will only be power from the incoming terminals to the circuit breaker (F100).



All service of electrical components shall always be performed by personnel holding relevant qualifications.

Service or maintenance on electrical equipment requires personnel that:

- Are familiar with the area and sufficient technical knowledge to understand the conditions on site.
- Have the technical knowledge and understanding of the electric equipment used.
- Understand the visual, careful and detailed inspection requirements relating to the equipment on site.
- Personnel are free to report any deviations that may arise during the inspection

NOTE **There is no requirement that such personnel are members of an external independent organization.**

NOTE **Electrical regulations require that service should only be performed by personnel holding the required certificates for the type of work in question.**

- Ensure that any special tools required, and spares are available before commencing the activity
- Open the protective cover, and perform the required service, e.g. change a relays, fuse or other component required.

WARNING **When changing components, ensure that the replacement component has a rating as for the component removed**

- Re-install the protective cover, and tighten the bolts of the cover.
- Refer to the technical data sheets for the component being serviced to determine any special considerations or features that need to be observed during service. This also applies to location of screws and bolts etc. that shall be loosened as part of the activity.

7.2 Corrective Maintenance

Only qualified and trained personnel, familiar with the unit, should perform any assembly or disassembly work on the unit.

During disassembly, make sure that all components that belong to the unit are kept with the unit. Power cables, RCP with cable and deck fastenings pads shall be securely stored.

Before assembly, make sure that all parts for installation and operation are available, and undamaged.

7.2.1 Repair

For repairs, always use original parts recommended from supplier and follow the spare part list (40065-LA-005).

Following equipment and consumables is necessary during maintenance of the Reel.
Spare parts are not mentioned in this table.

Tools/equipment/ consumables	Purpose	Fabricate/Type
Paint	”Touch-up” of Surface protection	RAL 9002
Lubrication	Preventive maintenance	Refer to chapter 7.1.1.
Torque wrench	Torque-tightening for bolts	N/A
Hand tools	Simple repairs	N/A

8 REFERENCE DRAWINGS, DOCUMENTS AND DATA SHEETS

8.1 Document and Drawings reference list

The following table gives the document and drawing reference list.

Advantec Doc no	Title
40065-XD-001	General Arrangement, Reel
40065-XD-002	General Arrangement, Interface and Envelope
40065-XD-016	Lifting Arrangement
40065-LD-001	Supplier Master Document List (SMDL)
40065-XT-001	Internal Wiring Diagram, Control Panel
40065-XT-002	Wiring Diagram, Field
40065-XB-001	Hydraulic Schematic, Reel
40065-LA-001	Equipment Index
40065-LA-005	Spare Part List

8.2 Technical Data Sheet Index

Advantec Doc no	Title
40065-DS-001	Noise Data Sheet
40065-DS-002	Reel Datasheet

8.3 DNV certificate

Advantec Doc no	DnV Certificate/Document No	Title
S-40065-VB-010	DNV-PP126936-DVR-001	DNV Design verification report
S-40065-VB-012	N1406CHT	DNV 2.7-3 Certificate

APPENDIX A- LUBRICATION DATA SHEETS

- Castrol Spheerol SX 2
- Interflon Paste HT1200 (HPU stainless steel Door hinges)
- Alpha SP 150 (gear oil)
- Prolong chain & wire oil spray
- Shell Tellus Oil 46 (Hydraulic Oil)

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	**Spheerol SX 2**
Product code	451377-BE01 SG01
SDS no.	451377
Product type	Grease

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	Grease for industrial applications For specific application advice see appropriate Technical Data Sheet or consult our company representative.

1.3 Details of the supplier of the safety data sheet

Supplier	BP Marine Division of Nordic Lubricants AS Drammensv. 167, Box 153 Skøyen 0212 Oslo
E-mail address	MSDSadvice@bp.com

1.4 Emergency telephone number

EMERGENCY TELEPHONE NUMBER	Carechem:+44 (0) 1235 239 670 (24 hours)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition Mixture

Classification according to Directive 1999/45/EC [DPD]

The product is not classified as dangerous according to Directive 1999/45/EC and its amendments.

See sections 11 and 12 for more detailed information on health effects and symptoms and environmental hazards.

2.2 Label elements

Risk phrases	This product is not classified according to EU legislation.
Safety phrases	Not applicable.
Supplemental label elements	Safety data sheet available for professional user on request.

Special packaging requirements

Containers to be fitted with child-resistant fastenings	Not applicable.
Tactile warning of danger	Not applicable.

2.3 Other hazards

Other hazards which do not result in classification	Note: High Pressure Applications Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. See 'Notes to physician' under First-Aid Measures, Section 4 of this Safety Data Sheet.

SECTION 3: Composition/information on ingredients

Substance/mixture Mixture

Highly refined base oil (IP 346 DMSO extract < 3%). Soap. Proprietary performance additives.

Product/ingredient name	Identifiers	%	Classification 67/548/EEC	Classification Regulation (EC) No. 1272/2008 [CLP]	Type
Calcium sulphonate	61789-86-4	5-10	Xi; R36	Eye Irrit. 2, H319	[1]
Naphthenic acids, zinc salts	12001-85-3	1-2.5	Xi; R36/38 N; R51/53	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Chronic 2, H411	[1]
calcium dodecylbenzene sulphonate	26264-06-2	1-5	Xi; R41, R38	Skin Irrit. 2, H315 Eye Dam. 1, H318	[1]

See Section 16 for the full text of the R-phrases declared above.

See Section 16 for the full text of the H statements declared above.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Skin contact Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation develops.

Inhalation If inhaled, remove to fresh air. Get medical attention if symptoms appear.

Ingestion Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects.
Note: High Pressure Applications
Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. Injuries may not appear serious at first but within a few hours tissue becomes swollen, discoloured and extremely painful with extensive subcutaneous necrosis. Surgical exploration should be undertaken without delay. Thorough and extensive debridement of the wound and underlying tissue is necessary to minimise tissue loss and prevent or limit permanent damage. Note that high pressure may force the product considerable distances along tissue planes.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media In case of fire, use water fog, alcohol resistant foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture In a fire or if heated, a pressure increase will occur and the container may burst.

SECTION 5: Firefighting measures

Hazardous combustion products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)
metal oxide/oxides
sulphur oxides (SO_2, SO_3, etc.)

5.3 Advice for firefighters

Special precautions for fire-fighters

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. Put on appropriate personal protective equipment.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Use a tool to scoop up solid or absorbed material and place into appropriate labelled waste container.

Large spill

Immediately contact emergency personnel. Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. If emergency personnel are unavailable, contain spilt material. Suction or scoop the spill into appropriate disposal or recycling vessels, then cover spill area with oil absorbent. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

See Section 1 for emergency contact information.
See Section 5 for firefighting measures.
See Section 8 for information on appropriate personal protective equipment.
See Section 12 for environmental precautions.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store and use only in equipment/containers designed for use with this product. Keep away from heat and direct sunlight. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10).

Not suitable

Prolonged exposure to elevated temperature

7.3 Specific end use(s)

Recommendations

See section 1.2 and Exposure scenarios in annex, if applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits No exposure limit value known.

Whilst specific OELs for certain components may be shown in this section, other components may be present in any mist, vapour or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Recommended monitoring procedures If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived No Effect Level

No DELs available.

Predicted No Effect Concentration

No PNEC available.

8.2 Exposure controls

Appropriate engineering controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.
All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Individual protection measures

Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection Respiratory protective equipment is not normally required where there is adequate natural or local exhaust ventilation to control exposure.
In case of insufficient ventilation, wear suitable respiratory equipment.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Eye/face protection Safety glasses with side shields.

Skin protection

Hand protection Wear protective gloves if prolonged or repeated contact is likely.
Wear chemical resistant gloves.
Recommended: Nitrile gloves.
The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Skin and body Use of protective clothing is good industrial practice.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

SECTION 8: Exposure controls/personal protection

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Grease
Colour	Brown. [Light]
Odour	Mild
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Open cup: >150°C (>302°F)
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	Not available.
Density	<1000 kg/m^3 (<1 g/cm^3) at 25°C
Solubility(ies)	insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not available.
Oxidising properties	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

10.2 Chemical stability The product is stable.

10.3 Possibility of hazardous reactions Under normal conditions of storage and use, hazardous polymerisation will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid No specific data.

10.5 Incompatible materials Reactive or incompatible with the following materials: oxidising materials.

10.6 Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on the likely routes of exposure Routes of entry anticipated:Dermal, Inhalation.

Potential acute health effects

Inhalation Vapour inhalation under ambient conditions is not normally a problem due to low vapour pressure.

Ingestion No known significant effects or critical hazards.

Skin contact No known significant effects or critical hazards.

Eye contact No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation No specific data.

Ingestion No specific data.

Skin contact No specific data.

Eye contact No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Inhalation Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation.

Ingestion Ingestion of large quantities may cause nausea and diarrhoea.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Eye contact Potential risk of transient stinging or redness if accidental eye contact occurs.

Potential chronic health effects

General No known significant effects or critical hazards.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Environmental hazards Not classified as dangerous

12.2 Persistence and degradability

Not readily biodegradable.

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) Not available.

Mobility Spillages are unlikely to penetrate the soil.

12.5 Results of PBT and vPvB assessment

PBT Not applicable.

vPvB Not applicable.

12.6 Other adverse effects

Other ecological information This product is unlikely to disperse in water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

SECTION 13: Disposal considerations

Hazardous waste Yes.

European waste catalogue (EWC)

Waste code	Waste designation
13 08 99*	wastes not otherwise specified

However, deviation from the intended use and/or the presence of any potential contaminants may require an alternative waste disposal code to be assigned by the end user.

Packaging

Methods of disposal Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations. Recycle, if possible.

Special precautions This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Never weld, solder or braze empty containers. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Other information At sea, used or unwanted product should be stored for eventual discharge into port approved waste oil disposal facilities.

SECTION 14: Transport information

	ADR/RID	ADN/ADNR	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
14.6 Special precautions for user	Not available.	Not available.	Not available.	Not available.
Additional information	-	-	-	-

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles Not applicable.

Other regulations

REACH Status The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

United States inventory (TSCA 8b) All components are listed or exempted.

Australia inventory (AICS) All components are listed or exempted.

Canada inventory All components are listed or exempted.

SECTION 15: Regulatory information

China inventory (IECSC)	All components are listed or exempted.
Japan inventory (ENCS)	All components are listed or exempted.
Korea inventory (KECI)	All components are listed or exempted.
Philippines inventory (PICCS)	All components are listed or exempted.

15.2 Chemical Safety Assessment This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Abbreviations and acronyms

ADN/ADNR = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DPD = Dangerous Preparations Directive [1999/45/EC]
DSD = Dangerous Substances Directive [67/548/EEC]
EINECS = European Inventory of Existing Commercial chemical Substances
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SADT = Self-Accelerating Decomposition Temperature
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVCB = Complex hydrocarbon substance
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements

H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H411	Toxic to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS]

Aquatic Chronic 2, H411	AQUATIC TOXICITY (CHRONIC) - Category 2
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2

Full text of abbreviated R phrases

R41- Risk of serious damage to eyes.
R36- Irritating to eyes.
R38- Irritating to skin.
R36/38- Irritating to eyes and skin.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD]

Xi - Irritant
N - Dangerous for the environment

History

SECTION 16: Other information

Date of issue/ Date of revision	25/09/2011.
Date of previous issue	No previous validation.
Prepared by	Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

Safety Data Sheet
according to 1907/2006/EC, Article 31

Printing date 31.05.2010 *Revision: 31.05.2010*

1 Identification of the substance/preparation and of the company/undertaking

· **Product details**

· **Trade name: Interflon Paste HT 1200**
· **Application of the substance / the preparation** Assembling and anti-seize paste.

· **Manufacturer/Supplier:**
Interflon b.v.
P.O. Box 1070
NL-4700 BB Roosendaal
The Netherlands
Tel: +31(0)165.55.39.11
Fax: +31(0)165.53.80.82
Email: info@interflon.com
www.interflon.com

· **Further information obtainable from:** Product safety department.
· **Information in case of emergency:** 0870 600 6266 (UK only)

2 Hazards identification

· **Hazard description:** Not applicable.
· **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
· **Classification system:**
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

3 Composition/information on ingredients

· **Chemical characterization**
· **Description:**
Mixture of medicinal white oil, polybutenes and ceramic connections.
All components used in this product meet the requirements of the FDA for "incidental food contact".
Interflon Paste HT 1200 is listed by the NSF for use in applications with incidental food contact (NSF-H1) and is in accordance with DIN V 10517 with registration number 122320.

· **Dangerous components:** Void
· **Additional information:** For the wording of the listed risk phrases refer to section 16.

4 First-aid measures

· **After inhalation:** No special measures required.
· **After skin contact:** Generally the product does not irritate the skin.
· **After eye contact:** Rinse opened eye for several minutes under running water.
· **After swallowing:** Do not induce vomiting; call for medical help immediately.

5 Fire-fighting measures

· **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.
· **For safety reasons unsuitable extinguishing agents:** Water with full jet
· **Protective equipment:** No special measures required.

(Contd. on page 2)

(Contd. of page 1)

6 Accidental release measures

· **Person-related safety precautions:** Not required.
· **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
· **Measures for cleaning/collecting:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **Additional information:** No dangerous substances are released.

7 Handling and storage

· **Handling:**
· **Information for safe handling:** No special measures required.
· **Information about fire - and explosion protection:** No special measures required.

· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.

8 Exposure controls/personal protection

· **Additional information about design of technical facilities:** No further data; see item 7.

· **Ingredients with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists valid during the making were used as basis.

· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures are to be adhered to when handling chemicals.
Do not eat, drink, smoke or sniff while working.
Wash hands before breaks and at the end of work.
· **Respiratory protection:** Not required.
· **Protection of hands:** Not required.
· **Material of gloves** Not required.
· **Penetration time of glove material** Not required.
· **Eye protection:** Goggles recommended during refilling

9 Physical and chemical properties

· **General Information**	
Form:	White paste.
Colour:	Whitish
Odour:	Odourless
· **Change in condition**	
Melting point/Melting range:	-10°C
Boiling point/Boiling range:	> 200°C
· **Flash point:**	220°C
· **Self-igniting:**	>300°C
· **Danger of explosion:**	Product does not present an explosion hazard.

(Contd. on page 3)

(Contd. of page 2)

· **Vapour pressure at 20°C:**	<0.01 kPa
· **Density at 20°C:**	1.14 g/ml
· **Solubility in / Miscibility with water:**	Insoluble.
· **Viscosity:**	
Dynamic at 20°C:	450 Pa.s

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
>250°C
Conditions to be avoided: open fire.
· **Materials to be avoided:** Strong acids, strong lye's and strong oxidising agents.
· **Dangerous reactions** No dangerous reactions known.
· **Dangerous decomposition products:**
Thermal decomposition or combustion can release carbon monoxide
and partly burned hydrocarbons.

11 Toxicological information

· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.
When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

12 Ecological information

· **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

13 Disposal considerations

· **Product:**
· **Recommendation** Smaller quantities can be disposed of with household waste.

· **European waste catalogue**	
20 01 26	oil and fat other than those mentioned in 20 01 25

· **Uncleaned packaging:**
· **Recommendation:** Disposal must be made according to official regulations.

(Contd. on page 4)

(Contd. of page 3)

14 Transport information

· **Land transport ADR/RID (cross-border)**
· **ADR/RID class:** Not classified

· **Maritime transport IMDG:**
· **IMDG Class:** Not classified
· **Marine pollutant:** No

· **Air transport ICAO-TI and IATA-DGR:**
· **ICAO/IATA Class:** Not classified

15 Regulatory information

· **Labelling according to EU guidelines:**
Observe the general safety regulations when handling chemicals.
The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials (German GefStoffV).

· **Special labelling of certain preparations:**
Safety data sheet available for professional user on request.

· **National regulations:**

· **Waterhazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:** Product safety department.
· **Contact:**
Head Laboratory
Email: service@interflon.com

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	**Alpha SP 150**
Product code	456555-BE01
SDS no.	456555
Product type	Liquid.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/ mixture	Lubricant for industrial gears For specific application advice see appropriate Technical Data Sheet or consult our company representative.

1.3 Details of the supplier of the safety data sheet

Supplier	BP Fuels & Lubricants AS Postboks 153 - Skøyen Drammensveien 167 N-0212 Oslo Norge Tel: +47 22 51 12 20 Fax: +47 22 51 12 70
E-mail address	MSDSadvice@bp.com

1.4 Emergency telephone number

EMERGENCY TELEPHONE NUMBER	Carechem: +44 (0) 1235 239 670 (24 hours)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition Mixture

Classification according to Directive 1999/45/EC [DPD]

The product is not classified as dangerous according to Directive 1999/45/EC and its amendments.

See sections 11 and 12 for more detailed information on health effects and symptoms and environmental hazards.

2.2 Label elements

Risk phrases	This product is not classified according to EU legislation.
Safety phrases	Not applicable.
Supplemental label elements	Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings	Not applicable.
Tactile warning of danger	Not applicable.

2.3 Other hazards

Other hazards which do not result in classification	Defatting to the skin.

SECTION 3: Composition/information on ingredients

Substance/mixture Mixture

Highly refined base oil (IP 346 DMSO extract < 3%). Proprietary performance additives.

Product/ingredient name	Identifiers	%	Classification 67/548/EEC	Classification Regulation (EC) No. 1272/2008 [CLP]	Type
Base oil - unspecified	Varies	>=90	Not classified.	Not classified.	[2]

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Skin contact Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation develops.

Inhalation If inhaled, remove to fresh air. Get medical attention if symptoms appear.

Ingestion Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous combustion products Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)
sulphur oxides (SO, SO_2, etc.)

5.3 Advice for firefighters

Special precautions for fire-fighters No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. Put on appropriate personal protective equipment.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Immediately contact emergency personnel. Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

See Section 1 for emergency contact information.
See Section 5 for firefighting measures.
See Section 8 for information on appropriate personal protective equipment.
See Section 12 for environmental precautions.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store and use only in equipment/containers designed for use with this product. Keep away from heat and direct sunlight. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10).

Not suitable

Prolonged exposure to elevated temperature.

7.3 Specific end use(s)

Recommendations

See section 1.2 and Exposure scenarios in annex, if applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
Base oil - unspecified	**Adm normer (Arbeidstilsynet) (Norway).** AN: 1 mg/m³ 8 hours. Form: Oil mist

For information and guidance, the ACGIH values are included. For further information on these please consult your supplier.

Whilst specific OELs for certain components may be shown in this section, other components may be present in any mist, vapour or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

SECTION 8: Exposure controls/personal protection

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived No Effect Level

No DNELs/DMELs available.

Predicted No Effect Concentration

No PNECs available

8.2 Exposure controls

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.
All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection

Respiratory protective equipment is not normally required where there is adequate natural or local exhaust ventilation to control exposure.
In case of insufficient ventilation, wear suitable respiratory equipment.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Eye/face protection

Safety glasses with side shields.

Skin protection

Hand protection

Wear protective gloves if prolonged or repeated contact is likely.
Wear chemical resistant gloves.
Recommended: Nitrile gloves.
The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/ manufacturer and with a full assessment of the working conditions.

Skin and body

Use of protective clothing is good industrial practice.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid.
Colour	Amber.
Odour	Oily.
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Pour point	-18 °C
Flash point	Closed cup: 220°C (428°F) [Pensky-Martens.]
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	Not available.
Density	890 kg/m³ (0.89 g/cm³) at 15°C
Solubility(ies)	insoluble in water.
Partition coefficient: n-octanol/ water	>3
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Kinematic: 150 mm^2/s (150 cSt) at 40°C Kinematic: 14.5 mm^2/s (14.5 cSt) at 100°C
Explosive properties	Not available.
Oxidising properties	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity — No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

10.2 Chemical stability — The product is stable.

10.3 Possibility of hazardous reactions — Under normal conditions of storage and use, hazardous polymerisation will not occur.
Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid — No specific data.

10.5 Incompatible materials — Reactive or incompatible with the following materials: oxidising materials.

10.6 Hazardous decomposition products — Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on the likely routes of exposure — Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Inhalation — Vapour inhalation under ambient conditions is not normally a problem due to low vapour pressure.

SECTION 11: Toxicological information

Ingestion No known significant effects or critical hazards.

Skin contact May cause skin dryness and irritation.

Eye contact No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation May be harmful by inhalation if exposure to vapour, mists or fumes resulting from thermal decomposition products occurs.

Ingestion No specific data.

Skin contact Adverse symptoms may include the following:
irritation
dryness
cracking

Eye contact No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Inhalation Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

Ingestion Ingestion of large quantities may cause nausea and diarrhoea.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Eye contact Potential risk of transient stinging or redness if accidental eye contact occurs.

Potential chronic health effects

General Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Environmental hazards Not classified as dangerous

12.2 Persistence and degradability

Biodegradable

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination.

12.5 Results of PBT and vPvB assessment

PBT Not applicable.

vPvB Not applicable.

12.6 Other adverse effects

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

SECTION 13: Disposal considerations

Hazardous waste Yes.

European waste catalogue (EWC)

Waste code	Waste designation
13 02 05*	mineral-based non-chlorinated engine, gear and lubricating oils

However, deviation from the intended use and/or the presence of any potential contaminants may require an alternative waste disposal code to be assigned by the end user.

Packaging

Methods of disposal Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations. Recycle, if possible.

Special precautions This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Never weld, solder or braze empty containers. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

14.6 Special precautions for user Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles Not applicable.

Other regulations

REACH Status The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

United States inventory (TSCA 8b) All components are listed or exempted.

Australia inventory (AICS) All components are listed or exempted.

Canada inventory All components are listed or exempted.

China inventory (IECSC) All components are listed or exempted.

Japan inventory (ENCS) All components are listed or exempted.

SECTION 15: Regulatory information

Korea inventory (KECI) All components are listed or exempted.

Philippines inventory (PICCS) All components are listed or exempted.

15.2 Chemical Safety Assessment This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Abbreviations and acronyms

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DPD = Dangerous Preparations Directive [1999/45/EC]
DSD = Dangerous Substances Directive [67/548/EEC]
EINECS = European Inventory of Existing Commercial chemical Substances
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SADT = Self-Accelerating Decomposition Temperature
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVCB = Complex hydrocarbon substance
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements Not applicable.

Full text of classifications [CLP/GHS] Not applicable.

Full text of abbreviated R phrases Not applicable.

Full text of classifications [DSD/DPD] Not applicable.

History

Date of issue/ Date of revision 05/09/2012.

Date of previous issue 31/08/2012.

Prepared by Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

SECTION 16: Other information

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

SAFETY DATA SHEET
PRO-LONG KJEDE & WIREOLJE Spray

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product name PRO-LONG KJEDE & WIREOLJE Spray

Applications Lubricant, water displacement, anti-corrosion, Aerosol.

Contact person Per Eikemo

Manufacturer
Pro-Long Smøremidler A/S
Postboks 11, 4086 Hundvåg
Norway
Tel: +47-51 86 26 85
Fax: +47-51 86 25 86
post@prolong.no
http://www.prolong.no/

Emergency telephone number National Poisons Information Service (NPIS), phone 0844 892 0111.
WEB: http://www.toxbase.org

2. HAZARDS IDENTIFICATION

FIRE HAZARD: Extremely flammable.
Not regarded as a health or environmental hazard under current legislation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS No.	Content	Symbol	Classification
destillates (petroleum), solvent-dewaxed heavy paraffinic	265-169-7	64742-65-0	60-100 %	-	
naphtha (petroleum), hydrotreated heavy	265-150-3	64742-48-9	5-10 %	Xn	R-65
alkanes, C18-20, chloro		106232-85-3	5-10 %	-	
butane	203-448-7	106-97-8	5-10 %	F+	R-12
propane	200-827-9	74-98-6	5-10 %	F+	R-12
propan-2-ol	200-661-7	67-63-0	1-5 %	Xi ,F	R-11, R-36, R-67

Section 16 contains detailed classification phrases.

Composition comments CAS-no. 64742-48-9 # 64742-65-0: Note L: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346.

4. FIRST AID MEASURES

General Remove victim immediately from source of exposure. Provide rest, warmth and fresh air. When unconscious, loosen tight clothing and position in secured recovery position. When breathing is difficult, properly trained personnel may assist affected person by administering 100% oxygen. If heart stops, provide heart massage.

Inhalation Move the exposed person to fresh air at once. Rinse nose and mouth with water.

Ingestion Ingestion is not likely under the use as intended and described, product is an aerosol.

Skin Wash the skin immediately with soap and water. Contact physician if irritation continues.

Eyes Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Contact physician if irritation persists. Make sure to remove any

contact lenses from the eyes before rinsing.

5. FIRE-FIGHTING MEASURES

Extinguishing media
Extinguish with foam, carbon dioxide, dry powder or water fog.

Special fire fighting procedures
Move container from fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards
Extremely flammable. Vapours are heavier than air and may spread near ground to sources of ignition.

Hazardous combustion products
Fire or high temperatures create: Carbon monoxide (CO). Carbon dioxide (CO2). Chlorinated compounds.

Protective measures in fire
Wear self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products.

6. ACCIDENTAL RELEASE MEASURES

Personal protection
Wear appropriate personal protective equipment - see Section 8.

Environmental protection
Do not allow to enter drains, sewers or watercourses.

Spill cleanup methods
Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. Collected material shall be disposed of in closed container according to local authority requirements. Waste treated in accordance with section 13.

7. HANDLING AND STORAGE

Usage precautions
Wear appropriate personal protective equipment - see Section 8. Do not breathe of aerosol mist. Avoid spilling, skin and eye contact. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level. Eliminate all sources of ignition.

Storage precautions
Keep in cool, dry, ventilated storage and closed containers. Keep away from heat, sparks and open flame.
Pressurised container: Must not be exposed for temperatures above 50°C.

Storage criteria
Flammable compressed gas storage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredient name	CAS no.	Reference	LT Exp 8 Hrs	ST Exp 15 Min	Date
naphtha (petroleum), hydrotreated heavy	64742-48-9	WEL.	275 mg/m3		
butane	106-97-8	WEL.	1450 mg/m3(K)	1810 mg/m3(K)	
propan-2-ol	67-63-0	WEL.	400/999 ppm/mg/m³	500/1250 ppm/mg/m3	
Oil mist (mineraloil particles)		WEL.	1 mg/m3		

Ingredient comments
WEL = Workplace exposure limits. SK= Skin absorbance, Rep= Reproduction, Carc= Carcinogenic Senz= Sensitisers, Mut= Carcinogenic

Protective equipment

Ventilation	No specific ventilation requirements noted, but forced ventilation may still be required if air contamination exceeds acceptable level.
Respirators	If ventilation is insufficient, suitable respiratory protection must be provided. Gas cartridge (organic substances).
Protective gloves	Protective gloves must be used if there is a risk of direct contact or splash. Use protective gloves made of: Nitrile. Polyvinyl alcohol (PVA). Time of breakthrough is not known, change gloves regulary.
Eye protection	Wear approved chemical safety goggles where eye exposure is reasonably probable.
Other Protection	Wear appropriate clothing to prevent any possibility of skin contact.
Hygienic work practices	Wash promptly if skin becomes wet or contaminated. Promptly remove any clothing that becomes wet or contaminated.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Fluid. Aerosol.		
Colour	Red.		
Odour	Mild (or faint). Sweet.		
Solubility description	Insoluble in water. Soluble in: Organic solvents (most).		
Boiling point (°C, interval)	<35	**Pressure**	760mmHg
Density (g/cm3)	0,91	**Temperature (°C)**	20
Vapour density (air=1)	> 1		
Viscosity (interval)	20 cSt	**Temperature (°C)**	
Flash point (°C)	<0	**Method**	ASTM D-93A

10. STABILITY AND REACTIVITY

Stability	Stable under normal temperature conditions and recommended use.
Conditions to avoid	Avoid excessive heat, flames and other sources of ignition.
Hazardous polymerisation	Will not polymerise.
Materials to avoid	Strong oxides. Strong acids.
Hazardous decomp. products	No specific hazardous decomposition products noted.

11. TOXICOLOGICAL INFORMATION

Sensitization	No allergic reaction is known.
Genotoxicity	No known information.
Carcinogenicity	No known information.
Reproduction toxicity	No known information.
Inhalation	Solvent vapours are hazardous and may cause nausea, sickness and headaches.
Ingestion	Ingestion is not a likely route of exposure, the product is supplied as an aerosol.
Skin	Acts as a defatting agent on skin. May cause cracking of skin, and eczema. Contact with liquefied gas might cause frostbites, in some cases tissue damage.
Eyes	Splashes may irritate and cause redness. Risk of frost bite in the eyes, aerosol.
Health warnings	Prolonged and repeated contact with solvents over a long period may lead to permanent health problems.
Route of entry	Inhalation. Skin and/or eye contact.
Target organs	Central nervous system. Respiratory system, lungs. Mucous membranes.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Not classified as dangerous to the environment. However, the product should not be allowed to enter drains or water courses or be deposited where it can affect ground or surface waters.
Mobility	Floating on water. The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces.
Bioaccumulative potential	No bioaccumulation expected.
Persistence and degradability	The chemical is readily biodegradable.

13. DISPOSAL CONSIDERATIONS

General/cleaning	Hazardous waste.
Disposal methods	Confirm disposal procedures with environmental engineer and local regulations.
Waste class	14 06 03* other solvents and solvent mixtures
Contaminated packaging	The product packaging must be disposed of in compliance with the country specific regulations.

14. TRANSPORT INFORMATION

Label for conveyance

Proper shipping name (national)	Flammable liquid, n.o.s. (isopropyl alcohol)
Proper shipping name (international)	AEROSOLES, flammable
ROAD TRANSPORT (ADR):	
UN no. road	1950
ADR class no.	2
ADR class	Class 2: Gases; Compressed, liquefied or dissolved under pressure.
ADR Hazard labels	2.1
Classification code	5F
Hazard no. (ADR)	23 Flammable gas.
Hazard no. (ADR)	23
RAIL TRANSPORT (RID):	
RID class no.	2
RID Hazard labels	2.1
SEA TRANSPORT (IMDG):	
UN no. sea	1950
IMDG class	2.1
EmS no.	F-D, S-U
AIR TRANSPORT (IATA-DGR / ICAO-TI):	
UN no., air	1950
IATA/ICAO class	2
IATA/ICAO Hazard label	Flamm.gas

15. REGULATORY INFORMATION

Symbol(s)

Contains	butane propane propan-2-ol
Risk phrases	R-12 Extremely flammable.
Safety phrases	S-2 Keep out of reach of children. S-16 Keep away from sources of ignition - No Smoking. S-21 When using do not smoke. S-23 Do not breathe gas/fumes/vapour/spray. S-51 Use only in well-ventilated areas. Pressurised container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use.
EU directives	67/548/EEC, 1999/45/EC, 2001/58/EC, 2008/58/EC (REACH), 1272/2008/EC (30ATP).

16. OTHER INFORMATION

Explanations to R-phrases in section 3	R-11 Highly flammable. R-12 Extremely flammable. R-36 Irritating to eyes. R-65 Harmful: may cause lung damage if swallowed. R-67 Vapours may cause drowsiness and dizziness.

*** Information revised since the previous version of the SDS**

Revision comments	Revision 2006-08-21, no. 1: supercede SDS of 2003-09-10.Changes in chapter 2,3,8, 15, 16. No change in product classification. Revision 2009-05-04, no. 2: supercede SDS of 2006-08-21. Prepared in REACH-format and in compliance with ATP30. Changed composition. No change in product classification. Revision 2010-05-25, no. 3: supercede SDS of 2009-05-04. No change of composition or product classification.
Issued by	Essenticon AS, Leif Weldingsvei 14, N-3208 Sandefjord, Norway. Tel.: +47 33 42 34 50 - Fax: +47 33 42 34 59 www.essenticon.com
Date of issue	2003-09-10
Revision date	2010-05-25
Revision no.	3
Rev. no./repl. SDS generated	2009-05-04
Safety Data Sheet status	30 ATP.
Signature	BHH

Safety Data Sheet

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Material Name : **Shell Tellus S2 V 46**
Product Code : 001D7750

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product Use : Hydraulic oil.

Uses Advised Against : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

1.3 Details of the Supplier of the safety data sheet

Manufacturer/Supplier : **Univar AS**
Østensjøveien 32
NO-0667
OSLO

Telephone : 22 88 16 00
Fax : 22 72 00 52
Email Contact for Safety Data Sheet : sds.no@univareurope.com

1.4 Emergency Telephone Number

: Alarmsentral Brann Øst, telefon: 69 20 17 81

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

1999/45/EC	
Hazard Characteristics	**R-phrase(s)**
Not classified as dangerous under EC criteria.;	

2.2 Label Elements

Labeling according to Directive 1999/45/EC

EC Symbols : No Hazard Symbol required

EC Classification : Not classified as dangerous under EC criteria.
EC Risk Phrases : Not classified.
EC Safety Phrases : Not classified.

2.3 Other Hazards

Health Hazards : Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. High-pressure injection under the skin may cause serious damage including local necrosis. Used oil may contain harmful impurities.

Safety Hazards : Not classified as flammable but will burn.

Environmental Hazards : Not classified as dangerous for the environment.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Material Name : Not applicable.

3.2 Mixtures

Mixture Description : Highly refined mineral oils and additives.

Hazardous Components

Classification of components according to Regulation (EC) No 1272/2008

Chemical Name	CAS No.	EC Number	REACH Registration No.	Conc.
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *	*	*	*	0,00 - 90,00%

Chemical Name	Hazard Class & Category	Hazard Statement
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *	Asp. Tox., 1;	H304;

Additional Information : The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

Refer to Ch 16 for full text of H phrases.

* contains one or more of the following CAS-numbers (REACH registration numbers): 64742-53-6 (01-2119480375-34), 64742-54-7 (01-2119484627-25), 64742-55-8 (01-2119487077-29), 64742-56-9 (01-2119480132-48), 64742-65-0 (01-2119471299-27), 68037-01-4 (01-2119486452-34), 72623-86-0 (01-2119474878-16), 72623-87-1 (01-2119474889-13), 8042-47-5 (01-2119487078-27), 848301-69-9 (01-0000020164-80).

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

SECTION 4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Information : Not expected to be a health hazard when used under normal conditions.

Inhalation : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

Skin Contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Obtain medical attention even in the absence of apparent wounds.

Eye Contact : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

Self-protection of the first aider : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

4.2 Most important symptoms and effects, both acute and delayed	:	Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Local necrosis is evidenced by delayed onset of pain and tissue damage a few hours following injection. Ingestion may result in nausea, vomiting and/or diarrhoea.
4.3 Indication of any immediate medical attention and special treatment needed	:	Notes to doctor/physician: Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy, to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.

SECTION 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

5.1 Extinguishing Media	:	Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	:	Do not use water in a jet.
5.2 Special hazards arising from the substance or mixture	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
5.3 Advice for firefighters	:	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Observe the relevant local and international regulations.

6.1 Personal Precautions, Protective Equipment and Emergency Procedures	:	6.1.1 For non emergency personnel: Avoid contact with skin and eyes. 6.1.2 For emergency responders: Avoid contact with skin and eyes.
6.2 Environmental Precautions	:	Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
6.3 Methods and Material for Containment and Cleaning Up	:	Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
Additional Advice	:	Local authorities should be advised if significant spillages cannot be contained.
6.4 Reference to other sections	:	For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

General Precautions	:	Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
7.1 Precautions for Safe Handling	:	Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers.
Product Transfer	:	This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.
7.2 Conditions for safe storage, including any incompatibilities	:	Store at ambient temperature. Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Recommended Materials	:	For containers or container linings, use mild steel or high density polyethylene.
Unsuitable Materials	:	PVC.
7.3 Specific end use(s)	:	Not applicable
Additional Information	:	Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

8.1 Control Parameters

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Oil mist, mineral	ACGIH	TWA(Inhalable fraction.)		5 mg/m3	
	ELV (NO)	NORMEN(Mist.)		1 mg/m3	

Biological Exposure Index (BEI)
No biological limit allocated.

PNEC related information : Data not available

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany. http://www.dguv.de/inhalt/index.jsp

L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

8.2 Exposure Controls

General Information : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Occupational Exposure Controls

Safety Data Sheet

Personal Protective Equipment	:	The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Eye Protection	:	Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.
Hand Protection	:	Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material.
Body protection	:	Skin protection not ordinarily required beyond standard issue work clothes.
Respiratory Protection	:	No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.
Thermal Hazards	:	Not applicable.

Environmental Exposure Controls

Environmental exposure control measures	:	Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in section 6.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	:	Amber. Liquid at room temperature.
Odour	:	Slight hydrocarbon.
Odour threshold	:	Data not available
pH	:	Not applicable.
Initial Boiling Point and Boiling Range	:	> 280 °C / 536 °F estimated value(s)
Pour point	:	Typical -39 °C / -38 °F
Flash point	:	Typical 225 °C / 437 °F (COC)
Upper / lower Flammability or Explosion limits	:	Typical 1 - 10 %(V) (based on mineral oil)
Auto-ignition temperature	:	> 320 °C / 608 °F
Vapour pressure	:	< 0,5 Pa at 20 °C / 68 °F (estimated value(s))
Relative Density	:	Typical 0,872 at 15 °C / 59 °F
Density	:	Typical 872 kg/m3 at 15 °C / 59 °F
Water solubility	:	Negligible.
Solubility in other solvents	:	Data not available
n-octanol/water partition coefficient (log Pow)	:	> 6 (based on information on similar products)
Dynamic viscosity	:	Data not available
Kinematic viscosity	:	Typical 46 mm2/s at 40 °C / 104 °F
Vapour density (air=1)	:	> 1 (estimated value(s))
Evaporation rate (nBuAc=1)	:	Data not available
Decomposition Temperature	:	Data not available
Flammability	:	Data not available
Oxidizing Properties	:	Data not available
Explosive Properties	:	Not classified

9.2 Other Information

Electrical conductivity	:	This material is not expected to be a static accumulator.

Other Information	:	not a VOC
Volatile organic compound	:	0 %

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity	:	The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
10.2 Chemical stability	:	No hazardous reaction is expected when handled and stored according to provisions.
10.3 Possibility of Hazardous Reactions	:	Reacts with strong oxidising agents.
10.4 Conditions to Avoid	:	Extremes of temperature and direct sunlight.
10.5 Incompatible Materials	:	Strong oxidising agents.
10.6 Hazardous Decomposition Products	:	Hazardous decomposition products are not expected to form during normal storage.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological effects

Basis for Assessment	:	Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Likely Routes of Exposure	:	Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.
Acute Oral Toxicity	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat
Acute Dermal Toxicity	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Not considered to be an inhalation hazard under normal conditions of use.
Skin corrosion/irritation	:	Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Serious eye damage/irritation	:	Expected to be slightly irritating.
Respiratory Irritation	:	Inhalation of vapours or mists may cause irritation.
Respiratory or skin sensitisation	:	For respiratory and skin sensitisation: Not expected to be a sensitiser.
Aspiration Hazard	:	Not considered an aspiration hazard.

Germ cell mutagenicity : Not considered a mutagenic hazard.
Carcinogenicity : Not expected to be carcinogenic. Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

Material	:	**Carcinogenicity Classification**
Highly refined mineral oil (IP346 <3%)	:	ACGIH Group A4: Not classifiable as a human carcinogen.
Highly refined mineral oil (IP346 <3%)	:	IARC 3: Not classifiable as to carcinogenicity to humans.
Highly refined mineral oil (IP346 <3%)	:	GHS / CLP: No carcinogenicity classification

Reproductive and Developmental Toxicity : Not expected to be a hazard.

Summary on evaluation of the CMR properties
Carcinogenicity : This product does not meet the criteria for classification in categories 1A/1B.,
Mutagenicity : This product does not meet the criteria for classification in categories 1A/1B.
Reproductive Toxicity (fertility) : This product does not meet the criteria for classification in categories 1A/1B.

Specific target organ toxicity - single exposure : Not expected to be a hazard.
Specific target organ toxicity - repeated exposure : Not expected to be a hazard.
Additional Information : Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible. High pressure injection of product into the skin may lead to local necrosis if the product is not surgically removed. Classifications by other authorities under varying regulatory frameworks may exist.

SECTION 12. ECOLOGICAL INFORMATION

Basis for Assessment : Ecotoxicological data have not been determined specifically for

this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

12.1 Toxicity

Acute Toxicity : Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract. Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

12.2 Persistence and degradability : Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

12.3 Bioaccumulative Potential : Contains components with the potential to bioaccumulate.

12.4 Mobility in Soil : Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Floats on water.

12.5 Result of PBT and vPvB assesment : This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

12.6 Other Adverse Effects : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Material Disposal : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

Container Disposal : Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the

collector or contractor should be established beforehand.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations.
EU Waste Disposal Code (EWC): 13 01 10 mineral based non-chlorinated hydraulic oils. Classification of waste is always the responsibility of the end user.

SECTION 14. TRANSPORT INFORMATION

Land transport (ADR/RID):
ADR
This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

RID
This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

Inland waterways transport (ADN):
This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

Sea transport (IMDG Code):
This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

Air transport (IATA):
This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution Category	:	Not applicable.
Ship Type	:	Not applicable.
Product Name	:	Not applicable.
Special Precaution	:	Not applicable.

Additional Information **:** MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Other regulatory Information

Authorisations and/or restrictions on use	:	Product is not subject to Authorisation under REACh.
Recommended Restrictions on Use (Advice Against)	:	This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

Chemical Inventory Status

EINECS	:	All components listed or polymer exempt.
TSCA	:	All components listed.
Other Information	:	Norwegian list of Dangerous Substances. Regulations relating to the classification, labelling etc. of dangerous chemicals. Regulations relating to the recycling of waste (Waste Regulations) Norwegian OEL-list. Regulations relating to the compilation and distribution of safety data sheets for dangerous chemicals.
15.2 Chemical Safety Assessment	:	No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16. OTHER INFORMATION

Not classified.

CLP Hazard Statements

H304 May be fatal if swallowed and enters airways.

Additional Information : No Exposure Scenario annex is attached to this safety data

Safety Data Sheet

sheet. It is a non-classified mixture containing hazardous substances as detailed in Section 3; relevant information from Exposure Scenarios for the hazardous substances contained have been integrated into the core sections 1-16 of this SDS.

Other Information

Abbreviations and Acronyms : Acute Tox. = Acute toxicity
Asp. Tox. = Aspiration hazard
Aquatic Acute = Acute hazards to the aquatic environment
Aquatic Chronic = Hazardous to the aquatic environment - Long-term Hazard
Eye Dam. = Serious eye damage/eye irritation
Flam. Liq. = Flammable liquids
Skin Corr. = Skin corrosion/irritation
Skin Sens. = Skin sensitizer
STOT SE = Specific target organ toxicity - single exposure
STOT RE = Specific target organ toxicity - repeated exposure

The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS = Australian Inventory of Chemical Substances
ASTM = American Society for Testing and Materials
BEL = Biological exposure limits
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council
CLP = Classification Packaging and Labelling
COC = Cleveland Open-Cup
DIN = Deutsches Institut fur Normung
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals
ECHA = European Chemicals Agency

Safety Data Sheet

EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HPV = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

SDS Distribution	:	The information in this document should be made available to all who may handle the product.
SDS Version Number	:	1.1

Safety Data Sheet

SDS Effective Date	:	13.12.2012
SDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
SDS Regulation	:	Regulation 1907/2006/EC as amended by Regulation (EU) 453/2010
Disclaimer	:	This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.