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ELA Container GmbH

Specification
for
Multi-Purpose Container 20 ft 3 m

distribution:

ELA

supplementary notes:

This specification is valid for the containers:

CF13H29B30-LA01; CF20H29B30-LQ01; CF20H29B30-LQ02; CF20H29B30-LQ03

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1 Introduction

1.1 General

ELA Container GmbH has designed modular multi-purpose containers for general offshore use. These containers are similar concerning the structure and the main outfitting but can be equipped for differently for following purposes: office, dining room, locker room, 2 person living quarter (LQ) or 4 person LQ module.

The length and height of the container modules correspond to those of a standard ISO 20 ft high-cube container, but the container width is 3 m. The containers are applicable for none hazardous areas on all kinds of offshore units such as platforms, jack-ups and ships. All types of containers shall be stackable up to 4 containers.

1.2 Scope of Document

This document specifies following multi-purpose containers with all their components:

- CF13H29B30-LA01
- CF20H29B30-LQ01
- CF20H29B30-LQ02
- CF20H29B30-LQ03

For a description of the container naming and numbering, see attachment GE4. A detailed description of the above mentioned container types are presented in Table 2.

This document is used as basis for the certification of the container according to DNV standard for certification no. 2.7-2.

1.3 Revisions

Following changes are implemented in this revision:

- Added DNV 2.7-1 certificates in attachment ST5.
- Added hook-up and installation procedure in attachment GE3.
- Updated waste water concept in chapter 5.9.

2 General

2.1 Codes and Standards

The following documents are referenced herein.

- [I.] Det Norske Veritas; Standard for Certification 2.7-1; “Offshore Containers”; June 2013
- [II.] Det Norske Veritas; Standard for Certification 2.7-2; “Offshore Service Modules”; May 2013
- [III.] NORSOK; Standard S-002; “Working Environment”; August 2004
- [IV.] NORSOK; Standard N-003; “Actions and Action Effects”; September 2007

2.2 Reference Documents

This document references to documents in the Annex only. The documents within the Annex are listed in chapter 6.

2.3 Definitions and Abbreviations

Abbreviations as possibly used within this project are listed in the following.

BL:	Base Line
BOS:	Bottom of Steel
CCR:	Central Control Room
CL:	Centre Line
COG:	Centre of Gravity
DNV:	Det Norske Veritas
DRA:	Drawing
ELA:	ELA Container GmbH
LQ:	Living Quarter
OV:	OVERDICK GmbH & Co. KG
REP:	Report
SPE:	Specification

2.4 Units

The international SI unit systems are used within this document. The following units are used unless noted otherwise:

Unit	Description	Input Units
Length	Millimetre	mm
Mass	Tons	t
Stress	Mega Pascal	MPa / N/mm ²
Force	Kilo Newton	kN
Temperature	Kelvin	K
Energy	Joule	J
Density	Tons per cubic meter	t/m ³

Table 1: Unit Definitions

2.5 Materials

For all used materials and their certificates, reference is made to the appendixes.

3 Description of the Container

3.1 General Description

The containers specified within this document are 20 ft high cube containers, which are 3 m wide. They are equipped for different purposes: laundry and living quarter for 4 persons. Namely these are:

- CF13H29B30-LA01
- CF20H29B30-LQ01
- CF20H29B30-LQ02
- CF20H29B30-LQ03

For a description of the container naming and numbering, see attachment GE4. A detailed description of the above mentioned container types are presented in Table 2.

The main equipment is independent of the different outfitting types. The three living quarter types differ only in the position of the hook-up points.

Following outfitting and equipment is required for all container types within this specification:

- Electrical outfitting: electric power supply, sockets, switches, lights, heaters, fans.
- Fire detection: optical smoke detectors.
- Communication: Loudspeaker on the exterior, in the interior and a two-way communication system.
- Firefighting: fixed sprinkler system, fire extinguishers.
- Passive fire protection and insulation: A60 fire protection on the walls and the roof. Thermal insulation on the floor.
- Ventilation: Mechanical ventilation, with heating at the inlet, additional heating and cooling via split system.
- Piping: Fresh water with circulation system, black water.
- Escape routes: 2 emergency escape exits in addition to the main entrance.
- Markings: As per chapter 5.10
- Painting: As per chapter 5.11

The additional outfitting required for the different possible application is indicated in chapter 3.2 and described in detail in chapter 5.

3.2 Outfitting Types

This specification covers various application areas, which differ in the outfitting within the container. The general outfitting (for example the electric, the fire detection, the firefighting equipment and the HVAC system) remains the same for all outfitting types.

Two types of container outfitting are presented within this specification: a living quarter container with bathroom equipped to accommodate four persons and a laundry container equipped with washing machine and dryer. The living quarter containers differ in the position of the intakes, which leads to the three different container names presented in Table 2.

Description			Unit	Container Types			
				CF20H29B30-LQ01	CF20H29B30-LQ02	CF20H29B30-LQ03	CF13H29B30-LA01
Manning Level	Number of Persons	n_P	-	4	4	4	4
Main Parameters	Length	L	mm	6,058	6,058	6,058	4,000
	Width	W	mm	3,000	3,000	3,000	3,000
	Height	H	mm	2,895	2,895	2,895	2,895
	Length Between Footing Points	S	mm	5,854	5,854	5,854	3,796
	Width Between Footing Points	P	mm	2,822	2,822	2,822	2,822
	Tare Weight	m_T	t	8.60	8.60	8.60	6.75
	Payload	m_P	t	0.50	0.50	0.50	0.50
	Maximum Gross Weight	m_G	t	9.10	9.10	9.10	7.25
Outfitting	Electric	-	-	x	x	x	x
	Fire Detection	-	-	x	x	x	x
	Communication	-	-	x	x	x	x
	Fire Fighting	-	-	x	x	x	x
	Passive Fire Protection	-	-	x	x	x	x
	Ventilation	-	-	x	x	x	x
	Cooling	-	-	x	x	x	x
	Heating	-	-	x	x	x	x
	Piping Fresh Water	-	-	x	x	x	x
	Piping Waste Water	-	-	x	x	x	x
	Toilet	-	-	x	x	x	
	Shower	-	-	x	x	x	
	Wash Bowl	-	-	x	x	x	x
	Beds	n_B	-	4	4	4	
	Chairs	n_C	-	2	2	2	
	Desks	n_D	-	2	2	2	1
	Lockers or Cabinets	n_L	-	4	4	4	
Other	-	-				1 Washing Machine 1 Dryer	

Table 2: Container Types

3.3 Dimensions and Weight

The main dimensions per LQ container are listed in Table 2.

3.4 Operation Area

The operation area is defined as follows:

- The multi-purpose containers by ELA are designed for general offshore use such as vessels, platforms, etc.
- A stack of 4 containers is structurally possible, provided that the horizontal forces are transferred via adequate lashing.

Nevertheless following limitations are applicable

- The containers shall not be located in an unprotected area north of 68° N (due to spray ice aggregation).
- The containers shall be located in non-hazardous areas.
- The containers shall be located in a sheltered area, which is protected from sea-pressure larger than 15 kPa, which corresponds to level 2 sea pressure according to DNV rule, ref [II.].

3.5 Environmental Conditions

The environmental conditions for the container outfitting are defined in accordance to DNV rule, ref. [II.]. In detail these are:

- Outside temperature: -20°C to +45°C
- Relative humidity: up to 96 %
- Maximum inclinations:
 - Ships: List: 22.5° and Trim 10°
 - Column stabilized and self-elevating units:
 - Static Condition: List: 15° and Trim 15°
 - Dynamic Condition: List: 22.5° and Trim 22.5°
 - Emergency Condition: List: 25° and Trim 25°
- Vibration level:
 - 3 – 25 Hz: 1.6 mm
 - 25 – 100 Hz: 4 * g

Additionally following requirements according to Norsok, ref. [III.], are fulfilled:

- Inside temperature: 22°C winter and 20°C summer

The environmental conditions used for the strength verification of the structure are:

- Sea pressure: 15 kPa for protected locations, ref [II.]
- Motion accelerations:
 - (Horizontal) Surge Acceleration: $a_x = 0.67 * g = 6.57 \text{ m/s}^2$
 - (Horizontal) Sway Acceleration: $a_y = 0.67 * g = 6.57 \text{ m/s}^2$
 - (Vertical) Heave Acceleration: $a_z = 0.50 * g = 4.91 \text{ m/s}^2$
- Wind: No wind is applied, due to higher sea pressure loads
- Snow and Ice: $p_{ice} = 0.667 \text{ kPa}$, according to Norsok, ref. [IV.]

For a detailed description of the loads, see attachment ST4

3.6 Container Stacks

A stack of 4 containers is structurally possible, provided that the horizontal forces are transferred via adequate lashing.

3.7 Container Hook-up and Installation

The installation and the hook-up of the container is presented in the corresponding hook-up and installation procedure, to be found in attachment GE3.

3.8 Container Inspection and Maintenance

The containers are subject of inspection and maintenance on a regular basis. A corresponding inspection and maintenance plan is currently being elaborated. Therefore, container inspection and maintenance issues are added in the next revision of this document.

4 Container Structure

4.1 General Description of the Structure

The structural members of all 3 m wide containers, all three types of LQs and the laundry container, are the same and as listed below:

- Corner posts: SHS 150 x 8 (S355)
- Bottom rails: RHS 160 x 80 x 8 (S355)
- Top rails: SHS 120 x 5 (S355)
- Floor beams: U-Profile 100 x 50 x 5 (S235)
- Roof beams: U-Profile 100 x 50 x 5 (S235)
- Corrugates wall: t = 5 mm (S355)
- Floor beams: t = 3 mm (S235)
- Roof beams: t = 5 mm (S235)

For detailed information about the structural members of the containers reference is made to attachment ST3.

4.2 Structural Strength of the Container

The strength verification of the container structure is presented in detail in attachment ST4. The results may be summarized as follows:

- The multi-purpose containers by ELA are designed for general offshore use such as vessels, platforms, etc.
- A stack of 4 containers is structurally possible, provided that the horizontal forces are transferred via adequate lashing.

Nevertheless following limitations are applicable

- The containers shall not be located in an unprotected area North of 68° N (due to spray ice aggregation).
- The containers shall be located in non-hazardous areas.
- The containers shall be located in a sheltered area, which is protected from sea-pressure larger than 15 kPa, which corresponds to level 2 sea pressures according to DNV rule, ref [II.].

4.3 DNV 2.7-1 Certificate

The containers are certified according to DNV 2.7-1, ref. [I.]. The certificates are listed in attachment ST5.

5 Outfitting

5.1 General Outfitting

The living quarter container is a 20 ft high cube container, which is equipped for different purposes as stated in chapter 3.2.

The equipment is capable of coping with the environmental conditions stated in chapter 3.5 and with the planned manning level as per chapter 3.2.

A detailed description of these components is presented in the sections 5.2 to 5.11. The description of the container outfitting for the different purposes (living quarter, offices, dining room and locker room) follows in the sections 5.12 to 5.13.

No asbestos is used in the fabrication of the module. The corresponding asbestos free declaration of the manufacturer is included in attachment GE2.

5.2 Electrical Outfitting

The electrical outfitting differs for the living quarter container and the laundry container. Both electrical outfitting types are described in the following sections.

5.2.1 Electrical Outfitting of Container Types CF20H29B30-LQ01, CF20H29B30-LQ02, CF20H29B30-LQ03

The electrical outfitting of the living quarter container is based on a TN-S system. Two supply voltages are foreseen: the main power supply and the emergency power supply. The power supplies are equipped with circuit breakers. Note that the position of the power intakes differ for the three container types whose electrical outfitting is described within this chapter.

The electrical outfitting is divided in three distribution boards:

- X1: direct power supply: 400 V, AC, 60 Hz, 50 A maximum, connected to the offshore installations main power supply system.
- X2: general power supply: 400 V, AC, 60 Hz, 50 A maximum, connected to the offshore installations main power supply system.
- X3: emergency power supply: 230 V, AC, 60 Hz, 16 A maximum, which is connected to the offshore installations emergency power system.

The power distribution X1 and X2 are connected with an isolating transformer.

The power distribution X1 comprises following components:

- Water heater, as per attachment AR2.

The power distribution X2 comprises following components:

- Sockets:
 - Per cabin 2 x 3, 1 x 2 and 1 x 1 sockets, thus 9 in total.
 - In the hallway: 1 x 1.
 - In the bathroom: 1 x 1.
- Lights, as per attachment EL2:
 - Per cabin: 1 main light, 2 bed lights.
 - Hallway: 1 main light.
 - Bathroom: 1 main light.
 - Outdoor light: 1 light above the container entrance.
- Ventilator, as per attachment VE3.
- Heater, as per attachment VE4.
- HVAC split unit, as per attachment VE5.

The emergency power supplies following components:

- Fire dampers, as per attachment IN1.
- State indicator fire dampers, as per attachment IN1.
- Emergency lights, as per attachment EL2.

Every sub-system has a fuse with 30 mA tripping current.

The single line diagram of the electrical system, as well as the detailed wiring diagrams, is presented in attachment EL1.

The alarm and shutdown philosophy is presented in the following. Two shutdown scenarios are available: ventilation shutdown due to fire alarm and complete container shut down.

The container is equipped with an integrated alarm system, thus the container automatically shuts down in case of fire alarm. The shutdown procedure is as follows:

- The fire detectors give an audible and visible alarm within the container and process an alarm to the offshore installations CCR.
- The fire dampers are closed on alarm.
- The air flow sensors at the air intake register no air flow.
- The ventilators are turned off due to lack of air flow.
- The heaters automatically turn off due to lack of air flow.

Alternatively, the container shut down due to fire alarm can be achieved by an emergency shutdown signal from the offshore installation which is processed via potential free contact.

The complete container shut down can be done by using the circuit breaker. The container shutdown leads to tripping of the containers main power supply. The emergency power supply and the fire alarm system are not being tripped.

The module is to be earthed by one M12 earth boss on either end of the container.

5.2.2 Electrical Outfitting Container Types CF13H29B30-LA01

The electrical outfitting of the laundry container is based on a TN-S system. Two supply voltages are foreseen: the main power supply and the emergency power supply. The power supplies are equipped with circuit breakers.

The electrical outfitting is divided in three distribution boards:

- X1: 230 V, AC, 60 Hz, 50 A maximum, connected to the offshore installations main power supply system.
- X2: general power supply: 230 V, AC, 60 Hz, 50 A maximum, connected to the offshore installations main power supply system.
- X3: emergency power supply: 230 V, AC, 60 Hz, 16 A maximum, which is connected to the offshore installations emergency power system.

The power distribution X1 and X2 are connected with an isolating transformer.

The power distribution X1 comprises following components:

- Washing machine.
- Tumble dryer.

Not that washing machine and tumble dryer are separated from the main power supply via isolating transformers.

The power distribution X2 comprises following components:

- Sockets: 3 x 2, 3 x 1 sockets, thus 9 in total.
- Lights:

- 2 main light
- 1 Outdoor light
- Ventilator, as per attachment VE3.
- Heater, as per attachment VE4.
- HVAC split unit, as per attachment VE5.

The emergency power supplies following components:

- Fire dampers, as per attachment IN1.
- State indicator fire dampers, as per attachment IN1.
- Emergency lights, as per attachment EL2.

Every sub-system has a fuse with 30 mA tripping current.

The single line diagram of the electrical system, as well as the detailed wiring diagrams, is presented in attachment EL1.

The alarm and shutdown philosophy is presented in the following. Two shutdown scenarios are available: ventilation shutdown due to fire alarm and complete container shut down.

The container is equipped with an integrated alarm system, thus the container automatically shuts down in case of fire alarm. The shutdown procedure is as follows:

- The fire detectors give an audible and visible alarm within the container and process an alarm to the offshore installations CCR.
- The fire dampers are closed on alarm.
- The air flow sensors at the air intake register no air flow.
- The ventilators are turned off due to lack of air flow.
- The heaters automatically turn off due to lack of air flow.

Alternatively, the container shut down due to fire alarm can be achieved by an emergency shutdown signal from the offshore installation which is processed via potential free contact.

The complete container shut down can be done by using the circuit breaker. The container shutdown leads to tripping of the containers main power supply. The emergency power supply and the fire alarm system are not being tripped.

The module is to be earthed by one M12 earth boss on either end of the container.

5.3 Fire Detection

The fire detection system is a ring system which is connected to the offshore installations CCR and to the containers alarm and ventilation system, thus it is an integrated system which also provides a signal to the CCR.

The fire detectors are to be provided by the client, corresponding to the offshore installations fire and alarm system. One fire detector is located in each room as shown in the general arrangement drawings in attachment GE1. The fire push button is located on the outside of the container near the main door.

The fire detectors have an integrated alarm, thus the alarm occurs within the containers and in the offshore installation alarms. When an alarm is set, the fire/gas tight dampers are closed, the ventilator is stopped and the heater is turned off.

The signal transmission can be seen in the wiring diagrams of the fire detection system and the wiring diagrams of the ventilation and heating system. For details concerning the electrical signal transmission and the wiring of the alarm system, see chapter 5.2.

The fire detectors are not connected to the sprinkler system. The sprinkler system is activated directly via temperature sensitive devices. For details concerning the sprinkler system, see chapter 5.5.

5.4 Communication

5.4.1 Container Container Types CF20H29B30-LQ01, CF20H29B30-LQ02, CF20H29B30-LQ03

The communication system for the LA01 container consists of:

- 3 speakers inside: one in each cabin and one in the bathroom.
- 1 speaker outside in front of the main door.
- 1 two-way communication system located in the vestibule.

For the speakers, the containers are equipped with one input cable with 5 cores, so that two speaker loops are available. A second required redundant speaker system hook up point is to be provided by the client. The Roxtec frame for electric cables has sufficient spare space for these systems.

The two-way communication system is to be provided by the client, so that it is compatible with the offshore installations communication system. The Roxtec frame for electric cables has sufficient spare space for these systems.

The wiring of the communication system is presented in detail in attachment EL1.

5.4.2 Container Types CF13H29B30-LA01

The communication system for the LA01 container consists of:

- 2 speakers inside.
- 1 speaker outside in front of the main door.
- 1 two-way communication system located in the vestibule.

For the speakers, the containers are equipped with one input cable with 5 cores, so that two speaker loops are available. A second required redundant speaker system hook up point is to be provided by the client. The Roxtec frame for electric cables has sufficient spare space for these systems.

The two-way communication system is to be provided by the client, so that it is compatible with the offshore installations communication system. The Roxtec frame for electric cables has sufficient spare space for these systems.

The wiring of the communication system is presented in detail in attachment EL1.

5.5 Fire Fighting

The containers are fitted with an automatic water sprinkler system, whose arrangement is shown in the general arrangement FiFi drawings in attachment FF1.

In case of fire, the firefighting system is manually connected to a fire hose of the offshore installation.

The sprinklers are of MX3 type. The release temperature can be in a range of 57°C to 141°C depending on the client's request. The sprinkler releases when the release temperature is met. The glass bulbs burst and the water is released. Details concerning the sprinkler system components are shown in attachment FF2.

The FiFi system is being certified at the moment. The corresponding certificate will be included in the next revision of the specification.

On the offshore installation it has to be ensured, that a firefighting brigade is available and instructed on the firefighting hook up point. A corresponding alarm procedure shall be implemented in the offshore installation fire and safety role.

One 2 kg powder fire extinguisher (Jockel PSJ 2 fire class A, B and C) is installed in either cabin. A third, 2 kg fire extinguisher is installed in the vestibule. For details concerning the fire extinguishers, see attachment FF3. The total fire extinguisher capacity is 6 kg.

5.6 Passive Fire Protection and Insulation

All walls and ceilings are of insulation class A60 (60 mm). The floor insulation is a thermal insulation. The used products and the corresponding certificates are listed in attachment.

All penetrations through a A60 rated wall need to be of the same rating. Namely these are:

- The outer doors, which are shown in detail in attachment AR1.
- The ventilation ducts, which are insulated up to the fire dampers. The details concerning the position and the function of the fire dampers see chapter 5.7 and attachment IN1.
- The cable penetrations, which are lead through a Roxtec frame with A60 rating. Details of the frame are presented in attachment IN3.
- The fresh and sewage water piping, which is insulated up to 450 mm from the penetration point with A60 insulation.
- The HVAC split system piping and electric is lead through a Roxtec frame with A60 rating. Details of the frame are presented in attachment IN3.

All penetrations and their insulations are shown in detail in the structural fire protection drawing in attachment IN4.

The applied insulation is as follows:

- Walls: one layer UMPN 66 with $t = 30$ mm and one layer UMPA with $t = 30$ mm thickness
- Roof: one layer UMPA 36 with $t = 60$ mm thickness and UMPA 66 with $t = 30$ mm thickness on the stiffeners.
- Floor: one layer UMF 13 with $t = 100$ mm isolation.

The corresponding passive fire protection and insulation data sheets and certificates are presented in attachment IN2.

5.7 Escape Routes

The container is equipped with one main door, which has a clear width and height of 900 mm x 1950 mm. It is located in the center of the container side. Additional escape doors are located in each room as shown in the general arrangement plan in attachment GE1. The escape doors have a dimension of 800 mm x 1000 mm and are located in 1,250 mm height. They are marked as escape doors and shall not be obstructed. For details concerning the escape doors, see attachment AR1.

The escape routes are fitted with emergency lights as stated in chapter 5.2.

5.8 Ventilation

The general layout of the ventilation, cooling and heating system is shown in the ducting and instrumentation drawing, which is being prepared at the moment and which will be added in attachment VE1 in the next revision.

The inlet and the outlet ducts are equipped with a weather protective grating (attachment ST2).

The outside air is heated by a heating coil (attachment VE4) and separated into two ducts (attachment PI1). The suction results from a ventilator (attachment VE3) located in the outlet duct in the bathroom.

For additional heating in the winter and cooling in the summer an air conditioning system, designed as cooling/heating split system, with 2 inside and one outside unit is used (attachment VE5). Two remote controls for the split system are included.

The air outlet (attachment VE9) is located in the center of the bathroom. The doors within the containers have a gap to allow for sufficient air change between the rooms and the bathroom.

Fire dampers with A60 rating are included in the ducting in front of the ventilator and within the outlet duct (attachment IN1). The fire dampers are operated fail safe, thus the fire dampers close when they are de-energized.

The ventilator is equipped with a controller (attachment VE7), which has a fix minimum value to ensure ventilation at all times. Additionally pressure sensors are located in front of- and behind the ventilator (attachment VE6). In case of loss of ventilation alarm lights and an alarm signal is activated. This safety feature is relevant because the outer doors are weather and air tight. The pressure sensor signal is also attached to the space heater, which is automatically shut off when the air flow is not

sufficient. The space heater is also automatically shut off when the temperature sensor (attachment VE8) behind the heater has a temperature above 30°C.

In general, the systems ventilation, heating and cooling capacity is sufficient for the temperature ranges defined in chapter 3.5. The type of ventilator depends on the containers purpose, thus the planned manning level as per Table 3. The corresponding list of ventilator type per room type is presented in Table 3. The ventilation, heating and cooling capacity check is presented in detail in attachment VE2.

Container Name	Description	Manning Level	Required Ventilation		Actual Ventilation	
			Number of Persons used for Ventilation Calculation	Ventilation in m ³ /h	Ventilation Air Changes per Person	Ventilation in m ³ /h
		n _P	m ³ /h	l/(s*n _P)	m ³ /h	-
CF20H29B30-LQ01	Offshore Living Quarter 4 Persons	4	172.8	12	350	TD-350/100-125
CF20H29B30-LQ02	Offshore Living Quarter 4 Persons	4	172.8	12	350	TD-350/100-125
CF20H29B30-LQ03	Offshore Living Quarter 4 Persons	4	172.8	12	350	TD-350/100-125
CF13H29B30-LA01	Laundry	4	172.8	12	350	TD-350/100-125

Table 3: Ventilator Types

5.9 Piping and Ducts

The LQ container is equipped with following piping and duct outfitting:

- Integrated fresh water piping system of stainless steel, outgoing ¾ inch.
- Integrated sewage piping system of stainless steel, outgoing DN 100.
- Circulation system with galvanized steel pipes.
- Ventilation system ducts.

The fresh water pipe routing is presented in attachment PI2.

The potable water circulation system routing is presented in attachment PI3.

The sewage water pipe routing is presented in attachment PI4. The system is divided in grey water and a black water system. The latter is to be connected to the offshore installations black water system, which in turn shall be of vacuum operated type.

The ventilation ducts are folded spiral-seam pipe. The general duct routing is presented in attachment PI1. The ducts are insulated with A60 insulation up to the fire dampers. For details concerning the fire damper and the pipe insulation see chapter 5.6.

5.10 Container Marking

On the outside, the containers are marked with the DNV 2.7-1 information plate, ref. [I.] and the DNV 2.7-2 name plate, which is shown in Figure 1 and the electrical data sheet at the connection point. The latter contains following information:

- System voltage
- Maximum supply protection value
- Frequency
- Short circuit current
- Rated short circuit breaking capacity
- Type of distribution system: The distribution system depends on the system provided by the client and shall be assigned before the container is leased or bought.

For details concerning the electrical system, see chapter 5.2.

DNV 2.7-2
OFFSHORE SERVICE MODULE
Name of Manufacturer:
Manufacturer contact details:
Design Assessment Ref:
Date of Certification:
Serial Number:
Important Service Use:
Hazardous Area Rating:
Operation Temperature Range:
Minimum Purge Time
Manned Use:
Max. No. of Personnel within module:
Fitted out Mass:
Other Certificates/CoC:
USER MUST REFER TO DNV 2.7-2 CERTIFICATE FOR LIMITATION OF USE

Figure 1: DNV 2.7-2 name plate, ref.[II].

Additional markings within the containers are:

- Marking of fuses: Ampere value and designation.
- Terminal rail voltage.
- Electrical closure voltage marking.
- Main isolating switch (the circuit breaker as described in chapter 5.2) is marked to identify its function as main power isolator.
- Marking of escape routes and fire extinguisher type and size.
- Fluorescent signs of the emergency exits and at the location of the fire extinguishers are foreseen.

5.11 Painting

The inside and outside primer will be 80 µm. The outer painting is at least 120 µm per layer. Two layers are foreseen. The data sheets of primer and paint are presented in attachment PT1.

5.12 Outfitting Container Types CF20H29B30-LQ01, CF20H29B30-LQ02, CF20H29B30-LQ03

The container types CF20H29B30-LQ01-O, CF20H29B30-LQ02-O, CF20H29B30-LQ03-O are an offshore accommodation cabin for four persons with bathroom. The detailed outfitting list is presented in the following. These containers differ only in the position of the hook up points. Otherwise they are identically equipped.

An overview of the container interior is presented in Figure 2. For details, see attachment GE1.

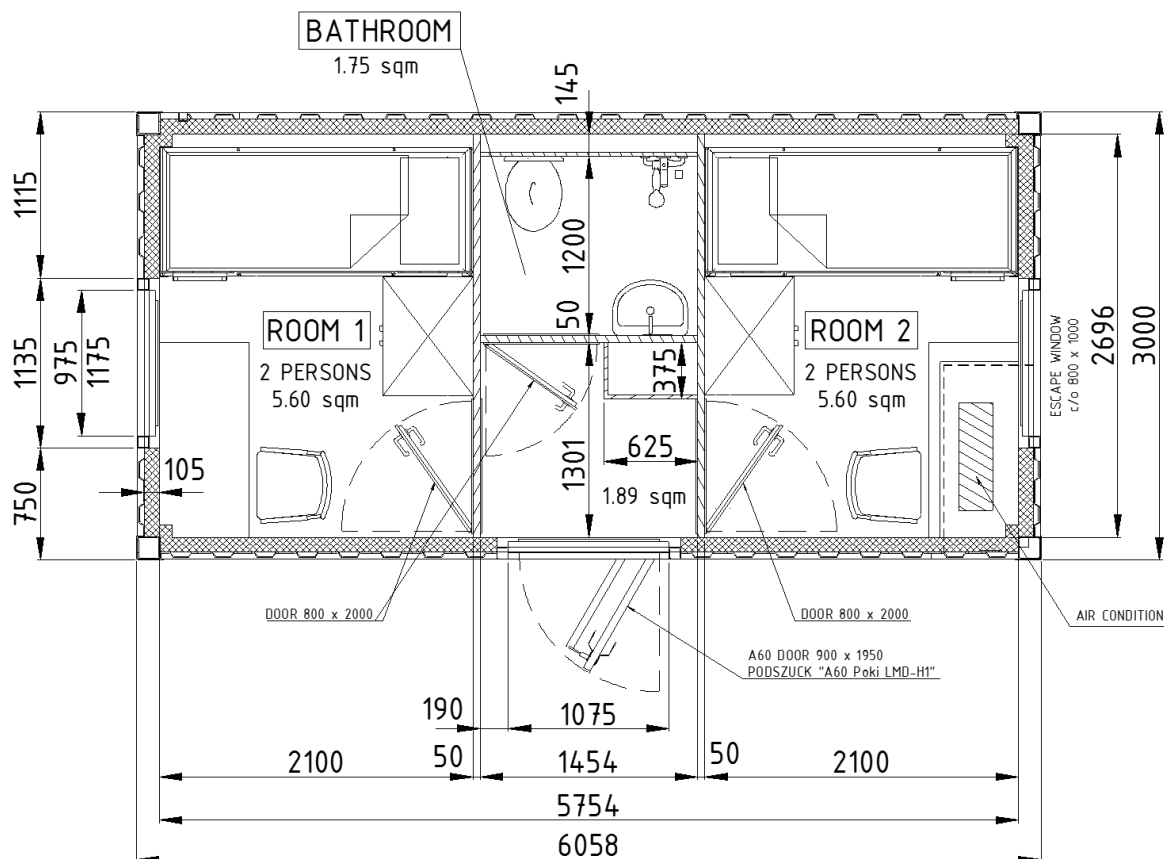


Figure 2: General Arrangement LQ Container Top View

5.12.1 Bathroom Outfitting

The bathroom is equipped with following outfitting:

- 1 ceramic toilet with water flushing behind the wall.
- 1 ceramic wash basin with water tab (mixer tab) hot/cold.
- 1 water heater (30 l, 2 kW).
- 1 mirror with shelf.
- 1 shower with water tab (mixer tab) hot/cold.
- 1 shower curtain in PVC, white.
- 2 drains on the floor.
- Water edge on the floor.

- 1 fan.
- 2 inside doors, white, with various hooks for towels.
- 1 heater alarm in bathroom with a separate cable outside of container to connect to board system.
- 1 loud speaker with a separate cable outside of container to connect to board system
- Floor with bathroom flooring.

5.12.2 LQ Outfitting

The living quarter is equipped with following outfitting:

- 2 x 2 steel bunk beds, colour white, with ladder for the upper bend and 2 x 2 rubber belts for fixing the bed linen. Bed linen are not included.
- 2 x 2 Fire retarding curtains.
- 2 x 2 fire retarding mattresses.
- 1 wooden table 600 mm x 400 mm with two steel feet, assembled on wall and floor. Two hooks and a rubber belt for fixing the chair.
- 2 steel lockers 600 mm x 400 mm with two doors, each with locker and keys, assembled on wall.
- 1 chair, seat and surface rest with PVC and 4 steel feet.
- Floor.

5.13 **Outfitting Container Types CF13H29B30-LA01**

This container is a laundry container equipped with following outfitting:

- 1 washing machine.
- 1 dryer.
- 1 table: size L x W x H = 1,500 mm x 600 mm x 780 mm.
- 1 wash basin.
- Floor.

6 Annex and Reference List

The following table presents the Annexes, which are divided in disciplines. Each discipline annex has sub-annexes with the container components within. Changes within the annexes are highlighted in red.

Discipline	Annex	Doc No.	Referenced Document Names
Structural	ST1	CF20H29B30-LQ01-CER-ST-001	GL Certificate Twistlock
		CF20H29B30-LQ01-DRA-ST-001	Twistlock Manual Drawing
	ST2	CF20H29B30-LQ01-DAT-ST-002	Weather Protective Grating
	ST3	CF20H29B30-LQ01-DRA-ST-003	Structural Drawings for LQ1
		CF20H29B30-LQ02-DRA-ST-003	Structural Drawings for LQ2
		CF20H29B30-LQ03-DRA-ST-003	Structural Drawings for LQ3
	ST4	CF13H29B30-LA01-DRA-ST-003	Structural Drawings for LA1
ST4	CF20H29B30-LQ01-REP-ST-002	Structural Strength Report	
	ST5	CF20H29B30-LQ01-CER-ST-002	DNV 2.7-1 Certificates
General	GE1	CF20H29B30-LQ01-DRA-GE-002	General Arrangement Drawings for LQ1-3
		CF13H29B30-LA01-DRA-GE-002	General Arrangement Drawings for LA01
	GE3	CF20H29B30-LQ01-PRO-GE-002	Hook-up and Installation Procedure
	GE4	CF20H29B30-LQ01-SPE-GE-100	Container and Document Numbering Specification
Electrical	EL1	CF20H29B30-LQ01-DRA-EL-001	Electrical Wiring Diagrams
	EL2	CF20H29B30-LQ01-DAT-EL-001	Data Sheets Main Light
		CF20H29B30-LQ01-DAT-EL-002	Data Sheets Bed Lights
		CF20H29B30-LQ01-DAT-EL-003	Data Sheets Emergency Lights
Fire Fighting	FF1	CF20H29B30-LQ01-DRA-FF-102	Fire Fighting and Escape Route Plan
		CF13H29B30-LA01-DRA-FF-103	Fire Fighting and Escape Route Plan
	FF2	CF13H29B30-LA01-CER-FF-001	Sprinkler Head Certificate Module B
		CF13H29B30-LA01-CER-FF-002	Sprinkler Head Certificate Module D
	FF3	CF20H29B30-LQ01-CER-FF-003	Jockel Mini Portable Extinguisher
	Passive Fire Protection and Insulation	IN1	CF20H29B30-LQ01-DRA-IN-001
CF20H29B30-LQ01-DAT-IN-001			Data Sheet Fire Damper
CF20H29B30-LQ01-DAT-IN-002			FDD Installation, operation and maintenance instructions
CF20H29B30-LQ01-CER-IN-001			Fire Damper Certificate
IN2		CF20H29B30-LQ01-CER-IN-001	EC Type Examination (Module B) A 60 Bulkhead EC Type Examination (Module B) A 60 Steel Deck

Discipline	Annex	Doc No.	Referenced Document Names
		CF20H29B30-LQ01-CER-IN-002	EC Type Examination (Module B) Non-combustible materials
	IN3	CF20H29B30-LQ01-CER-IN-003	Roxtec Seals
	IN4	CF20H29B30-LQ01-DRA-IN-002	Container Insulation Drawing
Ventilation	VE2	CF20H29B30-LQ01-REP-VE-002	HVAC Report
	VE3	CF20H29B30-LQ01-DAT-VE-001	Data Sheet TD Silent Ecowatt Ventilator
	VE4	CF20H29B30-LQ01-DAT-VE-002	Data Sheet Heater
	VE5	CF20H29B30-LQ01-DAT-VE-003	Data Sheet HVAC Split Unit
	VE6	CF20H29B30-LQ01-DAT-VE-004	Data Sheet Ventilator Pressure Difference Switch
	VE7	CF20H29B30-LQ01-DRA-VE-002	Ventilator Control Unit Drawing
	VE8	CF20H29B30-LQ01-DAT-VE-005	Data Sheet Temperature Sensor
	VE9	CF20H29B30-LQ01-DAT-VE-006	Data Sheet Inlet Air Diffusor
		CF20H29B30-LQ01-DAT-VE-007	Data Sheet Air Outlet Cover
Painting	PT1	CF20H29B30-LQ01-DAT-PT-001	Data Sheet Intershield 300
		CF20H29B30-LQ01-DAT-PT-002	Data Sheet Interthane 990
		CF20H29B30-LQ01-SPE-PT-001	Painting Specification
Piping	PI1	CF20H29B30-LQ01-DAT-PI-001	Data Sheets Ventilation Ducts
Architectural	AR1	CF20H29B30-LQ01-DRA-AR-001	A60 Poki LMD-H1 Door
		CF20H29B30-LQ01-DRA-AR-002	A60 Poki LMD-H1 Door
		CF20H29B30-LQ01-CER-AR-001	EC Certificate Type Examination (Module B)
	AR2	CF20H29B30-LQ01-DAT-AR-002	Data Sheets Electrical Water Heater

Table 4: Annex List