10’ OFFSHORE TECHNICAL SPEC BULLBOX

OFFSHORE CARGO CONTAINER
10’OFFSHORE - 10’ × 8’ × 8´6”

MODELO NO: **BULLBOX** - 10’ × 8’ × 8´6” **STANDARD**
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SECTION / TITLE / PAGE

1. General

This specification for offshore containers covers design, manufacture, materials, testing and marking.

The container is built in accordance with the standard of DNV2.7-1: 2006 and EN 12079: 2006.

2. Standards and regulation

The offshore container is designed, manufactured and tested in accordance with requirements of the following latest editions standards and regulations.

DNV2.7-1 - Offshore containers

EN 12079 - Offshore containers - Design, construction, testing, inspection and marking.

ISO 1161 - Specification of corner fittings for series 1 freight containers.

3. Handling

The offshore container is constructed to be capable of being handled and operated without any damage under the following conditions.

a. They are lifted by crane hook attached to top link of 4 legs lifting set through pad eyes at a maximal 45°from the vertical.

b. They are lifted by fork lift arms through fork lift pockets fitted in the bottom structure on container, whenever being empty or fully loaded.

c. They are stacked only onshore or on offshore installations with 2 high at most. Not to be stacked during transport on ships.

d. They are not lifted by using ISO corner fittings.

4. Dimensions and ratings

External

Length	2,991	+ 0 mm
		- 5 mm
Width	2,438	+ 0 mm
		- 5 mm
Height	2,591	+ 0 mm
		- 5 mm

Internal

Length 2,825 mm

Width 2,348 mm

Height 2,260 mm

Door opening dimensions

Width 2,336 mm

Height 2,224 mm

Internal cubic capacity (nominal)

15.0 cu.m

Ratings

Max. Gross Weight (R)	10,000 kg
Tare Weight (design) (T)	2,010 kg
Max. Payload (P)	7,990 kg

Lifting leg angle from the vertical 45°maximum.

5. Properties of Steel material

The properties of steel material used in construction are as follows.

Material	Y.P Min (Mpa)	T.S.Min (Mpa)	E.Min. %
JIS SPA-H	345	480	22
JIS SCW480	275	480	20
JIS S25C	275	450	24
GB Q345E	345	470	22
GB E36	355	490	21
JIS SUS304	205	520	40

* Y.P. : Yield point
T.S. : Tensile Strength
E.: Elongation

6. Construction

Base structure
The base frame will be composed of two (2) bottom side rails, a number of crossmembers and a pair of fork pockets, which are welded together as a sub-assembly.

Bottom side rails:
Material : JIS SPA-H
Gauge : 6 mm
Geometry : 150x80x80mm, pressed "C" section.

Crossmembers:
Material : JIS SPA-H
Gauge : 145x50x50x4.5mm channel
Geometry : Pressed "C" section.

Fork Pocket:
One pair of fork pocket will be fitted in the bottom structure for loaded handling. Each fork pocket is constructed with two adjacent crossmembers, a top plate and 3 bottom plates. 3 pieces of channel stiffeners and 2 protectors will be welded on top and both ends of each fork pocket .

Top plate: 4.0 mm Thk.
Bottom plate: 6.0 mm Thk. Depth : 300 mm
Stiffener channel: 100 x 45 x 45 x 4.5
Protector: 6.0 mm Thk.

6. 2 Floor

Material : JIS SPA-H.
Gauge : 4.0 mm thickness,
Assembly : The floor plates are welded to the top of the base frame.

6. 3 Front end

The front end will be composed of corrugated end wall and front end frame, which are welded together as a sub-assembly. Front end frame is consists of top and bottom rails, two corner posts and two bottom corner fittings.

Corner post:
Material : JIS SPA-H
Geometry : 6mm thick section steel.
Assembly : Fully penetration welded to the corner castings at bottom end.

Top rail:
The front top rail is constructed of one 100x100x4.0mm square tube and a 3.2mm top plate.
Material : JIS SPA-H

Bottom rail:
Material : JIS SPA-H - Bottom rail & gusset.
Gauge : Bottom rail - 150x120x6.0mm "C" shaped pressing.
Gusset - 6.0mmAssembly : Fully welded on both side to each corner posts.

End panel:
Material : JIS SPA-H
Gauge : 3.0mm
Geometry : 45.6mm depth, 110mm exterior flat, 18mm slop and 104mm interior flat.
Assembly : Panels are butt welded together and fully welded to front rails and corner posts.

6. 4 Rear end

Rear end is composed of rear end frame which consists of one door sill, two corner posts, one rear header with header plate and four corner fittings, which are welded together as a sub-assembly, and Door Systems with locking devices.

Corner post:
Material : JIS SPA-H
Gauge :
Outer – 6.0 mm thick pressing.
Inner –118 x 42 x 6 mm "C" shaped pressing.

Geometry : Rectangular box section composed of outer and inner.Assembly: Fully penetration welded to the corner castings at both ends.

Door sill:
Material : JIS SPA-H
Geometry : Bottom rail - 150x119x6.0mm "C" shaped pressing section with a slop upper face.
Gusset - 6.0mm.

Features : The door sill is built of a special channel section Steel pressing with internal gussets as stiffeners at the back of each cam keeper.

Door Header:
The door header is constructed from a lower part of a " U " shaped steel pressing with internal stiffener ribs at the location of the back of cam keeper and an upper part of steel rear header plate, they are welded together to form a box section to provide a high rigidity.

Material : SPA-H Header
lower : 4.0 mm thick
Upper plate : 4.0 mm thick
Gusset : 6.0 mm thick

6. 5 Door system

Doors will consist of two door leaves, each leaf with two (2) locking devices, four hinges and pins, seal gaskets, protection hollow sections and door holders. The doors will be installed by hinge pins to the rear end frame and capable of swinging about 270 degrees.

Door Leaves:
Each door leaf consists of door panels, steel door frame which consists of horizontal and vertical members. They are welded together to form the rectangular door leaf. The door are so arranged that the left leaf can not be opened without displacement of the right leaf. A set of protection hollow sections will be fitted on the door frame to protect the locking system against damages from impact load.

1) Door panel : corrugation plate
Depth : 44 mm
Inner face : 70 mm
Slope : 32 mm

2)Panel thickness :
Door frame :2.0 mm
a) Horizontal door member: 150 x 50 x 4.0 mm, channel section,
b) Vertical door member:100x50x4.0 mm RHS

3) Protection construction : 59x37x3.0 mm RHS

Hinges and Pins:
Four forged hinges, providing with bushed hole, are welded to each door leaf. Each door is installed by hinge pins, washers and bushings.
Washer - Material : Stainless steel .
Location : Under the bottom of hinge.
Bushing – Bronze.
Pin - Material : Stainless steel .

Locking Devices:
Two locking bars are of steel tube with handles, anti-racking rings and cam ends, and fixed to each door leaf with bolts and nuts, by top and bottom bearing brackets and bar guide brackets. The bars are suspended in bearing brackets with bush of self-lubricating synthetic material.

The EPDM shim will be placed over the holes on the door for fastener. Cam keepers are welded to the door header and sill.
Locking bars treatment : Hot-Dip galvanized.

Door Holder and Receptacle:
A door holder, made of steel bar, is fixed to the door frame. The receptacle is welded to corresponding bottom side rail to remain the door at the open position.

Seal Gaskets:
The door seal gaskets (black colour) are of E.P.D.M rubber assembled by rivets,using strip retainers and adhesive sealant on the back.

Gasket's shape : "J - C" Type
Retainer : Stainless steel
Rivet : Stainless steel

6. 6 Side

Top side rail
Material : JIS SPA-H
Geometry : Square tube.
Size : 100x100x4.0mm

Panel:
Material : JIS SPA-H
Gauge : 3.0mm
Geometry : 36mm depth, 72mm exterior flat, 68mm slop and 70mm interior flat.

Assembly : Panels are butt welded together and fully welded to exterior of container frame, stitch welded to interior of corner posts.

6. 7 Roof

Material : JIS SPA-H
Gauge : 3.0 mm
Geometry : Panel
Assembly : Continuous welding.
Features : Roof panel will be cylindrically cambered with approx. 5mm at center to ensure complete water drainage.

Roof stiffener rail:

Two pieces of stiffener rails are fitted under the transverse way of the roof panels to give a additional reinforcement.
Material : JIS SPA-H
Geometry : Square tube.
Size: 59x37x3.0mm

6. 8 *Corner fitting*

Material : SCW 480
Geometry : ISO 1161 – 1984

6. 9 Internal Lashing point

Twelve (12) lashing rings are welded onto the top and bottom side rails, which are of forged "D" shape and hinged type. Each ring is capable to withstand a force of 1,000 kgf.

6. 10 Rear Frame Mesh Lashing point

Three(3) lashing bars are welded onto each rear corner post. One lashing ring is welded onto the center position of the door header. Each lashing bar or ring is capable to withstand a force of 1,000 kgf.

6. 11 Pad eye

Material : E36
Gauge : 18 mm
Geometry : 2 pcs of round shape pad eyes joint together. Bolt hole diameter is 29mm.

6. 12 Lifting set

A lifting set with a fore runner is attached to the pad eyes on four corners by shackles. The wire rope slings and shackles are in accordance with EN 13889/EN 12079.Minimum Working Load Limit of the lifting set, WLLmin=15.01Tons.

4 -leg wire rope sling angle from vertical : maximum 45°,Lifting set slings and components should include:
Wire rope terminations shall be ferrule secured eyes with thimbles:

Wire rope shall be of type 6x36 or 6x19 and fibre cored.
Fore runner wire rope is 40mm in diameter and 1200mm in length with a minimum breaking force 835KN.
Four (4) leg sling wire rope is 28mm in diameter and 2550mm in length with a minimum breaking force 386KN.

Shackles shall be of bolt type with hexagon nut and split pin:

WLL = 8.5 Tonnes, Pin diameter 28mm,
Inside width at pin 43mm.
Bow (omega) type shackle is used.

Master link:
WLL= 22.3Tonnes.
Link diameter : Φ38mm.
Internal dimension : 275 x 150mm.

Quad assembly:
Quad assembly is composed of one master link and two intermediate links. WLL of quad assembly is 22.3 Tonnes.

6. 13 Sealing

Chloroprene sealant is to be caulked at inside unwelded seams and visible
seam of floor board periphery.

7. Preservation

7. 1 Surface preparation of the steel work

Prior to assembly
1) Each part will be completely inspected to remove any weld spatter, weld slag or contamination.

2) All steel components, prior to fabricating, will be shot blasted to Swedish .Standard SA 2 1/2 to remove rust, mill scale and painted zinc primer approximately 10 microns.

After assembly
1) All welding slags, spatters and other foreign matters are removed.

2) Welded area on the surfaces are shot blasted.

3) Remove of all loose grit and dust will be accomplished with clean compressed air before painting.

7. 2 Painting

The paint to be applied within two hours after shot blasting is as follows.

Outside
Epoxy zinc primer Barrier 77 CN 50 m
Epoxy paint Penguard express 100 m
Polyurethane topcoat(RALXXX) Hardtop xp 50 m

Inside
Epoxy zinc primer Barrier 77 CN 50 m
Epoxy paint Penguard express 70 m
The paint supplier is Jotun Paint.

8. Markings and Data Plate

8.1 Safety marking

The container shall be marked with a 100mm wide painting band of yellow color (RAL 1021) round the roof perimeter.

8.2. Identification markings

Owner's code and serial number issued by the owner shall be displayed on all sides and roof of the container. These code and number is to be white color and selfadhesive kiss-cut film.

8.3 Information markings

A rating decal is to be attached to the door panel, which is white color and selfadhesive kiss-cut film. It shall include maximum gross mass,tare mass and payload. A matt black board decal is to be fitted to the door panel.

8.4 Other markings

Society emblem and manufacturer's web site decal will be attached to the door.

8.5 Data and inspection plate

Data and inspection plate made of stainless steel shall be fitted to the door by stainless steel rivet.

8.6 Welded identification

Welded the manufacturer's serial number in 50mm high digits on the outside surface of the rear bottom rail.

9. Testing and Ispection

9.1 Type testingLifting tests

The container shall be lifted by a lifting set with an angle to the vertical equal to the design angle 45 degree. The container shall be carefully lifted in such a way that no significant acceleration force occur. It shall be held for 5 minutes before measurements are taken.

Four (4)-point lifting

The container shall be loaded to a total gross mass of 2.5R and lifted clear of the ground, using all the pad eyes. No deflections during testing shall be greater tan 1/300 of the span of the primary construction member. The container shall show no permanent deformation or other damage after testing.

Two-point lifting
The container shall be loaded to a total mass of 1.5R and lifted clear of the ground, using only two pad eyes, situated diagonally opposite each other. After the test there shall be no permanent deformation.

Drop test
The container shall be dropped on to a floor of concrete or other rigid structure. This floor may be covered with a sheathing of wooden planks with a thickness not exceeding 50mm (2 inches).

In the case, the container shall be inclined so that each of the bottom side and end rails connected to the lowest corner forms an angle of not less than 5°with the floor.However, the greatest height difference between the highest and lowest point of the underside of the container corners need not be more tan 400mm. The impacting corner shall be the one expected to have the lowest rigidity. For this containers this will normally be at the door end.

An internal load equal to the payload (P) shall be safely secured and the container shall be inclined as describe above. The container shall be suspended from a quick release hook. When released, the container shall drop freely
for at least 50 mm to give it a speed at initial impact of at least 1 m/s.

No significant permanent damage shall occur. Cracks in welds and minor deformation may be repaired.

9.2 Production Test

Lifting test
During production, a four-point lifting test as described in 9.1.1.1 shall be carried out. The number of containers to be tested shall be agreed in advance and chosen at random.

Weatherproofness testing
For 10% of the containers in a production series, the weatherproofness test shall be carried out in accordance with the rules specified in ISO1496-1 about weatherproofness.For the remaining containers, the water test may be replaced by a simple light test.

9.3 Inspection

All the materials and components will be inspected by Quality Control Dept. to make sure that the most suitable and qualified components being used for the containers and to meet this specification.

Every containers will be manufactured under effective Quality Control procedures, and every production line of the factory will be inspected and controlled by the Quality Control Dept. to meet this specification.

NDE of structural welds

100% of total length of welds between essential primary structure, magnetic particle examination shall be performed.
20% of total length of welds between essential and non-essential primary structure, magnetic particle examination shall be performed.
Dye penetrant examination shall be used where magnetic particle examination is not possible.

All welds shall be visually inspected.
Essential primary structure shall includes:
— top and bottom side rails
— top and bottom end rails
— corner posts
— corner castings
— pad eyes

Non-essential primary structure shall includes:
— floor plates
— reinforcement plates

NDE acceptance criteria:
For magnetic particle examination, EN 1291 to acceptance level 1. For dye penetrant examination, EN 1289 to acceptance level 1.

10. Warranty

The guarantee period will commence at the day of delivery.

10.1 Paint warranty

The paint system applied on the container surface is guaranteed against corrosión and/or paint failure for a period of three (3) years and is based on "RE 3" of the "European degrees of rusting standards."The warranty is applied to all kinds of faults of failures affecting more than 10% of the painted surface and partial or total repainting is assured for the container(s) at manufacturer's expense. Normal wear/tear, or corrosion caused by acid, alkaline solution or result from damage by abrasion impact or accident are excluded.

10.2 Other warranty

All containers shall be guaranteed against any defects or omissions in construction, poor workmanship, or defective materials for a period of two (2) years. Any damages caused by mis-handling, mis-securing, mis-loading, impact and other natures of accident are excluded. The self-adhesive film decal shall be guaranteed five (5) years.

BULLBOX

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