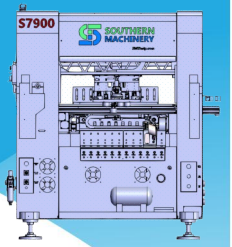
SOUTHERN MACHINERY



S7900

Maintenance manual

SOUTHERN MACHINERY

I. Equipment Inspection Item Cycle Table

Inspection Items	Inspection Items		Inspection Frequency				Inspection Frequency
Processing Method	Inspection Items	Processing Confirmation	Daily	Weekly	Monthly	Quarterly	Semi-annually
Inspection	Air Pressure, Pipelines and Joints	Confirm pressure is between 0.5MPa and 0.65MPa, no air leakage	O				
Inspection	Vacuum Generator Negative Pressure Value	≥-80KPa with no vacuum leakage	O				
Inspection	Intake Filter Assembly	Confirm no water accumulation or leakage	O				
Inspection	Power Indicator Light, Buzzer	Confirm light and buzzer function	O				
Inspection	Stopper Cylinder	Action Confirmation	O				
Inspection	Front and Rear Door Gas Springs	Action Confirmation	O				
Inspection	Discard Box	Remove discarded materials	O				
Inspection	Safety Light Curtain, Door Safety Switch	Action Confirmation	O				
Inspection	Support Platform	Action Confirmation	O				
Inspection	Control Panel Switch	Action Confirmation	O				
Inspection	Gripper, Nozzle	Confirm action and check rubber wear	O				
Inspection	Cooling Fan	Action Confirmation	O				
Inspection	24V Sensor	I/O Confirmation		O			
Inspection	Unit Cylinders	Action Confirmation		O			
Inspection	Conveyor Belt	Check for wear, damage, slack		O			
Inspection	Transport Track	Action Confirmation		O			
Inspection	Stopper Plastic Block	Wear and tear		O			
Inspection	Cables, Connectors	Check connection status		O			
Inspection	Gripper Cylinder, Clips	Action confirmation and wear and tear		O			
Inspection	Emergency Stop Switch	Operational Confirmation		O			
Inspection	Drag Chain	Inspect for wear, damage			O		
Inspection	Vacuum Filter (Plug-in Head)	Check for cleanliness, filter cotton			O		
Inspection	Filter (Vacuum Pump)	Check for dirt			O		
Cleaning	Linear Motion Units of Each Axis	Remove dust, grease			O		
Cleaning	Conveyor Belt	Remove dust, foreign objects		O			
Cleaning	Conveyor Sensors	Cleaning			O		
Cleaning	Gripper, Nozzle	Clean		O			
Cleaning	Cooling Fan	Clean					O

Note: Check the oil quantity of the screw rod/guide rail every half month. Add oil as needed. Clean the old oil and replace it with new oil every month!

Purpose: Timely cleaning and maintenance are conducive to the high - speed and stable operation of the equipment, and can extend the service life of the equipment.

Explanation: Maintenance is classified by time into daily maintenance, weekly maintenance, monthly maintenance, quarterly maintenance, and annual maintenance. Daily maintenance means cleaning and inspecting the production machines every day to improve the safety and stability of equipment operation. Please strictly implement the following inspection & maintenance items and requirements.

II. Tools Required for Inspection Items

Oil gun (B.06.01A), hexagon wrench, brush, vacuum cleaner, air gun

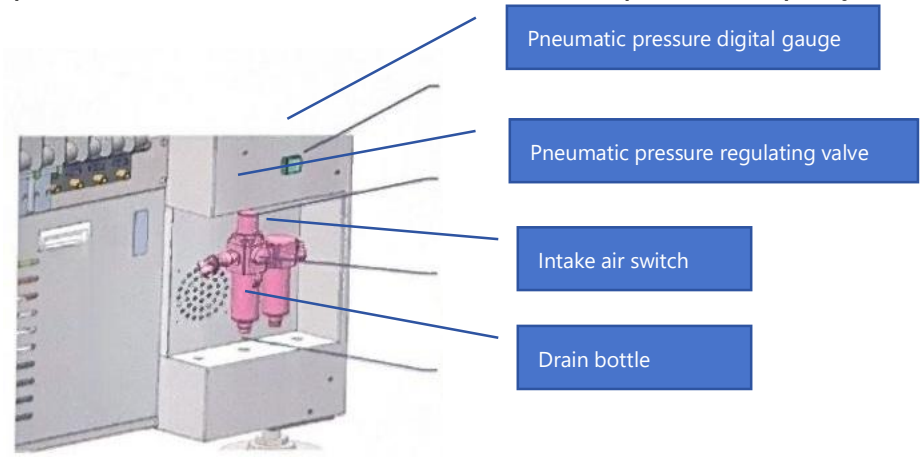
III. Preparation of Consumables for Inspection Items

Dust-free cloth, alcohol, WD40, B.01.01A (Idemitsu grease), B.02.01A (AFC lubricating grease)

IV. Specific Instructions for Some Inspection Items

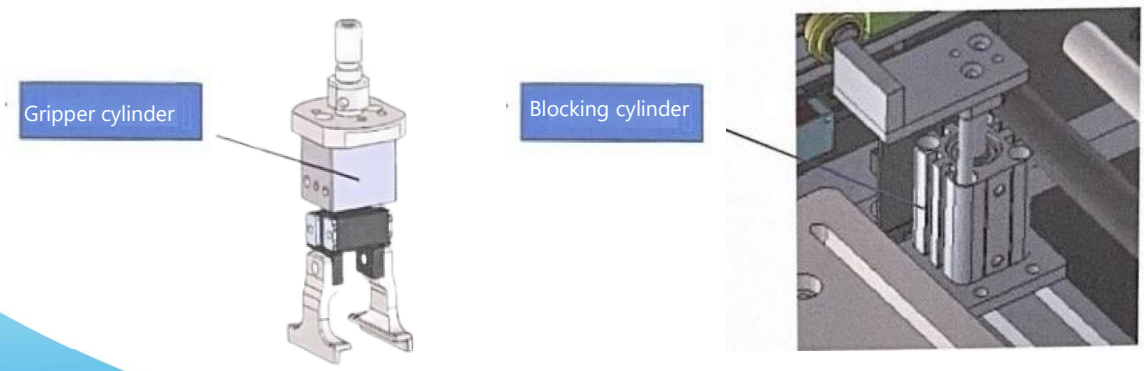
4.1 Inspection Content of the Pneumatic Pressure Unit

4.1.1 Confirm whether the pressure is 0.5Mpa - 0.6Mpa on the pneumatic pressure detection gauge. Also, check whether there is water and oil in the filter cup of the air intake three - in - one unit. If so, take it out and pour it out completely. See the figure below.



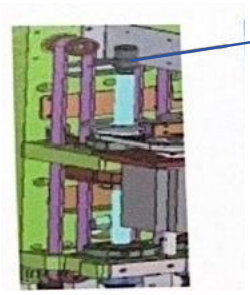
4.1.2 Check whether there is air leakage in the pneumatic pressure pipeline part.

4.1.3 Check whether the actions of each cylinder are normal. Cylinders include gripper cylinder, front and rear blocking cylinders, clamping plate cylinder, etc.)

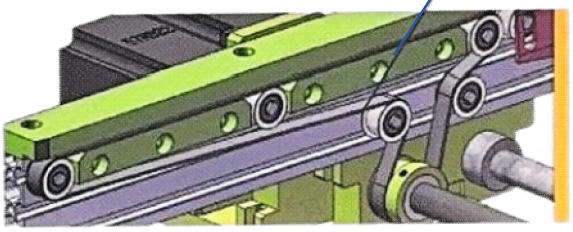


4.2 Inspection contents of the transmission unit

4.2.1 Check whether the conveyor belt has obvious wear, damage, looseness, etc., and replace it with a new one if necessary.

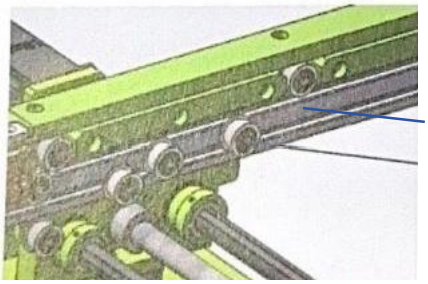


Upper and lower belts of the Z-axis



Track conveyor belt

4.2.2 Check the operation of the conveyor belt pulley. Turn on the motor transmission during the motor debugging and check whether the pulley moves smoothly. If the movement is not smooth or the pulley does not move, debugging is required and the pulley needs to be replaced.



pulley

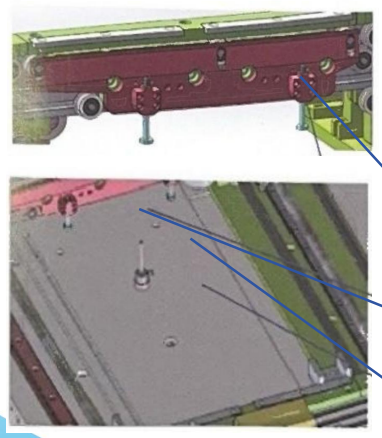
4.3 Inspection contents of the support platform and front - rear blockers

Manually raise and lower the support platform during programming and debugging. Check whether the lifting movement of the support platform is smooth, and whether the lifting action of the clamping plate device of the transport track (this device is applicable to the belt) is smooth. Confirm the fixing state of the substrate according to the following items.

4.3.1 After the support platform rises to the designated position, the substrate should have no looseness.

4.3.2 The support blocks (ejector pins) on the support platform should just support the bottom of the substrate without any gap or lift the substrate up.

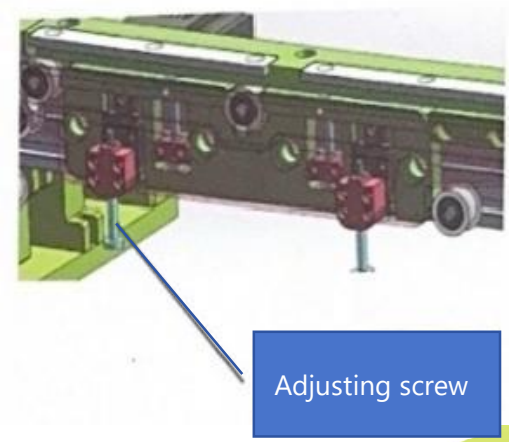
4.3.3 Check whether the stopper operates normally. Inspect whether the baffle is deformed or damaged, and whether the fixing screws are loose.



Support platform

Ejector pin

Ejector pin platform

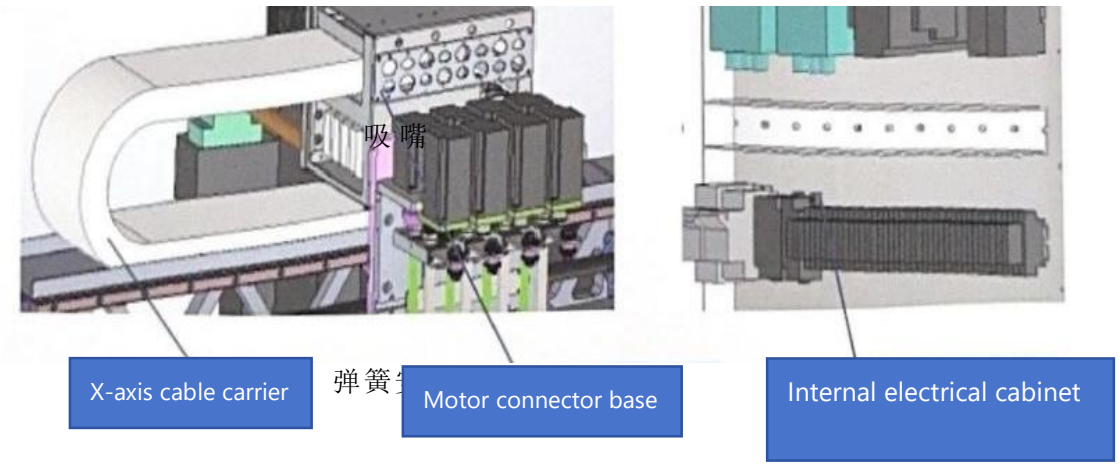


Adjusting screw

4.4 Inspection contents of cables, plugs and cable carriers

4.4.1 Confirm the connection status of all cables and plugs of the machine, and ensure that each plug is correctly connected.

4.4.2 Check whether the cables and cable carriers are damaged..

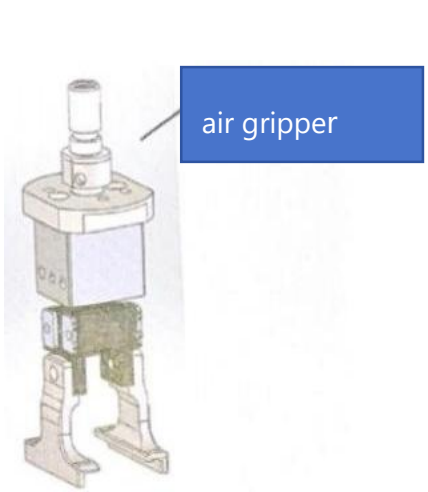


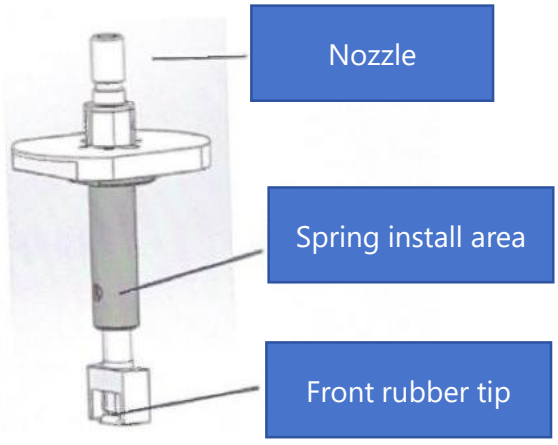
4.5 Inspection contents of grippers, suction nozzles and suction nozzle rod ferrules

4.5.1 Check whether the movement of the grippers to be used is smooth.

4.5.2 Check whether the spring rebound action of the suction nozzles (models with spring buffer) to be used is smooth.

4.5.3 Check whether the rubber on the gripper surfaces and the suction nozzle tips to be used has obvious wear or damage. Replace the new accessories if necessary.

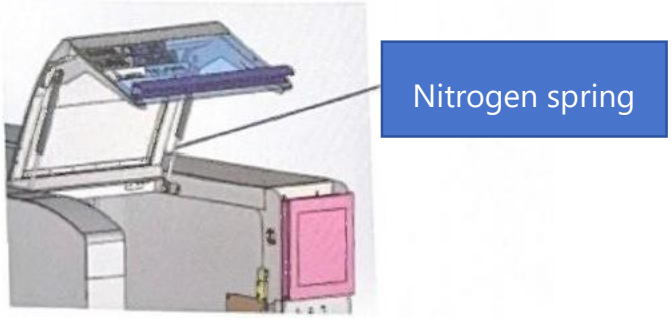


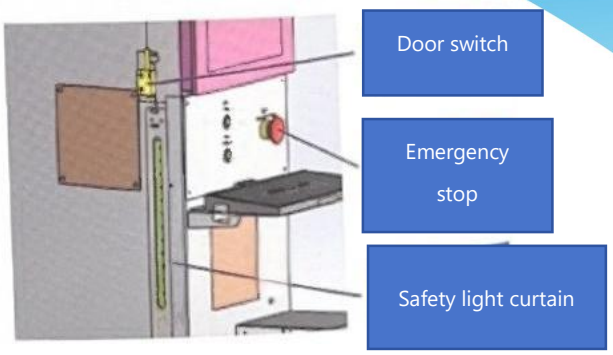


4.6 Inspection contents of safety protection switches and door cover hydraulic rods

4.6.1 Check the effectiveness of the front and rear door switches, safety light curtains and emergency stop switches.

4.6.2 Open the front and rear doors. Check whether the door opening and closing actions are smooth, whether the hydraulic rods support in place and whether the supporting force is normal. During the confirmation process, ensure that the safety doors will not fall. If the safety doors cannot stay open at a certain angle, the hydraulic rods need to be replaced.





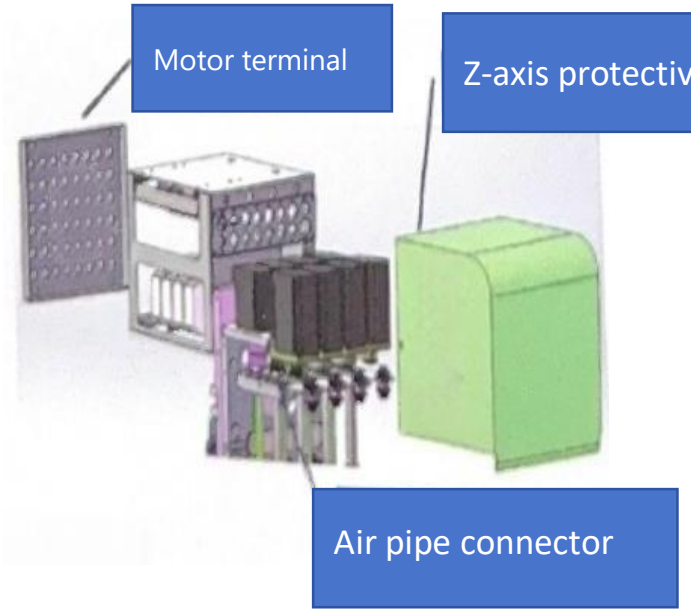
4.7 Inspection contents of the plug-in head

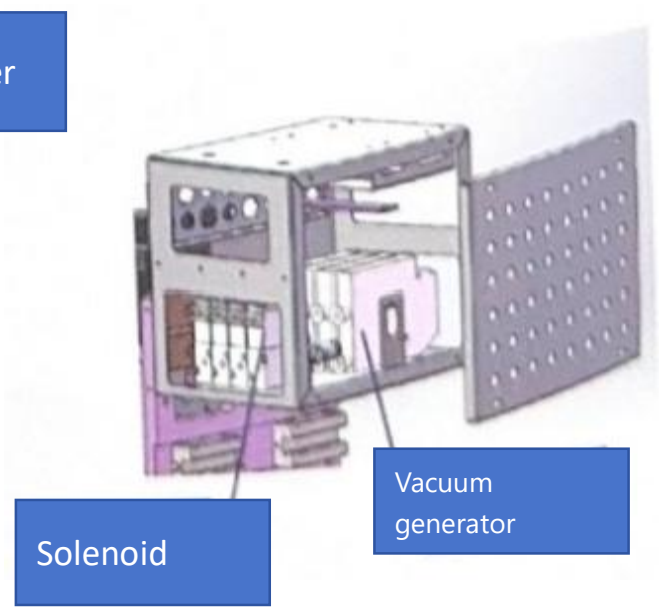
4.7.1 Check whether the cables, plugs, air hoses, etc. on the plug-in head are damaged, and whether the terminals are loose.

4.7.2 Check whether the up-and-down movement of the Z-axis is smooth.

4.7.3 Check whether the movement of the R-axis is smooth.

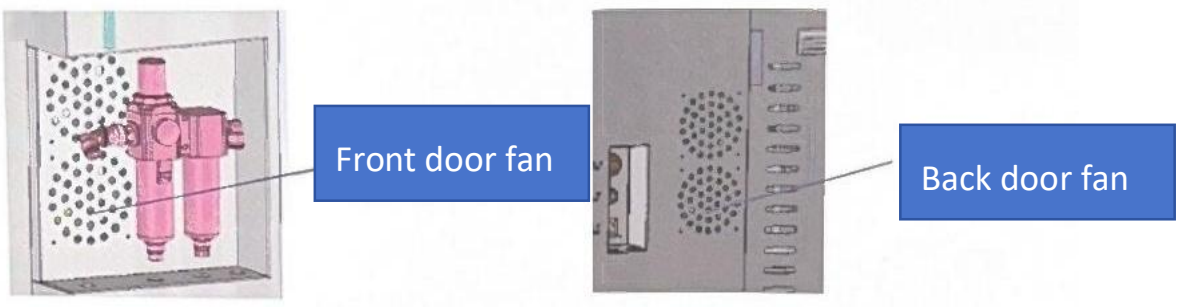
4.7.4 Check the fastening conditions of each mechanical component.





4.8 Inspection contents of the cooling fan

Check whether the fan is working properly. Clean the filter if necessary.



V. Specific Instructions for Cleaning Items

5.1 Cleaning of the moving units of each axis

Content: Remove dust, foreign objects, and dirty old oil.

Tools: Brush, vacuum cleaner.

Consumables: Dust-free cloth, Grease No. 2 (B.01.01A), AFC Grease (B.02.01A).

Requirements: There should be no attached dust, foreign objects, or dirty old oil on the linear motion units of each axis, and new oil should be reapplied to the guide rails.

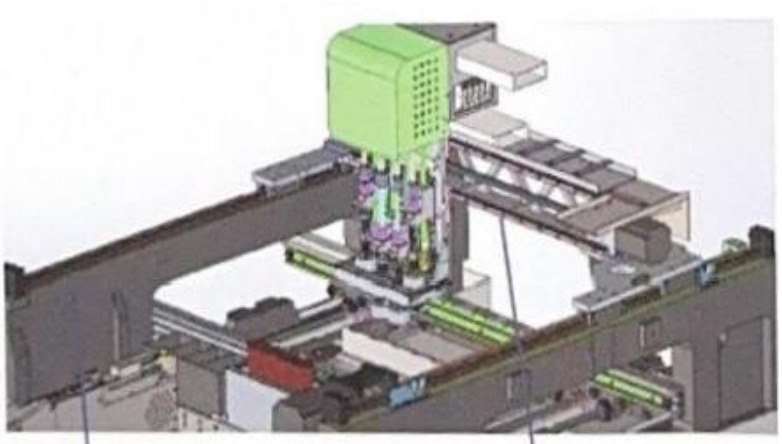
5.2 Cleaning of the transmission unit

Content: Remove dust and foreign objects from the conveyor belt.

Tools: Brush, vacuum cleaner.

Consumables: Dust-free cloth.

Requirements: There should be no attached dust or foreign objects on the conveyor track and the bottom of the track (support platform).



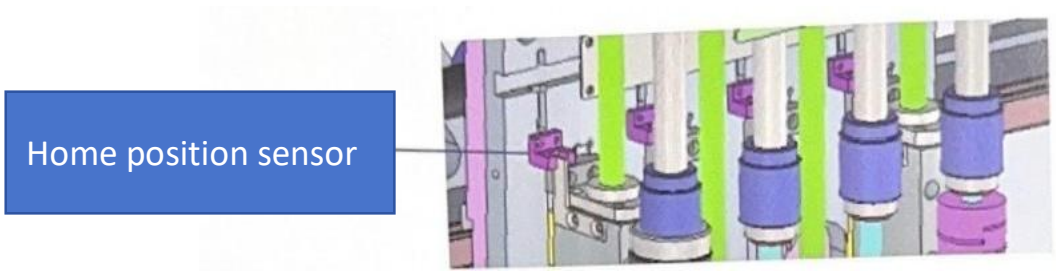
5.3 24 V Sensors

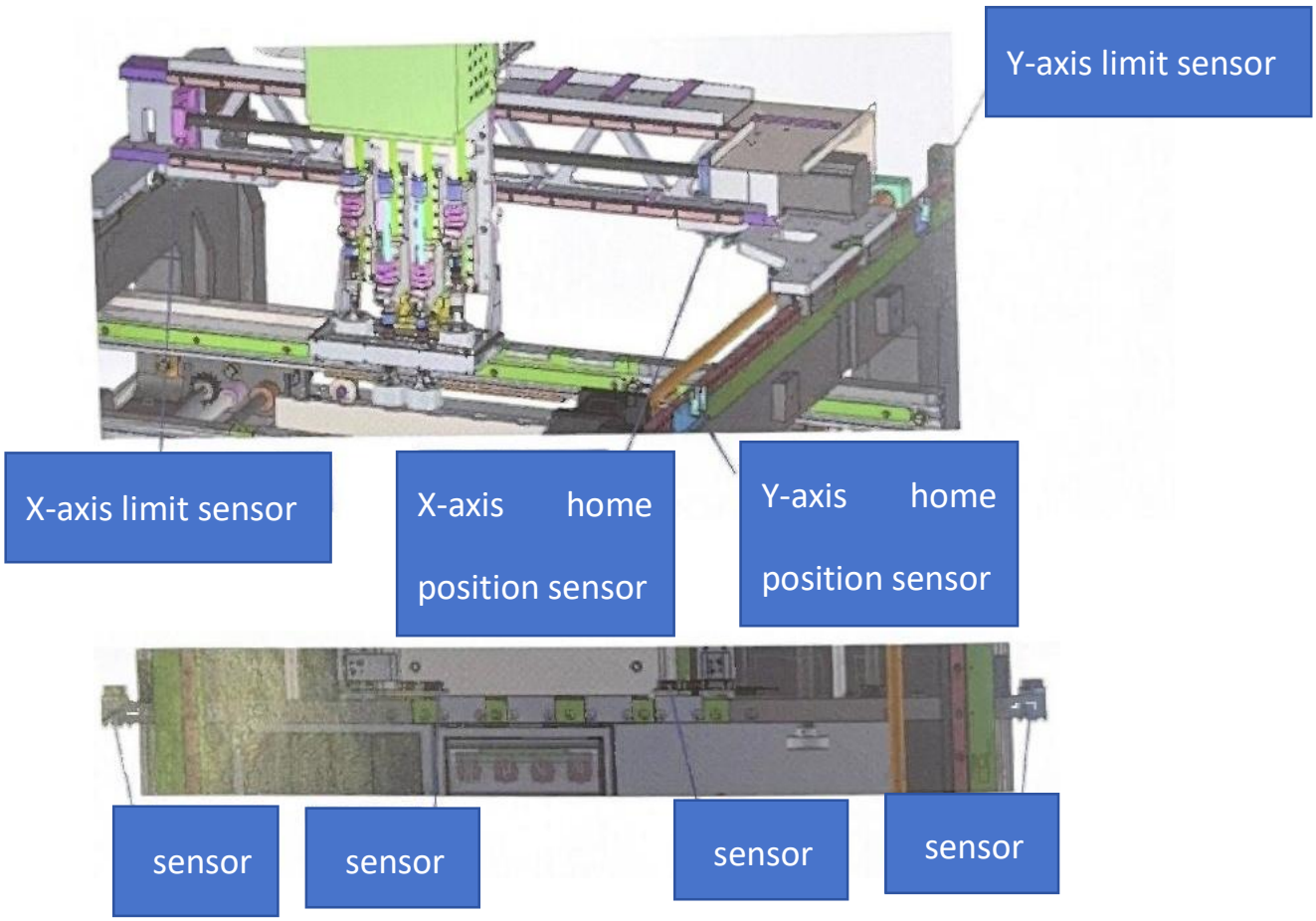
Content: Remove dust and foreign objects from the sensor windows.

Tools: Brush.

Consumables: Dust-free cloth, alcohol.

Requirements: There should be no attached dust or foreign objects on the sensor windows. If stains cannot be removed, clean the windows with a dust-free cloth dipped in a small amount of alcohol.





5.4 Air grippers and suction nozzles

Content: Remove the dust from the clamping surfaces of the air grippers, the tips of the suction nozzles, and the air channels of the suction nozzles.

Tools: Air gun.

Consumables: Dust-free cloth, alcohol.

Requirements: There should be no attached dust on the clamping surfaces of the air grippers, the tips of the suction nozzles, and the air channels of the suction nozzles. (Please clean with a small amount of alcohol.)

⚠ When cleaning, do not apply excessive force to any part of the vision module. Since the vision module uses glass components inside, they may be damaged.

5.6 Calibration reference points

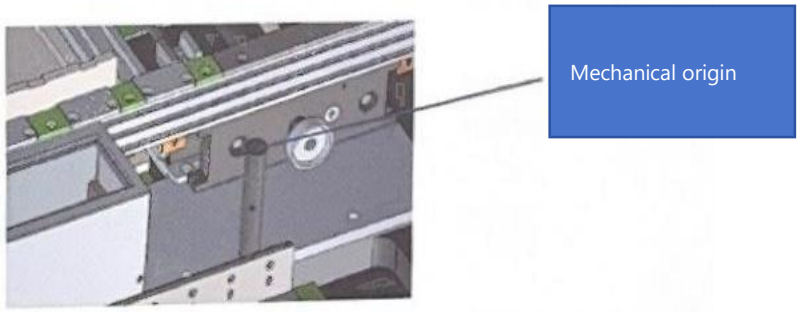
Content: Remove dust and foreign objects from the calibration reference points.

Tools: Vacuum cleaner.

Consumables: Dust-free cloth, alcohol.

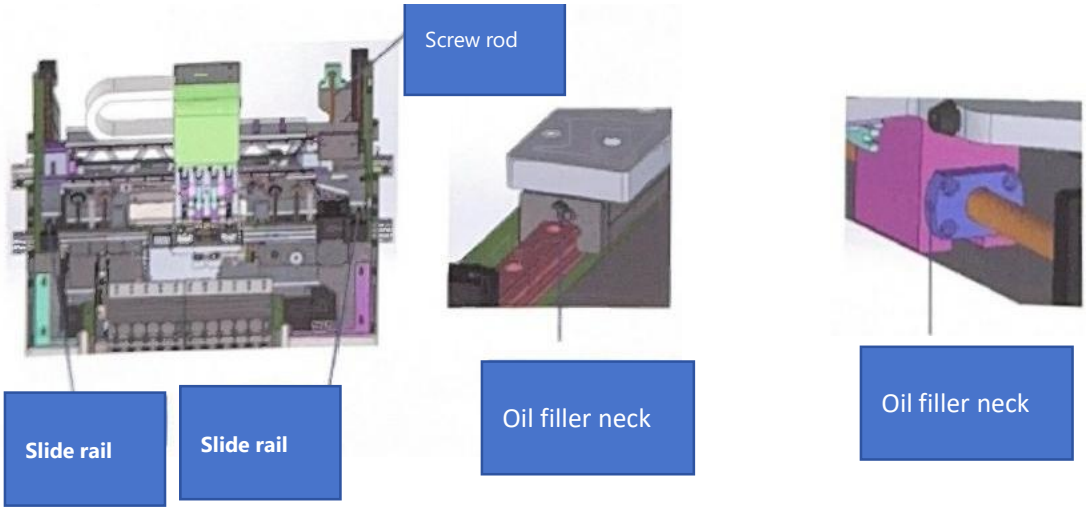
Requirements: There should be no attached dust or foreign objects on the calibration reference points. If stains cannot be removed, clean with a dust-free cloth dipped in a small amount of alcohol.

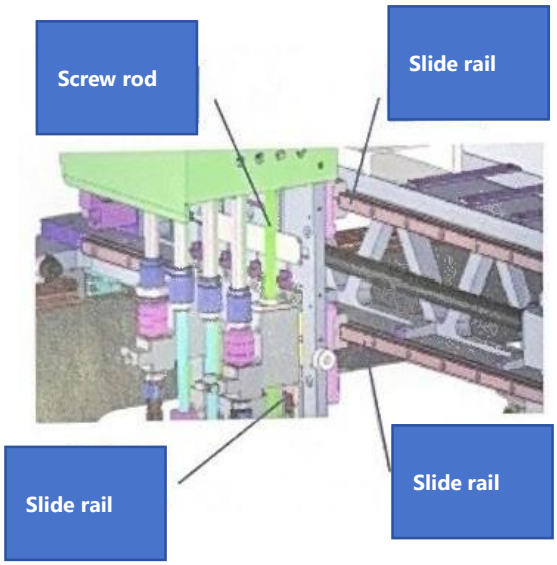
Note: Do not use a high-pressure air gun for cleaning (except for cleaning the air channels of the suction nozzles).

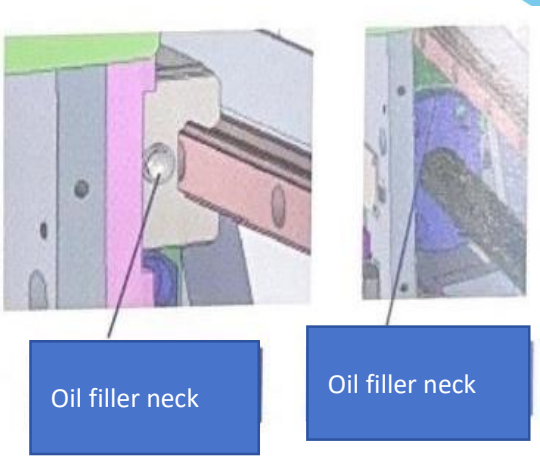


VI. Maintenance/Oiling Parts and Requirements

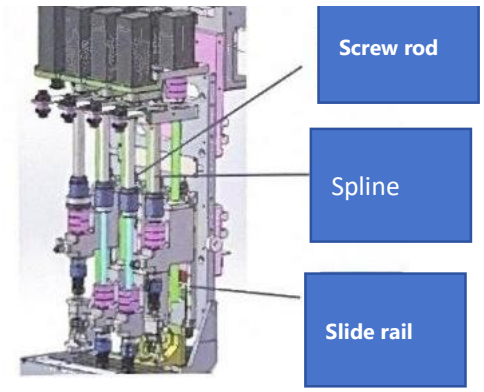
6.1 Clean and oil the XY lead screws and sliders. recommends using grease B.01.01A, No. 2 grease (once a month).

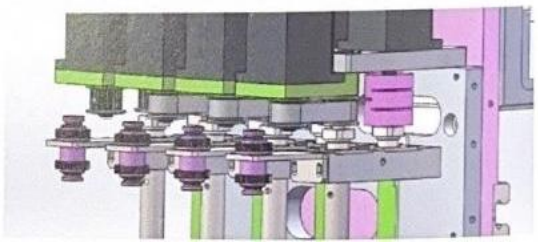




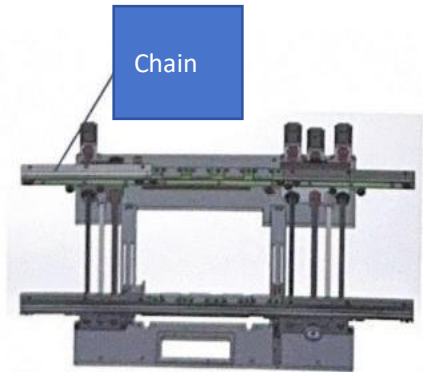


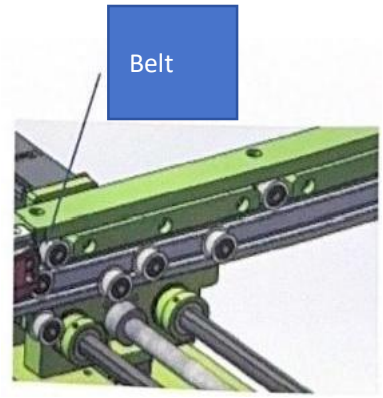
6.2 Clean and oil the Z-axis lead screw, slider, and suction nozzle rod. Chuangda recommends using grease B.02.01A, AFC grease (once a month). (Please use the special AFC oil gun B.06.01A and remove the head protective cover before oiling.)





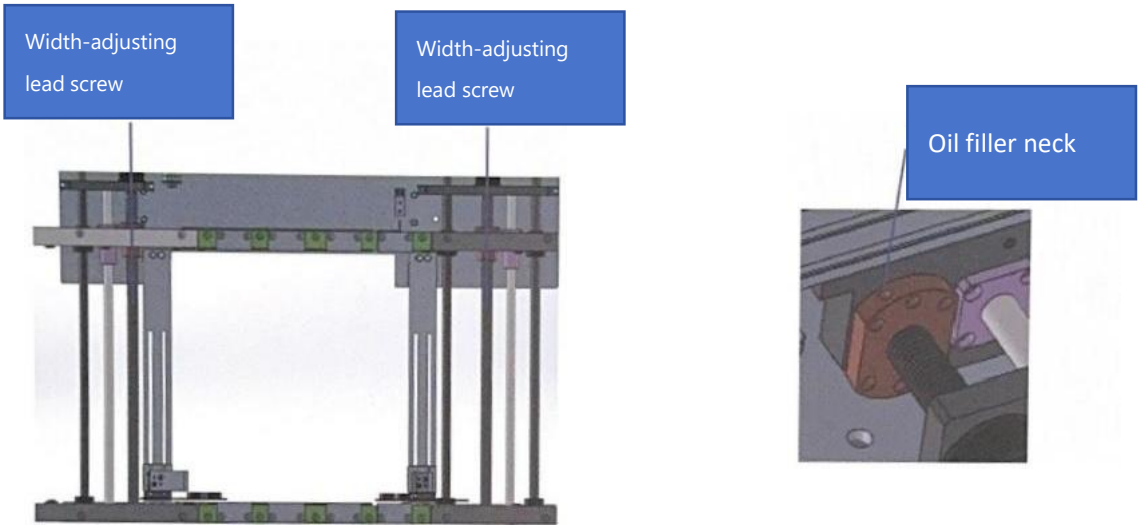
6.3 Track maintenance: Check whether the belt or chain is loose



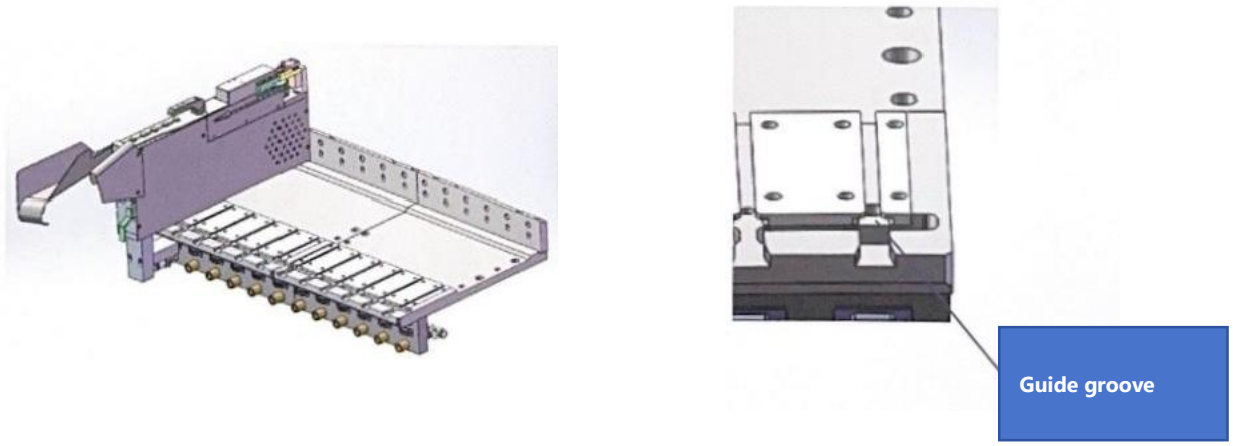


6.4 Check whether the guide wheels are worn or jammed. Clean and oil them. Inject chain oil with a syringe (once a month).

6.5 Clean and oil the track width change mechanism and the conveying mechanism. Fill with the No. 2 grease B.01.01A specified (once a month).



6.6 Clean the feeder installation platform (once a day).



VII. Others

7.1 Check every six months whether the air pipes are aged or damaged. If so, replace them in time.

7.2 Check every six months whether the power cords and control lines are damaged, and whether there are foreign objects or dust inside the electrical cabinet.

7.3 Clean the machine thoroughly before leaving work every day. Do not leave any foreign objects on the machine.

7.4 Check and re - tighten the bolts and screws of each component every quarter.

7.5 Clean the transmission components every six months to prevent the mixture of dust and oil from wearing the transmission components.