



1600 Automatic Shaker Unit

Installation, Operations & Maintenance Manual



Dear Customer,

Congratulations on deciding to choose an STS adhesive shaker unit for your DTF printing activities. You made an excellent choice.

When you need service or technical help, please let us know your purchase invoice number. This will make it easier to provide you with correct service.

For your convenience, space is provided below for you to record your local STS service contact information.

STS TECHNICAL TEAM

Service number: 561-999-8818

email: support@stsinks.com

1. General

Carefully read the instructions in this manual as they contain important information regarding proper, efficient and safe installation, use and maintenance of the unit.

The installation of this unit must be carried out in accordance with the manufacturer's instructions.

Switch off the unit in case of failure or malfunction and contact your distributor for service information.

1.1 Symbols that may be used in this manual



This symbol informs about a situation where a safety risk might be at hand. Given instructions are mandatory in order to prevent injury.



This symbol informs about the right way to perform in order to prevent bad results, appliance damages or hazardous situations.



This symbol informs about recommendations and hints that help to get the best performance out of the appliance.

2. Safety

2.1 Safe use of the appliance



For your safety. Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

2.2 Other prohibitions (dangerous procedures)



Using any parts other than genuine STS approved manufactured parts can void the warranty.



Improper installation, adjustment, alteration, service or maintenance can cause property damage or major injury. Read the installation and operating instructions thoroughly before installing or servicing this equipment.

3. Functional description

3.1 General

Model 1600 shakers are:

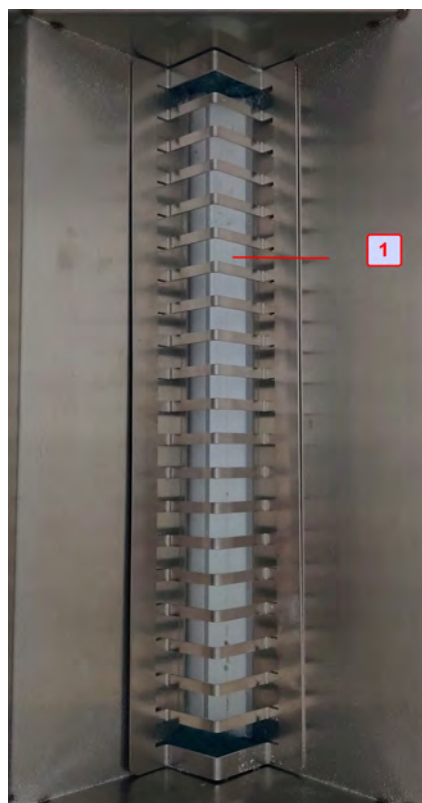
- Electrically heated
- Heated by infrared tubes
- Have both auto/manual interface
- Mesh belt driven
- Electronically controlled
- Automatically sensor controlled



3.2.1 Component Locations



1. Powder box switch
2. Multifunction relay
3. PLC touch screen
4. Powder recycle drawer
5. Manual switch



1. Powder box

Maintenance note*

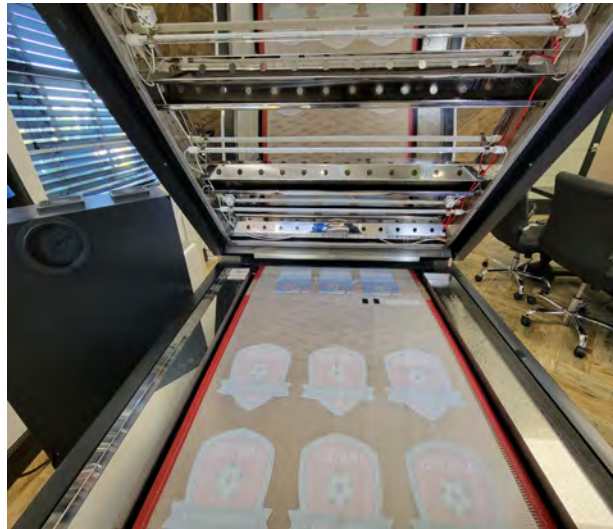
Keep powder box free from debris that mixes in with TPU powders. Brush unwanted material from powder box area daily and remove unwanted debris from recycle bin before reuse into powder box.



1. Powder blocking strip
(under front top cover)

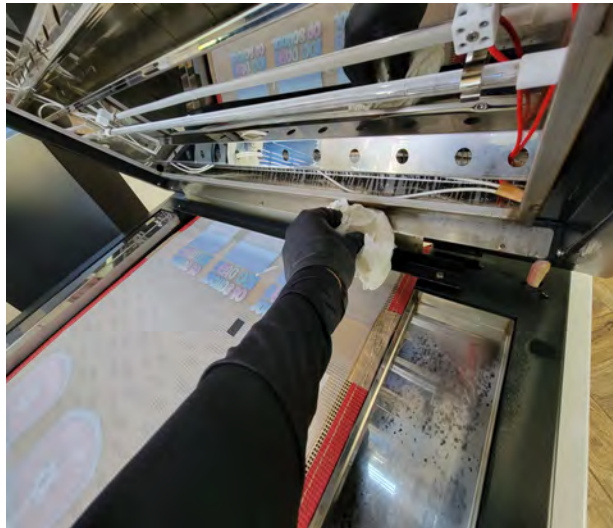


1. Vented oven lid
2. Vacuum cooling cylinder
3. Cooling fans
4. Motorized take-up reel



Maintenance note*

With the vented oven lid in the open position and the unit unplugged, fix the lid in place using the securing arm. Then using a dry paper towel....



remove any oily residue from surfaces inside the heating chamber every week.



Also wipe the interior of the two-zone filtration system and housings by opening heating chamber filter panel.

Use the supplied hex key to unlock both top and bottom fixtures. Be careful not to jolt open the door as there are no installed hinges. Simply pull open 6 inches then lift up slightly to remove door for access.



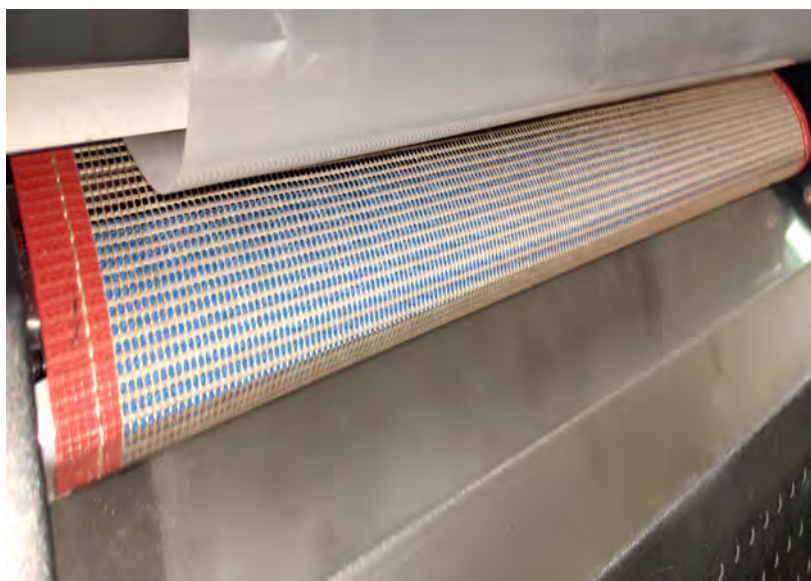
Maintenance note*

The two-zone HEPA and charcoal filters should be replaced as needed. With regular use each filter lasts approximately 3-4 months.

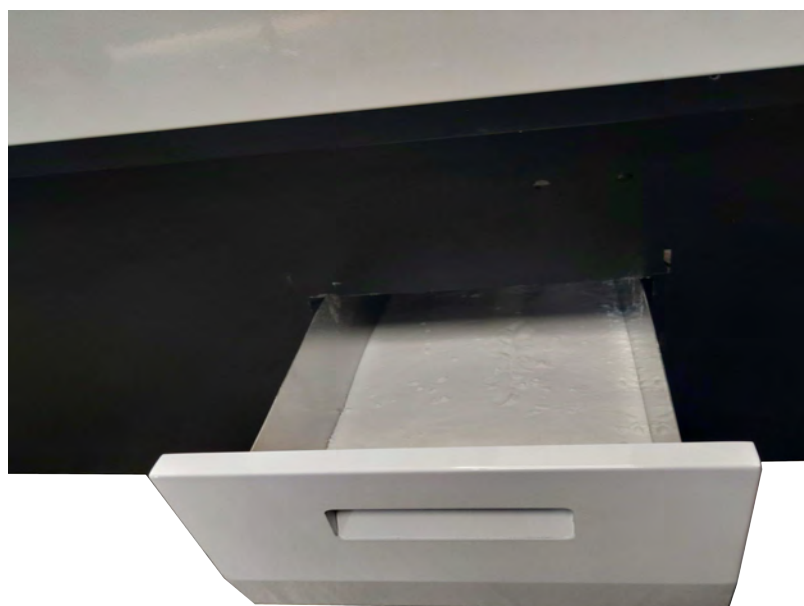


To remove and replace filters, unscrew interior locking nuts (black tops) and slide each filter upward to remove. Do the opposite to replace then affix door and seal with key locks.

2 zone filtration device includes both charcoal and HEPA filtration.



Mesh guide belt



Recycled powder tray

Maintenance note*

Always remove any unwanted material from the recycled powder tray upon inspection. TPU powder should be completely white and sediment-free.



Maintenance note*

After each daily workflow using 2000 grit sandpaper, gently sand across the vacuum cylinder to remove any surface buildup which may have occurred. This will ensure proper gripping of the PET film through the system.

Vacuum cylinder

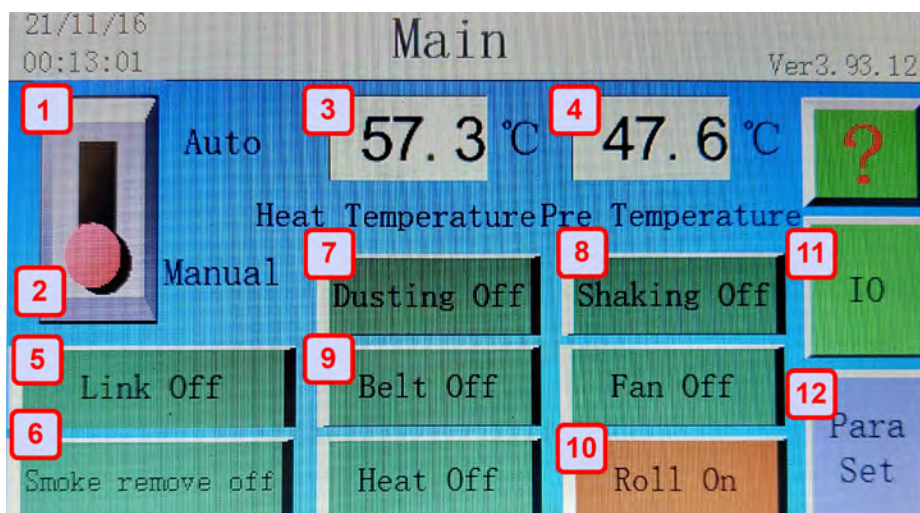


4. Operations instructions

4.1 Before using the unit

Before you begin to use your new shaker oven you must understand the differences between an automatic shaker and a dialed manual one. You will produce better re-sults if you understand the technology and follow the “rules”.

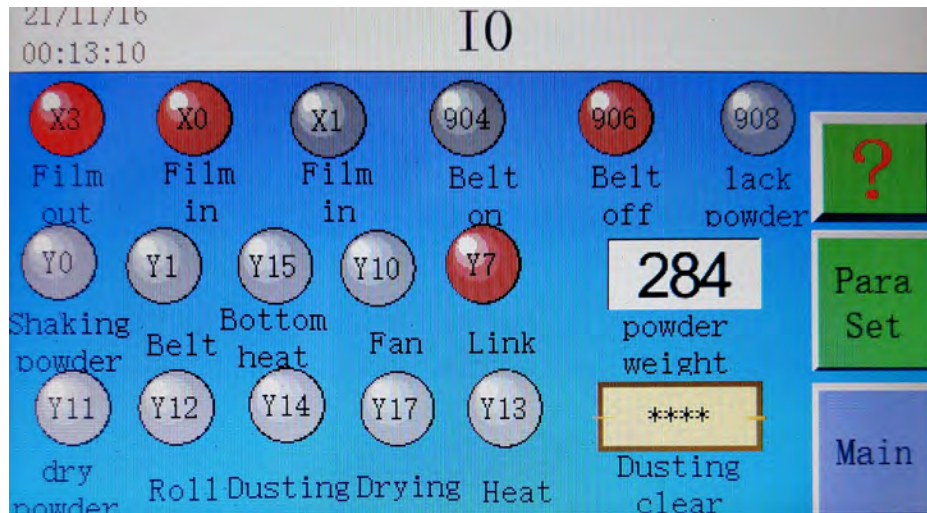
- 4.2 **The STS 1600** operates in both automatic and manual modes as selected by the user on the PLC touch screen.



- (1) & (2) **The automatic/manual modes** control the complete operation of the STS 1600.
 (2) The manual mode allows the user manually control the switches of each device function of the unit
- (3) **Heating temperature control** (actual)
 (4) **Preheating temperature** controls the front heating plate (actual)
 (5) **Print linkage** engages the front sensor, front vacuum cylinder and shaking device in automatic mode
 (6) **Smoke remove switch** engages the internal filtration system
 (7) **Dusting off** switch controls the opening and closing of the powder spreader
 (8) **Shaking off** switch controls the on and off functions of the powder shake element
 (9) **Mesh belt off** switch controls the heating of the conveyer belt
 (10) **Roll on switch** controls the functions of the take up reel

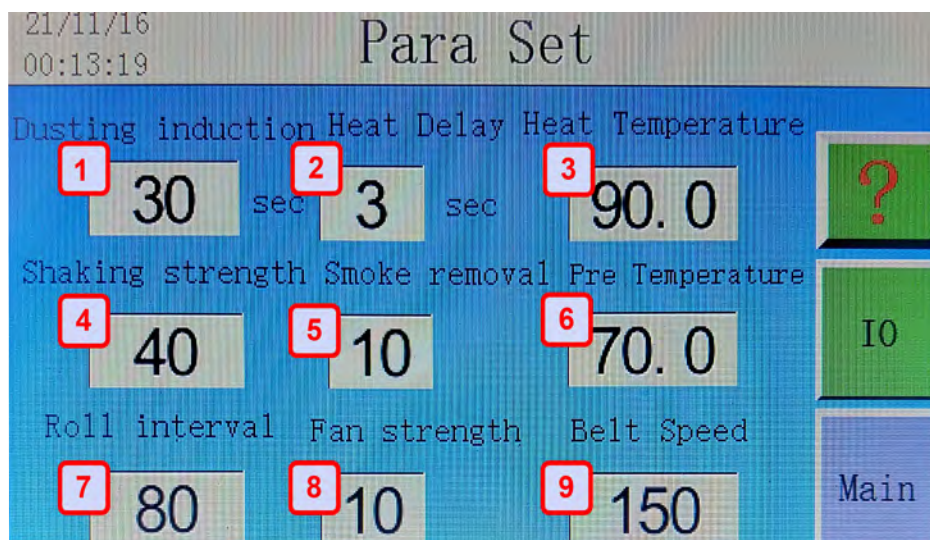
- (11) **IO** allows the user to enter the monitoring interface
 (12) **Para set** allows the user to enter the parameters settings

4.3 Monitoring Interface



- (1) **X0** denotes the operation of the sensor under the preheating platform stays white when it senses media feeding, and turns red when it does not sense media. The white and red lights are standard throughout the IO Interface where white is off and red is on.
- (2) **X3** denotes the operation of the sensor when the film has passed through the shaker to the take up reel
- (3) **906** whether the belt is working, the red light is on. The white light will show when it is off
- (4) **904** belt on, or **906** belt off refers to the mesh conveyor belt operation. Red denotes on and white denotes it is off
- (5) Essentially the red on and white off shows the user what systems are currently engaged and those that are not. If the unit is in auto mode it will turn on and off systems depending on operating characteristics.
- (6) **Powder weight - Calibrate to 19-21 with no powder using slight pressure on the scale. When in operation be sure that powder weight is above 170 to pull PET film through the system. Add powder if below 170 or the system will not activate vacuum cylinder roller.**

4.4 System Parameters

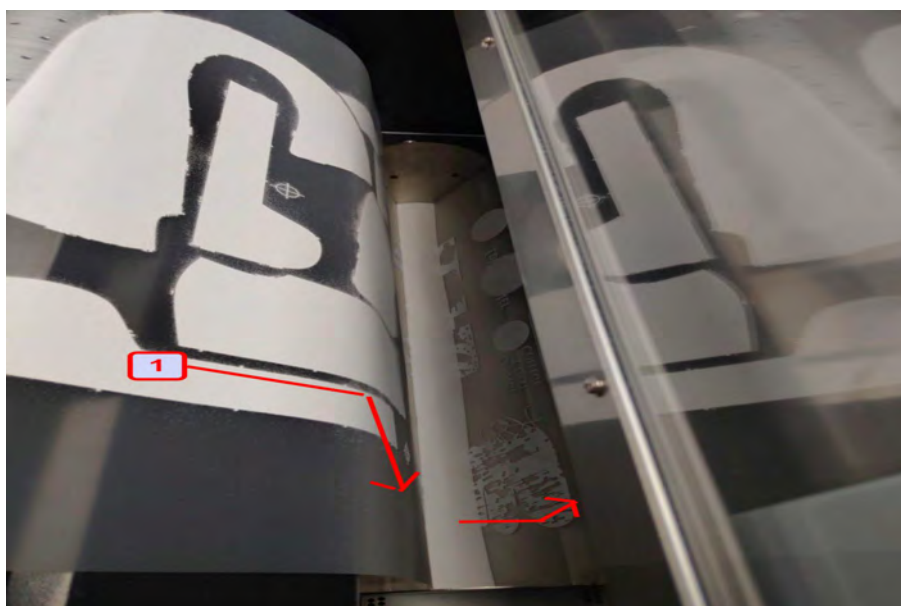


- (1) **Dusting induction** is set with a timing alarm that sounds after the powder spreading time is reached
- (2) **Heating delay** sets the heating delay time when the heating function is in the off position, time can be extended according to the new set time
- (3) **Heat temperature** of the infrared heating tunnel is set according to the melting temperature of the adhesive powder
- (4) **Shaking strength** adjusts the shaking strength of the powder removal sequence
- (5) **Smoke removal** adjusts the air purification unit intensity
- (6) **Preheating temperature** of the front heating plate can be set
- (7) **Take up speed** is set when the larger the value the slower the speed
- (8) **Suction strength** is set after entering the printing linkage mode. Click to set the suction strength of the 2 vacuum cylinders (front and rear)
- (9) **Mesh belt** speed controls the speed of the conveyor belt in which the larger the value the faster the running speed

5.0 Operational Procedures

Once the printer has printed enough transfers to cover the front preheating board and the media extends to the first of two vacuum cylinders (pg. 6) ensure that the PET transfer media is aligned correctly to inhibit any skew that may be present through the heating tunnel and take-up reel.

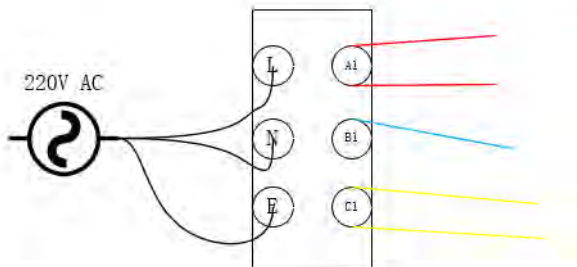
When the media is placed correctly to the first vacuum cylinder the shaker suction system should be in the on position. From this point the media will now be controlled by both the vacuum and mesh belt system through the heating tunnel (pg. 7). It is important to note that when placing the media under the powder hopper for the first time that enough slack is provided to allow powder to fill at the bottom and then be shaken off as the the media moves back up through the belt system (below).



After finishing the current print job, cut the last part of PET media and enter the print linkage mode. The film will then be automatically wound by the take-up to complete the printing process.

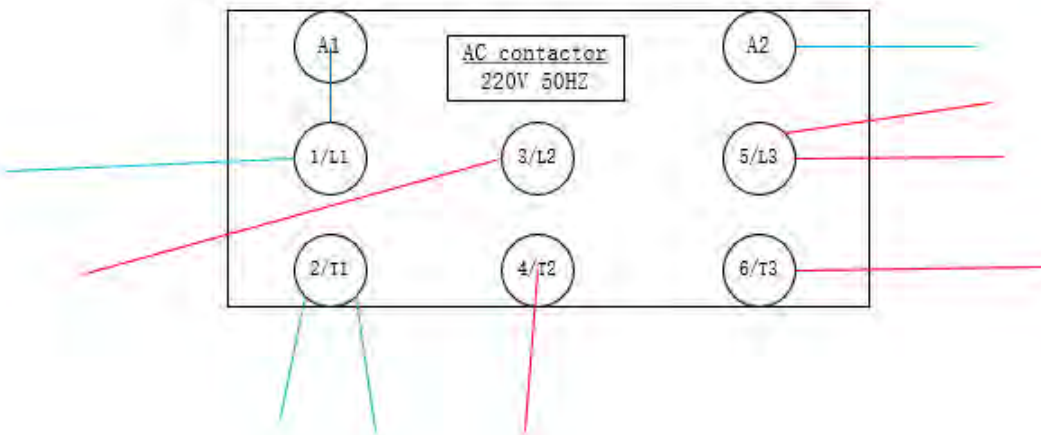
Recycling the hot melt powder is accomplished simply by brushing the powder from the interior walls into the recycled powder tray (pg.7) and refill it into the powder box (pg. 4).

Terminal1 (T1)



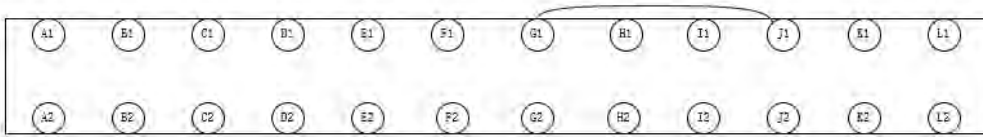
Number	Connect Location
T1-A1	C1-3/L2, C1-5/L3
T1-B1	C1-L1
T1-C1	T2-E1

AC contactor (C1)



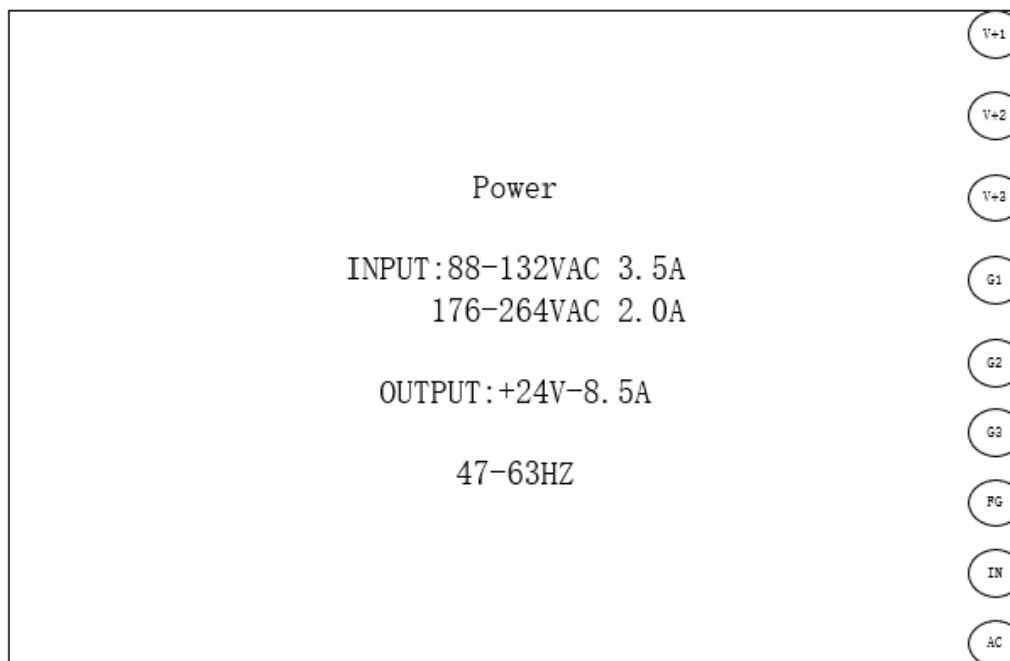
Number	Connect Location
C1-A1	C1-1/L1
C1-1/L1	T1-B1
C1-2/T1	T2-I1, T2-J1
C1-3/L2	T1-A1
C1-4/T2	T2-K1
C1-A2	T4-J1
C1-5/L3	T1-A1, T4-I1
C1-6/T3	T2-L1

Terminal2 (T2)

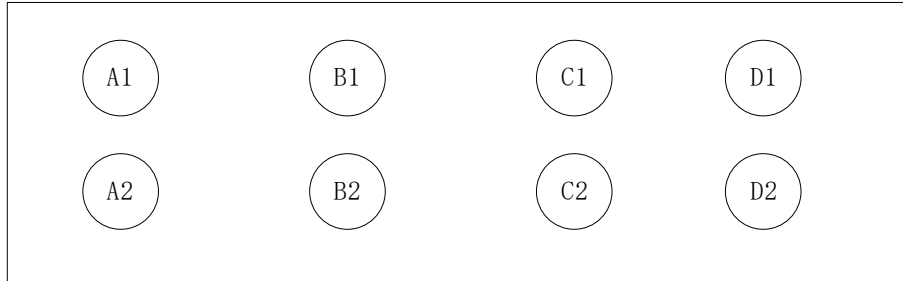


Number	Connect Location
T2-E1	T1-C1,T1-C1
T2-F1	Y12-2
T2-G1	T2-J1
T2-H1	DA-Y10-2
T2-I1	C1-2/T1
T2-J1	C1-2/T1,T2-G1
T2-K1	C1-4/T2
T2-L1	C1-6/T3
T2-A2	Paper sensor,PLC-X03
T2-B2	Paper sensor,P1-V+1
T2-C2	Paper sensor,Blower connector1,Blower connector2,P1-G3
T2-D2	Blower connector1,Blower connector2,Y10-2
T2-E2	P1-FG,P2-FG,Blower Earth, Paper roller Earth
T2-I2	Quick Connector ,T3-B2,P2-IN
T2-J2	T3-A2,T4-L1,P1-IN
T2-K2	P2-AC,Y16-1,Y6-2
T2-L2	Y14-2,Y17-1,P1-A2
T2-F2	Paper roller Live Wire
T2-G2	Paper roller Naught Wire, Blower Naught Wire
T2-H2	Blower Live Wire

Power(P1)

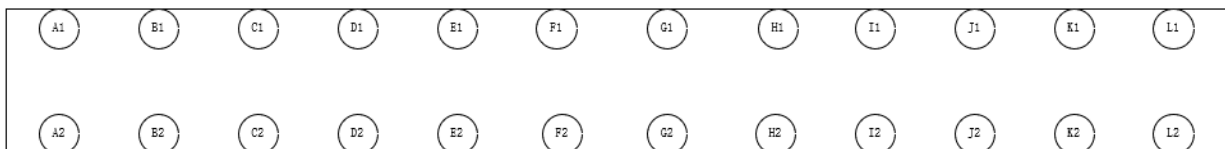


Number	Connect Location
P1-AC	Y12-1,T2-J2
P1-IN	T2-J2
P1-FG	P1-FG
P1-G3	T2-C2, Suction connector
P1-G2	PLC-COM,T4-E1,PLC-COM6, PLC-COM4
P1-G1	T3-C2, PLC-0V
P1-V+3	T3-D2,PLC-24V
P1-V+2	Y6-3,Y12-3,Y10-1,Y7-1
P1-V+1	T2-B2,T4-D1

Terminal3 (T3)

Number	Connect Location
T3-A1	Heating Lamp-Naught wire
T3-B1	Heating Lamp-Naught wire
T3-C1	Aiifar 4c step_moto_V1---V-
T3-D1	Y5-3,Aiifar 4c step_moto_V1---V+
T3-A2	T2-J2
T3-B2	T2-I2
T3-C2	P1-G1
T3-D2	P1-V+3

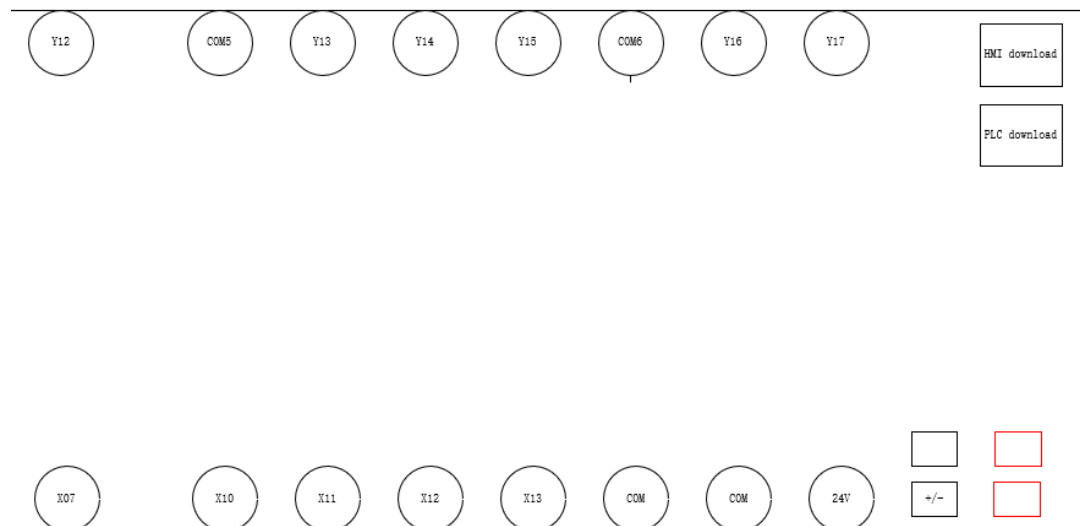
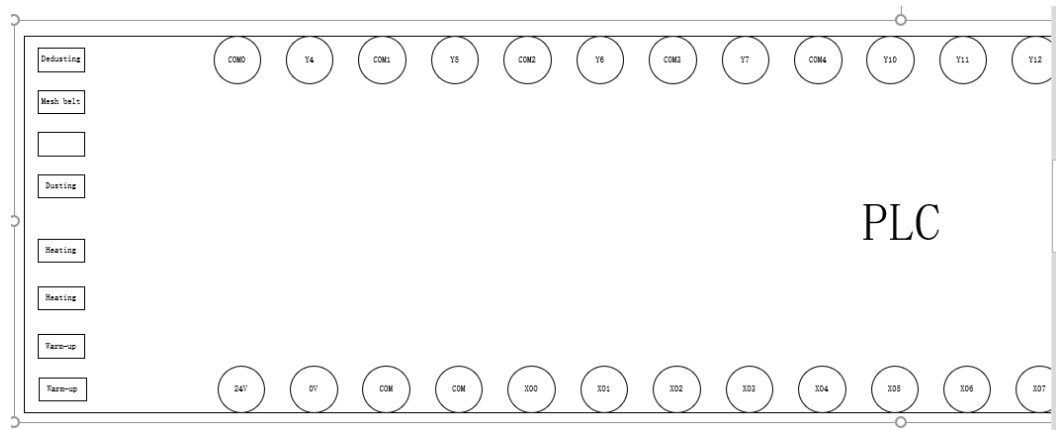
Terminal4(T4)



Number	Connect Location
T4-A1	Warm-up
T4-B1	Warm-up
T4-C1	PLC-X00
T4-D1	P1-V+1
T4-E1	P1-G2
T4-F1	PLC-----+/-
T4-G1	PLC-----+/-
T4-H1	Not connect
T4-I1	C1-5/L3
T4-J1	C1-A2
T4-K1	Y11-1
T4-L1	T2-J2

Number	Connect
T4-A2	Temperature control
T4-B2	Temperature control
T4-C2	Paper Feed Signal
T4-D2	Paper Feeding V+,PotentiometerV+
T4-E2	Paper Feeding V-
T4-F2	Potentiometer Signal
T4-G2	Potentiometer V-
T4-H2	Not connect
T4-I2	Rotary Switch
T4-J2	Emergency switch
T4-K2	Dehumidification
T4-L2	Dehumidification

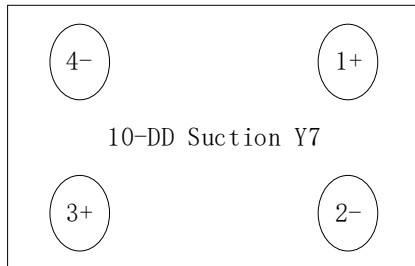
PLC



Number	Connect Location
PLC-COM0	Not connect
PLC-Y4	Not connect
PLC-COM1	PLC-COM2
PLC-Y5	Y5-4
PLC-COM2	PLC-COM1
PLC-Y6	Y6-4
PLC-COM3	PLC-COM4
PLC-Y7	Y7-4
PLC-COM4	PLC-COM3,P1-G2

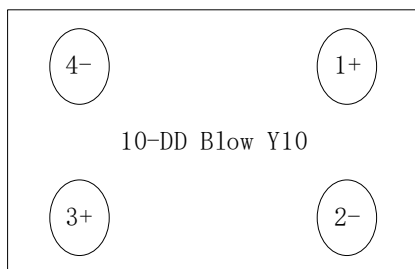
PLC-Y10	DA-Y10-4
PLC-Y11	Y11-4
PLC-Y12	Y12-4
PLC-COM5	PLC-COM6
PLC-Y13	Y13-4
PLC-Y14	PLC-Y16
PLC-Y15	Not connect
PLC-COM6	PLC-COM5,P1-G2
PLC-Y16	PLC-Y14
PLC-Y17	Y17-4
PLC-24V	P1-V+3
PLC-0V	P1-G1
PLC-COM	Not connect
PLC-COM	P1-G2
PLC-XOO	T4-C1
PLC-X01	Not connect
PLC-X02	Not connect
PLC-X03	T2-A2
PLC-X04	Not connect
PLC-X05	Not connect
PLC-X06	Not connect
PLC-X07	Not connect
PLC-X10	Not connect
PLC-X11	Not connect
PLC-X12	Not connect
PLC-X13	Not connect
PLC-COM	Not connect
PLC-COM	Not connect
PLC-24V	Not connect
PLC---- +/-	T4-F1,T4-G1

Relay:sunction Y7



	Connection Location
Y7-1	P1-V+2
Y7-2	Suction connector
Y7-3	Y10-3
Y7-4	PLC-Y7

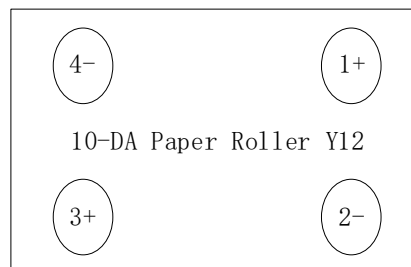
Relay:Blow Y10



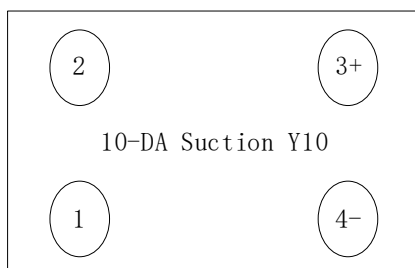
	Connection Location
DD-Y10-1	P1-V+2
DD-Y10-2	T2-D2
DD-Y10-3	Y12-3,Y7-3
DD-Y10-4	PLC-Y10

Relay:Paper Y12

	Connection Location
Y12-1	P1-AC,Y11-2
Y12-2	T2-F1
Y12-3	Y10-3,P1-V+2
Y12-4	PLC-Y12



Relay:Suction Y10

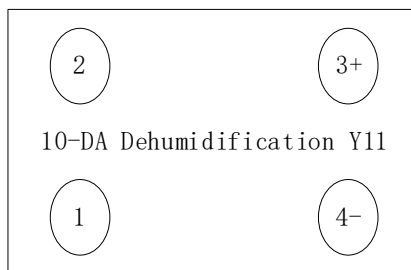


	Connection Location
DA-Y10-1	Y11-2
DA-Y10-2	T2-H1
DA-Y10-3	Y13-3
DA-Y10-4	DD-Y10-4,PLC-Y10

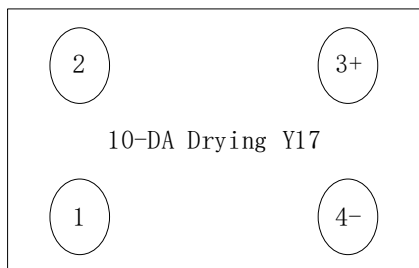
Relay:Dehumidification Y11

	Connection Location

Y11-1	T4-K1
Y11-2	DA-Y10-1
Y11-3	Y13-3,Y16-3
Y11-4	PLC-Y11

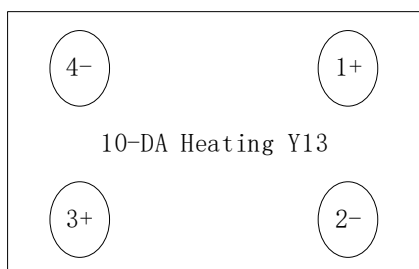


Relay:Drying Y17



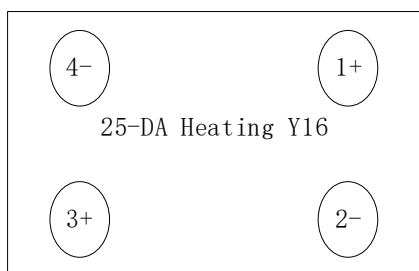
	Connection Location
Y17-1	T2-L2
Y17-2	Quick Connector
Y17-3	Y16-3,Y6-3
Y17-4	PLC-Y17

Relay:Heating Y13



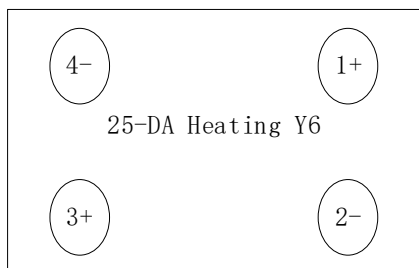
	Connection Location
Y13-1	Y16-1
Y13-2	Heating Lamp--Live Wire
Y13-3	DA-Y10-3,Y11-3
Y13-4	PLC-Y13

Relay:Heating Y16



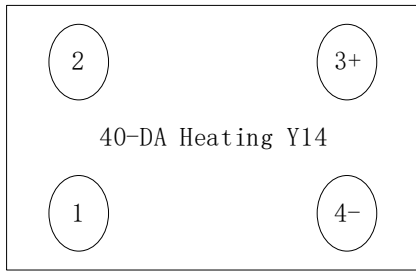
	Connection Location
Y16-1	Y13-1,T2-K2
Y16-2	Heating Lamp--Live Wire
Y16-3	Y11-3,Y17-3
Y16-4	PLC-Y16

Relay:Heating Y6



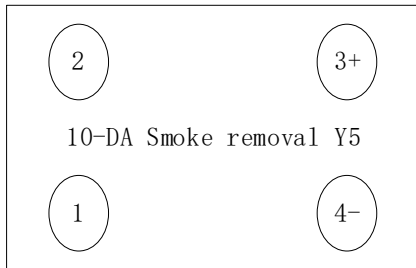
	Connection Location
Y6-1	Heating Lamp--Live Wire
Y6-2	T2-K2
Y6-3	Y17-3,P1-V+2
Y6-4	PLC-Y6

Relay:Heating Y14



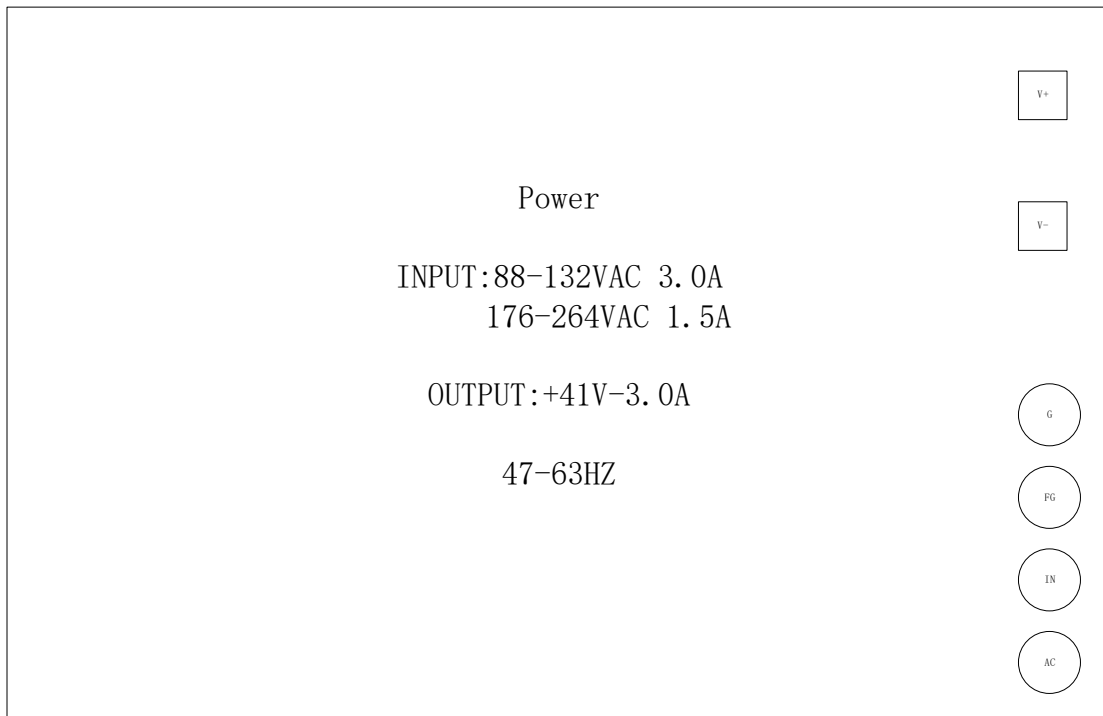
	Connection Location
Y14-1	Heating Lamp--Live Wire
Y14-2	T2-L2
Y14-3	Y5-3
Y14-4	PLC-Y14

Relay:Smoke removal Y5



	Connection Location
Y5-1	Smoke removal device
Y5-2	Y16-1
Y5-3	Y14-3,T3-D1
Y5-4	PLC-Y5

Power2(P2)

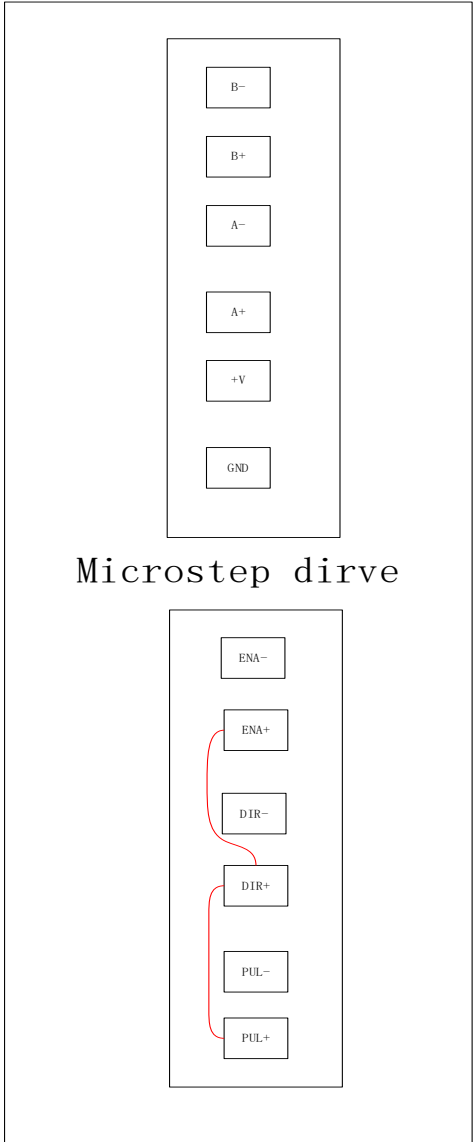


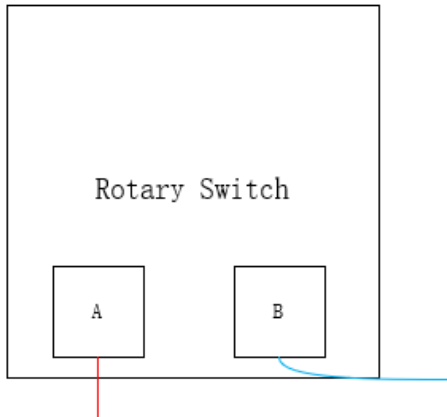
Number	Connect Location
P2-V+	MD--+V
P2-V-	MD--GND
P2-AC	T2-K2

P2-IN	T2-I2
P2-FG	T2-E2
P2-G	Not connect

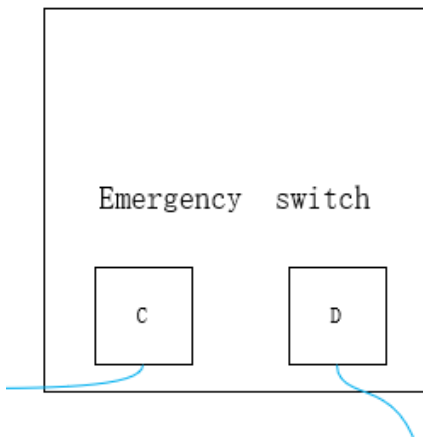
Microstep Drive(MD)

Number	Connect Location
+V	P2-V+
GND	P2-V-
ENA-	PLC-Dedusting
ENA+	DIR+
DIR-	PLC-Dedusting
DIR+	ENA+,PUL+
PUL-	PLC-Dedusting
PUL+	DIR+,PLC-Dedusting



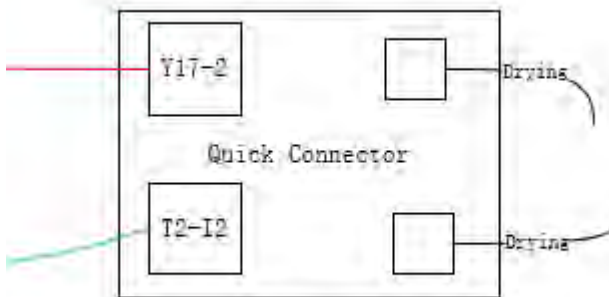


Number	Connect Location
A	T4-I2
B	Emergency switch-C



Number	Connect Location
C	Rotary Switch-B
D	T4-J2

Quick Connector



5.3 Positioning the unit

The STS 1600 Shaker unit dimensions are:

- 5.24 ft length
- 2.95 ft width
- 3.80 ft height

5.4 Electrical connections

cable 12-220v single phase 30 AMP

