Preface

- This "Operation Instruction Manual" is given with each machine,please keep this manual for your reference at any time.

- Please read this instruction manual carefully before you operate this machine.

- Due to technology upgrading and product special requirement, machine may be different from instruction manual partially, please be subject to actual machine, we will add additional explanation as much as possible.

- When the equipment is working normally, please keep some space in front of and at the back of the equipment, which is required for operation and maintenance. Besides, please do not block heat emission of the equipment.

- Equipment operating environment: temperature:5～25℃, relative humidity:20～95%, place with no direct sunlight, no condensation, no splashing water, oil and chemical.

- The technician who operates and repairs this machine must be able to use computer.

- The computer that is equipped for the machine can be only used for this equipment, can not be used for other purposes; it is strictly forbidden to connect any other movable memory device with virus with the machine to avoid damaging control system.

- The USB flash disk that is given with machine must be protect from virus, do not use it on other computer casually.

- For the sake of people's safety, when the machine is running, please do not open the front and back movable door and reach out your body into the machine or move close to the machine without taking any safety protections, otherwise, it will bring unnecessary personnel injury.

- Turning the power on and off repeatedly will be one reason of machine breakdown. After turning off power, ,you need to wait for at least 20 seconds before you can turn on the power again.

- Do not let the machine suffer from impact or strong vibration, otherwise it will cause machine breakdown.

- When you shut off the machine power, please do it according to following sequence; if you do not follow the sequence and shut off the power or restart directly, the data can not be saved completely, it will also cause damage to hard disk. Exit/Shut off procedure: exit from application program⟶ exit from Windows ⟶ turn off power

- If you need to temporarily stop using the machine, please keep the machine in

the environment as follows:temperature:5～25℃, relative humidity:20～95%, place with no direct sunlight, no condensation, no splashing water, oil and chemical.

In order to avoid dust, you can cover up the machine(for example, put a cover), but must be moisture-proof.

- If not understand, please contact us, please must not operate blindly.

Note: please pay attention to affairs mentioned above!

Chapter 1 Overview

S3000 series of Radial Insertion machine can insert various kinds (2.5mm and 5mm) of radial tape packed electronic components (electrolytic capacitor,potcelain capacitor, LED, etc) and bulk LED. The machine can first dispense the component on the carrier clip of the chain in sequency according to pre-set program, then, insertion head assembly will insert the component into PCB, then clinch and fasten.The insertion shaft will be static in horizontal direction, X,Y shaft will move and get component inserted on PCB each areas, and the insertion angle is maintained by worktable   turn plate, head turning motor RH, and housing turning motor RB. All machine movements are controlled by a computer. This series of radial insertion machines   are featured with following several advantages:

△ Completely controlled by computer, Chinese operation system, based on Windows platform,convinent to operate, fast, simple, easy to learn.

△ Use machine visual technology, on-line auto programming, auto correction, auto recognizing MARK point, the automation degree is enhanced.

△ Sequencer station, every 10 stations form a block, convinent for user to select.

△ Use AC servo system and optimized circuit, eliminating the unstability caused by circuit error, ensure the system is stable and rapid also power economic.

△ Insertion angle is 0°—360°, increment is 1°.

△ Worktable can rotate in clockwise and counterclockwise freely.

1. Machine Technical Specifications:

Item	Technical Specifications
Insertion Rate	18,000 pcs/hr (can enhance the speed by upgrading the software)
Non Performing Rate	Less than 1000PPM
Insert Theta	0° to 360°，increment of 1°.
Component Span	Dual span 2.5mm/5.0mm
PCB size	Min-50mm*50mm,Max-450mm*450mm
PCB thickness	0.79-2.36mm
Component Specs	Max Body height 20mm &max body diameter 10mm,max lead diameter 0.8mm
Component types	Radial tape packed material such as capacitor, transistor, triode, LED light, key switch, resistor,connector, coil, potentiometer, fuse socket, blown fuse, etc.
Clinch length	1.5±0.3mm(short blade),2.0±0.3mm(long blade)
Clinch degree	10°-35°(adjustable)
Station quantity	60 stations(recommended),optional (10-100 stations)
Machine size (length×width×height)	Main unit 1800mm×1600mm×2000mm
Station size	500mm×600mm×760mm
Machine weight	2000KG with 40 stations
Power supply	220V,AC (single phase), 50/60HZ,2.0KVA
System protection	Uninterruptible power supply (UPS) configuration, run 15 minutes after power outage
Working power	1.6KW (Energy Saving)
Air pressure	0.6--0.8MPA
Air consumption	0.3m³/minute
Ambient temperature	5°C-25°C
Machine noise	80 dB
Coordinate calibration	Machine visual system,MARK vision correction with multi-points
Drivingsystem	AC servo, AC motor
Data input	USB interface input(EXCEL format)

Control system	English operation interface (WINDOWS system control platform)
Component density	Distance between component body 1mm, distance between mounting component and hole can not be less than 3mm
Worktable operating mode	Clockwise and counterclockwise
PCB transfer	manual/automatic optional

2. Machinery Part

1) Mahcine stand

It is composed of insertion main unit and sequencer auxiliary unit as well as other stands. The stand units form the basic structure of this machine, and the machine body is made of resin, its scientific structure ensures high rigidness and stability.The four corners of machine are installed with vibration-proof feet, whose height can be adjusted to achieve proper leveling of machine.

2) X, Y worktable assembly

This machine inserts component to each areas of PCB by moving the worktable, where the PCB is placed.Each worktable assembly uses two hard steel shaft as rail, uses ball lead screw and servo motor in the middle to drive. The two ends of lead screw is fixed, the motor is connected with it through timing belt, lead screw nut is fixed with worktable, Motor drives lead screw to rotate, and lead screw drives lead screw nut and worktable to move in a straight line. On X, Y worktable assemblies, there are positive and negative limits, reduction switch and zero position inspection optoelectronic switch. If the assembly moves out of first limit, the motor will slow down; if it exceeds second limit, the motor will slow down until stop to avoid destructive impact to servo system. The zero position inspection optoelectronic switch determines the position of worktable when it stops.The X worktable assembly is installed on the main unit platform, Y worktable assembly is installed on X worktable assembly. The worktable board is made of imported aluminium of high quality, which helps to achieve light weight. There is a round rotating plate in Y worktable, the round rotating plate is supported and located by four bearing that are installed horizontally. At each side of round plate, there is V-shape locating bracket, normally, the "tongue" of locating structure of work plate stretches out and touches V-shape bracket closely to fix round plate. The locating structure is composed of two single-acting cylinders, one elastic "tongue" and locating board.When turning plate needs to rotate, air cylinder stretches out, "tongue" retracts and breaks away from

bracket. The round plate rotation is driven by turning plate motor, the turning plate motor is connected with one elastic round wheel assembly through timing belt. The round wheel assembly is equipped with one air cylinder, when the round plate needs to rotate, this air cylinder stretches out, the edge of round wheel and round plate touches with each other tightly, the rotation of motor drives the rotation of round plate.

3) Head Assembly

Head assembly moves the component on carrier clip to inserter, and insert it to PCB. H shaft motor is connected with horizontal gear axle through timing belt, gear axle is engaged with gear rack, gear rack is installed on a pair of straight bearing housing, straight bearing housing is fixed on two hard steel shafts, the hard steel shafts are fixed on main shaft housing and auxiliary shaft housing.Upper straight bearing housing is equipped with high speed lead screw and its nut, the top end of lead screw is located at the highest straight bearing housing , the low end of lead screw is connected with material pressing bar, the leas screw and straight bearing housing can slide freely on hard steel shaft; lead screw nut is fexed on bearing by a nut sleeve, and install one gear on nut, the gear is engaged with one vertical gear axle ,and the vertical gear axle is connected with servo motor P through timing belt, motor P roates and brings the lead screw to move up and down; when gear moves up and down, lead screw and other nut will move up and down together. There is one spin bearing inside bottom straight bearing housing, hollow insertion main bar is connected with this bearing, the main bar is located by two bearings that are installed horizontally. There are bearings installed inside the main hard steel shaft housing, main bar sleeve with timing belt is connected with bearing, main bar goes thtough main bar sleeve, synchronzing wheel is connected with motor RH by timing belt, when motor roates, it brings main bar to roate as well, which realizing inserting in different angles. The inserter is installed at the low end of main bar, and there are material clamp structure and material unload structure installed on inserter. When CTA chain transfers material, the material clamp structure will clip the material; when insert component, the metarial unload structure will unload the mterial from the clamp. At the tip of CTA feeder slider, there is arch material feeder, which is installed with material shovel;and there is a set of clip on arch material feeder, the chain goes through it; feeder slider is cooencted with liner slide rail, the silde rail is linked with air cylinder, and air cylinder drives the feeder slider to move back and forth, it transfers component from carrier clip on chain to material clamp on insert and return. CTA assembly is installed in the middle of tray, there is a set of chain at each side of it. When working, CTA assembly transfers component from carrier clip on chain to

material clamp of inserter, then return; motor Rh will rotate according to insertion angle, and set the inserter in right angle ;H shaft motor roates, gear will move downwards, inserter and material pressing bar will move downwards together; motor P rotates, metarial pressing bar will move downwards also and insert component into PCB hols, after than material press bar returns and back to original position together with gear.

4) Housing Assembly

Housing assembly is to shear off the excess lead leg after the component is inserted into PCB holes. The shear blade is installed in the housing, and there is one inspection bar at each side of shear blade; normally the inspection bar and inserter as well as shear blade are in isolation, after shear blade moves to right place, blade and inspection bar touches with each other closely, the machine and "ground" form circuit loop. The inserter is fixed on the housing main bar, main bar and main bar sleeve are in flexible connection, main bar sleeve is equipped with synchronizing gear, main bar sleeve is connected with bearing inside housing by fixed joint, synchronizing wheel is linked with motor RB through timing belt. The system drives housing to go up and down and shear blade to open and close is the same system, it is composed of rising air cylinder, air cylinder connector, connecting bar, air cylinder slider, connector pin, air cylinder connecting holder1, air cylinder connecting holder 2, air cylinder connecting rod and clinch air cylinder. When the system is working, motor RB roates, housing roates to the required angle, rising air cylinder works and housing moves up to required position, then shear air cylinder starts to work, air cylinder connecting bar put pressure on shear blade, shear blade cut off the component lead.

5) Chain Tension Assembly

The purpose is to maintain proper tention of chain. It is composed of three sets of chains, which are displayed in the shape of top and twinside bottom, the left side wheel can be only adjusted up and down, other locations are fixed and can not be adjusted. The chain in middle and the chain at right side can be adjusted back and forth to adjust the tension of chain. When loaded with chain, the set of wheel in middle is fixed on two shafts by two compress spring, the shaft is located on shaft housing, the shaft housing can be adjusted forward and backward; on shaft houisng, there is one adjusting screw, one end of screw bears against a pressing board, the pressing board is fixed on two shafts and touches compress spring closely, the working length of spring can be adjusted by adjusting screw, at the same time, the distortion amount is adjusted when the chain suffers from pressure.

6) Tape Cutting Assembly

The purpose of this assembly is to cut off the tape part of component on carrier clip that passing through this location. Air cylinder is linked with slider, there are main shear blade, pressing blade, tape removing blade on slider; on slider cap, there are adjust block and adjust screw to adjust the pressing blade reach limit; there is auxiliary shear blade at the opposite of main shear blade; at the back of auxiliary shear blade , there is chain guide rail; there is one bearing at the opposite of guide rail to locate the carrier clip from its side; above carrier clip, there is a wheel that can press down carrier clip, the wheel touches carrier clip "elastically" under the effect of spring and locates carrier clip in certain position. When the assembly is working, air cylinder moves and slider moves forward, pressing blade moves forward and press down component lead, taping removing blade removes the tape that is higher than cutting position, shear blade cut off the component lead, then there is no tape on component lead.

7) Chain Driver Assembly

This assembly will drive chains to rotate. It is composed of servo motor,planetary gear, reduction gear box, diaphragm type coupling, and driving chain, etc. At the end of driving chain, there is one optoelectronic inspection plate with eight even slots, it is to detect zero position od chain.

8) Dispenser Assembly

This assembly is to cut off and seperate tape component from tape, and transfer component to carrier clip on chain rapidly and accurately.   Material rolling gear is installed at the rear end of tape guiding board, electromagnetic valve and air cylinder assembly are installed at the rear end of station, the output bar of air cylinder is connected with driving slider by a flexible connector, and on the other end of driving slider, there is furcation material pushing piece and inspection board, and main blade to cut off tape at side; there is one shaft installed vertically at the rear end of driving slider, the shaft and connecting rod are connected flexibly, the other end of connecting rod is connected with pawl and ratchet wheel, the other end of shaft on ratchet wheel is connected with material rolling rubber wheel, there are tape material pressing board and auxiliary blade for tape cutting at the side of rubber wheel, the auxiliary tape is installed on an adjustable blade holder, it is to adjust the gap between it and main blade. One driven slider is installed flexibly at the side of driving slider, and there is one Z-shape material catching pawl on the top of driven slider, the other end of material catching pawl is located by two locater pin, which limits the travel of driven slider, there is tooth socket at this end, the tooth socket is engaged with the flexible pin inside driven slider, the pin is held against by a compressing spring, the other end of spring is connected with locater pin. On the

auxiliary blade housing, the missing component inspection piece is installed there; when there is no material at place, the inspection piece touches with the conductive copper of PCB inspection surface and forms circuit loop; otherwise, the circuit will break. When the system is working, air cylinder stretches out, the main shear blade and auxiliary shear blade on driving slider will cut off the tape component that is at place; meanwhile, Y-shape material pusher and material catching pawl as well as driving slider surface will function together to locate and clamp component tightly; Y-shape material pusher tip touched carrier clip first, and locate carrier clip firmly first, then push the component into clip on chain, material catching pawl opens; air cylinder retracts, ratchet wheel assembly moves, and brings material rolling rubber wheel to rotate once, then send one component into material catching pawl, air cylinder moves again……This cycle continues.

3.Electricity and Air Control

Electricity and air control device supplies power and control signal for machine.

All the motion command of this machine is input and output by computer. The detection signal is input to computer through I\O board, and motion command signal in input to I\O board or servo through computer.

This machine will use 220V AC, 24V and 5V DC, and it is equipped with UPS AC power source. There is leakage circuit breaker at AC power source trunk, and protective at each branch circuit. DC is supplied by switch power. Grounding system must be standard and reliable.

Every AC servo motor is controlled by one servo. All servo parameters can be read or adjusted through servo screen, or can be read and adjusted in computer with dedicated software. The servo scree can show error code of servo system, which means, the servo is able to "diagnose by itself". Air supply of machine is input by air control assembly and supplied to relevant aircylinder by each electromagnetic valve.
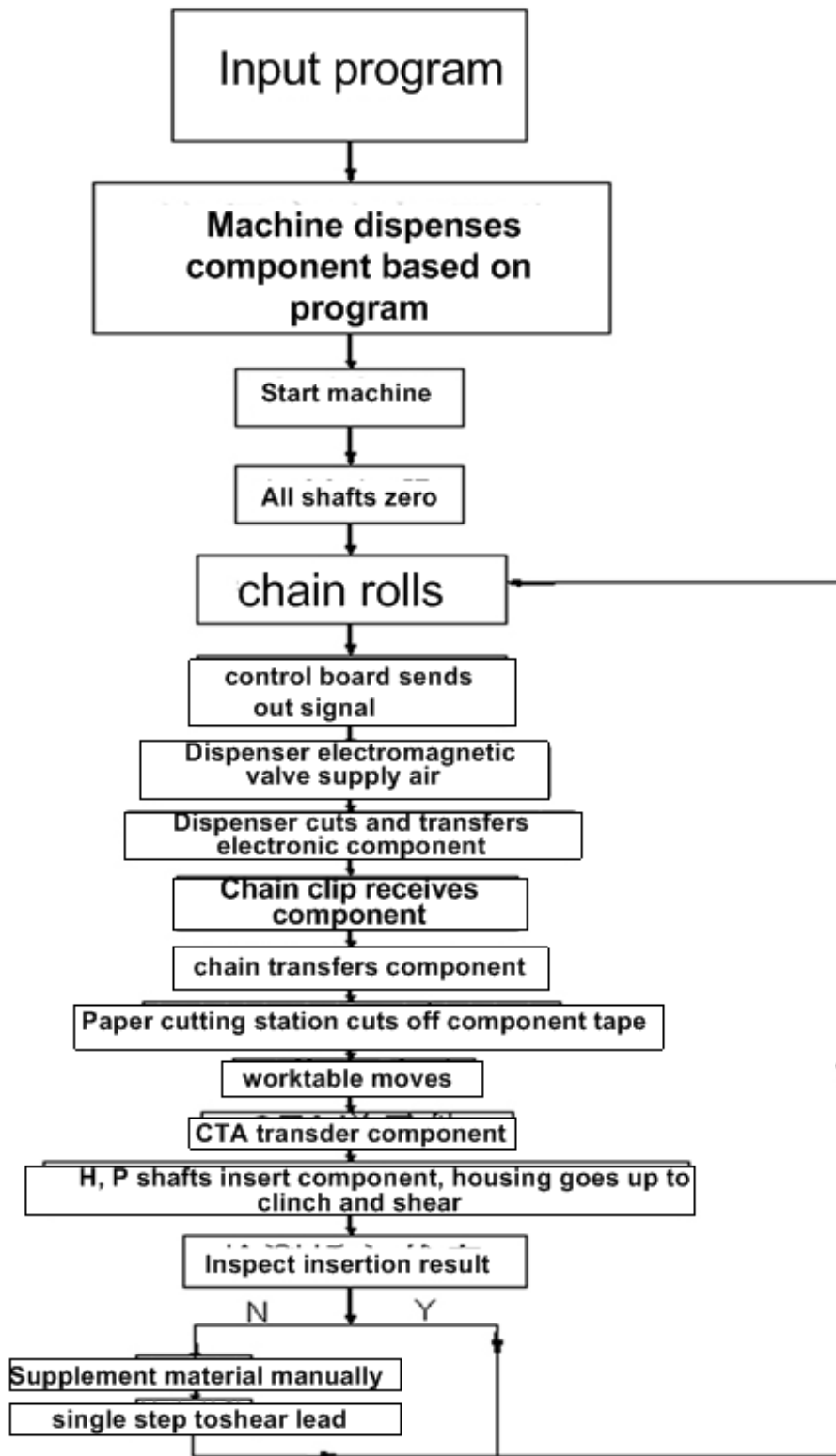
4. Dispenser Safety Inspection

Its purpose is to ensure: when the dispenser is working, only after the slider returns to safe location, can the chain continue to run, which helps not to damage carrier clip. There is a set of infrared optoelectronic switch at each side of module; in each set, one is to emit light source, another is to receive light source and output signal. By adjusting the optoelectronic switch up and down, right and left, to make sure the light sent out from light source can be received by receiver; and when

dispenser slider does not return to safe position, at the same time, the light transmission is blocked by optoelectronic inspection board on slider, the chain will not continue to run.

5.Camera Assembly

Camera assembly is used to on-line program and correct PCB insertion coordination automatically.Camera assembly is composed of camera and light source. Camera is installed at the left side of insertion head, and locked on a holder that can be jogged up and down. The camera lens can adjust focus and distance; the light source is installed under camera lens and is used to aid shotting.

Input program

Machine dispenses component based on program

Start machine

All shafts zero

chain rolls

control board sends out signal

Dispenser electromagnetic valve supply air

Dispenser cuts and transfers electronic component

Chain clip receives component

chain transfers component

Paper cutting station cuts off component tape

worktable moves

CTA transder component

H, P shafts insert component, housing goes up to clinch and shear

Inspect insertion result

N   Y

Supplement material manually

single step toshear lead

Radial Machine Assembly Motion Schematic Diagram

Chapter 2 Installation

1. Tools come along with machine

　1) One tool box;

　2) A set of metric hex key spanner (9 pieces);

　3) A set of open spanner (5.5-7　8-10　12-14　17-19　22-24) and a set of dedicated spanner;

　4) A set of cross-shaped screwdriver and a set of slotted screwdriver;

　5) sharp-nose pliers, diamond file, etc.

2. Install from "Part" to "Total"

　　Some parts of machine are broken down into pieces for the sake of packaging and transportation.

1) The sheetmetal door and front plate at both side of machine shell have been torn off, put the boards on the machine and lock the screw in relevant screw hole, and fit the boards to be aligned.

2) The warning light on machine shell has been torn off. First put wire through the installation screw hole of warning light, then turn metal tube into light installation screw hole and tighten the nut. At last, connect the wire one by one according to numbers.

3)**Adjust equipment leveling.** After the machine is moved to target place, you need to adjust machine leveling. Proper machine leveling can minimize machine vibration and enable the machine to work more smoothly with less nosie and longer life. The leveling of machine means adjust the stretch length of the adjustable plate on the four machine feet.

　　(1) Place a leveling instrument on the machine workbench.

　　(2) First adjust the machine right & left leveling; since the machine gravity center is in the rear part, thus adjust the two rear feet.

　　(3) Then ajust the machine front and back leveling; you only need to adjust one front foot because three points finalize one surface.

　　(4) Revolve down the foot hanging and revolve a little further, and tighten the locating nuts on four feet.

　　Note: it will be rapid and efficient to adjust leveling by putting three feet on the ground.

4) The inserter main unit and auxiliary feeder unit are disassembled. When you install the machine, first adjust the four feet of machine stand and adjust the leveling of mainframe. (refer to "Maintenance and Adjustment for adjust method"). Please pay attention: do not raise the machine stand too high. Then connect the first block

of auxiliary unit with main unit, likely, need to first adjust the leveling of this block, meanwhile need to ensure same height between through holes that connecting screw and main unit. Then, connect the second block with the first block of auxiliary unit, first align the height of second block and first block, then use horizontal locater pin to connect blocks, at last use screw bolt to connect and fasten.

Using the same method, connect all the blocks of auxiliary unit up, connect all the plug between main unit and auxiliary unit as well as the plug between auxiliary units, and other power connector, air pipe based on serial numbers.

5) Install chains. Please pay attention: when you install the chain, you must support the chain up steadily, which curls and looks like plate, ensure same height of chain and rail, and set the chain on rail and chain wheel slowly to avoid bending and deforming the chain. First   Loosen the adjusting wheel of the chain wheel tension assembly, then put the chain through from the last rail, and surround the tape cutting assembly, locating assembly, CTA assembly, tension assembly, rail, and main chain wheel. Use flexible connector to link the head and tail of chain, and locate it with clip piece. Adjust the position of adjusting wheel of chain tension assembly, and tighten the chain, at last, install protective cover for main chain wheel and fasten with screw.

3. Connect Power and Air Resource

Attention please: before connect power, first make sure machine overall power and air supply are cut off.

1) Connect the power connector that at left-rear side of mainframe to 220 V AC power, use national standard wire of 3(L+N+E)*2.5 mm². Grounding system must be standard.

2) Connect the input terminal of air control assembly that at the right-front side of machine with air pipe of 12*8.5 to introduce air source.

Attention: please clean up the impurities in air pipe before supply air to machine.
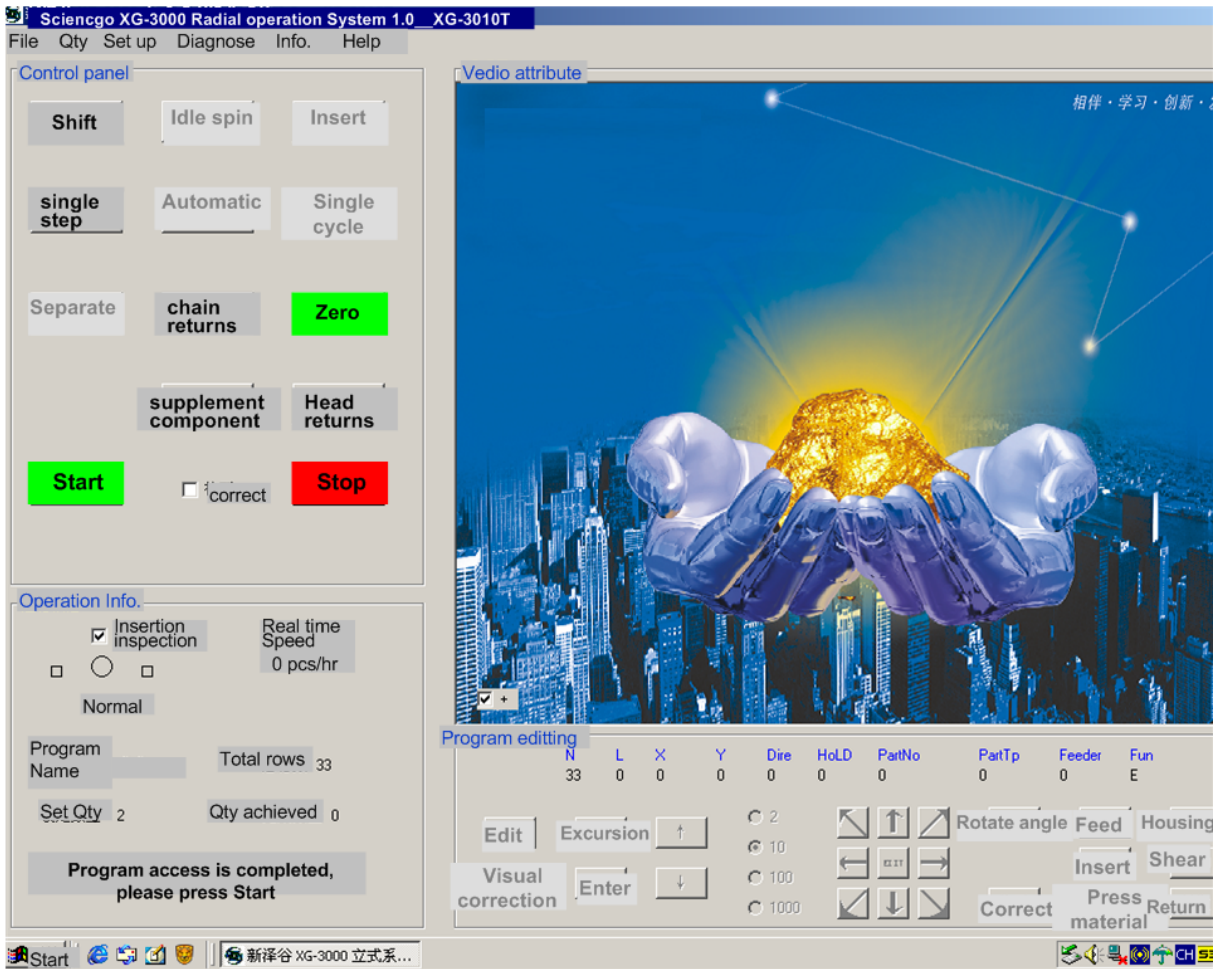
Chapter 3 Operation

1.Safety Check before operation

Please you must pay attention: when machine is newly installed or in idle for long time, please do following safety check carefully before supply power and air to the machine and operate the machine.

1) Check if the power supply is appointed rated voltage
2) Check if power is connected to machine, if safety fuse is in good condition, and whether branch breaker is closed.
3) Check if the equipment is properly grounded.
4) Check if there are any irrelevant items left in power control panel and moveable part of machine.
5) Conveyor belt or timing belt derails during transportation.
6) Check the mechanisms that are of heavy load and running fast are connected well, such as lead screw, rail, insertion shaft.
7) Use hand to push and pullX, Y, H, B, F, C, RB, RH, P, T assembly to see if they can move smoothly
8) Check if each dispenser is retreat back at safe location.
9) Check if limit detection and limit assembly are dislocated.
10) Check if emergency switch is pressed down, check whether overall air supply and power supply are at OFF status.
11) Check if all connectors and air pipes of computer and power control panel are connected properly.
12) Check if UPS contains enough power, otherwire you need to charge it at least for 4 hours.

2.Operation Interface Introduction.

1)the main operation interface is divided in 4 areas.

Sciencgo XG-3000 Radial operation System 1.0__XG-3010T

File   Qty   Set up   Diagnose   Info.   Help

Control panel

| Shift | Idle spin | Insert |

| single step | Automatic | Single cycle |

| Separate | chain returns | Zero |

| | supplement component | Head returns |

| Start | ☐ correct | Stop |

Operation Info.

☑ Insertion inspection   Real time Speed

☐ ○ ☐   0 pcs/hr

Normal

Program Name   Total rows 33

Set Qty 2   Qty achieved 0

Program access is completed, please press Start

Vedio attribute

相伴·学习·创新·

Program editting

N	L	X	Y	Dire	HoLD	PartNo	PartTp	Feeder	Fun
33	0	0	0	0	0	0	0	0	E

| Edit | Excursion ↑ | ○ 2 |
| Visual correction | Enter ↓ | ○ 10 ○ 100 ○ 1000 |

Rotate angle   Feed   Housing

Insert   Shear

Correct   Press material   Return

Start   新泽谷 XG-3000 立式系...

(1)Control panel area: this area controls machine operation and production. (as picture above)

Explaination for buttons at control panel area:

Shift: It only shifts workbench, no feeding and insertion.

Idle spin: move worktable to insert idly according to program sequence, CTA feeds material, chain does not move.

Insert: chain feeds material and insert according to program sequency.

Single step: Except for "Start" button, in order to excute any function or open any file, you need to single click on it. During process of shift, and automatic insertion, if you click on it, shift will end and insertion will stop after every component. If you want to continue with automatic run, you must click on "automatic" again.

Automatic: Complete action in order based on program.

Single-cycle—continuous: It is a compound button. Normally, single-cycle means the machine stops after shift, idle spin or insert, and only after press start again, the machine starts to shift, idle spin or insert again. When you single click "Single-cycle", the button becomes "Continuous", i,e, execute continuously until the production quantity is met.

Zero: worktable and turntable back to original position, zero position.This is a must to zero all the mechanism before shift and insert for the first time.

Break down: Separate the insertion movement into several steps.

Chain reset: when chain is not at zero position, click it, the chain will back to zero position.
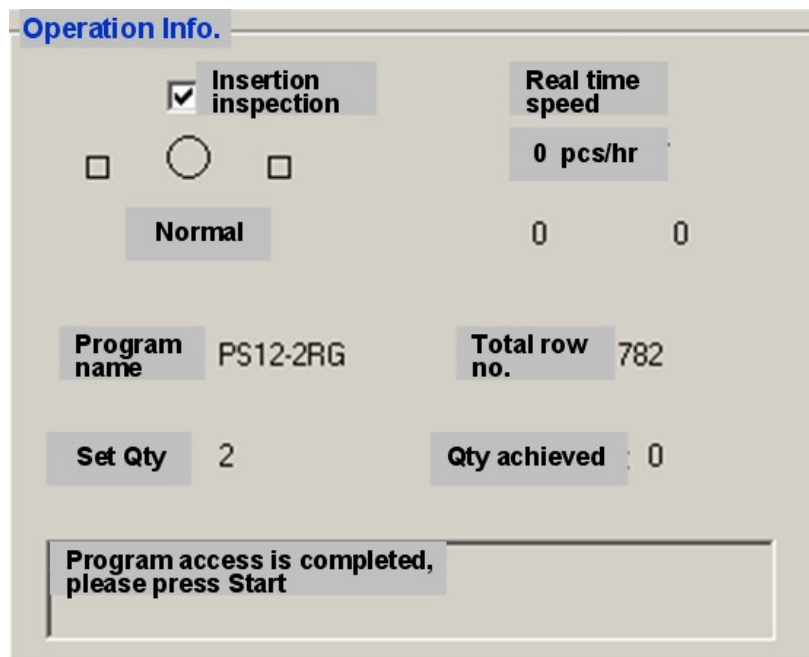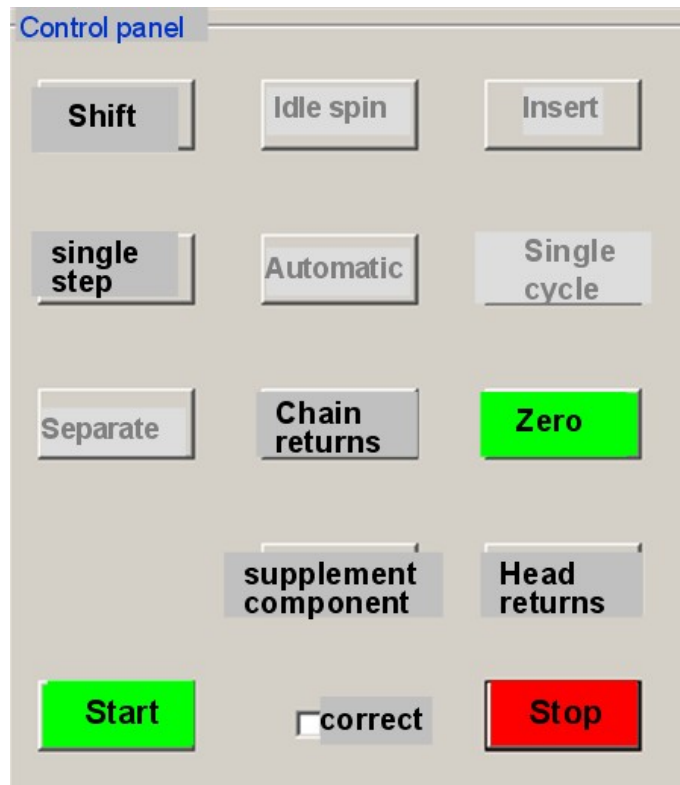
Supplement component: when missing component is detected, one component will be supplemented on PCB, click it, component lead will be sheared and planted on PCB, then you can continue insertion according to program.

Head return: when head is not at zero position, click it, it will drive head to return to zero position.

Start: Start the machine to conduct certain movement, and send out command of "Start".

Stop: Stop all the motions.

Correct: conduct visual correction for each row of program.

Control panel

Shift	Idle spin	Insert
single step	Automatic	Single cycle
Separate	Chain returns	Zero
	supplement component	Head returns
Start	correct	Stop

Operation Info.

Insertion inspection ☑

Real time speed

0 pcs/hr

Normal   0   0

Program name	PS12-2RG	Total row no.	782
Set Qty	2	Qty achieved	: 0

Program access is completed, please press Start

(2)Vedio Attribute Area: This area shows the image of PCB taken by camera.

(3)Run-time information area: This area shows production status and production information.

Insertion inspection   single click it, the mark √   will occur in the left box, means it

is doing insertion inspection; click it again, the mark √ will disappear,

means it is not inspecting insertion. If the round circle is green, means

the insertion is normal; if it is yellow, means missing component; if it is

red, means wrong component.

Real-time speed   it shows the real insertion speed of machine.

Program name: It shows the name of program that is going to run or has already run;
it changes as you "run" different programs.

Pieces (total number of rows) it shows the number of "points" of program(including
the row of OS,T1 and E).

Set quantity: Set the number of PCB to be inserted. When the quantity set is met,

the machine will stop automatically. Normally, the quantity is set as 2

automatically. If you single click it, a dialogue box will pop out asking

you "Do you want to set up target quantity?" If your answer is "Yes", you

can put the new target quantity directly. If the answer is "No", click on

"Cancel", and return to previous interface.

Quantity completed: every time when inertion has done for one PCB, the production
record will be updated automatically to show how many PCBs have been inserted.

When single click it, the dialogue will pop out asking "Do you want to

clear?", answer "sure", the quantity will be 0.

(4)Program edit area (such as picture): This area is to create or revise coordinate
program where the program is open to manual edit. To enter program edit area, first
click "single step" at control panel, then click the "edit" button at program edit area.
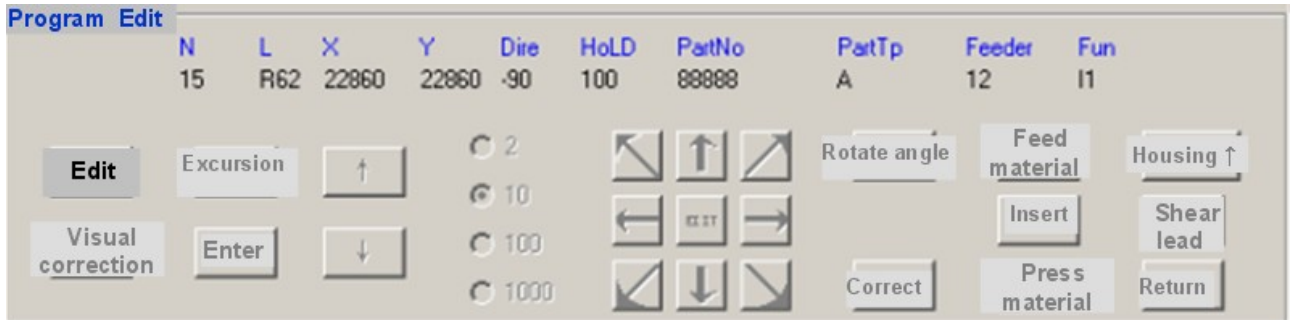
N :   shows current program row that is running.

Loe: the component serial number for insertion point on PCB.

X: X shaft coordinate. This machine uses the metric system, absolute coordinate. 1mm =100.

Y: Y shaft coordinate. This machine uses the metric system, absolute coordinate. 1mm =100.

Direct: theta, the actual insert angle of component based on the position of component at carrier clip as 0° .+ is in clockwise direction,- is in counterclockwise direction.

HolDia: insertion hole diameter.

PartTP: part type.

PartNO: part number.

Feeder: serial number of station where the component is.

Fun: the function of the program.

OS: the OFFSET position, it determines the location of board on machine.

MARK: use machine visual to recognize MARK point.

S: not to execute this row.

I1:   insert and inspect.

E: ending row, click it, machine will not move.

Edit: After click "single step" and "edit", this button becomes yellow, and the chatacter becomes "exit edit" and the button box frame becomes dotted line, then you can edit the program. After you finish editing, click this button to exit. If you do not single click "Confirm" after editing, the dialogue box will pop up asking "The edit is not confirmed! Do you want to confirm?" if you select "Yes", then the change will be saved, if "No", the change is not saved.

Visual correction: single step + edit, then click Visual correction, it turns to yellow,and the chatacter becomes "exit visual correction and the button box frame becomes dotted line, ,and image attribute area will show the

image of PCB taken by camera.

Excursion: when edit X and Y coordinate for the first row after program OS, this button will turn green, after you finish revising, and single 〖click〗it, then all the X, Y coordinates in all OS of the program will excurse automatically based on the revision done in first row. If you exit from revision after revising, and single click it, then the "excursion" is null.

Enter: single click it, then all the revision done will be saved.

Up arrow: under the condition of "edit", click it, will move to the program in last row.

(Note: if the last row and next row is T1 or T2, then clicking on it is not allowed)

Down arrow: under the condition of "edit", click it, will move to the program in next row.

Turn angle: turn the angle based on program requirement when adjusting coordinate manually for easy adjust of coordinate.

Correct: click"correct whole row" in control panel, the current row will be corrected automatically.

Transfer material: CTA transfers component on carrier clip clamp to insertion unit.

Insert: H shaft conducts insertion.

Press material: PUSH unit presses material.

Housing up: housing goes up; click it again, housing back to original position.

Clinch: click it, clinch shears and bends component lead; click it again, clinch back to original position.

Reposition: reposition all motions(zero).

EXIT: After adjusting coordinate, if you want to repeal and you haven't enter the adjustment, you can click it to return the coordinate to the previous value before adjustment.

Arrow button: adjust (edit) coordinate,the direction of arrow indicated the movement direction of worktable.

Number selection: the numbers 2, 10, 100, and 1000 means the movement distance of coordinate, you can select the movement distance by using "arrow button". The ration is 100=1 mm.

2) Explaination on Toolbar

| 📁 Sciencgo XG-30605					
File	Qty	Set Up	Diagnose	Information	Help

(1) File

single click: single step + file = open program, save program, save image, and exit(text format explanation: click on 〖single step〗, then click on 〖file〗, then the

fuction buttons like 『open program, save program, save image, exit』 will pop out, following same format are applicable to the same analogy)
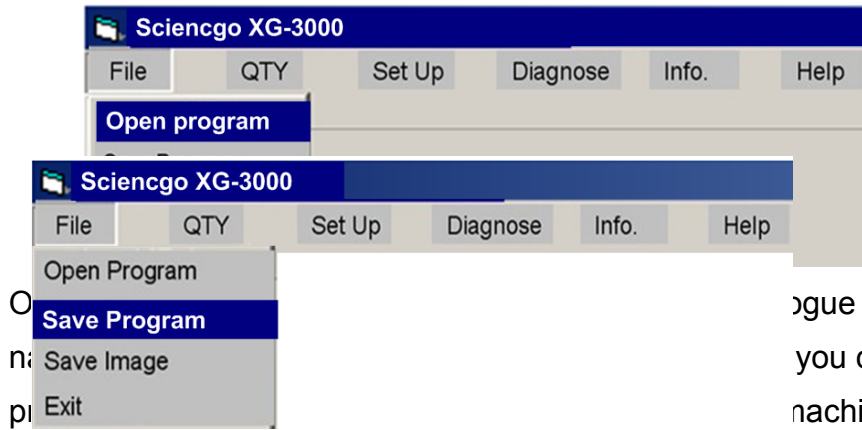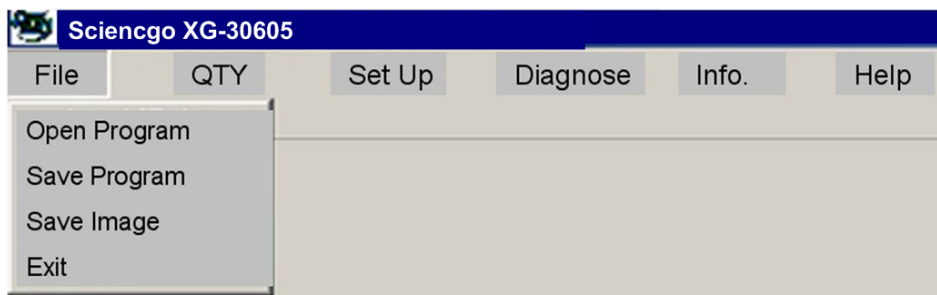

O... ...gue that show all the

na... ...you click the name of the

pr... ...machine will accept the

"Assignment" of conducting this...
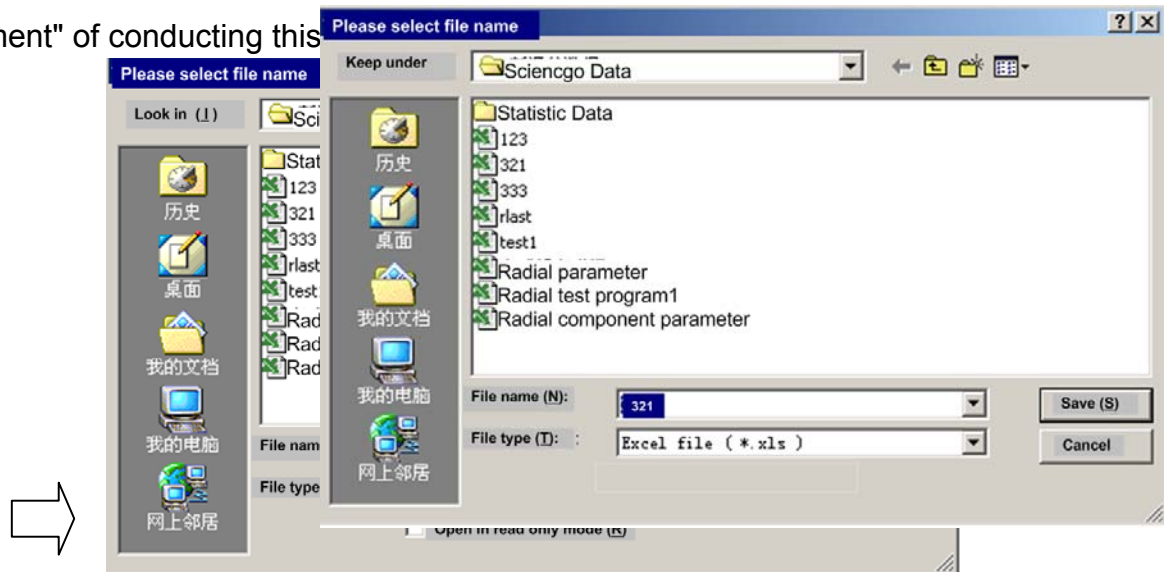
Save program: click File → Save program, the dialogue that asking you to select file name will pop out(as picture below), you can also fill in the file name in the File name input area, and click "Save".
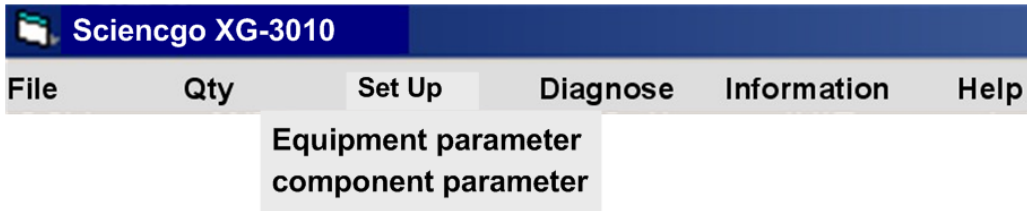
Exit click File ⟶ Exit, system will ask you if you want to exit from the operation system, if yes, click "Sure", if not, click "Cancel".
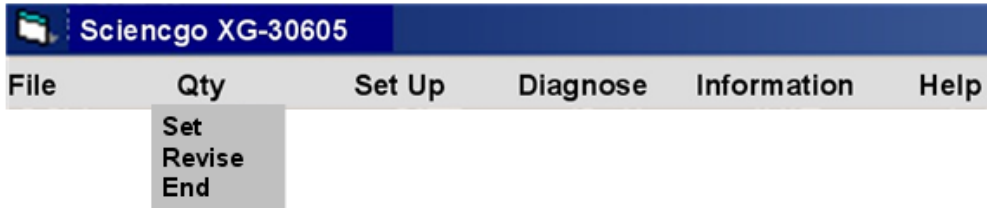
Save image: save vedio image to the to the appointed file folder.

(2) Quantity

Single click on quantity, function buttons like quantity set up, revise, end submenu will pop up. After ending submenu, you can revise the relevant quantity.


Set : set up the quantity needed for production. (Attention: first you need to set up the station, then set up quantity, if you need to change station during insertion, you need to first click "end" to finish inserting the components on chain up, then change the station and set the quantity the quantity again, otherwise the quantity will be more or less.)

Revise: revise the production quantity set as above. (Quantity needs to be smaller than the set up)
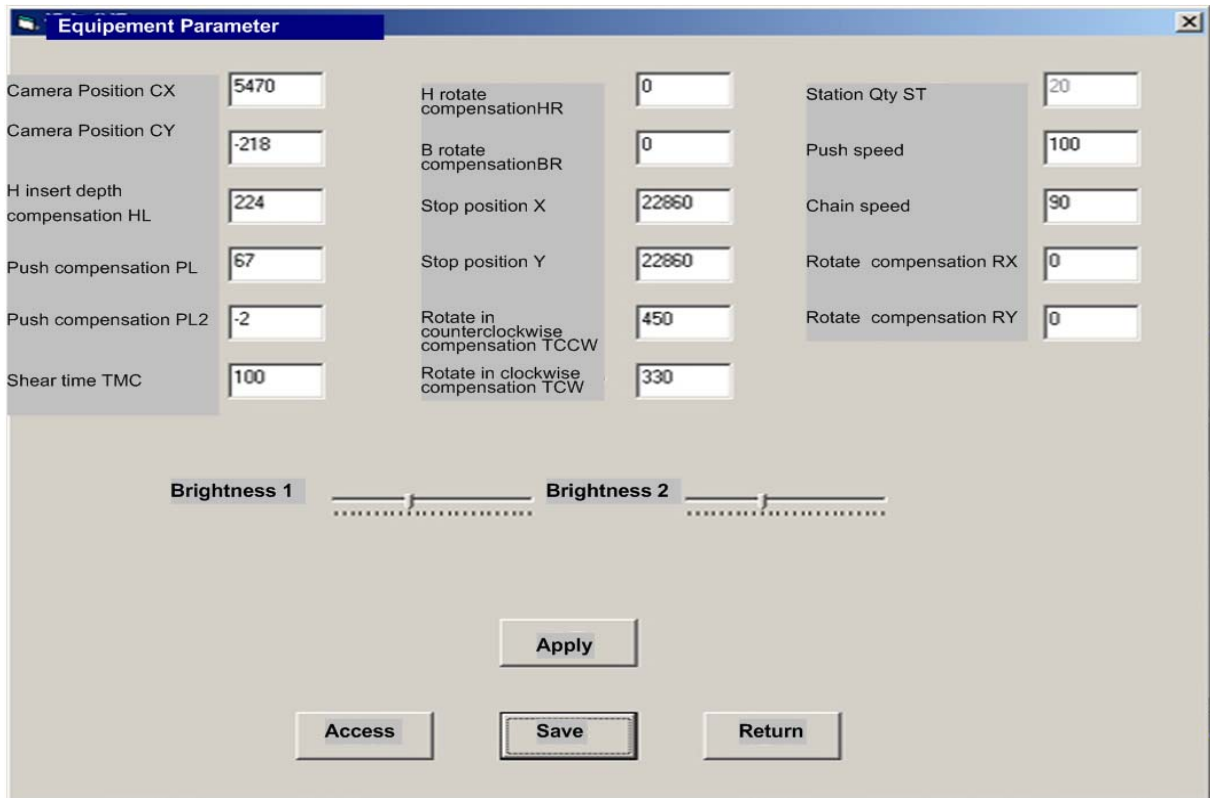
End: end after the set up production quantity is achieved.

(3) Set up

Single click Set Up button, the dropdown menu will pop out,including equipment parameter, component parameter, (shown as picture below)
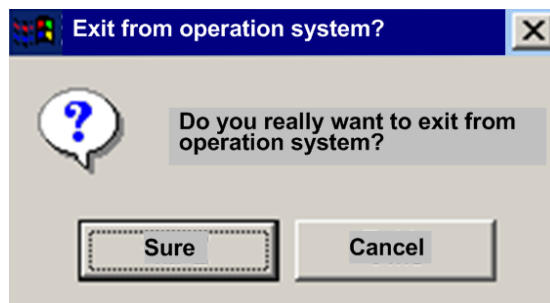
a.Equipment parameter (see picture):

All machine parameters adjustment is done in equipment parameter, including camera position CX and CY, H shaft insertion depth HL, material push compensation PL, turn angle compensation HR/BR, machine stop position X/Y, turntable rotates in clockwise (TCW)/ counterclockwise (TCCW) compensation,Push speed ,Chain speed, rotate compensation RX/RY, camera brightness adjust, etc.After you revise the parameter, you need to click application, save then click return. component parameter is to classify all the components in insertion program according to certain criterion, and describe features of component.

Camera position CX: position of insertion H shaft center in X shaft direction(coordinate) based on camera center as zero position.

Camera position CY: position of insertion H shaft center in Y shaft direction(coordinate) ,based on camera center as zero position.

H deep insertion compensation HL:compensation for insertion depth of insertion head.

Material push compensation PL: compensation for push distance of material push rod.

Material push compensation PL2:   compensation for P shaft based on PL as zero point (positive value, goes down; negative value, goes up).

H turn angle compensationHR: compensation for insertion head turn angle based on original point.

B turn angle compensation BR: compensation for housing turn angle zeros based on original point.

Turntable rotates in clockwise (TCW):   after turntable rotates in clockwise and reaches "At place" inspection position, compensation for time of turntable motor continue to rotate.

Turntable rotate in counterclockwise (TCCW) compensation: after turntable rotates in counterclockwise and reaches "At place" inspection position, compensation for time of turntable motor continue to rotate.

Machine stop position X: after workbench zeros, the actual position of X shaft, the value is bigger than zero, smaller than 45000.

Machine stop position Y: after workbench zeros, the actual position of Y shaft, the value is bigger than zero, smaller than 45000.

Rotation compensation RX: when insertion main shaft inserts after tuning angle, if the insertion position X does not match with actual insertion position X, you can compensation by adjusting this parameter.

Rotation compensation RY: when insertion main shaft inserts after tuning angle, if the insertion position Y does not match with actual insertion position Y, you can compensation by adjusting this parameter.

Push speed: adjust the speed of pressing of Push shaft.

Chain speed: adjust the speed of machine chain running.

Camera brightness adjust: adjust the brightness of camera light source.
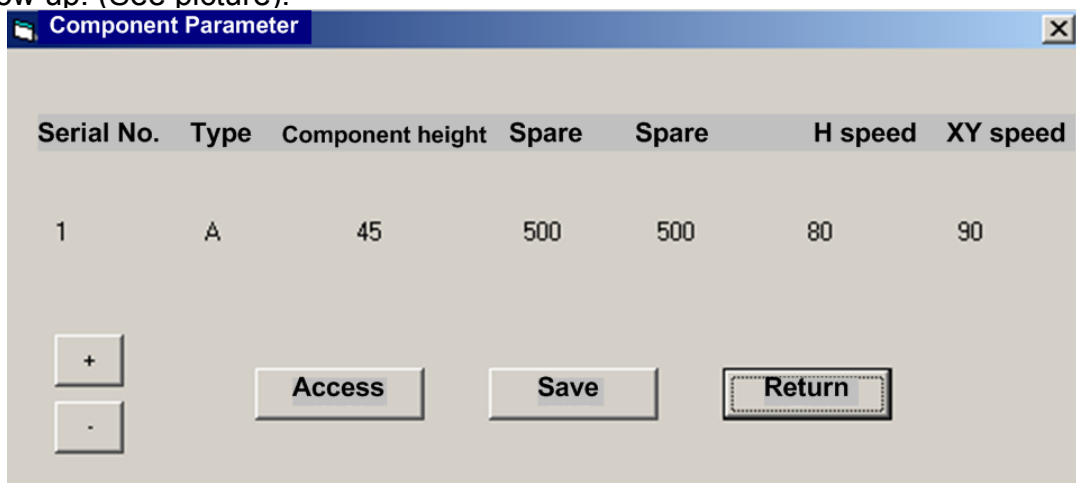
Apply: apply the parameter got revised.

Read: single click read, the default value will show up.

Save: save the parameters that get revised.

Return: exit from current page, return to previous operating system interface.

b.Component parameter: When you single click it, the following parameters will show up. (See picture):

Component Parameter

| Serial No.	Type	Component height	Spare	Spare	H speed	XY speed
1	A	45	500	500	80	90

+

-

Access   Save   Return

Serial number: serial number of component.

Type: type of component.

Component height: height of component body.

H speed: insertion speed of insertion head.

XY speed: move speed of workbench.

⊞ +: single click it, you can adjust the parameter of component with last "serial number".

⊟ —: single click it, you can adjust the parameter of component with next "serial number".

Read: single click read, the default value will show up.

Save: save the parameters that get revised.

Return: exit from current page, return to previous operating system interface.

(4) Diagnose

It is to diagnose the current status of input singal and output singal as well as the status of servo system movement.

Single step + diagnose= common input singal, common output singal, dedicated input singal, station driver, servo system, turn table, etc.

A. Common input singal:(input channels for each switches)

——The status described down is the machine standby status, when the machine works, the status changes between "high" and "low", "high" and "low" are short terms of high level and low level. This control software is effective for low level.

General Input Signal

No.	Mark	Name	Status
1	IN1	Emergency Stop	Low
2	IN2	Head Safety	Low
3	IN3	Guardrail Safety	Low
4	IN4	Head Switch	High
5	IN5	Insertion Inspection1	High
6	IN6	Insertion Inspection2	High
7	IN7	Start	High
8	IN8	Stop	High
9	IN9	Sequencer Inspection	High
10	IN10	Feeder B	Low
11	IN11	Turntable at place	Low
12	IN12	Turntable at zero position	Low
13	IN13	Feeder F	High
14	IN14	Housing goes down	Low
15	IN15	Dispenser LH	High
16	IN16	Dispenser RH	Low
17	IN17	Shear at place	High
18	IN18	Supplement component	High
19	IN19	Air supply switch	High

Emergency stop switch: when press down the emergency stop switch on the control panel, the status will change from high to low, vice versa.

Head safety: this in optoelectronic switch detection signal is used to prevent the H shaft from going down to unsafe position.

Guardrail safety: this switch is set up to proctect the moving door of machine. When you open the door, if you do not turn the safety switch manually, the low level will be released and all the working machines will stop.

Head switch: it is the enable control switch singal for servo of H shaft.

Insertion inspection: inspect the insertion status of component. When inserting, if the component is not inserted into the hole or the clinch does not touch the component lead, the machine will stop or alrm. The normal status is high, otherwise it is low. The singal is from clinch, and the theory is that when the process is normal, the clinch, shear and ground will form loop.

Start: when press down the start switch on the control panel, its status will change from high to low, the vise versa.

Stop: when press down the stop switch on the control panel, its status will change from high to low, the vise versa.

Sequencing inspection: inspect component presence on the chain.

Material transfer B: sensor signal sent out by magnetic switch(rear) when CTA air cylinder does not work.

Turn table at place: when "at place" magnet on turn table approaches the "at place" magneto sensitive component of turn table sensor, turn table sensor will send out this singal. This determines the turn table whether stops or continues to rotate.

Turn table zero position: when "zero position" magnet on turn table approaches the "zero position" magneto sensitive component of turn table sensor, turn table sensor will send out this singal. This determines the turn table whether returns back to zero position.

Material transfer F: sensor signal sent out by magnetic switch(front) when CTA air cylinder does not work.

Supplement   material: switch   control   signal   for   manual   material supplementary . After manually insert component on PCB, click "Supplement material" on panel, machine will clinch automatically.

Dispensing head, left & right: the output signal from two sets of infrared optoelectronic switches at both sides of auxiliary unit, it is to

check if the dispensing head returns to safe position.

Air source switch: the signal of air source open and close(green for open).

B. Special input singal: It is the signal status of current output (input to computer) by the optoelectronic switches on each shaft.

Positive and negative limit: they are short terms for the optoelectronic switch singals of the maximum position at positive and negative direction of each shaft.

Positive and negative slow down: it is to send out signal of "start slow down". They are installed in front of optoelectronic switch of positive and negative limit. When inspection sensor blocks the light emitter of optoelectronic switch, servo motor will start to slow down gradually and stop until it reaches the limit.

Original point: the detection signal of machine "zero point".

——You can put a piece of paper between the light emitter and light receiver of each optoelectronic switch, normally the signal will change from low to high as the paper goes in and out. Otherwise the optoelectronic switches are broken or circuits are abnormal.

Special Input Signal

No.	Mark	Name	Status
1	+ELX	X shaft positive limit	High
2	-ELX	X shaft negative limit	High
3	+SDX	X shaft positive slow down	High
4	-SDX	X shaft negative slow down	High
5	ORGX	X shaft original point	Low
6	+ELY	Y shaft positive limit	High
7	-ELY	Y shaft negative limit	High
8	+SDY	Y shaft positive slow down	High
9	-SDY	Y shaft negative slow down	High
10	ORGY	Y shaft original point	Low
11	ORGB	B shaft original point	High
12	ORGR	RB shaft original point	High
13	ORGR	RH shaft original point	Low
14	+ELH	H shaft positive limit	High
15	-ELH	H shaft negative limit	High
16	ORGH	H shaft original point	High
17	ORGP	H shaft original point	Low
18	ORGCI	H shaft original point	Low

C.   Common output singal. It shows the status of each motion signal sent by

computer. If you single click each buttom under "status", movement status will change between "high" and "low". "High", means there is no movement; "low", means there is movement.

No.	Mark	Name	Status
1	OUT1	Flash light 1	High
2	OUT2	Shovel material	High
3	OUT3	Green light	High
4	OUT4	Yellow light	Low
5	OUT5	Red light	Low
6	OUT6	Clinch	High
7	OUT7	Turnplate lock on	High
8	OUT8	Turnplate pinch roller	High
9	OUT9	Rotate in clockwise	High
10	OUT10	Rotate in counterclockwise	High
11	OUT11	Cut tape	High
12	OUT12	Transder material	High
17	OUT17	Housing	High
18	OUT18	Blow lead leg	High

General output Signal

Flashlight: it is the light source of camera.

Material shovel: material shovel air cylinder of auxiliary unit.

Green, yellow, red light: the warning lights on the shell.

Clinch: signal that drives the air cylinder of clinch.

Turn table lock: the electromagnetic valve for air cylinder on turn table lock assembly.

Turn table clamping roller: the electromagnetic valve for air cylinder on turn table lamping roller assembly.

Clockwise: relay singal that controls turn table rotate in clockwise.

Counterclockwise: relay   singal   that   controls   turn   table   rotate   in counterclockwise.

Cut tape: the signal to drive tape cutting air cylinder.

Transfer material: the signal to drive material transderring air cylinder.

Housing   the signal to drive housing going up and down air cylinder.

Blow lead leg: the electromagnetic signal to blow away the lead leg cut off by clinch.

D.Station driver (shown as picture below):

-　　Press this button, station position will move one step forward(decrease).

+　Press this button, station position will move one step backward(increase).

Also, you can put the target station in number input area directly.

Driver　Press this button, program start to execute the command input above, namely, the station selected will start to move.
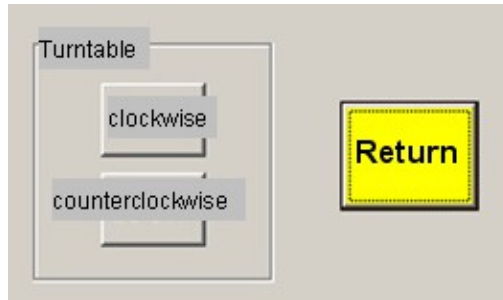
E. Servo system (dedicated diagnose area for each servo shaft).

Input value within limit in the input boxes of "travel distance" and "speed"of relevant shaft, when you single click the direction arrow once, the shaft will move once according to the value input and direction chosen, until the shaft reaches the limit and get protected.

Insert sequency 333

N	Loc	X	Y	Direct	HolDia	PartNo	PartTp	Feeder	Fun
1	OS	2244	3042	0	100	88888	0	0	OS
2	R20	14926	-2166	0	100	88888	A	2	I1
3	R65	18671	7733	90	100	88888	A	3	I1
4	R66	18674	6084	90	100	88888	A	1	I1
5	R67	18675	4439	90	100	88888	A	2	I1
6	R68	18674	2784	90	100	88888	A	3	I1
7	R69	18673	1137	90	100	88888	A	1	I1
8	R70	18674	-516	90	100	88888	A	2	I1
9	R71	18673	-2161	90	100	88888	A	3	I1
10	R75	21203	7747	45	100	88888	A	1	I1
11	R76	21210	6256	45	100	88888	A	2	I1
12	R77	21211	4771	45	100	88888	A	3	I1
13	R78	21206	3286	45	100	88888	A	1	I1
14	R79	21209	1789	45	100	88888	A	2	I1
15	R80	21206	298	45	100	88888	A	3	I1
16	R87	22560	304	-45	100	88888	A	1	I1
17	R84	22482	2862	45	100	88888	A	0	E

Servo System

Shaft Name	Travel Distance	Speed			Shaft Name	Travel Distance	Speed			→
X Shaft	10	200	←	→	B Shaft	3	200	↑	↓	
Y shaft	10	200	↑	↓	RB shaft	90	100	cc	c	
H shaft	5	100	↑	↓	Push shaft	67		↓	↑	
RH shaft	90	100	cc	c	Chain shaft	50	300	.05	→	

F. Turn table:

Clockwise: press the button once, the turntable will rotate 90°in clockwise.

Counterclockwise: press the button once, the turntable will rotate 90°in counterclockwise.

Return: exit from diagnose and return to previous operation interface.

(5) Information

Single step + Information = program sequence sheet/ station sheet/ operation information sheet

 A. Insertion program sequence sheet

N: shows the serial number of program that is running now.

Loe: the component number for insertion point on PCB.

X: X shaft coordinate. This machine uses the metric system, absolute coordinate, 1mm=100.

Y: Y shaft coordinate. This machine uses the metric system, absolute coordinate, 1mm=100.

Direct: angle, the component insertion angle based on the component position at carrier clip clamp as 0 ° . + is in clockwise, - is in counterclockwise.

HolDia: diameter of insertion point.

PartTP:component type.

PartNO:component number.

Feeder: serial number of the station where the component is at.

Fun: the function of this row of program.

OS: OFFSET position, determines the PCB location on machine.
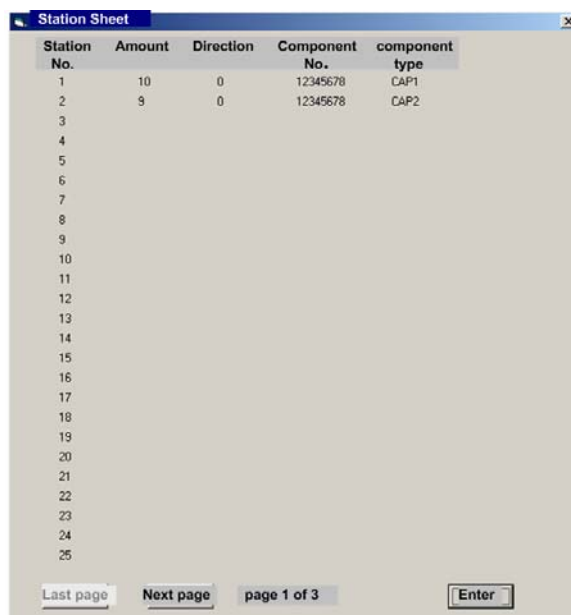
MARK: use machine visual to recognize MARK point.

S: do not conduct this row.

I1: insert and inspect.

E: end row, machine does not move.

B. Station sheet   it shows data such as current station consumption amount, direction, part number, part type, see picture below for details. Single click current"Station number", you can change the material transfer station, for example, change 1 to 3, (need to set quantity again, otherwise material will be transferred still from station 1)), then material will be transferred from station 3 instead of station 1.

C. Operation information (see picture) it shows current equipment operation information, including file name, pieces, counting start, counting end, machine on time, operation time,etc.


Attention:

Save:press save button, then the information will be saved in D disk "statistic record".

Zero clearing: press the zero clearing button, all operation information will be 0

Production information: information including yield, standby time, insertion time, etc.You can save the information automatically into D disk "Southern Machinery data" file folder, "statistic record" file folder directory, the file is named by the time when it gets saved, when you click drop-down menu and exit from production menu, the information will also be saved here automatically.

6)Help: brief description of equipment parameter and operation introduction for the machine.

7)Panel button
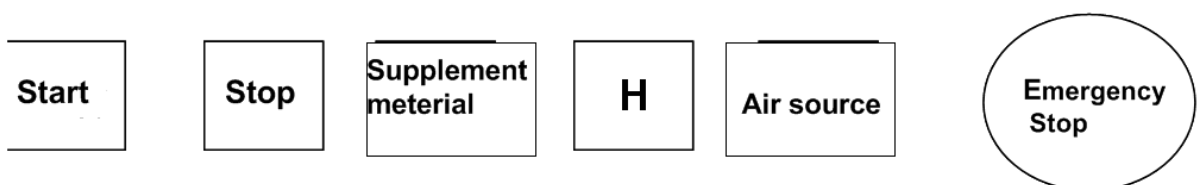
Start: let machine to conduct certain movement, send out command "Start" also.

Stop: stop all the motions.

Supplement material: when missing component is detected, need supplement one component on PCB, click "Supplement materia" once, machine will clinch automatically and fix the component on PCB, then you can continue to insert according to program.

H **:** shut off power for H shaft servo.

Air source: shut off all air source of machine.

Emergency stop: the power of all servo motors will be shut off.

3. Password Protection Function

In order to avoid casual use of some function on computer operation interface and casual revision of some data, the operation password is set and used, such as equipment parameter, component parameter and edit function.

Detailed usage method as follows:

1） Create password

Open Operation System⟶ Set up ⟶ Change password(initial password is absent)⟶ change password step 1 ⟶input new password, please click "enter" ⟶ change password step 2 ⟶ confirm the new password, please click "enter".

2） After password is set, need to enter password when go the equipment parameter, component parameter and edit function.

3） Cancel password

Open Operation System ⟶ Set up ⟶ Change password ⟶enter the password ⟶ change password step 1(can leave password in blank), please click confirm⟶ change password step 2 ⟶input the requirement to cancel password(password can be blank), please click "enter"

4) After password is cancelled, no need to input password when go to equipment parameter, component parameter and edit function..

4.Operation procedure

1) Turn on machine power: switch on the main power circuit breaker at the left side of machine mainframe.

2) Supply air to machine: click "air supply" buton on the machine shell, the air be supplied to housing, head, and feeder.

3) Turn on computer press the "computer" button on the machine shell.

4) Turn on emergency stop switch: turn on the emergency stop switch on shell in clockwise.(the button will go up)

5) Conduct diagnose: check if singal status is normal, check if there is motion, check if machine control system is normal. Please see operation in Chapter 3, explaination of "diagnose" of each function "button" on operation interface.

6) Programing: Please see operation in Chapter 3, explaination of "program editting" of each function "button" on operation interface, as well as "program editing" in Chapter 4.

7) Access program: single click "file" on interface, single click "read program", then single click the program name that you want to execute;set up "target quantity".

8) Execute "Editing" first then "visual correction": please see explaination of each function "button", "program editing" on operation interface. The purpose of executing this operation is to check if the coordinates in the program are correct, and also check if X\Y workbench moves within safe range, then conduct "idle spin"; ortherwise, the equipment will be damaged when conducting "Idle spin". "Idle spin", please see explaination of each function "button", "Idle spin" on operation interface. The purpose of executing this operation is to check if insertion shafts can move normally, and also "warm up" each working assembly.

9) load material   load tape component on dispenser of auxiliary unit according to station sheet and program.

10) Insertion,

(1) First do: single step+ insertion, check the result of component insertion. If the insertion result is bad, please see Chapter 5, Adjust and Maintenance, "machine, computer parameter adjustment".

(2) After finish insertion of one board, check insertion result, see if component position is correct, is there any miss, otherwise add program.

(3) Conduct   continue + insertion

11)Shut down the machine

(1)Exit from operation system: Please see operation in Chapter 3, explaination of "exit from program" at operation interface for each function "button".

(2)Turn off computer: Please see operation in Chapter 3, explaination of "shut off computer" at operation interface for each function "button".

(3)Emergency stop: press down the emergency stop button on machine shell.
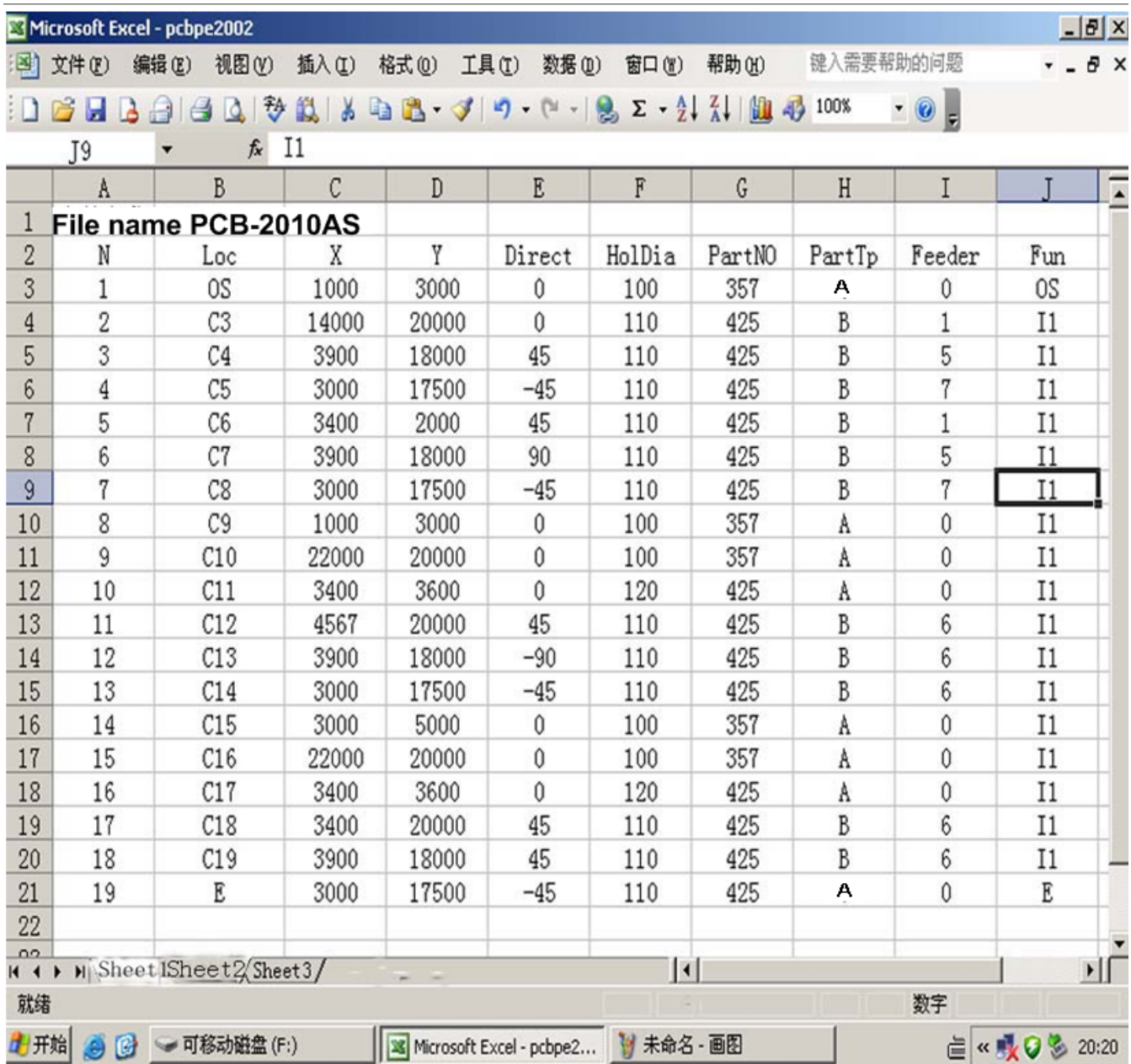
(4)Switch off main power: switch off the main power circuit breaker at right side.

Chapter 4　　Program Editting
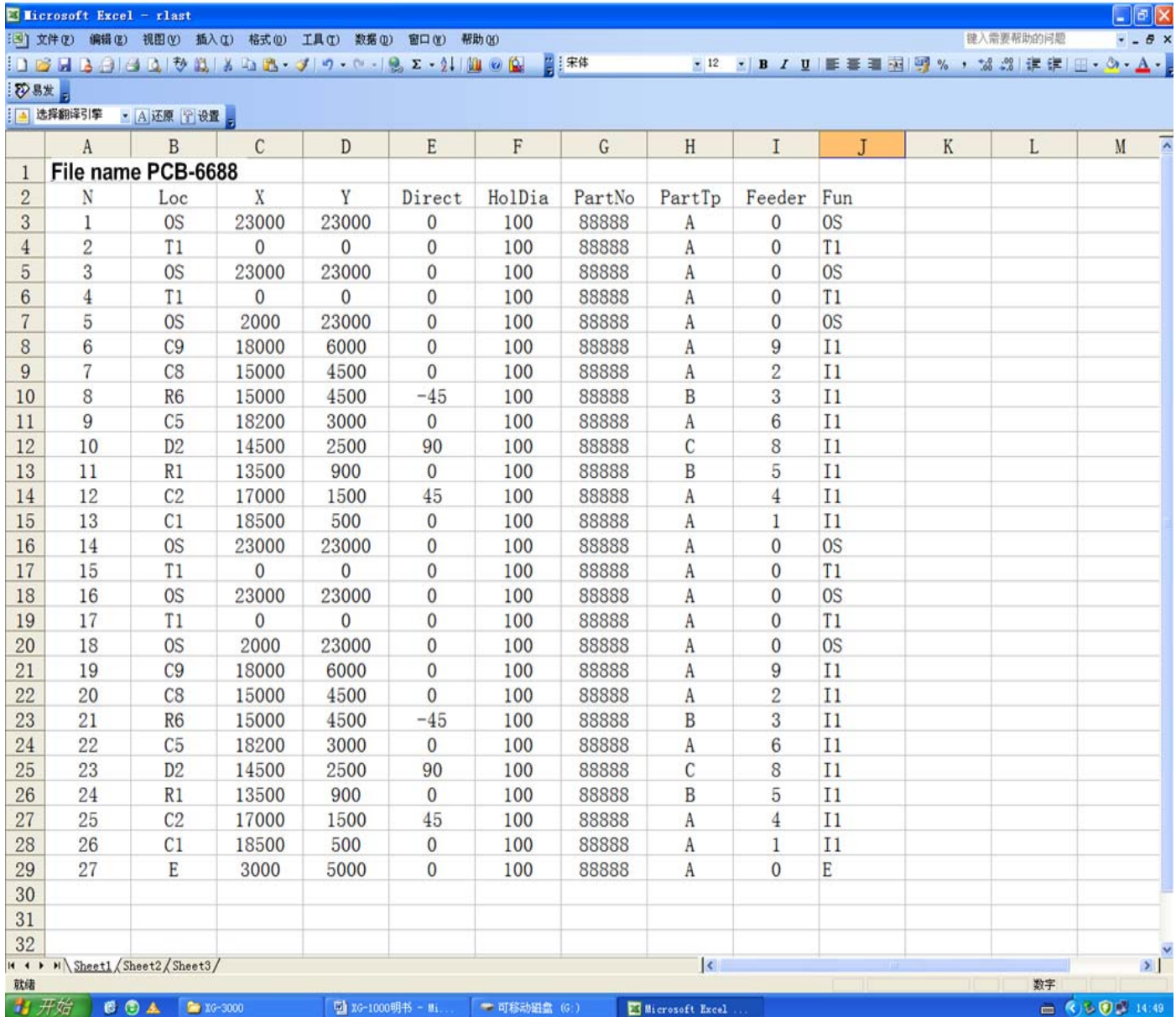
1. Program Introduction

This equipment use Execl to edit program, and use metric absolute coordinate, you can inreoduce the program of universal machine, DYNA machine, and masterplate, and edit it into the program applicable to this equipment. By multiplying metric absolute coordinate with 100, you can get the coordinates applicable to this equipment. Following is a program sample of this machine, please see chart below:

1.When PCB is wider than 20 (CM), usually the following program will be used:

N	Loc	X	Y	Direct	HolDia	PartNO	PartTp	Feeder	Fun
									File name PCB-2010AS
1	0S	1000	3000	0	100	357	A	0	0S
2	C3	14000	20000	0	110	425	B	1	I1
3	C4	3900	18000	45	110	425	B	5	I1
4	C5	3000	17500	-45	110	425	B	7	I1
5	C6	3400	2000	45	110	425	B	1	I1
6	C7	3900	18000	90	110	425	B	5	I1
7	C8	3000	17500	-45	110	425	B	7	I1
8	C9	1000	3000	0	100	357	A	0	I1
9	C10	22000	20000	0	100	357	A	0	I1
10	C11	3400	3600	0	120	425	A	0	I1
11	C12	4567	20000	45	110	425	B	6	I1
12	C13	3900	18000	-90	110	425	B	6	I1
13	C14	3000	17500	-45	110	425	B	6	I1
14	C15	3000	5000	0	100	357	A	0	I1
15	C16	22000	20000	0	100	357	A	0	I1
16	C17	3400	3600	0	120	425	A	0	I1
17	C18	3400	20000	45	110	425	B	6	I1
18	C19	3900	18000	45	110	425	B	6	I1
19	E	3000	17500	-45	110	425	A	0	E

2.When PCB is narrower than 20 (CM), usually the following program will be used:

	A	B	C	D	E	F	G	H	I	J
1	File name PCB-6688									
2	N	Loc	X	Y	Direct	HolDia	PartNo	PartTp	Feeder	Fun
3	1	0S	23000	23000	0	100	88888	A	0	0S
4	2	T1	0	0	0	100	88888	A	0	T1
5	3	0S	23000	23000	0	100	88888	A	0	0S
6	4	T1	0	0	0	100	88888	A	0	T1
7	5	0S	2000	23000	0	100	88888	A	0	0S
8	6	C9	18000	6000	0	100	88888	A	9	I1
9	7	C8	15000	4500	0	100	88888	A	2	I1
10	8	R6	15000	4500	-45	100	88888	B	3	I1
11	9	C5	18200	3000	0	100	88888	A	6	I1
12	10	D2	14500	2500	90	100	88888	C	8	I1
13	11	R1	13500	900	0	100	88888	B	5	I1
14	12	C2	17000	1500	45	100	88888	A	4	I1
15	13	C1	18500	500	0	100	88888	A	1	I1
16	14	0S	23000	23000	0	100	88888	A	0	0S
17	15	T1	0	0	0	100	88888	A	0	T1
18	16	0S	23000	23000	0	100	88888	A	0	0S
19	17	T1	0	0	0	100	88888	A	0	T1
20	18	0S	2000	23000	0	100	88888	A	0	0S
21	19	C9	18000	6000	0	100	88888	A	9	I1
22	20	C8	15000	4500	0	100	88888	A	2	I1
23	21	R6	15000	4500	-45	100	88888	B	3	I1
24	22	C5	18200	3000	0	100	88888	A	6	I1
25	23	D2	14500	2500	90	100	88888	C	8	I1
26	24	R1	13500	900	0	100	88888	B	5	I1
27	25	C2	17000	1500	45	100	88888	A	4	I1
28	26	C1	18500	500	0	100	88888	A	1	I1
29	27	E	3000	5000	0	100	88888	A	0	E
30										
31										
32										

File name: first row and first column of program, you can name it at will or leave it blank (recommend to name it as PCB board type).

Program name: first row and second column of program, you can name it at will, but need to make it clear that it is program for which kind of PCB.

N: second row and first column of program, the serial number is also the sequency of insertion.

Loc: second row and second column of program, the component number of insertion point on PCB board, for example:R123.

X: second row and third column of program, X coordinate column.

Y: second row and fourth column of program, Y coordinate column.

Direct: second row and fifth column of program, the insertion angle based on component position at carrier clip clamp as 0° + is in clockwise, - is

in counterclockwise.

HolDia**:** second row and sixth column of program, insertion hole diameter, unit:1/100 mm, for example, if diameter is 1mm, the hole diameter is 100.

PartNo**:** second row and seventh column of program, serial number of component.

PartTp**:** second row and eighth column of program, column of component type.[usually use A, B, C, D to represent, convenient to use.]

Feeder: station number column where the component is.

Fun: function column of the program, code meaning shown as below ——

OS: the original point of the program (OFFSERT), this row does not insert,it determines the board location on machine, i.e. only when the worktable moves to certain location, the turntable start to rotate.

MARK: use machine visual to identify MARK point, the coordinate of MARK point location.

S : not to execute this row.

T1**:** command the workbench to rotate 90°in clockwise.

T2**:** command the workbench to rotate 90°in counterclockwise.

OS**:** the original point of the program (OFFSERT), this row does not insert,it determines the location of first insertion point on machine, the next row is the first insertion point coordinate row.

I1**:** Insertion row, and conduct component missing inspection.

I2**:** Insertion row, but does not conduct component missing inspection.

I3**:** Norminal insertion row, it is error inspection row to detect off-standard insertion; this row executes insertion and inspection. When the PCB is not changed, or sequencer order error occurs or sequencer goes ahead, insertion will stop, this row is optional. It is set as the previous row of first insertion row with same coordinate as first insertion row. (this function is not used usually)

E Program end row, execute this row, the machine does not work.

Attention: all the English letters in the program must be in capital, and the program is created on worksheet Sheet1. The format of program is Excel worksheet.

2. Program editing procedure

1) Prepare tools: one digital caliper, two oil pens of different color, a sheet to create program.

2) First, based on BOM requirement, use oil pen to mark the component(component that meets AI requirement) hole to be inserted.

3) Connect the marks with a line, based on the connect order, the insertion sequency will be defined. Connection principle: first, the line should be effective and shortest, that is to say, try to avoid idle travel of machine when inserting, it helps to enhance insertion speed and production efficiency;second, 0° and 90° need to be linked in two separate lines, because it helps to improve production efficiency. (following are normal insertion sequencies: 1. 0°, from up to bottom, go as S shape, span 2.5, LED, from left to right. 2. 90°, from right to left. 3. -90°, from left to right. 4. combined method (combine at least two kinds of insertion sequencies above).

4)After drawing insertion sequency, use caliper to measure the coordinate data, the unit of data is mm. Before measuring the data, need to first confirm the two insertion locating holes on PCB board. Take clockwise continuous turn table insertion as an example (namely when PCB board is narrower than 20CM): when machine zeros,the round plate rotates in 90° twice and turns into 180° insertion status; after rotating, the two locating holes on the PCB board will be at upper side of the board, one right and one left, when we measure the coordinate data, we can use the left-upper corner of PCB as O point (namely original point, in picture below, D is original point), the upper edge of PCB can be considered as X shaft of axis, the left side of PCB can be considered as Y shaft of axis, thus, measure from left to right, the result is X coordinate data, measure from top to bottom, the result is Y coordinate data; when measuring X coordinate data, use the fixed tip of caliper to clip on left side of board, and use movable tip to clip at the center point of the line that links insertion holes (if there are three legs, then measure the hole in middle) the data shown on caliper is X coordinate data, need to keep two decimal places. When measuring Y coordinate data, use the fixed tip of caliper to clip on top of board, and use movable tip to clip at the center point of the line that links insertion holes (if there are three legs, then measure the hole in middle), add "-" before the data shown on caliper, you will get Y coordinate data, need to keep two decimal places as well.Continue until you finish measuring all points.
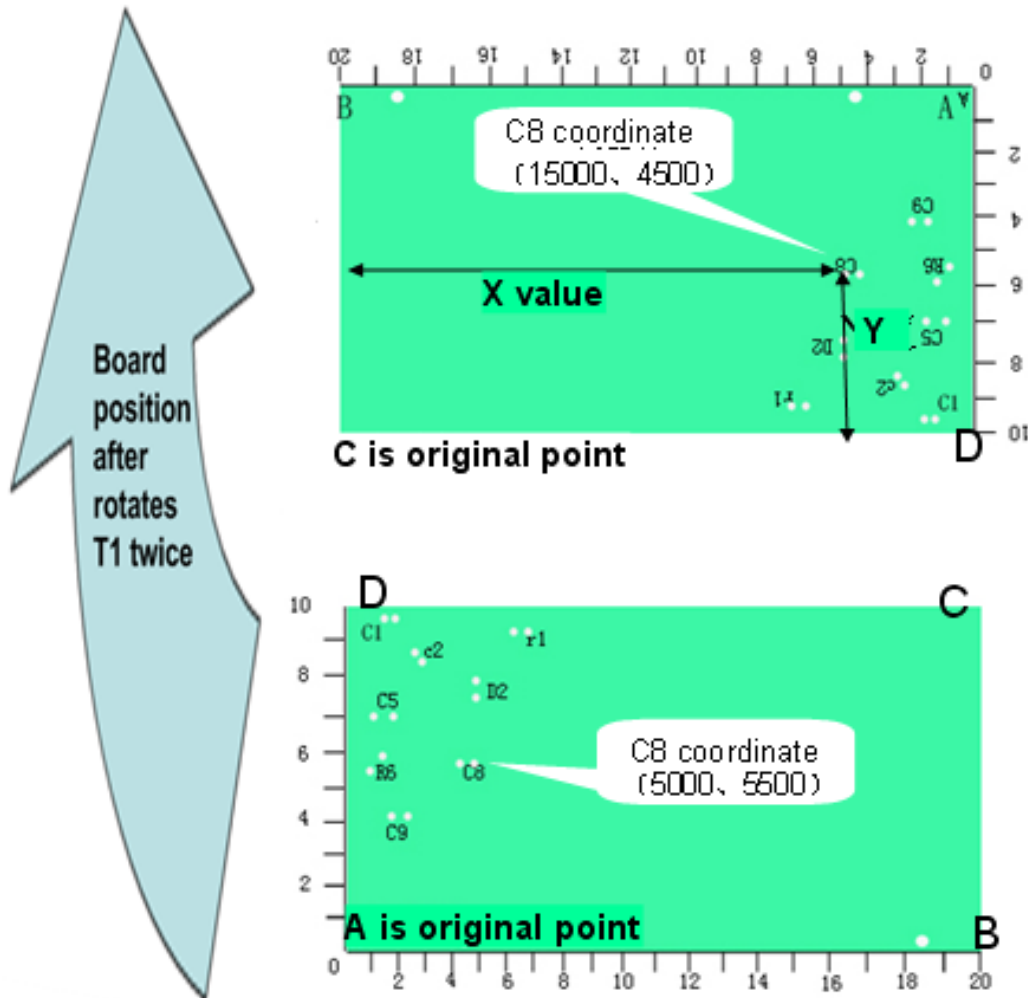
5) During normal production process, when machine round plate rotates 90° twice, the two insertion locating holes are at the top of PCB, one left and one right, at this time when we measure the coordinate data, the left-bottom corner of PCB is orignal point (C is original point); from left to right of the board, the data measured by caliper is X coordinate data; from bottom to top of the board, the data measured by caliper is Y coordinate data (it's Y data now); the picture above shows the PCB status after roundtable roates 180°.

6) After measuring coordinate data, create a EXECL worksheet in the file folder of D Disk "Southern Machinery data", put down file name, and key in all the coordinate data into worksheet, and multiply the actual data with 100, and create the production program needed by Southern Machinery machine, the program format as below:(following is the program when turn plate rotates in clockwise, and insert continuously)
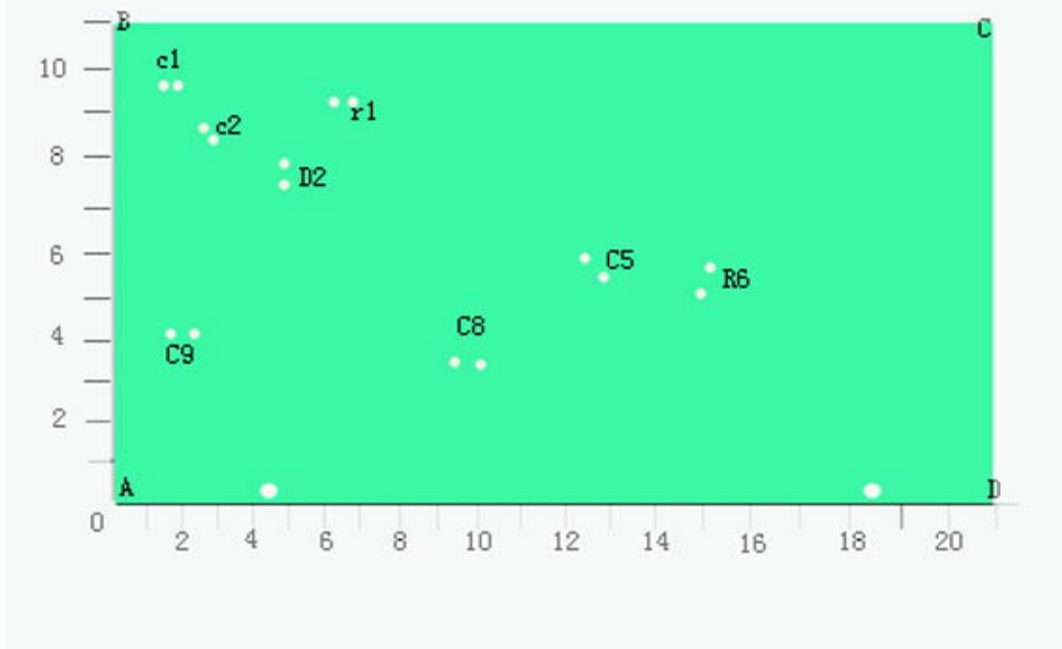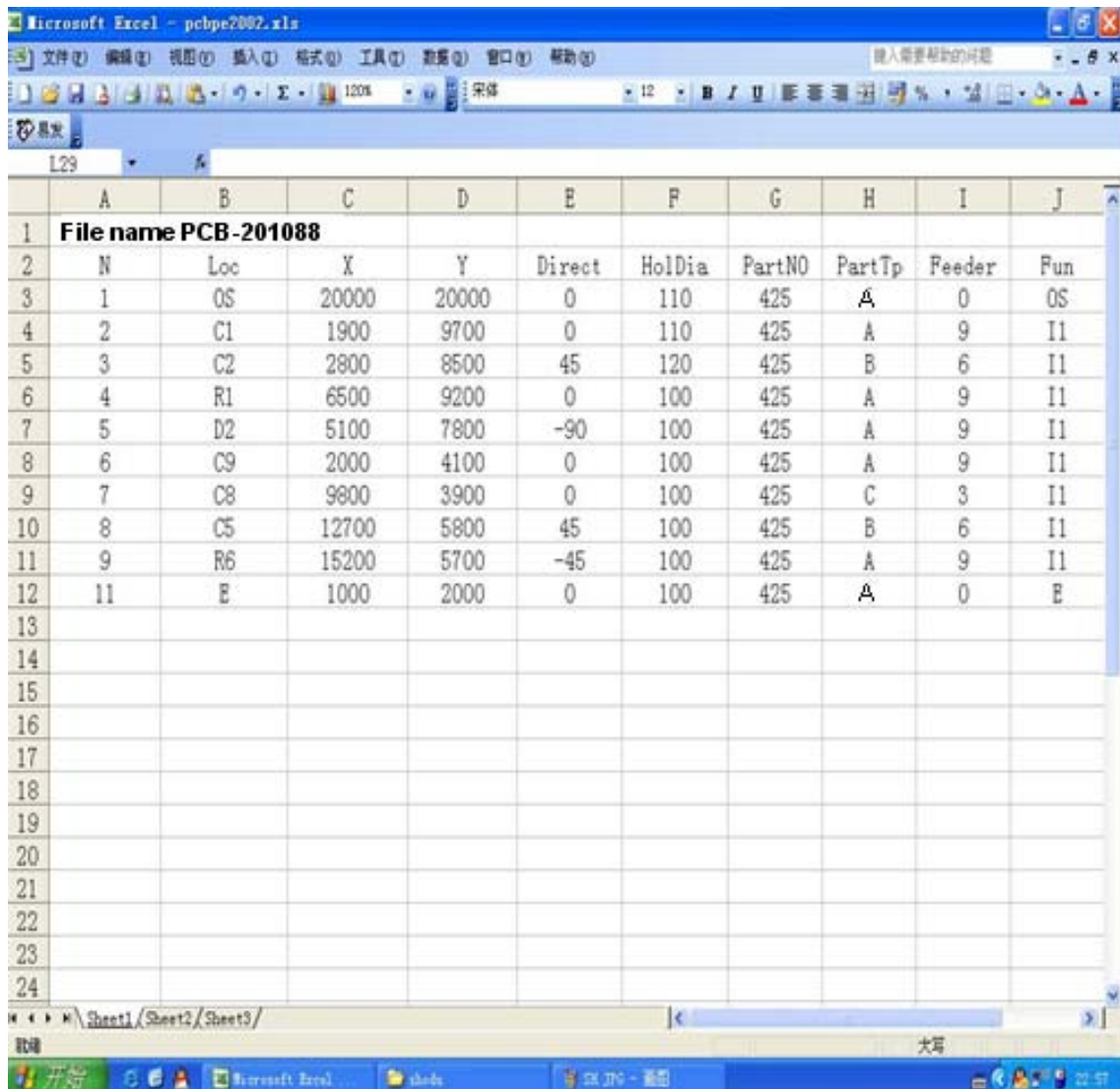
N	Loc	X	Y	Direct	HolDia	PartNo	PartTp	Feeder	Fun	
										File name PCB-6688
1	OS	23000	23000	0	100	88888	A	0	OS	Turntable OS
2	T1	0	0	0	100	88888	A	0	T1	
3	OS	23000	23000	0	100	88888	A	0	OS	
4	T1	0	0	0	100	88888	A	0	T1	Insertion row OS
5	OS	2000	23000	0	100	88888	A	0	OS	
6	C9	18000	6000	0	100	88888	A	9	I1	
7	C8	15000	4500	0	100	88888	A	2	I1	
8	R6	15000	4500	-45	100	88888	B	3	I1	
9	C5	18200	3000	0	100	88888	A	6	I1	Program of first PCB
10	D2	14500	2500	90	100	88888	C	8	I1	
11	R1	13500	900	0	100	88888	B	5	I1	
12	C2	17000	1500	45	100	88888	A	4	I1	
13	C1	18500	500	0	100	88888	A	1	I1	
14	OS	23000	23000	0	100	88888	A	0	OS	
15	T1	0	0	0	100	88888	A	0	T1	
16	OS	23000	23000	0	100	88888	A	0	OS	
17	T1	0	0	0	100	88888	A	0	T1	
18	OS	2000	23000	0	100	88888	A	0	OS	
19	C9	18000	6000	0	100	88888	A	9	I1	Program of second PCB
20	C8	15000	4500	0	100	88888	A	2	I1	
21	R6	15000	4500	-45	100	88888	B	3	I1	. . .
22	C5	18200	3000	0	100	88888	A	6	I1	
23	D2	14500	2500	90	100	88888	C	8	I1	
24	R1	13500	900	0	100	88888	B	5	I1	
25	C2	17000	1500	45	100	88888	A	4	I1	
26	C1	18500	500	0	100	88888	A	1	I1	
27	E	3000	5000	0	100	88888	A	0	E	

Example: turntable does not rotate, A as original point (when PCB is wider than 20CM, the program is usually used), program for inserting in any angle:

	A	B	C	D	E	F	G	H	I	J
1	File name PCB-201088									
2	N	Loc	X	Y	Direct	HolDia	PartNO	PartTp	Feeder	Fun
3	1	OS	20000	20000	0	110	425	A	0	OS
4	2	C1	1900	9700	0	110	425	A	9	I1
5	3	C2	2800	8500	45	120	425	B	6	I1
6	4	R1	6500	9200	0	100	425	A	9	I1
7	5	D2	5100	7800	-90	100	425	A	9	I1
8	6	C9	2000	4100	0	100	425	A	9	I1
9	7	C8	9800	3900	0	100	425	C	3	I1
10	8	C5	12700	5800	45	100	425	B	6	I1
11	9	R6	15200	5700	-45	100	425	A	9	I1
12	11	E	1000	2000	0	100	425	A	0	E

For the two program examples above, need to pay attention to following aspects:

1）In the program of turn table insertion, the OS coordinates of every two turn tables must be aligned,   sum of T1(T2) turntable coordinate and OS coordinates X,Y is usually around 22860 .

2）The sum of insertion row OS coordinate and the I1,I3 or I2 coordinate should be maller than 0 or bigger than 45000(X plus X,Y plus Y), if the sum is out of the range, then it exceeds the X shaft limit and Y shaft limit.

3）The HolDia and PartTp in program must be filled, and all English letters need to be in capital.

4）When inputting the items, no "space" is allowed, otherwise the machine can not recognize..

5）In machine parameters, component type must be included; otherwise the machine can not insert component (when inserting, P shaft goes down first to press component).

6）The Feeder column in program, the serial number of component station, must be in descending order or out-of-order.

7) Turn on computer, enter insertion machine operation system and keep machine at normal status.

8) (Shortcut) single click "file"——"open", select the newly created insertion program file

Click—open or double click, then the system opens the program file, machine will execute this program.

9) Start "zeros".

10) Start "shift"——"single step", move to the first insertion row under OS, namely offset row. (the rows with "I" are function rows, such as I1,I2,I3, only function rows can be editted). Apply "program edit" and "Visual correction", select the arrows of up, down, right and left to edit and correct according to actual situation, as well as the unit distance of movement 2,10,100……, confirm the coordinate position of new offset row, when camera aligns with insertion holes, click "enter offset" button to finalize new offset coordinate.

11) Apply "Visual correction" in "program edit", according to above method, confirm the coordinates of each insertion rows under offset row, but you need to click "confirmation" button after revising the coordinate of each row. After corretting all coordinates, click file — save, save new coordinate program file.

12) When creating a new program in Southern Machinery format, input component position in column L (component serial number); fill in hole diameter of insertion point In HolDia column; fill in component angle in Direct column; fill in component type in columnPartTp(parameter), fill in station number of component in column Feeder, fill in function code of machine motion T1 or T2 in column Fun (i.e. turn table rotates 90° in clockwise or counterclockwise); OS is OFFSET position, it determines the position of the first point on workbench;I1,I2,I3,S, not execute this row; E is ending row, machine does not run this row.

13) After all machine insertion programs are corrected and saved, click panel "shift" — "automatic"— "start", let the machine operates idle to see if the coordinate positions are correct. If all are correct, then you have finished program creation.

3. Verification program:

1) Set the PCB board in program stay at the original position..

2) After machine zeros, start "single step" + "shift", move to the first insertion row of the program, then click "edit" and "visual correction" in program edit area, see if the pount set and the cross picture of camera are concentric (standard insertion postion need to be concentric with cross picture),otherwise, use "edit" to correct.

3) Then click "exit from visual correction", then click "H" on the control panel, turn off H shaft motor servo enable, hold H shaft adjust wheel and press down insertion head (need to have component clinched and to be inserted on the insertion head), see if the two component leads can center the hole on PCB (0° and ±90°), if can not center or can not insert, then you need to adjust the "equipment parameter" until the component can center and insert properly.

4) In "program edit" area, click down arrow, check if coordinates of each row are correct, if not right, thencorrect it.

5) At last, click "exit from edit", then click "file"→"save program".

6) if all are correct, the next step is load the right quantity of component and start to produce.

4. Introduce other program:

1) Use "bitmap coordinate editor" to intruduce program.

The program created by "bitmap coordinate editor" is in text format; need to transfer the text file into EXECL.   Open the text file with "EXECL", and save, copy the content you need into the standard program format of this machine, and optimize other content.

2) Use"Board mold" data to introduce

You can transfer the format of PCB board data ----PROTEL99 into the program format can be used on the machine. This data is in text format also, and usually in British system, so you need to transder it into metric, and transfer the format from text to EXCEL. We only take the component lead hole WID X and WID Y data, copy the content you need into the standard program format of this machine, and optimize other content.

Attention: our company has the PROTEL99 software, you can ask for it. In order to keep the machine computer operate stablely, it is not allowed to install this software to the machine computer and use.

3) You can introduce the program used in other machine into this machine for usage.

a. first need to identify the number of PCB points that to be programmed, component direction, degree,component type,transfer station and the shortest effective insertion path (insertion sequence), try to avoid "idle travel" of worktable, to enhance production speed and save energy, you can consider insert 0° and 90° separately in certain occasions.

b. then put PCB on the jig of round plate to determine the direction of PCB board, and use "locating fixture" to fix PCB on jig.

c. turn on computer, go to S3000 insertion machine operation system(make sure

machine is normal).

d. single click "File"→"Open", copy one insertion program, then"rename","save as",then "open" the program "saved" and let machine execute this program.

e. Start "zero".

f. Start "shift"——"single step", when it executes to second row of program, click "Edit" and "Visual correction" in program editing area of operation interface, at this time, the camera is on, if the position caught by camera does not match the first insertion point that you determined, then please move the worktable by pressing the arrow buttons in program editing area, until the first insertion point is aligned with the center of camera, at last press "Enter" to finalize the coordinate of this point.

g. then click "↓" in program editing area, use the same method of identifying coordinate of first point to identify the coordinate of second point, the rest can be done in the same manner according to pre-set insertion path.

h. after identifying the coordinate of last point, click "exit editing", then click "File" in toolbar→"save program",OK.

Chapter 5　　Maintenance and Adjustment

1.Maintenance:

1)Maintenance of lead screw,gear, bearing and dynamic shaft, etc.

(1) Lead screw: Lead screw (ball screw) is one of the cores of a machine and it directly affects the precision and the speed of the machine. Being precision components, it needs strengthened maintenance. While using the lead screw, you should ensure enough lubrication to avoid the machine error or shortened machine life caused by metal contact which leads to the increase of friction and wear. The lubricants used on lead screw can be divided into two types: the lubricant grease (grease) and lubricant oil (the Shell High-speed Lubricant Oil). In terms of maintenance, the grease lubricants can make the kinetic friction torque increase greatly while the rotating speed is increasing. And it is better to use lubricant oil if the rotating speed is faster than 3-5 meters per minute. However do not forget to utilize

the lubricant grease, it happened before the the speed can reach 10 meters per minute with lubricant grease.

Table1: the general indicator of the check and supplies interval of lubricants. While supplying the lubricants, you should clean up the used grease on the screw shaft first.

Table 1:lubricants check and supplementary interval

Lubrication Method	Check Interval	Items of Inspection	Supplementary and Replacement Interval
Automatic lubricants oil feed	Every week	Oil amount, dirt etc.	supplement while checking, add proper amount of lubricant according to the capacity of oil slot
Lubricant grease	2 to 3 months at early stage of work	Dirt and dust ingress,etc.	supplement half a year, but add more moderately according check results
Oil bath	Every day before start working	Management of grease surface	Manage according to lubricants consumption

Use fiber-less cloth to remove dust from the ball screw regularly(one week), and add a little grease.

(2) Gear: Add some high-grade lubricants regularly(one week), and better not to add large amount of butter.

(3) Bearing: Check if there is impurities or debris in each ball bearing, if any, clean up and add some high-grade lubricants.

(4) Dynamic Shaft: Clean and maintain regularly (one week), add some high-grade lubricants to reduce the friction on the surface of dynamic shaft.

(5) Chain: Clean and maintain regularly (one week), check if there is impurities in the chain , add some high-grade lubricants to reduce the friction of chain and rail and wearing of chain.
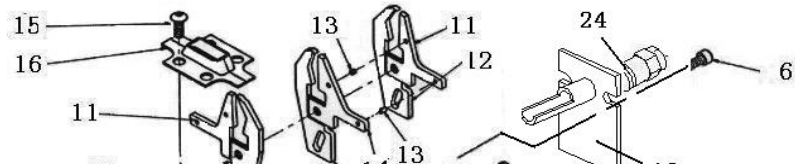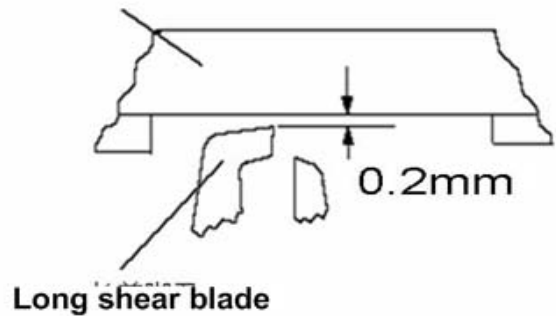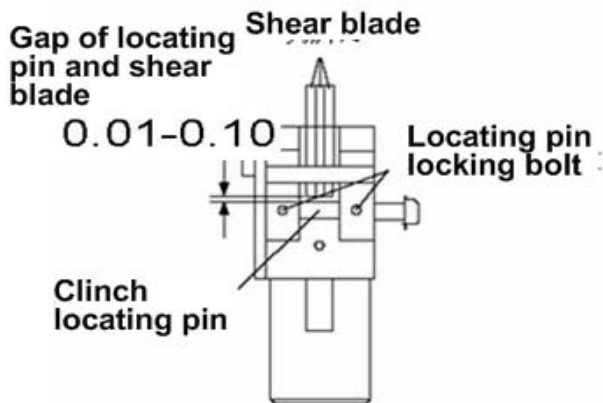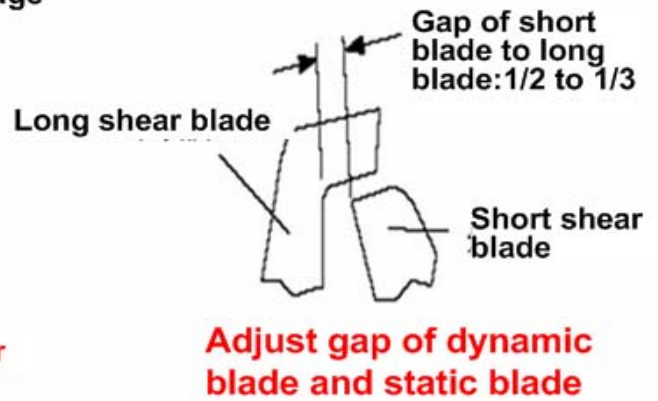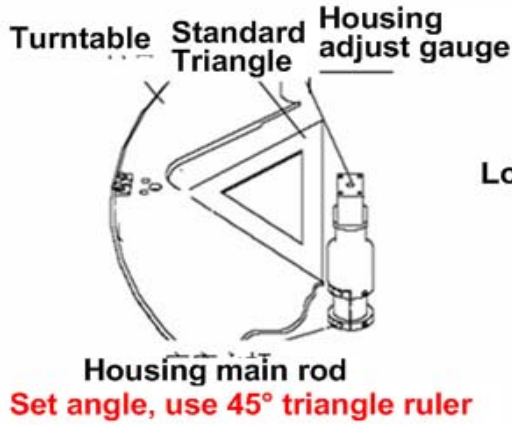
2) Maintenance of Clinch
 (1)Disassemble clinch

Loosen the four larger clinch set screws on the ⑰XG3KDZ-07020 clinch housing, Loosen the screws on the ⑧XG3KDZ-07025 inspection rod, then pull out the inspection wire and take out the air pipes for waste lead leg blowing and waste leg tube, then you can take the whole clinch out.

(2) Maintenance of the clinch

a. Loosen the screws on the cap of the ⑯XG3KDZ-07026 clinch, then Loosen the screws on the locating pin and pull out the ⑲XG3KDZ-07063 locating pin. Release the snap spring on the ⑨XG3KDZ-07021 pin and pull the pin out, then you can take out the shear blade ⑪ XG3KDZ-07031 clinch shear curving blade1, ⑫XG3KDZ-07034 clinch shear blade 2, ⑭XG3KDZ-07033clinch shear blade1, use fiber-less cloth to clean the clinch blade, check for any wearing of clinch blade and wearing degree, see if it is necessary to replace it.

b. Use fiber-less cloth to clean the pin of ⑨XG3KDZ-07021, and apply a little grease provided by our company.

c. Attention: the gap between⑪ XG3KDZ-07031 clinch curving blade 1, ⑭ XG3KDZ-07033clinch shear blade1 rear part and ⑧XG3KDZ-07025 inspection rod must be within 0.01-0.1mm, if gap is too small, the "Insertion inspection" will not be able to detect, if the gap is too big, then it is too far to be detected; you can adjust the gap by turning ⑧ XG3KDZ-07025 inspection rod, after the gap is set, do not adjust it casually again, and fasten ④ M3*6 set screw.

Clinch Assembly

Turntable   Standard Triangle   Housing adjust gauge

Housing main rod

Set angle, use 45° triangle ruler

Gap of short blade to long blade:1/2 to 1/3

Long shear blade

Short shear blade

Adjust gap of dynamic blade and static blade

Gap of locating pin and shear blade

Shear blade

0.01-0.10

Locating pin locking bolt

Clinch locating pin

Gap of locating pin and clinch is 0.01-0.10mm

0.2mm

Long shear blade

Gap of clinch and PCB 0.2mm

3) Installation of clinch head.

Install the clinch head that just get maintained according to the reverse sequence of disassembling, then install it on machine, then check each screw for any   Looseness.

No.	Name	Code	Qty for one machine	Remark
Clinch Blade Specification and No.1
1	Adjusting housing screw5MM	XG3KDZ-07099	1	
2	Adjusting housing	XG3KDZ-07093	1	
3	spring screw inside clinch head	XG3KDZ-07037	2	
4	set screw M3*6	set screwM3*6	8	
5	M3 spacer	M3 spacer	4	
6	Unified national screw	4-40*1/4	2	
7	clinch curing blade2	XG3KDZ-07032	1	
8	inspection rod	XG3KDZ-07025	2	
9	pin	XG3KDZ-07021	1	
10	lead leg sink	XG3KDZ-07030	1	
11	clinch curing blade1	XG3KDZ-07031	2	
12	clinch shear blade2	XG3KDZ-07034	1	
13	hollow pinø1.5*10	XG3KDZ-07114	1	
14	clinch shear blade1	XG3KDZ-07033	2	
15	round cup screw M3*6	round cup screw M3*6	4	
16	clinch head blade cover	XG3KDZ-07026	2	
17	clinch head	XG3KDZ-07020	1	
18	clinch head small slider5MM	XG3KDZ-07098	1	
19	clinch locating pin	XG3KDZ-07063	3	
20	soft rubber pipe	XG3KDZ-07043	1	
21	waste leg outlet pipe	XG3KDZ-07058	1	
22	spring	XG3KDZ-07035	1	
23	adjusting set block	XG3KDZ-07096	1	

| 24 | air connector PC04-M5 | XG3KZW-02091 | 1 | |
| 25 | clinch head sensor line | XG3KDZ-07042 | 2 | |

Clinch Blade Specification and No.2

| No.	Common part code	Qty	Name		code
1	43461601	2	clinch curing blade1	Short blade for machine type 1	XG3KDZ-07031
2	43461501	2	clinch curing blade2		XG3KDZ-07032
3	43461801	1	clinch shear blade1		XG3KDZ-07033
4	43461701	1	clinch shear blade2		XG3KDZ-07034
No.	Name	Code	Qty for one machine		Remark
1	43902201	2	clinch curing blade1	Long blade for machine type 1	XG3KDZ-07104
2	43902001	1	clinch curing blade2		XG3KDZ-07105
3	43902101	1	clinch shear blade1		XG3KDZ-07106
4	43902301	2	clinch shear blade2		XG3KDZ-07107
1	49313901	2	clinch curing blade1	Long blade for machine type 2(special	XG3KDZ-07108
2	49314001	1	clinch curing blade2		XG3KDZ-07109
3	49536201	2	clinch shear blade1		XG3KDZ-07110
4	49536301	1	clinch shear blade2		XG3KDZ-07111
1	47803002	1	clinch curing blade1	Short blade for machine type 2	XG3KDZ-07112
2	47803102	1	clinch curing blade2		XG3KDZ-07113
3	47803202	2	clinch shear blade1		XG3KDZ-07114
4	47803302	2	clinch shear blade2		XG3KDZ-07115
1	43902006	1	clinch curing blade1	Long blade for machine type 2	XG3KDZ-07116
2	43902103	1	clinch curing blade2		XG3KDZ-07117
3	43902204	2	clinch shear blade1		XG3KDZ-07118
4	43902303	2	clinch shear blade2		XG3KDZ-07119

3 Housing Maintenance

1) Disassemble housing.

 Loosen the four screws on ⑨XG3KDZ-07208 clinch base board, pull out ⑮ XG3KDZ-17007(400W servo motor wire) and optoelectronic switch wire, air cylinder magnetic switch wire, waste leg pipe , air pipe, and grounding wire, you can take down the whole housing.
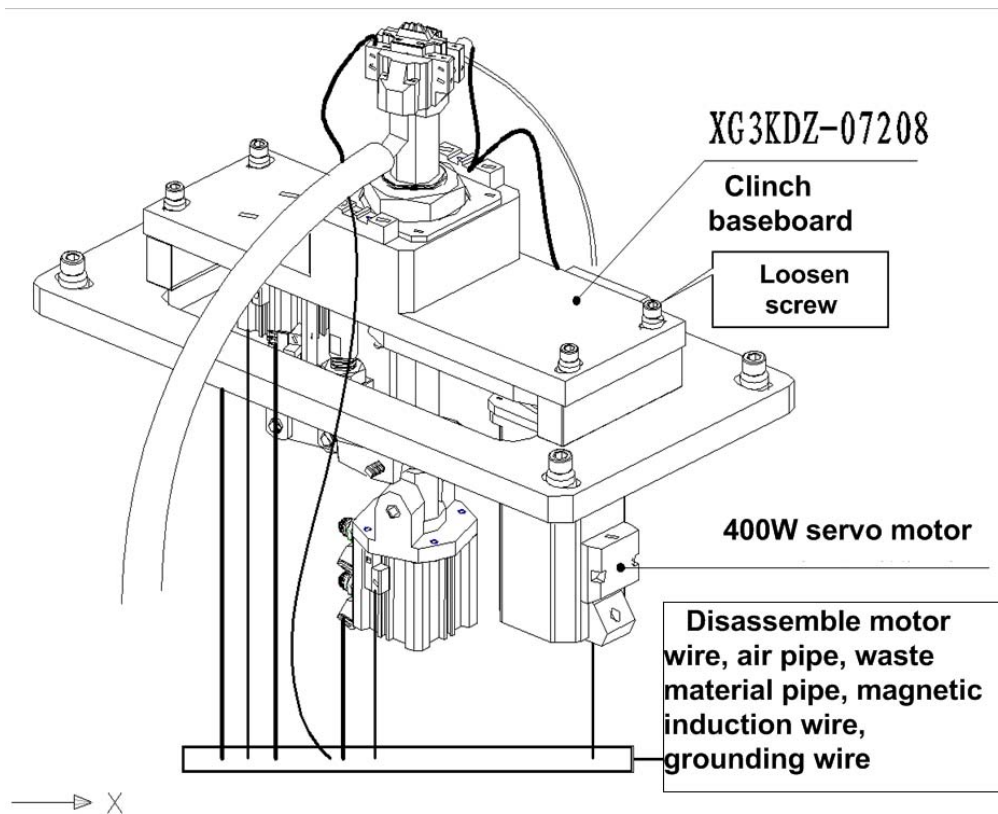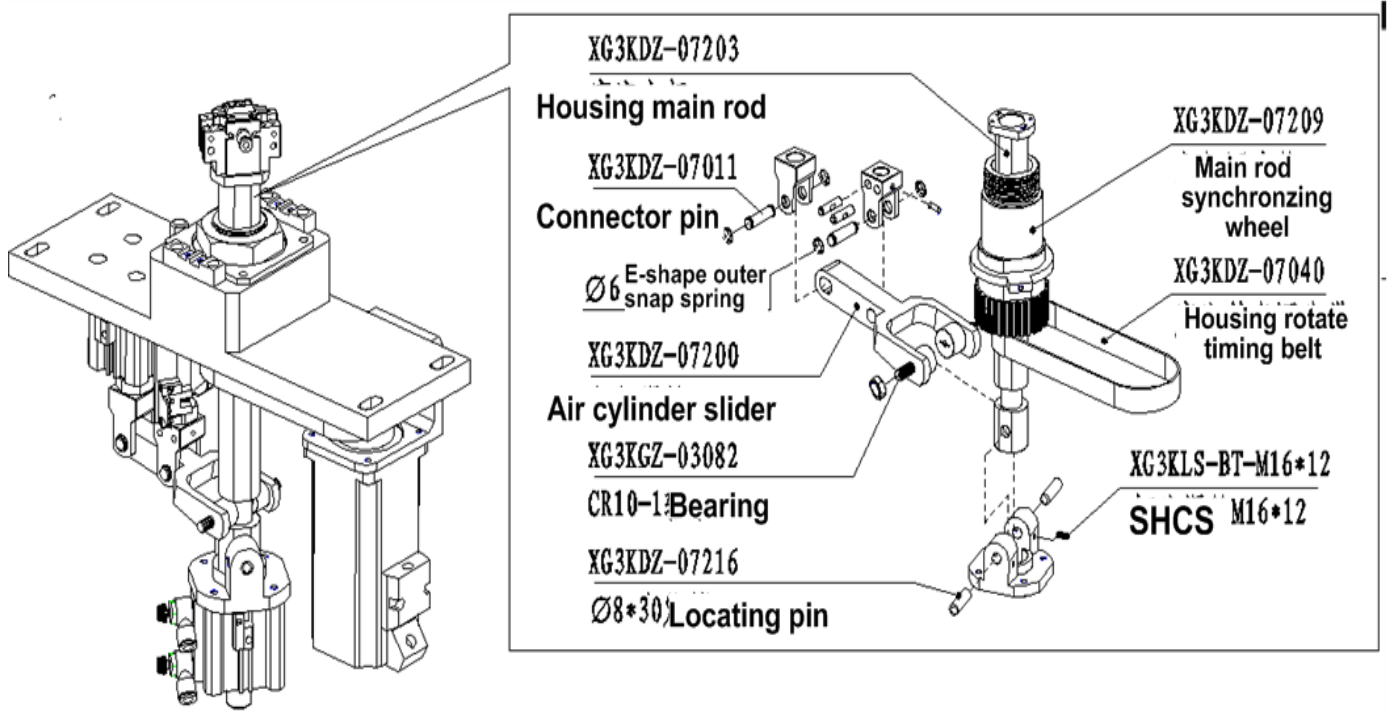

2)Housing unit maintenance

(1)First loosen the snap spring of ㊾XG3KDZ-07011 connector pin, pull out the pin,remove the ㉖XG3K-07200 air cylinder slider, check for pin wearing, if it is worn out seriously, then replace it; then clean the air cylinder slider with cloth, and apply the grease given by our company evenly in the areas get worn out during work, see picture (1-2).

XG3KDZ-07011
Connector pin

Ø6 (E-shape outer snap spring)

XG3KDZ-07200
Air cylinder slider
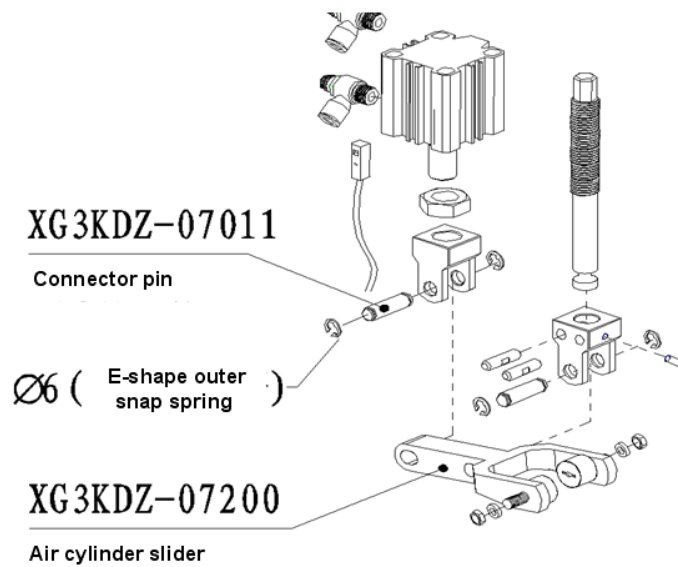
Picture 1-2

(2)First use dedicated spanner to   Loosen ㉘XG3KLS-BT-M6*12 SHCS (M6*12), then use spanner to pull out ㉗XG3KDZ-07216(Ø8*30 locating pin),remove air cylinder connecting holder 2 and place it well. Then use spanner again to disassemble the snap spring inside Ø6E, take out㊾XG3KDZ-07011 connector pin,   remove   ㉖   XG3KDZ-07200   air   cylinder   slider   和   ㉚ XG3KGZ-03082(CR10-1bearing) and apply grease and place aside properly, at last hold the ② XG3KDZ-07203 housing main rod, shake housing main rod slightly,check if housing main rod shakes abnormally, if so, need ti replace it. Then use cloth to clean the air cylinder connecting block, and apply the grease given by our company evenly in the areas get worn out during work,(picture1-3), then check the wearing of ㉓XG3KDZ-07040 timing belt(picture1-4).

**Picture 1-3**   **Picture 1-4**

(3)Maintain ㊵ XG3KDZ-07046 housing up and down air cylinder, and ㉝ XG3KDZ-07048 housing clinch air cylinder regularly, please refer to Chapter 5 Air Driving System Maintenance for detailed maintenance method(picture1-5).
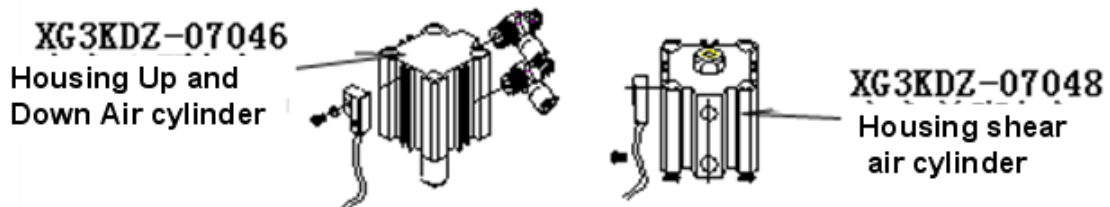
Picture 1-5

3)Housing Installation

Install the housing that just got maintained to machine according to the reverse sequence of disassembling. Attention: need to center clinch head for housing, then fasten screw.
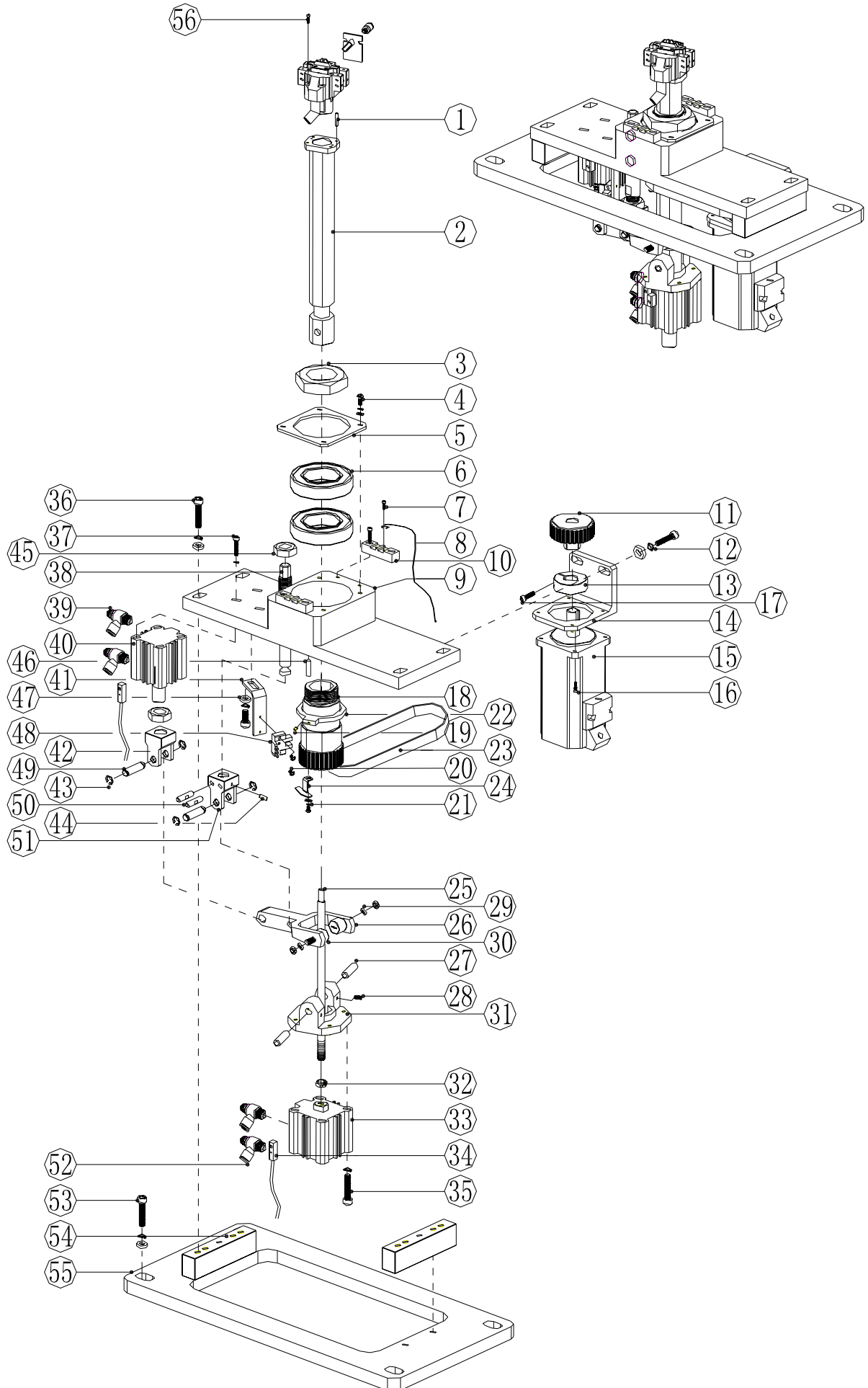
Housing component list

No.	Name	Code	Qty/per machine	Remark
1	clinch locating pin	XG3KDZ-07063	3	
2	housing main rod	XG3KDZ-07203	1	
3	M36*2 nut	XG3KDZ-07008	1	
4	round cup screw M5X16	XG3KLS-BYT-M5*16	4	+ spring pad+ pacer
5	bearing cap	XG3KDZ-07004	1	
6	Imported bearing NSK(6008 ZZ)	XG3KDZ-07038	2	
7	SHCS M4X8	XG3KLS-BT-M4*8	4	+spring pad
8	clinch head sensor line	XG3KDZ-07042	2	
9	Clinch base board	XG3KDZ-07208	1	
10	Locating holder	XG3KDZ-07130	2	
11	Housing synchronizing roller	XG3KDZ-07018	1	
12	SHCS M6X25	XG3KLS-BT-M6*25	4	+spring pad+spacer
13	XYUD motor synchronizing roller anchor ear	XG3KGZ-03014	1	
14	Motor holder	XG3KDZ-07019	1	
15	Pulse (400W) servo motor	XG3KDL-17007	1	
16	SHCS M4X16	XG3KLS-BT-M4*16	4	+spring pad
17	SHCS M5X12	XG3KLS-BT-M5*12	4	+spring pad
18	Main rod synchronizing roller	XG3KDZ-07209	1	
19	set screwM3X5	XG3KLS-JM-M3*5	1	
20	SHCS M3X12	XG3KLS-BT-M3*12	2	+spring pad+spacer
21	SHCS M5X10	XG3KLS-BT-M5*10	4	+spring pad+ pacer
22	Housing limit position	XG3KDZ-07207	1	
23	Housing turn angle degree timing belt	XG3KDZ-07040	1	
24	Housing turn angle degree inspection piece	XG3KJC-11008	1	
25	air cylinder connecting rod	XG3KDZ-07215	1	

26	air cylinder slider	XG3KDZ-07200	1	
27	∅ 8*30 locating pin	XG3KDZ-07216	2	
28	SHCS M6X12	XG3KLS-BT-M6*12	2	
29	M6 flat washer	XG3KGZ-03073	2	
30	CR10-1 bearing	XG3KGZ-03082	2	
31	air cylinder connecting holder 2	XG3KDZ-07201	1	
32	M8 hexagonal nut	M8 hexagonal nut	1	
33	Housing clinch air cylinder	XG3KDZ-07048	1	
34	housing up and down air cylinder magnetic induction switch	XG3KDZ-07047	2	
35	SHCS M5X55	XG3KLS-BT-M5*55	4	+spring pad
36	SHCS M8X30	XG3KLS-BT-M8*30	4	+spring pad
37	SHCS M5X35	XG3KLS-BT-M5*35	4	+spring pad
38	air cylinder adjusting rod	XG3KDZ-07213	1	
39	air connector PL06-01	XG3KDZ-07050	2	
40	housing up and down air cylinder	XG3KDZ-07046	1	
41	optoelectronic switch installation holder	XG3KDZ-11007	1	
42	air cylinder connector 1	XG3KDZ-07009	1	
43	E-shape snap ring(outer snap spring)	Ø6 outer snap spring	4	
44	set screw M4X10	set screw M3X10	2	
45	M14*1.5 nut	XG3KLS-LM-M14*1.5	1	
46	Housing position limit PIN	XG3KDZ-07070	1	
47	SHCS M5X10	XG3KLS-BT-M5*10	4	+spring pad+spacer
48	optoelectronic switch	EE-SX671	1	
49	connector pin	XG3KDZ-07011	2	
50	Ø6*24 locating pin	XG3KDZ-07217	2	
51	air cylinder connector 2	XG3KDZ-07214	1	
52	adjusting valve	XG3KSL-04091	2	AS2201F-01-06S
53	SHCS M8X30	XG3KLS-BT-M8*30	4	+spring pad+spacer

54	seat pad1	XG3KDZ-07014	2	
55	Housing locating block	XG3KDZ-07088	1	
56	SHCS M4X30	XG3KLS-BT-M8*30	4	+spring pad+ pacer
	411A-DOA-DM-DDAA-1BA	XG3KDZ-07062	2	

4.Insertion Head Maintenance

1) Disassemble of insertion head.

Loosen ㉝M4*4 SHCS , then   Loosen ㉛set screw M6*20, then pull out ㉞XG3KCJ-13033 insertion head locating pin, then you can remove the whole insertion head.

2)Insertion Head Maintenance.

(1)First   Loosen ⑤M4*10 SHCS , ⑦M4*15 SHCS , so that you can remove the ④XG3KCJ-13014 insertion head sliding cover, disassemble ②XG3KCJ-13004 guiding sleeve, ③XG3KCJ-13011 abnormal shape slider, ⑮XG3KCJ-13020 plum flower slider and material guiding unit, use fiber-less cloth to clean it and apply the grease provided by our company evenly.

(2)Use your hand to press the ㉒XG3KCJ-13026 material pressing head,check for the tension of the pressing rod slider spring of ⑰XG3KCJ-13024   inside ㉑ XG3KCJ-13010 material pressing pin, if spring tension is poor, replace it.

(3)Use your left hand to hold the triangle of ㉔XG3KCJ-13019 in material guiding unit, then use your right hand to press down the ㉚XG3KCJ-13005 compress block, the compress block will move downward together with ㉓XG3KCJ-13017 main pawl, the right and left pawl will also open, after compress block moves down to certain position, you can remove the compress block, when removing, be careful, do not make ㉔XG3KCJ-13023 main pawl slider spring, and ㉕XG3KCJ-13025

side pawl spring pop out and fly away, then check spring tension, if tension is poor,

Inserter

Seperate, disassemble, clean, lubricate

Triangle slider

Inserter sliding cover

Insert supporter stop

Adjust bolt

Adjust block

0.5 ± 0.05

Push down manually

Material supporting unit

Roller

Adjust bolt

Locating bolt

Adjust block

Insertion head guide jaw

Adjust gap of inserter triangle slider and sliding cover

0.5 ± 0.05 **Adjust right and left, back and forth**

Dial gauge

Locating bolt

Locating bolt

Fastening block

Adjusting bolt

Dial gauge

Set bolt

Eccentric pin

Adjusting block

Fastening bolt

Locating pin

Calibrate inserter center, deviation range +/-0.025mm

Set the position of insertion head assembly on machine

Direction change queue, set tool, BEC template

Install insertion head

Insertion head guide jaw

CTA carrier clip clamp

CTA carrier clip clamp
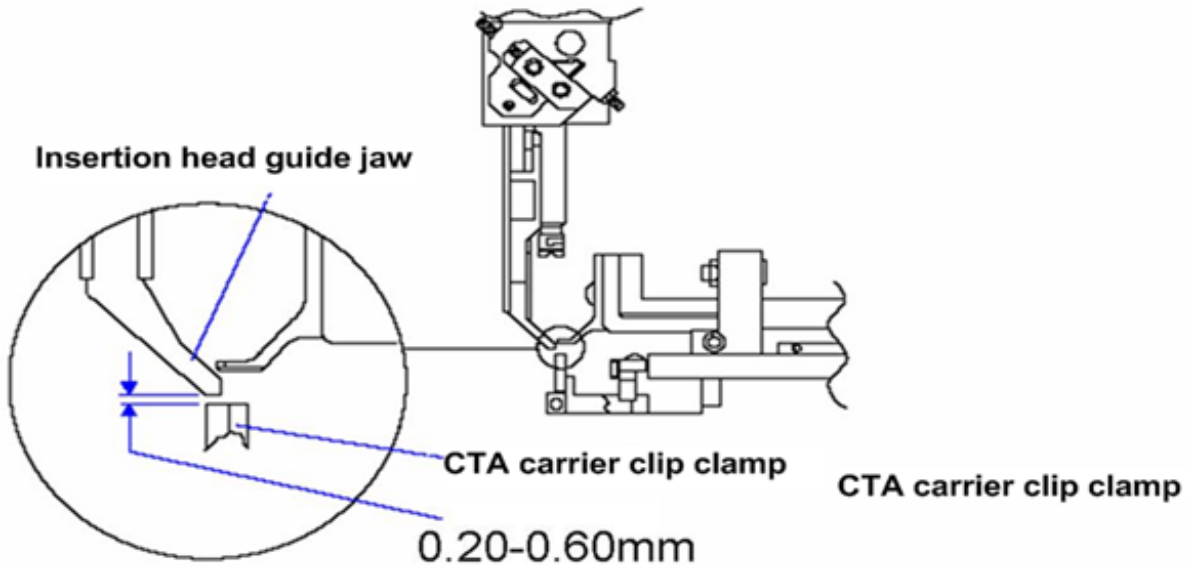
0.20-0.60mm

Set the inserter position, gap of guide jaw and CTA carrier clip 0.20-0.60mm

Insertion head guide jaw

PCB board
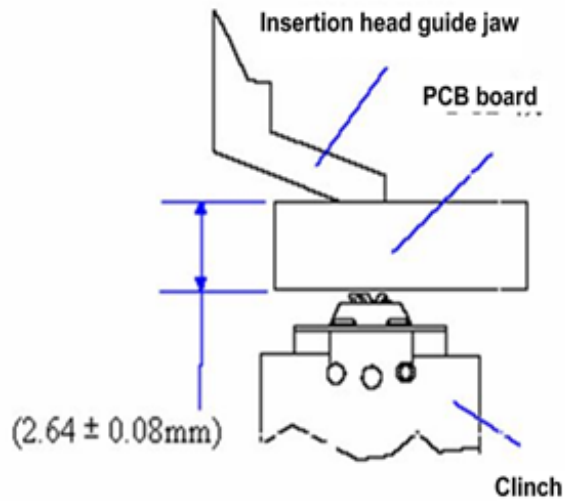
(2.64 ± 0.08mm)

Clinch

Set the insert location, the gap of guide jaw and clinch 2.64+/-0.008mm
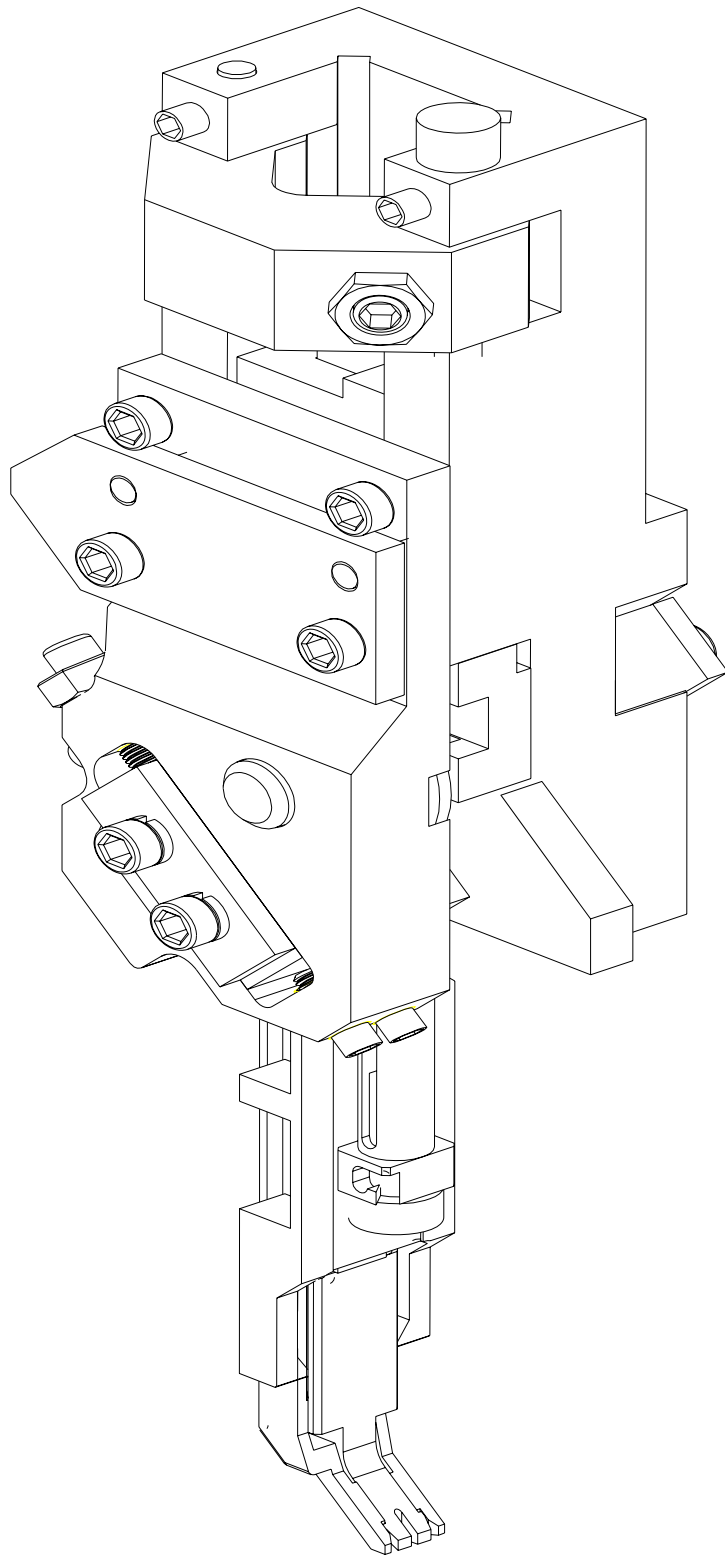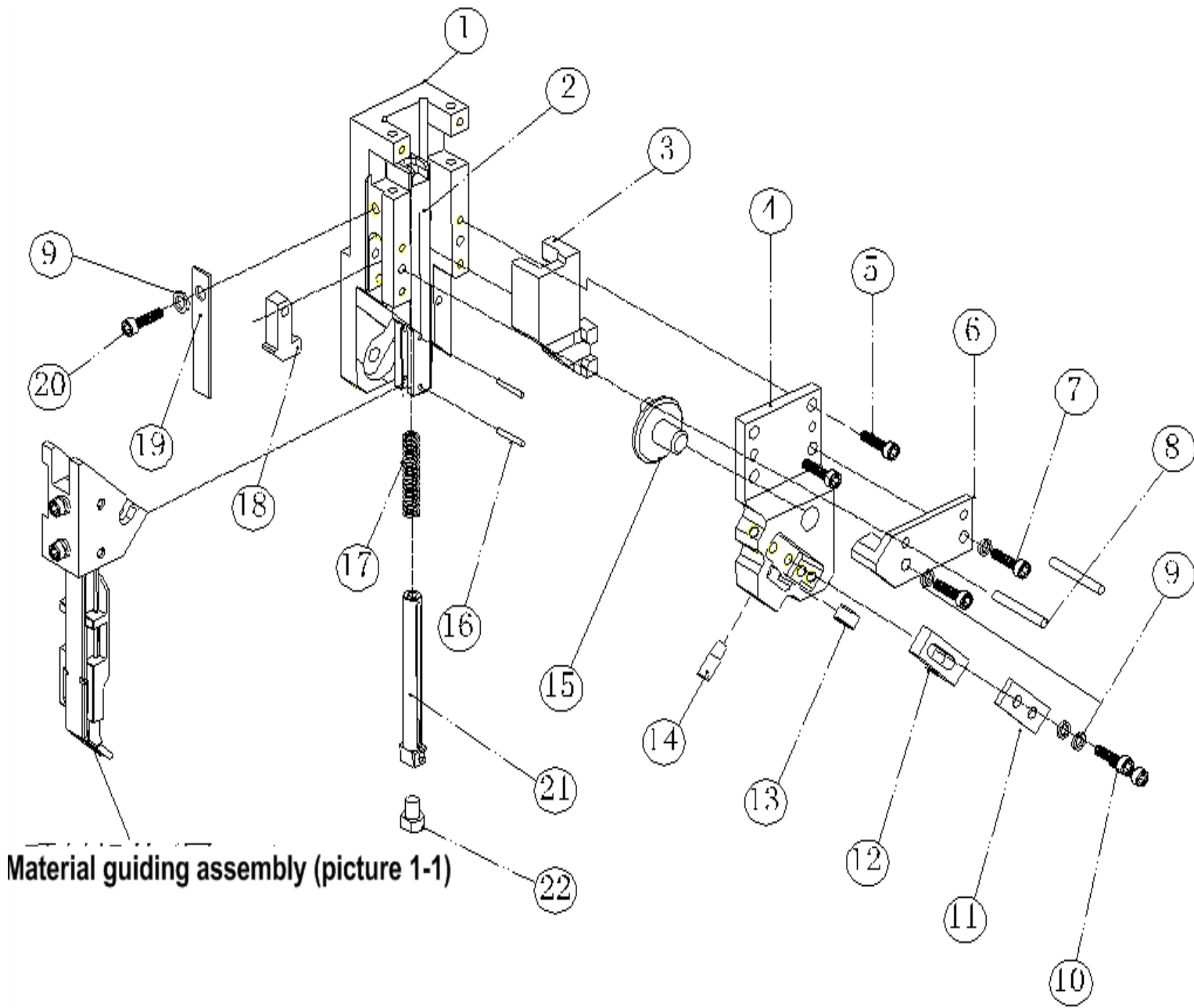
Material guiding assembly (picture 1-1)
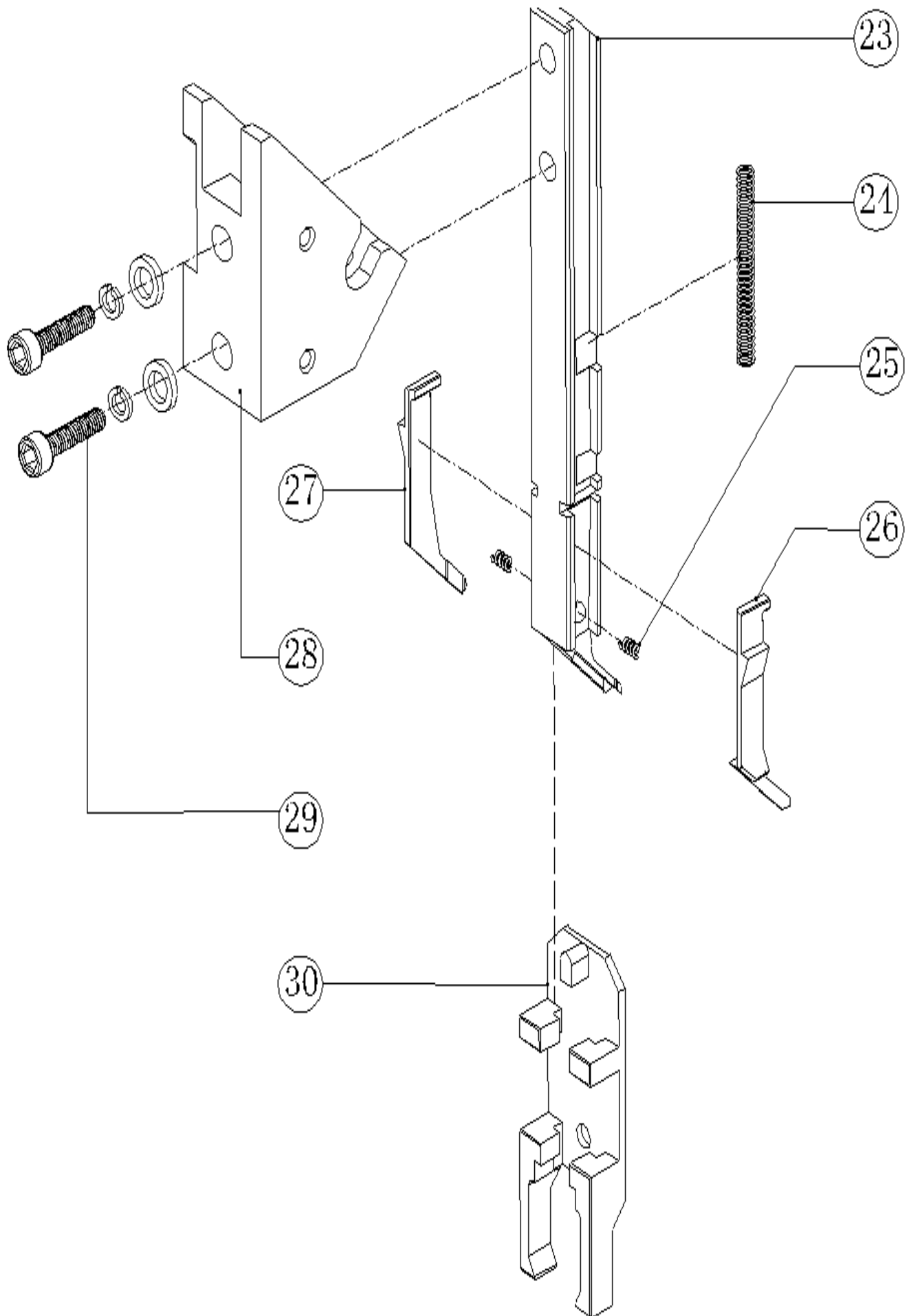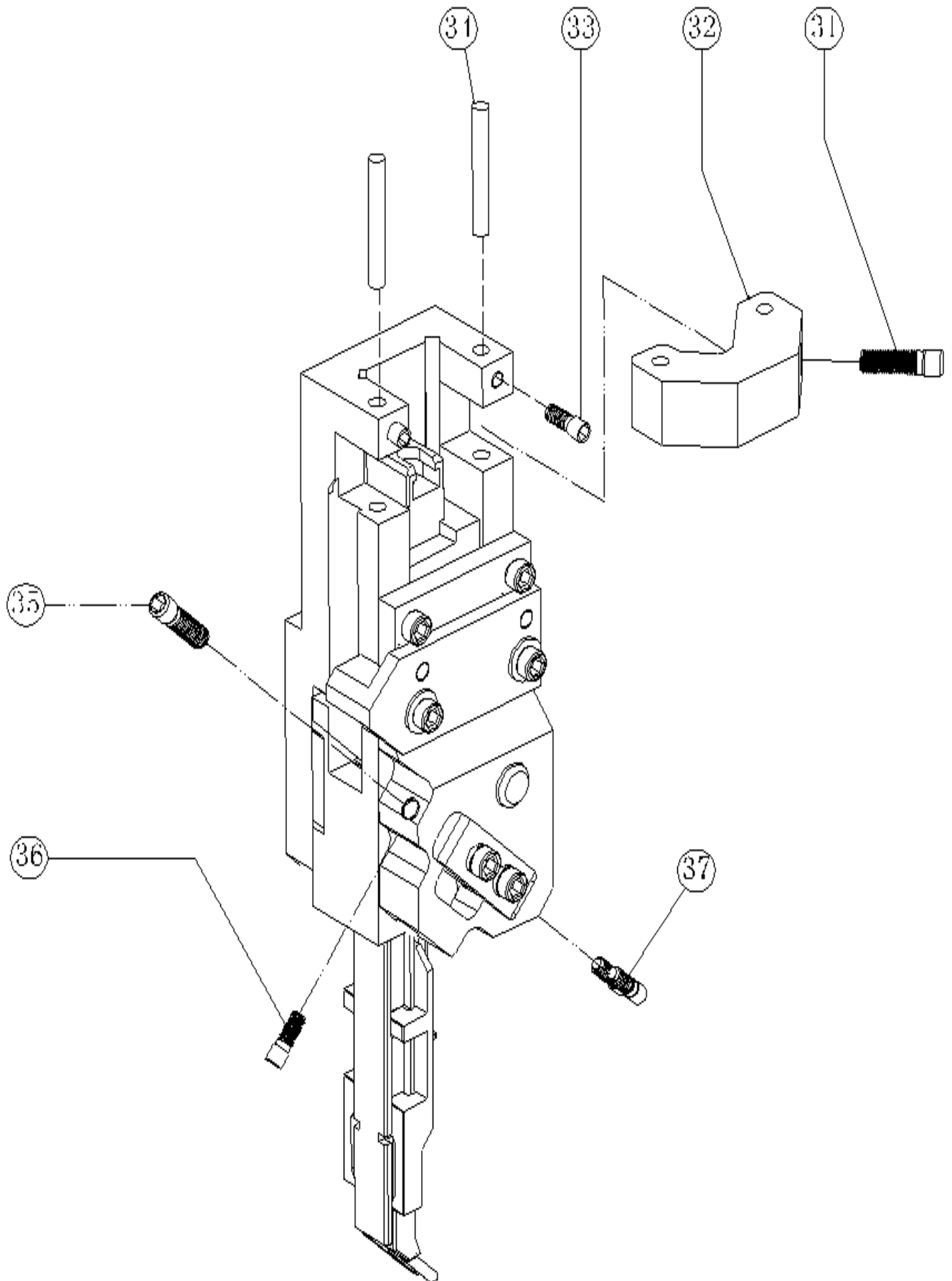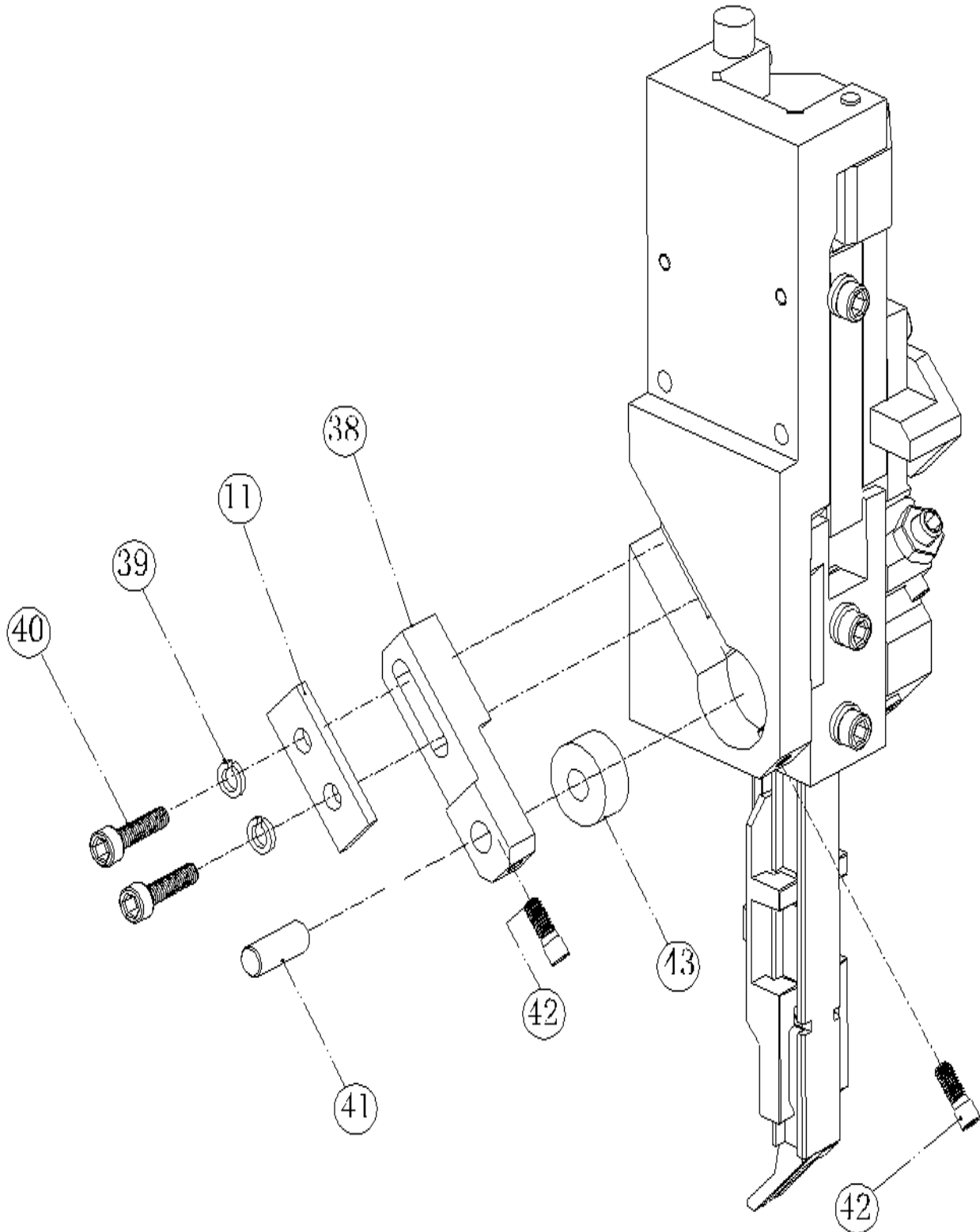
Insertion head component list

No.	Name	Code	Qty/per machine	Remark

1	insertion head body	XG3KCJ-13013	1	
2	guiding sleeve	XG3KCJ-13004	1	
3	abnormal shape slider	XG3KCJ-13011	1	
4	insertion head cap	XG3KCJ-13014	1	
5	SHCS M4*10	SHCS M4*10	2	
6	protective board	XG3KCJ-13015	1	
7	SHCS M4*15	SHCS M4*15	2	
8	insertion head locating pin2	XG3KCJ-13034	2	
9	M4 spacer	Ø4.3*9*0.8	5	
10	SHCS M4*10	SHCS M4*10	2	
11	spacer	XG3KCJ-13003	2	
12	seat pad	XG3KCJ-13006	1	
13	Imported bearing R155	XG3KCJ-13032	1	
14	eccentric pin	XG3KCJ-13012	1	
15	plum flower slider	XG3KCJ-13020	1	
16	Ø2*10 hollow pin	XG3KCJ-13028	2	
17	pressing rod slider spring	XG3KCJ-13024	1	
18	axe type part	XG3KCJ-13001	1	
19	spring 片	XG3KCJ-13022	1	
20	SHCS M4*10	cup head M4*10+spring pad+ spacer	1	
21	material pressing pin	XG3KCJ-13010	1	
22	material pressing head	XG3KCJ-13026	1	
23	main pawl	XG3KCJ-13017	1	
24	main pawl slider spring	XG3KCJ-13023	1	
25	side pawl spring	XG3KCJ-13025	2	
26	right side pawl	XG3KCJ-13018	1	
27	left side pawl	XG3KCJ-13016	1	
28	triangle slider	XG3KCJ-13019	1	
29	SHCS 8-32x3/8	Cup head 8-32x3/8+spring pad+ spacer	2	

insertion head component list

No.	Name	Code	Qty/per machine	Remark
30	clamp block	XG3KCJ-13005	1	
31	set screwM6*20	set screw M6*20	1	
32	compress block	XG3KCJ-13021	1	
33	SHCS M4*4	SHCS M4*4	2	
34	insertion head locating pin1	XG3KCJ-13033	2	
35	set screw M4*8	set screwM4*8	1	
36	SHCS M4*4	SHCS M4*4	1	
37	set screw M4*8	set screw M4*8	1	
38	adjusting block	XG3KCJ-13002	1	
39	M4 spacer	Ø4.3*9*0.8	1	
40	SHCS M 4*15	SHCS M4*15	2	
41	jig locating pin	XG3KZJ-16027	1	
42	SHCS M4*4	SHCS M4*4	1	
43	Imported bearing R3(open)	XG3KCJ-13031	1	

5. Head maintenance.

1) Disassemble the key part of head. First Loosen the four screws of ⑧⑧ XG3KTB-06021H bearing housing1 and ⑦① XG3KTB-06022H bearing housing2, remove the gear shaft of ⑧⑧ XG3KTB-06021H bearing housing1, ⑦① XG3KTB-06022H bearing housing2 and   ⑧⓪ XG3KTB-06005, then Loosen the screw on ⑤⑨ XG3KTB-06017head bearing housing and the two screws on 和 ㉞ XG3KTB-06018 hard steel shaft locating housing, then you can remove the whole head key part, be careful when removing.

2) Head key part maintenance.

(1) First apply a layer of grease provided by our company evenly on the ⑧⓪ XG3KTB-06005 gear shaft, ⑦④ XG3KTB-06006 gear rack, 107 XG3KTB-06069 P shaft transmission gear and 140 XG3KTB-06070 P shaft transmission driving gear in

order to reduce wearing.

(2) Use hand to hold 132 XG3KTB-06020 lead screw locating housing and pull it up(make sure insertion head is disassembled already), pull out 105 XG3KTB-06049 material pressing lead screw, use fiber-less clean cloth to clean it, and apply grease provided by our company evenly (not need too much).

(3) Loosen the two screws on front 59 XG3KTB-06017 head locating holder and the two screws on front 34 XG3KTB-06018 hard steel shaft locating holder, then pull out 115 XG3KTB-06042 hard steel shaft,use fiber-less clean cloth to clean it, and apply grease provided by our company evenly .

(4)Hold 121 XG3KTB-06007 rotate locating housing manually, pull out the 119 XG3KTB-06004 insertion head main rod,use fiber-less clean cloth to clean it, and apply grease provided by our company evenly (no need for too much), check if insertion head main rod shakes abnormally.

(5) Loosen the screw on 134 XG3KTB-06023,CR10-1 housing, take out 135XXG3KGZ-03082 bearing IKO CR10-1,use fiber-less clean cloth to clean it, and apply grease provided by our company evenly .
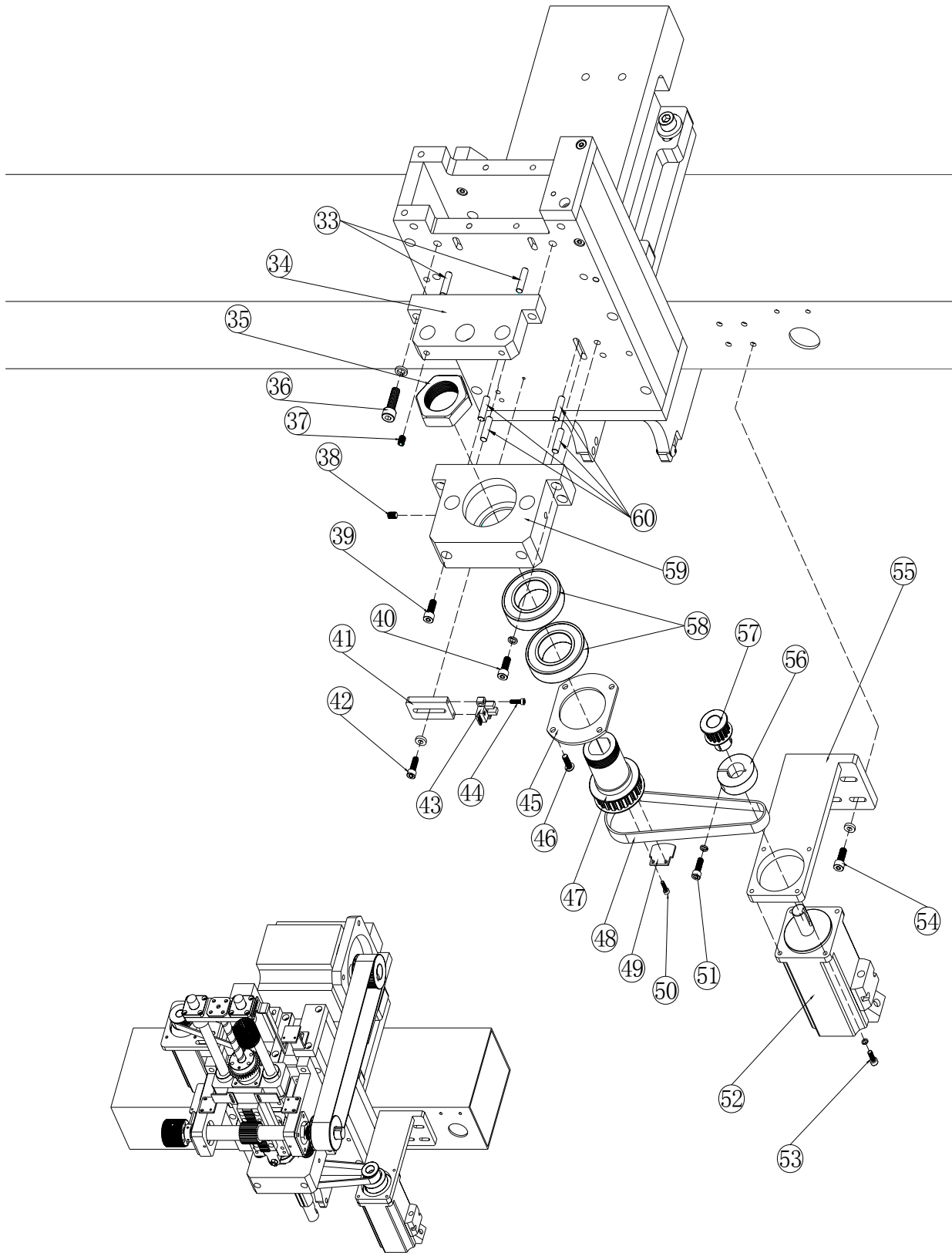
3)Head key part installation.

Install the head key part that just get maintained according to the reverse sequence of disassembling, then install it on machine, then check each screw for any Looseness.
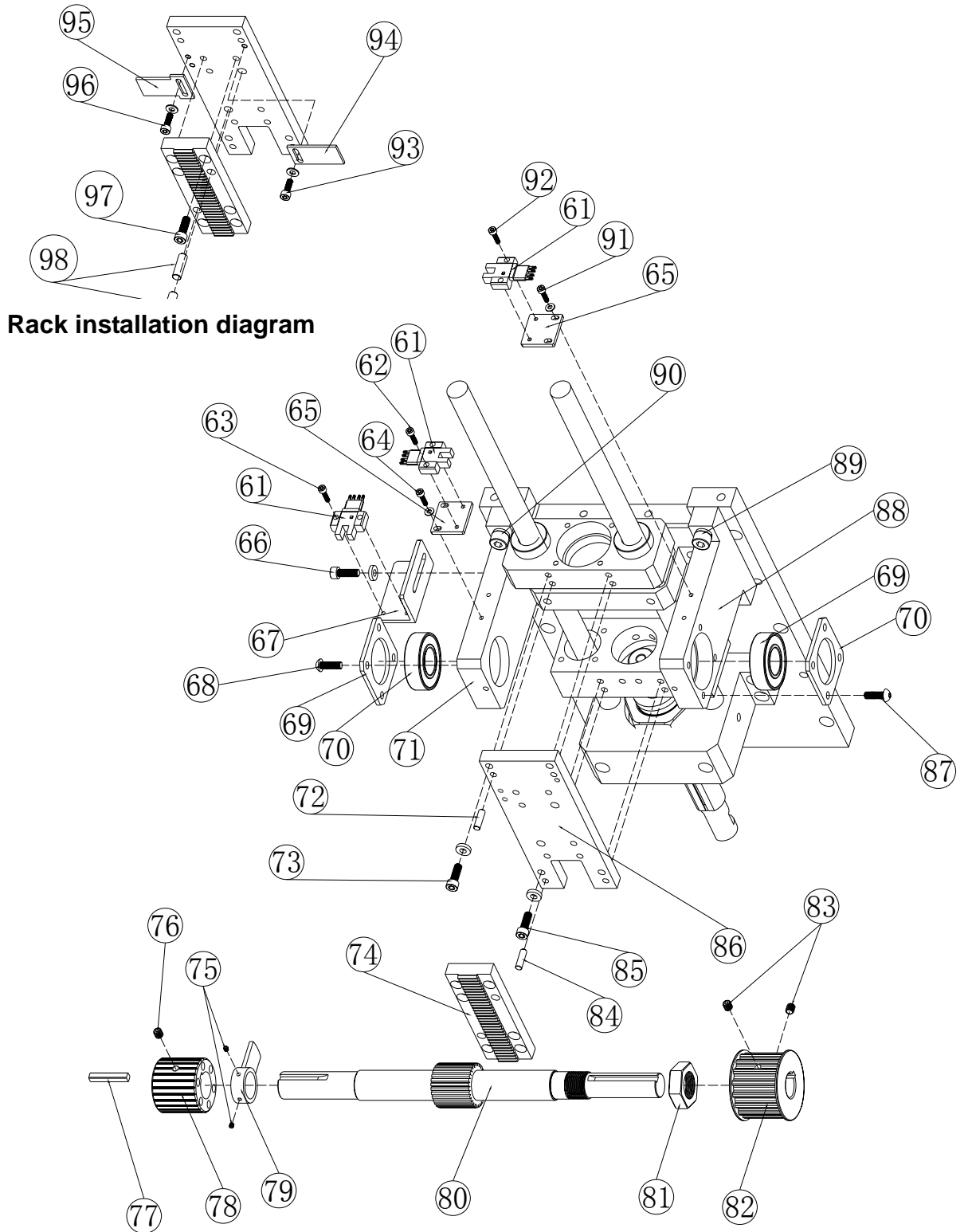
9.6 Head（3-4）
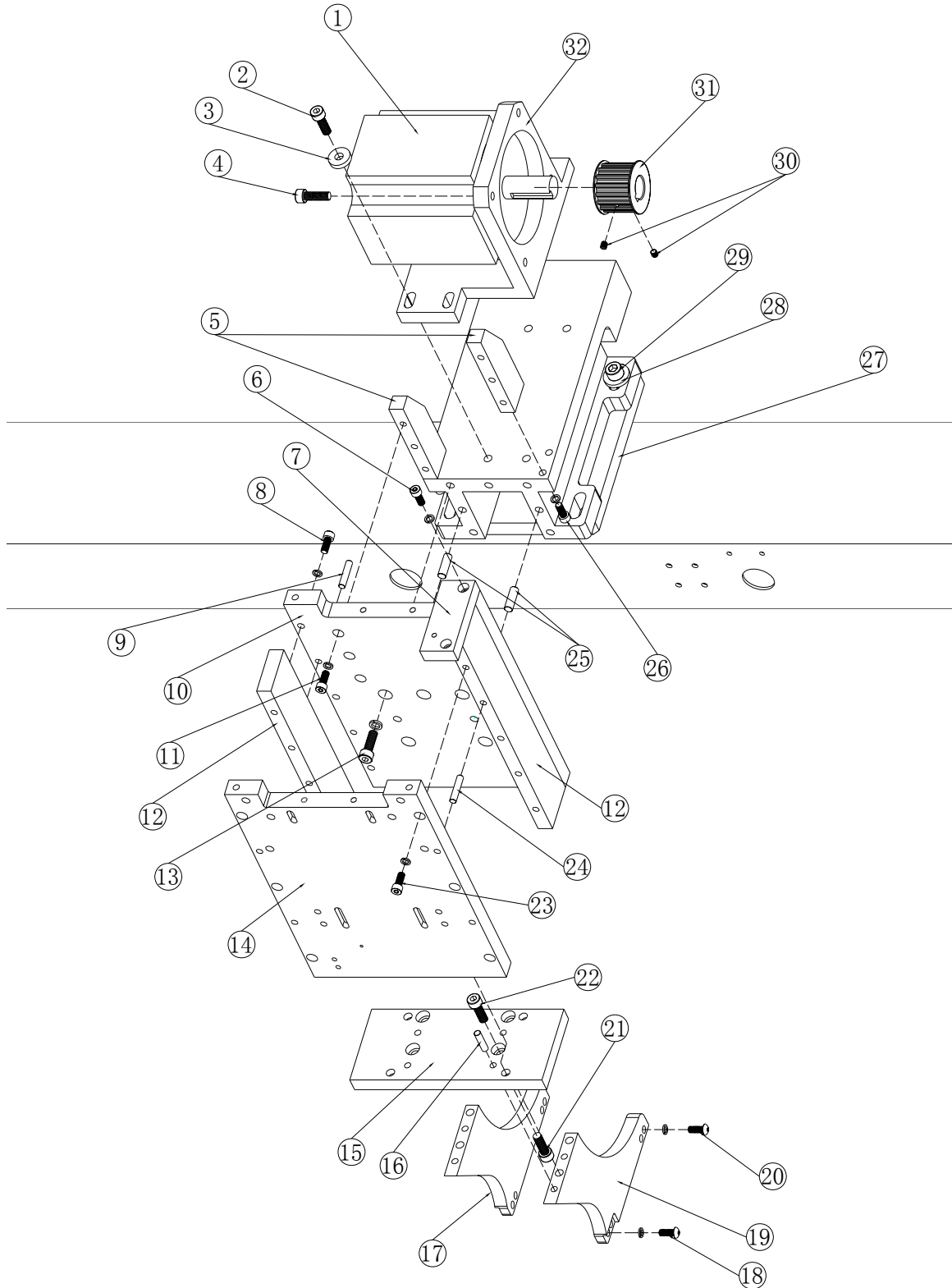
头部(2-6)

Head （**2-6**）

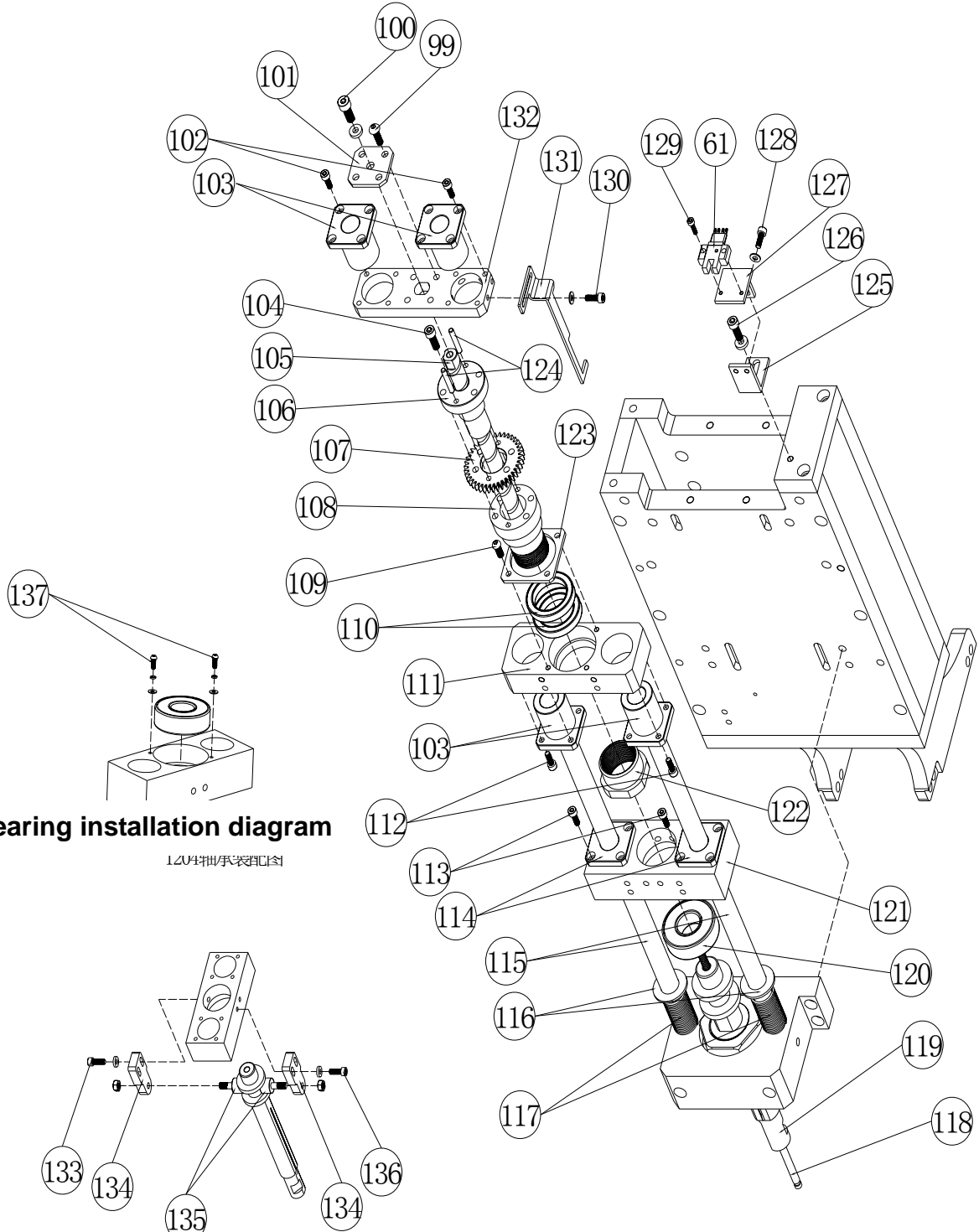## Head 3-6

Rack installation diagram
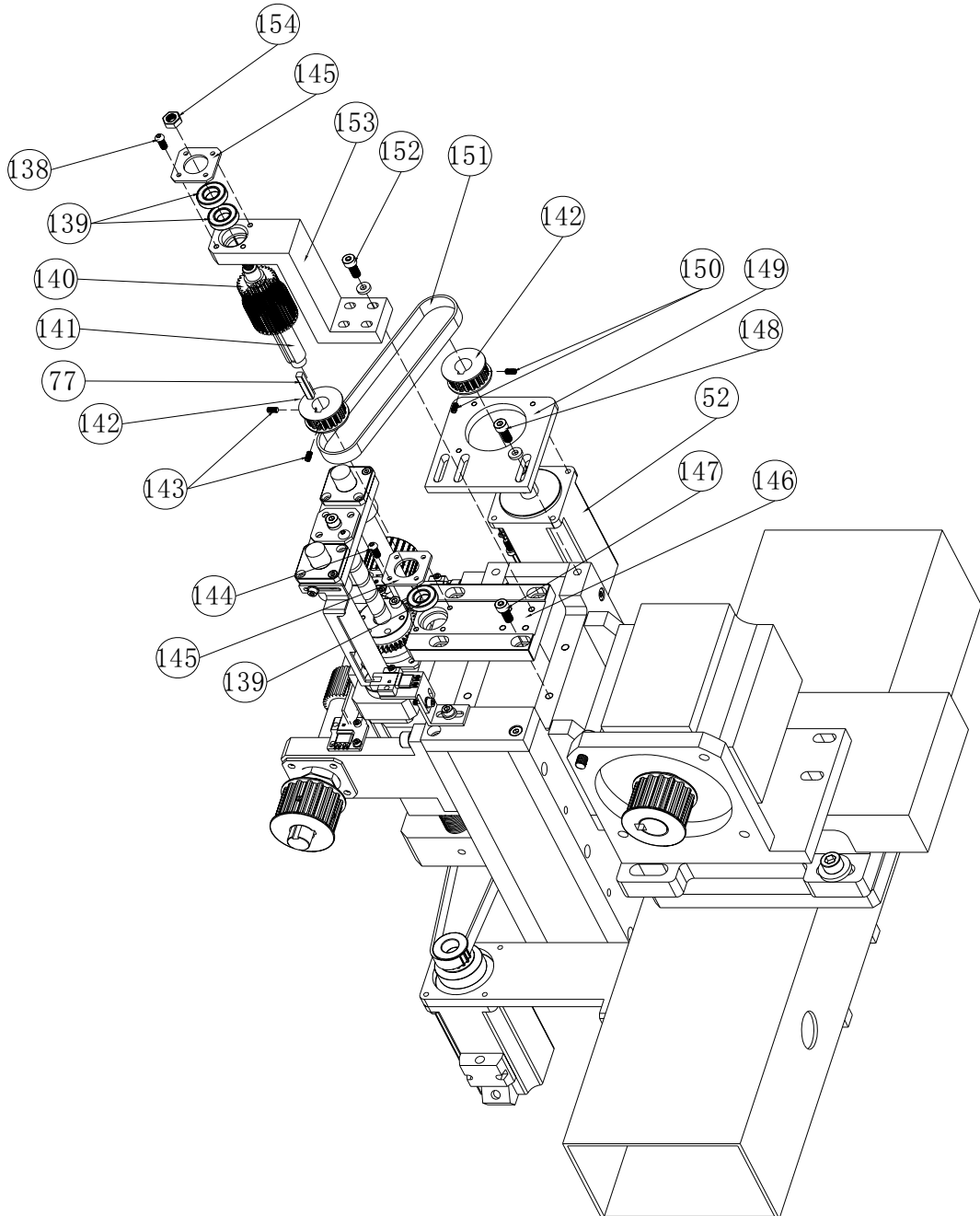
Head 4-6

1204 bearing installation diagram

1204轴承装配图

CR10-1 bearing installation diagram

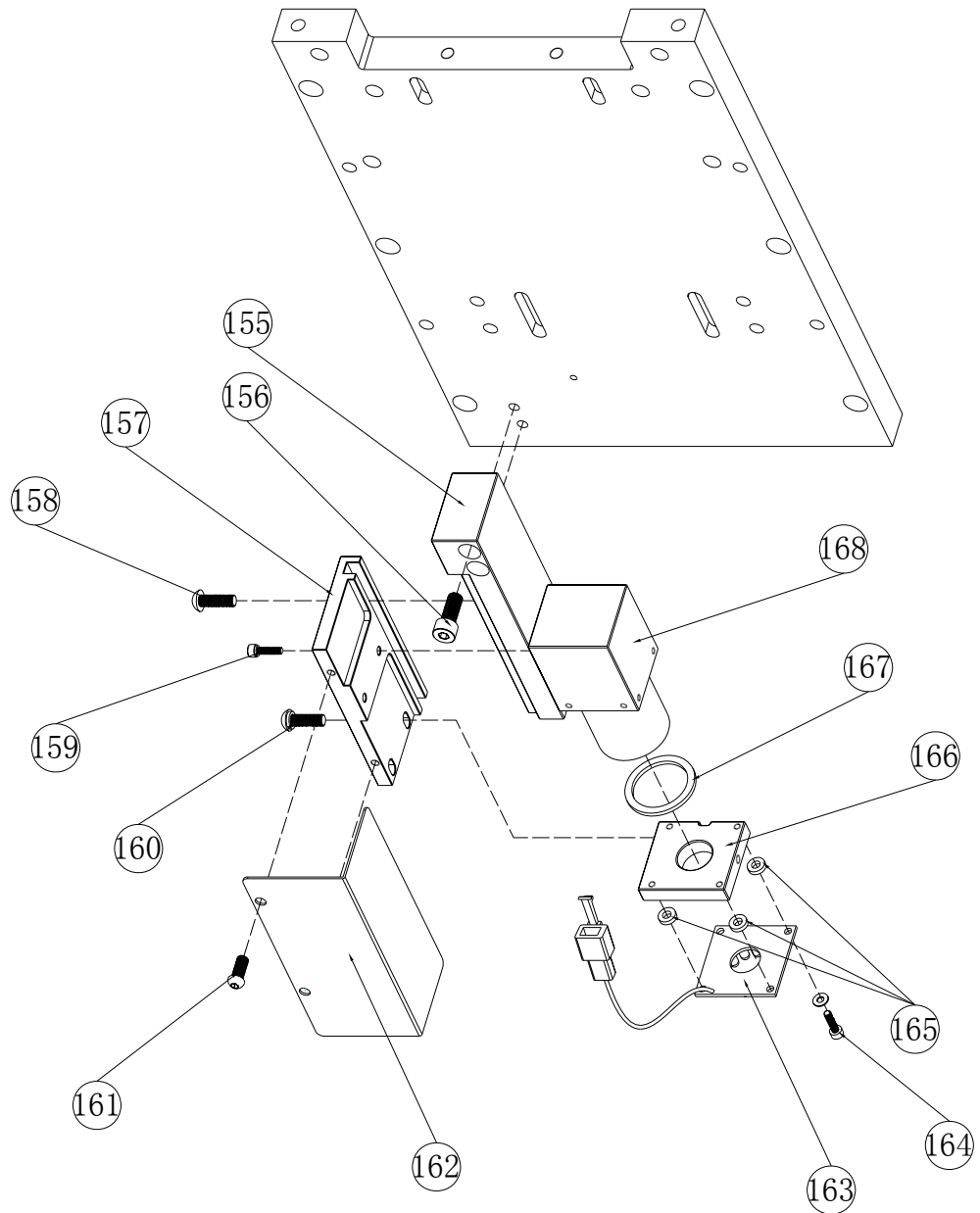CR10-1轴承装配图

Head 5-6

头部（5-6）

Head 6-6

头部（6-6）

Head component list

No.	Name	Code	Qty/per machine	Remark
1	1500W servo motor MDMA152P1G	XG3KDL-17011	1	
2	SHCS	M8*30	4	add flat washer
3	M8 flat washer	XG3KDZ-07059	4	
4	SHCS	M8*30	4	
5	Strengthen block	XG3KTB-06038	2	
6	SHCS	M6*16	2	add spring pad
7	head aluminum board 4	XG3KTB-06030	1	
8	SHCS	M6*20	6	add spring pad
9	locating pin	1/4*30	4	
10	head aluminum board 1	XG3KTB-06024	1	
11	SHCS	M6*20	6	add spring pad
12	head aluminum board 2	XG3KTB-06025	2	
13	SHCS	M8*25	5	add spring pad
14	head aluminum board 3	XG3KTB-06026	1	
15	head iron board	XG3KTB-06027	1	
16	locating pin	1/4*25	4	
17	head iron board LH	XG3KTB-06029	1	
18	round head stainless steel screw	M6*20	2	add spring pad
19	head iron board RH	XG3KTB-06028	1	
20	round head stainless steel screw	M6*25	2	add spring pad
21	SHCS	M8*20	4	
22	SHCS	M8*20	4	
23	SHCS	M6*20	6	add spring pad
24	locating pin	1/4*30	4	
25	locating pin	∅8*35	2	
26	SHCS	M6*30	4	add spring pad
27	seat pad	XG3KJJ-01004	1	
28	M10 spacer	XG3KWB-08047	4	
29	SHCS	M10*40	4	add flat washer
30	Set screw	M5*6	2	

31	1500W motor synchronizing roller	XG3KTB-06011	1	
32	H shaft motor holder	XG3KTB-06040	1	
33	locating pin	1/4*25	2	
34	hard steel shaft locating housing	XG3KTB-06018	1	
35	M35 nut	XG3KTB-06016	1	
36	SHCS	M8*35	2	add spring pad
37	Set screw	M6*8	2	
38	Set screw	M6*8	2	
39	SHCS	M6*20	2	
40	SHCS	M6*20	4	add spring pad
41	Optoelectronic inspection locating housing 3	XG3KJC-11026	1	
42	SHCS	M5*16	1	add spring pad
43	optoelectronic switch EE-SX671	XG3KDL-17054	1	
44	SHCS	M3*12	2	
45	bearing cap 1	XG3KTB-06001	1	
46	round head stainless steel screw	M5*12	4	
47	turn angle degree synchronizing roller	XG3KTB-06009	1	
48	turn angle degree timing belt 150XL wide 13	XG3KTB-06058	1	
49	Head turn angle degree inspection piece	XG3KJC-11006	1	
50	SHCS	M3*8	2	
51	SHCS	M5*10	1	add spring pad
52	Pulse (400W) servo MBDDT2210053	XG3KDL-17006	2	
53	SHCS	M4*12	4	add spring pad
54	SHCS	M6*20	4	add flat washer
55	Head turn angle 400w motor housing	XG3KTB-06032	1	
56	XY shaft motor synchronizing roller anchor ear	XG3KGZ-03014	1	
57	Housing turn angle motor synchronizing wheel	XG3KDZ-07018	1	
58	imported bearing NSK 6007 ZZ	XG3KTB-06043	2	

59	head bearing housing	XG3KTB-06017	1	
60	locating pin	1/4*25	4	
61	optoelectronic switch EE-SX670	XG3KDL-17053	3	
62	SHCS	M3*12	2	
63	SHCS	M3*12	2	
64	SHCS	M3*10	2	add spring pad
65	Inspection locating board	XG3KJC-11004	2	
66	SHCS	M4*12	1	add flat washer
67	rear optoelectronic inspection housing	XG3KJC-11010	2	
68	round head stainless steel screw	M5*12	4	
69	bearing cap 2	XG3KTB-06002	2	
70	imported bearing NSK 6004 ZZ	XG3KTB-06046	2	
71	H bearing housing2	XG3KTB-06022	1	
72	locating pin	3/16*16	2	
73	SHCS	M5*20	2	add flat washer
74	gear rack	XG3KTB-06006	1	
75	Set screw	M3*3	2	
76	Set screw	M5*6	1	
77	5*5 flat key	XG3KWB-08032	2	
78	H shaft adjusting wheel	XG3KTB-06079	1	
79	Inspection head	XG3KJC-11001	1	
80	H roate gear shaft	XG3KTB-06005	1	
81	M20*1.5 nut	XG3KTB-06080	1	
82	gear shaft synchronizing roller	XG3KTB-06010	1	
83	Set screw	M5*6	2	
84	locating pin	3/16*16	2	
85	SHCS	M5*20	2	add flat washer
86	Connecting aluminum block	XG3KTB-06031	1	
87	round head stainless steel screw	M5*12	4	
88	H bearing housing1	XG3KTB-06021	1	
89	SHCS	M8*30	2	add spring pad
90	SHCS	M8*30	2	
91	SHCS	M3*10	2	add flat washer

92	SHCS	M3*12	2	
93	SHCS	M4*12	1	add flat washer
94	bottom limit inspection board	XG3KJC-11022	1	
95	inspection board1	XG3KJC-11002	1	
96	SHCS	M4*12	2	add flat washer
97	SHCS	M5*20	6	
98	locating pin	1/4*20	2	
99	round head stainless steel screw	M5*12	4	
100	SHCS	M6*12	1	add flat washer
101	Material pressing lead screw locating piece	XG3KTB-06054	1	
102	SHCS	M4*12	8	
103	Flange unified oil-less lining1	XG3KTB-06082	4	
104	SHCS	M5*16	4	
105	material pressing lead screw SGT-S-13*70-210-RH-KO-205-K22-F-POM-1	XG3KTB-06049	1	
106	13*170 material pressingnutSGF-S-13*70-210-RH-POM-1	XG3KTB-06050	1	
107	P shaft transmission gear rack	XG3KTB-06069	1	
108	material pushing wheel	XG3KTB-06033	1	
109	round head stainless steel screw	M5*12	4	
110	imported bearing NSK 6806 ZZ	XG3KTB-06045	2	
111	gear rack housing 2	XG3KTB-06019	1	
112	SHCS	M4*12	8	
113	SHCS	M4*12	8	
114	Flange unified oil-less lining1	XG3KTB-06048	2	
115	hard steel shaft	XG3KTB-06042	2	
116	Steel pad	XG3KTB-06008	2	
117	Head compressing spring	XG3KTB-06053	2	
118	pushing rod	XG3KTB-06041	1	
119	insertion headmain rod	XG3KTB-06004	1	
120	imported bearing NSK 1204	XG3KTB-06044	1	

121	rotate locating holder	XG3KTB-06007	1	
122	nutM30*1.5	XG3KTB-06034	1	
123	bearing cap 3	XG3KTB-06035	1	
124	∅4*35 locating pin	XG3KTB-06057	2	
125	optoelectronic inspection locating housing1	XG3KJC-11005	1	
126	SHCS	M5*10	1	add flat washer
127	optoelectronic inspection locating housing2	XG3KJC-11025	1	
128	SHCS	M4*12	2	add flat washer
129	SHCS	M3*12	2	
130	SHCS	M4*12	2	
131	material pressing sensor piece	XG3KJC-11009	1	
132	Push material lead screw locating housing	XG3KTB-06020	1	
133	SHCS	M5*20	2	add flat washer
134	CR10 holder	XG3KTB-06023	2	
135	bearing IKO CR10-1	XG3KGZ-03082	2	
136	SHCS	M5*20	2	add flat washer
137	round head stainless steel screw	M3*8	2	add spring pad , flat washer
138	round head stainless steel screw	M5*12	4	
139	imported bearing NSK 6901 ZZ	XG3KTB-06047	3	
140	P shaft transmission main gear rack	XG3KTB-06070	1	
141	material pressing transmission shaft	XG3KTB-06067	1	
142	Motor shaft end belt pulley	XG3KSL-04047	1	
143	Set screw	M4*8	2	
144	round head stainless steel screw	M5*12	4	
145	bearing cap	XG3KTB-06068	2	
146	material pressing transmission bearing housing 2	XG3KTB-06066	1	
147	SHCS	M6*20	4	
148	SHCS	M6*20	2	add flat washer
149	Motor housing	XG3KTB-06036	1	

150	Set screw	M4*8	2	
151	material pressing timing belt 154XL wide 13	XG3KTB-06052	1	
152	SHCS	M6*25	4	add flat washer
153	material pressing transmission bearing housing 1	XG3KTB-06065	1	
154	nut	M8	1	
155	Camera stand up and down guide rail	XG3KXJ-12001	1	
156	SHCS	M6*25	2	
157	Camera stand	XG3KXJ-12002	1	
158	round head stainless steel screw	M5*12	2	
159	SHCS	M3*16	2	
160	round head stainless steel screw	M5*16	2	
161	round head stainless steel screw	M4*12	2	
162	Camera cover	XG3KXJ-12004	1	
163	flash light		1	
164	SHCS	M3*8	4	add flat washer
165	Camera small steel pad	XG3KXJ-12006	3	
166	camera flash light stand	XG3KXJ-12003	1	
167	camera spacer	XG3KXJ-12005	1	
168	camera		1	

6. CTA Maintenance.

1) Disassemble CTA.

Loosen the three ⑦① M6*16 screws which are located in the shape of top and twinside bottom at the bottom of CTA, take away air pipe and magnetic induction switch, then you can take the whole CTA unit down.(disassemble the key chain at CTA position).

2) CTA Maintenance.

(1) Loosen the screw on ③⓪ XG3KSL-04026 chain protective bar, remove the protective bar, use fiber-less clean cloth to clean it, and apply grease provided by our company evenly .

(2) maintain ② XG3KSL-04040 material transfer air cylinder regularly,please refer to Chapter 5 Air Driving System Maintenance for detailed maintenance method.

You also need to maintain ④⑨ XG3KSL-04061 straight line sliding rail, ②② XG3KSL-04057 curing Y-shape material pusher , ②⓪ XG3KSL-04055 material guiding slot, ②⑥ XG3KSL-04056 material clip clamp, ②① XG3KSL-04054 spring carrier clip clamp, ③④ XG3KSL-04058 material transfer block(such as: wearing degree), check ①⑨ XG3KSL-04042 tension spring2, see if spring elasticity is normal, rubber wearing degree.

3) CTA installation.

Install the CTA that just get maintained according to the reverse sequence of disassembling, then install it on machine, knock in locating pin and fasten screw.
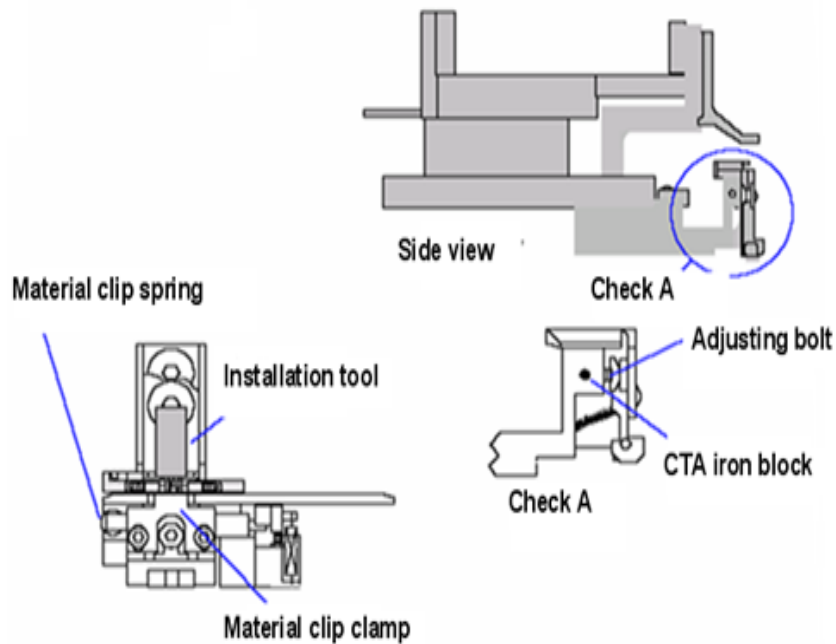
CTA Assembly

Chain

Chain Bump
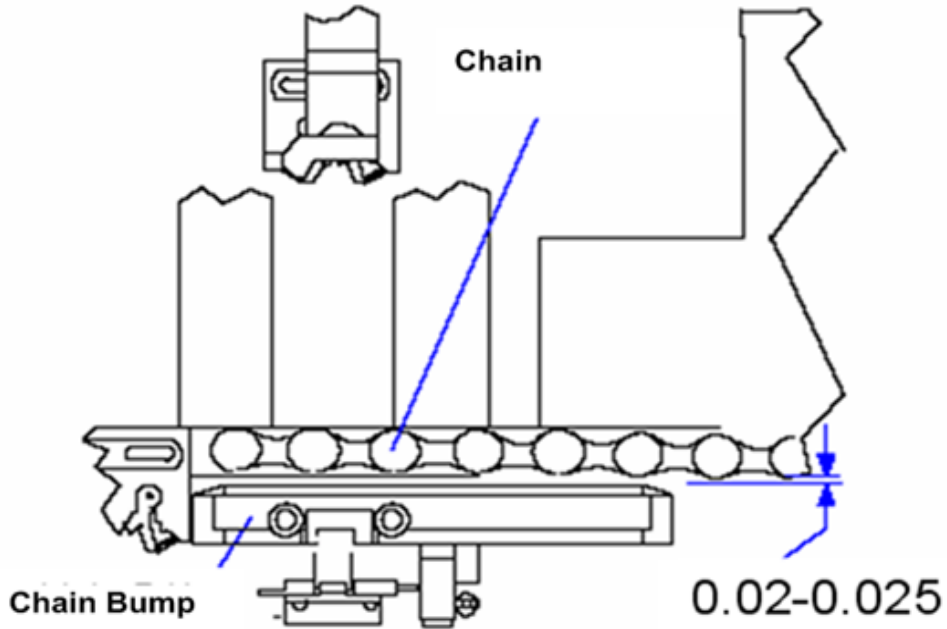
0.02-0.025

Adjust gap between chain and supporting stand : **0.02 - 0.025mm**

Material Pusher

Bend Y-shape material pusher

Chain Bump

0.13-02mm

Front view

Material clip clamp

Enlarged view of pusher and material clip clamp
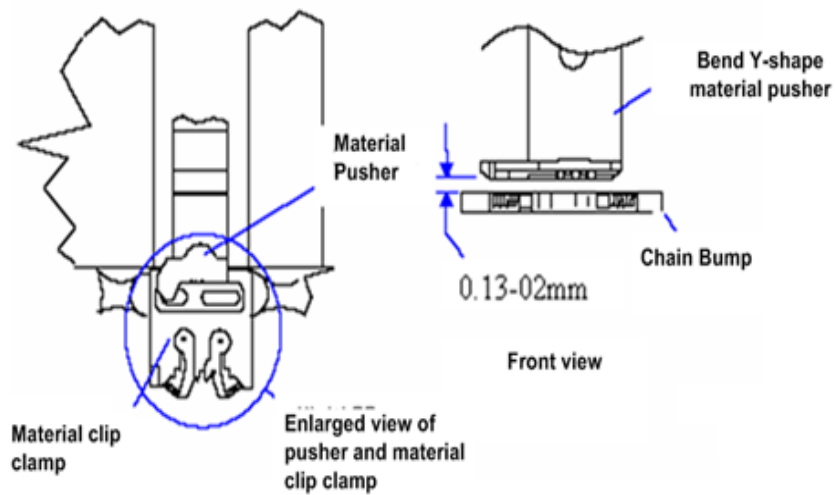
Gap between bend Y-shape pusher and carrieri clip clamp : **0.13 - 0.2 mm**

Bend Y-shape
material pusher

Chain bump size must be
within stamdard. The material
transder slot and the cutter
point od chain bump should
be at same horizontal plane.

Material
transder slot

picture A

Material
transder slot

Chain Bump

Material
transder slot

See picture A

Chain Bump
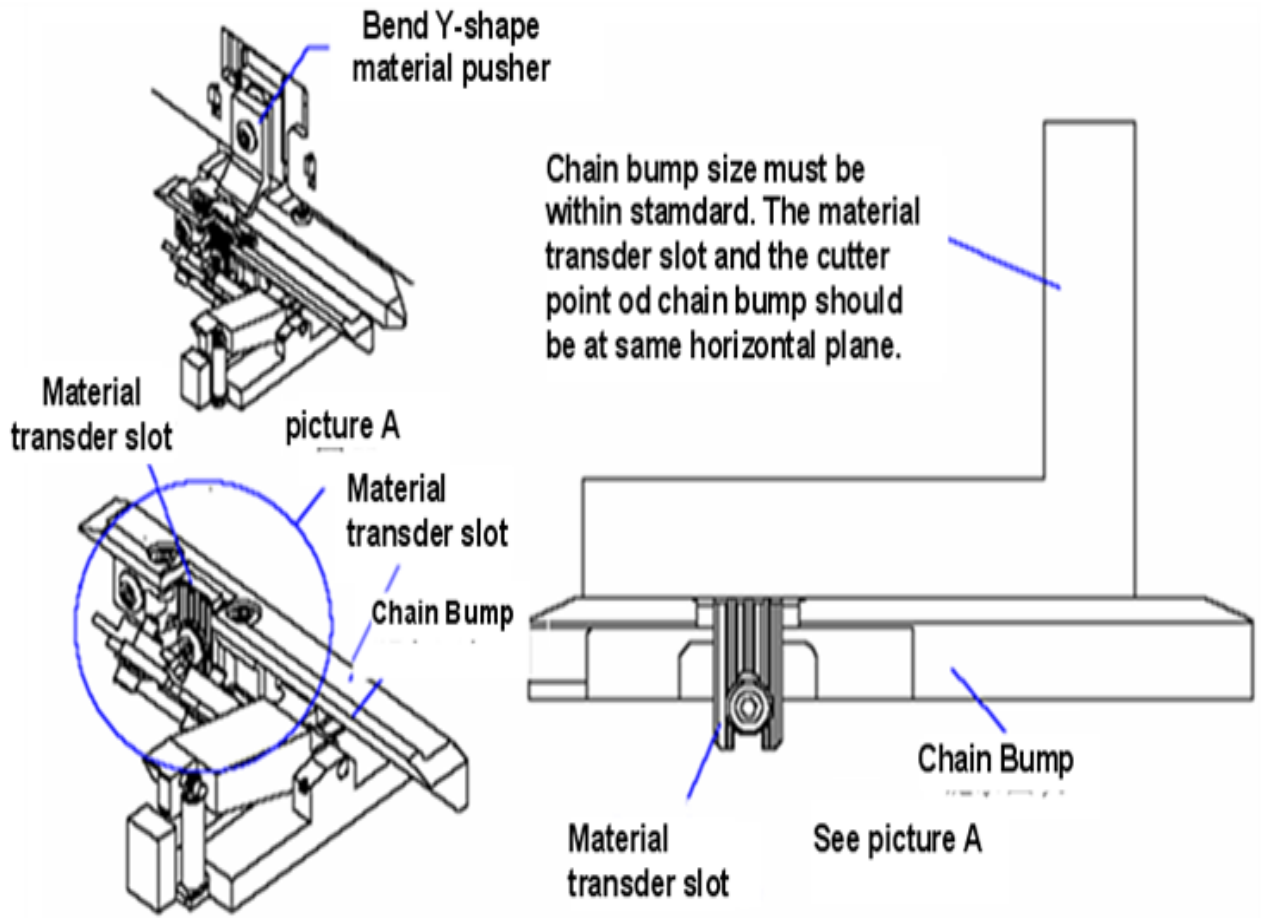
Adjust the height of material transfer slot

Side view

Check A

Material clip spring

Installation tool

Adjusting bolt

CTA iron block

Check A

Material clip clamp

Adjust the open and close sequence of material clip clamp

0.5-1.0mm

Material transfer slot

Material clip clamp

Adjusting bolt

CTA iron block
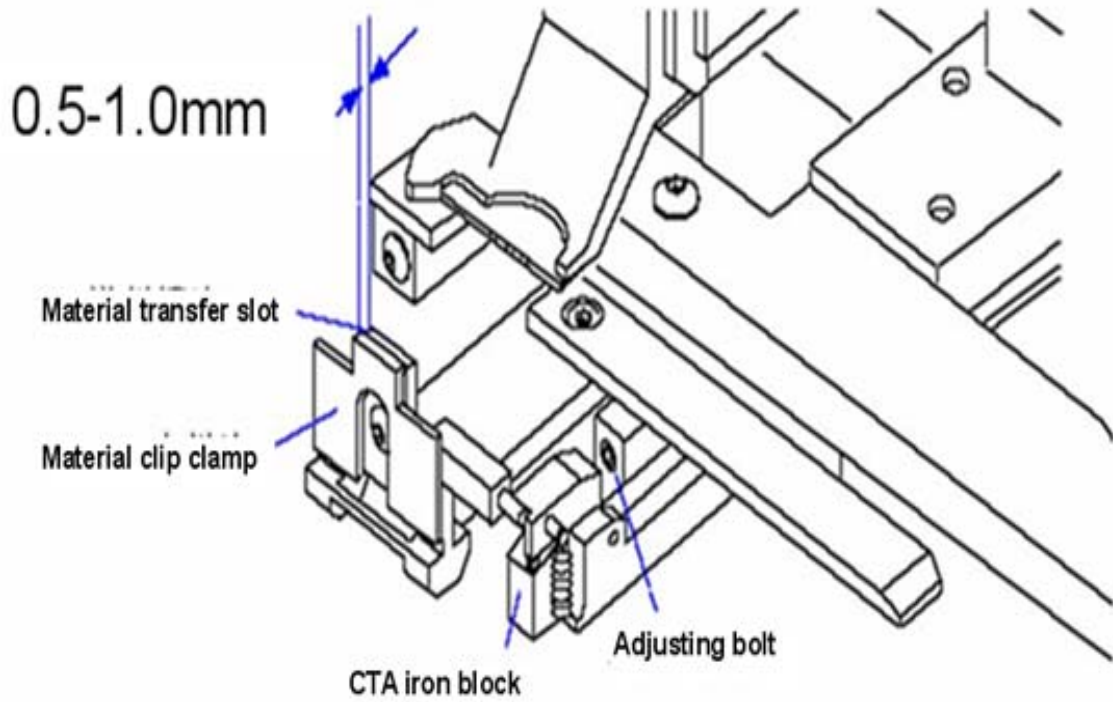
Adjust the gap between material clip clamp and material transfer slot 0.5-1.0mm

Use standard ruler to adjust the position for proper leveling

Carrier clip clamp

Material transfer slot
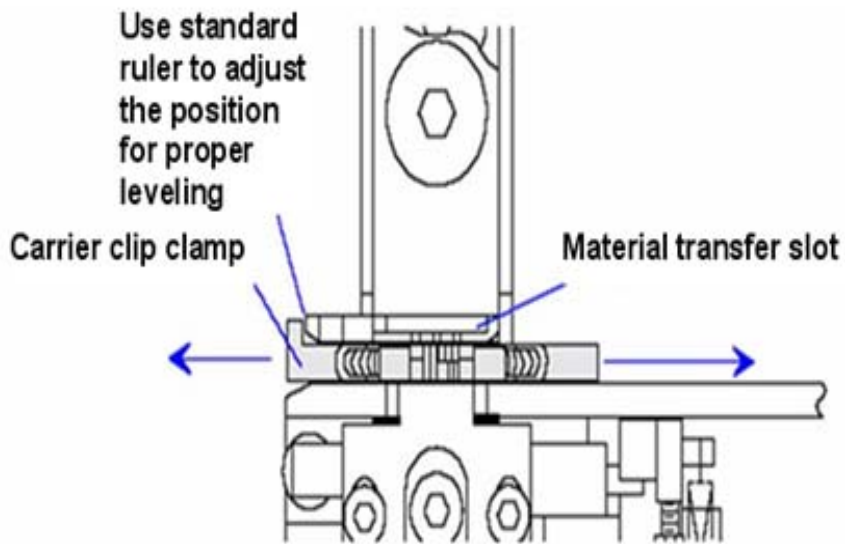
Adjust gap of CTA and carrier clip clamp 0.76mm

Component(electrolytic capacitor or triode) is clipped on CTA, thus the deviation of CTA project out and retract shoule be within 0.10-0.15mm
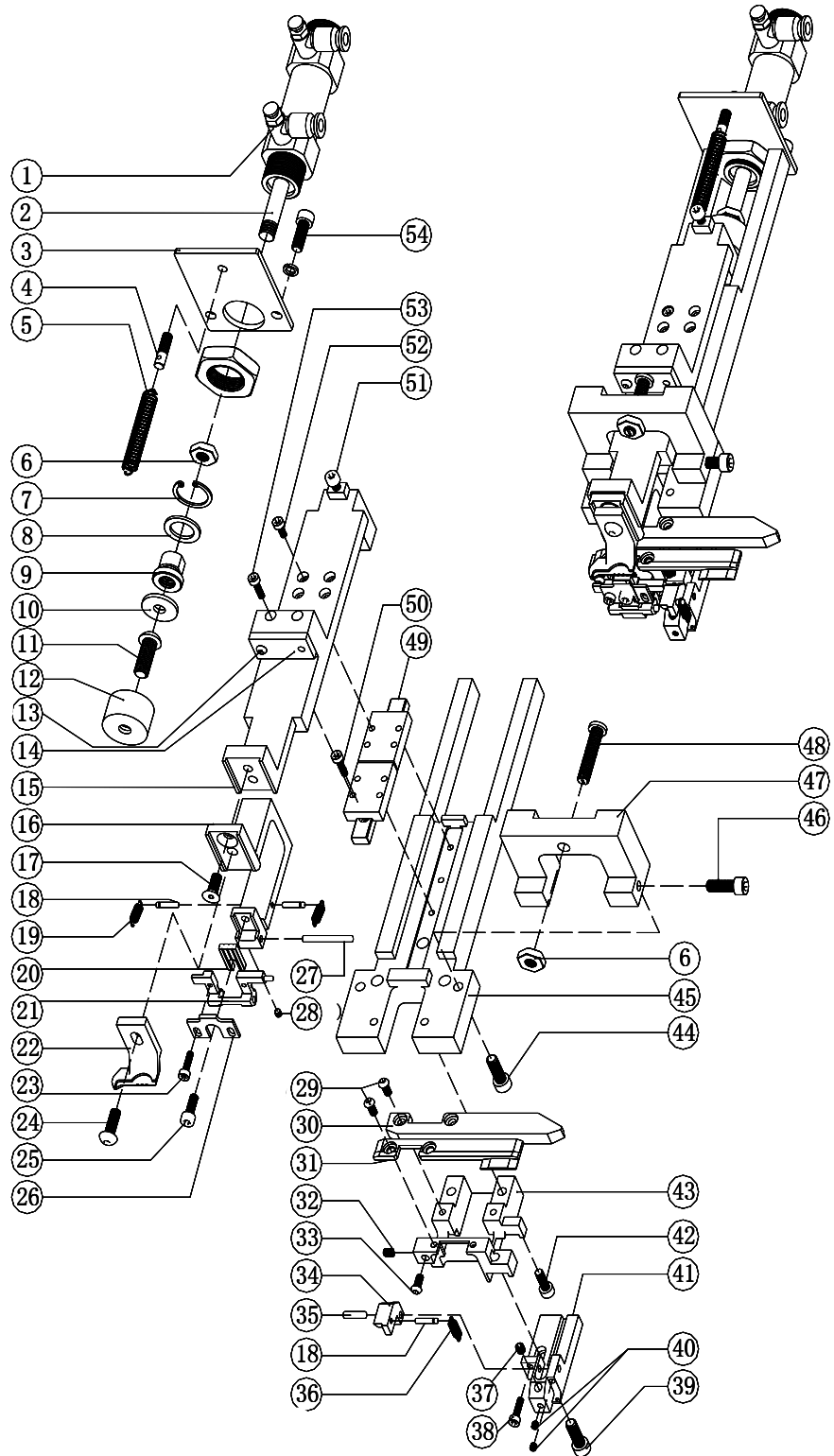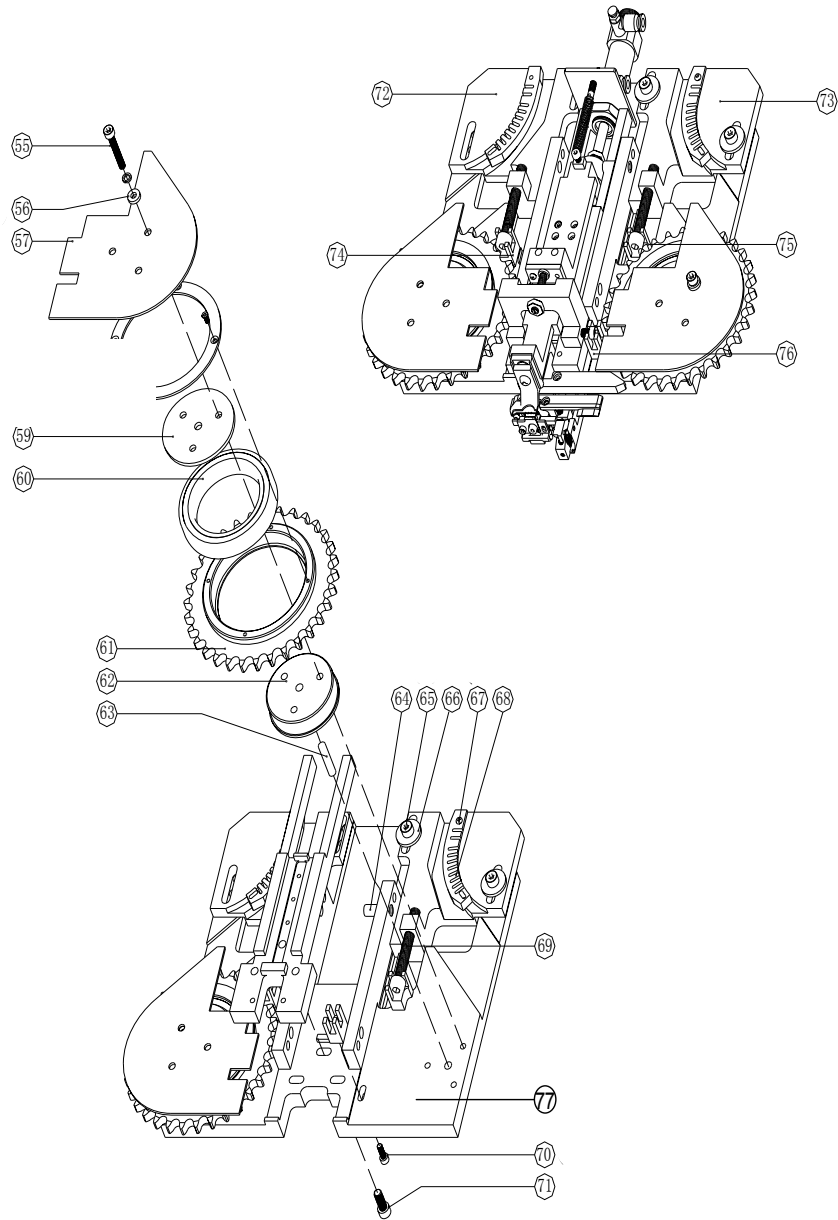
CTA Assembly Diagram List

No.	Name	code	Qty/per machine	Remark
1	adjusting valve(AS2201F-01-06S)	XG3KSL-04091	2	
2	material transfer air cylinder (CDM2B20-25)	XG3KSL-04040	1	
3	material guiding air cylinder locating housing	XG3KSL-04019	1	
4	hanging spring	XG3KSL-04060	1	
5	material transfer tension spring2	XG3KSL-04043	1	
6	nut	M6	2	
7	inner snap spring ∅19	XG3KSL-04090	1	
8	spacer	XG3KSL-04029	1	
9	connector	XG3KSL-04028	1	
10	CTA movable connector rubber pad	XG3KSL-04081	1	
11	round cup stainless steel screw	M6*16	1	
12	connecting sleeve	XG3KSL-04030	1	
13	round cup screw	M3*10	2	
14	CTA buffer rubber	XG3KSL-04097	1	
15	material transfer guide rod	XG3KSL-04009	1	
16	curving material transfer(short)	XG3KSL-04025	1	
17	flat head screw	M5*10	1	
18	sensor piece locating pin	XG3KZW-02024	3	
19	tension spring1	XG3KSL-04042	2	
20	material guiding slot	XG3KSL-04055	1	
21	spring carrier clip clamp	XG3KSL-04054	1	
22	curing Y-shape material pusher	XG3KSL-04057	1	
23	united national screw	4-40*1/4	2	
24	round cup stainless steel screw	M5*16	1	
25	SHCS	M4*6	1	
26	material clip clamp	XG3KSL-04056	1	
27	locating pin	1/8*27	1	
28	set screw	M3*3	2	
29	round cup screw	M3*10	4	
30	chain protective block1	XG3KSL-04026	1	
31	chain protective block2	XG3KSL-04027	1	
32	set screw	M3*5	1	
33	round cup stainless steel screw	M3*10	1	
34	material transfer block	XG3KSL-04058	1	
35	locating pin	1/8*12	1	

36	tension spring1	XG3KSL-04041	1	
37	set screw	M4*16	1	
38	SHCS	M3*12	1	
39	SHCS	M5*12	1	

40	set screw	M3*3	2	
41	Material clip holder	XG3KSL-04006	1	
42	SHCS	M4*16	2	
43	material transfer iron block	XG3KSL-04007	1	
44	SHCS	M5*20	2	
45	material transfer slider holder	XG3KSL-04004	1	
46	SHCS	M5*16	1	
47	material transfer stop holder	XG3KSL-04005	1	
48	M6 screw	XG3KSL-04023	1	
49	linear sliding rail (MR9MNSS2V1N-85L)	XG3KSL-04061	1	
50	SHCS	M3*12	4	
51	SHCS	M4*6	1	
52	SHCS	M3*10	6	
53	SHCS	M3*16	2	
54	SHCS	M5*16	2	add spring pad
55	SHCS	M5*35	6	add spring pad flat washer
56	M5 flat washer	XG3KGZ-03074	6	
57	chain wheel protective piece	XG3KSL-04016	2	
58	chain wheel bearing cap	XG3KSL-04096	2	
59	pulley bearing cap	XG3KSL-04002	2	
60	imported bearing NSK(6912 ZZ)	XG3KSL-04098	2	
61	chain wheel1	XG3KSL-04003	2	
62	Pulley body	XG3KSL-04001	2	
63	locating pin	1/4*30	2	
64	∅8 locating pin	XG3KSL-04022	4	
65	SHCS	M6*20	4	add flat washer
66	M6 flat washer	XG3KGZ-03073	4	
67	round cup stainless steel screw	M3*16	4	
68	chain protective bar	XG3KSL-04015	2	
69	SHCS	M8*60	2	
70	SHCS	M4*12	6	
71	SHCS	M6*16	3	
72	chain wheel left tension block	XG3KSL-04013	1	
73	chain wheel right tension block	XG3KSL-04014	1	
74	left screw locating holder	XG3KSL-04011	1	
75	right screw locating holder	XG3KSL-04010	1	
76	screw locating holder	XG3KSL-04012	1	
77	chain wheel plate	XG3KSL-04008	1	

7. Chain Tension Maintenance.

1) Disassemble chain tension housing.

Loosen the M6X45 SHCS on ③ locating housing XG3KLZ-05006, then you can remove the whole chain tension unit of ⑰ chain wheel3 XG3KLZ-05004.

Loosen the M6X55 SHCS on ⑨ chain holder XG3KLZ-05002, then you can remove the whole chain tension unit of ⑯ chain wheel2 XG3KLZ-05001.

2) Material Transfer Unit Maintenance.
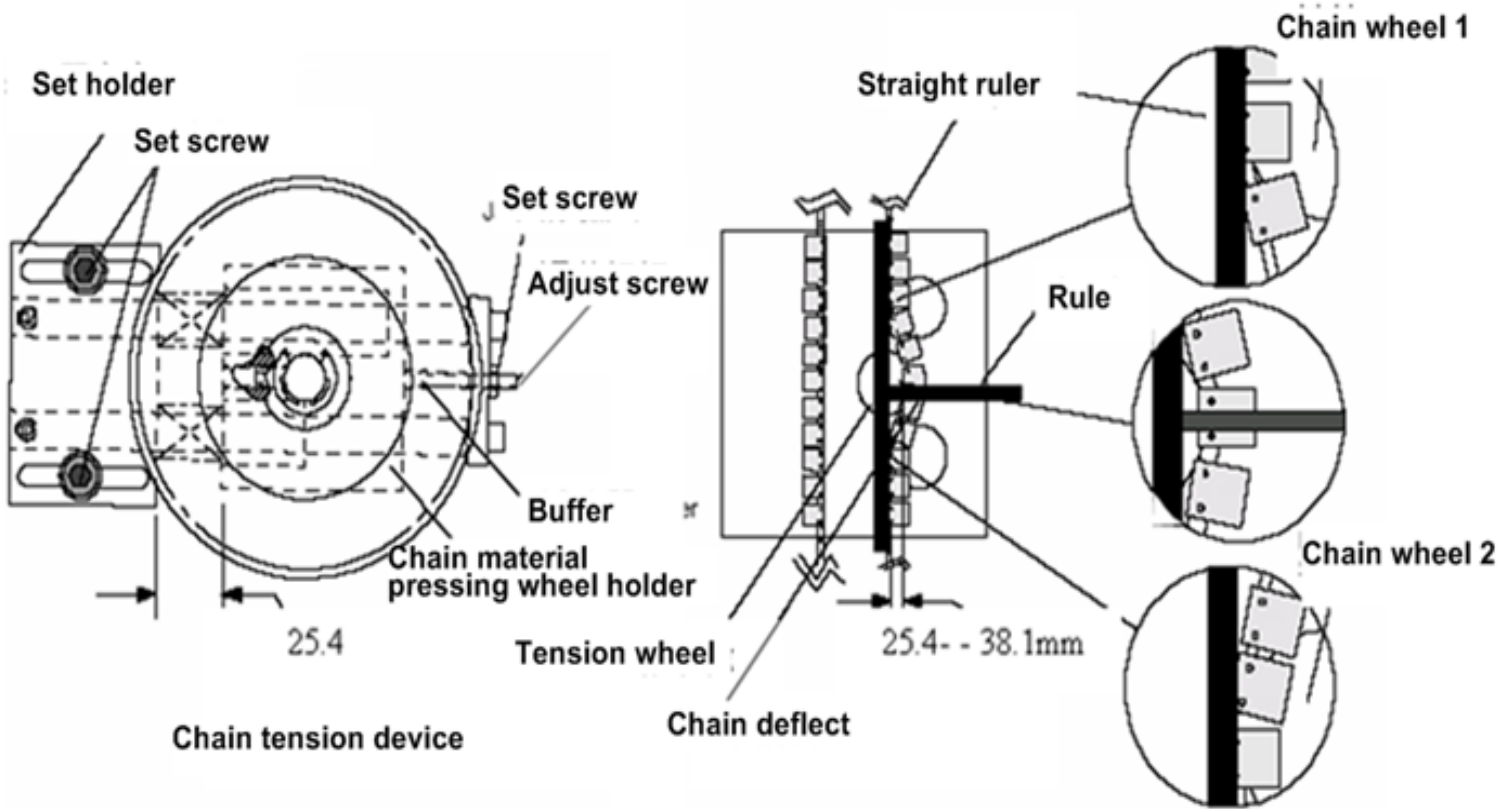
(1) Loosen the outer snap spring Ø15 of ⑰ chain wheel 3 XG3KLZ-05004 and Loosen the ㉓ M6X8 set screw on ⑯ chain wheel2 XG3KLZ-05001, take out chain wheel3 and chain wheel2 and use fiber-less clean cloth to clean it, and apply grease provided by our company evenly .

(2) Maintain ⑰ chain wheel3 XG3KLZ-05004 , ⑯ chain wheel2 XG3KLZ-05001 regularly (check wearing degree regularly) , check if the spring elasticity of chain tension spring XG3KLZ-05017 is normal.

3) Chain Tension Unit Installation.

Install the chain tension unit that just get maintained according to the reverse sequence of disassembling, then install it on machine, and then adjust it according to the Chain System and fasten screw. (see picture below)

Chain system

Chain tension device

Set holder

Set screw

Set screw

Adjust screw

Buffer

Chain material pressing wheel holder

25.4

Tension wheel

Chain tension size **25.4mm**

Straight ruler

Chain wheel 1

Rule

Chain wheel 2

25.4- - 38.1mm

Chain deflect

Chain deflect **25.4 - 38.1mm**

Carrier clip clamp locating step

Gap of dispenser pusher and carrier clip clamp

Carrier clip clamp

0.76mm

Pusher
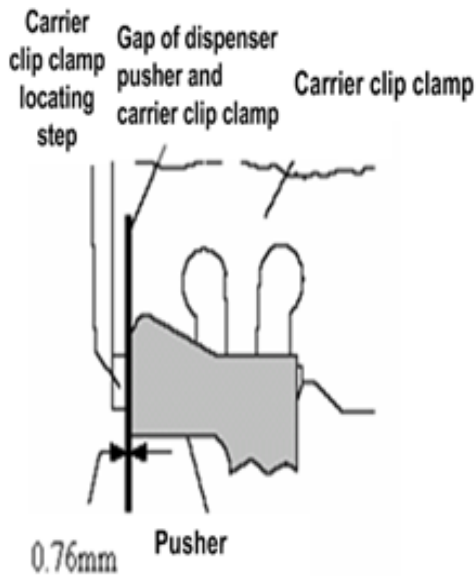
Gap between dispensing head and carrier clip clamp 0.76mm

Component

Material guiding piece

0.25
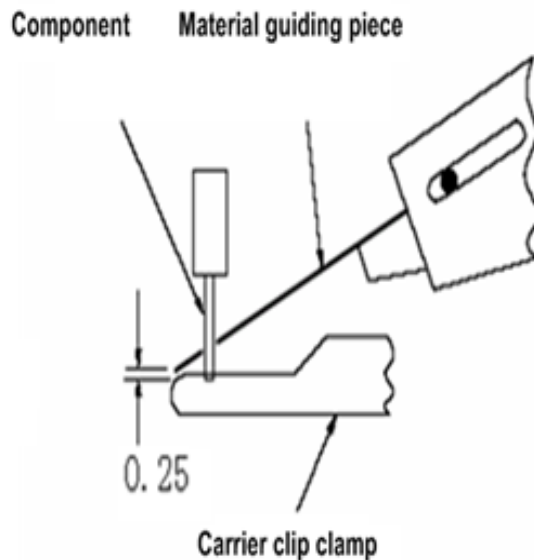
Carrier clip clamp

Gap between material guiding piece and carrier clip clamp 0.25mm
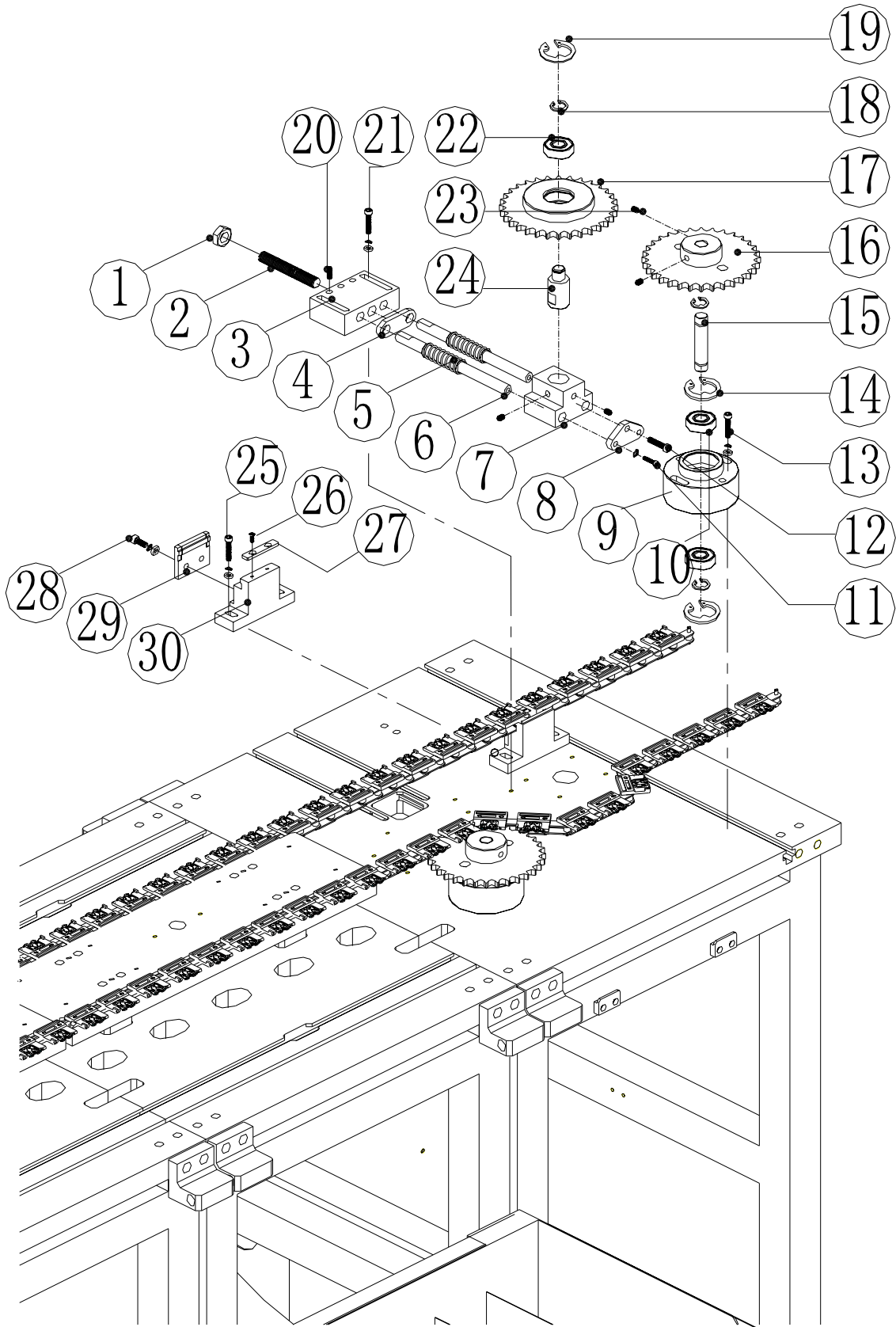
Chain Tension Housing Installation Diagram List

No.	Name	Code	Qty/per machine	Remark
1	nut	M14*1.5	1	
2	M14 screw	XG3KLZ-05010	1	
3	locating housing	XG3KLZ-05006	1	
4	spacer	XG3KLZ-05007	1	
5	chain tension spring	XG3KLZ-05017	2	
6	connecting shaft	XG3KLZ-05011	2	
7	chain pinch roller housing	XG3KLZ-05005	1	
8	Adjusting board	XG3KLZ-05008	1	
9	chain wheel housing	XG3KLZ-05002	2	
10	imported bearing NSK 6302 ZZ	XG3KLZ-05015	4	
11	SHCS	M6X25	2	add spring pad + spacer
12	SHCS	M8X25	1	
13	SHCS	M6X55	2	add spring pad + spacer
14	inner snap spring ∅42	XG3KLZ-05016	4	
15	∮15 shaft	XG3KLZ-05003	2	
16	chain wheel2	XG3KLZ-05001	2	
17	chain wheel3	XG3KLZ-05004	1	
18	outer snap spring ∅15	XG3KLZ-05018	5	
19	inner snap spring ∅35	XG3KLZ-05019	1	
20	Set screw	M8*6	5	
21	SHCS	M6*45	2	add spring pad + spacer
22	imported bearing NSK 6202 ZZ	XG3KGZ-03080	2	
23	Set screw	M6*8	4	
24	connecting pin	XG3KLZ-05009	1	
25	SHCS	M6X25	2	add spring pad + spacer
26	flat head screw2	M4*10	2	
27	steel pad	XG3KLZ-05014	1	
28	SHCS	M6X15	2	add spring pad + spacer
29	holder fasten block	XG3KLZ-05013	1	
30	Chain holder	XG3KLZ-05012	1	

8. Rear Unit Maintenance.

1) Disassemble rear unit.

Loosen the M5X15 round cup screw on ⑳ rear cover XG3KWB-08021, then you can take out the whole rear cover together with ㉑ rear chain wheel cover XG3KWB-08022, and you can see the rear unit.

Loosen the M15X15 SHCS of ⑪ couplingXG3KWB-08031 and the M12X30 SHCS of ⑭ motor holder XG3KWB-08008, so that you can take out the motor driving part. By loosening the M15X15 SHCS on ⑪ couplingXG3KWB-08031 and M8X35 SHCS on ⑧ rear chain wheel housing XG3KWB-08005, then you can take out the upper rear unit.

2) Rear Unit Maintenance.

(1) Loosen the M6X8 set screw on ① inspection chain wheel plate XG3KWB-08003, first take out inspection plate, then loosen the M6X8 set screw on ② chain wheel XG3KWB-08001, take out the chain wheel and use fiber-less clean cloth to clean it, and apply grease provided by our company evenly .

(2) Maintain ② chain wheelXG3KWB-08001 regularly and check wearing degree.

3) Rear Unit Installation.

Install the Material transfer unit that just get maintained according to the reverse sequence of disassembling, then install it on machine, knock in locating pin and fasten screw, and adjust inspection plate again according to this manual.

Rear Unit
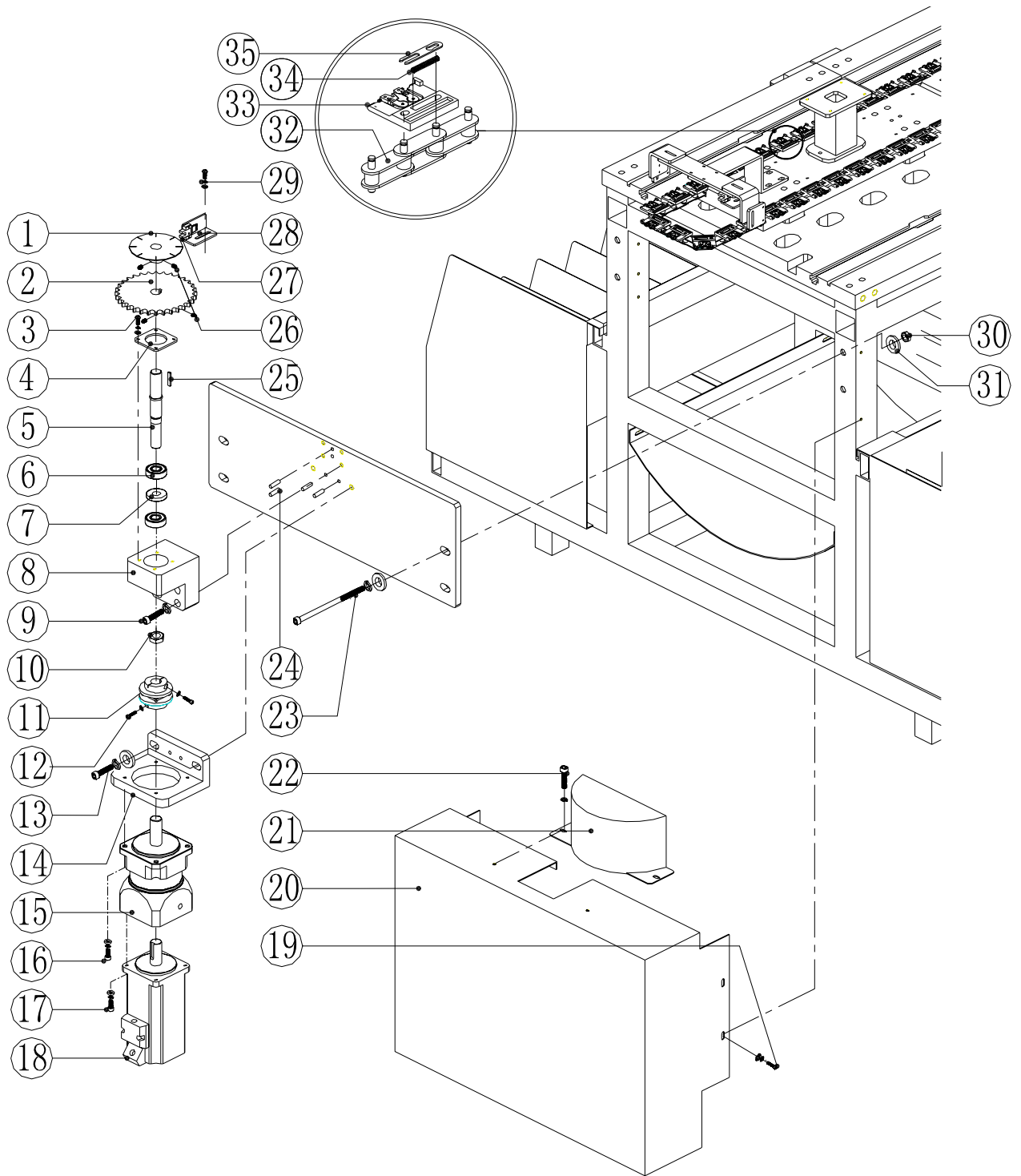
No.	Name	Code	Qty/per machine	Remark
	Rear Installation Diagram List			
1	Inspection housing plate	XG3KWB-08003	1	
2	chain wheel	XG3KWB-08001	1	
3	SHCS	M5X15	4	add spring pad + spacer
4	bearing cap	XG3KWB-08002	1	
5	rear chain wheel shaft	XG3KWB-08006	1	
6	imported bearing NSK 6004 ZZ	XG3KTB-06046	2	
7	6004 bearing pad1	XG3KWB-08010	1	
8	rear motor connecting holder	XG3KWB-08057-3	1	
9	SHCS	M10X25	4	add spring pad
10	nut	M14X1.5	1	
11	Coupling LK3-C56-1722	XG3KWB-08031	1	
12	SHCS	M5X15	2	add spring pad
13	SHCS	M12X30	2	add spring pad + spacer
14	Motor hosuing	XG3KWB-08008	1	
15	Speed reducer PB090L1-10	XG3KWB-08030	1	
16	SHCS	M6X25	4	add spring pad + spacer
17	SHCS	M6X25	4	add spring pad + spacer
18	pulse(750W) servo motor	XG3KDL-17009	1	
19	round cup screw	M5X15	4	add spring pad + spacer
20	rear cover	XG3KWB-08021	1	
21	rear chain wheel cover	XG3KWB-08022	1	
22	SHCS	M5X15	2	add spring pad + spacer
23	SHCS	M8*80	4	add spring pad + spacer
24	1/4X18 pin	XG3KWB-08045	4	
25	5*5 flat key	XG3KWB-08032	1	
26	Set screw	M6X8	2	
27	optoelectronic switch EE-SX670	XG3KDL-17053	1	
28	rear optoelectronic inspection housing	XG3KJC-11010	1	

29	SHCS	M5X15	1	add spring pad + spacer
30	nut	M8X1.5	4	
31	M10 spacer	XG3KWB-08047	8	
32	chain C2040	XG3KZW-02057	Remark	10 stations 87 joints, 20 stations 107joints, 30 stations 127 joints, 40 stations 147joints, 60 stations 187joints.
33	chain clip	XG3KZW-02058	Remark	
34	compressing spring(chain clip)	XG3KZW-02059	Remark	
35	Material clip snap spring	XG3KZW-02040	Remark	

9. Tape Station Maintenance

1) Disassemble tape station.

Loosen the connecting block and air pipe of ⑮XG3KJL-09002 connecting block, and ⑤M6*35 set screw on ⑦XG3KJL-09005 locating block, then you can pull out the whole tape station.

SHCS M6X35

XG3KJL-09002 Connecting block

SHCS M6X35

XG3KJL-09005 Set block
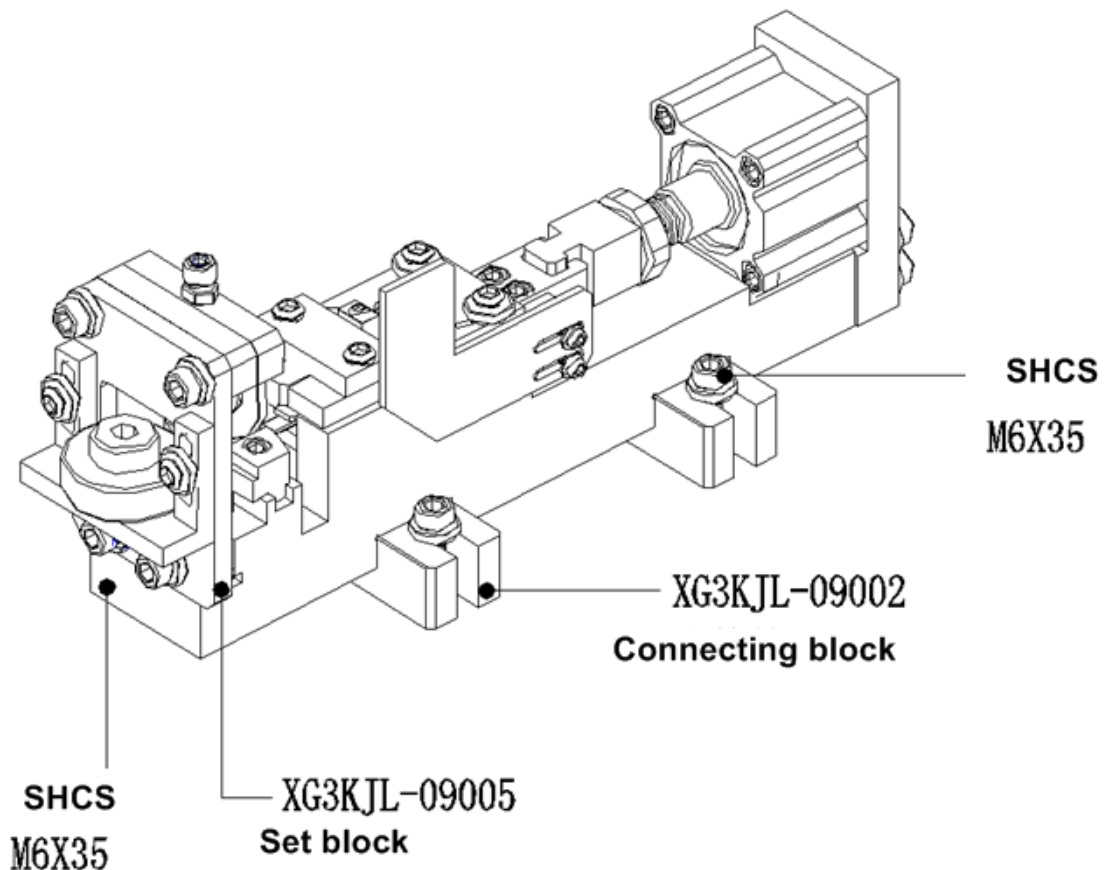
2) Tape station maintenance.

(1) Loosen the screw on ㉟XG3KJL-09016 slider cap and ㉜XG3KJL-09018 slider cap pressing block, remove slider cap and pressing block, then take out the the straight fork in ㊳ XG3KJL-09025 tape station and curving fork in ㊲ XG3KJL-09026 tape station, and wipe them clean, then check if the small shear blade of ㊶ ХXG3KJL-09024 tape station and big shear blade of ⑬ XG3KJL-09023 tape station are worn out, if so, replace; check the tension of ㊴ XG3KJL-09028 spring2 and ㊷ XG3KJL-09029 spring and ㊸ XG3KJL-09027 spring1, or whether the sping is broken, if so, replace. If spring tension is poor, replace it.

3) Tape station installation.

    Install the Material transfer unit that just get maintained according to the reverse sequence of disassembling, then install it on machine. Attention: the small shear blade on XG3KJL-09024 tape station must be centered with chain clip, and XG3KJL-09004 chain pressing block is vertical with chain. At last check if screw is fastened.

■5X20
SHCS

XG3KTL-09018
Slider pressing block

■5X25
SHCS

XG3KJL-09016
Slider cover

XG3KTL-09026
Tape station curving fork

XG3KTL-09025
Tape station straight fork

XG3KTL-09028
Spring 2
XG3KJL-02024
**Tape station
small blade**

XG3KTL-09029
Spring

■5X25
SHCS

XG3KJL-09027
Spring 1

XG3KTL-09023
**Tape station big
blade**
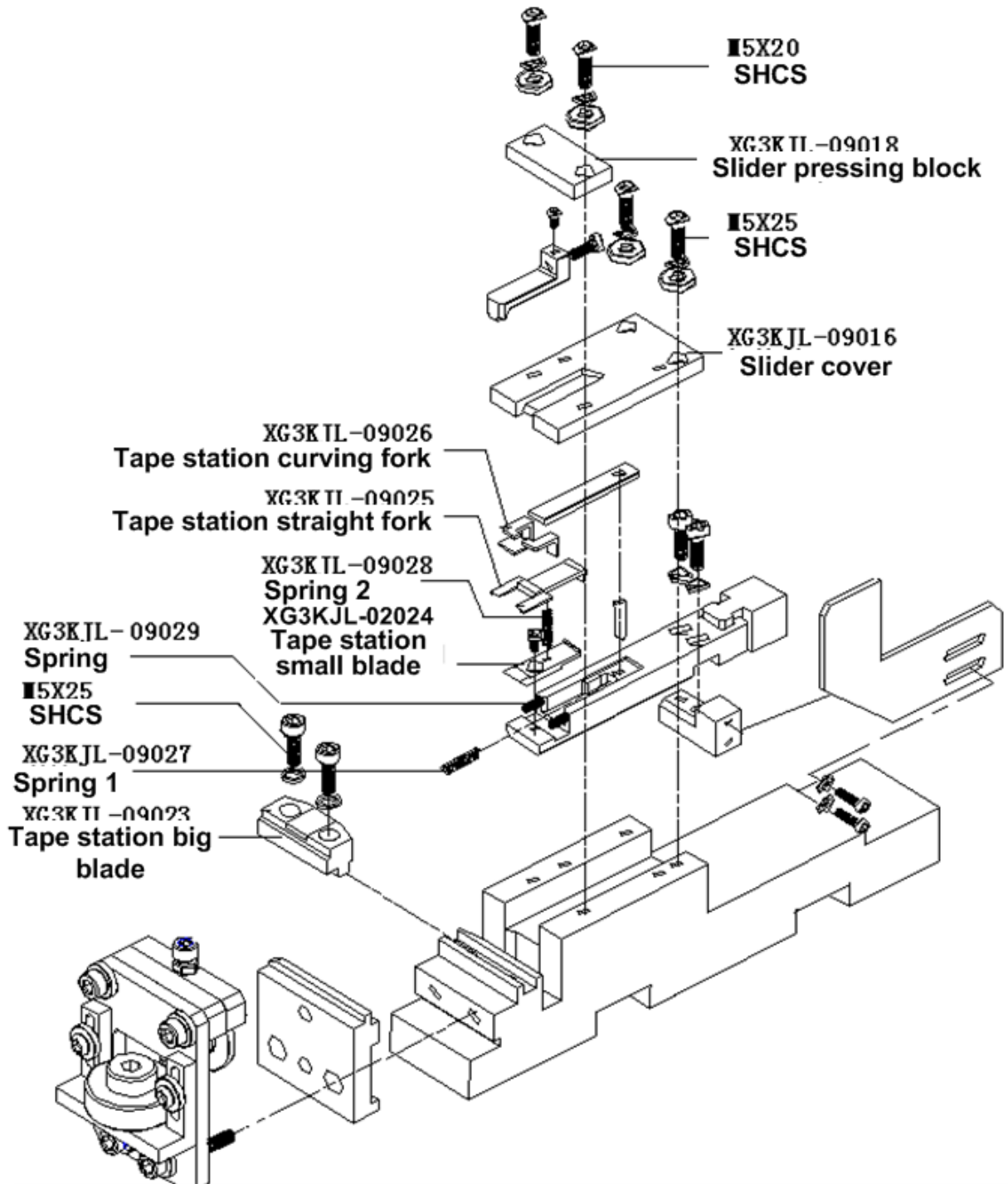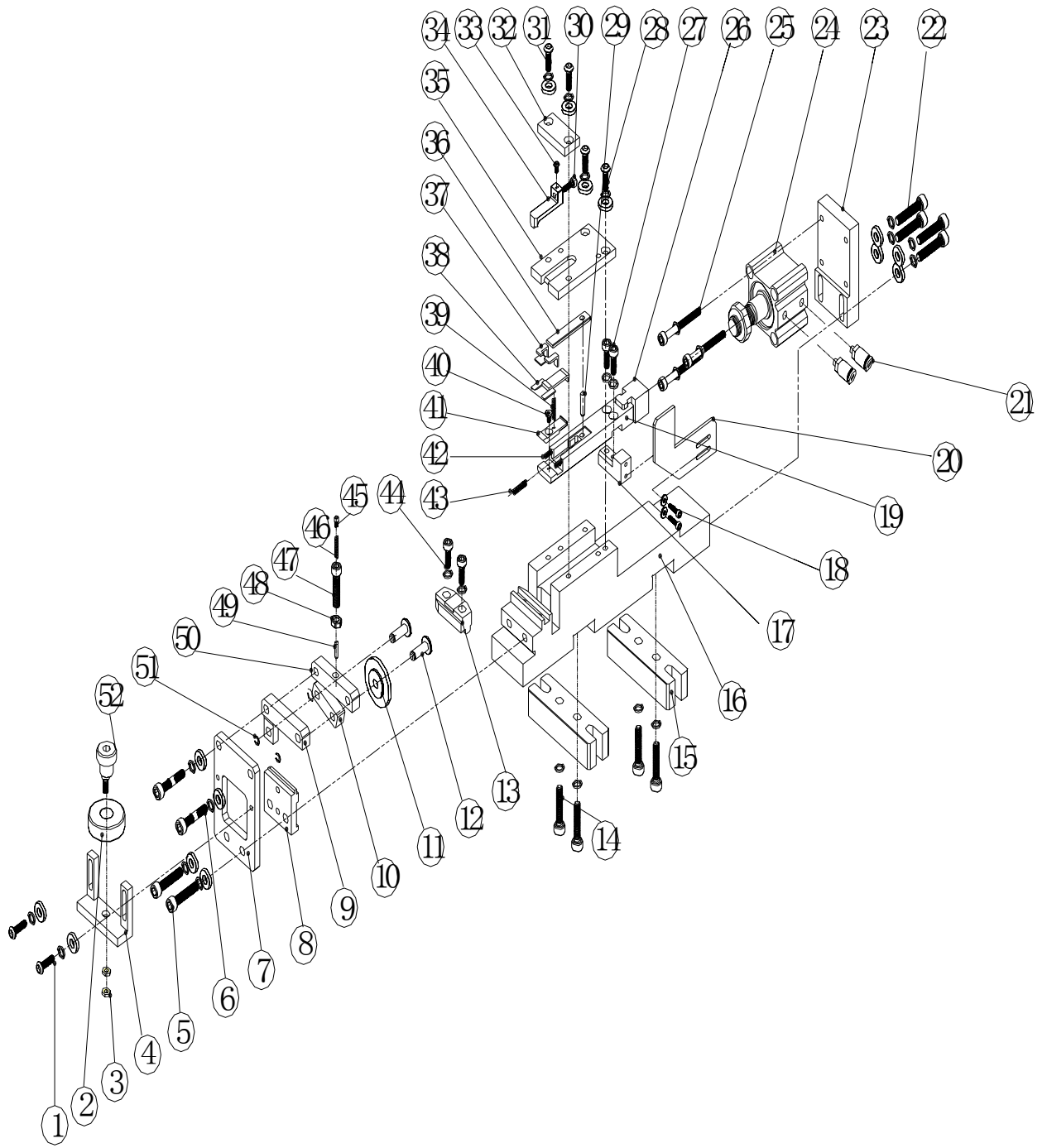
Tape cutting component list

No.	Name	Code	Qty/per machine	Remark
1	SHCS M4*16	cup head M4*16+spring pad+ spacer	2	
2	bearing NSK(6202ZZ)	XG3KGZ-03080	1	
3	M5 nut	M5 nut	2	
4	bearing stand	XG3KJL-09011	1	
5	SHCS M6*25	cup headM6*25+spring pad+ spacer	2	
6	SHCS M6*25	cup headM6*25+spring pad+ spacer	2	
7	locating block	XG3KJL-09005	1	
8	chain pressing block	XG3KJL-09004	1	
9	pinch roller main block	XG3KJL-09006	1	
10	pinch roller block	XG3KJL-09008	1	
11	material clip pinch roller	XG3KJL-09010	1	
12	pinch roller pin	XG3KJL-09009	2	
13	tape station big shear blade	XG3KJL-09023	1	
14	SHCS M6*25	cup headM6*25+spring pad	4	
15	connecting block	XG3KJL-09002	2	
16	tape station body	XG3KJL-09001	1	
17	sensor piece connecting block	XG3KJL-09014	1	
18	SHCS M3*12	cup headM3*12+spring pad+ spacer	2	
19	slider	XG3KJL-09012	1	
20	Block piece	XG3KJL-09015	1	
21	air connector PC06-01	XG3KW-02062	2	
22	SHCS M6*25	cup headM6*25+spring pad+ spacer	4	
23	air cylinder locating housing	XG3KJL-09020	1	

24	Tape cutting air cylinder CQ2A32-15DCM	XG3KJL-09030	1	
25	SHCS M5*45	cup headM5*45+spring pad	4	
26	air cylinder connector	XG3KJL-09013	1	
27	SHCS M5*12	cup headM5*12+spring pad	2	
28	SHCS M5*20	cup headM5*12+spring pad+ spacer	2	
29	jig locating pin	XG3KJL-16026	1	
30	SHCS M4*15	cup headM4*15	1	
31	SHCS M5*25	cup headM5*25+spring pad+ spacer	2	
32	slider pressing block	XG3KJL-09018	1	
33	SHCS M3*6	cup headM3*6	1	
34	Stop block	XG3KJL-09017	1	
35	Slider cap	XG3KJL-09016	1	
36	cover slider	XG3KJL-09019	1	
37	tape station curving fork	XG3KJL-09026	1	
38	tape station straight fork	XG3KJL-09025	1	
39	spring2	XG3KJL-09028	1	
40	flat head screwM3*6	flat head screwM3*6	1	
41	tape station small shear blade	XG3KJL-09024	1	
42	spring	XG3KJL-09029	2	
43	spring1	XG3KJL-09027	1	
44	SHCS M5*25	cup headM5*25+spring pad	2	
45	flat head screwM3*6	flat head screwM3*6	1	
46	chain clip spring	XG3KZW-02059	1	
47	Pressing PIN	XG3KJL-09021	1	
48	M5 nut	M5 nut	1	
49	Pressing PIN-1	XG3KJL-09022	1	
50	adjusting block	XG3KJL-09007	1	
51	E-shape snap ring(outer snap spring ∅5)	XG3KZW-02043	2	

52	pulley bolt	XG3KZW-09003	1	

10. Dispensing Head Maintenance.

1)   Disassemble dispensing head.

   Loosen the set screw, inspection signal wire, electromagnetic valve power wire and air pipe of dispensing head, then you can take out the whole dispensing head.

2)   Dispensing head maintenance.

(1) Loosen the screw on ㊿ XG3KZW-02028 covering board, then loosen the screw on ㊄ XG3KZW-02027 station air cylinder locating board, take out the rear unit of dispensing head, then loosen the snap spring on⑪ XG3KZW-02012 material transfer rod, then you can take out the ⑬ XG3KZW-02009 material transfer main slider1 and ⑨ XG3KZW-02013 material transfer slider2, use fiber-less clean cloth to clean it, and apply grease provided by our company evenly .

(2)check if ㉞ XG3KZW-02022 tape shear blade and ⑭ XG3KZW-02010 slider shear blade are worn out, if so, then need to replace them timely. Attention: the two blades must fit with each other tightly so that the tape can be cut off completely, and there is no flash on them, the gap between the two blade is almost zero.

(3)check if the ㉑ XG3KZW-02019 station curving pushing piece and ⑳ XG3KZW-02018 station Y-shape pushing piece are deformed, whether spring contains proper tension, whether the snap spring drops, if so, need to replace timely.

3) Dispensing head installation.

   Install the dispensing head that just get maintained according to the reverse sequence of disassembling, then install it on machine, then check each screw for any looseness, if any, fasten them again.

Dispensing head

Disassemble, clean, lubricate

Dynamic blade B

Static blade A

0.038mm

Static blade A

Dynamic blade B

Top view of blade
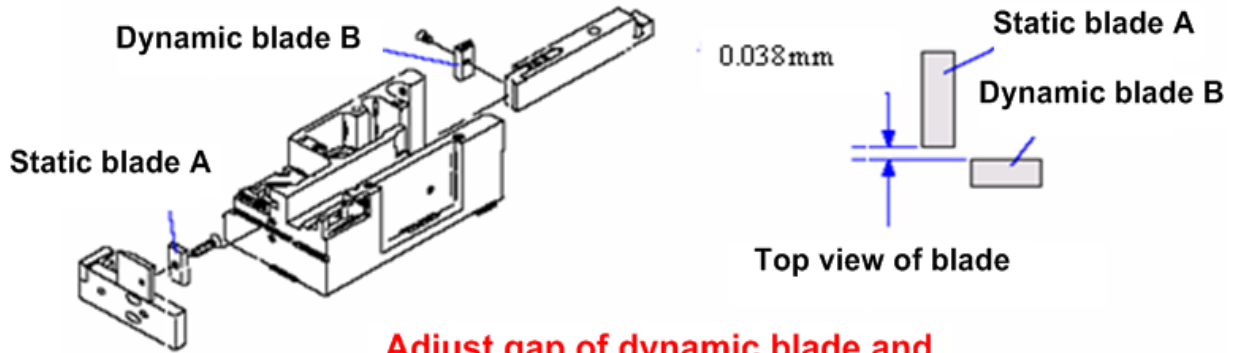
Adjust gap of dynamic blade and static blade: 0.038mm

Add hole in set screw

Adjust locating screw

Pawl

0.25mm

supporting rod

Adjustable pawl

Set screw

Pawl cam

Adjust set screw cam

Stop Pawl

Ratchet wheel
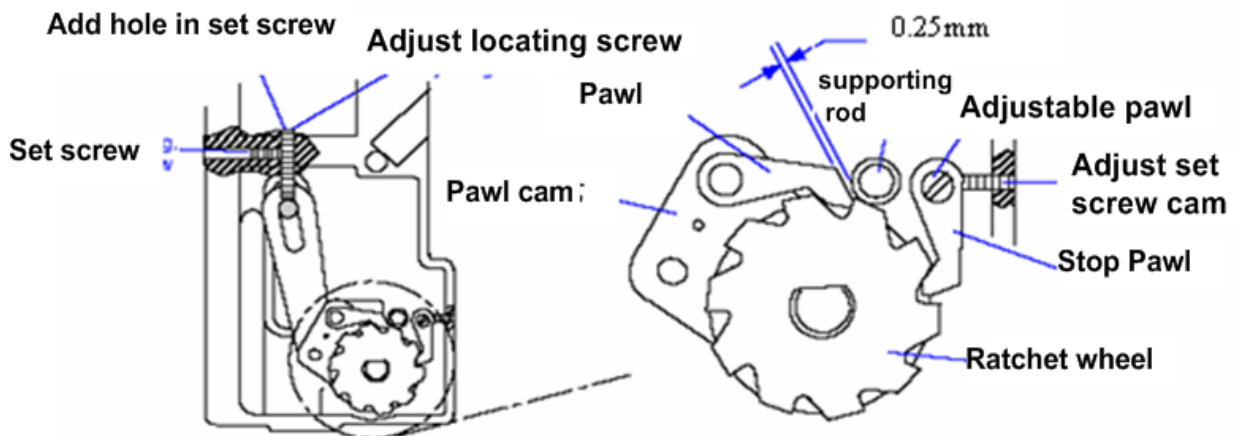
Gap of pawl and supporting rod: 0.25mm

Top view of station bottom

Adjustable pawl

Set screw

Stop pawl

Ratchet wheel

Stop pawl

0.05mm

Ratchet wheel

Gap between stop pawl and ratchet wheel: 0.05mm

Delivery wheel

5.0 MM

Component lead position

Material belt position

Set screw

Material pusher

Adjust dilivery wheel

Station side view
(shows driving program stretches out completely)

Tuning the cover place to adjust
the standard position of pusher

Adjust air cylinder
connector to meet
dimension spec:
16.66±0.05mm

Adjust screw

Air cylinder
connector

Station side view
(air cylinder) driving program
retracts completely

Adjust stroke of dispensing head

Station (picture 1-3)

Station (picture 2-3)
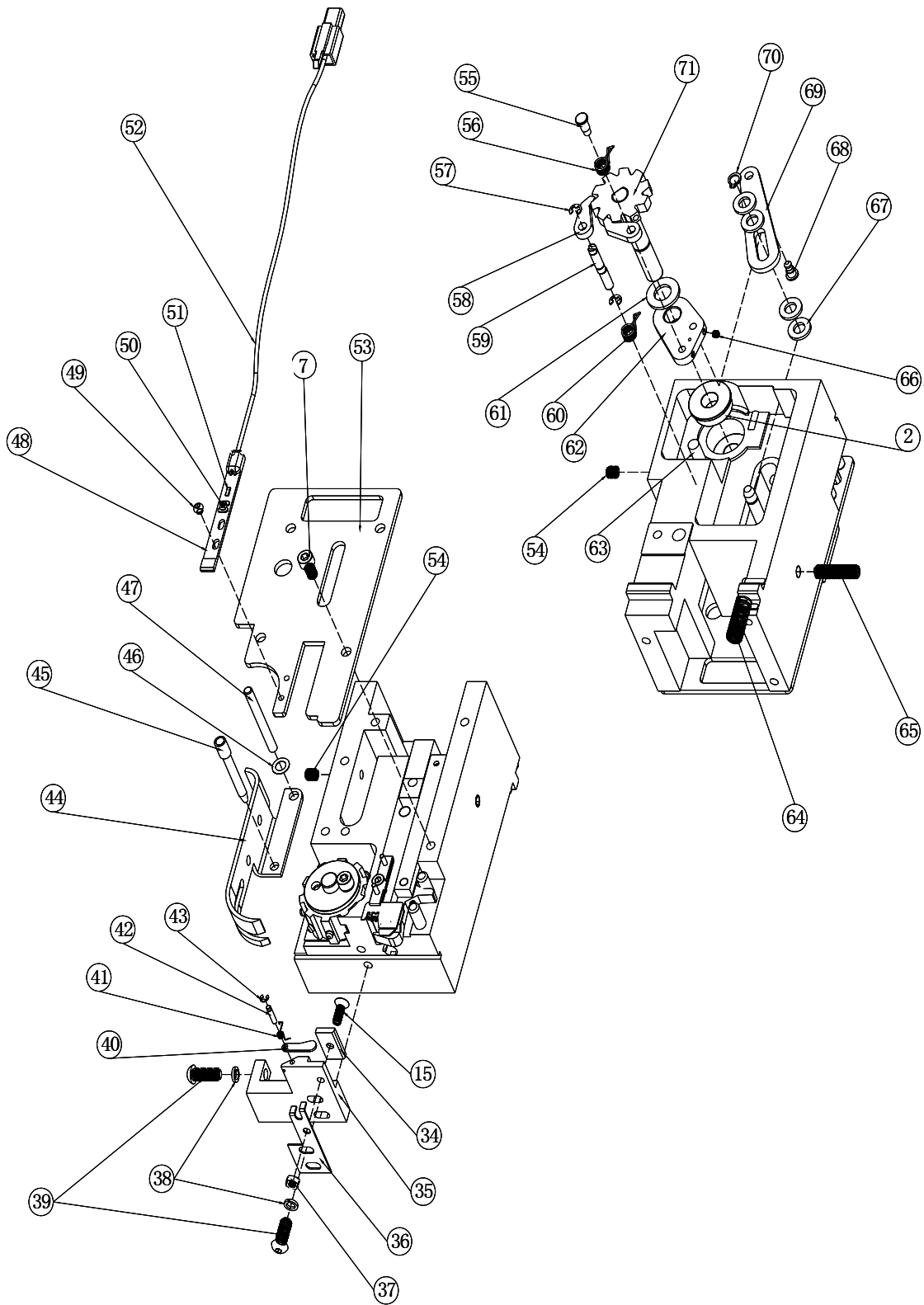
Station (picture 3-3)
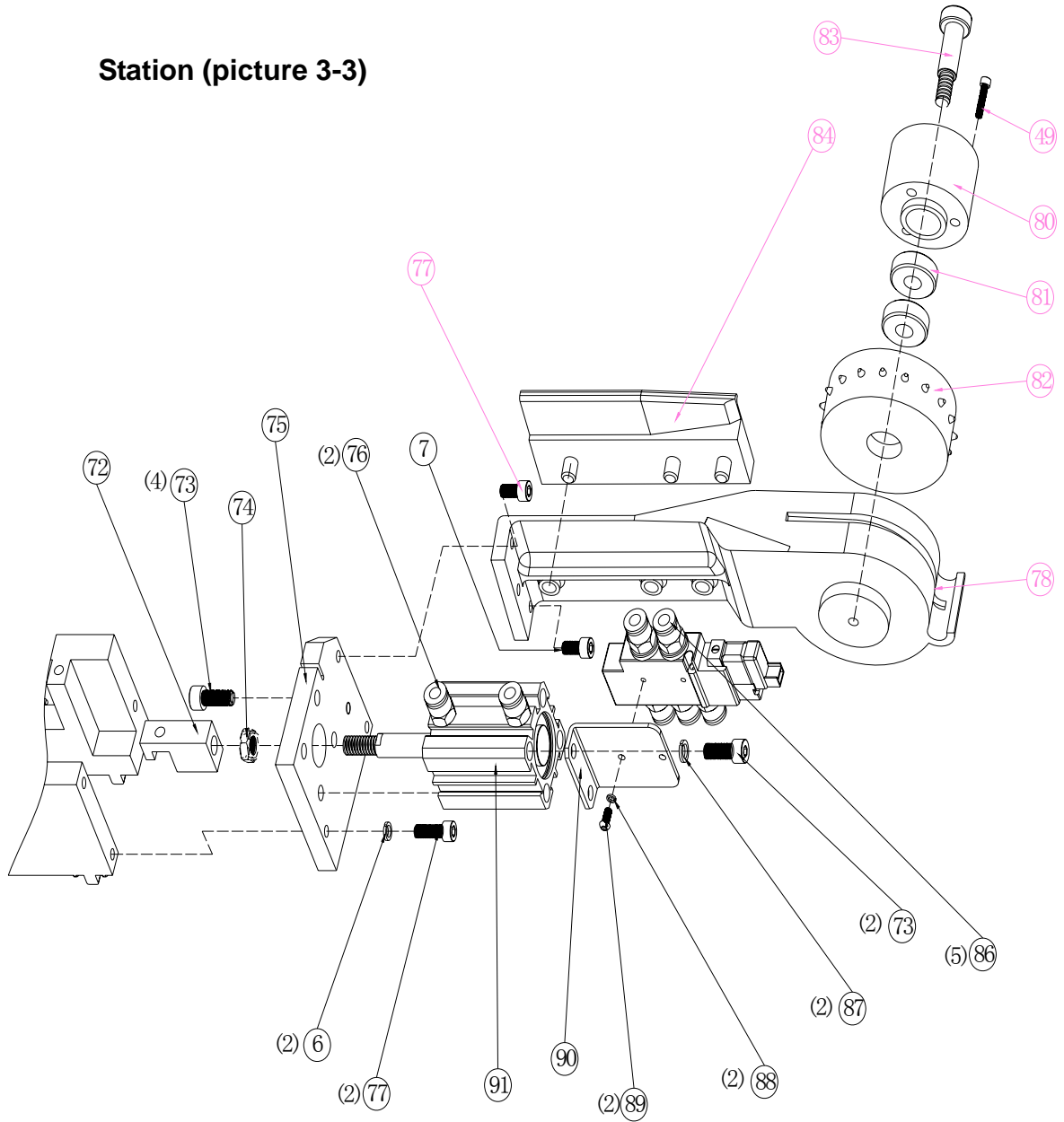
Station component list

No.	Name	code	Qty/per machine	Remark
1	C-shape snap ring ∅9(outer snap spring)	XG3KZW-02041	1	
2	imported bearing NSK (FR6 ZZ)	XG3KZW-02045	2	
3	Material baffle main wheel	XG3KZW-02001	1	
4	fasten ring	XG3KZW-02002	1	
5	Pressing cover	XG3KZW-02003	1	
6	spring washer	M5	5	
7	SHCS	M5*10	7	
8	Set screw	M4*5	1	
9	material transfer slider2	XG3KZW-02013	1	
10	air cylinder connector	XG3KZW-02026	1	
11	material transfer bar	XG3KZW-02012	1	
12	hollow pin ∅5*12	XG3KZW-02051	1	
13	material transfer slider1	XG3KZW-02009	1	
14	slider shear blade	XG3KZW-02010	1	
15	inner hexagonal flat head screw2	M4*10	2	
16	Material pushing piece locating pin	XG3KZW-02053	2	
17	SHCS	M4*12	1	
18	spring washer	M4	1	
19	station Y-shape pushing piece spacer	XG3KZW-02098	1	
20	station Y-shape pushing piece	XG3KZW-02018	1	
21	station curving pushing piece	XG3KZW-02019	1	
22	station baffle piece	XG3KZW-02020	1	
23	tape spacer	XG3KZW-02011	1	
24	flat head cross-shaped screw	M2.5*5	2	
25	material guiding pawl locating pin	XG3KZW-02017	1	
26	material guiding pawl	XG3KZW-02015	1	
27	set	M3*5	1	

28	material guiding pawl pressing pin	XG3KZW-02016	1	
29	stop spring	XG3KZW-02046	1	
30	1/4*25 pin	XG3KZW-02052	2	
31	reposition spring	XG3KZW-02047	1	
32	spring pin	XG3KZW-02014	1	
33	Station body	XG3KZW-02031	1	
34	tape shear blade	XG3KZW-02022	1	
35	shear blade locating block	XG3KZW-02021	1	
36	Station sensor baffle piece	XG3KZW-02025	1	
37	round head screw	M5*16	3	
38	spacer	φ5.3*9*1	3	
39	nut	M4 nut	1	
40	sensor copper piece	XG3KZW-02023	1	
41	One-arm curving rotate spring1	XG3KZW-02048	1	
42	sensor piece locating pin	XG3KZW-02024	1	
43	E-shape snap ring ¢2(outer snap spring)	XG3KZW-02044	1	
44	station material transfer block	XG3KZW-02029	1	
45	3/16*47 pin	XG3KZW-02054	1	
46	wave spacer(inner diameter ¢6mm outer diameter ¢10mm thick 0.3mm)	XG3KZW-02056	1	
47	baffle piece locating pin	XG3KZW-02094	1	
48	(inspection) circuit board	XG3K-DLBO1	1	
49	slotted screw	M3*3	4	
50	Mounting LED(1210)	XG3KDL-17089	1	
51	mounting resistor(181Ω 1206)	XG3KDL-17088	1	
52	Signal wire	RV1*0.5,长54CM	1	
53	covering board	XG3KZW-02028	1	
54	Set screw	M5*6	2	
55	pawl pin2	XG3KZW-02008	1	
56	One-arm curving rotate spring2	XG3KZW-02050	1	

57	E-shape snap ring ∅3(outer snap spring)	XG3KZW-02042	2	
58	pawl	XG3KZW-02006	2	
59	adjustable pawl pin	XG3KZW-02036	1	
60	Cylinder curving rotate spring	XG3KZW-02049	1	
61	material transfer gear rack seat pad	XG3KZW-02037	1	
62	material transfer gear rack slider	XG3KZW-02005	1	
63	1/4*30 pin	XG3KZW-02055	1	
64	Set screw	M8*25	1	
65	Set screw	M6*20	1	
66	Set screw	M3*3	2	
67	spacer	XG3KZW-02038	4	
68	pawl pin1	XG3KZW-02007	1	
69	connecting board	XG3KZW-02030	1	
70	C-shape snap ring ∅ 5(outer snap spring)	XG3KZW-02043	1	
71	material transfer gear rack	XG3KZW-02004	1	
73	SHCS	M6*16	6	
74	nut	M8 nut	1	
75	station air cylinder locating board	XG3KZW-02027	1	
76	air connector (PC06-M5)	XG3KZW-02090	2	
77	SHCS	M5*16	3	
78	material stand	XG3KZW-02101	1	
79	station electromagnetic valve (J-SY5120-5LZD-01)	XG3KZW-02060	1	
80	material rolling wheel handle wheel	XG3KZW-02104	1	
81	NSK bearing	XG3KZW-02106	2	
82	material rolling wheel	XG3KZW-02103	1	
83	stop screw	XG3KZW-02105	1	
84	material stand(small)	XG3KZW-02102	1	
85	nut	M6 loose-proof nut	1	
86	air connector (PC06-01)	XG3KZW-02062	5	
87	spring washer	M6	2	

88	spring washer	M3	2	
89	stainless steel round cup	M3*8	2	
90	electromagnetic valve holder	XG3KZW-02039	1	
91	station air cylinder (J-CQ2A25-35DM)	XG3KZW-02061	1	

11. Work Table Maintenace

1) keep lead screw ⑱ XG3KGZ-03089 and rail ⑥ XG3KGZ-03003clean, add grease regularly.

2) maintain relevant bearing and add grease.

3) maintain turntable lock, check spring and ball for any damage or looseness, and add grease.

4) Must not add grease into turn plate, otherwise the pinch roller can not drive turntable.
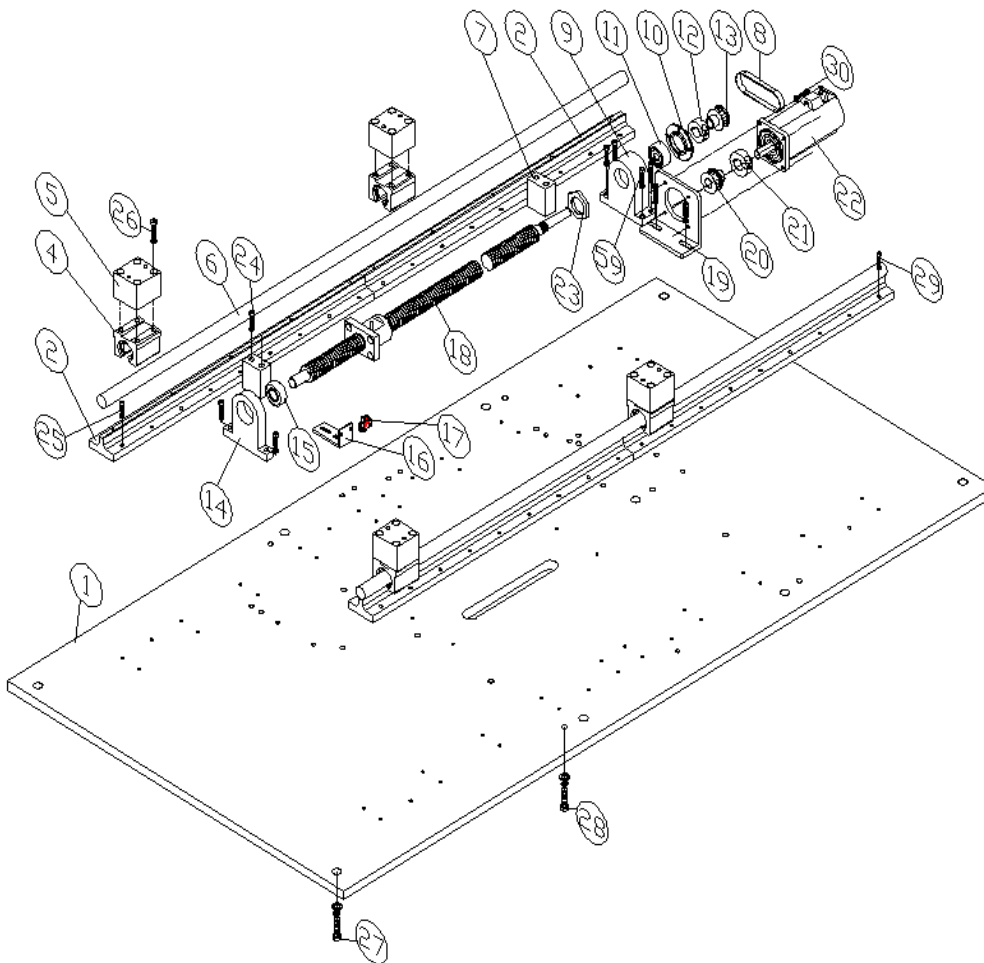
Worktable component list

No.	Name	Code	Qty/per machine	Remark
1	ground base board	XG3KJJ-01091	1	
2	Y rail housing	XG3KGZ-03004	4	
4	linear bearing (SME20UU)	XG3KGZ-03088	4	
5	X slider seat pad	XG3KGZ-03009	4	
6	XY rail hard steel shaft	XG3KGZ-03003	2	
7	X impact-proof stop block	XG3KGZ-03001	2	
8	lead screw timing belt161Lwide10.5	XG3KGZ-03087	1	
9	X bearing housing1	XG3KGZ-03005	1	
10	XY bearing cover	XG3KGZ-03011	1	
11	bearing (7202CYP4)	XG3KGZ-03079	2	
12	XY shaft lead screw synchronizing roller anchor ear	XG3KGZ-03013	1	
13	XY lead screw synchronizing roller	XG3KGZ-03007	1	
14	X bearing holder 2	XG3KGZ-03006	1	
15	bearing (6202 ZZ)	XG3KGZ-03080	2	
16	XY zero position limit holder	XG3KGZ-03010	5	
17	optoelectronic switch EE-SX670	XG3KDL-17053	1	
18	XY shaft lead screw	XG3KGZ-03089	1	
19	X shaft motor housing	XG3KGZ-03012	1	
20	XY motor synchronizing roller	XG3KGZ-03008	2	
21	XY shaft motor synchronizing roller anchor ear	XG3KGZ-03014	1	
22	pulse(400W) servo motor	XG3KDL-17007	1	
23	XY lead screw nut M14×1	XG3KGZ-03027	2	

24	cup head screw	M6×25	2	Spring pad+spacer
25	cup head screw	M5×25	20	spring pad+ pacer
26	cup head screw	M6×35	16	spring pad+spacer
29	cup head screw	M5×25	20	spring pad+ spacer
30	cup head screw	M4×20	4	spring pad+ spacer
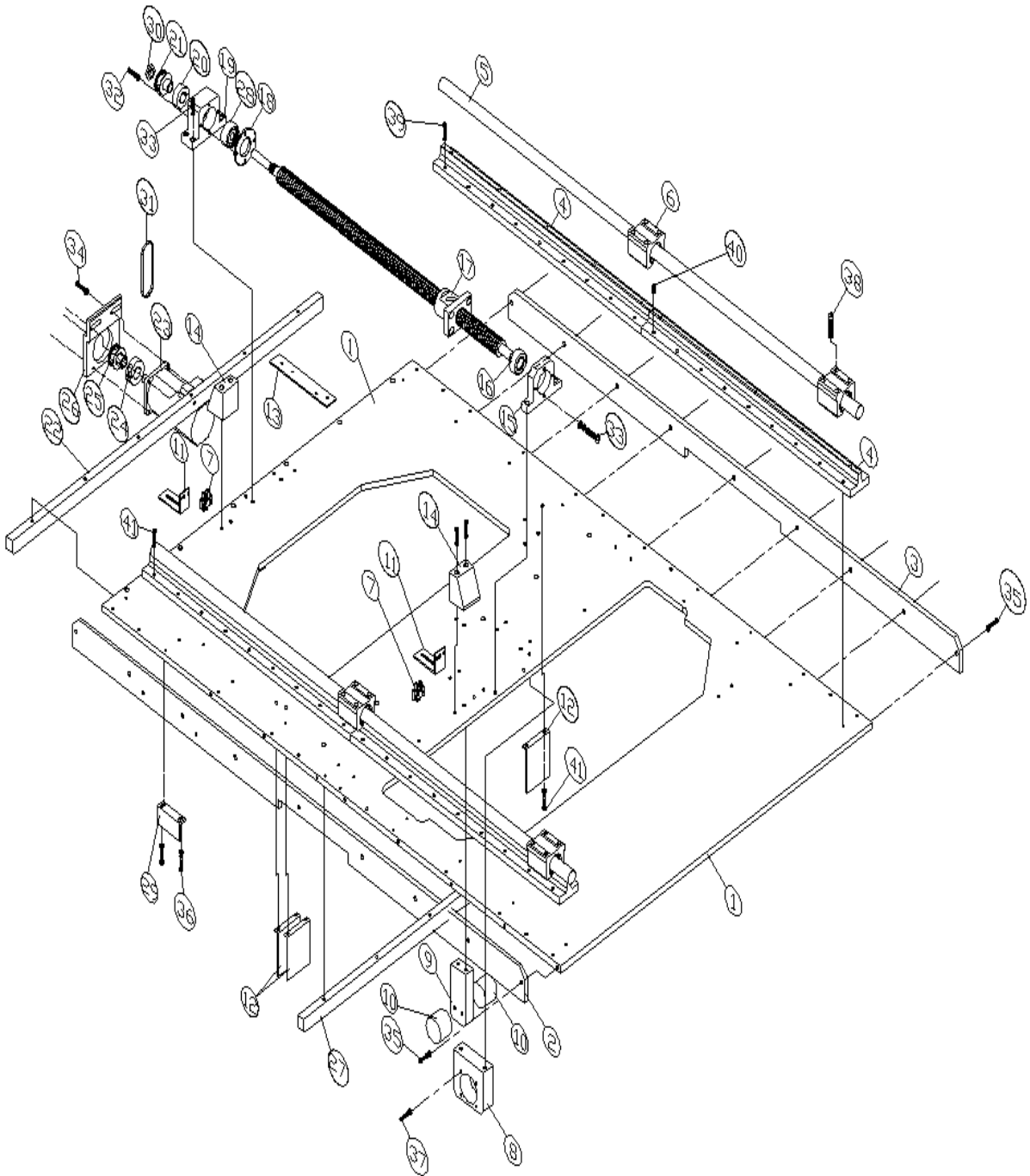
Worktable component list

No.	Name	code	Qty/per machine	Remark
1	Worktable middle aluminum board	XG3KGZ-03015	1	
2	LH pressing aluminum bar	XG3KGZ-03018	1	
3	RH pressing aluminum bar	XG3KGZ-03019	1	
4	X rail housing	XG3KGZ-03022	4	
5	XY rail hard steel shaft	XG3KGZ-03003	2	
6	linear bearing (SME20UU)	XG3KGZ-03088	4	
7	optoelectronic switch EE-SX670	XG3KDL-17053	1	
8	X shaft nut locating housing	XG3KGZ-03025	1	
9	X impact-proof rubber locating block	XG3KGZ-03020	1	
10	X shaft impact-proof rubber	XG3KGZ-03091	2	
11	XY zero position limit housing	XG3KGZ-03010	2	
12	X zero position switch piece	XG3KGZ-03029	3	
13	X drag chain installation block	XG3KGZ-03028	1	
14	Y impact-proof stop block	XG3KGZ-03021	2	
15	Y bearing housing1	XG3KGZ-03023	1	
16	bearing (6202ZZ)	XG3KGZ-03080	2	
17	XY shaft lead screw	XG3KGZ-03089	1	
18	XY bearing cover	XG3KGZ-03011	1	
19	Y bearing housing2	XG3KGZ-03024	1	
20	XY shaft lead screw synchronizing roller anchor ear	XG3KGZ-03013	1	
21	XY lead screw synchronizing roller	XG3KGZ-03007	1	
22	Rear pressing aluminum bar	XG3KGZ-03017	1	
23	pulse(400W) servo motor	XG3KDL-17007	1	
24	XY shaft motor synchronizing roller anchor ear	XG3KGZ-03014	1	
25	XY motor synchronizing roller	XG3KGZ-03008	1	
26	Y shaft motor housing	XG3KGZ-03026	1	

27	Middle pressing aluminum bar	XG3KGZ-03016	1	
28	bearing (7202CYP4)	XG3KGZ-03079	1	
29	Y zero position switch piece	XG3KGZ-03030	3	
30	XY lead screw nut	XG3KGZ-03027	1	
31	lead screw timing belt timing belt161L*10.5	XG3KGZ-03087	1	
32	cup head screw	M4×20	4	spring pad+spacer
33	cup head screw	M4×25	4	spring pad+ pacer
34	cup head screw	M4×16	2	spring pad+spacer
35	round head screw	M5×12	9	spring pad+spacer
36	round head screw	M5×10	4	spring pad+spacer
37	cup head screw	M5×16	4	spring pad+spacer
38	cup head screw	M6×35	8	spring pad+spacer
39	round head screw	M5×25	20	spring pad+spacer
40	locating pin	φ5×5	8	
41	cup head screw	M5×25	20	spring pad+spacer
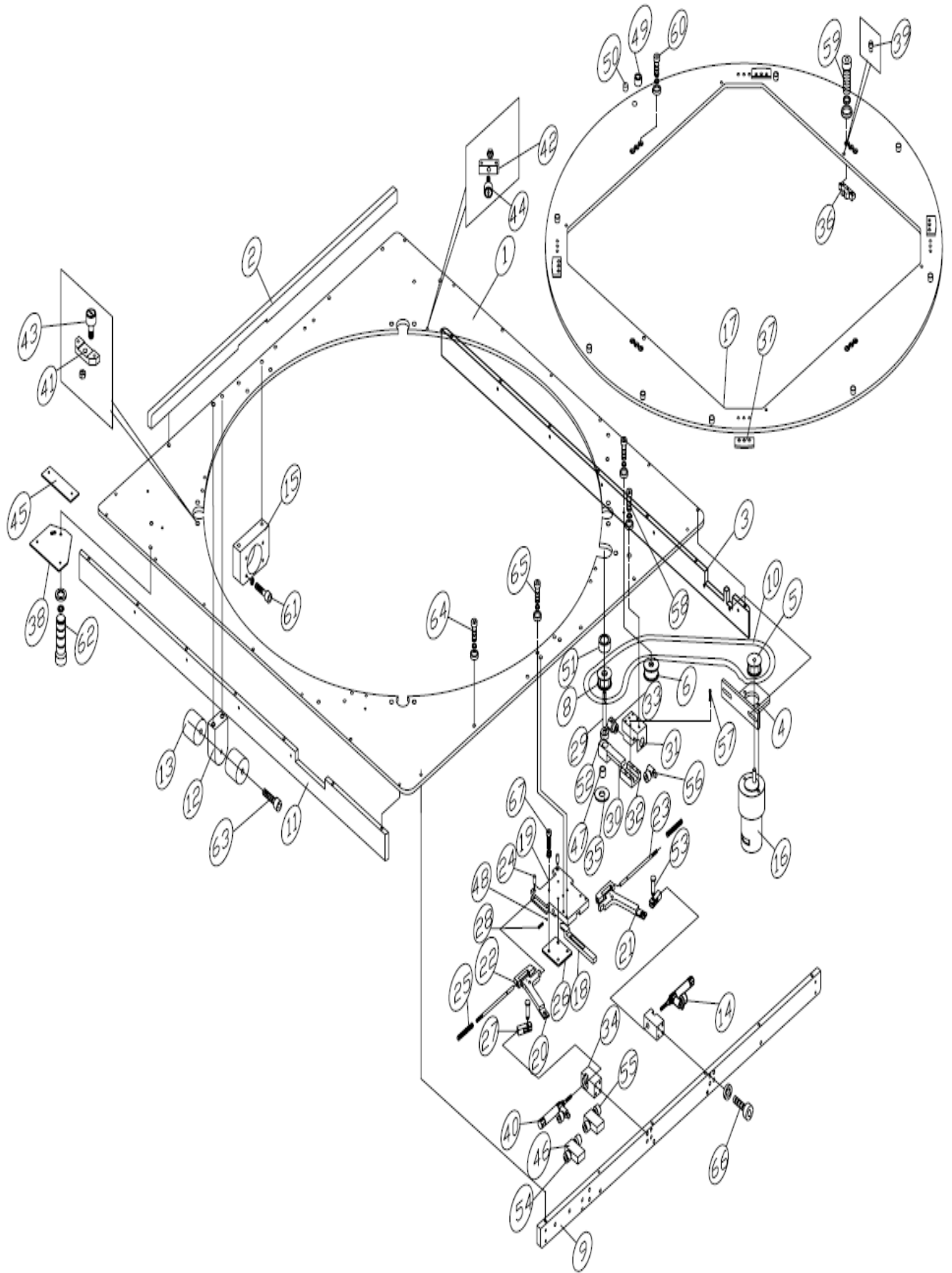
worktable component list

No.	name	code	Qty/per machine	Remark
1	worktable	XG3KGZ-03034	1	
2	worktable rear aluminum bar	XG3KGZ-03037	1	
3	Worktable rear aluminum bar	XG3KGZ-03035	1	
4	turntable motor holder	XG3KGZ-03124	1	
5	turntable motor synchronizing wheel	XG3KGZ-03071	1	
6	bearing NSK (F606 ZZ)	XG3KGZ-03070	2	
7	optoelectronic switchEE-SX670	XG3KDL-17053	1	
8	turntable driving synchronizing wheel	XG3KGZ-03072	1	
9	turntable air cylinder installation block	XG3KGZ-03038	1	
11	worktable left hand aluminum bar	XG3KGZ-03036	1	
12	Y impact-proof rubber locating block	XG3KGZ-03040	1	
13	Y shaft impact-proof rubber1	XG3KGZ-03105	1	
15	Y shaft lead screw nut locating housing	XG3KGZ-03039	1	
16	turntable motor	XG3KDL-17063	1	
17	round turn plate	XG3KGZ-03041	1	
18	turn plate locking supporting bar	XG3KGZ-03043	1	
19	turn plate locking main block	XG3KGZ-03044	1	
20	RH turn plate locking stop	XG3KGZ-03045	1	
21	LH turn plate locking stop	XG3KGZ-03046	1	
22	turn plate locking stop baffle block	XG3KGZ-03047	2	
23	turn plate stop block PIN	XG3KGZ-03048	2	
24	PIN	XG3KGZ-03049	2	
25	SPRING	XG3KGZ-03050	2	
26	Locking elastic bolt cap	XG3KGZ-03051	1	
27	locking air cylinder connector	XG3KGZ-03052	2	
28	SPRING spring	XG3KGZ-03054	2	

29	turntable driving wheel axle	XG3KGZ-03055	1	
30	turntable driving wheel socket	XG3KGZ-03056	1	
31	turntable driving wheel stand sliding box	XG3KGZ-03057	1	
32	turntable driving wheel stand sliding box cap	XG3KGZ-03058	1	
33	turntable driving small air cylinder CJP2B10-5D	XG3KGZ-03098	1	
34	turntable locking air cylinder housing	XG3KGZ-03060	2	
35	platy bearing (6.35*17.02)	XG3KGZ-03085	4	
36	turntable locking pawl	XG3KGZ-03062	4	
37	turntable locating pieces for four corners	XG3KGZ-03063	4	
38	turntable locating sensor board housing	XG3KGZ-03064	1	
39	Turntable jig locating PIN	XG3KGZ-03065	2	
40	turntable air cylinder (J2B10-15)	XG3KGZ-03099	2	
41	turntable locating bearing housing for four corners	XG3KGZ-03067	4	
42	Turntable rotate rail bearing housing	XG3KGZ-03068	4	
43	bearing (CR12)	XG3KGZ-03081	4	
44	bearing (CR10-1)	XG3KGZ-03082	4	
45	turntable locating sensor board	Self-made	1	
46	turntable electromagnetic valve VQZ115-5GB1-M5-PR	XG3KGZ-03100	2	
50	magnet ϕ3*4	XG3KGZ-03090	5	
51	Rubber sleeve	XG3KGZ-03066	1	
52	D6.35 anchor ear	XG3KGZ-03061	1	
53	Connecting pin for locking air cylinder	XG3KGZ-03053	2	
54	air connector PC06-M5	XG3KZW-02090	2	
55	air connector PC04-M5	XG3KZW-02091	2	
56	air connector PL04-M3	XG3KGZ-03093	2	
57	SHCS	M6×20	4	

58	SHCS	M5×20	1	
59	SHCS	M5×10	3	
60	SHCS	M4×8	12	
61	SHCS	M6×25	4	
62	SHCS	M4×10	3	
63	SHCS	M5×25	2	
64	SHCS	M3×25	6	
65	round cup screw	M5×20	4	
66	SHCS	M4×12	8	
67	SHCS	M5×20	4	
68	SHCS	M4×12	4	
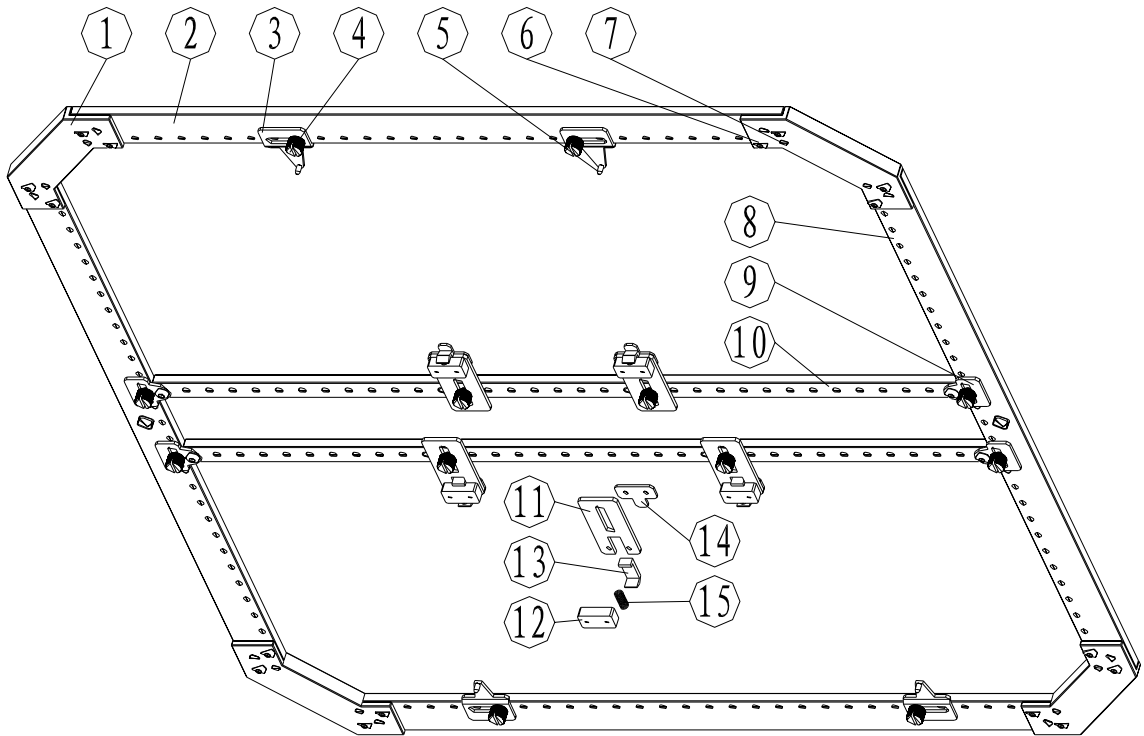
Turn plate jig diagram

Turn plate jig component list		
No.	**Name**	**Part No.**
1	jig segment connecting block	XG3KZJ-16009
2	jig segment1	XG3KZJ-16007
3	stainless steel long messenger	XG3KZJ-16011
4	screwM5	XG3KZJ-16013
5	locating pin	XG3KZJ-16015
6	round cup screw M5*10	
7	Locating PIN	
8	jig segment2	XG3KZJ-16008
9	stainless steel connecting block	XG3KZJ-16012
10	Horizontal bar	XG3KZJ-16014
11	Messenger segment 1	XG3KZJ-16016
12	Messenger segment 2	XG3KZJ-16017
13	Messenger segment 3	XG3KZJ-16018
14	Messenger segment 4	XG3KZJ-16019
15	messenger spring	XG3KZJ-16020

12. Electric Circuit Maintenance

1) check each connector for any looseness and short circuit, use brush and vacuum to clean the dirt, use universal meter to measure the circuit voltage to make sure it is within proper range.

2) use brush to clean up all the dirt in optoelectronic switch.

Attachment:Air driven part maintenance knowledge.

A set of air driven device, if not get maintained properly, it will be damaged too early or break down frequently, and shorten working life greatly. When maintaining air driven device, if accident signal is seen, you need to take countermeasure timly to minimize or prevent breakdown from occurring, and prolong the working life of component and system. Thus, company should create maintenance managemen regulation for air driven device, strengthen management and education, and manage it strictly.

The key task of maintenance is to ensure supply clean and dry compressed air to air driven system, ensure air driven system seal tightness, ensure oil spray lubricate component to be lubricated properly, ensure air driven component and system to

operate in regulated work conditions (like using pressure, voltage,etc) ,to make sure air driven execute assembly work according to requirement.
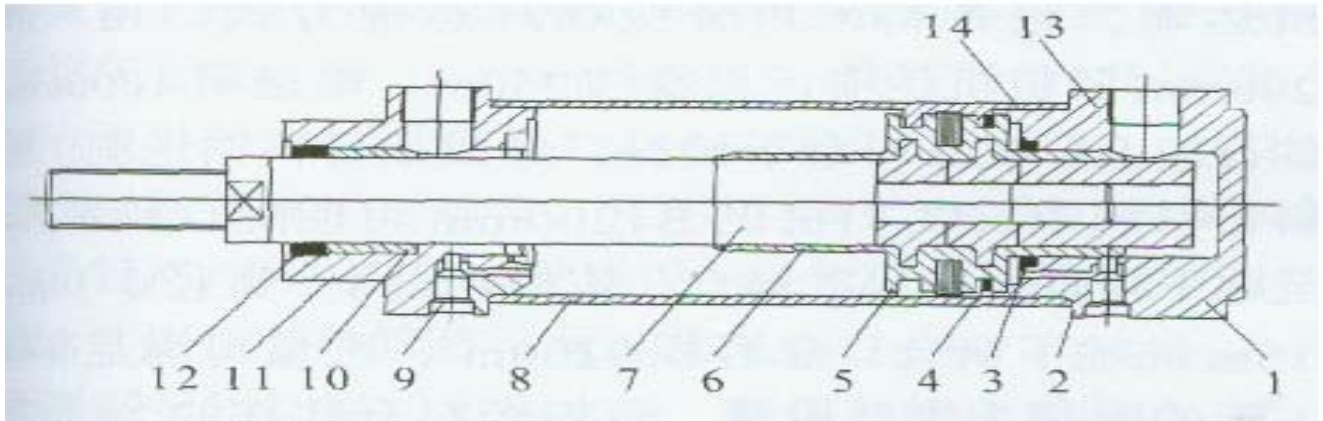
Picture1: The structure and theory of air cylinder

1. rear cylinder cover   2. Seal ring   3.buffering seal ring   4. Piston seal ring   5. Piston
6. buffering plunger piston 7. Piston bar 8.Cylinder barrel 9. Buffering throttle 10.guiding sleeve
11.front cylinder cover   12.dust-proof seal ring   13.   14.guiding ring
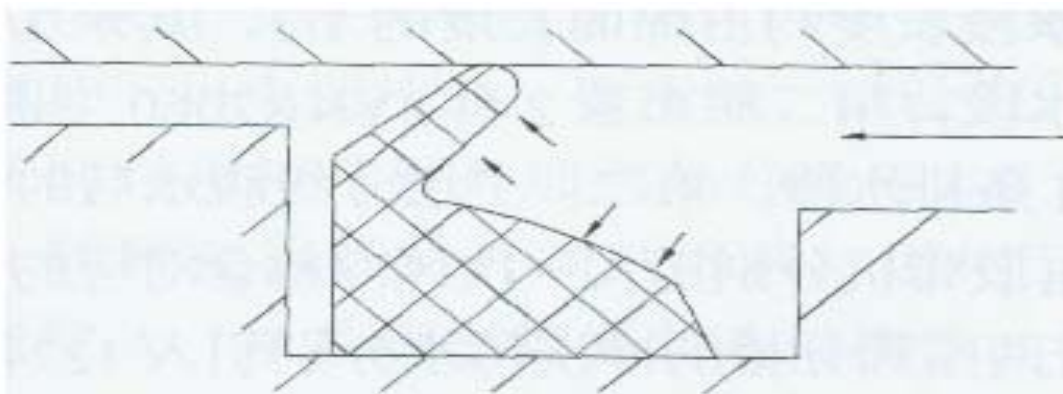
Picture 2: YX shape seal ring

There are two lips of same length at the fracture surface of YX shape seal ring, the seal ring is installed in the slot of piston, when its right side is pushed by air pressure, the seal ring lip will open due to the pressure, and stick to cylinder barrel tightly to achieve good seal. Please observe closely after the air cylinder is broken apart, if the YX shape seal ring lip has been worn out, the you should remove it and replace with a new lip; apply lubricate oil. Besides, the buffering plunger piston touches with cylinder cover frequently, so it also needs to be applied with lubricate oil.

After air cylinder is broken apart, you should first clean up each components, then apply lubricant or seal it up.

Maintenance of piston. Air cylinder piston is pushed by air pressure and slides inside barrel, so the piston needs to be very flexible, at the same time, the seal between

piston and cylinder barrel must be good. The seal is maintained by YX shape seal ring, and it is quick-wear part, please see picture 2 for its structure.

2. Adjustment

1) Adjust turning plate

The turning round plate should be adjusted in normal operation environment with proper temperature, so that it can rotate flexibly, there is no excess gap. You need to use measuring tool to adjust turning round plate. Only trained and professional personnel can do following adjustment. Adjust the gap between four driven bearing ㊽XG3KGZ-03081 of worktable and round plate to allow round plate to rotate smoothly.

(1)Use special jig to adjust the four locater plate ㊲XG3KGZ-03063 .The center of the circle of four locater plate top trajectory is the center of turning plate, and the top is out of turning plate. If there is no special jig, must not adjust

(2)Put in four sets of filler gauge in arc between turning plate and worktable symmetrically, the total thickness of each set of filler gauge should be between1.5mm to 1.7mm, so that turning plate and worktable are concentric.

(3)Put a piece of paper between four driven bearing ㊽XG2K-03081 of worktable and four locating plate ㊲XG2KGZ-04063 of turning plate, move the bearing to close to paper, after the bearing is locked, when you pull the paper back and forth, the bearing and paper must move together.

(4)Fix the housing of dial gauge on the frame of machine (as picture shows below); locate the special jig on worktable firmly.

(5)First adjust the straightness in X direction, then adjust the straightness in Y direction. Under the mode of "Diagnose", set the adjust range as 300mm, adjust speed as 5mm/s. Inspection standard: if lead screw moves within 300mm range, and reading of dial gauge is within 0.01 to 0.03mm, then it conforms to standard.

(6)Use "Diagnose" to let X shaft moves within 300mm range at the speed of 5mm/s repeatedly. Record the largest deviation value and the location where

it occurs.

(7)Likely, let Y shaft moves within 300mm range at the speed of 5mm/s repeatedly. Record the largest deviation value and the location where it occurs.

(8)Compare the values you get from X shaft and Y shaft.

a. If in the same direction, there are four deviations same, then need to adjust ⑲ XG3KGZ-03044.

b. If the four deviations are different from each other, then first step is to adjust turntable lock ⑲ XG3KGZ-03044, the other three steps are adjust turntable locking pawl ㊱ XG3KGZ-03062.

c. If there is only one reading is different, the other three are same, then only need to adjust ㊱ XG3KGZ-03062.
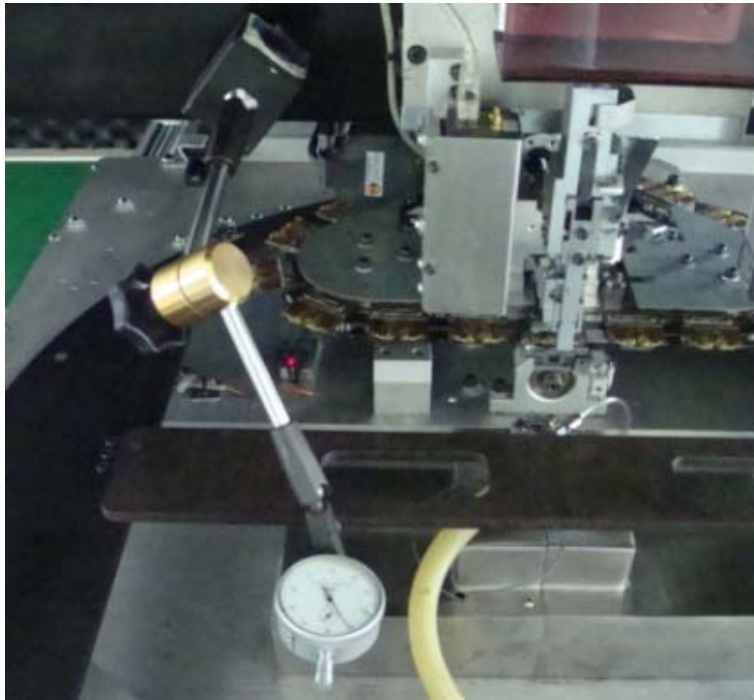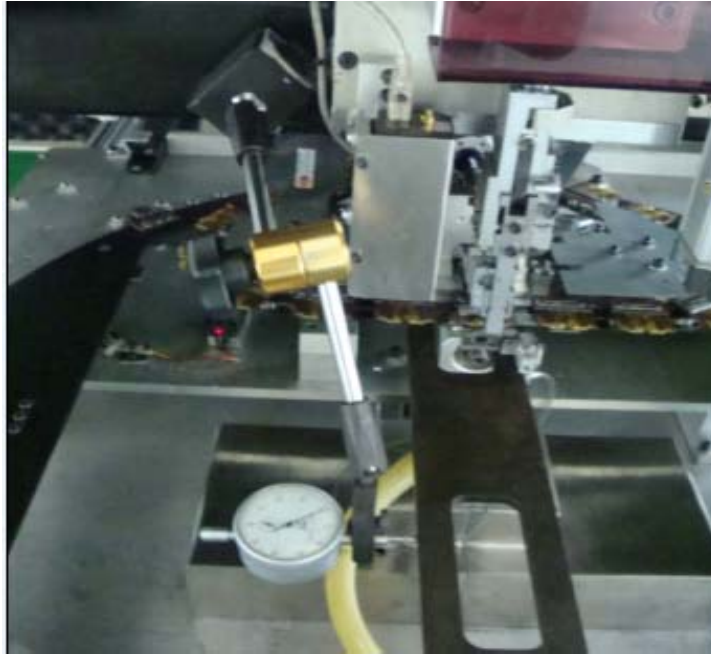
---Attention: if there is no special jig, must not break down and install turn plate locking main unit ⑲ XG3KGZ-03044, turntable locking pawl ㊱ XG3KGZ-03062, turn table locating plate for four corners ㊲ XG2KGZ-04063.

2) Inserter adjustment.

(1) adjust main shaft [121] XG3KTB-06004 rotation eccentricity degree. Use dial gauge to measure, move and rotate main shaft a circle from top to bottom slowly, the error of dial gauge is between(0.01-0.03)mm, if the main shaft is firm and not move around, then it is qualified.

(2) adjust the position of inserter main pawl center. Put master component on

the main pawl, and calibrate the position in three directions ±90^0 and 0^0, if all are centered, then it is OK, the steps are:

A. Put jig on the two projecting cylinders of turn table, and move turn table to zero position.

B. Put master component on the three clips of main pawl, and the three leads of the material must be in the same surface vertically downward.

C. Press the triangle slider to the lowest bottom,

D. Rotate the inserter to +90°, move worktable "X", "Y" to allow the three leads of master component to insert in the center of 90° hole of jig.

E. Rotate the inserter 180° in counterclockwise.

F. If the three leads of master component are at the right (or left) side of three holes, not at (or pass) the center:

G. Loosen ⑩ screw, do not loosen it completely, remove �37 (or �35) set screw,

and rotate �35 (or �37) set screw and ⑩ screw in clockwise, press down triangle slider to lowest bottom again, so that the deviation between three leads of master component and three holes is reduced by half .

H. Repeat step C, D, E, to make the three leads of master component at one straight line in ±90°, if not, adjust again.

I. Repeat step C, D, E, if the three leads of master component are above (or below)

the three holes of jig, then you Loosen the screw ㉙ to allow "Y" shaft to

move in negative(or positive) direction, the move distance is half of the error

value, and tighten screw ㉙, repeat step C, D, E, until center point of ±90° is

completely coincide with the center of three leads of master component, if not,adjust again.

J. Rotate inserter to 0° to validate the center point of jig 0° ,if not,adjust again.

Component lead must align with the center hole of jig
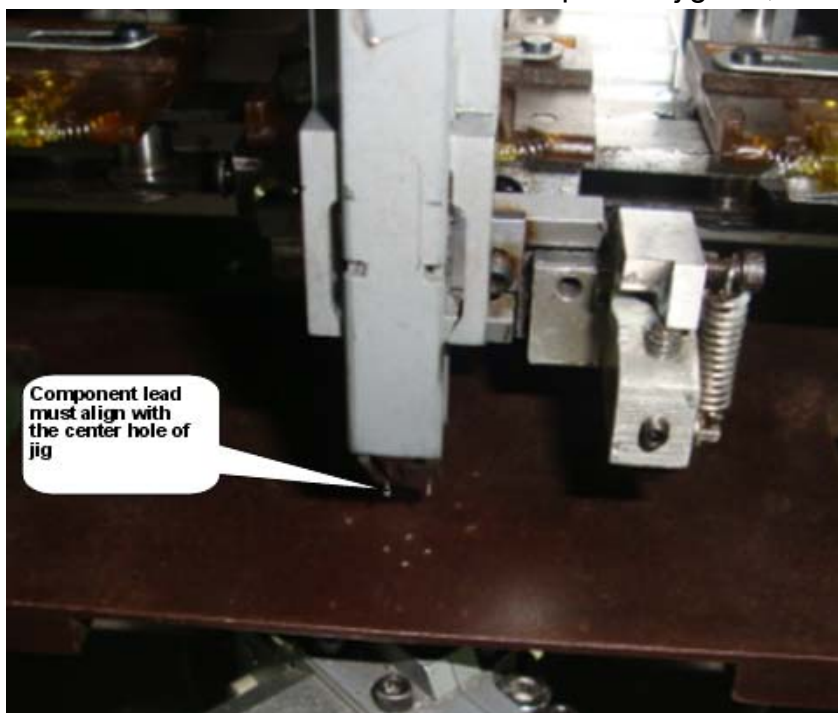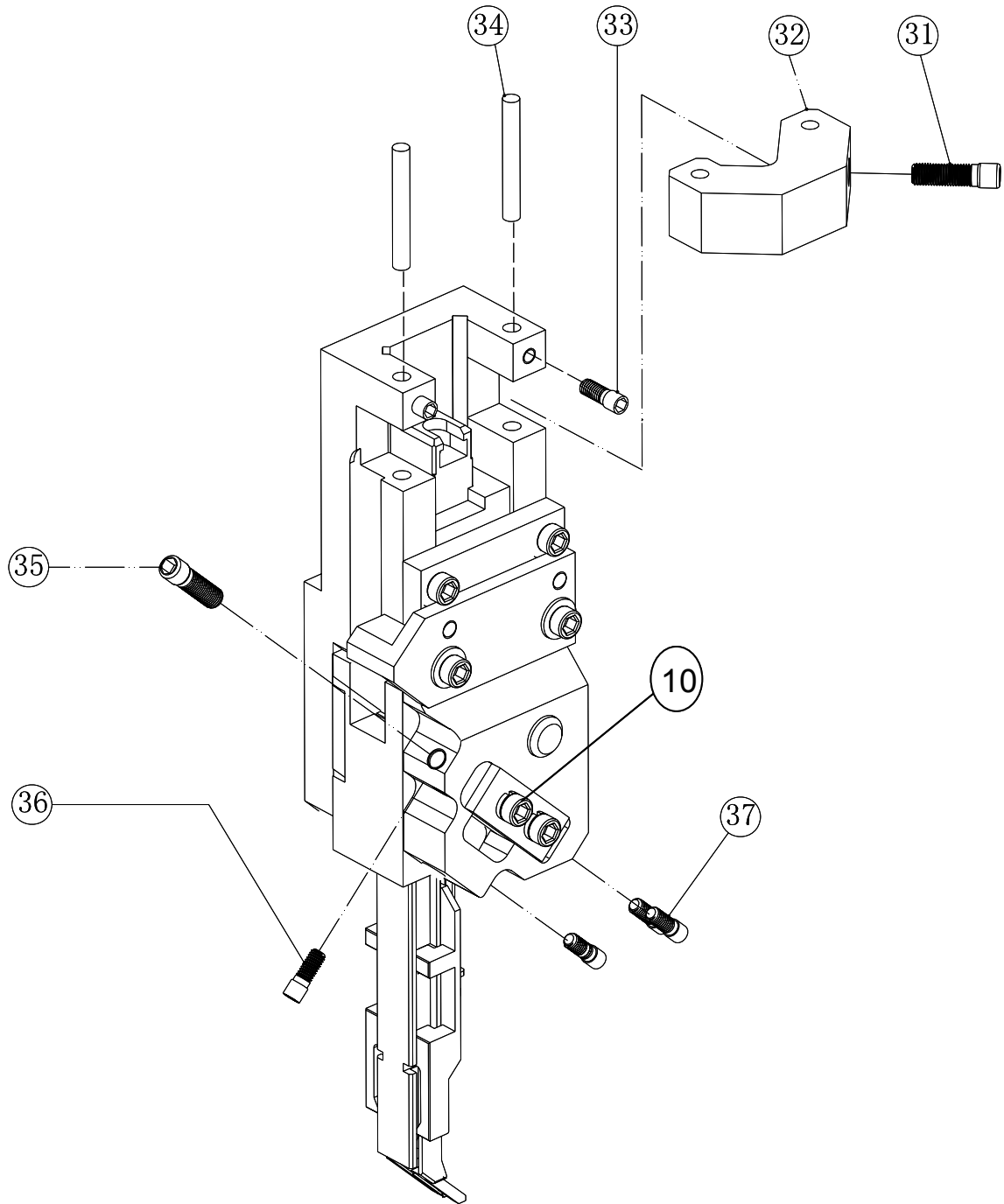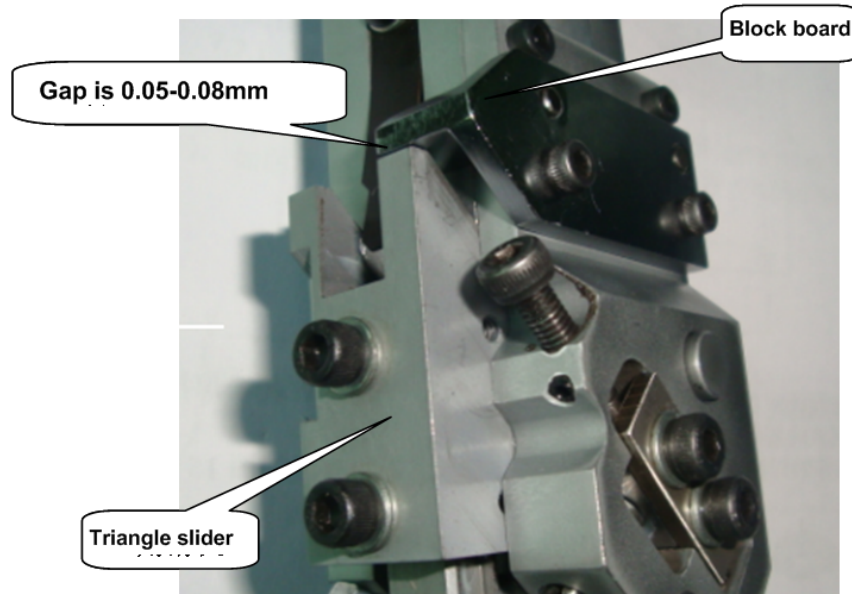
3) Adjust the tightness of ㉘XG3KCJ-13019 triangle slider so that it can move up and down smoothly, and not shake back and forth.

4) The gap between triangle slider㉘ XG3KCJ-13019and protective board ⑥ XG3KCJ-13 is within 0.05mm-0.08mm.

5) Loosen the two screws that connecting triangle slider㉘XG3KCJ-13019 and main pawl㉓XG3KCJ-13017, then you can adjust and move the main pawl right and left. If the main pawl can move more than 2mm, then among the main shaft, insertion head body, triangle slider, main pawl, one is of issues(usually main pawl does not have problem), replace the problematic part.(Attention: when adjust the center point, use this method to adjust, range ±1mm)

6) Insertion head common issue solution.
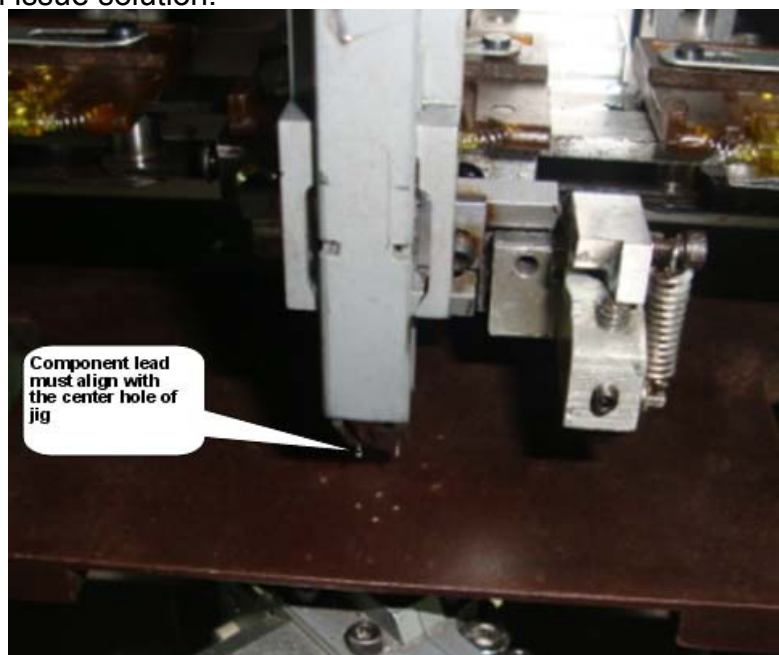
(1) Insertion head main pawl shakes back and forth　Loosen ㊵M3*15 bolt (as picture below), you can loosen or tighten the main pawl by rotating ㊷M4*4 SHCS; to tighten, rotate in clockwise; to loosen, rotate in counterclockwise; when main pawl does not shake back and forth, the triangle slider can move up and down smoothly, then tighten ㊵M3*15 screw.
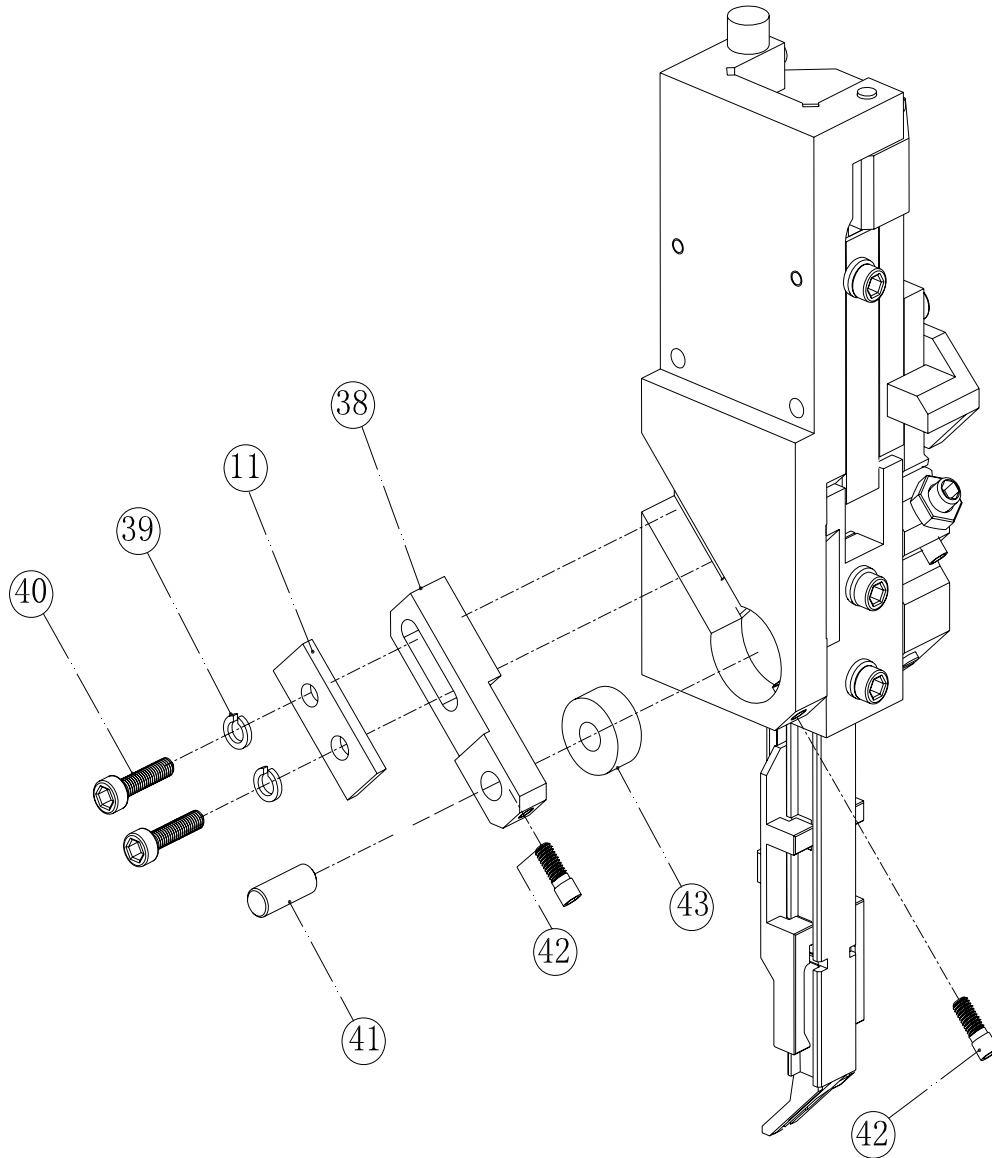
(2) Insertion head main pawl shakes right and left　　Loosen the set screw under ⑭XG3KCJ-13012 eccentric pin (as picture below), you can adjust the right and left tightness by rotating ⑭XG3KCJ-13012 pin, adjust it moderately so that main

pawl can move smoothly and does not shake right and left.
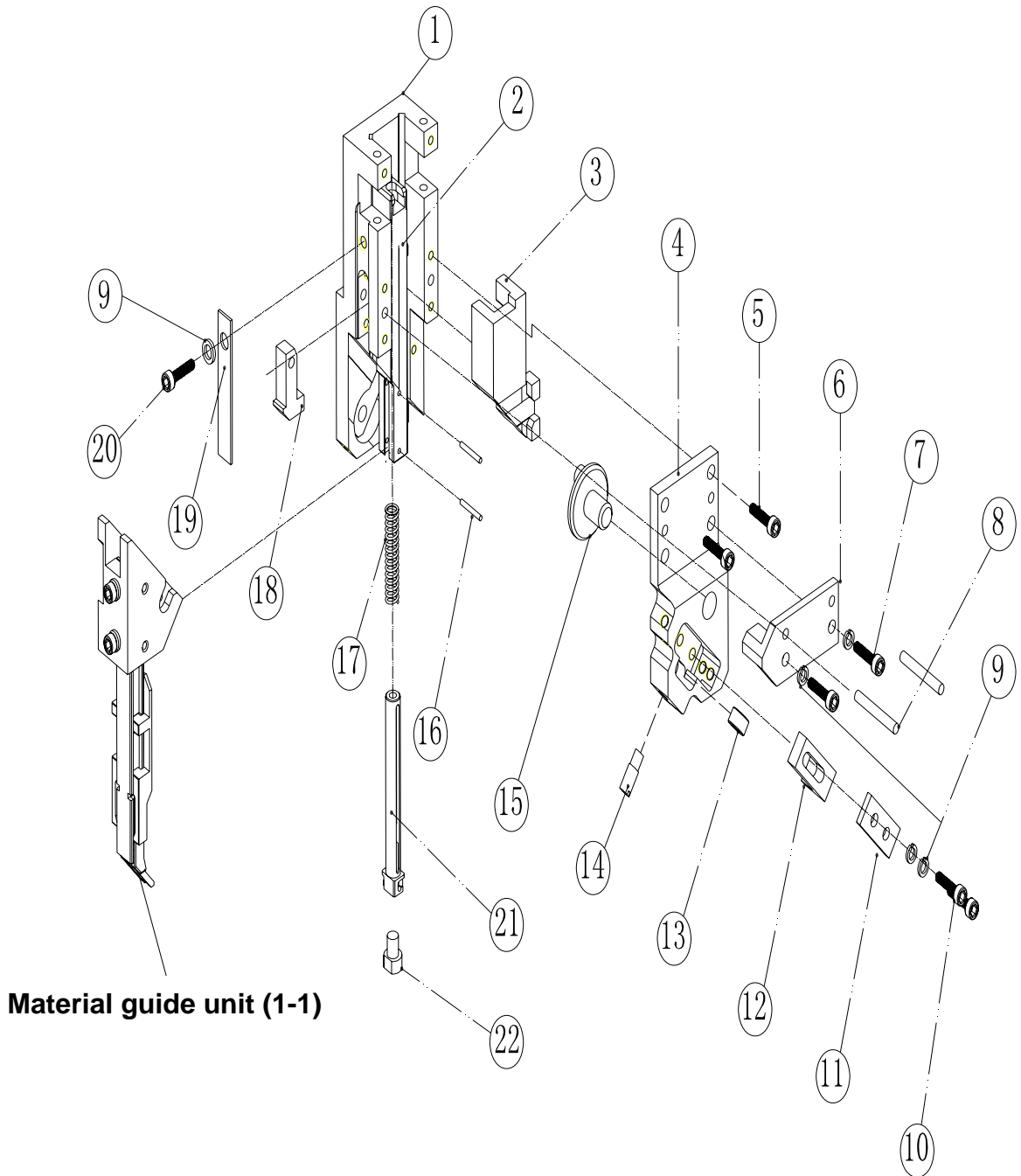
Material guide unit (1-1)

(3) Main pawl can not clip tightly   1) check if main pawl㉓XG3KCJ-13017, left

hand pawl㉖(XG3KCJ-13016), and

right side pawl ㉗XG3KCJ-13018 are worn out, if so, replace.(as picture below)

(4) check the elasticity of ㉕XG3KCJ-13025 spring (as picture below), if elasticity

is poor, replace it.
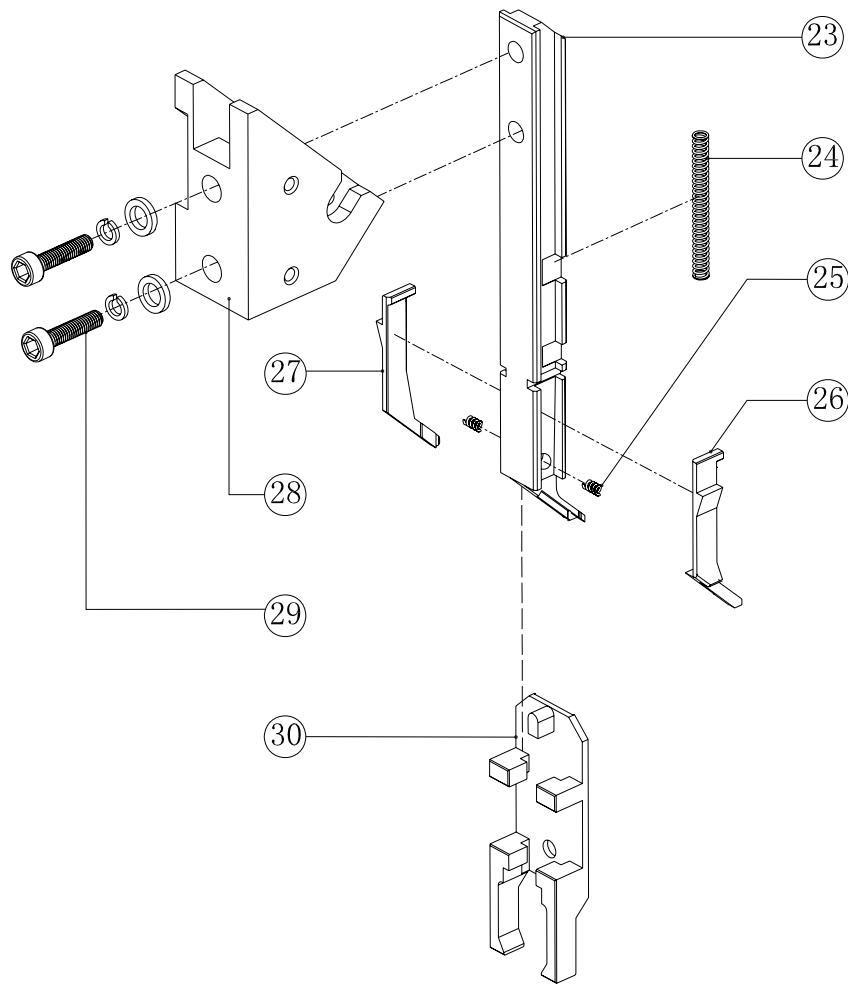
(5) Main pawl can not close　　A, check the elasticity of ㉔ XG3KCJ-13023 main slider spring(see insertion head picture attached in Operation Instruction Manual), if the elasticity is poor, replace it.

B, check if ㉚ XG3KCJ-13005 clamp block(see picture above) is worn out, if so, replace it.

C, if the main pawl still can not close, then the problem will be caused by left side pawl, or right side pawl, or main pawl.

3. Adjust the centering of insertion head and housing.

1) Adjust clinch head 0° .(see picture below.)

(1) Jig is 25mm*25mm right angled isosceles triangle ruler.

(2) Disassemble the waste leg cover of clinch head body. Use"Diagnose" to execute it, place the 90^0 edge of right angled isosceles triangle ruler at the edge of round plate, move X ,Y shaft, let the 45^0 side(bevel edge) of right angled isosceles triangle ruler be parallel 0° with the waste leg cap of clinch head body, then loosen zero position optoelectronic switch and move it from left to right to make the optoelectronic switch indicator light just extinguish, tighten optoelectronic switch, then zero machine for several times to confirm the "Zero" function is normal.
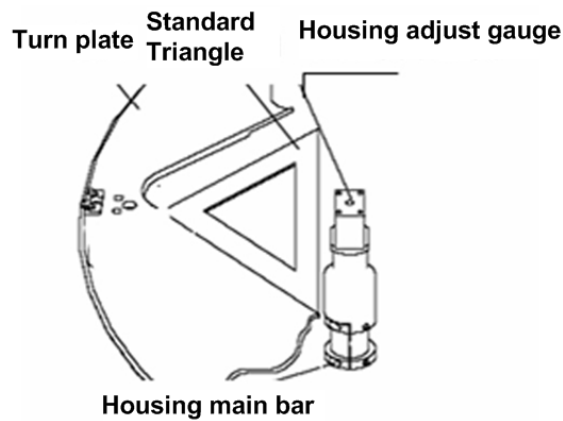
Set angle, use 45° triangle rule
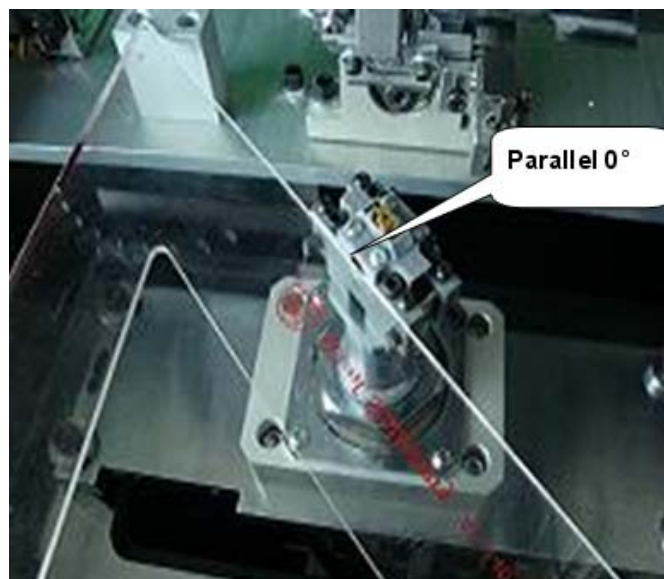
2) Confirm the center point of insertion head is normal, adjust housing to confirm

the clinch head is normal.

　3) Put the master component XG3KDZ-07087 on insertion head main pawl, make the insertion head insert downward, housing goes up,

　4) Adjust the position of clinch head.(see picture below)　Use machine with power on to adjust the center position with 0° and ±90°. It is to aligned the center of three sets of blade of clinch head with the three leads of jig.

The three shear centers of clinch need to be aligned with the three legs of standard component
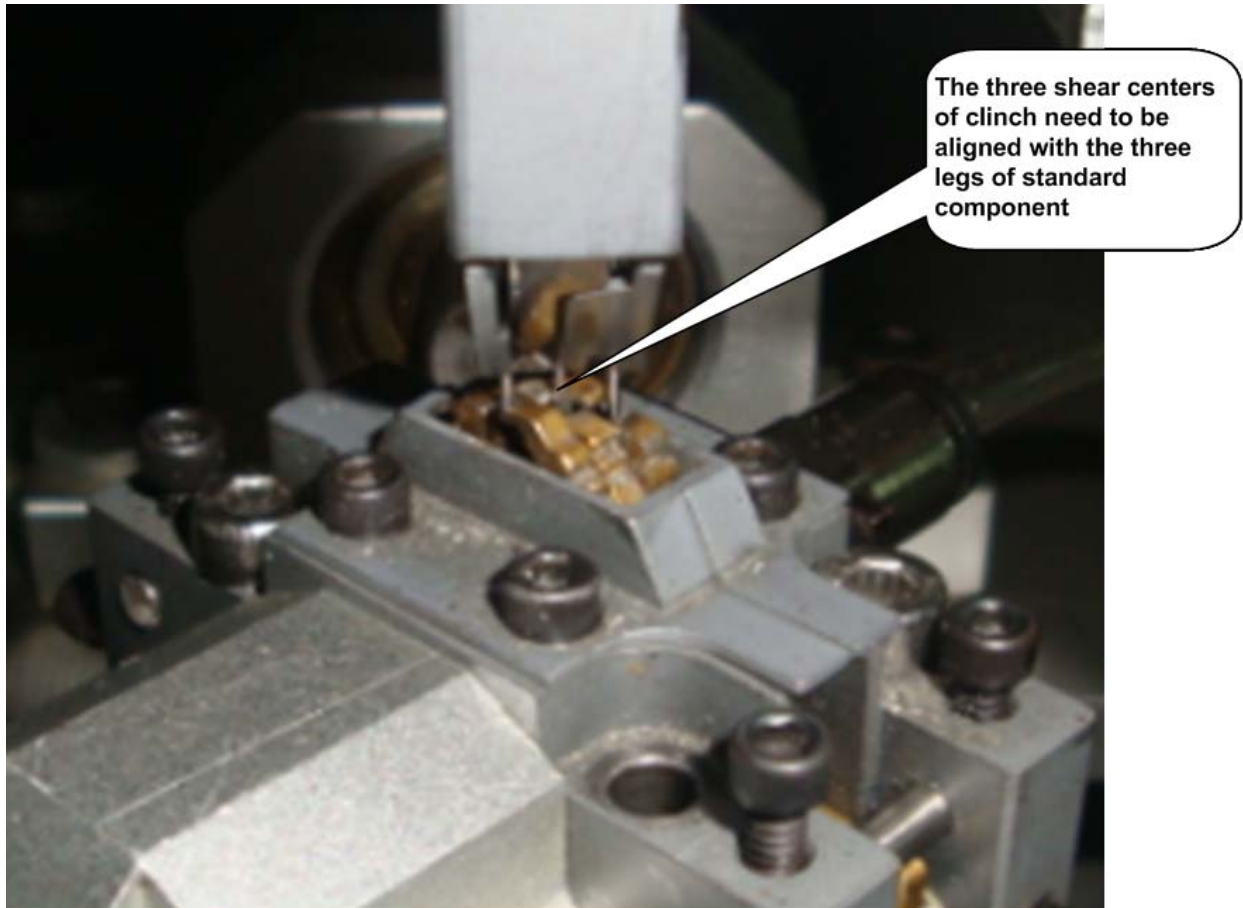
(1)　Loosen the four screws 1 on the ⑨XG3KDZ-07208 clinch base board, then you can adjust the position of clinch head back and forth.

(2)　Loosenthe four screws 2 on the 55 housing locating blockXG3KDZ-07088, then you can adjust the position of clinch head right and left.Adjust centering of housing and insertion head.

(3) after adjustment, zero several times to validate, if correct, then OK, if not, adjust again.
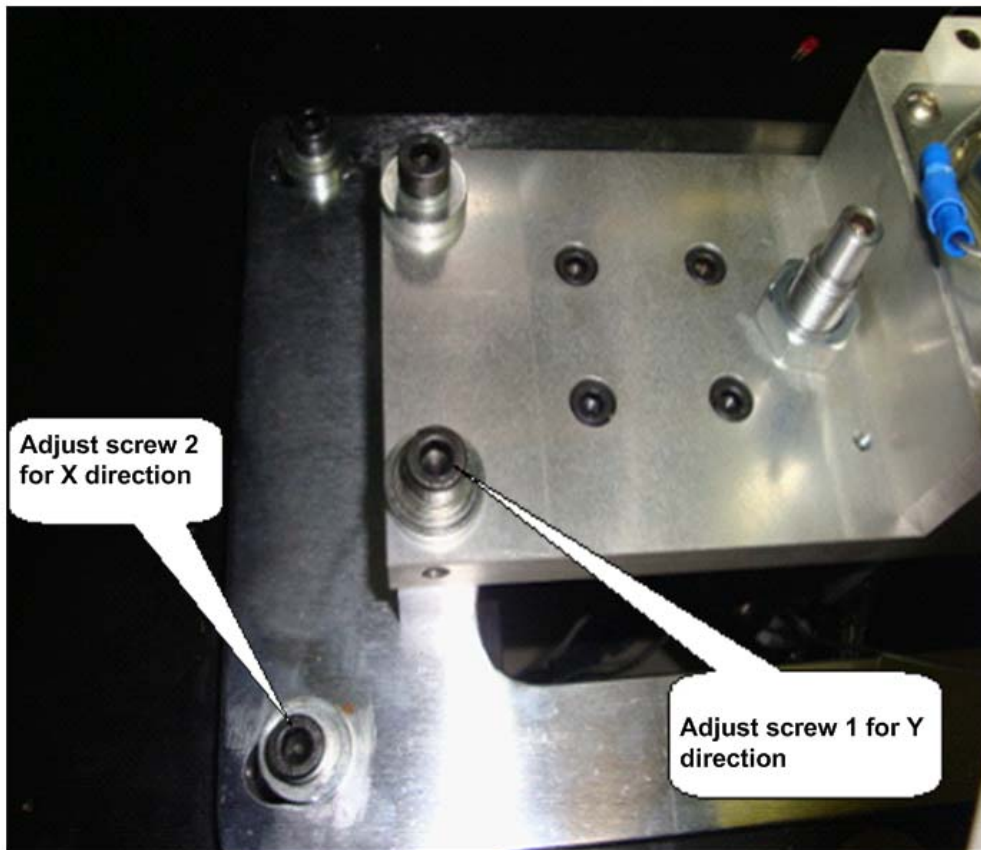
4. Housing Adjustment.

1) Housing height adjustment.(see picture below) Use the dedicated M14 open spanner to loosen M14*1.5 nut ㊺XG3KLS-LM-M14*1.5 on ㊳(XG3KDZ-07213) air cylinder adjusting rod, put inner hexagonal spanner into the hexagonal slot on air cylinder adjusting rod and rotate; If rotate in clockwise, the housing will go lower; if rotate in counterclockwise, the housing will go higher, then adjust the travel distance of ㊵XG3KDZ-07046 air cylinder rod, otherwise it can not reach and clinch, or goes too far.

Attention: usually by tuning the height of housing, the travel distance of ㉕ XG3KDZ-07215 air cylinder rod can be adjusted; if piston travels longer, then housing will be higher; if piston travels shorter, then housing be lower. With this method, you don't need to adjust the travel distance of ㉝XG3KDZ-07048 air cylinder rod again.
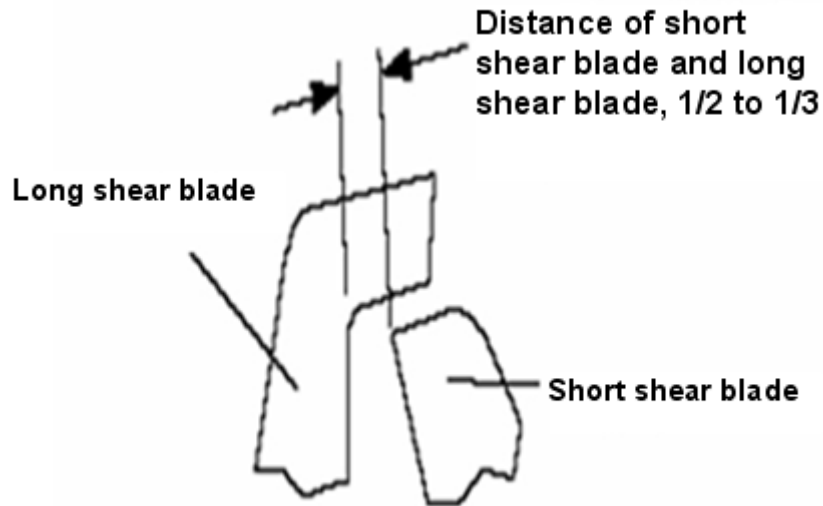
Adjust the gap of dynamic blade and static blade

2) Adjust the travel distance of clinch air cylinder.

(1) Shut off air source, pull off the air pipe and sensor line on ㉝ G3KDZ-07048 air cylinder, loosen and remove the four screws at rear position, then you can take out the air cylinder.

(2) Loosen the nut ㉜ M8 on ㉕ XG3KDZ-07215 air cylinder connecting rod, you can adjust the travel distance. If you rotate the connecting rod in clockwise, the travel distance will be shortened; If you rotate the connecting rod in counterclockwise, the travel distance will be prolonged. Adjust standard: air cylinder connecting rod top touches with the clinch head ① XG3KDZ-07099 adjusting housing connecting rod 5MM away from the end. After adjustment, fasten M6 nut.(usually the effective length of connecting rod is 17.5-17.8mm.)

(3) Adjust the limit of shear blade, loosen the set screw ⑥ that fixing ①

XG3KDZ-07099 with ⑱ XG3KDZ-07098. Rotate the adjusting housing ② XG3KDZ-07093, rotate in clockwise, the blade close gap will be bigger; rotate in counterclockwise, the blade close gap will be smaller. The coincidence of each set of blade is within 1/2-2/3.
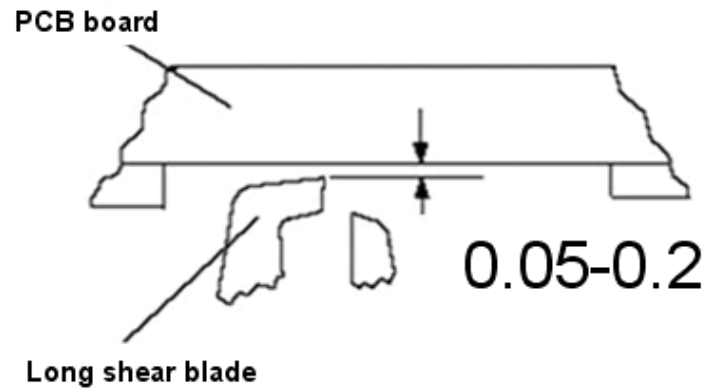
Gap between clinch and PCB 0.05-0.2mm
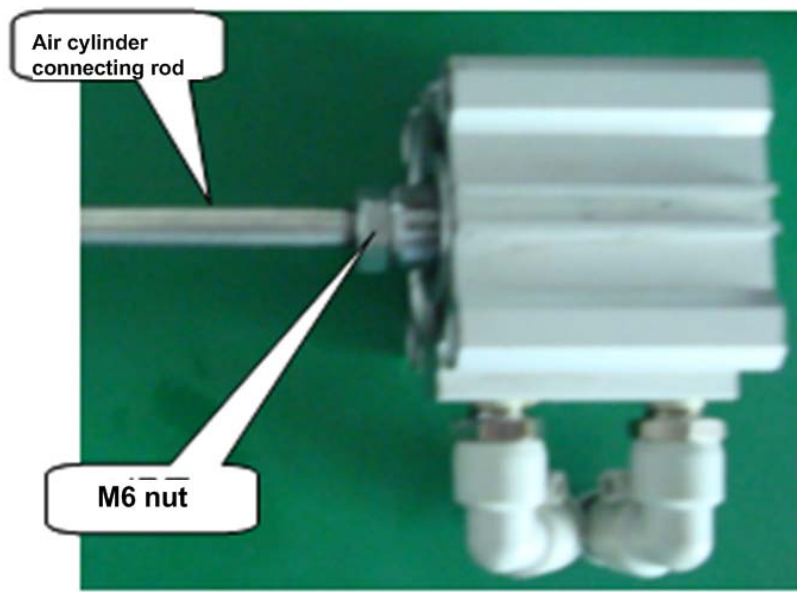
(4) The distance between clinch shear and PCB is 0.05-0.20mm

3)Clinch head common errors solutions.

(1) lead is not cut off   A. clinch blade is worn out, replace clinch blade.

B. Clinch travel distance too short, loosen M6 nut (see picture above), can adjust the travel distance.

C. There is waste leg on clinch head, clean clinch head(see picture below).

(2) sensor error   A. use universal meter to test the voltage see if it is normal.

B. use universal meter to test if clinch head is grounded.

C. The gap between sensor rod and clinch blade is too small or too big, loosen ④XG3KDZ-07037 screw (see picture below), you can rotate ⑧XG3KDZ-07025 sensor rod to adjust the gap between sensor rod and clinch blade (0.01-0.10mm).
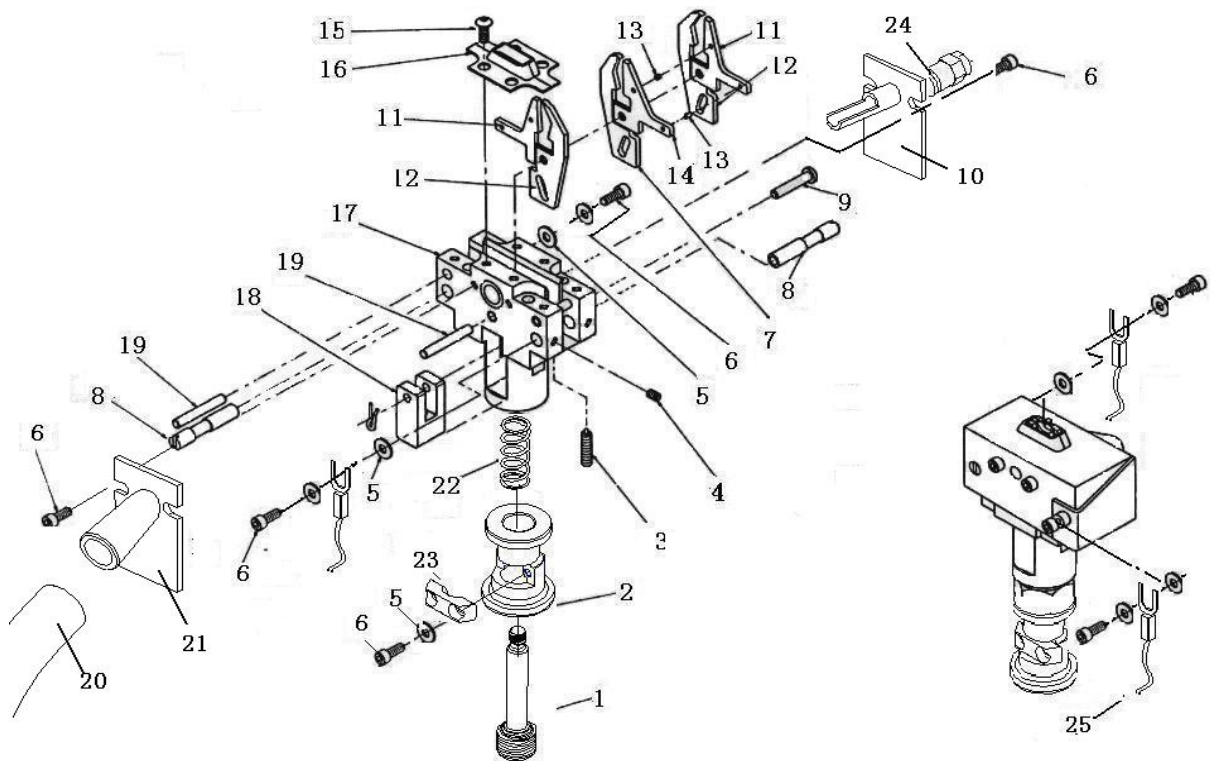
5. CTA Adjustment.

1) Adjust curing Y-shape material pusher ㉒XG3KSL-04057. Adjust standard: the gap between curing Y-shape material pusher bottom surface and chain clip is within 0.15mm-0.25mm. Loosen the set screw on curving Y-shape material guide, adjust curing Y-shape material pusher up and down, after the up and down standard is met, fasten the set screw.
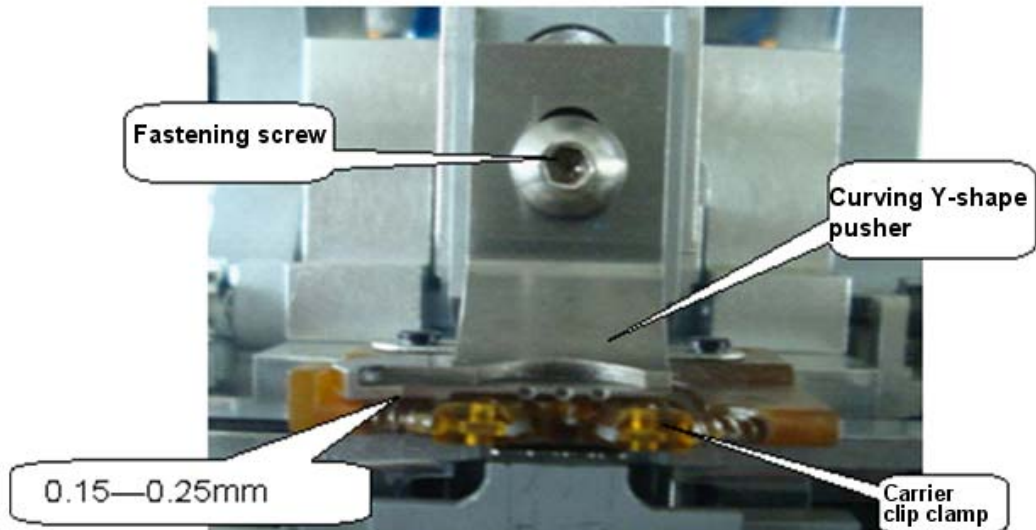
2) Adjust the travel distance of CTA to insertion head.

(1) open the "Diagnose" on operation interface.

(2) select component with lead diameter of 0.36mm-0.5mm, and clip the component on the chain clip in front of curing Y-shape material pusher.

(3) Use the dial meter top to touch the back of insertion head main pawl, and press the meter top slightly to make the meter reading within 0.25mm-0.8mm, then zero the meter indicator.

(4) Under "Diagnose", use "material transfer" in "general output signal" to create CTA, adjust the control screw of CTA travel distance, make the dial meter indicator move between 0.025mm-0.05mm, .then fasten the control screw of travel distance,exit from "Diagnose".
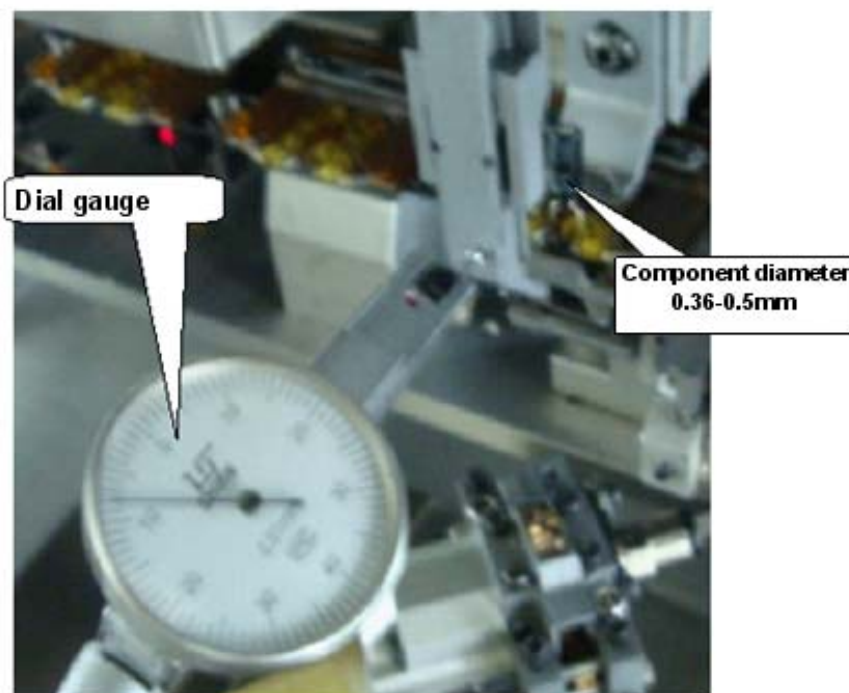
3) Adjust the return stroke of air cylinder.

The proper standard of CTA return stroke is: the gap between material guiding slot ⑳ XG3KSL-04055 and chain protective block ㉛ XG3KSL-04027 is 0.52mm, it can be achieved by adjust the stretch length of CTA air cylinder optical axis and movable connector. The purpose is to make sure the material guiding slot and chain protective block will not hit each other, to avoid damage of curving hook.
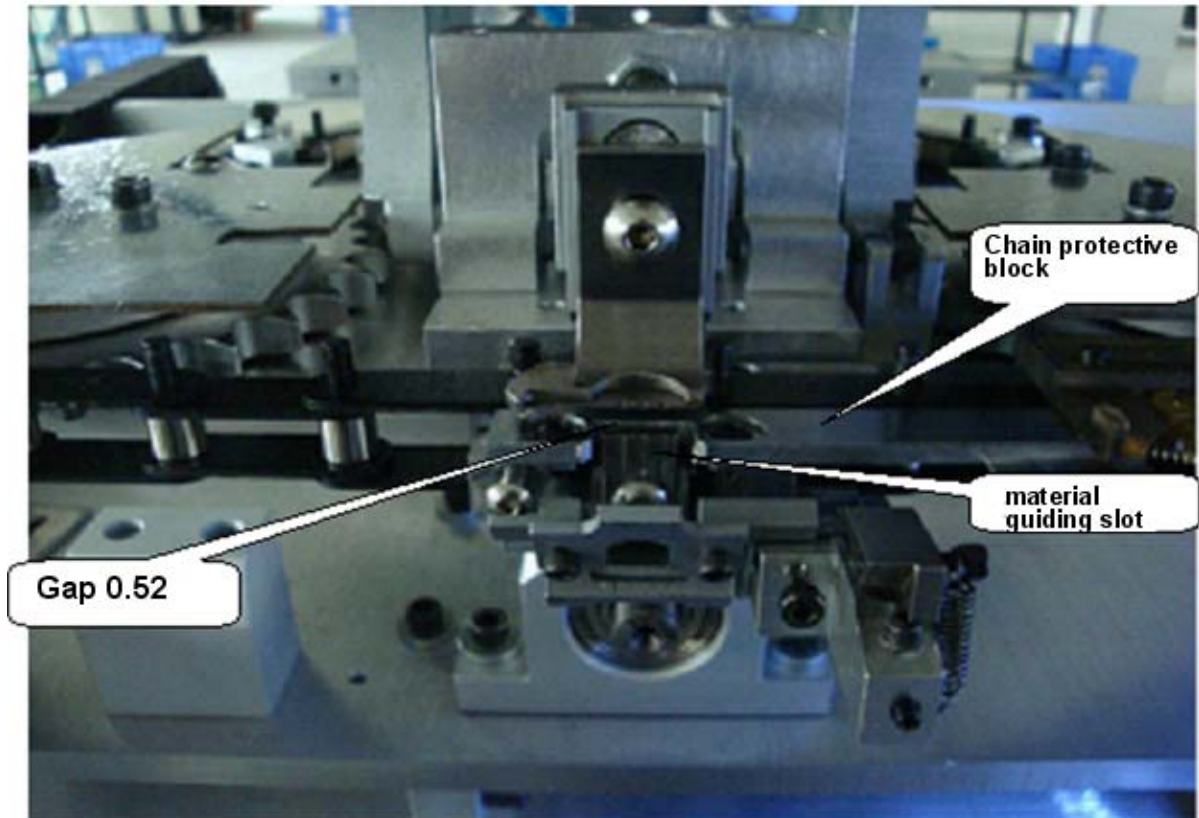
4) Adjust the height of CTA material guiding slot ⑳ XG3KSL-04055 and material clip clamp ㉖ XG3KSL-04056.

First supply air to CTA air cylinder, use "Diagnose" to let CTA push out, align the height of material clip clamp and material guiding slot. If the height is not adjusted properly, it will cause problem of material dropping during work.
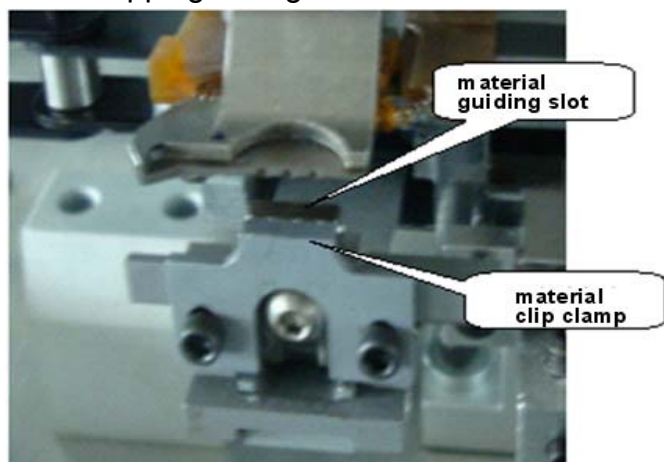
5) Adjust CTA material clip.

(1) make machine at standby status, but need to shut off the air supply.

(2) install the master component XG3KDZ-07087 on material clip.

(3)Pull out CTA slowly, and see if CTA material guiding slot ⑳ XG3KSL-04055,

material clip clamp ㉖ XG3KSL-04056 and curing Y-shape material pusher ㉒

XG3KSL-04057 can all touch the lead of master component XG3KDZ-07087, if not,

adjust main contact screw, to make the three part touch the master component all

together, then fasten screw. Thus, the adjustment of CTA material clip is done.
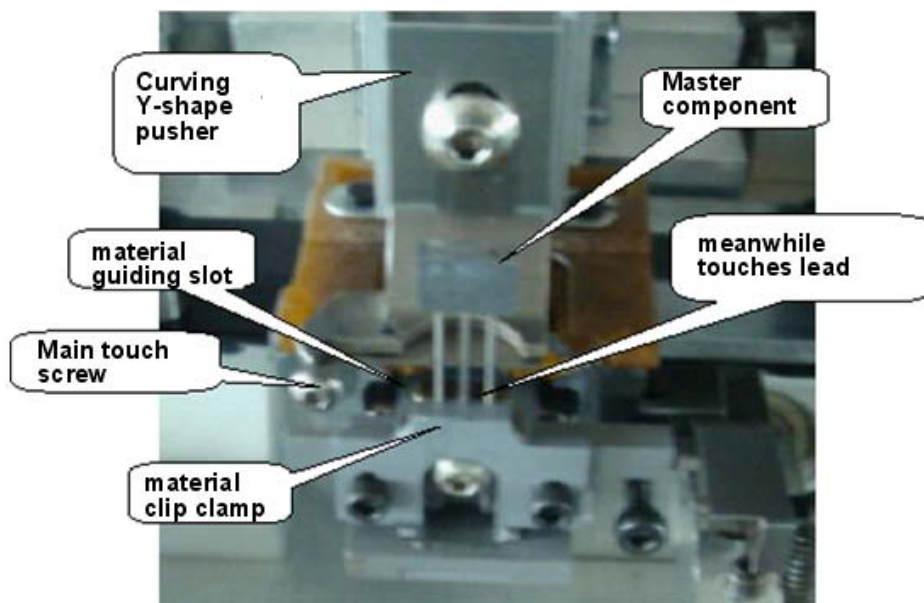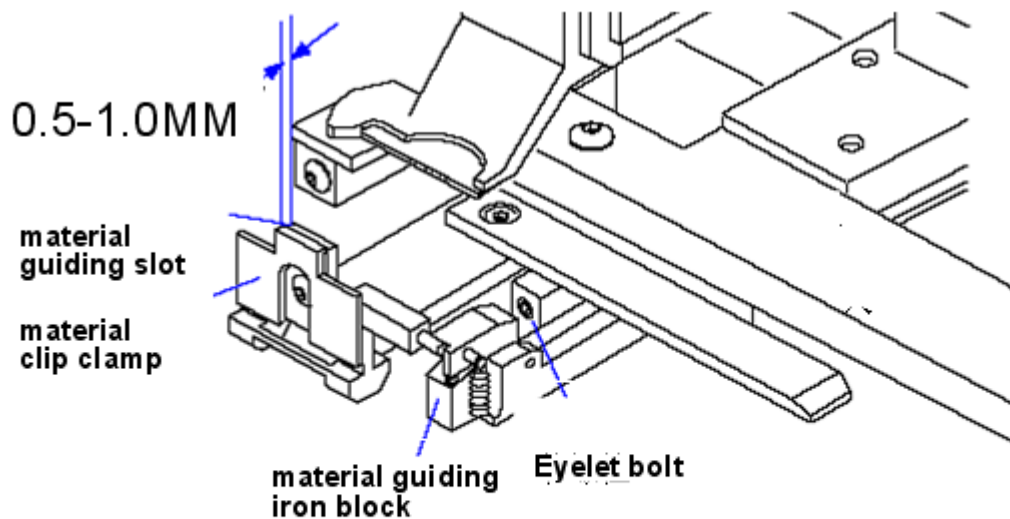

6) Adjust the centering of CTA and chain.

(1) after adjusting the chain position inspection optoelectronic switch, loosen the set

screw at the two sides of chain wheel tension block (1mm gap is adjustable).

(2)then,adjust the right side chain wheel tension block to make the gap between

curing Y-shape material pusher ㉒ XG3KSL-04057 and chain clip is within

0.13-0.2mm,namely, when the inner side of material guider left edge touches with

the chain clip left edge, push the chain clip to left strongly, the gap between two

contact surface is within 0.6-0.8mm. But adjusting chain wheel tension block will

affect chain tension a lot, so you need to adjust tension again. Then adjust the gap

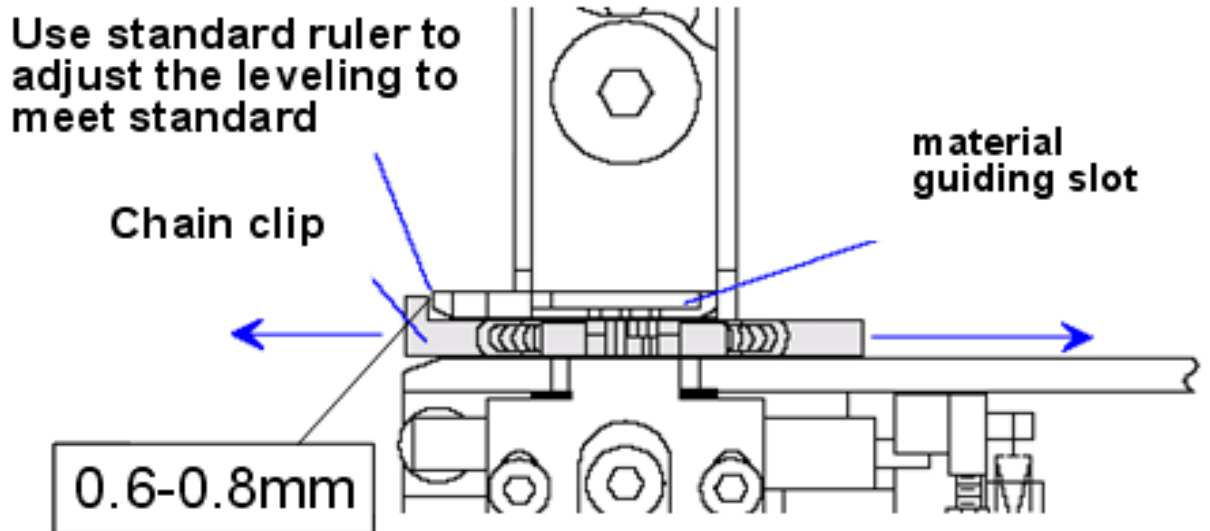between CTA and chain clip again, repeat several until the proper gap is met.
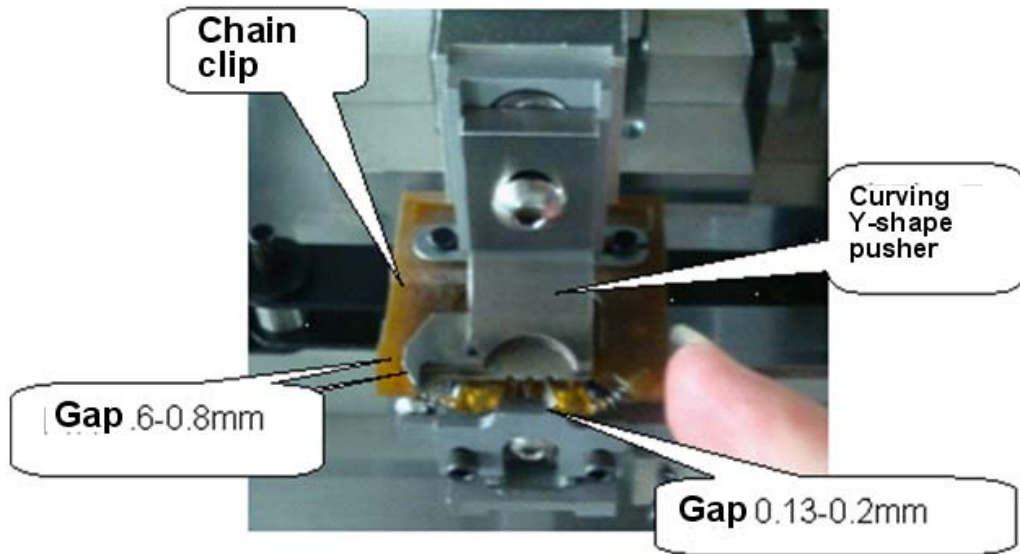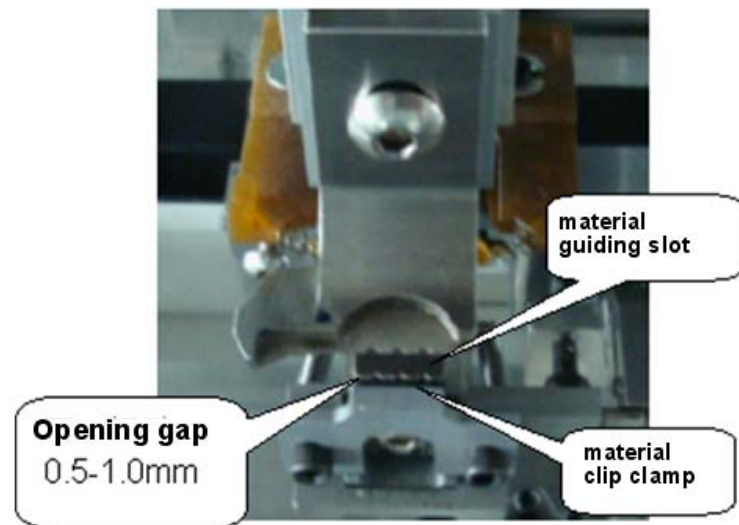
7)Adjust the position of CTA material clip holder.

(1) Turn on machine power, use "Diagnose" to push out CTA.

(2) Loosen the set screw, and move screw to make the gap between material clip clamp ㉖ XG3KSL-04056 and material guiding slot ⑳ XG3KSL-04055 within 0.5-1.0mm, then fasten the material clip holder. Then exit from "Diagnose", done.

.

Adjust gap of Latch and bottom in program : 0.5-1.0MM

Use standard ruler to adjust the leveling to meet standard

Chain clip

material guiding slot

0.6-0.8mm

Adjust gap of CTA and material clip   0.6-0.8mm

material guiding slot

Opening gap
0.5-1.0mm

material clip clamp

8) Adjust air cylinder sensor.

(1) Adjust the return stroke of sensor. Make air cylinder retract to the bottom under the force of air pressure, then, loosen the set screw of sensor1, then move the sensor from left to right slowly, once the sensor indicator light is on, stop moving immediately, and fix sensor.

(2) Adjust the stroke of sensor. First use "Diagnose" to push out CTA, loosen the set screw of sensor2, then move the sensor from right to left slowly, once the sensor indicator light is on, stop moving immediately, and fix sensor.
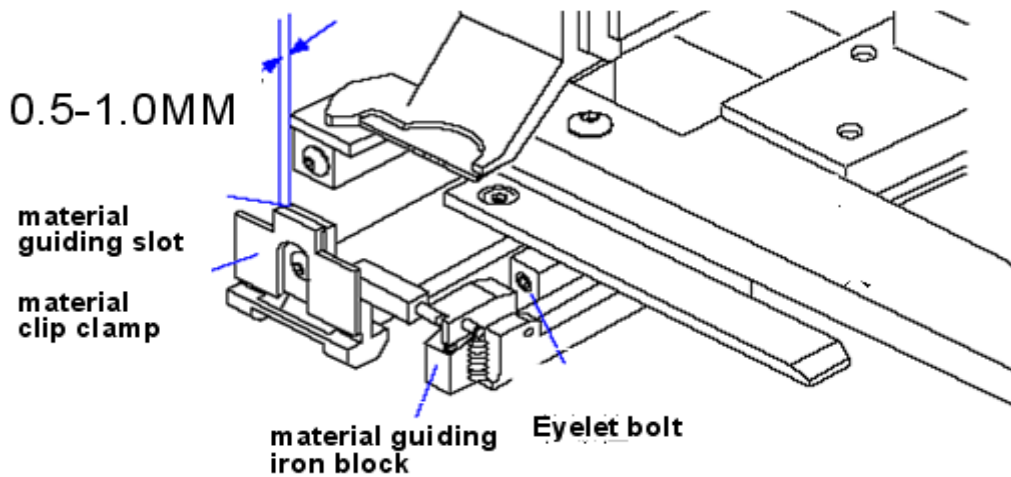
After the sensor is fixed for first time, let air cylinder move several times repeatedly, and check the if the sensor is at the optimum position, if not, adjust and fix the sensor again.

(3)Adjusting valve can adjust the air pressure flow rate to change the rigidness of CTA. Rotate the valve in clockwise, the rigidness will be weaker; rotate in counterclockwise, the rigidness will be stronger. After adjustment., fasten the locking screw.
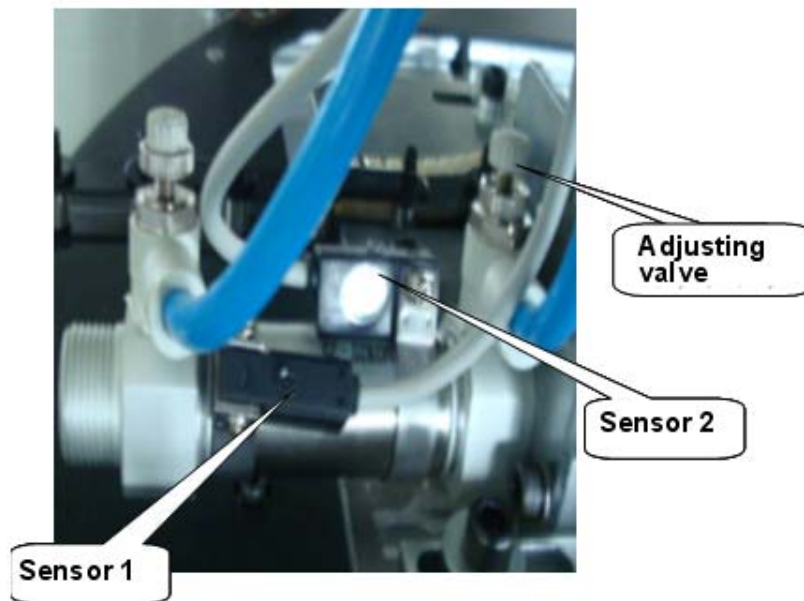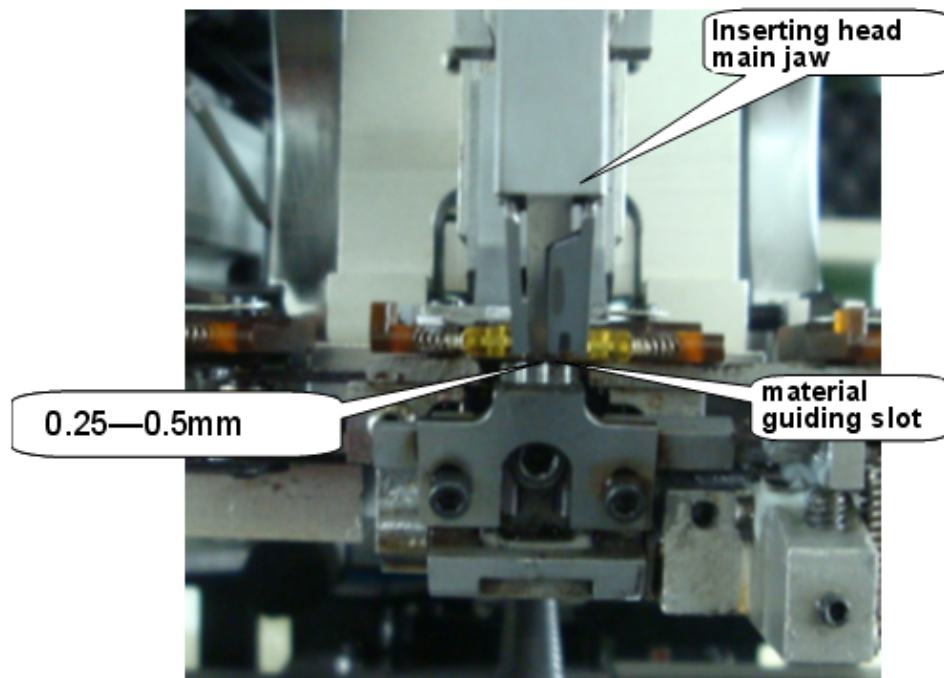

6. Adjust the height of CTA and insertion head.

First, make sure the triangle slider is pressed to the lowest bottom, then keep the distance between ㉓ insertion head main pawl XG3KCJ-13017bottom and the top surface of ⑩ CTA material guiding slot ⑳ XG3KSL-04055 within 0.25mm～0.5mm (chain clip bottom surface and insertion head main pawl bottom surface must be aligned in one surface), and put in filler gauge; Open "Diagnose" in tool bar, then adjust the position of H shaft zero position inspection sensor piece, first loosen the set screw of sensor piece, rotate the sensor piece from up to bottom slowly to make H shaft original point optoelectronic switch indicator light extinguish just right (also in "Diagno" time of H original point just turns to low level), then fasten the set screw.(see picture below) After machine returns to zero position, the chain clip bottom surface and insertion head main pawl bottom surface are aligned in the same surface.

0.5-1.0MM

material guiding slot

material clip clamp

material guiding iron block

Eyelet bolt

Adjust gap of Latch and bottom in program : 0.5-1.0MM

Inserting head main jaw

0.25—0.5mm

material guiding slot

7. Adjust Centering of CTA and insertion head.

1) Set machine at standby status.

2) Install master component XG3KDZ-07087 on insertion main pawl.

3) Loosen the three set screws that one on top and two at bottom, then rotate screw to make the two leads of master component in the two parallel slots of material guiding slot, fasten screw.
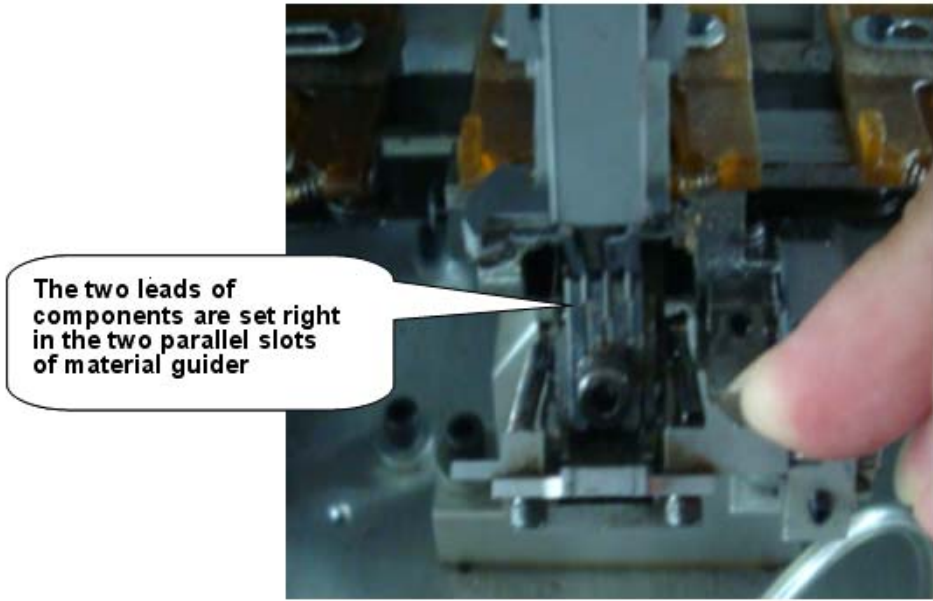
The two leads of components are set right in the two parallel slots of material guider

Use standard ruler to adjust the leveling to meet standard

material guiding slot

Chain clip

0.6-0.8mm

Adjust gap of CTA and material clip 0.6-0.8mm

material guiding slot

Opening gap 0.5-1.0mm
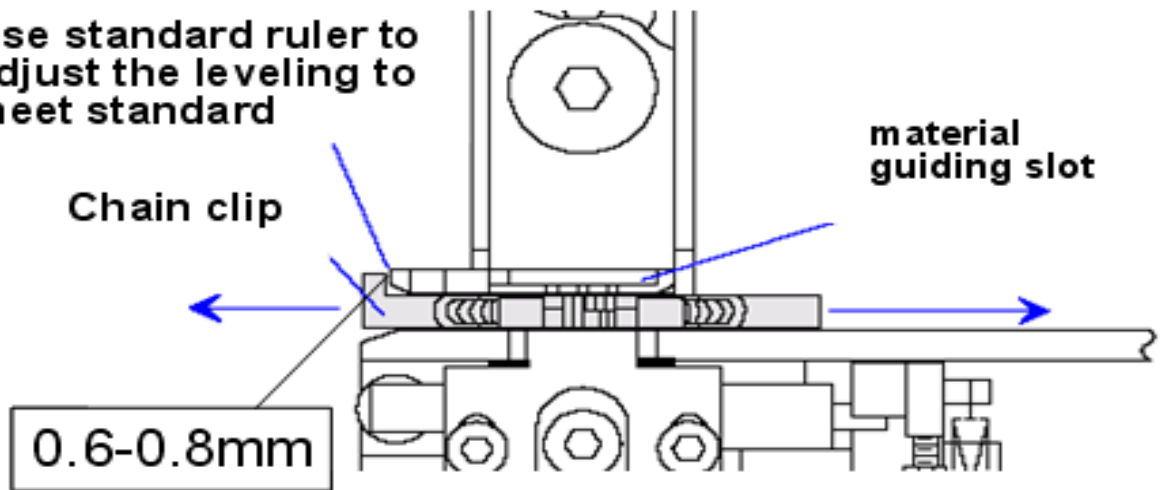
material clip clamp
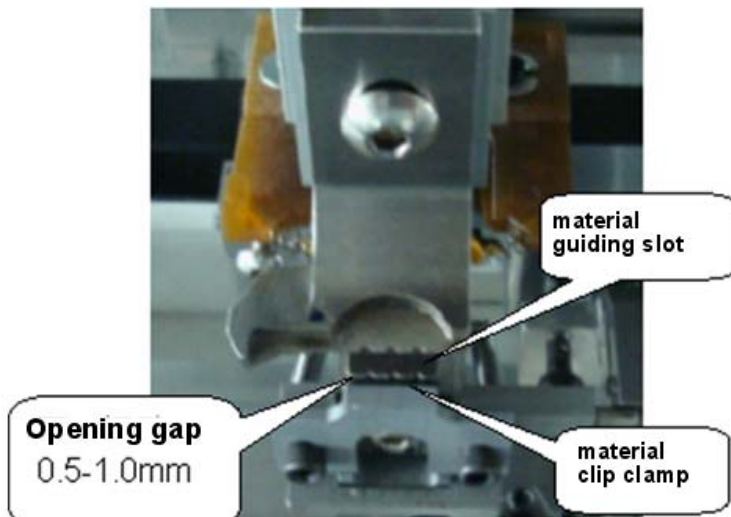
8. Adjust chain tension.

  1) The proper chain tension standard: use pressure meter top end to go against the center position of chain between tension adjusting chain wheel and CTA left hand chain wheel(usually tune the middle gear rack, one of the three gear racks, fasten the screw, chain will be loose, loosen the screw, chain will get tight).

2) First loosen the screw on locating housing of tension adjusting chain wheel(as picture below), when need to increase   tension, you need to move locating housing backward slowly; otherwise, forward. After adjustment, need to test again, if the standard is not met, adjust again.
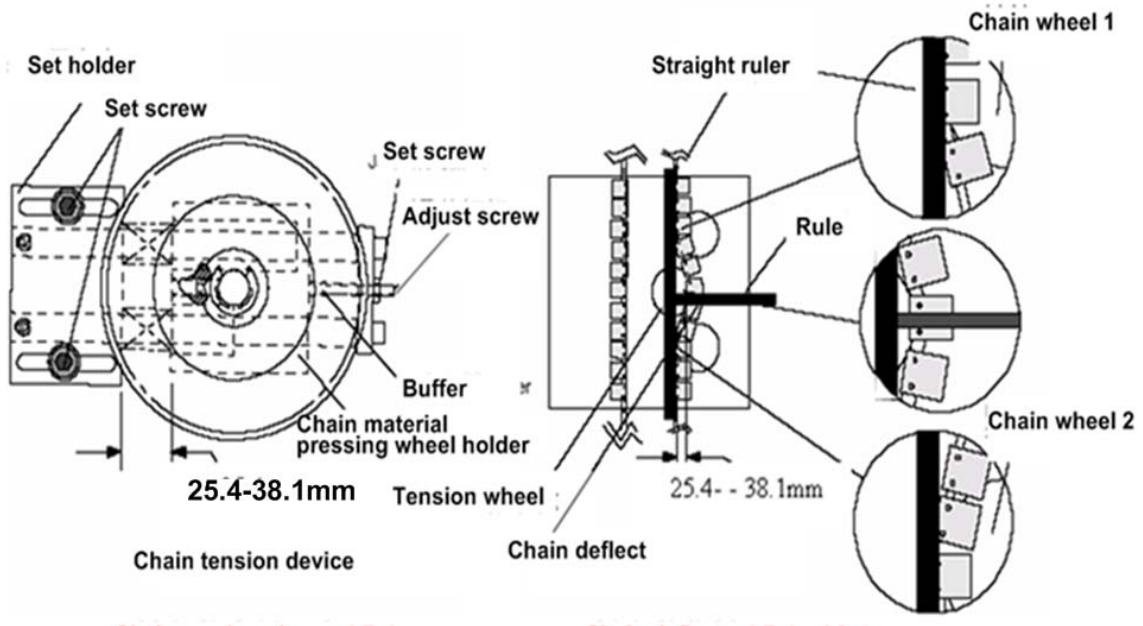
9. Adjust CTA chain protective block.

First set the machine at standby status, then install chain protective block, and make the gap between it and chain 0.2mm. And make sure the gap between chain protective block and three-slot material transfer piece no less than 0.25mm. If the standard is not met, need to adjust CTA air cylinder travel distance again.

10. Adjust cut tape station.

1) Adjust the position of chain and cut tape station.

(1)When machine chain is at normal zero position, loosen the four screws on ⑮ connecting block XG3KJL-09002, you can adjust the cut tape station right and left back and forth.
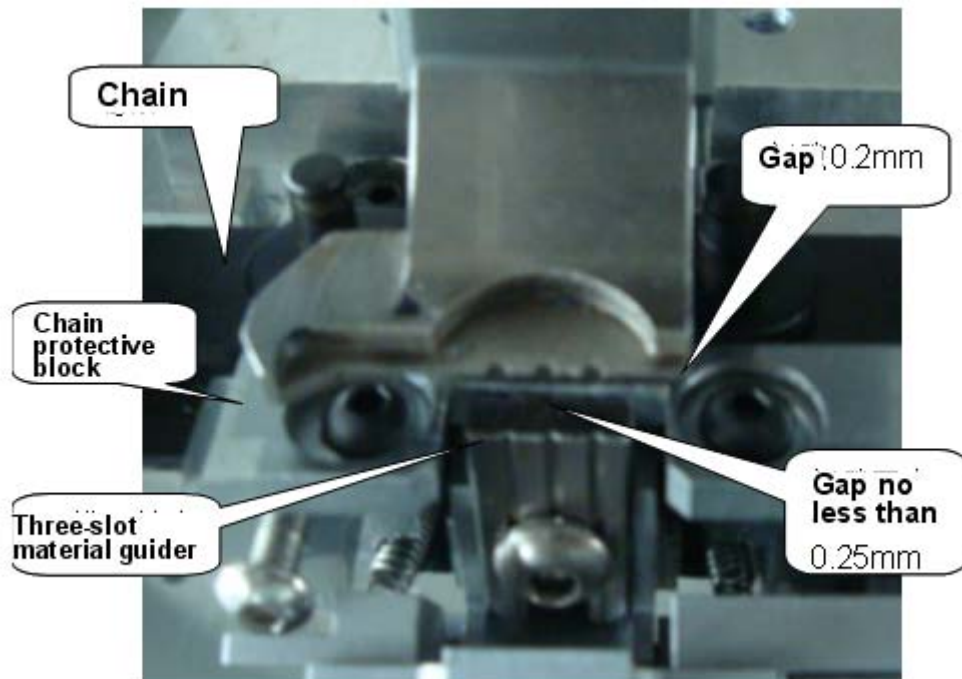
Picture A

(2) Shut off machine air source, pull out half of tape station slider(i.e, make air

cylinder to stretch out 1/2 of travel distance), adjust station right and left to make its vertical center axis is vertical with chain, and center of tape station straight fork ㊳ XG3KJL-09025 is aligned with chain clip center.

2) Adjust tape station itself.

(1) The coincidence of tape station small shear blade and big shear blade is at 2/3 of big shear blade sink slot, adjust air cylinder piston rod. Then　loosen ㉜ XG3KJL-09018 pressing block, and adjust ㉞ XG3KJL-09017 adjusting block, to make the gap between straight fork and big shear blade 0.1mm.

After component lead is cut, there is flash: replace tape shear blade ⑬ XG3KJL-09023 big shear blade.

(2) After component lead is cut, lead is long or short: tape station is not centered with chain clip,　loosen the four screws on ⑮ XG3KJL-09002 connecting block, you can adjust it right and left, or material tape is too high, change material.

(3) After component lead is cut, there is tape paper on lead: replace the spring on ㊳ XG3KJL-09025 spring and ㊲ XG3KJL-09026.

(4) Component lead can not be cut off completely: maintain air cylinder and its electromagnetic valve;

Check if bearing ② XG3KGZ-03080 is against chain clip;

Loosen screw of pulley bolt㊼ XC3KJL-09003, you can adjust the bearing ② XG3KGZ-03080;

Check whether the gap between㊼ XG3KJL-09003 material baffle connecting block and body is 0.75mm.
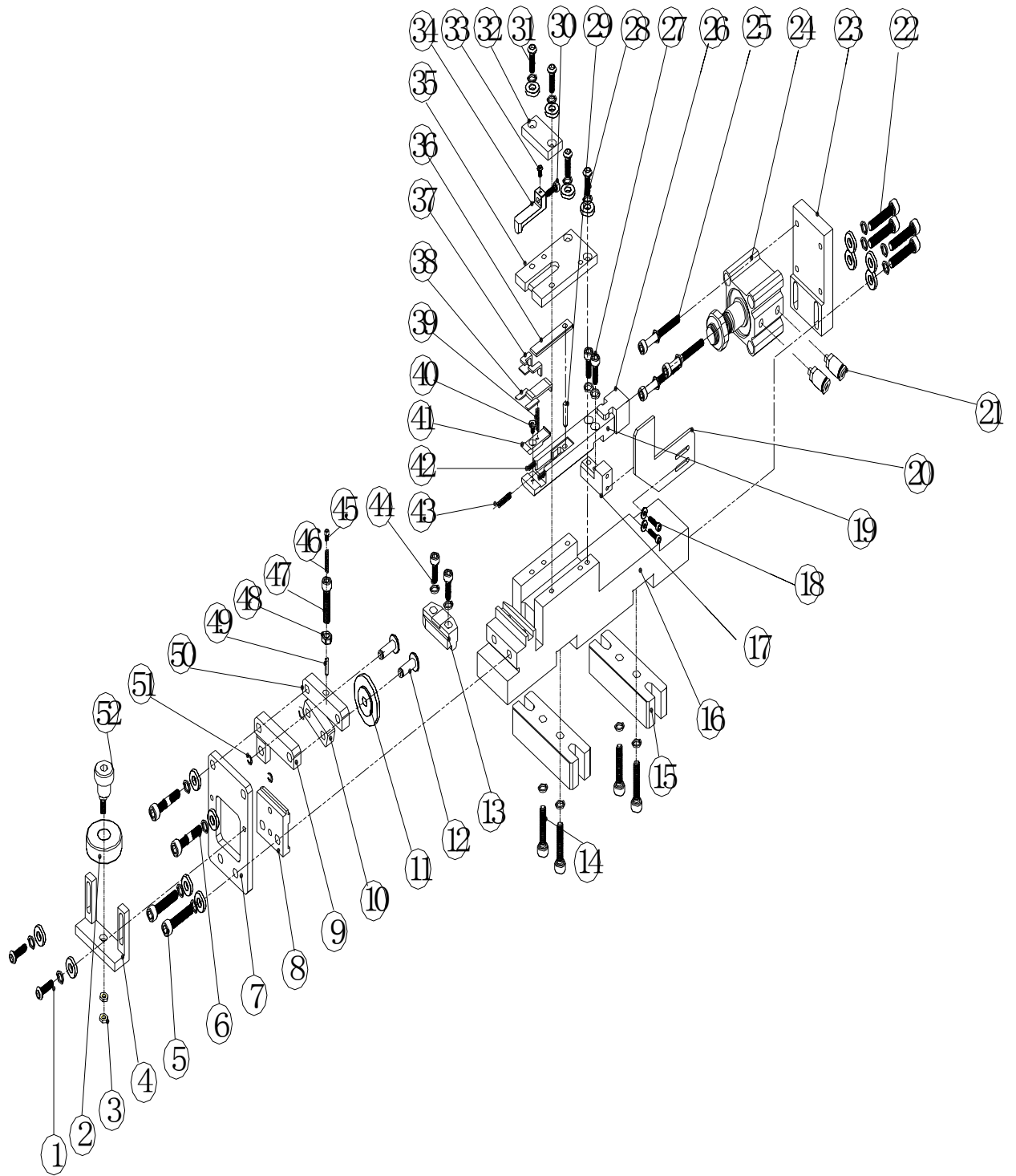
11. Adjust the position of dispensing head and chain.

1) After machine zeros, CTA, insertion head and chain are at normal position, loosen the set screw of dispensing head, you can adjust the position of dispensing head right and left.

2) Shut off machine air source, use hand to push out dispensing head fork piece to make its left side touch with the left edge of chain clip baffle, then use hand to push the chain clip to the limit position at left hand, and see if the gap is changing within 0.6mm-0.8mm when the two edges just touches with each other, if not, adjust according to method mentioned in 1), and fasten screw.(see picture below)

3) When loading 2.5 component on dispensing head, subject to the two left lead slot.
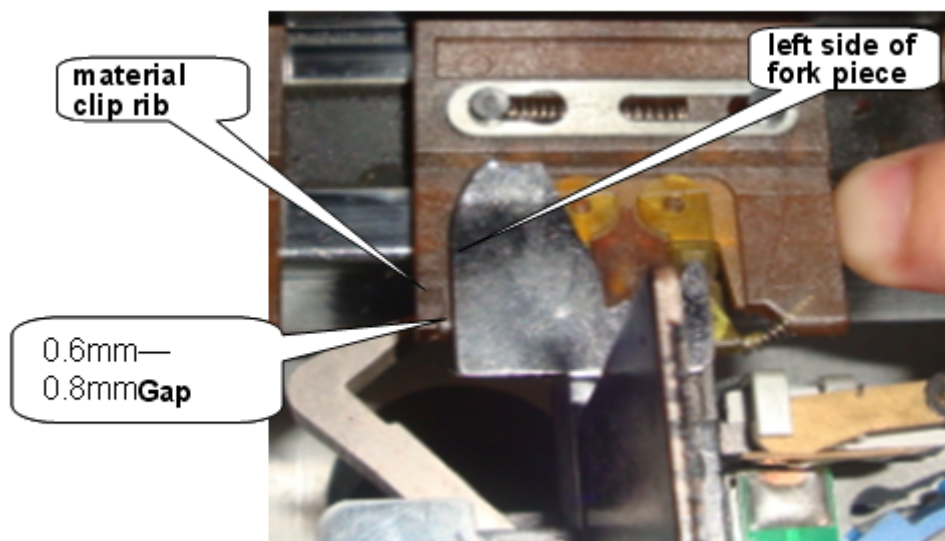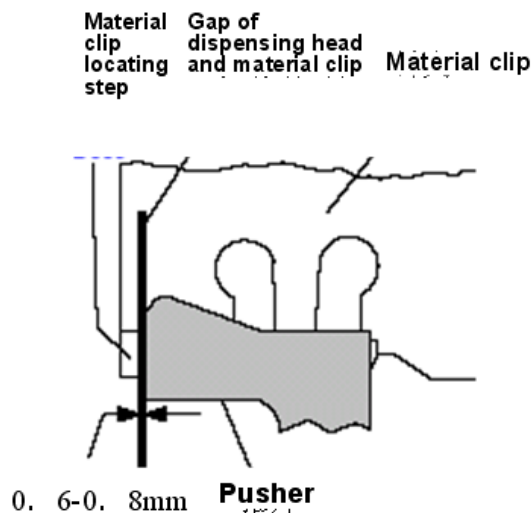
12. Adjust position of chain and waste leg shovel device .

1)When machine chain is at normal zero position, loosen the screw of material

shovel material shovel on ②air cylinder locating housing2 (XG3KJL-09042), you can adjust back and forth, loosen the screw on ③material shovel installation board(XG3KJL-09053), then you can adjust right and left.(as picture shows)
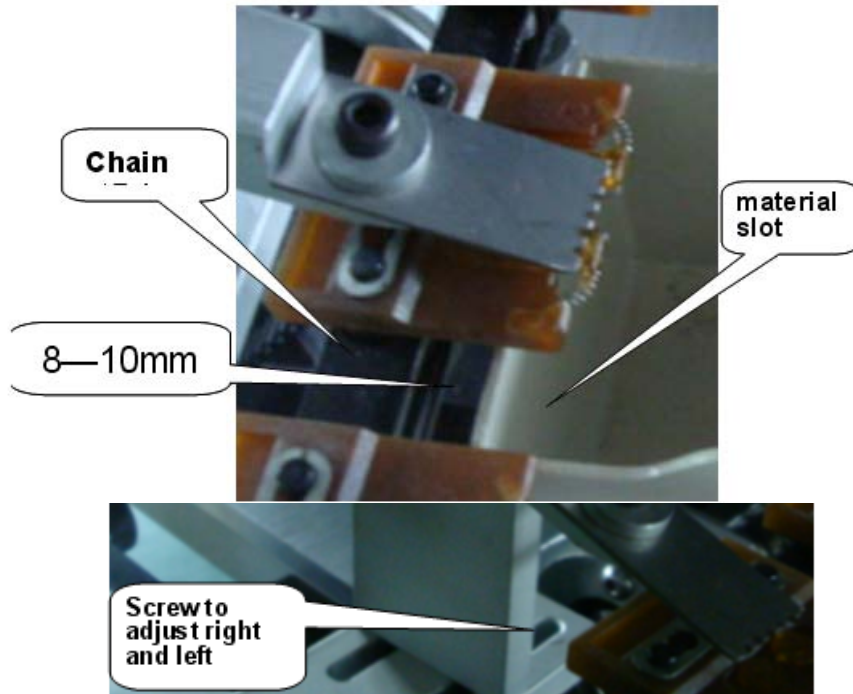
2) Adjust the position of ⑥ material slot and ⑦ material slot locating housing, back and forth, right and left to make the ⑤ material shovel piece(XG3KJL-09044) center is aligned with chain clip center.
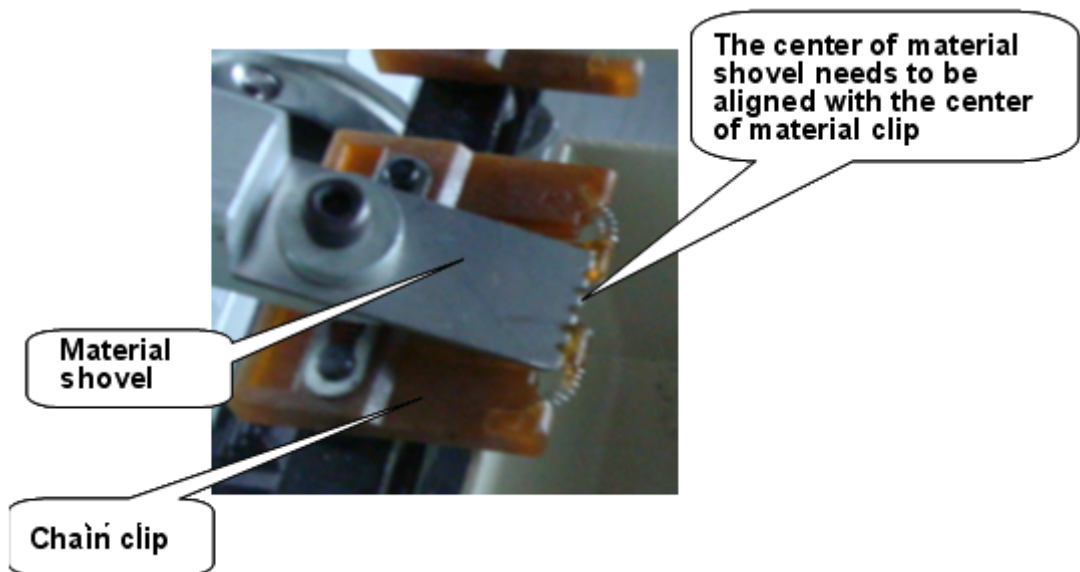
3） Loosen the screw of ⑦ material slot(XG3KJL-09046) locating housing, then

you can adjust the position of ⑥ material slot(XG3KTB-09045) to make the distance between material slot top to chain 8mm-10mm.
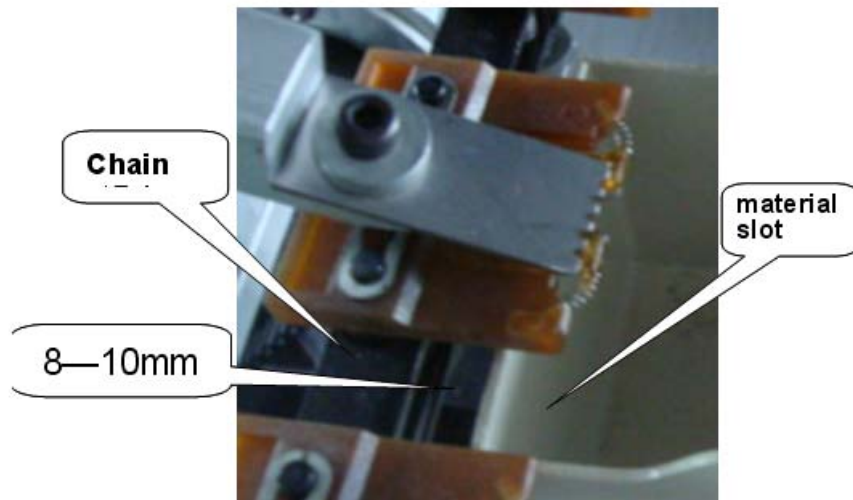
13. Adjust material pressing unit .

1) Loosen the screw 152 M6*25 on 153 XG3KTB-06065 material pressing rotating bearing housing1, then you can adjust the position of main gear rack back and forth, until the 140 XG3KTB-06070 P shaft transmission main gear rack and driven gear rack are tightly engaged, and driven gear rack can move up and down smoothly, then fasten screw.(as picture below)
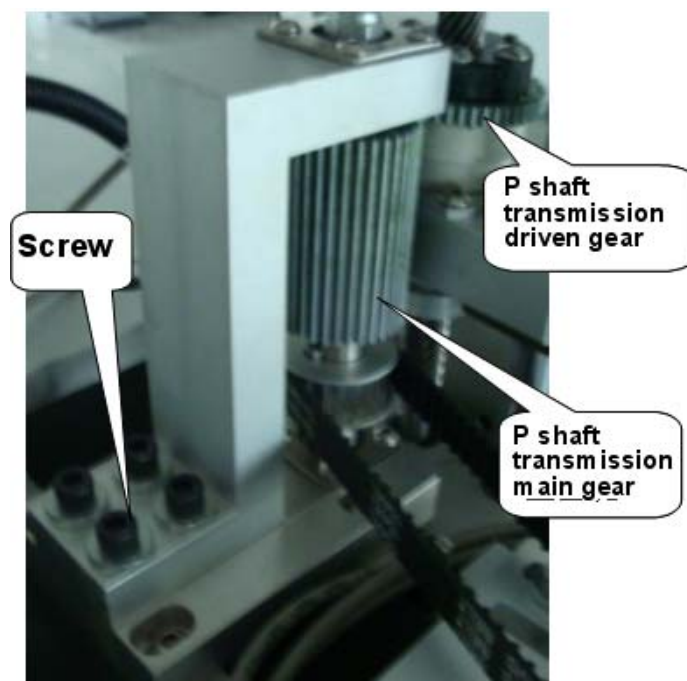
2) Adjust timing belt tension.   The proper tension standard is: put pressure in the middle of timing belt, the radian is around 5mm. First loosen the set screw 148 M5*12 on motor housing 149 XG3KTB-06036, move the motor housing right and left to increase or decrease the timing belt tension, at last fasten set screw(the P shaft timing belt can not be adjusted tight, otherwise P shaft will alarm, adjust standard: press down the surface of timing belt, the belt will sink by nearly 1cm).

3)Adjust P

(1) After machine zeros, see if the P shaft optoelectronic switch ㉖① XG3KDL-17053 extinguished(in equipment parameter, PL2 value is 0).

(2) If optoelectronic switch ㉖① XG3KDL-17053 extinguished and P shaft does not alarm.

Use hand to push triangle slider ㉘ XG3KCJ-13019 up and down, and there is no gap, otherwise put negative value for PＬ2 in equipment parameter, let machine zero until there is no gap between triangle sliderup and down.

(3) If optoelectronic switch ㉖① XG3KDL-17053 does not extinguish, the motor will alarm.

A. Use hand to rotate P shaft motor to raise the P shaft to highest position, adjust P shaft optoelectronic switch ㉖① XG3KDL-17053 from up to bottom slowly, once the optoelectronic switch extinguishes, fasten the

optoelectronic switch ⑥XG3KDL-17053, then press down emergency

stop for 4 or 5 seconds, start machine and zero it.

B if the machine alarms, repeat (3), no alarm, repeat A.

14. Adjust dispensing head.

1) Adjust dispensing head stroke .

Loosen the ⑦M8 nut of ⑨XG3KZW-02061 station air cylinder, use

Nut for air cylinder

Air cylinder piston shaft

Air cylinder

Tuning the cover place to adjust the standard position of pusher

Adjust air cylinder connector to meet dimension spec: 16.66±0.05mm

Adjust screw

Air cylinder connector

Station side view
(air cylinder) driving program retracts completely
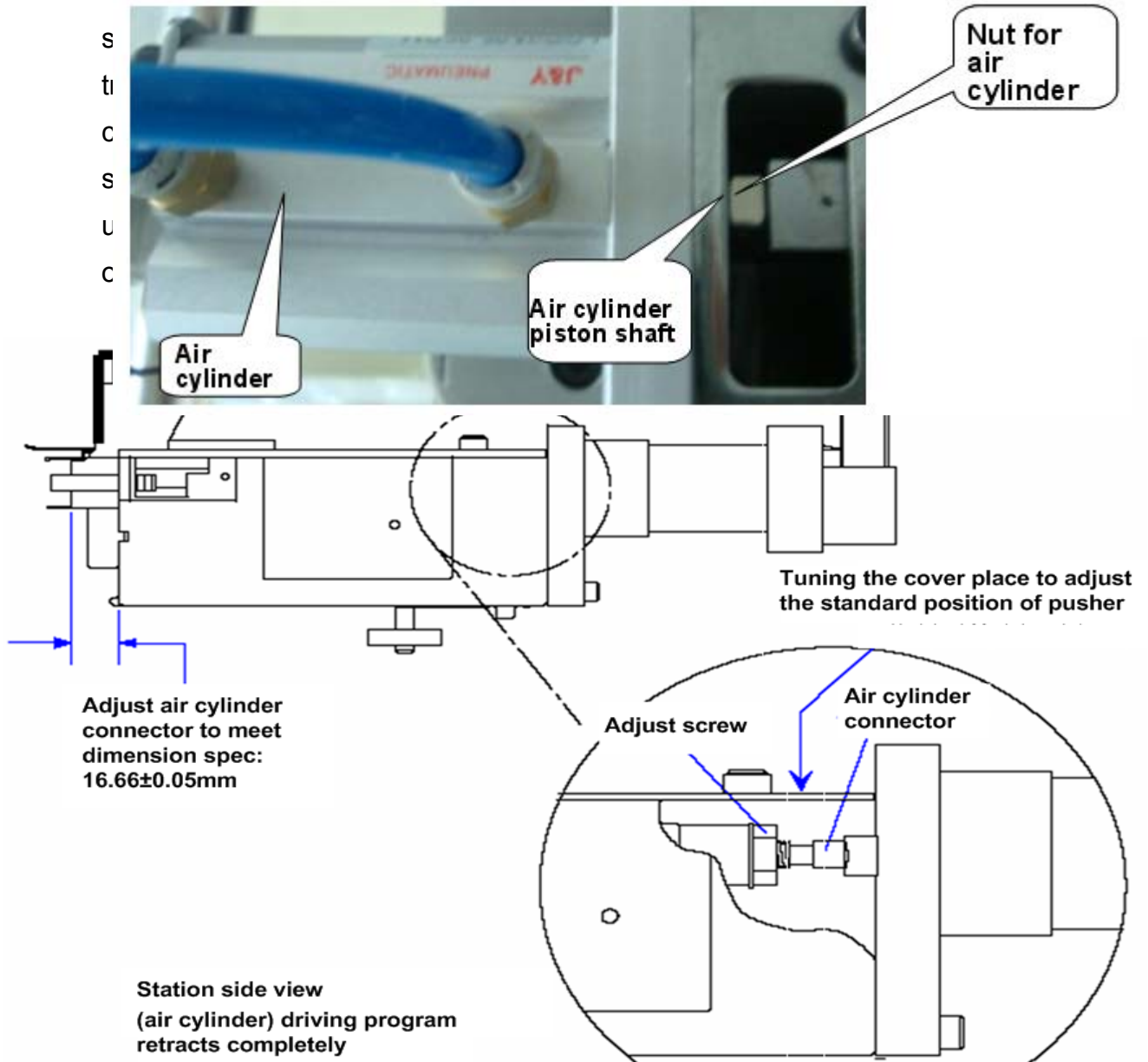
2) Adjust the gap of dispensing head pushing block.

Precondition of conducting this adjustment: the adjustment of dispensing head stroke is completed, and no dirt in between pushing blocks.

Adjust method:

(1) Disassemble the covering board at the top of dispensing head, put 0.025mm filler gauge in between pushing block and body. shown as picture below:

(2) Adjust the tuning screw to allow filler gauge to move moderately between pushing block and body, and the gap is 0.025mm.

3) Adjust the tape cutting blade of dispensing head.

Precondition of conducting this adjustment: the adjustment of dispensing head stroke is completed, the adjustment of gap of dispensing head pushing block is completed.

(1)Use pushing pin to push the slider to move forward until shear blade1 and shear blade2 touches with each other.

(2) Use filler gauge to measure the gap between the two shear blades, if the gap is 0.038mm, then no need to adjust, if not, then adjust according to following steps:

A. Loosen the hexagonal screw1 and 2.

B, Rotate screw2 in counterclockwise and clockwise to move the locating housing right and left in order to increase or decrease the gap between two shear blades, then adjust the tuning screw to make the gap 0.038mm.

C. Fasten screw1 and 2.(see picture below.)
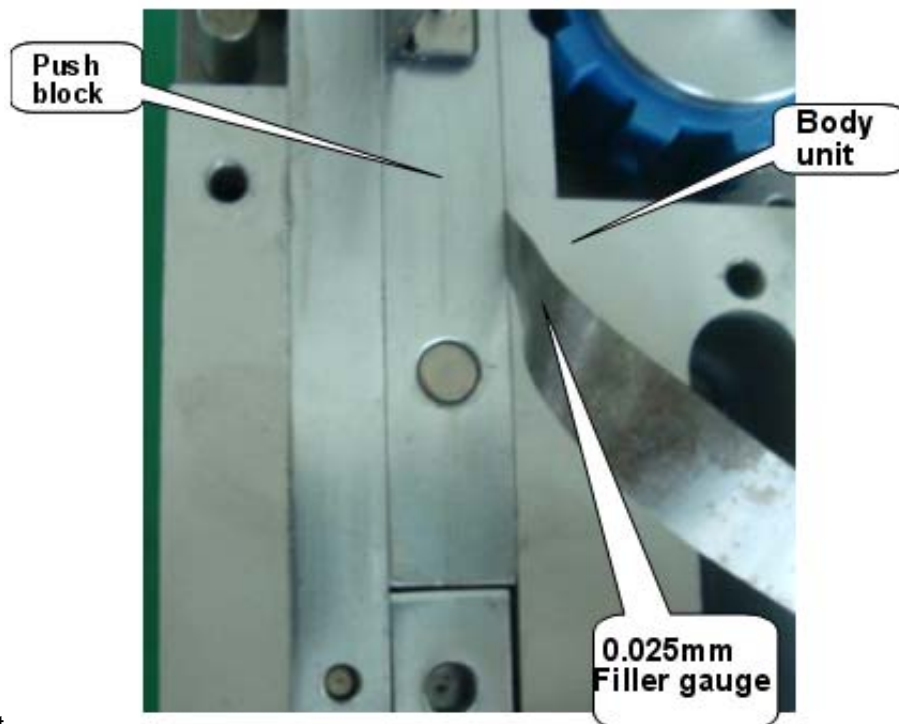
4) Adjust the reverse pawl (pawl 2) and stop pin.(see picture below.)

Precondition of conducting this adjustment: the dispensing head is disassembled from machine.

(1) Operate dispensing head manually to make gear rack ⑦ XG3KZW-02004 rotate,

and check repeatedly to find out the nearest position between pawl 1 head surface and stop pin, where the gap is 0.1mm, mark the gear at the position, loosen the screw that locates the eccentric shaft.

(2) Operate the ratchet wheel again to make it rotate again, when it rotates to the marked position and touches with pawl 2, stop rotating.

(3) Use slotted screw to spin eccentric shaft ㊾ XG3KZW-02036 to increase the gap

between pawl 2 head surface and ratchet wheel.

(4) Put a 0.05mm-thick filler gauge in between pawl 2 head surface and ratchet wheel.

(5) Rotate eccentric shaft until the filler gauge can not move smoothly between pawl 2 and ratchet wheel.

(6) After adjustment, fasten the set screw of eccentric shaft.
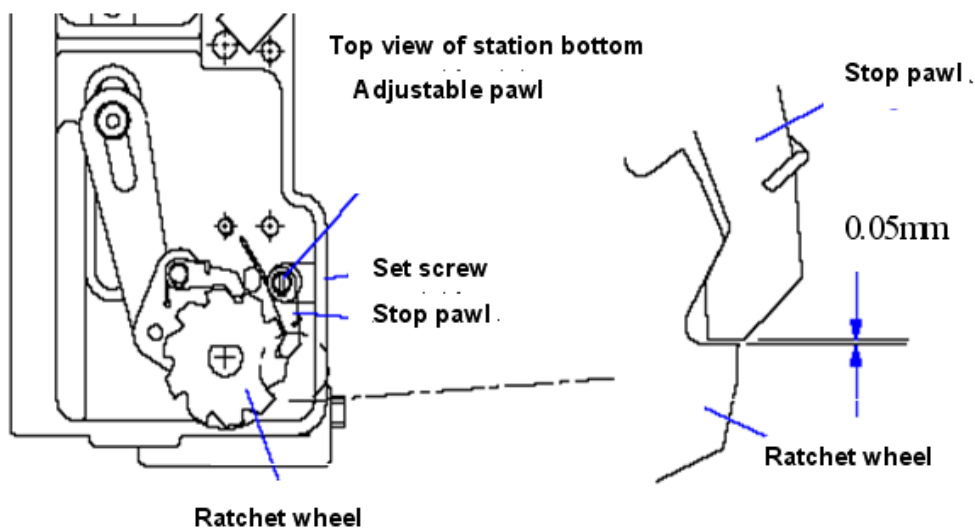
Gap of stop pawl and ratchet wheel: 0.05MM
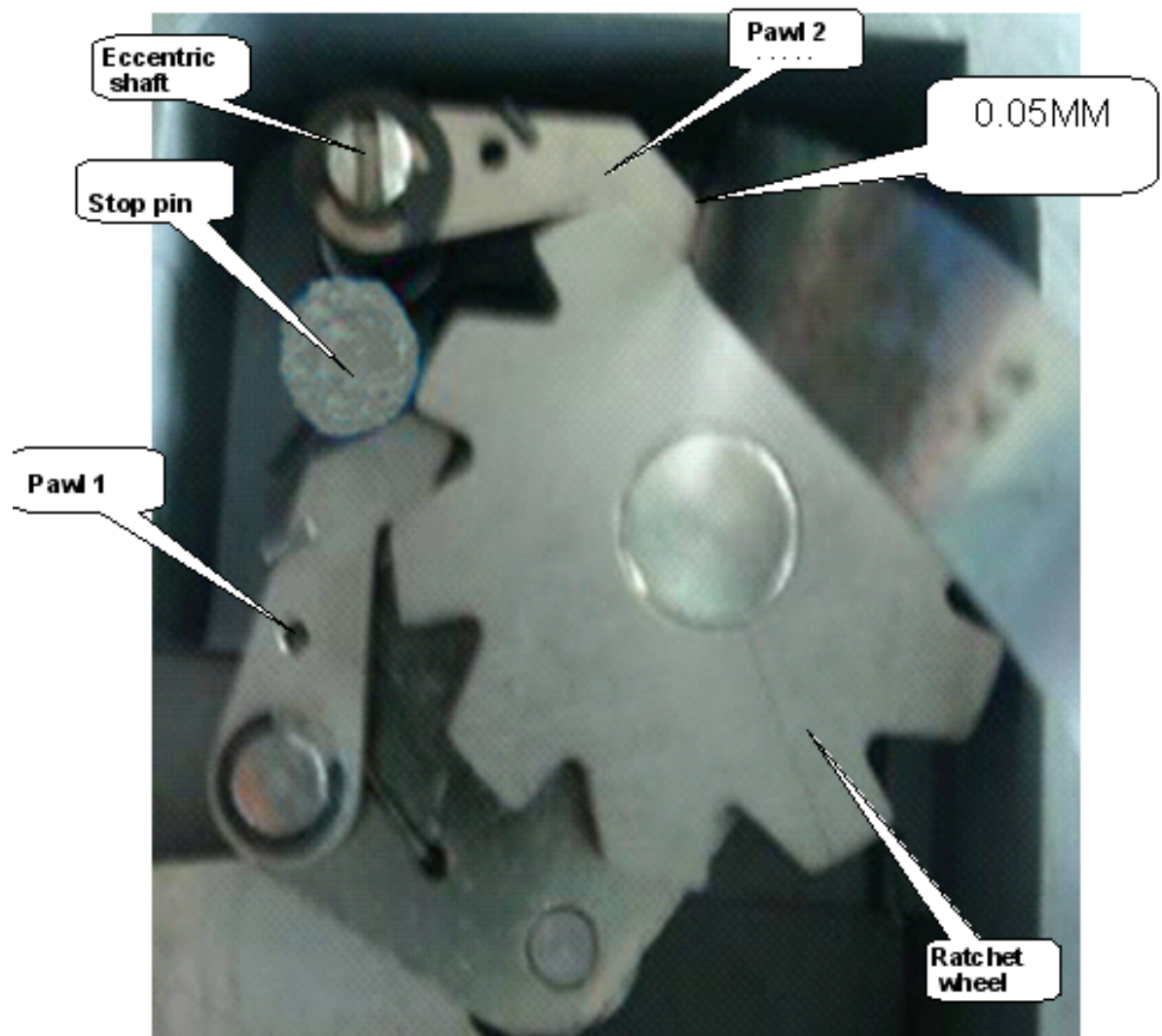
5) Adjusting the centering of component to fork slot .

Precondition of conducting this adjustment: the adjustment of dispensing head stroke is completed, the adjustment of reverse pawl and stop pin is completely, and the machine is at standby status.

Tool to be used: special tuning spanner.

Adjust process:

(1) Install the material tape on dispensing head, and let material transfer wheel to transfer component to the front of fork.

(2) shut off the air supply, use pushing pin to push fork until the component touches with fork.

(3) check if component lead is at the center of fork slot.

(4) If not, loosen the two set screw on material transfer.

(5) Rotate the material transfer wheel manually to make the component lead at the center of slot.

(6) Use the special tuning spanner for dispensing head to keep the material transfer wheel static and fasten screw.(see picture below)
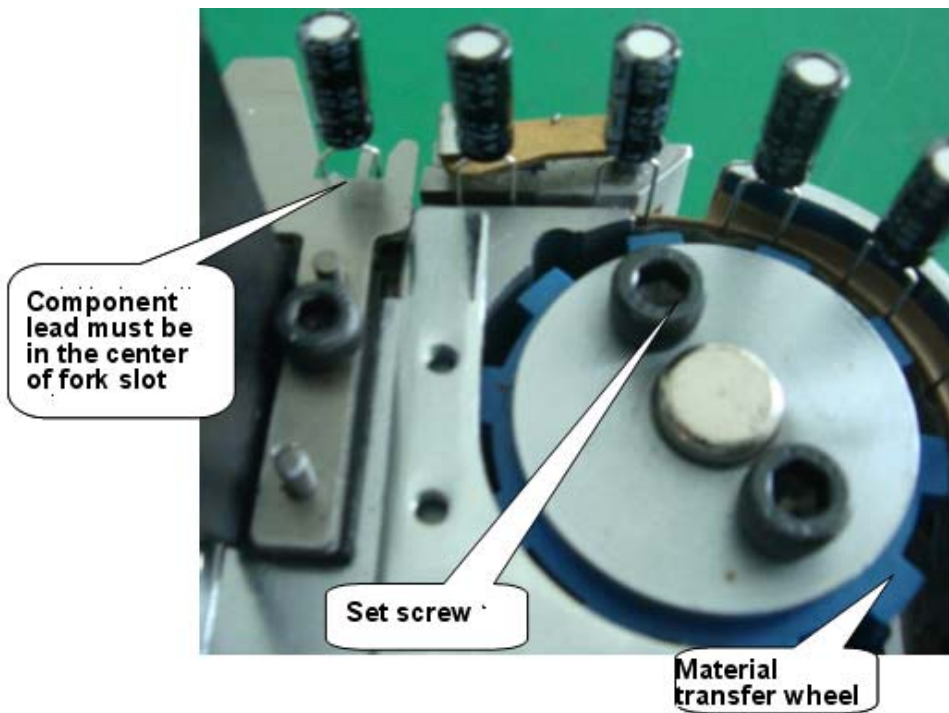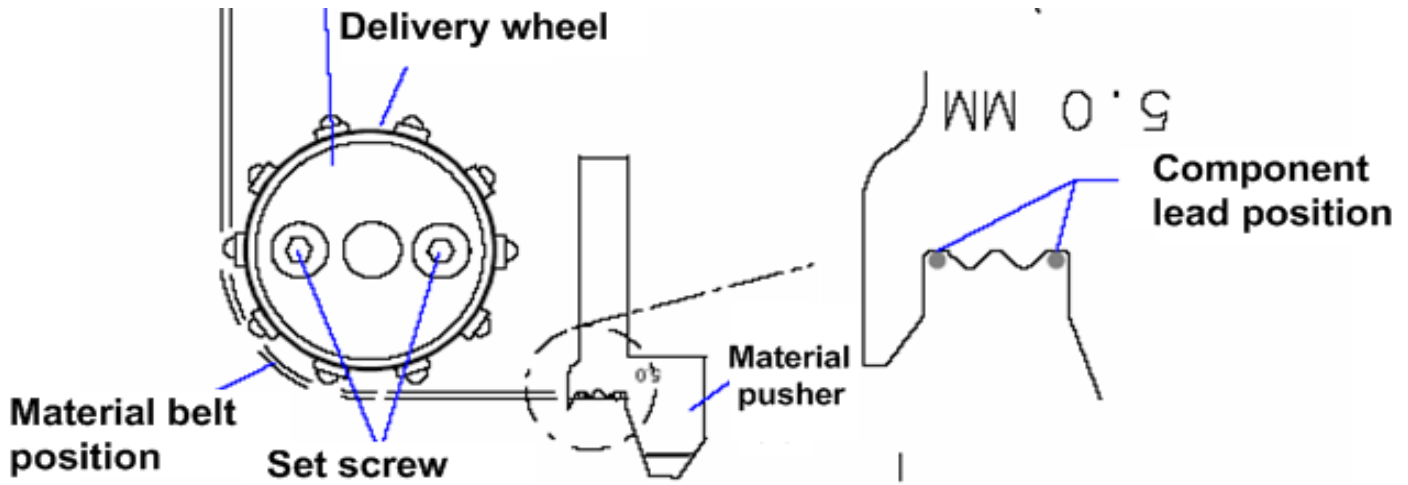
6) Adjust the centering of dispensing head fork and chain clip.

Precondition of conducting this adjustment: the adjustment of dispensing head stroke is completed, the adjustment of centering between component and fork slotis completed.

Tool to be used: 30‰ standard calibration jig.

Adjust process:

(1) Remove the material tape from material transfer wheel.

(2) pushing pin to push the pushing block and make fork move forward as much as possible.

(3) Put the 30‰ standard calibration jig in between component transfer chain clip rib and pushing piece; if need to calibrate, use special T-shape spanner to loosen the set screw of dispensing head, move the dispensing head right and left, and push the chain clip to left side, and make the two surface of 30‰standard calibration jig touches with component transfer chain clip rib and the left side of dispensing head fork separately.

(4) Remove 30‰standard calibration jig, and fasten screw.

(5) Make the fork stretch out and return repeatedly, then check again to see if the standard above is met or not; if not, adjust again according to steps above. See picture below:
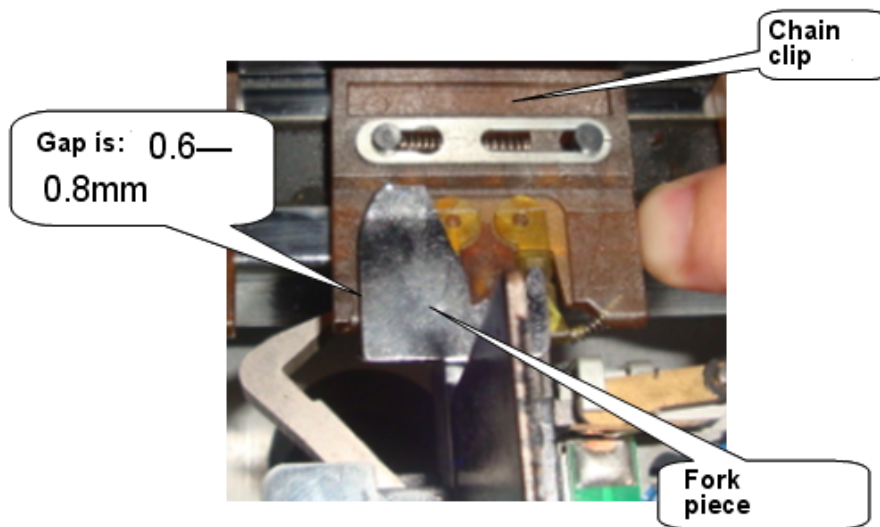
7) Adjust the material re-transfer driver(component inspection device)

　　Adjust process:

(1) Loosen the two set screws on inspection board, then move the inspection board to make the inspection board at the back of dispensing head by distance of 1.5mm, then fasten screw.

(2) if the adjustment above can not meet requirement, you can loosen the four screws on the dispensing head cover, than move the cover back and forth to meet the requirement. See picture below.
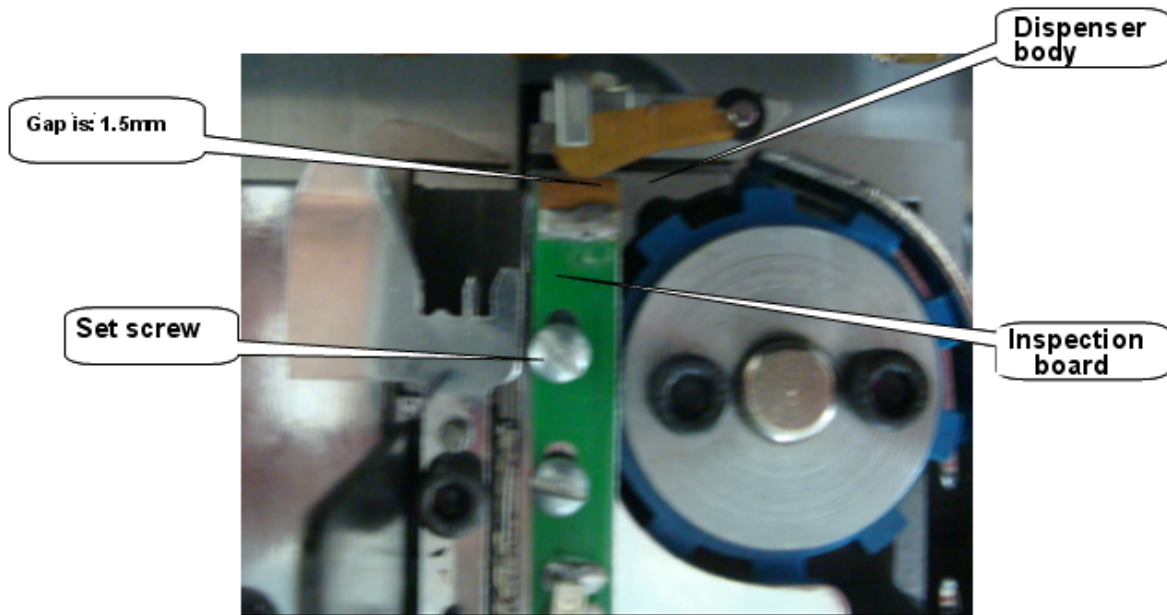
15. Adjust the numeric value.

1) Single click "Set up", in drop-down menu, there are two parts: equipment parameter and component parameter.(as picture below)
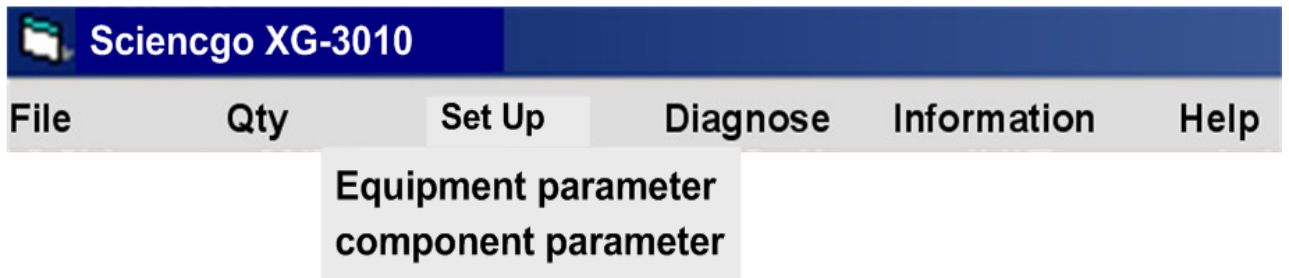
(1) **Equipment parameter**(see picture below):
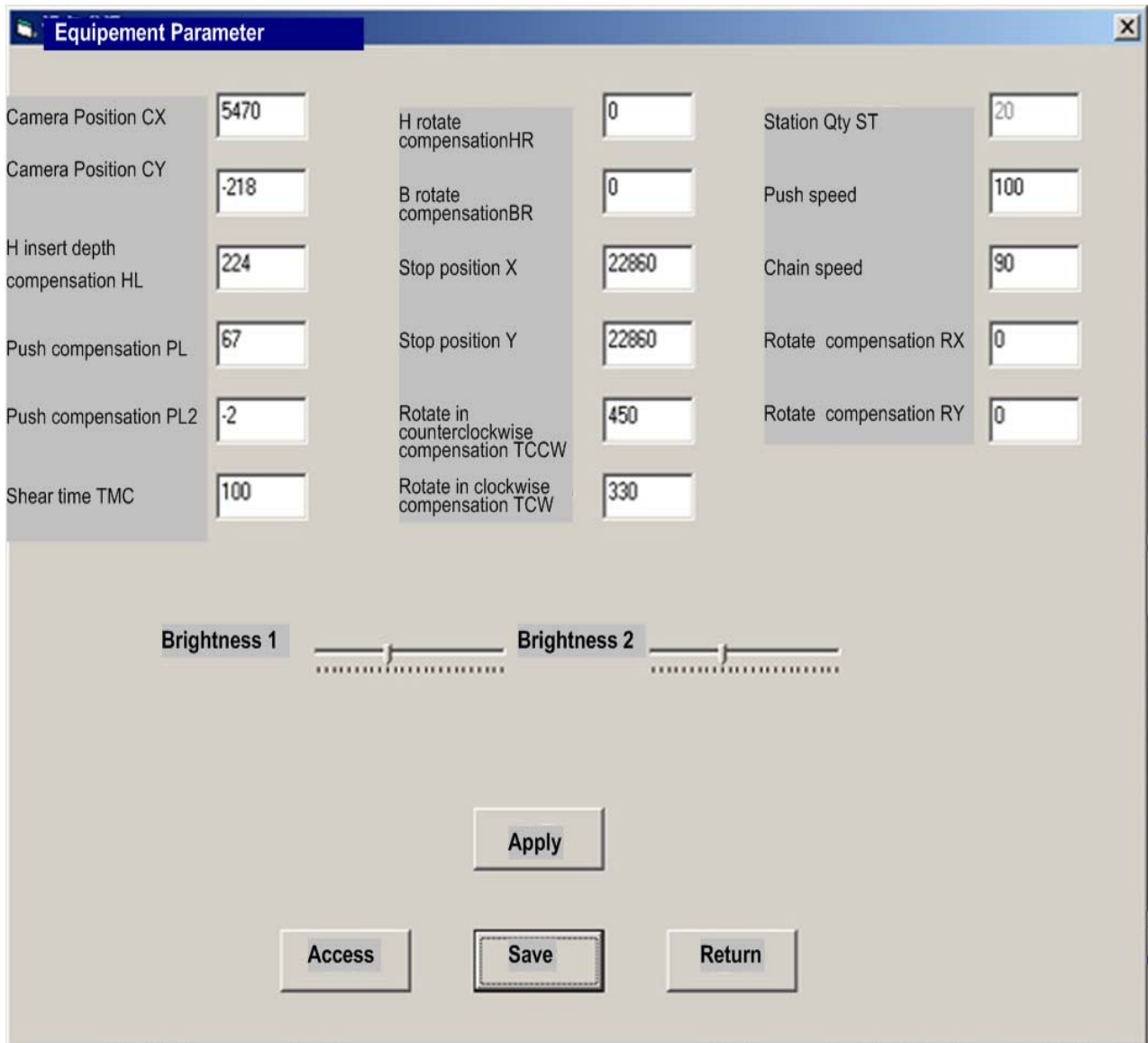
All machine parameters adjustment is done in "equipment parameter", including camera position CX and CY, H shaft insertion depth compensation HL, material push compensation PL, turn angle compensation HR/BR, machine stop position X/Y, turntable rotates in clockwise (TCW)/ counterclockwise (TCCW) compensation,Push speed ,Chain speed, rotate compensation RX/RY, camera brightness adjust, etc.After you revise the parameter, you need to click application, save and then click return. component parameter is to classify all the components in insertion program according to certain criterion, and describe features of component.

Camera position CX: position of insertion H shaft center in X shaft direction(coordinate) based on camera center as zero position.

Camera position CY: position of insertion H shaft center in Y shaft direction(coordinate) ,based on camera center as zero position.

H deep insertion compensation HL:compensation for insertion depth of insertion head.

Material push compensation PL: compensation for push distance of material push rod.

Material push compensation PL2: compensation for P shaft based on PL as zero point (positive value, goes down; negative value, goes up).

H turn angle compensationHR: compensation for insertion head turn angle based on original point.

B turn angle compensation BR: compensation for housing turn angle zeros based on original point.

Turntable rotates in clockwise (TCW): after turntable rotates in clockwise and reaches "At place" inspection position, compensation for time of turntable motor continue to rotate.

Turntable rotate in counterclockwise (TCCW) compensation: after turntable rotates in counterclockwise and reaches "At place" inspection position, compensation for time of turntable motor continue to rotate.

Machine stop position X: after workbench zeros, the actual position of X shaft, the value is bigger than zero, smaller than 45000.

Machine stop position Y: after workbench zeros, the actual position of Y shaft, the value is bigger than zero, smaller than 45000.

Rotation compensation RX: when insertion main shaft inserts after tuning angle, if the insertion position X does not match with actual insertion position X, you can compensation by adjusting this parameter.

Rotation compensation RY: when insertion main shaft inserts after tuning angle, if the insertion position Y does not match with actual insertion position Y, you can compensation by adjusting this parameter.

Push speed: adjust the speed of pressing of Push shaft.

Chain speed: adjust the speed of machine chain running.

Camera brightness adjust: adjust the brightness of camera light source.

Apply: apply the parameter got revised.

Read: single click read, the default value will show up.

Save: save the parameters that get revised.

Return: exit from current page, return to previous operating system interface.

(2) Component parameter: When you single click it, the following parameters will show.
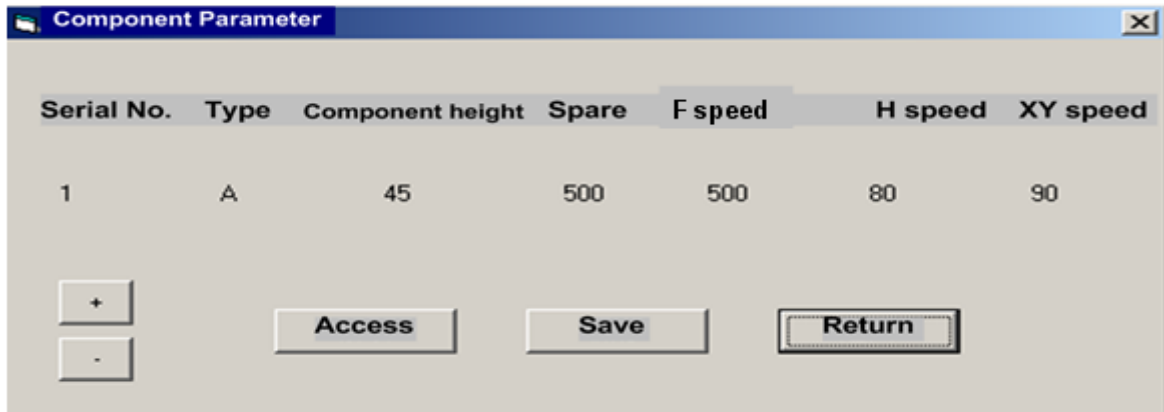
Serial number: serial number of component.

Type: type of component.

Component height: height of component body.

F speed: the speed of CTA material transfer.

H speed: insertion speed of insertion head.

XY speed: move speed of workbench.

$\boxed{+}$: single click it, you can adjust the parameter of component with last "serial number".

$\boxed{-}$: single click it, you can adjust the parameter of component with next "serial number".

Read: single click read, the default value will show up.

Save: save the parameters that get revised.

Return: exit from current page, return to previous operating system interface.

2) Adjust switching power.

This machine uses DC 24, 5 V power supplied by independent switching power.

(1) The input voltage of switching power can select between 220V and 110 V, this machine uses 220 V, already set, do not adjust.

(2) The output voltage can be fine tuned around the nominal value, use multimeter to monitor the output, use slot type screw driver to rotate adjust button, when rotates in clockwise, the output voltage increases;when in counterclockwise, it decreases.

3) Adjust camera

Attention: camera is precision component, it affects the coordinate and H shaft insertion position, break apart or adjust the camera at will is strongly prohibitted.

1). Height   height of camera determines the object distance and focus. First do rough adjustment, we set it as a rule: the distance between the camera bottom and PCB is around 148 mm. Then do fine tuning, need to use dedicated measuring scale, and adjust under Visual correction, select 1,5 or 10 mm as unit distance; click once, see if the cursor moves accordingly on the scale of measuring rule once; if not, need to adjust the camera position up and down; if still not right, then adjust the object distance and focus until it is right, then fix the position.

Please pay attention: after moving camera position, the H shaft parameter in "equipment parameter" may also need to be adjusted, because those parameters are set based on camera being "zero point".

2). Focus   can be adjusted on camera lens. From top to buttom, the first is used to adjust object distance, rotate in clockwise and counterclockwise, the basic standard is the image is clear, then check if cursor move distance is same as measuring scale, then lock up.

3). object distance   can be adjusted on camera lens. From top to buttom, the second is used to adjust object distance, rotate in clockwise and counterclockwise, the basic standard is the image is clear, then check if cursor move distance is same as measuring scale, then lock up.

4) Adjust the dispensing head inspection optoelectronic switch.

Left and right dispensing head inspection optoelectronic switch can be classified into two types, light emitter and light receiver, the effective detection distance is15 meters.

(1) light emitter: send out invisible infrared. There is one power indicator light.

(2) light receiver: there is power indicator light (green), signal indicator light(orange), sensitivity adjust button, min is minimum, max is maximum. Rotate it in clockwise, the sensitivity will increase; rotate in counterclockwise, the sensitivity will decrease. output signal switch(D⌒L)—— we set it in D.

(3) By adjusting the locating stand, send the light from light emitter to lightreceiver. And make sure when the dispensing head does not return to safe position, under the function of inspection signal, the chain will not run, and machine is protected safe.

Chapter 6 Basic Error Analysis and Solutions

1. Basic error analysis and solutions

Skills: first need to identify which part causes the breakdown, electricity, air system, machinar, or computer. Then check whether electricity, air, or power source are introduced or not, are they nominal values. Next check the connection or demountable section connected or not, or locked stably (wire connector, synchronizing wheel……). Check whether safety switch, protective switch, limit switch are under protective locking (scram switch, protective tube, limit optoelectronic switch, electric leakage switch, air-brake switch).

Failure Area	Symptom	Root Cause	Failure Resolution
Computer	computer and display can not open	panel computer power switch broken orconnection wire broken	Replace or connect again
	Can not turn on computer, but display normal	1. Check internal memory stick 2. Check if mouse and key are connected reversely 3. system error	1. use eraser to rub the gold bar on internal memory stick, replace internal memory sticks lot or replace internal memory stick 2. if connected reversely, then correct it 3. re-install system,contact ciencgo
	Mainframe can work normally but no display	Check internal memory stick for loose connection or CPU for poor connection	use eraser to rub the gold bar on internal memory stick, or replace CPU
	Shut off automatically after turn on the computer less than10 minutes	CPU cooling fan loose, broken, or power voltage unstable	Replace CPU cooling fan or check power circuit

	execl file format incompatible, can not open operation system	Infected with virus ,Office has been damages	Use lastest updated anti-virus software to kill the virus, delete all the execl files, re-install Office
XY servo system	motor does not move	Let servo exit from power connection, pull off the wire between servo and motor, push XY Assembly slightly, see if it can move or not	
		limit inspection board touches limit optoelectric switch	Retreat the machine to original reposition, exit from limit position
		servo has no monophase 200 V output	Check servo enable singal, I/O, replace servo
		Connector between servo and motor does not actuate	Make emergency stop reposition, replace connector
	motor moves but abnormal	motor broken	replace
		Computer error (example:shift phenomenon)	
		synchronizing wheel not tighten	Tighten it
		Improper parameter setting	set up again
		timing belt aging	replace
		servo or motor error	check and repair or replace

Failure Area	Symptom	Root Cause	Failure Resolution
Image	light source no light	5V power error	Check 5V switch power, relay, wire connector
	light source not bright enough	5V voltage too low	Adjust standard
		LED broken	replace
	Vedio no image	Singal wire error	Re-connect or replace
	Image vague, not clear	camera not adjusted well	Adjust aperture
		light source not bright enough	Check 5 V or LED
		camera parameter setting in the system incorrect	Tone up again andadjust exposure time
		Board too dirty	clean
Machine back to zero position	When machinezeros,click zeros, machine does not move	Press down emergency stop switch	Turn on the emergency stop switch in clockwise,turn on 24V power
		Organic glass door protective switch on	Turn off the organic glass door protective switch, make stop switch red light extinguish
		turn table small board broken	replaceturn table small board
	zero position switch is triggered, machine does not stop,continue to run	zero position signal abnormal, optoelectronic switch or circuit broken	replace optoelectronic switch, check circuit
Coordinate displacement	After adjustment, good for some time, then displace	timing belt too loose	adjust timing belt tightness
		anchor ear not tight	replace anchor ear

		encoder singal wire broken	replace
		motor or driver broken	replace
Turn plate	Turn plate lock not release , turn plate not move	Electronic valve that driving turn plate breakdown	Replace
		Turn wire breaks	Use multimeter to check and replace
		The two small cyliders that releasing turn plate are loose ,causing lock device can not open enough to drive turn plate	Check and adjust again
		Turn table motor or relay breakdown	Replace

Note: for mechanical error, please refer to Chapter 5 Machanical Adjustment

1. Computer basic error analysis and solutions

Skills: first need to identify which part causes the breakdown, electricity, air system, Assembly or computer. Then check whether electricity, air, or power source are introduced or not, are they nominal values. Next check the connection or demountable section connected or not, or locked stably (wire connector, synchronizing wheel……). Check whether safety switch, protective switch, limit switch are under protective locking (scram switch, protective tube, limit optoelectronic switch, electric leakage switch, air-brake switch).

1) Installation of driver

Normally for a hard disk that just get system installed or recovered ,still there are several drivers not installed, such as mainboard, display card, sound card, USB controller, etc

1) Installation method:

First check the driver that not installed yet, go to device manager, see picture as below, if there is mark of "!" or yellow "?" in the yellow circle for the option, then it means the driver of the option is not installed. Right click the option, and install the driver by selectting "Update Driver" or using the disk that come with computer (shown as following picture).

This I/O card is only used on Sequencer, Radial, Rivet and Combined machine

This control card is applicable to all types of Sciencgo machine

This screen shows the driver is installed for control card (PISO-P32C32 and DMC1000)
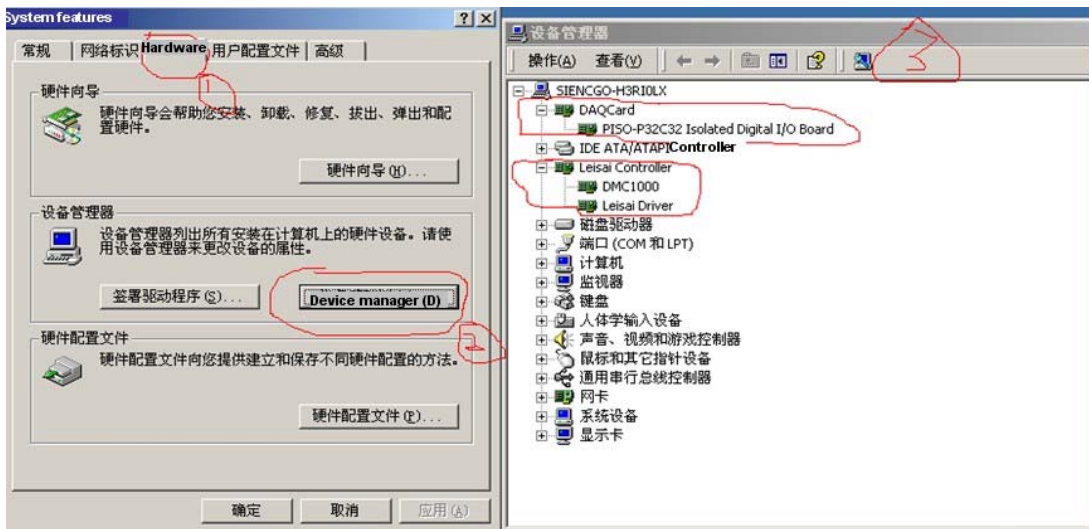
2) File backup

In order to avoid loss of production data, we recommend every two or three days, use clean USB falsh disk that without virus to copy the Southern Machinery data folder and camera folder as backup.

If the machine shows "execl table incompatible" or "file format incorrect ", please conduct overall virus detection and destruction under safe mode, and install Office software again, then delete all files that have execl table.

3) Set up of Display

1. Display color: 32 bits true color
2. Scree resolution: 1024×768 pixel
3. Set Screen Protection as "Non", and Power Management as "Always on".

Attention: install and run antivirus software casually, because when AI is working, it needs to access to hard disk file frequently, and antivirus program usually first check read-write file, which affecting the AI performance and system stability. If the computer is suspicious of virus, you can create and install antivirus software, after destroying virus, uninstall the antivirus software or stop running it.

Warning: if data exchange with outside is needed, please make sure that outside device (USB flash disk, CD, Floppy disk) does not contain virus!
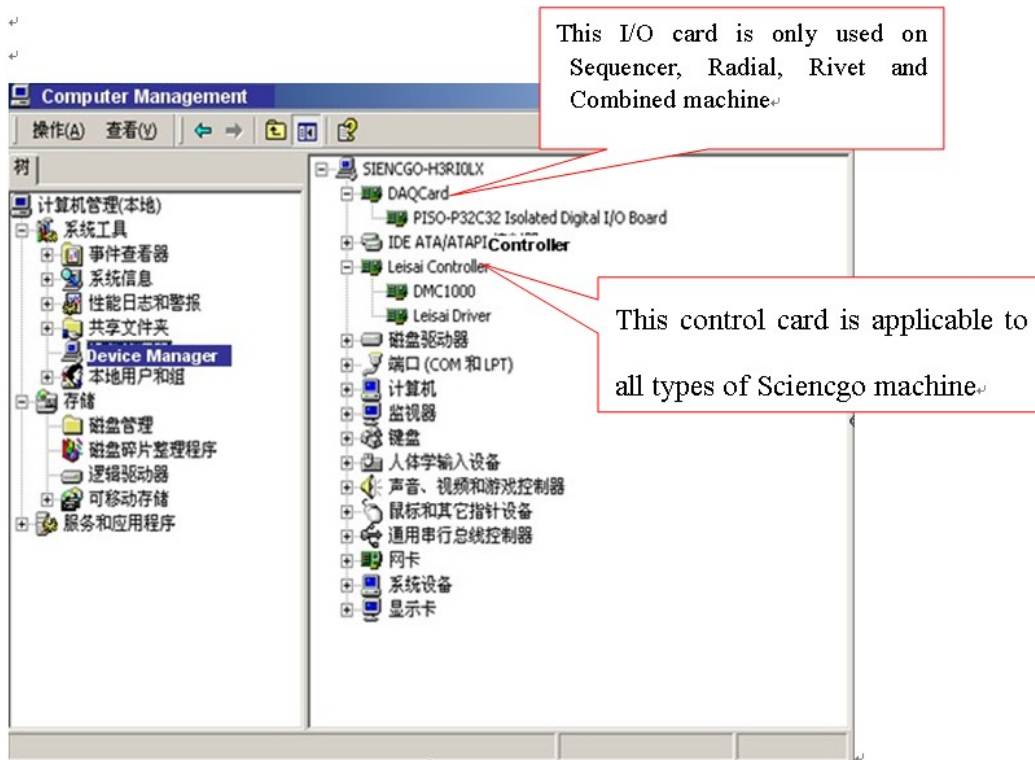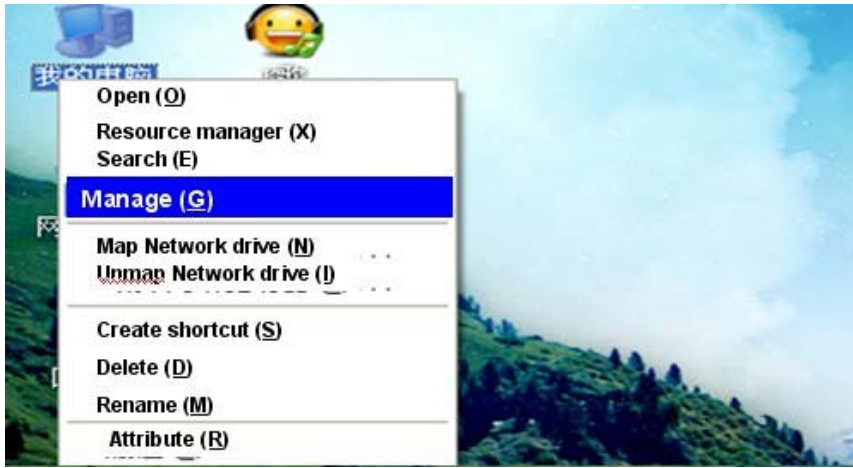

4) Basic error analysis and solution

Skill: first need to identify which part causes the breakdown, electricity, air system, Assembly or computer. Then check whether electricity, air, or power source are introduced or not, are they nominal values. Next check the connection or demountable section connected or not, or locked stably (wire connector, synchronizing wheel……). Check whether safety switch, protective switch, limit switch are under protective locking (scram switch, protective tube, limit optoelectronic switch, electric leakage switch, air-brake switch).

 a. Unable to turn on computer and display

◆error analysis: usually happen when UPS breakdown and no power in store, or panel power button or power wire burns out or has poor connection.

◇Solution:

Step 1: check whether computer power wire is connected to UPS, and whether UPS is working normally. Connect the power of computer and display to outside.

Step 2: check whether soldering joint between panel button and connection wire is loose or connected wrong; connec the button wire again or replace the button.

Step 3: check power wire joint loose or connected poorly, replace power wire or pull out and insert power wire again.

 b. Unable to turn on computer maframe, but display is normal

◆error analysis: 1.check memory bank for copper foil falls off or IC burnout
2. Check mouse and keyboard linked correctly   3. System is destroyed or crashed.

◇Solution:

Step 1: use clean eraser to clean copper foil on memory bank, replace memory slot and install it on mainframe again, or replace memory bank.

Step 2: switch the socket of mouse and keyboard or pull out mouse and keyboard.

Step 3: system is destroyed by virus or by people (delete system file by mistake), install system again or recover the system.

c. Mainframe can work normally, but there is no display

◆error analysis::this problem usually occurs on memory bank, mainboard, and display card; also it may occur on displayer.

◇Solution:

Step 1: remove memor bank, clean up the dust on mainboard, use clean rubber to rub the copper foil on memory bank, change memory slot and install again on mainboard, or replace memory bank.

Step 2: if there is discrete graphic card, then remove it and clean the dust, and install it on mainboard again.

Step 3: remove CPU, memory bank from mainboard and install again, or replace mainboard directly.

Step 4: pull out the vedio connecting wire andplug again, or replace.

d. Computer shuts down or restarts automatically after operating less then 10 munites, or restarts frequently; Turn on emergency stop switch, computer shuts down.

◆error analysis: this problem usually occurs due to poor CPU heat emission or unstable power voltage. For turn on emergency stop switch, computer shuts down, it is because of the emergency stop switch is pressed for too long time.

◇Solution:

Step 1: CPU cooling fan is stuck by dust or feed snap can not rotate, replace CPU cooling fan.

Step 2: the thermal conductive silicon under CPU cooling fan heat emission fin is dried up, tear up CPU cooling fan heat emission fin and apply thermal conductive silicon on the surface evenly.

Step 3: Turn on emergency stop switch, computer shuts down or restart, UPS voltage is not stable, sepereate the power of computer and machine, do not link the two both to UPS.

e. turn on computer operating system, Execl file can not be recognized.

◆error analysis: this issue is difficult to diagnose cause. 1. may caused by Office2000 File Format Converters damage; 2. Office is infected by virus; 3. The computer is shut off illegally or accidentally, and data is damaged.

◇Solution:

Step 1: use lastest anti-virus software to detect and kill virus, install Office2000 software again, delete all previous Execl file.

Step 2: Use "ExeclRecovery" to recover damaged Execl 2000 files. This software will add recover program to Execl software automatically, showing the command of "Recovery" is

added under "File" menu, it will open damaged file in the way of automatic recovery.

Step 3: if all above methods can not recover the file, try to re-install or recover the system.

f. Insertion head back to zero position, no movement.

◆error analysis: usually caused by optoelectronic switch, signal wire, control card or IO board.

◇Solution:

Step 1: distinguish the serial no. of control card, replace data wire for control card, inspect control card's signal staus or replace control card.

Step 2: check IO board for loose screw, or burnout, or IC burnout; replace IO board.

Step 3: check if optoelectronic switch is blocked.

Step 4: check if sensor is at best place or falls off.

g. Blue screen code: 0x0000007B:INACESSIBLE_BOOT_DEVICE

◆error analysis: in starting procedure, Windows can not visit system partition or. It usually happens after mainboard is replaced; start for the first time, mainly because IDE controllers for new mainborad and old mainboard are equipped with different chip. Sometimes, it may be caused by virus or hard disk damage.

◇Solution:

Usually it can be solved by starting computer with installation disk and conduct recovery installation. For virus, can use DOS version anti-virus software to kill the virus (kv2005DOS version is available for download in main station). If hard disk has problem, please install it into other computer, and use "chkdsk /r" to check and correct disk error.

h. Open the computer and skip Windows2000 interface scroll bar, black screen, re-start automatically or shut down.

◆error analysis: 1.Windows system file is damaged or crushes; 2. hard disk damage causing Windows can not start normally.

◇Solution:

Step 1: use system installation disk to recover the system.

Step 2: re-install the system or recover system.

i. Open operating software, error code: E0001, E0002, E0003, E0004

◆error analysis: E0001 is becaused of the hard disk is not registered. E0002 is caused by the same reason as E0001. E0003, safetydog is not installed properly; E0004, there is no operation board driver.

◇Solution:

Step 1: register the hard disk installed in system at Southern Machinery.

Step 2: make sure the safety dog is installed properly.

Step 3: install all drivers, and the two files in "My computer" D disk installation board.

Step 4: check files in Southern Machinery for any miss of following files: 0001 bitmap image, alast, aslast, rlast, mdlast, slast, camera, original point debug, TESTT, equipment parameter, component parameter.

j. turn on machine operating software; the tip that there is no relevant user lock pops out.

◆error analysis: 1. safety dog is not installed; 2. safety dog is loose, poor connection; 3. if there is USB extended wire, it may burnout.

◇Solution:

Step 1: re-install safety dog to USB slot.

Step 2: replace USB extended wire or change to another USB slot, connect safety dog again

k. Driver initializing error!!!

◆error analysis: board DMC1000, PISO-P32C32 or PISO-C64 driver is not installed.

◇Solution:

Usually the problem can be solved by installing board driver according to above **Installing Method of Movement Control Card** and re-start the computer.

l. Run-time error "1004" or Run-time error "91"

◆error analysis: run-time error, code 1004, lack of alast.xls (Axial) file or rlast.xls (Radial) file in Southern Machinery data.

◇Solution:

Open "My computer" D disk Southern Machinery data and check if alast.xls(Axial) file or rlast.xls (Radial) file exists, copy one alast.xls (Axial) file or rlast.xls(Radial) file into it from USB, or copy one program named by alast.xls (Axial) file or rlast.xls(Radial) file.

m. Run-time error "53 can not find dmc1000.dll

◆error analysis: this computer has not been registered at Southern Machinery

◇Solution:

Please contact Southern Machinery technician, register the hard disk for the computer, and debug the software program.

n. P Card Error; Driver initializing error!!!

◆error analysis: run-time PISO control card initialize error, PISO control card is not readable.

◇Solution:

At control panel- system –hard ware- device manager, check if PISO-P3C32 control card driver is installed or not, or remove the PISO control card and install again.

o. Error code SN, please contact Southern Machinery; or erroe code SK, please contact Southern Machinery (1000)

◆error analysis: 1.this hard disk is not registered with Southern Machinery software; 2.safety dog is not installed properly, can not detect driver; 3. log in user name has been changed.

◇Solution:1. Check if the hard disk is formatted and the system is installed again; 2. Check if safety dog is pulled oout; check in control panel, if the login name for user account has been changed or not.

p. Run-time error "91", Object variable or with block variable not net

P Card Error, Only one Card in system (3000)

◆error analysis: Run-time error "91", target is variable or block is invariant, P Card Error, Only one Card in system.

◇Solution: go to D disk, equipment parameter in Southern Machinery data, change the last item, the quantity for dispenser.

q. When exit from software or use certain function, it show: Please exit EXECL running.

◆error analysis: check Windows, if EXECL file is opened, or EXECL.exe process does not stop in task manager.

◇Solution:

1. Close the open EXECL file in Windows

2. Use combination key Ctrl+Alt+Del to open task management, stop the EXECL.exe process.

3. Copy Southern Machinery data and necessary software to "My computer" D disk, and overlap previous data

CPU and cooling fan
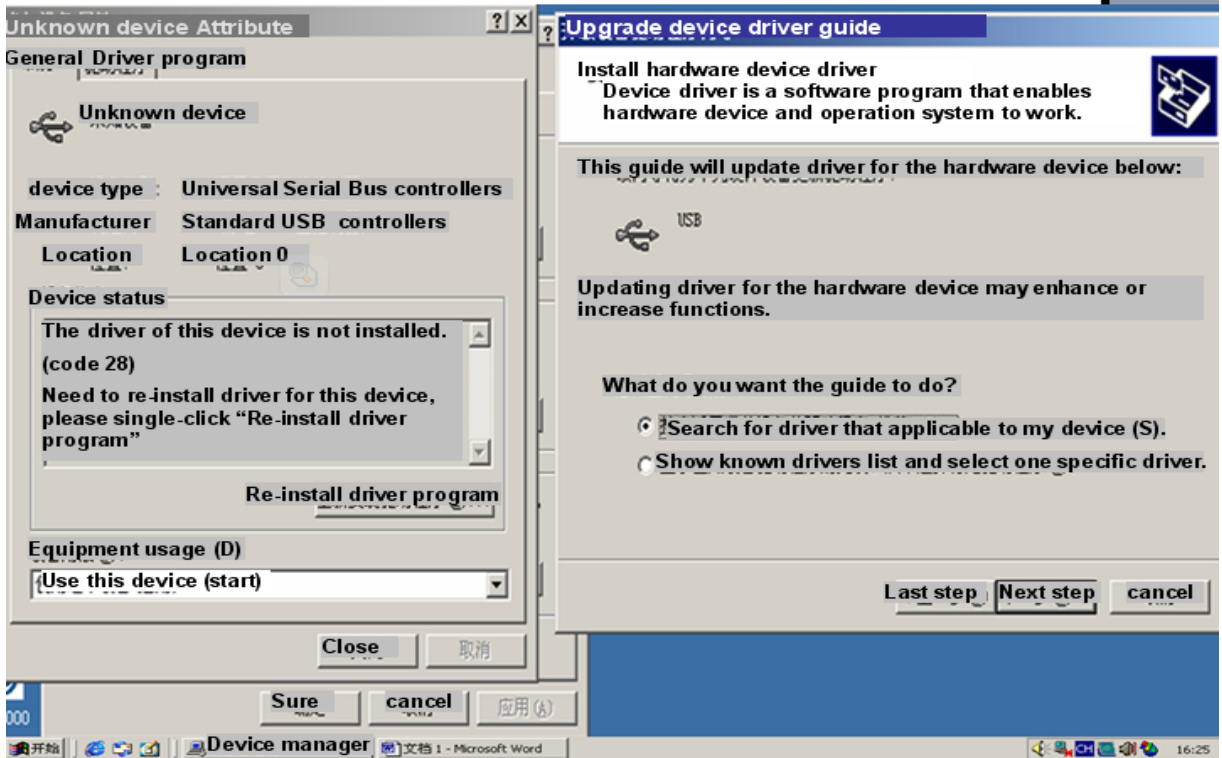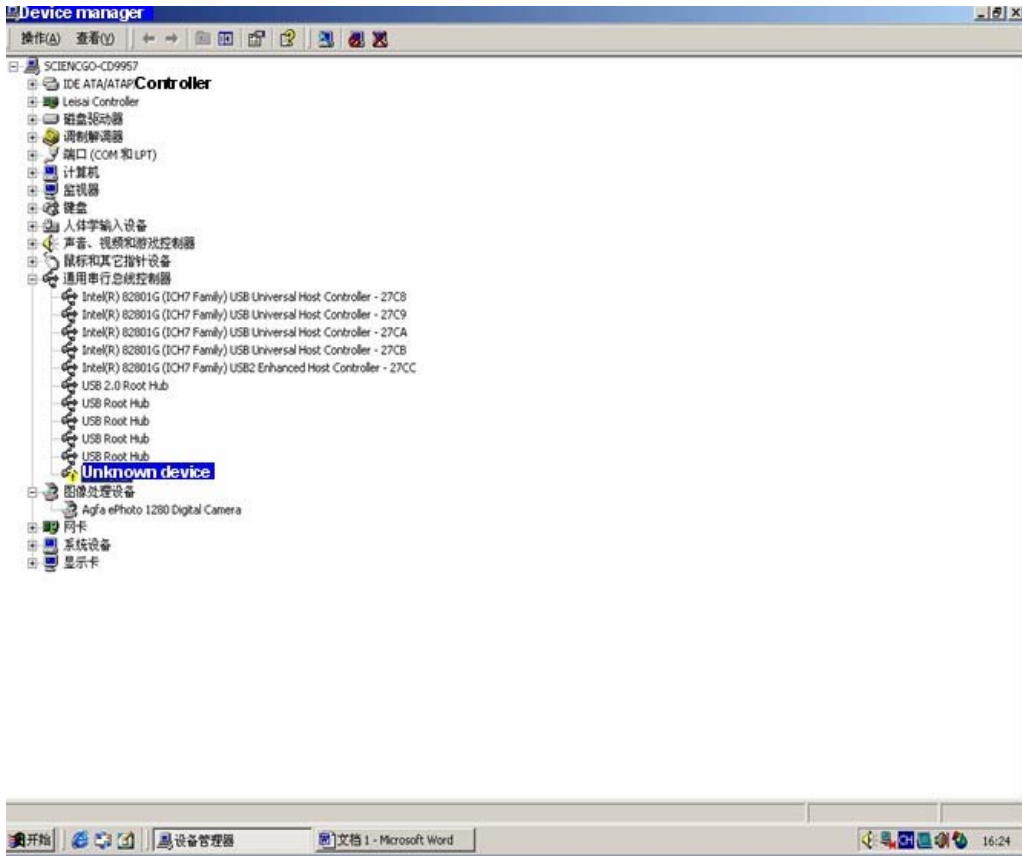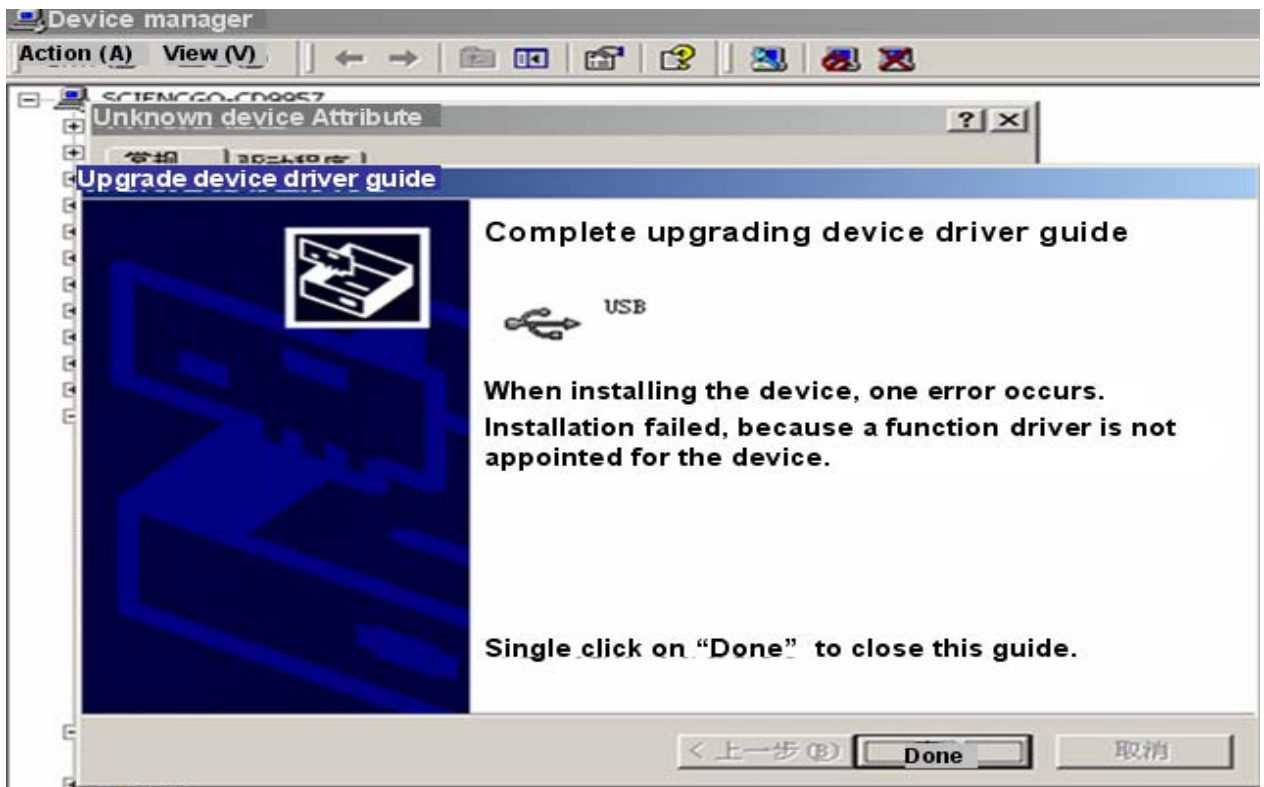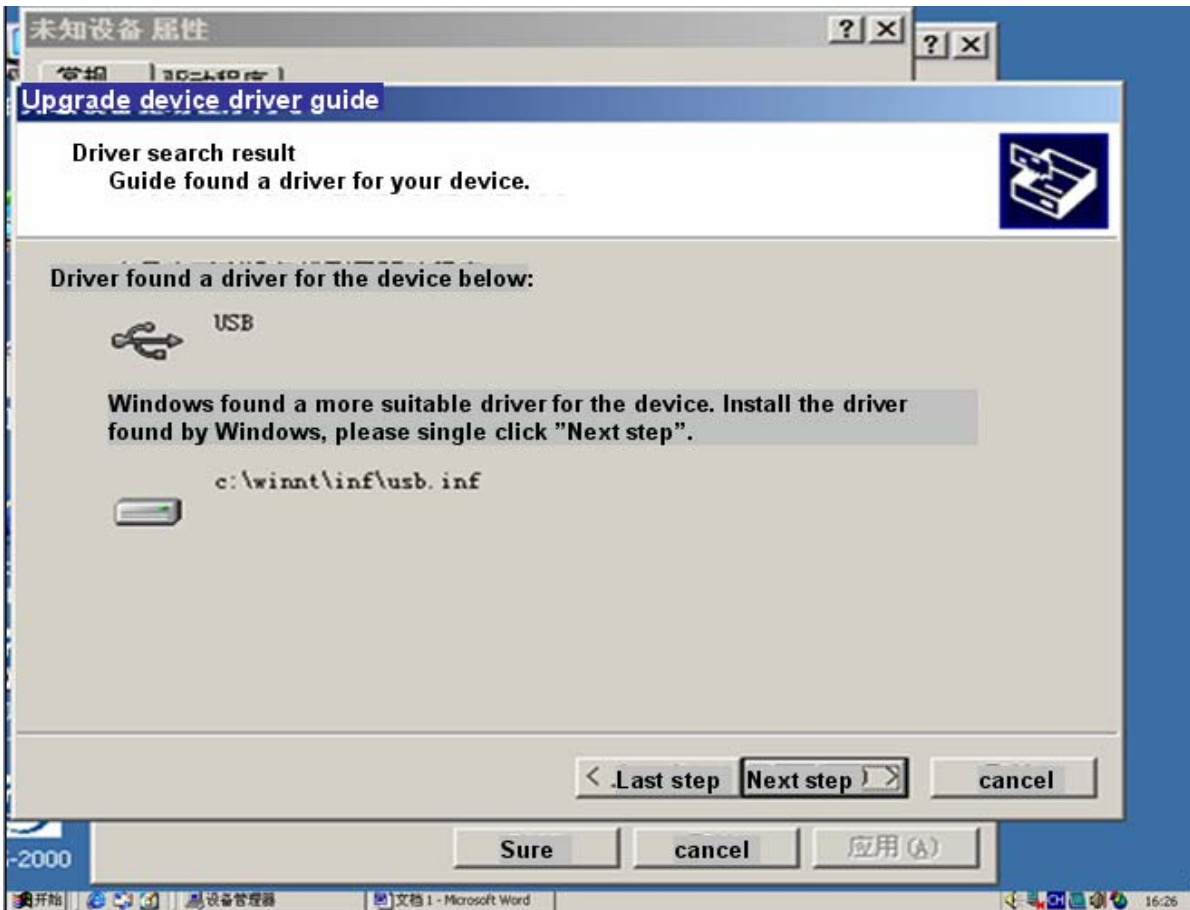
2. Machinery picture:

1) Machine plan graph:

Air source introduce position, air pipe 12*8.5

Overall power introduce position, wire(L+N+E) 3*2.5 mm²

0.2M 0.5M 0.5M 1.54M

Machin total length(L)=1.54M+0.5M+ Total stations 10 stations *0.5M+0.2M

Machin power switch location

1.8M

0.8M

1.7M
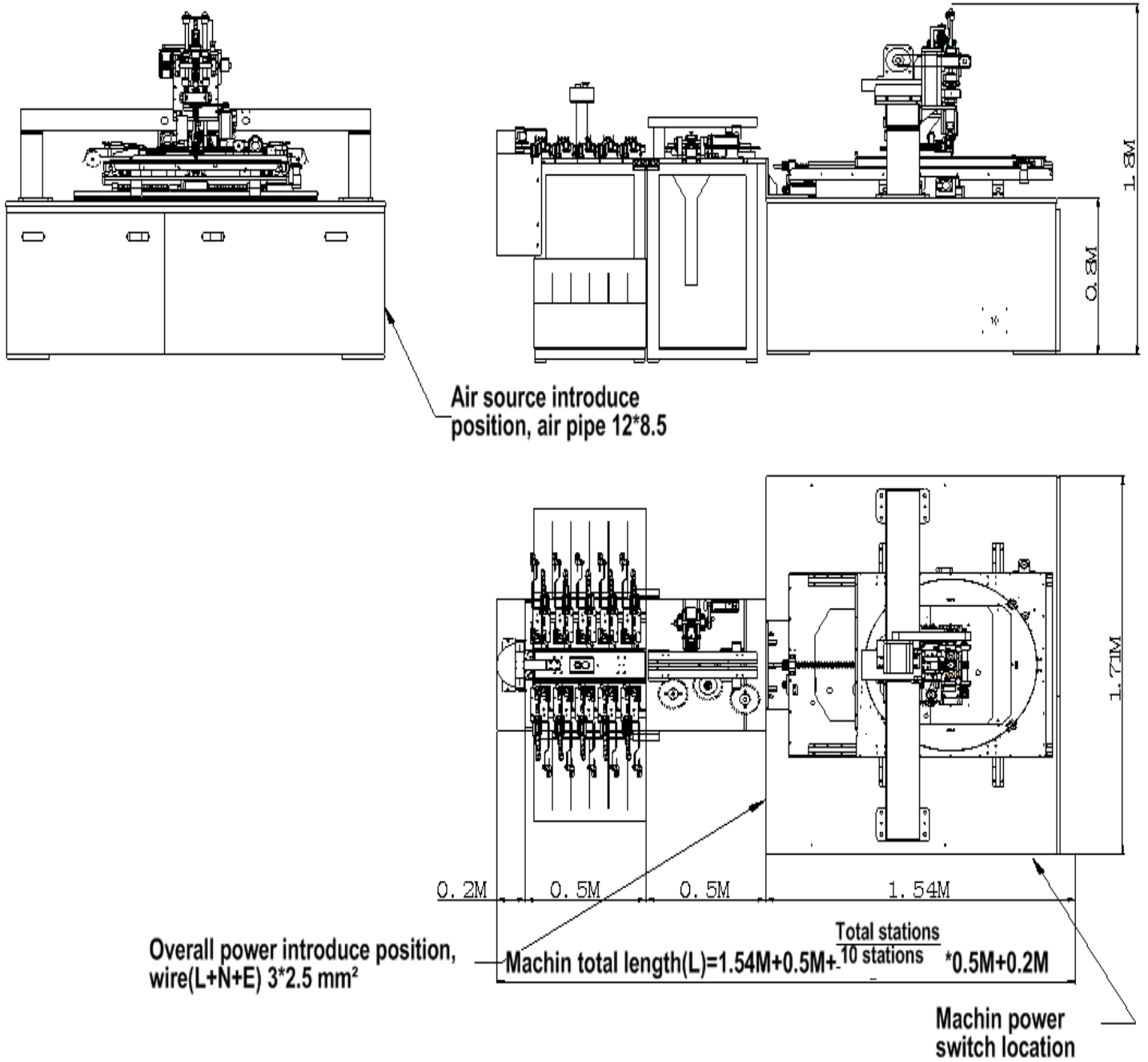
2) The overall diagram of electric control wiring:

XG3K-Radial Machine(Overall Wiring Diagram)

Cooling Fan

Computer mainframe | Display

Clinch inspection board

X5 port for all servos

Camera light source

(See note ① for definition of relay)

(HL is warning light, CNF1-6 is electromagnetic valve)

HL1 I/O・A・X3・3 Green 55
HL2 I/O・A・X3・4 Yellow 56
HL3 I/O・A・X3・5 Red 57
CNF1 I/O・A・X3・6 Clinch 63
CNF2 I/O・A・X3・7 Turn table lock open
CNF3 I/O・A・X3・8 Turn table pinch roller 6
CNF4 I/O・A・X3・11 Cut tape 68
CNF5 I/O・A・X3・12 Transfer material 69
CNF6 I/O・B・X3・5 Housing 73

Servo H | Servo X | Servo Y | Servo RH | Servo RB | Servo P | Servo C

SM1 | SM2 | SM3 | SM4 | SM5 | SM6 | SM7

Note①: KM1=SSR1=Solid state relay1

KM2=SSR2=Solid state relay2

KM3=SSR3=Solid state relay3

KM4=KA1=3P Solid state relay(H shaft)

KM5=KA2=3P Solid state relay2(rotate fwd)

KM6=KA3=3P Solid state relay3(rotate rev)

KM7=KA4=2P Solid state relay1(emergency stop)

KM8=KA5=2P Solid state relay2(flashlight)

SB1 Work light | SB2 Work light | SB3 Work light | SB4 Work light | SB6 Work light | SB7 Work light
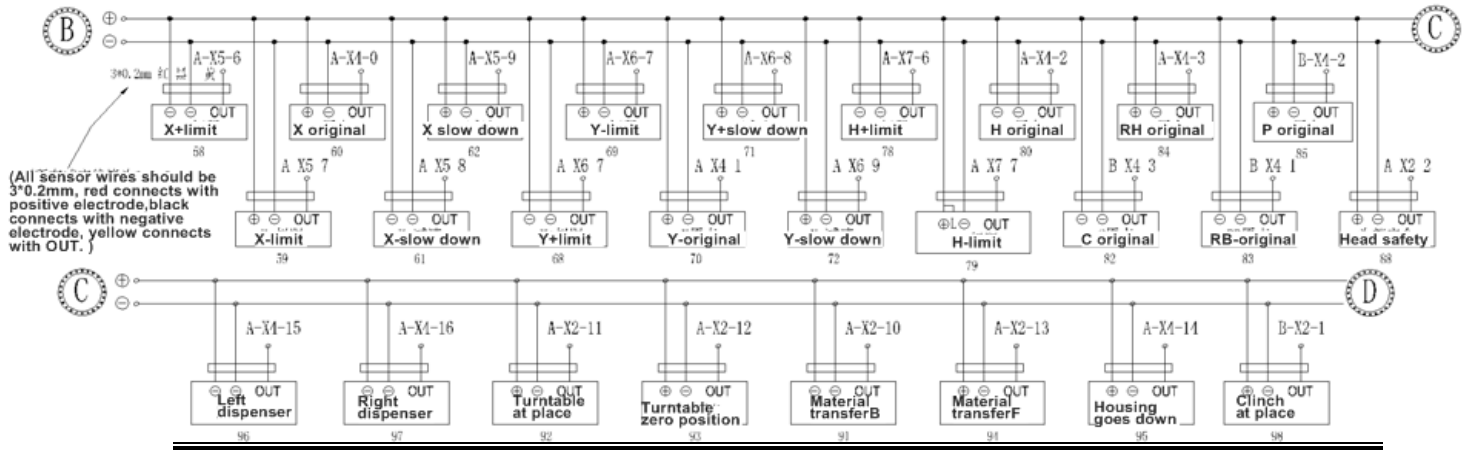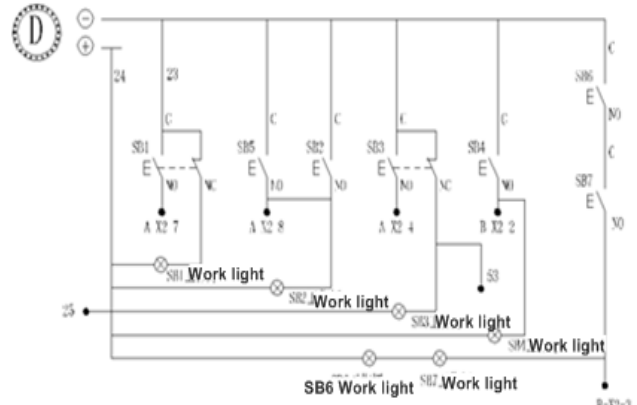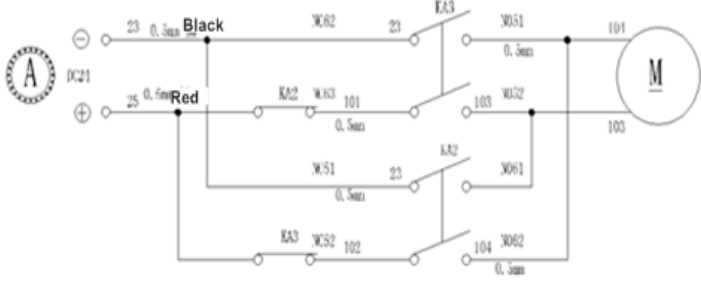
(All sensor wires should be 3*0.2mm, red connects with positive electrode,black connects with negative electrode, yellow connects with OUT.)

X+limit | X original | X slow down | Y-limit | Y+slow down | H+limit | H original | RH original | P original

X-limit | X-slow down | Y+limit | Y-original | Y-slow down | H-limit | C original | RB-original | Head safety

Left dispenser | Right dispenser | Turntable at place | Turntable zero position | Material transferB | Material transferF | Housing goes down | Clinch at place

Wiring diagram — Right connector (68P):

X2:
- 1 — IN17 Clinch at place 98
- 2 — IN18 Component supplement 99
- 3 — IN19 Air source switch 100
- 4–12

X1:
- 1–10, GND, GND

X4:
- 13
- 14 — 20 stations 101
- 15 — 30 stations
- 16 — 40 stations
- 3 — ORG C Original point 82
- 2 — ORG P Original point 85
- 1 — ORG RB original point 83
- 0
- +VD0 / VDO — 24VDC+ 24
- EXGND / EXGND — 24VDC- 23

X3:
- 1
- 2 — OUT17 Housing 73
- 3 — OUT18 Blow lead leg
- 4–12

Connectors: X5 RB, X6 RB, X7 P, X8 C (1 2 3 4)

Wiring diagram — Left connector (68P):

X2:
- 1 — IN1 Emergency stop 74
- 2 — IN2 Head safety 88
- 3 — IN3 Guardrail safety 75
- 4 — IN4 Head switch 76
- 5 — IN5 Insertion check 1 77
- 6 — IN6 Insertion check 2 78
- 7 — IN7 Start 89
- 8 — IN8 Stop 90
- 9 — IN9 Sequencing check
- 10 — IN10 Material transferB 91
- 11 — IN11 Turntable at place 92
- 12 — IN12 Turntable zero 93

X4:
- 13 — IN13 Mtl. transfer F 94
- 14 — IN14 Housing down 95
- 15 — IN15 left dispenser 96
- 16 — IN16 right dispenser 97
- 3 — ORG RH Original point 84
- 2 — ORG H Original point 80
- 1 — ORG Y Original point 70
- 0 — ORG X Original point 60
- +VD0 / VDO — 24VDC+ 24
- EXGND / EXGND — 24VDC- 23

X1:
- 1–12, GND, GND

X3:
- 54 OUT1 Flashlight — 1
- OUT2 Shovel light — 2
- 55 OUT3 Green light — 3
- 56 OUT4 Yellow light — 4
- 57 OUT5 Red light — 5
- 63 OUT6 Clinch — 6
- 64 OUT7 Turntable lock open — 7
- 65 OUT8 Turntable pinch roller — 8
- 66 OUT9 clockwise — 9
- 67 OUT10 counterclockwise — 10
- 68 OUT11 Cut tape — 11
- 692 OUT12 Guide material — 12

Connectors: X5 X, X6 Y, X7 H, X8 RH (1 2 3 4)

5,I/Oboardwiringsheet:

I/O A Board wiring sheet

Interface board	Signal mark	Signal name	Mark No.	Interface board	Signal mark	Signal name	Mark No.
1				A-×8-1	PULH+	H servoX5-3	51
A-×6-1	PULX+	X servoX5-3	31	A-×8-2	PULH-	H servoX5-4	51
A-×6-2	PULX-	X servoX5-4	31	A-×8-3	DIRH+	H servoX5-5	51
A-×6-3	DIRX+	X servoX5-5	31	A-×8-4	DIRH-	H servoX5-6	51
A-×6-4	DIRX-	X servoX5-6	31	A-×9-1	PULRH+	RH servoX5-3	43
A-×7-1	PULY+	Y servoX5-3	35	A-×9-2	PULRH-	RH servoX5-4	43
A-×7-2	PULY-	Y servoX5-4	35	A-×9-3	DIRRH+	RH servoX5-5	43
A-×7-3	DIRY+	Y servoX5-5	35	A-×9-4	DIRRH-	RH servoX5-6	43
A-×7-4	DIRY-	Y servoX5-6	35	A-×5-1	OUT1	flash light	63
A-×6-6	ELX+	X+ limit	58	A-×5-2	OUT2	spare	
A-×6-7	ELX-	X- limit	59	A-×5-3	OUT3	Green light	64
A-×6-8	SDX+	X+ slow down	61	A-×5-4	OUT4	Yellow light	65
A-×6-9	SDX-	X- slow down	62	A-×5-5	OUT5	Red light	66
A-×3-0	ORGX	X original point	60	A-×5-6	OUT6	clinch	73
A-×7-6	ELY+	Y+ limit	68	A-×5-7	OUT7	Turntable lock open	74
A-×7-7	ELY-	Y- limit	69	A-×5-8	OUT8	turntable pinch roller	75
A-×7-8	SDY+	Y+ slow down	71	A-×5-9	OUT9	clockwise	89
A-×7-9	SDY-	Y- slow down	72	A×-5-10	OUT10	counterclockwise	90
A-×3-1	ORGY	Y original point	70	A×-5-11	OUT11	Cut tape1	91
A-×8-6	ELH+	H+ limit	78	A-×5-12	OUT12	Transfer material	92
A-×8-7	ELH-	H- limit	79	A-×2-5	IN5	Insertion inspection1	96
				A-×2-6	IN6	Insertion inspection2	97
				A-×2-7	IN7	start	98
A-×3-2	ORGH	H original point	80	A-×2-8	IN8	stop	99
				A-×2-9	IN9		
				A-×2-10	IN10	material transfer B	100
				A-×2-11	IN11	Turntable at place	102
				A-×2-12	IN12	turntable zero position	103
A-×3-3	ORGRH	RH original point	84	A-×3-13	IN13	material transferF	101
A-×2-1	IN1	emergency stop switch	93	A-×3-14	IN14	Housing goes down	104
A-×2-2	IN2	Head safety	88	A-×3-15	IN15	dispensing headLH	105
A-×2-3	IN3	Protective cap safe	94	A-×3-GND	GND	24 VDC -	23
A-×2-4	IN4	head switch	95	A-×3-VDD	VDD	24 VDC +	24
A-×3-G+1D	GND	Rounding wire		A-×3-16	IN16	dispensing head RH	106

X	X motor		
Y	Y motor		
H	insertion head motor		
RH	Turn angle motor up		

I/O B Board wiring sheet

Interface board	Signal mark	Signal name	Mark No.	Interface board	Signal mark	Signal name	Mark No.
1				B-×8-1	PULP+	P servoX5-3	55
2				B-×8-2	PULP-	P servoX5-4	55
3				B-×8-3	DIRP+	P servoX5-5	55
4				B-×8-4	DIRP-	P servoX5-6	55
5				B-×9-1	PULC+	C servoX5-3	39
B-×7-1	PULRB+	RB servoX5-3	47	B-×9-2	PULC-	C servoX5-4	39
B-×7-2	PULRB-	RB servoX5-4	47	B-×9-3	DIRC+	C servoX5-5	39
B-×7-3	DIRRB+	RB servoX5-5	47	B-×9-4	DIRC-	C servoX5-6	39
B-×7-4	DIRRB-	RB servoX5-6	47	43	OUT1	spare	13
10				44	OUT2	spare	14
11				45	OUT3	spare	15
12				46	OUT4	spare	16
13				B-×5-5	OUT5	housing	17
14				B-×5-6	OUT6	Blow lead leg	18
15				B-×5-7	OUT7	spare	19
16				B-×5-8	OUT8	spare	20
17				B-×5-9	OUT9	spare	21
18				B-×5-10	OUT10	spare	22
B-×3-1	ORGRB	RB original point	83	53	OUT11		23
B-×3-2	ORGP	P original point	85	54	OUT12		24
21				55	IN5	Missing component inspection2	21
22				56	IN6	Missing component inspection3	22
23				57	IN7	Missing component inspection4	23
24				58	IN8		24
25				59	IN9		25
26				60	IN10		26
27				61	IN11		27
28				62	IN12		28
B-×3-3	ORGC	C original point	82	63	IN13		29
B-×2-1	IN1	Clinch inspection	108	64	IN14		30

B-×2-2	IN2	Supplement material	109	65	IN15		31
B-×2-3	IN3	Vibration inspection3		B-×3-GND	GND	24 VDC -	23
B-×2-4	IN4	Vibration inspection4		B-×3-VDD	VDD	24 VDC +	24
B-×3-GND	GND	Grounding wire		68	IN16		32

RB	Turn angle motor down
Push	material pressing motor
C	chain motor

---when there is no vibration plate, short circuit the signal of Vibration
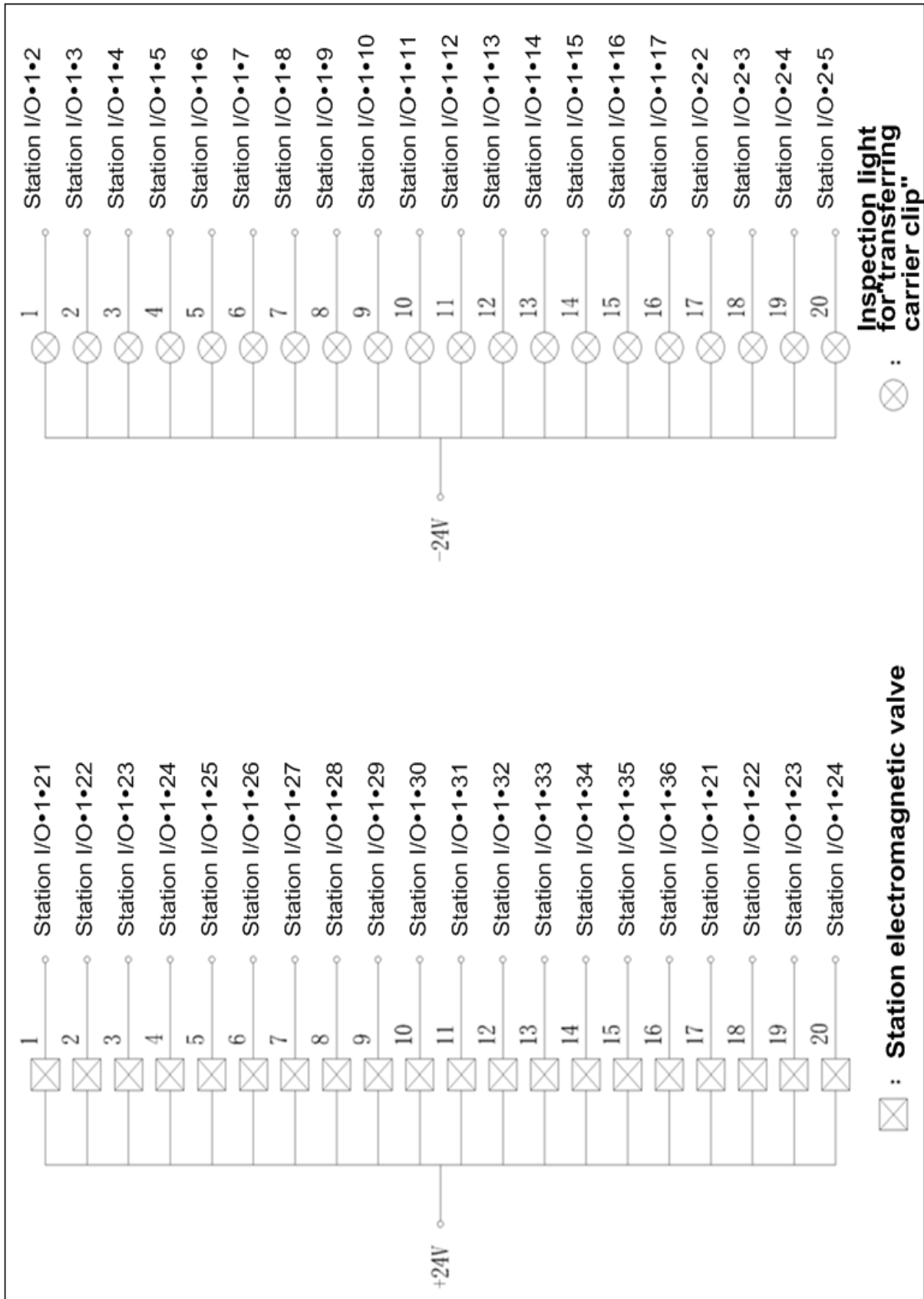
inspection, Missing component inspection with "ground".

Station board wiring
diagram(30stations)P32C32 card

CON1　　　　　　(Pin 37 of card)

Interface board	Signal mark	Signal name	Interface board	Signal mark	Signal name
1	GND	24V (-)	20	GND	24V (-)
2	INPUT0	station1 input	21	OUTPUT0	station1 output
3	INPUT1	station2 input	22	OUTPUT1	station2 output
4	INPUT2	station3 input	23	OUTPUT2	station3 output
5	INPUT3	station4 input	24	OUTPUT3	station4 output
6	INPUT4	station5 input	25	OUTPUT4	station5 output
7	INPUT5	station6 input	26	OUTPUT5	station6 output
8	INPUT6	station7 input	27	OUTPUT6	station7 output
9	INPUT7	station8 input	28	OUTPUT7	station8 output
10	INPUT8	station9 input	29	OUTPUT8	station9 output
11	INPUT9	station10 input	30	OUTPUT9	station10 output
12	INPUT10	station11 input	31	OUTPUT10	station11 output
13	INPUT11	station12 input	32	OUTPUT11	station12 output
14	INPUT12	station13 input	33	OUTPUT12	station13 output
15	INPUT13	station14 input	34	OUTPUT13	station14 output
16	INPUT14	station15 input	35	OUTPUT14	station15 output
17	INPUT15	station16 input	36	OUTPUT15	station16 output
18	COM1A	Signal ground	37	VC	24V (+)
19	COM1B	Signal ground			

CON2　　　　　　(outlet pin37)

Interface board	Signal mark	Signal name	Interface board	Signal mark	Signal name
1	GND	24V (-)	20	GND	24V (-)
2	INPUT16	station17 input	21	OUTPUT16	station17 output
3	INPUT17	station18 input	22	OUTPUT17	station18 output
4	INPUT18	station19 input	23	OUTPUT18	station19 output

5	INPUT19	station20 input	24	OUTPUT19	station20 output
6	INPUT20	station21 input	25	OUTPUT20	station21 output
7	INPUT21	station22 input	26	OUTPUT21	station22 output
8	INPUT22	station23 input	27	OUTPUT22	station23 output
9	INPUT23	station24 input	28	OUTPUT23	station24 output
10	INPUT24	station25 input	29	OUTPUT24	station25 output
11	INPUT25	station26 input	30	OUTPUT25	station26 output
12	INPUT26	station27 input	31	OUTPUT26	station27 output
13	INPUT27	station28 input	32	OUTPUT27	station28 output
14	INPUT28	station29 input	33	OUTPUT28	station29 output
15	INPUT29	station30 input	34	OUTPUT29	station30 output
16	INPUT30		35	OUTPUT30	
17	INPUT31		36	OUTPUT31	
18	COM2A	Signal ground	37	VC	24V (+)
19	COM2B	Signal ground			

	Station I/O•1•2	Station I/O•1•3	Station I/O•1•4	Station I/O•1•5	Station I/O•1•6	Station I/O•1•7	Station I/O•1•8	Station I/O•1•9	Station I/O•1•10	Station I/O•1•11	Station I/O•1•12	Station I/O•1•13	Station I/O•1•14	Station I/O•1•15	Station I/O•1•16	Station I/O•1•17	Station I/O•2•2	Station I/O•2•3	Station I/O•2•4	Station I/O•2•5
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

−24V

⊗ : Inspection light for "transferring carrier clip"

	Station I/O•1•21	Station I/O•1•22	Station I/O•1•23	Station I/O•1•24	Station I/O•1•25	Station I/O•1•26	Station I/O•1•27	Station I/O•1•28	Station I/O•1•29	Station I/O•1•30	Station I/O•1•31	Station I/O•1•32	Station I/O•1•33	Station I/O•1•34	Station I/O•1•35	Station I/O•1•36	Station I/O•1•21	Station I/O•1•22	Station I/O•1•23	Station I/O•1•24
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

+24V

⊠ : Station electromagnetic valve

XG-3000 Radial Machine Air Control Diagram

4. Computer control diagram：

Machine Visual → **Industrial control computer** [Motion Control card | Motion Control card | Motion Control card]

I/O Board → **Dispenser electromagnetic valve**

Pneumatic, turntable, warning light, visual light source ← **OUT** | **I/O Board**

Each inspection, switch signal → **IN**

Servo ↔ **Servo Motor**
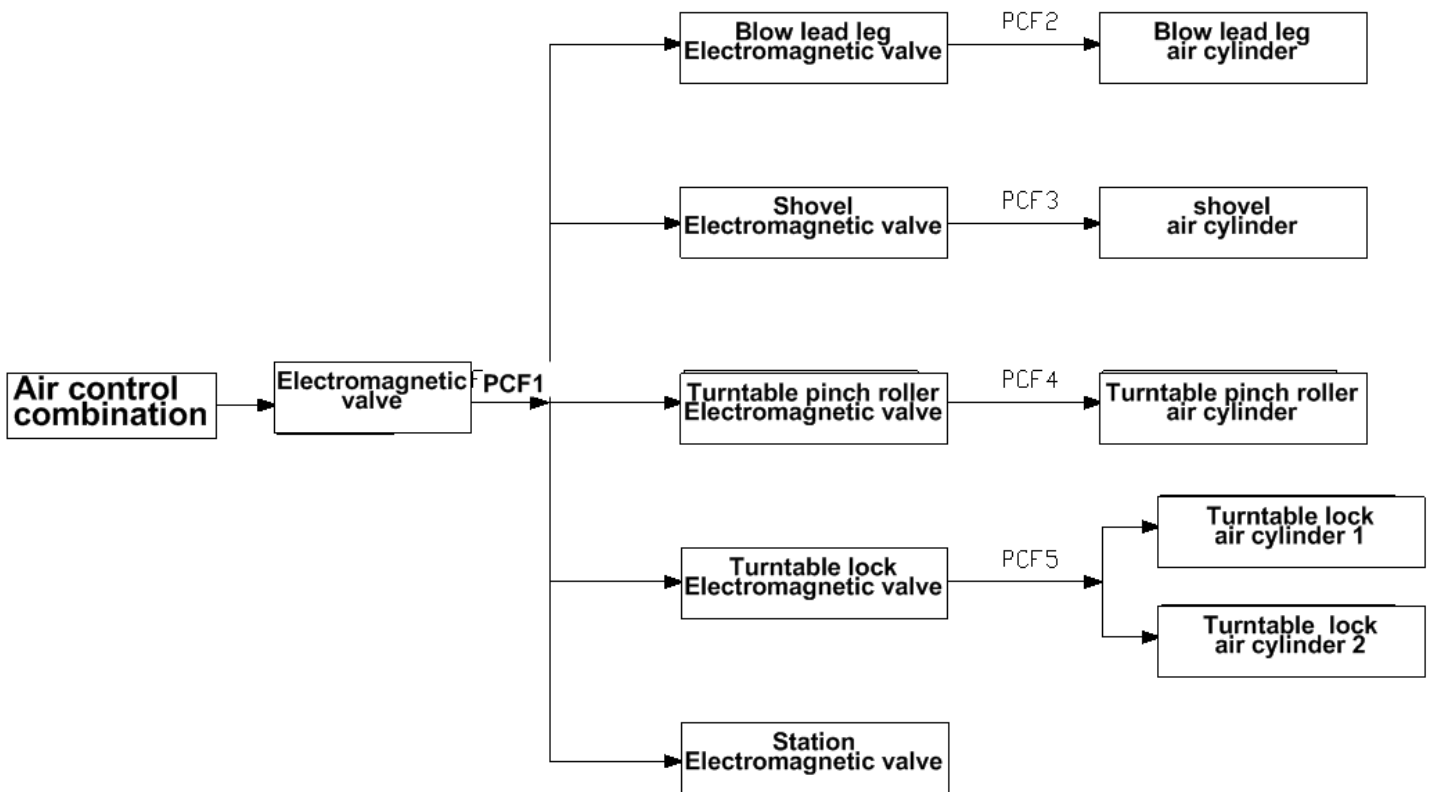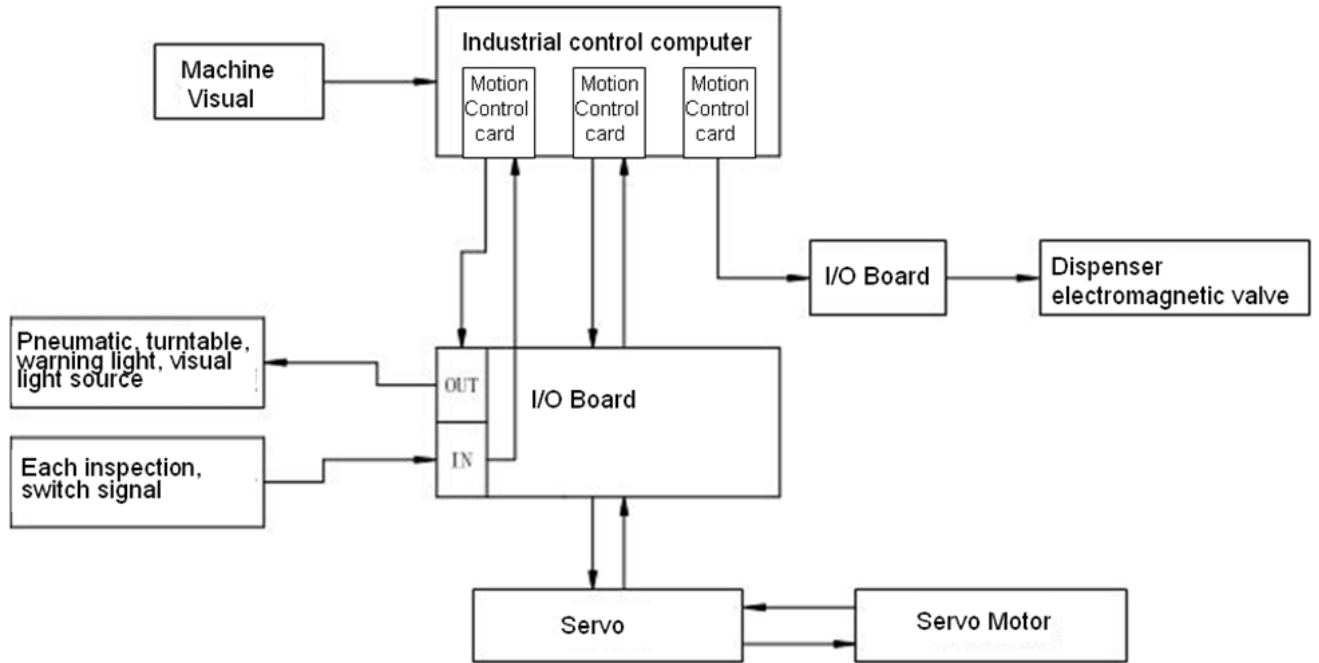
Radial Machine Computer Control Diagram

Big I/O board wiring diagram