



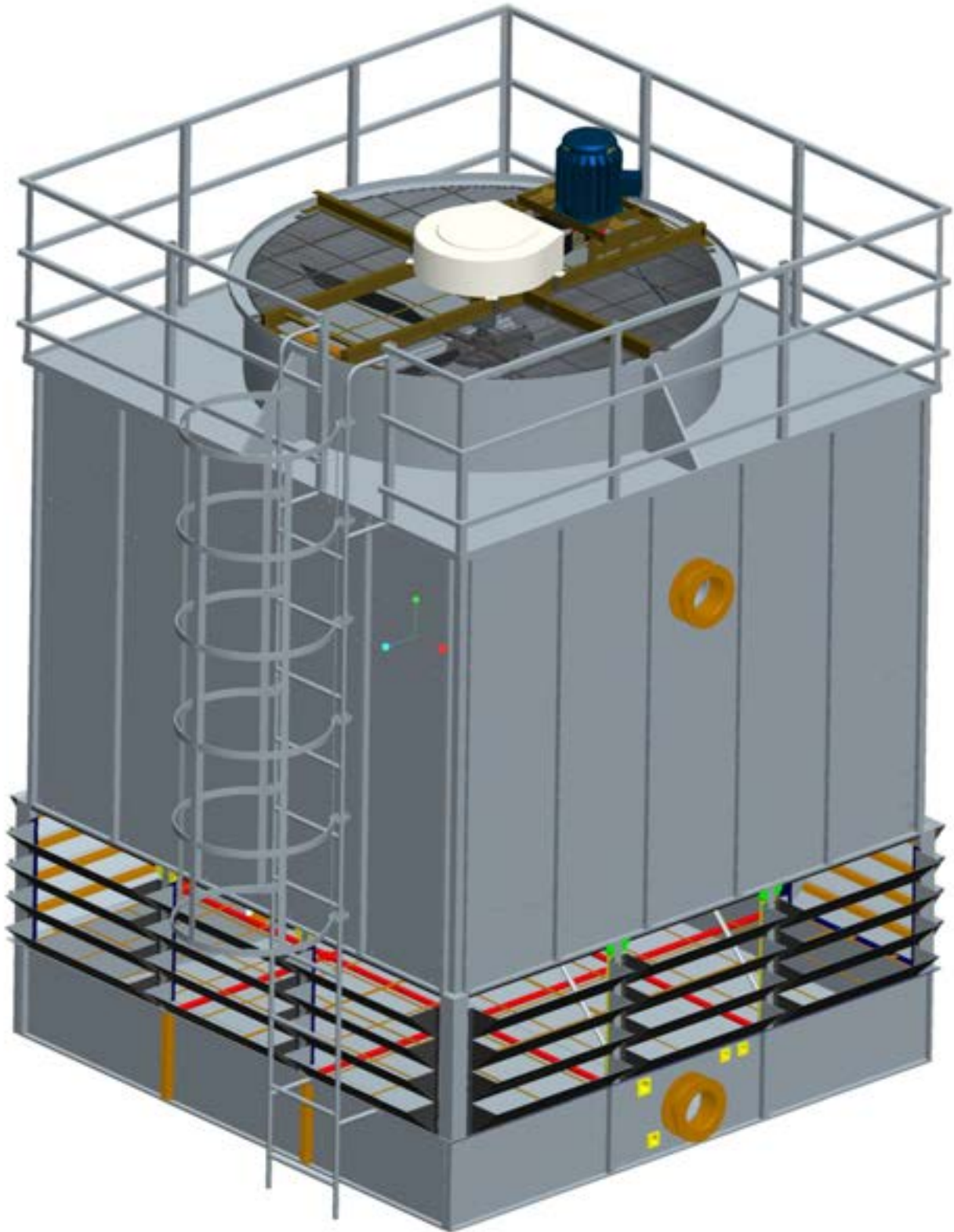
# COOLING TOWER

## INSTALLATION MANUAL (MCR-2606-11L)

MCR SERIES – COUNTER FLOW LOW NOISE TYPE

COOLING TOWER







# Content

## 1. Installation Preparation

- 1.1 Preparation
- 1.2 Confirmation
- 1.3 Storage

## 2. Installation Step

- 2.01 Cold water basin (Attention: waterproof procedure)
- 2.02 Air inlet support
- 2.03 Acoustic mat with mesh & support, infill main support and make up water accessory
- 2.04 Side panel (Attention: waterproof procedure)
- 2.05 Infill support, infill, semi-circular tube
- 2.06 Distribution system and nozzle
- 2.07 Drift eliminator and upper catwalk
- 2.08 Fan stack
- 2.09 Transmission system
- 2.10 Handrail, safety cage, ladder, louvre





# 1. Installation Preparation

## 1.1 Preparation

In order to achieve convenient and quick installation, please prepare in accordance with the following instructions:

1.1.1 Carefully refer to the installation diagrams, the list of packing, and the list of screws so as to examine and analyze the structure and components of the cooling tower, and understand the installation steps and procedures.

1.1.2 Standby tools

Before the installation, please prepare for the following tools, and determine the number of staff needed according to the size, quantity and work period of the cooling tower, and determine the type, quantity and time needed for installing the machinery according to the position of installation, and then estimate the installation cost.

Basic tools needed:

Spanners (Open-mouth, plum blossom, or casing) 6 x 8

8 x 10

11 x 13

12 x 14

14 x 17

17 x 19

19 x 22

22 x 24

Flexible Spanner

200

300

Inner Hexagon Spanner

6

8

10

Pipe Wrench

Trestle Ladder

2000m (H), or 3000m (H)





Prying Bar	M10, M12
Horizontal Pipeline	1 pc (20-30m)
Horizontal Ruler	2 Units
Supporting Wire	2 Units
Straight Screwdriver	6 x 100 8 x 150
Cross Screwdriver	#1 #3
Plier	175 or 200
Hammer	2 Pieces
Mallet	2 Pieces
Iron Bars	900
Screw Saw	1 pc
Hand Saw	1 pc
Steel Measuring Tape	20m
Hand Electric Drill	10mm
Drill	φ 6 φ 8 φ 9.5
Adjusting pad (Several)	60mm x 60mm, Thickness 2mm, 3mm, 1mm
Nylon rope	8m - 10m
Other electric tools, electrical welding, fireproof apparatuses, safety equipment	
Greasing oil	
Sandpape	

## 1.2 Installation Site Confirmation Check

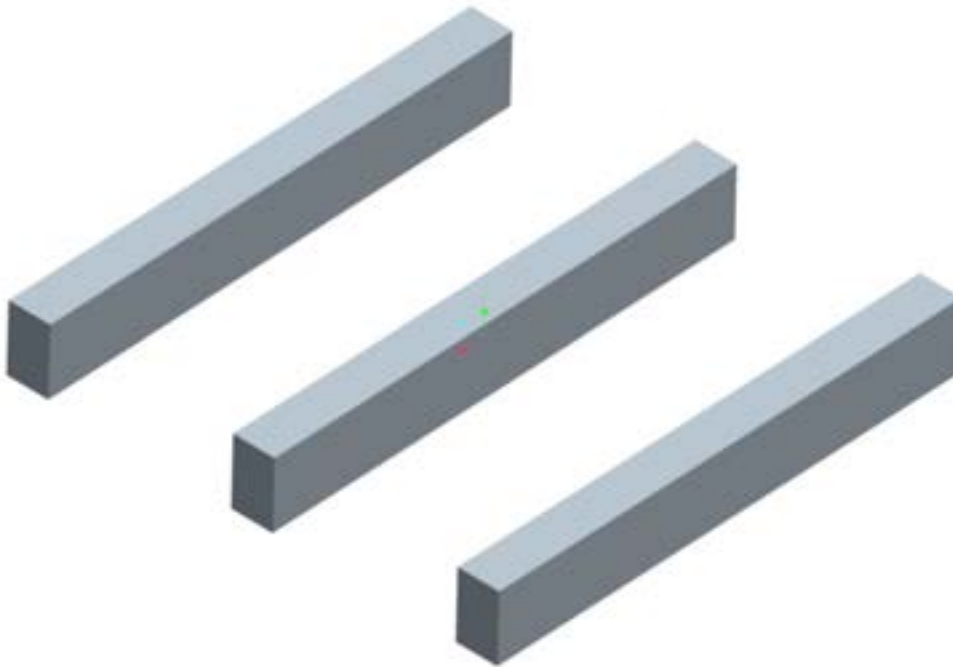
- 1.2.1 Check whether the foundation meets the installation requirements. Check and survey the situations with horizontal pipe and scroll rule according to the dimension and requirements of the foundation diagram as provided by Mesan Company. If the error is relatively large, please make the preparation so as to realize the installation requirements for a smooth installation. Various footings of the cooling tower shall be buried with an error which is no larger than 5mm, and the central diagonal is not larger than 3mm. See Figure (I).
- 1.2.2 Check whether the quantity of all components is correct according to the list of packing. Sort





and place the components according to the installation map, installation manual, and the installation sequence, and store them according to the requirements, which will provide quick, accurate useful conditions for the installation.

- 1.2.3 Determine the specific installation direction according to the requirements of the client and the water intake and outlet positions of the cooling tower.
- 1.2.4 Fabricate according to the above mentioned requirements if there is steel structure foundation.



See Figure (I)

## 1.3 Storage

- 1.3.1 Filling materials (rubber pad)  
The filling materials shall be placed in cool and dry places, keep away from overweight on the top and the direct sunshine under the sun, in avoidance of over early transformation and aging.
- 1.3.2 Electric motor (motor) and fan  
The electrical motor and fan shall be placed in cool, ventilating and safe places, in avoidance of external rusting and damaged insulation. Pay special attention so as not to lose.





### 1.3.3 Belt Reducer

Belt reducer shall be placed in cool, ventilating and safe places, in avoidance of rusting or loss. The belt reducer shall stand and avoid flat laying, in avoidance of crashing or transformation by the heavy matters.

### 1.3.4 Rubber mortar, fiber

The rubber mortar and fiber shall be placed in dry, cool and ventilating places, in avoidance of direct strong sunshine so as not to become void.

### 1.3.5 Fiber Components

The fiber components shall be placed separately. Don't place other hardware items on the top so as not to be damaged or transformed. Stack the items properly according to different shapes.

### 1.3.6 Hardware Items

Hardware items shall be placed according to different dimension separately so as to count the quantity, sort by type, and transport easily. It is better to place according to the sequence of installation.

## 2. Installation Step

**Install the cooling tower according to the following procedure**

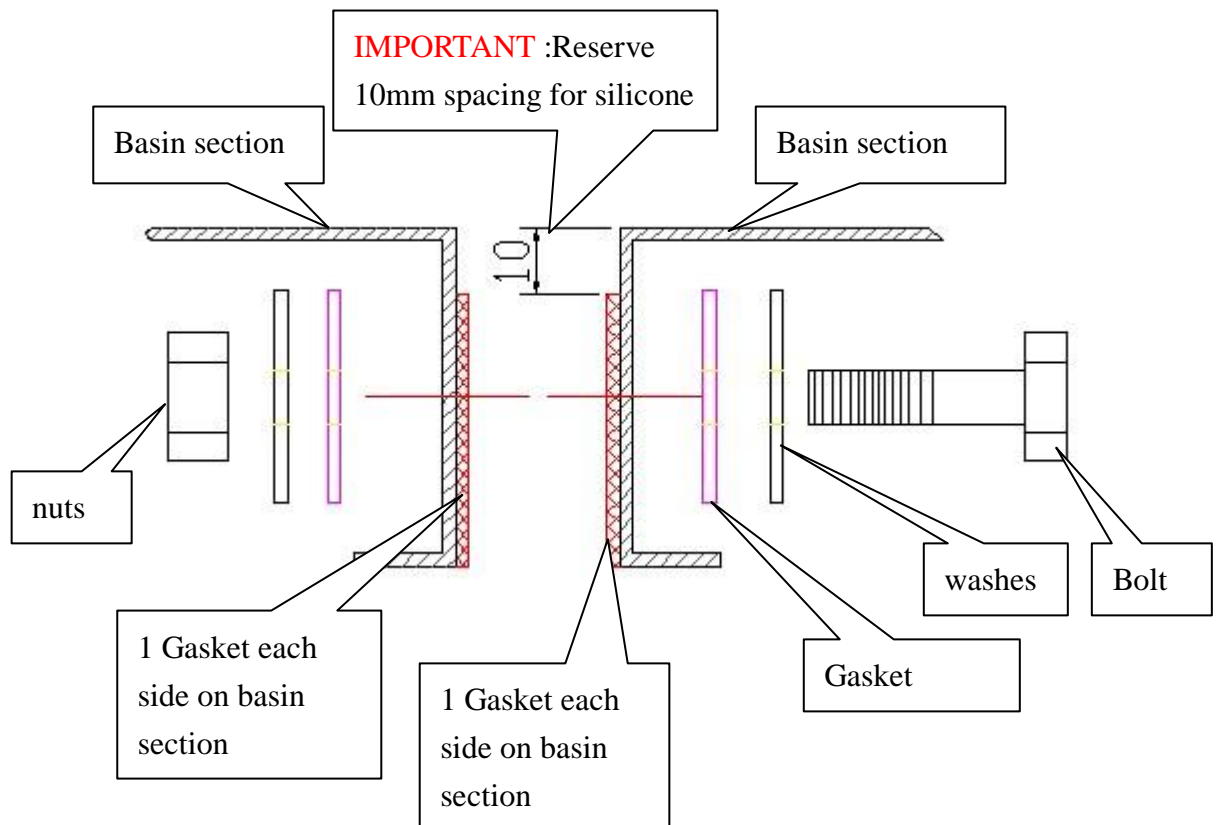
### 2.01 Cold water basin

- 1) **Read carefully the waterproof procedure (see figure 2) before install the cold water basin**
- 2) Connect all the basin components by hand first BUT DO NOT TIGHTEN UP THE BOLTS & NUTS 100%. Some tolerance needed to be minor adjusted on the basin. Use level ruler to check horizontal level on all sides of basin. Tolerance more than 3mm, sheet metal spacer should be added under the tower support.
- 3) Check the basin is regularly by using nylon string, tape to measure 4 angles of the basin. Tolerance between the diagonal length should not more than 3mm. Tighten all the bolts and nuts and check the horizontal level again within the tolerance.

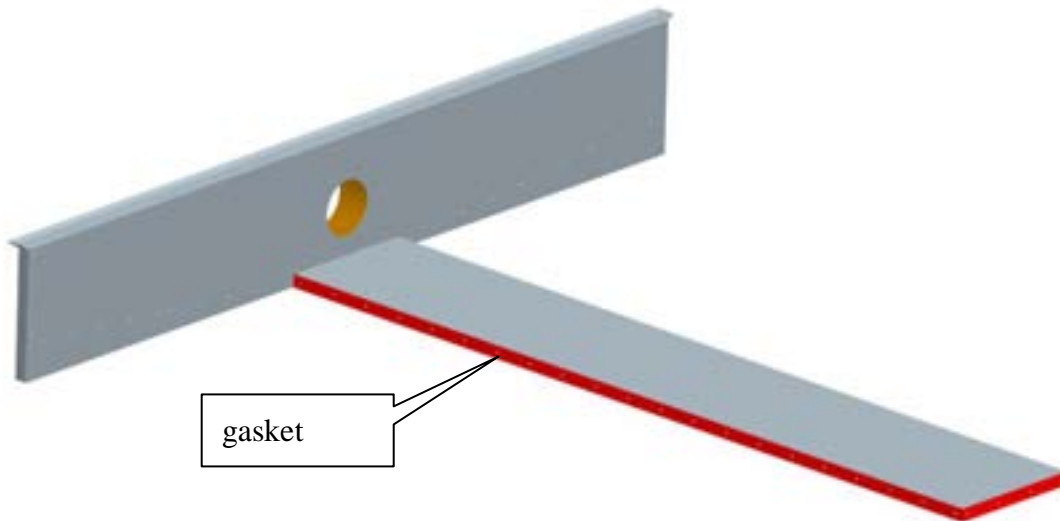
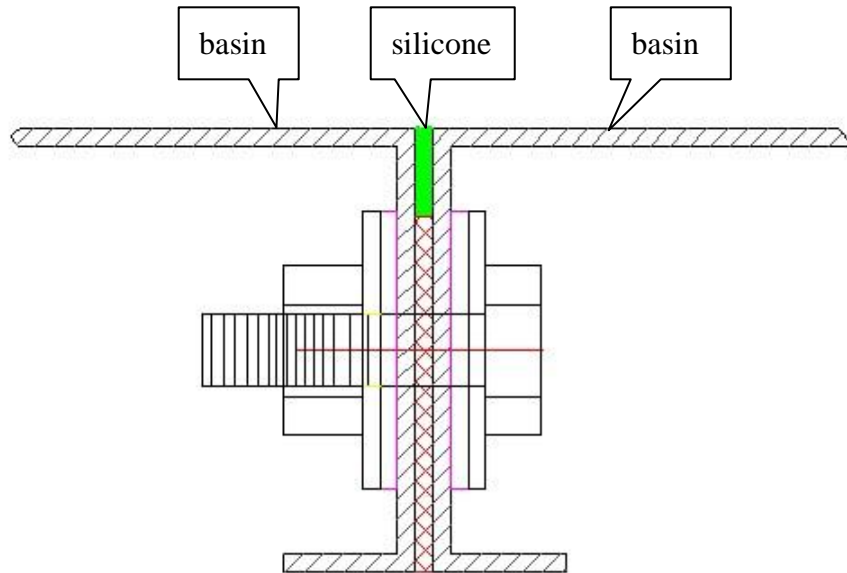


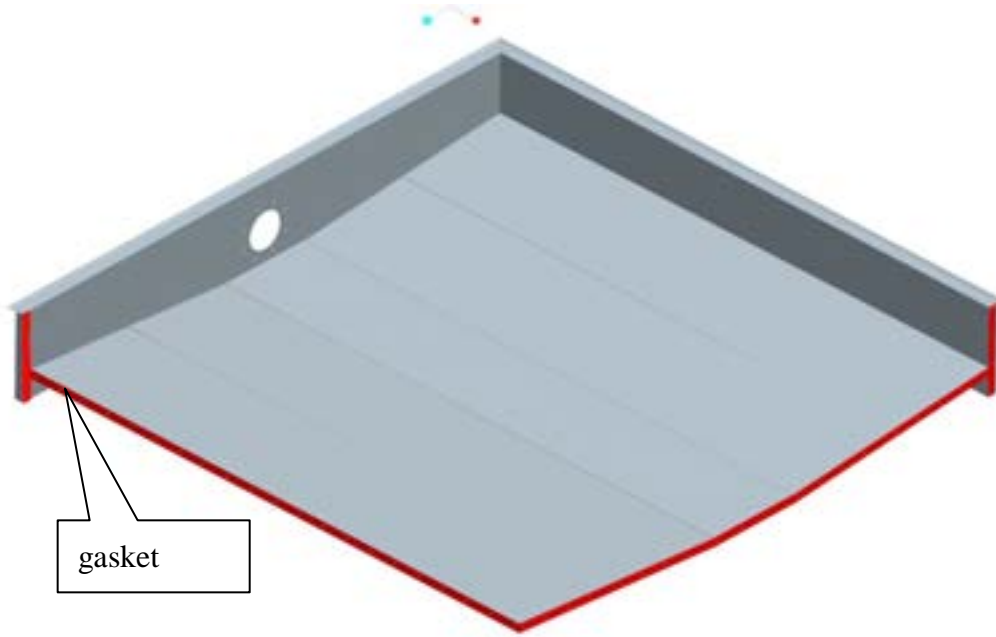


Side view of 2 pcs cold water basin sections









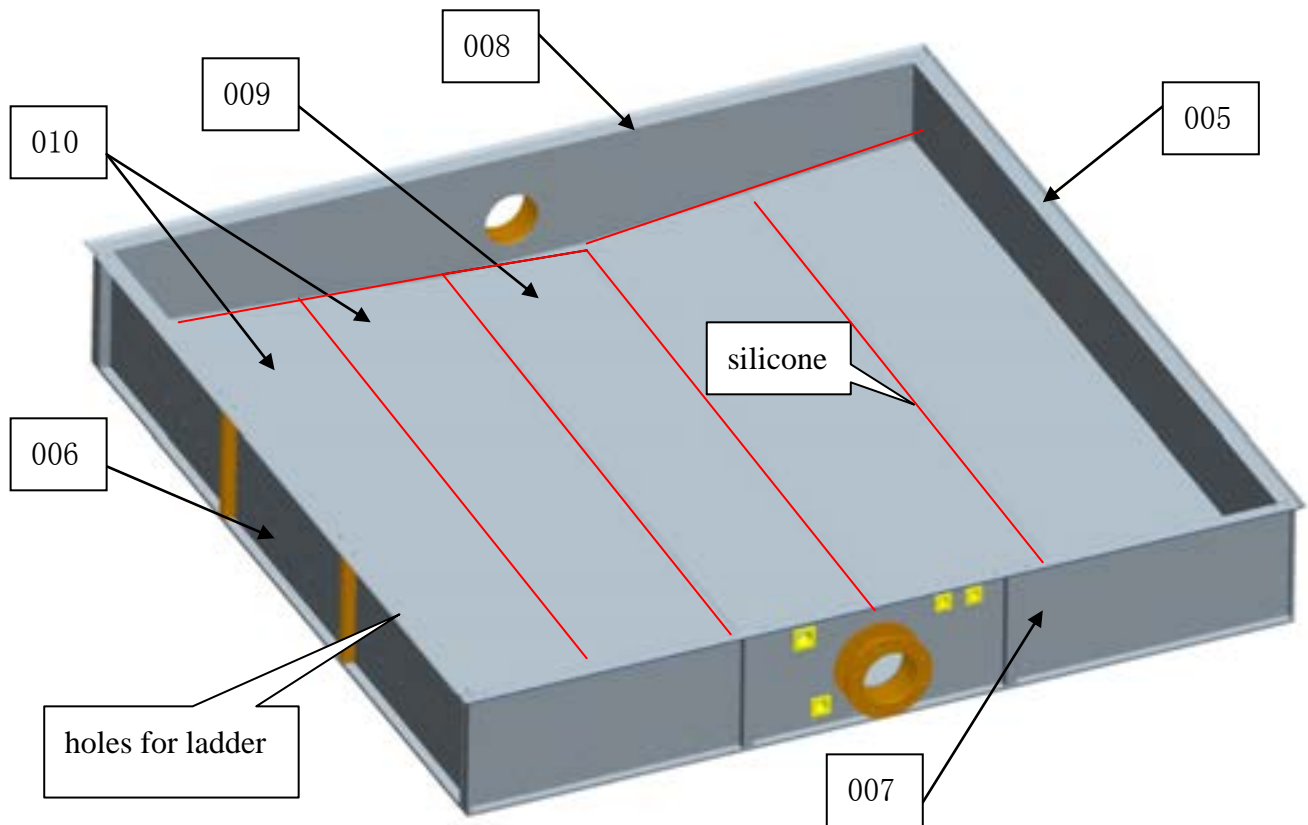
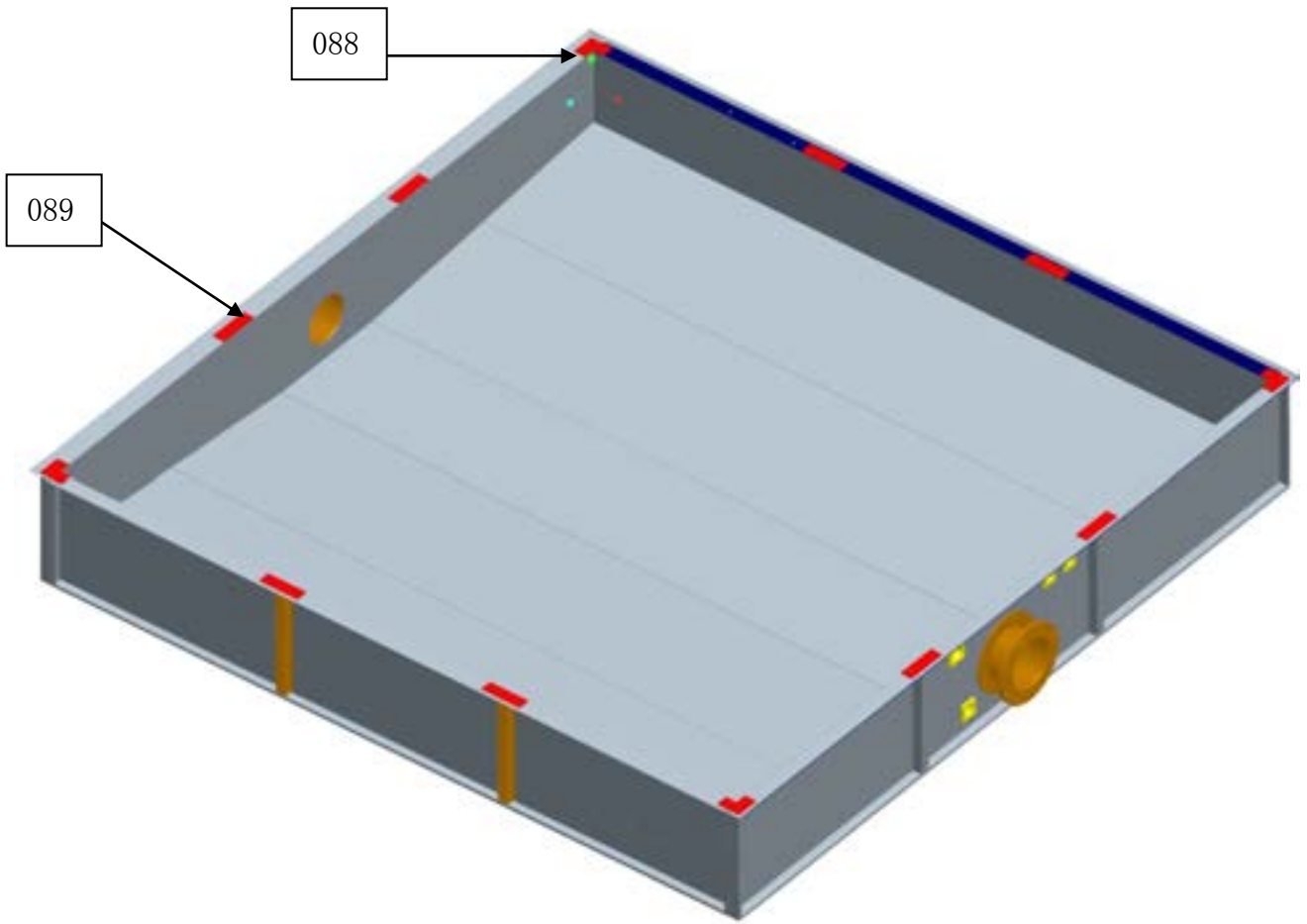


Figure 2

## 2.02 Air inlet support

1. Attention to put gaskets on basin before install the air inlet support. (see figure 3a & b)
2. Put gaskets in between washes when tighten up bolts & nuts





(see figure 3a)



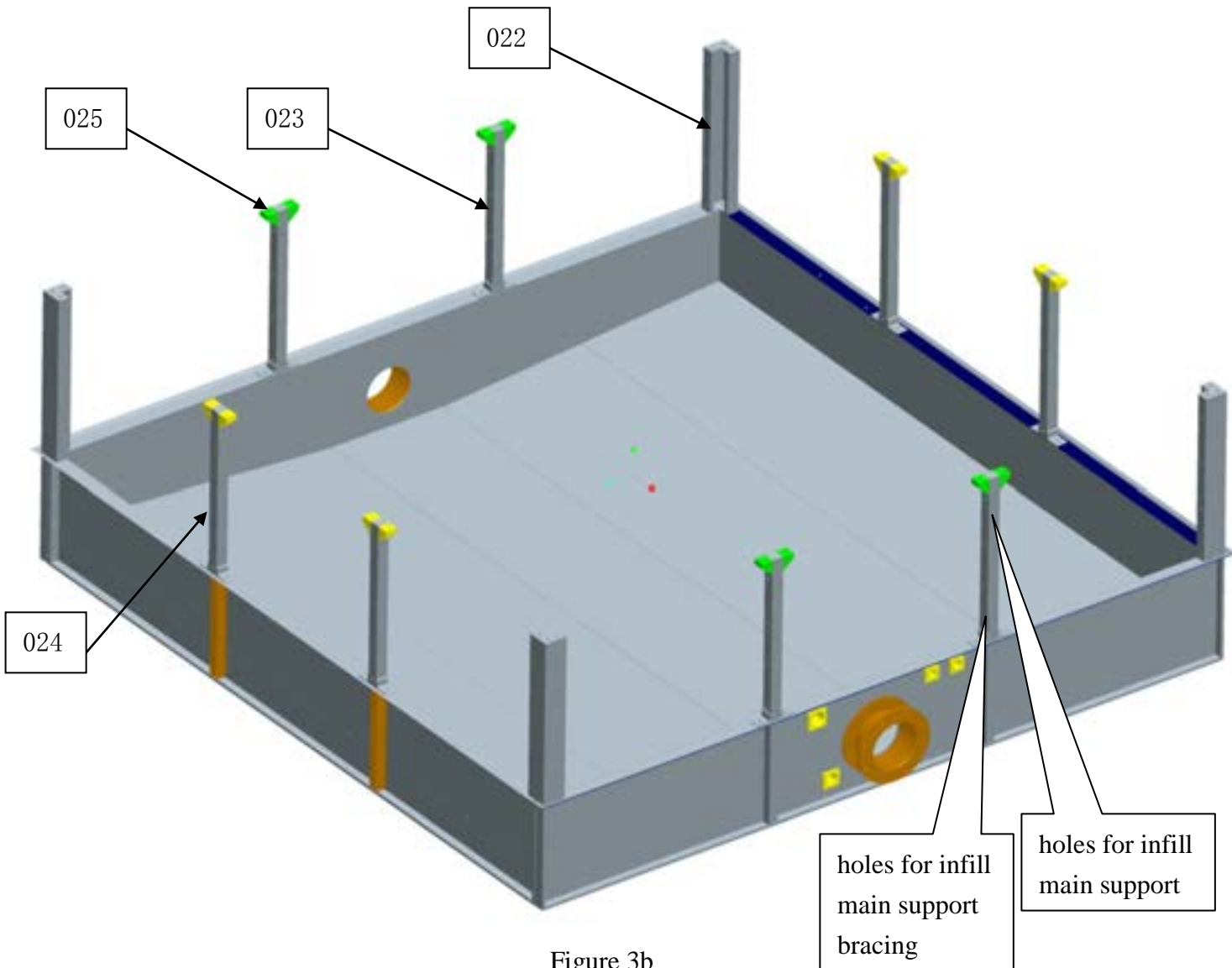


Figure 3b

## 2.03 Acoustic mat with mesh & support, infill main support and make up water accessory

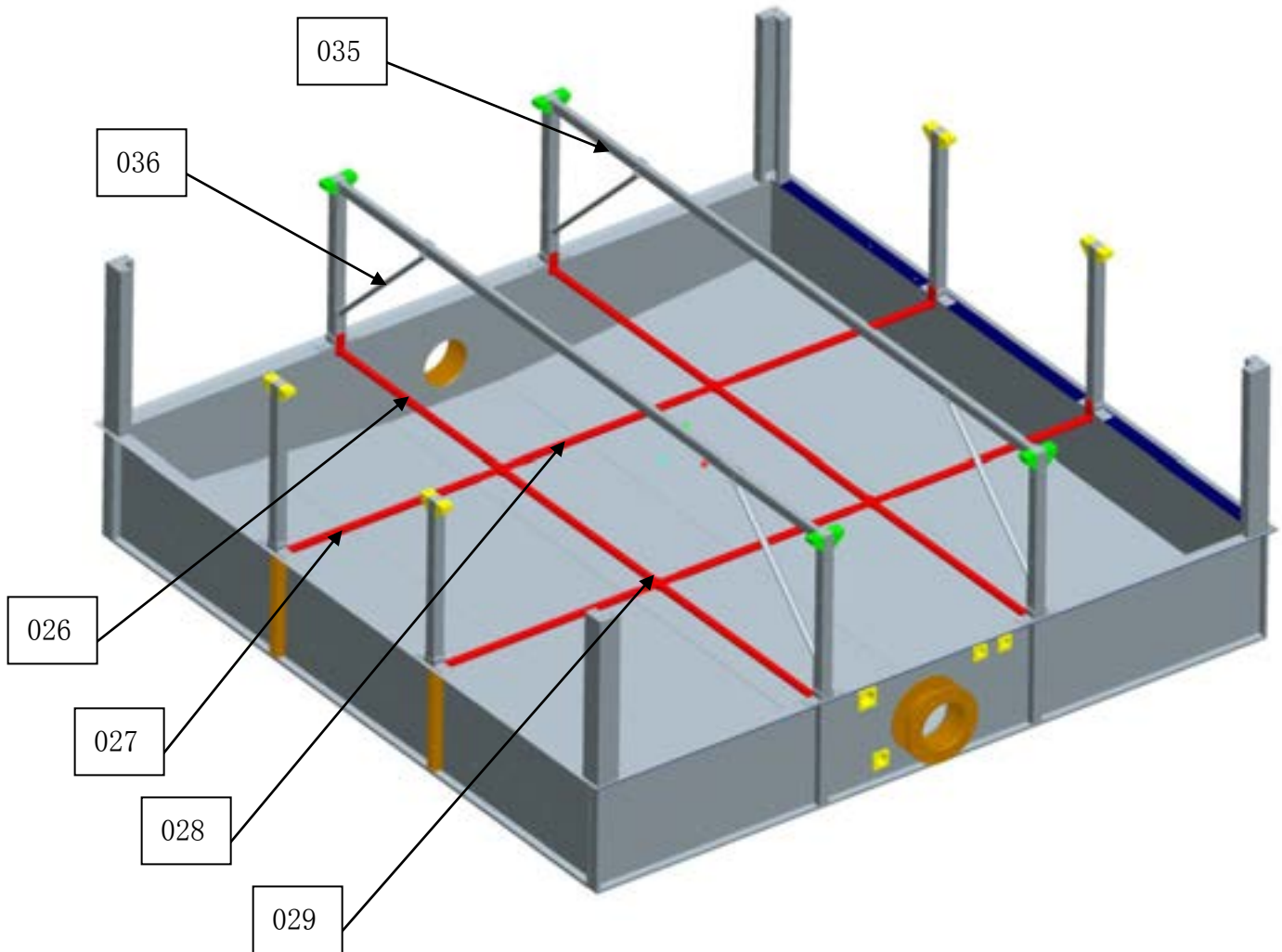
- 1) When install acoustic mat support and infill main support, gaskets must be put in between washes when tightened up bolts & nuts
- 2) After put acoustic mat with mesh on acoustic mat support, use nylon tie to tie up acoustic

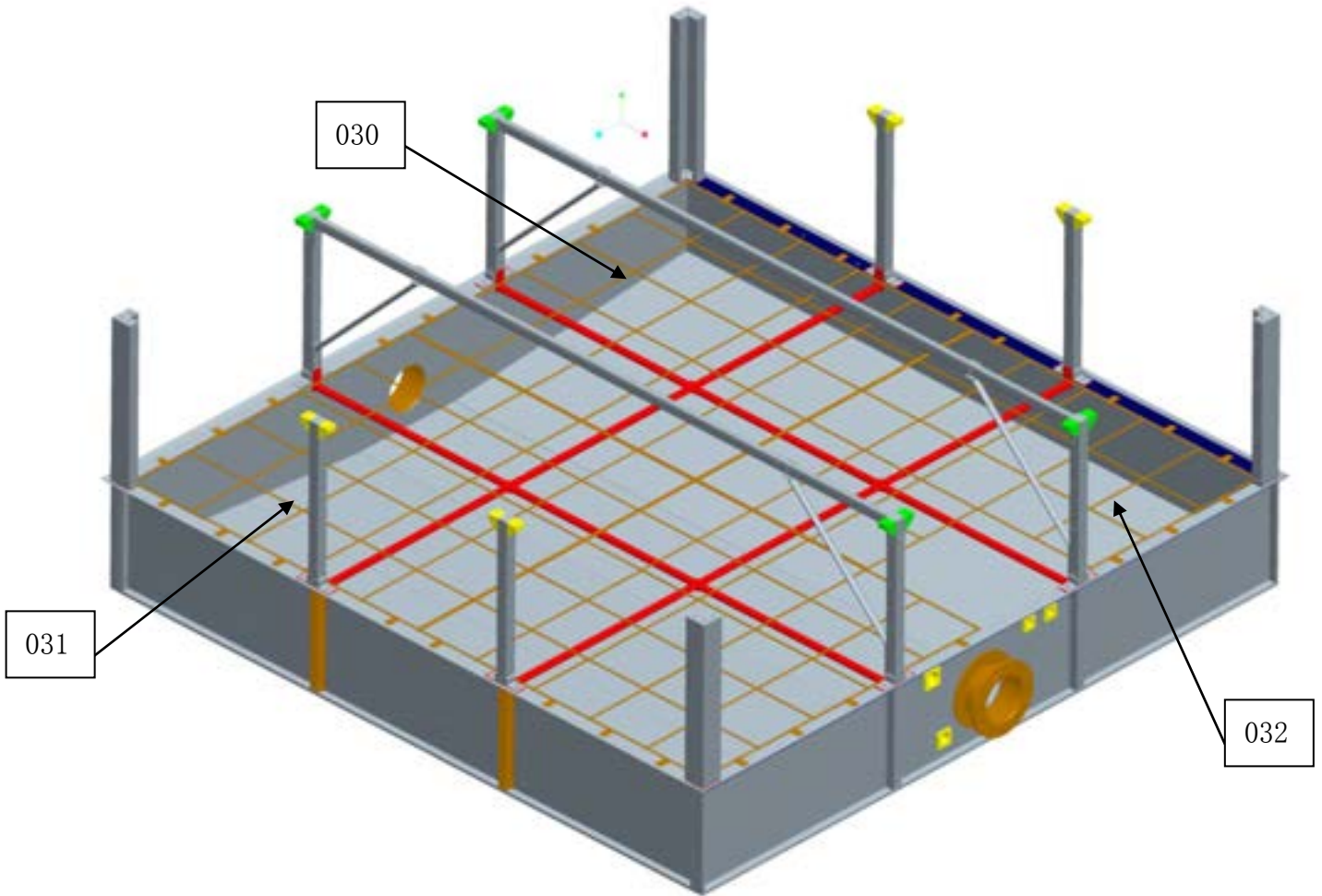




mat one another

- 3) Rubber gasket must be put when install debris strainer. (see figure 4)





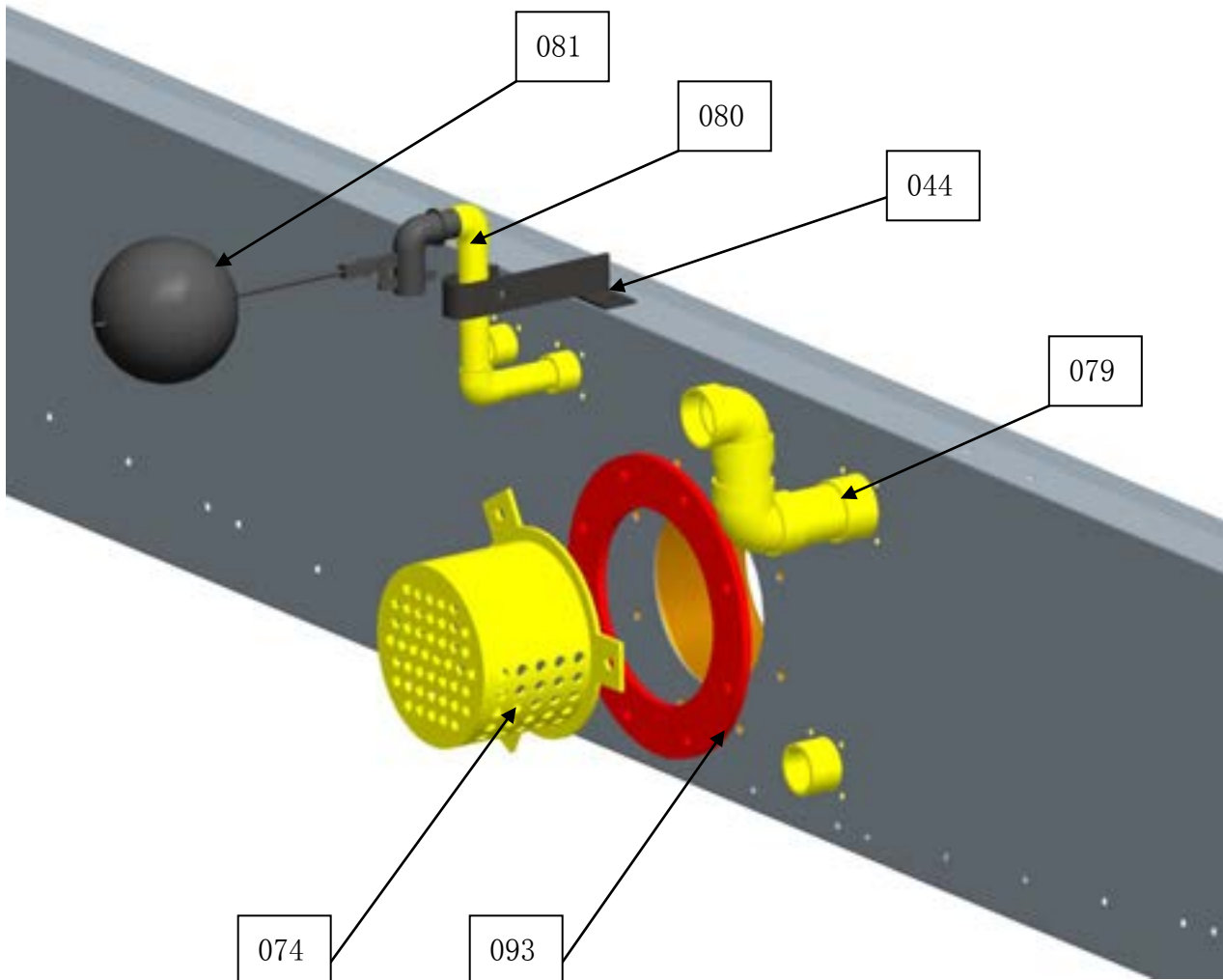


Figure 4

## 2.04 Side panel

- 1) Install 4 pieces of panel middle post on four corners. (see figure 5)
- 2) Place the panels on ground in order, and pay attention on some holes on panels for installing different parts. (see Figure 7a & b)
- 3) Attention on waterproof procedure when installing panels (see Figure 6)
- 4) Install 3 side panels only at the beginning and left 1 side for installing infill.(see Figure 8)





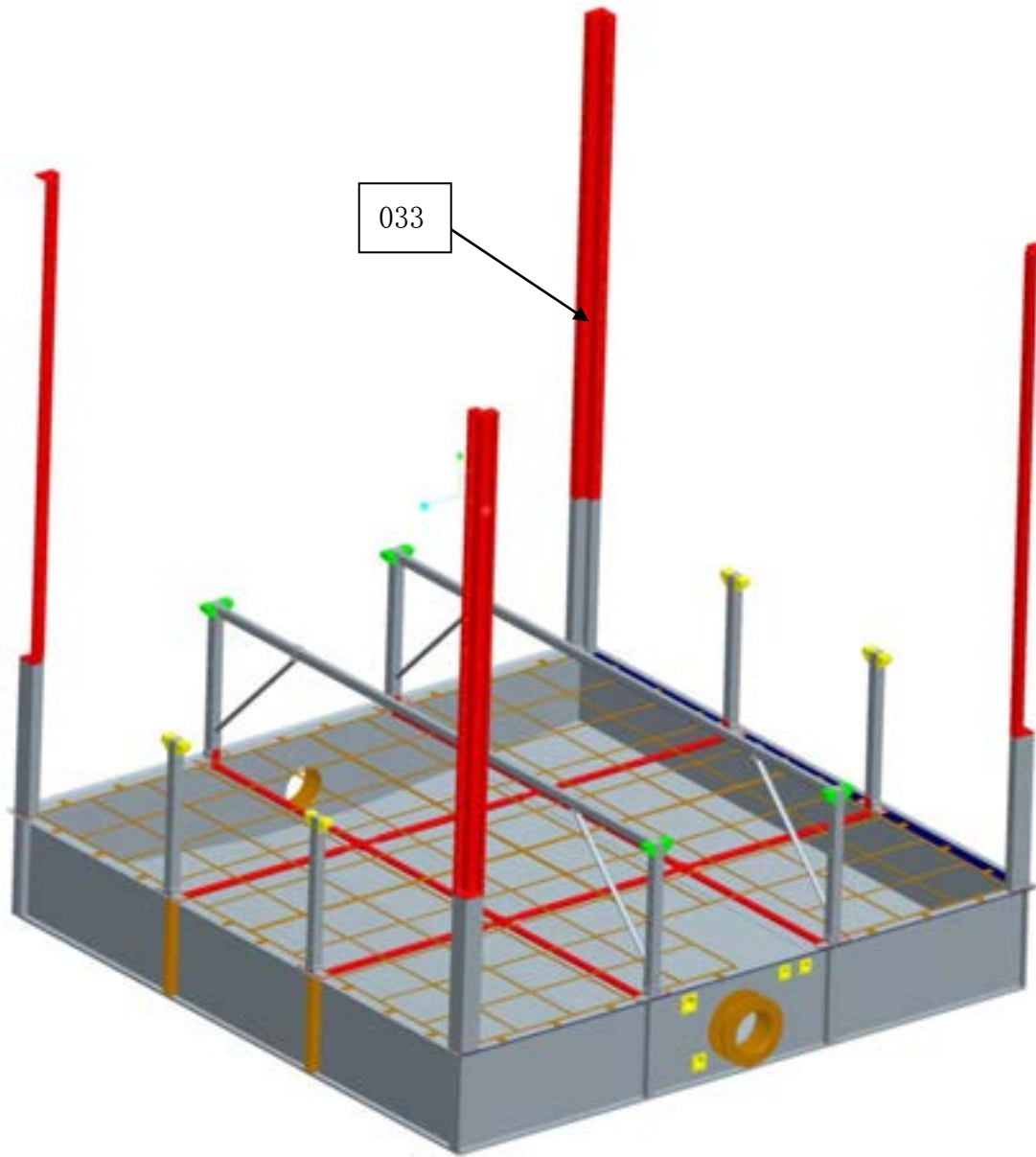


Figure 5



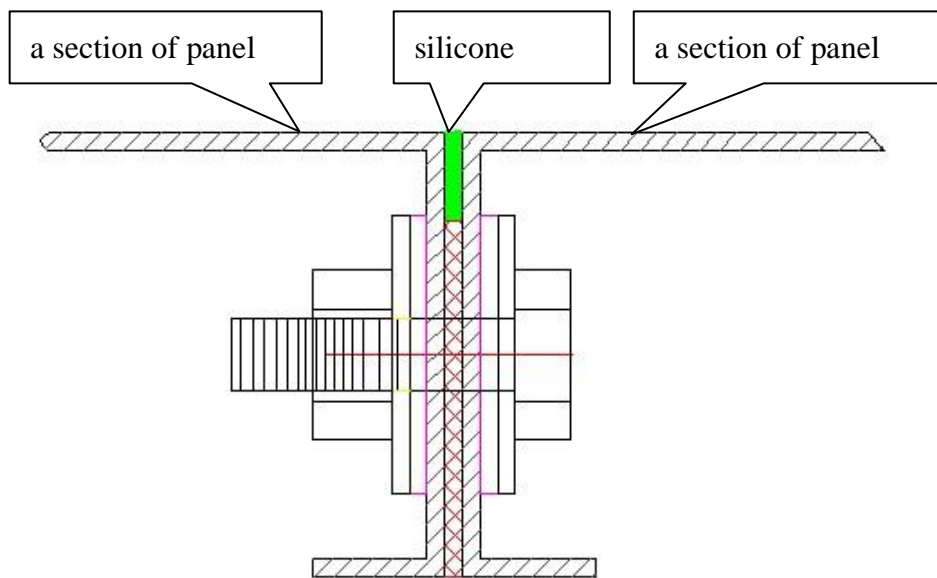
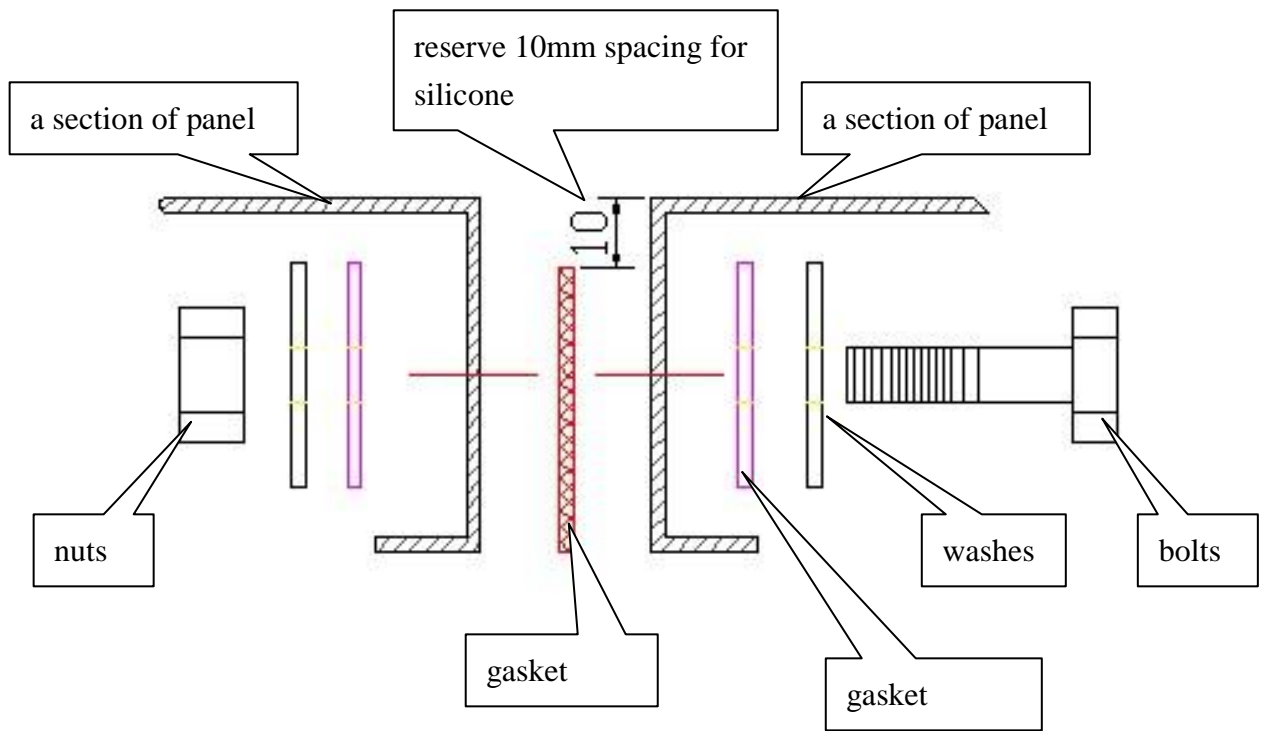


Figure 6



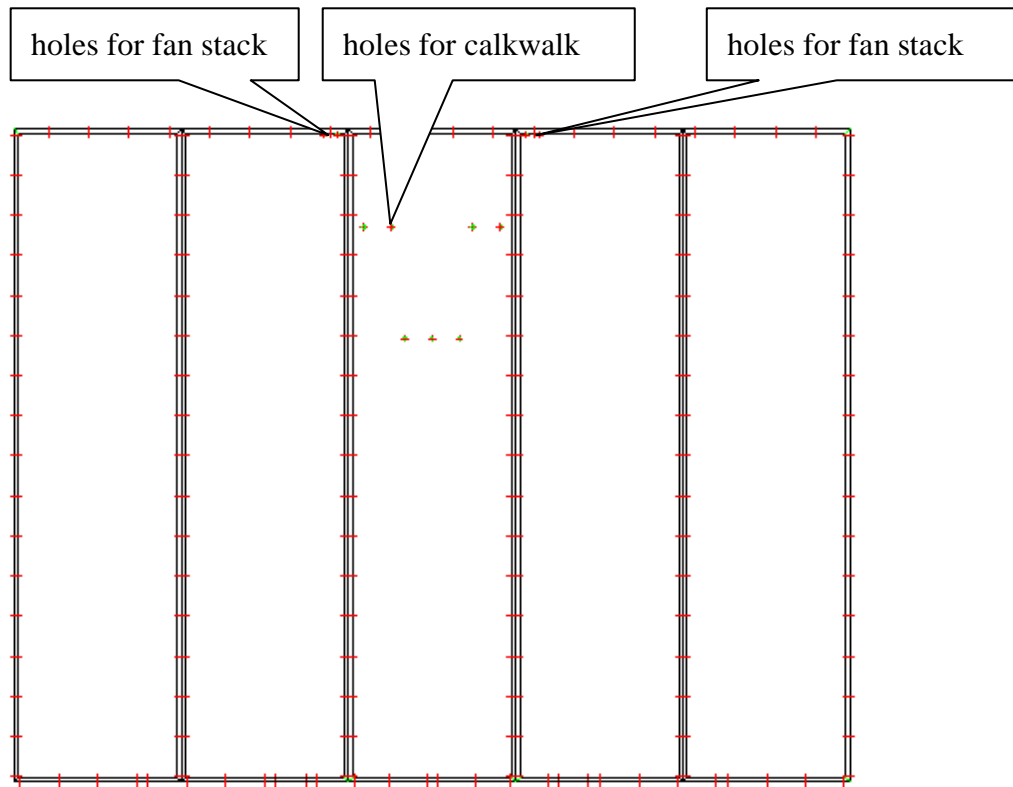
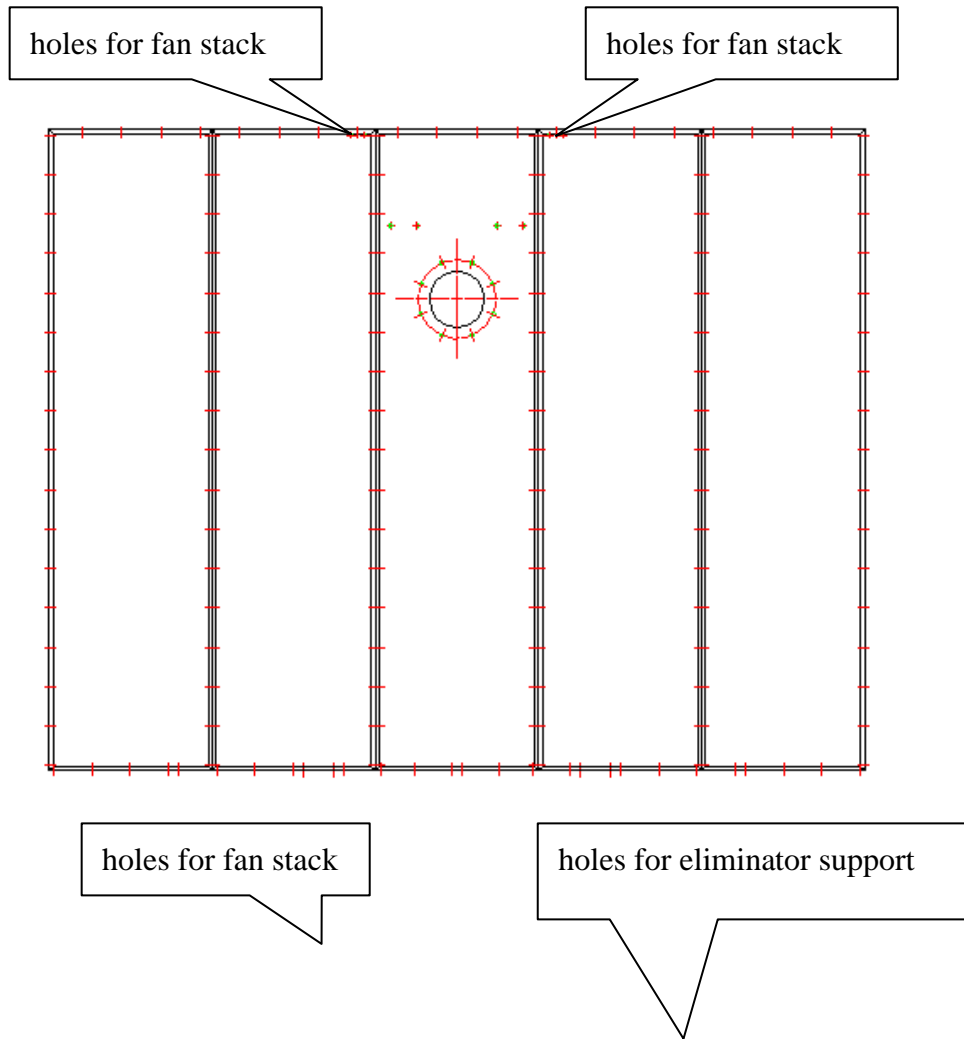


Figure 7a





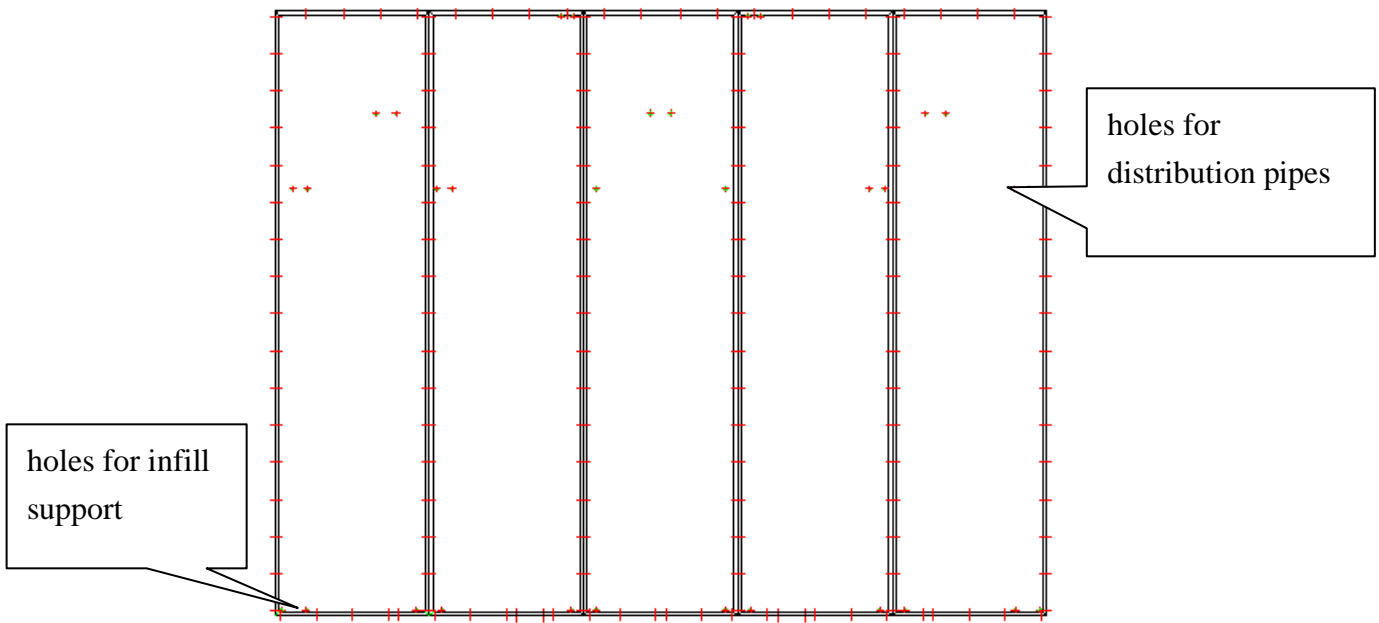


Figure 7b

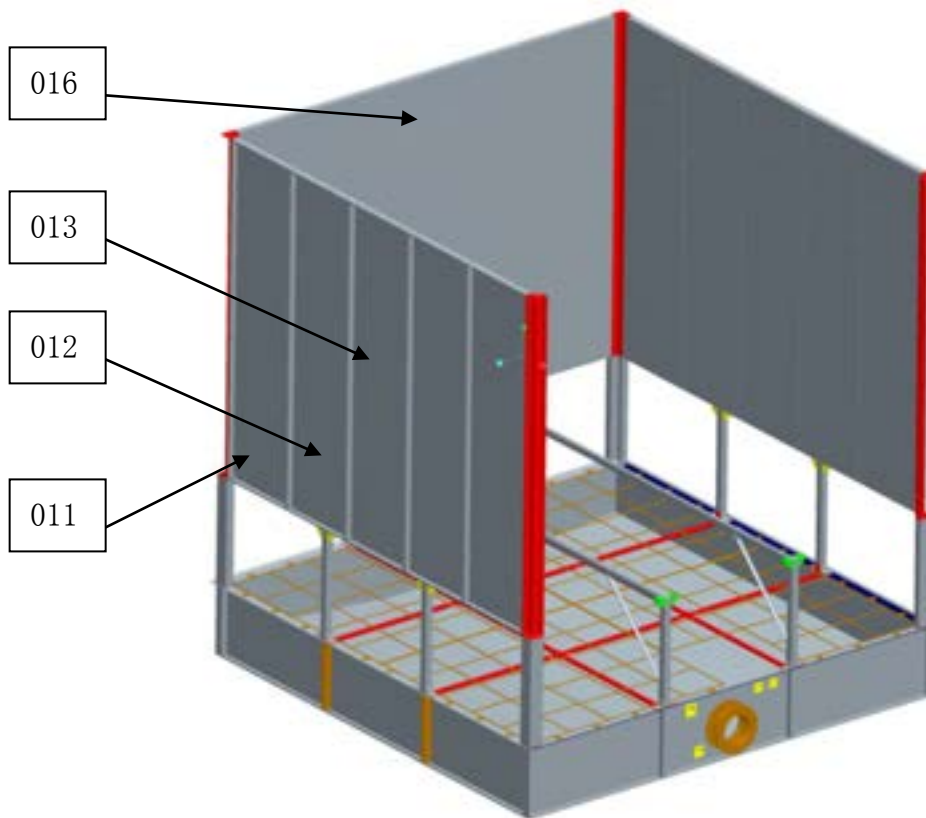




Figure 8

## 2.05 Infill support, infill and semi-circular tube

- 1) Gasket must be put when install infill support (see figure 9)
- 2) Infill is combined of 4 layers with 2 different height, 220mm & 330mm. Pls follow the sequence from the bottom to the top,330mm,330mm,220mm,220mm , and **each layer of infill have to be perpendicular each other.**(see figure 10a & b)
- 3) use plastic fastener to install the semi-circular tube. (see figure 11)

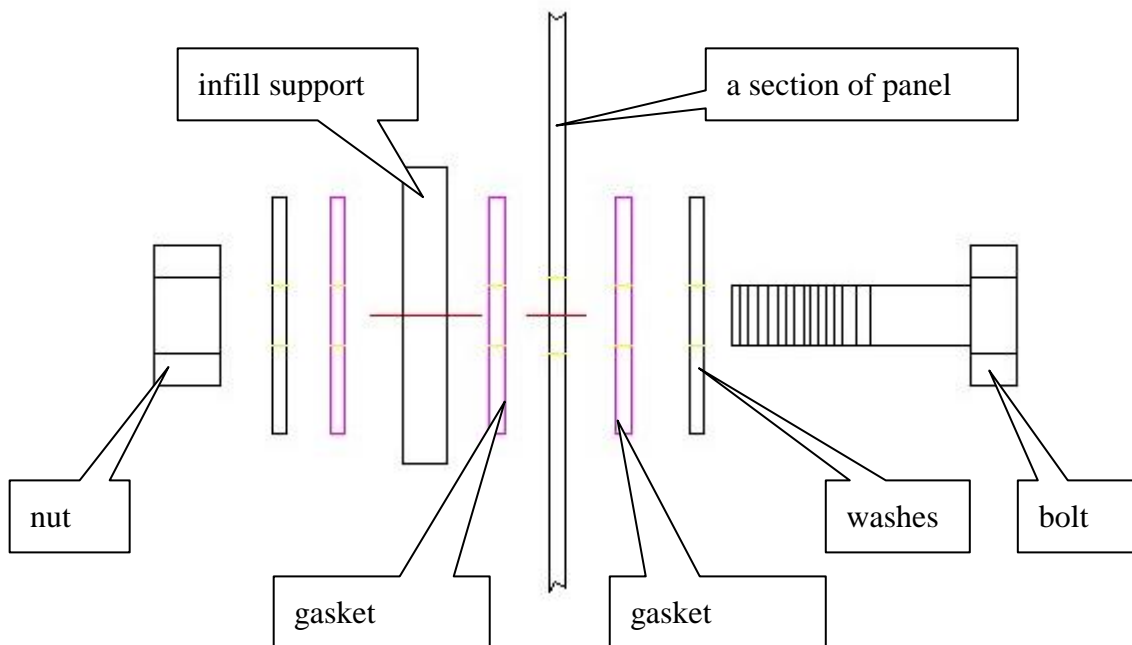
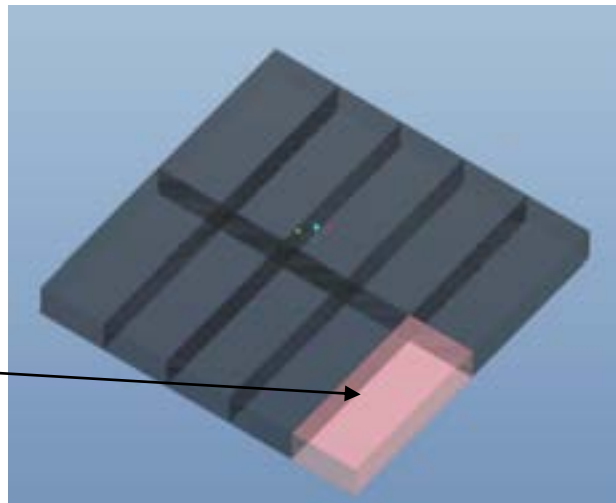
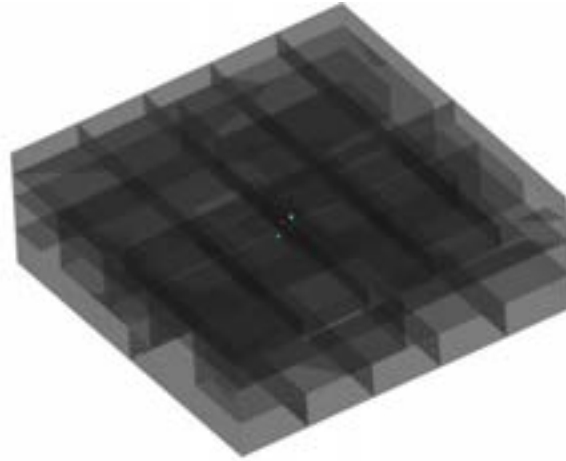


Figure 9



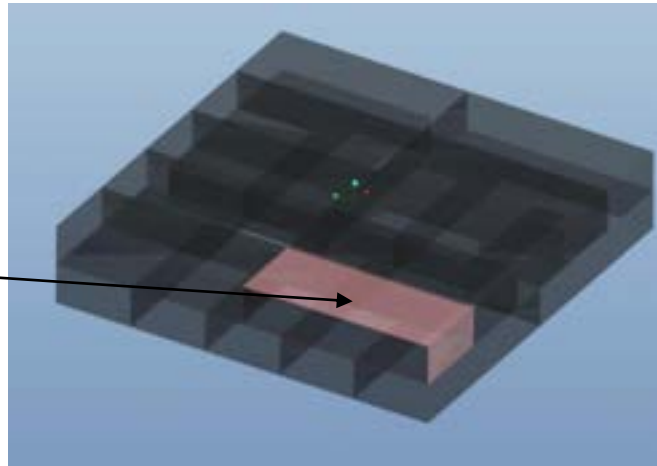


1st layer  
High 330mm

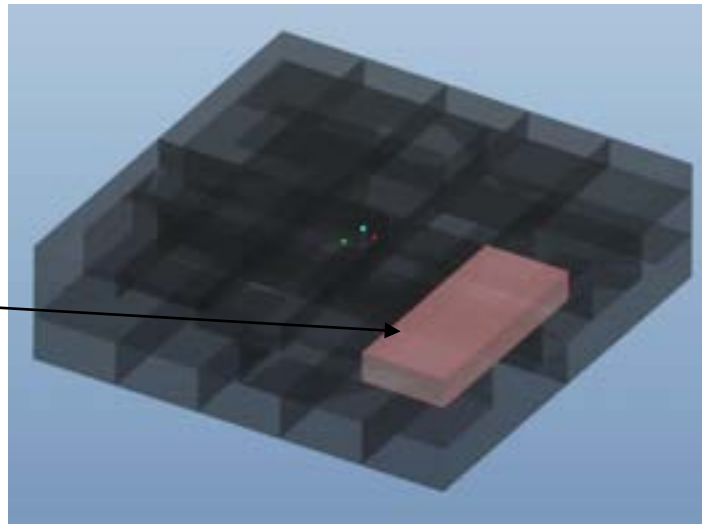




2nd layer  
High 330mm



3rd layer  
High 220mm





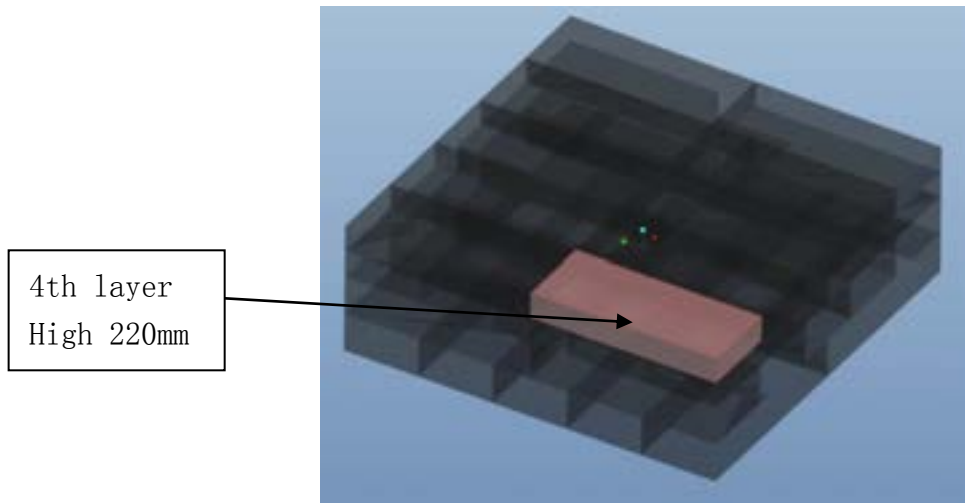


Figure 10a



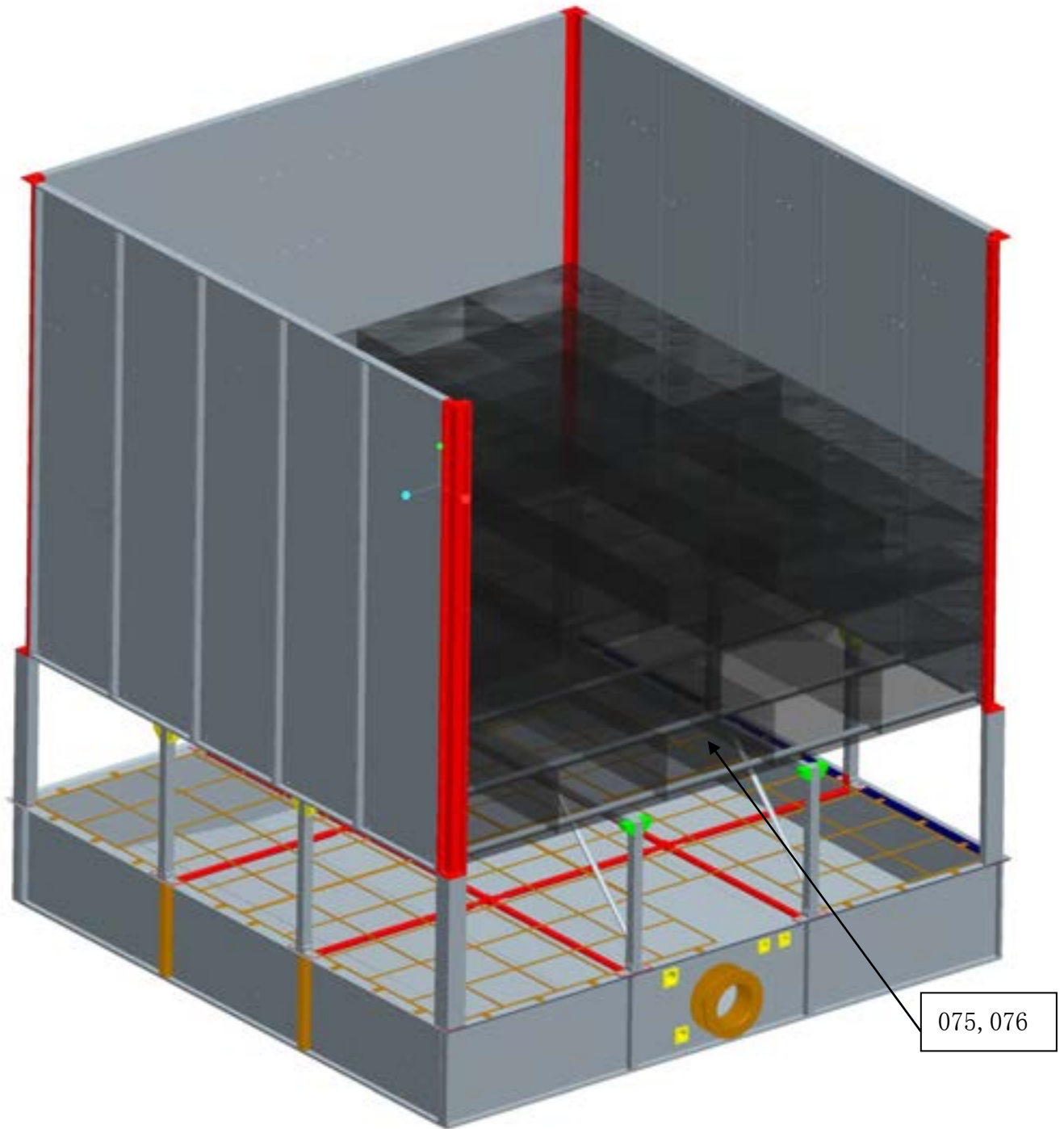


Figure 10b



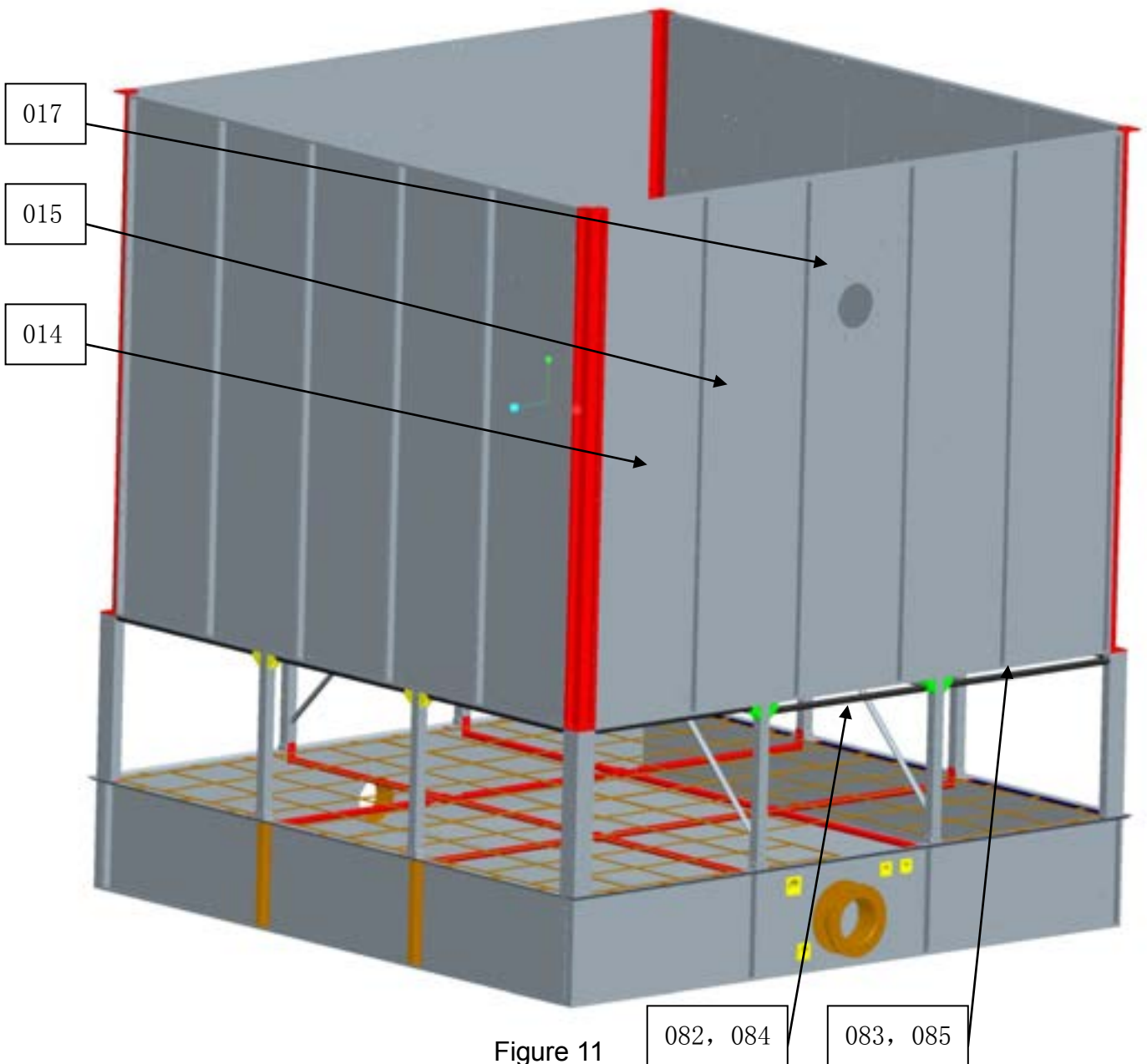


Figure 11

## 2.06 Distribution system and nozzle

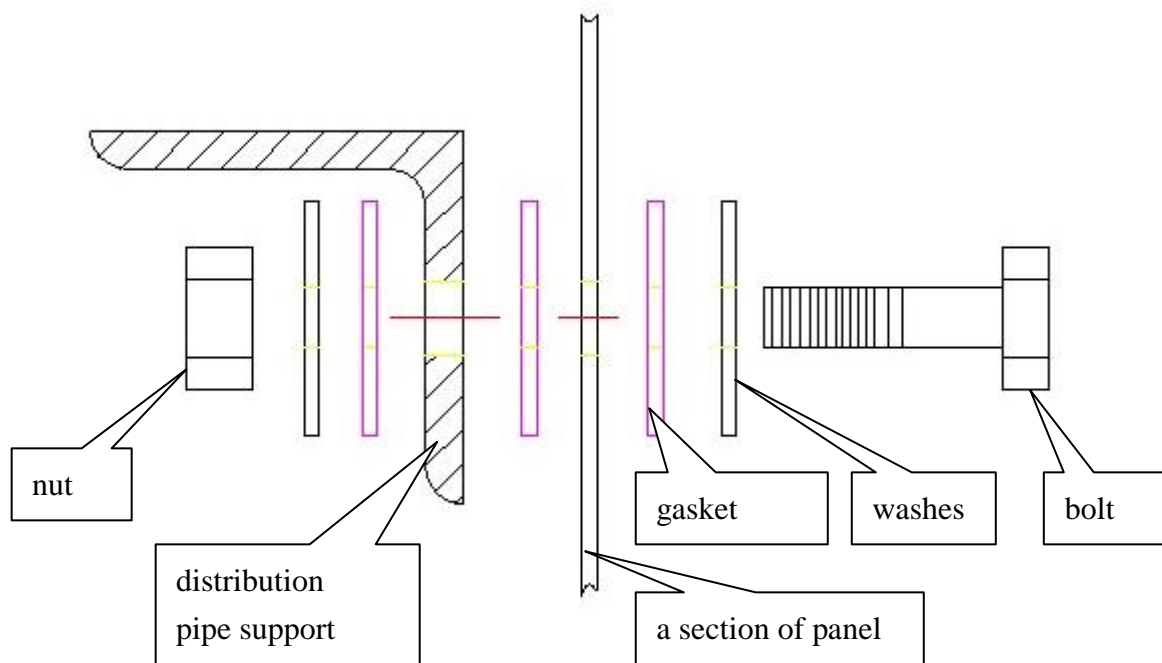
Attention: nozzle types and position must be installed correctly, or it may result tower capability drop.(see figure15)

- 1) Install the distribution pipe support on the panel, and gaskets must be put in between washes when tighten up the bolts & nuts. (see Figure 12)





- 2) Install the nozzles on the distribution pipe; gasket must be put on nozzle; (see Figure 13) spray board installed on 4 corners; install the sub-distribution pipe with nozzle onto the main distribution pipe; using half lock to fix sub-distribution pipe on the pipe support against the panel. (see figure 14)



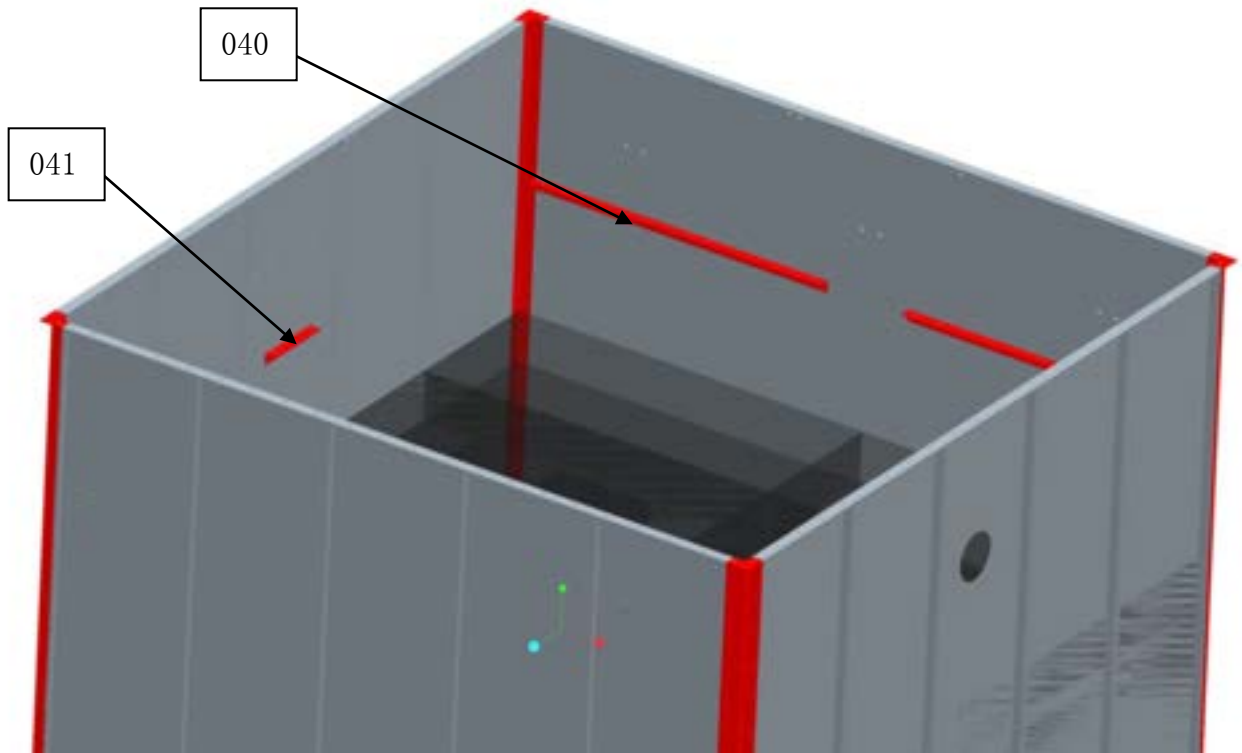


Figure 12



Figure13



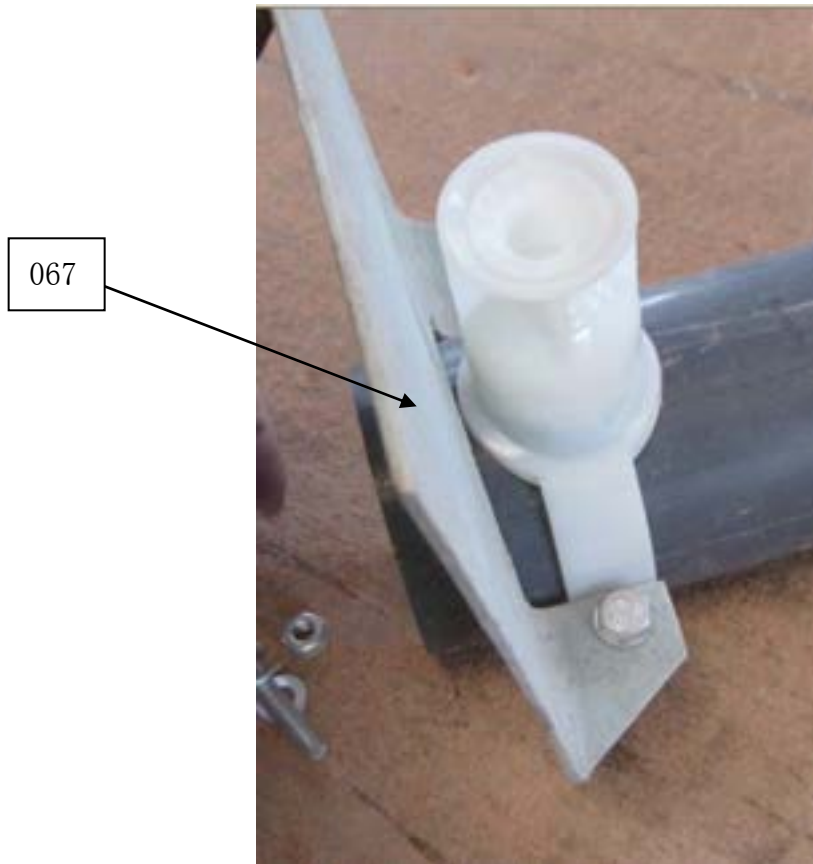


Figure 14

**Attention: pls follow the following install the different type of nozzles accordingly, or it may result tower capability drop.**  
**Nozzle types : 1.Yellow-crossing spray 2. Black-half spray 3.Red-full spray**



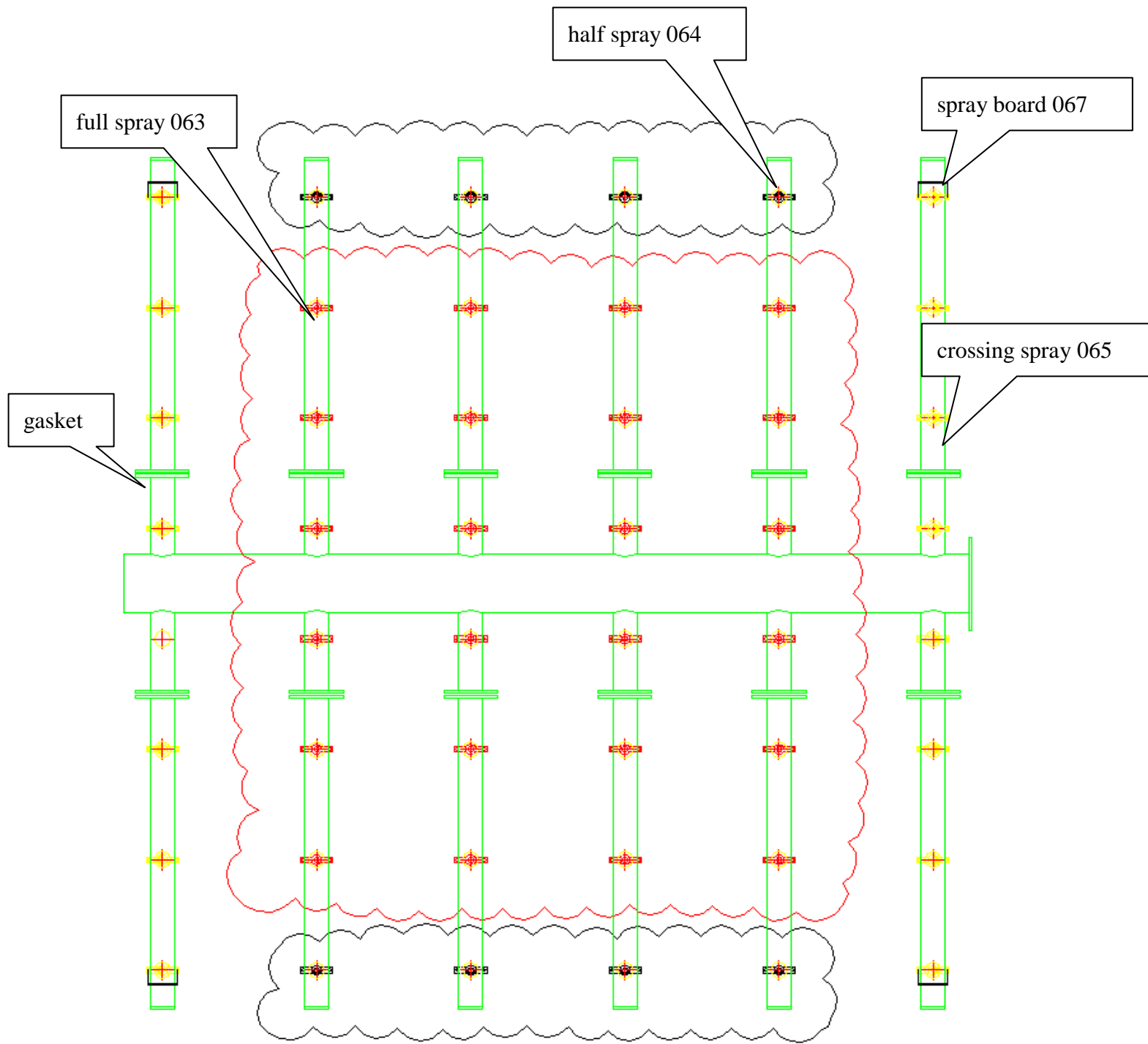
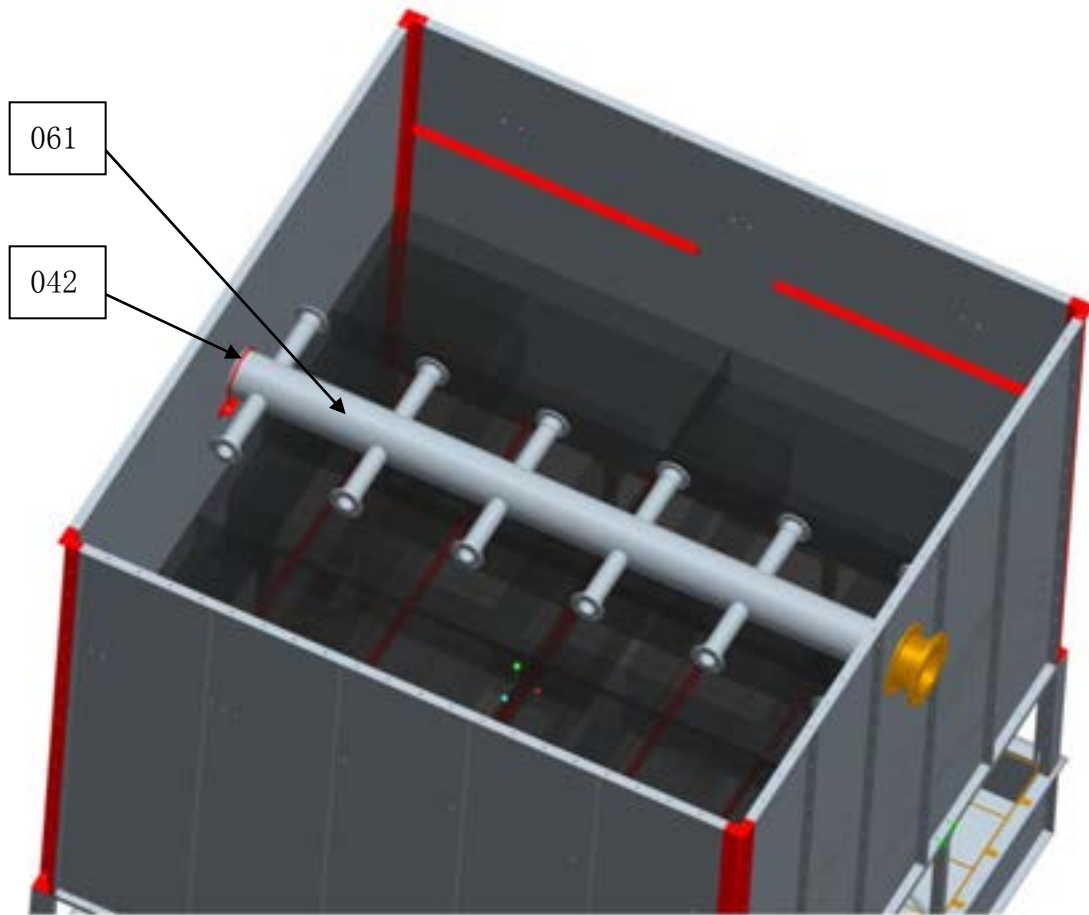


Figure 15







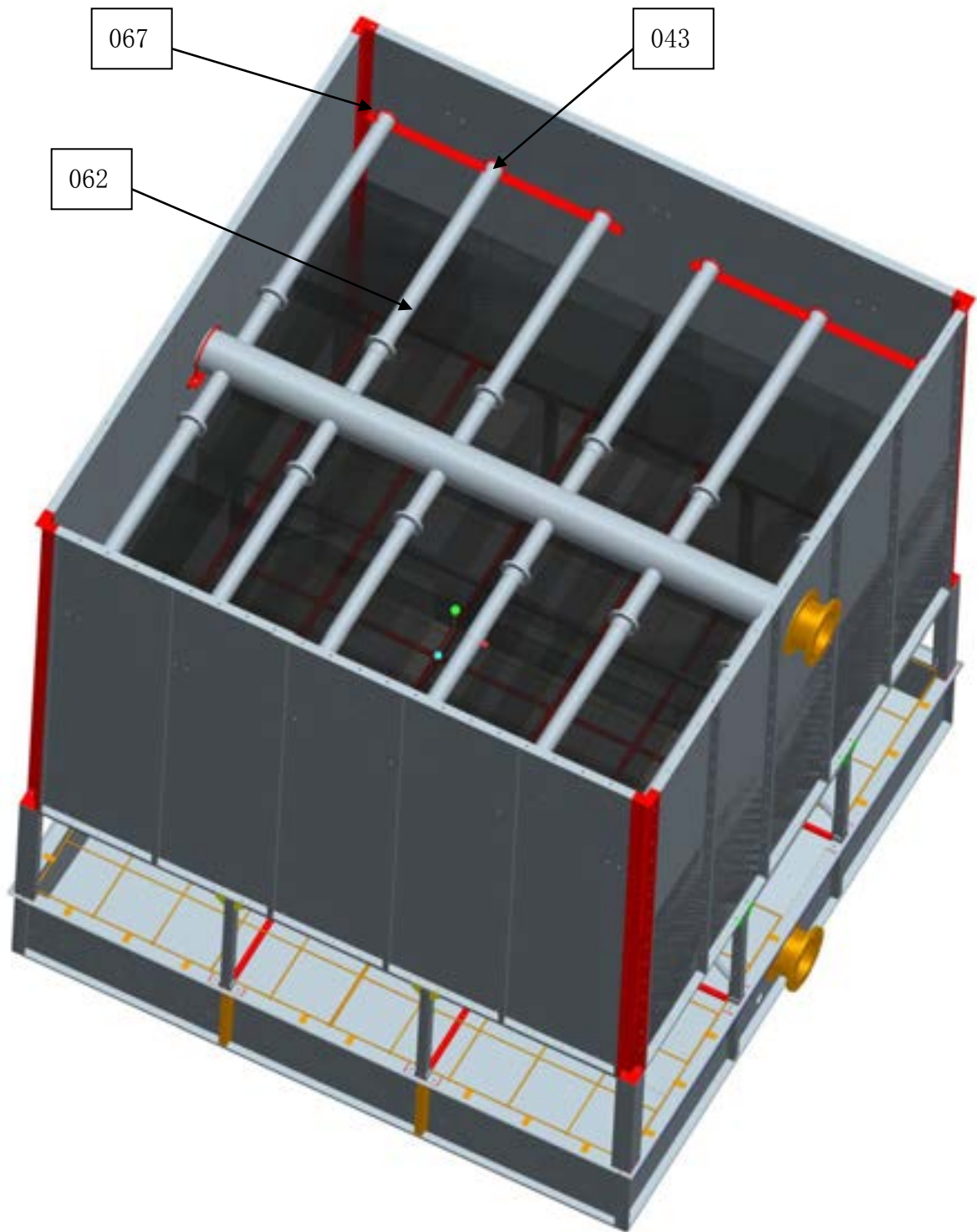


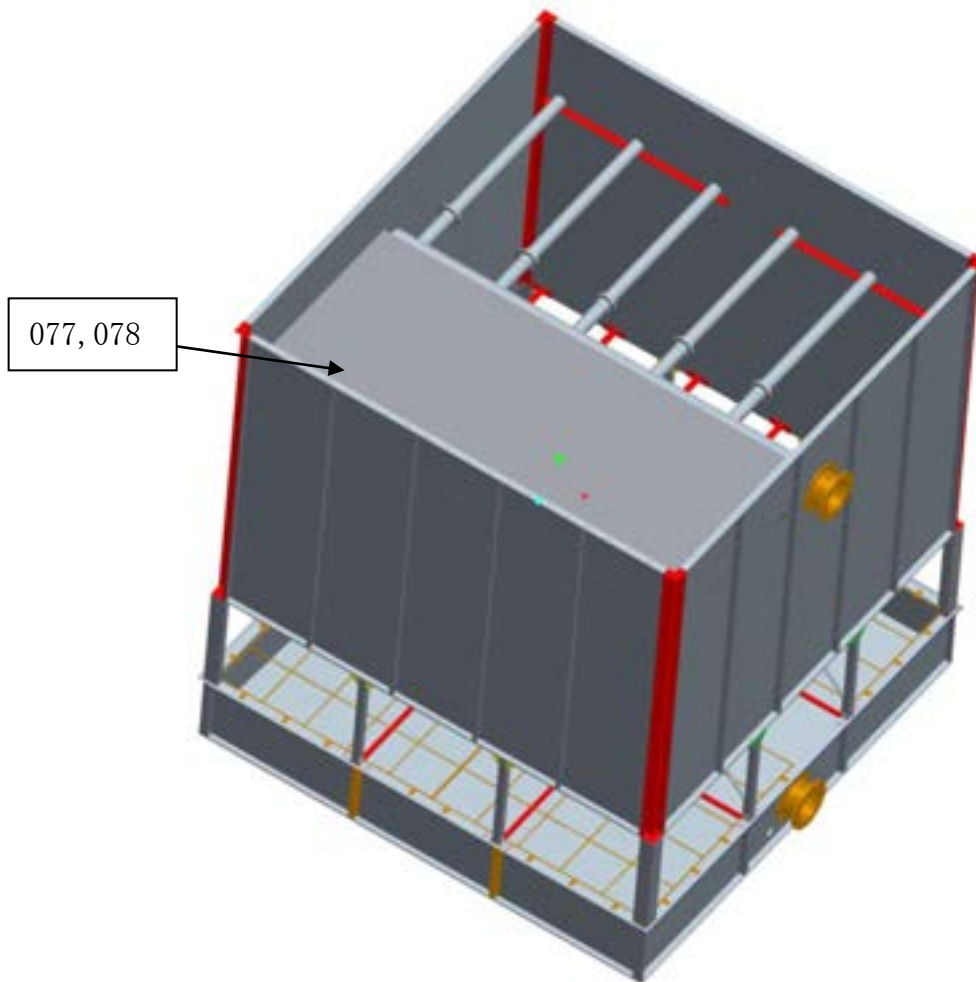
Figure 14





## 2.07 Drift eliminator and upper catwalk

- 1) Put the eliminator on the distribution pipes, then install the eliminator holder pipes on the panel (see figure 16). Gasket must be put in between washes when tighten up the screws (see figure 15)
- 3) Gasket must be put in between washes when install the catwalk onto the panel.
- 4) Install the fan stack support onto the panel.



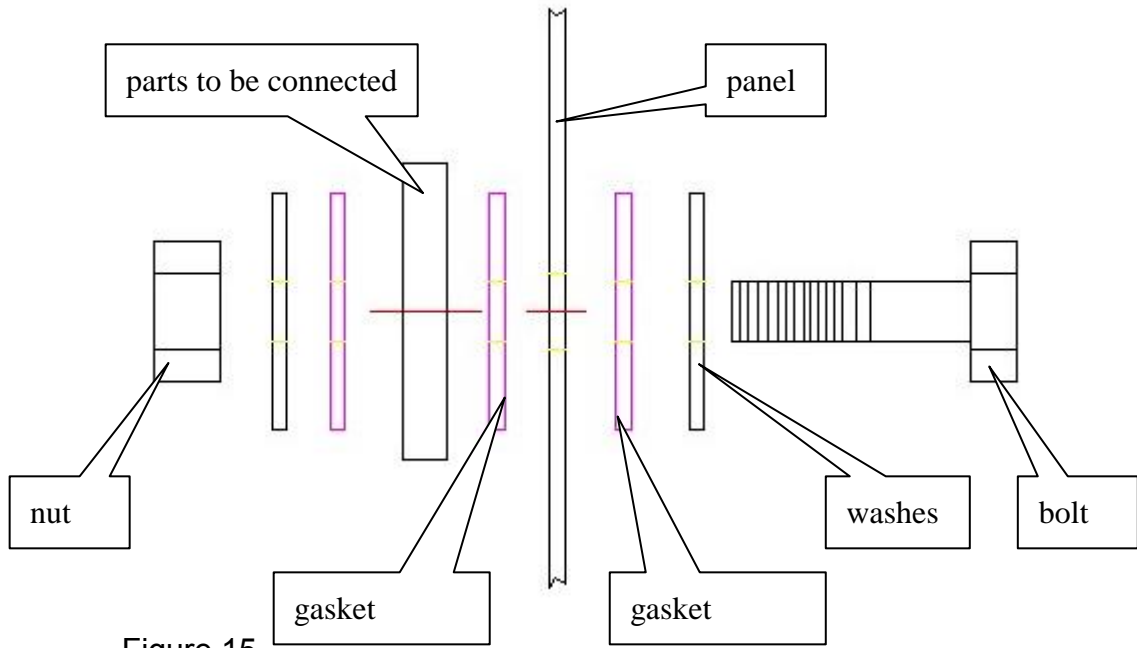


Figure 15

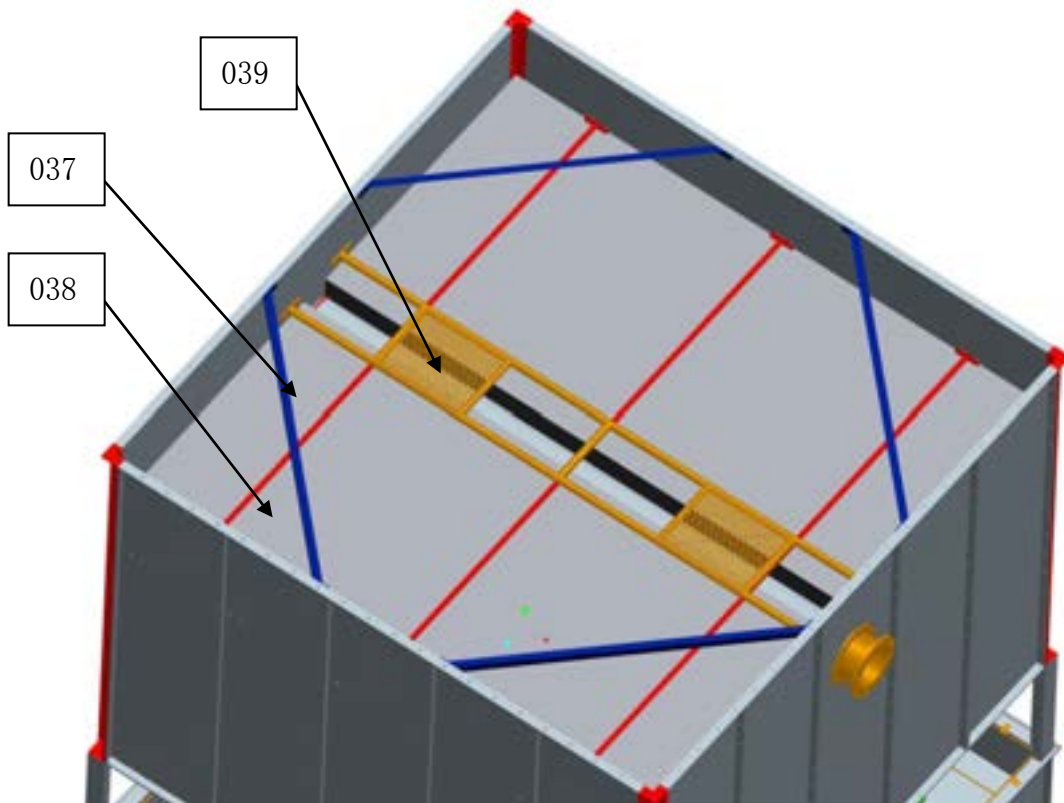
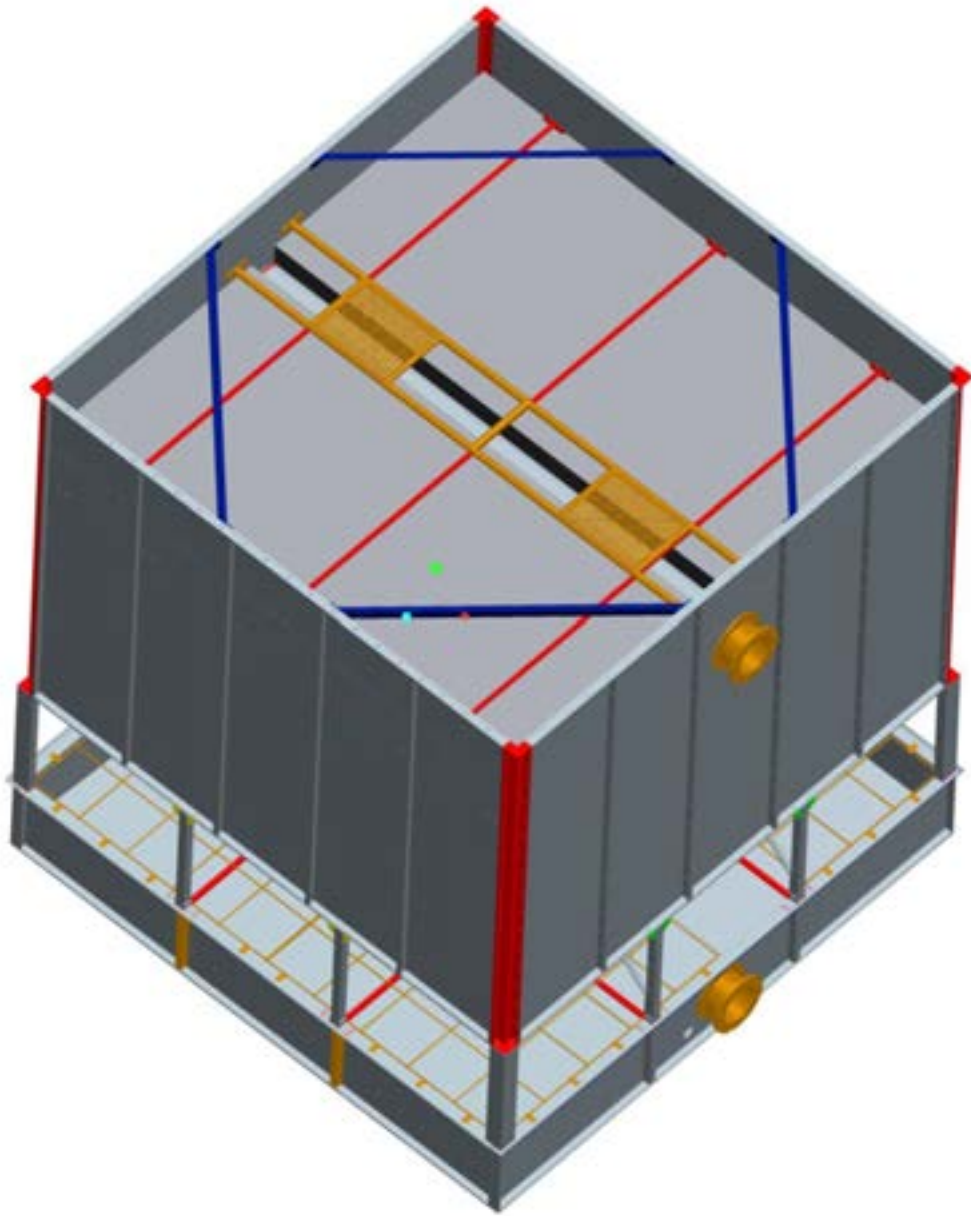




Figure 16





## 2.08 Fan stack

- 1) Tighten up those bolts & nuts in between panels and fan stack.
- 2) Than tighten up those bolts & nuts in between fan stack one and other.
- 3) Pay attention those holes for motor support (see figure 18)

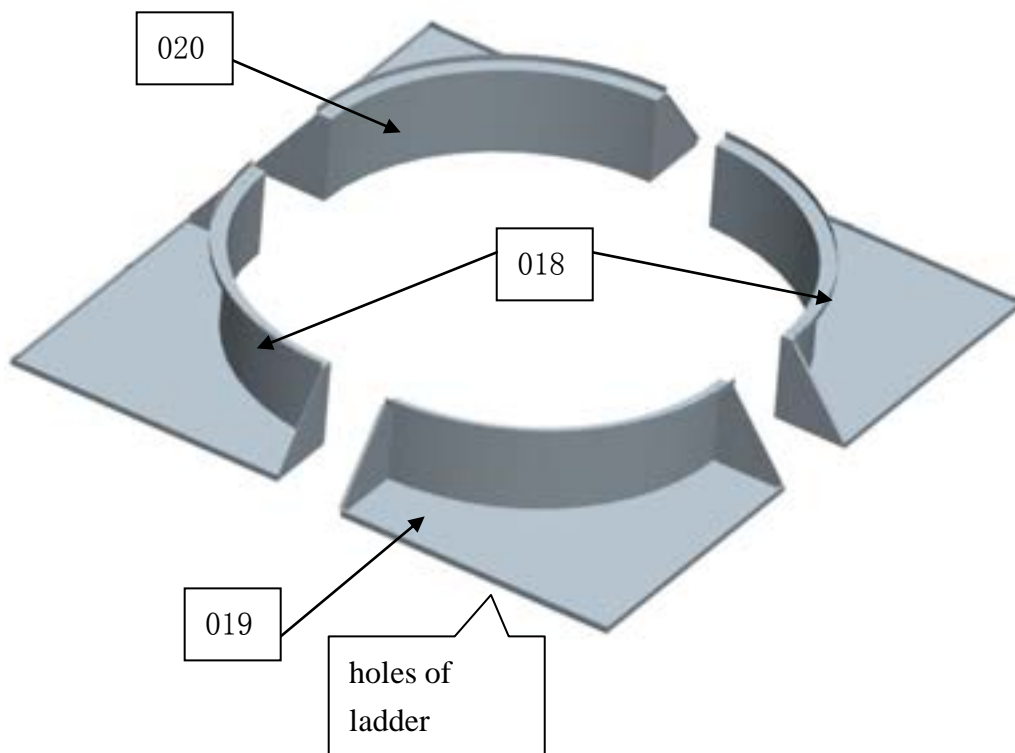


Figure 17



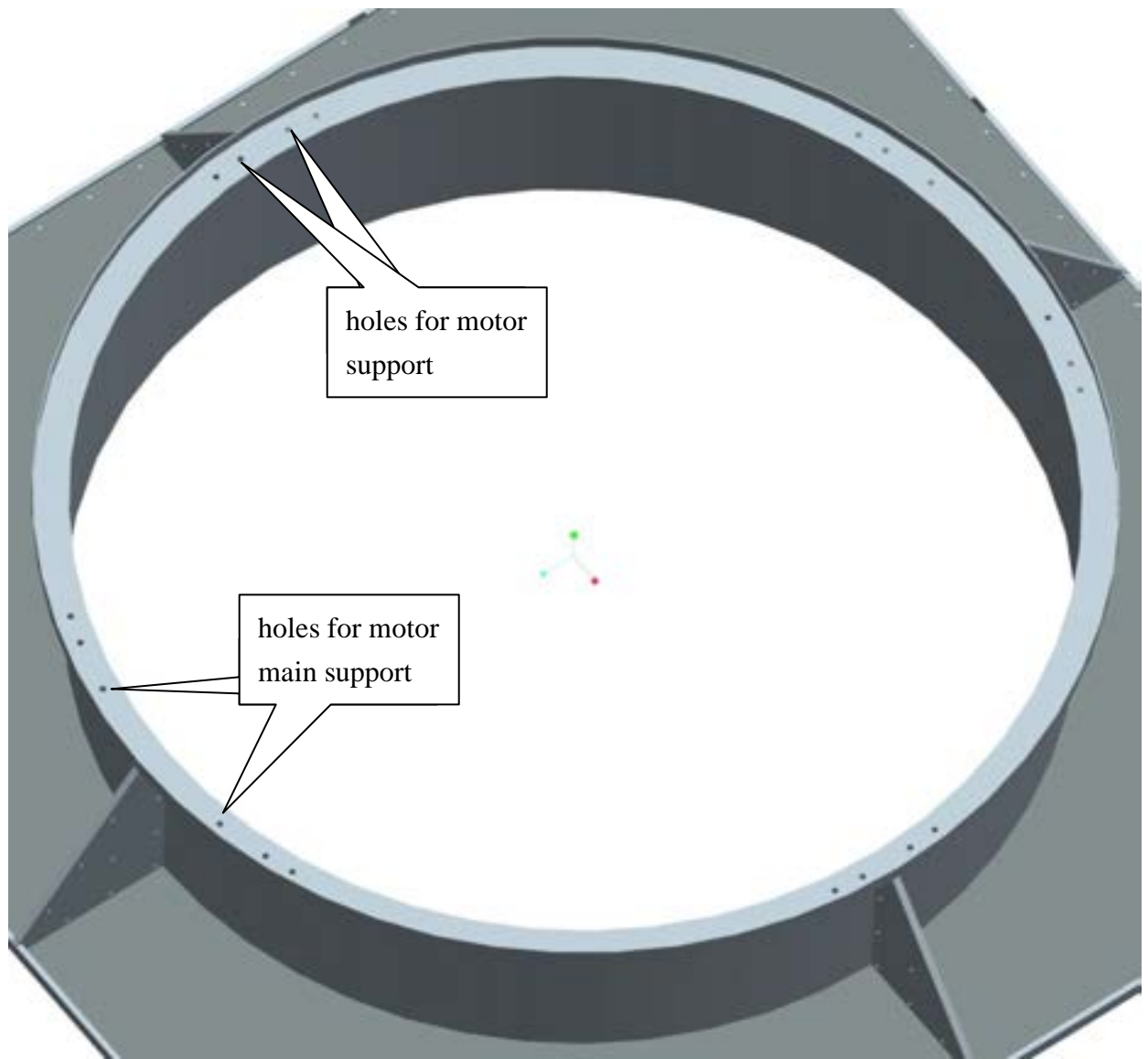
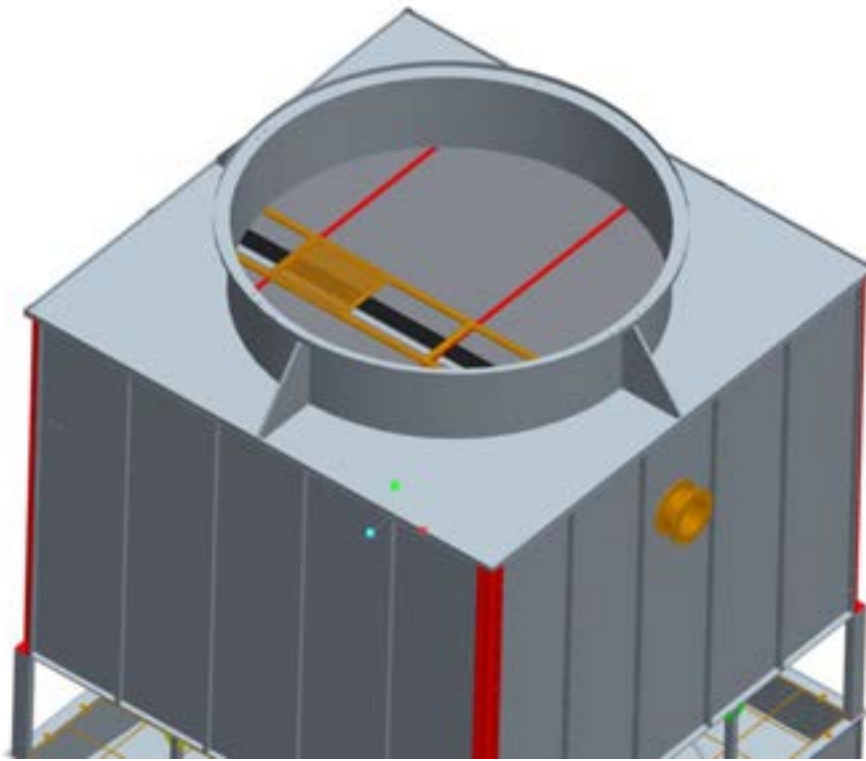


Figure 18



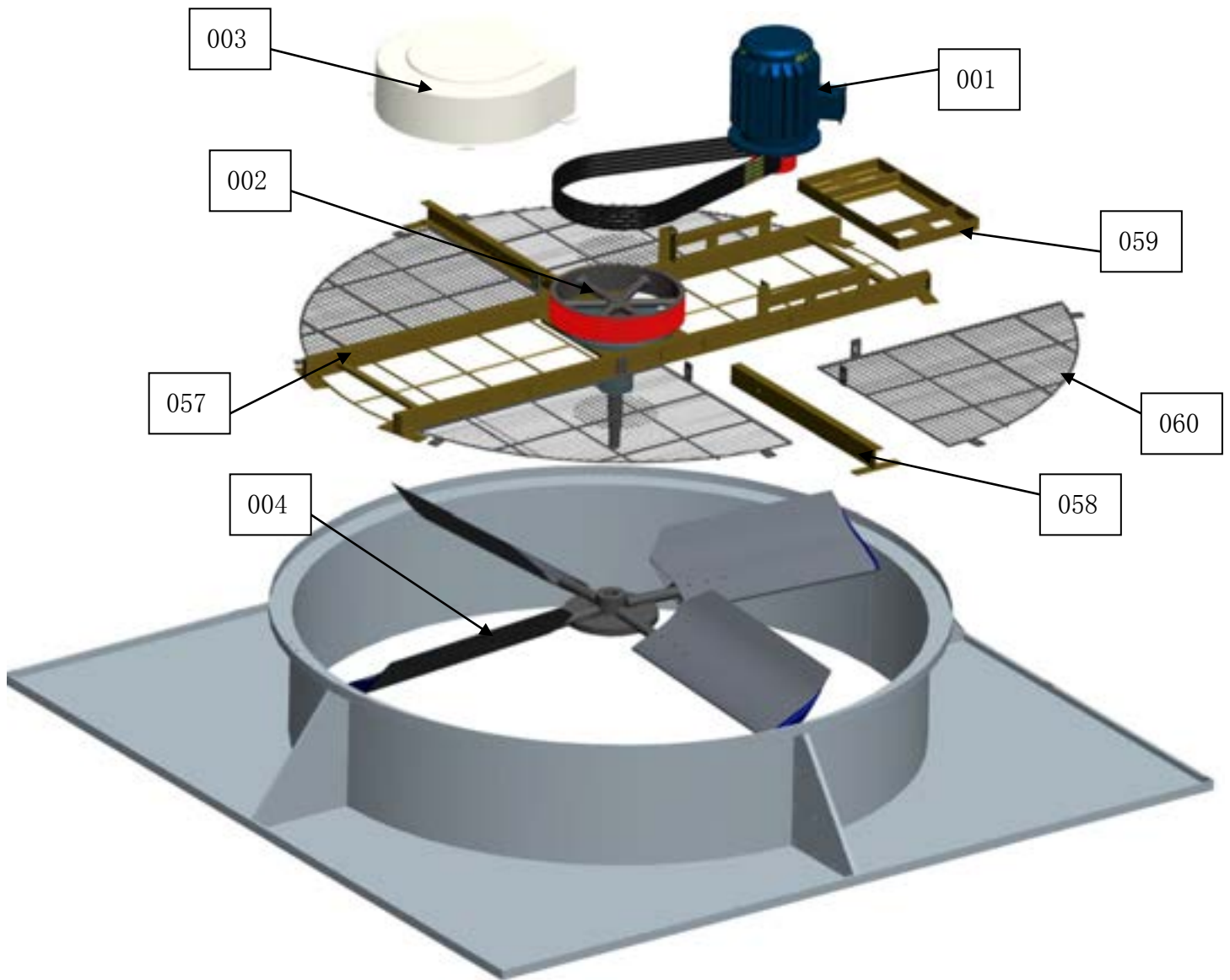


## 2.09 Transmission system

- 1) Put & fix the motor main support onto the fan stack, but do not tighten up the screws 100%.
- 2) Install the speed reducer on the center of motor support.
- 3) Install the fan hub onto the speed reducer (please refer to Fan Installation), then install the blades. After checked the tip clearance if they are even by rotating the blades, tighten up all the screws in between motor support and fan stack.
- 4) Install the motor and put the belts onto small and larger pulley of the V-belt reducer, then adjust the V-belt tension by tighten or loosen the long screws See Figure 12.5. Suitable tension is V-belt distortion approximately 10mm by hand pressing in the middle of the position between small and large pulley, and then fasten the connection bolts and nuts between the motor support and the main support.

**Note: After running the tower a week, check the V-belt and adjust the tension once again.**





## 2.10 Handrail, safety cage, ladder, louvre

- 1) Handrail post on 4 corners are right angle steel, and the rest are square hollow. (see figure 19)
- 2) Install safety cage and ladder (see figure 20)
- 3) Install the louvre onto the frame before install it onto the air take sections (see figure







21).

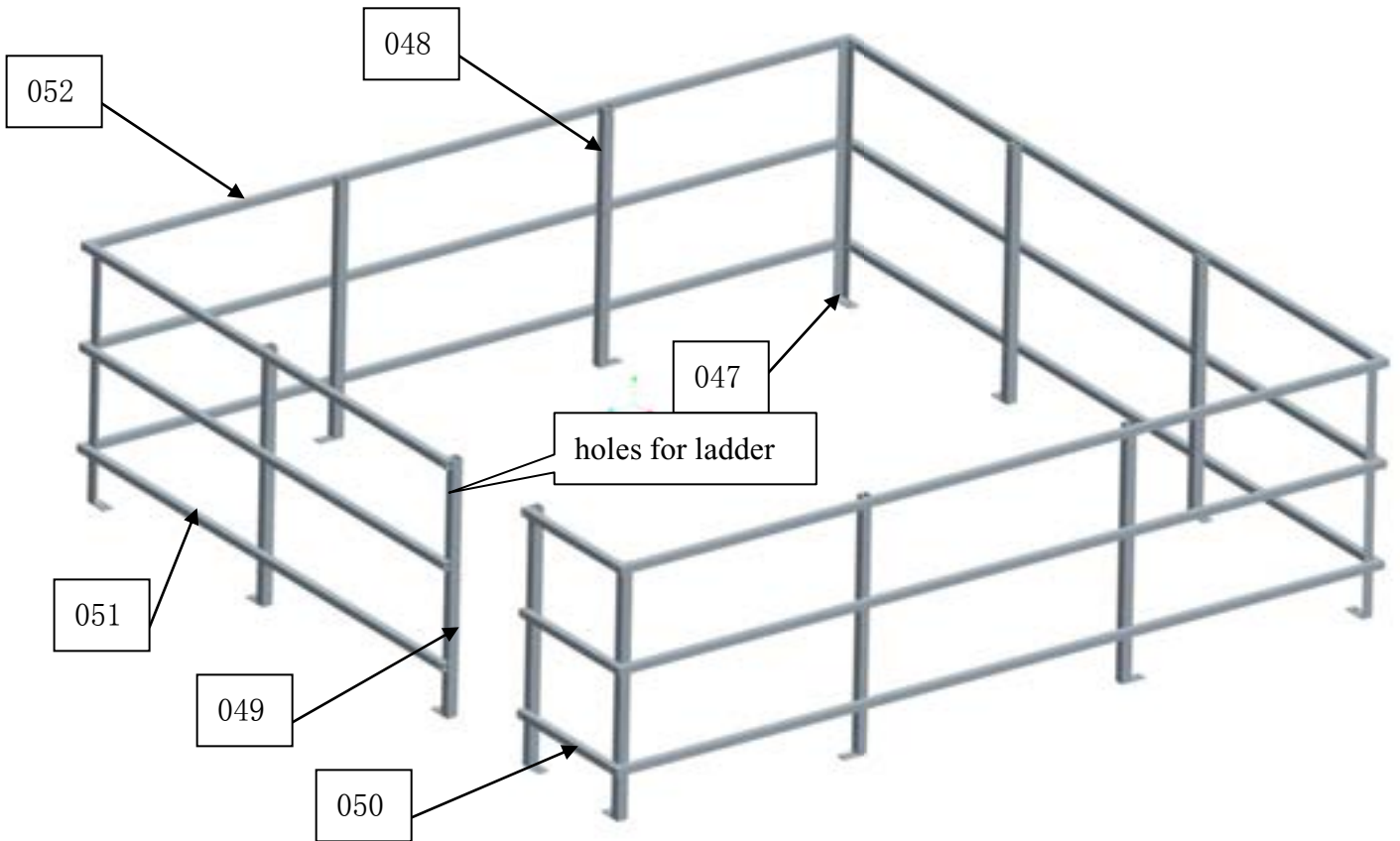


Figure 19



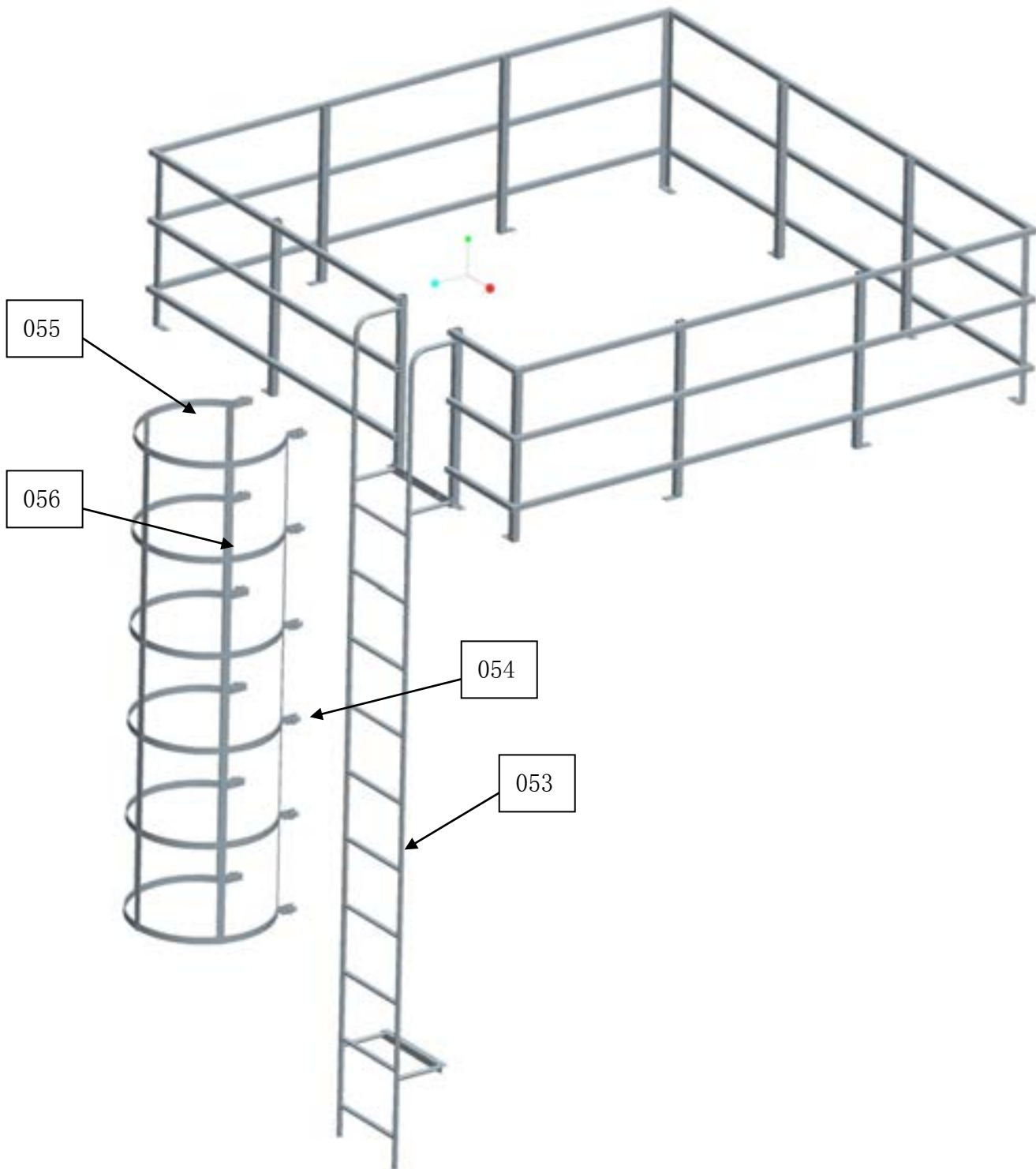




Figure 20

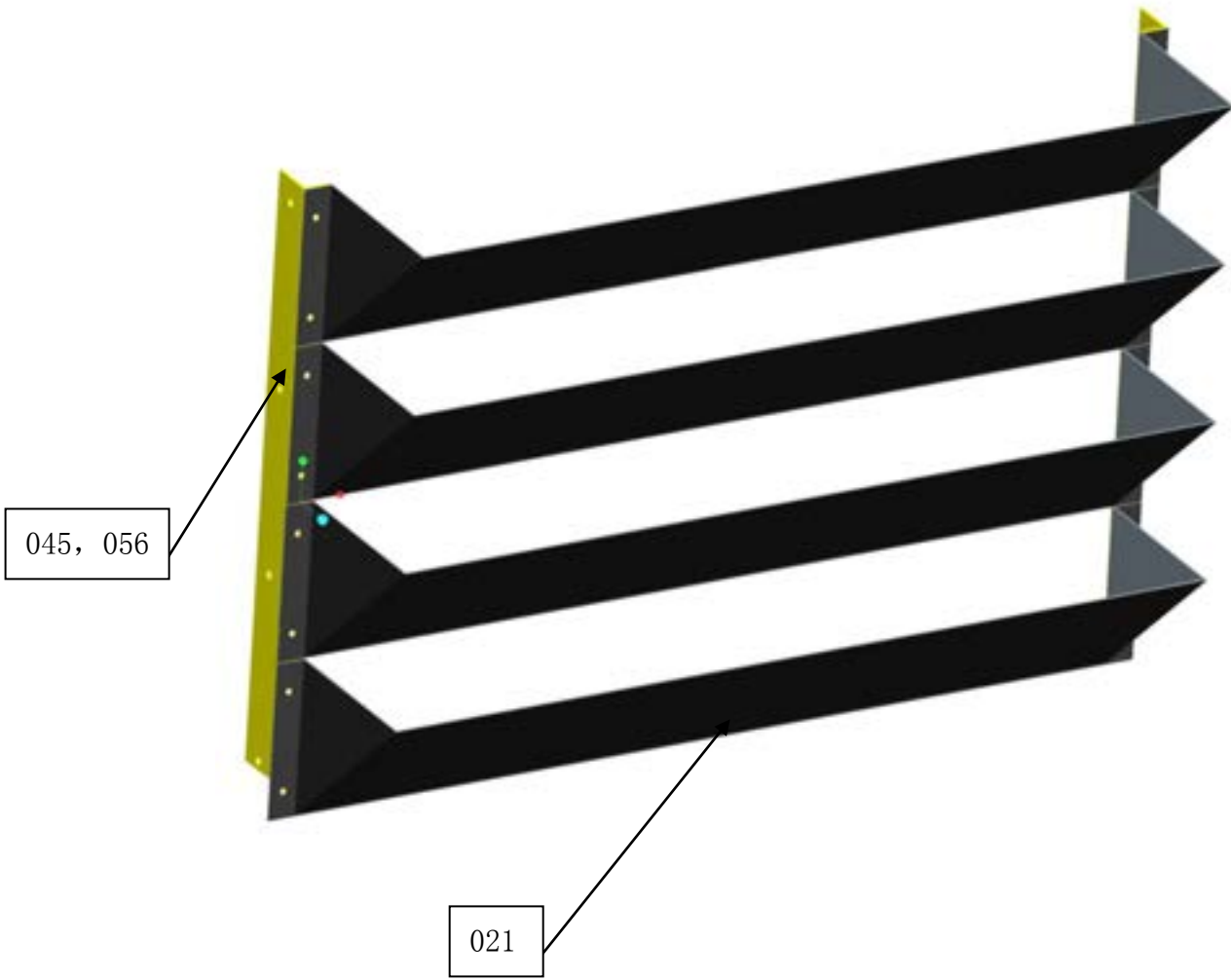


Figure 21



