

USER MANUAL



MODEL: 0JADE-T4. 5I

INDEX

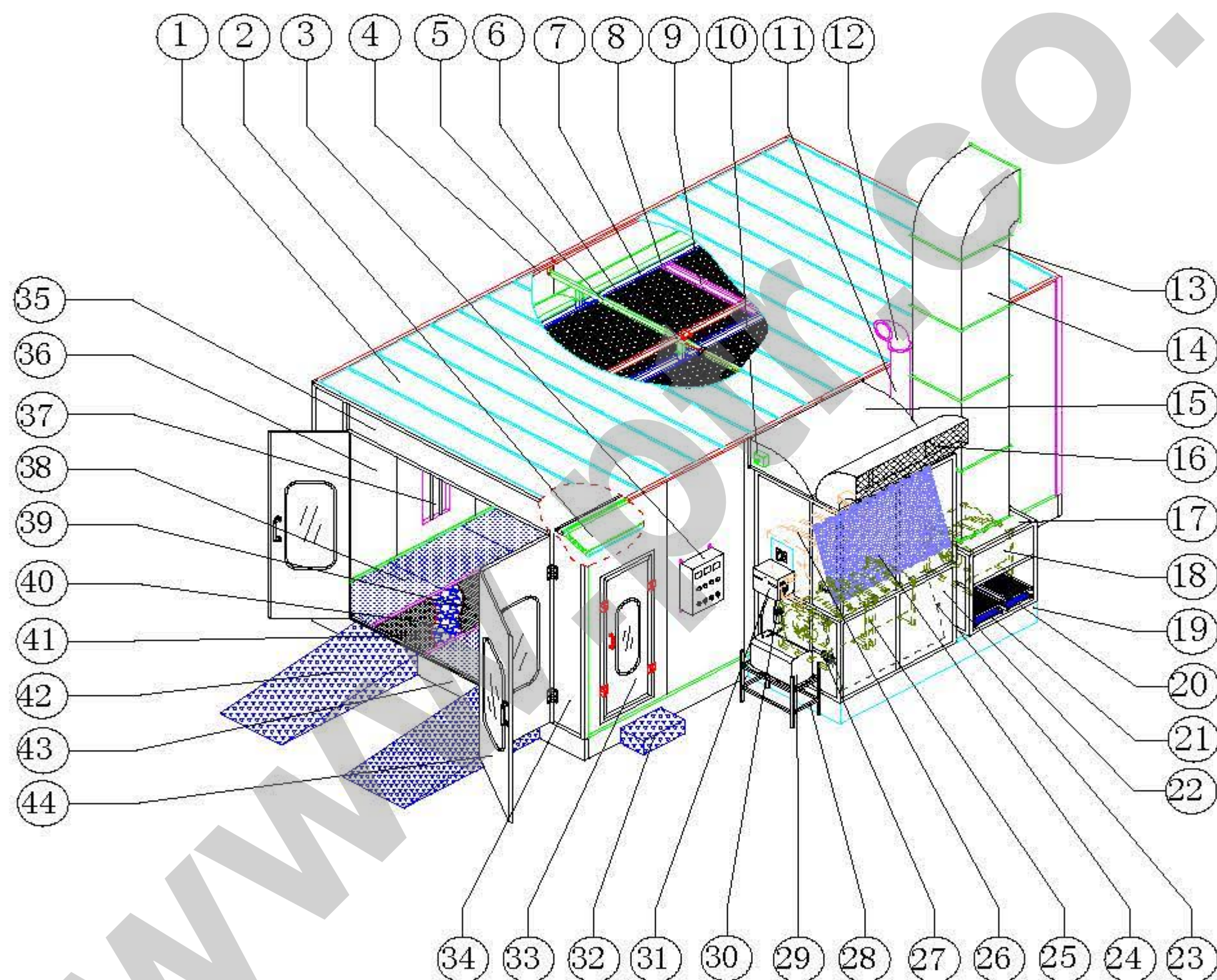
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1. General Description

Spray booth comes out as it is seasoned with spraying for whole surface of modern automobiles, part repair and baking which can provide operation room of cleanness, sanitation for above tasks. The whole set equipment has the function of ventilation, air purge, drying, disposing exhaust gas and so on which meets basic requests of auto surface disposal. The equipment is made up of room body, lighting unit, intake and exhaust air system, air purge system, exhaust gas disposal system and control system.

In order to make the equipment work normally, please read this manual carefully before installation, operation and maintenance.

2. Configuration and Main Parts Names



1、Roof panel 2、Lighting 3、Control box 4、Slot 5、Roof cross beam 6、Ceiling filter frame 7、Roof longitude beam 8、Connecting plate 9、Cotton channel 10、Temperature controller 11、Chimney 12、Chimney elbow 13、Exhaust duct flange 14、Exhaust duct 15、Intake air elbow mouth 16、Intake air elbow 17、Exhaust air cabinet 18、Exhaust air fan cabinet 19、Generator basement 20、Exhaust filter 21、Active carbon 22、Heating Generator 23、Damper 24、Intake air filter 25、Fan 26、Heating exchanger 27、Electromotion air actuator 28、Bracket of oil box 29、Oil box 30、Diesel oil filter 31、Burner 32、Step 33、Personal door 34、Main door batten 35、Main door head panel 36、Wall panel 37、Side lighting 38、Indented Plate 39、Grille 40、Basement 41、Floor filter 42、Backing grid 43、Ramp 44、Main door

3. Technical parameter

Technical Parameter chart

Model	OJADE-T4.5I
Outside Dimension: (mm)	6900x4500x2800
Inside Dimension: (mm)	7010x5950x3600
Main Door Dimension: (mm)	3000×2700mm
Personal Door Dimension: (mm)	700×2000mm
Air Capacity: (m ³ /h)	25000
Free Air Speed: (m/s)	0.21
Frequency of Air Change: (time/h)	350
Maximum Baking Temperature: (°C)	80
Heating Productivity: (kcal/h)	260000
Efficiency of Air Filtration:	98%
Inside Illumination: (Lux)	≥1000
Noise: dB(A)	<85
Total Power: (KW)	18.5

4. Spray booth conveying and storage

As spray booths are in big size, they're conveyed in bulk while loading and unloading. The parts in frame should be loaded and unloaded by fork vehicles while the small parts are conveyed by manpower. Be noticed to make sure that the parts are not damaged and dilapidated in the loading and unloading process.

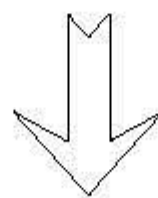
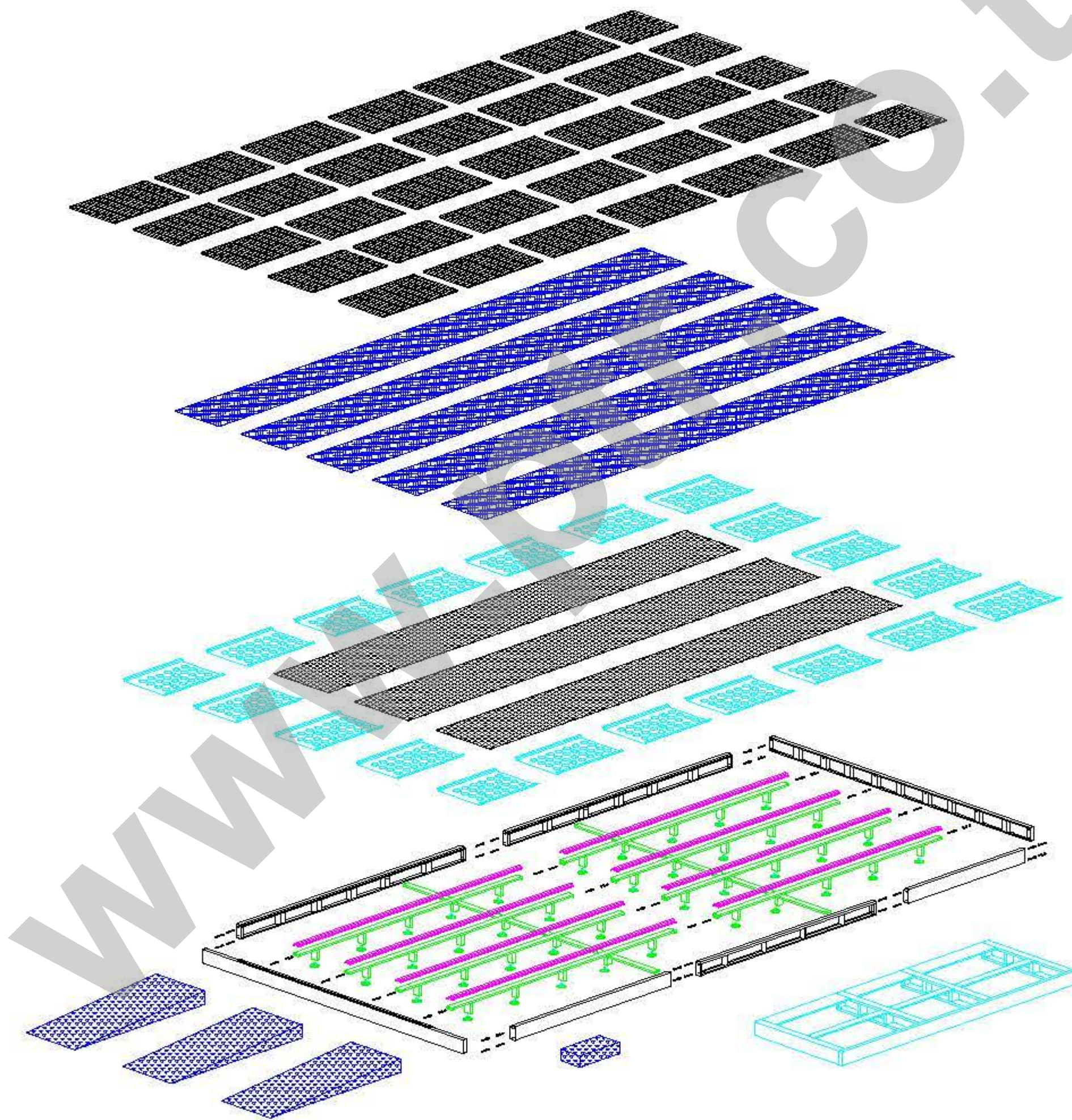
The finished parts of spray booth are usually stored in the finished products warehouse, and marked on the outside packages for checking before delivery. After being sent to the destination, all the parts should not be put in the open air but in store house to prevent from rusting and oxidized by the moisture.

5. Installation Steps

In general, spray booth is transported in bulk, and installation work is processed locally. The detailed installation steps are as below:

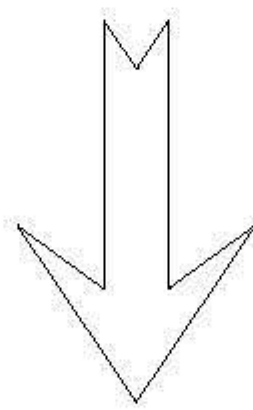
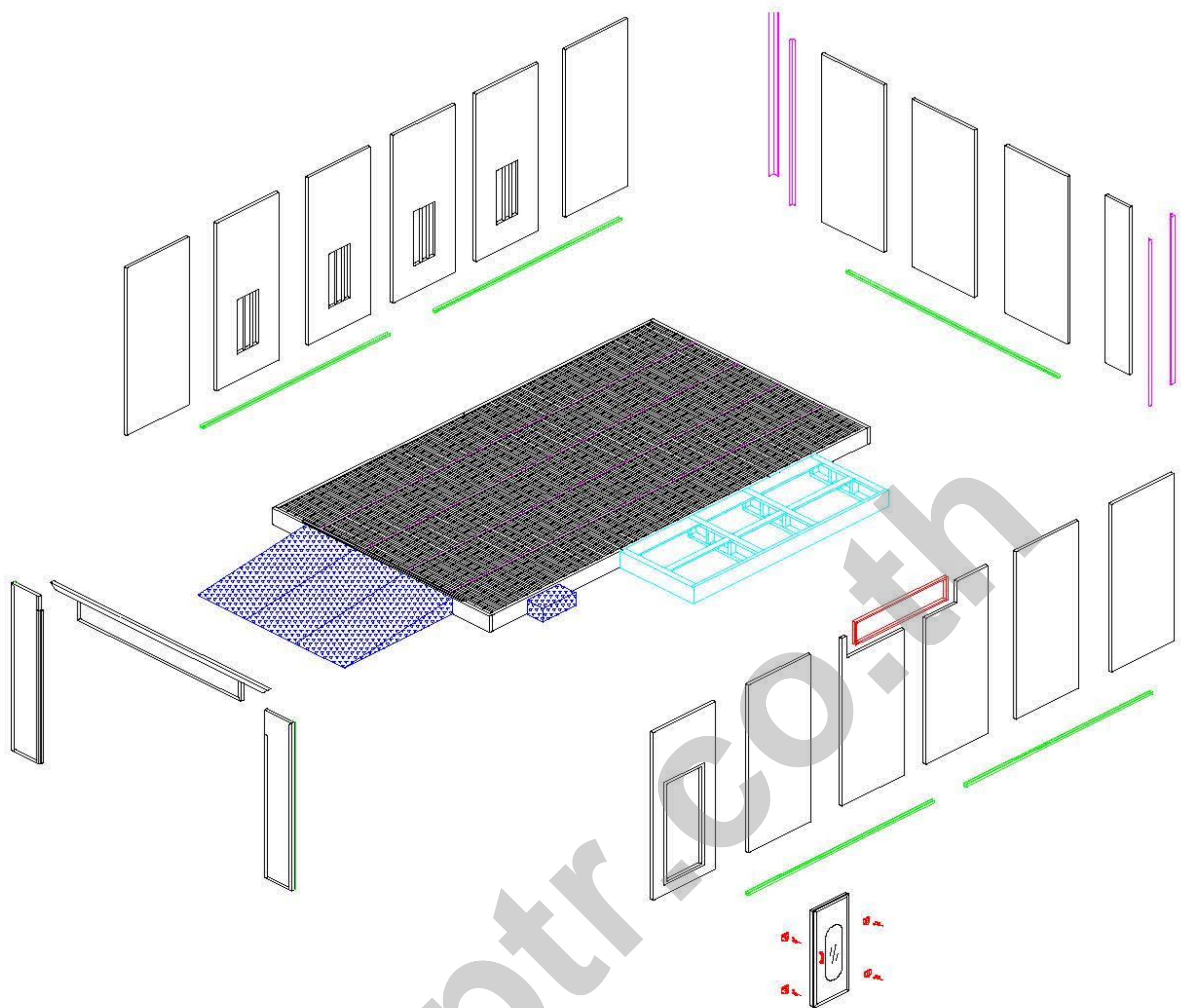
5.1 Installation of basement unit

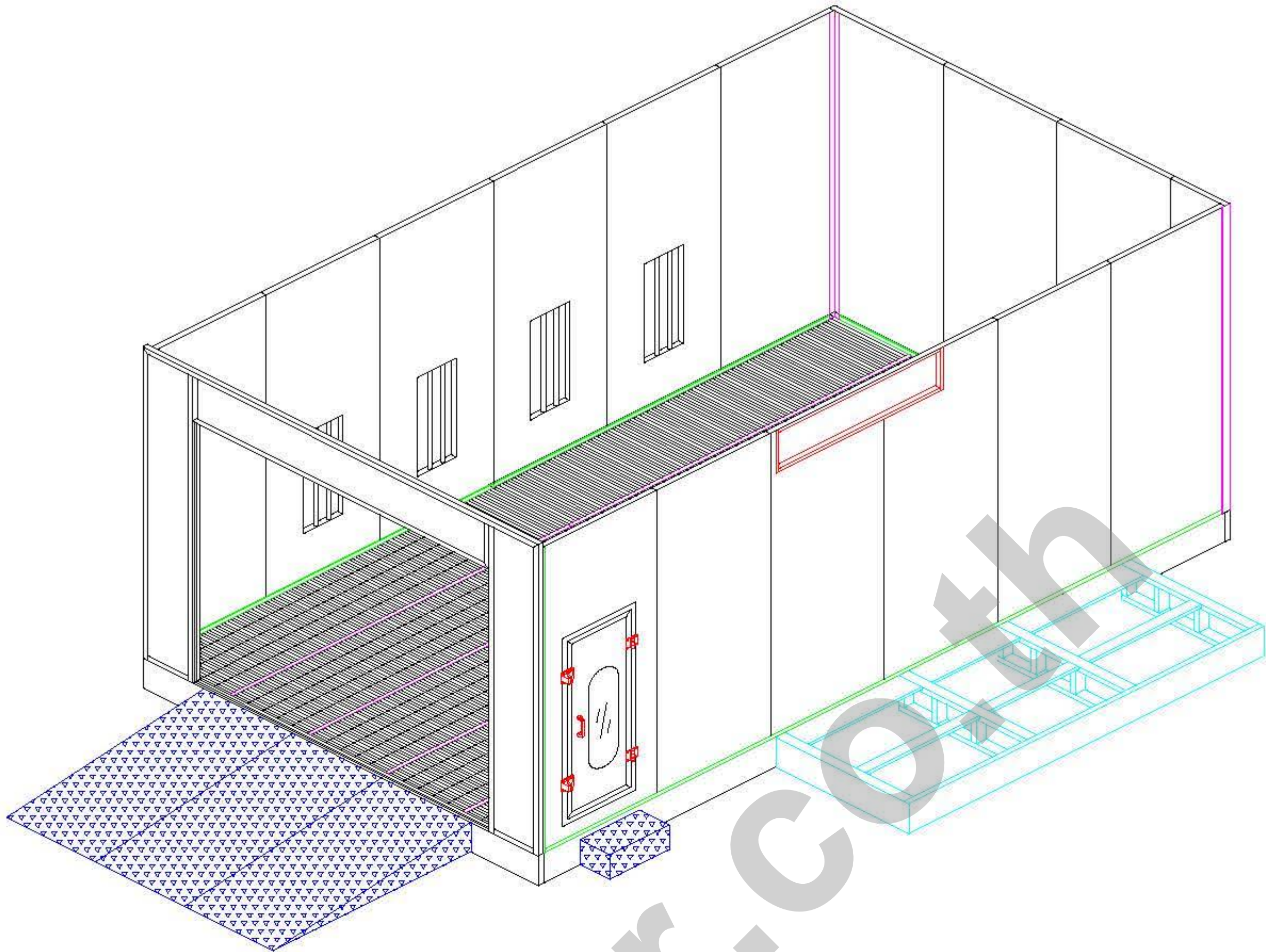
- 1) Please refer to detailed packing list and check basement unit parts before start of installation to make sure both the dimensions and quantities are correct.
- 2) Sweep and test the floor, ensuring the floor is smooth, clean and the level error is no more than 5mm.
- 3) Place the parts according to sequence, see the installation drawing:



- NOTICE: Install each part of the basement unit according to sequence, or it will bring inconvenience to installation.**

- 1) Please refer to detailed packing list and check all spare parts of room body before start of installation, make sure both the dimensions and quantities are correct.
- 2) Place the parts for room body according to sequence, see the drawing:



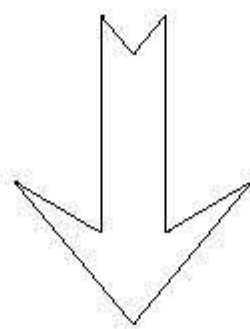
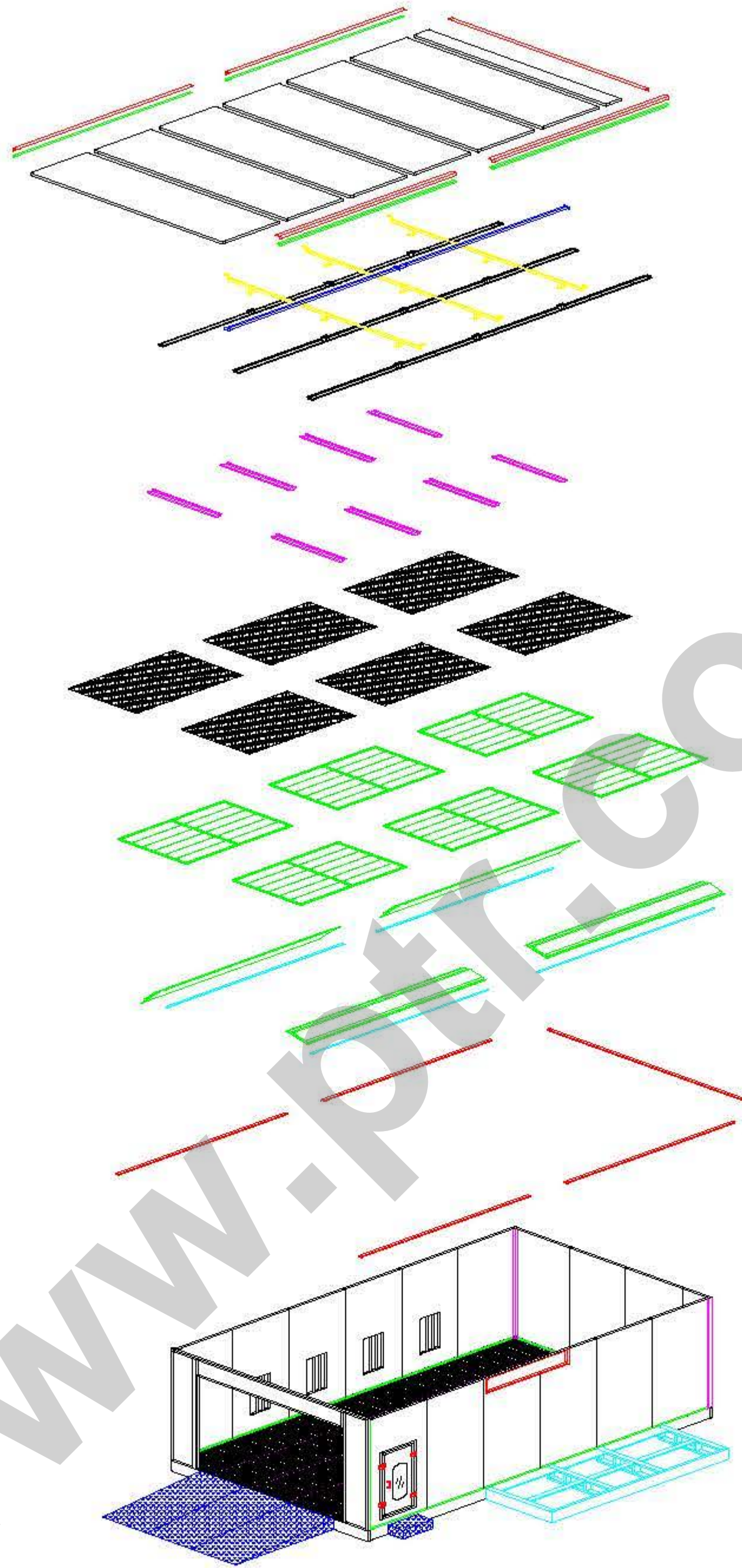


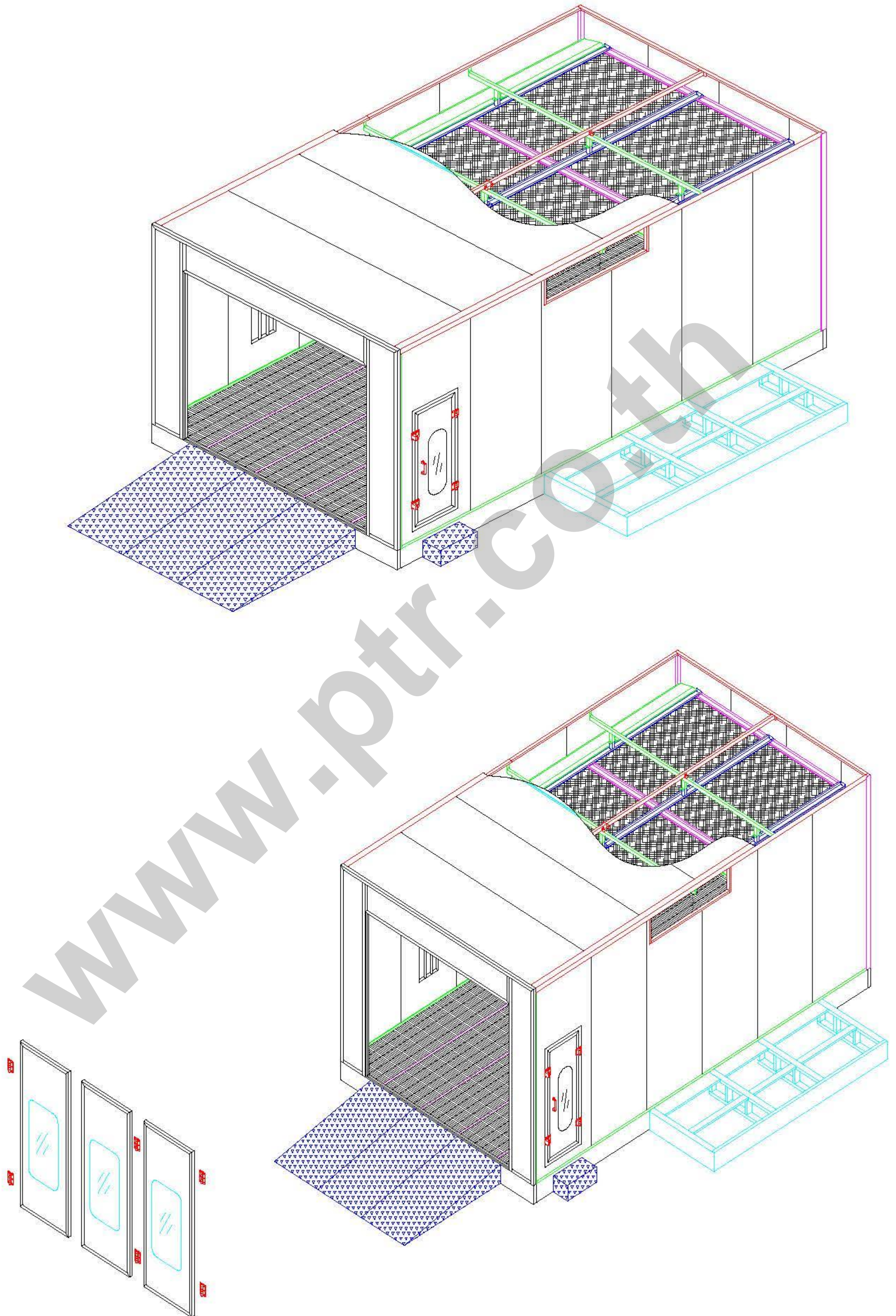
- 3) Check diagonals of whole unit after installation finished, make sure dimensions errors are no more than 5mm, at the same time, use gradienter to test verticality of room body.

NOTICE: While installing, make sure the connection and fixation of the wall panel corner, and ensure the connection of main door batten and head frame panel is fastness and leveling off, make sure the error on the cross of the main door hole within permission.

5.3 Installation of roof unit

- 1) Please refer to detailed packing list and check all parts of roof unit before start of installation, make sure that there's no mistake either for dimensions or quantities.
- 2) Install parts of roof unit according to sequence, then well connect each parts, see below chart:

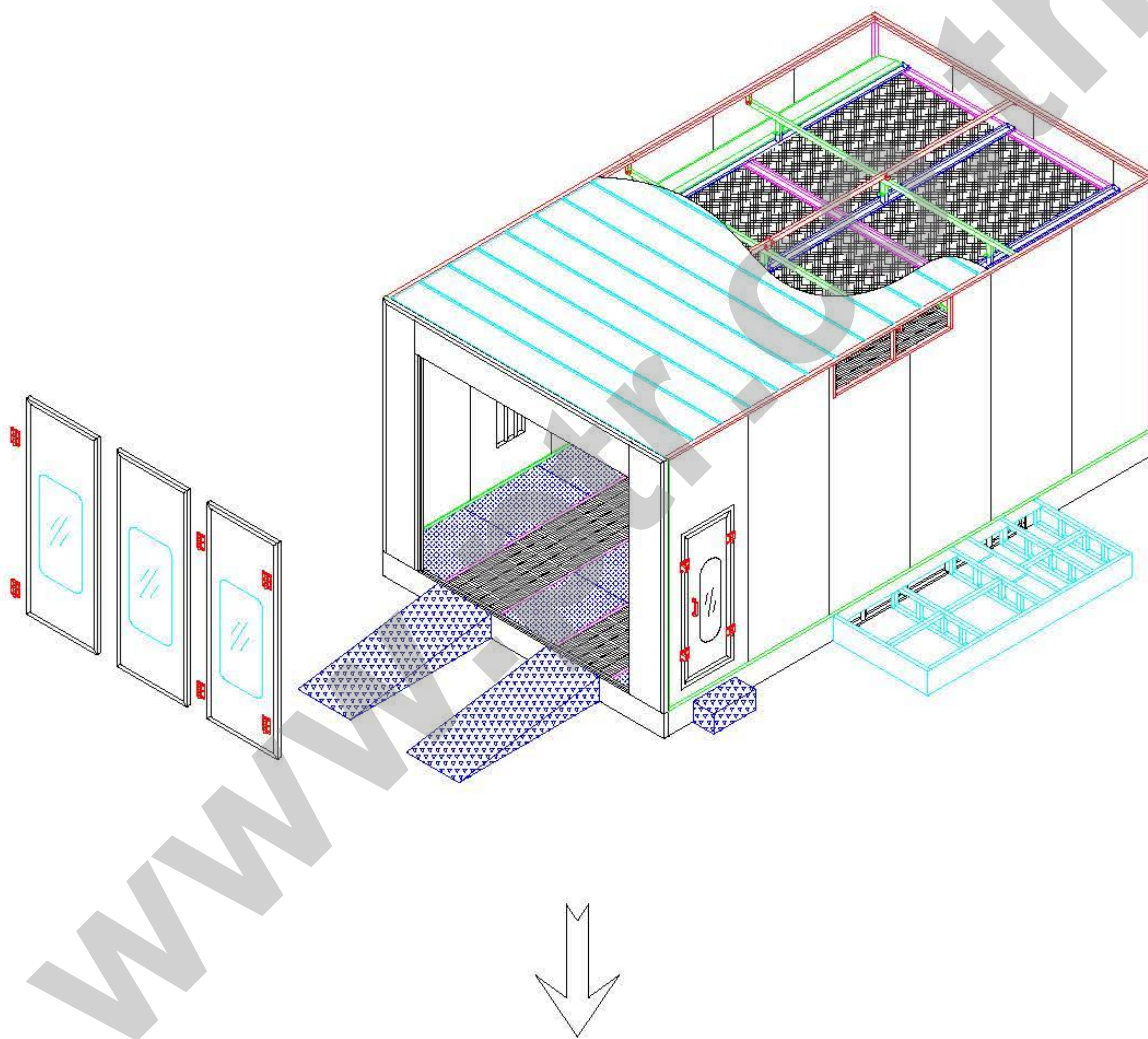


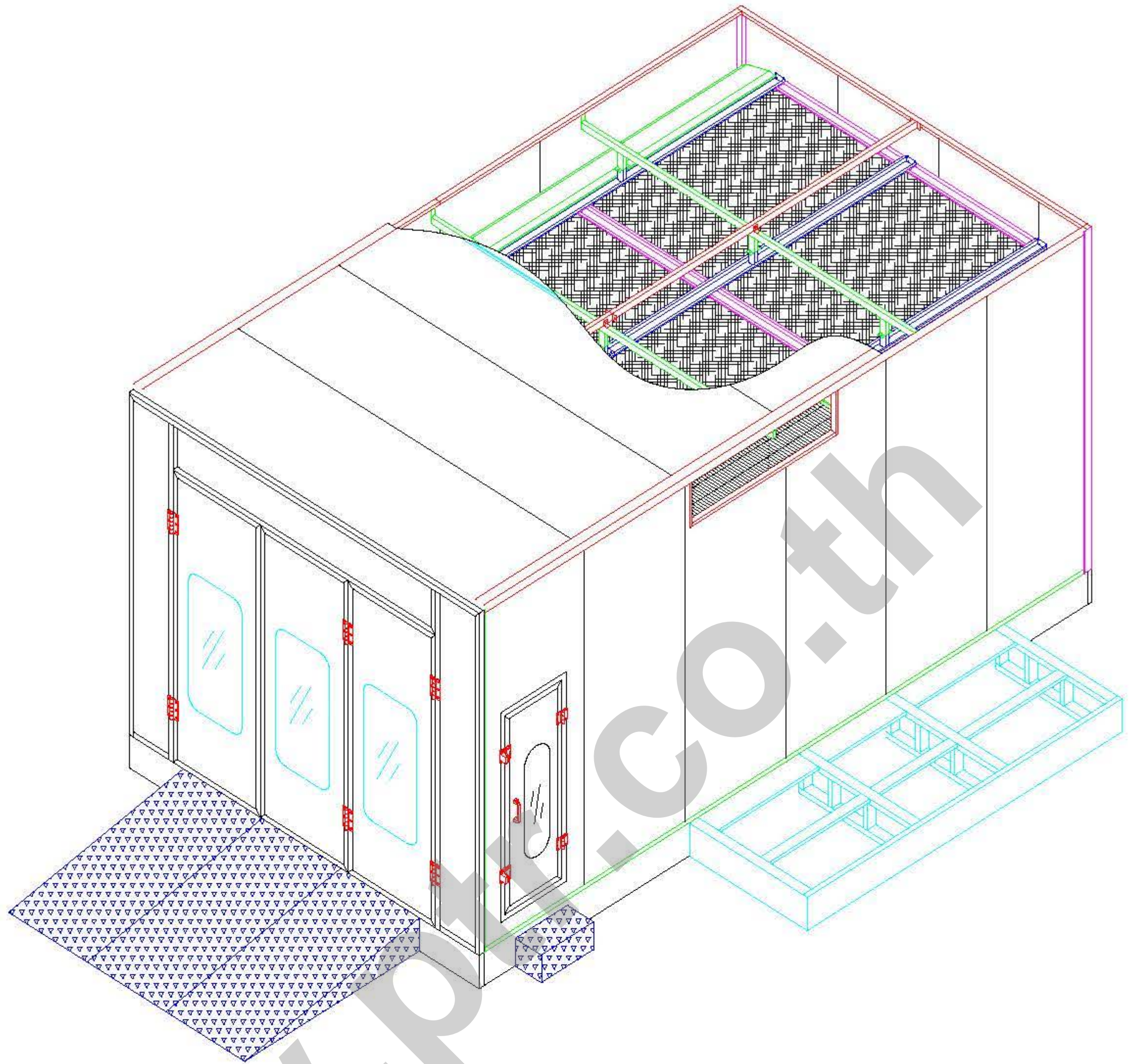


NOTICE: Install parts of roof unit strictly according to sequence, then screw down all connection bolts.

5.4 Installation of main door unit

- 1) Please refer to detailed packing list and check all parts of main door unit before start of installation, make sure that there's no mistake for dimensions and quantities.
- 2) Install main door parts orderly, adjust space between each panel, screw down bolts of hinges, see below chart:



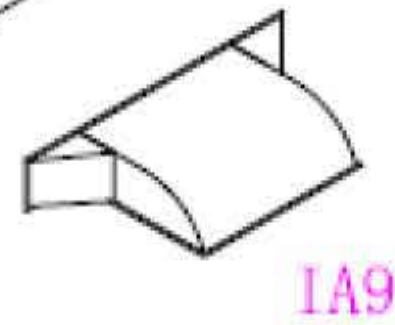
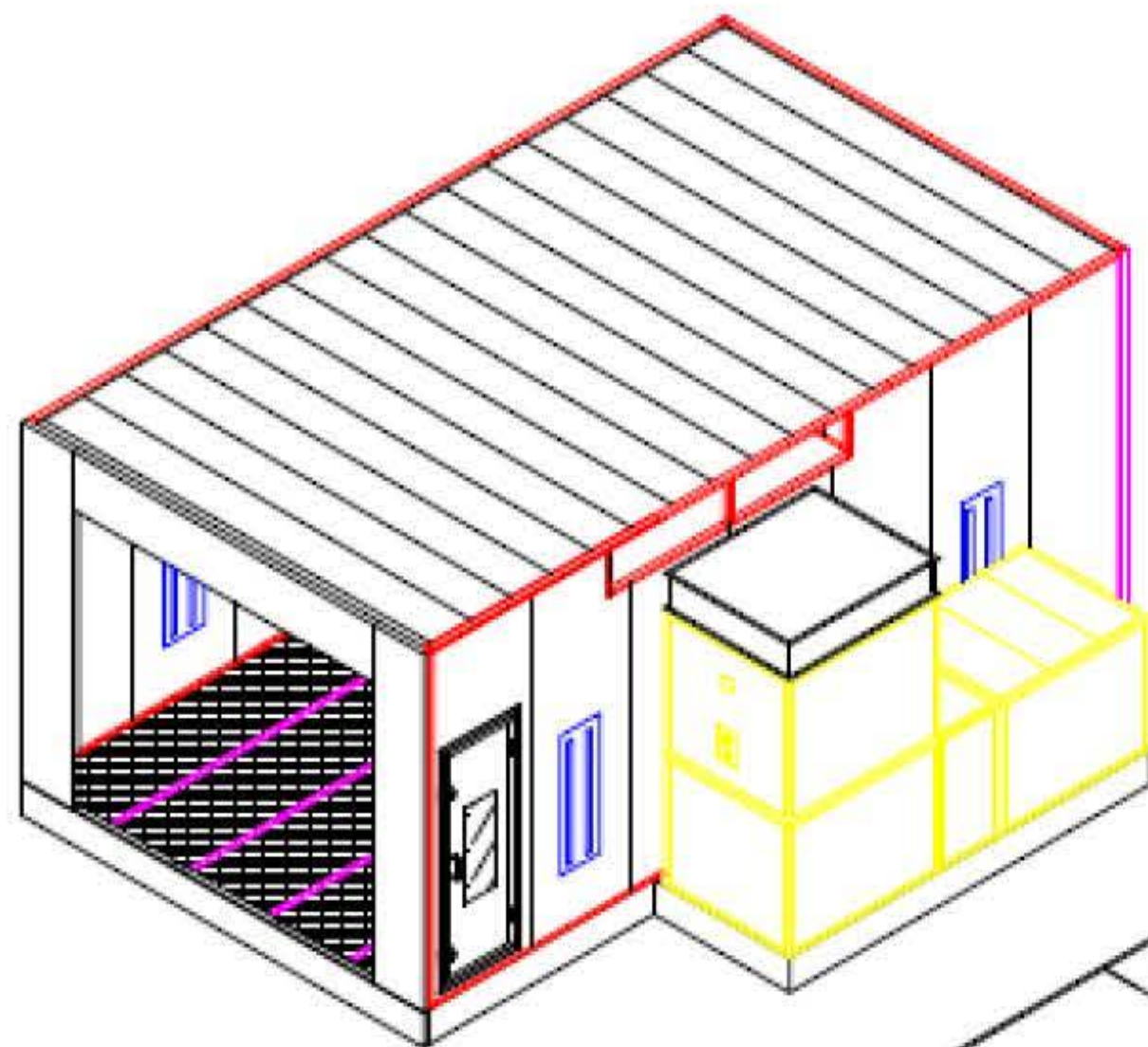


- 3) Open the door while finishing installation, check whether the bolts are loose or not, if they are, please adjust again to ensure the fastness and stability for each joint.

NOTICE: While installing, make sure the space between each main door panel is symmetrical, the bolts of hinges should screw down.

5.5 Installation of intake and exhaust air system

- 1) Please refer to detailed packing list and check all parts of intake and exhaust air unit before installation work begins, make sure that there's no mistake either for dimensions or quantities.
- 2) Install each part according to sequence and connect the parts well, see below chart:



NOTICE: While installing, clean the intake and exhaust air fan, ensures the fan inside is clean and with nothing, or it will bring risk when using the booth.

5.6 Installation of control system

- 1) Please refer to the detailed packing list of control system before installation, make sure that there's no mistake either for dimensions or quantities.
- 2) Place control box depends on actual situation, and then follows the wires length of each electrical part. Connect parts one by one according to the numbers of terminals in the control box, ensure all connections are correct, see installation drawing.

NOTICE: The installation of control system should be done by the one who specialize in electrician, or we won't be responsible for all the sequent that it brings.

To ensure the operation of the equipment, pressurize all the places need be airproof with glass glue after fixing up all the parts, in case dusts go into the booth and influence the work quality.

6. Spray booth debugging

To ensure the performance of the spray booth is to the high-point in the using process, debugging after installation is needed.

Connect to electrical source; turn on the switches in the control panel by order. Observe the indicator lamps and interrelated electrical parts, to see if all are in the correct working condition or not; check the running of fans whether in right direction or opposite, to confirm the fans are in normal working condition; check if the air door is in the right position and test its switching state; observe other parts' working condition, adjust or replace the parts which can not meet requirement is necessary.

7. Working Principle

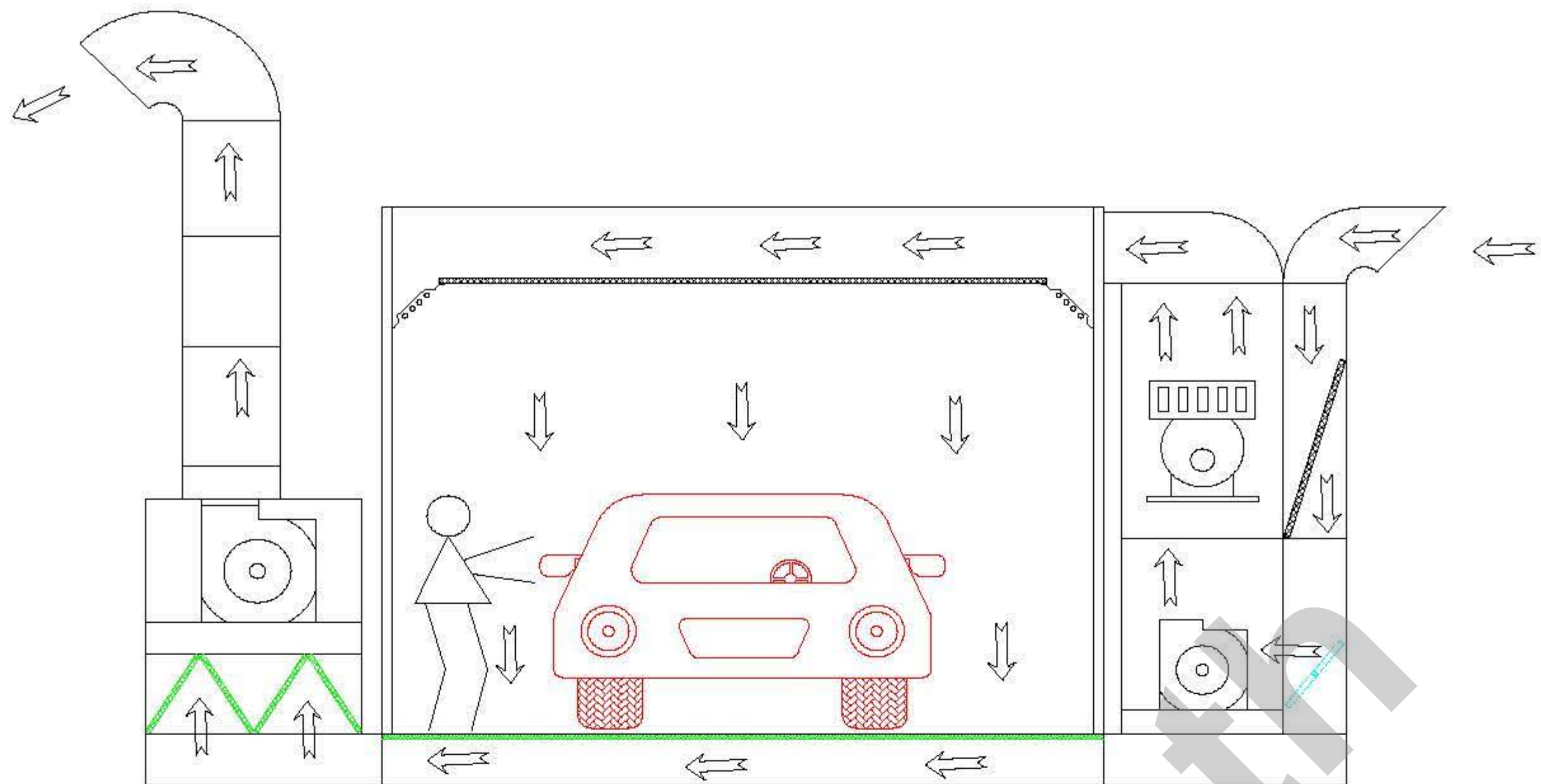
7.1 Working principle of spray in normal temperature

Turn the power switch to the on position, and turn the spraying switch to the normal spraying position, in this time, the intake air fan and the exhaust air fan will start up and the damper is open. In the function of intake air fan, outside fresh air comes into the heating generators through the pre-filter system, and enters into the plenum, then filtered by ceiling filter and into the booth which brings clean, symmetrical and steady-going down airflow for spraying. Due to the function of the exhaust air fan, the mixture gas produced by spraying in the booth will be released to the atmosphere through the exhaust air duct, after being filtered by fiberglass filter in the booth floor and in the exhaust air unit.

The air flow:

Fresh air → intake air duct → pre-filter → intake air fan → heating generator → plenum → ceiling filter → working area of the spray booth → the first exhaust air filter → the second exhaust air filter → exhaust air fan → exhaust air duct → atmosphere

See the normal spraying principle figure for details:



7.2 Working principle of spraying in rising temperature

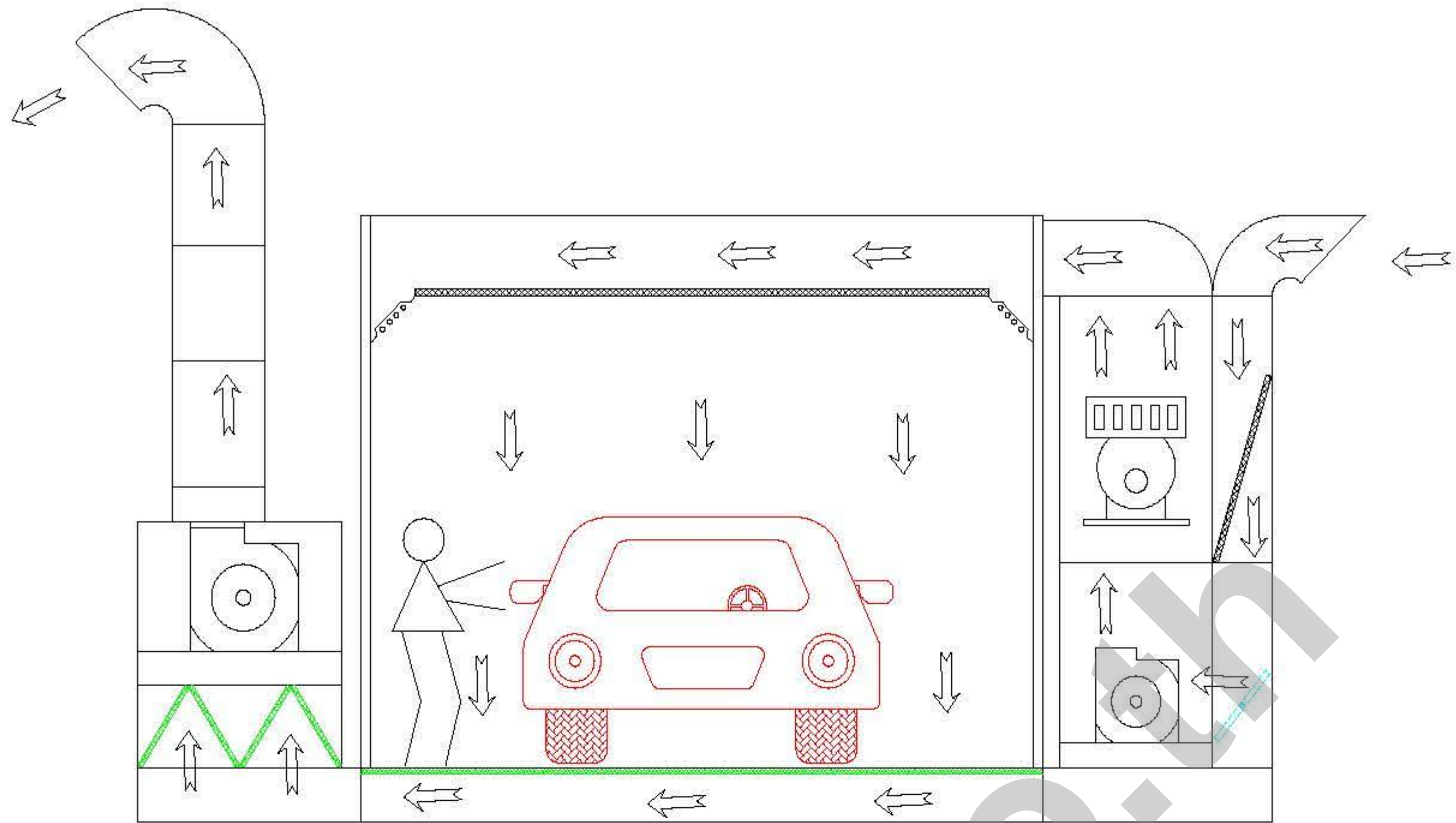
Turn the power switch to the on position, and turn the spraying switch to the rising temperature position, in this time, the intake air fan and the exhaust air fan will start up, the damper is open and the burner is working. In the function of intake air fan, the outside air goes into the heating generators through the pre-filter system, after being heated up and the air temperature rises in heat exchanger, and enters into the plenum, then filtered by ceiling filter and into the booth which brings clean, symmetrical and steady-going down airflow for spraying. Due to the function of the exhaust air fan, the mixture gas produced by spraying in the booth will be released to the atmosphere through the exhaust air duct, after being filtered by fiberglass filter in the booth floor and in the exhaust air unit.

The air flow:

Fresh air → intake air duct → pre-filter → intake air fan → heating generators → hot air → plenum → sub-ceiling filter → working space of the spray painting room → the first exhaust air filter → the second exhaust filter → exhaust air fan → exhaust air duct → atmosphere

See the spraying in rising temperature principle figure for details:

NOTICE: The temperature can not be set over 30°C for rising temperature spraying.



7.3 Working principle of baking

After spraying cycle finished, turn on baking switch, at this time, it goes to flash off state in the spray booth. After several minutes, one intake air fan and one exhaust air fan stop automatically and the burner fires itself, and the damper is **closed**. At this time, there's only little fresh air goes from outside into heating generators in the function of intake air fan which can save energy sources and increase utilization ratio of heat, the spray booth goes into inner circulation state. Hot air goes from heating generators to plenum, then enters room after filtered by ceiling filter, providing heat that is necessary for baking of cars surface. Afterwards, the air with little benzene will be released to the atmosphere after being filtered twice by the exhaust air filter.

The air flow:

Fresh air → pre-filter → intake air fan → heating generator → plenum → ceiling filter → working area of spray booth → the first exhaust air filter → the second exhaust air filter → exhaust air fan → exhaust air duct → atmosphere

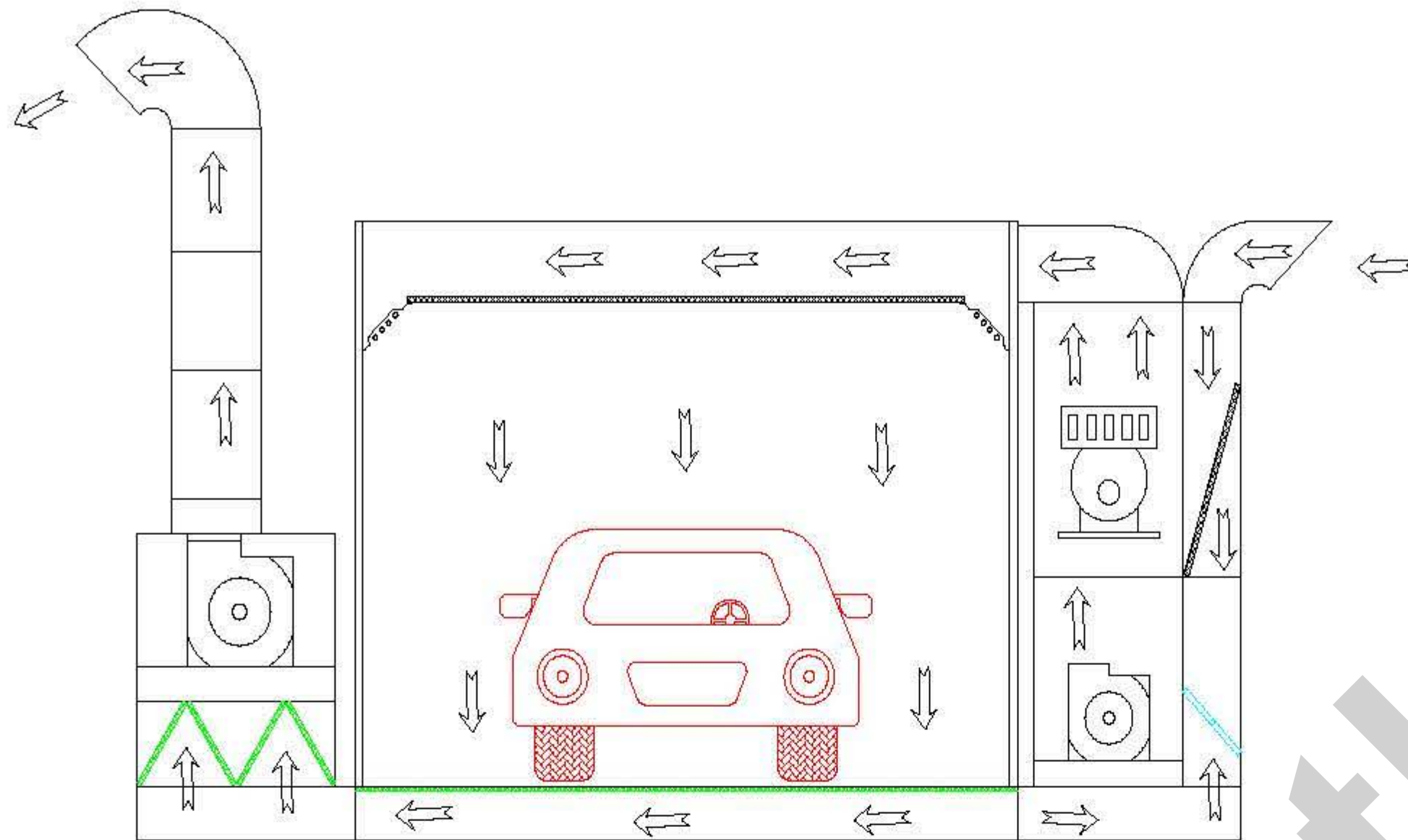
NOTICE: Only 30% fresh air come into the booth while baking.

The air flow of inner circulation:

Hot air → the first exhaust air filter → damper → intake air fan → heating generators → plenum → ceiling filter → working area of spray booth

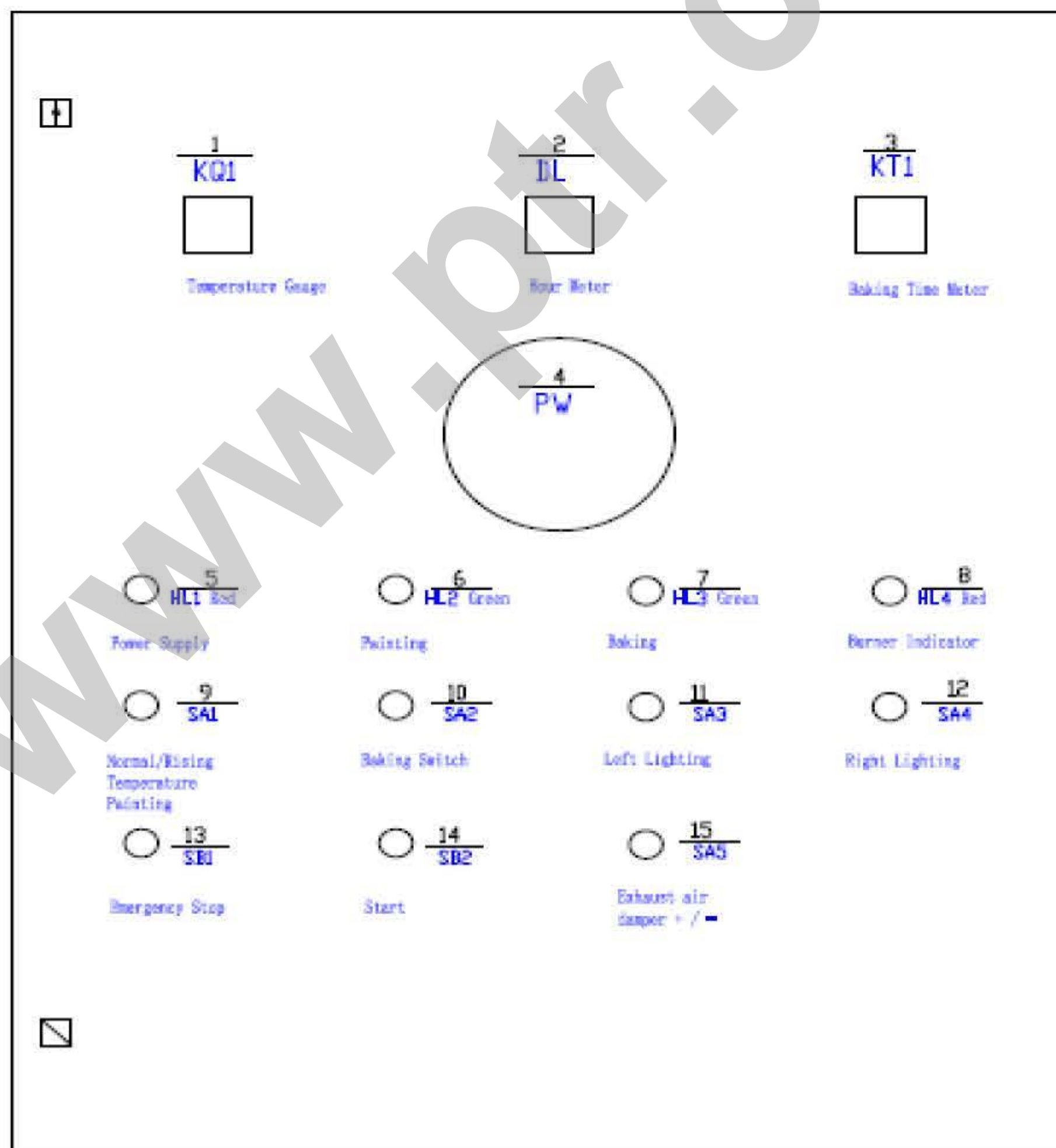
See the baking principle figure for details.

NOTICE: The temperature can not be set over 80°C for baking



8. Operation

8.1 Operation panel of control box (with the panel figure)



1. temperature controller
2. hour meter

3. time adjustor
4. power indicator light
5. spraying indicator light
6. baking indicator light
7. burner failure indicator light
8. spraying/heat spraying switch
9. baking switch
10. switch of left illumination
11. switch of right illumination
12. emergency stop switch
13. switch of damper

Introduction of the indicator lights, switches and meters:

Power switch: placed in the control panel, control the outside power of the whole spray booth.

Temperature controller: used to set up and control temperature for spraying, rising temperature spraying and baking cycle.

Hour meter: used to calculate total working time of the spray booth.

Time adjustor: used to control the baking time.

Power indicator light: indicating the power on-off of the spray booth.

Spraying indicator light: indicating the spraying cycle.

Baking indicator light: indicating the baking cycle.

Burner failure indicator light: indicating the working situation of the burner.

Spraying/rising temperature spraying switch: control the spraying cycle of the booth.

Baking switch: control baking cycle of the booth.

Switch of left illumination: control the connection of left-lighting.

Switch of right illumination: control the connection of right-lighting.

Emergency stop: once there's emergency condition, it will cut the power supply.

Switch of damper: control the on-off of the damper.

8.2 Operation of normal spraying

1. Turn on power supply switch, the indicator light will be bright.
2. Turn on the switch to the normal spraying position, the booth will be on spraying cycle.
3. View the condition of fans, both the intake air fan and exhaust air fan are running.
4. Check work condition of burner, the burner should be on off position.
5. View the on-off of cycle damper, the damper should be closed.
6. Choose the work condition of the lighting according to the environment.

8.3 Operations of rising temperature spraying

1. Turn on power supply switch, the indicator light will be bright.
2. Set temperature.
3. Turn on the switch to the rising temperature spraying position, the booth will be on heating spraying cycle.

4. View the condition of fans, both the intake air fan and exhaust air fan are running.
5. View the on-off of cycle damper, the damper should be closed.
6. Check work condition of burner, now the burner is working.
7. Choose the work condition of the lighting according to the environment.

8.4 Operation of baking

1. Turn on power supply switch, the indicator light will be bright.
2. Set temperature and baking time.
3. Turn on the baking switch, the booth will be on the baking cycle.
4. Check the fans, only the intake air fan is running.
5. View the on-off of cycle damper, now the damper is open.
6. Check the burner, now the burner is working.
7. The lighting of booth should be turned off.

NOTICE: It should be strictly to operate the booth orderly, the temperature can not be set over 30℃ for rising temperature spraying, and can not be set over 80℃ for baking. Getting into the booth is forbidden for anyone while baking.

9. Maintenance

Spray booth is a kind of special equipment which includes machinery, electrical parts, filter materials, airproof parts and many other parts. So in the daily using please pay more attention to the repair and maintenance. There are several aspects as below:

9.1 Maintenance of filter system

The filter system is an important part of spray booth, usually it includes prep-filter, ceiling filter, fiberglass filter and activated carbon.

- 1) Prep-filter is a used for filtering fresh air, normally it should be replaced after 100 working hours and according to the actual situation.
- 2) Ceiling filter is used for second-filter of air, normally it should be replaced every 400 working hours.
- 3) Fiberglass filter is used to collect solvent fumes of exhaust air. There're 2 fiberglass filter of the booth. Generally it should be replaced every 80-100 working hours.
- 4) Activated carbon is used to adsorb exhaust gas of paint in paint mist, please check the activated carbon every 7 working days. If the surface of the carbon is affixed with much paint that impact exhaust air effect, please replace it in time to ensure exhaust air getting out freely.

9.2. Maintenance of airproof parts

In order to make sure the airproof capacity of the booth, airproof parts are needed a lot. As the air produced by working booth is caustic, and airproof parts are often made of rubber materials which are easily suffered, and the airproof parts will be

aging after using a long time, so timely renewing the airproof parts are needed indeed to ensure a high quality.

9.3 Maintenance of electrical parts

As “brain” of the booth, control system directly conducts all kinds of operation for the booth. So it is extremely important to keep a good stableness of all electrical parts. During operating time, periodic checking of all electric parts is recommended in order to ensure correct and precise operation.

9.4 Maintenance of gear parts

Gear parts are mainly composed of straps between motors and fans. As they’re used frequently, straps would become loose and worn after a period of enlistment. So adjust the belts according to working condition and replace them if necessary, so the working effect of fans can reach the best. Furthermore, there are oil-holes at the two ends of the axletrees of fans, periodically lubricate the above oil-holes to keep a smoothly running.

9.5 Maintenance of burner

The burner is the heat source for the booth, and its fuel is oil or gas. Regarding to oil burner, it must be maintained as follows: check the oil duct periodically to ensure that there’s no leak; check the diesel oil filter periodically to ensure that it is free; clean the oil mouth periodically; replaced the intake filter of the burner periodically to ensure the intake air is clean.

9.6 Maintenance of other parts

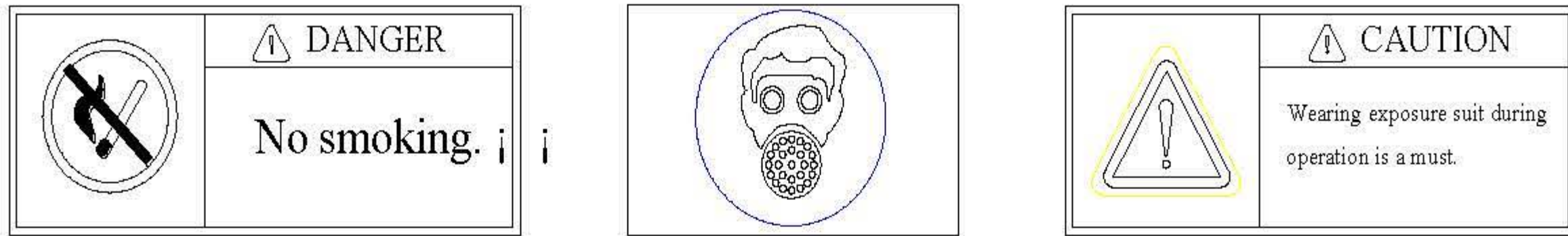
So as to ensure the performance of spray booth, daily maintenances of other parts are also needed. It mainly includes cleaning the booth, checking tight-and-loose of connections, checking the working environments outside and so on, all which have been done well to prevent from unseen accidents.

NOTICE: The maintenance work should be done by the person specially assigned for a job, and the following should be done in the maintenance process:

- a. Any workpiece can not be put in the booth.**
- b. Close the power supply of the booth, and set warning sign at the main power supply.**
- c. All the replaced filters should be disposed in a special way, they can not be disposed as the normal garbage.**

10. Warning

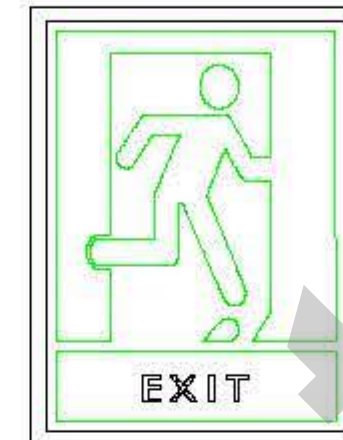
Our company will deliver the relevant warning sign with the cargo, and the warning sign should be put in the right position after finishing installing. Explaining as follow:



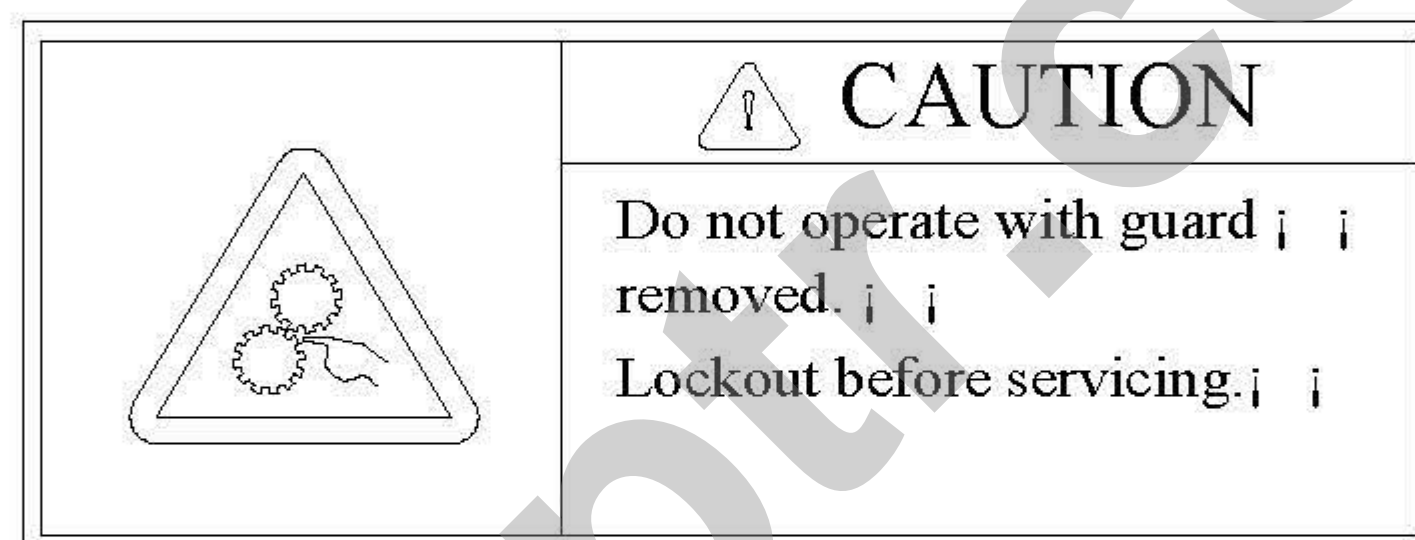
Paste the three warning sign above on the side or rear panel of the booth that can be seen easily.

PULL

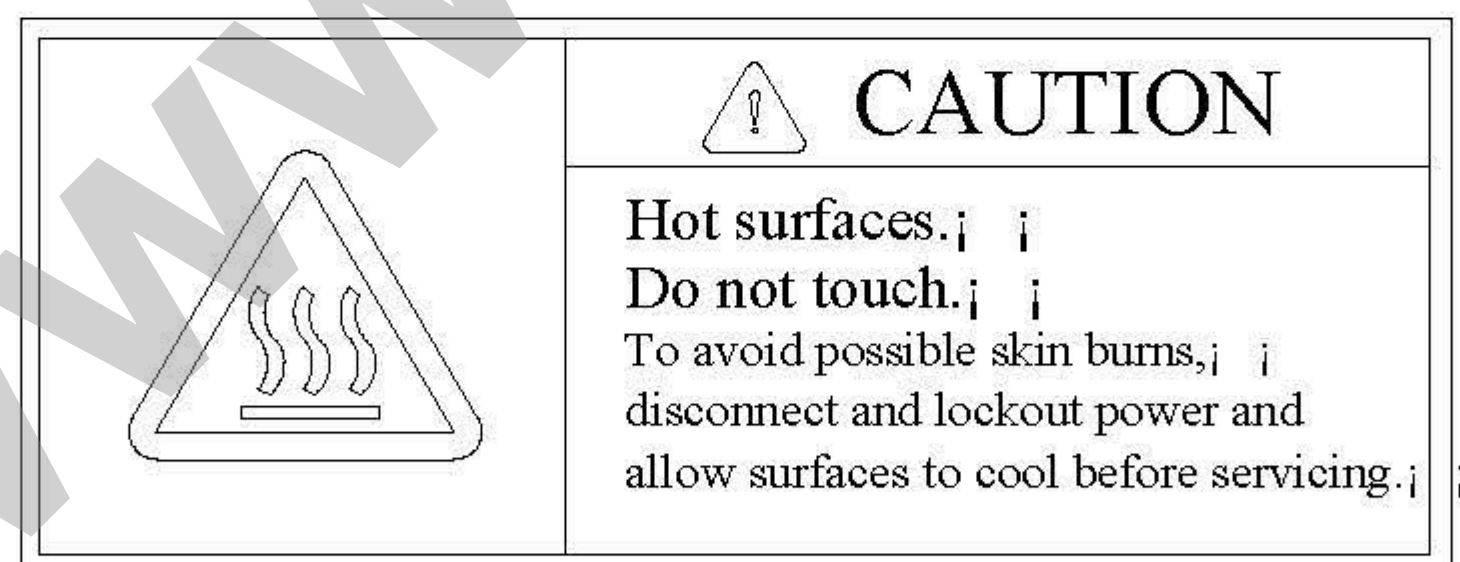
PUSH



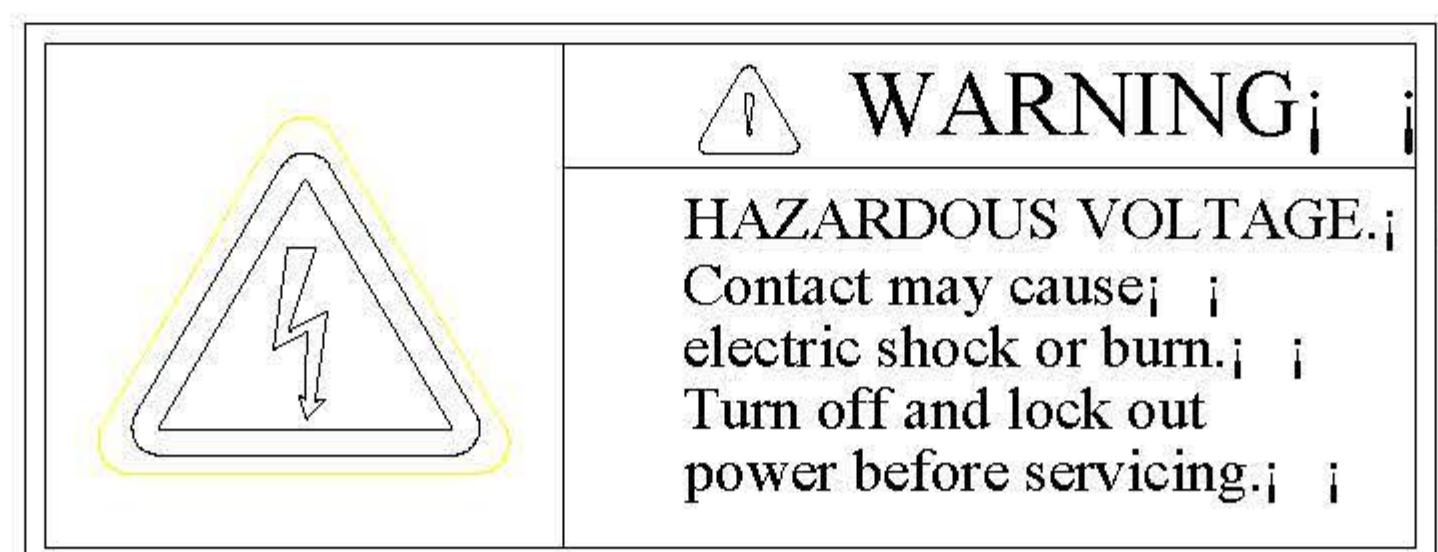
Paste the three warning sign above on the personal door.



Paste this warning sign on the panel outside intake air fan.



Paste this warning sign on the position close by exhaust duct of heating exchanger.



Paste this warning sign on the side panel of the control box or the wall panel near by.

Working in the spray booth should pay much attention to the security, here are the details:

- a) Fire and smoking are forbidden in the booth.
- b) Exposure suit and gas mask should be put on while working.
- c) Electrical parts should have earth line for protection.
- d) Periodically examine the running state of motors to make sure that they are running in good condition.
- e) Bright fires are forbidden around the spray booth.
- f) The dope used for spraying and baking should be put in safe place.

11. Usual troubleshooting and possible solutions.

Usual troubles	Possible solutions
1. The fans stop after starting up	Check motor breakers and relays, adjust preset current value to correct one.
2. Temperature rises slowly while baking.	Check damper, adjust it to right working position
3. The pressure inside booth is bigger than needed while spraying.	Replace the exhaust air filters. Check exhaust air damper, adjust it to right working position
4. Inside booth pressure is negative while spraying.	Replace the intake air filters. Adjust exhaust air damper to right working position
5. The burner cannot start up.	Check oil duct whether there's air in it or it is blocked or not, replaced it if necessary. Adjust the intake air damper of the burner

NOTICE: All the relevant operation of the booth should according to this manual, or we won't be responsible for all the sequent that it brings.