Base Load Power Hub (BLPH)

Basis of Design for Installation

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1 ABBREVIATIONS AND DEFINITIONS

Abbreviation	Description
COG	Centre of Gravity
DAF	Dynamic Application Factor
DAD	Design Appraisal Document
DRA	Design Risk Assessment
FAT	Fabrication Acceptance Testing
Fd	Duty Factor
Fh	Hoisting Factor
HLV	Heavy Lift Vessel
Hs	Significant Wave Height
HSE	Health, Safety and Environment
LAT	Lowest Astronomical Tide
MBL	Minimum Breaking Load
NTEW	Not too Exceed Weight
PS	Portside
SAT	Site Acceptance Testing
SB	Starboard
SCA	Scaldis
SKL	Skew Load Factor
UKC	Under Keel Clearance
WLL	Working Load Limit
HAT	Maximum Predicted Water Level
MHWS	Average of the two successive high waters reached during the 24 hours when the tidal range is at its greatest (spring tide)
MHNW	Average of the two successive high waters reached during the 24 hours when the tidal range is at its lowest (neap tide)
MSL	Mean Predicted WL
MLWN	Average of the two successive low waters reached during the 24 hours when the tidal range is at its lowest (neap tide)
MLWS	Average of the two successive low waters reached during the 24 hours when the tidal range is at its greatest (spring tide)

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2 REFERENCES

2.1 DOCUMENTS

Nr.	Contractor Doc. No.	Company Doc. No.	Title
Ref [1]	DNVGL-ST-N0001 2016-06	N/A	Marine Operations and Marine Warranty
Ref [2]	A12-4001-66-100 Rev. A (*)	N/A	User Manual 2x2000mt Sheerleg Cranes Rambiz 4000
Ref [3]	N/A.	123A90-DDL-TI-RE-99052	Acceptance Criteria for Offshore Installations
Ref [4]	N/A	HKN_20191014_DHI_	Metocean Study_Version 2.4-F
Ref [5]	N/A	HKN-SMU-EG-CAL-2002_02	Design Report Geotechnical DesignN
Ref [6]	N/A	202200794-ROS-DES-PRR-00001(02)	Monthly Weight Report
Ref [7]	N/A	202200794-CW-DES-PRO-00001(00)	Platform and Engineering Data

please add: 123A90-DDL-ST-SP-90017 structural design basis

2.2 CALCULATIONS

Nr.	Contractor Doc. No.	Company Doc. No.	Title
Ref [8]	23-RE006-CAL-005	202200794-SCA-DES-RPT-00003	Motion Analysis
Ref [9]	23-RE006-CAL-003	202200794-SCA-DES-RPT-00002	HLV Preliminary Mooring Analysis Including Weather Limitation
Ref [10]	23-RE006-CAL-001	202200794-SCA-INS-PRO-00001	HLV Ballast Procedure

2.3 HOLD POINTS

Hold Nr.	Hold Point	Owner
Hold 1	Caisson frame rigging to be designed	SCA
Hold 2	Installation tolerances of BLPH to be provided by Rosetti	Rosetti
Hold 3	Sequence of bolt installation to be provided by Rosetti	Rosetti
Hold 4	Welding specification BLPH to TP to be provided by Rosetti	Rosetti

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3 INTRODUCTION

3.1 GENERAL PROJECT DATA

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation. Scaldis was awarded the tender to install the BLPH, together with its transition piece and caisson structure.

3.2 PROJECT LOCATION

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

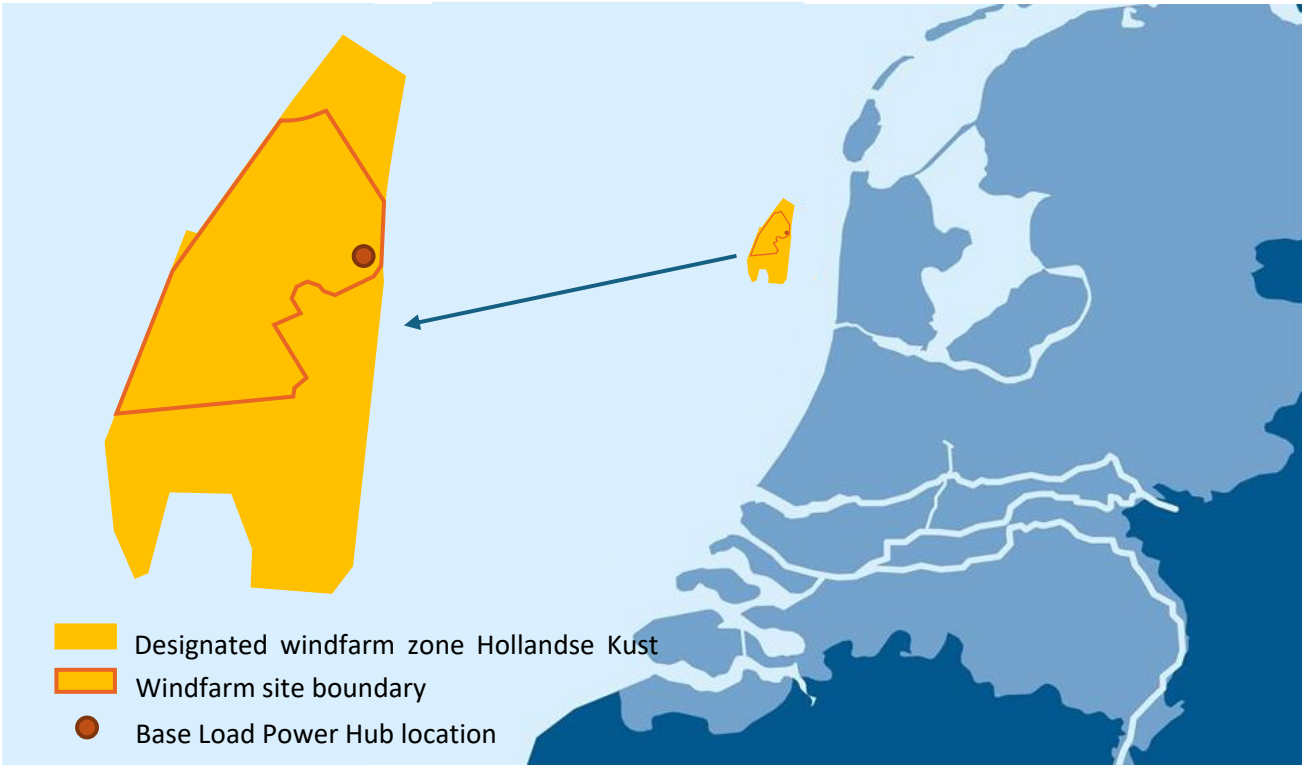


Figure 1: BLPH Location

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile is reserved for installing the platform accommodating the BLPH. The monopile structure is already installed and therefore not part of the BLPH scope.

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3.3 DOCUMENT DESCRIPTION

This document details the design principles for the scope of the BLPH installation.

3.4 PURPOSE

The purpose of this document is to give a detailed description of the rules and standards that subcontractor will follow during the engineering phase of the Crosswind project for the BLPH installation scope for calculations such as mooring calculation, motion analysis and rigging calculation.

This document refers to several guidelines and other documents or empirical data. In order to get a full understanding of the intended works, this document must be read in conjunction with its reference documents.

This document must be read as a basis for the considered scope. The method statements regarding lifting, mooring, anchoring and barge mooring use this Basis of Design as a starting point.

The document is written for the following personnel and representatives involved in the BLPH installation scope:

- Project Team
- MWS
- Subcontractor, Contractor and Employee representatives.

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4 EQUIPMENT

4.1 HLV RAMBIZ

The Heavy Lift Vessel (HLV) Rambiz is a non-self-propelled crane pontoon of the sheerleg type. The technical information sheet of HLV Rambiz is included in Attachment 12.1. The load curve is included in Attachment 12.2. It is important to note that the crane curves and associated capacity include certain safety factors. These safety factors include a hoisting and duty factor:

- Hoisting factor Fh : 1,10
- Duty Factor Fd: 1,00

is it a proof load factor (e.g. test load) ?
if yes it shouldn't be considered as DAF

This results in a DAF-factor of 10%, which is included in the crane curves of the HLV Rambiz. The hoisting speed when the crane is under loading is 0 – 0,75m/min, Ref [2].

The technical specifications of HLV Rambiz are given in the table below.

HLV Rambiz		
Owner	Scaldis	
Lifting capacity	3300t	
Max. lift height	78m	
Main dimensions	85m x 44m x 5.6m	
Summer draught	4.6m	

Table 1: HLV Rambiz

4.2 CRAWLER CRANE

The Sennebogen 7700 will be installed on crawler tracks on Rambiz. Technical specifications of this crawler crane can be found below.

Sennebogen 7700		
Owner	Dutch Offshore Contractors	
Main dimensions	13.9m x 8.0m x 5.10m	
Boom height	52.3m	
Lifting capacity	300t	
Max. lift height	50m	
Configuration	SH (Main boom, Heavy/light)	
Reeving of block	2x4	

Table 2: Technical Specifications of Sennebogen 7700

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5 ENVIRONMENTAL DATA

Representative environmental data is of utmost importance in determining the workability of the HLV's. Environmental data is provided by Contractor, see Ref [4]. Limitations of the HLV's or Contractor for these sea states are given below where applicable.

5.1 METEOROLOGICAL AND OCEANOGRAPHIC DATA

The following is taken from Ref [7].

Description	Unit	Value
Ambient conditions		
Ambient Temperature (min/nom/max) – Hourly @ +10m	°C	-8.4 / 10.5 / 25.0
Atmospheric pressure (nominal) – Hourly @ +10m	Mbar	1013.7
Specific Humidity (min/nom/max) – Hourly @ +10m	X 10-3	4.2 / 6.5 / 9.5
Wind Conditions		
Annual average wind speed (at 100m)	m/s	9.56
Extreme wind speed for 1-year recurrence period (at 100m)	m/s	33.1
Extreme wind speed for 50-year recurrence period (at 100m)	m/s	41.0
Marine conditions		
Sea water temperature (min/max)	°C	1.3 / 20.2
Average sea water density	Kg/m3	1025

Table 3: Meteorological and Oceanographic Data

5.2 RAIN FALL

The following is taken from Ref [7].

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
Min	14.1	18.1	9.1	1.2	10.3	17.3	6.2	20.7	27.2	43.0	22.2	28.1	646.6
Mean	75.0	62.5	48.6	39.6	47.4	47.9	58.2	73.0	91.0	102.7	108.5	89.3	843.6
Max	143.2	119.4	106.4	79.8	92.7	117.9	160.7	154.7	178.6	188.7	179.3	138.1	1056.1

Table 4: Rain Fall

5.3 WATER LEVELS

5.3.1 WATER DEPTH

The following is taken from Ref [7].

Year	Lowest Seabed	Highest Seabed	Best Estimate
2023	-21.6	-20.0	-21.0
2048	-22.2	-20.0	-21.4

Table 5: Water Levels

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5.3.2 TIDAL ENVELOPE

The following is taken from Ref [7].

Tidal value	Relative to LAT	Relative to MSL
Highest astronomical Tie (HAT)	2.2	1.0
Mean high water spring	1.9	0.8
Mean high water neap	1.6	0.5
Mean sea level	1.1	0
Mean low water neap	0.6	-0.5
Mean low water spring	0.3	-0.9
Lowest astronomical tide	0	-1.1

Table 6: Water Levels

Extreme water level	Return period						
	1	2	56	10	50	100	1000
Max	3.2	3.4	3.5	3.7	4.0	4.1	4.5
Min	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.4

Table 7: Water Levels

5.3.3 WAVE DATA

The general annual rose plot of the wave height is given below, Ref [4].

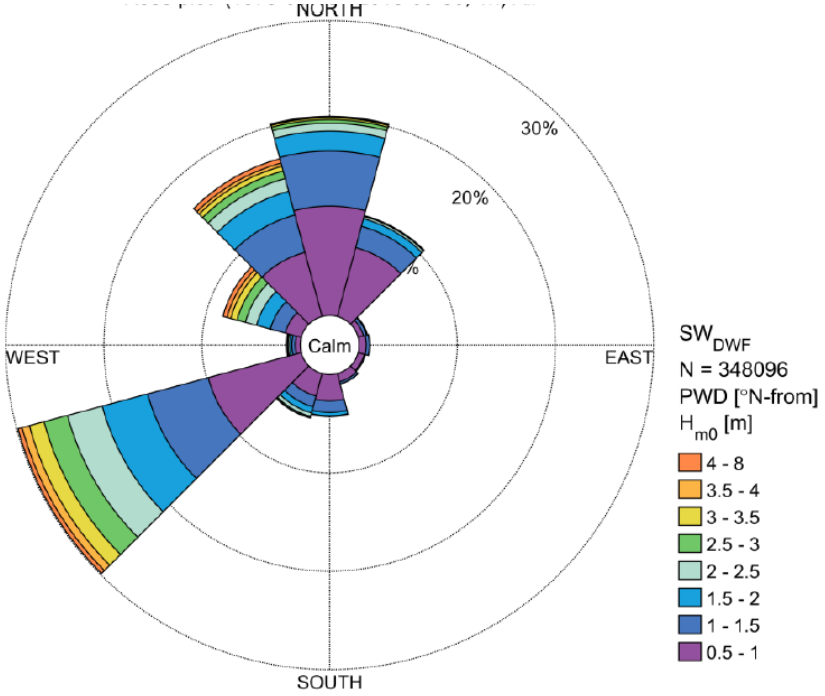


Figure 2: Wave Data

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5.4 WIND SPEED

The following is taken from Ref [7].

Averaging time	Return period						
	1	2	56	10	50	100	1000
1hr	31.8	33.4	35.1	36.4	39.1	40.1	43.4
10min	33.7	35.5	37.4	38.8	41.7	42.9	46.5
3s	39.4	41.6	44.1	45.9	49.7	51.1	56.0

Figure 3: Wind Data

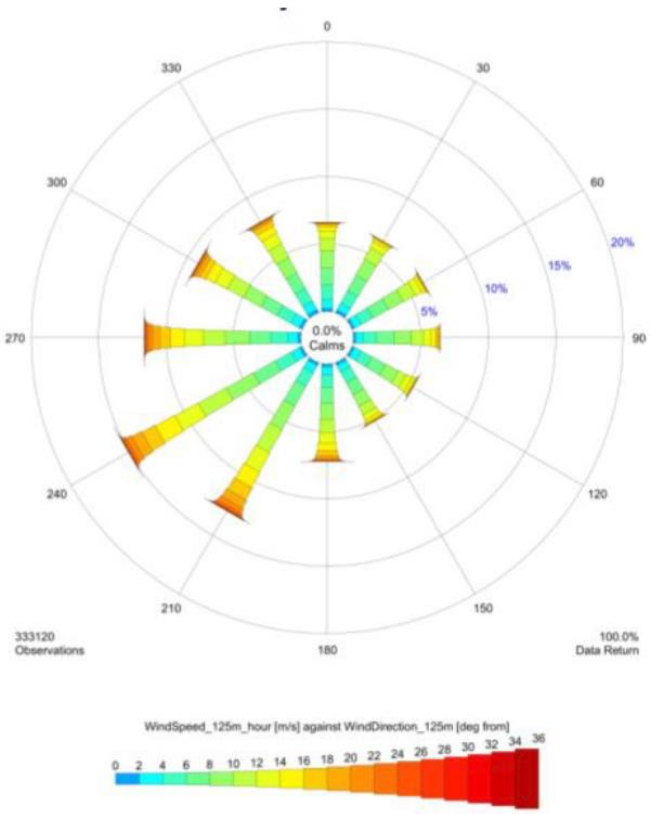


Figure 4: Wind Speed

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5.5 CURRENT DATA

The general annual rose plot of the wind speed is given below, Ref [4].

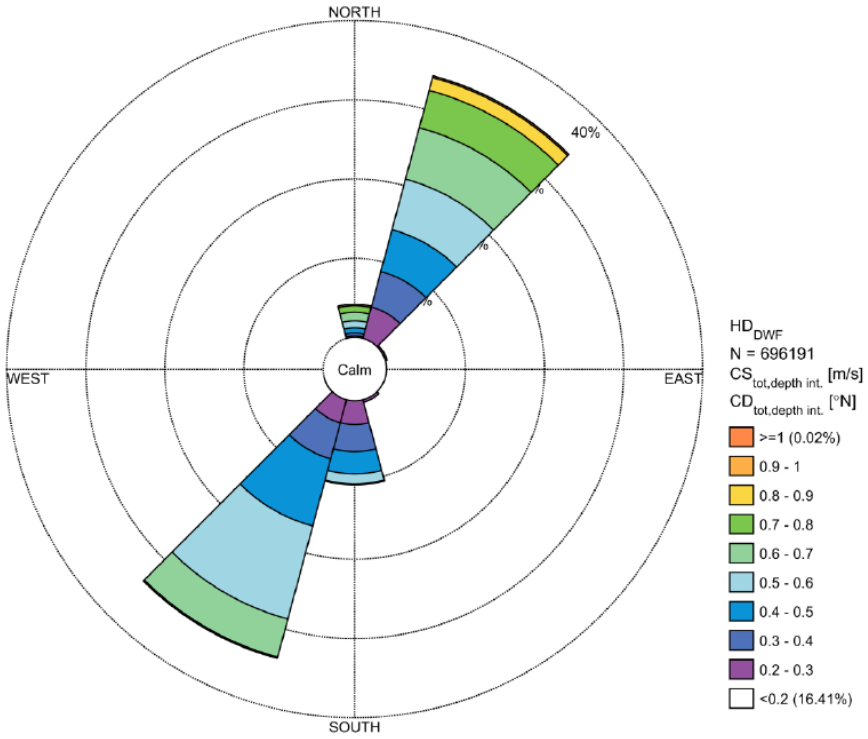


Figure 5: Current Speed

		T_R [Years]						
		1	2	5	10	50	100	1000
Directional	omni	1.0	1.0	1.1	1.1	1.1	1.2	1.2
	0	1.0	1.0	1.1	1.1	1.1	1.2	1.2
	30	1.0	1.0	1.1	1.1	1.1	1.2	1.2
	60	0.4	0.5	0.5	0.5	0.5	0.5	0.5
	90	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	120	0.2	0.2	0.2	0.2	0.2	0.2	0.3
	150	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	180	0.7	0.7	0.8	0.8	0.8	0.8	0.9
	210	0.8	0.8	0.8	0.8	0.9	0.9	0.9
	240	0.3	0.3	0.4	0.4	0.4	0.4	0.4
	270	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	300	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	330	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Table 8: Current Data

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5.6 SOIL DATA FOR ANCHOR LOCATIONS

The HLV's are standard equipped with Delta Flipper anchors, which are able to drag themselves in the soil when a nearly horizontal force pulls on them. The soil bearing capacity has to be investigated, whether this type of anchors remain station during the high currents or whether another type of anchors is to be used. Soil data is provided in Ref [5].

Depth [m]		Soil type	γ [kN/m^2]	Q_c [MPa]		Φ_{cv} [DEG]	δ_{cv} [DEG]
From	To			Top	Bottom		
0	1.3	Sand	20.5	1	1	30	28
1.3	4.0	Sand	20.5	1	65	30	28
4.0	6.0	Sand	20.5	65	65	35	28
6.0	8.0	Sand	20.5	12	12	35	28
8.0	14.0	Sand	19.0	15	15	35	28
14.0	15.5	Sand	19.0	34	34	35	28
15.5	18.0	Sand	19.0	12	12	35	28
18.0	20.0	Sand	19.0	25	25	35	28
20.0	22.5	Sand	19.0	40	40	35	28

Table 9: Soil Data

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6 CRANE CAPACITY AND RIGGING CALCULATION

Subcontractor will prepare rigging calculations. The main goal of these calculations is to verify the Rambiz and crane capacity, as well as designing adequate rigging arrangements. Key aspects in these calculations are the weight and centre of gravity of the items and crane outreach. Rigging drawings and calculations will be added to the document to ensure correct drawings are used for review.

All the rigging calculations are made with a spread sheet compiled by the in-house engineering department. Several safety factors will be taken into account in the calculations. These factors are defined in the guidelines. The guidelines that Sub-subcontractor will use is DNVGL-ST-N0001, Ref [1].

The paragraphs below explain the different aspects of the rigging calculation. Input items are the weight input and centre of gravity. Once these are known, the crane capacity is checked. Thereafter the slings, spreaders and link plates are checked.

6.1 WEIGHT INPUT

we will provide weighed weight with accuracy +/-3%.

6.1.1 FACTORS

Several definitions of weights are present in guidelines. To avoid confusion or misunderstanding, relevant items with an explanation are given below. These definitions are in line with Ref [1].

Item	Explanation	Used Factor
Net weight	Weight as provided by Contractor. This is the calculated weight during engineering phase and the weighed weight after final weighing of the items.	n.a.
Net Rigging weight	Rigging weight including all items between the lift points and the crane hook, such as slings, shackles and spreader bars or frames as appropriate.	n.a
Weight contingency factor	To be applied on the net weight of the to be lifted item for the rigging design. During engineering a weight contingency factor of 1,05 will be used on the net weight. After weighing, the factor is determined by the accuracy of the weighing equipment. On the rigging weight a weight contingency factor of 1,03 will be added.	1.0
Gross weight	This is the net weight multiplied with the weight contingency factor, as provided by contractor	
Weight of rigging	This is the net weight of the rigging multiplied with the weight contingency factor.	n.a.
NTEW	The Not To Exceed Weight, defined as the upper boundary of weight for the to be lifted items, during the lifting scope of the works. This weight is defined as the total lifting weight, including all safety and contingency factors.	n.a.

according to Des Basis, 5% of stati hook load for TP and 7% for doubl hook with spread bar (topside)

1.10 (DNV ST N001) for lifting purpose

Table 10: Rigging Factors

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6.1.2 NOT TO EXCEED WEIGHTS

For all items (TP, CF and BLPH), a Not to Exceed weight (NTEW) is defined. The NTEW is a summation of everything suspended from the HLV rigging. On top of the NTEW all necessary factors according to DNVGL-STN001, Ref [1], are included. This results in the following values:

NTE were agreed during contractual phase and remain valid for contractual point of view.
in this report I suggest to refer to the weighed weights and to apply all the coefficient on top of weighed weights.
for CF the TEKLA model weight will be used multiplied 1.10

Base Load Power Hub	2000

Table 11: NTEW per Item

6.2 CENTER OF GRAVITY

The location of the centre of gravity (COG) is given in Ref [6]. For the single hook lifts, no COG inaccuracy factor is used. For the dual crane BLPH lift, a COG inaccuracy factor is used.

it is not clear. CoG envelope will be used for rigging design.

6.3 CRANE CAPACITY VERIFICATION

Crane capacity of the HLV can be found in Attachment 12.2. Crane capacity of the crawler crane can be found in attachment 12.3. Crane capacity verification is dependent upon the hook load and the outreach. Below, key items are given with their explanation for the HLV lift. These definitions are in line with Ref [1].

Name	Explanation	Used Factor
Static hook load	Gross weight and the weight of the rigging	n.a.
Dynamic Hook load	Static hook load multiplied by the DAF	n.a.
DAF	Dynamic Amplification Factor, taking into account the load fluctuations due to lifting in a dynamic environment. This is equal to 1.25 for offshore lifts of structures with a weight between 100-300 tonnes, 1.20 for offshore lifts of structures with a weight between 300-1000 tonnes and 1.15 for offshore lifts of structures with a weight between 1000- 2500 tonnes.	1.25 1.20 1.15
Tilt factor	Factor representing the weight increase due to the tilt. This factor is based on overall dimensions of the to be lifted item.	n.a.
Yaw Factor	Factor representing the load increase in cranes while slewing the cranes. For sheer leg crane barges with non-rotating cranes, such as the Rambiz and the Gulliver, this factor can be reduced to 1.00, Ref [1].	1.00

Table 12: Rigging Factors

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6.4 RIGGING ARRANGEMENT

6.4.1 TRANSITION PIECE

The figure below shows the rigging arrangement concept that will be calculated and engineered during detailed design phase. More information on the rigging equipment is given in the following sections.

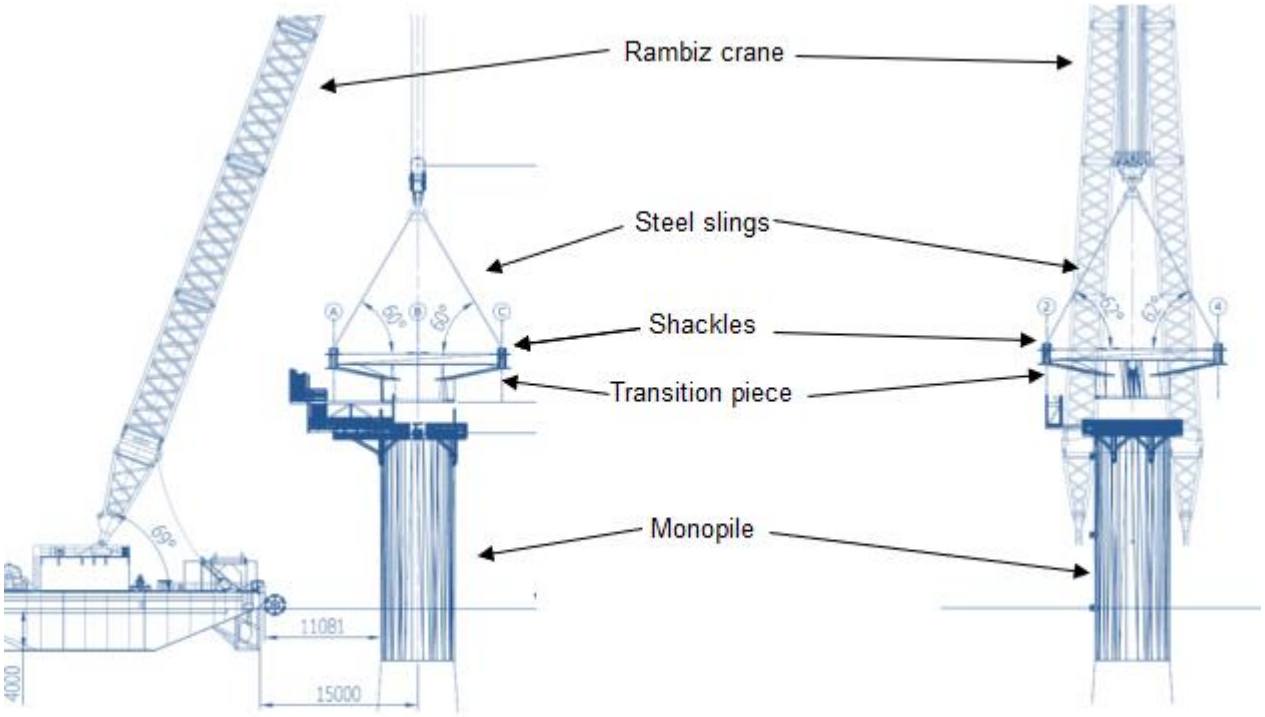


Figure 6: Transition Piece Rigging

6.4.2 CAISSON FRAME

The rigging arrangement concept that will be calculated and engineered during detailed design phase is shown below. More information on the rigging equipment is given in the following sections.

Hold 1, caisson frame rigging to be designed in next revision of document.

6.4.3 BASE LOAD POWER HUB

The rigging arrangement concept that will be calculated and engineered during detailed design phase is shown below. More information on the rigging equipment is given in the following sections.

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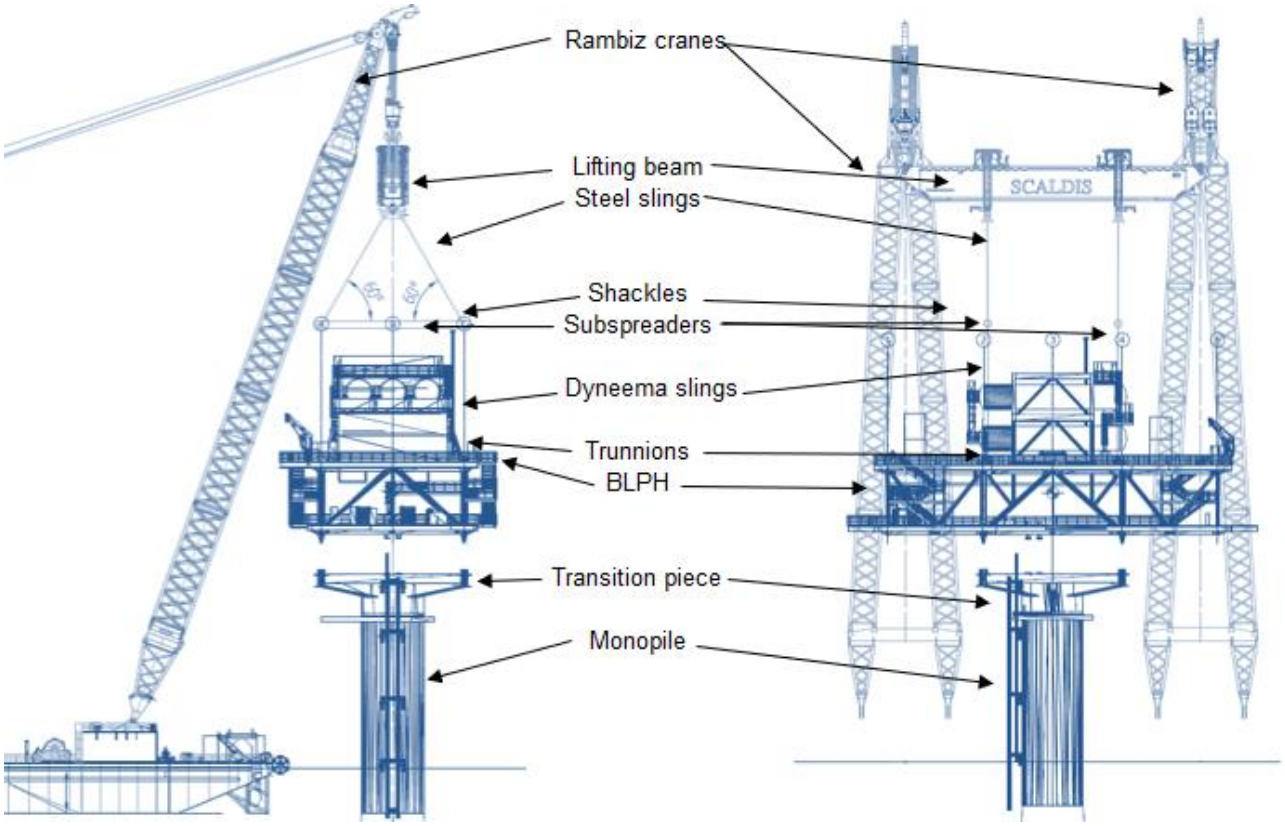


Figure 7: Base Load Power Hub Rigging

6.5 RIGGING VERIFIC

According to section 16.2.4.4 of DNV for multi-hook lift carried out by the same sheerleg crane vessel the more onerous condition of:

- Tilt of 1.5deg
- Hook elevation difference of +/- 0.5m

Rigging verification is spr… …ackles.

6.5.1 SLINGS/GROMMETS

Following factors have to be taken into account for the slings and grommets verification, Ref [1].

Name	Explanation	Used Factor
SKL-Factor	SKL is not applicable for statically determinate lifts.	1.00
Tilt factor	For sling/grommet verification, the same tilt factor as section 6.3 is applicable. Please refer to section 6.3 for tilt factor description.	n.a.
Yaw Factor	For … is ap… according to Des basis: • 1.10 for Topside based on dual crane lift configuration including 2 spreader bars. • 1.25 for TP. • 1.00 for caissons based on 3 sling arrangement.	1.0
Part factor	Whe… ear … to ac… be distributed into 49:51.	Non greased: 0.55 Greased: 0.51
Safety factor on slings/ grommets	An additional safety factor on steel slings and grommets, consisting of several sub factors.	Varies
Bending factors	Bending factor is defined in Ref [1] and accounts for the bending of the slings over a curved surface. The ratio between the sling	Varies

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	diameter and the diameter of the curved surface is evaluated here.	
Termination factor	The termination factor is 1.00 for slings with Superloop or Flemish eyes.	1.00

Table 13: Sling and Grommet Factors Explained

6.5.2 SHACKLES/SPREADERS

Following terms are of importance during the shackles and spreaders verification, Ref [1].

Name	Explanation
Working Load Limit (WLL)	The maximum force which an item is authorized to sustain in when the rigging and connection arrangements are in accordance with the design.
Minimum Breaking Load (MBL)	This equals the WLL multiplied by a safety factor.
Safe Working Load (SWL)	The maximum load, as certified by a Competent Person, which an item of lifting equipment may be lifted under particular service conditions. The term SWL has been superseded by the term WLL.

Table 14: Shackle and Spreader Factors Explained

The WLL shall not be less than the static sling load. In addition, the MBL of the shackles divided by a safety factor equal to 3.00 shall be greater than the dynamic sling load, which is equal to the static sling load multiplied by the DAF, Ref [1].

spreaders should have valid certificate, as well as slings and shackles

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7 BALLAST CALCULATION

A ballast calculation verifies and aims to reduce the trim, list to increase stability of the HLV during lifting. A plan with several ballast conditions is created, including the filling of the ballast tanks.

Software used to perform HLV Rambiz stability analysis is DelftLoad, developed by DelftShip Maritime Software. This program is based on the latest version of the stability booklets of the HLV. Certificates of the programme are included in attachment 12.4.

Ballast calculations are made for all structures, Ref [10].

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8 INSTALLATION ANALYSIS

The heavy lifts are performed with multiple vessels in shallow water, resulting in complex mechanical and hydrodynamic multi-body interactions. The installation analysis comprises two parts: the mooring analysis and the motion analysis. Mooring analysis relates to the station keeping of the HLV while the motion analysis focusses on the heavy lift part of the installation.

8.1 MOORING ANALYSIS

The mooring analysis entails a multi-body diffraction analysis and simulations with OrcaFlex software with focus on the mooring loads and mooring positions. The two most important variables are currents, from tidal streams in the estuary, and wind waves. The maximum site conditions are determined for all occurring installation steps.

Mooring analysis can be found in Ref [9].

8.2 MOTION ANALYSIS

The heavy lifts are performed with multiple vessels, resulting in complex multi-body hydrodynamic interactions. The impact of environmental conditions and crane boom movements on these interactions is analysed and assessed, resulting in boundary conditions for all impact parameters. The maximum site conditions are determined for all occurring installation steps. The motion analysis is performed with the mooring lay-out found in the mooring analysis.

Motion analysis can be found in Ref [8].

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9 INSTALLATION TOLERANCES

Installation tolerances are given in Ref [3]. For the sake of clarity, the tolerances related to Subcontractor scope are given below.

9.1 FLANGE INSTALLATION TOLERANCES

The tolerances of flange installation are outside the scope of subcontractor. Following installation tolerances, related to the flange interface are under subcontractors scope:

9.1.1 FLANGE ALIGNMENT

A maximal mis-alignment between the 2 flanges of 10mm is accepted.

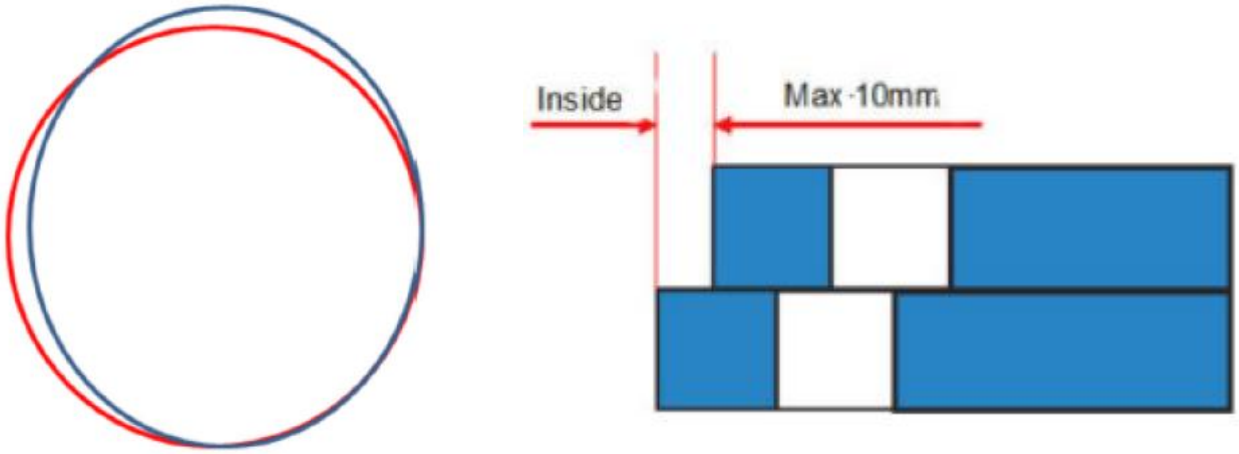


Figure 8: Flange Mis-Alignment

9.1.2 FLANGE SHIMMING

After applying 10% tensioning on the bolts, the airgap needs to be less than 1mm between the flanges over a full length of 30degrees. Following conclusions are made:

Air gap at high spot	**Local airgap (<30 degrees angle between start and stop)**	
< 1mm	Approved	Continue to final tightening
1 -> 3mm	Shim	shim

Air gap at high spot	**Global airgap (>30 degrees angle between start and stop)**	
< 2mm	Approved	Continue to final tightening
2 -> 4mm	Shim	shim

Table 15: Shimming Reqiurements

9.2 BLPH ON TP TOLERANCES

The BLPH tolerances on the TP are Hold 2.

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10 BOLTING SPECIFICATIONS

Bolting specifications are given in Ref [3]. Stud bolts will be used with following characteristics:

Type of Fastener **ISO studs with IHF nuts**	**M64**
Property class	10.9
Tension (kN)	1686
Two-stage tightening 1st stage (kN) 2nd stage (kN)	 1686 1686

Table 16: Bolt Specifications

The sequence and amount of bolts to be tightened at the same time are to be provided by company, Hold 3.

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11 WELDING SPECIFICATIONS

The BLPH will be welded onto the TP on her 4 corner legs. Welding specifications are to be provided by company, Hold 4.

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12 ATTACHMENTS

12.1 ATTACHMENT 1: HLV RAMBIZ SPECS

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SCALDIS
SALVAGE & MARINE CONTRACTORS N.V.

HEAVY LIFT VESSEL
RAMBIZ



GENERAL PARTICULARS

Type of vessel	Heavy Lift Vessel
Year of construction	1995/1996
Year of conversion	1999/2000
Builders	Huisman-Itrec Schiedam
Class	Lloyd's Register of shipping
LR/IMO Number	9136199
Class Notation	*100AT non self propelled crane pontoon, LA LMC
Owners	SCALDIS-SMC NV
Port of registry	Brugge
Flag	Belgian
Call sign	ORKA

MAIN DIMENSIONS

Length O.A.	85m
Breadth moulded	44m
Depth moulded	5,6m
Sailing draft	2,8m
Displacement	14980T
GRT	7547
NRT	2264

LIFTING CAPACITY

RAM (SB) Crane	1600T Total:3300 T
BIZON (PS) Crane	1700T
Mast length	82m
Max lift height	79m above deck

PROPULSION

Type of propulsion	4 Schottels
Installed power	4 x 750hp diesel

TANK CAPACITY

Fuel oil	420m³
Fresh Water	400m³ + watermaker (10m³/day)
Water ballast	14675m³

COMMUNICATION

GSM
VHF
E-mail and internet facilities (VSAT)
Satellite communication terminal (open iridium)
EPIRB

NAVIGATIONAL EQUIPMENT

S-Band daylight radar
Gyro compass
Echo sounder
DGPS
GMDSS
Navtex
AIS
Trans Sas (map navigation)

LIFE RAFTS

Number of rafts	6
Capacity	6x25p
Location	Boarding from cross deck, SB and PS
Accommodation	74 persons

SCALDIS SALVAGE AND MARINE CONTRACTORS N.V.
North Trade Building
Noorderlaan 133 Box 31
2030 Antwerp - Belgium
Tel: 0032 3 541 69 55 (24h/24h)
Fax: 0032 3 541 81 93
mail@scaldis-smc.com

12.2 ATTACHMENT 2: LOAD CURVES RAMBIZ

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LOAD CAPACITY - RAMBIZ 3300 - 82m A-FRAME

Angle	Radius	Outreach	Sea State			Sea State			Sea State			Sea State		
Between	Measured	Measured	max. Hsig=0,75m			Hsig=1.00m			Hsig=1.25m			Hsig=1.50m		
deck and	along	along	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM
A-frame	deck level	deck level	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane
			LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL
degr.	m	m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
85	9,61	-5,45	3300	1700	1600	2726	1396	1330	2152	1093	1059	1578	789	789
84	11,03	-4,02	3300	1700	1600	2724	1395	1329	2148	1091	1057	1572	786	786
83	12,44	-2,61	3300	1700	1600	2722	1394	1328	2144	1089	1055	1566	783	783
82	13,86	-1,19	3300	1700	1600	2720	1393	1327	2140	1087	1053	1560	780	780
81	15,27	0,22	3300	1700	1600	2719	1393	1326	2137	1085	1052	1556	778	778
80	16,67	1,62	3300	1700	1600	2717	1392	1325	2133	1083	1050	1550	775	775
79	18,07	3,02	3300	1700	1600	2715	1391	1324	2129	1081	1048	1544	772	772
78	19,46	4,41	3300	1700	1600	2713	1390	1323	2125	1079	1046	1538	769	769
77	20,85	5,80	3300	1700	1600	2711	1389	1322	2123	1078	1045	1534	767	767
76	22,23	7,18	3300	1700	1600	2709	1388	1321	2119	1076	1043	1528	764	764
75	23,61	8,56	3300	1700	1600	2707	1387	1320	2115	1074	1041	1522	761	761
74	24,98	9,93	3300	1700	1600	2705	1386	1319	2111	1072	1039	1516	758	758
73	26,34	11,29	3300	1700	1600	2704	1385	1319	2108	1071	1037	1512	756	756
72	27,69	12,64	3245	1645	1600	2665	1348	1318	2086	1050	1035	1506	753	753
71	29,03	13,98	3098	1540	1558	2565	1277	1289	2033	1013	1019	1500	750	750

LOAD CAPACITY - RAMBIZ 3300 - 82m A-FRAME

Angle	Radius	Outreach	Sea State			Sea State			Sea State			Sea State		
Between	Measured	Measured	max. Hsig=0,75m			Hsig=1.00m			Hsig=1.25m			Hsig=1.50m		
deck and	along	along	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM
A-frame	deck level	deck level	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane
			LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL
degr.	m	m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
70	30,37	15,32	2906	1445	1461	2436	1213	1223	1966	980	986	1496	748	748
69	31,70	16,65	2733	1359	1374	2319	1154	1164	1904	950	955	1490	745	745
68	33,01	17,96	2577	1282	1295	2213	1102	1111	1848	922	926	1484	742	742
67	34,32	19,27	2434	1211	1223	2115	1054	1062	1797	896	900	1478	739	739
66	35,61	20,56	2303	1146	1157	2027	1010	1017	1750	873	877	1474	737	737
65	36,90	21,85	2182	1086	1096	1944	969	975	1706	851	855	1468	734	734
64	38,17	23,12	2072	1031	1041	1869	931	938	1665	831	834	1462	731	731
63	39,44	24,39	1969	980	989	1783	889	895	1598	797	800	1412	706	706
62	40,69	25,64	1874	933	941	1698	846	852	1522	760	762	1346	673	673
61	41,92	26,87	1786	889	897	1619	807	812	1451	724	727	1284	642	642
60	43,15	28,10	1703	848	855	1544	770	774	1385	691	694	1226	613	613
59	44,36	29,31	1626	810	816	1475	735	739	1323	661	663	1172	586	586
58	45,56	30,51	1554	774	780	1409	703	707	1265	631	633	1120	560	560
57	46,75	31,70	1486	740	746	1348	672	676	1210	604	606	1072	536	536
56	47,92	32,87	1422	708	714	1290	643	647	1158	578	580	1026	513	513

LOAD CAPACITY - RAMBIZ 3300 - 82m A-FRAME

Angle	Radius	Outreach	Sea State			Sea State			Sea State			Sea State		
Between	Measured	Measured	max. Hsig=0,75m			Hsig=1.00m			Hsig=1.25m			Hsig=1.50m		
deck and	along	along	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM
A-frame	deck level	deck level	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane
			LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL
degr.	m	m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
55	49,07	34,02	1363	679	684	1236	616	620	1109	554	555	982	491	491
54	50,21	35,16	1305	650	655	1184	590	594	1063	531	532	942	471	471
53	51,34	36,29	1251	623	628	1135	566	569	1020	509	511	904	452	452
52	52,45	37,40	1200	598	602	1089	543	546	977	488	489	866	433	433
51	53,54	38,49	1152	574	578	1045	521	524	939	469	470	832	416	416
50	54,62	39,57	1106	551	555	1003	500	503	901	450	451	798	399	399
49	55,68	40,63	1062	529	533	963	480	483	865	432	433	766	383	383
48	56,73	41,68	1018	509	509	924	462	462	830	415	415	736	368	368
47	57,76	42,71	978	489	489	887	444	444	797	398	398	706	353	353
46	58,77	43,72	940	470	470	853	426	426	765	383	383	678	339	339
45	59,76	44,71	904	452	452	820	410	410	736	368	368	652	326	326
44	60,73	45,68	870	435	435	789	394	394	707	354	354	626	313	313
43	61,69	46,64	836	418	418	758	379	379	680	340	340	602	301	301
42	62,63	47,58	804	402	402	729	364	364	653	327	327	578	289	289
41	63,54	48,49	774	387	387	701	351	351	629	314	314	556	278	278

LOAD CAPACITY - RAMBIZ 3300 - 82m A-FRAME

Angle	Radius	Outreach	Sea State			Sea State			Sea State			Sea State		
Between	Measured	Measured	max. Hsig=0,75m			Hsig=1.00m			Hsig=1.25m			Hsig=1.50m		
deck and	along	along	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM
A-frame	deck level	deck level	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane
			LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL
degr.	m	m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
40	64,44	49,39	744	372	372	674	337	337	604	302	302	534	267	267
39	65,32	50,27	716	358	358	648	324	324	580	290	290	512	256	256
38	66,18	51,13	688	344	344	623	311	311	557	279	279	492	246	246
37	67,02	51,97	662	331	331	599	299	299	535	268	268	472	236	236
36	67,84	52,79	636	318	318	575	288	288	515	257	257	454	227	227
35	68,63	53,58	612	306	306	553	276	276	493	247	247	434	217	217
34	69,41	54,36	588	294	294	531	265	265	473	237	237	416	208	208
33	70,17	55,12	566	283	283	511	255	255	455	228	228	400	200	200
32	70,90	55,85	544	272	272	490	245	245	436	218	218	382	191	191
31	71,62	56,57	522	261	261	470	235	235	418	209	209	366	183	183
30	72,31	57,26	502	251	251	451	226	226	401	200	200	350	175	175
29	72,98	57,93	480	240	240	432	216	216	384	192	192	336	168	168
28	73,62	58,57	462	231	231	415	207	207	367	184	184	320	160	160
27	74,25	59,20	442	221	221	397	198	198	351	176	176	306	153	153
26	74,85	59,80	424	212	212	380	190	190	336	168	168	292	146	146

LOAD CAPACITY - RAMBIZ 3300 - 82m A-FRAME

Angle	Radius	Outreach	Sea State			Sea State			Sea State			Sea State		
Between	Measured	Measured	max. Hsig=0,75m			Hsig=1.00m			Hsig=1.25m			Hsig=1.50m		
deck and	along	along	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM
A-frame	deck level	deck level	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane
			LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL
degr.	m	m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
25	75,43	60,38	406	203	203	363	182	182	321	160	160	278	139	139
24	75,99	60,94	388	194	194	347	174	174	307	153	153	266	133	133
23	76,52	61,47	370	185	185	331	165	165	291	146	146	252	126	126
22	77,03	61,98	354	177	177	316	158	158	278	139	139	240	120	120
21	77,52	62,47	338	169	169	301	151	151	265	132	132	228	114	114
20	77,98	62,93	322	161	161	286	143	143	250	125	125	214	107	107
19	78,42	63,37	306	153	153	272	136	136	238	119	119	204	102	102
18	78,83	63,78	292	146	146	259	129	129	225	113	113	192	96	96
17	79,23	64,18	276	138	138	244	122	122	212	106	106	180	90	90
16	79,59	64,54	262	131	131	231	115	115	199	100	100	168	84	84
15	79,94	64,89	248	124	124	218	109	109	188	94	94	158	79	79
14	80,26	65,21	234	117	117	205	103	103	177	88	88	148	74	74
13	80,55	65,50	220	110	110	192	96	96	164	82	82	136	68	68
12	80,82	65,77	206	103	103	179	90	90	153	76	76	126	63	63
11	81,07	66,02	194	97	97	168	84	84	142	71	71	116	58	58

LOAD CAPACITY - RAMBIZ 3300 - 82m A-FRAME

Angle	Radius	Outreach	Sea State			Sea State			Sea State			Sea State		
Between	Measured	Measured	max. Hsig=0,75m			Hsig=1.00m			Hsig=1.25m			Hsig=1.50m		
deck and	along	along	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM	TOTAL	BIZON	RAM
A-frame	deck level	deck level	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane	HOOK	PS Crane	SB Crane
			LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL	LOAD	SWL	SWL
degr.	m	m	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
10	81,29	66,24	180	90	90	155	78	78	131	65	65	106	53	53
9	81,48	66,43	168	84	84	144	72	72	120	60	60	96	48	48
8	81,65	66,60	154	77	77	131	66	66	109	54	54	86	43	43
7	81,80	66,75	142	71	71	120	60	60	98	49	49	76	38	38
6	81,92	66,87	130	65	65	109	55	55	89	44	44	68	34	34
5	82,02	66,97	118	59	59	98	49	49	78	39	39	58	29	29
4	82,09	67,04	106	53	53	87	43	43	67	34	34	48	24	24
3	82,14	67,09	94	47	47	76	38	38	58	29	29	40	20	20
2	82,16	67,11	82	41	41	65	32	32	47	24	24	30	15	15
1	82,16	67,11	72	36	36	55	28	28	39	19	19	22	11	11
0	82,13	67,08	60	30	30	44	22	22	28	14	14	12	6	6

ATTACHMENT TO: form 1365 (L.A.1) (06/93)

Note : Radius and Outreach include 0.8° static trim

Rotterdam 6888

Lloyd's Register of Shipping Rotterdam

31-05-2000

12.3 ATTACHMENT 3: LOAD CURVES SENNEBOGEN 7700 ON RAMBIZ

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SENNEBOGEN

PRELIMINARY



7700 G

Crawler crane

321 kW (Stage V)

300 t

maXCAB

Stage V

7700G Advanced. The G-Series



1976-1995: S 1225 crawler crane with fly boom to lift casing boards

What makes up the G-Series

- 50 years of experience in construction of lattice boom and crawler cranes
- Modular construction with numerous configuration options
- Technology that can be mastered in operation and in service
- Long service life and high value stability

Your top benefits

1 Green Efficiency
Save fuel - reduce operating costs
Work quietly - protect operator and environment

2 Top-level performance
Robust boom system - operates up to a 4° tilt

3 Maximum usability
Maxcab comfort cab - work in comfort
SENCON – work program selection made easy

4 Flexible operation
Operate under full load - small space requirements
Strong undercarriage traction - good off-road mobility

5 Easy to transport
Starlifter undercarriage - quickly ready for use
Ballast support system - short set-up time

6 Maintenance and service made easy
SENNEBOGEN control system - easy diagnosis
Simple maintenance - clear labeling

7 Consultation and support in your area
3 production sites - 2 subsidiaries
150 sales partners - over 350 service stations





Also approved for off-shore application*

* Reference: Dutch Offshore

7700G Technical data, equipment

MACHINE TYPE

Model (type)	**7700**

ENGINE

Model	Cummins X12 (Stage V) **321 kW / 430 HP/ 436 PS at 1800 min^{-1}** **325 kW / 436 HP/ 442 PS at 1700 min^{-1}** Direct injection, turbo-charged, charge air cooling, reduced emissions
Cooling	Water-cooled
Diesel filter	Electrically heated with water separator
Air filter	Dry filter with pre-separator, automatic dust discharge, main element and safety element, contamination indicator
Fuel tank	**max. 805 l (half-way up the sight glass)**
DEF tank	**105 l**
Electr. system	**24 V**
Electrical installation	Easy and very clear
Batteries	**2 x 180 Ah**, main switch
Options	■ Low temperature package with engine preheating ■ Electric fuel pump

UPPERCARRIAGE

Design	Torsion-resistant box design, precision crafted, bronze bushings for boom mounting arrangement, clear and very service-friendly concept, engine installed in the longitudinal direction, ballast support fixture
Electrical system	Central electrical distributor, battery disconnect switch
Lighting	LED headlights for optimal lighting of the work area
Safety	Camera monitoring of the rear area right side, uppercarriage railing right + left
Options	■ Anti-corrosive maritime climate varnish ■ Low temperature package ■ Pinion tooth lubrication for slewing ring outer ■ Additional cameras available on customer request ■ Automatic central lubrication system for equipment and slewing ring

HYDRAULIC SYSTEM

Multi-circuit hydraulic system for optimum functionality and performance, all movements can be operated simultaneously.

Pump type	The hydraulic pumps are variable displacement piston pumps with individual control and energy-saving flow-on-demand control.
Pump control	The pumps only pump as much oil as will actually be used. Pressure purging, load limit control
Operating pressure	**max. 330 bar**
Filtration	High-performance filtration with long-term change interval, contamination indicator, SENNEBOGEN HydroClean micro-filter system with water separator, option
Hydraulic tank	**max. 860 l / 765 l (half-way up the sight glass)**
Control system	Proportional, precision hydraulic servo control of the movements, 2 servo joysticks for work functions, additional functions via switches and foot pedals - arranged clearly and ergonomically. High energy efficiency due to large-scale hydraulic valves and lines. Measurement connections in the hydraulic circuits
Safety	Hydraulic circuits with safety valves
Options	■ Bio-oil filling ■ SENNEBOGEN HydroClean micro-filter system with water separator

SLEWING

Gearbox	3 compact planetary gears with bent-axis hydraulic motor, integrated brake valves
Swing bearing brake	Spring-loaded multi-disk brake
Slewing ring	Three-row roller-beating slewing ring with external gear teeth
Slewing speed	**0-2 min^{-1}**, 3 adjustable slewing speeds
Options	■ Positioning swing bearing brake

7700 G Technical data, equipment

CAB

Cab type	Maxcab, tiltable 20°
Cab equipment	Sliding door, sliding window in operator door, excellent ergonomics, automatic air conditioning, seat heater, air-suspension comfort seat, fresh air /circulating air filter, 12 V/24 V connections, SENCON, sunblind for skylight
Options	■ Auxiliary heating system with timer ■ Activated-carbon filter for cab ■ Bullet proof skylight, rigidly glazed ■ Bullet proof cab windshield, rigidly glazed ■ Sunblind for windshield ■ Protective roof grating ■ FOPS protective grating for roof ■ Radio with Bluetooth ■ Electric cooling box

EQUIPMENT

Design	Decades of experience and the latest computer simulations guarantee the greatest degree of stability and life-span
Boom adjustment winch	Bent-axis hydraulic motor drive with compact planetary gear and 2 x 165 kN tensile force; rope diameter 26 mm, adjustment speed 30° to 80° in 77 sec.
Safety brake	Spring-loaded multi-disk brake
Crane safety	Latest generation of load moment monitoring, display shows all important data, lifting limit switch, pressure relief valves, cable exit protection
Boom	SH boom length up to 91.5 m
Options	■ Max. boom length with SHLH equipment: 113.9 m ■ Max. boom length with SHWS equipment: 74.7 m + 74.7 m ■ Auxiliary boom for load capacities up to 42 t

UNDERCARRIAGE

Design	Very strong Star-Lifter wide-gage crawler undercarriage, with integrated, protected drive transmission
Travel drive	Strong travel drive with axial piston hydraulic motor and directly attached automatically functioning brake valve and compact planetary gear on each running gear side
Parking brake	Spring-loaded multi-disk brake
Traveling gear	Maintenance-free flat track shoe traveling gear with hydraulic chain tension, 1200 mm flat track shoes
Travel speed	**0 - 1.4 km/h**
Options	■ 1500 mm flat track shoes

WINCH

The winches are driven via high-pressure-regulated adjustable hydraulic motors, thus there is always optimal pulling force speed control. Hydraulic lowering brake valves for sensitive, wear-free braking. Strong oil bath, planetary gear, low-maintenance. Holding brakes are spring-loaded, maintenance-free, low-wear disc brakes running in the oil bath, oil-cooled.

Main winches

Cable pull max. 1st position	200 kN
Cable pull 7th position	150 kN
Cable diameter	28 mm
Drum diameter	725 mm
Cable speed	0 - 140 m/min
Cable capacity across 7 positions	610 m

OPERATING WEIGHT

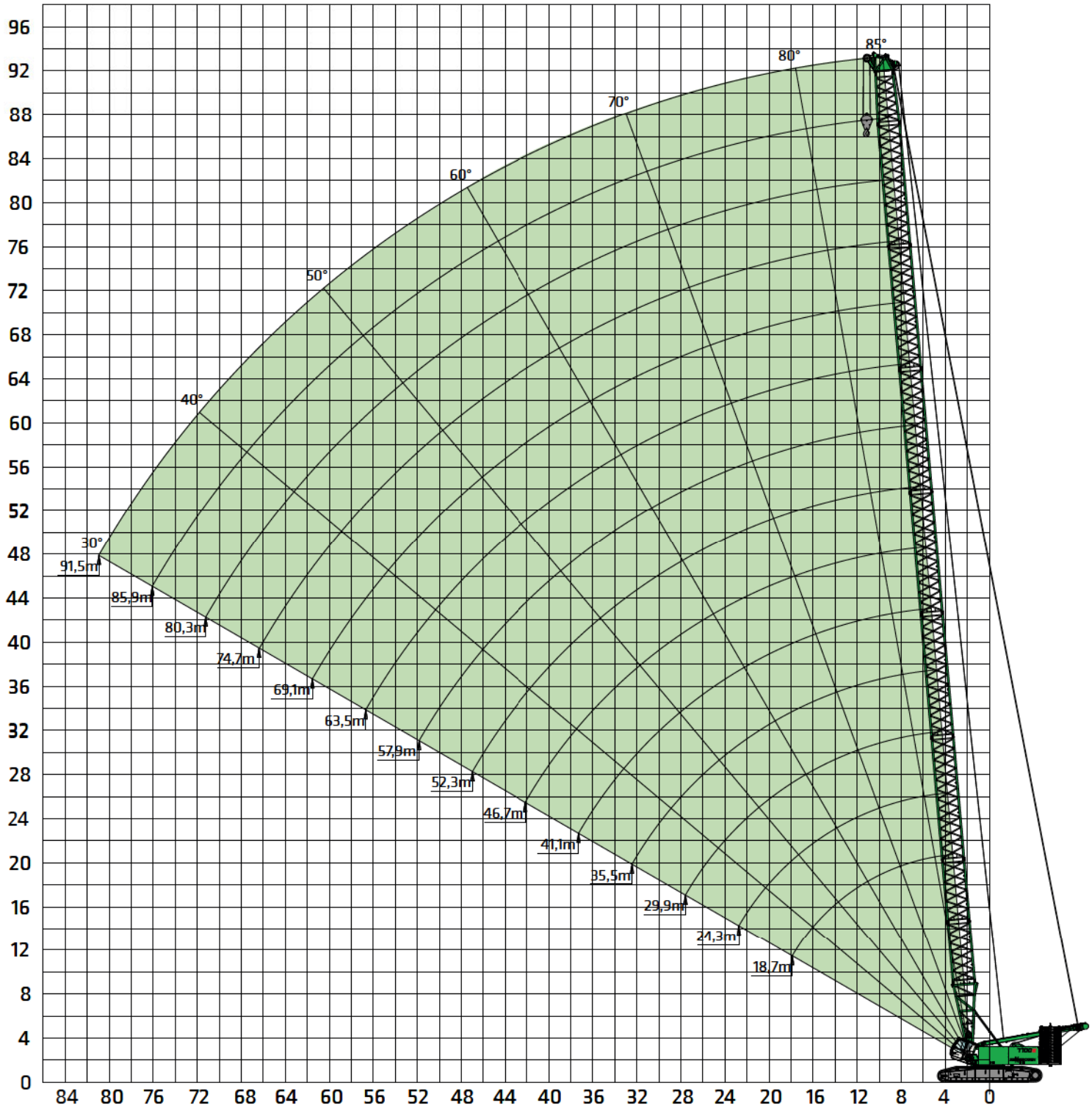
Mass	**approx. 293,000 kg** 7700 basic machine with 1200 mm disk drive, 2 150 kN main winches, main boom consisting of lower boom section, 5.6 m boom section, head piece, 135 t counter weight, 40 t undercarriage ballast, 200 t hook and 650 m hoist cable
Note	Operating weight varies by model and equipment.

Subject to change. Additional options available upon request.

7700G Crane equipment

EN 360°

Main boom SH



7700G Load ratings

EN 360° Main boom SH 85 t 40 t

85 t 40 t	Boom length [m]													
Boom radius [m]	18.7	24.3	29.9	35.5	41.1	46.7	52.3	57.9	63.5	69.1	74.7	80.3	85.9	91.5
5.0	300													
6.0	249.8	249.3	248.5											
7.0	216.1	215.5	209.7	227.9	179.6	167.5								
8.0	190.1	189.7	177.7	189.9	154.9	145.5	136.8	129.0						
9.0	169.6	164.5	153.9	162.4	135.9	128.4	121.3	114.9	108.8	97.9				
10.0	151.8	144.0	135.5	14.6	120.9	114.7	108.7	103.3	98.1	93.4	79.6			
12.0	114.3	114.1	109.0	112.2	98.5	94.0	89.5	85.5	81.5	77.9	74.3	64.9	55.2	48.0
14.0	91.1	90.9	90.4	92.4	82.6	79.1	75.6	72.4	69.2	66.3	63.3	60.6	53.0	45.5
16.0	75.4	75.1	74.5	78.2	70.8	68.0	65.0	62.4	59.7	57.3	54.7	52.4	50.0	43.4
18.0	63.9	63.6	63.1	67.4	61.6	59.3	56.7	54.5	52.2	50.0	47.8	45.8	43.7	41.6
20.0		54.9	54.4	57.9	53.1	52.3	50.0	48.1	46.0	44.1	42.1	40.3	38.4	36.7
24.0			42.0	47.0	40.7	40.2	39.5	38.4	36.6	35.1	33.4	31.9	30.2	28.8
28.0			33.7	36.9	32.4	31.9	31.1	30.5	29.7	28.4	26.9	25.6	24.1	22.8
32.0				29.9	26.4	25.9	25.1	24.5	23.7	23.1	21.9	20.7	19.4	18.2
36.0					21.8	21.4	20.6	20.0	19.2	18.5	17.7	16.8	15.6	14.5
40.0						17.8	17.0	16.4	15.6	15.0	14.2	13.5	12.5	11.4
44.0							14.1	13.6	12.8	12.1	11.3	10.6	9.8	8.9
48.0								11.2	10.4	9.8	8.9	8.3	7.4	6.7
52.0								9.2	8.4	7.8	7.0	6.3	5.5	4.8
56.0									6.7	6.1	5.3	4.6	3.8	3.1
60.0										4.7	3.8	3.2		
64.0														
68.0														
Number of falls	22	19	19	17	14	13	10	10	8	7	6	5	4	4

Table no. 7700R-80/3504/85.0/08.10 SH

Notes:

1. The load ratings given apply when the machine is on a firm and level surface.
2. The load ratings are given in tonnes and apply 360 degrees.
3. Thethe load capacities take standards DIN 15019/2 and ISO 4305 into account (tilt angle 4.5°)
4. The weight of the load handling equipment (hooks, suspension gear) should be deducted from the load capacities.
5. The load ratings apply for the maximum undercarriage track width.
6. Load capacities must be limited or reduced in adverse conditions such as soft or uneven ground, slopes, wind, side loads, swinging loads, jolts or sudden stopping of loads, personnel and operators not experienced in handling loads.
7. Permissible cable pull per strand in crane mode for cable diameter 28 mm - 14,500 kg.
8. The load ratings apply to the SH boom (boom assembly as per operating instructions).
9. The load ratings apply for optimal boom assembly and pulley head with plastic rollers.
10. The load ratings given are for reference only. Please refer to the operating instructions for the relevant applicable load ratings.
11. Load ratings for tilts of 2° and 4° are also available on request.

7700G Load ratings



Main boom SH



105 t 40 t	Boom length [m]													
Boom radius [m]	18.7	24.3	29.9	35.5	41.1	46.7	52.3	57.9	63.5	69.1	74.7	80.3	85.9	91.5
5.0	287.0													
6.0	261.8	261.3	260.5	230.0										
7.0	226.5	226.0	225.2	218.2	203.1	180.4								
8.0	199.3	198.9	198.1	186.8	177.9	167.2	157.4	130.1						
9.0	177.9	177.4	176.6	163.1	156.3	147.7	139.7	127.9	112.7	97.9				
10.0	160.5	160.0	155.7	144.5	139.1	132.1	125.4	119.3	110.7	96.0	79.6			
12.0	131.4	131.1	125.4	117.2	113.6	108.6	103.6	99.1	94.6	90.6	76.5	64.9	55.2	48.0
14.0	104.9	104.7	104.1	98.2	95.5	91.7	87.7	84.2	80.6	77.4	73.9	62.9	53.0	45.5
16.0	86.9	86.7	86.1	84.1	82.1	79.0	75.7	72.8	69.8	67.1	64.3	61.2	51.1	43.4
18.0	73.9	73.6	73.0	72.5	71.7	69.1	66.3	63.8	61.3	58.9	56.5	54.3	49.4	41.6
20.0		63.7	63.1	62.5	61.8	61.1	58.7	56.6	54.3	52.2	50.1	48.1	46.0	40.0
24.0			49.1	48.5	47.8	47.3	46.5	45.5	43.6	41.9	40.1	38.5	36.7	35.2
28.0			39.6	39.0	38.3	37.8	37.0	36.4	35.6	34.3	32.7	31.3	29.8	28.4
32.0				32.2	31.4	31.0	30.2	29.6	28.8	28.1	27.1	25.8	24.4	23.2
36.0					26.3	25.8	25.0	24.5	23.6	23.0	22.1	21.4	20.1	19.0
40.0						21.7	21.0	20.4	19.6	19.0	18.1	17.4	16.6	15.5
44.0							17.7	17.1	16.3	15.7	14.9	14.2	13.3	12.6
48.0								14.5	13.6	13.0	12.2	11.5	10.7	10.0
52.0								12.2	11.4	10.8	10.0	9.3	8.4	7.7
56.0									9.5	8.9	8.0	7.4	6.5	5.8
60.0										7.2	6.4	5.7	4.9	4.2
64.0											5.0	4.3	3.5	
68.0												3.0		
Number of falls	22	20	20	18	15	14	12	10	9	7	6	5	4	4

Table no. 7700R-80/3504/105.0/08.10 SH

Notes:

1. The load ratings given apply when the machine is on a firm and level surface.
2. The load ratings are given in tonnes and apply 360 degrees.
3. Thethe load capacities take standards DIN 15019/2 and ISO 4305 into account (tilt angle 4.5°)
4. The weight of the load handling equipment (hooks, suspension gear) should be deducted from the load capacities.
5. The load ratings apply for the maximum undercarriage track width.
6. Load capacities must be limited or reduced in adverse conditions such as soft or uneven ground, slopes, wind, side loads, swinging loads, jolts or sudden stopping of loads, personnel and operators not experienced in handling loads.
7. Permissible cable pull per strand in crane mode for cable diameter 28 mm - 14,500 kg.
8. The load ratings apply to the SH boom (boom assembly as per operating instructions).
9. The load ratings apply for optimal boom assembly and pulley head with plastic rollers.
10. The load ratings given are for reference only. Please refer to the operating instructions for the relevant applicable load ratings.
11. Load ratings for tilts of 2° and 4° are also available on request.

7700G Load ratings

Main boom SH

135 t 40 t	Boom length [m]													
Boom radius [m]	18.7	24.3	29.9	35.5	41.1	46.7	52.3	57.9	63.5	69.1	74.7	80.3	85.9	91.5
5.0														
6.0														
7.0						180.4								
8.0					198.6	177.1	158.0	130.1						
9.0				185.5	186.8	174.2	155.1	127.9	112.7	97.9				
10.0			170.5	169.9	166.5	158.3	150.4	125.9	110.7	96.0	79.6			
12.0		142.9	142.2	140.9	136.3	130.4	124.6	119.4	107.3	92.6	76.5	64.9	55.2	48.0
14.0	122.7	122.3	121.6	118.3	115.0	110.5	105.9	101.9	97.8	89.7	73.9	62.9	53.0	45.5
16.0	104.3	104.0	103.4	101.7	99.1	95.5	91.8	88.4	85.0	81.9	71.7	61.2	51.1	43.4
18.0	88.8	88.6	88.0	87.4	86.7	83.8	80.6	77.8	74.9	72.3	69.5	59.7	49.4	41.6
20.0		76.8	76.3	75.7	75.0	74.4	71.6	69.2	66.7	64.4	61.9	58.4	47.9	40.0
24.0			59.7	59.1	58.4	57.9	57.1	56.1	54.0	52.2	50.2	48.4	45.4	37.5
28.0			48.4	47.9	47.1	46.7	45.9	45.3	44.5	43.3	41.5	40.0	38.3	35.7
32.0				39.8	39.1	38.6	37.8	37.2	36.4	35.7	34.9	33.5	32.0	30.6
36.0					32.9	32.5	31.7	31.1	30.3	29.7	28.8	28.1	26.9	25.7
40.0						27.7	26.9	26.3	25.5	24.9	24.1	23.4	22.5	21.6
44.0							23.1	22.5	21.7	21.1	20.2	19.5	18.7	18.0
48.0								19.3	18.5	17.9	17.1	16.4	15.5	14.8
52.0								16.7	15.9	15.2	14.4	13.8	12.9	12.2
56.0									13.6	13.0	12.2	11.5	10.7	10.0
60.0										11.0	10.2	9.6	8.7	8.0
64.0											8.5	7.9	7.0	6.4
68.0												6.4	5.6	4.9
Number of falls	9	11	13	14	15	14	12	10	9	7	6	5	4	4

Table no. 7700R-80/3504/135.0/08.10 SH

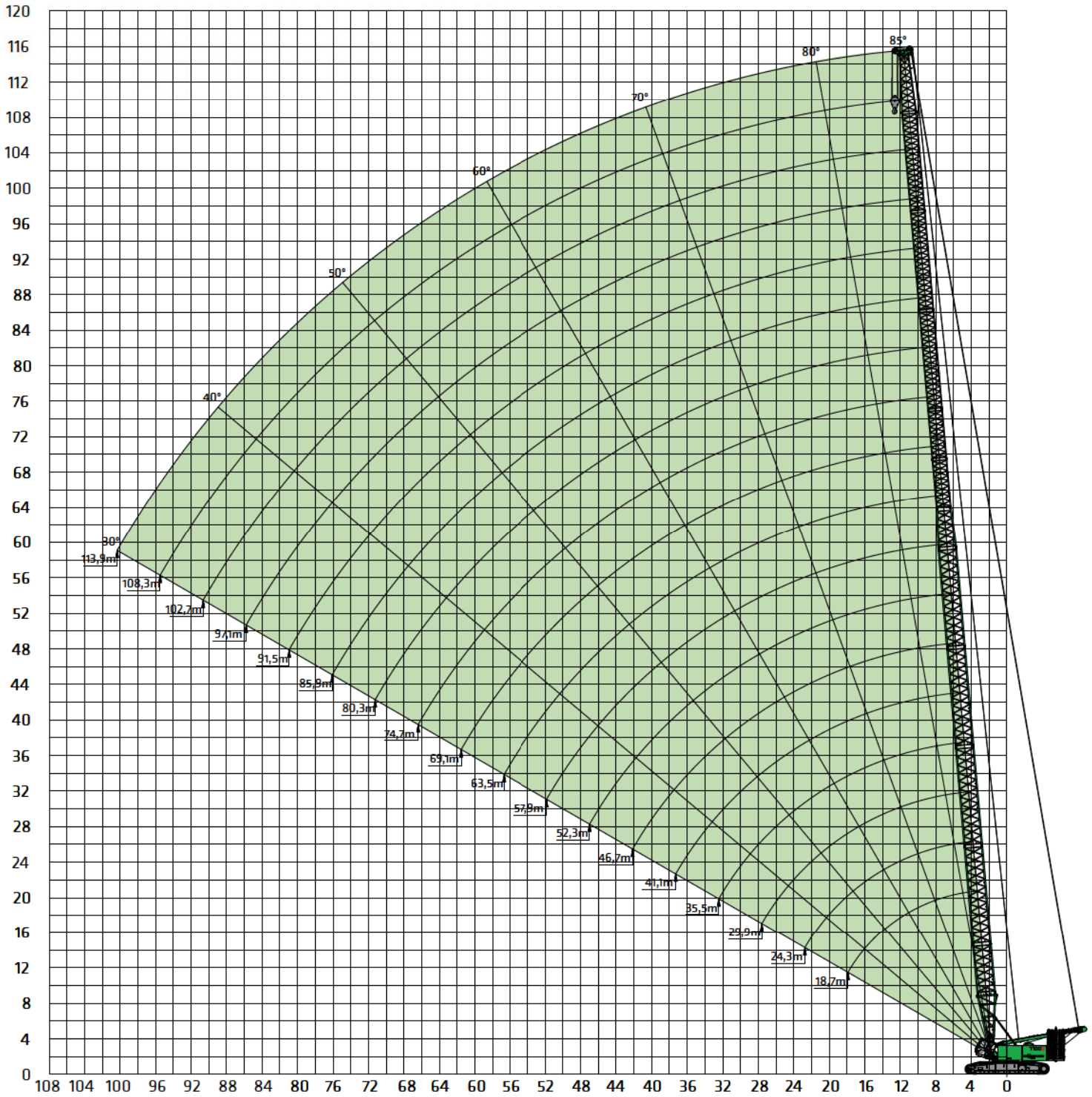
Notes:

1. The load ratings given apply when the machine is on a firm and level surface.
2. The load ratings are given in tonnes and apply 360 degrees.
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4. The weight of the load handling equipment (hooks, suspension gear) should be deducted from the load capacities.
5. The load ratings apply for the maximum undercarriage track width.
6. Load capacities must be limited or reduced in adverse conditions such as soft or uneven ground, slopes, wind, side loads, swinging loads, jolts or sudden stopping of loads, personnel and operators not experienced in handling loads.
7. Permissible cable pull per strand in crane mode for cable diameter 28 mm - 14,500 kg.
8. The load ratings apply to the SH boom (boom assembly as per operating instructions).
9. The load ratings apply for optimal boom assembly and pulley head with plastic rollers.
10. The load ratings given are for reference only. Please refer to the operating instructions for the relevant applicable load ratings.
11. Load ratings for tilts of 2° and 4° are also available on request.

7700G Crane equipment

EN 360°

Main boom SHLH



7700G Load ratings



Main boom SHLH



85 t 40 t	Boom length [m]								
Boom radius [m]	69.1	74.7	80.3	85.9	91.5	97.1	102.7	108.3	113.9
9.0	87.0								
10.0	83.9	73.0							
12.0	77.9	67.4	60.0	49.7	41.0	34.5			
14.0	68.5	62.3	56.2	46.6	38.7	32.9	26.8	23.5	19.0
16.0	59.5	57.7	52.6	43.7	36.6	31.4	25.7	22.6	18.5
18.0	52.4	50.8	49.2	41.0	34.6	29.9	24.6	21.7	17.9
20.0	46.5	45.2	44.0	38.5	32.7	28.5	23.6	20.8	17.4
24.0	37.4	36.4	35.6	33.9	29.4	25.9	21.7	19.3	16.3
28.0	30.8	30.0	29.3	28.5	26.4	23.5	19.9	17.8	15.2
32.0	25.1	24.9	24.5	23.8	23.2	21.3	18.3	16.4	14.1
36.0	20.6	20.4	20.3	20.0	19.6	18.9	16.7	15.1	13.1
40.0	17.1	16.9	16.8	16.5	16.3	16.0	15.3	13.8	12.0
44.0	14.2	14.0	14.0	13.7	13.5	13.2	12.9	12.5	11.0
48.0	11.9	11.7	11.6	11.4	11.2	10.8	10.6	10.2	9.9
52.0	9.9	9.7	9.7	9.4	9.2	8.9	8.7	8.3	8.0
56.0	8.2	8.1	8.0	7.8	7.6	7.3	7.0	6.7	6.4
60.0	6.7	6.6	6.6	6.3	6.2	5.9	5.6	5.3	5.0
64.0		5.3	5.3	5.1	4.9	4.6	4.4	4.0	3.8
68.0			4.2	4.0	3.8	3.5	3.3	3.0	2.7
72.0				3.0	2.8	2.5	2.3		
76.0									
Number of falls	7	6	5	4	3	3	2	2	2

Table no. 7700R-80/3504/85.0/08.10 SHLH

Notes:

1. The load ratings given apply when the machine is on a firm and level surface.
2. The load ratings are given in tonnes and apply 360 degrees.
3. Thethe load capacities take standards DIN 15019/2 and ISO 4305 into account (tilt angle 4.5°)
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5. The load ratings apply for the maximum undercarriage track width.
6. Load capacities must be limited or reduced in adverse conditions such as soft or uneven ground, slopes, wind, side loads, swinging loads, jolts or sudden stopping of loads, personnel and operators not experienced in handling loads.
7. Permissible cable pull per strand in crane mode for cable diameter 28 mm - 14,500 kg.
8. The load ratings apply to the SHLH boom (boom assembly as per operating instructions).
9. The load ratings apply for optimal boom assembly and pulley head with plastic rollers.
10. The load ratings given are for reference only. Please refer to the operating instructions for the relevant applicable load ratings.
11. Load ratings for tilts of 2° and 4° are also available on request.

7700G Load ratings

EN 360° Main boom SHLH 105 t 40 t

105 t 40 t	Boom length [m]								
Boom radius [m]	69.1	74.7	80.3	85.9	91.5	97.1	102.7	108.3	113.9
9.0	87.0								
10.0	83.9	73.0							
12.0	77.9	67.4	60.0	49.7	41.0	34.5			
14.0	72.1	62.3	56.2	46.6	38.7	32.9	26.8	23.5	19.0
16.0	66.4	57.7	52.6	43.7	36.6	31.4	25.7	22.6	18.5
18.0	61.0	53.5	49.2	41.0	34.6	29.9	24.6	21.7	17.9
20.0	54.6	49.6	46.0	38.5	32.7	28.5	23.6	20.8	17.4
24.0	44.3	42.8	40.0	33.9	29.4	25.9	21.7	19.3	16.3
28.0	36.7	35.8	34.5	29.7	26.4	23.5	19.9	17.8	15.2
32.0	30.2	30.0	29.6	26.0	23.7	21.3	18.3	16.4	14.1
36.0	25.0	24.9	24.7	22.6	21.3	19.3	16.7	15.1	13.1
40.0	20.4	20.9	20.7	19.6	19.0	17.4	15.3	13.8	12.0
44.0	16.9	17.6	17.5	16.8	16.9	15.7	13.9	12.6	11.0
48.0	14.3	15.0	14.5	14.2	14.4	14.0	12.6	11.4	10.0
52.0	12.6	12.7	11.9	11.9	12.2	11.9	11.4	10.3	9.0
56.0	11.0	10.8	9.7	9.8	10.3	10.0	9.8	9.1	8.1
60.0	9.3	9.2	8.0	8.0	8.7	8.4	8.2	7.8	7.2
64.0		7.7	7.0	6.5	7.3	7.0	6.8	6.4	6.1
68.0			6.4	5.4	6.1	5.8	5.5	5.2	4.9
72.0			5.3	4.7	4.9	4.7	4.4	4.1	3.8
76.0			4.3	4.1	4.0	3.7	3.5	3.1	2.9
Number of falls	7	6	5	4	3	3	2	2	2

Table no. 7700R-80/3504/105.0/08.10 SHLH

Notes:

1. The load ratings given apply when the machine is on a firm and level surface.
2. The load ratings are given in tonnes and apply 360 degrees.
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11. Load ratings for tilts of 2° and 4° are also available on request.

7700G Load ratings



Main boom SHLH



135 t 40 t	Boom length [m]								
Boom radius [m]	69.1	74.7	80.3	85.9	91.5	97.1	102.7	108.3	113.9
9.0	87.0								
10.0	83.9	73.0							
12.0	77.9	67.4	60.0	49.7	41.0	34.5			
14.0	72.1	62.3	56.2	46.6	38.7	32.9	26.8	23.5	19.0
16.0	66.4	57.7	52.7	43.7	36.6	31.4	25.7	22.6	18.5
18.0	61.0	53.5	49.2	41.0	34.6	29.9	24.6	21.7	17.9
20.0	55.8	49.6	46.0	38.5	32.7	28.5	23.6	20.8	17.4
24.0	46.0	42.8	40.0	33.9	29.4	25.9	21.7	19.3	16.3
28.0	37.3	37.0	34.5	29.7	26.4	23.5	19.9	17.8	15.2
32.0	30.9	30.7	29.6	26.0	23.7	21.3	18.3	16.4	14.1
36.0	25.0	25.7	25.1	22.6	21.3	19.3	16.7	15.1	13.1
40.0	20.4	21.8	21.2	19.6	19.0	17.4	15.3	13.8	12.0
44.0	16.9	18.7	17.6	16.8	16.9	15.7	13.9	12.6	11.0
48.0	14.3	16.0	14.5	14.2	14.9	14.0	12.6	11.4	10.0
52.0	12.6	13.4	11.9	11.9	12.9	12.5	11.4	10.3	9.0
56.0	11.5	11.1	9.7	9.8	11.1	10.9	10.2	9.1	8.1
60.0	10.2	9.5	8.0	8.0	9.4	9.2	9.0	8.0	7.2
64.0		8.6	7.0	6.5	7.9	7.8	7.5	7.0	6.3
68.0			6.6	5.4	6.6	6.5	6.3	5.9	5.5
72.0				4.8	5.7	5.4	5.1	4.8	4.5
76.0				4.7	4.6	4.3	4.1	3.8	3.5
80.0					3.6	3.4	3.2	2.8	2.6
Number of falls	7	6	5	4	3	3	2	2	2

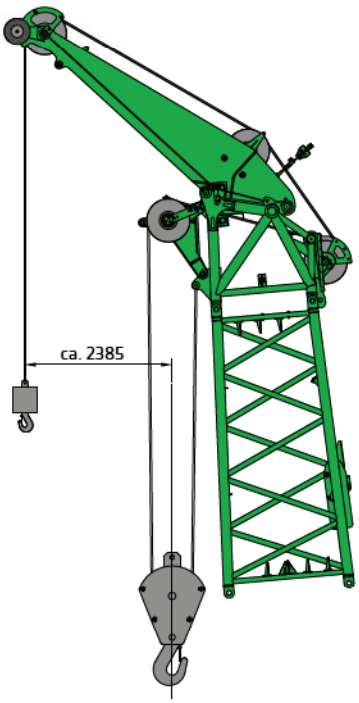
Table no. 7700R-80/3504/135.0/08.10 SHLH

Notes:

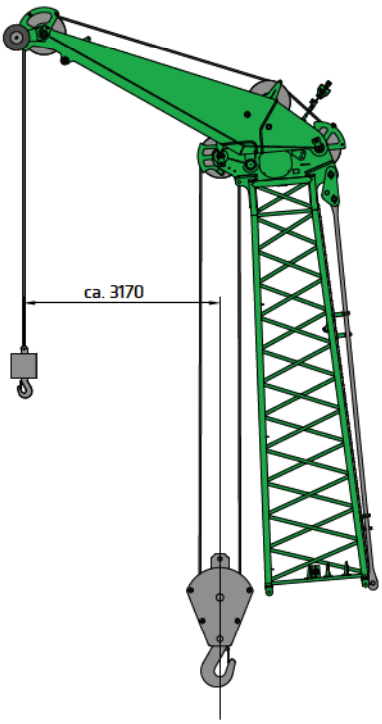
1. The load ratings given apply when the machine is on a firm and level surface.
2. The load ratings are given in tonnes and apply 360 degrees.
3. Thethe load capacities take standards DIN 15019/2 and ISO 4305 into account (tilt angle 4.5°)
4. The weight of the load handling equipment (hooks, suspension gear) should be deducted from the load capacities.
5. The load ratings apply for the maximum undercarriage track width.
6. Load capacities must be limited or reduced in adverse conditions such as soft or uneven ground, slopes, wind, side loads, swinging loads, jolts or sudden stopping of loads, personnel and operators not experienced in handling loads.
7. Permissible cable pull per strand in crane mode for cable diameter 28 mm - 14,500 kg.
8. The load ratings apply to the SHLH boom (boom assembly as per operating instructions).
9. The load ratings apply for optimal boom assembly and pulley head with plastic rollers.
10. The load ratings given are for reference only. Please refer to the operating instructions for the relevant applicable load ratings.
11. Load ratings for tilts of 2° and 4° are also available on request.

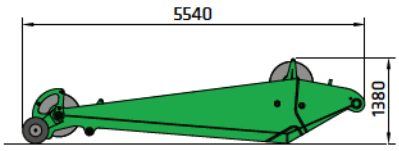
7700G Additional equipment

Main boom SH with S 42.1 auxiliary boom
max. load capacity 42.0 t

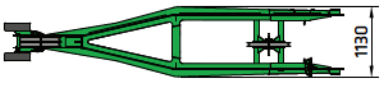


Main boom SHLH with S 42.1 auxiliary boom
max. load capacity 20.0 t



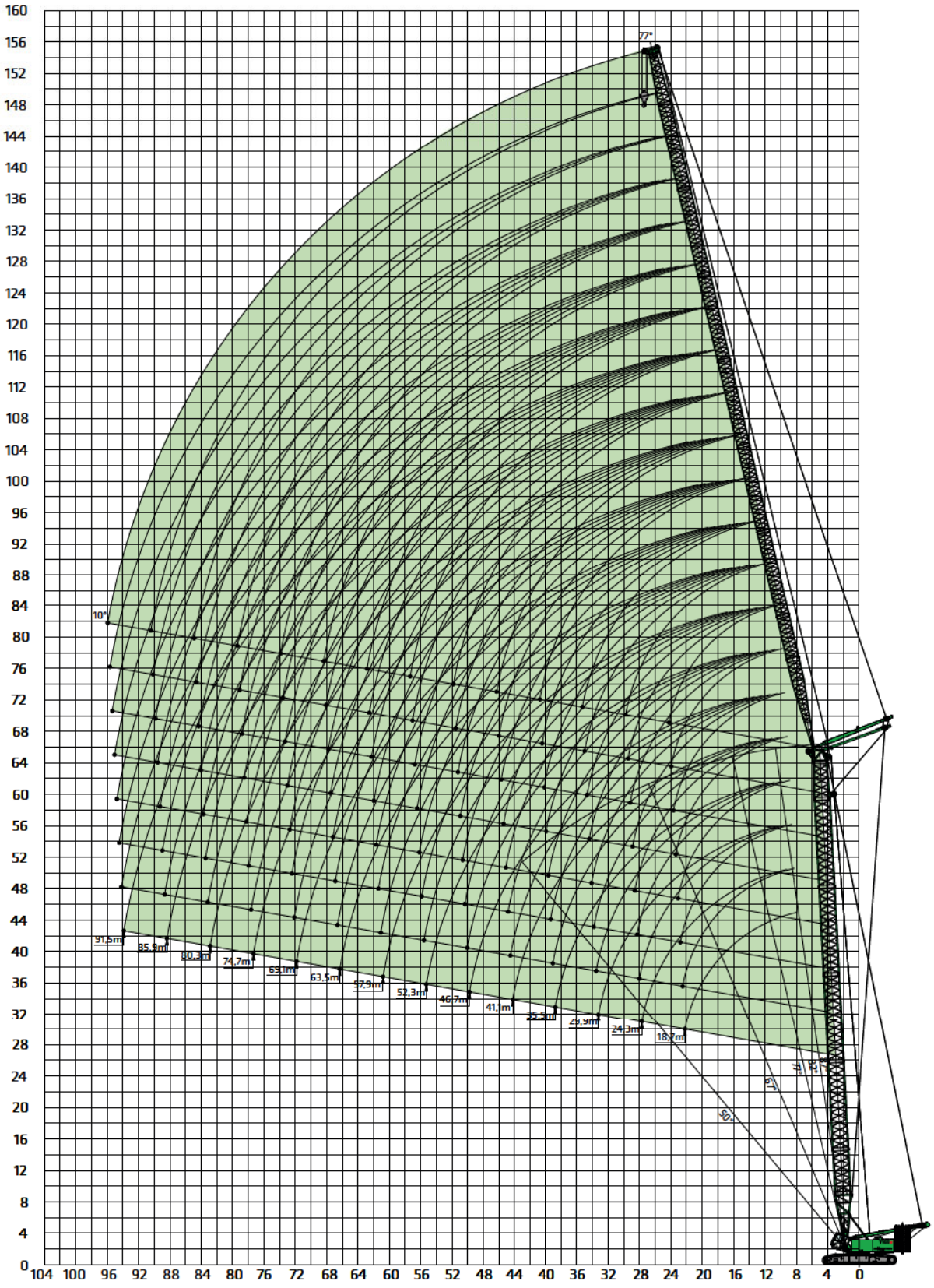


S 42.1 auxiliary boom
Weight: 1300 kg
Load capacity: max. 42.0 t



7700G Crane equipment

Main boom SH
with tiltable WS fly boom



7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

105 t 40 t

Table no. 7700R-80/3504/105.0/08.10 SHWS 87

105 t 40 t 87° SH		Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	10.0	95.0							92.5						
	12.0	91.5							89.4						
	14.0	88.6	81.0						86.7	76.8					
	16.0	86.0	76.2	61.4					83.7	73.1	57.1				
	18.0	78.3	71.9	58.2	36.6				75.5	69.5	54.7	33.8			
	20.0	68.2	65.6	55.2	35.8	23.7			67.0	63.5	52.4	33.1	22.7		
	24.0		54.2	50.0	34.0	22.8	14.5			52.8	48.1	31.8	21.7	14.1	
	28.0		44.4	43.9	32.3	21.8	13.9	5.9		44.3	42.7	30.6	20.8	13.6	5.1
	32.0		36.9	37.1	30.7	20.8	13.3	5.6		36.9	36.6	29.5	20.0	13.0	4.8
	36.0			31.8	29.4	19.9	12.7	5.4			31.7	28.5	19.3	12.4	4.6
	40.0			27.5	26.9	19.0	12.1	5.1			27.5	26.8	18.6	11.9	4.4
	48.0				20.8	17.5	11.1	4.6				20.8	17.4	11.0	4.0
	56.0					16.0	10.2	4.1					16.0	10.2	3.5
	64.0					12.7	9.6	3.4					12.7	9.5	3.1
	72.0						8.9	2.8						8.9	2.6
	80.0														
	84.0														
	Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	1

105 t 40 t 87° SH		Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	10.0	92.5													
	12.0	89.4							83.6						
	14.0	86.7	68.5						81.4	61.8					
	16.0	83.7	66.1						78.3	59.8					
	18.0	75.5	63.5	52.8	31.0				70.0	57.3	48.7	29.5			
	20.0	67.0	59.4	51.2	30.4	21.7			63.4	54.3	46.8	29.1			
	24.0		49.8	49.5	29.5	20.6	13.8			47.9	45.2	28.0	19.5	12.8	
	28.0		42.7	46.2	28.8	19.8	13.2	4.3		41.4	42.3	27.2	18.7	12.4	4.4
	32.0		37.1	41.5	28.3	19.2	12.7	4.0		36.1	38.9	26.4	18.1	11.9	4.1
	36.0		32.0	36.2	27.7	18.7	12.2	3.8		31.7	35.2	25.6	17.4	11.4	3.9
	40.0			31.6	26.6	18.2	11.7	3.6			31.0	24.7	16.9	10.8	3.6
	48.0			27.7	20.9	17.2	10.9	3.3			27.4	20.7	15.7	9.9	3.2
	56.0				16.9	16.0	10.1	3.0				16.8	14.6	9.1	2.9
	64.0					13.1	9.5	2.7					12.7	8.4	2.6
	72.0						9.1							7.9	
	80.0														
	88.0														
	Number of falls	7	6	4	3	2	1	1	6	5	4	3	2	1	1

Notes:

1. The load ratings given apply when the machine is on a firm and level surface.
2. The load ratings are given in tonnes and apply 360 degrees.
3. Thethe load capacities take standards DIN 15019/2 and ISO 4305 into account (tilt angle 4.5°)
4. The weight of the load handling equipment (hooks, suspension gear) should be deducted from the load capacities.
5. The load ratings apply for the maximum undercarriage track width.
6. Load capacities must be limited or reduced in adverse conditions such as soft or uneven ground, slopes, wind, side loads, swinging loads, jolts or sudden stopping of loads, personnel and operators not experienced in handling loads.
7. Permissible cable pull per strand in crane mode for cable diameter 28 mm - 14,500 kg.
8. The load ratings apply to the SHWS boom (boom assembly as per operating instructions).
9. The load ratings apply for optimal boom assembly and pulley head with plastic rollers.
10. Load ratings for tilts of 2° and 4° are also available on request.
11. The load ratings given are for reference only. Please refer to the operating instructions for the relevant applicable load ratings.

7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

105 t 40 t

Table no.7700R-80/3504/105.0/08.10 SHWS 87

105 t 40 t 87° SH

Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5
		Main boom length 46.7 m						
Reach [m]	12.0	80.0						
	14.0	78.0	61.8					
	16.0	75.2	59.0	44.6				
	18.0	67.4	56.7	42.4				
	20.0	61.1	54.7	40.8	27.7			
	24.0		48.2	38.4	26.6	18.5	11.9	
	28.0		41.6	36.4	25.5	17.7	11.5	4.5
	32.0		36.6	34.2	24.5	17.0	11.0	4.2
	36.0			30.3	23.6	16.2	10.5	3.9
	40.0			27.2	22.7	15.5	10.0	3.6
	48.0				20.5	14.2	8.9	3.1
	56.0				16.6	13.2	8.1	2.7
	64.0					12.2	7.4	
	72.0						6.8	
	80.0							
	Number of falls	6	5	4	2	2	1	1

Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5
		Main boom length 52.3 m						
Reach [m]	12.0	76.7						
	14.0	73.3	57.0					
	16.0	69.3	54.3	40.7				
	18.0	63.7	52.0	38.7				
	20.0	58.8	49.8	37.2	25.5			
	24.0		44.5	34.8	24.3	17.4	11.2	
	28.0		39.6	32.8	23.2	16.7	10.9	4.5
	32.0		35.4	30.9	22.2	15.9	10.4	4.2
	36.0			28.1	21.3	15.1	9.8	3.9
	40.0			25.8	20.5	14.3	9.3	3.6
	48.0				18.7	12.9	8.2	3.0
	56.0					11.9	7.3	
	64.0					10.9	6.5	
	72.0						5.8	
	80.0							
	Number of falls	6	4	3	2	2	1	1

105 t 40 t 87° SH

Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5
		Main boom length 57.9 m						
Reach [m]	12.0	73.5						
	14.0	68.5	52.2					
	16.0	63.5	49.7	36.7				
	18.0	60.0	47.2	35.0				
	20.0	56.6	44.9	33.6	23.2			
	24.0	48.0	40.8	31.2	22.0	16.4		
	28.0		37.6	29.3	21.0	15.7	10.4	4.5
	32.0		34.3	27.6	20.0	14.8	9.8	4.3
	36.0			26.0	19.1	13.9	9.2	3.9
	40.0			24.4	18.2	13.0	8.6	3.5
	48.0				16.9	11.6	7.5	2.8
	56.0				16.0	10.6	6.5	
	64.0					9.6	5.7	
	72.0						4.9	
	76.0						4.3	
	Number of falls	6	4	3	2	2	1	1

Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5
		Main boom length 63.5 m						
Reach [m]	12.0	63.7						
	14.0	58.8	44.7					
	16.0	55.1	42.7					
	18.0	52.5	40.5	30.2				
	20.0	49.7	38.7	28.5	20.1			
	24.0	43.0	35.6	26.3	18.4	14.1		
	28.0		32.9	24.7	17.0	13.1	8.8	
	32.0		30.1	23.3	15.8	12.1	8.2	
	36.0			21.8	14.8	11.1	7.6	
	40.0			20.4	13.9	10.2	7.0	
	48.0				12.6	8.8	5.9	
	56.0				11.5	7.9	5.0	
	64.0					7.0	4.2	
	72.0						3.5	
	76.0						3.2	
	Number of falls	5	4	3	2	1	1	1

105 t 40 t 87° SH

Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5
		Main boom length 69.1 m						
Reach [m]	12.0	54.0						
	14.0	49.0						
	16.0	46.7	35.8					
	18.0	45.0	33.8	25.3				
	20.0	42.8	32.5	23.5	17.0			
	22.0	40.2	31.4	22.2	15.8			
	24.0	38.0	30.4	21.3	14.7	11.8		
	28.0		28.1	20.0	13.0	10.5	7.2	
	32.0		25.9	18.9	11.6	9.3	6.5	
	36.0			17.7	10.5	8.3	5.9	
	40.0			16.4	9.7	7.4	5.3	
	48.0				8.4	6.0	4.3	
	56.0				7.0	5.1	3.5	
	64.0					4.3	2.7	
	72.0							
	Number of falls	4	3	2	2	1	1	

Subject to change.

7700G Load ratings



Main SH boom
with tiltable WS fly boom



Table no. 7700R-80/3504/105.0/08.10 SHWS 82

105 t 40 t 82° SH		Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	14.0	93.1							86.7						
	16.0	85.3							81.3						
	18.0	75.6	67.4						72.2	66.0					
	20.0	66.9	63.3	51.3					64.5	60.7					
	24.0	53.0	52.6	45.9	33.0				52.4	50.6	45.8	31.5			
	28.0		43.3	42.3	31.8	21.2				42.5	40.7	30.6	20.5		
	32.0		36.7	35.8	30.5	20.4	13.1			36.1	35.0	29.6	19.9	13.0	
	36.0			30.9	29.2	19.6	12.5				30.4	28.5	19.2	12.5	
	40.0			27.0	25.9	18.9	11.9	5.6			26.5	25.4	18.5	11.9	5.2
	48.0				20.3	17.6	10.9	4.6				19.9	17.2	10.9	4.4
	56.0				16.4	15.5	10.0	3.8				16.1	15.2	10.0	3.7
	64.0					12.7	9.2	3.3					12.4	9.2	3.1
	72.0						8.5	2.7						8.5	2.6
	80.0														
	88.0														
	Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	1

105 t 40 t 82° SH		Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	16.0	77.3							73.4						
	18.0	68.8	64.5						65.5						
	20.0	62.0	58.2						59.2	55.6					
	24.0	51.7	48.7	45.7					49.5	46.5	43.7				
	28.0		41.7	39.1	29.5					39.9	37.5	28.2			
	32.0		35.6	34.1	28.6	19.4	12.9			34.5	32.7	27.1	18.3		
	36.0		30.7	29.8	27.8	18.8	12.5			30.1	28.7	26.1	17.5	11.5	
	40.0			26.1	24.9	18.1	12.1	4.8			25.4	23.8	16.7	11.0	4.4
	48.0			20.6	19.5	16.7	11.2	4.2			20.1	19.0	15.2	10.0	3.9
	56.0				15.7	14.8	10.3	3.7				15.3	13.8	9.1	3.6
	64.0					12.1	9.4	3.2					11.7	8.3	3.2
	72.0						8.8	2.7						7.7	2.7
	80.0						7.5							6.7	
	88.0														
	Number of falls	7	6	4	3	2	1	1	6	5	4	3	2	1	1

7700G Load ratings



Main SH boom
with tiltable WS fly boom



Table no. 7700R-80/3504/105.0/08.10 SHWS 82

105 t 40 t 82° SH	Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 16.0	69.6													
18.0	62.2							59.0						
20.0	56.3	52.9						53.4						
24.0	47.2	44.4	41.6					44.9	42.2	38.0				
28.0		38.2	35.8	27.0					36.4	34.0	24.5			
32.0		33.4	31.2	25.5	17.2				31.8	29.7	22.7	16.0		
36.0		29.6	27.6	24.3	16.1	10.6			28.2	26.3	21.3	15.0	10.1	
40.0			24.7	22.7	15.2	9.9	4.0			23.5	19.9	14.1	9.6	3.8
48.0			19.7	18.4	13.7	8.8	3.7			19.0	16.7	12.6	8.6	3.5
56.0				14.9	12.7	7.9	3.4				14.0	11.5	7.9	3.2
64.0					11.3	7.2	3.2					10.4	7.2	3.0
72.0						6.6	2.8					9.0	6.6	2.7
80.0						5.9							5.9	
88.0														
92.0														
Number of falls	6	5	4	2	2	1	1	6	4	3	2	2	1	1

105 t 40 t 82° SH	Main boom length 57.9 m							Main boom length 63.5 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 18.0	55.7													
20.0	50.5							47.7						
24.0	42.6	40.1						40.2	37.8					
28.0	36.8	34.5	32.2	22.0				34.8	32.6	29.2				
32.0		30.3	28.2	19.8	14.7				28.6	25.9	18.4			
36.0		26.9	25.0	18.3	13.8	9.5			25.4	23.0	16.6	12.3	8.4	
40.0		24.3	22.3	17.0	12.9	9.2			23.0	20.6	15.2	11.4	8.1	
48.0			18.3	15.0	11.5	8.5	3.3			17.1	12.8	9.8	7.2	
56.0				13.1	10.4	7.8	3.0				10.5	8.5	6.3	
64.0					9.4	7.2	2.8					7.2	5.4	
72.0					8.4	6.6	2.6					6.1	4.6	
80.0						5.9							3.8	
88.0														
92.0														
Number of falls	6	4	3	2	2	1	1	5	4	3	2	1	1	

105 t 40 t 82° SH	Main boom length 69.1 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 20.0	44.8						
24.0	37.9	35.6					
28.0	32.8	30.8	26.2				
32.0		27.0	23.6	16.9			
36.0		24.0	21.1	15.0	10.8		
40.0		21.6	19.0	13.4	9.8	7.0	
48.0			15.9	10.6	8.1	5.9	
56.0				8.0	6.6	4.8	
64.0					5.0	3.7	
72.0					3.7	2.6	
80.0							
Number of falls	4	3	2	2	1	1	

7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

105 t 40 t

Table no. 7700R-80/3504/105.0/08.10 SHWS 77

105 t 40 t 77° SH		Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	18.0	73.2							67.7						
	20.0	65.1							61.9						
	24.0	51.6	51.0						50.3	48.5					
	28.0		42.0	41.0						40.7	38.9				
	32.0		35.5	34.6	33.1					34.6	33.4	31.4			
	36.0		30.6	29.8	28.6	23.2				29.9	28.9	27.4	22.7		
	40.0			26.0	24.9	22.0	15.3				25.3	24.1	21.7	15.1	
	48.0			20.5	19.5	18.5	13.7	5.8			19.9	18.8	17.8	13.6	5.4
	56.0				15.7	14.8	12.0	5.0				15.1	14.2	12.0	4.7
	64.0					12.0	10.3	4.4					11.5	10.2	4.1
	72.0						8.8	3.8						8.5	3.6
	80.0						7.4	3.4						7.0	3.0
	88.0							3.0							
	96.0							2.6							
	Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	1

105 t 40 t 77° SH		Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	20.0	58.8													
	24.0	48.9	46.1						46.0						
	28.0	40.5	39.4	36.9					38.7	37.2					
	32.0		33.7	32.1	29.8					32.2	30.3				
	36.0		29.1	28.1	26.2					28.1	26.6	24.6			
	40.0		25.4	24.5	23.3	21.3				24.6	23.5	21.9	19.6		
	48.0			19.3	18.1	17.1	13.5	5.0			18.6	17.3	16.0	12.1	
	56.0				14.6	13.6	12.0	4.4				13.9	12.9	10.7	3.8
	64.0					11.0	10.0	3.9					10.4	9.2	3.5
	72.0					9.1	8.1	3.3					8.5	7.6	3.1
	80.0						6.6	2.7						6.1	2.7
	88.0														
	96.0														
	Number of falls	7	6	4	3	2	1	1	6	5	4	3	2	1	

7700G Load ratings



Main boom SH
with tiltable WS fly boom



Table no. 7700R-80/3504/105.0/08.10 SHWS 77

105 t 40 t 77° SH

Reach [m] \ Fly boom length	Main boom length 46.7 m							Main boom length 52.3 m						
	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
24.0	47.0							40.5						
28.0	36.9	35.1						34.8	32.6					
32.0		30.6	28.5					30.4	28.6	26.4				
36.0		27.1	25.2	23.1					25.3	23.4	20.7			
40.0		23.8	22.4	20.5	17.8				22.4	20.9	18.9			
48.0			17.9	16.5	15.0	10.7				16.8	15.2	13.7	10.6	
56.0				13.3	12.1	9.5	3.3				12.3	11.0	9.0	
64.0				10.8	9.8	8.5	3.1				10.1	8.9	7.6	
72.0					8.0	7.0	2.9					7.3	6.1	
80.0						5.6	2.7						4.9	
88.0													3.2	
96.0														
Number of falls	6	5	4	2	2	1	1	6	4	3	2	2	1	

105 t 40 t 77° SH

Reach [m] \ Fly boom length	Main boom length 57.9 m							Main boom length 63.5 m						
	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
24.0	37.9													
28.0	32.6							30.1						
32.0	28.5	26.6						26.3	24.5					
36.0		23.5	21.7						21.7	19.9				
40.0		21.1	19.3	17.4					19.4	17.7	15.7			
48.0			15.7	13.9	12.4	10.5				14.3	12.5	11.0	8.0	
56.0			13.0	11.3	9.9	8.6				11.8	10.1	8.7	7.2	
64.0				9.4	8.0	6.7					8.3	7.0	5.6	
72.0					6.5	5.3						5.6	4.3	
80.0						4.1							3.2	
88.0						3.2								
Number of falls	6	4	3	2	2	1		5	4	3	2	1	1	

105 t 40 t 77° SH

Reach [m] \ Fly boom length	Main boom length 69.1 m						
	18.7	29.9	41.1	52.3	63.5	74.7	91.5
28.0	27.6						
32.0	24.2	22.5					
36.0	21.5	19.8	18.0				
40.0		17.7	16.0				
48.0			12.9	11.1	9.7		
56.0			10.6	8.9	7.6		
64.0				7.3	5.9		
72.0					4.7		
80.0					3.6		
Number of falls	4	3	2	2	1		

7700G Load ratings



Main boom SH
with tiltable WS fly boom



105 t 40 t 67° SH	Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 24.0	48.7													
28.0	40.1							38.3						
32.0		33.3						32.3	31.7					
36.0		28.7	27.7						27.3					
40.0		25.1	24.2						23.9	22.8				
48.0			19.0	17.8	16.8					17.9	16.7			
56.0				14.3	13.3	10.0					13.3	12.3	9.4	
64.0					10.8	8.9	3.0				10.9	9.9	8.4	
72.0					8.8	7.9	2.8					8.0	7.1	
80.0						6.4	2.6						5.6	
88.0														
96.0														
Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	

105 t 40 t 67° SH	Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 28.0	36.5													
32.0	30.9							29.0						
36.0		25.9						25.0	24.2					
40.0		22.6	21.5						21.1					
48.0			16.8	15.5						15.6				
56.0			13.6	12.4	11.3					12.5	11.2	10.1		
64.0				10.0	9.0	7.9					9.0	8.0	6.8	
72.0					7.3	6.2						6.4	5.3	
80.0						4.9						5.0	4.1	
88.0						3.8							3.1	
92.0													2.7	
Number of falls	7	6	4	3	2	1		6	5	4	3	2	1	

Table no. 7700R-80/3504/105.0/08.10 SHWS 67



Main boom SH
with tiltable WS fly boom



105 t 40 t 67° SH	Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 34.0	25.2													
38.0	21.8							19.8						
40.0		19.6												
48.0		15.4	14.3						13.9	12.6				
56.0			11.4	10.1						10.1	8.6			
64.0				8.1	7.0	5.7					6.8	5.6		
72.0				6.5	5.5	4.4					5.4	4.3	3.0	
80.0					4.3	3.2						3.2		
88.0														
Number of falls	6	5	4	2	2	1		6	4	3	2	2	1	

7700G Load ratings



Main boom SH
with tiltable WS fly boom



105 t 40 t 67° SH

Reach [m] / Fly boom length	Main boom length 57.9 m							Main boom length 63.5 m						
	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
38.0	17.9													
40.0	16.8							14.4						
48.0		12.4							10.4					
56.0			8.8	7.0					8.4	7.0				
64.0			7.1	5.5	4.2					5.6	4.0			
72.0				4.3	3.0						2.9			
80.0														
Number of falls	6	5	4	2	2	1		5	4	3	2			

105 t 40 t 67° SH

Reach [m] / Fly boom length	Main boom length 69.1 m						
	18.7	29.9	41.1	52.3	63.5	74.7	91.5
42.0	11.3						
50.0		8.0					
58.0		6.4	5.0				
60.0			4.7				
66.0			3.8				
70.0							
80.0							
Number of falls	6	3	2				

Table no. 7700R-80/3504/105.0/08.10 SHWS 67



Main boom SH
with tiltable WS fly boom



105 t 40 t 50° SH

Reach [m] / Fly boom length	Main boom length 24.3 m							Main boom length 29.9 m						
	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
34.0	28.4													
38.0								22.6						
42.0		21.1												
50.0									15.1					
58.0			12.8							11.3				
66.0				9.4							8.1			
74.0					6.8							5.5		
82.0						4.5						4.3	3.2	
90.0						3.5								
94.0														
Number of falls	7	7	5	3	2	2		7	6	5	3	2	1	

105 t 40 t 50° SH

Reach [m] / Fly boom length	Main boom length 35.5 m							Main boom length 41.1 m						
	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
42.0	17.9													
50.0		13.5												
58.0			9.9						8.7					
66.0										6.5				
74.0				5.3							4.0			
82.0					3.2									
86.0					2.8									
Number of falls	7	6	4	3	2			6	5	4	3			

Table no. 7700R-80/3504/105.0/08.10 SHWS 50

7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

105 t 40 t

105 t 40 t 50° SH		Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	48.0	11.2													
	56.0														
	64.0									4.8					
	72.0			4.2											
	78.0														
	Number of falls	6		4						4					

105 t 40 t 50° SH		Main boom length 57.9 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	56.0	5.0						
	64.0		3.0					
	68.0		2.6					
	Number of falls	6	4					

Table no. 7700R-80/3504/105.0/0810 SHWS 50

7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

135 t 40 t

135 t 40 t 87° SH		Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	10.0	95.0							92.5						
	12.0	91.5	86.3						89.4	80.1					
	14.0	88.6	81.0						86.7	76.8					
	16.0	86.0	76.2	61.4					83.7	73.1	57.1				
	18.0	78.3	71.9	58.2	36.6				75.5	69.5	54.7	33.8			
	20.0	68.2	65.6	55.2	35.8	23.7			67.0	65.8	52.4	33.1	22.7		
	24.0		54.2	50.0	34.0	22.8	14.5			54.6	48.1	31.8	21.7	14.1	
	28.0		44.4	43.9	32.3	21.8	13.9	5.9		44.4	42.7	30.6	20.8	13.6	5.1
	32.0		36.9	37.1	30.7	20.8	13.3	5.6		36.9	36.6	29.5	20.0	13.0	4.8
	36.0			31.8	29.4	19.9	12.7	5.4			31.7	28.5	19.3	12.4	4.6
	40.0			27.5	27.1	19.0	12.1	5.1			27.5	26.8	18.6	11.9	4.4
	48.0				20.8	17.5	11.1	4.6				20.8	17.4	11.0	4.0
	56.0					13.4	7.6	16.3					16.0	10.2	3.5
	64.0					12.7	9.6	3.4					12.7	9.5	3.1
	72.0						8.9	2.8						8.9	2.6
	80.0														
	84.0														
	Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	1

Table no. 7700R-80/3504/135.0/08.10 SHWS 87

135 t 40 t 87° SH		Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	10.0	90.0													
	12.0	87.2							83.6						
	14.0	84.7	72.7						81.4	67.3					
	16.0	82.0	70.0	52.8					79.0	64.5	48.7				
	18.0	79.0	67.0	51.2	31.0				76.5	61.9	46.8	29.5			
	20.0	75.3	63.9	49.5	30.4	21.7			73.7	59.3	45.2	29.1	20.3		
	24.0		57.5	46.2	29.5	20.6	13.8			54.0	42.3	28.0	19.5	12.8	
	28.0		48.5	43.1	28.8	19.8	13.2	4.3		47.2	39.7	27.2	18.7	12.4	4.4
	32.0		40.3	40.1	28.3	19.2	12.7	4.0		40.3	37.2	26.4	18.1	11.9	4.1
	36.0			34.6	27.7	18.7	12.2	3.8			33.3	25.6	17.4	11.4	3.9
	40.0			29.9	27.1	18.2	11.7	3.6			29.8	24.9	16.9	10.8	3.6
	48.0				22.7	17.2	10.9	3.3				22.0	15.7	9.9	3.2
	52.0				20.1	16.7	10.5	3.2				20.1	15.2	9.5	3.0
	60.0					15.7	9.8	2.9					14.2	8.7	2.7
	68.0						9.3	2.6						8.2	2.5
	72.0						9.1							7.9	
	80.0														
	88.0														
	Number of falls	7	6	4	3	2	1	1	6	5	4	3	2	1	1

7700G Load ratings



Main boom SH
with tiltable WS fly boom



Table no. 7700R-80/3504/135.0/08.10 SHWS 87

135 t 40 t 87° SH		Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	10.0														
	12.0	80.0							76.7						
	14.0	78.0	61.8						73.3	57.0					
	16.0	76.0	59.0	44.6					68.3	54.3	40.7				
	18.0	74.0	56.7	42.4					67.0	52.0	38.7	25.8			
	20.0	72.0	54.7	40.8	27.7				64.9	49.8	37.2	25.5			
	24.0		50.4	38.4	26.6	18.5				45.6	34.8	24.3			
	28.0		45.8	36.4	25.5	17.7	11.5	4.5		39.9	31.9	23.2			
	32.0		42.1	34.3	24.5	17.0	11.0	4.2		38.9	30.9	22.2			
	36.0			31.9	23.6	16.2	10.5	3.9			29.0	21.3			
	40.0			29.7	22.7	15.5	10.0	3.6			27.0	20.5			
	48.0				21.3	14.2	8.9	3.1				19.1	12.9	8.2	3.0
	52.0				20.7	13.7	8.3	2.9				18.5	12.4	7.7	2.7
	60.0					12.7	7.7	2.6					11.4	6.9	
	68.0						7.1							6.2	
	76.0						6.4							5.4	
	84.0														
	Number of falls	6	5	4	2	2	1	1	6	5	3	2	2	1	1

135 t 40 t 87° SH		Main boom length 57.9 m							Main boom length 63.5 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	10.0														
	12.0	73.5							63.7						
	14.0	68.5	52.2						58.8	44.7					
	16.0	63.5	49.7						55.1	42.7					
	18.0	60.0	47.2						52.5	40.5	30.2				
	20.0	57.8	44.9	33.6	23.2				50.3	38.7	28.5	20.1			
	24.0	48.0	40.8	31.2	22.0	16.4			43.0	35.6	26.3	18.4	14.1		
	28.0		37.6	29.3	21.0	15.7	10.4	4.5		32.9	24.7	17.0	13.1	8.8	
	32.0		34.4	27.6	20.0	14.8	9.8	4.3		30.1	23.3	15.8	12.1	8.2	
	36.0			26.0	19.1	13.9	9.2	3.9			21.8	14.8	11.1	7.6	
	40.0			24.4	18.2	13.0	8.6	3.5			20.4	13.9	10.2	7.0	
	48.0				16.9	11.6	7.5	2.8				12.6	8.8	5.9	
	52.0				16.4	11.0	7.0	2.6				12.1	8.3	5.4	
	60.0					10.2	6.1						7.4	4.6	
	68.0					8.8	5.3						6.3	3.9	
	76.0						4.3							3.2	
	84.0														
	Number of falls	6	4	3	2	2	1	1	5	4	3	2	1	1	

135 t 40 t 87° SH	Main boom length 69.1 m							Main boom length 74.7 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 10.0														
12.0	54.0							44.0						
14.0	49.0							42.5						
16.0	46.7	35.8						40.5	31.3					
18.0	45.0	33.8	25.3					38.7	29.8	22.3				
20.0	42.8	32.5	23.5	17.0				37.5	28.3	21.0	15.0			
24.0	38.0	30.4	21.3	14.7	11.8			35.0	25.8	18.8	13.0	9.6		
28.0		28.1	20.0	13.0	10.5	7.2			24.6	17.2	11.6	8.7	6.3	
32.0		25.9	18.9	11.6	9.3	6.5			23.7	16.0	10.5	7.9	5.9	
36.0			17.7	10.5	8.3	5.9				15.0	9.6	7.2	5.4	
40.0			16.4	9.7	7.4	5.3				14.2	8.8	6.6	4.8	
48.0				8.4	6.0	4.3					7.3	5.4	3.7	
52.0				7.8	5.5	3.9					6.6	4.9	3.1	
60.0					4.7	3.1						3.9		
68.0					3.9							2.8		
76.0														
Number of falls	6	4	3	2	2	1	1	5	4	3	2	1	1	

EN 360°

Main SH boom
with tiltable WS fly boom

135 t 40 t

135 t 40 t 82° SH	Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 13.0	95.0													
15.0	91.0							93.0						
17.0	87.0	70.0						87.4						
19.0	84.0	65.2						81.4	65.2					
20.0	79.9	63.3	51.3					77.5	63.3					
24.0	60.0	57.3	45.9	33.0				61.1	57.3	46.3	31.5			
28.0		49.5	42.3	31.8	21.2				49.5	43.5	30.6	20.5		
32.0		40.8	39.5	30.5	20.4	13.1			40.8	40.4	29.6	19.9	13.0	
36.0			34.6	29.2	19.6	12.5				35.6	28.5	19.2	12.5	
40.0			29.8	28.0	18.9	11.9	5.6			30.9	27.5	18.5	11.9	5.2
48.0				22.3	17.6	10.9	4.6				22.3	17.2	10.9	4.4
56.0				17.4	16.3	10.0	3.8				17.4	15.9	10.0	3.7
64.0					13.6	9.2	3.3					13.6	9.2	3.1
72.0						8.5	2.7						8.5	2.6
80.0														
88.0														
Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	1

135 t 40 t 82° SH	Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m] 15.0	95.0													
19.0	78.8	67.6						75.4	64.4					
20.0	75.0	67.2						71.8	64.4					
24.0	62.3	59.1	46.7					60.0	58.5	44.3				
28.0		50.8	44.6	30.0					48.9	41.6	28.2			
32.0		43.2	41.2	29.5					42.2	38.4	27.1	18.3		
36.0		37.4	36.5	28.6	19.4	12.9			36.8	34.9	26.1	17.5	11.5	
40.0			32.0	27.8	18.8	12.5				31.5	25.1	16.7	11.0	4.4
48.0			25.2	26.1	17.4	11.6	4.4			24.9	22.9	15.2	10.0	3.9
56.0				21.9	16.1	10.7	3.9				19.3	14.1	9.1	3.6
64.0					15.0	9.8	3.5					13.4	8.3	3.2
72.0					13.7	9.1	3.0					10.2	7.7	2.7
80.0						8.6	2.5						7.2	
88.0														
92.0														
Number of falls	7	6	4	3	2	1	1	6	5	4	3	2	1	1

Table no. 7700R-80/3504/135.0/08.10 SHWS 82

7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

135 t 40 t

Table no. 7700R-80/3504/135.0/08.10 SHWS 82

135 t 40 t 82° SH

Reach [m]	Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
16.0	84.7													
18.0	75.8							72.3						
20.0	68.6	61.6						65.5						
24.0	57.8	54.0	42.0					55.2	50.6	38.2				
28.0		47.0	38.5	27.0					44.9	35.6	24.5			
32.0		41.3	35.7	25.5	17.2				39.6	32.8	22.7	16.0		
36.0		36.2	33.2	24.3	16.1	10.6			35.0	30.5	21.3	15.0	10.1	
40.0			30.9	23.3	15.2	9.9	4.0			28.1	20.2	14.1	9.6	3.8
48.0			24.6	21.4	13.7	8.8	3.7			22.9	18.2	12.6	8.6	3.5
56.0				19.1	12.7	7.9	3.4				16.1	11.5	7.9	3.2
64.0					12.0	7.2	3.2					10.7	7.2	3.0
72.0						6.6	2.8					9.1	6.6	2.7
80.0						5.9	2.5						5.9	2.5
92.0														
Number of falls	6	5	4	2	2	1	1	6	5	3	2	2	1	1

135 t 40 t 82° SH

Reach [m]	Main boom length 57.9 m							Main boom length 63.5 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
18.0	68.7													
20.0	62.4							57.4						
24.0	52.7	47.1						48.6	42.3					
28.0	45.8	42.8	32.6	22.0				43.1	38.0	29.4				
32.0		37.9	29.9	19.8	14.7				33.7	26.8	18.4			
36.0		33.8	27.7	18.3	13.8	9.5			30.6	24.4	16.6	12.3	8.4	
40.0		30.6	25.4	17.0	12.9	9.2			28.0	22.2	15.2	11.4	8.1	
48.0			21.2	15.0	11.5	8.5	3.3			18.5	12.8	9.8	7.2	
56.0				13.1	10.4	7.8	3.0				10.5	8.5	6.3	
64.0					9.4	7.2	2.8					7.2	5.4	
72.0					8.4	6.6	2.6					6.1	4.6	
80.0						6.1							3.9	
88.0														
92.0														
Number of falls	6	4	3	2	2	1	1	5	4	3	2	1	1	

135 t 40 t 82° SH

Reach [m]	Main boom length 69.1 m							Main boom length 74.7 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
20.0	52.2							42.0						
24.0	44.5	37.4						38.0	31.0					
28.0	40.5	33.2	26.2					34.2	28.4	21.9				
32.0		29.6	23.6	16.9					26.1	20.2	14.0			
36.0		27.3	21.1	15.0	10.8				24.1	18.8	13.0	9.5		
40.0		25.3	19.0	13.4	9.8	7.0			22.3	17.4	12.0	8.8	5.8	
48.0			15.9	10.6	8.1	5.9				14.9	10.0	7.3	4.8	
56.0				8.0	6.6	4.8					8.0	6.0	3.6	
64.0					5.0	3.7					5.5	4.7	2.5	
72.0					3.7	2.6						3.2		
76.0														
Number of falls	4	3	2	2	1	1		4	3	2	2	1	1	

7700G Load ratings



Main boom SH
with tiltable WS fly boom



Table no. 7700R-80/3504/135.0/08.10 SHWS 77

135 t 40 t 77° SH		Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	17.0	93.5													
	19.0	83.5							79.4						
	20.0	78.2							74.9						
	24.0	62.2	61.5						61.0	59.0					
	28.0		50.8	47.6						49.6	46.6				
	32.0		43.1	42.2	33.1					42.2	41.0	31.5			
	36.0		37.3	36.5	31.3	23.2				36.5	35.6	30.3	22.6		
	40.0			32.0	29.7	22.0	15.3				31.2	29.2	21.7	15.1	
	48.0			24.2	23.9	19.7	13.7	5.8			24.2	23.5	19.6	13.6	5.4
	56.0				18.6	17.4	12.0	5.0				18.7	17.5	12.0	4.7
	64.0					14.5	10.3	4.4					14.5	10.3	4.1
	72.0						8.8	3.8						8.8	3.6
	80.0						7.8	3.4						7.7	3.0
	88.0							3.0							2.5
	96.0							2.6							
	Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	1

135 t 40 t 77° SH		Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	19.0	75.4													
	20.0	71.7													
	24.0	59.8	56.5						56.7						
	28.0	49.4	48.4	45.7					47.7	46.1					
	32.0		41.3	39.9	30.0					39.9	38.0				
	36.0		35.7	34.7	29.3					34.8	33.3	28.7			
	40.0		31.4	30.5	28.6	21.3				30.5	29.5	27.6	19.6		
	48.0			24.2	23.0	19.4	13.5	5.0			23.5	22.2	17.7	12.1	
	56.0				18.7	17.6	12.0	4.4				18.0	15.7	10.7	3.8
	64.0					14.6	10.6	3.9					13.5	9.5	3.5
	72.0					12.2	9.1	3.3					11.7	8.4	3.1
	80.0						7.7	2.7						7.3	2.7
	88.0														
	96.0														
	Number of falls	7	6	4	3	2	1	1	6	5	4	3	2	1	1

7700G Load ratings



Main boom SH
with tiltable WS fly boom



Table no. 7700R-80/3504/135.0/08.10 SHWS 77

135 t 40 t 77° SH		Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	22.0	58.3													
	26.0	49.5	47.1						47.0						
	32.0		38.4	36.0					38.3	36.3	33.8				
	36.0		33.8	31.9	28.0					32.1	30.1	24.3			
	40.0		29.7	28.6	26.5	17.8				28.5	27.0	23.4			
	48.0			22.7	21.5	15.9	10.7				21.8	20.0	15.2	10.6	
	56.0				17.4	13.9	9.5	3.3				16.6	13.2	9.4	
	64.0				14.4	12.5	8.5	3.1				13.8	11.8	8.3	
	72.0					11.2	7.6	2.9					10.6	7.4	
	80.0						6.9	2.7						6.8	
	88.0							2.5						6.1	
	96.0														
	Number of falls	6	5	4	2	2	1	1	6	5	3	2	2	1	

135 t 40 t 77° SH		Main boom length 57.9 m							Main boom length 63.5 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	24.0	47.9													
	28.0	41.3							38.7						
	36.0		30.4	28.3						28.4	26.4				
	40.0		27.3	25.4	20.4					25.5	23.6	18.7			
	48.0			20.8	18.5	14.5	10.5				19.4	16.2	12.4	8.0	
	56.0			17.1	15.7	12.6	9.2				16.1	13.4	10.5	7.2	
	64.0				13.1	11.1	8.1					10.7	9.0	6.2	
	72.0					10.0	7.2						7.9	5.4	
	80.0						6.6							4.8	
	88.0						6.1								
	92.0														
	Number of falls	6	4	3	2	2	1		5	4	3	2	1	1	

135 t 40 t 77° SH		Main boom length 69.1 m							Main boom length 74.7 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	28.0	36.1							33.4						
	32.0	31.7	29.8						29.4						
	36.0	28.4	26.5	24.5					26.2	24.4					
	40.0		23.8	21.9						21.9	19.7				
	48.0			18.0	14.5	10.4				18.1	16.4	11.0			
	56.0			15.1	11.3	8.4					13.7	9.0			
	64.0				8.7	6.9						7.0			
	72.0					5.8									
	80.0					4.8									
	84.0														
	Number of falls	4	3	2	2	1			4	3	2	2			

7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

135 t 40 t

Table no. 7700R-80/3504/135.0/08.10 SHWS 67

135 t 40 t 67° SH		Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	24.0	59.3													
	28.0	48.9							47.2						
	32.0		40.9						39.9	39.3					
	36.0		35.4	34.4						34.0					
	40.0		31.0	30.1						29.8	28.8				
	48.0			23.9	22.7	18.4					22.8	21.6			
	56.0				18.4	15.6	10.0					17.5	15.5	10.3	
	58.0				17.6	15.0	9.8					16.6	14.8	10.0	
	64.0					13.7	8.9	3.0				14.4	13.0	9.2	
	72.0					12.0	7.9	2.8					11.2	7.9	
	80.0						7.3	2.6						7.2	
	88.0							2.5							
	96.0														
	Number of falls	7	7	5	3	2	2	1	7	6	5	3	2	1	

135 t 40 t 67° SH		Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	28.0	45.4													
	32.0	38.5							36.7						
	36.0		32.6						31.6	30.9					
	40.0		28.5	27.4						27.1					
	48.0			21.7	20.4						20.4				
	56.0			17.7	16.5	15.4					16.6	15.3	14.1		
	64.0				13.6	12.4	9.7					12.6	11.5	9.6	
	80.0						7.1						7.8	6.6	
	88.0						6.4							5.6	
	96.0														
	Number of falls	7	6	4	3	2	1		6	5	4	3	2	1	

7700G Load ratings



Main boom SH
with tiltable WS fly boom



Table no. 7700R-80/3504/135.0/08.10 SHWS 67

135 t 40 t 67° SH		Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	34.0	32.3													
	38.0	28.1							26.3						
	40.0		25.6												
	44.0		22.7							21.1					
	48.0		20.3	19.2						18.8	17.6				
	52.0			17.2	15.8					16.9	15.8				
	60.0			14.2	12.8	11.7					13.0	11.6	10.3		
	68.0				10.6	9.5	8.4					9.5	8.4	5.9	
	76.0					7.8	6.8						6.8	5.3	
	84.0						5.5						5.6	4.5	
	92.0						4.4							3.5	
	96.0														
	Number of falls	6	5	4	2	2	1		6	5	3	2	2	1	

135 t 40 t 67° SH		Main boom length 57.9 m							Main boom length 63.5 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	38.0	24.5													
	40.0	22.9							20.6						
	44.0		19.5						18.3						
	48.0		17.4							15.5					
	52.0		15.6	14.4						14.0	12.6				
	60.0			11.8	10.3						10.3	8.7			
	68.0				8.4	7.2						7.0	5.3		
	76.0				7.0	5.8						5.7	4.2		
	84.0					4.7							3.3		
	92.0														
	Number of falls	6	4	3	2	2			5	4	3	2	1		

135 t 40 t 67° SH		Main boom length 69.1 m							Main boom length 74.7 m						
Fly boom length		18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
Reach [m]	42.0	17.2													
	50.0		12.9						12.0	10.8					
	58.0		10.8	9.2						8.9	7.4				
	64.0			8.0	6.3						6.3				
	72.0				5.0						5.2				
	80.0				4.0										
	Number of falls	4	3	2	2				4	3	2				

7700G Load ratings

EN 360°



Main boom SH
with tiltable WS fly boom

135 t 40 t

Table no. 7700R-80/3504/135.0/08.10 SHWS 50

135 t 40 t 50° SH

Reach [m]	Main boom length 24.3 m							Main boom length 29.9 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
34.0	35.5													
38.0								28.9						
42.0		26.7												
50.0									19.8					
58.0			16.7							15.3				
66.0				12.9							11.5			
74.0					9.8							8.6		
82.0						7.3						7.1	6.0	
90.0						5.6							4.7	
98.0														
102.0														
Number of falls	7	7	5	3	2	2		7	6	5	3	2	1	

135 t 40 t 50° SH

Reach [m]	Main boom length 35.5 m							Main boom length 41.1 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
42.0	23.5													
50.0		18.1												
58.0			13.8						12.7					
66.0										10.0				
74.0				8.4							7.0			
82.0					6.0							4.4		
90.0						3.9								
98.0						3.0								
Number of falls	7	6	4	3	2	1			5	4	3	2		

135 t 40 t 50° SH

Reach [m]	Main boom length 46.7 m							Main boom length 52.3 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5	18.7	29.9	41.1	52.3	63.5	74.7	91.5
48.0	16.0													
56.0														
64.0									8.3					
72.0			7.4							5.7				
80.0				4.8										
82.0				4.5										
Number of falls	6		4	2					5	3				

135 t 40 t 50° SH

Reach [m]	Main boom length 57.9 m						
Fly boom length	18.7	29.9	41.1	52.3	63.5	74.7	91.5
56.0	9.1						
58.0	8.6						
60.0							
62.0							
64.0		6.6					
66.0		6.2					
68.0		5.9					
70.0							
Number of falls	6	4					

7700G Boom configuration

Main boom SH

		Main boom													
Boom length [m]		18.7	24.3	29.9	35.5	41.1	46.7	52.3	57.9	63.5	69.1	74.7	80.3	85.9	91.5
Lower SH boom section type 2409	7.0 m	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SH boom section type 2409-V	5.6 m	1	0	1	0	1	0	1	0	1	0	1	0	1	0
SH boom section type 2409-V	11.2 m	0	1	1	2	2	2	2	2	2	2	2	2	2	2
SH boom section type 2409	11.2 m	0	0	0	0	0	1	1	2	2	3	3	4	4	5
Conical SH boom section type 2409	4.6 m	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T300/200 pulley head	1.5 m	1	1	1	1	1	1	1	1	1	1	1	1	1	1
S42.1 auxiliary boom (optional)	42.0 t	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Main boom SHLH

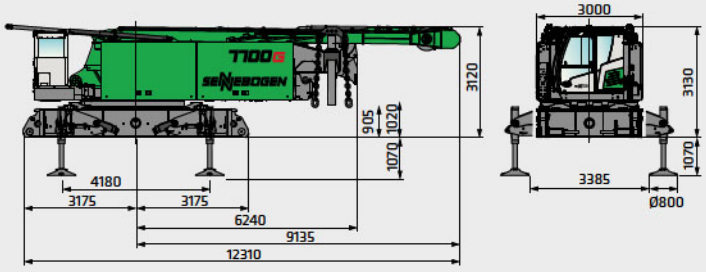
		Main boom								
Boom length [m]		69.1	74.7	80.3	85.9	91.5	97.1	102.7	108.3	113.9
Lower SH boom section type 2409	7.0 m	1	1	1	1	1	1	1	1	1
SH boom section type 2409-V	5.6 m	1	1	1	1	1	1	1	1	1
SH boom section type 2409-V	11.2 m	2	2	2	2	2	2	2	2	2
SH boom section type 2409	11.2 m	2	2	2	2	2	2	2	2	2
Conical SH boom section type 2409	4.6 m	1	1	1	1	1	1	1	1	1
LH boom section type 2002	5.6 m	0	1	0	1	0	1	0	1	0
LH boom section type 2002	11.2 m	0	0	1	1	2	2	3	3	4
LH/T110 head piece type 2002	7.1 m	1	1	1	1	1	1	1	1	1
S42.1 auxiliary boom (optional)	42.0 t	x	x	x	x	x	x	x	x	x

SHWS tiltable jib (Main boom SH with tiltable WS fly boom)

		Main boom										Fly boom													
Boom length [m]		24.3	29.9	35.5	41.1	46.7	52.3	57.9	63.5	69.1	74.7	18.7	24.3	29.9	35.5	41.1	46.7	52.3	57.9	63.5	69.1	74.7	80.3	85.9	91.5
Lower SH boom section type 2409	7.0 m	1	1	1	1	1	1	1	1	1	1														
SH boom section type 2409-V	5.6 m	0	1	0	1	0	1	0	1	0	1														
SH boom section type 2409-V	11.2 m	1	1	2	2	2	2	2	2	2	2														
SH boom section type 2409	11.2 m	0	0	0	0	1	1	2	2	3	3														
Conical SH boom section type 2409	4.6 m	1	1	1	1	1	1	1	1	1	1														
T300/200 pulley head	1.5 m	1	1	1	1	1	1	1	1	1	1														
LH fly boom lower section type 2002	11.6 m											1	1	1	1	1	1	1	1	1	1	1	1	1	1
LH boom section type 2002	5.6 m											0	1	0	1	0	1	0	1	0	1	0	1	0	1
LH boom section type 2002	11.2 m											0	0	1	1	2	2	3	3	4	4	5	5	6	6
LH/T110 head piece type 2002	7.1 m											1	1	1	1	1	1	1	1	1	1	1	1	1	1
S42.1 auxiliary boom (optional)	42 t											x	x	x	x	x	x	x	x	x	x	x	x	x	x

Combination options											
Fly boom length	18.7 m	x	x	x	x	x	x	x	x	x	x
	24.3 m	x	x	x	x	x	x	x	x	x	x
	29.9 m	x	x	x	x	x	x	x	x	x	x
	35.5 m	x	x	x	x	x	x	x	x	x	x
	41.1 m	x	x	x	x	x	x	x	x	x	x
	46.7 m	x	x	x	x	x	x	x	x	x	x
	52.3 m	x	x	x	x	x	x	x	x	x	x
	57.9 m	x	x	x	x	x	x	x	x	x	x
	63.5 m	x	x	x	x	x	x	x	x	x	x
	69.1 m	x	x	x	x	x	x	x	x	x	x
	74.7 m	x	x	x	x	x	x	x	x	x	x
	80.3 m	x	x	x	x	x	x	x	x	x	
	85.9 m	x	x	x	x	x	x	x	x		
	91.5 m	x	x	x	x	x	x	x			

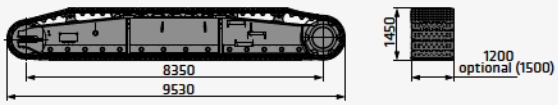
7100G Transport dimensions and weights



Basic machine without lower boom section

55 t incl. hoisting gear I + II, 650 m hoist cable, ballast support

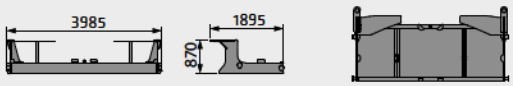
46 t without hoisting gears, without ballast support



Crawler drive: **2 x**

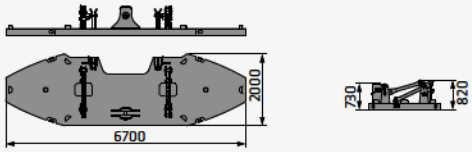
1200 mm (option: 1500 mm) flat track shoes

Weight: 23000 kg (option 1500 mm: 24500 kg)



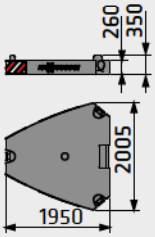
Console undercarriage ballast

Weight: 900 kg **2 x**



Ballast base plate

Weight: 15000 kg **1 x**



Counter weight

Weight: 5000 kg

Uppercarriage ballast

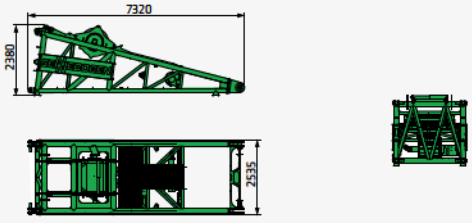
85 t **14 x**

105 t **18 x**

135 t **24 x**

Undercarriage ballast

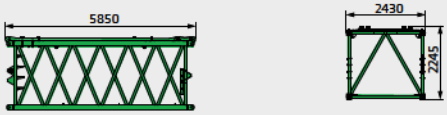
40 t **8 x**



SH boom lower section 7 m type 2409

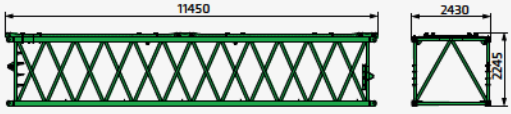
Weight: 7500 kg (incl. shifting winch WS and cable)

4700 kg (without shifting winch WS and cable) **Width:** 2460 mm



5.6 m SH boom section type 2409-V with SH/SHWS guying)

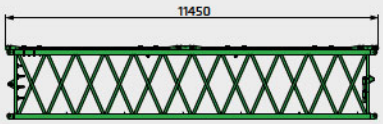
Weight: 2080 / 2280 kg

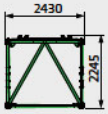


11.2 m SH boom section type 2409 with SH/SHWS guying)

Weight: 3400 / 3800 kg

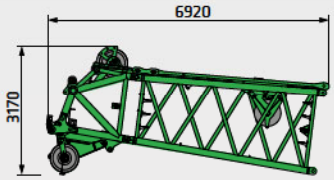
7700G Transport dimensions and weights





11.2 m SH boom section type 2409-V with SH/SHWS guying)

Weight: 3780 / 4180 kg

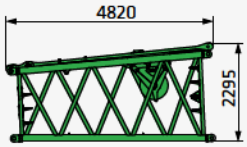


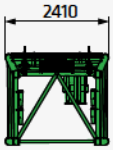


6.1 m SH boom head piece type 2409 (with guying)
= 4.6 m SH cone + 1.5 m T300 pulley head

Weight: max. 5500 kg (incl. Roller block)

Width: 2410 mm

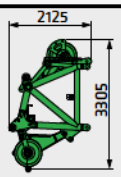




4.6 m SH boom cone type 2409 (with guying)

Weight: 2100 kg (incl. Roller block)

Width: 2410 mm

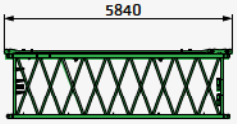


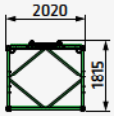


1.5 m T300 pulley head (with guying)

Weight: 3400 kg

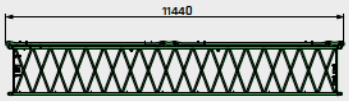
Width: 2200 mm

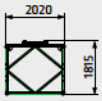




5.6 m LH boom section type 2002 (with guying)

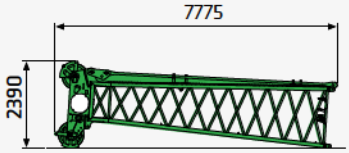
Weight: 970 kg





11.2 m LH boom section type 2002 (with guying)

Weight: 1750 kg

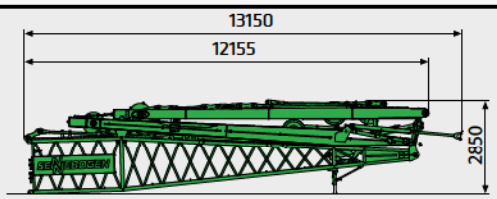




7.1 m LH boom head piece type 2002 (with guying)

Weight: 1940 kg

Width: 2010 mm

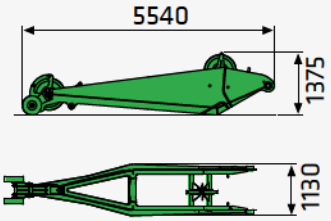




11.6 m WS lower boom section type 2002 (with two guying frames)

Weight: 9100 kg

Width: 2440 mm

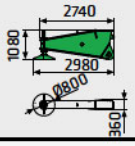


S42.1 auxiliary boom (42 t)

Weight: 1300 kg

Load capacity: 42.0 t

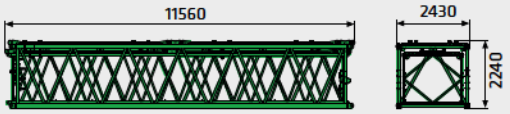
7700G Transport measurements and weights



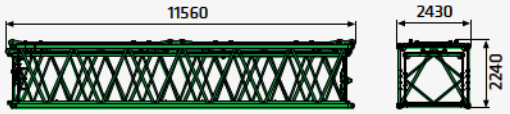
Set-up aid for long booms
Weight: 1250 kg
2 x



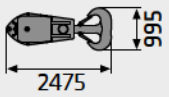
5.6 m SH boom section type 2409-V incl. 5.6 m LH type 2002 with guying SH/SHWS
Weight: 3050/3250 kg



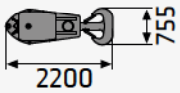
11.2 m SH boom section type 2409-V incl. 11.2 m LH type 2002 with guying SH/SHWS
Weight: 5530/5930 kg



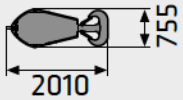
11.2 m SH boom section type 2409 incl. 11.2 m LH type 2002 with guying SH/SHWS
Weight: 5150/5550 kg



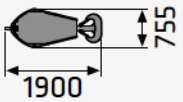
300 t hook block - 11 rollers
Weight: 3300/4500 kg
Width: 1240/1470 mm



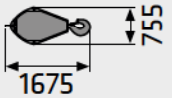
200 t hook block - 7 rollers
Weight: 1800/3000/4200 kg
Width: 940/1200/1460 mm



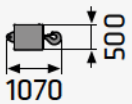
150 t hook block - 5 rollers
Weight: 1600/2800/4000 kg
Width: 940/1200/1460 mm



100 t hook block - 3 rollers
Weight: 1400/2200/3000 kg
Width: 540/720/900 mm

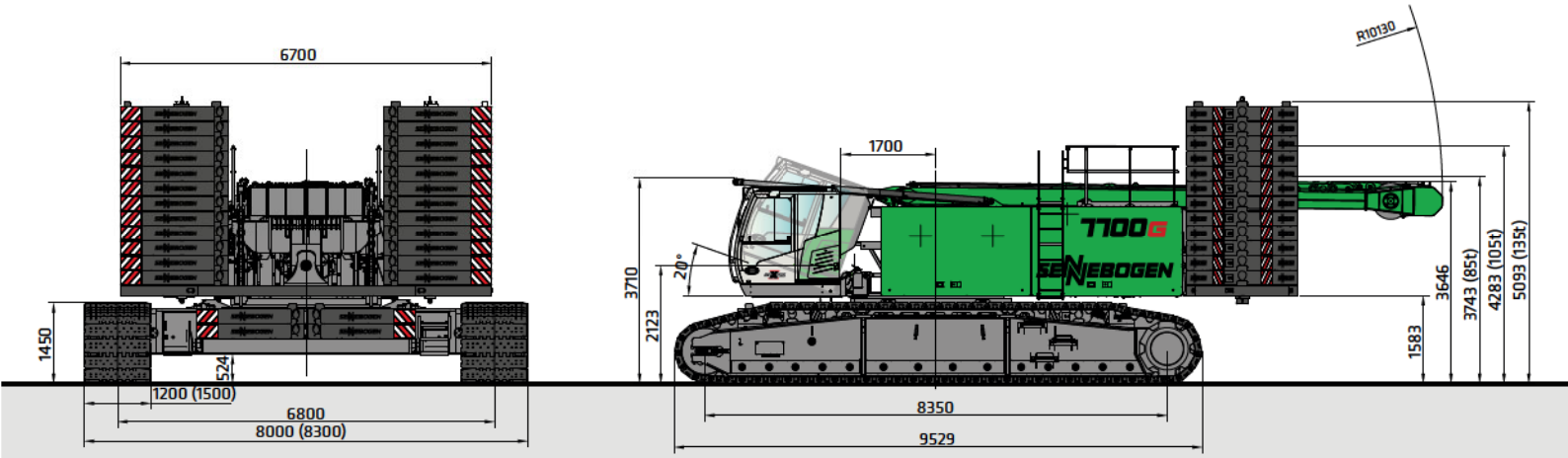


50 t hook block - 1 roller
Weight: 1000/1800 kg
Width: 460/570 mm

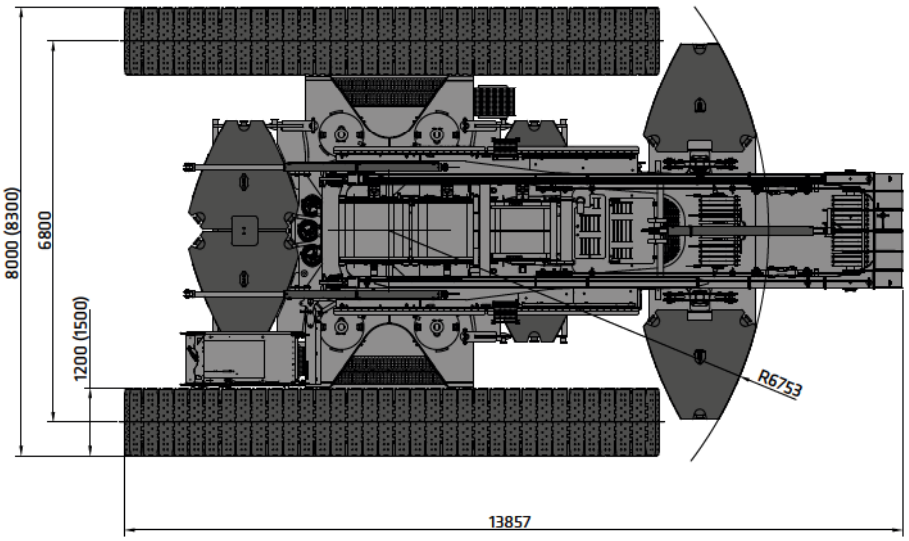


15 t loading hook
Weight: 900 kg
Width: 500 mm

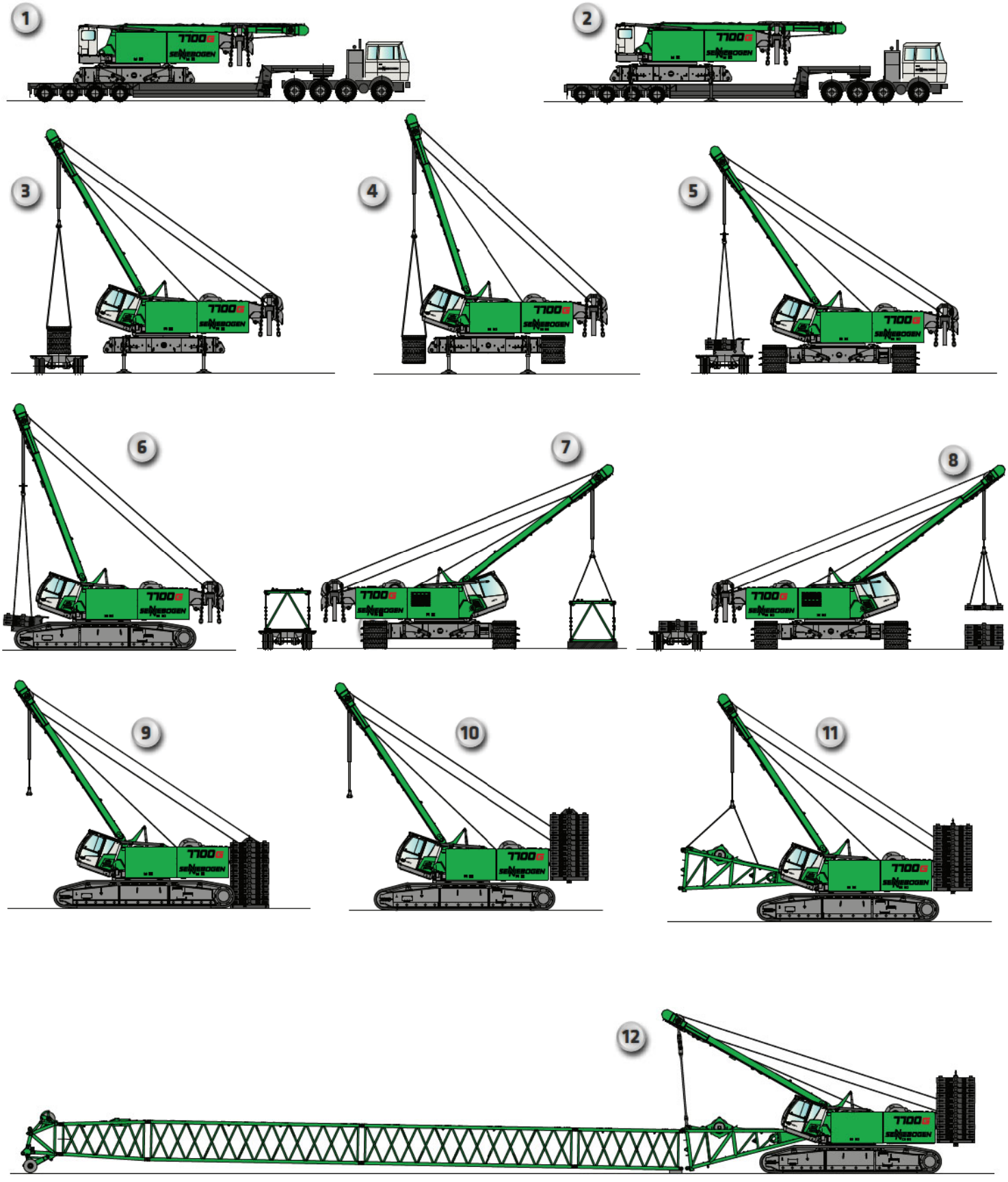
7700G Basic machine dimensions and weights



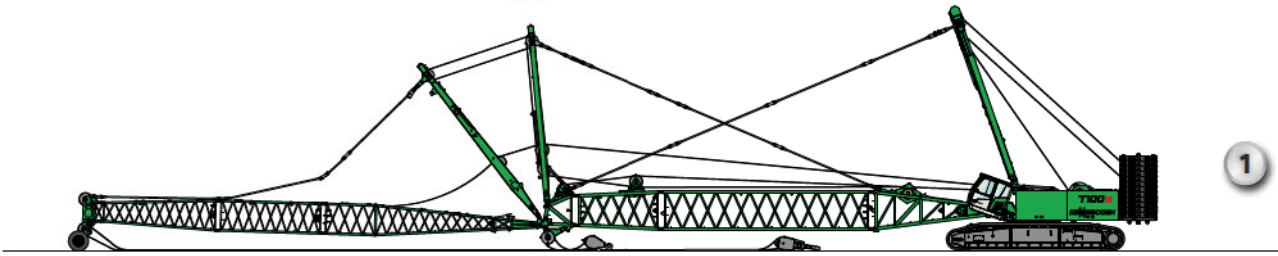
Weight: approx. 278 t consisting of basic machine with 135 t counterweight, 40 t undercarriage ballast, 1200 mm flat track shoes, ballast support, hoisting gear 1+2 with 650 m hoist cable

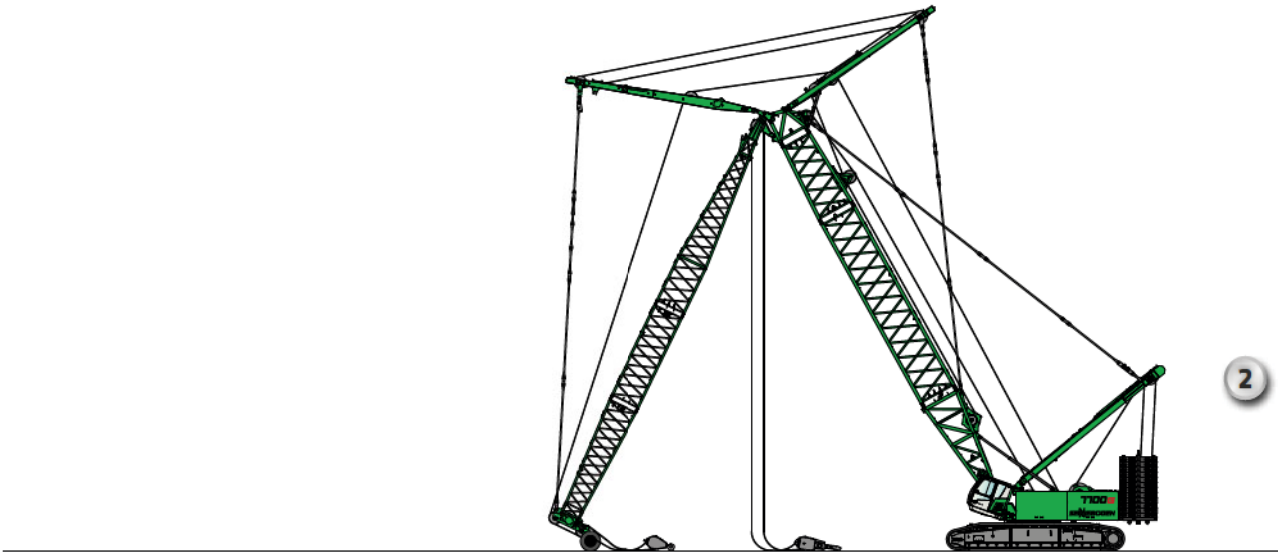


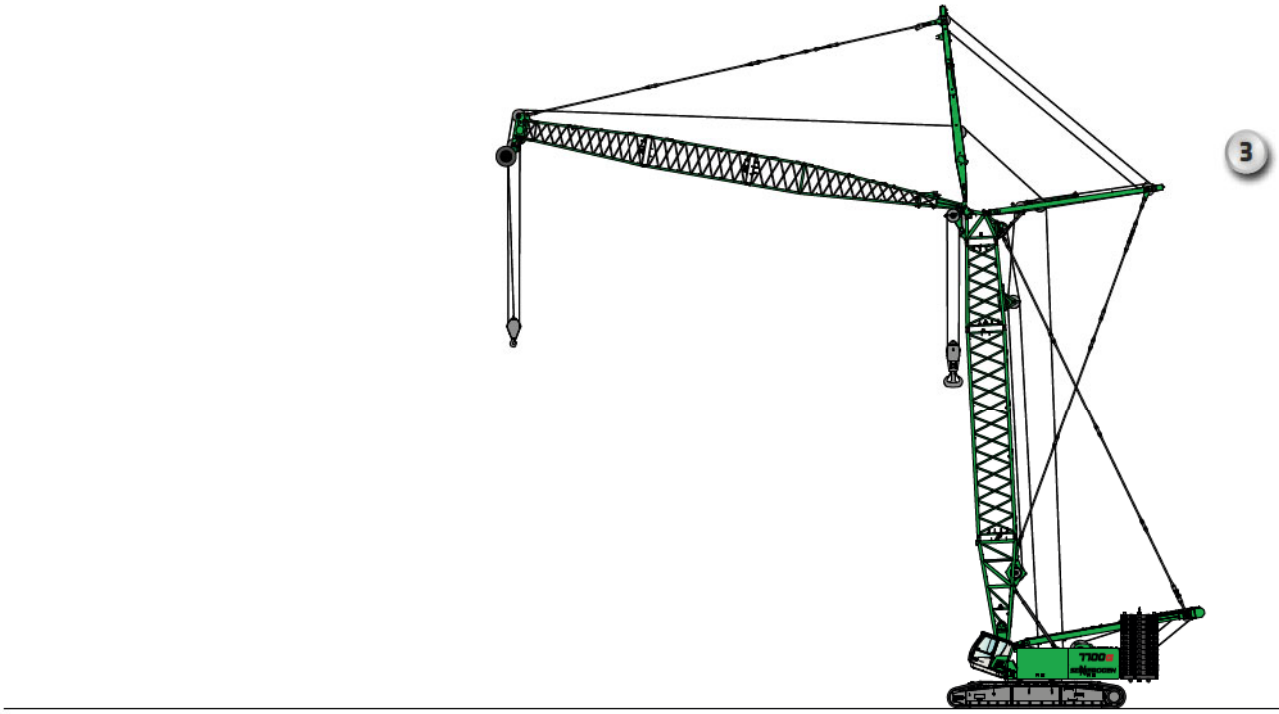
7700G Self-assembly system

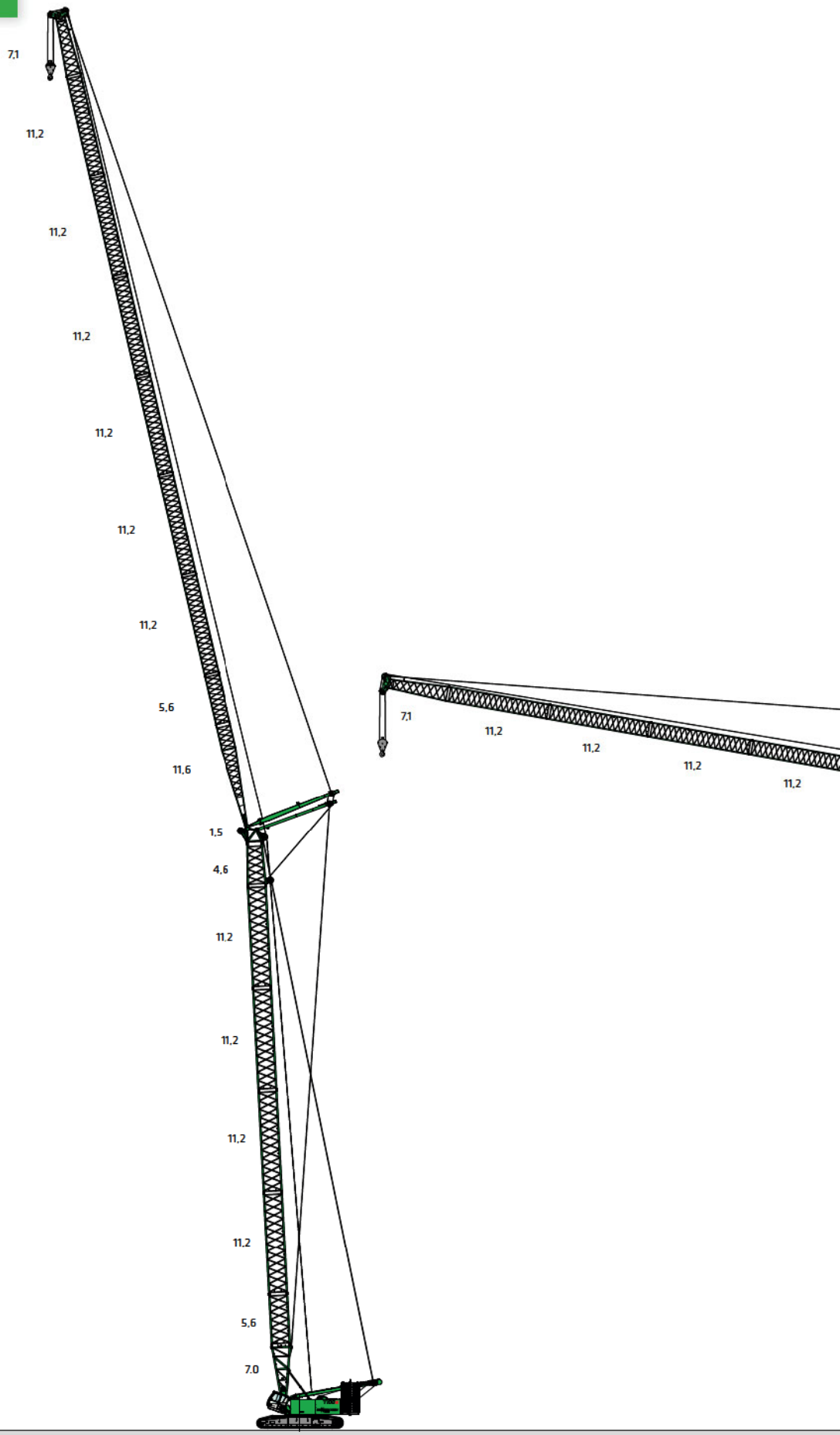


7700G Hoisting the SHWS boom








7,1
11,2
11,2
11,2
11,2
11,2
11,2
11,2
5,6
11,6
1,5
4,6
11,2
11,2
11,2
11,2
11,2
5,6
7.0
7,1
11,2
11,2
11,2
11,2

SH + WS


11,2
11,2
5,6
11,6
1,5
4,6
11,2
11,2
11,2
11,2
11.2
5,6
7.0
1,5
4,6
11,2
11,2
11,2
11,2
11,2
11,2
11,2
5,6
5,6
7.0
7,1
11,2
11,2
11,2
5,6
5,6
4,6
11,2
11,2
11,2
11,2
5,6
5,6
7.0

SH + WS **SH** **SH + LH**

7700 G



This catalog describes machine models, scope of equipment of individual models, and configuration options (standard equipment and optional equipment) of the machines delivered by SENNEBOGEN Maschinenfabrik GmbH. Machine illustrations can contain optional equipment and supplemental equipment. Actual equipment may vary depending on the country to which the machines are delivered, especially in regard to standard and optional equipment and tolerances.

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Please contact your local SENNEBOGEN sales partner for information concerning the equipment variants offered. Requested performance characteristics are only binding if they are expressly stipulated upon conclusion of the contract. Delivery options and technical features are subject to change. All information is supplied without liability. Equipment is subject to change, and rights of advancement are reserved.
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Order no. 299256
7700-G-01910

ENGINEERING STATEMENT

According appendix IIB and provisions according 2006/42/EG off the Machine directive for self-supporting machines and/or machine parts.

Application	: Lift ratings offshore
Fabricator, type	: Sennebogen 7700
Serial number(s)	: 7700.5.129, 7700.5.202
ratings	: 24013 010
Document number	: 24013 012-0

The capacity charts are in compliance with the applicable standards for the indicated aspects:

Considered Norm	yes	no	Considered aspect
EN 13852-2	X		Static / dynamic tipping angle
	X		Static / dynamic stability
	X		Strength boom
	X		Strenght pendants / wire ropes
	X		Winch capacities / linepull
	X		Capacity slew bearing

Dynamic conditions considered:

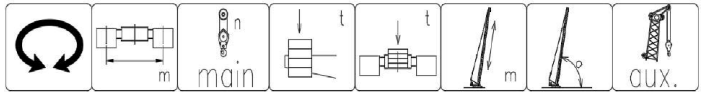
RATINGS - Floating to static

boom [m]	52,3			57,9		
Condition	Good weather	Normal conditions	Maximum conditions	Good weather	Normal conditions	Maximum conditions
Hs [m] / Swell	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m
pitch [deg]	0,35	0,50	1	0,35	0,50	1,00
roll [deg]	0,50	1,00	2,00	0,50	1,00	2,00
off lead [deg]	1,25	1,25	2,00	1,25	1,25	2,00
side lead [deg]	1,25	1,25	3,00	1,25	1,25	3,00
reeving [-]	9	7	4	8	6	3
wind [m/s]	12	13	15	12	13	15

Rev.	Date	Status	Author	Checked	approved	remark
0	2024.03.05	1st release	A. vd Steen	J.de Snaijer	W. Kattouw	

Sennebogen 7700 on Rambiz

Application : **Liftratings offshore Hs(⅓) = 0.50 - 1.5 m**
Standard : **EN 13852-2 (2004)**
Serial nr. : **7700.5.129, 7700.5.202, 7700.5.207**
Boom : **52.3 m, 57.9 m**



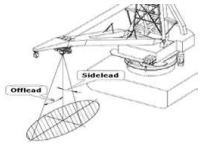
360° 6.80 m n = 3-10 135 t 40 t 52-59 m 30° - 85° n = 1-3

RATINGS - Floating to static

boom [m]	52,3			57,9		
Condition	Good weather	Normal conditions	Maximum conditions	Good weather	Normal conditions	Maximum conditions
Hs [m] / Swell	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m
pitch [deg]	0,35	0,50	1.00	0,35	0,50	1,00
roll [deg]	0,50	1,00	2,00	0,50	1,00	2,00
off lead [deg]	1,25	1,25	2,00	1,25	1,25	2,00
side lead [deg]	1,25	1,25	3,00	1,25	1,25	3,00
reeving [-]	9	7	4	8	6	3
wind [m/s]	12	13	15	12	13	15

Radius [m]	Capacity [t]											
	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI
8	130		100		50		110		85		43	
9	130		100		50		110		85		43	
10	123		100		50	1,74	110		85		43	1,74
11	116		100	1,39	50		110		85	1,39	43	
12	109		99		50		108		85		43	
13	103	1,18	93		50		102	1,18	85		43	
14	96		86		50		95		85		43	
15	90		80		50		89		79		43	
16	84		74		50	1,58	83		74		43	1,58
17	79		69		50		78		69		43	
18	74		65		50		73		64		43	
19	70		61	1,30	50		69		60	1,30	43	
20	66		57		49		65		57		43	
22	58		50		43		57		50		42	
24	51		45		39	1,42	50		44		38	1,42
26	45		40		35		44		39		34	
28	41		36		32		40		36		31	
30	37		33		29		36		32		28	
32	33		29		26		32		29		25	
34	30		26		23		29		26		22	
36	27	1,12	24		21		26	1,12	23		20	
38	25		22		19		24		21		18	
40	23		20	1,20	17		22		19	1,20	16	
42	21		18		15	1,26	20		17		15	1,26
44	19		16		14		18		16		13	
46	17		15		12		17		14		12	
48							15		13		10	
50							14		12		9	
52							13		11		8	

DUTCHOFFSHORE



Terms & Conditions

A. General

1 Rambiz - dimensions 85 m x 44 m.
2 The general conditions according to crane manufacturer manuals apply.
3 Ratings in metric tonne [t] according EN 13852-2 for 360° slewing range and additional conditions as indicated.
4 Hook-block, slings and other hoisting equipment are part of the load.
5 Mass of runner (S42.1 - 1170kg), aux. hook block (1000 kg) and reeved loadlines of main- and aux. hoist are calculated within the ratings. total (excl wire ropes) : 2170 kg
6 Ratings are valid for crawlers fully extended.
7 Widen tracks, as on Gulliver allowed.
8 Radius is the horizontal distance between the slewing center and the load.
9 Ratings above the red lining are based on structural strength.
10 Resposible PSI (dynamic impact factor on the load) indicated in ratings.

B. Operational

1 Ambient temperatures -20° / +40° C.
2 Allowed off-/side leads as indicated above the ratings.
3 Allowed operational wind speed (3sec gust @ crane tip) as indicated above the ratings.
4 Maximum trim & heel of barge: see above the ratings.

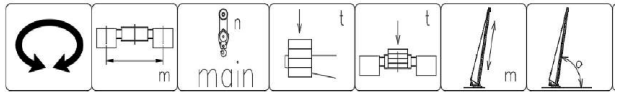
C. Crane

1 Main boom assembly according manufacturer manuals apply.
2 Counterweight upper structure 135 t - central ballast under carriage 40 t .
3 Limits boom angle 30 - 85°.
4 Runner: capacity equal to the loadchart of the main boom at the same radius limited to a maximum lifting capacity of 42.0 t.
5 When operating the main hoist and runner simultaneously the total load may not exceed the load ratings at the radius of the runner (see condition C4).
6 Reeving capacities as indicated below.

reeving parts	1	2	3	4	5	6	7	8	9	10
capacity	14,5	29	43,5	58	72,5	87	101,5	116	130,5	145

Sennebogen 7700 on Rambiz

Application : **Liftratings offshore Hs(⅓) = 0.50 - 1.5 m**
Standard : **EN 13852-2 (2004)**
Serial nr. : **7700.5.129, 7700.5.202, 7700.5.207**
Boom : **52.3 m, 57.9 m**



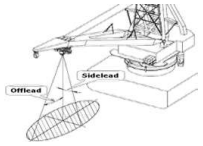
360° | 6.80 m | n = 3-10 | 135 t | 40 t | 52-59 m | 30° - 85°

RATINGS - Floating to static

boom [m]	52,3			57,9		
Condition	Good weather	Normal conditions	Maximum conditions	Good weather	Normal conditions	Maximum conditions
Hs [m] / Swell	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m
pitch [deg]	0,35	0,50	1.00	0,35	0,50	1,00
roll [deg]	0,50	1,00	2,00	0,50	1,00	2,00
off lead [deg]	1,25	1,25	2,00	1,25	1,25	2,00
side lead [deg]	1,25	1,25	3,00	1,25	1,25	3,00
reeving [-]	9	7	4	8	6	3
wind [m/s]	12	13	15	12	13	15

Radius [m]	Capacity [t]											
	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI
8	132		102		52		112		87		45	
9	132		102		52		112		87		45	
10	125		102		52	1,74	112		87		45	1,74
11	118		102	1,39	52		112		87	1,39	45	
12	111		101		52		110		87		45	
13	105	1,18	95		52		104	1,18	87		45	
14	98		88		52		97		87		45	
15	92		82		52		91		81		45	
16	86		76		52	1,58	85		76		45	1,58
17	81		71		52		80		71		45	
18	76		67		52		75		66		45	
19	72		63	1,30	52		71		62	1,30	45	
20	68		59		51		67		59		45	
22	60		52		45		59		52		44	
24	53		47		41	1,42	52		46		40	1,42
26	47		42		37		46		41		36	
28	43		38		34		42		38		33	
30	39		35		31		38		34		30	
32	35		31		28		34		31		27	
34	32		28		25		31		28		24	
36	29	1,12	26		23		28	1,12	25		22	
38	27		24	1,20	21		26		23	1,20	20	
40	25		22		19		24		21		18	
42	23		20		17	1,26	22		19		17	1,26
44	21		18		16		20		18		15	
46	19		17		14		19		16		14	
48							17		15		12	
50							16		14		11	
52							15		13		10	

DUTCHOFFSHORE



Terms & Conditions

A. General

1 Rambiz - dimensions 85 m x 44 m.
2 The general conditions according to crane manufacturer manuals apply.
3 Ratings in metric tonne [t] according EN 13852-2 for 360° slewing range and additional conditions as indicated.
4 Hook-block, slings and other hoisting equipment are part of the load.
5 No runner mounted
6 Ratings are valid for crawlers fully extended.
7 Widen tracks, as on Gulliver allowed.
8 Radius is the horizontal distance between the slewing center and the load.
9 Ratings above the red lining are based on structural strength.
10 Resposible PSI (dynamic impact factor on the load) indicated in ratings.

B. Operational

1 Ambient temperatures -20° / +40° C.
2 Allowed off-/side leads as indicated above the ratings.
3 Allowed operational wind speed (3sec gust @ crane tip) as indicated above the ratings.
4 Maximum trim & heel of barge: see above the ratings.

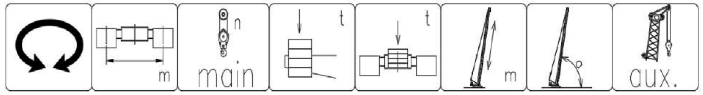
C. Crane

1 Main boom assembly according manufacturer manuals apply.
2 Counterweight upper structure 135 t - central ballast under carriage 40 t .
3 Limits boom angle 30 - 85°.
4 Reeving capacities as indicated below.

reeving parts	1	2	3	4	5	6	7	8	9	10
capacity	14,5	29	43,5	58	72,5	87	101,5	116	130,5	145

Sennebogen 7700 on Gulliver

Application : **Liftratings offshore Hs(⅓) = 0.50 - 1.5 m**
Standard : **EN 13852-2 (2004)**
Serial nr. : **7700.5.129, 7700.5.202, 7700.5.207**
Boom : **52.3 m, 57.9 m**



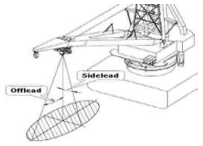
360° 6.80 m n = 3-10 135 t 40 t 52-59 m 30° - 85° n = 1-3

RATINGS - Floating to static

boom [m]	52,3			57,9		
Condition	Good weather	Normal conditions	Maximum conditions	Good weather	Normal conditions	Maximum conditions
Hs [m] / Swell	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m
pitch [deg]	0,35	0,50	1.00	0,35	0,50	1,00
roll [deg]	0,50	1,00	2,00	0,50	1,00	2,00
off lead [deg]	1,25	1,25	2,00	1,25	1,25	2,00
side lead [deg]	1,25	1,25	3,00	1,25	1,25	3,00
reeving [-]	9	7	4	8	6	3
wind [m/s]	12	13	15	12	13	15

Radius [m]	Capacity [t]											
	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI
8	132		103		55		112		88		51	
9	132		103		55		112		88		51	
10	123		103		55	1,74	112		88		51	1,74
11	116		103	1,39	55		112		88	1,39	51	
12	109		99		55		108		88		51	
13	103	1,18	93		55		102	1,18	88		51	
14	96		86		55		95		85		51	
15	90		80		55		89		79		51	
16	84		74		55	1,58	83		74		51	1,58
17	79		69		55		78		69		51	
18	74		65		55		73		64		51	
19	70		61	1,30	52		69		60	1,30	51	
20	66		57		49		65		57		48	
22	58		50		43		57		50		42	
24	51		45		39	1,42	50		44		38	1,42
26	45		40		35		44		39		34	
28	41		36		32		40		36		31	
30	37		33		29		36		32		28	
32	33		29		26		32		29		25	
34	30		26		23		29		26		22	
36	27	1,12	24		21		26	1,12	23		20	
38	25		22		19		24		21		18	
40	23		20	1,20	17		22		19	1,20	16	
42	21		18		15	1,26	20		17		15	1,26
44	19		16		14		18		16		13	
46	17		15		12		17		14		12	
48							15		13		10	
50							14		12		9	
52							13		11		8	

DUTCHOFFSHORE



Terms & Conditions

A. General

1 Gulliver - dimensions 108 m x 49 m.
2 The general conditions according to crane manufacturer manuals apply.
3 Ratings in metric tonne [t] according EN 13852-2 for 360° slewing range and additional conditions as indicated.
4 Hook-block, slings and other hoisting equipment are part of the load.
5 Mass of runner (S42.1 - 1170kg), aux. hook block (1000 kg) and reeved loadlines of main- and aux. hoist are calculated within the ratings. total (excl wire ropes) : 2170 kg
6 Ratings are valid for crawlers fully extended.
7 Widen tracks allowed.
8 Radius is the horizontal distance between the slewing center and the load.
9 Ratings above the red lining are based on structural strength.
10 Resposible PSI (dynamic impact factor on the load) indicated in ratings.

B. Operational

1 Ambient temperatures -20° / +40° C.
2 Allowed off-/side leads as indicated above the ratings.
3 Allowed operational wind speed (3sec gust @ crane tip) as indicated above the ratings.
4 Maximum trim & heel of barge: see above the ratings.

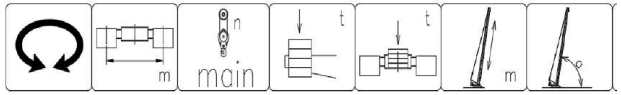
C. Crane

1 Main boom assembly according manufacturer manuals apply.
2 Counterweight upper structure 135 t - central ballast under carriage 40 t .
3 Limits boom angle 30 - 85°.
4 Runner: capacity equal to the loadchart of the main boom at the same radius limited to a maximum lifting capacity of 42.0 t.
5 When operating the main hoist and runner simultaneously the total load may not exceed the load ratings at the radius of the runner (see condition C4).
6 Reeving capacities as indicated below.

reeving parts	1	2	3	4	5	6	7	8	9	10
capacity	14,5	29	43,5	58	72,5	87	101,5	116	130,5	145

Sennebogen 7700 on Gulliver

Application : **Liftratings offshore Hs(⅓) = 0.50 - 1.5 m**
Standard : **EN 13852-2 (2004)**
Serial nr. : **7700.5.129, 7700.5.202, 7700.5.207**
Boom : **52.3 m, 57.9 m**



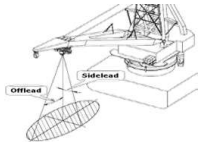
360° | 6.80 m | n = 3-10 | 135 t | 40 t | 52-59 m | 30° - 85°

RATINGS - Floating to static

boom [m]	52,3			57,9		
Condition	Good weather	Normal conditions	Maximum conditions	Good weather	Normal conditions	Maximum conditions
Hs [m] / Swell	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m	Hs 0.5m	Hs 1m	Hs 1.5m / swell0.5m
pitch [deg]	0,35	0,50	1.00	0,35	0,50	1,00
roll [deg]	0,50	1,00	2,00	0,50	1,00	2,00
off lead [deg]	1,25	1,25	2,00	1,25	1,25	2,00
side lead [deg]	1,25	1,25	3,00	1,25	1,25	3,00
reeving [-]	9	7	4	8	6	3
wind [m/s]	12	13	15	12	13	15

Radius [m]	Capacity [t]											
	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI	SWL	PSI
8	134		105		57		114		90		53	
9	134		105		57		114		90		53	
10	125		105		57	1,74	114		90		53	1,74
11	118		105	1,39	57		114		90	1,39	53	
12	111		101		57		110		90		53	
13	105	1,18	95		57		104	1,18	90		53	
14	98		88		57		97		87		53	
15	92		82		57		91		81		53	
16	86		76		57	1,58	85		76		53	1,58
17	81		71		57		80		71		53	
18	76		67		57		75		66		53	
19	72		63	1,30	54		71		62	1,30	53	
20	68		59		51		67		59		50	
22	60		52		45		59		52		44	
24	53		47		41	1,42	52		46		40	1,42
26	47		42		37		46		41		36	
28	43		38		34		42		38		33	
30	39		35		31		38		34		30	
32	35		31		28		34		31		27	
34	32		28		25		31		28		24	
36	29	1,12	26		23		28	1,12	25		22	
38	27		24	1,20	21		26		23	1,20	20	
40	25		22		19		24		21		18	
42	23		20		17	1,26	22		19		17	1,26
44	21		18		16		20		18		15	
46	19		17		14		19		16		14	
48							17		15		12	
50							16		14		11	
52							15		13		10	

DUTCHOFFSHORE



Terms & Conditions

A. General

1 Gulliver - dimensions 108 m x 49 m.
2 The general conditions according to crane manufacturer manuals apply.
3 Ratings in metric tonne [t] according EN 13852-2 for 360° slewing range and additional conditions as indicated.
4 Hook-block, slings and other hoisting equipment are part of the load.
5 No runner mounted
6 Ratings are valid for crawlers fully extended.
7 Widen tracks allowed.
8 Radius is the horizontal distance between the slewing center and the load.
9 Ratings above the red lining are based on structural strength.
10 Resposible PSI (dynamic impact factor on the load) indicated in ratings.

B. Operational

1 Ambient temperatures -20° / +40° C.
2 Allowed off-/side leads as indicated above the ratings.
3 Allowed operational wind speed (3sec gust @ crane tip) as indicated above the ratings.
4 Maximum trim & heel of barge: see above the ratings.

C. Crane

1 Main boom assembly according manufacturer manuals apply.
2 Counterweight upper structure 135 t - central ballast under carriage 40 t .
3 Limits boom angle 30 - 85°.
4 Reeving capacities as indicated below.

reeving parts	1	2	3	4	5	6	7	8	9	10
capacity	14,5	29	43,5	58	72,5	87	101,5	116	130,5	145

12.4 ATTACHMENT 4: CERTIFICATE OF DELFTLOAD

This document is CONFIDENTIAL and the sole property of Scaldis. It shall not be shown to Third Parties nor used for purposes other than those for which it was prepared.

Lloyd's Register EMEA

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3000 AS Rotterdam
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Fax +31 (0)10 20 18 451
Email enrico.campanella@lr.org

http:\\www.lr.org

Memorandum

To	Lloyd's Register surveyor	**Fax**			
Cc		**Fax**		**Date**	15 June 2017
From	Enrico Campanella	**Page**	1 of 3	**Your ref**	email from DELFTship
Subject	'RAMBIZ' - IMO 9136199 - Loading Computer Software - DELFTship			**Our ref**	RTS/STB/17.1670-A

1. Enclosed are final test conditions endorsed by Lloyd's Register on 15 June 2017 for stability.

2. Please verify that the following details correspond with the on board instrument:

Ship name:	RAMBIZ
IMO number:	9136199
Loading computer supplier:	DELFTship BV
Program name:	DELFTload

3. You are requested to observe the installation test being carried out with regards to stability as follows:

   3.1 Witness the data for one ballast condition and one cargo condition being input manually with the remaining conditions directly from stored files on hard or floppy disk. Observe the program being run and check that the results are identical to those shown in the endorsed test conditions.

   3.2 For those conditions loaded directly from stored files, select one and observe the program being run three times for that condition to establish the following:

   a) Run the program for the data downloaded from stored files. This first run should provide results identical to those shown in the endorsed test conditions.

   b) The second run to establish that the results produced have been calculated by running the program as opposed to being a pre-programmed set of output data. This can be determined by one or more items of input data being significantly changed (hold / tank weight or volume amended to zero) to achieve a displacement change of at least 10% prior to the test being run. The results obtained should differ in a logical way from those shown on the endorsed test conditions.

   c) The third run is to be carried out once the amended data entry has been restored to its original value. The results produced should be identical to the

endorsed test conditions, or within the acceptable tolerances (if any) specified on the copy of the General "Certificate of Approval" contained in the User Manual.

4. Installation on one computer is accepted, also in case the computer has no marine type approval for use on board.

5. Provided the installation test(s) is successful you should issue a **"Program Installation Test Certificate"** to the ship to be retained in the ship's records.

6. A draft copy of the **"Program Installation Test Certificate"** is enclosed for your reference. The minimum draft at the existing certificate may be copied to the new certificate. When producing your certificate please ensure that you include in the appropriate space the date of the test and the details of the computer on which the program is run and make any other amendments where necessary.

7. Please forward a copy of the **"Program Installation Test Certificate"** to DCG/CLASS; DCG/STAT/COMP and to the Rotterdam office as soon as practical, using the enclosed Class memorandum (*Appendix G*), and file your report via the on-line reporting system in accordance with:
   - Marine Survey Procedures Manual (Rewrite) - Class Notations, Descriptive Notes and Other Programmes and Schemes - Class Notations - LI (Loading Instrument) and;
   - Marine Survey Procedures Manual (Rewrite) - Testing, Survey Activities and Surveyable Items - Surveyable Items - Loading Instruments (Programs) (ex SPM Part E Chapter 9 Section 7)

8. **If the results produced when the program is run, vary from those in the endorsed test conditions then the owner/ master should be advised to contact the software manufacturer immediately.**

   8.1 Moreover for these case:
   - Condition of class (if the longitudinal strength program is fitted as a class requirement)
   - Hull memoranda (if the longitudinal strength and/or stability program is fitted as an owner's requirement) should be raised stating the following:

     "Until the Longitudinal Strength Calculation and Stability aspect of the loading instrument is acceptable for use, the approved loading / stability manual should be used for determining compliance with classification regulations".

   8.2 The builder/owner/master is to be advised accordingly and a copy of your report forwarded to the above plan approval office.

9 On completion of the test, a fee assessed in accordance with your time spent and expenses incurred are to be charged.

10. **It should be noted that the "Program Installation Test Certificate" should not be issued if the User Manual is NOT found on board the vessel.**

11. Please ensure that any test condition endorsed earlier are removed from onboard the vessel along with any previously issued Program Installation Test Certificates.

12. Please advise the owner/master/owner's representative of the following note and ensure that it is included on the certificate issued (see draft certificate attached).

"The supplier is responsible for ensuring that any computer software and hardware is capable of handling date changes without loss of performance or functionality. The capability of the computer software and hardware to handle date changes without loss of performance or functionality has not been demonstrated to LR."

Regards,



Enrico Campanella
Specialist
Statutory Computational Department
Rotterdam Technical Support Office
Lloyd's Register EMEA