



**INLINE DISPENSER**

**HD20**

**HARDWARE OPERATION**

**MANUAL**

# Catalogue

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## Chapter 1 Features and advantages

- Compact design style maximizes the utilization rate of factory space and reduces the cost of ownership
  
- New digital vision system enables high-speed capture of the datum point
  
- Equipped with piezoelectric valves to achieve higher capacity and easy handling of the most challenging products and requirements
  
- Software-controlled nozzle/cartridge heaters allow for precise temperature control
  
- Rapid non-contact jet dispensing will reduce yield losses in needle dispensing
  
- Digital visualization of the valve pressure software can maximize the control precision

# Chapter 2 Product configuration and specifications

## 2.1 Product configuration

- Multifunctional dispenser: HD20 basic machine
- Dispensing valve configuration: hot melt piezoelectric valve
- Digital visual recognition system
- Clean bench with automatic setting of adhesive wiping and purging
- Manual adhesive pressure precision regulating valve
- Laser height sensor: used to precisely control the relative height of the dispensing nozzle and surface
- Three-stage assembly line track reduces waiting time

## 2.2 Specifications: HD20 series

### Motion system

Z-axis repeatability:  $\pm 0.01$  mm

X-Y repeatability:  $\pm 0.02$  mm

X-Y acceleration: 0.6 g max.

X-Y speed: 600mm/s max.

### Computer

Industrial computer with Windows 10 operating system

### Maximum dispensing area (X-Y)

450mm x 600mm (configured with CCD and laser height measurement)

### Conveyor system

Maximum width of the substrate/carrier: 450 mm

Height of the track: adjustable from the floor to the component bottom in the range of 900-970 mm

Maximum load: 10 kg

Operation mode: Automatic (SMEMA), manual, transfer type

Conveyor type: Stainless steel chain conveyor

### Plant requirements

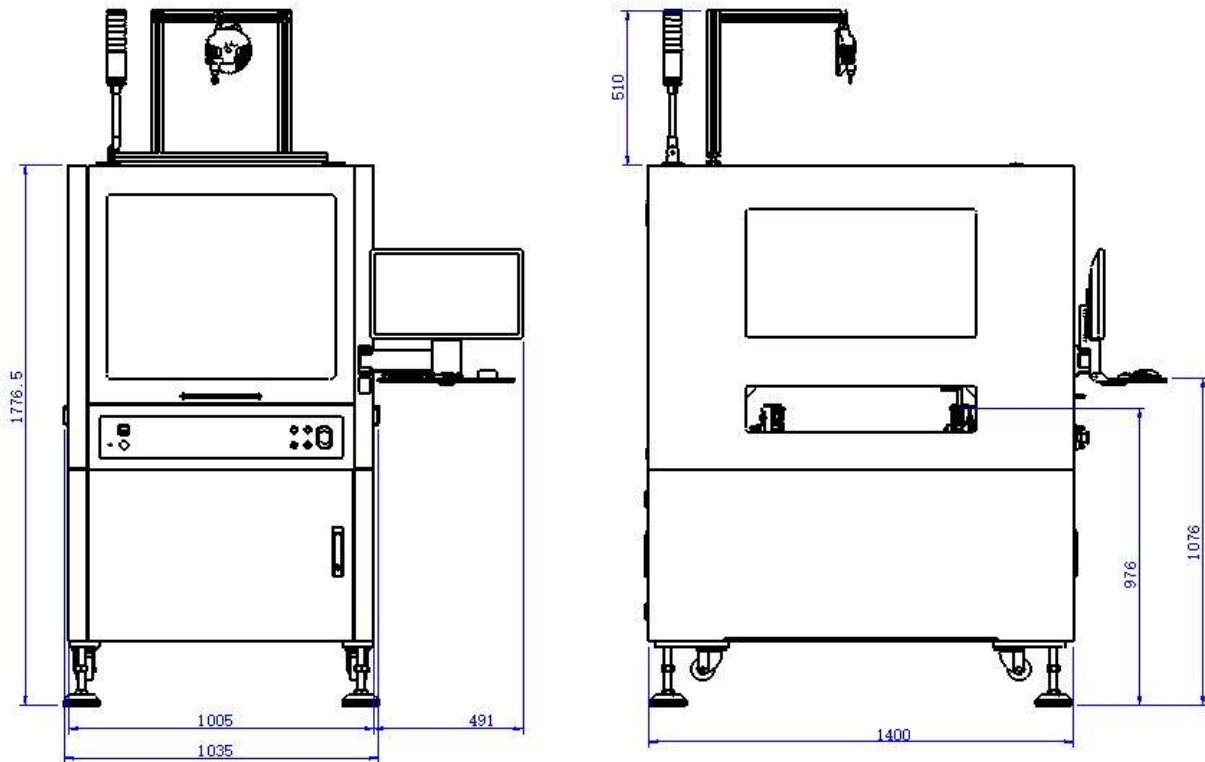
System footprint: 1005 mm (W) x 1400 mm (D)  
 Air supply:  $\geq 0.6$  mPa

Main power supply: 2000W, recommended 200-240V, AC, 50Hz single-phase, 10 A (bottom heating and blowing not included)

System weight: 450 kg

### 2.3 Standard appearance of HD20

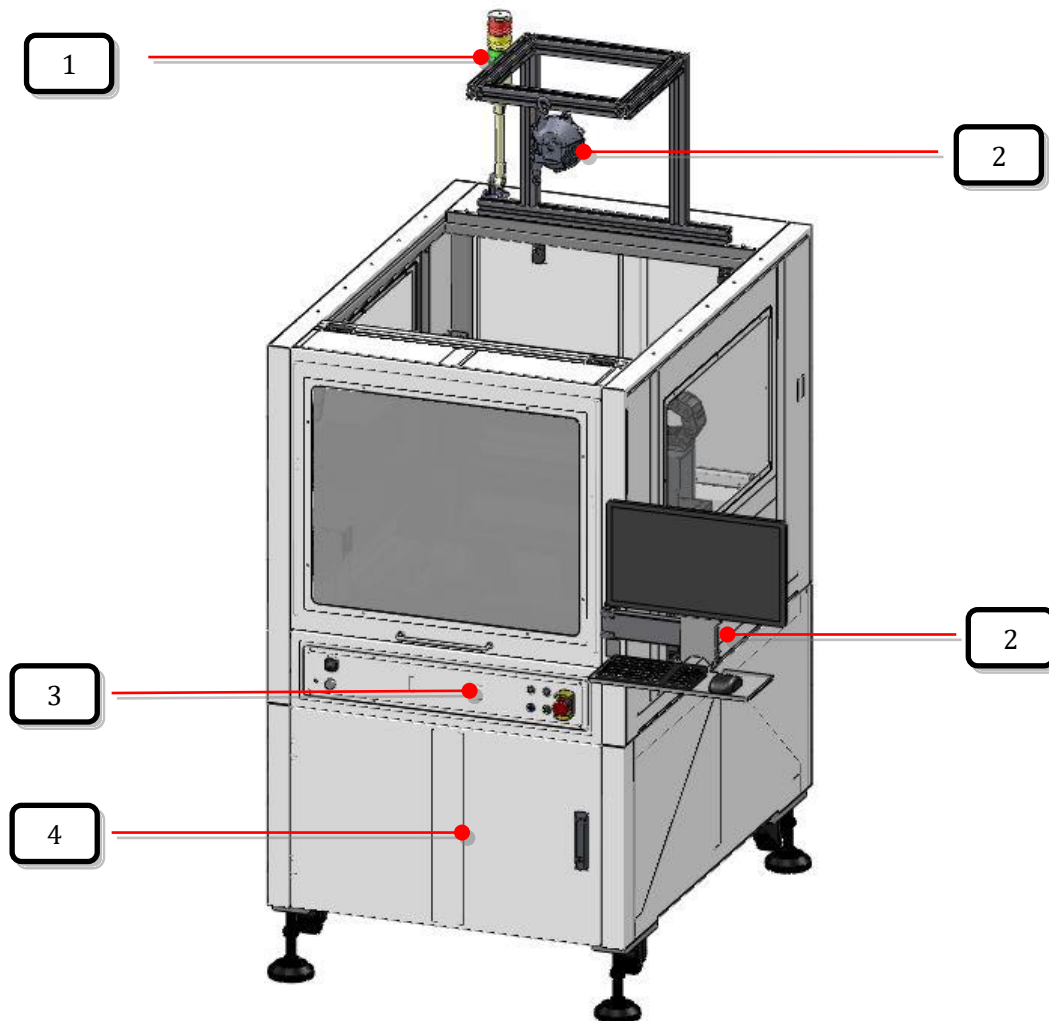
Dimension unit: mm



## Chapter 3 System characteristics

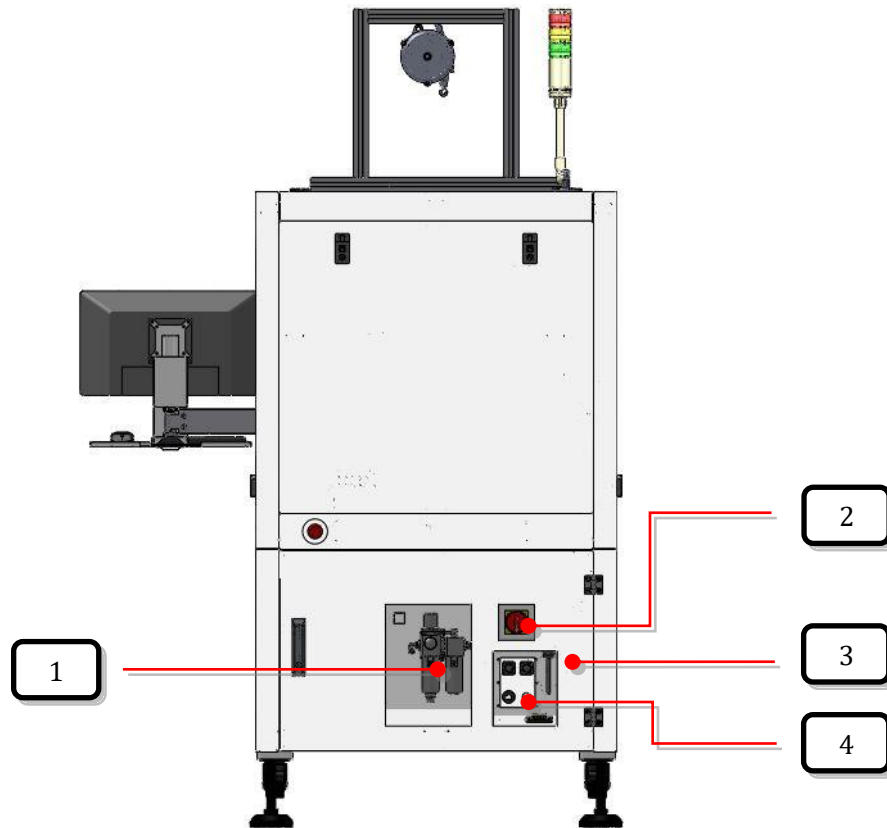
All illustrations in this chapter show the dispensing system in various views and the characteristics of the components. The main parts, accessories and switches are numbered. The numbers in the illustrations are cross-referenced with the numbers in the numbering.

### 3.1 HD20 front view



1. Status light/buzzer alarm: The status light is used to indicate the operating status of the system and to warn the operator when abnormal conditions occur
2. Display and keyboard: can be used to run the dispensing software under the Windows operating system
3. Control panel: emergency stop button, start button, stop button, lighting, precision air pressure regulating valve, etc. are on the control panel
4. Front cabinet: inside the front door is the industrial control computer and the solenoid valve related to the air circuit, etc.
5. Spring balancer: used to balance the load on the supply line

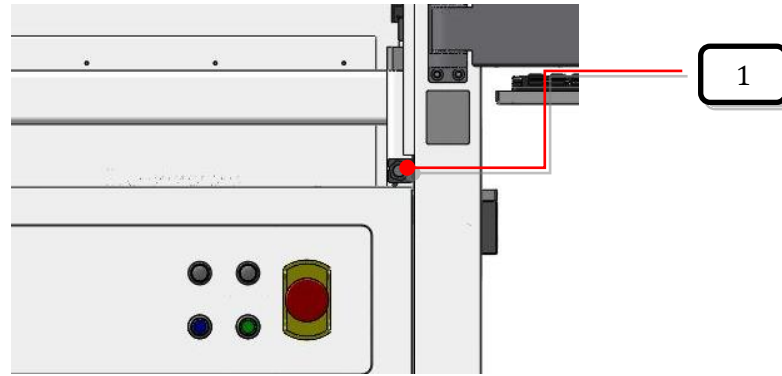
### 3.2 HD20 back view



1. Filter and regulator: total air source input 0.4~0.7mPa
2. Power switch: the main switch of the complete machine power supply which controls the whole machine power
3. Power connector: main power input connector, AC220V
4. Upstream/downstream communication interface: upstream (communicates with the upper computer), downstream (communicates with the lower computer)

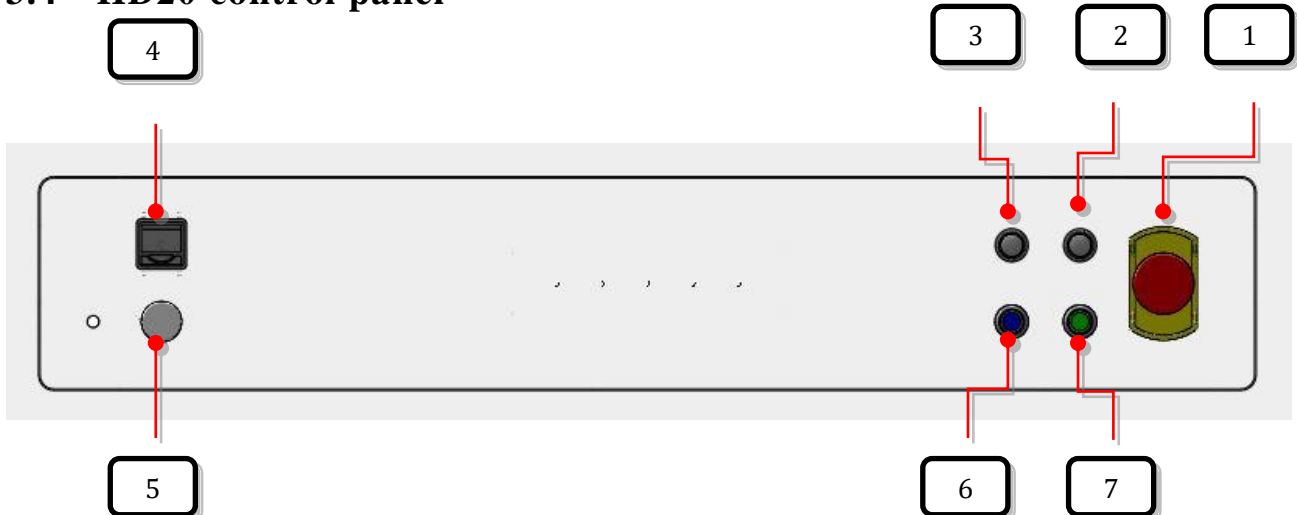
### 3.3 HD20 front door safety switch





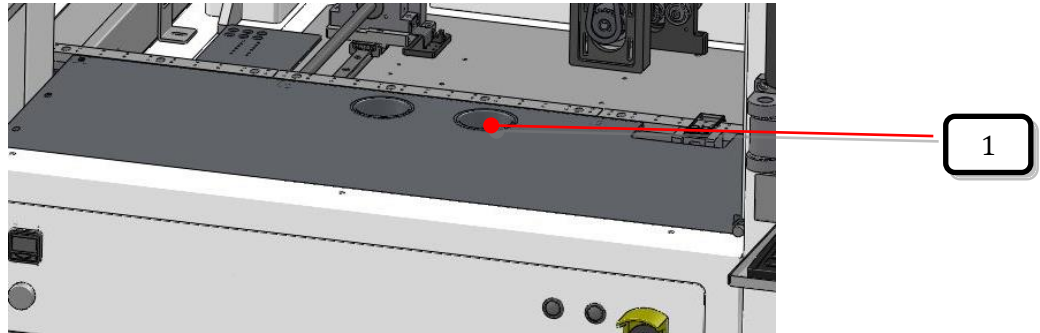
1. Safety switch: senses the opening and closing status of the upper door and stops the equipment when the door is sensed to open, preventing the operator from being hit by the moving parts when maintaining and debugging the equipment without stopping.

### 3.4 HD20 control panel



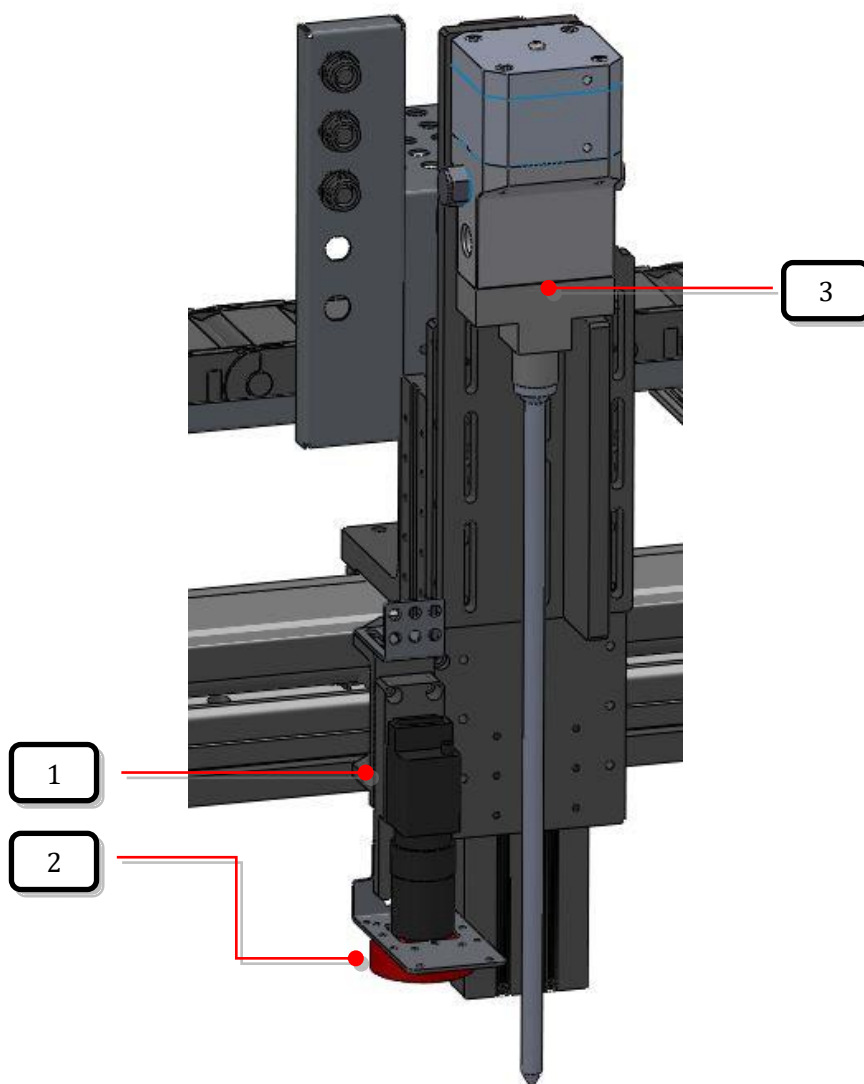
1. Emergency stop button: used to stop the equipment in case of abnormal emergency and to cut off the power supply to the moving parts
2. Purge button (PURGE): used to purge manually
3. Lighting button (LIGHT): turn on/off the LED light inside the machine
4. Digital pressure gauge: displays the adhesive supply pressure
5. Precision pressure regulating valve (FLUID): used to regulate the supply pressure precisely
6. Stop button (STOP): used to stop the current program
7. Start button: used to start the machine and run the current program

### 3.5 HD20 control console



1. Purge cup: purge cup of the adhesive valve;

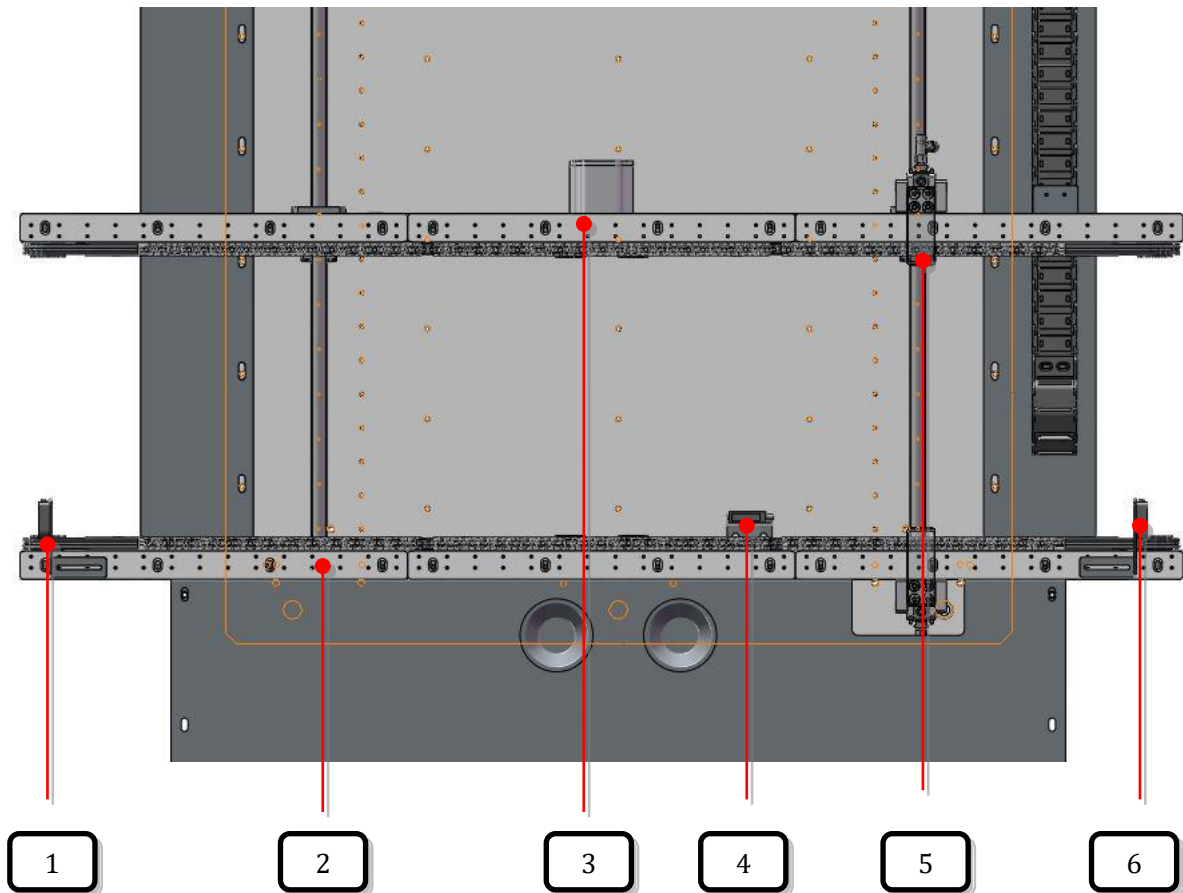
### 3.6 HD20 Z-axis fixture



1. Camera module: consists of a camera and lens
2. Light source module: can match various types of light sources, the example on the picture is: ring LED light source
3. Valve module: various types of valves, the example on the picture is:  
two-component adhesive valve

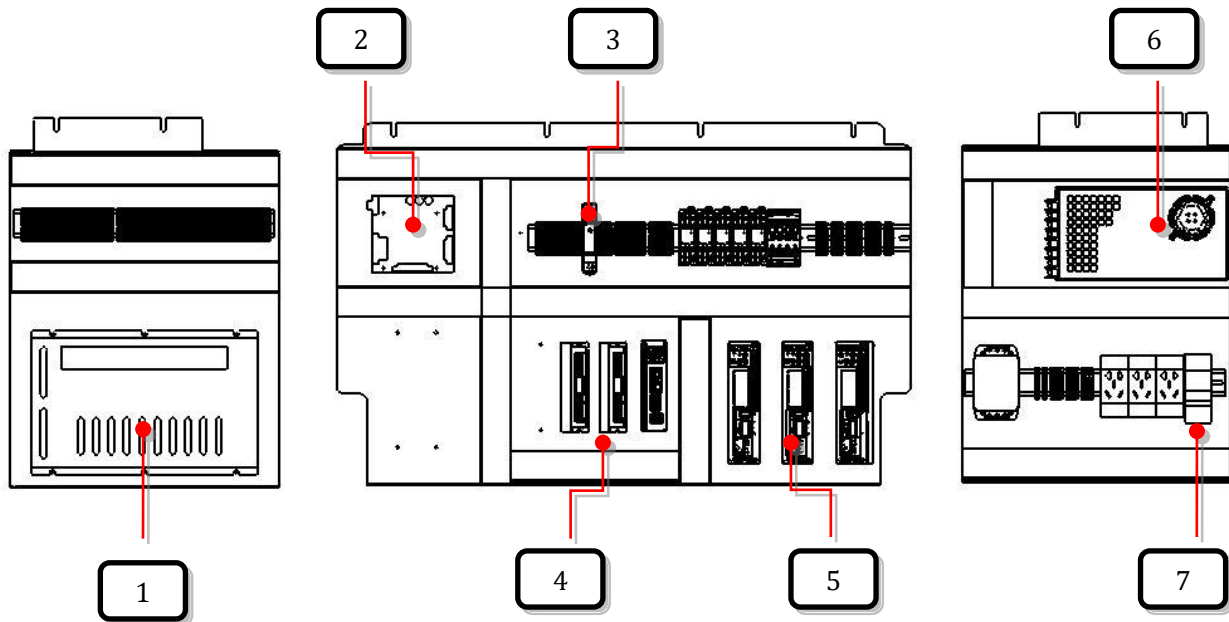
### 3.7 HD20 transport track

The transport track is designed as a standard assembly line track, with the material flowing from left to right or from right to left. The two sides of the dispensing position are equipped with jackings to jack up the fixed product during the dispensing operation. The width of the track can be adjusted with the software automatically.



1. Inlet detection sensor: detects if material is entering the track
2. Fixed track: stainless steel chain conveyor
3. Movable track: stainless steel chain transmission whose width is automatically adjusted by the software
4. Dispensing position sensor: detects whether there is material in the dispensing position
5. Dispensing position stopper cylinder: block the material to keep the material in the dispensing position
6. Discharge sensor: detects whether there is material in the discharging position

### 3.8 HD20 electric control panel of the back electric cabinet



1. Control card: the main motion control component of the equipment motor
2. Light source board: control board of light source communication
3. Switch power supply: 24V power supply for the camera
4. Stepper driver: controls the track width adjustment and chain transfer stepper motor
5. Servo driver: servo motor control of the X-axis, Y-axis and Z-axis
6. Switch power supply: the main power supply for the 24V power supply system
7. Circuit breaker: main power control

## Chapter 4 Handling safety

This chapter provides basic safety information for the operation and maintenance of the HD20 dispensing system. This chapter includes the following sections: training, personnel safety, equipment safety, emergency stop, safety in use and basic safety precautionary measures. Precautions and recommended operating procedures are used throughout this manual.

### 4.1 Training

For better use of the equipment and to ensure the safety of the equipment and personnel, we require training for all personnel involved in the use, programming and service of the equipment, including operators, technicians and engineers. Only trained and qualified personnel are allowed to work on the equipment.

### 4.2 Personnel safety

When operating and maintaining HD20, follow the recommended precautions below. Failure to follow the precautions may result in personnel injury or system damage.

- Only trained personnel are permitted to program, maintain or repair the equipment
- A second person must be on hand to monitor safety issues during maintenance and repairs
- Confirm the location and meaning of all safety signs and follow the instructions of these safety signs
- If any person is in danger or injured, immediately press the red “emergency stop” (EMO) button on the front panel of the machine
- When maintaining and repairing the equipment, cut off its power supply and main air source

- Do not touch movable parts of the equipment, such as areas with anti-pinch signs
- The injector head is very hot. Do not touch it to prevent burns
- Before using the system for the first time, all safety warning marks on the system must be clearly identified and strictly observed
- The power supply must be locked and marked, and the air supply must be disconnected before repairing and servicing the equipment
- All power connections to upstream and downstream equipment must be locked and marked before repairing and servicing the equipment
- When operating the system, do not wear loose clothing or accessories. Long hair should be tied up to prevent it from getting tangled in moving parts
- Do not touch the dispensing machine body, conveyor and other moving parts while the equipment is in operation
- Wear insulated gloves when working near heating molds or adhesive heating devices
- If your system is equipped with an optional laser height sensor, take extreme care when operating the system to avoid looking directly at the laser beam or at the reflected laser beam from a mirror formed by a smooth surface
- Before starting the system, ensure that the main power lines and the main air pressure lines are securely connected
- Always take appropriate protective equipment in accordance with the factory's safety measures and the material manufacturer's "Material Safety Management and Use"
- Make sure that the main power line and main compressed air line are well connected before operating the equipment
- If working in an enclosed space, ensure that there is sufficient uninterrupted flow of air/heat and cool air to relieve the stress caused by the environment to personnel and dispensing.
- When the level of volatile organic compounds (VOC) in the working environment exceeds safe values, ventilation or filtration systems must be switched on.

### 4.3 Material safety

- Properly use, clean and dispose of the adhesive and corresponding containers contacted the dispensing system in strict accordance with the recommendations on the Material Safety Data Sheet (MSDS). (for example, syringes, solvent cups, reservoirs, etc.)
- When cleaning dispensing equipment and spills, strictly follow the MSDS recommendations for proper use and handling of chemical materials.
- When handling and cleaning any chemical materials, ensure that the ventilation system of the dispensing system is in normal working condition.
- Learn the recommended emergency treatment in Material Safety Data Sheet (MSDS) of injuries caused by spills of hazardous substances.
- Personal protective equipment (PPE) should be worn in accordance with factory safety practices and MSDS requirements provided by the material manufacturer.
- When working with multiple chemical materials, refer to the MSDS to ensure compatibility of all materials.
- If possible, conserve or reuse unused materials. Read the MSDS carefully before storing or reusing unused chemical materials.

### 4.4 Equipment and product safety

- For the safety of the product, the equipment must be grounded
- The main power supply voltage of the equipment is 220V/AC/single-phase, and the main air supply pressure should reach 0.6MPa. If the factory air pressure cannot reach this standard, please contact the supplier for help according to the declaration section of this



manual

- The equipment must be installed on a firm foundation and must not be shaken, as this will affect the dispensing quality
- If you are not sure whether an operation meets the safety requirements, please contact our technical support directly

## 4.5 Emergency stop

If any person is in danger or injured, or in any other emergency requiring a stop, the operator should immediately press the red “emergency stop” (EMO) button on the front panel of the machine.



Emergency Stop Button



Emergency Stop State Release

## 4.6 Safety in use

To ensure high quality operation and safe production of the system, the equipment needs to be installed in a location that can accommodate the required factory engineering facilities. If you have any questions about this, please contact our technical support staff.

Using the equipment in a manner other than that mentioned in the documentation accompanying the equipment may result in personnel injury or equipment damage. The following are some examples of inappropriate use:

- Use of materials that are incompatible with the machine and take no necessary protection
- Unauthorized modifications
- Unauthorized removal or skipping of safety devices or interlocking devices
- Use of incompatible or damaged parts
- Use of unapproved auxiliary equipment
- Operating equipment in excess of its maximum rating

## 4.7 Precautionary measures

- Prevent the dispensing systems and workpieces from being damaged
- If the dispensing system or workbench is in danger of being damaged, immediately press the emergency stop (EMO) button
- Use standard electro-static discharge (ESD) measures when working with sensitive parts
- If corrosive or conductive adhesives are spilled, they should be removed immediately in accordance with "Material Safety Management and Use" (MSOS) (“材料安全管理使用”) provided by the material manufacturer. If the adhesive enters the interior of the machine, contact technical support immediately
- Strictly implement the repairing and maintenance procedures recommended for all systems
- Keep the dispensing area clean and ensure that there are no fallen workbenches or other obstructions
- Ensure that the compressed air inlet and outlet are not blocked when the system is in operation

## 4.8 Safety warning signs









Safety warning signs are attached to the HD20 series dispensing systems to indicate potentially hazardous areas and to remind related personnel to take necessary safety precautions.

Table 4-1 shows the safety warning signs that you may see on your dispensing system

Fully comply with the safety warning signs, otherwise serious personnel injury or dispensing system damage may be caused. Worn or damaged safety warning signs should be replaced as soon as possible with new signs of the same product part number.

Table 4-1 Safety warning signs

Warning Type	Icon	Dangerous Condition Indicated
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Electrical (Beware of electric shock)		This sign warns that a high-voltage component may cause electric shock, burns or death. When working in these areas, extreme care must be taken. Disconnect and switch off the power supply before repairing and servicing.
General warning		This sign requires personnel to pay high attention to certain parts that could otherwise cause serious bodily harm to the user.
Hot surface		The hot surface warning sign is an indication of parts or surfaces that may be very hot. When working near these areas, care should be taken to avoid burns.
Moving Parts		Used to warn that moving parts may cause serious injury to hands or fingers. Keep your hands away from the moving parts. The relevant power supply should be disconnected before operation.
Hand entanglement / moving parts		This sign is used to warn of the possibility of moving equipment parts getting hands or fingers entangled in the machine and causing injury. The power should be disconnected before operation.
Laser radiation warning		If your system is fitted with a laser height sensor, this sign is used to indicate possible laser radiation hazards.
Prohibited behaviours		Used to warn of moving parts, which must not be touched. Do not touch or approach the moving parts immediately after the machine stops running, otherwise serious bodily injury may be caused to the user.
Read the operator manual		This sign is used to warn related personnel to read the operator manual before operating the machine.

## Chapter 5 Servicing and maintenance instructions

### 5.1 Preventive maintenance



Before carrying out any maintenance procedures, the power and main air supply to the equipment must be disconnected and all required safety measures should be taken.

Below are some of the tools and materials required for preventive maintenance.

- Lubricant
- 2 mm hex wrench
- 2.5mm hex wrench
- 3mm hex wrench
- 4mm hex wrench
- Lead-free cotton fabric
- Safety glasses
- Rubber gloves

The relevant maintenance and servicing are shown in the following table:

Item	Frequency	Maintenance instructions
Equipment surface	Daily	Clean the surface of the equipment to remove dust and dirt.
Cleaning of the dispensing head	Daily	Clean the dispensing head to avoid clogging of the residual adhesive
Lubrication	Quarterly	Lubricate the linear guide rail

## Chapter 6 Warranty

1. Provide the warranty of the contract agreement (one year after delivery if not specified in the contract). During the warranty period, we will repair and replace any defective parts on the machine.

2. Repairs, modifications and damage caused by improper use without our permission are not covered by the warranty.

3. In addition, any damage to the machine caused by purchasing any parts for replacement from the market by yourself that are not provided or confirmed by our company is not covered by the warranty.

4. In no event shall our liability arising from this warranty exceed the purchase price of the equipment.

5. Prior to use, the user shall determine whether the product is suitable for the intended use, and all risks and liabilities associated therewith shall be borne by the user. This warranty is valid only if the equipment is used properly and in strict compliance with the regulations.

6. We do not warrant the merchantability or fitness for a particular purpose of the equipment, nor do we assume any liability for accidents or consequential damages.