Technical Specification

For

9’ x 2300mm x 2240mm

Dry Cargo Steel Container

(CIMC)

(2 vents each side wall)

Specification No. : S000D01G1

Drawing No. : 000D01G1G

Date of Issue : May. 03, 2022

This specification is used in all factories of

Dongguan Southern CIMC Logistics Equipment Manufacture Co., Ltd.

22A-00

Contents

1. Scope

This specification will cover the design, construction, materials, testing and inspection performances of 9’ x 2300mm x 2240 type end door steel dry cargo containers.

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2. General

2.1 Operational Environment

The container will be designed and constructed for the transportation of general cargo on sea (above or under deck) and on land (road or rail) throughout the world, and will be suitable for the environmental conditions imposed by those modes of transport. All materials used in the construction will be able to withstand extreme temperature ranging from -40°C (-40°F) to 70°C (158°F) without effect on container's strength and watertightness.

2.2 T.C.T. Certification

All exposed wooden components used for container will be treated to comply with the requirements of "Cargo Containers - Quarantine Aspects and Procedures" of the Commonwealth Department of Health, Australia.

3. Handling

The container will be constructed to be capable of being handled without any permanent deformation under the following conditions:

a) Lifting, full or empty, at top corner fittings using slings with terminal fittings at any angles between vertical and 60 degrees to the horizontal.

b) Lifting, full or empty, at forklift pockets using forklift truck.

4. Dimensions and Ratings

4.1 External Dimensions

Length	2,743	+ 0mm - 5mm
Width	2,300	+ 0mm - 5mm
Height	2,240	+ 0mm - 5mm

1) No part of the container will protrude beyond the external dimensions mentioned above.

2) Maximum allowable differences between two diagonals on anyone of the following surfaces will be as follows:

Roof, bottom, side, front and rear diagonals: 10mm

4.2 Internal Dimensions

Length	2,592	+ 0mm - 5mm
Width	2,212	+ 0mm - 5mm

Height 2,042 + 0mm - 5mm

4.3 Door opening dimensions

Width 2,206 + 0mm - 5mm

Height 1,929 + 0mm - 5mm

2.4 Internal cubic capacity (Nominal)

11.7 cu.m 413 cu.ft

4.5 Forklift pockets

Width 320 mm

Height min. 118 mm

Centre to centre 900 mm +/- 50 mm

4.6 Ratings

Max. Gross Weight (R)	6,000 kg	13,230 lb
Tare Weight (design) (T)	1,060 kg	2,340 lb
Max. Payload (P)	4,940 kg	10,890 lb

Tare Weight Tolerance 2%

5. Construction

5.1 General

The container will be constructed with steel frames, fully vertical-corrugated steel sides and front wall, horizontal-corrugated steel double doors at rear end, die-stamped steel roof and corner fittings.

5.2 Corner Fittings

The external dimensions of small corner fittings are 116 mm length, 99 mm width and 71 mm height.

5.3 Base Frame

Base frame will be composed of two bottom side rails, five cross members, and a set of forklift pockets.

5.3.1 Bottom Side Rail

Each bottom side rail is built of a 3.0 mm thick pressed open section steel made in one piece.

5.3.2 Crossmember

The cross members are made of pressed channel section steel with a dimension of 45x122x30x3.0 mm

5.3.3 Fork Pocket

Each forklift pocket is built of 3.0 mm thick full depth flat steel top plate and two 200 mm deep x 6.0 mm thick flat lower end plates between two channel section cross members.

5.4 Front End

Front end structure will be composed of one bottom end rail, two corner posts, one top end rail, four corner fittings and an end wall, which are welded together.

5.4.1 Bottom end rail

The bottom end rail is made of 52x159x30x3.0 mm thick pressed channel section steel.

5.4.2 Front corner post

Each corner post is made of 4.0 mm thick pressed open section steel in a single piece, and designed to give a sufficient strength against stacking and racking forces.

5.4.3 Top end rail

The top end rail is made of a 3.0 mm thick pressed “Z” section steel.

5.4.4 Front wall

The trapezium section front wall is constructed with 1.6 mm thick vertically

corrugated steel panels, butt welded together to form one panel, and continuously welded to front end rails and corner posts.

5.5 Rear End

The rear frame will be composed of one door sill, two corner posts, one door header and four corner fittings, which will be welded together to make the door-way.

5.5.1 Door sill

The door sill to be made of a 4.0 mm thick pressed Z section steel is reinforced by two internal gussets at the back of each locking cam keeper location and four external gussets.

5.5.2 Rear corner post

Each rear corner post of hollow section is fabricated with 4.0 mm thick pressed steel outer part and 4.0 mm thick pressed angle section steel inner part.
Four (4) sets of hinge pin lugs are welded to each rear corner post.

5.5.3 Door header

The door header is constructed from a piece steel pressing with internal stiffener ribs at the location of the back of cam keeper.
header : 4.0 mm thick
Rib : 3.0 mm thick, qty. : 2 pcs.

5.6 Door

5.6.1 Each container will have double wing doors at rear end frame, and each door will be capable of swinging approximately 270 degrees.

5.6.2 Each door is constructed with two 3.0 mm thick pressed channel section steel horizontal frames for the top and bottom, 100x50x3.2mm thick rectangular hollow section vertical frames for the post side and center side of door respectively, 1.6 mm thick horizontally corrugated steel door panel, which are continuously welded within frames.

5.6.3 Two sets of galvanized "HH-E" or equivalent bolt on model locking assemblies with forged steel handles are fitted to each door using zinc plated steel bolts.Locking gears should be assembled after painting of container.

5.6.4 The left-hand door can not be opened without opening the right hand door when the container is sealed in accordance with TIR requirements.

5.6.5 Each door is suspended by four hinges being provided with stainless steel pins, self-lubricating nylon bushings and the stainless steel or brass washers, which are placed at the hinge lugs of the rear corner posts.

5.6.6 The door gasket to be made of an extruded J&C-type EPDM rubber is installed to the door peripheries frames with stainless steel gasket retainers which must be caulked with butyl sealant before installation of gasket, and fastened by stainless steel rivets at a pitch of 150 mm.

5.7 Side Wall Assembly

5.7.1 Top Side Rails

Each top end rail consists of one 60x60x3mm thick square hollow section.

5.7.2 Side Walls

The trapezium section side wall is constructed with 1.6 mm thick fully vertically continuous-corrugated steel panels, which are butt welded together to form one panel and continuously welded to the side rails and corner posts.

5.8 Roof

The roof panel is constructed with 1.6 mm thick die-stamped steel sheets having about 6.0 mm upward smooth camber, which are welded together to form one panel and continuously welded to the top side rails and top end rails

5.9 Floor

5.9.1 The Floor Boards

The wooden floor constructed with 28 mm thick wood boards are laid transversely on the cross members between the flat section steel floor center rail and the pressed angle section steel floor guide rails stitched welded to the bottom end rails.

Plywood thickness : 28 mm

Plywood moisture content: Less than 14 %

Plywood ply number : Min. 19 plies

Plywood material :Bamboo hybrid, Apitong or Hardwood,Hardwood with PSF.

5.9.2 Self-tapping screw

Each floor board is fixed to the transverse members by zinc plated self-tapping screws that are 8.0mm dia. shank x 16mm dia. head x 45mm length. Screw heads are to be countersunk with about 2mm below the floor top surface.

5.10 Special Features

5.10.1 Customs Seal Provision

Customs seal provisions are made on each locking handle and retainer in accordance with TIR requirements.

5.10.2 Lashing rings

Two (2) lashing hoop rings are welded to each top and bottom side rail at recessed corrugations of side panels but not extruded any cargo space (total 8 rings). Each lashing point is designed to provide a "1,500 kgs pull load in any direction" without any permanent deformation of lashing ring and surrounding area.

5.10.3 Ventilators

ventilator with E.P.D.M seal gasket is supplied on side wall when facing the outside of container, fixed by aluminum huck bolts, the seal is to be applied on the edges except the bottom side of the ventilator, after the completion of paint.

Quantity: 2 / each side panel

Material: ABS Labyrinth Type.

6. Preservation

6.1 Surface Preparation of the Steelwork

1) All the steel surfaces prior to forming or after will be degreased and shot blasted to Swedish Standard SA 2.5 to obtain the surface roughness at 25 to 35 microns which can result in the removement of all the rust, dirt, mill scale and all other foreign materials.
2) Locking rod assemblies, which are welded with gear cams, bars holder and handle hinges, are hot dipping galvanized (Thickness: 75 microns).
3) All fasteners such as nuts, washers, self-tapping screws, which are not mentioned in this Spec. will be electro zinc plated to 13 Microns. Bolt/Huck-bolts to be H.D.G. 40 μ .
4) Hinges and cam keepers will be electro zinc plated to 13 Microns.
5) Sealant

   Each perimeter of the floor, all the overlapped joints of inside, all the holes for bolts and nuts and all the places where may leak water will be sealed to give prevention against water entry.

   Sealant Materials:

   a. Chloroprene/Neoprene/waterborne (Cargo contact area)
   b. Butyl (Hidden parts and other area)

6.2 Coating

6.2.1 Prior to Assembly

All the steel surfaces will be coated with primer paint immediately after shot-blasting.

6.2.2 After Assembly

All the weld joints will be shot-blasted to remove all the welding fluxes, spatters, burnt primer coatings caused by welding heat, and other foreign materials, and followed with the secondary paint operation immediately.

6.2.3 All the surface of the assembled container will have coating system as follows:

Process	Paint Name	DFT (μ)
Exterior Surface	Epoxy zinc rich primer	10
	Waterborne epoxy zinc rich primer	20
	Waterborne epoxy primer	40
	Waterborne acrylic topcoat RAL 2002	40
	Total :	110
Interior Surface	Epoxy zinc rich primer	10
	Waterborne epoxy zinc rich primer	20
	Waterborne epoxy topcoat, RAL 8012	50
	Total:	80
Under Structure	Epoxy zinc rich primer	10
	Waterborne epoxy zinc rich primer	20
	Waterborne undercoating (Jointas JT-321, Ivan-512, JL-100)	200(steel parts) 100(floorboard)
	Total:	230(steel parts)

* The DFT decision rules in practice is 90-10:

For each area, and coat, less than 10% of the readings may be below the DFT specified. No readings may be below 90% of the DFT specified. Areas where the total DFT is more than twice the DFT specified are not acceptable and must be redone completely.

* Epoxy zinc rich primer and epoxy topcoat are not applied to the wooden floor.

7. Markings

7.1 Lettering

The markings will be designed decal and arranged according to buyer's requirement. The markings consist of the following contents:

1) Owner's emblems ..... according to owner's design.
2) Weight details (on door)
3) Material of marking: Calender Vinyl film.

7.2 Specifications

1) Identification plates such as consolidated data plate consisting of TIR and TCT will be riveted on the door permanently by stainless steel blind rivets. The entire periphery except the bottom side will be caulked with sealant.

2) The owner's serial numbers and manufacturer's serial numbers will be stamped into the top surface of left-hand and right-hand rear lower corner fittings respectively

8. Testing and Inspection

8.1 Proto-type Container

The prototype container to be manufactured in accordance with this specification will be tested by manufacturer under the supervision of classification society.

8.2 The proposed sequence & procedure table for general prototype testing:

	Test items & loads	Test methods
A)	Lifting (from top corner fittings) Internal load : 2R-T	Lifting 60 degree to the horizontal Time duration : 5 minutes
B)	Lifting (from bottom corner fittings) Internal load : 2R-T	Lifting 60 degree to the horizontal. Time duration : 5 minutes
C)	Lifting (for forklift pockets) Internal load : 1.6R-T	Lifting by horizontal bars. Bar length : 1,828mm Bar width : 200mm
D)	Operation of door	After completion of test, the operation of doors, locks, hinges, etc. will be checked.
E)	Dimensions and weight	After completion of test, the dimensions and weight will be checked.
F)	Weatherproofness	Inside dia. of nozzle : 12.5mm Distance : 1.5 m Speed : 100 mm/sec. Pressure : 1 kg/sq.cm

* Note: R Maximum Gross Weight
T Tare Weight
P Maximum Payload

8.3 Inspection

8.3.1 Materials and Component Parts 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.

8.3.2 Production Line Inspection

Every container 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.

9. Documents Submission

9.1 When Contracting

CIMC shall submit the specification with following drawing (3 sets):

General arrangement	Side wall assembly
Base assembly	Front end assembly
Rear end assembly	Roof assembly
Marking arrangement	

9.2 When delivery

The owner shall inform CIMC all the documents needed two weeks before the date of delivery and CIMC will be submit them to the owner.

10. Guarantee

The guarantee period will commence at the day of delivery and the delivery is not later than three (3) months after the containers are accepted by the owner.

10.1 Paint Guarantee

The paint system applied to the container surface shall be guaranteed against corrosion and/or paint failure for a period of five (5) years. The guarantee shall be applied to all the kinds of faults / failures affecting more than 10 % of any given part of the container, and partial or total repainting shall be assured for the container(s) at the manufacturer's expense. Normal wear/tear, or corrosion caused by acid, alkaline solution or result from damages by abrasion impact or accident are excluded. Corrosion is defined as the rusting exceeding RE3 (European scale of degree of rusting).

10.2 Other Guarantee

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 seven (7) years.

11. Materials

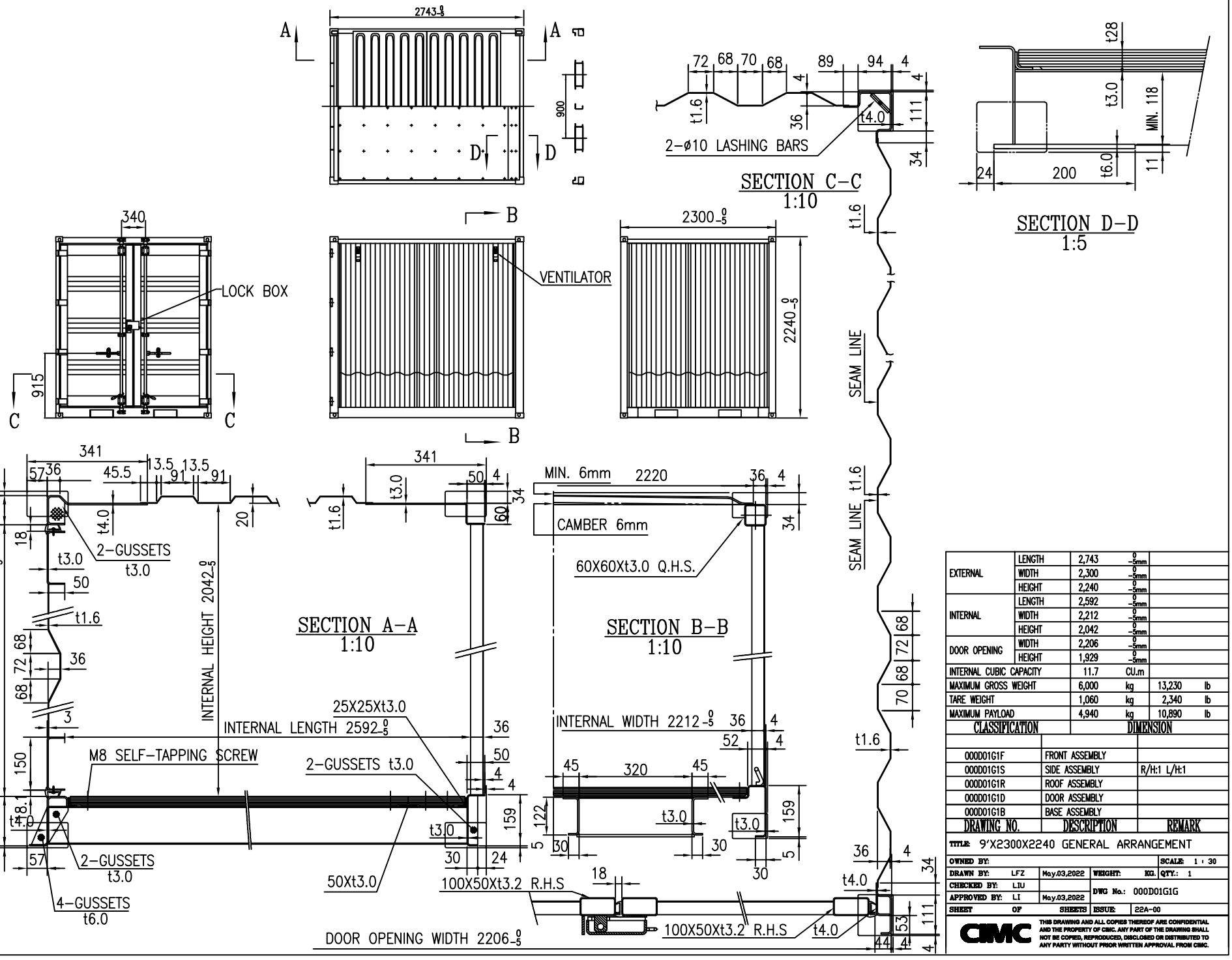
The main materials used in construction are as follows or approved equivalent:

Where used	Materials
Front End Assembly	
Front corner post	Corten A
Front sill	Corten A
Front panel	Corten A
Front header	Corten A
Base Assembly	
Bottom side rail	Corten A
Crossmember	Corten A
Fork pocket assembly	Corten A
Floor center rail	Corten A

Rear End Assembly	
Rear corner post	Corten A
Rear header	Corten A
Door sill	Corten A
Door panel frame	Corten A
Door panel	Corten A
Door hinge	SS41, Electro zinc plated
Door hinge pin	SUS304
Locking cam keeper	SS41, Electro zinc plated
Locking cam	SS41, H.D.G.
Locking rod	STK41, H.D.G.
Door gasket	E.P.D.M
Gasket retainer	SUS304
Washer	SUS304
Rivet	SUS304
Shim	E.P.D.M.
Corner fitting	SCW49
Side Wall Assembly	
Side panel	Corten A
Top side rail	Corten A
Lashing bar, lashing ring	SS41, Electro zinc plated
Ventilator	A.B.S
Roof	
Roof corner gusset	Corten A
Roof panel	Corten A

Note:

Material	Yield point (Kg/sq.mm)	Tensile strength (Kg/sq.mm)
SS41	25	41
JIS SCW49	28	49
SS50	29	50
SM50YA	37	50
Corten A	35	49
SM50A	33	50

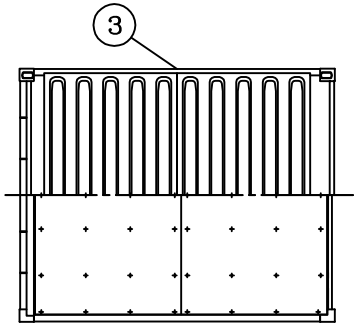


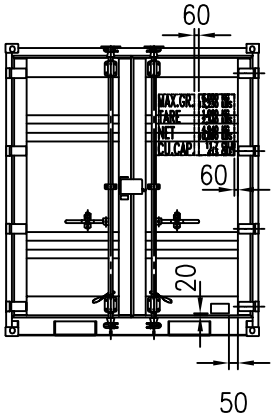
EXTERNAL	LENGTH	2,743	0 -5mm	
	WIDTH	2,300	0 -5mm	
	HEIGHT	2,240	0 -5mm	
INTERNAL	LENGTH	2,592	0 -5mm	
	WIDTH	2,212	0 -5mm	
	HEIGHT	2,042	0 -5mm	
DOOR OPENING	WIDTH	2,206	0 -5mm	
	HEIGHT	1,929	0 -5mm	
INTERNAL CUBIC CAPACITY		11.7	CU.m	
MAXIMUM GROSS WEIGHT		6,000	kg	13,230 lb
TARE WEIGHT		1,060	kg	2,340 lb
MAXIMUM PAYLOAD		4,940	kg	10,890 lb

CLASSIFICATION	DIMENSION	
000D01G1F	FRONT ASSEMBLY	
000D01G1S	SIDE ASSEMBLY	R/H:1 L/H:1
000D01G1R	ROOF ASSEMBLY	
000D01G1D	DOOR ASSEMBLY	
000D01G1B	BASE ASSEMBLY	
DRAWING NO.	DESCRIPTION	REMARK

TITLE: 9'X2300X2240 GENERAL ARRANGEMENT

OWNED BY:				SCALE:	1 : 30
DRAWN BY:	LFZ	May.03,2022	WEIGHT: KG.	QTY.:	1
CHECKED BY:	LIU		DWG No.:	000D01G1G	
APPROVED BY:	LI	May.03,2022			
SHEET	OF	SHEETS	ISSUE:	22A-00	





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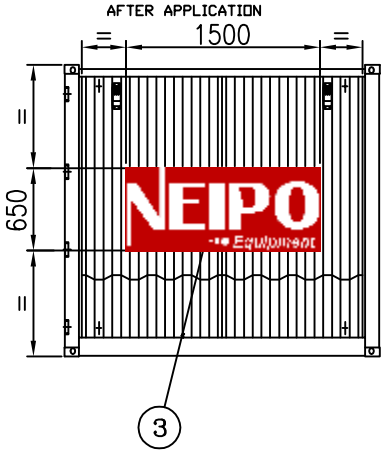

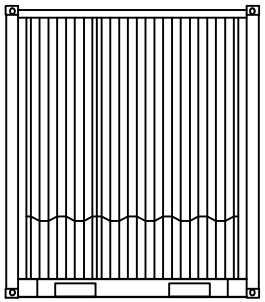

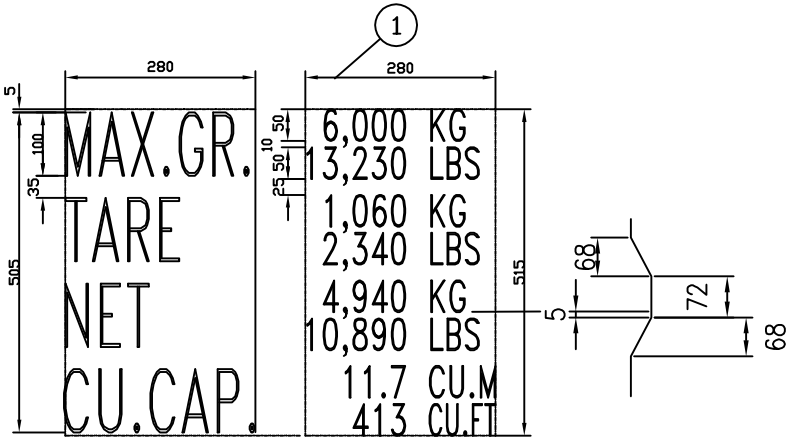

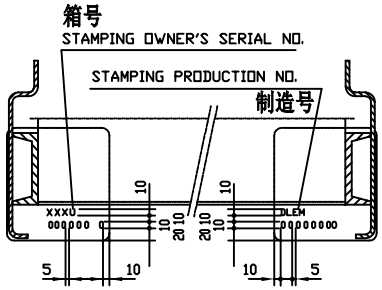

REAR END BOTTOM CORNER FITTING

NOTE:
DECAL MATERIAL: Calender Vinyl film

3	SIDE LOGO		WHITE ISSUE		2
2	CIMC DECAL				1
1	WEIGHT DECAL	M100001	WHITE ISSUE		1ST

TITLE: 9'x2300x2240 GENERAL ARRANGEMENT				
OWNED BY:				SCALE: 1 : 30
DRAWN BY:	LFZ	May.03,2022	WEIGHT: KG.	QTY.: 1
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