

# **MACHINERY ILLUSTRATION**

## **CORNER AND SIDE TYPE CARTON SEALER FG500L**

### **PREFACE**

At first, thank you very much for ordering the series of the four-counter automatically sealing packaging from our company. Our company adopts the assembling of single machine in the design of the function. This equipment is connected by single machine and the principle of design is to provide wide choices in the proper range.

The series of the four-counter automatically sealing packaging from our company will improve on the problems frequently occurred. The beauty of outside and the inner structure are all designed after elaborate investigation. The installation and test procedure should proceed step by step to satisfy the requirements of clients and to ensure successful sealing packaging. The functions are listed in the following:

1. Free from extra lube: screw tuning is adopted in the part of engine transmission. The outside frame plates of the main work are cut by the high-density radium. The width and height adjustment group and the main engine header with belt are all spindled in the principle of continuous action. The linear axletree with lube is adopted in the sliding part , so it is free from extra lube.

2. The unique design of the main engine header with belt has U-shaped cingulated groove supporting the belt terminal so droop will not occur.

3. As for the adjustment of specification of the paper box (width, height and size), the four-counter automatically sealing machine (adjustable) adopts the tooth-welding synchronous adjustment to ensure smooth movement with no shaking. The central position is accurate and assured.

4. The uniqueness of functions (unavailable among the counterparts at present) of this type has three characteristics:

A. Special translate structure, designed in the principle of synchronous movement of the right and left gear bars.

B. The main engine header with motorial solder mainly adopts unilateral mode as the principal axis of the belt, sets the patch of U-model path and half-arc zenith to avoid the break of the head of adhesive tape. This design aims at working under the situation when the convenient belt can't paste on the adhesive tape.

C. The engine header with belt: four corners in one engine all adopt unilateral belts in order to take the convenient loading and carrying.

5. The products of this series undergo nine-year design and improvements. Now it is the mature machine type, so problems are few, the ratio of faults is low and the

maintenance is easy.

6. Effects of the belts: As the adhesive tape's thickness that customers use is different, the design for Corner-type machine's pasting method is also different from other complanate pasting methods. The Corner-type machine uses the flat forwarding pasting at half of the four corners' width. Besides the half, there are other institutions of the machine(folded corner, side-way paste).Since the adhesive tape belongs to fluttering object, the effects of the pasting are also different. Therefore, in order to improve the effects of the corner-type pasting, our company keeps on doing experiments for the belt for more than ten years, and adopting many kinds of pasting methods such as round-hair pasting tape, slight huffing pasting tape and so on to use as the design of the belt. But still can't achieve the best effect. Then we spent much manpower and material resources to work out the design in the year 1996, that is, use the tailor-made, durable Nylon thread to invent the nylon line pasting to work as the pasting belt, but still there is little fluttering pasting effect of the adhesive tape's lines, as the adhesive paper is soft and there is existing dead angle which can't be overcome. It belongs to international problem (many countries such as Italy, Japan, the USA, their advanced machines have the same problem).Regarding to the debugging of impact, the best one is the experiential debugging. But our machine has its advanced effect than others so far.

**Cautions:** when using the automatically packaging equipments of H-type paper box, attentions needs to be paid in the following aspects:

1. Please keep the cleanness and damp proof of the machine.
2. When installing or discharging the belt or in maintenance, the electric source and gas source should be turned off.
3. Gasoline for pressure (combined by three points) should be checked frequently to make sure there is enough gasoline to ensure smoothing of the parts.
4. The knives for cutting the belt(dent form knife) should be kept clean to ensure good effect of belt.
5. Though the products of this series do not limit the specification of BOPP belt, yet

the material of belt should not be too thin in case the belt will crinkle or other problems occur when expanding too much.

This pamphlet for instruction includes all the detailed instructions for installation and operation of this machine, so the operator should read it carefully to ensure the safety of staff and the prolonging of the service life of the machine.

### **Instruction of danger warning signs**

The signs of “ELECTRIC WARNING SIGNS” as shown in the following drawing will be affixed on electric box and junction box. Except for the operator and maintenance men in operation or maintenance, others are forbidden from operating the machine.



The signs of “Warning signs for danger of hands” as shown in the following drawing should be affixed on the electric box on the desk or movement parts to prevent from touching in operation. In maintenance, the machine should first be stopped and then maintenance can proceed.



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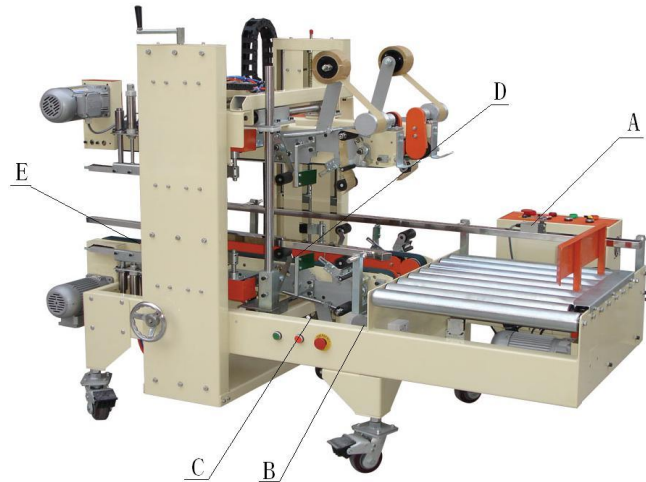
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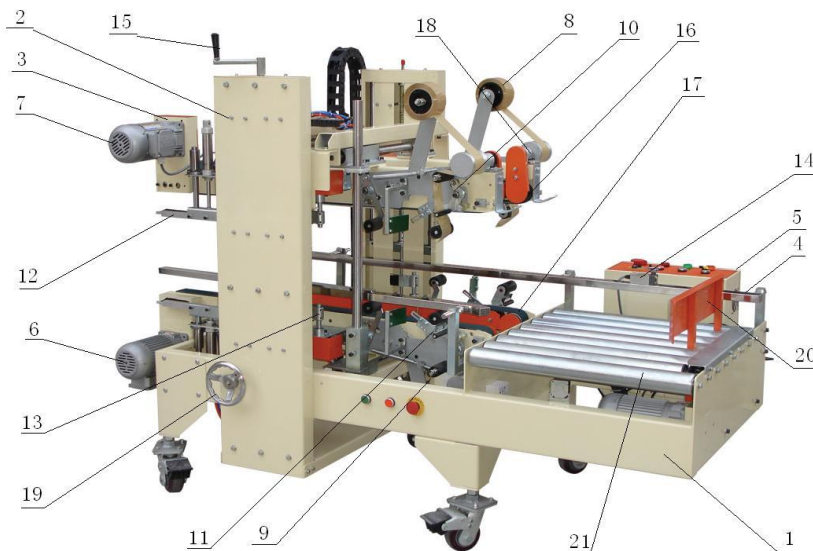
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1. OUTLINE DRAWING



## 2.1. BRIEF INTRODUCTION TO THE MAIN STRUCTURE



- |   |                                     |
|---|-------------------------------------|
| 1 main frame structure                  | 12 the adhesive tape brushing unit  |
| 2 main frame column                     | 13 Fold Angle impacting unit        |
| 3 upper main frame                      | 14 case pushing starting switch     |
| 4 width guiding unit                    | 15 height adjustment crank          |
| 5 main control box                      | 16 upper transport strap unit       |
| 6 lower transmission deceleration motor | 17 lower transport strap unit       |
| 7 upper transmission deceleration motor | 18 the tape strain eliminating unit |
| 8 upper adhesive tape                   | 19 the width adjustment crank       |
| 9 lower adhesive tape                   | 20 case pushing unit                |
| 10 The upper part of pasting outfits    | 21 conveyer with moter unit         |
| 11 The lower part of pasting outfits    |                                     |

## 2.2. THE BRIEF INTRODUCTION TO THE MAIN STRUCTURES OF THE EXTERIOR

Number	Name	Number	Name
01	The group of the main frame structure	21	Stop and restoration(jiggle switch)
02	The bearing for the main frame	22	The pressure-adjustive valve of the moving plate
03	The first part of striking outfits	23	Right-and-left sides folding outfits(Photoelectricity Switch)
04	Central-divided machinery plate	24	Highly-restoration inspecting (Magnetic spring switch)
05	Highly-orientation moving plate	25	Moving plate usage (electromagnetic valve)
06	The second part of capper outfits	26	The first part of striking outfits(electromagnetic valve)
07	The upper part of adhesive tape roll	27	The second part of striking outfits(electromagnetic valve)
08	The lower part of adhesive tape roll	28	Right-and-left folding fittings usage (electromagnetic valve)
09	The upper part of pasting outfits	29	High-gas vat braking usage(electromagnetic valve EIA/8)
10	The lower part of pasting outfits	30	High-gas vat braking usage(electromagnetic valve E3A/8)
11	Main driving-brake motor	31	Tri-dots combination
12	Main controlling box	32	Width of gas vat(electromagnetic valve)
13	Highly-orientation gas vat	33	High- gas vat of pressure-adjustive valve
14	Discretion-adjustive gas vat	34	Width of gas vat of the pressure-adjustive valve
15	Discretion-orientation Magnetic spring switch	35	Width-adjustive gas vat
16	Striking bar of gas vat outfits	36	STOPPER vat
17	Grabbing mode of strap-transmission outfits	37	Carton center sewing(sides pressing wheel outfits)
18	Portal STOPPER outfits	38	Sides-pressing guiding wheel outfits and oriented lined gear
19	Strap nip, striking usage(jiggle switch)		

20	Strap stop, upper reamer outfits for lower orientation		
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### 3.1. THE ACTION INSTRUCTION OF OPERATION PROCEDURE

#### CONTROL

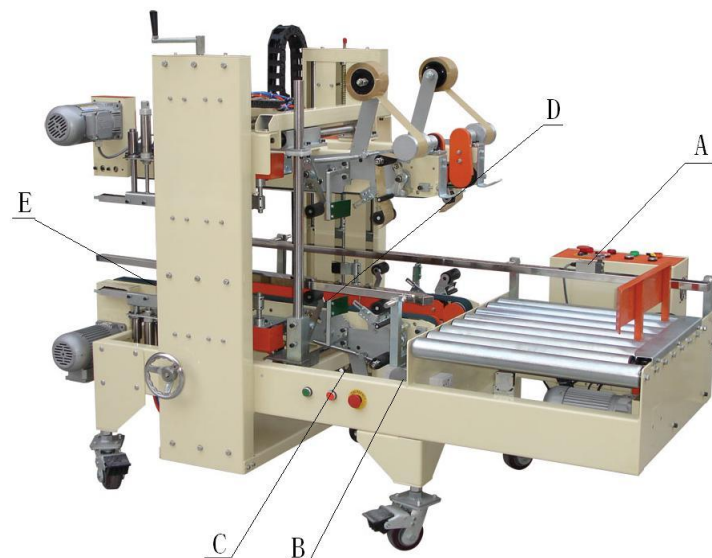
A. Denotation: when the carton is put into the machine and the front point (A point) touch the jiggle switch, the dynamical roller will stop, and the machine will push the paper in.

B. Denotation: when the carton is put into the machine and the front point (B point) touch the jiggle switch, the machine will fold the angle into the back after the carton is disengaged.

C. Denotation: when the carton induces C point, the strap will stop moving and the pasting outfits will fold into four angle and long margin. After the action is finished, the strap outfits is on crucial state.

(The above action procedure should be operated ordinally)

### 3.2. MACHINE'S CONTROLLING POINTS REMARK



(A point) Touch the jiggle switch, the dynamical roller will stop.

(B point) Magnetic spring switch turns off; the carton-pushing outfits will do the ingress.

(C point) Magnetic spring switch turns on; the carton-pushing outfits will stop the ingress.

(D point) When touching the jiggle switch, the machine will fold, chase and strike.

(E point) When touching the jiggle switch, the strap will stop pasting, finish restoration and send



## 4 INSTRUCTION OF OPERATION

### A . Air pressure adjustment

1. Air pressure supply 5-6 kg/c m<sup>2</sup>

### B. Electronic controlling operation:

1. Power supply 220V/AC 1  $\phi$  50/60HZ: Provided by central-controlled trunk
2. Controlling power DC24VAC: Provided by central-controlled trunk

3. POWER ON/OFF : Control the power switch.

4. Power supply light: Control the power supply indicator.

5. Urgent stop: Press and stop the machine, need to circumvolve the switch before restoration.

6. Start: The machine starts to work, please pay attention for safety and don't get close to the entrance & exit of the front and back sides.

7. Stop: The machine stops working.

### C. Operation situation:

1. Under normal operation, the green indicating light on controlling engine is on, which means the machine is under normal operation situation

2. Under abnormal operation, the green indicating light on controlling engine is glittering and the machine stops. Please press the urgent stop button and touch the ALARM. You can only press the green button for re-starting the machine after resolving the problem.

3. If the motor is over loaded, the indicating light is off and keeps ALARM.

4. If you discover the operation is abnormal, please press the urgent stop or stop button to avoid burning down the motor or mangling the machinery.

**Please pay attention to your safety when eliminating the problem. Safety is the first.**

## 5. MAINTENCE FOR GAS-CONTROLLING OUTFITS(USAGE OF WASTING MATERIAL)

### A. QTri-points combination:

1. Check if the gasoline is enough or not, if not, please replenish with the special air pressure gasoline (transparent bottle gasoline, its concentration can't be too dense. (There is attached picture for illustration this page)).

**Please don't replace by other gasoline casually to avoid preventing the return of the air pressure or malfunction.**

2. Check the water purified cup, i.e. check if the water storage is excessive often, if yes, then the excessive water need to be drained to avoid damaging the air pressure.

**Suggestion:** A. The best maintenance for the water purified cup is draining the water once a week.

B. Air pressure vat: Often brush the axis to prevent dust filtering into the piston, which

may cause gas leaking.

C. Maintenance of the air pressure pipe: If the air pressure pipe need to be torn down, please pay attention if the pipe is winding before installation and orientation. If the pipe is winding, please lead it back to smooth to avoid air backlog situation.

## 6. INSTRUCT FOR GENERAL FAULTS ELIMINATION

1.Abnormal operation	a. Check to see if the relative LS/PH/PS are normal b.Check to see if the pressure source and the pressure of pressure regulating valve
2.Abnormal power supply	a. Check to see if the switch is damaged b. Check to see if the voltage is stable. c. Check to see if the voltage is stable. d. Check to see if the distributing lines are loose
3.The immobility of the engine	a. Check to see if the butteries jump out b. Check to see if the “OUTPUT” outputs c. Check to see if the “RELAY” is ok. d. Check to see if the engine is damaged e. Check to see if the chains are ok f. Check to see if the axis is normal g. Check to see if the screws are loose
4.Abnormal action of pressure cylinder	a. Check to see if the “OUTPUT” outputs b. Check to see if the “RELAY” is ok. c. Check to see if the electromagnetic is ok. d. Check to see if the pressure regulating valve and the components of pneumatic control are normal. e. Check to see if all the switches are normal. f. Check the inside of the pressure cylinder g. Check to see if the screws are loose
5.Abnormal operation of the belt	a. check to see if the axletree of the engine is normal b. check to see if the belt is damaged c.check to see if the tension of the belt needs adjustment
6. Abnormity of the belt	a. check to see if the parts of belt wear b. check to see if the screws are loose c. check to see if the belt material is good d. check to see if the blade is changed

## 7. METHODS OF ELECTRIC CONTROL MAINTENANCE

### 1. Brief introduction to the preface

A. The general method for electronic control is simple. First, get a whole understanding of the position of this machine and functions of each part.

B. The electronic control of this machine takes the electronic controlling outfits as its main control, and contains the control of each limitation switch, photoelectricity

switch, magnetic spring switch, etc..

1. Wiring is the main controlling system.
  2. Limitation switch is generally set up at the controlling touchable point of the object.
  3. Photoelectricity switch is generally set up at the controlling untouchable point of the object.
  4. Magnetic spring switch is generally set up on the wall of the gas vat's pipe.
- Decelerating motor is generally used for transportation and transmission.

## 2. General faults

Problem one: The strap can't be operated.

- a. Reason: If the power switch is on or off; if the urgent stop switch is started or not;
- b. If the air pressure valve is open or not; if controlling touchable point of the limitation switch is malfunctioned or the height and width of the circling point is not oriented.

Fault elimination: Check if the disengaged point of the trunk is correct or not; check if the jiggle switch's flexibility is normal or not.

Problem Two: Touching (A point) jiggle switch but not push the carton.

- a. Reason: (B point) Magnetic spring switch doesn't do the orientation; electromagnetic valve is air-logged or burnt down; limitation switch is malfunctioned; or continuous electric appliance is in bad connection.

- b. Faults elimination: Restart first, if the restart is invalid, then check all the controlling points related to Point B to see if the orientation is done or malfunctioned.

Problem 3: The chasing outfits don't work.

- a. Reason: (D) Limitation switch is malfunctioned; electromagnetic valve is air-logged or burnt down; or continuous electric appliance is in bad connection.
- b. Faults elimination: Restart first, if the restart is invalid, then check all the controlling points related to Point D to see if the orientation is done or malfunctioned.

Problem 4: line-pasting doesn't work.

- a. Reason: E point or the linked programme of Magnetic spring switch (E Point) is not oriented or electromagnetic valve is malfunctioned.
- b. Faults elimination: Watch the flexibility of limitation switch (E point); or check if the gas vat or electromagnetic valve is malfunctioned. (Checking method: examining if the air in-and-out for the manually-electromagnetic noumenal valve is regular or not.)

### **Special instruction:**

The above mentioned problems belong to the examination of common malfunction. Besides, other problems which are related to circuitry, you should pay attention to the possibility of bad connection or broken line. This is another important checking point.

## **8. THE EXAMINATION AND REPAIR OF PNEUMATIC CONTROL**

Brief introduction to the preface

A. The general method for pneumatic control is simple. First, get a whole

understanding of the position of pneumatic control and functions of each part. Please refer to the instruction in page 1-1 and page 1-2.

B. The pneumatic control of this machine is composed of combination of three points, electromagnetic valve and pressure cylinder which form a loop system of pneumatic control.

C. The loop system of pneumatic control is closely related to the pneumatic control, contributing largely to each structure. Both the two system are indispensable.

### General faults:

Tri-points combination malfunction

Problem one: the fault of the combination of three points

1 Reason: generally speaking faults will not occur unless it is damaged by external force or leakage occurs because the machine has not been maintained or repaired for a long time.

Fault elimination: change the machine into a new one or refer to page nine to see if the maintenance is proper.

Problem two: the fault of electromagnetic valve

1. Reason: the coil is burned or the ventilation axis of the electromagnetic valve wears which causes leakage inside the machine.

Fault elimination: change the machine into a new one

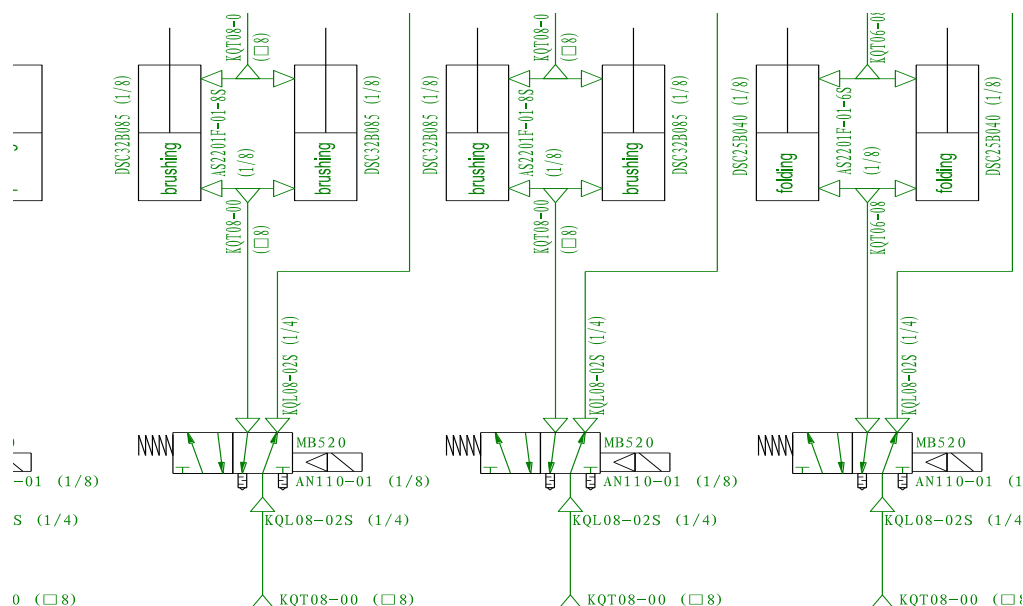
Problem three: the fault of pressure cylinder

2. Reason: the piston wears and causes leakage

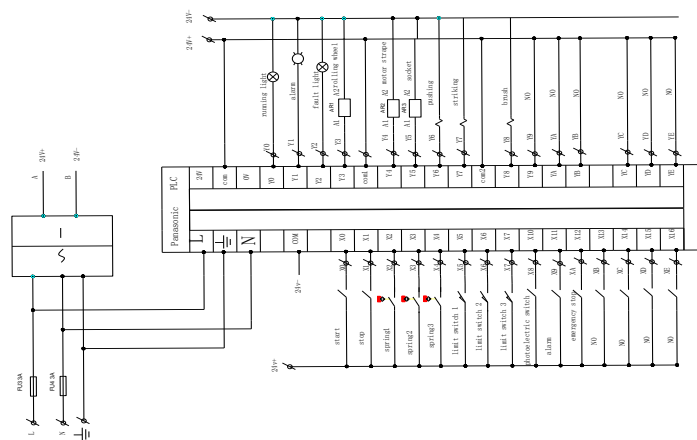
Fault elimination: change the machine into a new one

**The methods listed above are general ones. As for the pneumatic components, grease lubrication is also very important.**

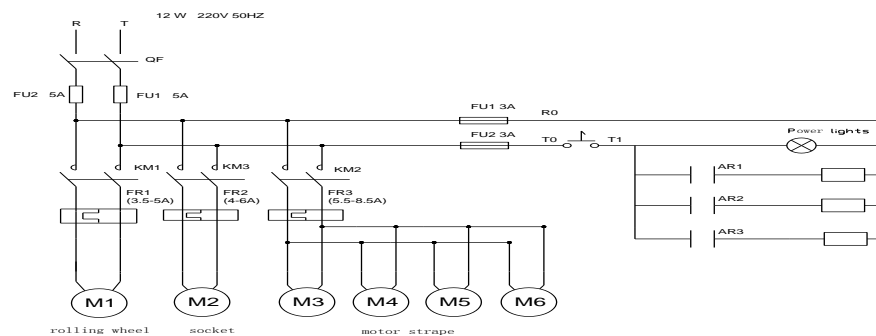
## 9. THE DIAGRAM OF PNEUMATIC CONTROL



## 10. THE DIAGRAM OF CONTROL CIRCUIT



## 11. THE DIAGRAM OF THE PROCEDURE OF ELECTRIC CONTROL



## 12. THE ADJUSTMENT AND OPERATION OF THE BELT MACHINE

The adjustment and operation:

At first, place the belt on the belt plate, as shown in the picture one and then pass the belt through B idle gear and then C one-way gear and D cupreous gear and finally through the bearing gasket F and then the belt comes out from the anterior rubber gear. **The side with glutinosity should face toward outside.**

## 13. THE CHART OF THE PARTS OF THE BELT

Sequence number	Number	Name	Quantity	Specification
1	TH401A	The anchoring plate For the belt supporting	1	
2	NF010A	The adjustable screw	1	
3	FA001A	Spring pressured	1	
4	HA010B	Gasket pressured	2	
5	NA018M	The fixed adjustable screw cap	1	
6	TH402A-2"	The belt supporting	1	
	TH402B-3"			
7	TH403A-2"	the anchoring rod for the belt supporting	1	
	TH403B-3"			
8	SF610F	The parallel inner hexangular screw	4	M6*10

## 14. PREPARATION MADE BEFORE STARTING

1. Check if all the electric parts are connected. If they are well-connected, electricity can be delivered.
2. Clean all the places on working desk, especially the movement part to avoid the sundries and to prevent especially the metal and other hard matters from falling into the inside of working desk.
3. Check if all the parts of movement part can operate well. If necessary, some parts should be operated for one or two circles by man power. If nothing goes wrong, the machine can be operated without load.

## 15. INSTRUCTION PROCEDURE OF STOPPING

Operation of emergent stopping

Warning: Don't do emergent stopping if it is not emergence.

Emergent stopping switch are equipped in all the main parts in the machine.

If emergence occurs, switch on the switches to stop the machine abruptly.