HOACO

Original Instructions / File No.201
2020/05/01 V1.0

⚠ IMPORTANT: READ CAREFULLY BEFORE USE
KEEP FOR FUTURE REFERENCE

CE

User manual

HW2500C16 Rotary Die Cutting Machine
Serial Number H16-200301

Shandong HOACO Automation Technology Co., Ltd.

Contents

1 Foreward

User manual is an integral part of the machine for safe operation and maintenance. The manual is provided to users and shall always accompany with the machine, even in the event of resale. The manual shall be replaced immediately if lost, damaged or unreadable.

To ensure continuing safe and efficient use, any technical or functional modification of the machine which is not approved by the manufacturer is forbidden and any consequences will not be covered by support services or product warranties. Shandong HOACO Automation Technology Co., Ltd. (is abbreviated as HOACO) shall not be liable for any consequences caused thereby.

If there is any question with the machine, please notify HOACO in writing, HOACO will assess them and provide necessary information under warranty. Problems caused by improper use or non-compliance with HOACO instructions are not covered by this warranty.

HOACO have checked the contents of the manual to ensure that they coincide with the described machine. The information contained in the manual is reviewed regularly and any necessary changes will be included in the next version. HOACO are thankful for any advice for improvement.

HOACO reserves the right to improve and upgrade the machine described in the manual, so HOACO may adapt the technical parameters of the machine and the technical documents including the manual without prior notice.

Other documents provided and used together with the manual are shown in Table 1-1.

Table 1-1 Reference documents list

No.	Document name
1	Electrical schematic
2	Pneumatic schematic

2 Notice for use

Please understand the content of this chapter before reading the manual.

This chapter shows you the intended readers, symbols, terms, abbreviations, expression rules and product conformity in the manual.

2.1 Scope of application

The manual is applicable to model HW2500C16 rotary die cutting machine.

Model meaning is shown in Figure 2-1.

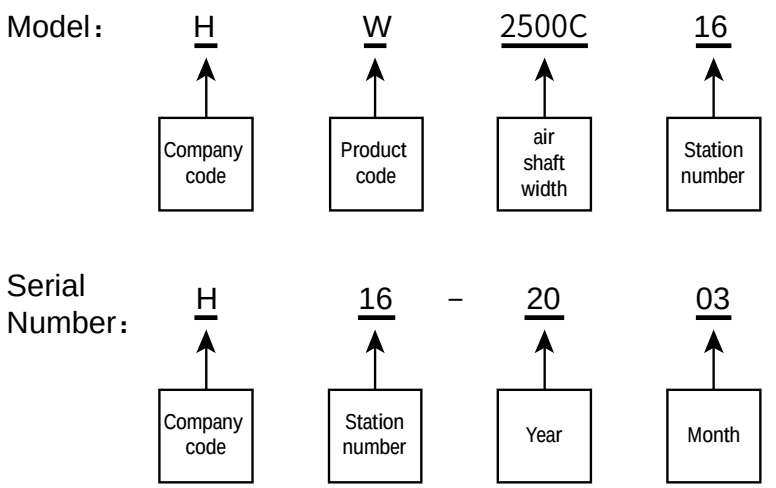


Figure 2-1 Model meaning

2.2 Signal words

This safety sign identifies important safety warning messages in the manual.
When you see this sign, be alert to possible injuries, carefully read the message that follows and inform other users.

The signal words are shown in Table 2-1 from high to low by risk level.

Table 2-1 Explaination of signal words

Sign	Signal word and explaination
	**DANGER** This signal word indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
	**WARNING** This signal word ndicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	**CAUTION** This signal word indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

When more than one risk level occurs, use the highest level. When a signal word contains warning message that may cause personal injury, warning message of possible property damage may also be attached.

2.3 Intended readers

The manual addresses the following skilled users:

- **Delievery personnel**
- **Installation personnel**
- **Opeartor**
- **Maintenance personnel**

	**WARNING** Read *Chapter 3 Safety instructions* before working for all people allowed to use the machine.

2.4 Terms

The terms and explanation used in the manual are shown in Table 2-2.

Table 2-2 Terms and explanation

No.	Term	Explanation
1	Die cutter	Die for cutting materials.
2	Rubber roller	The roller above the material, squeeze and transport the material with anvil roller.
3	Anvil roller	The roller under the material, squeeze and transport material with rubber roller.
4	Drive roller	The roller that drives die station.

2.5 Abbreviations

The abbreviations used in the manual are shown in Table 2-3.

Table 2-3 Abbreviations

No.	Abbreviation	Full name
1	AC	Alternating Current
2	DC	Direct Current
3	HMI	Human Machine Interface
4	PLC	Programmable Logic Controller

No.	Abbreviation	Full name
5	SPD	Surge Protective Devices
6	STO	Safe Torque Off
7	SLS	Safe Limit Speed
8	SLC	Safety Light Curtain
9	Async.	Asynchronous

2.6 Unit of measurement

The quantities in the manual are indicated in international standard units (SI Units) or derived SI Units. The units of measurement in the manual are the same as those on the machine.

2.7 Explaination of illustrations

For better understanding of the manual, the illustrations in the manual are only for brief description, in which the protective devices and covers may be removed. In the manual, HOACO do not provide specific dimensions of the machine.

2.8 Conformity of machine

The machine is designed and manufactured according to the standards in Table 2-4.

Table 2-4 Reference standards

No.	Standard
1	ISO 12100: 2010 Safety of machinery - General principles for design - Risk assessment and risk reduction
2	EN 60204-1:2018 Safety of machinery - Electrical equipment of machines Part 1: General requirements

Declaration of Conforminty in accordance with Machinery Directive 2006/42/EC, Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU is shown in *Section 11.1 EC declaration of conformity.*

3 Safety instructions

3.1 Basic safety rules

Most accidents happen because basic safety rules are not followed.

The safeguards provided by the HOACO are only for basic accident prevention, only when safety working procedures made by the proprietor are provided simultaneously, the machine can be operated and maintained safely.

The proprietor of the machine must ensure that:

1) The safety regulations are posted in the respective working area;

2) Those persons who are concerned have been trained for their particular job and in regard to the safety regulations;

3) The safety regulations are adhered to.

In order to give full play to the performance of the machine without personnel injury and machine damage, users must obey the following basic safety rules:

1) The machine must only be used for the purpose it has been designed for, refer to *Section 3.3 Intended use and reasonably foreseeable misuse*. Do not use the machine exceeding the limits established by the technical data. Do not use the machine in potential flammable and/or explosive environment.

2) The operators should be instructed persons who got the training for operating the machine safely. Maintenance of the machine should be carried out only by skilled persons who got specialized maintenance training of the machine. The work of the electrical system should be carried out by skilled electrician in accordance with applicable electrical engineering rules. These users should be able to fully comply with safety rules and preventive measures designed to prevent personal injury or machine damage.

3) Before using the machine, users must read the manual carefully, especially *Chapter 3 Safety Instructions* and all safety labels on the machine (refer to *Section 3.7 Residual risks and safety labels*). Users must ensure that they fully understanding the meanings and strictly follow its requirments, all recommended safety protection measures and "common sense", otherwise it will cause personal injury or machine damage.

4) For safety, wear appropriate personal protective equipments (PPE) in accordance with local safety regulations and company safety rules. When using the machine, the operator should wear safety helmet and safety footwear, do not wear loose clothing, fasten the cuffs and tighten the hair. Do not wear rings, watches, bracelets, ties, scarfs and other accessories.

5) Before any operation, focus on what you want to do. Do not operate and maintain the machine after drinking or taking medicine. These conditions are critical to your safety.

6) Maintain good lighting conditions, clean environment and sufficient working space to facilitate the operation and maintenance of machines and control cabinets.

7) Make sure that all safety protection measures are in place and maintained in effective working states before operation, otherwise do not operate and maintain the machine, and immediately notify the superior. Do not suspend, move, modify or remove the safeguards or control devices of the machine at any time.

8) According to the noise test requirements specified in the EN 13023:2003+A1:2010 standard, the A-weighted sound pressure of the main work stations of this machine is less than 70dB (A).

3.2 Machine nameplate

Machine nameplate is shown in Figure 3-1.

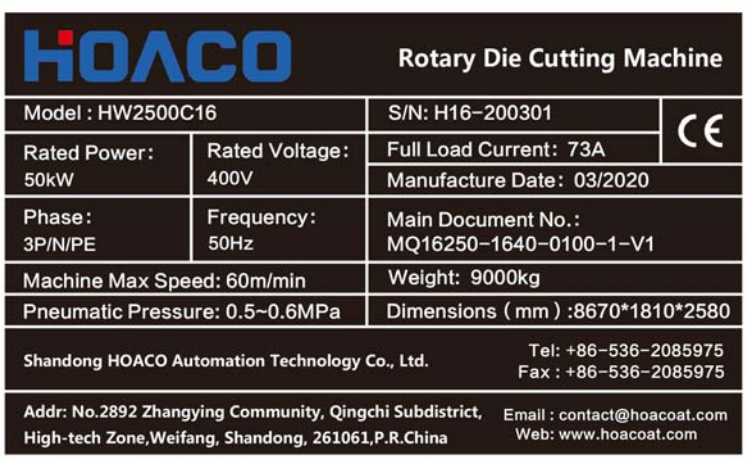


Figure 3-1 Machine nameplate

3.3 Intended use and reasonably foreseeable misuse

Rotary Die Cutting Machine is designed and manufactured for die cutting and compounding of non-metal coil materials such as single-sided stickers and double-sided stickers, protective films, gaskets and dust nets. The machine should be used by personnel who fully know machine risks and have strong safety awareness. Rotary Die Cutting Machine is made referring to the latest technical and safety standards. However, it may cause harm to the lives and limbs of users or third parties, or cause damage to machines and other property. Therefore, any disfunction that affects machine safety should be corrected immediately.

WARNING

Users must follow the requirements in the manual.
It is dangerous to use the machine for function beyond intended use. In this case, users are fully responsible for the risk, HOACO will not be responsible for any injury caused thereby. This includes but is not limited to the following:

- Do not use the machine exceeding the limits established by the technical data;
- Do not use machine beyond permitted materials, such as die cutting and compounding of metal materials.

3.4 Operation positions

Operation positions of the machine are shown in Figure 3-2.

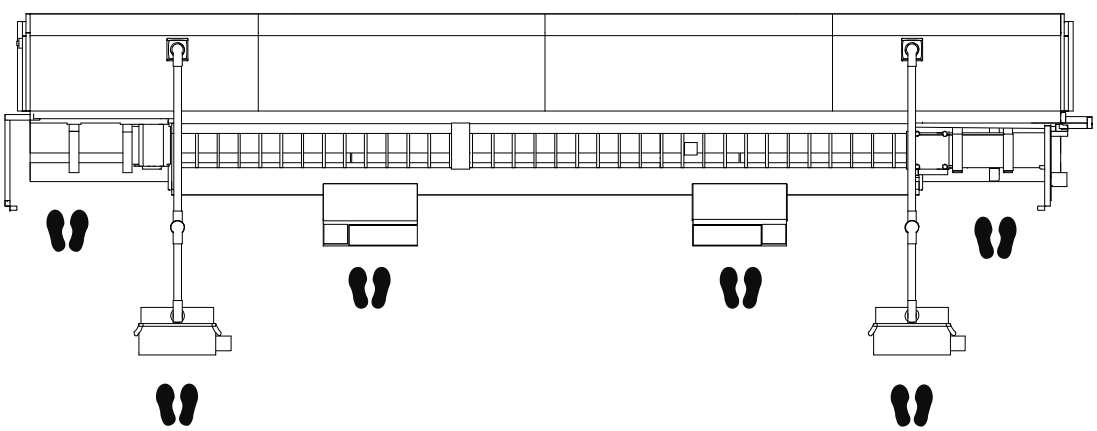


Figure 3-2 Operation positions

3.5 Operation environment

	**DANGER** The machine is limited to use in the following environments! Operations beyond the environments may bring greater risks or affect the machine's function and performance.

- Indoor use.
- Altitude does not exceed1 000 m above mean sea level.
- Ambient air temperature is between +5°C and +40°C.
- The relative humidity does not exceed 50 % at a maximum temperature of +40°C. Higher relative humidities are permitted at lower temperatures (for example 90 % at 20°C).
- No conductive dust and corrosive gases that damage insulation.
- No virbration, shock and radiation that affect machine.
- No potential flammable and/or explosive environment.

3.6 Energy requirements

3.6.1 Electrical power

The electrical power reqirements of the machine are shown in Table3-1.

Table 3-1 Electrical power requirements

Voltage	Nominal voltage AC400V Steady state voltage: 0.9 to 1.1 of nominal voltage.
Grounding system	TN-S, 3/N/PE
Frequency	Nominal frequency 50Hz, 0.99 to 1.01 of nominal frequency continuously, 0.98 to 1.02 short time.
Harmonic	Harmonic distortion not exceeding 12% of the total r.m.s. voltage between live conductors for the sum of the 2nd through to the 30th harmonic.
Unbalanced voltage	Neither the voltage of the negative sequence component nor the voltage of the zero sequence component in three-phase supplies exceeding 2% of the positive sequence component.
Voltage interruption	Supply interrupted or at zero voltage for not more than 3 ms at any random time in the supply cycle with more than 1000ms between successive interruptions.
Voltage drop	Voltage dips not exceeding 20 % of the rms voltage of the supply for more than one cycle with more than 1000ms between successive dips.
Surge protective devices (SPDs)	SPDs should be provided in the power supply system by the end user, to protect against the effects of overvoltages due to lightning or to switching surges.

3.6.2 Air supply

Air supply reqirements of the machine are shown in Table 3-2.

Table 3-2 Air supply requirements

Air pressure	0.5~0.6 MPa
Air flow	1 m^3/min

3.7 Residual risks and safety labels

Safety labels give informations of machine's potential risks. Before operation, be familiar with all safety labels.

The layouts of safety labels are shown in Figure 3-3, Figure 3-4 and Figure 3-5.

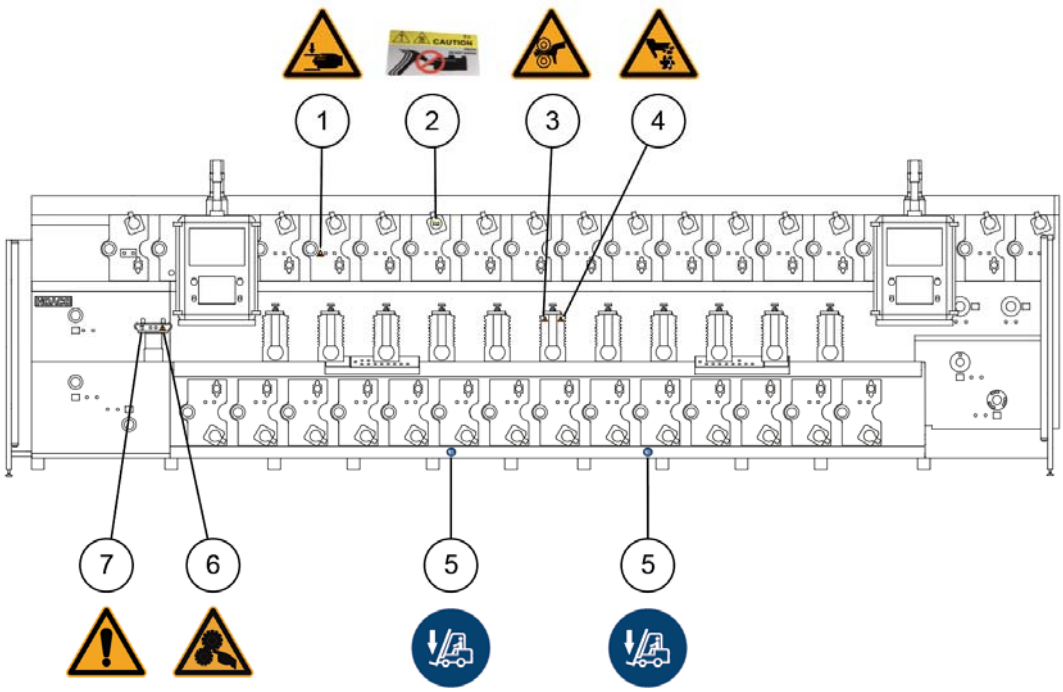


Figure 3-3 Layout of safety labels (1)

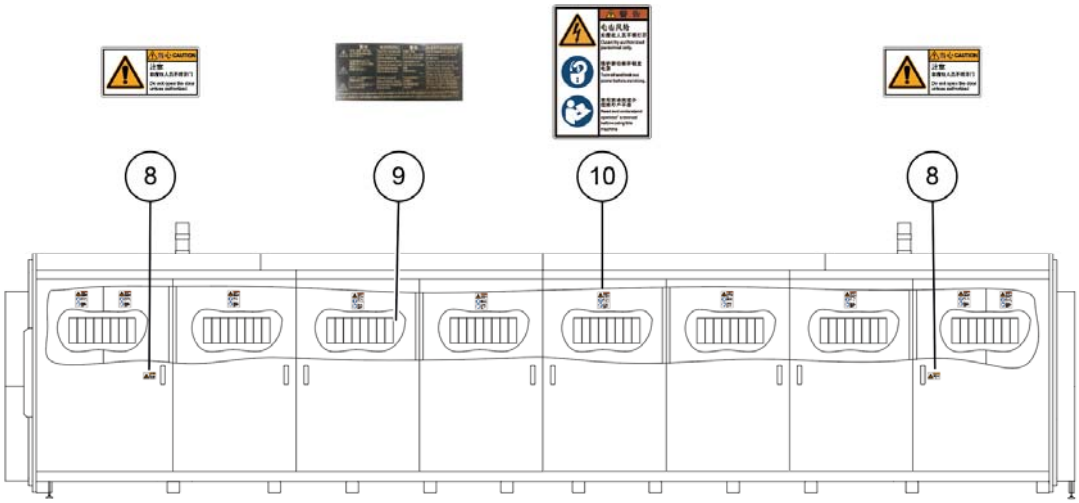


Figure 3-4 Layout of safety labels (2)

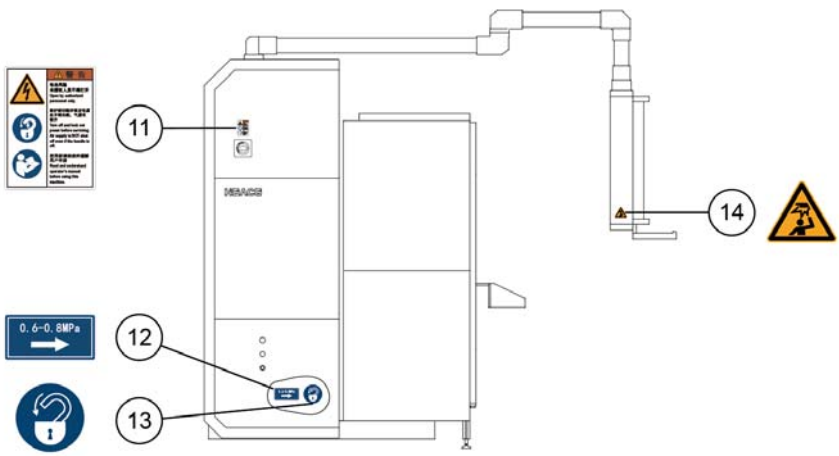


Figure 3-5 Layout of safety labels (3)

The descriptions of safety labels are shown in Table 3-3.

Table 3-3 Safety labels

No.	Position	Safety label	Description
1	Near air shafts		Crushing hazard when air shaft opens and closes.
2	On the servo motors		Do not hit the servo motor.
3	Near drive rollers and die cutters		Drawing-in hazards between drive rollers, anvil roller, die cutter and die pressure roller.
4	Near die cutters		Cutting hazard when replacing the die cutter.
5	Middle position of machine		Forklift truck inserts and lifts machine here.
6	Near the web guide device		Drawing-in hazard when the web guide device is working.

No.	Position	Safety label	Description
7	Near the web guide device		Impact hazard when the web guide device is working.
8	Safety guard door		Drawing-in hazard inside, unauthorized personnel are not allowed to open the door.
9	On servo drivers		Electrical shock hazard after servo driver is powered off within 20 minutes. Burn hazard of heatsink.
10	Power cabinet door		Electrical shock hazard, users should lock out the power before maintenance and read manual before using.

No.	Position	Safety label	Description
11	Near main power switch		Electrical shock hazard, lock out the power and read manual. Even if the main power switch in "OFF" position and locked, the machine still has air pressure. Before maintenance, you need to turn the manual ON-OFF valve to the "OFF" position and lock it.
12	Near manual ON-OFF valve		Nominal air pressure and direction
13	Near manual ON-OFF valve		Turn off manual ON-OFF valve and lock it before maintenance.
14	Near suspension HMI console		Mind your head.

3.8 Safeguards

The machine safeguards are shown in Figure 3-6, Figure 3-7 and Figure 3-8.

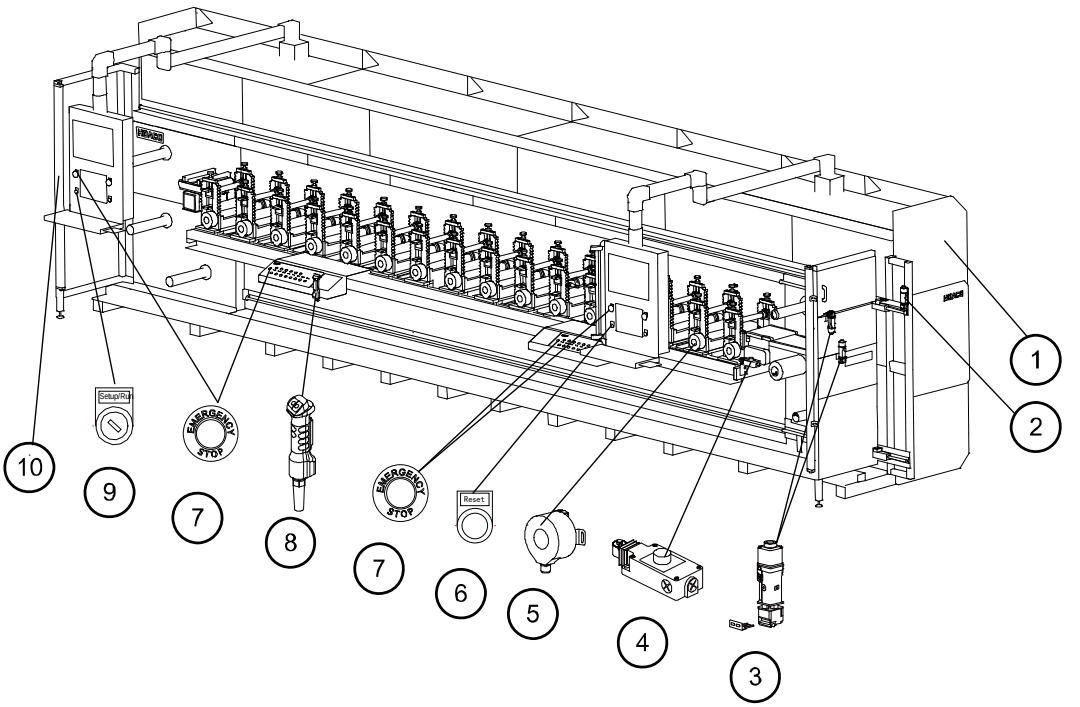


Figure 3-6 Safeguards layout (1)

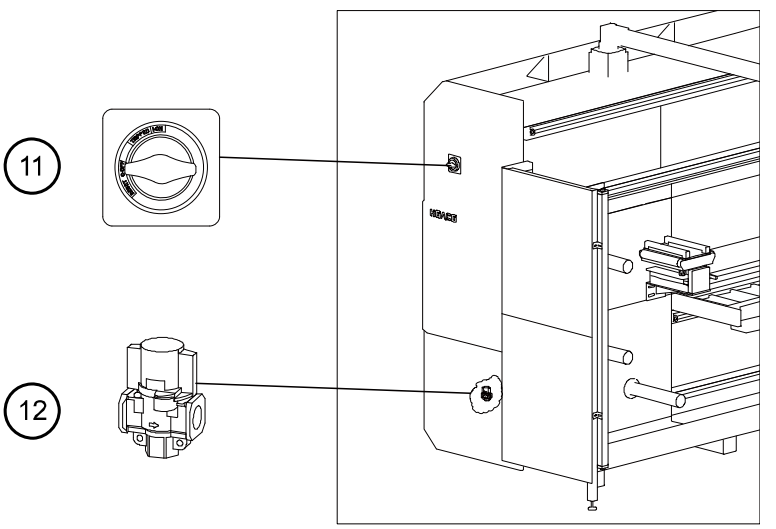


Figure 3-7 Safeguards layout (2)

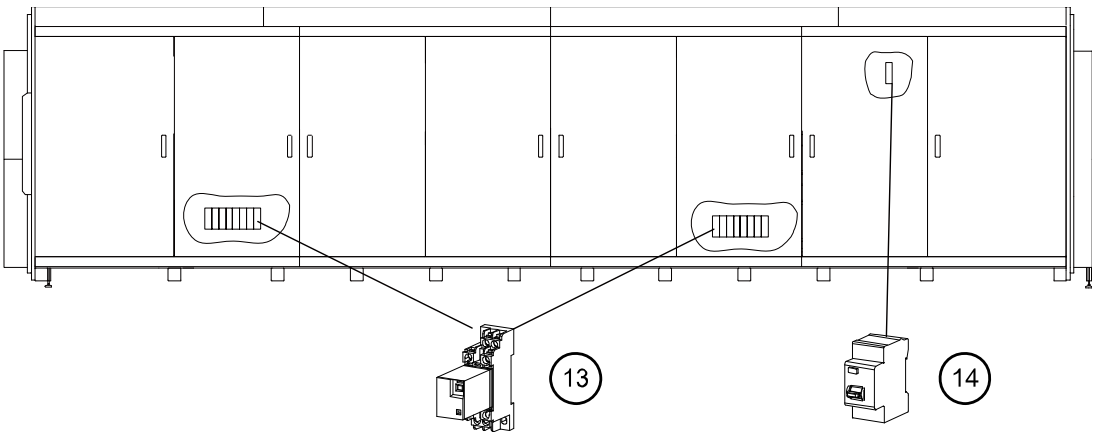


Figure 3-8 Safeguards layout (3)

The function descriptions of safeguards are shown in Table 3-4.

Table 3-4 Safeguards functions

No.	Safeguard	Description
1	Protective guards	Protect operators from injury during machine operation.
2	Safety door switch 1	U18, U19, R1~R4 are disabled when safety door switch 1 is in open state.
3	Safety door switch 2 and Safety door switch 3	Opening the safety door switch will trigger a safe stop. All die cutters turned to STO mode, and the machine cannot be started before closing. You can check the status of the safety door switch on the PLC.
4	Emergency rope	Pulling the emergency rope triggers an emergency stop event, all the die cutter motors and air shaft motors turned to STO mode. Press “Reset” button to reset safety systems after an emergency stop.
5	Safety encoder	Monitor the speed of die cutter, and give alarm if the setting value is exceeded or the zero speed monitoring is abnormal.
6	Reset botton	Reset safety system after any emergency button, emergency rope or safety door switch triggered.

No.	Safeguard	Description
7	Emergency button	Pressing emergency button triggers an emergency stop event, all the die cutter motors and air shaft motors turned to STO mode.
8	Jog grip switch	Jog the machine at a low speed in the "Maintenance" mode. The switch has 3 positions. Machine runs when hold the 1st position of this switch. Machine stops when release or hold the 2nd position of this switch.
9	Mode-select key switch	Turn "Setup" mode or "Run" mode.
10	Safety light curtain	If the safety light curtain is triggered, all stations stop immediately. This is a safe stop, not an emergency stop.
11	Main power switch	Turn on/off the machine's main power and lock it in OFF position when maintenance.
12	Manual ON-OFF valve	Turn on/off the machine’s main air supply and lock it in OFF position when maintenance.
13	Safety relay	Safety logic control.
14	Residual current device (RCD)	When the residual current of the circuit reaches its specified value under the specified conditions, the contact will be triggered and the circuit will be disconnected.

In "Run" mode, the safety light curtain is triggered, all die cutter motors stop and the machine stops safely.

If the operator needs to replace material, replace die cutter, or handle block material during the production process, turn the machine into the "Setup" mode through the Mode-select key switch, and the protection function of the safety light curtain is bypassed at this time.When the operator goes across the safety light curtain and needs to enable the moving parts such as the drive roller, die cutter and air shaft, hold the Jog grip switch to achieve the low-speed (⩽1m/min) operation of the moving parts, and stop them when release or hold the 2nd position of the switch.

	**DANGER** ● Make sure that safety protection measures are in place and maintained in effective working state before operation. ● Do not suspend, move, modify or remove the safeguards or control devices of the machine at any time.
	**WARNING** ● The safety protection measures taken by the machine can only reduce but not completely eliminate all risks. ● Check the functions of emergency button, emergency rope, safety light curtain and jog grip switch every 72 hours. ● Check the functions of safety door switches, mode-select key switch, main power switch and manual ON-OFF valve every 168 hours. ● Check the safety functions of the protective guards every 360 hours. ● Reinstall the safeguards and make sure them in correct position and effective working state after remove the safeguards for maintenance purpose. ● Check the necessary safety functions after replacing any safeguards. ● Operator should know the position and operation method of each emergency button or emergency rope to stop the machine in case of emergency. ● Do not stop the machine during usual operation by emergency buttons, emergency rope, safety light curtain, etc.

3.9 Safety instructions for machine lifecycle

During the transportation, installation, operation, adjustment, maintenance and disassembly of the machine, users should obey the basic safety rules described in the manual, the safety regulations in your country/region and safety preventive measures as follow.

3.9.1 Transportation

For personal safety and machine transportation safety, delievery personnel should obey

the following safety rules besides *Section 3.1 Basic safety rules*:

1) Provide suitable storage conditions to prevent machine damage. The storage temperature should be between -25 ~ + 55℃, and for short periods not exceeding 24 h at up to +70℃.

2) Only skilled and authorized delievery personnel can transport the machine.

3) Only use forklift for machine moving. Refer to machine mass shown in *Section 5.3 Transportation* and use a forklift with sufficient capacity.

4) Only use the lifting points shown in *Section 5.3 Transportation*.

5) Avoid sudden movement during machine moving.

3.9.2 Installation

For personal safety and machine transportation safety, installation personnel should obey the following safety rules besides *Section 3.1 Basic safety rules*:

1) Only skilled and approved installation personnel can install the machine;

2) Before installation, check if

   - No part of the machine is damaged;
   - No water leakage in the control cabinets, operation panels and junction boxes;
   - No wiring strip is damaged.

3) The machine should be reliably grounded. Before connecting the live conductors of power cable to the machine, ground the machine first. PE terminal, the protective conductors in the equipment of the machine, conductive structure parts and exposed conductive parts and conductive structure parts of the machine should be interconnected.

4) Connect the protective bonding circuit to accessible extraneous conductive parts (such as metallic pipes, fences, ladders and handrails) in the vicinity of the machine.

5) After installation, verify the continuity of the protective bonding circuit by professional personnel equipped with test instruments.

6) Static elimination device shall be provided by the end user for such material roll which undesirable electrostatic may discharge.

3.9.3 Operation and adjustment

For personal safety and machine operation safety, operators should obey the following safety rules besides *Section 3.1 Basic safety rules*:

1) Only instructed and approved operators can operate the machine. This applies not only to the machine operator, but also to all those who may be involved in the machine operation in some way.

2) The key of the mode-select key switch should be kept by the person in charge of the workshop.

3) Only approved operators can correct machine failures or change operating modes.

4) Any function adjustment of the machine must be performed by skilled and approved personnel when the machine is stopped. Do not adjust the machine or accessories during production.

5) Always keep hands, arms or other body parts away from moving parts of the machine. Do not reach into areas of dangours moving parts or use tools to increase the accessibility of the areas.

6) Never climb or rest against the machine at any time.

7) Before starting the machine, make sure none is working on or around the machine and remove all irrelevant items on the workstation.

8) The machine should be operated by a single person.

9) Do not handle material roll over 25kg by a single person. When the mass of material roll is greater than 25kg, two persons lift together or use auxiliary equipment which should be provided by the end user.

10) If there is abnormal noise from the machine, stop the machine immediately, leave the dangerous area, and immediately notify the superior or the person in charge of maintenance.

11) After emergency stop or failure, the machine should be checked by qualified personnel before restarting.

12) After stopping the machine under safe conditions, use an air gun to remove debris or other foreign matters from the machine and nearby.

13) Replacing material procedures

	**WARNING** 1) Turn mode-select key switch to "Setup" mode; 2) Press "Air shaft start/stop" button to loosen air shaft; 3) Remove material roll; 4) Install new material roll; 5) Connect materials; 6) Press "Air shaft start/stop" button to tighten air shaft; 7) Turn mode-select key switch to "Run" mode.

14) Inserting material procedures

	**WARNING** 1) Turn mode-select key switch to "Setup" mode; 2) Insert material belt between die cutter and anvil roller; 3) Hold and press the jog grip switch, jog the die cutter; 4) Pull material belt to the rewind roll; 5) Turn mode-select key switch to "Run" mode.

15) Opening/closing air shafts

	**WARNING** When opening and closing air shafts in "Setup" mode, keep your hands away from air shafts before operating the mechanical valve and "Air shaft start/stop" button of air shafts to prevent crushing hands.

16) Handling material block on drive rollers or die cutters

	**WARNING** 1) Clean up in time when too much material is wrapped around rubber rollers or die cutters, otherwise it may cause servo motor being locked and machine alarm. 2) After stopping the machine, release the pressure of rubber rollers or die cutters and lift it to clean up the material.

17) After the production is finished, stop the power supply.

3.9.4 Maintenance

For personal safety and machine maintenance safety, maintenance personnel should obey the following safety rules besides *Section 3.1 Basic safety rules*:

1) Only skilled and approved maintenance personnel can do maintenance work.

2) Sufficient local lighting must be provided if maintenance or inspection requires access into the machine.

3) Maintenance signs must be placed around the maintenance area to warn the maintenance is in progress.

4) Before starting any maintenance work, make sure that the machine is completely stopped, turn the handle of main power switch to the "OFF" position and lock it, and turn the manual ON-OFF valve to the "OFF" position and lock it.

5) Do regular maintenance and inspections of machine in accordance with the requirements in *Chapter 8 Maintenance*.

6) Even if the main power switch is in the "OFF" position, the following parts and their conductors are still live!

   - Power supply line and main power switch incomming terminals are still live.
   - Servo drivers and switching power supply may still be live within 20 minutes after power off. Do not touch their parts and the conductors connected to them.

7) Reinstall the safeguards and make sure them in correct position and effective working states after removing the safeguards for maintenance purpose

8) Use the parts and materials confirmed by HOACO when replacing new parts.

9) Take safety preventive measures in the manual to prevent personal injury or machine damage when troubleshooting.

10) Any technical modification of the machine must be done by HOACO or with the confirmation of HOACO. Do not move the positions of emergency buttons, emergency rope, safety door switch and safety light curtain. Otherwise, HOACO will not be responsible for repair or any damage caused thereby.

4 Function and specification

4.1 Machine overview

The main components of the machine are shown in Figure 4-1.

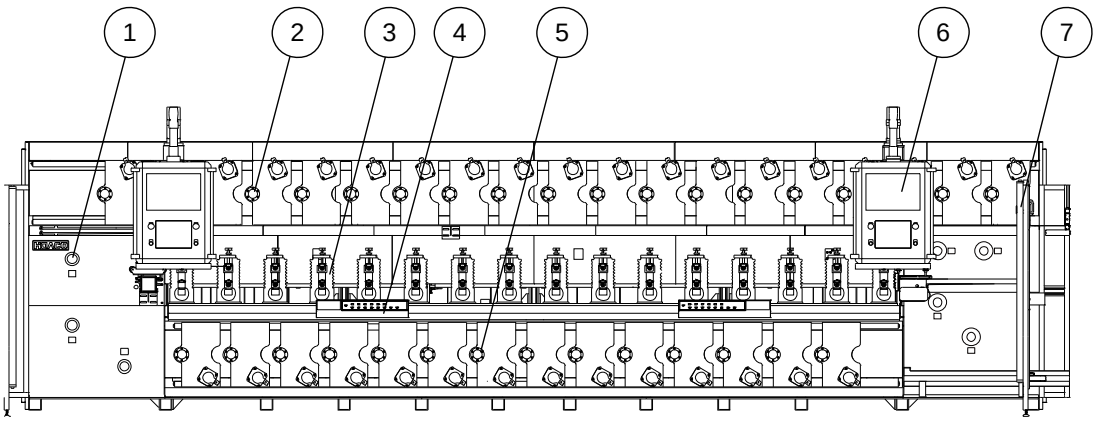


Figure 4-1 Main components of the machine

(1) Fixed air shaft (2) Upper sliding air shaft (3) Sliding die station

(4) Operation console (5) Lower sliding air shaft

(6) Suspension HMI console (7) Safety light curtain

Function of each unit:

(1) Fixed air shaft: Used for rewinding and unwinding the material, the position is fixed.

(2) Upper sliding air shaft: Used for receiving and unwinding the material, the position can be moved horizontally.

(3) Sliding die station: Used for die cutting of materials.

(4) Operation console: Die station control box.

(5) Lower sliding air shaft: Used for receiving and unwinding the material, the position can be moved horizontally.

(6) Suspension HMI console: Set and control the machine.

(7) Safety light curtain: Safety protection.

4.2 Technical specification

The machine technical specification is shown in Table 4-1.

Table 4-1 Technical specification

Parameter	Value
Total power (kW)	50
Voltage	TN-S, 400V, 50Hz
Full load current (A)	73
Short-circuit rating (kA)	18
Dimensions (length x width x height, mm)	8670×1810×2580
Total weight (kg)	9000
Allowable material width (mm)	≤250

5 Transportation and installation

5.1 Safety instructions

For sending and installation, refer to this chapter.

	**WARNING** ● Only trained and approved personnel can transport and install the machine. ● Only use the lifting points shown in *Section 5.3 Transportation*; ● Only use forklift for machine moving. ● Adequate working space should be reserved around machines and control cabinets to easy access, operation, maintenance and heat dissipation of the control cabinets.

5.2 Preparation

5.2.1 Related documents

In addition to the manual, the documents used in the installation process are shown in Table 5-1. Make sure that they are available at all times.

Table 5-1 Related documents

No.	Name
1	Electrical schematic
2	Pneumatic schematic

5.2.2 Site preparation

Before installation, complete these work in the installation area:

- Clean up irrelevant materials;
- Use railings or safety isolation belts to isolate the installation area;
- Make sure that there are available power and air sources.

5.3 Transportation

	**WARNING** ● Only use forklift for machine moving. ● The machine weighs 9000kg, select a suitable forklift!

Use a forklift to transport the packing case to the target position, as shown in Figure 5-1.

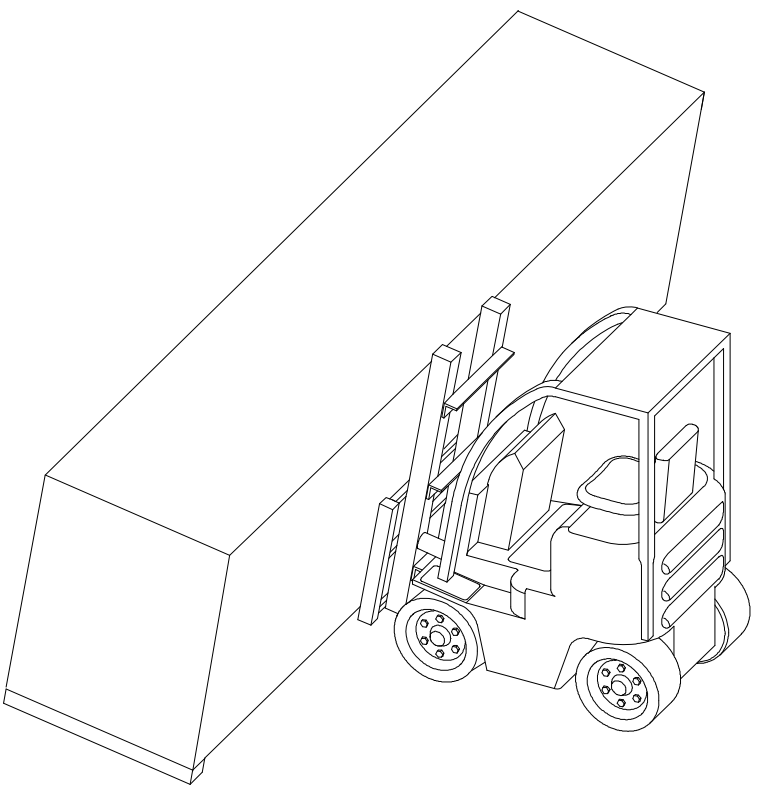


Figure 5-1 Transport the packing case

5.4 Installation

5.4.1 Putting the machine in position

Step1：Remove the connecting screws between the machine and the wooden pallet;

Step2：Refer to the layout drawing to transport the machine to the target position with a forklift, as shown in Figure 5-2.

	**CAUTION** The forklift transports the machine to the top of the target position, and when it slowly falls to 80 ~ 100mm from the ground, it stops. Place Adjustable Iron Pad under both ends of each supporting foot of the machine (the initial positions of all shock-absorbing horns are the lowest positions).

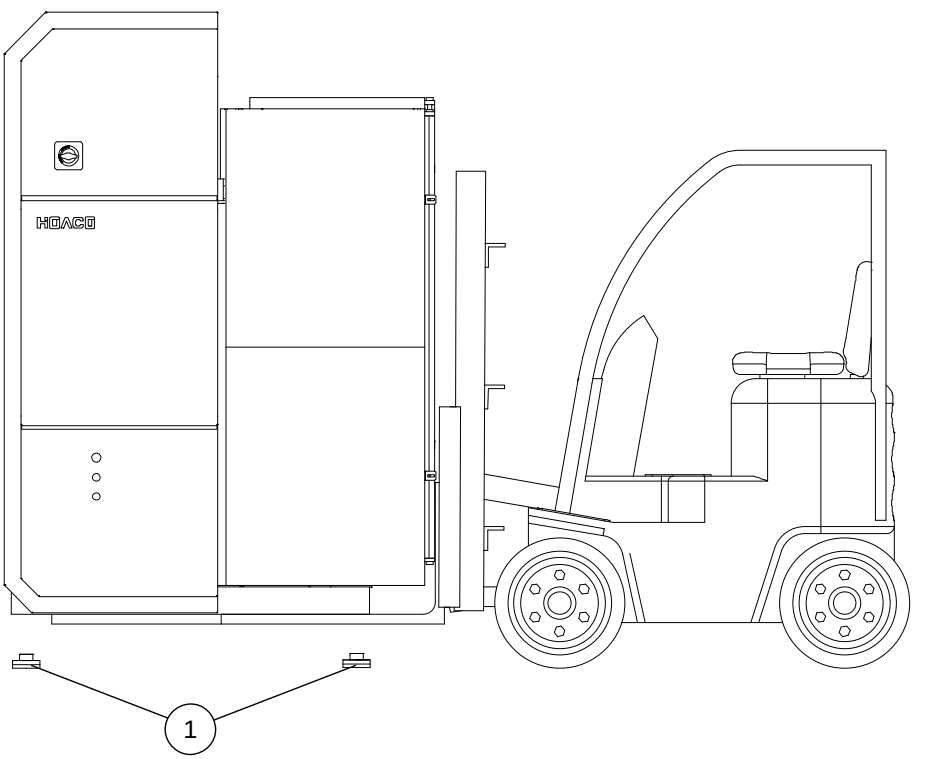


Figure 5-2 Transport the machine

(1) Adjustable iron pad

If the machine is used alone, the minimum space required is shown in Figure 5-3.

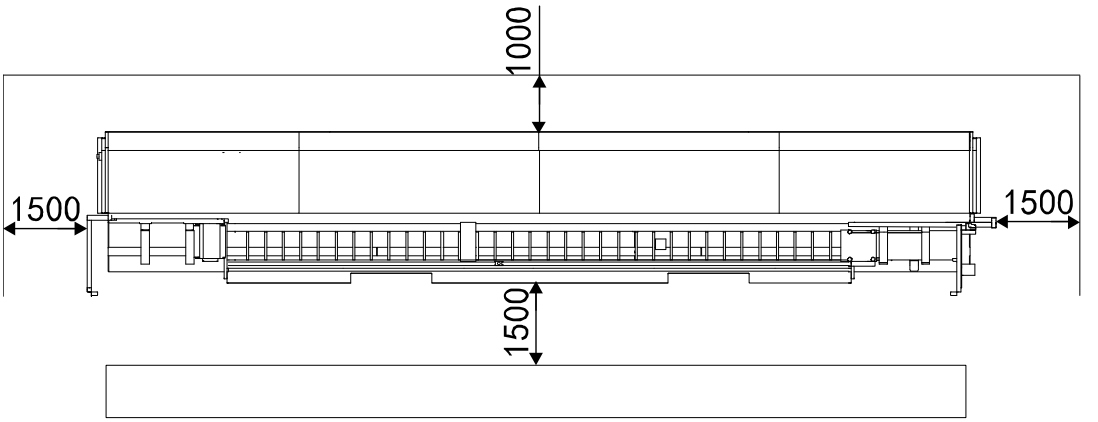


Figure 5-3 Minimum space required

5.4.2 Leveling

Place the spirit level on the guide rail of the die station, and check the levelness at 6 positions, as shown in Figure 5-4.

Adjust the levelness of each position≤0.5mm/m.

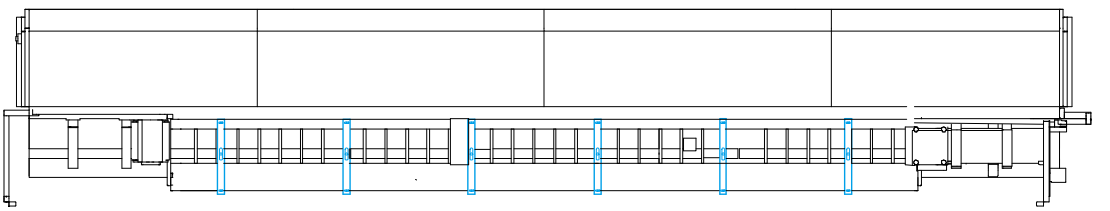


Figure 5-4 Spirit level position

If spirit level is long, place a pressure block on the guide rail, as shown in Figure 5-5.

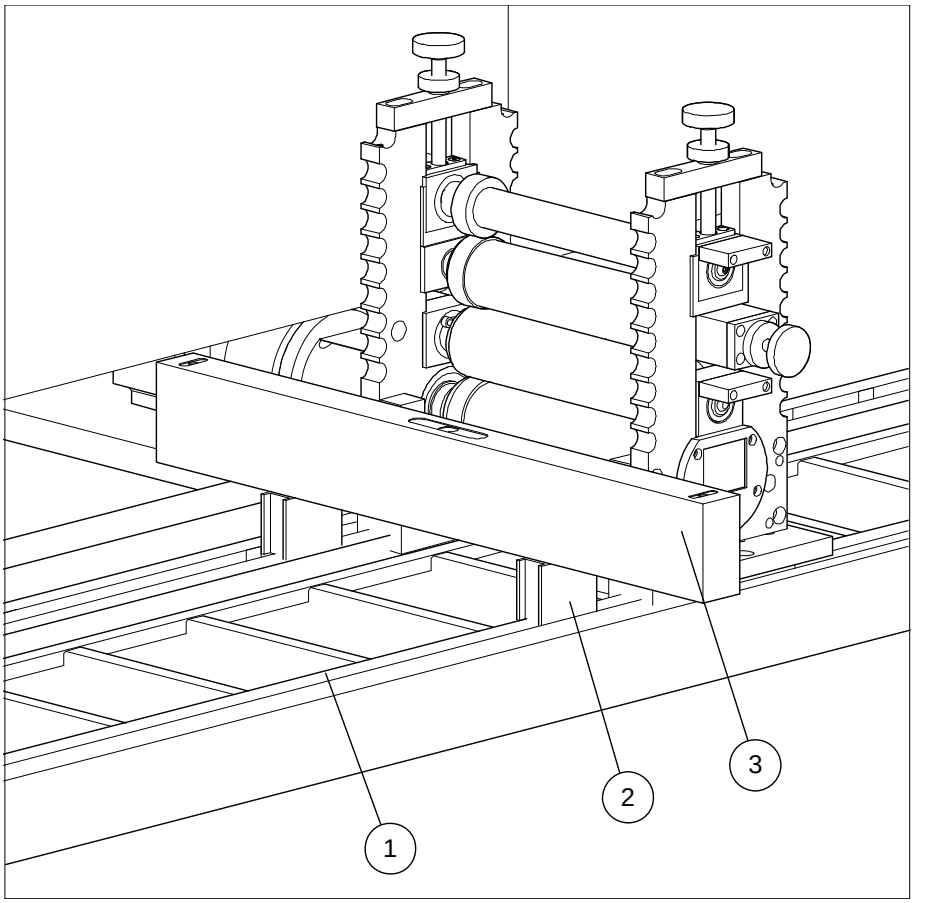


Figure 5-5 Place a pressure block on the guide rail

(1) Guide rail (2) Pressure block (3) Spirit level

The method of adjusting the adjustable iron pad is shown in Figure 5-6.

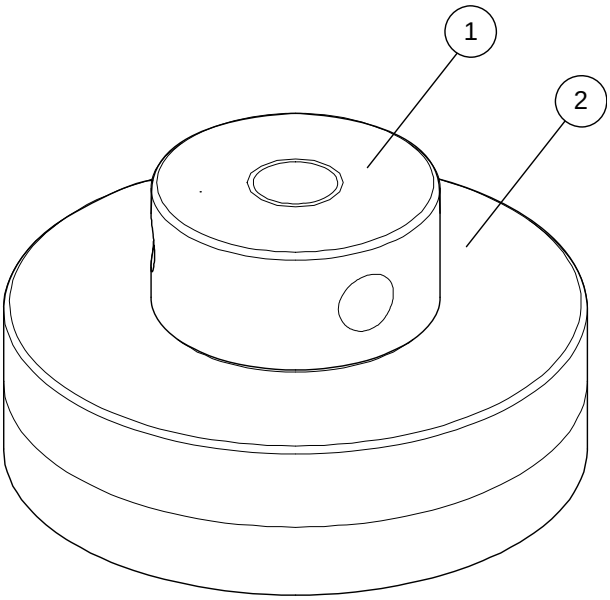


Figure 5-6 Adjustable iron pad

(1) Screw (2) Pad

Adjust the screw (1) anticlockwise to raise the machine; adjust the screw (1) clockwise to lower the machine.

5.4.3 Removing accessories

Some accessories are installed on the machine and need to be removed before use.

Please refer to the contact information on last page of manual to consult with HOACO engineers.

5.4.4 Installing safety door assembly

Safety door assembly includes safety doors, safety door switches and safety light curtain.

The method of installing safety door assembly is shown in Figure 5-7 and Figure 5-8.

Figure 5-7 Left safety door assembly

(1) Connection point (2) Safety door (3) Safety light curtain (4) Cable connector

Step 1：Install safety door (2) to the machine through connection point (1);

Step 2：Install safety light curtain (3) (refer to the mark on the safety door);

Step 3：Connect cable connector (4);

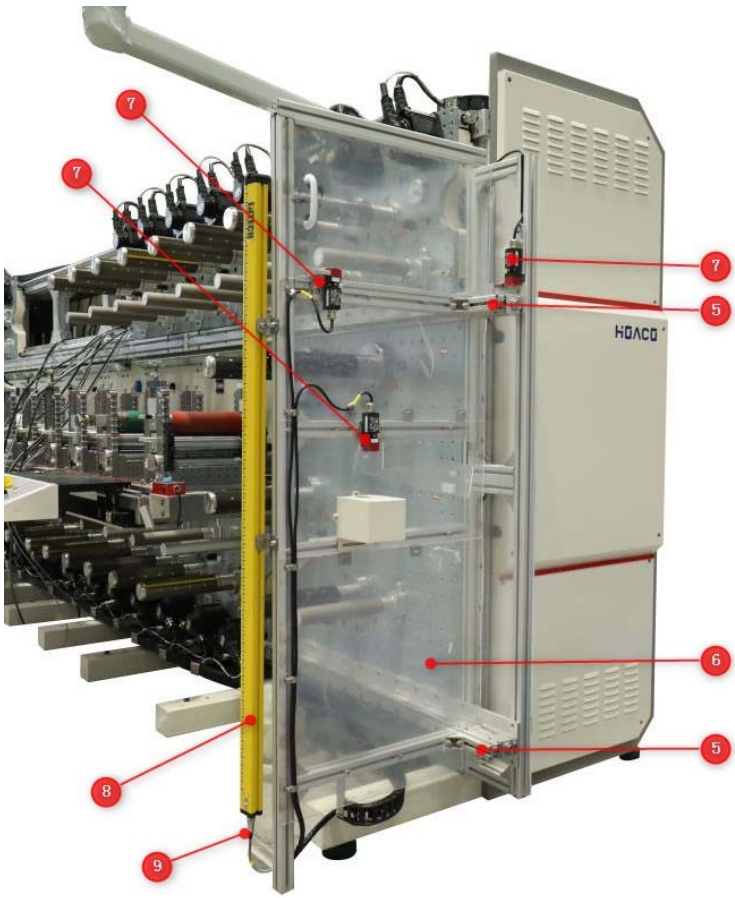


Figure 5-8 Right safety door assembly

(5) Connection point (6) Safety door (7) Safety door switch

(8) Safety light curtain (9) Cable connector

Step 4: Install safety door (6) to the machine through connection point (5);

Step 5: Install safety door switch (7);

Step 6: Install safety light curtain (8) (refer to the mark on the safety door);

Step 7: Connect cable connector (9).

5.4.5 Installing operation console

The method of installing operation console 1 and operation console 2 is shown in Figure 5-9.

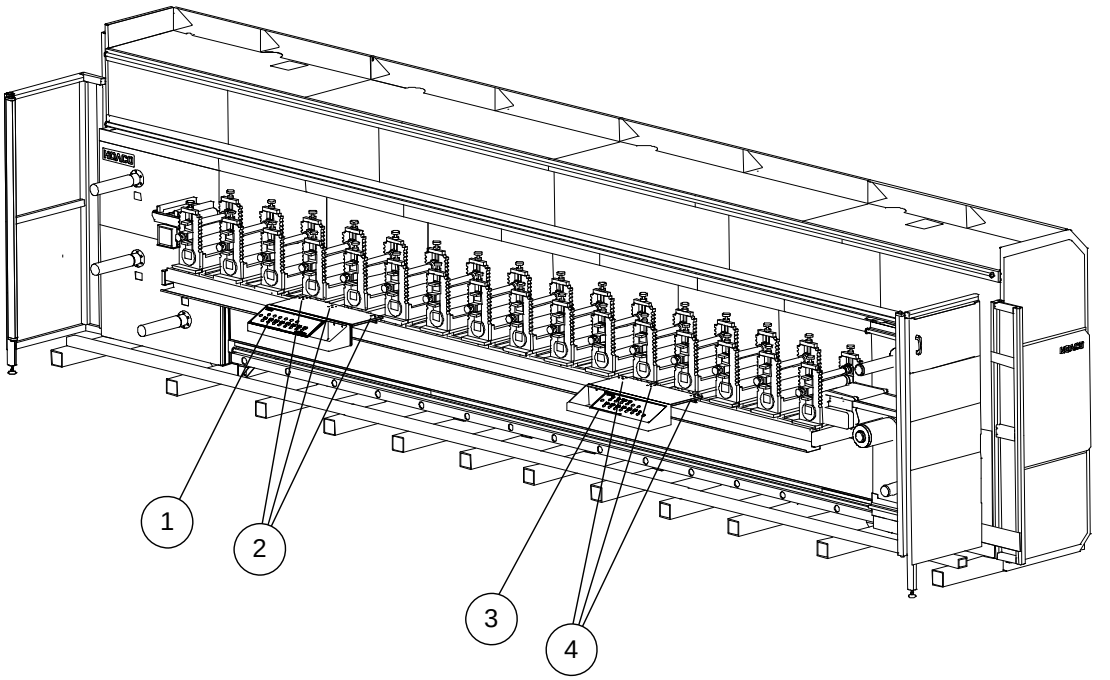


Figure 5-9 Installing operation console

(1) Operation console 1 (2) Connection point 1

(3) Operation console 2 (4) Connection point 2

Step 1: Install operation console 1 (1) to the machine through connection point 1 (2);

Step 2: Install operation console 2 (3) to the machine through connection point 2 (4).

5.4.6 Installing suspension HMI console

The method of installing suspension HMI console 1 and suspension HMI console 2 is shown in Figure 5-10.

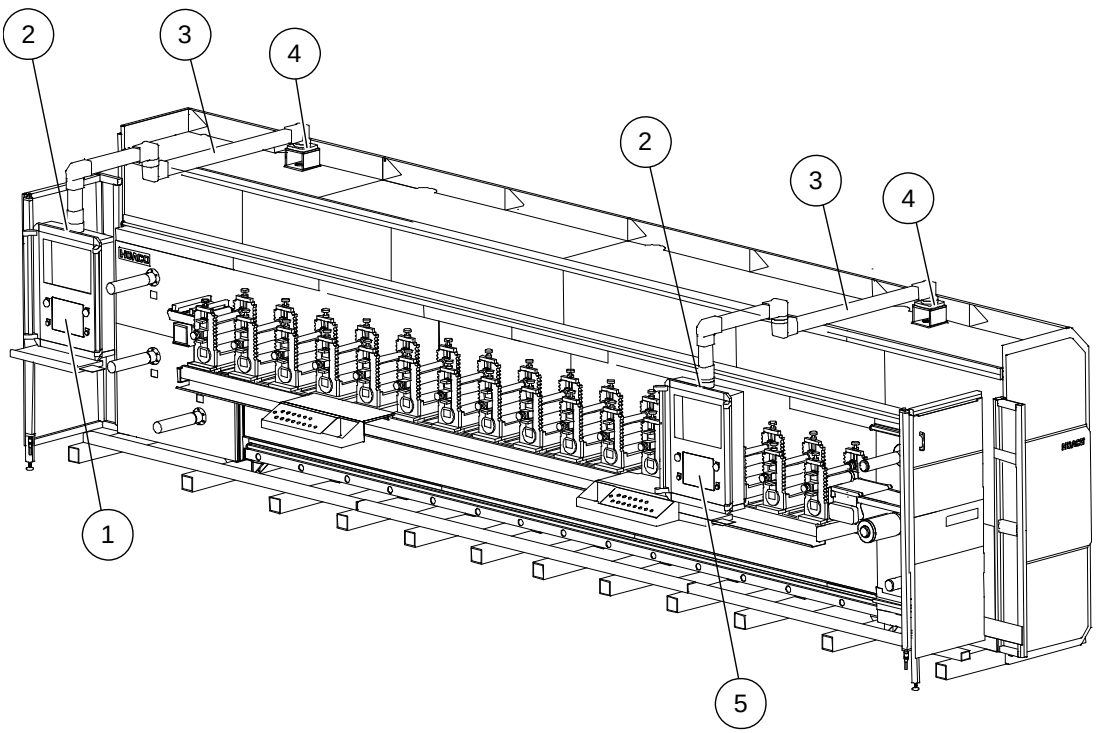


Figure 5-10 Installing suspension HMI console

(1) Suspension HMI console 1 (2) Connection point 1

(3) Suspension beam (4) Connection point 2 (5) Suspension HMI console 2

Step 1: Install the suspension beam (3) to the machine through connection point 2 (4);

Step 2: Install suspension HMI console 1 (1) and suspension HMI console 2 (5) to the suspension beam (3) through connection point 1 (2).

5.4.7 Installing bottom beam cover

The method of installing the bottom beam cover is shown in Figure 5-11 and 5-12.

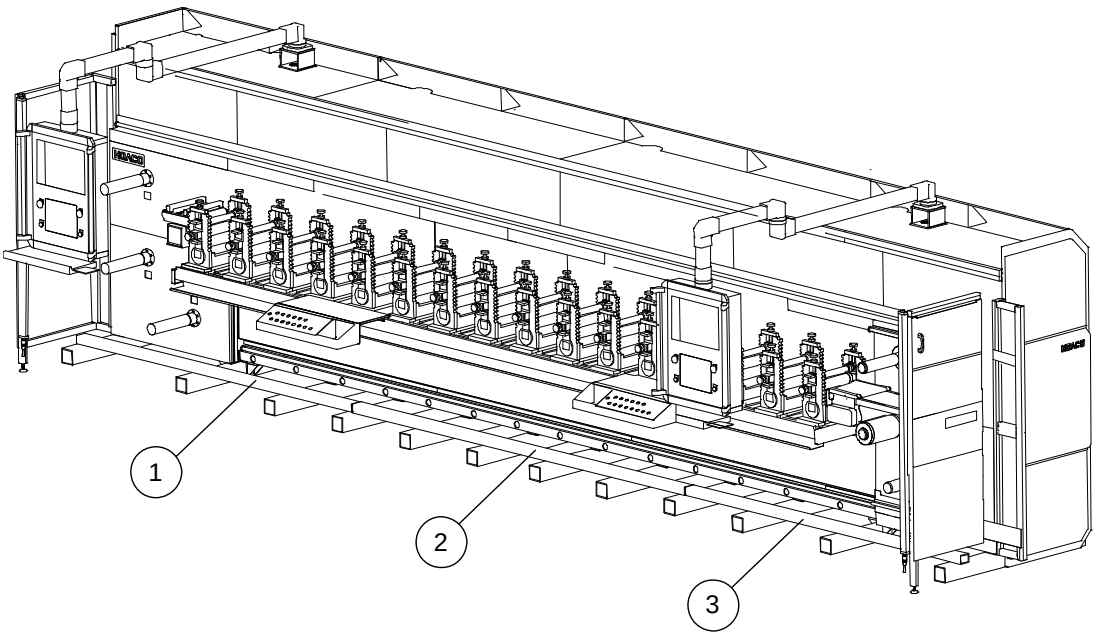


Figure 5-11 Removing forklift beam

(1) Forklift beam 1 (2) Forklift beam 2 (3) Forklift beam 3

Step 1: Remove forklift beam 1 (1), forklift beam 2 (2) and forklift beam 3 (3);

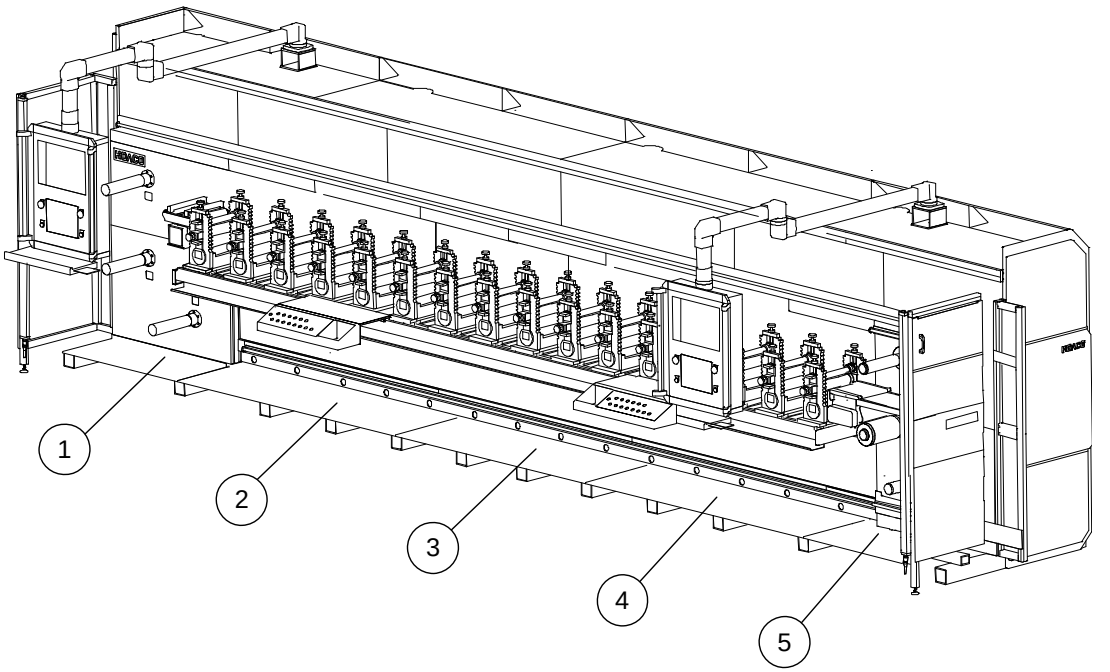


Figure 5-12 Installing bottom beam cover

(1) Cover 1 (2) Cover 2 (3) Cover 3 (4) Cover 4 (5) Cover 5

Step 2: Install cover 1 (1), cover 2 (2), cover 3 (3), cover 4 (4) and cover 5 (5).

5.4.8 Pneumatic connection

The position of the air supply interface is shown in Figure 5-13.

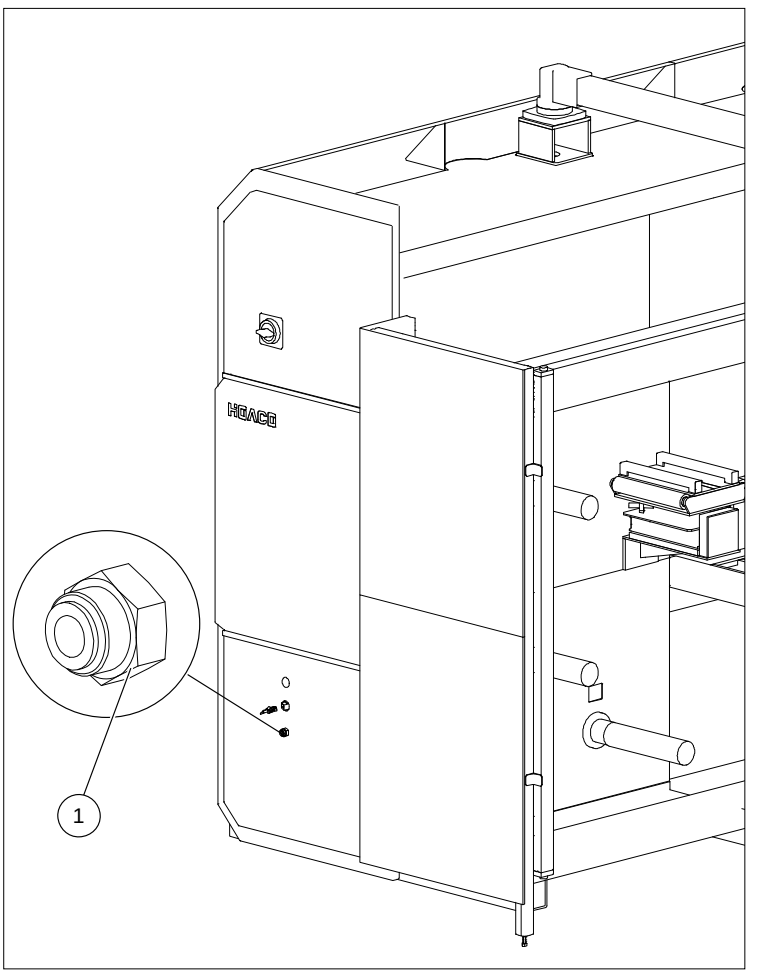


Figure 5-13 Air supply interface

(1) Air supply interface

Use Φ10 PU pipe to connect workshop air supply to the interface of the machine.

5.4.9 Electrical connection

5.4.9.1 Communication cable

The position of the communication cable interface is shown in Figure 5-14.

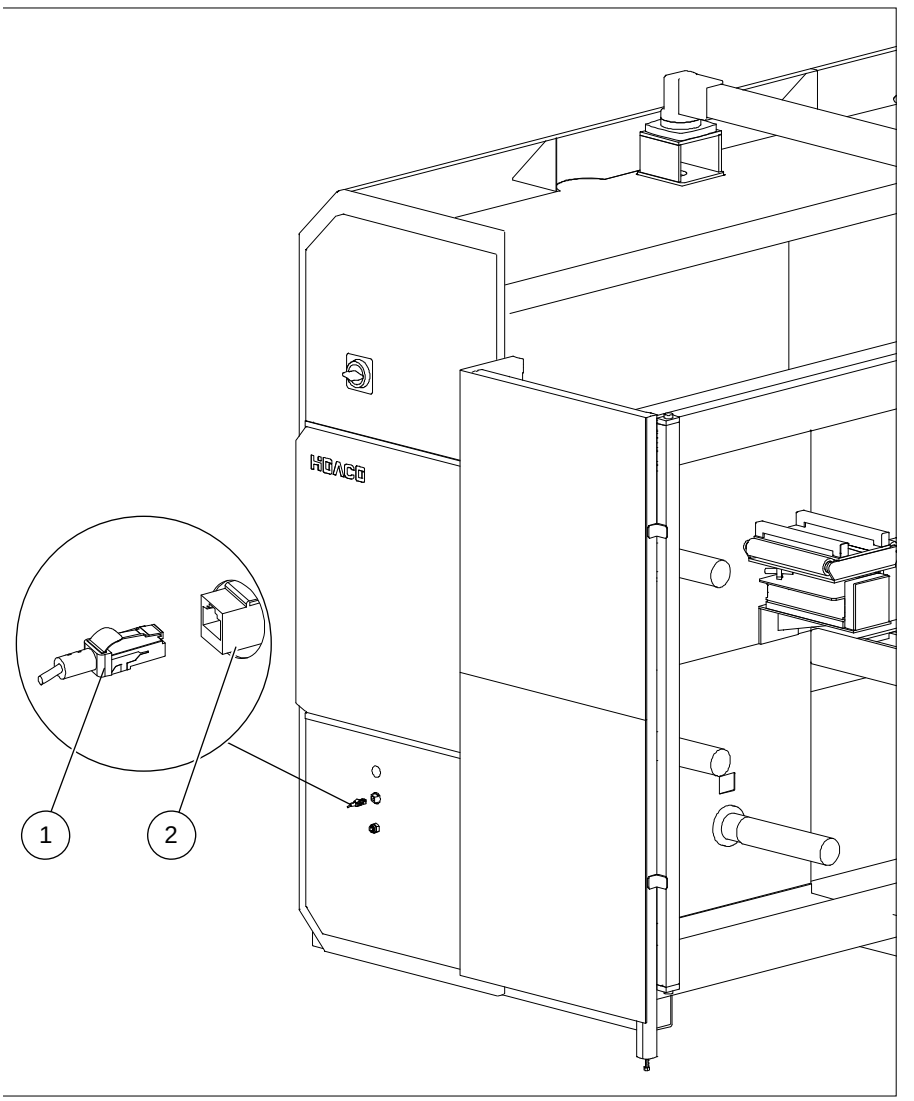


Figure 5-14 Position of communication cable interface

(1) Communication cable (2) Communication cable interface

5.4.9.2 Incoming power supply

The method of connecting incoming power supply cable is shown in Figure 5-15, Figure 5-16, and Figure 5-17.

Figure 5-15 Incoming power supply cable inlet

(1) Incoming power supply cable inlet (2) Safety guard door

Step 1: Insert the incoming power supply cable into the machine from Incoming power supply cable inlet (1);

Step 2: Open machine safety guard door (2);

Figure 5-16 Connection terminals of incoming power supply cable

(3) Control cabinet door (4) Terminals of incoming power supply cable

Step 3: Open control cabinet door (3), connection terminals of incoming power supply cable (4) shown in Figure 5-16;

Figure 5-17 Connecting incoming power supply cable

Step 4: Connect to terminals L1, L2, L3, N and PE shown in Figure 5-17.

5.4.9.3 Operation console

The method of connecting power cable of operation console is shown in Figure 5-18, Figure 5-19, and Figure 5-20.

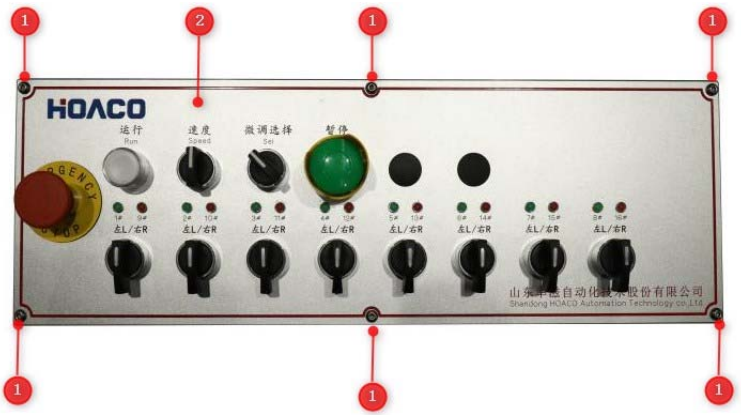


Figure 5-18 Operation console

(1) Screw (2) Cover

Step 1: Remove screws (1) and cover (2), the terminals shown in Figure 5-19;

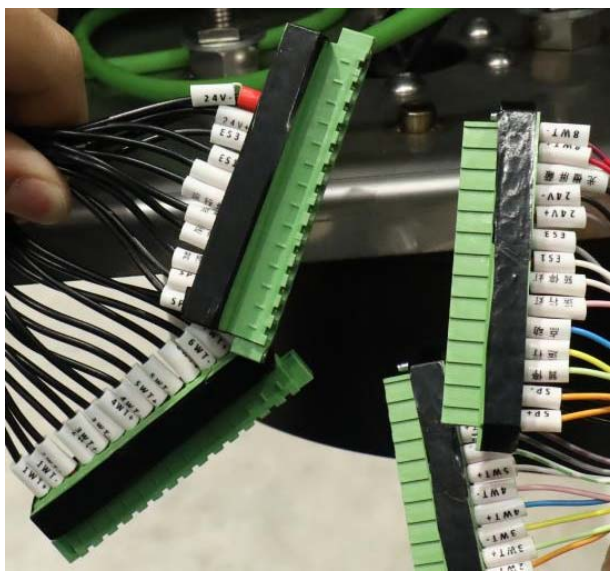


Figure 5-19 Terminals

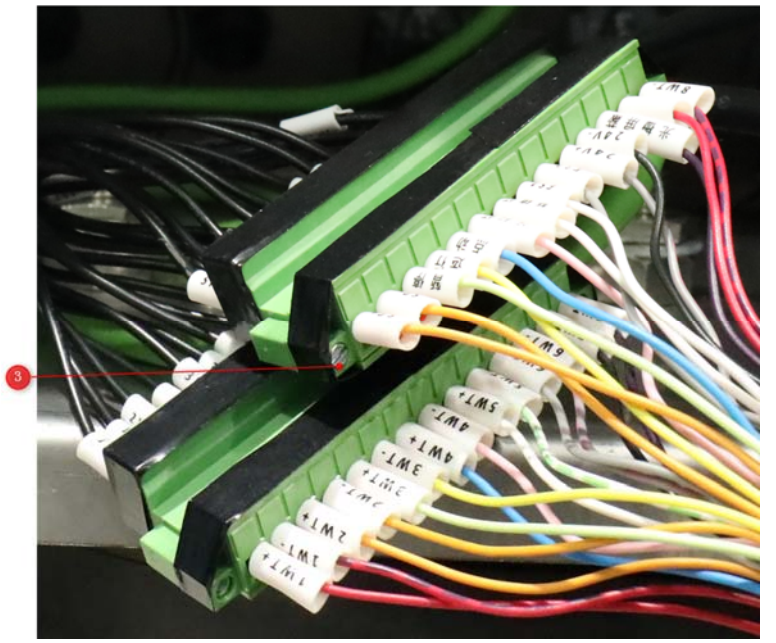


Figure 5-20 Connecting terminals

(3) Screw

Step 2: Connect the green terminals according to wire number (Figure 5-20 is not the real wire number, please refer to the electrical schematic for details);

Step 3: Tighten screws (3);

Step 4: Install cover (2).

5.4.9.4 Suspension HMI console

The method of connecting power cable of suspension HMI console is shown in Figure 5-21, Figure 5-22, and Figure 5-23.

Figure 5-21 Suspension HMI console

(1) Rear door of suspension HMI console

Step 1: Open rear door of suspension HMI console (1), the terminals shown in Figure 5-22;

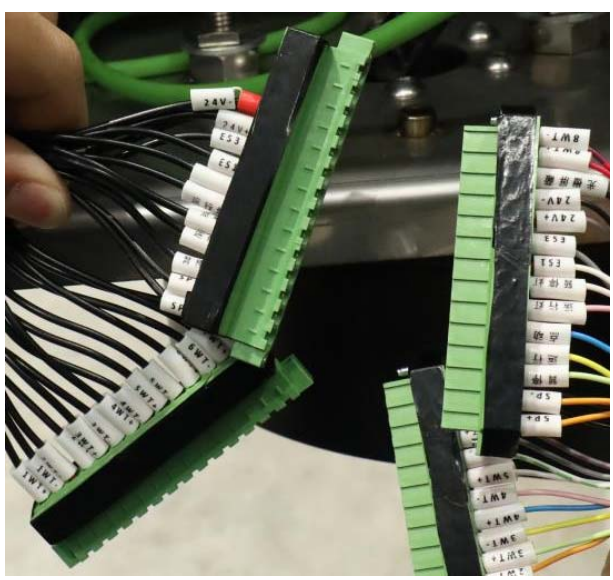


Figure 5-22 Terminals

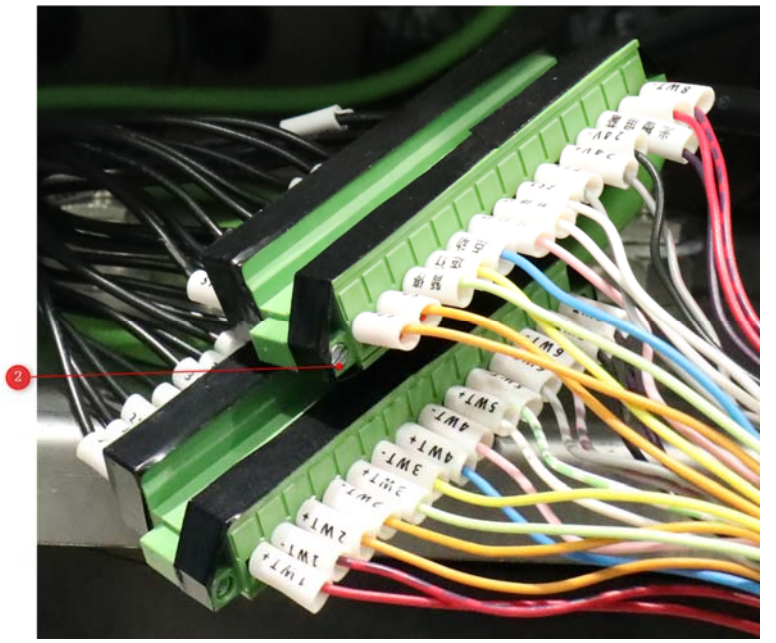


Figure 5-23 Connecting terminals

(2) Screw

Step 2: Connect the green terminals according to wire number (Figure 5-23 is not the real wire number, please refer to the electrical schematic for details);

Step 3: Tighten screws (2);

Step 4: Close rear door of suspension HMI console (1).

6 Commissioning

6.1 Safety instructions

For commissioning in the customer's workshop, refer to this chapter.

	**WARNING** ● Make sure that power cables of the machine are properly connected before powering on. ● Make sure that all setting parameters are correct before commissioning. ● Servo drivers and switching power supply may still be live within 20 minutes after power off. Do not touch their parts and the conductors connected to them. ● Do not touch the braking components or servo driver heatsinks to avoid burn hazard. ● Do not stop the machine by pressing emergency buttons or pulling emergency rope during normal operation. ● When an alarm occurs, troubleshoot, find out the cause and make sure it is safe before re-commissioning. ● When starting the machine, keep your hand on the emergency button and press it immediately if an emergency occurs.

6.2 Preparation

Confirm the following information before commissioning:

Make sure that the energy meets the requirements, referring to *Section 3.6 Energy requirements*.

6.2.1 Power on

Step 1: Check before powering on:

Check to make sure there are no objects that may damage the machine around or inside the machine;

Check that all electrical cables are connected;

Check that all circuits are not open circuit and short circuit;

Check that all switches in the cabinet are closed.

Step 2: Turn on the main power switch;

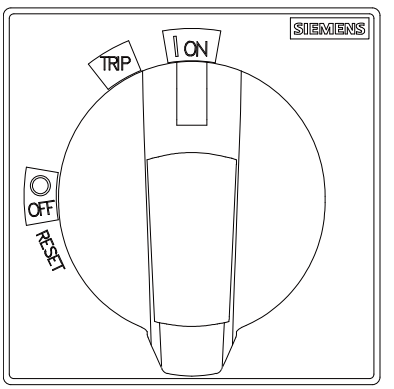


Figure 6-1 Main power switch

Step 3: Confirm after power on:

All switches in the cabinet are not tripped;

The power supply of PLC and inverter in the cabinet is normal;

The power supply of HMI, web guide device and CCD system is normal.

6.2.2 Testing safety functions

Adjust the angle of the safety light curtain until all the indicators turn green.

Test safety functions referring to *Section 3.8 Safeguards*.

6.3 No-load test

No-load test means to run the machine under no-load state, find and solve the problems.

Start machine, refer to *Section 7.2.1 Power on.*

The main concern of the no-load test:

Start all die cutters and air shafts, observe whether they rotate normally.

Solve the problems found in the no-load test timely, the load test can be started only after passing no-load test.

6.4 Load test

The load test shall be carried out after passing no-load test.

Solve the problems found in the load test timely, formal production can be started only after passing load test.

Load test steps:

Step 1: Configure materials, die cutters, etc. according to the process flow chart;

Step 2: Set the parameters of die cutters and air shafts;

Step 3: Run the machine and adjust the parameters until the finished product meets the requirements.

7 Operation

7.1 Safety instructions

For operation of the machine, refer to this chapter.

	**WARNING** ● All operators must be approved and trained. ● Operators should wear safety helmet and safety footwear, do not wear loose clothing, fasten the cuffs and tighten the hair. Do not wear rings, watches, bracelets, ties, scarfs and other accessories. ● To illustrate machine operation, some illustrations may not describe the complete safety functions, such as safety doors, guards, etc. Before operation, make sure all safeguards are in place. ● Do not handle material roll over 25kg by a single person. When the mass of material roll is greater than 25kg, two persons lift together or use auxiliary equipment.

7.1.1 Emergency stop

Press any emergency button or pull emergency rope in emergency situation, and then:

- The whole machine will stop completely.
- Safety control function is triggered.
- The visual and audible signal device is on and alarm information will be displayed on HMI panels.

To normal stop the machine, refer to *Section 7.2 Preparation.*

7.1.2 Other safety devices

If other safety devices other than emergency button or emergency rope are activated, and then:

- Triggering safety device will stop the associated dangerous movement, and the relevant alarm information will be displayed on HMI panels.

7.2 Preparation

	**WARNING** To prevent accidents, preparations and inspections should be made before operation. ● Make sure that the clothing meets safety regulations. ● Prepare enough production materials. ● Make sure that the power source, air source and other energy sources are available. ● Make sure there are no people or other objects inside the machine. ● Make sure that the operating tools are in place.

7.2.1 Power on

Step 1: Turn on the manual ON-OFF valve, as shown in the left view of Figure 7-1;

Step 2: Turn on the main power switch, as shown in the right view of Figure 7-1;

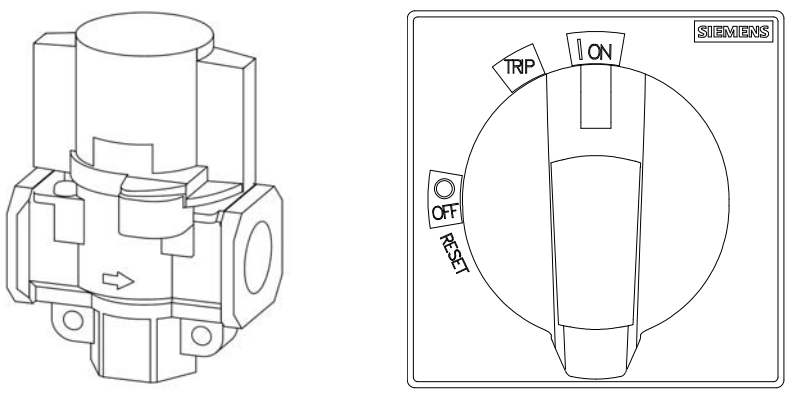


Figure 7-1 Manual ON-OFF valve and main power switch

Step 3: Check the fault message on HMI and solve it;

Step 4: Turn mode-select key switch to "Run" mode;

Step 5: Press the "Reset" button on right suspension HMI console;

Step 6: Start air shaft through HMI or "Air shaft start/stop" button on the machine;

Step 7: Press the "Run" button on operation console;

Step 8: Turn the "Speed" switch on operation console clockwise to start machine.

7.2.2 Power off

Step 1: Click the "Stop All" icon on "Other Settings" page of HMI;

Step 2: Turn off the CCD host on suspension HMI console;

Step 3: Turn off the main power switch;

Step 4: Turn off the manual ON-OFF valve.

7.3 Introduction of operating panels

7.3.1 Overview of operating panels

The layout of operating panels is shown in Figure 7-2.

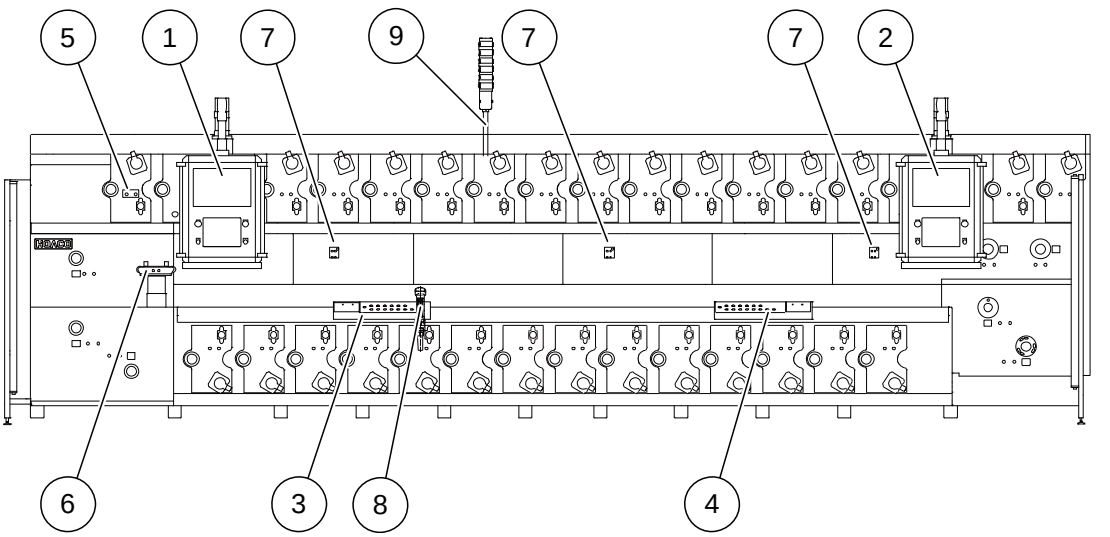


Figure 7-2 Layout of operating panels

The name of operating panels are shown in Table 7-1.

Table 7-1 Name of operating panels

No.	Name
1	Suspension HMI console (left)
2	Suspension HMI console (right)

No.	Name
3	Operation console 1
4	Operation console 2
5	Air shaft operation panel
6	Web guide operation panel
7	Camera light-source operation panel
8	Jog grip switch
9	Visual and audible signal device

7.3.2 Suspension HMI console (left)

The layout of the operation panel is shown in Figure 7-3.

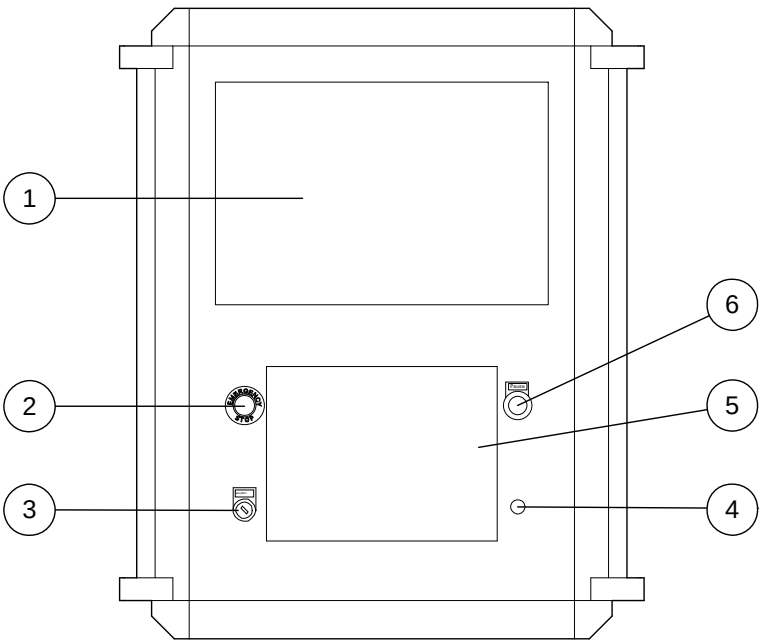
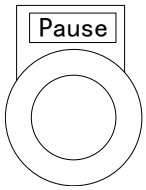


Figure 7-3 Suspension HMI console (left)

Functions of the operation panel are shown in Table 7-2.

Table 7-2 Function introduction

No.	Legend	Description
1	-	CCD display Function: CCD vision system monitoring and setting.

No.	Legend	Description
2		EMERGENCY button Function: Trigger emergency stop event. Operation: Press button. Press "Reset" button to reset safety systems after emergency stop.
3		Mode-select key switch Function: Select machine operating mode ("Run" or "Setup"). Operation: Turn key to select mode.
4	-	Spare
5	-	HMI Function: Human-machine interface. Refer to *Section 7.4 HMI introduction* for detailed functions.
6		Pause button Function: To stop machine to speed 0 slowly (recommended). Operation: ● Operable only when "Run" button light ON. ● Press once to stop machine slowly - button light ON. ● Press again to resume previous speed - button light OFF.

7.3.3 Suspension HMI console (right)

The layout of the operation panel is shown in Figure 7-4.

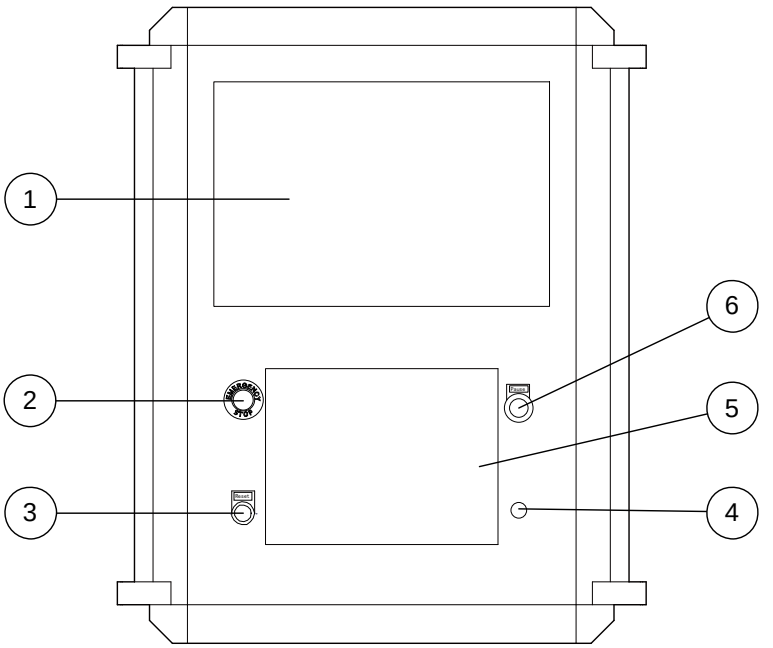
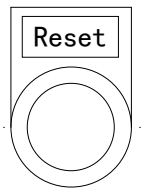
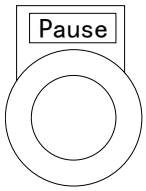


Figure 7-4 Suspension HMI console (right)

Function of the operation panel is shown in Table 7-3.

Table 7-3 Function introduction

No.	Legend	Description
1	-	CCD display Function: CCD vision system monitoring and setting.
2		EMERGENCY button Function: Trigger emergency stop event. Operation: Press button. Press "Reset" button to reset safety systems after emergency stop.
3		Reset button Function: 1. Power-on machine. 2. Reset all safety systems after emergency stop. Operation: Press once. Button light ON after all safety systems are reset.
4	-	Spare

No.	Legend	Description
5	-	HMI Function: Human-machine interface. Refer to *Section 7.4 HMI introduction* for detailed functions.
6		Pause button Function: To stop machine to speed 0 slowly (recommended). Operation: ● Operable only when "Run" button light ON. ● Press once to stop machine slowly -button light ON. ● Press again to resume previous speed - button light OFF.

7.3.4 Operation console 1

The layout of the operation panel is shown in Figure 7-5.

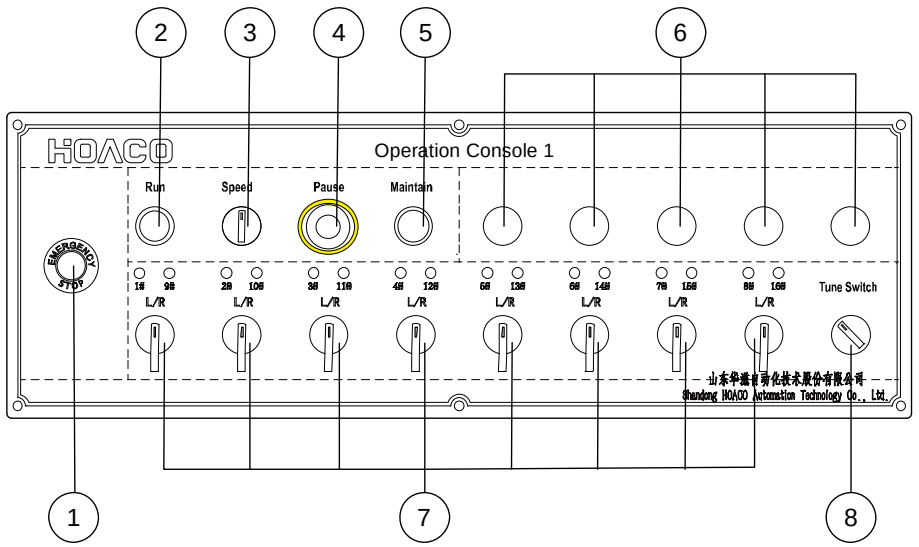
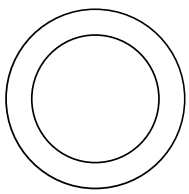
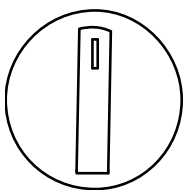
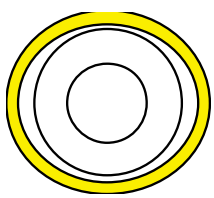
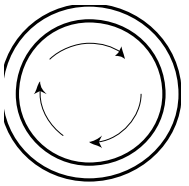
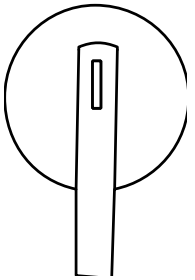
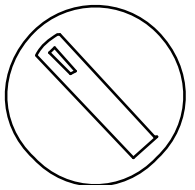


Figure 7-5 Operation console 1

Function of the operation panel is shown in Table 7-4.

Table 7-4 Function introduction

No.	Legend	Description
1		EMERGENCY button Function: Trigger emergency stop event. Operation: Press button. Press "Reset" button to reset safety systems after an emergency stop.
2		Run button Function: Start/stop machine. Operation: ● Operable in "Run" mode only. ● Press once to start machine (speed 0), button light ON. ● Then turn "Speed" switch to increase/reduce speed. ● Press again will stop machine immediately (not recommended though), button light OFF.
3		Speed switch Function: Increase/reduce speed. Operation: Turn clockwise to increase speed; Turn anticlockwise to reduce speed.
4		Pause button Function: To stop machine to speed 0 slowly (recommended) Operation: ● Operable only when "Run" button light ON. ● Press once to stop machine slowly - button light ON. ● Press again to resume previous speed - button light OFF.

No.	Legend	Description
5		Maintenance button Function: To enable/disable "Maintenance" mode. Operation: ● In "Run" mode, press "Maintenance" button to reduce speed to default maintenance speed (Preset in PLC screen to a value of 0.1-1m/min). ● Once SLS < 1m/min, press-enable grip switch to disable safety light curtain to enter workzone. ● Release "Maintenance" button to resume previous machine speed.
6	-	Spare
7		L/R switch Function: Adjust X-axis for a specific station. Operation: ● In "Maintenance" mode, one hand press-enable grip switch to disable safety light curtain and enter workzone. ● Another hand turns "L/R" switch to adjust X-axis for a specific station.
8		Tune switch Function: Select the station controlled by the "L/R" switch. Operation: Turn switch to select the station to be controlled.

7.3.5 Operation console 2

The layout of the operation panel is shown in Figure 7-6.

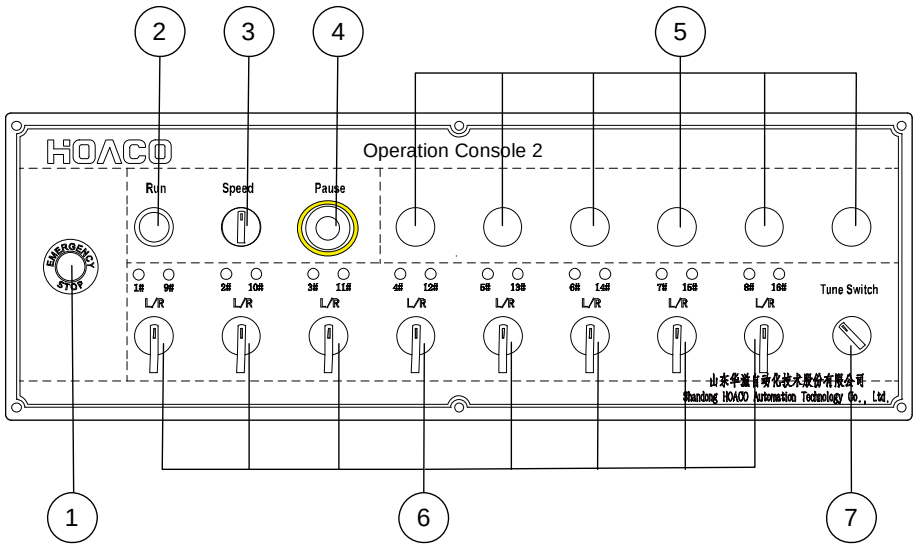
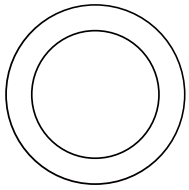
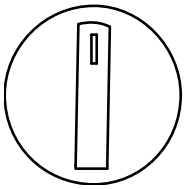
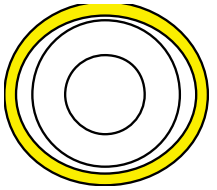
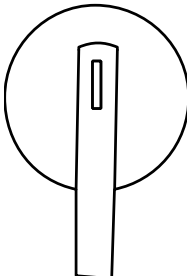
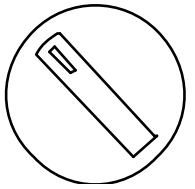


Figure 7-6 Operation console 2

Function of the operation panel is shown in Table 7-5.

Table 7-5 Function introduction

No.	Legend	Description
1		EMERGENCY button Function: Trigger emergency stop event. Operation: Press button. Press "Reset" button to reset safety systems after an emergency stop.
2		Run button Function: Start/stop machine. Operation: ● Operable in "Run" mode only. ● Press once to start machine (speed 0), button light ON. ● Then turn "Speed" switch to increase/reduce speed. ● Press again will stop machine immediately (not recommended though), button light OFF.

No.	Legend	Description
3		Speed switch Function: Increase/reduce speed. Operation: Turn clockwise to increase speed; Turn anticlockwise to reduce speed.
4		Pause button Function: To stop machine to speed 0 slowly (recommended). Operation: ● Operable only when "Run" button light ON. ● Press once to stop machine slowly - button light ON. ● Press again to resume previous speed - button light OFF.
5	-	Spare
6		L/R switch Function: Adjust X-axis for a specific station. Operation: ● In "Maintenance" mode, one hand press enable grip switch to disable safety light curtain and enter workzone. ● Another hand turns "L/R" switch to adjust X-axis for a specific station.
7		Tune switch Function: Select the station controlled by the "L/R" switch. Operation: Turn switch to select the station to be controlled.

7.3.6 Air shaft operation panel

The layout of the operation panel is shown in Figure 7-7.

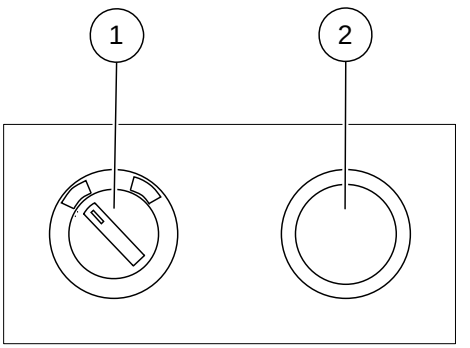
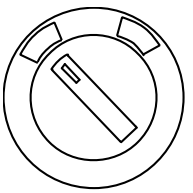
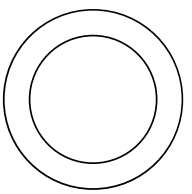


Figure 7-7 Air shaft operation panel

Function of the operation panel is shown in Table 7-6.

Table 7-6 Function introduction

No.	Legend	Description
1		Function: Lock the air pressure of the air shaft. Operation: Turn the switch after inflation.
2		Function: Inflate/deflate the air shaft, start/stop the air shaft. Operation: ● Press once to inflate the air shaft, and then start the air shaft. ● Press again to stop the air shaft, and then deflate the air shaft.

7.3.7 Web guide operation panel

The layout of the operation panel is shown in Figure 7-8.

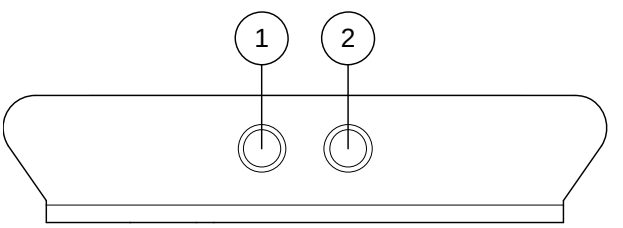
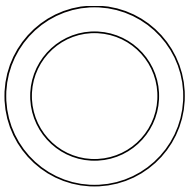
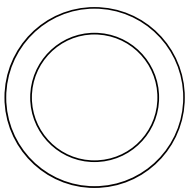


Figure 7-8 Web guide operation panel

Function of the operation panel is shown in Table 7-7.

Table 7-7 Function introduction

No.	Legend	Description
1		Function: Up/down the front web guide roller. Operation: ● Press once to up the roller. ● Press again to down the roller.
2		Function: Up/down the rear web guide roller. Operation: ● Press once to up the roller. ● Press again to down the roller.

7.3.8 Camera light-source operation panel

The layout of the operation panel is shown in Figure 7-9.

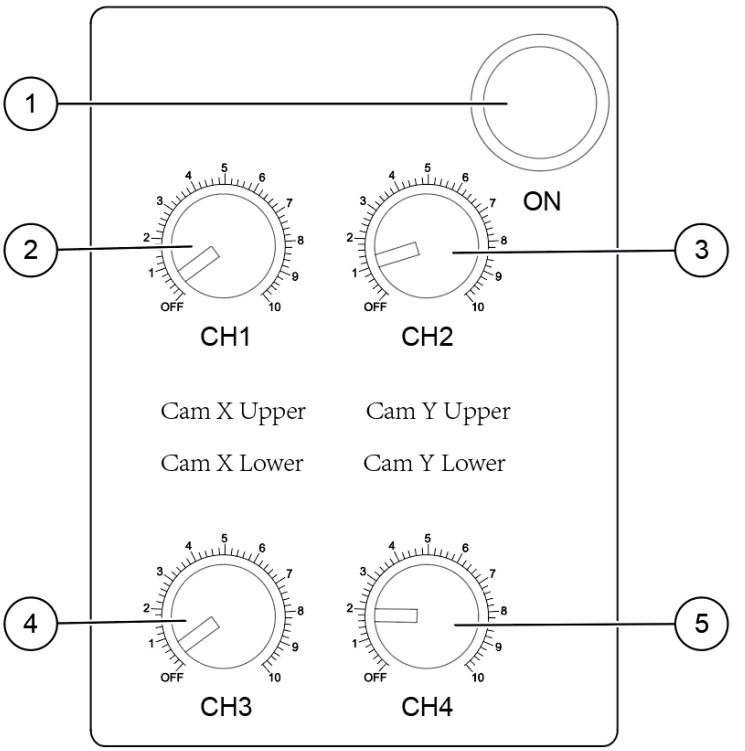
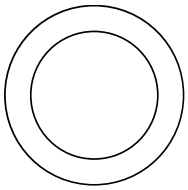


Figure 7-9 Camera light-source operation panel

Function of the operation panel is shown in Table 7-8.

Table 7-8 Function introduction

No.	Legend	Description
1		Power switch Function: Turn on/off the light-source of vision system. Operation: ● Press once to turn on the light-source. ● Press again to turn off the light-source.
2		Function: Adjust the brightness of the CH1 light-source. Operation: ● Turn the knob clockwise to gradually increase the brightness. ● Turn the knob anticlockwise to gradually decrease the brightness.
3		Function: Adjust the brightness of the CH2 light-source. Operation: ● Turn the knob clockwise to gradually increase the brightness. ● Turn the knob anticlockwise to gradually decrease the brightness.
4		Function: Adjust the brightness of the CH3 light-source. Operation: ● Turn the knob clockwise to gradually increase the brightness. ● Turn the knob anticlockwise to gradually decrease the brightness.
5		Function: Adjust the brightness of the CH4 light-source. Operation: ● Turn the knob clockwise to gradually increase the brightness. ● Turn the knob anticlockwise to gradually decrease the brightness.

7.3.9 Jog grip switch

Function of the switch are shown in Table 7-9.

Table 7-9 Function introduction

No.	Legend	Description
1		In "Setup" mode, ● Press enable grip switch + press left jog button to jog machine forward. ● Press enable grip switch + press right jog button to jog machine backward. In "Maintenance" mode, ● Press-enable grip switch disables safety light curtain when SLS < 1 m/min. ● If SLS > 1 m/min, a safe stop event will be triggered. ● If grip switch is disabled (either released or gripped 2nd position) while operator is still in workzone, a safe stop event will be triggered by safety light curtain. ● Jog buttons are disabled.

7.3.10 Visual and audible signal device

Function of the device are shown in Table 7-10.

Table 7-10 Function introduction

No.	Light	Buzzer	Description
1	Red & Continuous	No	The machine is not in safe state.
2	Yellow & Intermittent	Yes	The machine is swithing into/from "Maintenance" mode, the signal lasts for 3 seconds.
3	Green & Continuous	No	The machine is in "Run" mode and runs normally.
4	White & Continuous	No	The machine is in "Setup" or "Maintenance" mode.

7.4 HMI introduction

7.4.1 On/off

7.4.1.1 Start up

HMI application will automatically start at power-on.

After starting, the application will display the "Main Page" (refer to *Section 7.4.4 Page 1: Main Page* for details) as the initial screen.

7.4.1.2 Select language

If applicable, you can select:

- 中文
- English

Procedure:

Step 1: Click the "Other Settings" icon on the main page to enter the "Other Settings" page;

Step 2: Click the "中文" or "English" icon to select the desired language.

Figure 7-10 Select language

7.4.1.3 Exit and close

This function should be performed by authorized personnel, and operator can only shut down HMI by power off.

7.4.2 Page layout

Figure 7-11 Page layout

Table 7-11 Function introduction

Field	Name	Description
1	Title field	Display title information and it is identical on all pages.
2	Parameter setting field	Set and display machine parameters
3	Alarm information field	Display current alarm information
4	Page selection field	Open the selected page

7.4.3 Page overview

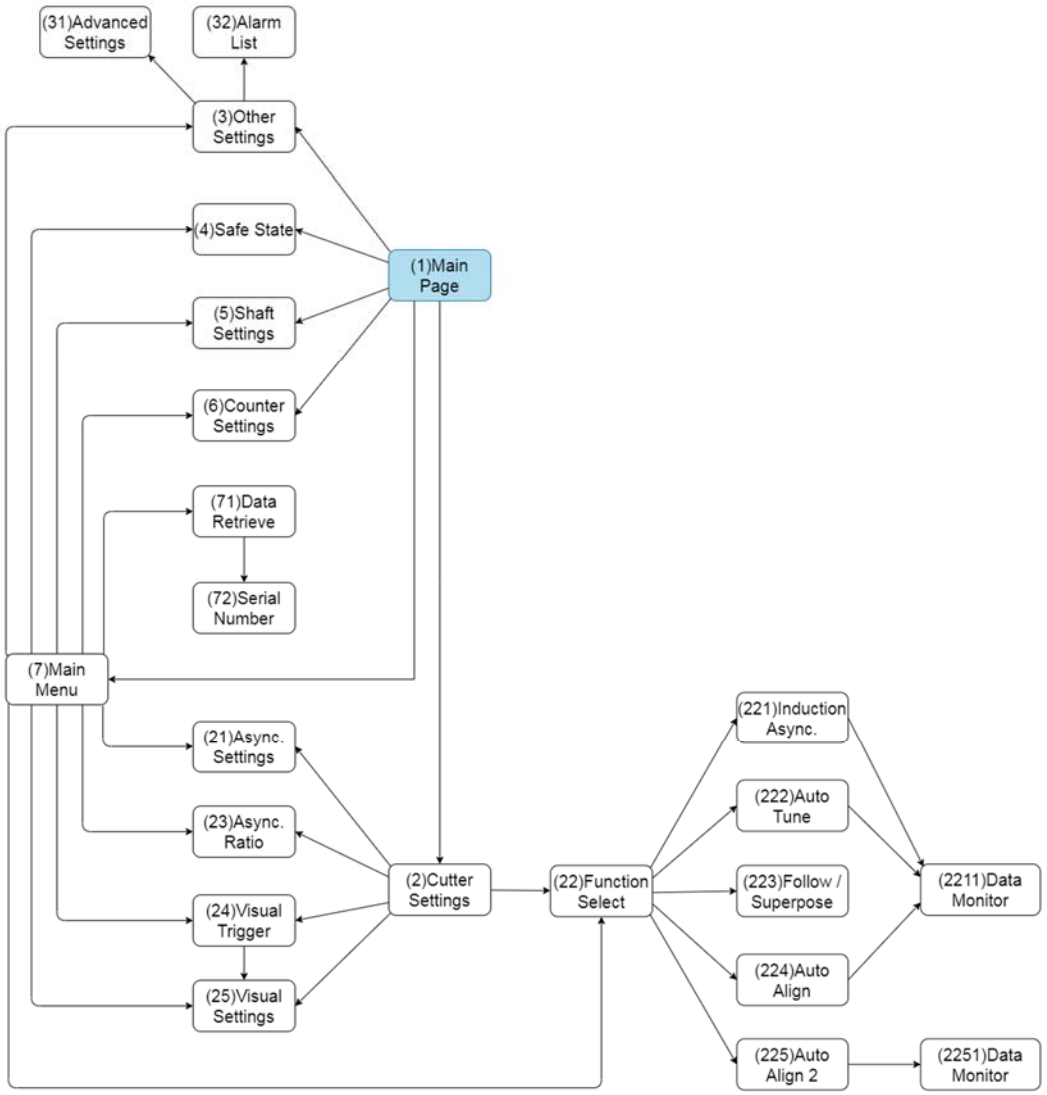


Figure 7-12 Page overview

7.4.4 Page1: Main Page

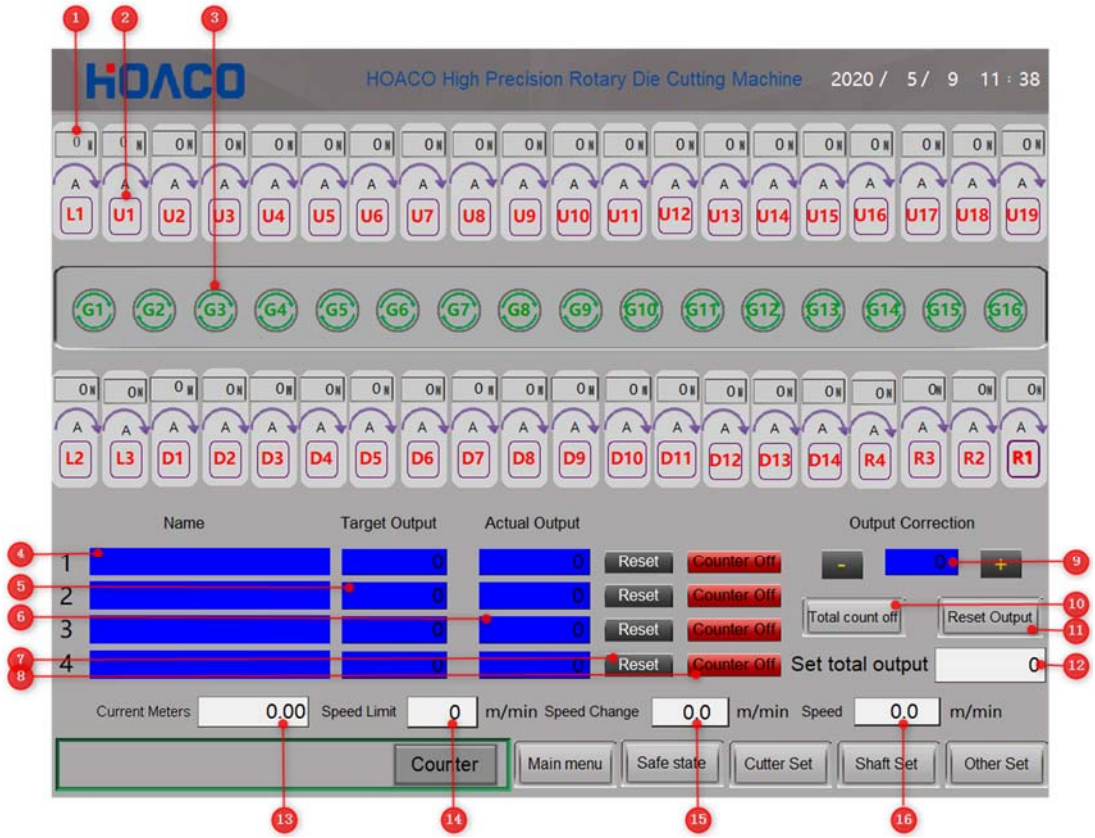


Figure 7-13 Page layout

Table 7-12 Function introduction

No.	Parameter	Description
1	Tension	Type: Input; Range: min 1, max 150; Unit: N Function: Set the tension of the air shaft.
2	Air Shaft	Type: Command/Indication Function: Press this icon to control the air shaft operation; Indicate the state of the air shaft. The following status can be shown: - **Green**: Running - **Red**: Stopped

No.	Parameter	Description
3	Cutter	Type: Indication Function: Indicate the state of cutter. The following status can be shown: - **Green**: Running - **Red**: Stopped
4	Name	Type: Input, Range: String Function: Set the name of this entry.
5	Target Output	Type: Input; Range: min 1, max 99999999; Unit: pcs Function: Set the target output. When the actual output reaches this value, the machine will pause automatically.
6	Actual Output	Type: Output; Unit: pcs Function: Display the actual output recorded.
7	Reset	Type: Command Function: Click this icon to reset the "Actual Output" of this entry.
8	Counter On/Off	Type: Selection Function: Select whether to record the output of this entry The following entries can be selected: - **Counter On** - **Counter Off**
9	Output Correction	Type: Input; Range: min 1, max 9999; Unit: m Function: Set the output correction value. Set this value, and then click the "-" or "+" icon, "Actual Output" will minus or plus this value as the new actual output.
10	Total count on/off	Type: Selection Function: Select whether to turn on the total count function. Turn on this switch, and then turn on the count switch of each entry to start recording the actual output. The following entries can be selected: - **Total count on** - **Total count off**
11	Reset Output	Type: Command Function: Click this icon to clear the "Actual Output" parameter.

No.	Parameter	Description
12	Set total output	Type: Input; Range: min 1, max 99999999; Unit: pcs Function: Set the maximum allowable value of the output record. When this value is reached, the record must be cleared and re-recorded.
13	Current Meters	Type: Output; Unit: m Function: Display the number of meters of currently produced materials.
14	Speed Limit	Type: Input; Range: min 0, max 60; Unit: m/min Function: Set the maximum allowable speed.
15	Speed Change	Type: Input; Range: min 0, max 10; Unit: m/min Function: Set the change value each time when using the "Speed" switch of the operation console to adjust speed of the machine.
16	Speed	Type: Output; Unit: m/min Function: Display the current speed.

7.4.5 Page2: Cutter Settings

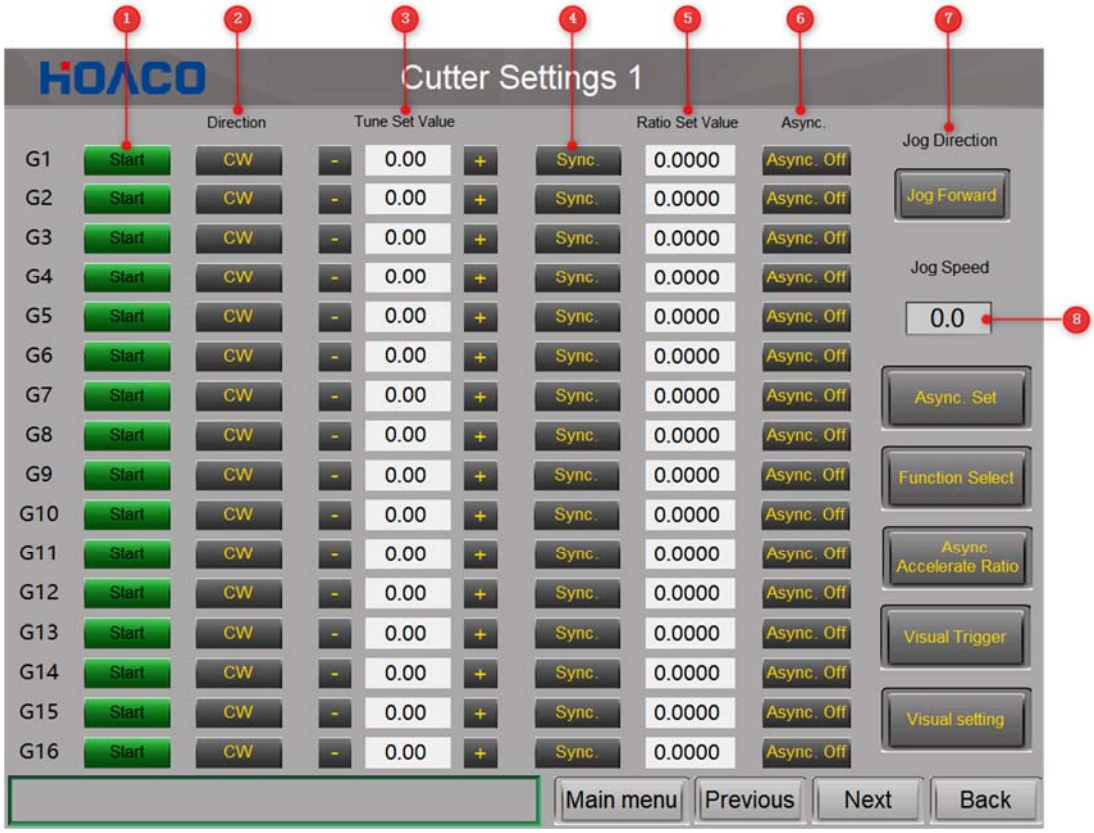


Figure 7-14 Page layout

Table 7-13 Function introduction

No.	Parameter	Description
1	Start/Stop	Type: Selection Function: Select to start or stop cutter. The following entries can be selected: - **Start** - **Stop**
2	Direction	Type: Selection Function: Select the running direction of cutter. The following entries can be selected: - **CW**: Clockwise direction - **CCW**: Anticlockwise direction

No.	Parameter	Description
3	Tune Set Value	Type: Input; Range: min 0.01, max 0.9; Unit: mm Function: Set the tune value of the X axis of cutter. Each time the "L/R" switch of the operation console is triggered, the X axis of cutter will tune the value. "+" And "-" function and the "L/R" switch functions identical.
4	Sync.	Type: Selection Function: Select the synchronous mode of cutter. The following entries can be selected: - **Sync.**: " Ratio Set Value" defaults to 1 - **Ratio**: Enter the ratio value in " Ratio Set Value"
5	Ratio Set Value	Type: Input; Range: min 0, max 3 Function: Set the speed ratio of cutter when operating in Ratio mode.
6	Async.	Type: Selection Function: Select whether cutter runs asynchronously. The following entries can be selected: - **Async. On**: Enable Asynchronous function - **Async. Off**: Disable Asynchronous function
7	Jog Direction	Type: Command Function: When the machine is in the stop state, press this icon to jog all cutters.
8	Jog Speed	Type: Input; Range: min 0.0, max 1.0; Unit: m/min Function: Set the jog speed of cutter.

7.4.5.1 Page21: Async. Settings

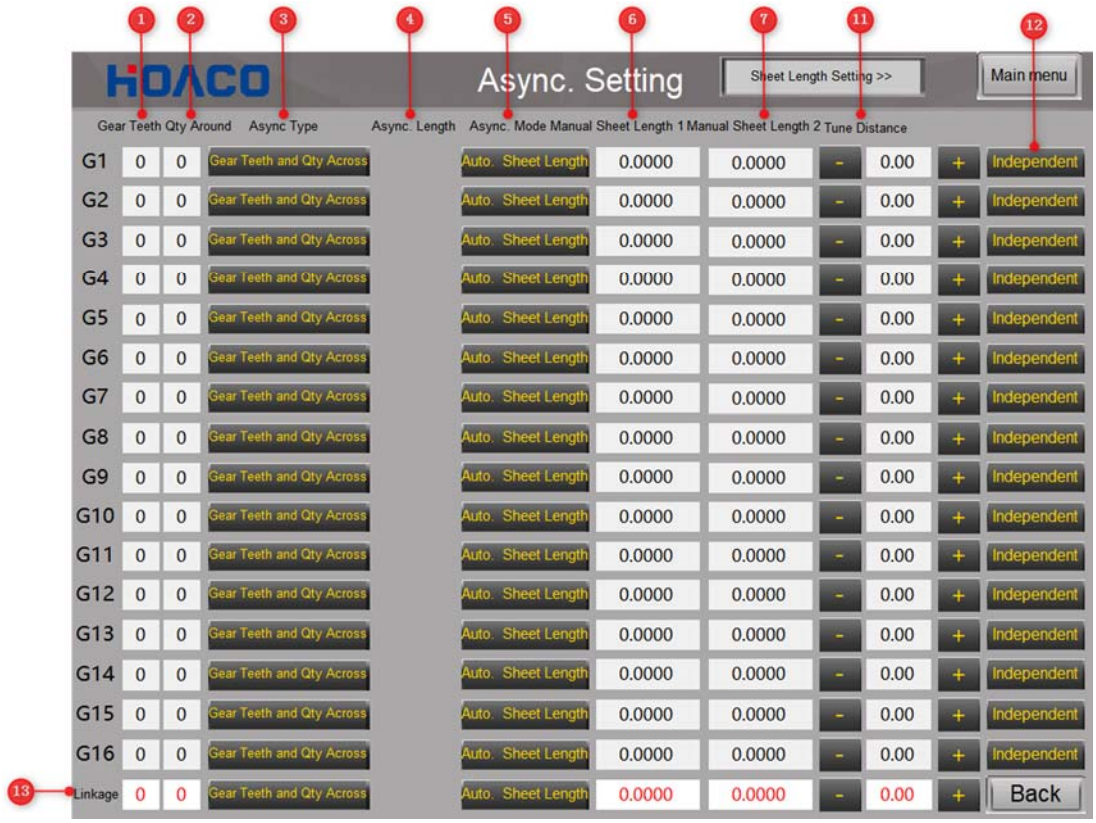


Figure 7-15 Page layout (1)

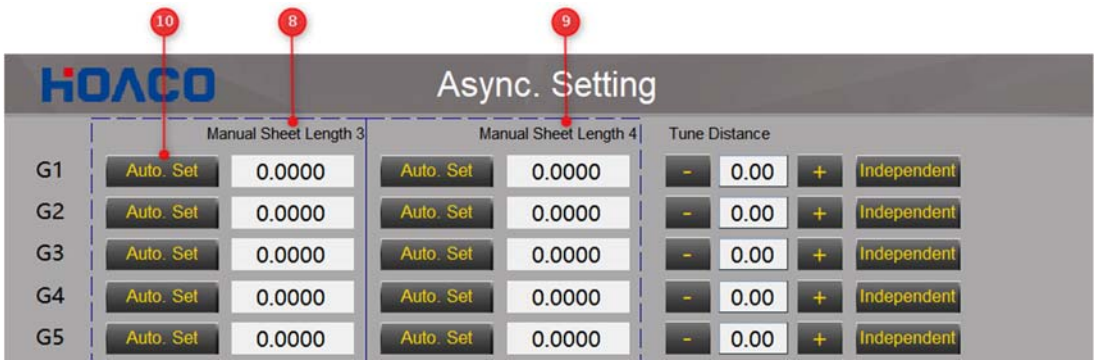


Figure 7-16 Page layout (2)

Table 7-14 Function introduction

No.	Parameter	Description
1	Gear Teeth	Type: Input; Range: min 1, max 999 Function: Set the Gear Teeth number of die cutter.
2	Qty Around	Type: Input; Range: min 1, max 999 Function: Set the blade edge number of die cutter.
3	Async. Type	Type: Selection Function: Select the asynchronous type of cutter. The following entries can be selected: - **Gear Teeth and Qty. Around**: Parameters “Gear Teeth” and “Qty. Around” required. - **Manual Input**: Parameter “Async. Length” required.
4	Async. Length	Type: Input; Range: min 0, max 999; Unit: mm Function: Set the Async. Length of cutter.
5	Async. Mode	Type: Selection Function: Select the asynchronous mode of cutter. The following entries can be selected: - **Auto. Sheet Length**: Calculate the sheet length automatically. - **Double Async**: Cutter performs an asynchronous action in 2 different lengths that determined by parameters “Manual Sheet Length1”, “Manual Sheet Length2”. - **Tri-Async**: Cutter performs an asynchronous action in 3 different lengths that determined by parameters “Manual Sheet Length 1”, “Manual Sheet Length 2” and “Manual Sheet Length 3”. - **Quad-Async**: Cutter performs an asynchronous action in 4 different lengths that determined by parameters “Manual Sheet Length 1”, “Manual Sheet Length 2”, “Manual Sheet Length 3” and “Manual Sheet Length 4”.
6	Manual Sheet Length 1	Type: Input; Range: min 0, max 10000; Unit: mm Function: Set the sheet length 1 manually.
7	Manual Sheet Length 2	Type: Input; Range: min 0, max 10000; Unit: mm Function: Set the sheet length 2 manually.

No.	Parameter	Description
8	Manual Sheet Length 3	Type: Input; Range: min 0, max 10000; Unit: mm Function: Set the sheet length 3 manually.
9	Manual Sheet Length 4	Type: Input; Range: min 0, max 10000; Unit: mm Function: Set the sheet length 4 manually.
10	Auto. Set	Type: Command Function: Click this icon to calculate the sheet length based on other input sheet length.
11	Tune Distance	Type: Input; Range: min 0, max 99.09; Unit: mm Function: Set the change value of equal pitch distance. Each time the icon "-" or "+" is pressed, equal pitch distance will minus or plus the value.
12	Independent /Linkage	Type: Selection Function: Select to use the parameters of this line or Linkage line. The following entries can be selected: - **Independent**: Use the parameters of this line. - **Linkage**: Use the parameters of Linkage line.
13	Linkage	Type: Text Function: Identify that all cutters with "Linkage" selected adopt the parameter settings in this line.

7.4.5.2 Page22: Function Selection

According to the “Function Selection” page, you can enter the subpage.

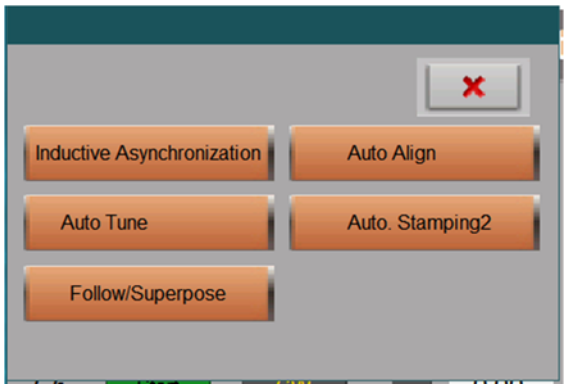


Figure 7-17 Subpage

7.4.5.2.1 Page221: Induction Async. Setting

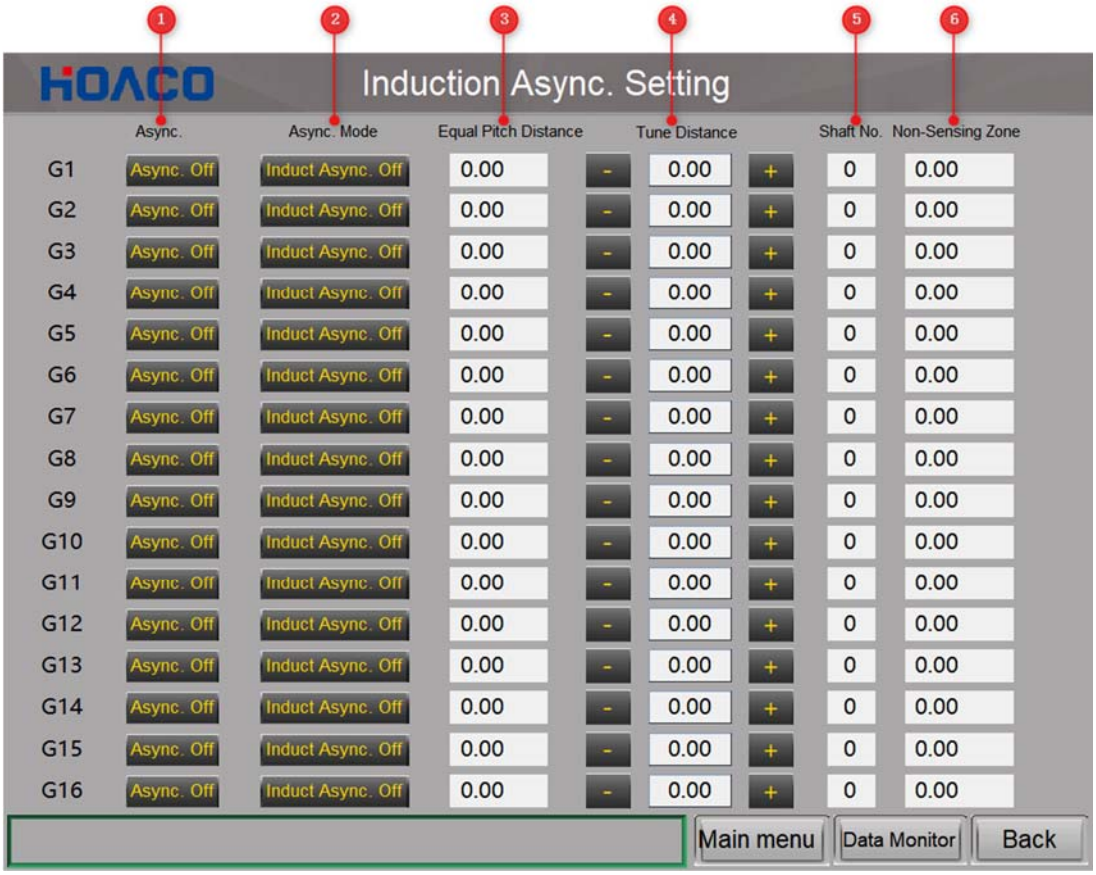


Figure 7-18 Page layout

Table 7-15 Function introduction

No.	Parameter	Description
1	Async.	Type: Selection Function: Select whether cutter runs asynchronously. The following entries can be selected: - **Async. On**: Enable Asynchronous function - **Async. Off**: Disable Asynchronous function

No.	Parameter	Description
2	Async. Mode	Type: Selection Function: Select the asynchronous mode of cutter. The following entries can be selected: - **Induct Async. On**: Enable Induction Asynchronous function - **Induct Async. Off**: Disable Induction Asynchronous function
3	Equal Pitch Distance	Type: Input; Range: min 10.0, max 100.0; Unit: mm Function: Set the distance from the sensor to cutter.
4	Tune Distance	Type: Input; Range: min 0, max 99.09; Unit: mm Function: Set the change value of equal pitch distance. Each time the icon "-" or "+" is pressed, equal pitch distance will minus or plus the value.
5	Shaft No.	Type: Input; Range: min 0, max 16 Function: Set the axis number of a synchronized cutter to provide reference position.
6	Non-Sensing Zone	Type: Input; Range: min 0, max 9999.99; Unit: mm Function: Set the distance value of material movement. After the sensor detects the signal and triggers action, it will not start detecting the next signal within this distance.

7.4.5.2.1.1 Page2211: Data Monitor

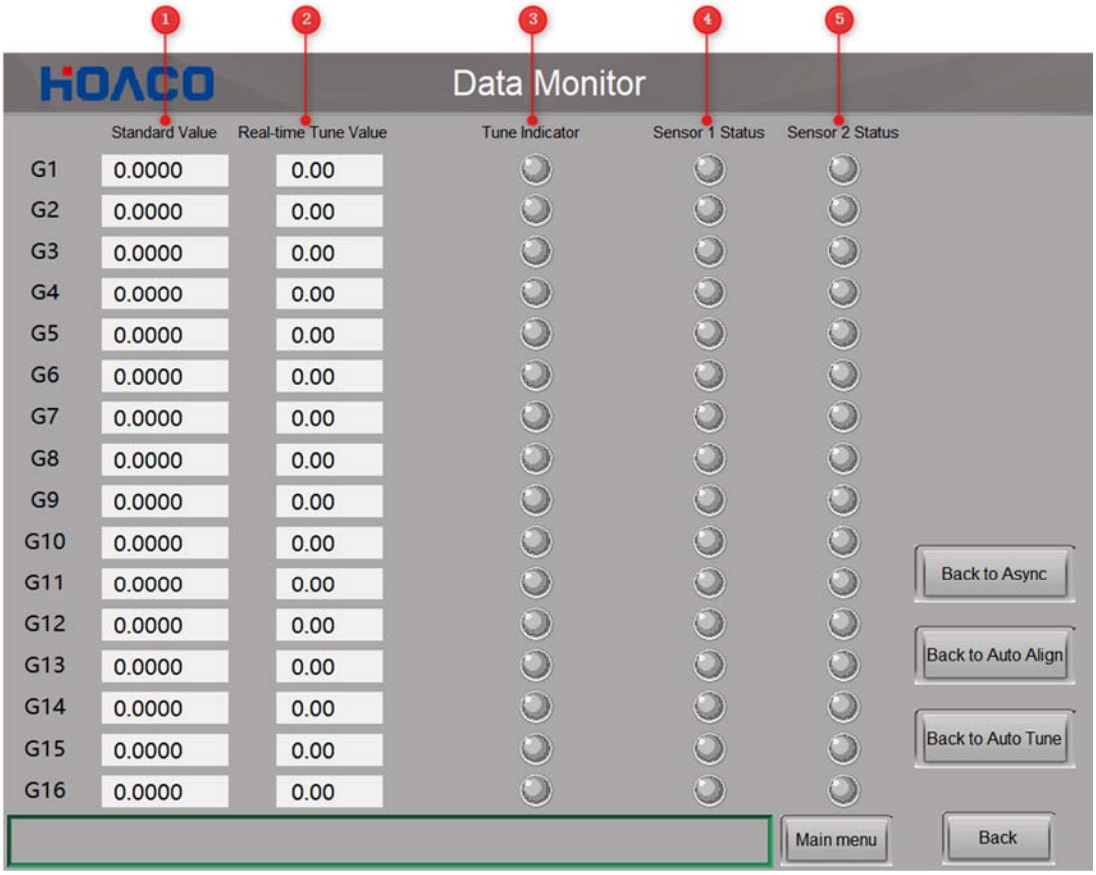


Figure 7-19 Page layout

Table 7-16 Function introduction

No.	Parameter	Description
1	Standard Value	Type: output; Unit: mm Function: Display the standard value set by the user.
2	Real-time Tune Value	Type: output; Unit: mm Function: Display the real-time tune value, that is, the deviation between the measured value and the standard value.

No.	Parameter	Description
3	Tune Indicator	Type: Indication Function: Indicate whether cutter is in the state of tune. The following status can be shown: - **Light**: Tuning. - **Dark**: Not tuning.
4	Sensor 1 Status	Type: Indication Function: Indicate the status of sensor 1. The following status can be shown: - **Light**: Signal detected. - **Dark**: No signal detected.
5	Sensor 2 Status	Type: Indication Function: Indicate the status of sensor 2. The following status can be shown: - **Light**: Signal detected. - **Dark**: No signal detected.

7.4.5.2.2 Page222: Auto Tune

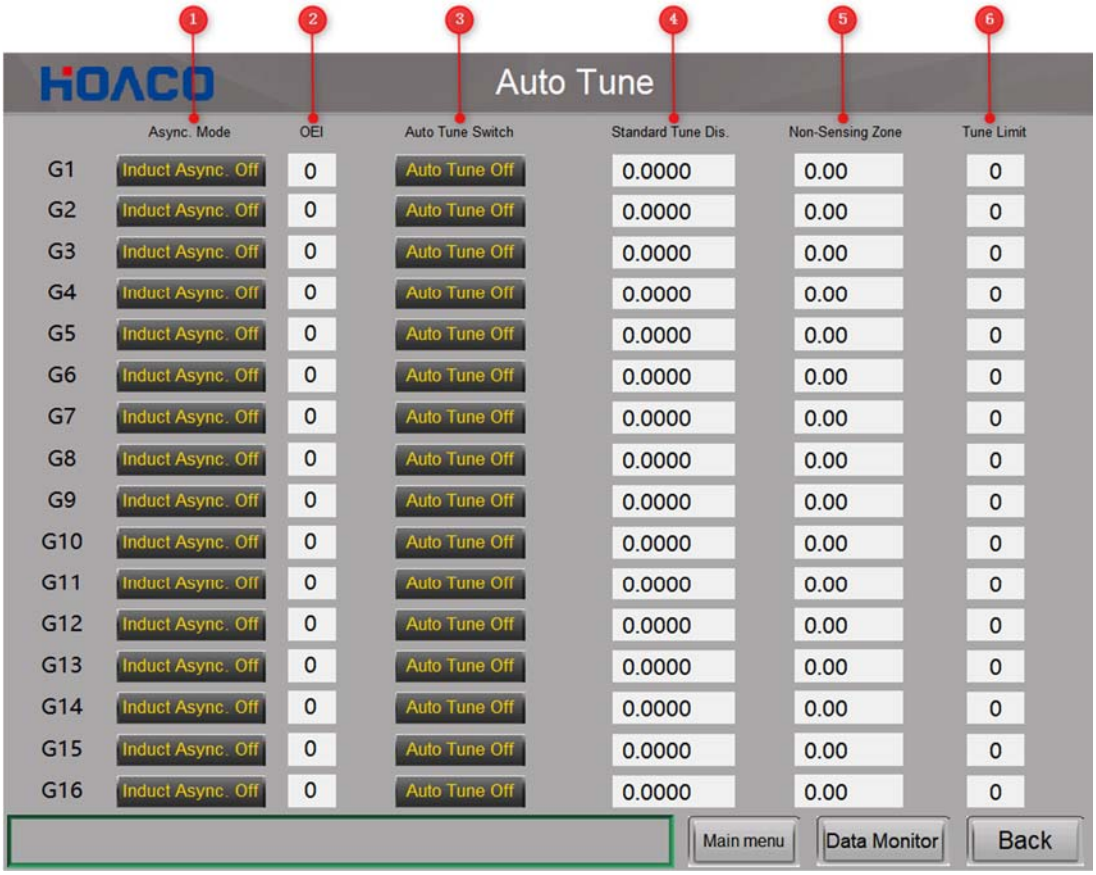


Figure 7-20 Page layout

Table 7-17 Function introduction

No.	Parameter	Description
1	Async. Mode	Type: Selection Function: Select the asynchronous mode of cutter. The following entries can be selected: - **Induct Async. On**: Enable Induction Asynchronous function - **Induct Async. Off**: Disable Induction Asynchronous function
2	OEI	Type: Input; Range: min 0, max 16 Function: Set the photoelectric interface to which the sensor used by the Auto Tune function is connected. This is generally the same as the corresponding cutter number.

No.	Parameter	Description
3	Auto Tune Switch	Type: Selection Function: Select whether cutter uses the Auto Tune function. The following entries can be selected: - **Auto Tune On**: Enable Auto Tune function - **Auto Tune Off**: Disable Auto Tune function
4	Standard Tune Dis.	Type: Input; Range: min 0, max 1000; Unit: mm Function: Set the standard value for comparison with the measured value.
5	Non-Sensing Zone	Type: Input; Range: min 0, max 9999.99; Unit: mm Function: Set the distance value of material movement. After the sensor detects the signal and triggers action, it will not start detecting the next signal within this distance.
6	Tune Limit	Type: Input; Range: min 0, max 999; Unit: mm Function: Set the range that allows automatic tuning. If the required tuning value exceeds this range, the machine will alarm.

7.4.5.2.3 Page223: Follow/Superpose

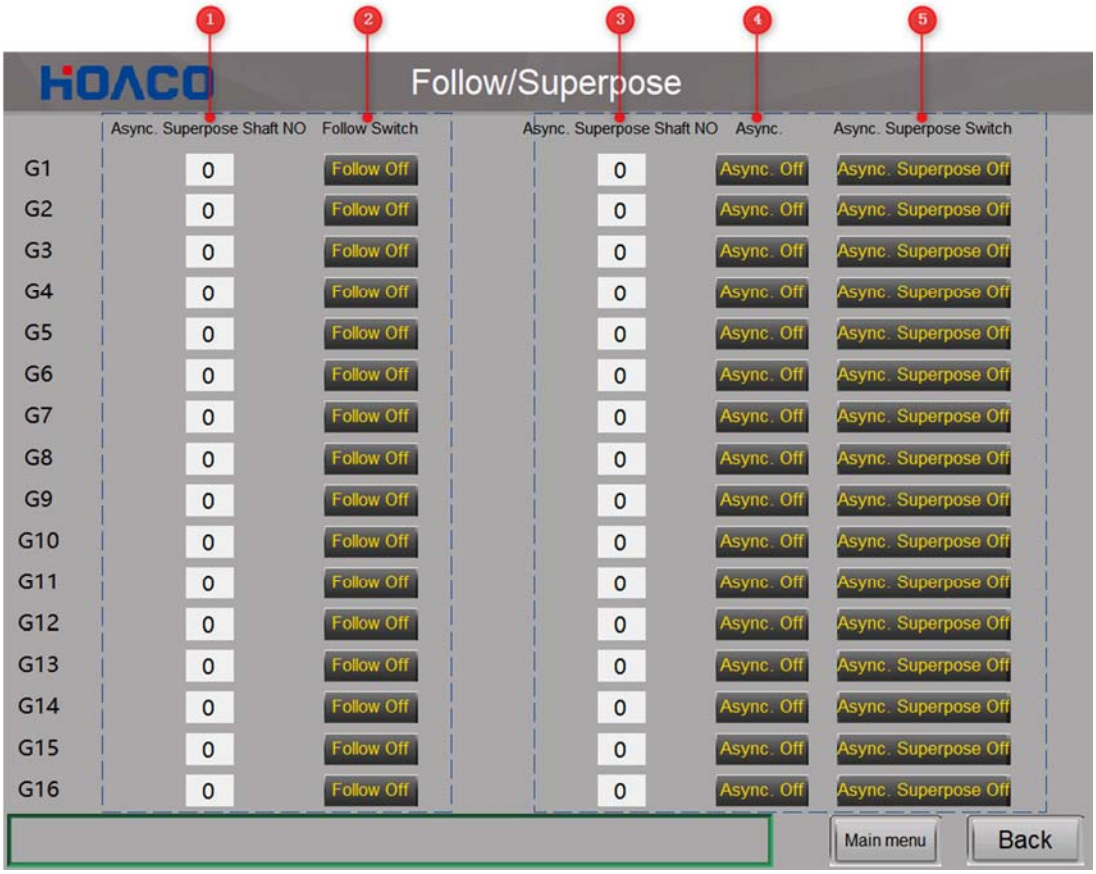


Figure 7-21 Page layout

Table 7-18 Function introduction

No.	Parameter	Description
1	Async. Follow Shaft No.	Type: Input; Range: min 0, max 16 Function: Set the axis number of cutter to be followed by this cutter.
2	Follow Switch	Type: Selection Function: Select whether cutter uses the Follow function. The following entries can be selected: - **Follow On**: Enable Follow function - **Follow Off**: Disable Follow function

No.	Parameter	Description
3	Async. Superpose Shaft No.	Type: Input; Range: min 0, max 16 Function: Set the axis number of cutter to be superposed by this cutter.
4	Async.	Type: Selection Function: Select whether cutter runs asynchronously. The following entries can be selected: - **Async. On**: Enable Asynchronous function - **Async. Off**: Disable Asynchronous function
5	Async. Superpose Switch	Type: Selection Function: Select whether cutter uses the Async. Superpose function. The following entries can be selected: - **Async. Superpose On**: Enable Async. Superpose function - **Async. Superpose Off**: Disable Async. Superpose function

7.4.5.2.4 Page224: Auto Align 1

Figure 7-22 Page layout

Table 7-19 Function introduction

No.	Parameter	Description
1	Async. Mode	Type: Selection Function: Select asynchronous mode of cutter. The following entries can be selected: - **Induct Async. On**: Enable Induction Asynchronous function - **Induct Async. Off**: Disable Induction Asynchronous function
2	OEI	Type: Input; Range: min 0, max 16 Function: Set photoelectric interface to which the sensor used by Auto Align function is connected. This is generally the axis number of a cutter that runs in synchronous mode.

No.	Parameter	Description
3	Calibrate	Type: Command Function: After manual align is accurate, click this icon to write the standard value of aligning.
4	Waiting Sheets	Type: Input; Range: min 1, max 2 Function: Set the number of pieces of material between the photoelectric sensor and cutter.
5	Auto Align	Type: Selection Function: Select whether cutter uses the Auto Align function. The following entries can be selected: - **Auto Align On**: Enable Auto Align function - **Auto Align Off**: Disable Auto Align function
6	Equal Pitch Distance	Type: Input; Range: min 1, max 9999.99; Unit: mm Function: Set the distance to wait for cutter to adjust from the detected deviation.
7	Single Tune Value	Type: Input; Range: min 0, max 0.9; Unit: mm Function: Set the tune distance of cutter once. If the required tune distance is greater than this value, it will be divided into multiple tunes.
8	Non-Sensing Zone	Type: Input; Range: min 0, max 9999.99; Unit: mm Function: Set the distance value of material movement. After the sensor detects the signal and triggers action, it will not start detecting the next signal within this distance.
9	Tune Limit	Type: Input; Range: min 0, max 999; Unit: mm Function: Set the range that allows automatic tuning. If the required tuning value exceeds this range, the machine will alarm.

7.4.5.2.5 Page225: Auto Align 2

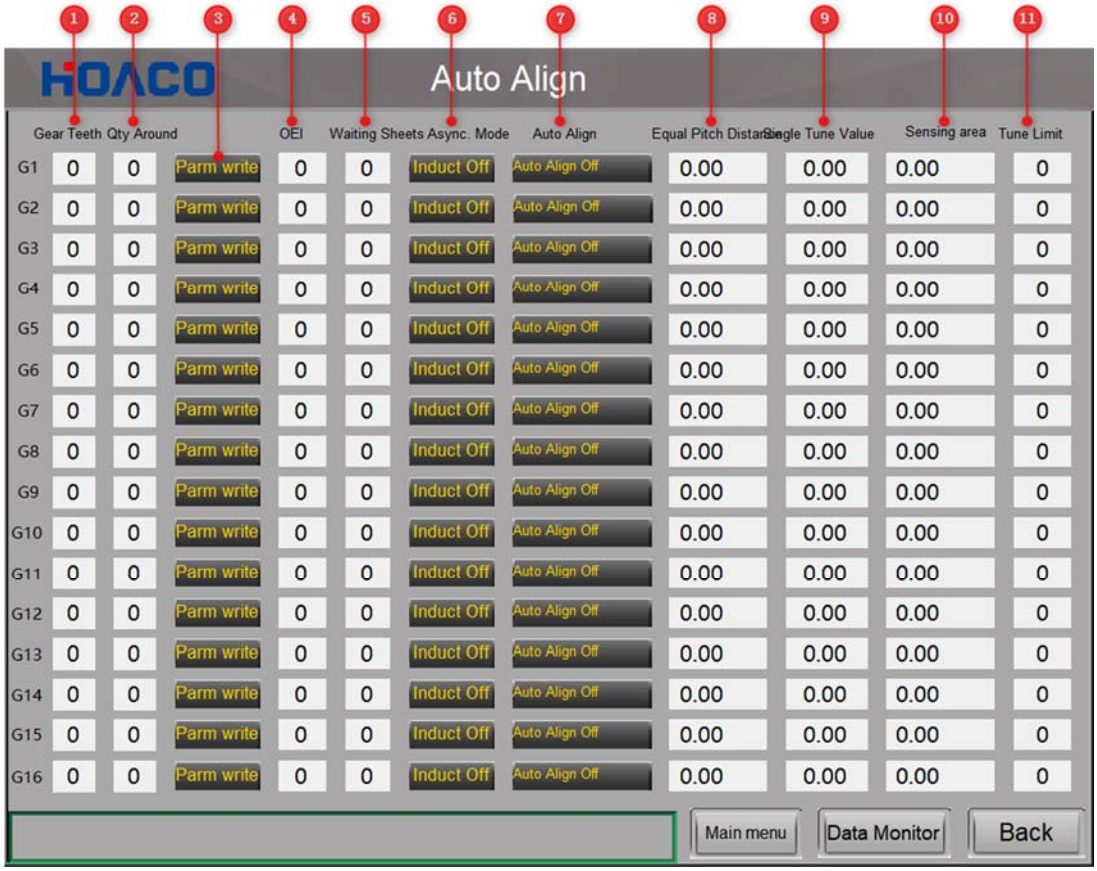


Figure 7-23 Page layout

Table 7-20 Function introduction

No.	Parameter	Description
1	Gear Teeth	Type: Input; Range: min 1, max 999 Function: Set the Gear Teeth number of die cutter.
2	Qty Around	Type: Input; Range: min 1, max 999 Function: Set the Qty. Around number of die cutter.
3	Parm write	Type: Command Function: Click this icon, the parameters "Gear Teeth" and "Qty Around" take effect.

No.	Parameter	Description
4	OEI	Type: Input; Range: min 0, max 16 Function: Set the photoelectric interface to which the sensor used by the Auto Tune function is connected. This is generally the same as the corresponding cutter number.
5	Waiting Sheets	Type: Input; Range: min 1, max 2 Function: Set the number of pieces of material between the photoelectric sensor and cutter.
6	Async. Mode	Type: Selection Function: Select the asynchronous mode of cutter. The following entries can be selected: - **Induct Async. On**: Enable Induction Asynchronous function - **Induct Async. Off**: Disable Induction Asynchronous function
7	Auto Align	Type: Selection Function: Select whether cutter uses the Auto Align function. The following entries can be selected: - **Auto Align On**: Enable Auto Align function - **Auto Align Off**: Disable Auto Align function
8	Equal Pitch Distance	Type: Input; Range: min 1, max 9999.99; Unit: mm Function: Set the distance to wait for cutter to adjust from the detected deviation.
9	Single Tune Value	Type: Input; Range: min 0, max 0.9; Unit: mm Function: Set the tune distance of cutter once. If the required tune distance is greater than this value, it will be divided into multiple tunes.
10	Sensing Area	Type: Input; Range: min 0, max 9999.99; Unit: mm Function: Set the sensing area at the material color mark, only the color mark in this area will be detected.
11	Tune Limit	Type: Input; Range: min 0, max 999; Unit: mm Function: Set the range that allows automatic tuning. If the required tuning value exceeds this range, the machine will alarm.

7.4.5.2.5.1 Page2251: Data Monitor

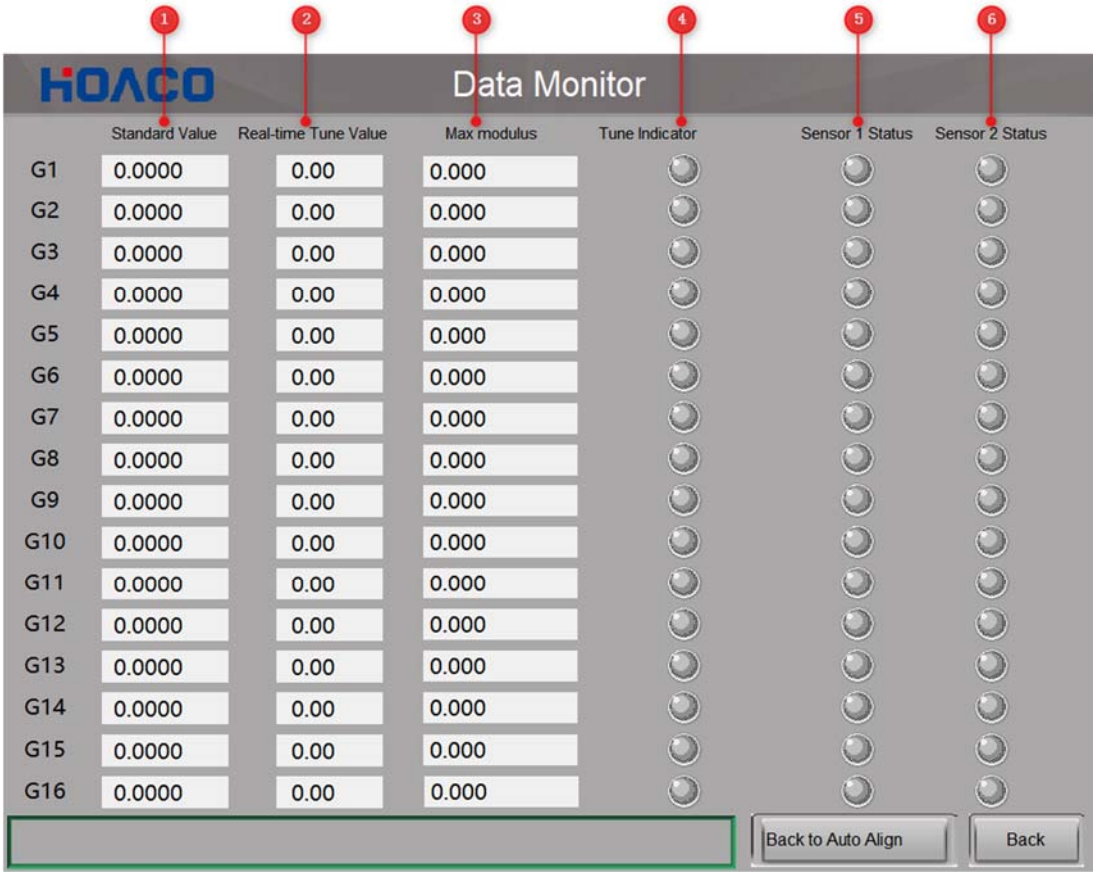


Figure 7-24 Page layout

Table 7-21 Function introduction

No.	Parameter	Description
1	Standard Value	Type: output; Unit: mm Function: Display the standard value set by the user.
2	Real-time Tune Value	Type: output; Unit: mm Function: Display the real-time tune value (deviation between the measured value and the standard value).
3	Max Modulus	Type: output; Unit: mm Function: Displays the maximum state that the counter can represent.

No.	Parameter	Description
4	Tune Indicator	Type: Indication Function: Indicate whether cutter is in the state of tune. The following status can be shown: - **Light**: Tuning. - **Dark**: Not tuning.
5	Sensor 1 Status	Type: Indication Function: Indicate the status of sensor 1. The following status can be shown: - **Light**: Signal detected. - **Dark**: No signal detected.
6	Sensor 2 Status	Type: Indication Function: Indicate the status of sensor 2. The following status can be shown: - **Light**: Signal detected. - **Dark**: No signal detected.

7.4.5.3 Page23: Async. Ratio

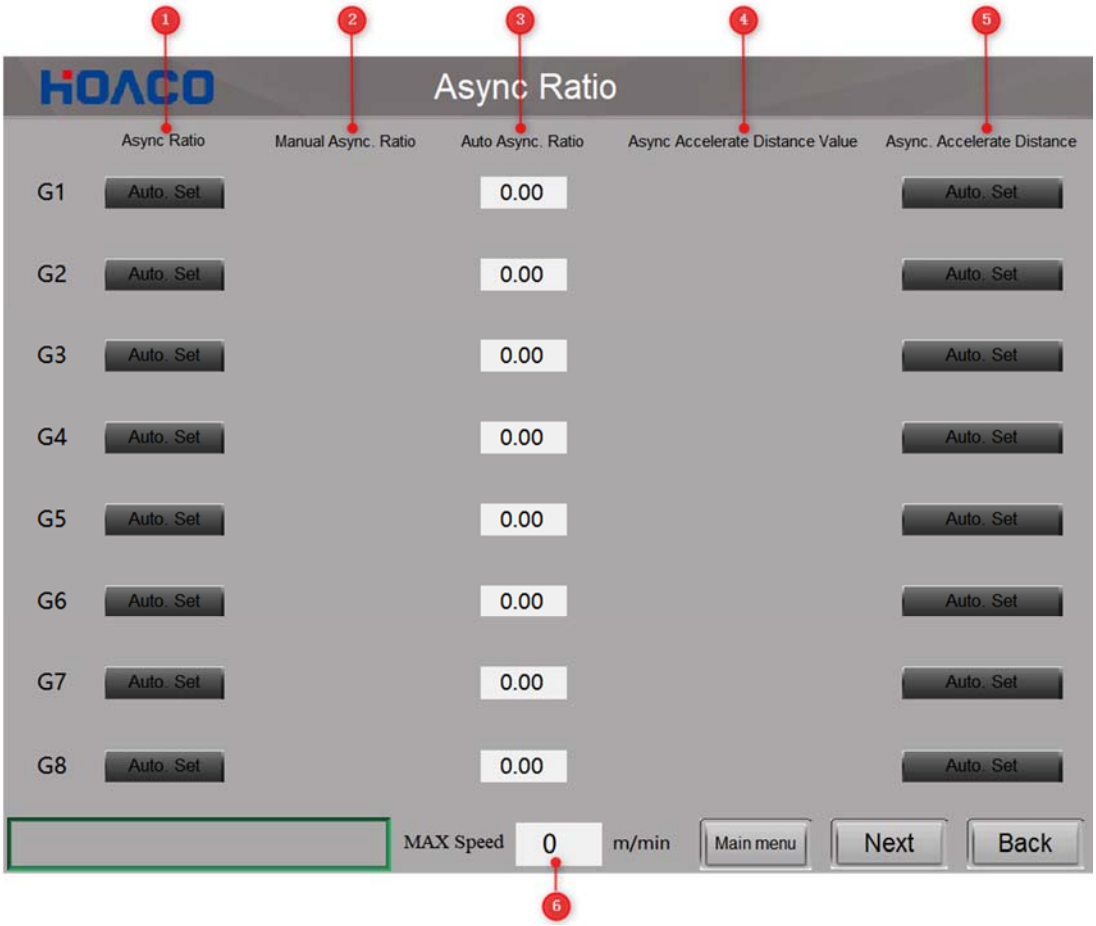


Figure 7-25 Page layout

Table 7-22 Function introduction

No.	Parameter	Description
1	Async. Ratio	Type: Selection Function: Select the input method of asynchronous ratio. The following entries can be selected: - **Auto Set**: Calculate automatically and displayed by parameter “Auto Async. Ratio”. - **Manual Set**: Parameter “Manual Async. Ratio” required.

No.	Parameter	Description
2	Manual Async. Ratio	Type: Input; Range: min 1.01, max 1.99 Function: Set the asynchronous ratio manually
3	Auto Async. Ratio	Type: Output Function: Display the automatically calculated asynchronous ratio.
4	Async. Accelrate Distance Value	Type: Input; Range: min 1, max 327.67; Unit: mm Function: Set the acceleration distance value when cutter runs in asynchronous mode.
5	Async. Accelrate Distance	Type: Selection Function: Select the input method of asynchronous acceleration distance. The following entries can be selected: - **Auto Set**: Calculated automatically. - **Manual Set**: Parameter “Async. Accelrate Distance Value” required.
6	MAX Speed	Type: output; Unit: m/min Function: Display the maximum asynchronous speed calculated according to the set parameters.

7.4.5.4 Page24: Visual Trigger

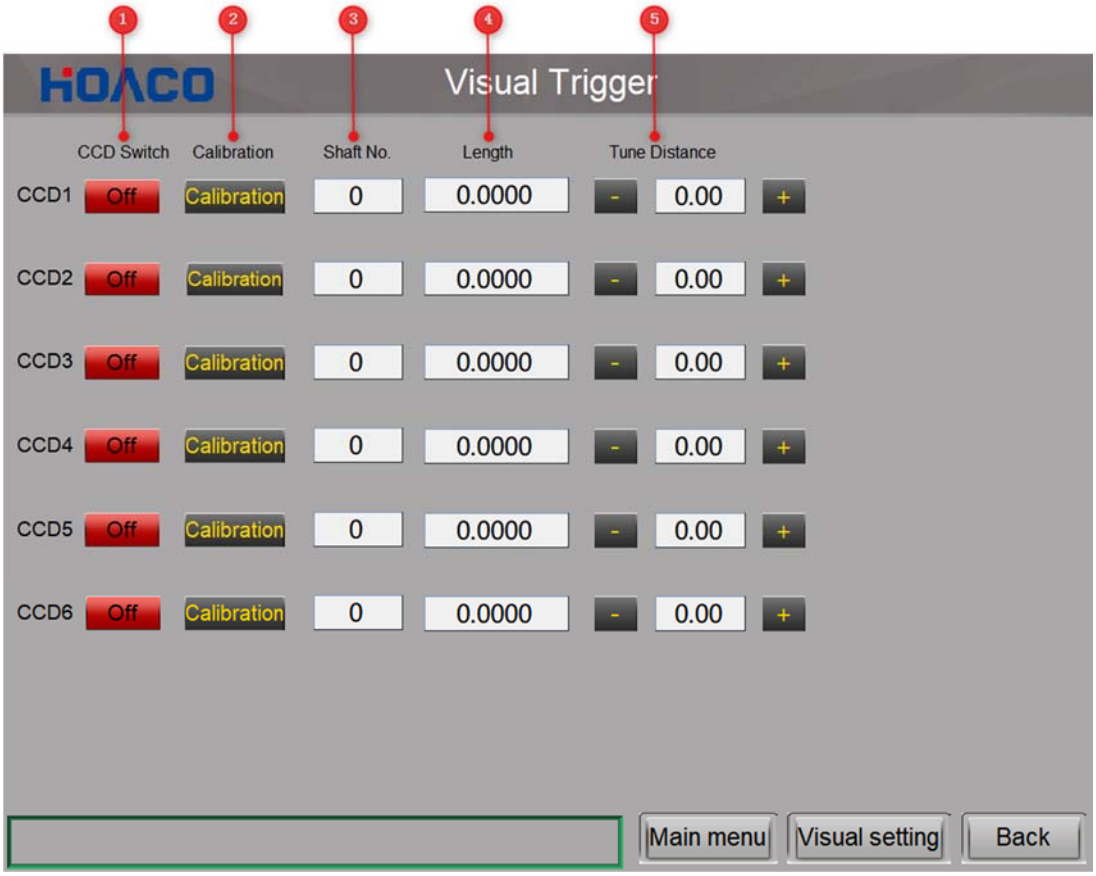


Figure 7-26 Page layout

Table 7-23 Function introduction

No.	Parameter	Description
1	CCD Switch	Type: Selection Function: Select whether to use this CCD vision system. The following entries can be selected: - **On** - **Off**
2	Calibration	Type: Command Function: After setting the shaft number, when the image to be captured is in the middle of the field of view, click this icon to control the starting value of the trigger.

No.	Parameter	Description
3	Shaft No.	Type: Input; Range: min 0, max 16 Function: Set the number of a cutter operating in synchronous mode to provide reference position.
4	Length	Type: Input; Range: min 0, max 10000; Unit: mm Function: Set the distance that the material runs in the interval between two pictures.
5	Tune Distance	Type: Input; Range: min 0, max 99.99; Unit: mm Function: Adjust the left and right positions of the viewable field that need to be captured.

7.4.5.5 Page25: Visual Setting

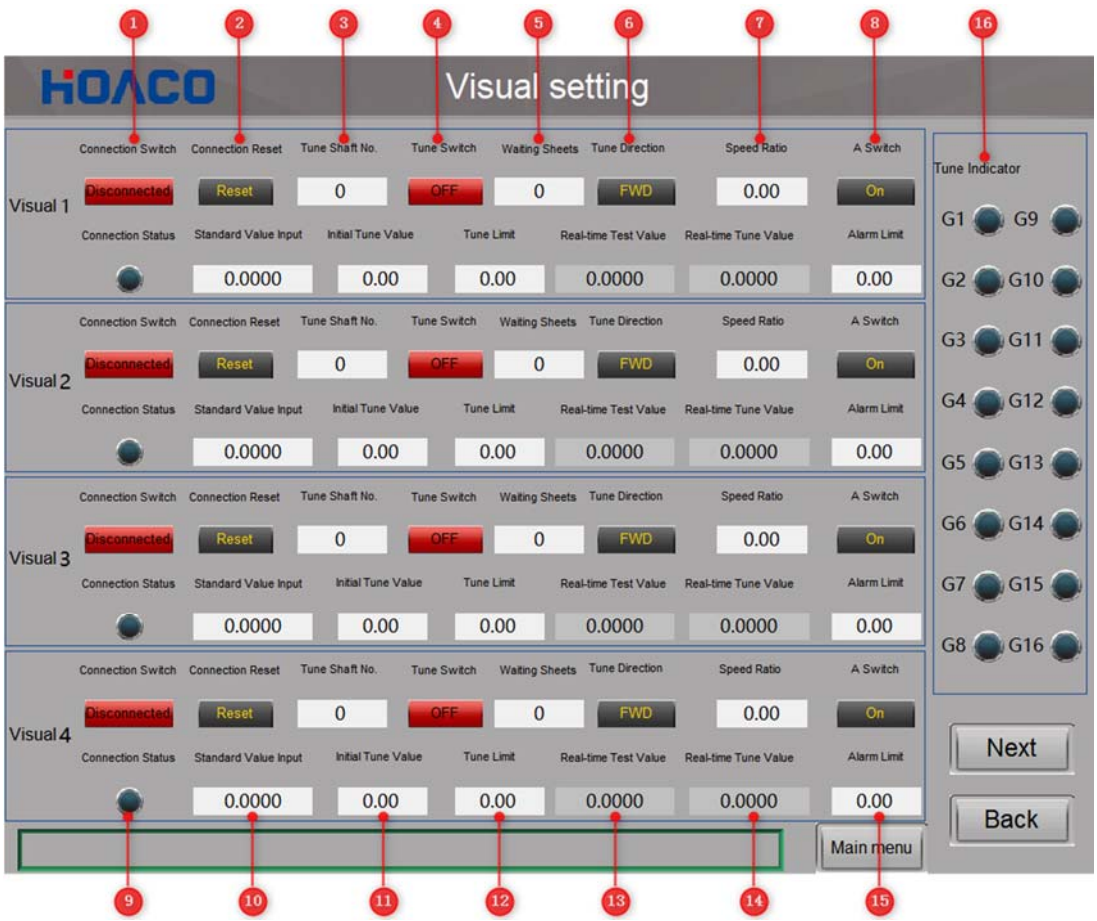


Figure 7-27 Page layout

Table 7-24 Function introduction

No.	Parameter	Description
1	Connection Switch	Type: Selection Function: Select connect/disconnect the camera. The following entries can be selected: - **Connected**: The camera automatically connects after taking pictures about three times. - **Disconnected**
2	Connection Reset	Type: Command Function: When there is no problem with the camera communication settings, the camera cannot communicate with the PLC, click this icon to reset the communication of the PLC and the camera.
3	Tune Shaft No.	Type: Input; Range: min 0, max 16 Function: Set cutter to be adjusted after the CCD detects the deviation.
4	Tune Switch	Type: Selection Function: Select whether cutter tunes automatically according to the deviation value. The following entries can be selected: - **On** - **Off**
5	Waiting Sheets	Type: Input; Range: min 0, max 9; Unit: pcs Function: Set the number of camera triggers between the camera installation position and cutter to be tuned.
6	Tune Direction	Type: Selection Function: Select the direction of tuning cutter. The following entries can be selected: - **FWD**: Forward - **REV**: Reverse
7	Speed Ratio	Type: Input; Range: min 0, max 1 Function: Set the coefficient of the deviation measured by the CCD and the tuning value of cutter. The formula is: Real-time Tune Value = (Real-time Test Value - Initial Tune Value) * Speed Ratio.

No.	Parameter	Description
8	A Switch	Type: Selection Function: Select whether to turn on the alarm function. When the alarm switch is set to on, and the alarm is triggered, the machine will automatically pause. The following entries can be selected: - **On** - **Off**
9	Connection Status	Type: Indication Function: Indicate the connection status of the camera. The following status can be shown: - **Light**: Connected - **Dark**: Not Connected
10	Standard Value Input	Type: Input; Range: min 0, max 1000; Unit: mm Function: Set the standard value of the position to be measured by the CCD.
11	Initial Tune Value	Type: Input; Range: min 0, max 99.99; Unit: mm Function: Set the initial tune value. When the deviation between the measured value of the CCD and the standard value is greater than this value, cutter starts to tune.
12	Tune Limit	Type: Input; Range: min 0, max 99.99; Unit: mm Function: Set tune limit value. When the deviation between the CCD measured value and the standard value is greater than this value, cutter will not be tuned to prevent measurement jump and affect the tune result.
13	Real-time Test Value	Type: output; Unit: mm Function: Display each measured value of CCD.
14	Real-time Tune Value	Type: output; Unit: mm Function: Display the tune value calculated by the system.
15	Alarm Limit	Type: Input; Range: min 0, max 99.99; Unit: mm Function: Set the alarm limit value. When the deviation between the measured value and the standard value exceeds this value, an alarm is triggered.

No.	Parameter	Description
16	Tune Indicator	Type: Indication Function: Indicate whether cutter is in the state of tune. The following status can be shown: - **Light**: Tuning. - **Dark**: Not tuning.

7.4.6 Page3: Other Settings

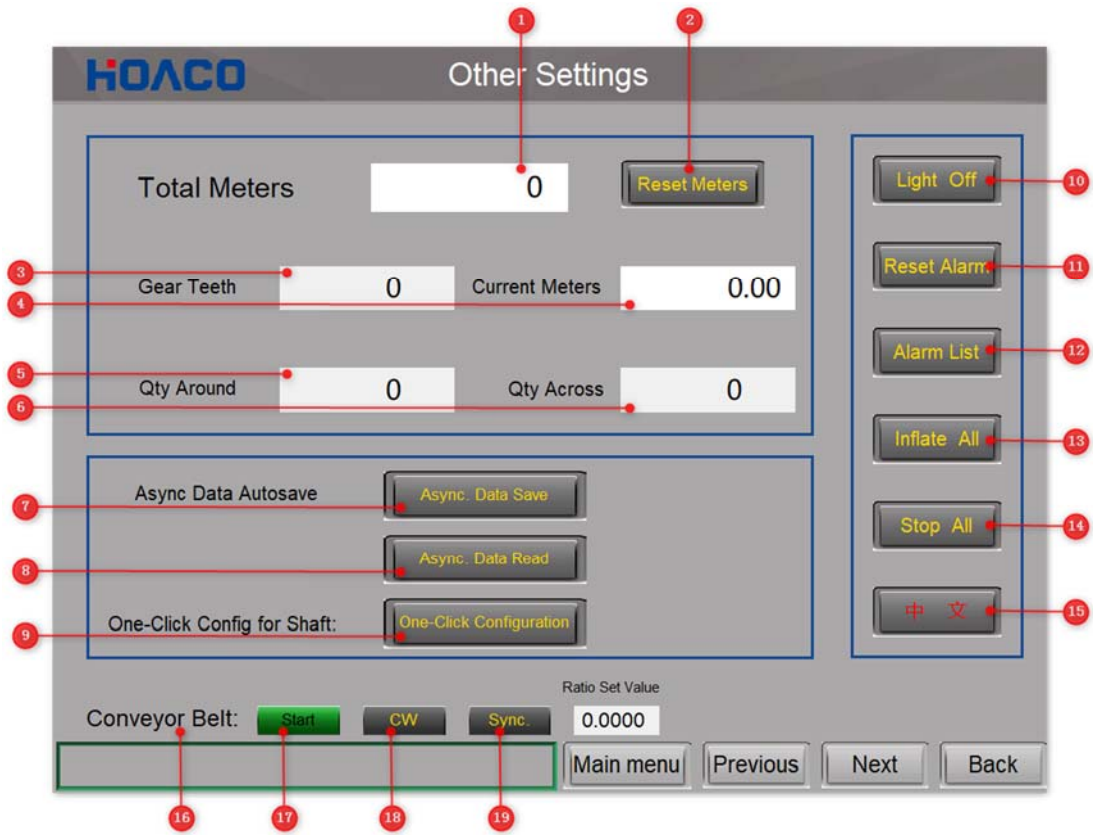


Figure 7-28 Page layout

Table 7-25 Function introduction

No.	Parameter	Description
1	Total Meters	Type: Output; Unit: m Function: Display the total number of meters of material produced by the machine. This value cannot be reset.

No.	Parameter	Description
2	Reset Meters	Type: Command Function: Click this icon to reset the parameter “Current Meters”.
3	Gear Teeth	Type: Input; Range: min 1, max 999 Function: Set the Gear Teeth number of die cutter running in synchronous mode.
4	Current Meters	Type: Output; Unit: m Function: Display the number of meters of currently produced materials. This value can be reset by “Reset Meters” icon.
5	Qty Around	Type: Input; Range: min 1, max 999 Function: Set the Qty Around number of die cutter running in synchronous mode (Calculated for Y direction).
6	Qty Across	Type: Input; Range: min 1, max 999 Function: Set the Qty Across number of die cutter running in synchronous mode (Calculated for X direction).
7	Async. Data Save	Type: Command Function: Click this icon to save the current parameter settings.
8	Async. Data Read	Type: Command Function: Click this icon to reset the parameter settings saved when the icon "Async. Data Save" was last clicked.
9	One-Click Configuration	Type: Command Function: When the machine is powered off and powered on again, click this icon to reset the air shaft settings to the state before power off.
10	Light On/Off	Type: Selection Function: Select whether to turn on the machine's lights. The following entries can be selected: - **Light On** - **Light Off**
11	Reset Alarm	Type: Command Function: Click this icon to reset the alarm of the servo driver.
12	Alarm List	Type: Page operation Function: Click to open the "PLC Alarm List" page.
13	Inflate All	Type: Command Function: Click this icon to inflate all air shafts; click this icon again to deflate all air shafts.

No.	Parameter	Description
14	Stop All	Type: Command Function: Click this icon to control all cutters and air shafts to stop.
15	中文/English	Type: Selection Function: Select the language of HMI. The following entries can be selected: -中文 - **English**
16	Start/Stop	Type: Selection Function: Select to start or stop conveyor belt. The following entries can be selected: - **Start** - **Stop**
17	CW/CCW	Type: Selection Function: Select the running direction of conveyor belt. The following entries can be selected: - **CW**: Clockwise direction - **CCW**: Anticlockwise direction
18	Sync.	Type: Selection Function: Select the synchronous mode of conveyor belt. The following entries can be selected: - **Sync.**: " Ratio Set Value" defaults to 1 - **Ratio**: Enter the ratio value in " Ratio Set Value"
19	Ratio Set Value	Type: Input; Range: min 0, max 3 Function: Set the speed ratio of conveyor belt when operating in Ratio mode.

7.4.6.1 Page31: Advanced Settings

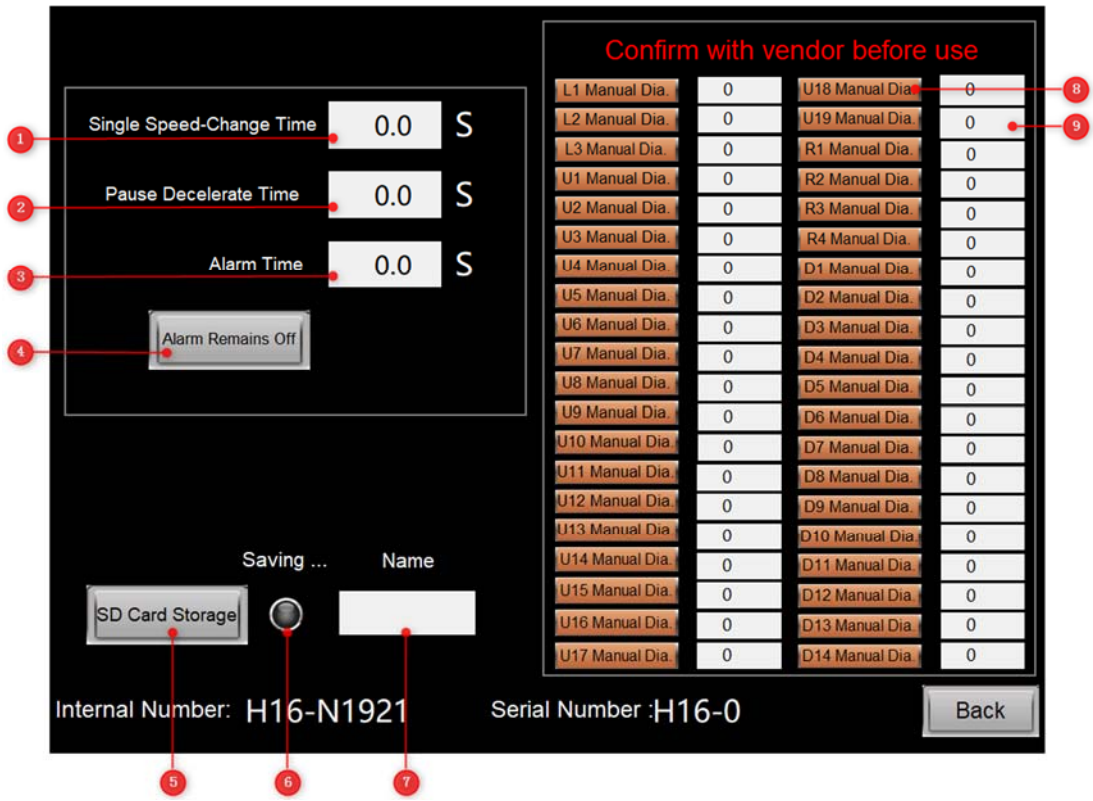


Figure 7-29 Page layout

Table 7-26 Function introduction

No.	Parameter	Description
1	Single Speed-Change Time	Type: Input; Range: min 0.1, max 99.9; Unit: mm Function: Set the time required for a single speed change when the speed is adjusted using the "Speed" switch on the operation console.
2	Pause Decelerate Time	Type: Input; Range: min 0.5, max 99.9; Unit: s Function: Set the decelerate time required to stop the machine by pressing the "Pause" button.
3	Alarm Time	Type: Input; Range: min 0.0, max 99.9; Unit: s Function: Set the delay time of the material diameter alarm.

No.	Parameter	Description
4	Alarm Remains On/Off	Type: Selection Function: Select whether the alarm is always maintained after the diameter alarm is triggered. The following entries can be selected: - **Alarm Remains On** - **Alarm Remains Off**
5	SD Card Storage	Type: Command Function: Click this icon to save the PLC program to the memory card.
6	Saving …	Type: Indication Function: Indicate the status of program storage. The following status can be shown: - **Light**: Storing - **Dark**: Not storing
7	Name	Type: Input; Range: String Function: Set the storage name of the program.
8	Auto/Manual Dia.	Type: Selection Function: Select whether to reset the material diameter to a fixed value set in parameter “Diameter” when the machine is started. The following entries can be selected: - **Auto Dia.**: Reset to a fixed value. - **Manual Dia.**: Not reset to a fixed value.
9	Diameter	Type: Input; Range: min 76, max 100; Unit: s Function: Set the initial diameter of the material.

7.4.6.2 Page32: PLC Alarm List

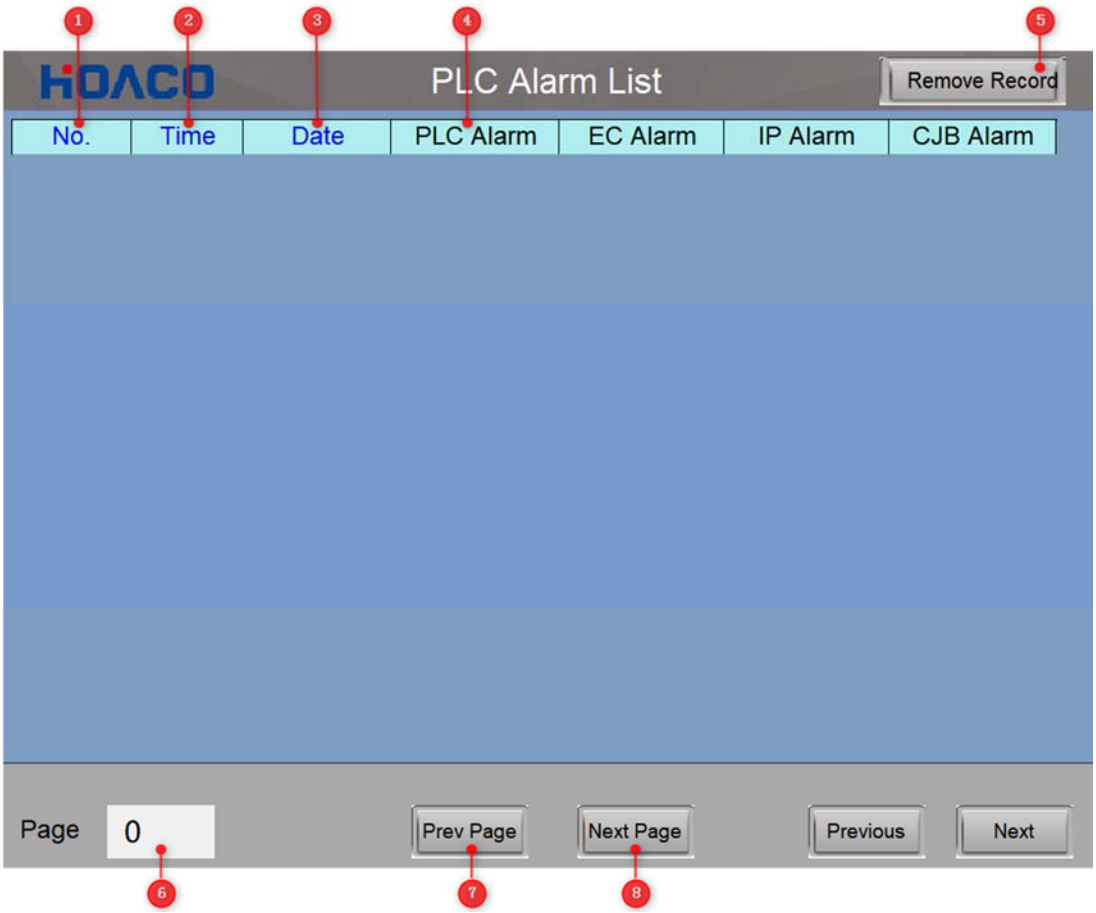


Figure 7-30 Page layout

Table 7-27 Function introduction

No.	Parameter	Description
1	No.	Type: Output Function: Display the alarm sequence number.
2	Time	Type: Output Function: Display the alarm time.
3	Date	Type: Output Function: Display the alarm date.
4	PLC Alarm	Type: Output Function: Display the alarm type and alarm number.

No.	Parameter	Description
5	Remove Record	Type: Command Function: Click this icon to clear the alarm record.
6	Page	Type: Output Function: Display the current number of alarm pages.
7	Prev Page	Type: Command Function: Click this icon to view the alarm information on the previous page.
8	Next Page	Type: Command Function: Click this icon to view the alarm information on the next page.

7.4.7 Page4: Safe State

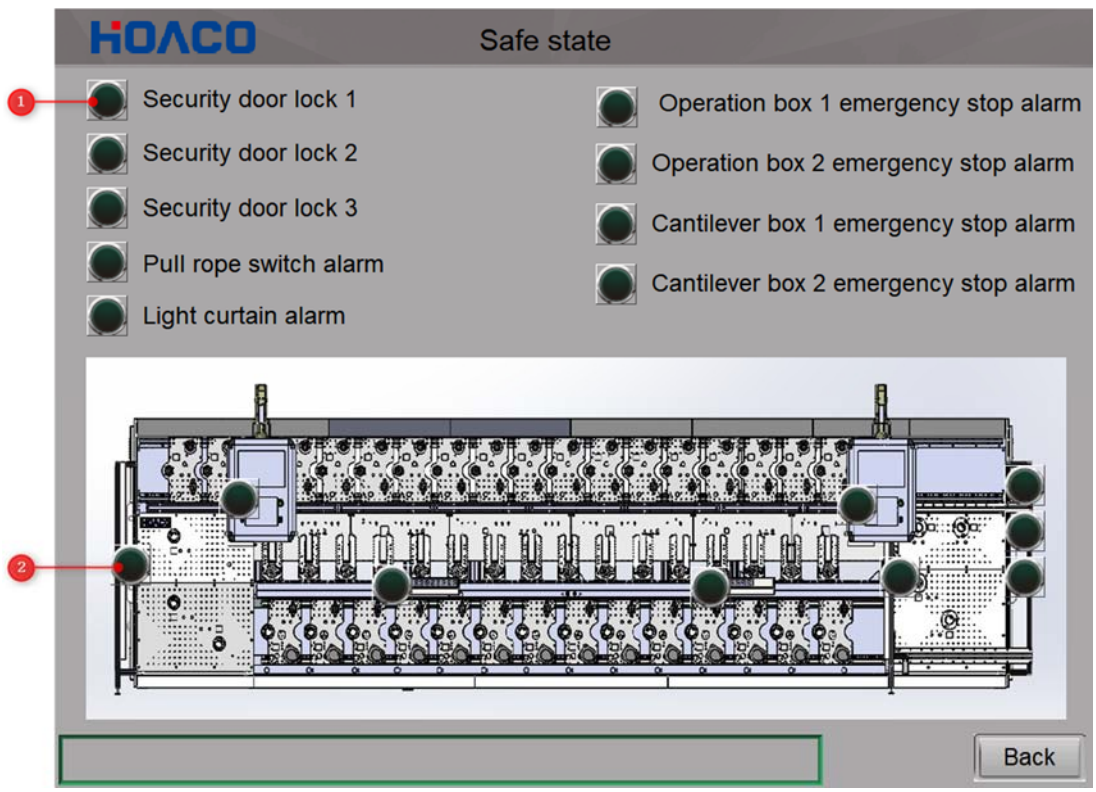


Figure 7-31 Page layout

Table 7-28 Function introduction

No.	Parameter	Description
1	-	Type: Indication Function: Indicate whether the safety device is triggered. The following status can be shown: - **Red**: Triggered - **Green**: Not triggered
2	-	Type: Indication Function: Indicate the position of the safety device and whether it is triggered. The following status can be shown: - **Red**: Triggered - **Green**: Not triggered

7.4.8 Page5: Shaft Settings

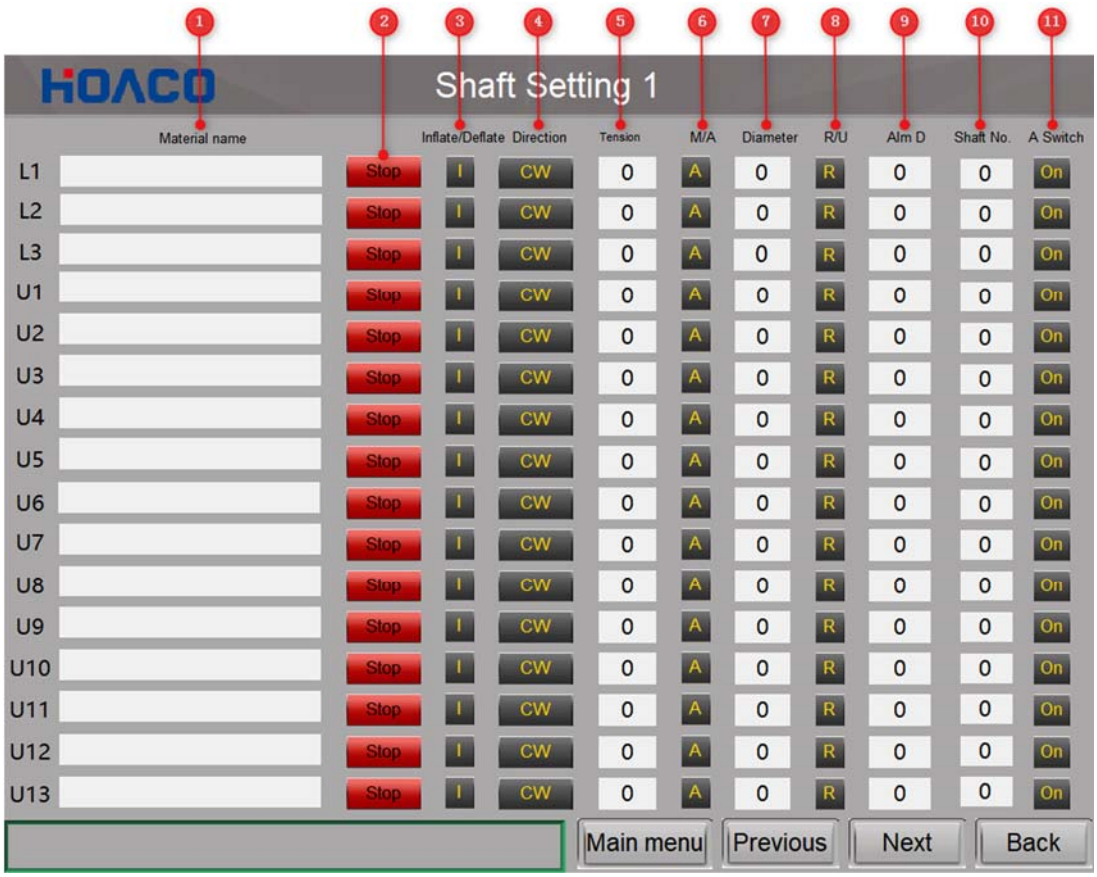


Figure 7-32 Page layout

Table 7-29 Function introduction

No.	Parameter	Description
1	Material Name	Type: Input; Range: String Function: Set the name of the material on this air shaft.
2	Start/Stop	Type: Selection Function: Select to start or stop the air shaft. The following entries can be selected: - **Start** - **Stop**
3	Inflate/Deflate	Type: Command Function: Click this icon to inflate the air shaft; click this icon again to deflate the air shaft.
4	Direction	Type: Selection Function: Select the running direction of air shaft. The following entries can be selected: - **CW**: Clockwise direction - **CCW**: Anticlockwise direction
5	Tension	Type: Input; Range: min 1, max 150; Unit: N Function: Set the tension of the air shaft.
6	M/A	Type: Selection Function: Select whether to automatically adjust the torque setting value of the air shaft with the change of the material diameter to maintain constant tension. The following entries can be selected: - **A**: Adjust automatically - **M**: Not adjust automatically
7	Diameter	Type: Input/Output; Range: min 76, max 600; Unit: mm Function: Set and display the diameter of the material.
8	R/U	Type: Selection Function: Select whether the function of the air shaft is rewinding or unwinding. The following entries can be selected: - **R**: Rewinding - **U**: Unwinding

No.	Parameter	Description
9	Alm D	Type: Input; Range: min 0, max 999; Unit: mm Function: Set the diameter for the material alarm. When the actual diameter of the material is less than this value, an alarm is triggered.
10	Shaft No.	Type: Input; Range: min 0, max 16 Function: When this shaft provides materials for cutter running in asynchronous mode, set the number of cutter.
11	A Switch	Type: Selection Function: Select whether to turn on the diameter alarm function. The following entries can be selected: - **On** - **Off**

7.4.9 Page6: Counter Settings

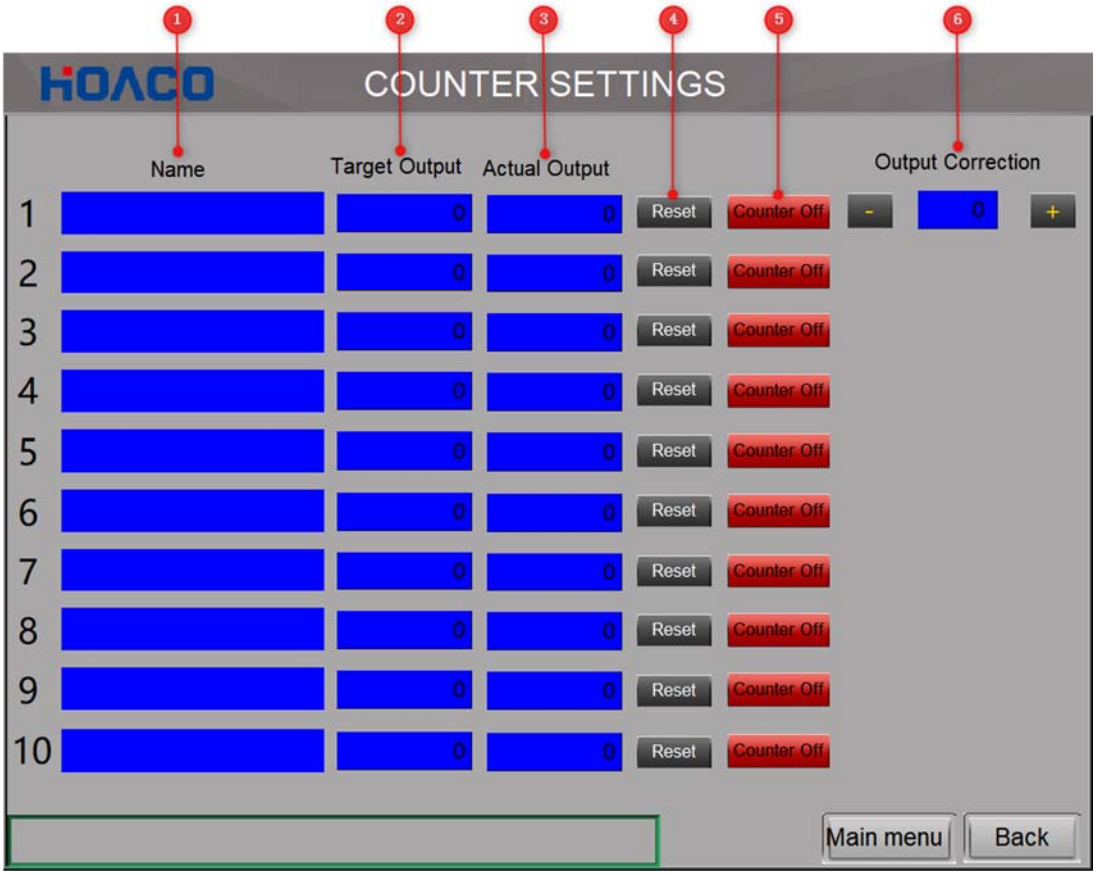


Figure 7-33 Page layout

Table 7-30 Function introduction

No.	Parameter	Description
1	Name	Type: Input, Range: String Function: Set the name of this entry.
2	Target Output	Type: Input; Range: min 1, max 99999999; Unit: pcs Function: Set the target output. When the actual output reaches this value, the machine will pause automatically.
3	Actual Output	Type: Output; Unit: pcs Function: Display the actual output recorded.
4	Reset	Type: Command Function: Click this icon to reset the "Actual Output" of this entry.

No.	Parameter	Description
5	Counter On/Off	Type: Selection Function: Select whether to record the output of this entry The following entries can be selected: - **Counter On** - **Counter Off**
6	Output Correction	Type: Input; Range: min 1, max 9999; Unit: m Function: Set the output correction value. Set this value, and then click the "-" or "+" icon, "Actual Output" will minus or plus this value as the new actual output.

7.4.10 Page7: Main Menu

According to the “Main Menu” page, you can enter the subpage as shown in Figure 7-34.

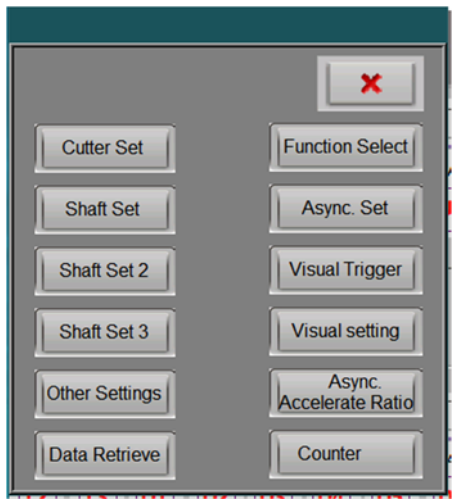


Figure 7-34 Subpage

7.4.10.1 Page71: Data Retrieve

Figure 7-35 Page layout

Table 7-31 Function introduction

No.	Parameter	Description
1	Product Serial No.	Type: Input, Range: String Function: Set the name of this entry.
2	Save	Type: Command Function: When the product process is stable, click this icon to store the current parameter as recipe of this product.
3	Retrieve	Type: Command Function: Click this icon to recall the previously stored recipe when needed.

No.	Parameter	Description
4	Retrieve Data	Type: Input, Range: String Function: Set the name of the product recipe to be retrieved.

7.4.10.2 Page72: Serial Number

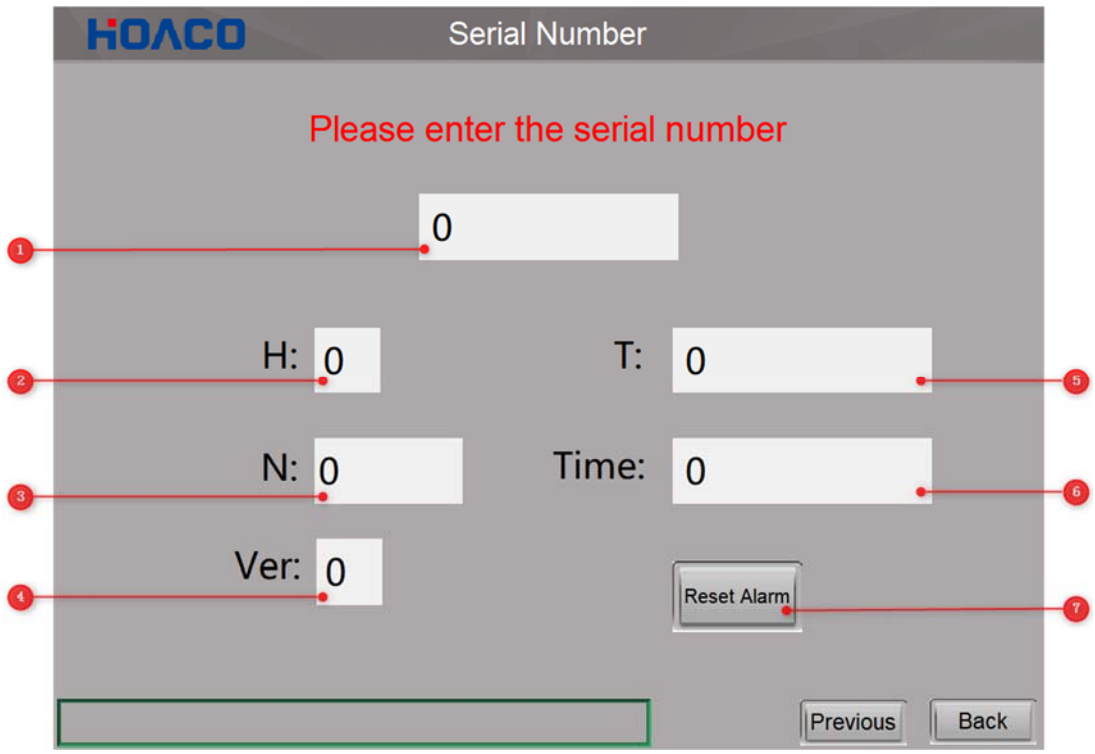


Figure 7-36 Page layout

Table 7-32 Function introduction

No.	Parameter	Description
1	Serial Number	Type: Input Function: Set the serial number of this machine to be authorized to operate.
2	H	Type: Output Function: Display the machine number.
3	N	Type: Output Function: Display the machine number.
4	Ver	Type: Output Function: Display the machine version number.

No.	Parameter	Description
5	T	Type: Output Function: Display the time when the machine authorization expires and stops running.
6	Time	Type: Output Function: Display the current time.
7	Reset Alarm	Type: Command Function: Click this icon to reset the machine authorized use time alarm.

7.5 Stop event definitions

7.5.1 Normal stop event

- Machine stops gracefully to speed 0 after pressing "Pause"/"Run" button
- No loss of power/tension for any subsystems

7.5.2 Safe stop event

- Triggered by safety light curtain.
- Machine to stop within 0.1s (assumption: machine speed < 30m), after which, all motors are monitored for SLS = 0m. Otherwise, any motor with SLS > 0m triggers an emergency stop event.
- Visual and audible signal device alerts (red light).
- All motors at speed 0 but tension remain (not STO mode).
- PLC + CCD + lighting powers remain.
- Once triggered, operator must confirm the stop event on PLC.

7.5.3 Emergency stop event

- Triggered by
  - Emergency button or emergency rope.
  - Safety lock sensors.

- Machine to stop within 0.1s (assumption: machine speed < 30m).
- Visual and audible signal device alerts (red light).
- All motors in STO mode. Die stations and material shafts lose tension.
- Higher priority than safe stop.
- PLC + CCD + lighting power remains.
- After restarting the machine, check and put the machine in a safe state, and then reset the system by the "Reset" button.

7.5.4 Power-off stop event

- Triggered by turning off main power switch.
- Machine in total loss of power.

7.6 Operating mode definitions

7.6.1 "Setup" mode

- Select this mode by the mode-select key switch.
- Machine cannot run automatically.
  - "Run" button/"Speed" button/"Pause" button/"L/R" switch NOT operable.
- Jog speed limited to 1m/min.
  - Preset default jog speed to a value of 0.1 - 1m/min in PLC screen.
  - Trigger emergency stop if SLS > 1m/min (This is not possible by design).
- Safety light curtain always OFF.
  - Regardless of jog grip switch status.
  - Press-enable grip switch + press jog buttons to jog the whole machine.
- Release jog button or disable (either released or pressed strongly) grip switch to stop machine.

7.6.2 "Run" mode

- Select this mode by the mode-select key switch.
- Safety light curtain on by default.
- "Run" button/"Speed" button/"Pause" button/"L/R" switch enabled.
- Press "Run" button to start machine.
- Turn "Speed" switch to increase/reduce speed of whole machine.
- Turn "L/R" switch to adjust X-axis for individual stations.
- Press "Pause" button to stop/restart machine to previous speed.

7.6.3 "Maintenance" mode

- Enter this mode by pressing "Maintenance" button in "Run" mode.
- In "Run" mode, press "Maintenance" button to reduce speed to default maintenance speed.
- With "Maintenance" button pressed, press-enable grip switch disables safety light curtain to allow access to workzone for maintenance while machine is running at maintenance speed.
- Release "Maintenance" button to resume previous speed.
- 1x "Maintenance" button, together with jog grip switch, will be installed on the operation console 1.

	**WARNING** • The key of the mode-select key switch must be handed over to the person in charge of the workshop. When the "Maintenance" button is pressed, the machine can only run at low speed. • It is forbidden to use the machine when the key of mode-select key switch is not unplugged.

7.6.4 Operating principle

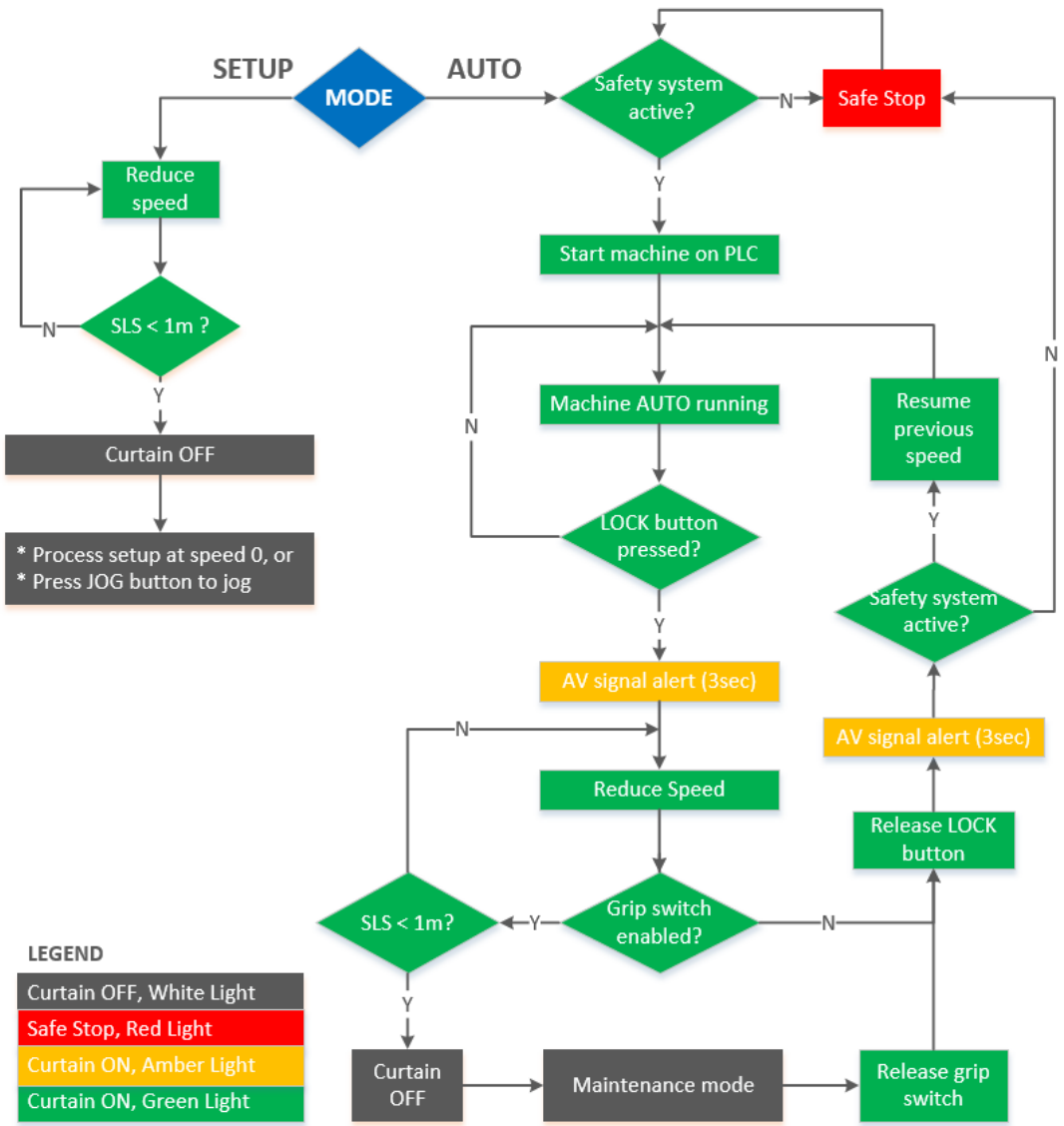


Figure 7-37 Operating principle

7.7 Typical operating procedures

7.7.1 Normal stop

Step1: Press "Pause" button to stop machine slowly and gracefully.

Step2: Press "Pause" button again to resume previously speed.

7.7.2 Installing rolls/die cutters/rollers/sensors/CCD cameras

Step1: Press "Pause" button to stop machine.

Step2: Turn mode-select key switch to "Setup" mode.

Step3: Install/change rolls/die cutters/rollers/sensors/CCD cameras, etc.

Step4: Turn mode-select key switch to "Run" mode.

Step5: Restart the machine.

7.7.3 Adjusting Y-Axis in "Run" mode

1) Tools

Allen wrench 5 #

2) Work steps

The method of adjusting Y-Axis of die cutter is shown in Figure 7-38.

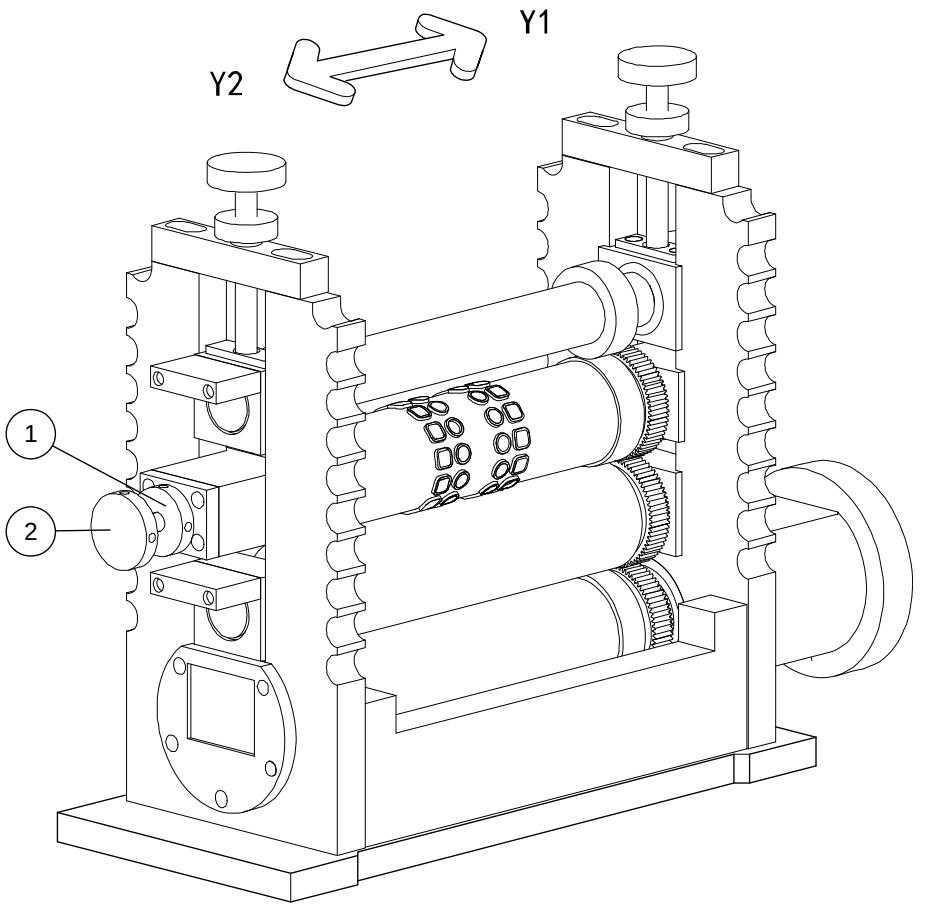


Figure 7-38 Adjust Y-axis of die cutter

(1) Knob (2) Nut

Step1: Press "Maintenance" button to reduce speed to < 1m/min ("Maintenance" mode).

Step2: Grip jog handle to disable safety light curtain and enter workzone.

Step3: Loosen nut (2).

Step4: While one hand press-enable grip switch, the other hand turns knob (1) to adjust Y-axis. The adjustment method is as follows:

- Adjust the knob clockwise, and the die moves in the Y1 direction as shown in Figure.
- Adjust the knob anticlockwise, and the die moves in the Y2 direction as shown in Figure.

Step5: Exit workzone and release grip switch.

Step6: Release "Maintenance" button to resume previous speed.

7.7.4 Adjusting X-axis in "Run" mode

Step1: Press "Maintenance" button to reduce speed to < 1m/min ("Maintenance" mode).

Step2: One hand press-enable grip switch to disable safety light curtain and enter workzone.

Step3: Another hand turns "L/R" switch to adjust X-axis for a specific station.

Step4: Exit workzone and release grip switch.

Step5: Release "Maintenance" button to resume previous speed.

7.7.5 Product changeover

Step 1: Press "Pause" button on suspension HMI console;

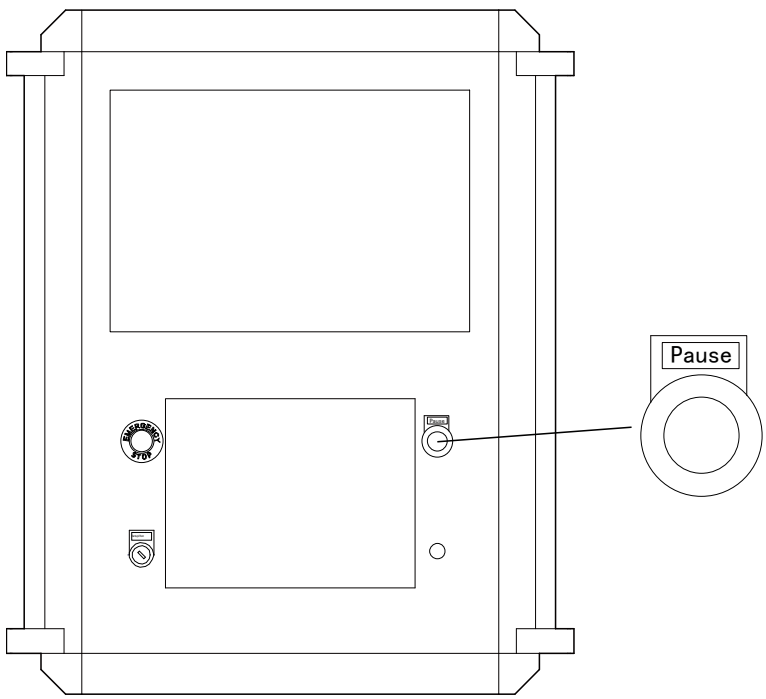


Figure 7-39 Suspension HMI console

Step 2: Turn the mode-select key switch to "Setup" mode;

Figure 7-40 "Setup" mode

Step 3: Click the "Stop All" icon on "Other Settings" page of HMI (Step a in Figure 7-41), and then click "Inflate All" icon (Step b in Figure 7-41);

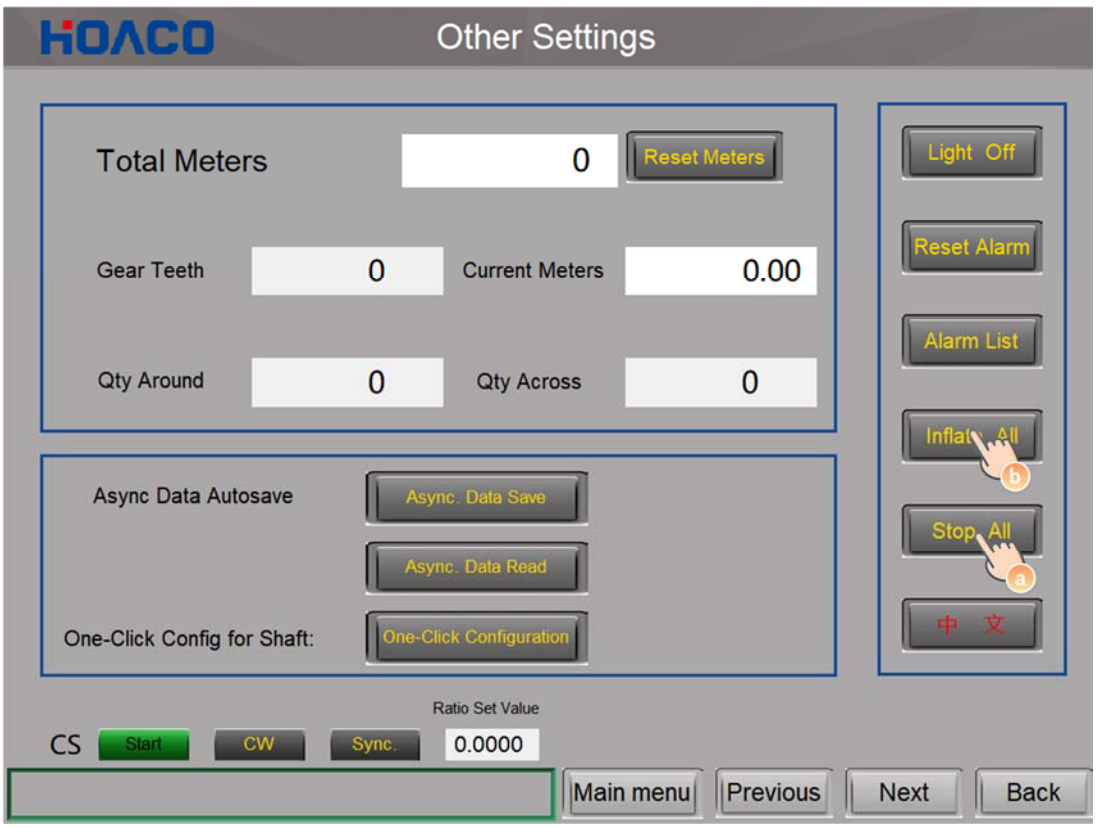


Figure 7-41 "Other Settings" page

Step 4: Cut all materials on material roll and remove material roll;

Step 5: Turn off the manual ON-OFF valve and lock it, as shown in the left view of Figure

7-42;

Step 6: Turn off the main power switch and lock it, as shown in the right view of Figure 7-42;

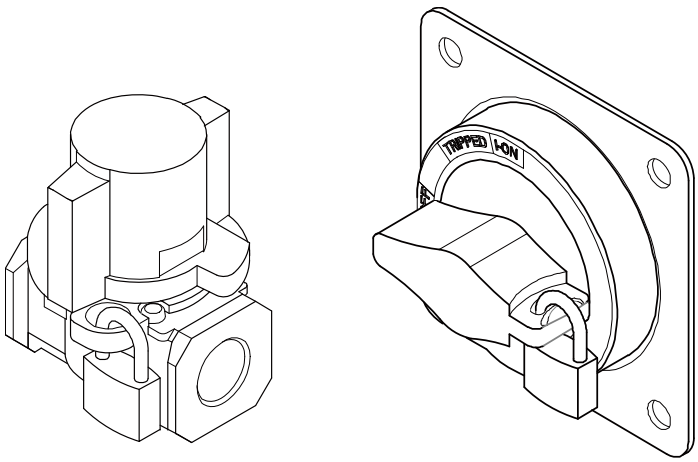


Figure 7-42 Manual ON-OFF valve/main power switch

Step 7: Remove die cutter, anvil roller, rubber roller, movable air shaft, moveable idler roller, crank roller, straight roller, liner release knife, knife blade holder, die pressure roller, pressure block, pressure knob, CCD series attached;

	**CAUTION** Wear safety gloves when removing and installing die cutter!

Step 8: Clean removed parts, inject grease on die cutter;

Step 9: Clean drive roller and gears;

Step 10: Check the type of final product:

If the product is a coil, remove the conveyor;

If the product is a sheet, keep the conveyor on the machine;

Refer to *Section 7.7.7 Removing conveyor* for the removing or installing the conveyor;

Step 11: Install die cutter (Clean grease before installation), anvil roller, rubber roller, movable air shaft, moveable idler roller, die pressure roller, pressure block, pressure knob, CCD series attached refer to process flow chart;

Step 12: Insert material;

Step 13: Install crank roller, straight roller, liner release knife, knife blade holder refer to process flow chart;

Step 14: Turn on the main power switch, as shown in the left view of Figure 7-43;

Step 15: Turn on the manual ON-OFF valve, as shown in the right view of Figure 7-43;

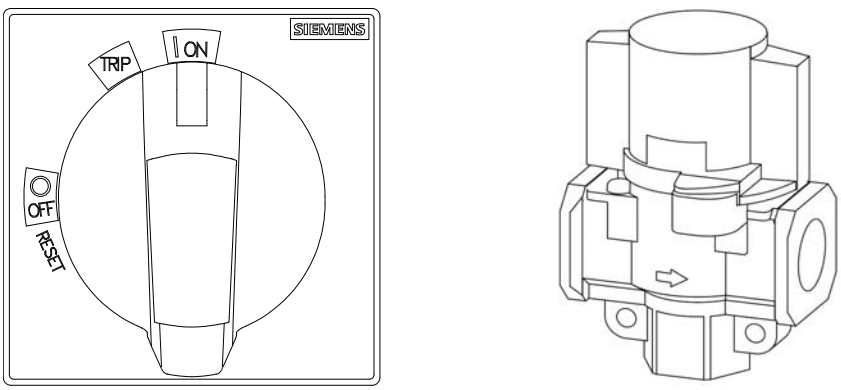


Figure 7-43 Main power switch/manual ON-OFF valve

Step 16: Set the parameters of air shaft and die cutter on HMI;

Step 17: Start air shaft and tighten material belt;

Step 18: Turn mode-select key switch to "Run" mode.

Figure 7-44 "Run" mode

7.7.6 Replacing materials

During operation, the machine will alarm when there is no material in material roll, replace materials as follow:

Step 1: Turn mode-select key switch to "Setup" mode;

Step 2: Press "Air shaft start/stop" button to loosen air shaft;

Step 3: Remove material roll;

Step 4: Install new material roll;

Step 5: Connect materials;

Step 6: Press "Air shaft start/stop" button to tighten air shaft;

Step 7: Turn mode-select key switch to "Run" mode.

7.7.7 Removing conveyor

1）Tools

Allen wrench 5 #

2）Work steps

The method of removing conveyor is shown in Figure 7-45, Figure 7-46 and Figure 7-47.

Step 1: Turn off the manual ON-OFF valve and lock it;

Step 2: Turn off the main power switch and lock it;

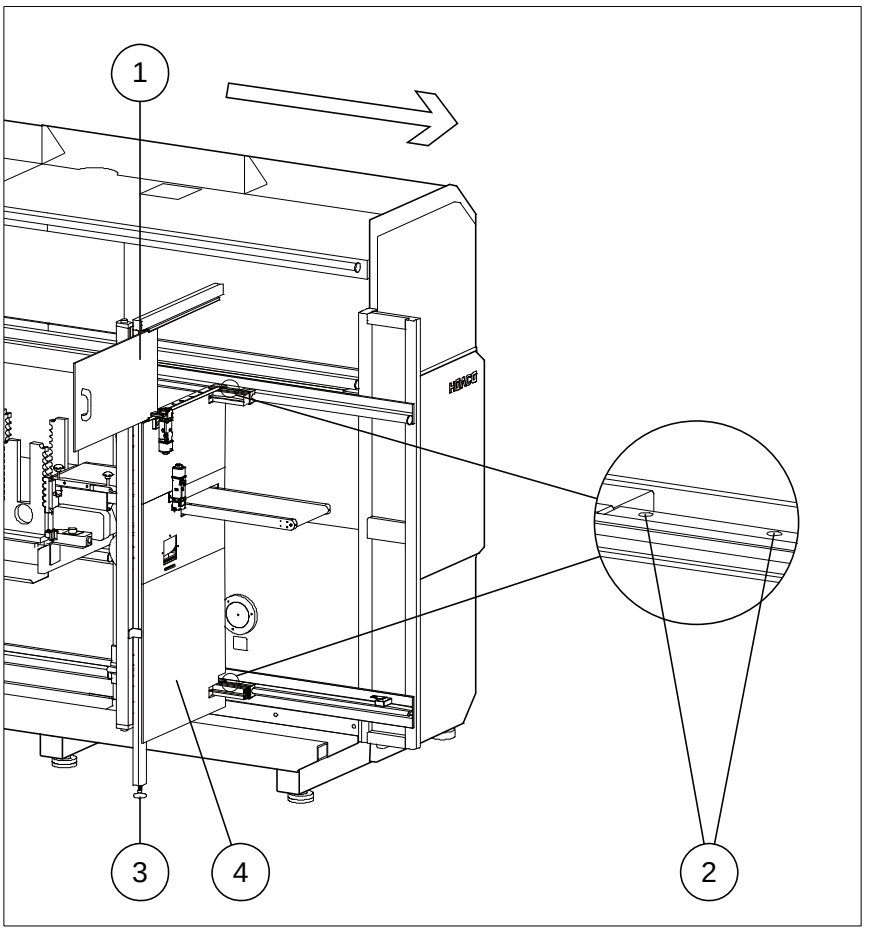


Figure 7-45 Moving safety door assembly

(1) Safety door 2 (2) Screw (3) Foot cup (4) Safety door assembly

Step 3: Loosen screws (2);

Step 4: Raise foot cup (3);

Step 5: Open safety door 2 (1);

Step 6: Move safety door assembly (4) to the right end;

Step 7: Tighten screws (2);

Step 8: Lower foot cup (3);

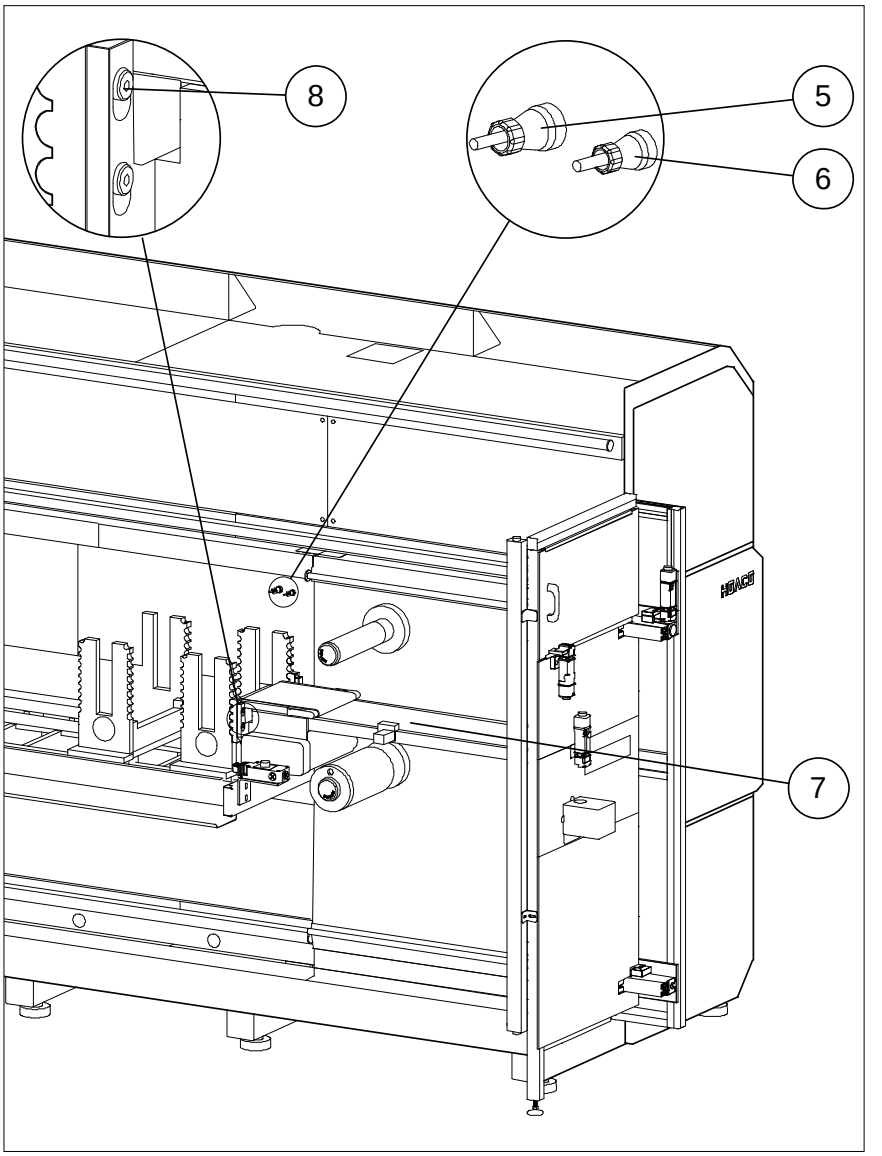


Figure 7-46 Removing conveyor

(5) Connector 1 (6) Connector 2 (7) Conveyor (8) Screw

Step 9: Remove connector 1 (5) and connector 2 (6);

Step 10: Loosen screws (8);

Step 11: Remove conveyor (7);

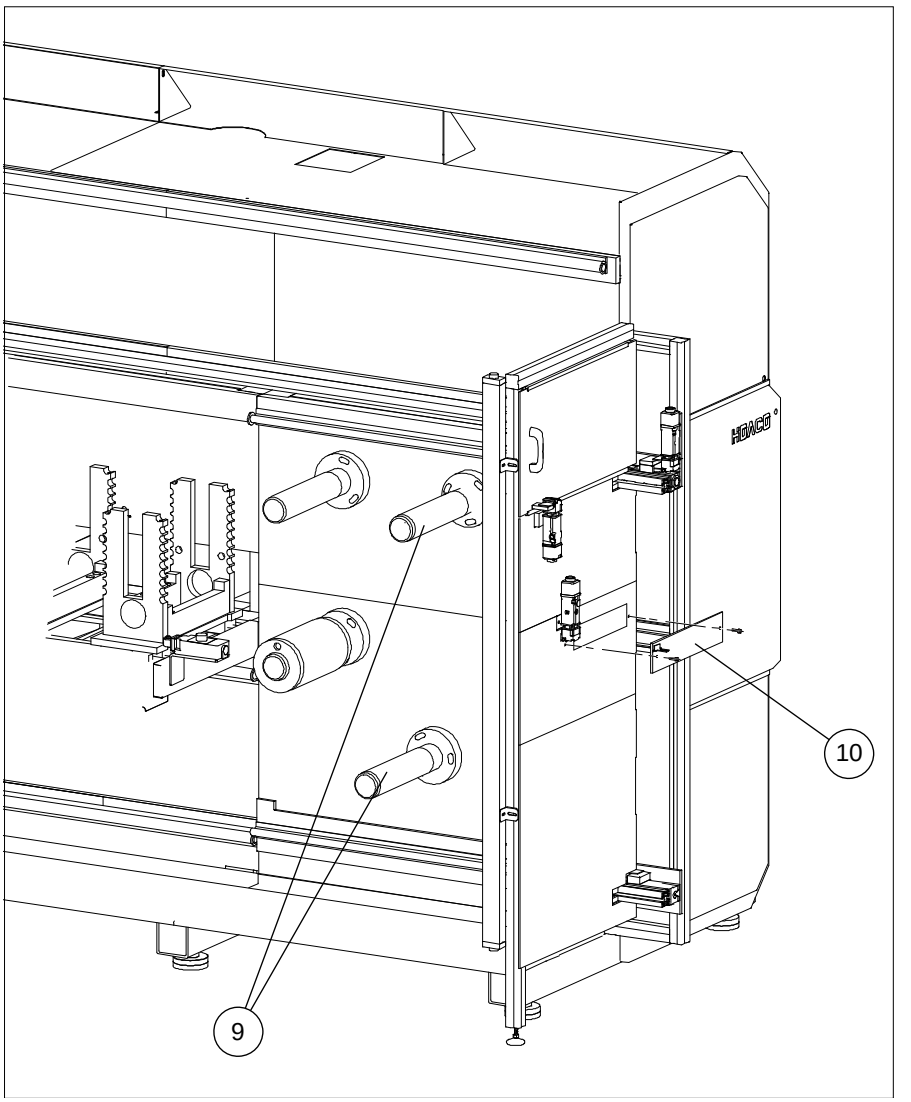


Figure 7-47 Installing air shaft

(9) Air shaft (10) Safety door 3

Step 12: Install air shaft (9), refer to *Section 9.4.2 Replacing air shaft (right)*;

Step 13: Install safety door 3 (10).

7.7.8 PLC data backup and recovery

7.7.8.1 PLC data backup

Step1: Power off the machine, and then install the SD card to the PLC. The position of the SD card slot is shown in Figure 7-48 ;

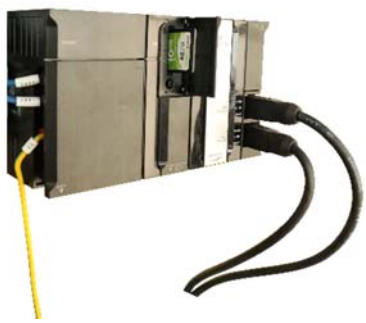


Figure 7-48 SD card slot position

Step 2: Power on the machine again and switch to the "Advanced Settings" page on HMI;

Figure 7-49 "Advanced Settings" page

Step 3: Enter a name such as 20191129 in the parameter "Name";

Step 4: Click on the "SD Card Storage" icon, the "Saving…" indicator turns on, and the indicator turns off after storage is complete;

	**CAUTION** During the storage process, the machine cannot be powered off and cannot be operated. The storage process lasts about 1 minute.

Step 5: After storage, the machine can run normally.

7.7.8.2 PLC data recovery

Setp 1: Pull out the backup SD card from the original PLC card slot;

Step 2: Connect the SD card to the computer, cut the contents of the 20191129 folder to the root directory of the SD card, and then pull out the SD card.

Figure 7-50 File position

Step 3: In power off state, install the SD card into the PLC that needs to download the backup data, and then dial DIP switches 3 and 4 to ON position as shown in Figure 7-51.

Figure 7-51 DIP switch

Step 4: Power on the PLC, the data of the SD card starts to download to PLC, the SD PW indicator of the PLC flashes, and download is completed when the indicator becomes steady on;

Step 5: Set DIP switches 3 and 4 of PLC to OFF position, and PLC data recovery is completed.

7.7.9 Remote control

Remote control box is an industrial Internet intelligent transmission terminal machine that can easily realize remote interconnection, remote download and remote maintenance of field machines.

Figure 7-52 Remote control box

Remote networking method of remote concol box is generally factory set to WIFI mode or WAN mode. If you want to change this setting, follow the steps below (It is not recommended that customer make changes by themselves, please consult HOACO engineers before making changes):

Step 1: Connect the computer to the remote control box using Ethernet (plug the network cable into the LAN port of the remote control box, set the IP address of the computer to the same network segment as the LAN port IP of the remote control box), open the browser, and enter IP of the remote control box in the address bar Address: 192.168.1.1, enter remote control box configuration interface;

Step 2: Enter user name and password (User: admin; S/N: serial number) in the login window, click "Log in" icon to complete login; (Step a in Figure 7-53);

Step 3: In Internet window area of Setup tab, check "WIFI" option and click "Save" icon to save; (Step b in Figure 7-53);

Step 4: In WIFI window area of Setup tab, fill in the SSID and password, and click "Save" icon to save; (Step c in Figure 7-53);

Step 5: Switch to the System tab, click "Reboot FBox" icon, restart remote control box to make the settings take effect. (Step d in Figure 7-53).

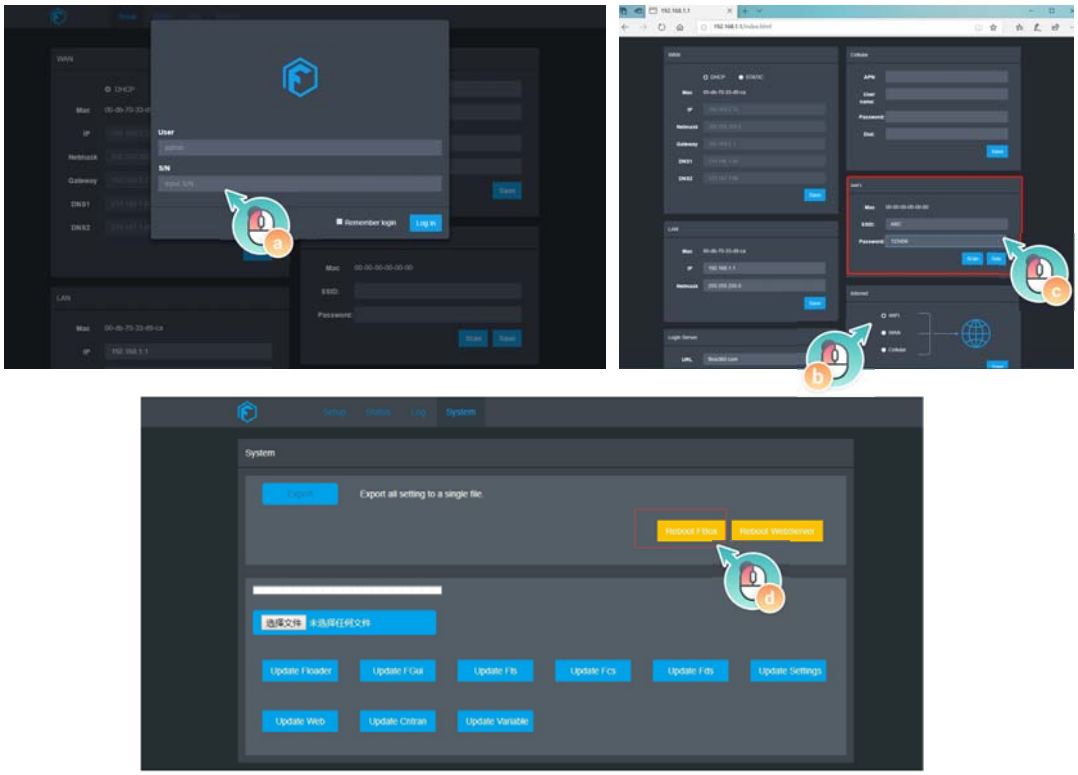


Figure 7-53 Setup steps

7.7.10 Induction asynchronous function

Function description:

The principle of this function is to trigger the asynchronous action through the photoelectric sensor to ensure the position of the asynchronous action is accurate. Through photoelectric sensor detection, accurate positioning can be achieved and accumulated deviations can be eliminated.

Use case：

1）Objective

Material belt contains two features, rectangle 1 and rectangle 2, as shown in Figure 7-54.

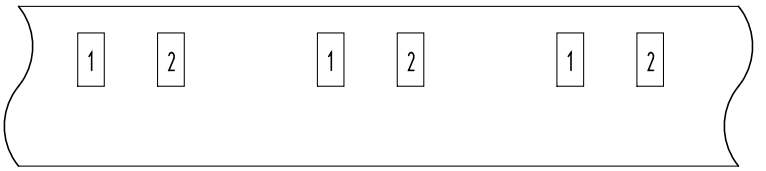


Figure 7-54 Material belt before G3

After passing through cutter G3, add a triangle feature under rectangle 1 feature, as shown in Figure 7-55.

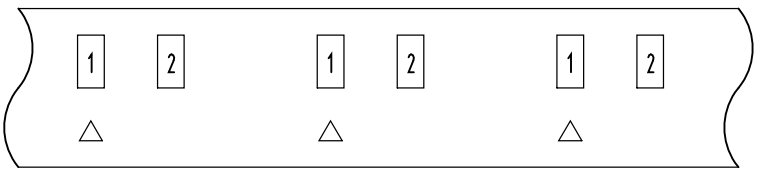


Figure 7-55 Material belt after G3

In order to ensure the position accuracy of the triangle feature and the rectangle 1 feature, cutter G3 uses the induction asynchronous function to cut the triangle feature according to the position of rectangle 1.

2）Installing photoelectric sensor

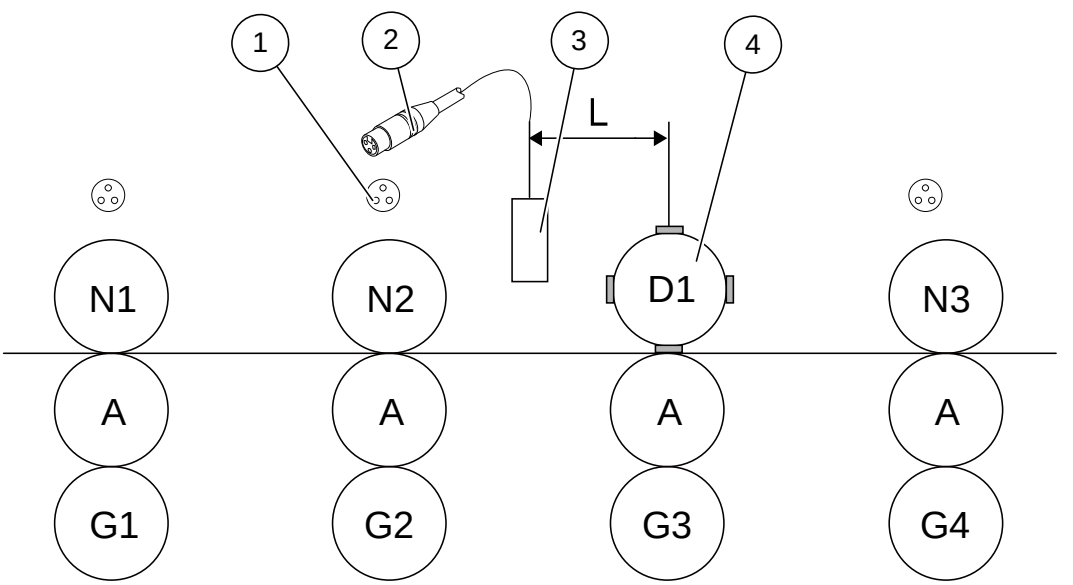


Figure 7-56 Installing photoelectric sensor

(1) Socket (2) Cable plug (3) Photoelectric sensor (4) Die cutter

Step 1: Install the photoelectric sensor (3) to the position shown in Figure 7-56, between cutter G2 and cutter G3;

Step 2: Connect cable plug (2) with socket (1) above cutter G2.

3）Setting parameters

Figure 7-57 “Induction Async.” page

Step 1: Set the "Shaft No." to 2; (Step a in Figure 7-57)

Step 2: Set the "Equal Pitch Distance" to the value of L shown in Figure 7-56; (Step b in Figure 7-57)

Step 3: Set the "Non-Sensing Zone" to the value of X shown in Figure 7-58; (Step c in Figure7-57)

The function of this parameter is to shield unrelated features when there are multiple identical features on material belt. In this case, rectangle 2 is an unrelated feature.

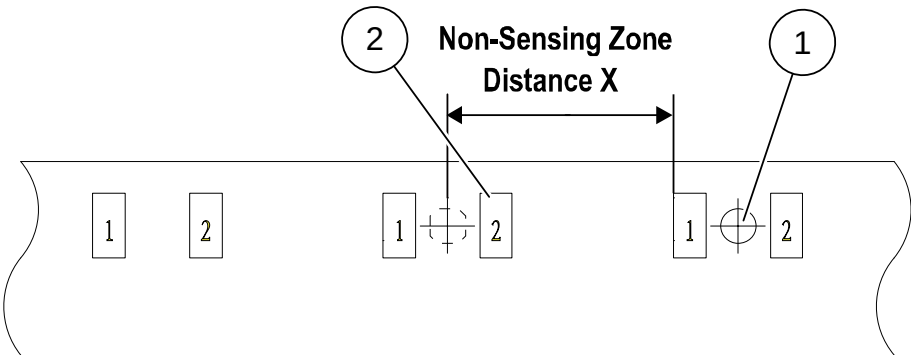


Figure 7-58 Non-Sensing zone

(1) Photoelectric sensor (2) Rectangle 2

For example, if material belt stays at the position shown in Figure 7-58 and "Non-Sensing Zone" is set to X, then the rectangle detected within the distance X is invalid after rectangle 1 is detected.

Step4: Select “Async. On” and “Induct Async. On”. (Step d and e in Figure 7-57)

7.7.11 Auto tune function

Function description:

The principle of this function is to trigger the tune of cutter through the photoelectric sensor to ensure accurate die cutting position. Through photoelectric sensor detection, the length of the product can be compensated and adjusted.

This function is mainly suitable for graphite sheet with bottom film.

Use case:

1）Objective

Material belt contains graphite sheets with different spacing, as shown in Figure 7-59.

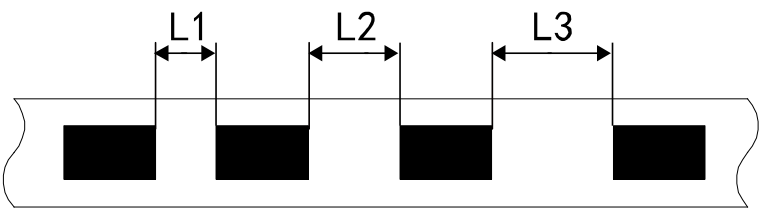


Figure 7-59 Material belt before G3

After passing through cutter G3, the graphite sheets have the same spacing, as shown in Figure 7-60.

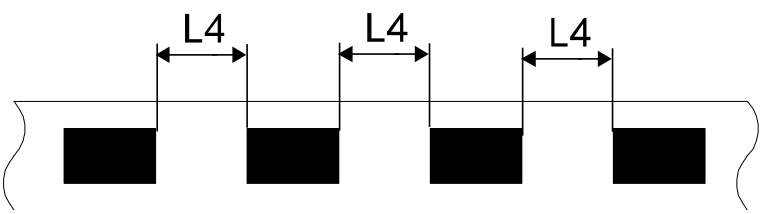


Figure 7-60 Material belt after G3

2）Installing photoelectric sensor, liner release knife and air shaft

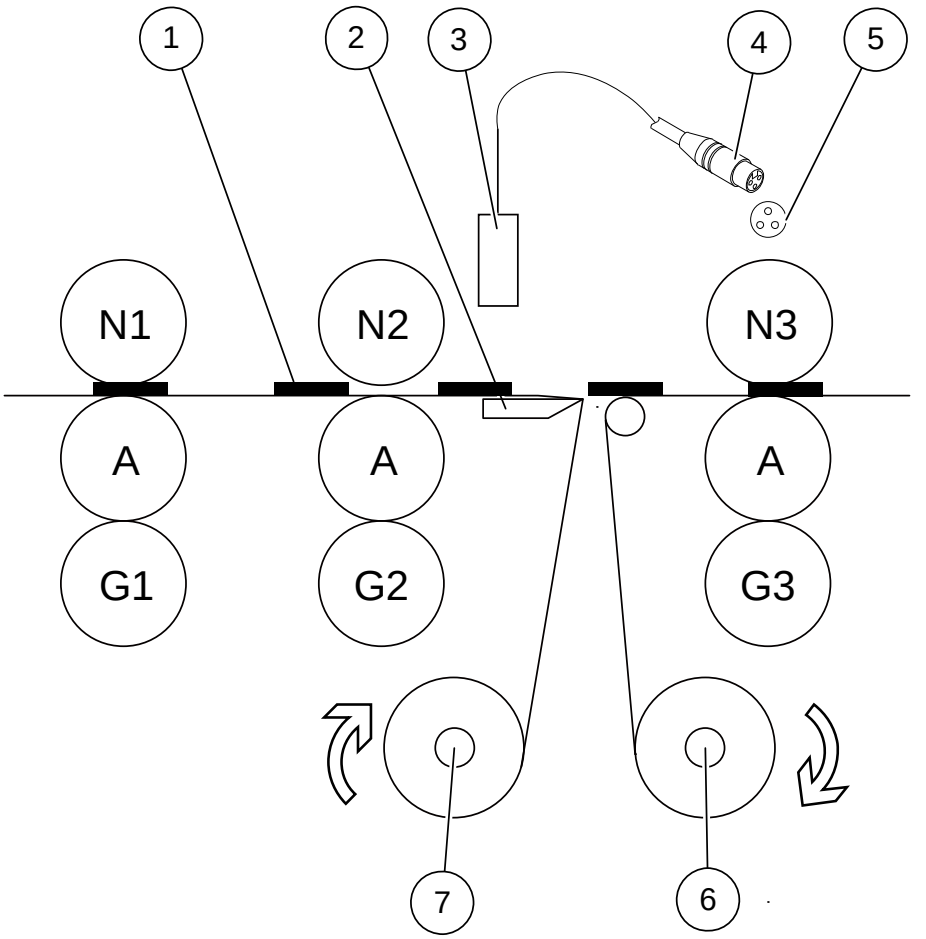


Figure 7-61 Installing photoelectric sensor, liner release knife and air shaft

(1) Graphite sheet (2) Liner release knife (3) Photoelectric sensor

(4) Cable plug (5) Socket (6) Air shaft 1 (7) Air shaft 2

Step1: Install liner release knife (2), air shaft 1 (6) and air shaft 2 (7) between cutter G2 and G3;

Step 2: Install the photoelectric sensor (3) to position shown in Figure 7-61, in front of liner release knife (2);

Step 3: Connect cable plug (4) with socket (5) above cutter G3.

3）Setting parameters

Figure 7-62 “Auto Tune” page

Step 1: Set "OEI" to 3; (Step a in Figure 7-62)

Step 2: Set the "Standard Tune Dis." to the value of L shown in Figure 7-63; (Step b in Figure7-62)

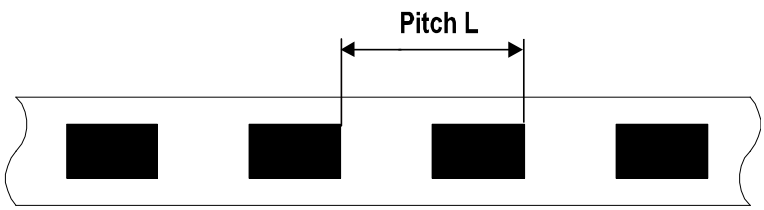


Figure 7-63 Standard pitch

Step 3: Set the "Non-Sensing Zone" to the value of X shown in Figure 7-64; (Step c in Figure7-62)

The function of this parameter is to shield unrelated features when there are multiple identical features on material belt. In this case, the borderline from black to white on the graphite sheet is an unrelated feature.

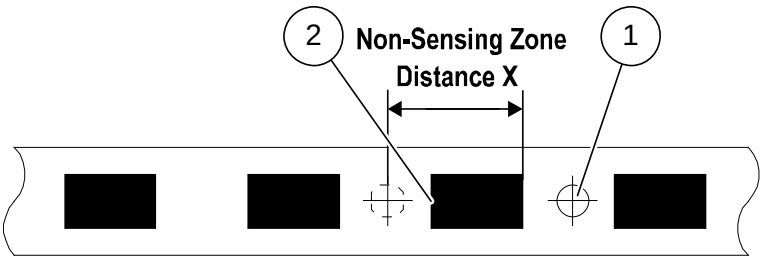


Figure 7-64 Non-Sensing Zone

(1) Photoelectric sensor (2) Borderline from black to white

For example, if material belt stays at the position shown in Figure 7-64 and the "Non-Sensing Zone" is set to X, then the borderline detected within the separation distance X is invalid after the borderline from white to black is detected.

Step 4: Set "Tune Limit", generally 1 ~ 2mm. (Step d in Figure 7-62).

Step 5: Select “Induct Async. On” and “Auto Tune On”. (Step e and f in Figure 7-62).

7.7.12 Follow function

Function description:

This function can realize that a certain cutter follows another cutter.

Use case:

1）Objective

There are two rolls of material belt, as shown in Figure 7-65.

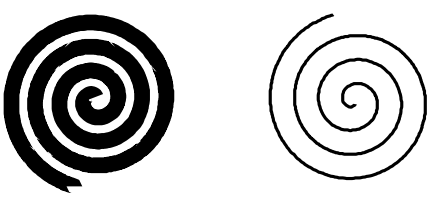


Figure 7-65 Two rolls of material belt

After passing through cutters G1 and G2, the two rolls of material belt are bonded together, as shown in Figure 7-66.

Figure 7-66 Material belt after G1 and G2

	**CAUTION** The condition of using the follow function: The blade edge distance on the die cutter must be equal to the width of the cut material, as shown in Figure 7-67.

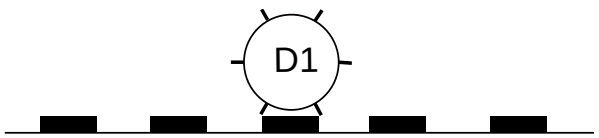


Figure 7-67 Blade edge distance and material width equal

2）Installing liner release knife and air shaft

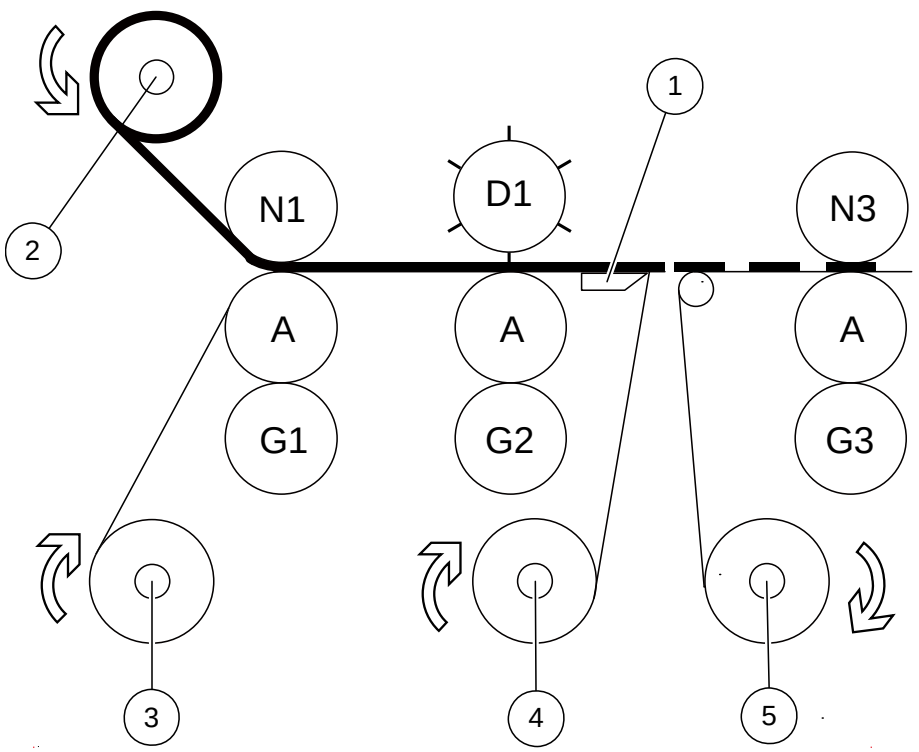


Figure 7-68 Installing liner release knife and air shaft

(1) Liner release knife (2) Air shaft 1 (3) Air shaft 2 (4) Air shaft 3 (5) Air shaft 4

Install liner release knife (1), air shaft 1 (2), air shaft 2 (3), air shaft 3 (4), air shaft 4 (5) according to Figure 7-68.

3）Setting parameters

Figure 7-69 “Follow/Superpose” page

Step 1: Set G1 to be asynchronous with G3, refer to *Section 7.4.5.1 Page21: Async. Settings*;

Step 2: Set "Async. Follow Shaft No." to 1; (Step a in Figure 7-69)

Step 3: Select “Follow On”. (Step b in Figure7-69)

7.7.13 Superpose function

Function description:

This function can realize the operation of a certain cutter by superposing another cutter.

Use case:

1）Objective

There are two rolls of material belt, as shown in Figure 7-70.

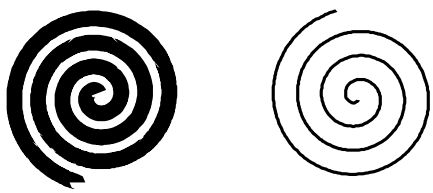


Figure 7-70 Two rolls of material belt

After passing through cutters G1 and G2, two rolls of material belt are bonded together, as shown in Figure 7-71.

Figure 7-71 Material belt after G1 and G2

	**CAUTION** The condition of using the superpose function: The blade edge distance on the die cutter must be **not** equal to the width of the cut material, as shown in Figure 7-72.

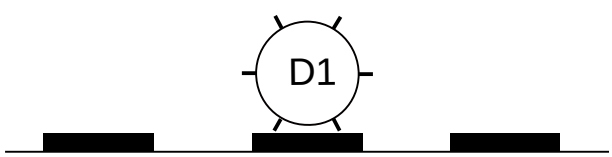


Figure 7-72 Blade edge distance and material width (not equal)

2）Installing liner release knife and air shaft

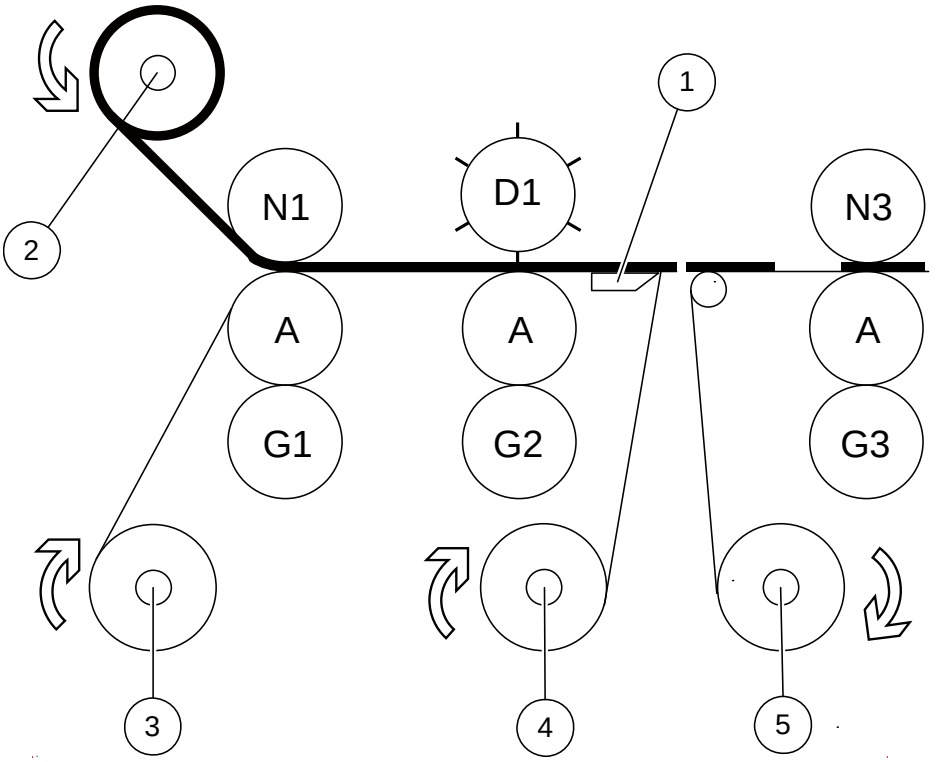


Figure 7-73 Installing liner release knife and air shaft

(1) Liner release knife (2) Air shaft 1 (3) Air shaft 2 (4) Air shaft 3 (5) Air shaft 4

Install liner release knife (1), air shaft 1 (2), air shaft 2 (3), air shaft 3 (4), air shaft 4 (5) according to Figure 7-73.

3）Setting parameters

Figure 7-74 “Follow/Superpose” page

Step 1: Set G1 to be asynchronous with G3, refer to *Section 7.4.5.1 Page21: Async. Settings;*

Step 2: Set "Async. Superpose Shaft No." to 1; (Step a in Figure 7-74)

Step 3: Select “Async. On”; (Step b in Figure7-74)

Step 4: Select “Async. Superpose On”. (Step c in Figure7-74)

7.7.14 Auto align 1 function

Function description:

The principle of this function is to ensure accurate cutting position of cutters by calculating the movement distance of cutter between the detection signals of two sensors, and then compensating and adjusting this distance.

This function is mainly suitable for printed product.

Use case:

1）Objective

Material belt contains printed rectangles with different spacings, as shown in Figure 7-75.

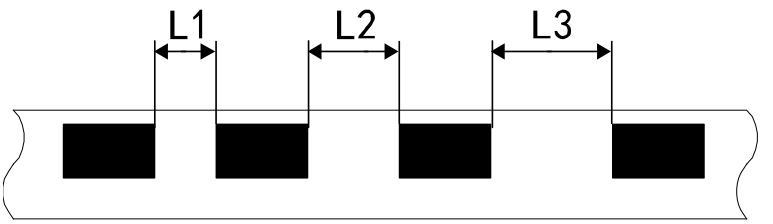


Figure 7-75 Material belt before G3

After passing through cutter G3, add a triangle feature at the same position below each rectangle, as shown in Figure 7-76.

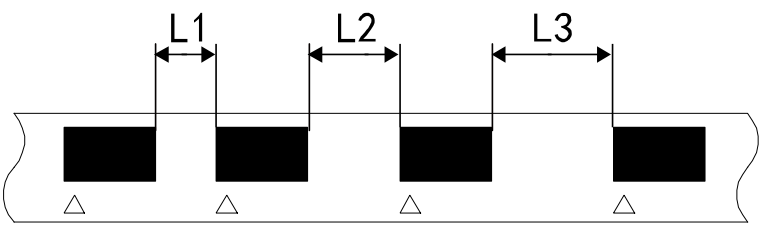


Figure 7-76 Material belt after G3

2）Installing proximity sensor and color mark sensor

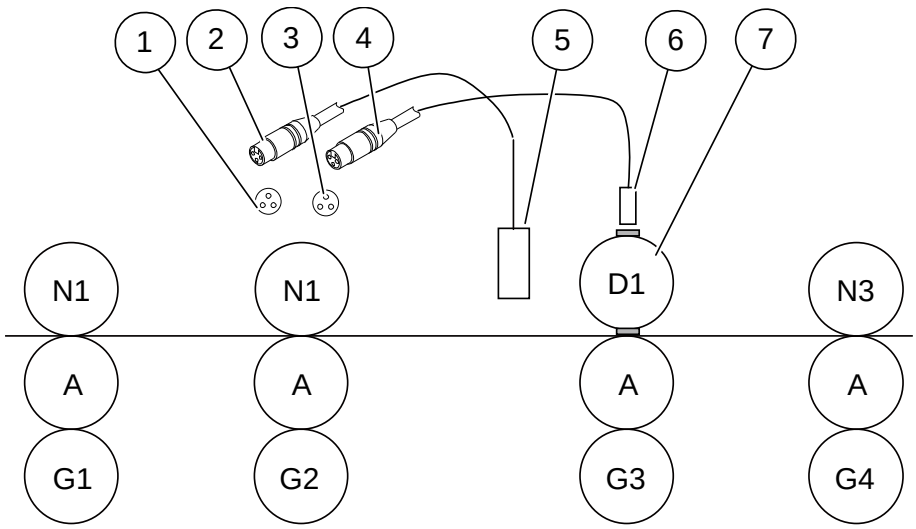


Figure 7-77 Installing proximity sensor and color mark sensor

(1) Socket (2) Cable plug (3) Socket (4) Cable plug (5) Color mark sensor

(6) Proximity sensor (7) Die cutter

Step 1: Install the color mark sensor (5) and proximity sensor (6) to the position shown in Figure 7-77;

Step 2: Connect cable plug (4) with socket (3) above cutter G2;

Step 3: Connect cable plug (2) with socket (1) above cutter G2.

3）Setting parameters

Figure 7-78 “Auto Align” page

Step 1: Set "OEI" to 2; (Step a in Figure 7-78)

Step 2: Set "Waiting Sheets", that is the number of products between the color mark sensor and cutter G3 (1 is recommended); (Step b in Figure 7-78)

Step 3: Set "Equal Pitch Distance". After photoelectric sensor detects the signal, and then material travels this distance, cutter G3 performs tuning; (Step c in Figure 7-78)

Step 4: Set "Single Tune Value"; (Step d in Figure 7-78)

Step 5: Set "Non-Sensing Zone" to the value of X shown in Figure7-79; (Step e in Figure 7-78)

The function of this parameter is to shield unrelated features when there are multiple identical features on material belt. In this case, the left border of the rectangle is an unrelated feature.

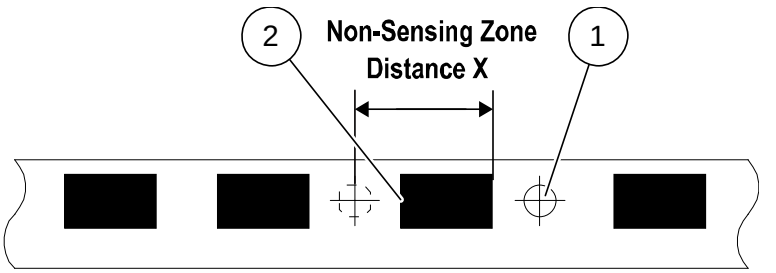


Figure 7-79 Non-Sensing Zone

(1) Photoelectric Sensor (2) Left border of the rectangle

For example, if material belt stays at the position shown in Figure 7-79 and the "Non-Sensing Zone" is set to X, then the border detected within the separation distance X is invalid after the right border of the rectangle is detected.

Step 6: Set "Tune Limit"; (Step f in Figure 7-78)

Step 7: Select “Induct Async. On”; (Step g in Figure 7-78)

Step 8: Start the machine for manual alignment, and then click “Calibrate” after the alignment is accurate; (Step h in Figure 7-78)

Step 9: Select “Atuo Align On”. (Step i in Figure 7-78)

7.7.15 Auto align 2 function

Function description:

The principle of this function is to ensure the accurate cutting position of cutters by calculating the difference between the material pitch detected by the color mark sensor and the standard distance of blade edges on die cutters, and then compensating and adjusting this difference.

This function is mainly suitable for printed product.

Use case:

1）Objective

Material belt contains printed rectangles with different spacing, as shown in Figure 7-80.

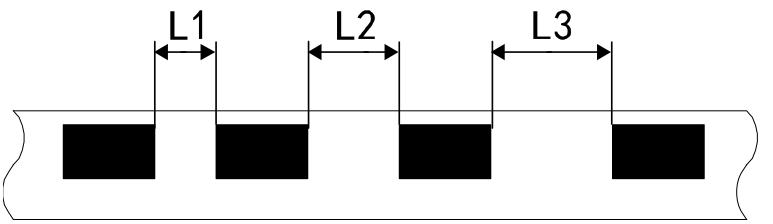


Figure 7-80 Material belt before G3

After passing through cutter G3, add a triangle feature at the same position below each rectangle, as shown in Figure 7-81.

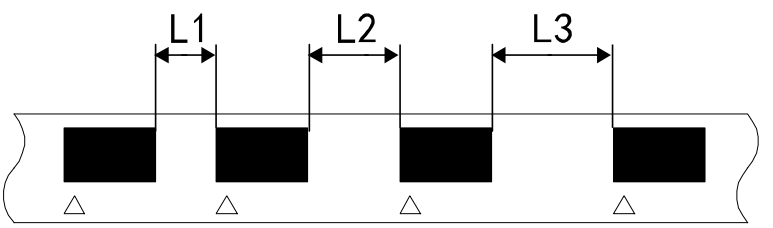


Figure 7-81 Material belt after G3

2）Installing color mark sensor

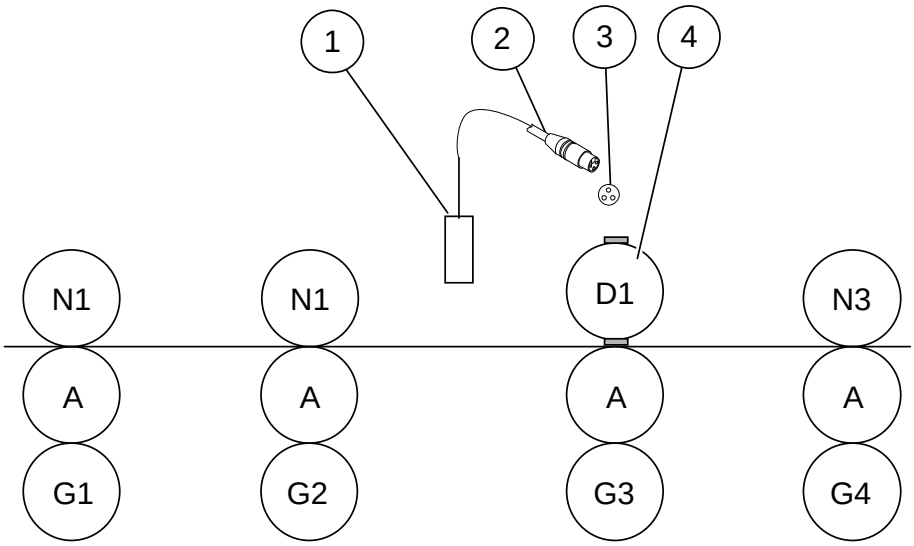


Figure 7-82 Install color mark sensor

(1) Color mark sensor (2) Cable plug (3) Socket (4) Die cutter

Step 1: Install color mark sensor (1) to the position shown in Figure 7-82;

Step 2: Connect cable plug (2) with socket (3) above cutter G3.

3）Setting parameters

Figure 7-83 “Auto Align 2” page

Step 1: Set "Gear Teeth" and “Qty Around”, then click “Pram write” icon; (Step a in Figure 7-83)

Step 2: Set "OEI" to 3 (same as the cutter number); (Step b in Figure 7-83)

Step 3: Set "Waiting Sheets", that is the number of products between the color mark sensor and cutter G3 (1 is recommended); (Step c in Figure 7-83)

Step 4: Select “Induct On”; (Step d in Figure 7-83)

Step 5: Set "Single Tune Value"; (Step e in Figure 7-83)

Step 6: Set "Equal Pitch Distance". After the photoelectric sensor detects the signal, and then material travels this distance, cutter G3 performs tuning; (Step f in Figure 7-83)

Step 7: Set "Sensing Zone"; (Step g in Figure 7-83)

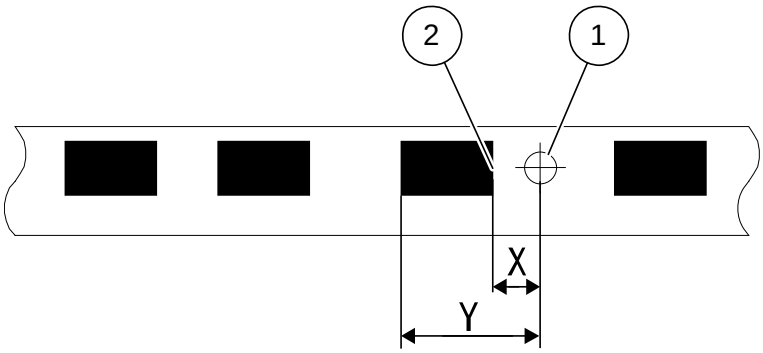


Figure 7-84 Sensing Zone

(1) Color mark sensor (2) Right border of the rectangle

For example: If material belt stays at the position shown in Figure 7-84, set "Sensing Zone" value between X and Y, the color mark sensor will detect the right border line (2) of the white to black rectangle within the sensing area.

Step 8: Set "Tune Limit", generally 1 ~ 2mm; (Step h in Figure 7-83)

Step 9: Manually adjust the cutting position until it is accurate, and then select “Auto Align On”. (Step i in Figure 7-83)

8 Maintenance

8.1 Safety instructions

For safety maintenance of the machine, refer to this chapter.

Maintenance functions:

1. Keep the machine in good condition and decrease the risk of machine failure.

2. Keep the machine in good precision.

3. Prolonging the service life of the machine.

Do maintenance regularly referring to the contents of the manual, and record maintenance and inspection data. Maintenance includes preventive maintenance, lubrication and overhaul.

WARNING

- Only skilled and approved maintenance personnel can do maintenance work.
- Sufficient local lighting must be provided if maintenance or inspection requires access into the machine.
- Maintenance signs must be placed around the maintenance area to warn the maintenance is in progress.
- Before starting any maintenance work, make sure that the machine is completely stopped, turn the handle of main power switch to the "OFF" position and lock it, and turn the manual ON-OFF valve to the "OFF" position and lock it.
- Even if the main power switch is in the "OFF" position, the following parts and their conductors are still live!
  Power supply line and main power switch incomming terminals are still live.
  Servo drivers and switching power supply may still be live within 20 minutes after power off. Do not touch their parts and the conductors connected to them.
- Before maintenance, make sure that you fully understand the contents in the manual. If you have any question, contact the technical service department of HOACO.

8.2 Preventive maintenance

8.2.1 Maintenance list

Regular inspection and maintenance are necessary for maintaining accuracy.

Maintenance list is shown in Table 8-1.

Table 8-1 Maintenance list

No.	item	Maintenance method
Every 8 hours inspection and maintenance		
01	Check wear of straight roller surface and crank roller surface.	Polish surface with sandpaper (≥ 400 mesh), clean with rag and alcohol.
02	Check wear of liner release knife.	1. Replace liner release knife, refer to *Section 8.2.2.1 Replacing liner release knife.* 2. Change the process.
03	Check if anvil roller surface, rubber roller surface and drive roller surface is clean.	Clean with rag and alcohol.
04	Check for debris between gears.	Clean with air blow gun.
05	Check safety device functions	Refer to *Section 3.8 Safeguards.*
06	Check the pneumatic pipeline for leaks.	-
Every 60 hours inspection and maintenance		
01	Check if there is water in the oil-water separator	Remove the water in the oil-water separator.
Every 250 hours inspection and maintenance		
01	Check wear of drive roller gear, anvil roller gear, die cutter gear, and rubber roller gear surface.	Replace, refer to *Section 8.2.2.2 Replacing drive roller gear* or *Section 8.2.2.5 Replacing anvil roller gear, rubber roller gear or die cutter gear.*
02	Check if set screws of the coupling (between the servo motor and the drive roller) are loose	Tighten set screws.
03	Check if the servo motor set screws are loose.	Tighten set screw.

04	Check wear of adjustable die housing bearing.	Replace, refer to *Section 8.2.2.3 Replacing adjustable die housing bearing.*
05	Check wear of pressure knob and screw.	Replace, refer to *Section 8.2.2.4 Replacing pressure knob, screw and outer cover.*
06	Check if set screws of suspension HMI console beam are loose.	Tighten set screws.
Every 750 hours inspection and maintenance		
01	Check wear of anvil roller.	Replace, refer to *Section 8.2.2.6 Replacing anvil roller.*
02	Check wear of die cutter.	Replace, refer to *Section 8.2.2.7 Replacing die cutter.*
03	Check if control switches and buttons functions are operating correctly.	Replace if necessary.
Every 1500 hours inspection and maintenance		
01	Check if cable in drag chain is broken.	Replace cable if necessary.
02	Check if servo motor encoder cables and power cable connectors are loose.	Tighten cable connector.
03	Check if the communication cable connectors are loose.	Tighten cable connector.
04	Check and tighten all cables.	-
Every 3000 hours inspection and maintenance		
01	Check parallelism between die stations.	Consult HOACO technical engineers.

8.2.2 Typical maintenance tasks

8.2.2.1 Replacing liner release knife

1）Tools

Allen wrench 5 #

2）Work steps

The method of replacing liner release knife is shown in Figure 8-1.

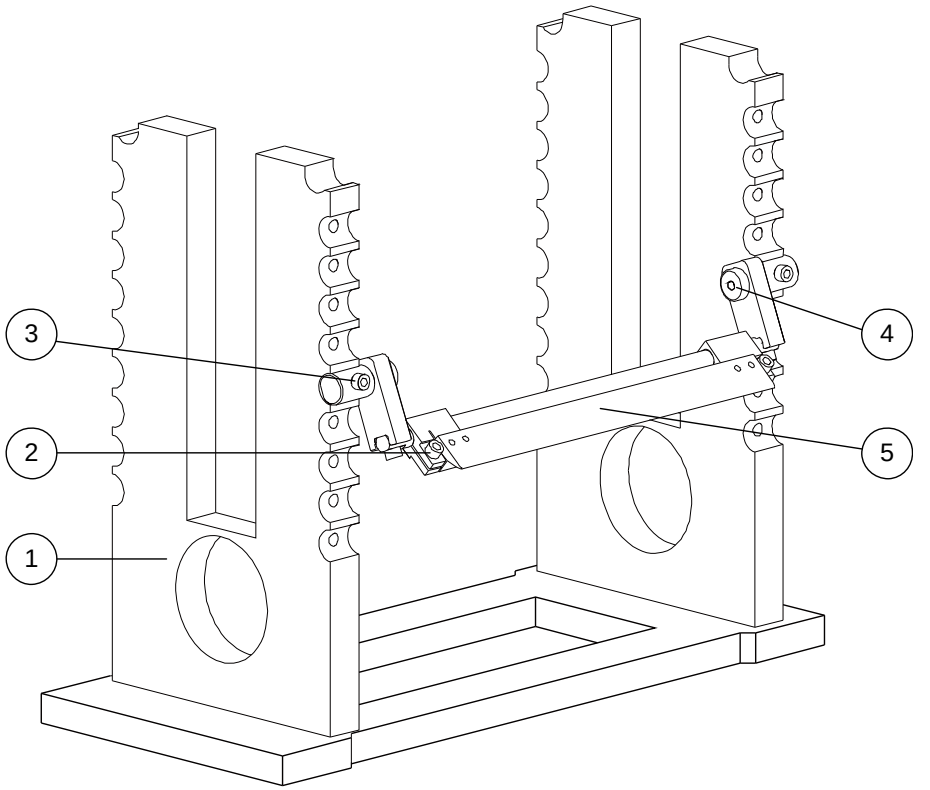


Figure 8-1 Replacing liner release knife

(1) Die station (2) Screw (2 pieces) (3) Screw (2 pieces)

(4) Screw (2 pieces) (5) Liner release knife assmbly

Step 1: Remove screws (3) and liner release knife assmbly (5);

Step 2: Install new liner release knife assmbly (5) to the die station (1);

Step 3: Loosen screws (2) and screws (4), and adjust angle of liner release knife assembly (5);

Step 4: Tighten screws (2) and screws (4).

8.2.2.2 Replacing drive roller gear

1）Tools

Allen wrench 5 #, Allen wrench 10 #, Open wrench 18 #, Copper rod.

2）Work steps

The method of replacing drive roller gear is shown in Figure 8-2, Figure 8-3, Figure 8-4, Figure 8-5 and Figure 8-6.

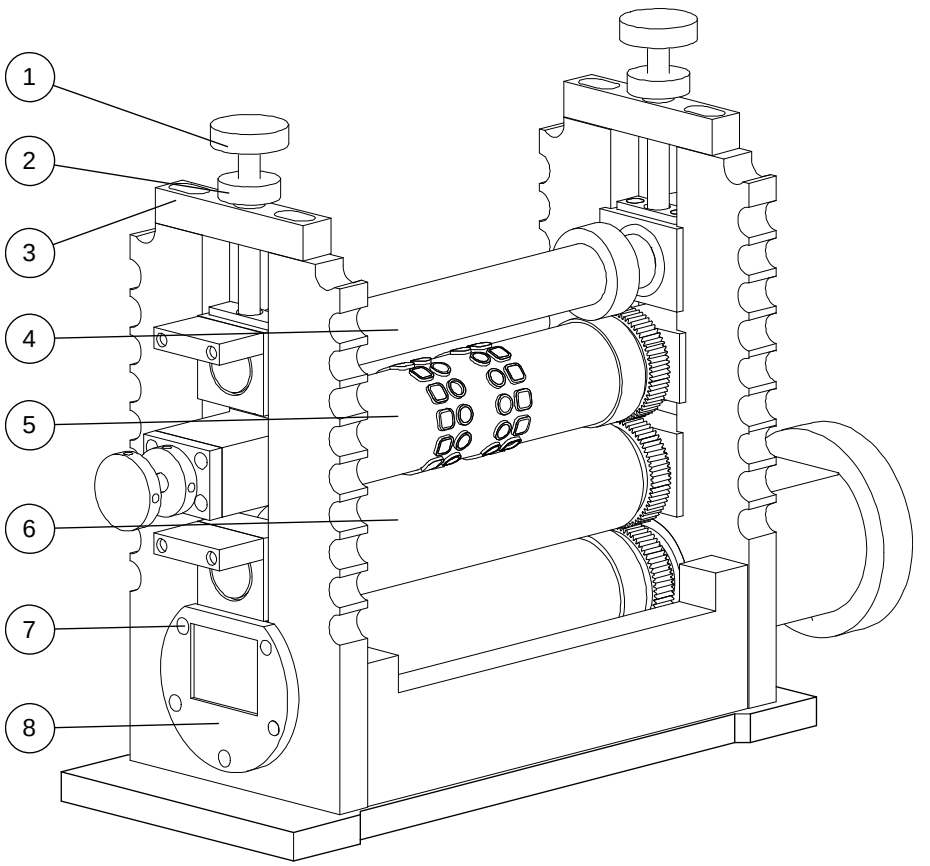


Figure 8-2 Removing bearing cover

(1) Knob (2) Nut (3) Pressure knob assembly (4) Die pressure roller

(5) Die cutter assembly (6) Anvil roller assembly (7) Screw (8) Bearing cover

Step 1: Loosen nut (2) and knob (1);

Step 2: Remove pressure knob assembly (3);

Step 3: Remove Die pressure roller (4);

Step 4: Remove die cutter assembly (5);

	**CAUTION** Wear safety gloves when removing and installing die cutter!

Step 5: Remove anvil roller assembly (6);

Step 6: Remove screws (7);

Step 7: Remove bearing cover (8);

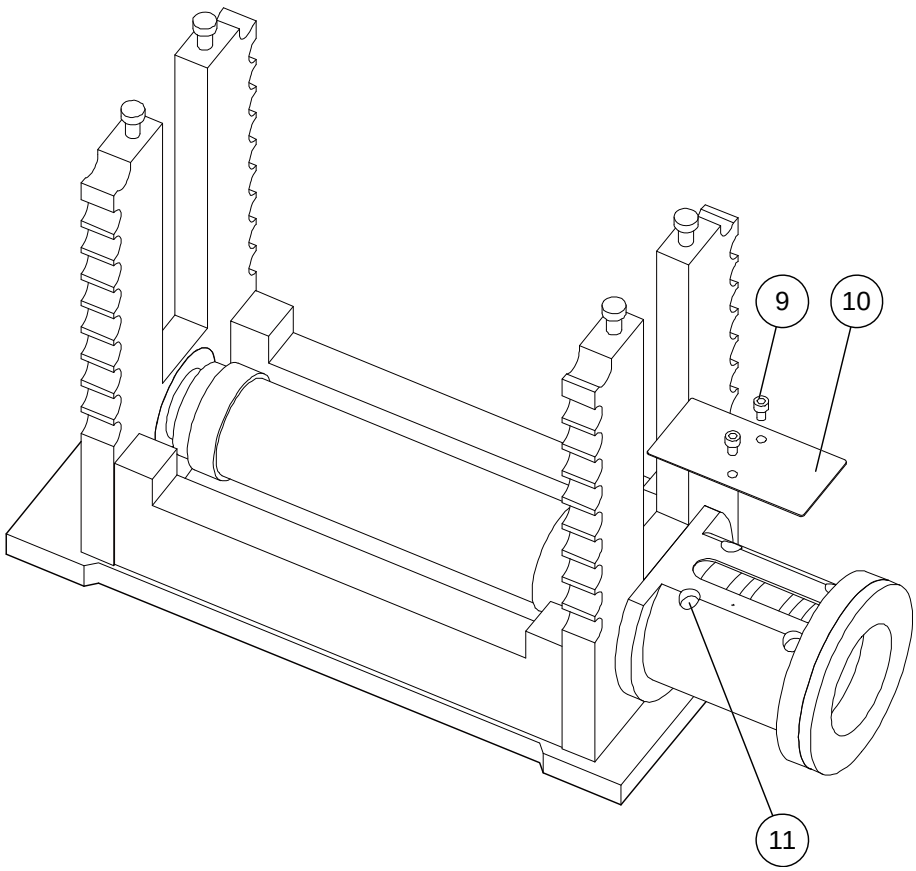


Figure 8-3 Loosening set screw of coupling

(9) Screw (10) Cover (11) Hole

Step 8: Remove screw (9) with 5# allen wrench, and remove cover (10);

Step 9: Through hole (11), loosen set screw between drive roller and coupling.

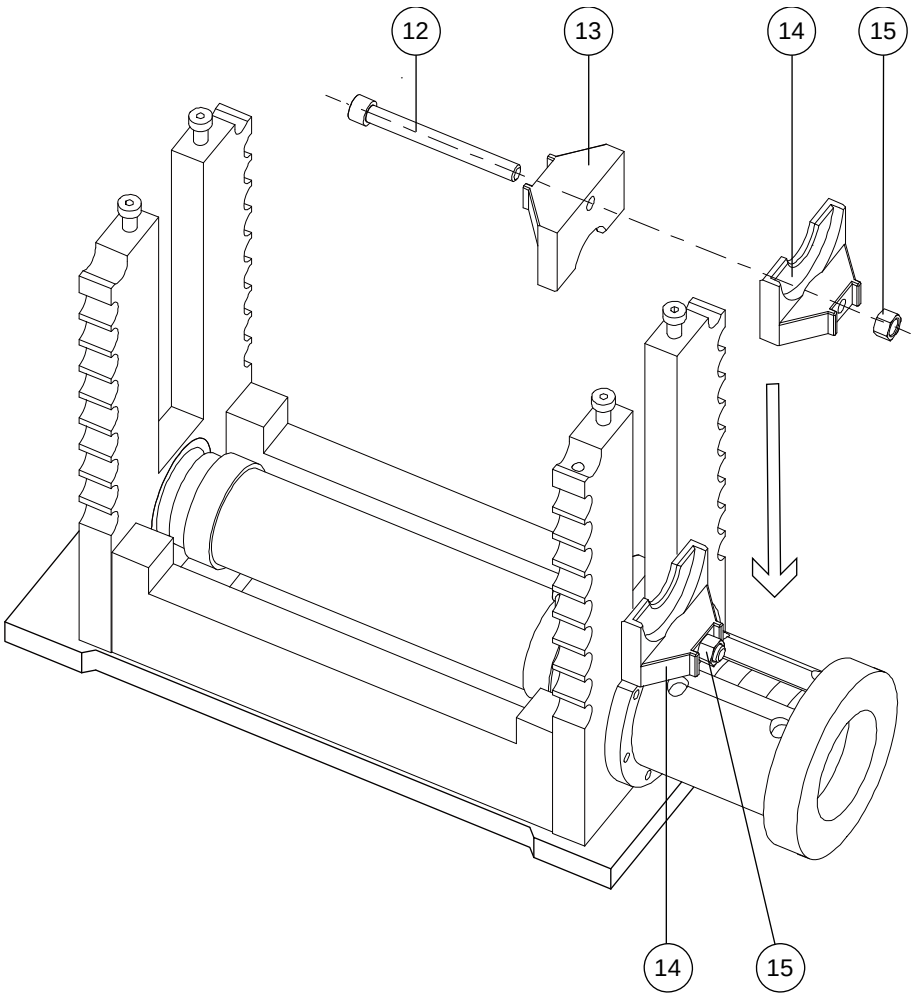


Figure 8-4 Installing tools

(12) Screw (13) Tool 1 (14) Tool 2 (15) Nut

Step 10: Install tool1 (13) and tool 2 (14);

Step 11: Connect tool1 (13) and tool 2 (14) with screw (12) and nut (15);

Step 12: Tighten screw (12) and nut (15) with 10# allen wrench and 18# open wrench;

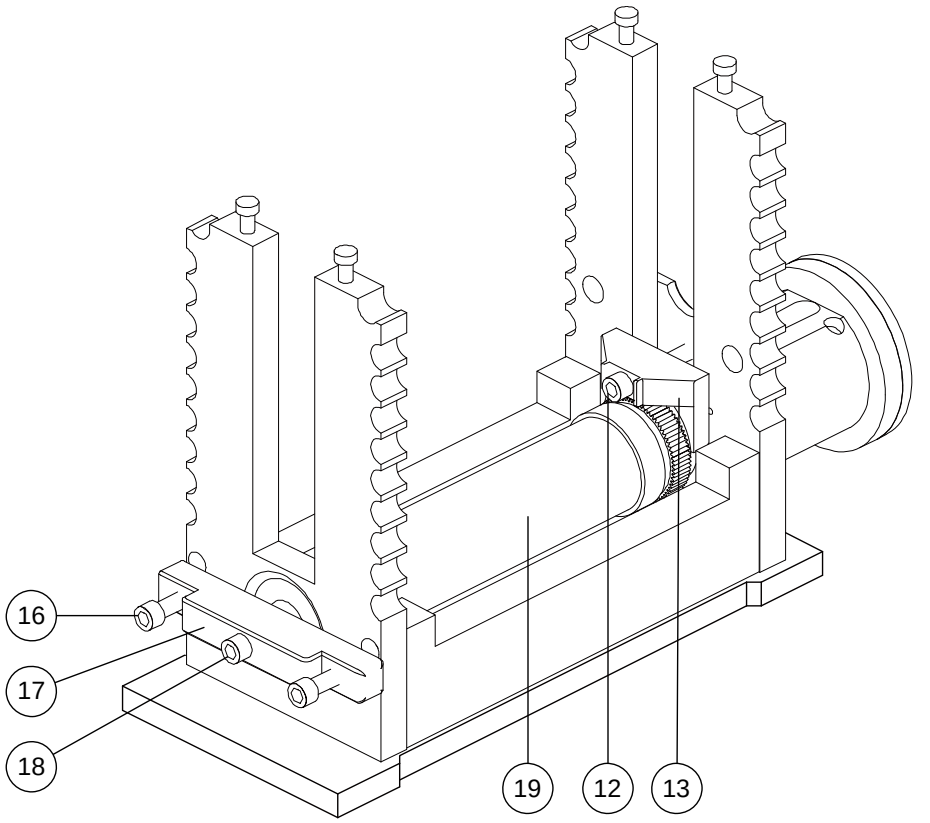


Figure 8-5 Removing drive roller assembly

(16) Screw (17) Tool 3 (18) Screw (19) Drive roller assembly

Step 13: Install screw (18) with10# allen wrench, connect tool 3 (17) and drive roller assembly (19);

Step 14: Tighten screws (16) with 10# allen wrench, and remove drive roller assembly (19);

Step 15: Remove tool1 (13), tool 2 (14), tool 3 (17);

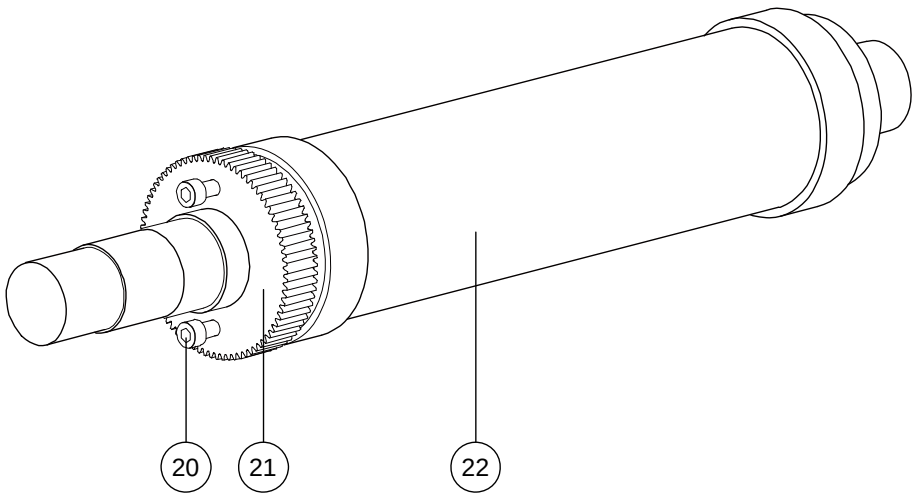


Figure 8-6 Removing gear

(20) Screw (21) Gear (22) Drive roller

Step 16: Tighten screw (20) to separate gear (21) and drive roller (22);

Step 17: Remove gear (21) and install new one;

Step 18: Install drive roller (22) with new gear, and hit it in place with copper rod;

Step 19: Install other parts in reverse order.

8.2.2.3 Replacing adjustable die housing bearing

1）Tools

Allen wrench 5 #, vernier caliper, Φ27mm copper rod, rubber hammer

2）Work steps

The method of replacing adjustable die housing bearing is shown in Figure 8-7, Figure 8-8, Figure 8-9 and Figure 8-10.

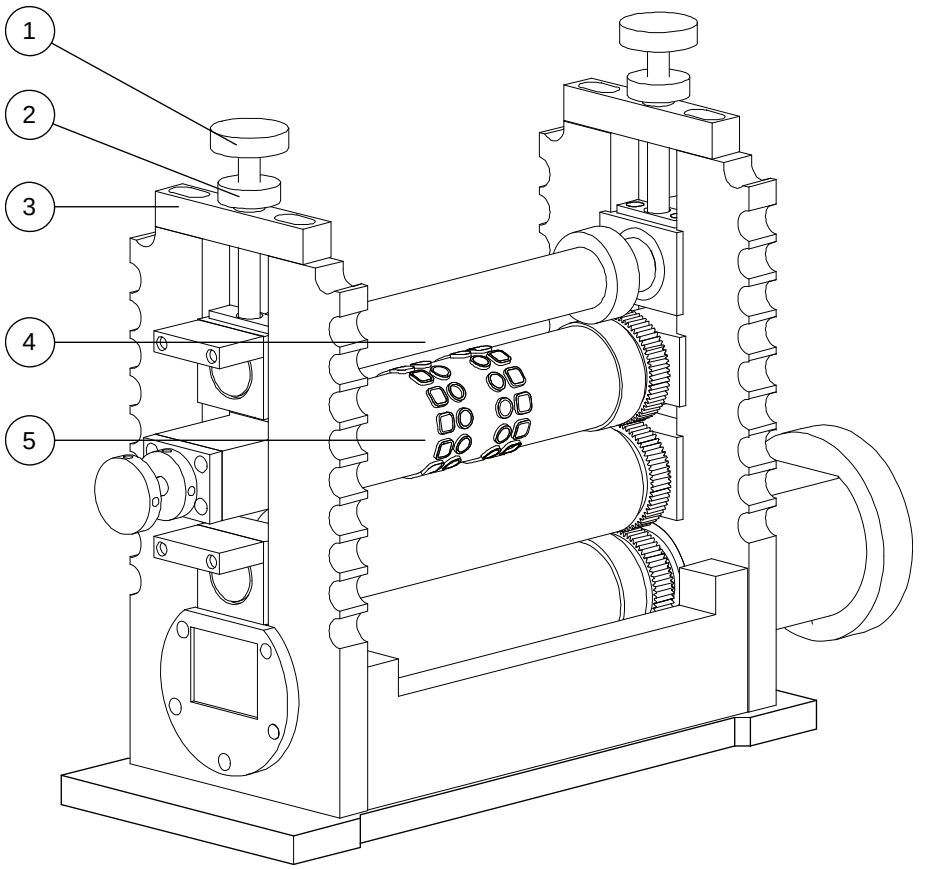


Figure 8-7 Removing die cutter assembly

(1) Knob (2) Nut (3) Pressure knob assembly

(4) Die pressure roller (5) Die cutter assembly

Step 1: Loosen nut (2) and knob (1) with 5# allen wrench;

Step 2: Remove pressure knob assembly (3);

Step 3: Remove Die pressure roller (4);

Step 4: Remove die cutter assembly (5);

	**CAUTION** Wear safety gloves when removing and installing die cutter!

Step 5: Remove adjustable die housings at both end of die cutter assembly;

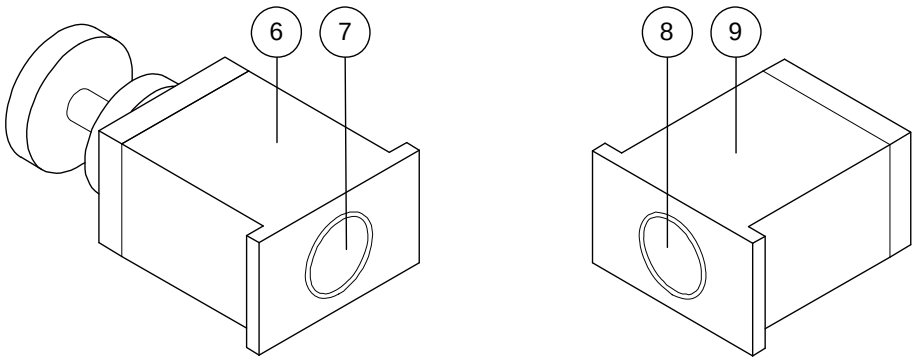


Figure 8-8 Measuring adjustable die housing bearing

(6) Adjustable die housing (outer side) (7) Bearing

(8) Bearing (9) Adjustable die housing (inner side)

Step 6: Measure the inner diameter of bearing (7) and bearing (8) with vernier caliper, replace when it is more than 25.3mm;

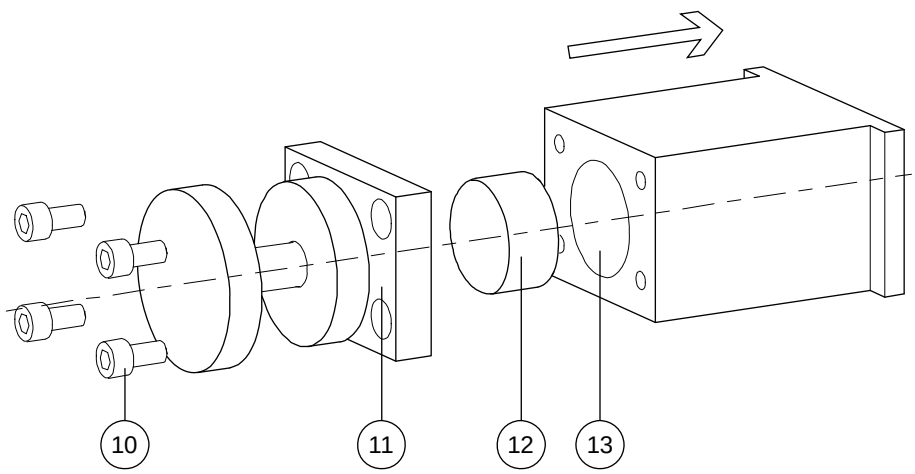


Figure 8-9 Replacing adjustable die housing (outer side) bearing

(10) Screw (11) Cover (12) Support block (13) Hole

Step 7: Remove screw with (10) 5# allen wrench;

Step 8: Remove cover (11) and support block (12);

Step 9: Remove bearing from hole (13) with Φ27mm copper rod and rubber hammer according to the direction shown in Figure 8-9, and replace a new one;

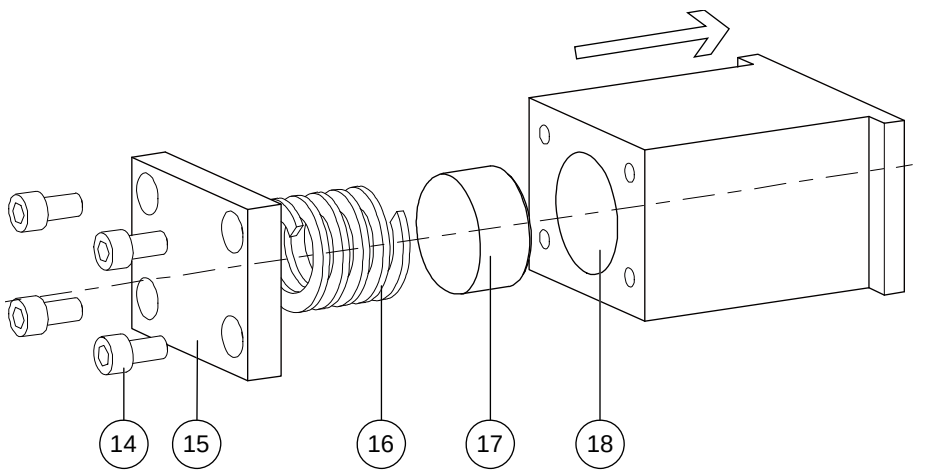


Figure 8-10 Replacing adjustable die housing (inner side) bearing

(14) Screw (15) Cover (16) Return spring (17) Support block (18) Hole

Step 10: Remove screw (14) with 5# allen wrench;

Step 11: Remove cover (15), return spring (16) and support block (17);

Step 12: Remove bearing from hole (18) with Φ27mm copper rod and rubber hammer according to the direction shown in Figure 8-10, and replace a new one;

Step 13: Install other parts in reverse order.

8.2.2.4 Replacing pressure knob, screw and outer cover

1）Tools

Allen wrench 5 #

2）Work steps

The method of replacing pressure knob, screw and outer cover is shown in Figure 8-11.

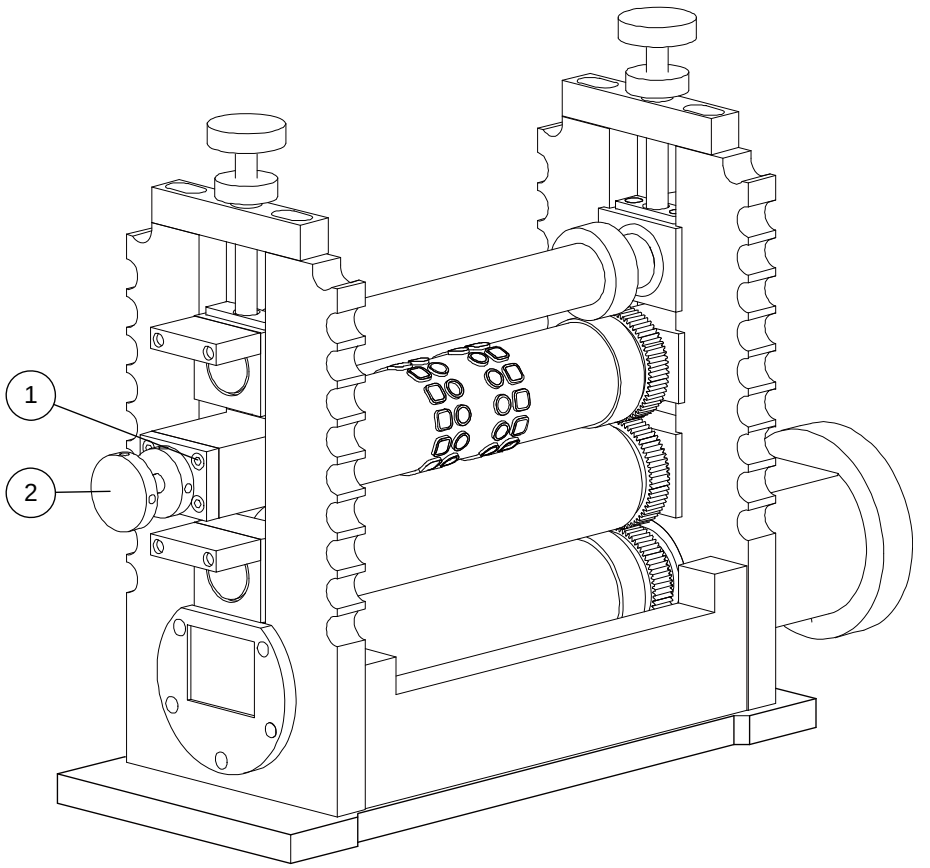


Figure 8-11 Replacing pressure knob, screw and outer cover

(1) Screws (2) Pressure knob, screw and outer cover

Step 1: Remove screws (1);

Step 2: Remove pressure knob, screw and outer cover (2), install a new one;

Step 3: Adjust die cutter Y axis, refer to *Section 7.7.4 Adjusting Y-Axis in "Run" mode*.

8.2.2.5 Replacing anvil roller gear, rubber roller gear or die cutter gear

1）Tools

Allen wrench 5 #

2）Work steps

The replacement method of anvil roller gear, rubber roller gear and die cutter gear is same, take the replacement method of anvil roller gear as an example.

The method of replacing anvil roller gear is shown in Figure 8-12 and Figure 8-13.

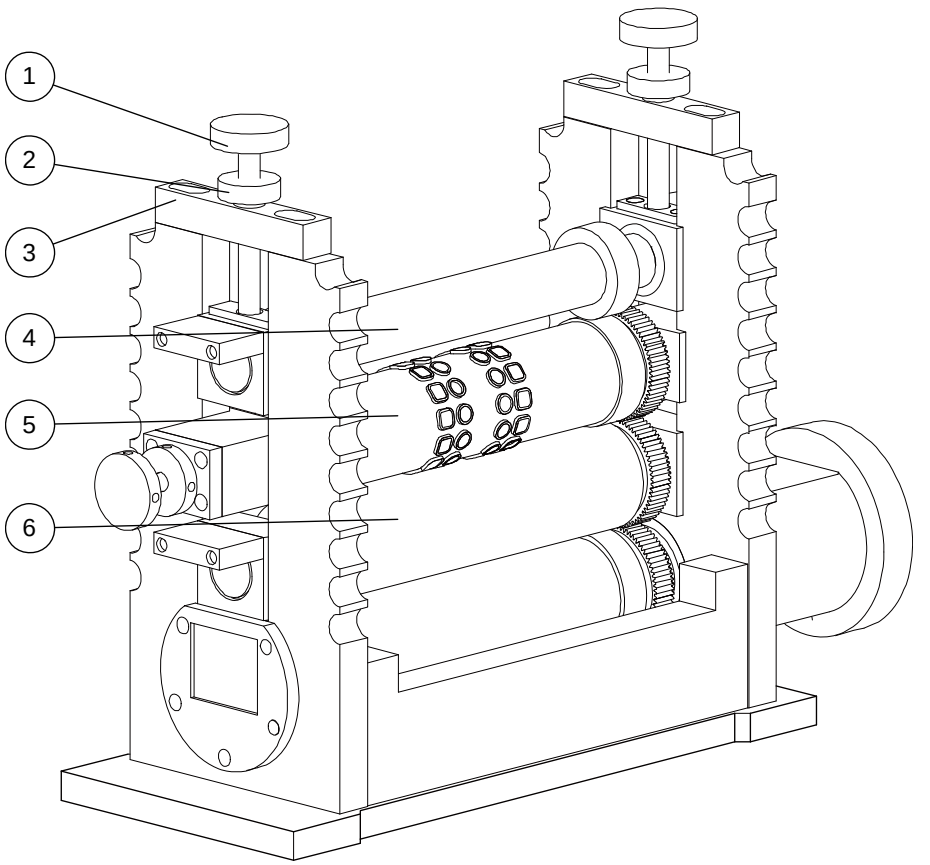


Figure 8-12 Removing anvil roller assembly

(1) Knob (2) Nut (3) Pressure knob assembly (4) Die pressure roller

(5) Die cutter assembly (6) Anvil roller assembly

Step 1: Loosen nut (2) and knob (1);

Step 2: Remove pressure knob assembly (3);

Step 3: Remove Die pressure roller (4);

Step 4: Remove die cutter assembly (5);

CAUTION

Wear safety gloves when removing and installing die cutter!

Step 5: Remove anvil roller assembly (6);

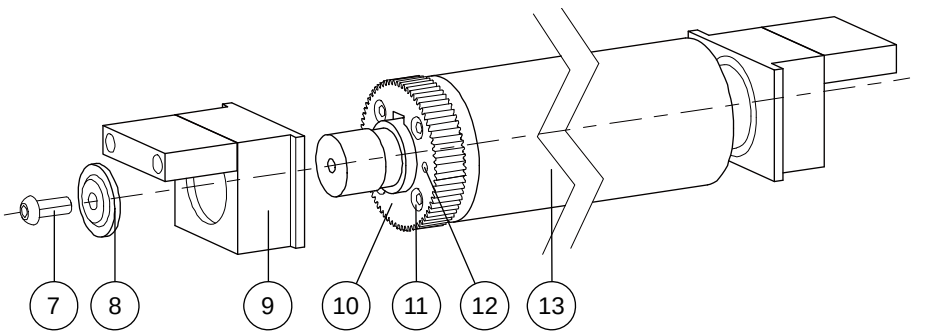


Figure 8-13 Replacing anvil roller gear

(7) Screw (8) Cover (9) Bearing housing (10) Gear

(11) Screw (12) Threaded hole (13) Anvil roller

Step 6: Remove screw (7) with 5# allen wrench;

Step 7: Remove cover (8) and bearing housing (9);

Step 8: Remove screws (11) with 5# allen wrench;

Step 9: Install screws (11) in threaded hole (12) with 5# allen wrench;

Step 10: Remove gear (10), and install new one;

Step 11: Install other parts in reverse order.

8.2.2.6 Replacing anvil roller

1）Tools

Allen wrench 5 #, vernier caliper

2）Work steps

The method of replacing anvil roller is shown in Figure 8-14, Figure 8-15 and Figure 8-16.

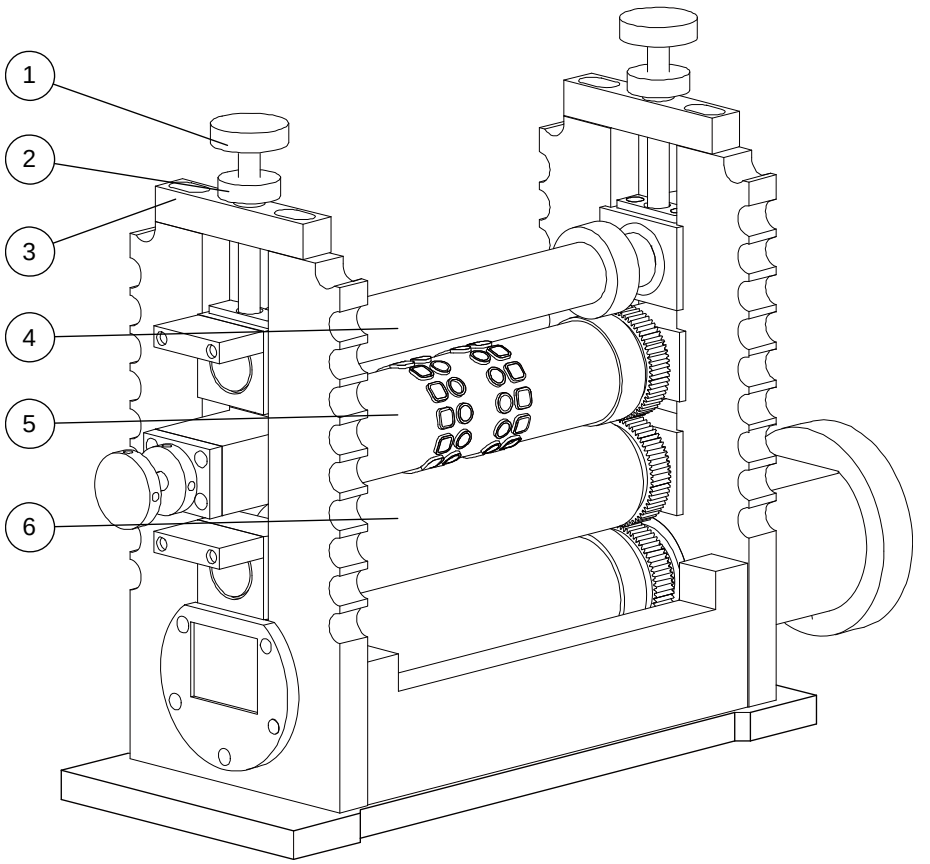


Figure 8-14 Removing anvil roller assembly

(1) Knob (2) Nut (3) Pressure knob assembly (4) Die pressure roller

(5) Die cutter assembly (6) Anvil roller assembly

Step 1: Loosen nut (2) and knob (1);

Step 2: Remove pressure knob assembly (3);

Step 3: Remove Die pressure roller (4);

Step 4: Remove die cutter assembly (5);

	**CAUTION** Wear safety gloves when removing and installing die cutter!

Step 5: Remove anvil roller assembly (6);

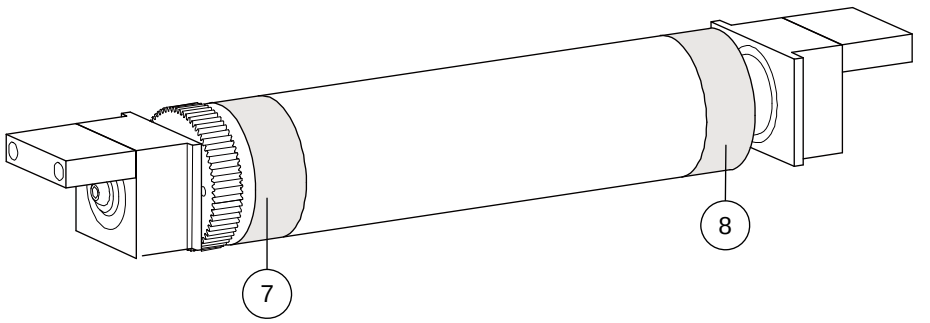


Figure 8-15 Measuring the diameter of anvil roller

(7) Area 1 (8) Area 2

Step 6: Measure the diameter of area 1 (7) and area 2 (8) with vernier caliper, replace when it is less than 81.79mm;

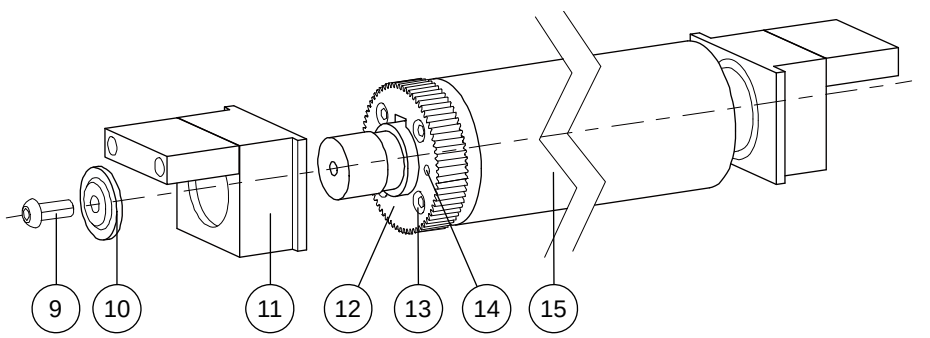


Figure 8-16 Replacing anvil roller

(9) Screw (10) Cover (11) Bearing housing (12) Gear

(13) Screw (14) Threaded hole (15) Anvil roller

Step 7: Remove screw (9) with 5# allen wrench;

Step 8: Remove cover (10) and bearing housing (11);

Step 9: Remove screws (13) with 5# allen wrench;

Step 10: Install screws (13) in threaded hole (14) with 5# allen wrench;

Step 11: Remove gear (12), and install new one;

Step 12: Install other parts in reverse order.

8.2.2.7 Replacing die cutter

1）Tools

Allen wrench 5#

2）Work steps

The method of replacing die cutter is shown in Figure 8-17 and Figure 8-18.

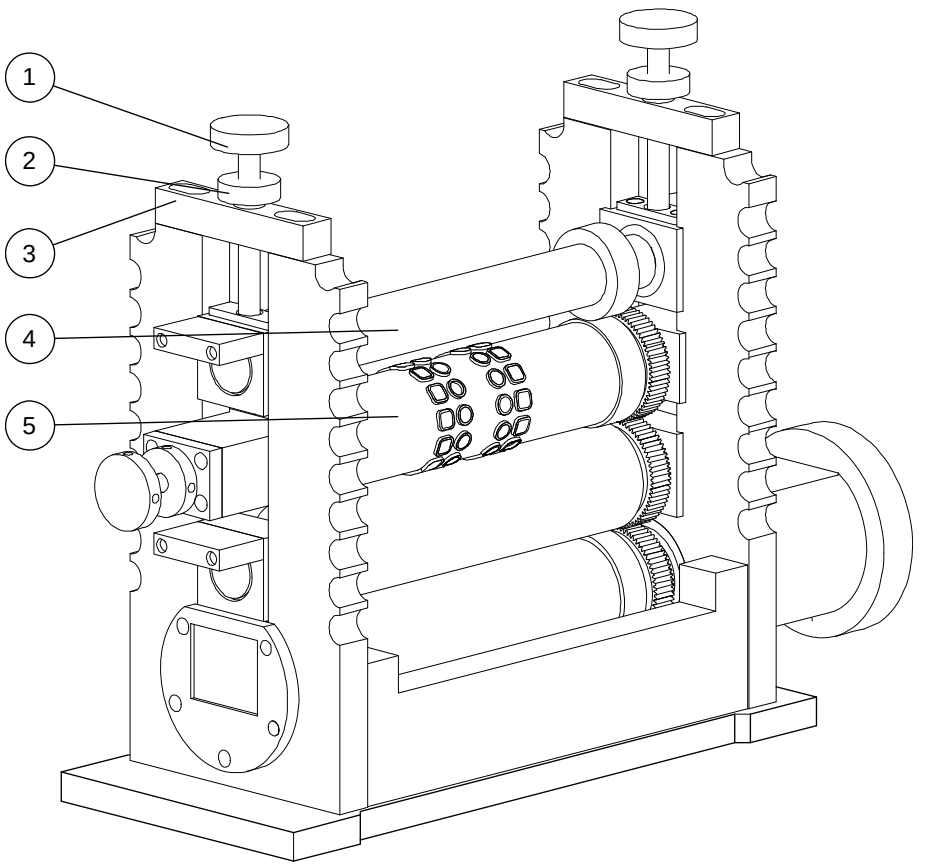


Figure 8-17 Removing die cutter assembly

(1) Knob (2) Nut (3) Pressure knob assembly

(4) Die pressure roller (5) Die cutter assembly

Step 1: Loosen nut (2) and knob (1);

Step 2: Remove pressure knob assembly (3);

Step 3: Remove Die pressure roller (4);

Step 4: Remove die cutter assembly (5);

	**CAUTION** Wear safety gloves when removing and installing die cutter!

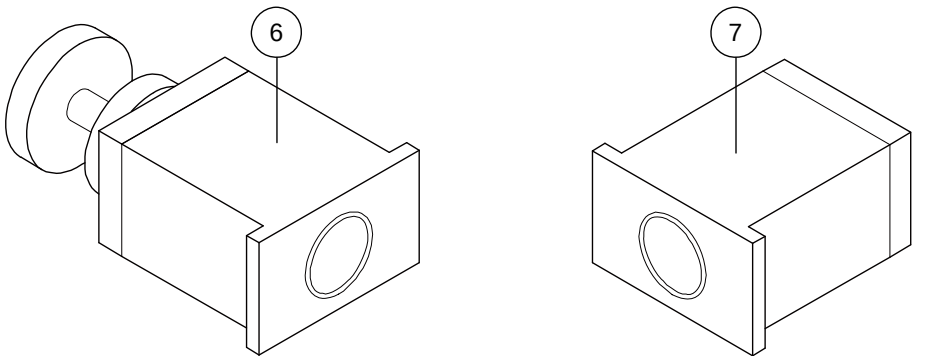


Figure 8-18 Adjustable die housing

(6) Adjustable die housing (outer side) (7) Adjustable die housing (Inner side)

Step 5: Remove adjustable die housing (outer side) (6) and adjustable die housing (Inner side) (7);

Step 6: Install new die cutter;

Step 7: Install other parts in reverse order.

8.3 Lubrication

Obey the instructions in the manual for machine lubrication.

The machine has been fully lubricated before delivery.

Some lubricants have been specified in the lubrication chart, and the same quality lubricants from other brands can also be used.

	**DANGER** ● Turn off the main power switch before doing inspection of oil level and oil quality, and replacement of lubricating oil.
	**WARNING** ● If the lubricant consumption is faster than usual or there is abnormal noise, check the machine, because it may be a sign of machine failure. ● Do not mix mineral oil with synthetic oil. ● Do not lubricate too much. If too much lubricant is injected, clean the part.

8.3.1 Recommended lubricants

The recommended lubricants are shown in Table 8-2.

Table 8-2 Recommended lubricants

Type	Viscosity mm²/s（40˚C）	Series	Use
grease	-	NLGI 2	bearing
lubricating oil	15	ISO-VG15	gear

8.3.2 Die station

Lubrication information of die station is shown in Table 8-3.

Table 8-3 Lubrication information of die station

No.	Machine parts	lubricants	quantity	lubrication cycle
1	bearing housing	NLGI 2	4cm^3	300h
2	bearing housing	NLGI 2	4cm^3	300h
3	gear	ISO-VG15	4cm^3	300h
4	gear	ISO-VG15	4cm^3	300h
5	gear	ISO-VG15	4cm^3	300h

The positions of parts to be lubricated are shown in Figure 8-19.

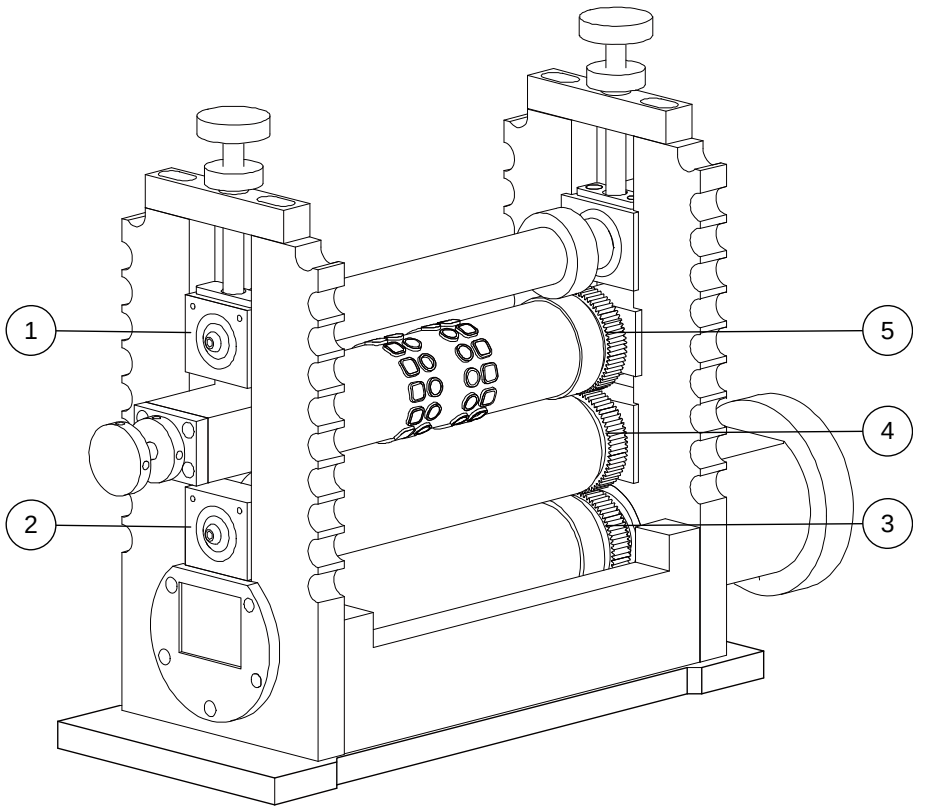


Figure 8-19 Die station lubrication diagram

(1) Bearing housing (2) Bearing housing (3) Gear (4) Gear (5) Gear

8.4 Maintenance for long-time stop

8.4.1 Before long-time stop

Do these inspection and maintenance when the machine is stopped for more than two weeks.

1. Remove material from the machine.

2. Close the main power switch and lock it, close the main air supply and lock it.

3. Clean the dust inside the machine.

8.4.2 Starting after long-time stop

Do these inspection and maintenance before starting the machine that has been stopped for more than two weeks.

1. Inject lubricants, and lubricate all parts of the machine, refer to *Section 8.3 Lubrication*.

2. Turn on the main power switch and manual ON-OFF valve.

3. Do inspection before operation, refer to *Section 7.2 Preparation.*

4. Check oil leakage and air leakage.

5. Check if there are abnormal noise, vibration or high temperature. If abnormal, refer to *Section 8.2 Preventive maintenance.*

9 Troubleshooting

9.1 Safety instructions

For machine troubleshooting, refer to this chapter.

When a fault occurs, check the fault pages of HMI panels to help troubleshooting.

	**WARNING** ● Only skilled and approved maintenance personnel can do maintenance work.

9.2 Procedure

When a failure occurs, obey the troubleshooting procedure shown in Figure 9-1.

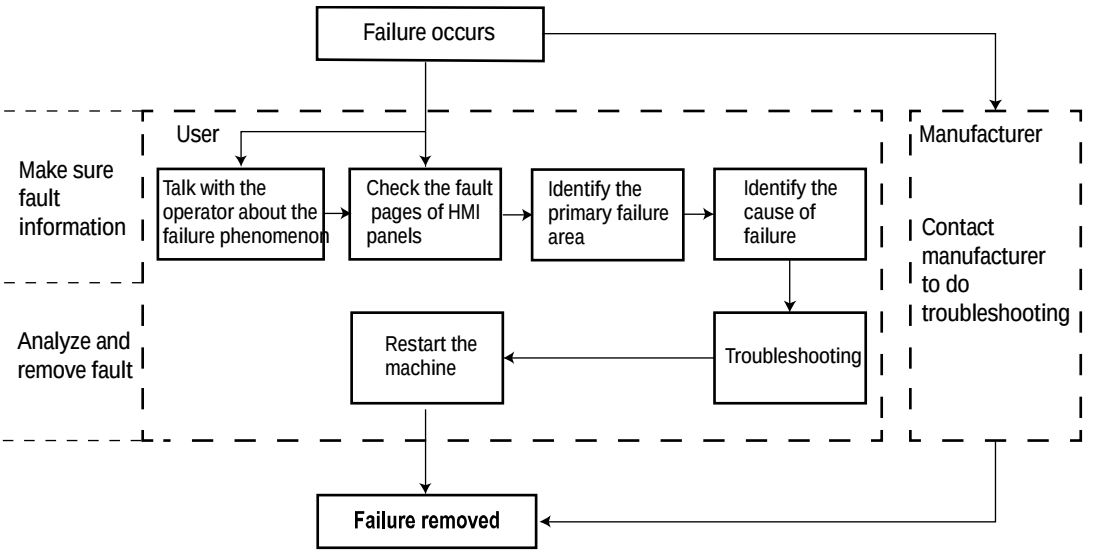


Figure 9-1 Procedure

9.3 Fault list

Faults, causes and troubleshooting methods of the machine are shown in Table 9-1.

Table 9-1 Fault list

Code	Fault	Cause	Method	Reference section
-	Air shaft stopped.	Motor failure.	Repair or replace the motor.	-
		The belt is broken.	Replace the belt.	-
-	Material roll do not rotate synchronously with air shaft.	Air switch sealing problem.	Check if the push-in connector between the air switch and the material shaft is leaking.	-
		Air bag is broken.	Replace air shaft.	9.3.2 9.3.3 9.3.4
-	Buttons can’t work normally.	Bad contact of button.	Meassure if the 24V terminal has a voltage of 24V with multimeter, if not, replace contact or button.	-
-	HMI is dark.	There is bad contact in the power plug-in.	Reconnect the power plug-in.	-
-	HMI data is blank.	The plugs at both ends of the communication cable are not firmly connected.	Reconnect or replace PLC communication cable.	-
-	During operation, material belt behind die station is loose.	"Ratio Set Value" error in the "Cutter Setting" page.	Adjust "Ratio Set Value".	7.4
		Drive roller motors failure.	Repair or replace the motor.	-

Code	Fault	Cause	Method	Reference section
		Coupling is loose.	Tighten the screw or replace the coupling.	-
-	Machine noise.	Gear damaged.	Replace the gear.	8.2.2.2 8.2.2.5
		Air shaft is leaked.	Replace air shaft.	9.3.2 9.3.3 9.3.4
		Pneumatic pipeline is leaked.	Reconnect or replace pneumatic components.	-
		Bearing of anvil roller is broken.	Replace anvil roller.	8.2.2.6
-	HMI: servo motor alarm.	Servo controller/servo motor failure.	Check the fault code displayed on the servo controller, read the manual of servo motor/servo controller.	-
-	HMI: out of material.	Lack of material on air shaft.	Replace material.	7.7.6
-	HMI: short of material.	Lack of material on air shaft.	Replace material.	7.7.6
-	HMI: material overload.	Material overload on air shaft.	Adjust material roll.	-
-	HMI: rewind/unwind set error.	Rewind/unwind parameters are wrong.	Reset rewind/unwind parameters.	7.4
-	HMI: CCD Alarm	CCD order is wrong.	Check CCD order.	-
-	HMI: EC alarm.	Communication failure.	1）Click “Reset Alarm” icon on “Other Settings” page of HMI. 2）If 1) is failed, check the communication cable.	7.4

Code	Fault	Cause	Method	Reference section
-	HMI: async. Set Error.	Asynchronous pitch (calculated based on "Gear Teeth" and "Qty Around" in the "Async. Setting" page) is greater than pitch.	Reset value of "Gear Teeth" and "Qty Around".	7.4
-	HMI: async at max speed.	Machine speed is higher than async maximum speed (the system calculates according to the input async parameters).	Reset async parameters or speed.	7.4
-	HMI: Conveyor alarm.	Conveyor motor failure.	Repair or replace conveyor motor.	-
-	HMI: PLC communication failure alarm.	Communication between PLC and servo system PLC is interrupted.	Click “Reset Alarm” icon on” Other Settings” page of HMI.	7.4
-	HMI: PLC failure alarm.	PLC failure.	Repair or replace PLC.	-
-	HMI: die cutter STO alarm.	Emergency button, safety light curtain, emergency rope or safety door switch is triggered.	Check "Safe state" page of HMI, check the triggered safety device, and press the "Reset" button on suspension HMI console when the safety conditions are met.	7.4

Code	Fault	Cause	Method	Reference section
-	HMI: material shaft STO alarm.	Emergency button or emergency rope is triggered.	Check "Safe state" page of HMI, check the triggered safety device, and press the "Reset" button on suspension HMI console when the safety conditions are met.	7.4

9.4 Typical troubleshooting

9.4.1 Replacing air shaft (left)

1）Tools

Allen wrench 3#, allen wrench 6#

2）Work steps

The method of replacing air shaft is shown in Figure 9-2 and Figure 9-3.

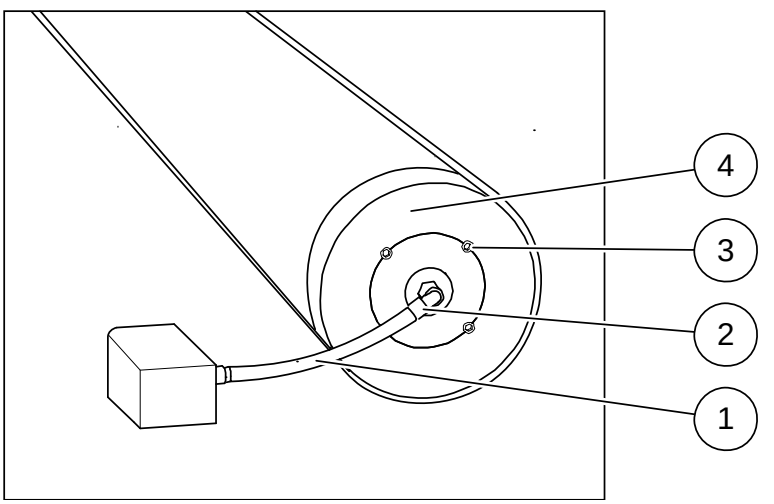


Figure 9-2 Removing pulley assembly

(1) Pipe (2) Push-in connector (3) Screw (4) Pulley assembly

Step 1: Open the safety guard door on the back of the machine;

Step 2: Remove pipe (1);

Step 3: Remove push-in connector (2);

Step 4: Remove screws (3) with 3# allen wrench;

Step 5: Remove pulley assembly (4);

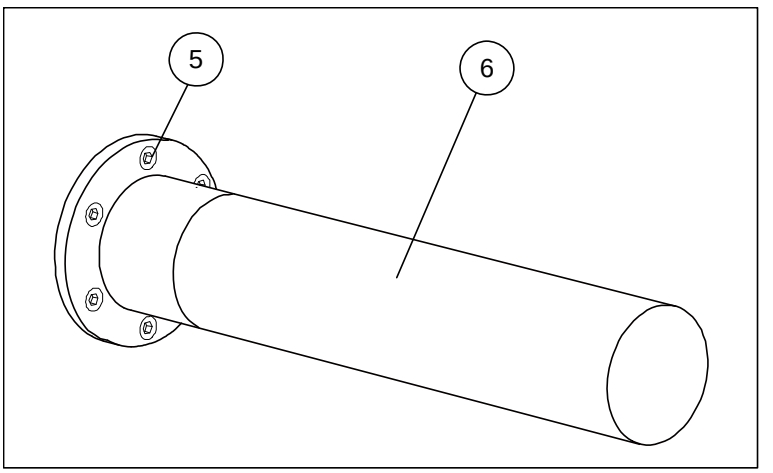


Figure 9-3 Replacing air shaft

(5) Screw (6) Air shaft

Step 6: Remove screws (5) with 6# allen wrench;

Step 7: Remove air shaft (6), install a new one;

Step 8: Install other parts in reverse order;

Step 9: Close the safety guard door on the back of the machine.

9.4.2 Replacing air shaft (right)

1）Tools

Allen wrench 6#

2）Work steps

The method of replacing air shaft is shown in Figure 9-4.

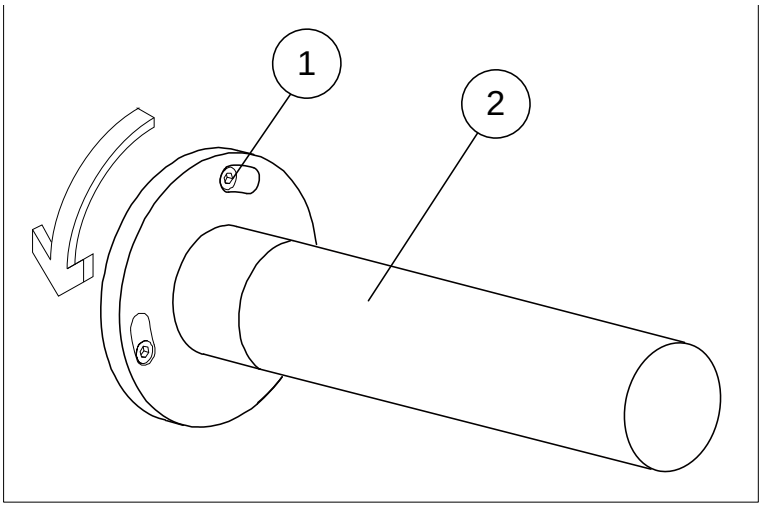


Figure 9-4 Repalcing air shaft

(1) Screw (2) Air shaft

Step 1: Loosen screws (1) with 6# allen wrench;

Step 2: Rotate as direction shown in Figure 9-4 and remove air shaft (2), and install new one.

9.4.3 Replacing air shaft (up&down)

1）Tools

Allen wrench 3#, allen wrench 5#, allen wrench 6#

2）Work steps

The method of replacing air shaft is shown in Figure 9-5, Figure 9-6 and Figure 9-7.

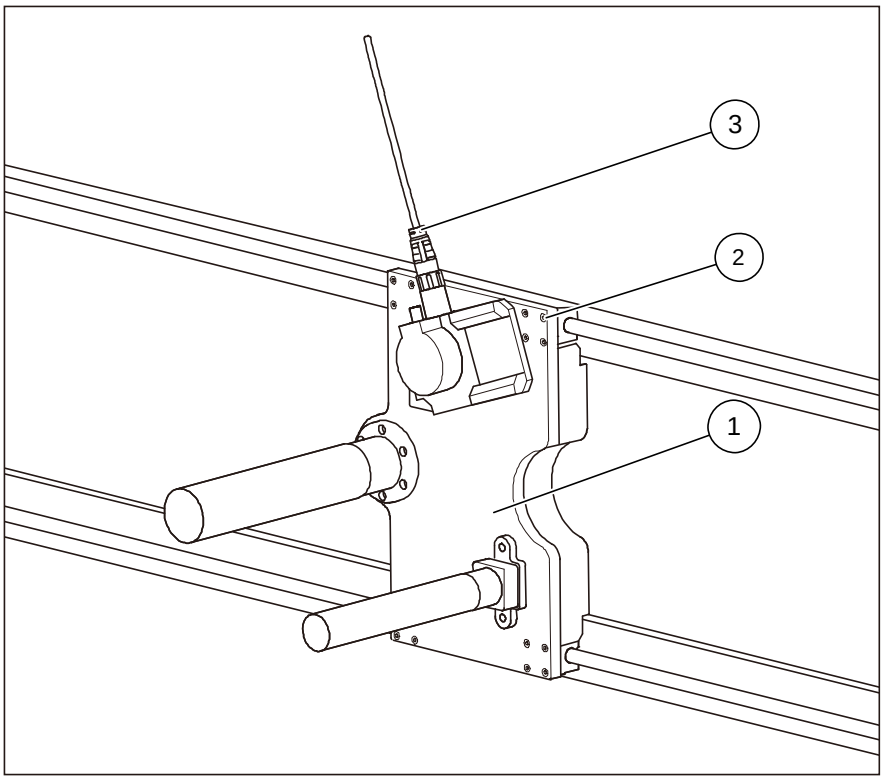


Figure 9-5 Removing air shaft assembly

(1) Air shaft assembly (2) Screw (3) Cable connector

Step 1: Remove cable connector (3);

Step 2: Remove screws (2) with 5# allen wrench;

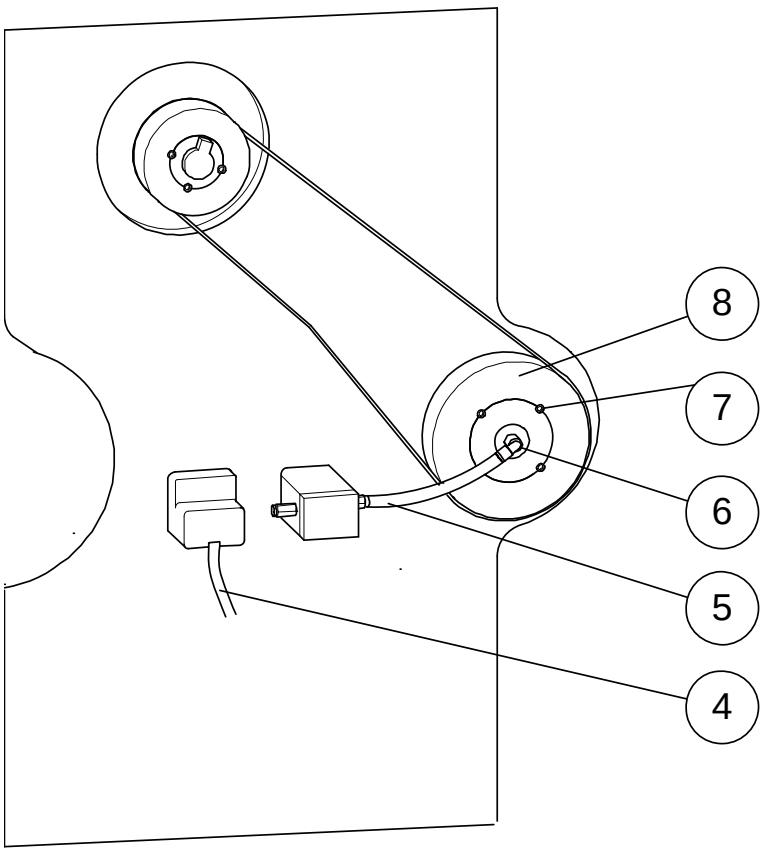


Figure 9-6 Removing pulley assembly

(4) Cable (5) Pipe (6) Push-in connector (7) Screw (8) Pulley assembly

Step 3: Disconnect cable (4) and pipe connected to machine;

Step 4: Remove air shaft assembly (1);

Step 5: Disconnect pipe (5);

Step 6: Remove push-in connector (6);

Step 7: Remove screws (7) with 5# allen wrench;

Step 8: Remove pulley assembly (8);

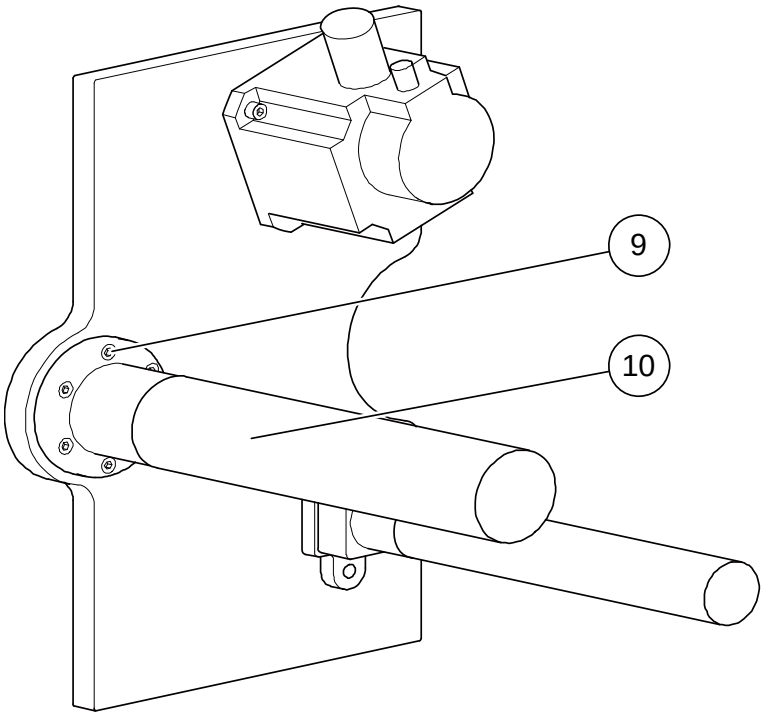


Figure 9-7 Removing air shaft

(9) Screw (10) Air shaft

Step 9: Remove screws (9) with 6# allen wrench;

Step 10: Remove air shaft (10), install a new one;

Step 11: Install other parts in reverse order.

9.4.4 Removing material wound on die cutter or anvil roller

1）Tools

Allen wrench 5#

2）Work steps

Step 1: Remove die cutter or anvil roller, refer to *Section 8.2.2.7 Replacing die cutter or Section 8.2.2.6 Replacing anvil roller;*

Step 2: Remove the material wound on the die cutter or anvil roller;

Step 3: Install die cutter or anvil roller, refer to *Section 8.2.2.7 Replacing die cutter or*

Section 8.2.2.6 Replacing anvil roller;

Step 4: Connect material;

Step 5: Turn on the manual ON-OFF valve;

Step 6: Turn on the main power switch;

Step 7: Check and solve the error message on HMI;

Step 8: Press "Reset" button on the right suspension HMI console;

Step 9: Check and turn mode-select key switch to "Setup" mode;

Step 10: Start the air shaft through HMI or "Air shaft start/stop" button on the machine;

Step 11: Hold jog grip switch and jog to observe if the blade position is correct;

Step 12: Adjust the position of the blade by turning the "L/R" on the operation console;

	**WARNING** Before adjusting the position of the blade, raise the outer end of die cutter to prevent the blade from damadge.

Step 13: Turn mode-select key switch to "Run" mode;

Step 14: Press "Run" button on the operation console;

Step 15: Turn "Speed" switch on operation console clockwise to start the machine.

10 Accessories, special tools and spare parts

10.1 Accessories

10.1.1 Air shaft sleeve

The standard air shaft has an inner diameter of 3 inches. When using a material roll with an inner diameter of 6 inches, an air shaft sleeve needs to be installed on the air shaft.

The method of using the air shaft sleeve is shown in Figure 10-1.

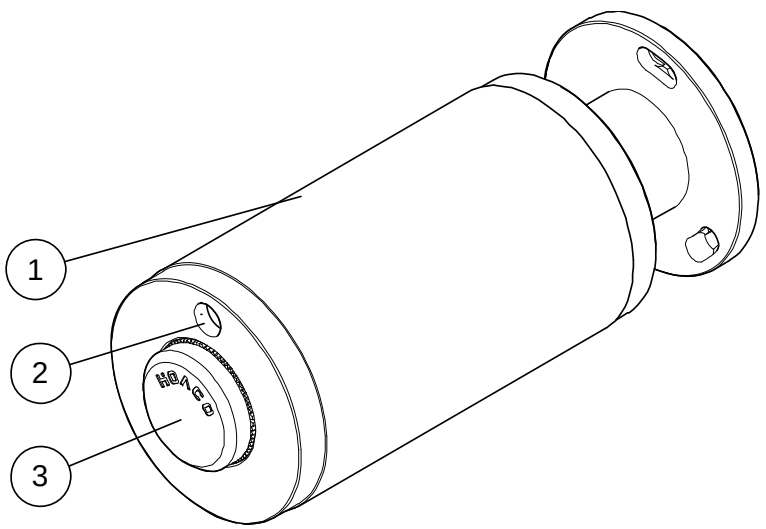


Figure 10-1 Air shaft sleeve

(1) 6 inches air shaft sleeve (2) Inflatable hole (3) 3 inches air shaft

10.1.2 Station height extension block

Station height extension block is used to increase the height of die station.

The method of using station height extension block is shown in Figure 10-2.

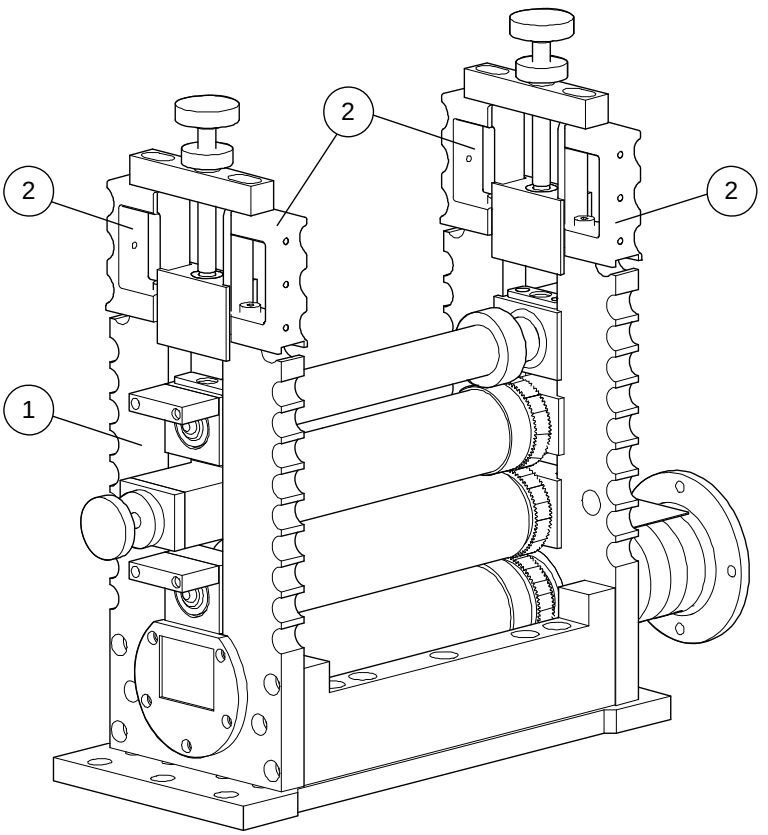


Figure 10-2 Station height extension block

(1) Die station (2) Station height extension block

10.1.3 Moveable air shaft

Moveable air shaft is used for unwinding, can not be used for rewinding.

The method of using moveable air shaft is shown in Figure 10-3.

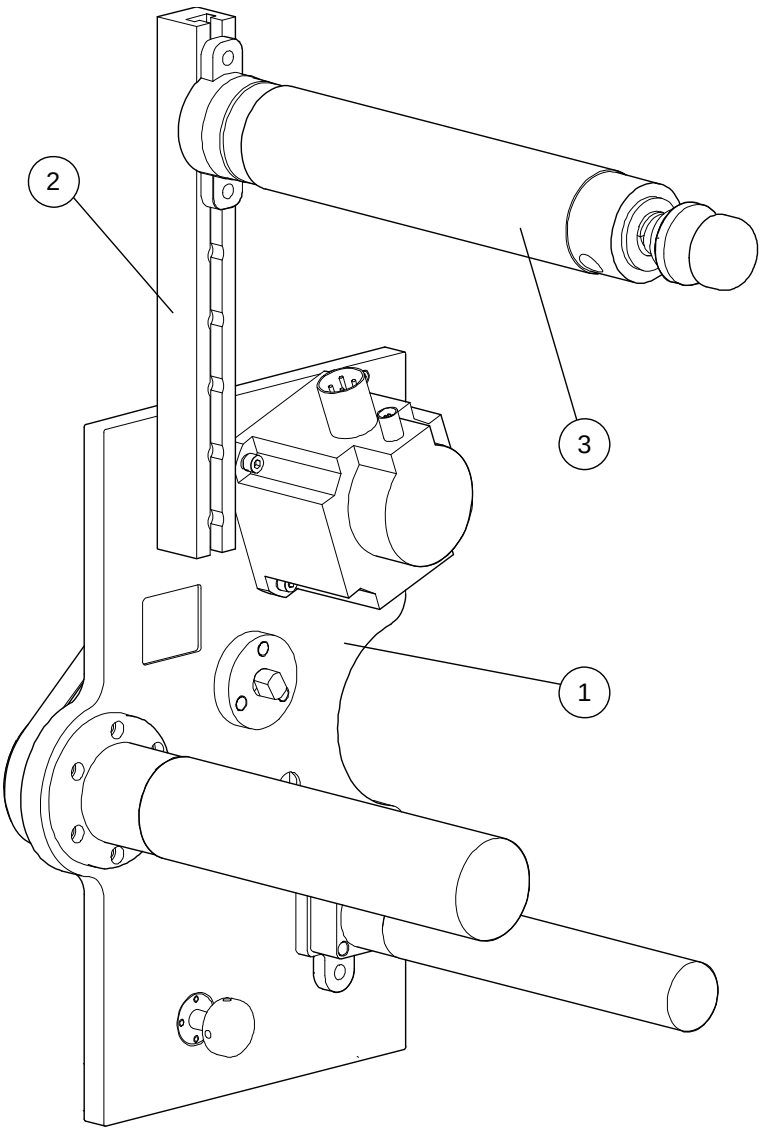


Figure 10-3 Moveable air shaft

(1) Air shaft assembly (2) T-type guide rail (3) Moveable air shaft

10.1.4 Knife blade holder

Knife blade holder is used to divide a piece of material into several pieces (accuracy ± 0.5mm).

The method of using knife blade holder is shown in Figure 10-4.

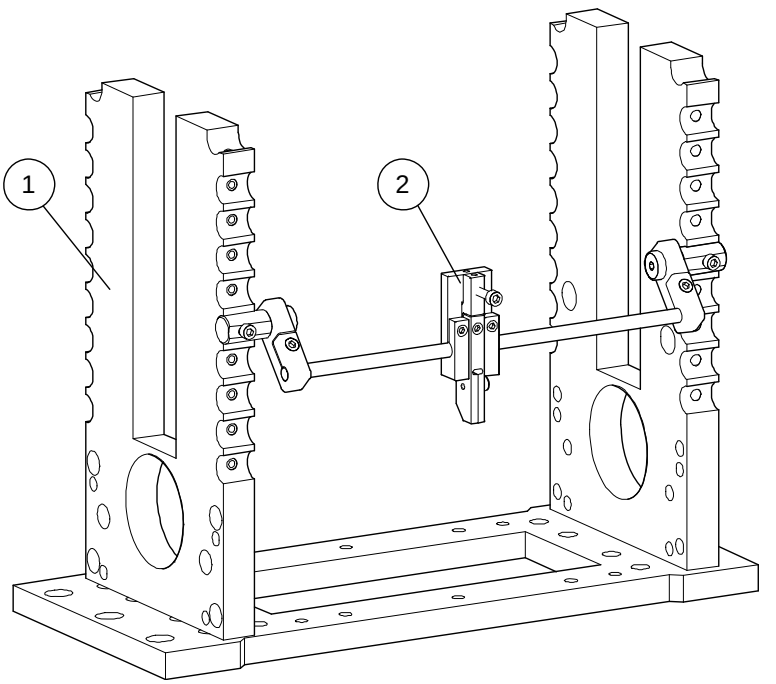


Figure 10-4 Knife blade holder

(1) Die station (2) Knife blade holder

10.1.5 T-type guide rail

T-type guide rail is used to guide materials to other places when space is small.

The method of using T-type guide rail is shown in Figure 10-5.

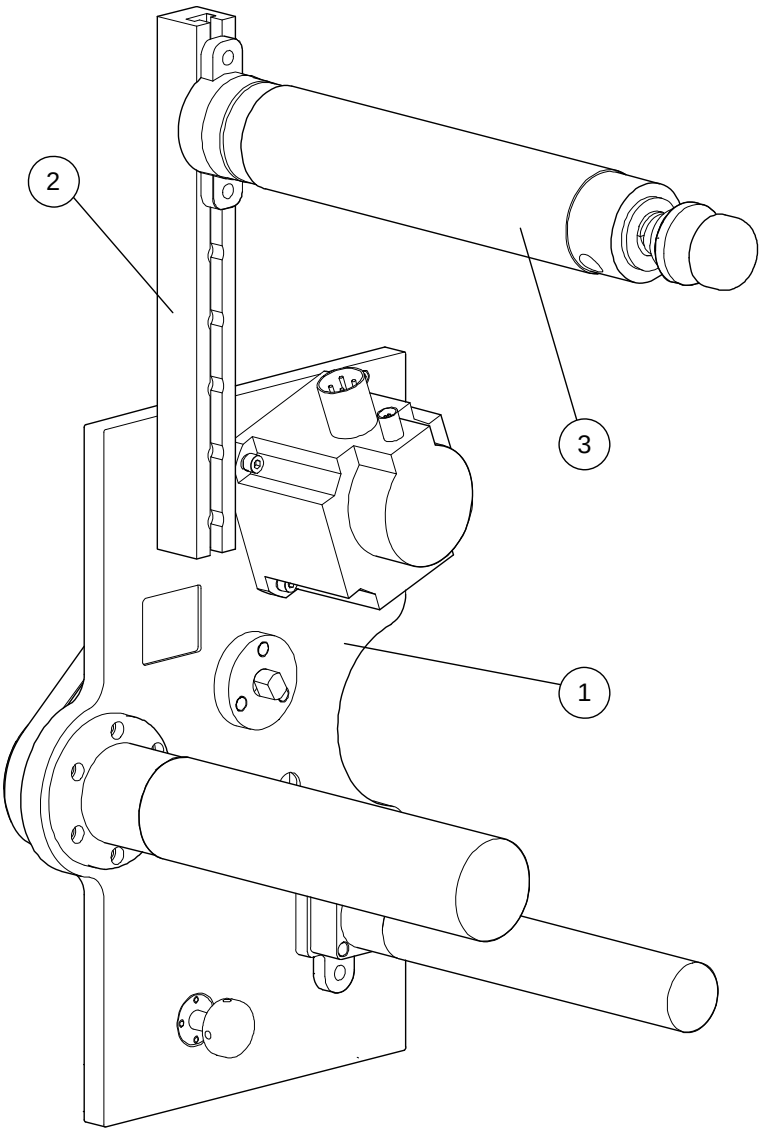


Figure 10-5 T-type guide rail

(1) Air shaft assembly (2) T-type guide rail (3) Moveable air shaft

10.2 Special tools

Information of special tools are shown in Table 10-1.

Table 10-1 Special tools

No.	Name	Function	Quantity
1	Accessories shelf	Used to place the rollers	1
2	Toolbox	Place tools and screws	1
3	Oil cruet	Inject lubricant	1
4	Air blow gun	Inflate moveable air shaft	1

10.3 Spare parts

You can get spare parts recommended in Table 10-2 through HOACO.

Table 10-2 Recommended spare parts

No.	Name	Model	Brand	Recommended number
1	Solenoid valve	SY5120-5GD-01	SMC	1
2	Servo motor	ECMA-F11308PJ	DELTA	1
		R88M-1M1K020H -S2	OMRON	1
3	Servo motor driver	ASD-A2-1021-E	DELTA	1
		R88D-1SN10H-ECT	OMRON	1
4	Gear	81T(thickness 9mm)	HOACO	1
		81T (thickness 16mm)		1
		76T		1
5	Anvil roller	81T	HOACO	1
6	Drive roller	76T	HOACO	1
7	Synchronous belt	320XL-20	HOACO	1
8	Short handle knob	XB2BD53C	SCHNEIDER	1
9	Pause button	YMP22C-LMM1-S3C5-G-AD24	MISUMI	1
10	Air shaft start/stop button	XB2BW31B1C	SCHNEIDER	1
11	Gearbox	VRB-090C-10-K3-28HB22	SHIMPO	1

11 Annex

11.1 EC declaration of conformity

EC Declaration of Conformity

Machinery Directive 2006/42/EC
Electromagnetic Compatibility 2014/30/EU

This is hereby declared that following designated product complied with the essential health and safety requirements of above Council Machinery Directive(s) on the approximation of the laws of the Member States relating to it.

Product description:

Rotary Die Cutting Machine

Serial number:

H16-200301

Model(s):

HW2500C16

Standard(s):

2006/42/EC，EN ISO 12100:2010, EN 60204-1：2018
2014/30/EU,EN IEC 61000-6-4:2019,EN IEC 61000-6-2:2019

This declaration is the responsibility of the Manufacturer:

Shandong HOACO Automation Technology Co.,Ltd.
No.2892 Zhangying Community, Qingchi Subdistrict, High-tech Zone,Weifang, Shandong, 261061,P.R.China

Name and address of the person (established in the Community) compiled the technical file:

HOACO Automation Technology B.V.
Prinses Margrietplantsoen 33, 2595AM, The Hague, the Netherlands

This declaration applies to all specimens manufactured identical to the model submitted for testing/ evaluation. Assessment of compliance of the product with the requirements relating to safety standards listed above was performed by manufacturer.

SIGNED ON BEHALF OF
Shandong HOACO Automation Technology Co.,Ltd.

SIGNATURE: Mandy Rong

TITLE: Manager

PLACE: Weifang. China

DATE: May 9, 2020

CE

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