Red Sun

BOWLING SYSTEM
OPERATION TRAINING MANUAL



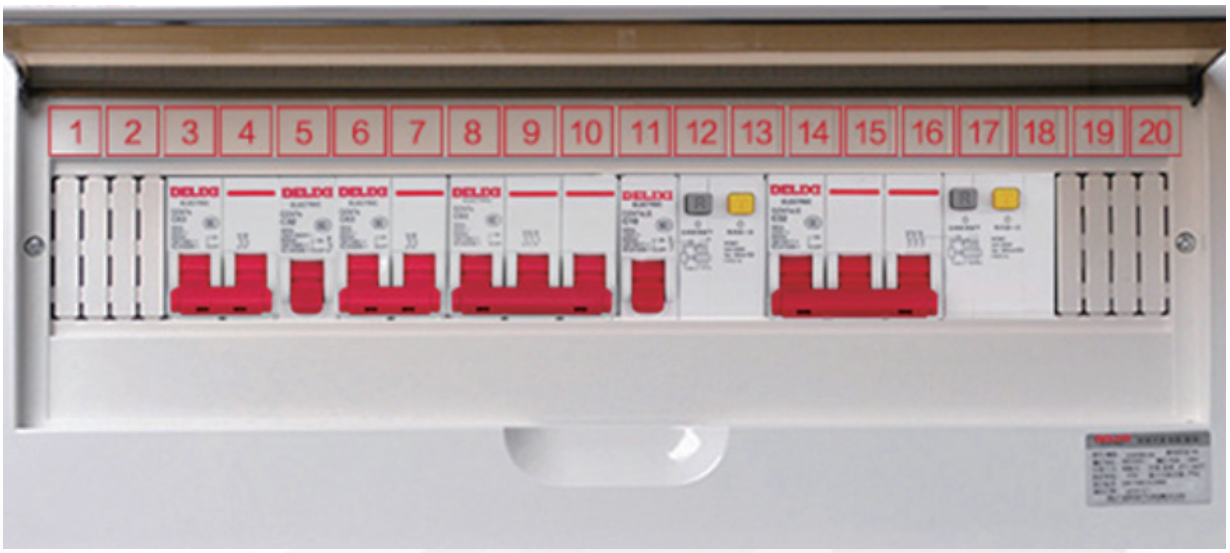
Beijing Red Sun Bowling Technology Co ., ltd

OPERATING SYSTEM

One. Equipment Power On/Off and Signal Connection

• Correct Power-On Sequence

1.Turn on the main power switch of the electrical box in the bowling area.



2.Start the main computer at the bowling front desk.



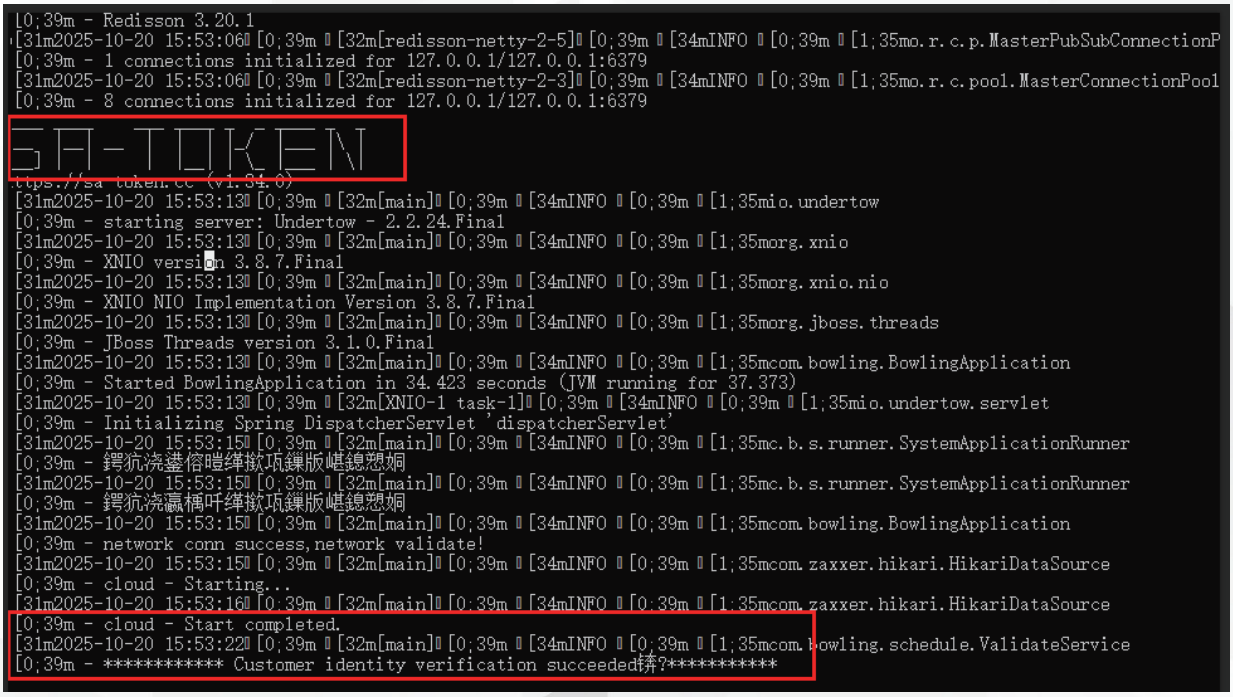
3.Log in to the bowling software

After starting the Windows operating system, the account password is "Admin123".

After the system is fully started, the front desk system will run automatically. If it does not run automatically, click the **green icon on the desktop to launch it.**



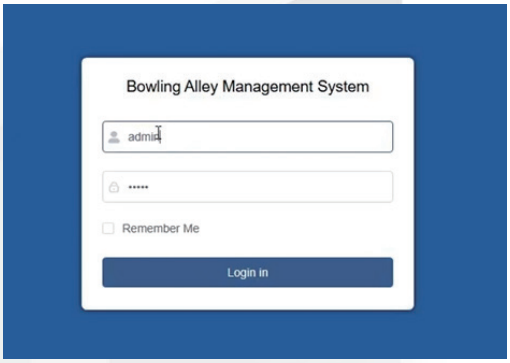
When the message **"start completed"** appears, the background system is officially fully activated,



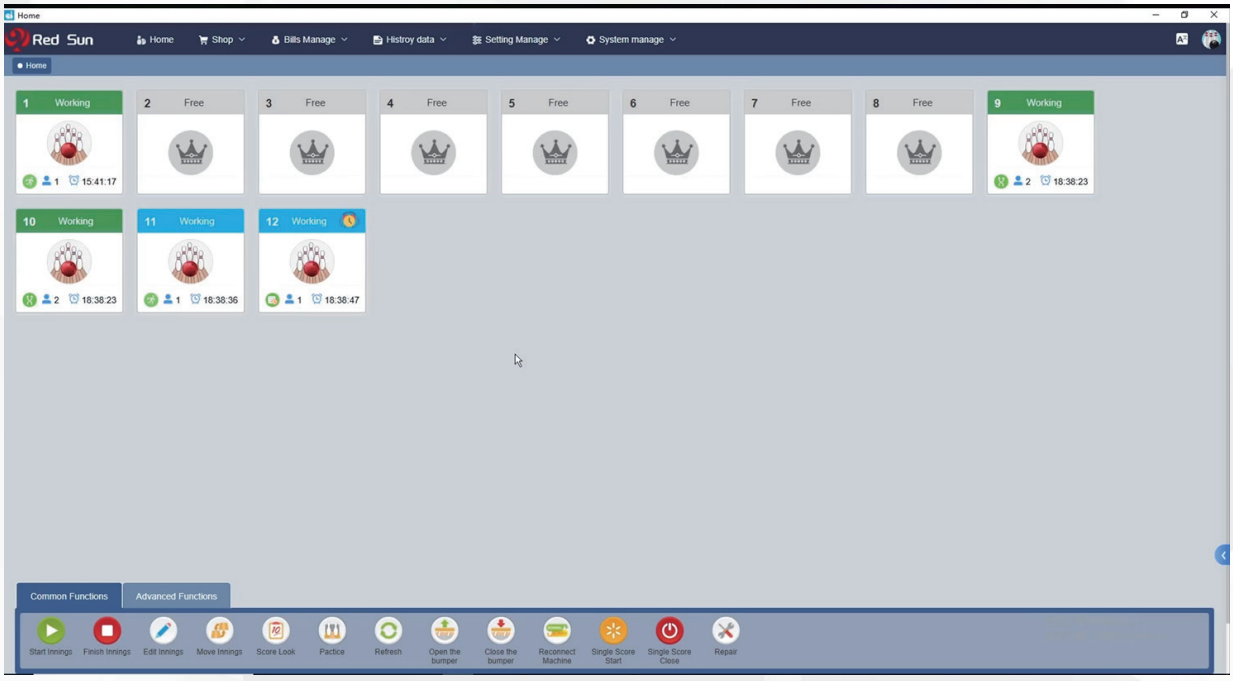
and then the user can launch the **blue bowling icon on the front end.**



After the front desk management system is started, a "Login" window will pop up. Enter the username (e.g., "admin") in the "Account" field and the password (e.g., "admin123") in the **"Password"** field, then click the **"Login"** button to access the system for operation.If you click the **"Exit"** button, the front desk system will be closed.

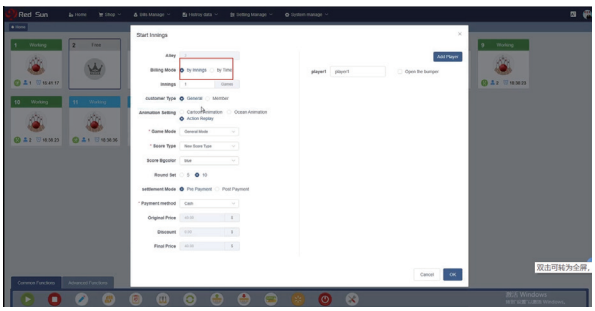


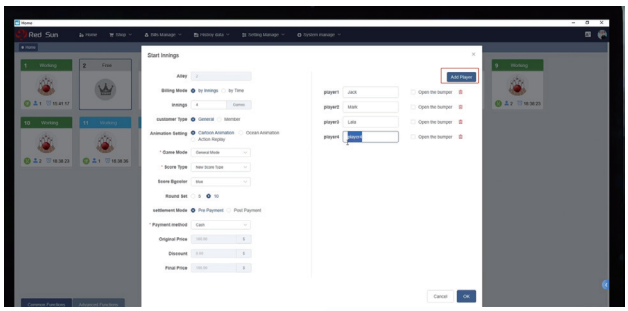
The information of the bowling lanes installed in the venue will be displayed on the main window of "Front Desk Management", as shown in the figure.



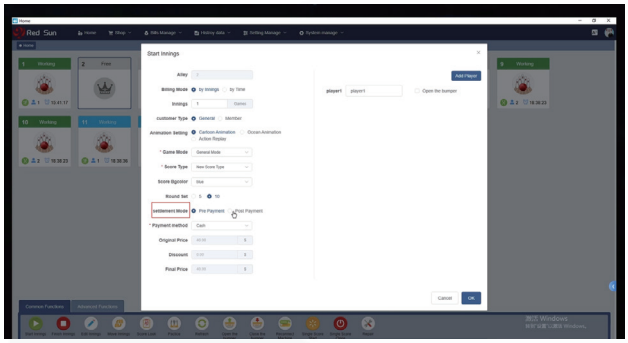
On the main window of **"Front Desk Management"**, find a lane with the current status of "Free", and click the corresponding lane with the mouse (click once to select, click again to deselect).Click the **"Start Inning"** button to enter the **"Game Setup"** window.

Click the "Add Player" button to enter the "Player Registration" page, where you can enter the player's name and set whether to enable the lane guardrail.



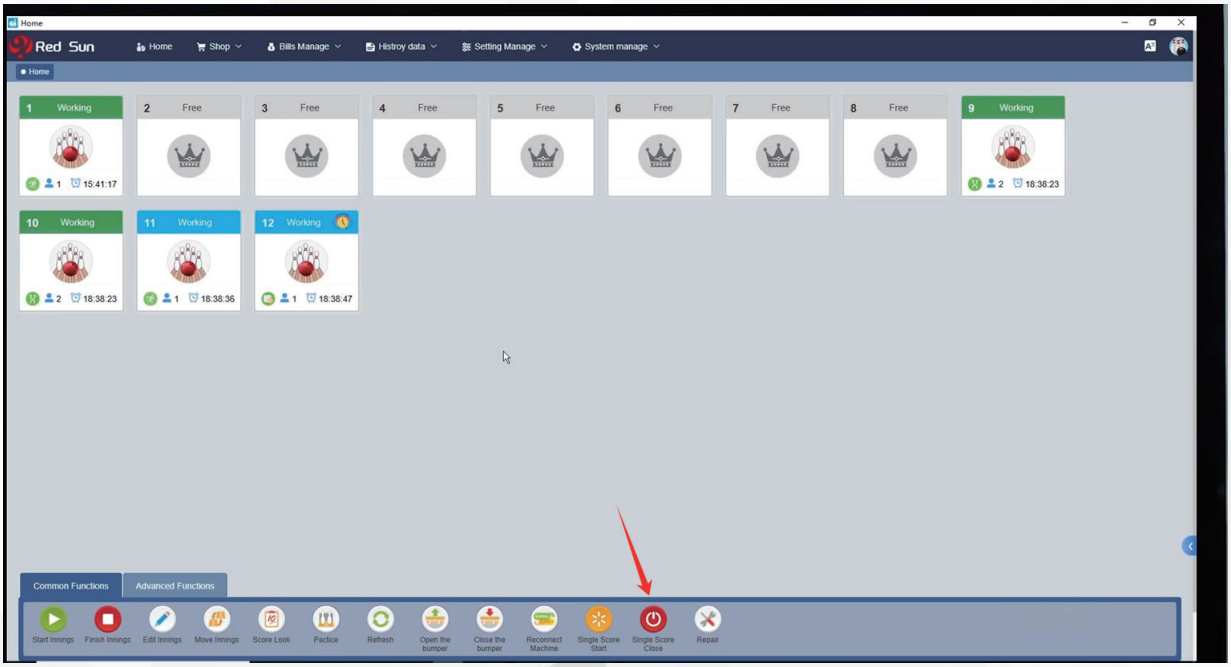


Select the payment method (prepayment/postpayment, by time/by game), game mode (normal mode/exchange mode/practice mode/entertainment mode), and round setting (5 or 10 rounds for one game). Choose the payment channel (WeChat/Alipay/cash, set in the background), then click "Confirm" to complete the game setup.

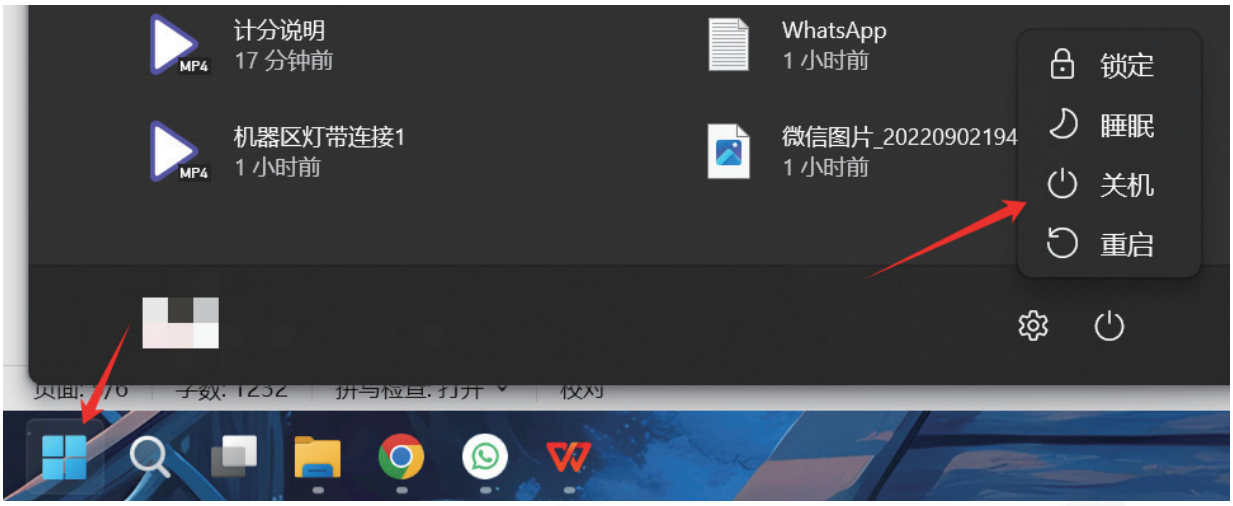


• Safe Shutdown Process

1.Click "Shut Down All Scoring Hosts" in the bowling software.



2.Then shut down the Windows computer system.



3.At this time, the lane display should automatically exit the bowling scoring interface. If the scoring system is still displayed, try to manually turn off the mini scoring computer.

4.Turn off the main power switch of the electrical box in the bowling area.

• Power, Network and Signal Cable Inspection

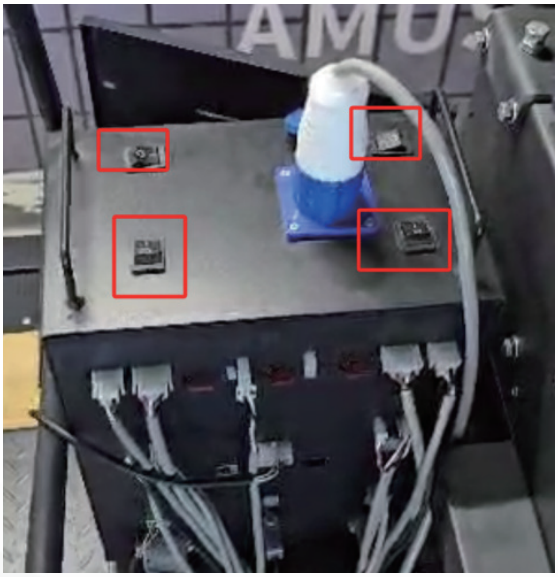
1.To check if the scoring system is powered on, verify the power indicator lights of the main computer and display.



2.To check if the bowling equipment is powered on, confirm that the main power switch of the bowling area is on and the bowling electrical control box is working properly.



3.If the bowling electrical control box has no power, check whether the 4 switches above the electrical control box are in the on position.



4.To check if the network is working properly, confirm that the front desk computer is connected to WIFI, and the network cable and encryption USB flash drive are connected properly. Do not connect other USB flash drives to the front desk computer for a long time, as this may affect the startup of the scoring system.



5.Check if all network cables of the network switch are working properly. Ensure all network cables are functional and do not connect any network cables other than those for bowling equipment, scoring computers and the front desk computer, otherwise the startup of the bowling scoring system may be affected.



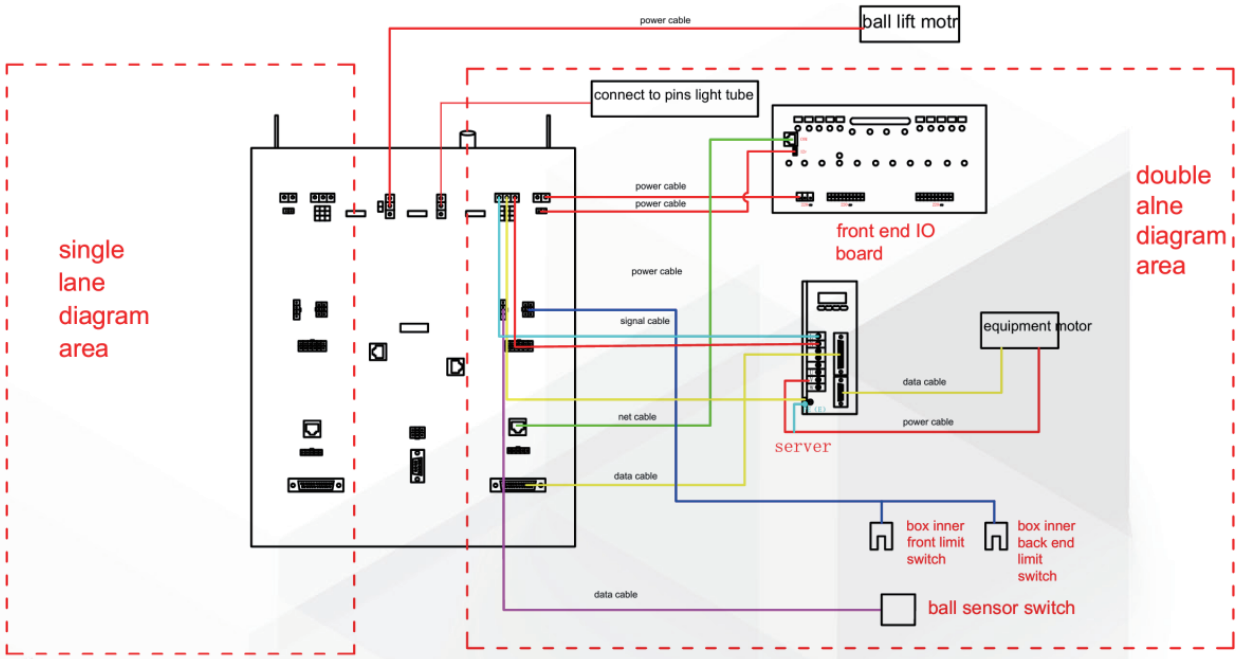
6.Connection Methods for Main Computer, Pinsetter, Ball Return System and Display

(1)The main computer is connected to the bowling network switch via an Ethernet cable.

(2)Mini scoring computers are connected to the network switch via Ethernet cables.

(3)Machine interface boxes are connected to the network switch via Ethernet cables.

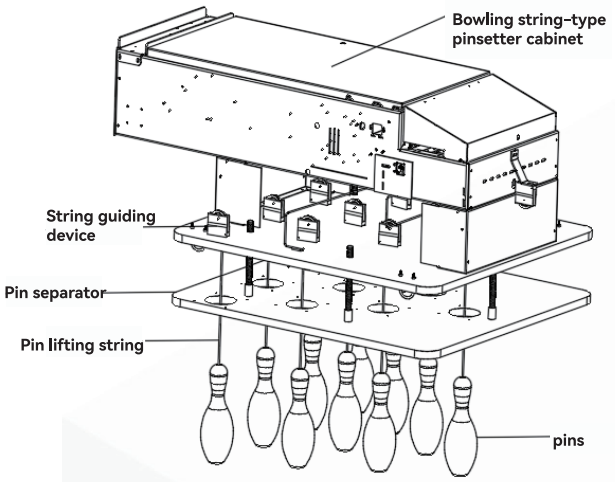
(4)Refer to the equipment wiring diagram for detailed connections (Ball Lift Machine Motor, Single Lane Wiring Area, Dual Lane Wiring Area, Equipment Front-end I/O Board, Equipment Motor, Servo Drive, Infrared Ball Sensor, Interface Box).



EQUIPMENT WORKING PRINCIPLE

Two. Equipment Working Principle and Scoring System Explanation

Bowling String-type Pinsetter Cabinet



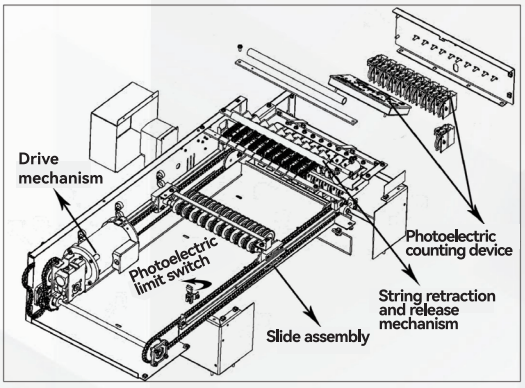
Operating Principle: "The Bowling string-type pinsetter cabinet can lift and lower the pins via the Pin lifting string to fulfill the pin setting function of the bowling equipment. Pulling the string drives the Perforated pin pulling wheel of the Photoelectric counting device to rotate, which triggers the Photoelectric switch and realizes the counting of fallen pins.

When the pins are knocked down, the Pin lifting string will be stretched. The stretched string drives the Perforated pin pulling wheel of the Photoelectric counting device to rotate more than one and a half circles. Each wheel is equipped with four light holes. Whenever the light holes pass the light from the Photoelectric switch more than six times, the Photoelectric switch is triggered to collect the signal to the Photoelectric Control Box, which transmits it to the scoring system of the entire bowling equipment to complete the scoring.

After pin hitting, the Drive mechanism pulls the Slide assembly to lift all pins via the Pin lifting string until the Slide assembly is pulled to the fixed position inside the cabinet, which triggers the Photoelectric limit switch installed on the Cabinet side panel, and the pin lifting action ends here. Then the Drive mechanism reverses to drive the Slide assembly to pull back and start the pin releasing action. During the pin releasing process, the String retraction and release mechanism will clamp the Pin lifting string tied to the pins that were knocked down in the previous round, so that the knocked-down pins will not be lowered again in the second pin releasing.

If the player fails to knock down all pins in the first pin hitting, the pins that are not knocked down in the previous cycle will be lowered again. After the player knocks down the remaining pins again, the pinsetter will pull all pins back to the position of the Pin separator to complete the second spare scoring, thus finishing a full set of actions.

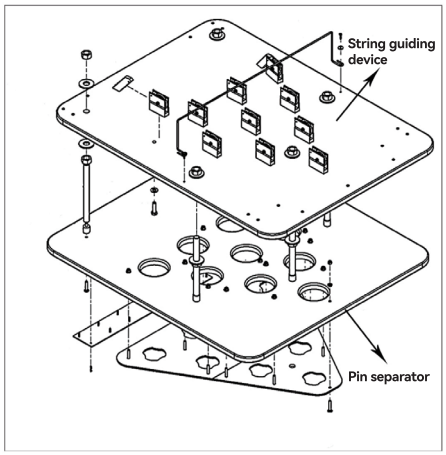
The force transmission of the entire system is realized by the Pin lifting string.The Pin lifting string runs from the Slide assembly to the String retraction and release mechanism, then passes through the Photoelectric counting device, changes its running direction via the String Separator Device, is vertically guided to the Pin separator, and is finally tied to the pins. The Drive mechanism provides power for all string pulling actions.



Main Assemblies of the Bowling String-type Pinsetter Cabinet

Internal Part of the Pinsetter Cabinet:

- Slide assembly
- Photoelectric counting device
- String retraction and release mechanism
- Drive mechanism

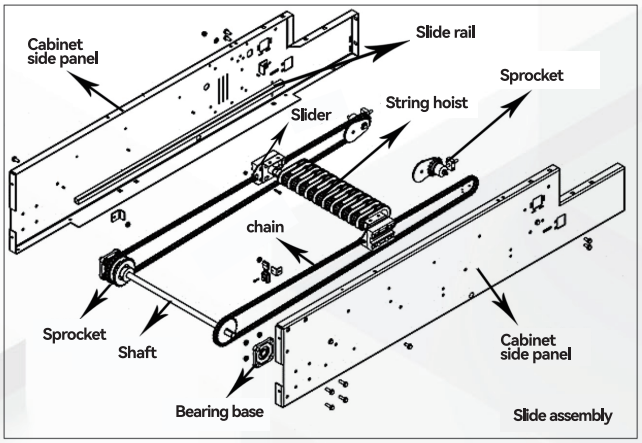


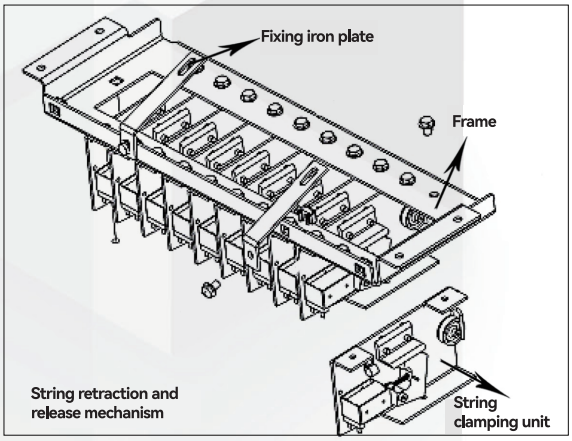
Lower Part of the Pinsetter Cabinet:

String guiding device

Pin separator

The composition of each assembly is introduced one by one as follows:





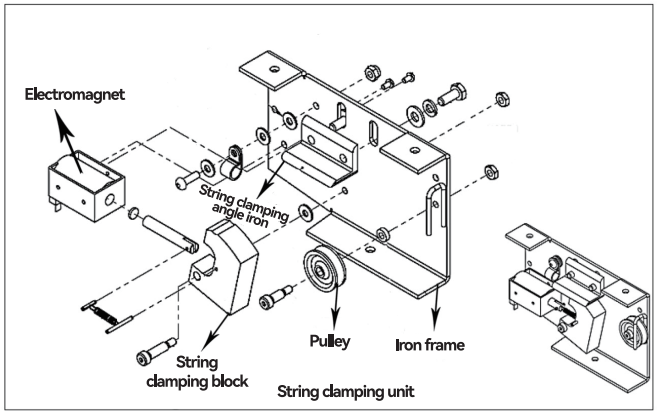
Slide assembly

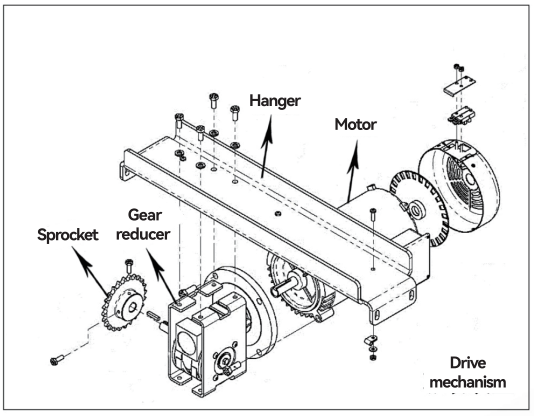
It is mainly composed of chains, Bearing base, Sprocket, Sprocket Connecting Rods, String hoist, Shaft, Slider and Slide rail.

String retraction and release mechanism:

It is mainly composed of Frame, String clamping unit and Fixing iron plate.

Each set of String retraction and release mechanism is equipped with 10 String clamping units. Each String clamping unit controls the clamping and release of its solenoid valve according to the signal transmitted from the Photoelectric counting device to clamp the Pin lifting string, so as to realize whether the pins are placed on the lane surface or suspended in the air.





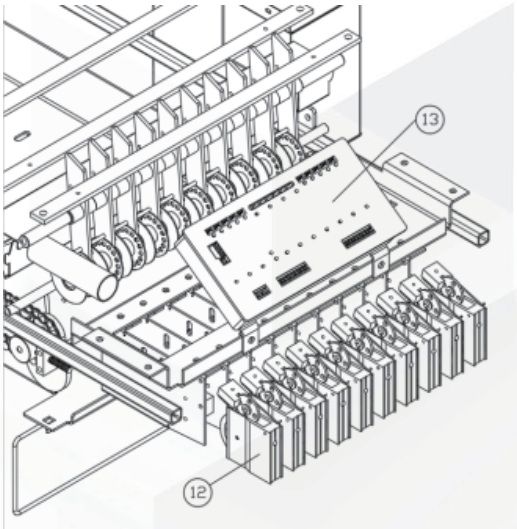
String clamping unit

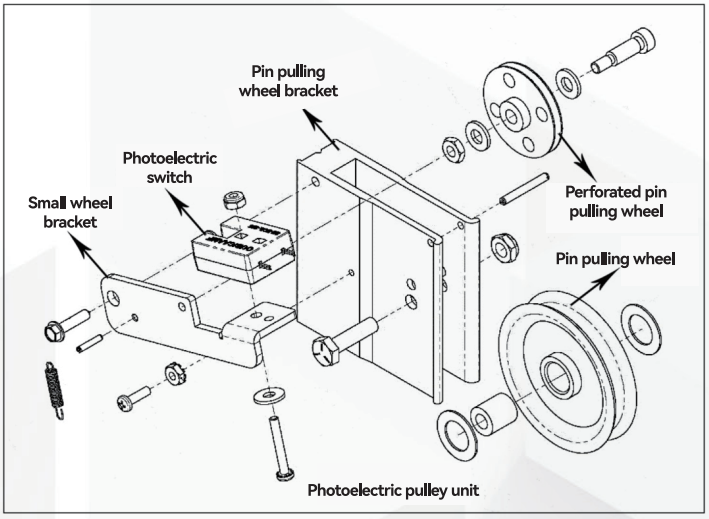
It is mainly composed of Electromagnet, Pulley, String clamping block, String clamping angle iron and Iron frame.

Drive mechanism

It is mainly composed of Motor, Reducer, Sprocket and Hanger. The Drive mechanism provides power support for the entire bowling string-type pinsetter.

Photoelectric counting device





It is mainly composed of a Photoelectric Control Box (13 in the figure) and a photoelectric pulley set device (12 in the figure). The photoelectric pulley set device is divided into 10 Photoelectric pulley units; each Photoelectric pulley unit is composed of a Pin pulling wheel, a Perforated pin pulling wheel, a Photoelectric switch, a Pin pulling wheel bracket and a Small wheel bracket.

The Photoelectric counting device drives the rotation of the Pin pulling wheel through the sliding of the Pin lifting string, which in turn drives the rotation of the Perforated pin pulling wheel. It judges whether the pins connected to the string are knocked down by the number of times the light of the Photoelectric switch passes through the holes of the Perforated pin pulling wheel (when a pin is knocked down, it will pull the Pin lifting string tied to the pin, making the Perforated pin pulling wheel rotate more than one and a half circles, that is, the light passes through the wheel holes more than six times). Thus, it judges which pins are knocked down to realize the scoring function. The photoelectric signal is transmitted to the scoring system of the entire equipment through the Photoelectric Control Box to complete the scoring.

GAME INSTRUCTIONS

Three. Bowling Game Operation Instructions

• Correct Ball Grip

Gripping the ball is the foundation of bowling, with the core principles of "comfortable fit, stable without loosening, and effortless force application". Incorrect grip may cause the ball to slip, lead to sprains, or result in inaccurate shots.
The following detailed steps apply to standard bowling balls, including differences for adults and children:

1.Precondition: Choose the Right Ball (Affects Grip Effect)

(1)Weight selection: Adults are advised to use 8-16 lbs (commonly 10-12 lbs); children use 5-8 lbs (should be easy to lift to the chest and swing without effort).
(2)Finger hole fit: After inserting the fingers, there should be a 1/4 inch (approximately 0.6cm) gap between the finger roots and the hole edges. The thumb should be fully inserted and removable naturally (not tight or loose).

2.Correct Grip Steps (4 Steps, Easy for Beginners)

Step 1: Finger Insertion Posture
① Insert the thumb fully into the bottom hole (root against the hole bottom, no gap).
② Insert the middle and ring fingers into the upper two holes up to the second knuckle (finger pads against the hole walls, fingertips exposed 1-2cm).
③ Bend the little finger and index finger naturally against the side of the ball (no need to clamp tightly, only for auxiliary stability).

↓

Step 2: Hand Force Control
① Place the palm gently against the ball surface, with fingers naturally curved (not tight or stiff) — the ball should be rotatable slightly without slipping.
② Keep the wrist straight or slightly bent (avoid excessive bending or lifting), and let the arm hang loosely at a 30° angle to the body (do not shrug or tense up).

↓

Step 3: Body Coordination Posture
① After gripping the ball, keep it close to the outer thigh (avoid hanging away from the body to prevent unstable center of gravity).
② Stand with feet shoulder-width apart, center of gravity between the feet, and eyes focused on the target pins to prepare for the swing.

↓

Step 4: Grip Technique During Swing
① Maintain wrist stability during the swing (no random rotation), and rely on the natural swing of the arm to drive the ball's inertia.
② At the moment of impact, pull out the thumb first, then push forward and upward with the middle and ring fingers to make the ball roll forward (not throw or swing).

3.Common Wrong Grips and Corrections (Avoid Injuries and Improve Accuracy)

Wrong Grip	Hazards	Correction Methods
Overly deep finger insertion (middle/ring fingers to the roots)	Difficulty in force application, wrist stiffness, easy to cause finger sprains	Adjust the hole depth, insert only up to the second knuckle
Gripping too tightly (clamping the ballwith the palm)	Arm soreness, unsmooth swing, shots deviating left/right	Relax the palm, imagine "placing the ball gentlyon the hand", and apply slight force only with the finger pads
Excessively bent/raised wrist	Loss of release control, easy to "sling the ball"	Keep the wrist close to the forearm, maintain a natural straight posture, and move synchronously with the arm during the swing
Ball hanging away from the body (suspended swing)	Unstable center of gravity, easy to fall or cause inaccurate shots	The ball remains close to the outside of the thigh and moves along a natural arc in front of the body during swing

• Basic Game Rules

The core rule of bowling is to knock down as many pins as possible with the fewest balls within the specified number of frames. The rules are simple and easy to learn, suitable for professional competitions, parent-child entertainment, commercial bowling alleys and other scenarios. The following are general basic rules and scenario-based supplements:

1.Core Premises (Frames, Lane, Pin Setup)

(1)Frames: 1 game = 10 frames, each frame allows 1-2 rolls (the 10th frame is special).

(2)Lane and pins: Red Sun standard adult lane is of international standard size, with a total length of 26.4 meters and 10 pins arranged in an equilateral triangle at the end; Red Sun mini lane has the same number of pins but shorter spacing, suitable for parent-child play.

(3)Ball usage rules: Adults use 8-16 lbs balls, children use 5-8 lbs balls. After each roll, use the public balls of the designated lane or bring your own ball.

Mode	Frame Type	Number of Rolls	Rules Explanation
New Mode	Frames 1-10	Maximum 2 times	① Strike (knock down all 10 pins in the first roll): End the frame and proceed to the next. ② Spare (knock down remaining pins in the second roll): End the frame. ③ Open Frame (fail to knock down all pins in 2 rolls): Score = total pins knocked down in 2 rolls.
Classic Mode	Frames 1-9 (Normal)	Maximum 2 times	Same as the new mode for frames 1-10.
	Frame 10 (Special)	Maximum 3 times	①Strike: Get 2 extra bonus rolls. ②Spare: Get 1 extra bonus roll. ③ Open Frame: Only 2 rolls, no bonus. Bonus rolls are only for calculating the 10th frame score and do not occupy an additional frame.

• Scoring Rules Explanation

1.Strike (marked as "X"): Knock down all 10 pins with the first roll in a frame, the score for this frame = 30.
2.Spare (marked as "/"): Knock down all remaining pins with the second roll in a frame, the base score for this frame is 10 (calculated as the sum of pins knocked down in two rolls plus 10 pins for the next roll). Example: Knock down 7 pins with the first roll in Frame 1 and get a spare with the second roll, the total score for the two rolls = 7 + 10 = 17 points.
3.Perfect Score: The maximum score for one game is 300 points

• Novice Operation Guide

Bowling focuses on "aiming - stable shooting - knocking down pins", with simple rules and a low threshold for beginners. **3-minute Quick Start + Must-Know Notes for Beginners.** Don't panic for your first bowling game! Focus on "finding the feel + following safety norms", and operate according to the simplified steps below — you can find the rhythm after 2-3 rounds for a smooth experience.

1.Quick Start: 3 Core Steps (No Need to Memorize Complex Rules)

Step 1: Choose & Grip the Ball (Most Critical, Determines the Start Speed)
①Ball selection: Adults choose 8-10 lbs directly (8 lbs for women, 10 lbs for men); children choose 5-6 lbs (Red Sun's beginner area is fully equipped with lightweight non-slip balls for easy handling).
② Grip: Insert the thumb fully into the bottom hole, insert the middle and ring fingers into the upper two holes (up to the second knuckle). Place the palm gently against the ball without squeezing tightly (over-squeezing may cause slipping).

Step 2: Stance & Aiming (No Need for Precision, Just Find the Right Direction)
①Stand about 1 meter behind the lane starting line (foul line), with feet shoulder-width apart and body slightly leaning forward.
②Do not stare at the distant pins! Focus on the "aiming arrows" in the middle of the lane (usually 3 or 5), and aim at the middle arrow — you have a high chance of knocking down pins by hitting it.

Step 3: Swing & Shooting (Rely on Inertia, Do Not Swing Hard)
①After gripping the ball, let the arm hang naturally with the ball close to the outer thigh, and swing back and forth gently 1-2 times (like a pendulum) to feel the ball's weight.
②When swinging the ball to the front of the body, push it forward along the inertia (not throw or swing). After pushing, extend the arm naturally to maintain a stable posture.

2.Must-Know Notes (Safety + Avoid Pitfalls, Less Detours)

(1)Safety First (Never Do These)
①Do not cross the foul line!
②Do not throw or slam the ball! Hard throwing may damage the lane and injure your wrist.
③Children must be accompanied by adults! Use 5-6 lbs light balls, and do not let children carry heavy balls alone to avoid foot injuries.

(2)Common Pitfalls for Beginners (Quick Corrections for Smoother Play):

Refer to the above "Common Wrong Grips and Corrections (Avoid Injuries and Improve Accuracy)".

(3)Equipment Usage Tips

①Start the equipment: Press the "Start" button on the panel (with graphic prompts). Ask the staff for help if you do not understand.

②No need to calculate scores manually: The screen will automatically display the number of pins knocked down (Strike is displayed as "X", Spare as "/").

③If the pins do not reset: Just wait for a few seconds.

3.Novice Mentality Tips

1.Do not pursue "Strikes" blindly! Knocking down 5-6 pins in your first game is great — the key is to enjoy the fun.

2.You will get the feel after 2 more rounds and play more smoothly. If there are experienced players nearby, you can ask them for aiming tips.

3.Speak up if you have any questions — no need to be embarrassed!

Follow this method, and you can get started quickly for your first bowling game with safety and fun!

EQUIPMENT MAINTENANCE AND UPKEEP

Four. Equipment Maintenance, Upkeep and Spare Parts Specification

Daily Maintenance Requirements for Synthetic Lanes

1.Dust the approach area in a timely manner every day to reduce friction between dust and the approach area surface.Clean the lane with a cleaning solution mixed with lane cleaner and water at a ratio of 1:5.Use a manual lane oiler to oil the lane immediately at the start of business, with an oiling length of 8-12 meters (starting 15cm before the foul line) being appropriate.
2.Due to the extremely smooth surface of synthetic wood, improper temperature and humidity control may cause water vapor condensation on the approach area surface. Maintain an appropriate temperature of 22℃ to 28℃ and a humidity of 40% to 50%.
3.The soles of the public bowling shoes in the alley must be cleaned regularly and kept dry — wet soles may cause customers to slip.
4.Prohibit players from using bowling powder in the approach area, as bowling powder causes significant damage to the lane surface of the approach area.

• Regular Equipment Maintenance Checks

Daily Check (Before Business Startup)

①Check if the main control computer and scoring computers start normally.
②Check if the pin setting action of all equipment operates normally.
③ If guardrail devices are equipped, check if they start normally.
④ Patrol the pinsetter equipment to check for loose fixing screws.
⑤ Check if the length of all Pin lifting strings needs to be adjusted.
⑥ Check if the Pin Cones are damaged, and replace them in a timely manner to prevent string tangling.

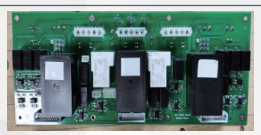
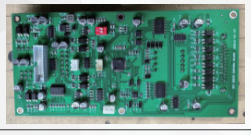
Bi-Weekly Check

①Check all Pin lifting strings for excessive wear, and replace them in a timely manner.
② Check the chains inside the pinsetter cabinet for looseness or stretching, and adjust them in a timely manner.
③ Check the hydraulic buffer and damper of the Pin Stop Buffer Plate.
④ Check the motor belts of the front Ball Lift Machine and Ball Return Accelerator for wear and stretching.
⑤ Check the Infrared Ball Sensors and Reflectors for damage and looseness.
⑥ Check the lane guard ring for damage.

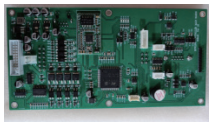
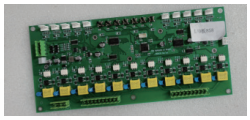
Quarterly Check

①Check the oil seal of the pinsetter servo motor gearbox for oil leakage.
② Check the data cable connectors of the equipment control box for looseness or high-temperature deformation.
③Apply a small amount of lubricating oil to the chains of the pinsetter (the Ball Lift Machine is included for mini equipment).
④ Check the V-shaped rubber wheels of the Ball Return Accelerator and front Ball Lift Machine for wear, and replace them if necessary.
⑤ Check the flatness of all lane panels, and replenish the missing screw covers in a timely manner.

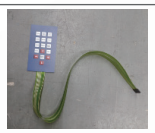
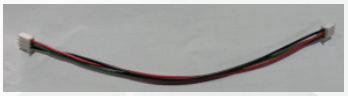
• Commonly Used Spare Parts List

Serial number	Item Name	photo
1	Calculate pin fall wheel	
2	The electromagnetic valve	
3	Electromagnetic valve spring	
4	Optical wheel bracket small spring	
5	Long diode for Calculate pin fall wheel	
6	Short diode for pinsetter case	
7	Pin Cable 4.3 meters	
8	Pin Cable Connector Cover	
9	Pin cable Hole black Cover	
10	Bowling Pin Cable Blocked	
11	Control Box Power Board	
12	Control Box Function board	

• Commonly Used Spare Parts List

Serial number	Item Name	photo
13	Control Box Motherboard	
14	Pinsetter I/O board	
15	Ball Lift Power&Control Panel	
16	Motor For Ball Lift & Ball Accelerator	
17	Pinsetter Case Motor and Wire	
18	Server	
19	VType Wheel	
20	Ball Accelerator Belt	
21	Ball Lift Belt	
22	Pinsetter Case Side Slider	
23	AC Contractor	
24	Pin Area Light Tube	

• Commonly Used Spare Parts List

Serial number	Item Name	photo
25	Pin Cable Wheel	
26	Double Pulley Device	
27	Control Box Soft Keyboard	
28	Control Box Switch	
29	Buffer Rubber Pad	
30	Ball Sensor	
31	Anti -light film	
32	Signal Wire between Control Box and Serve (24 pins)	
33	Control Box Signal Wire	
34	Fuse	
35	HD Signal Wire	
36	Maintain Tool	

• Commonly Used Spare Parts List

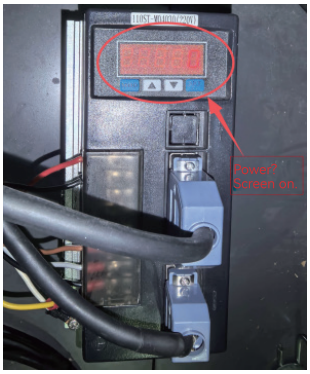
Serial number	Item Name	photo
37	Flat key	
38	Ball Lift Power Supply Wire	
39	Ball Lift Power Box	
40	Chain union	
41	Bowling Lane Side LED Light Belt	
42	bowling synthetic over lane drill bit	
43	4 wire terminals	
44	10 wire terminals	
45	Drill Bit	
46	Chain tool	

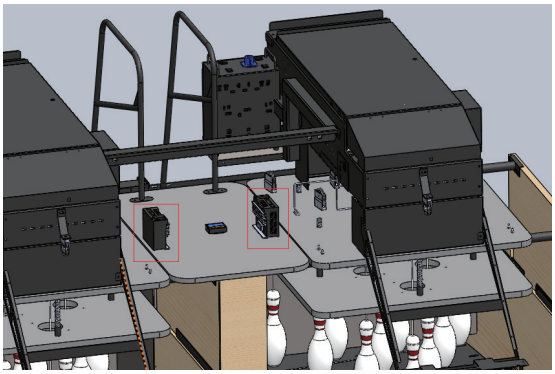
COMMON TROUBLESHOOTING

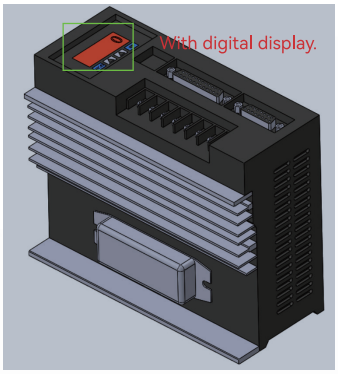
Five. Common Faults and Basic Troubleshooting Procedures

1. Equipment Failure to Start

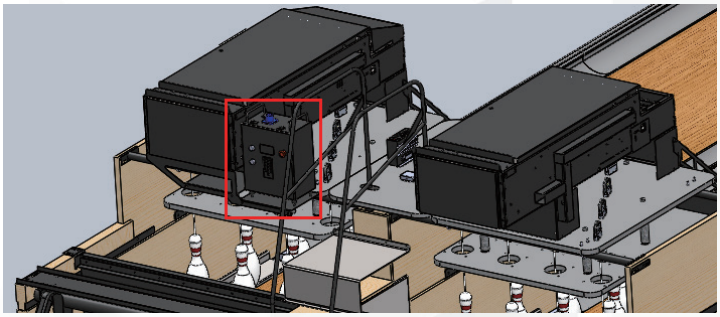
① Check if the Servo Drive is powered on (see the figure below).

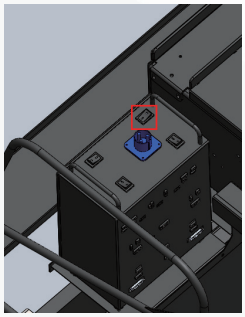


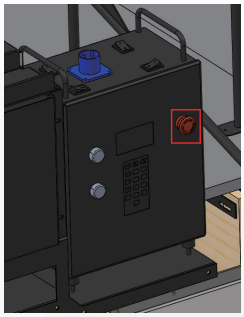




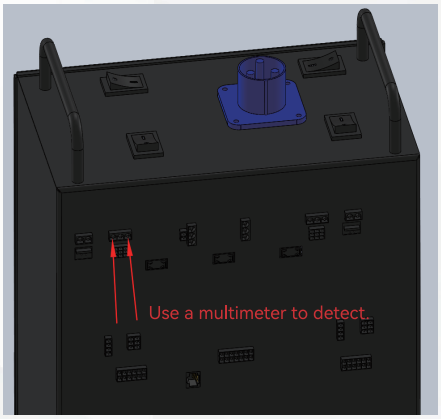
②If the Servo Drive has no power, check if the control switch of the electrical control box and the emergency switch are on (see the figure below).





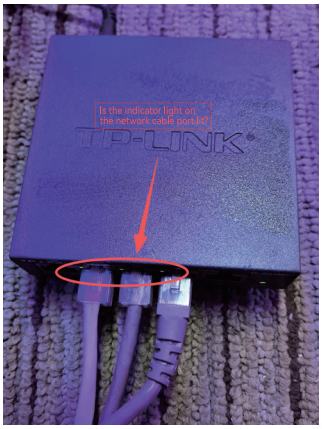


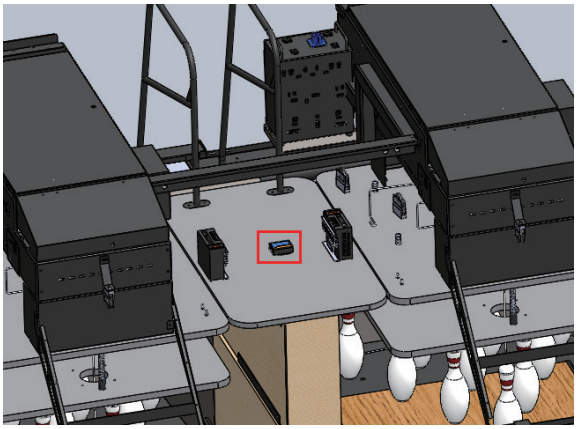
③If the above are normal, check whether the power supply plug of the Servo Drive has 220V voltage with a multimeter (see the figure below).



④Check if the network cable communication between the switch and the control box is normal (see the figure below).





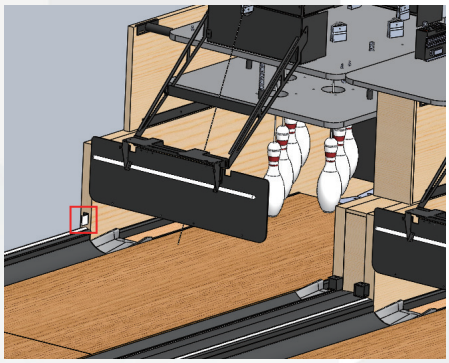


⑤ Communication command failure caused by power failure of the electrical control box, switch or router.

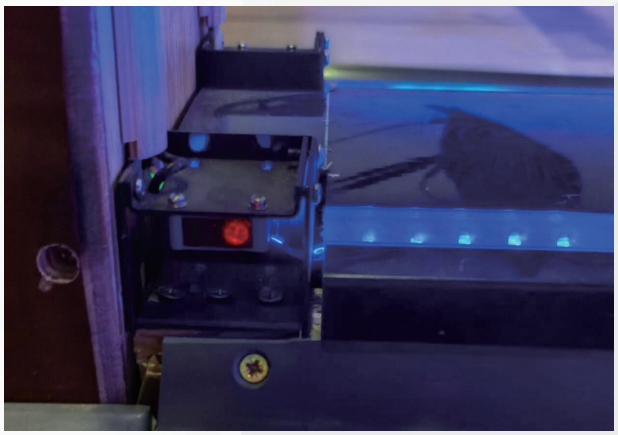
2. Pinsetting Abnormalities/Tangled Pins

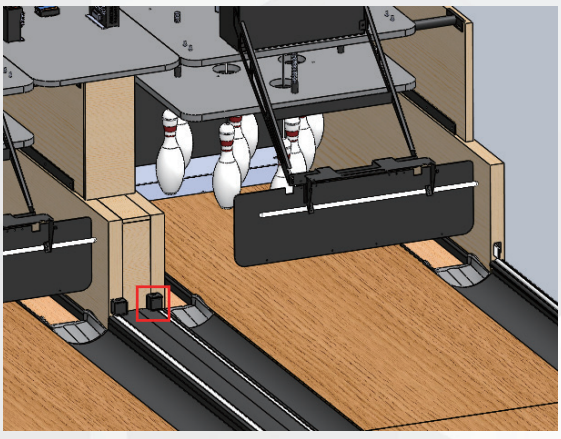
① If the machine does not retrieve pins after they are knocked down, check the following items:
Check if the Reflector surface has dust or is damaged (see the figure below).



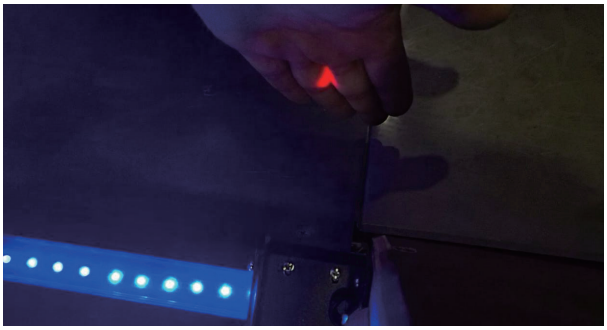


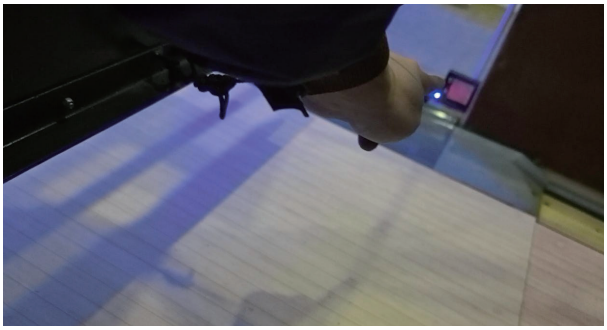
Check if the Infrared Probe is damaged and verify if the indicator light is on (see the figure below).



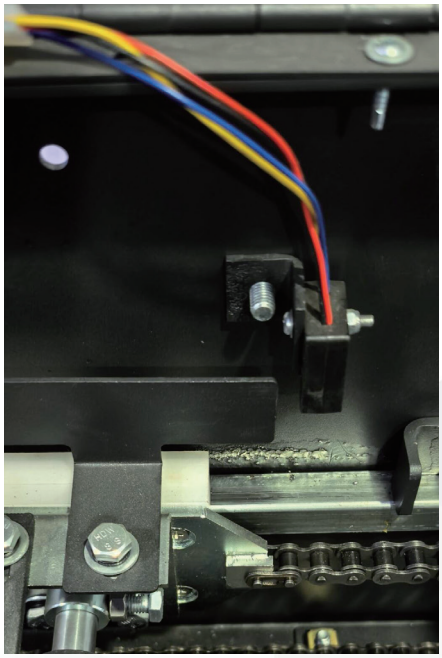


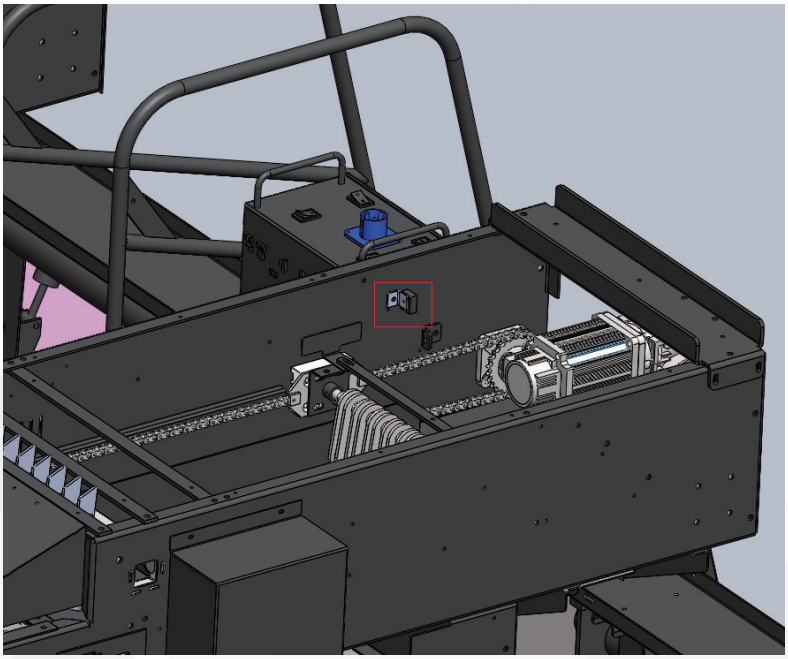
Align the Infrared Probe with the Reflector; adjust the probe angle if the red dot is not aligned with the Reflector (see the figure below).





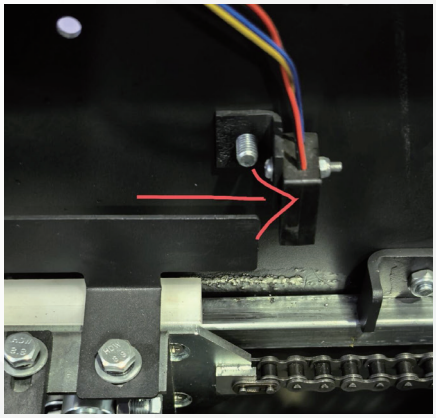
② If the pins are continuously and automatically set or lifted up and down, check the following items:

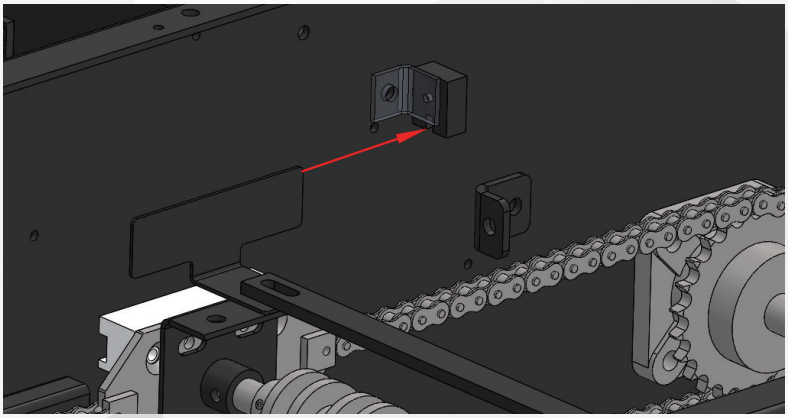




Check if the rear limit switch inside the cabinet is vertical and if the Travel Iron Plate can be inserted into the limit switch (see the figure below).

If the Travel Iron Plate cannot be inserted, check if the Pin lifting string is too tight, then adjust the string tightness to enable the insertion of the Travel Iron Plate (see the figure below).



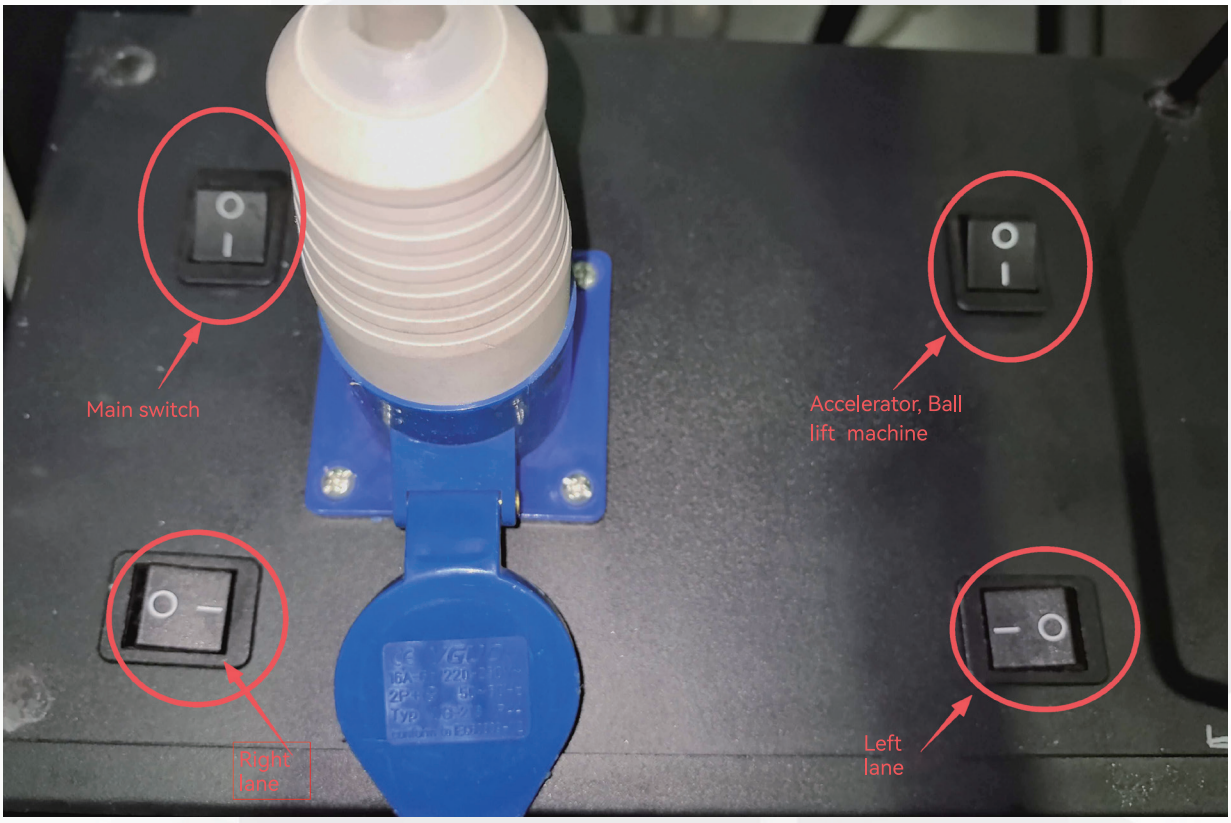


If multiple pins are tangled and cannot be retrieved, separate them manually and clear the fault (see the figure below).

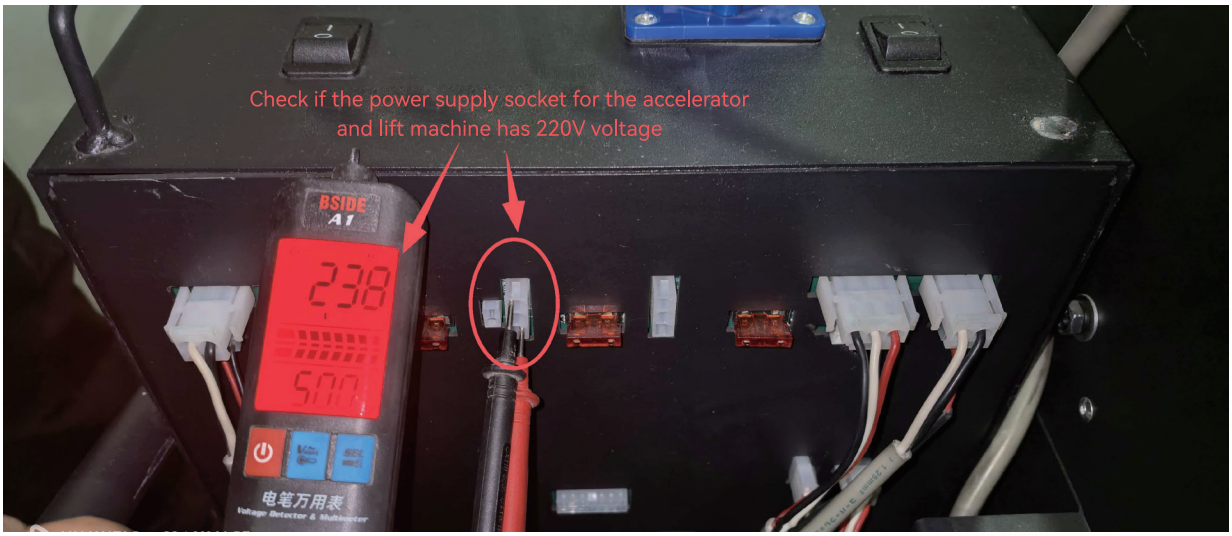


3. Ball Stuck and Ball Return Abnormalities

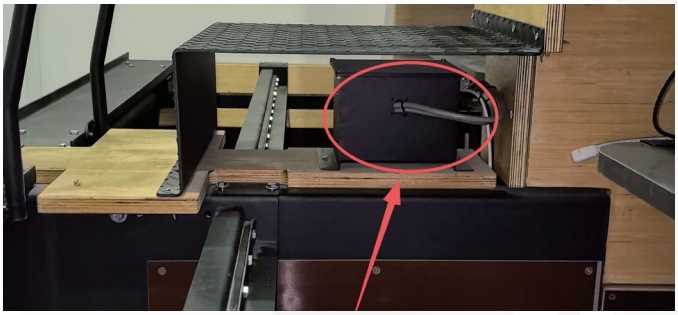
① If both the Ball Return Accelerator and Ball Lift Machine fail to work, check the following items:
Check if the switch of the electrical control box is on (see the figure below).

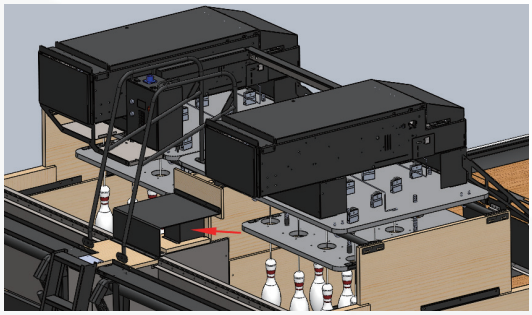


Measure whether the power port has 220V voltage with a multimeter (see the figure below).

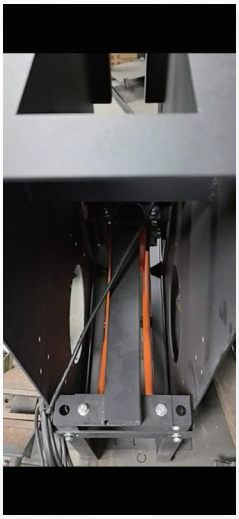


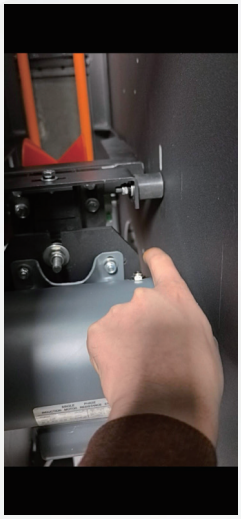
If the above checks are normal, check if the contactor button can pull in automatically; replace the contactor if it cannot (see the figure below).

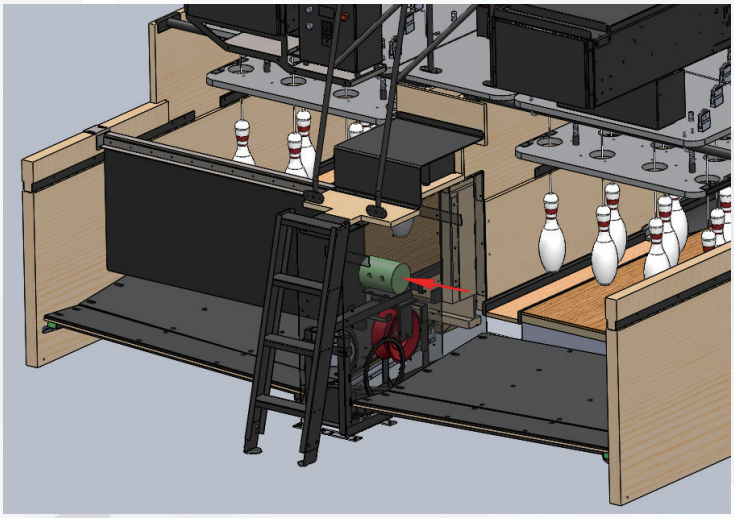




②If the Ball Return Accelerator motor does not work: Check if the motor protection button pops out, and press it back if it does (see the figure below).

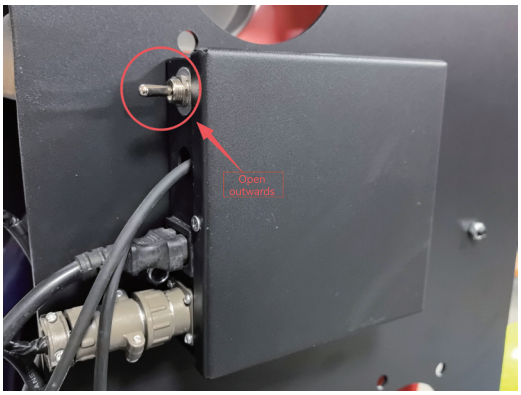


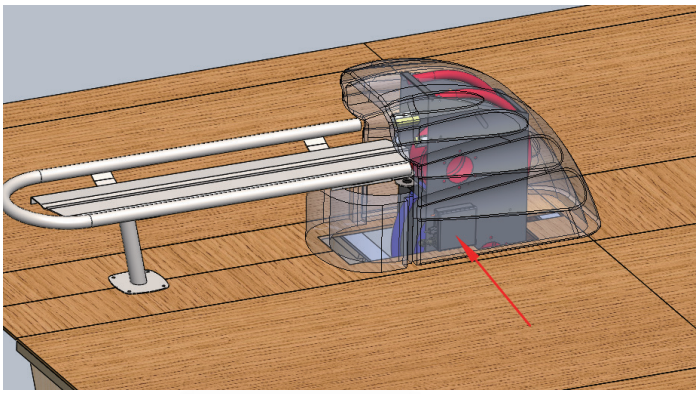




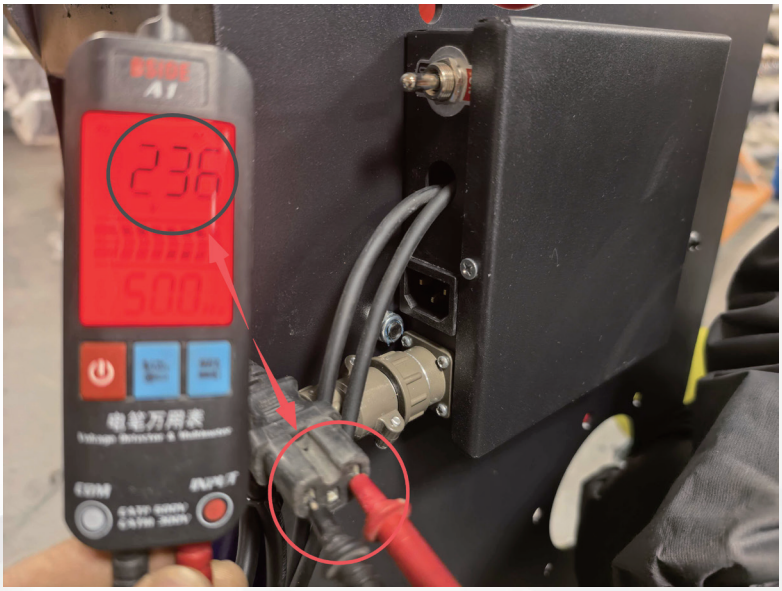
③ If the Ball Lift Machine does not operate:

Check if the switch is on (see the figure below).



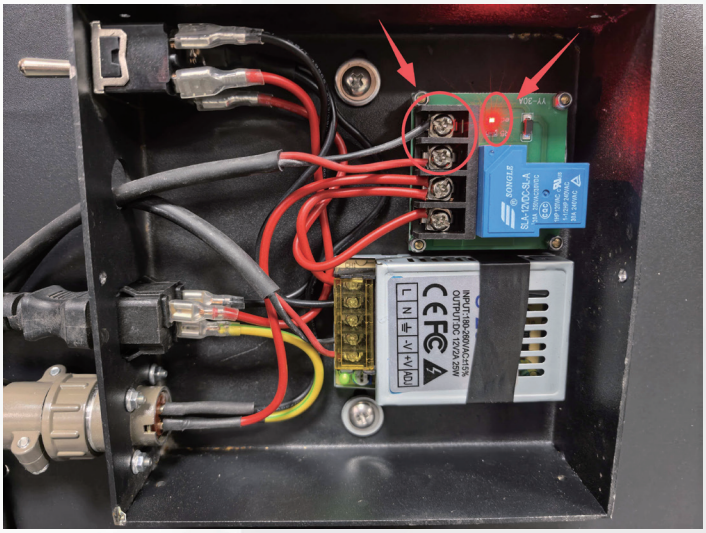


Measure the input and output voltage for 220V with a multimeter (see the figure below).

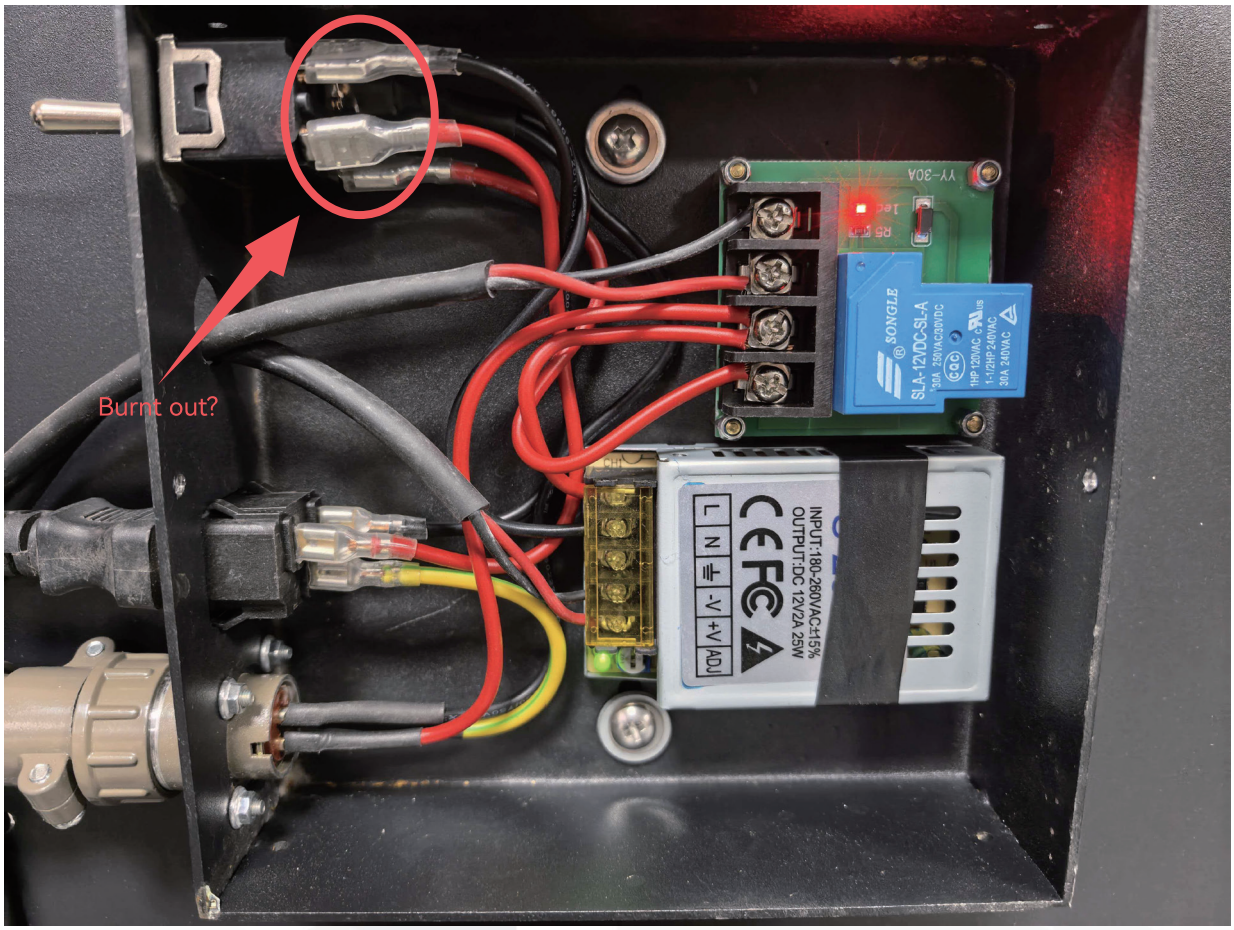




Measure whether the control board of the control box has a 12V signal with a multimeter (see the figure below).



Check if the internal wiring terminals of the switch are burned out (see the figure below).

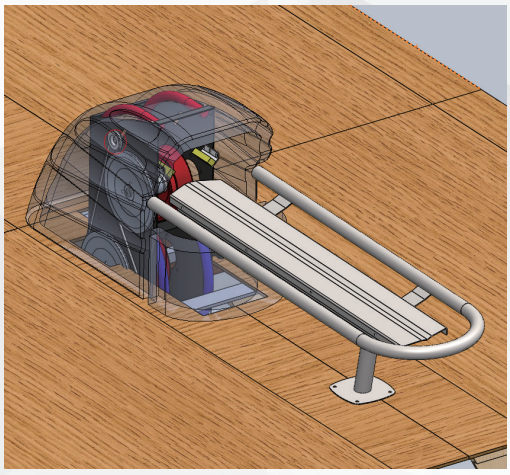


④ If the ball keeps rotating in the Ball Lift Machine and cannot return: Check if there is excessive oil on the surface of the Ball Lift Machine and its rotating wheels, and wipe off the oil with a cleaning agent.

⑤ If the ball is stuck in the Ball Lift Machine (the outer belt rotates but the ball does not): Adjust the belt tightness (first remove the belt, loosen the adjusting wheel nut, move the wheel upward to the appropriate position, then retighten the nut) (see the figure below).







4. Scoring Abnormalities

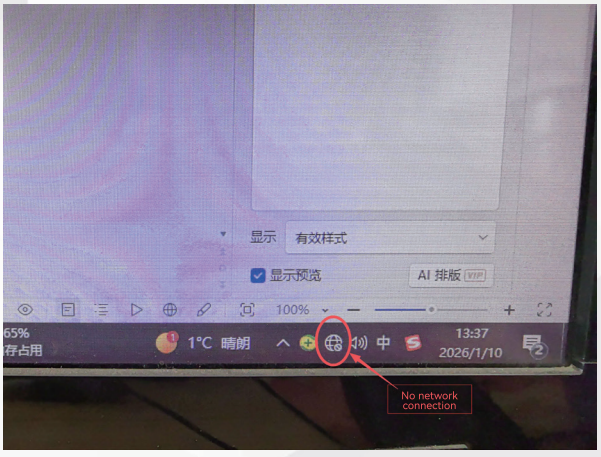
① Restart the scoring computer (the computer behind the TV) (as shown in the figure).

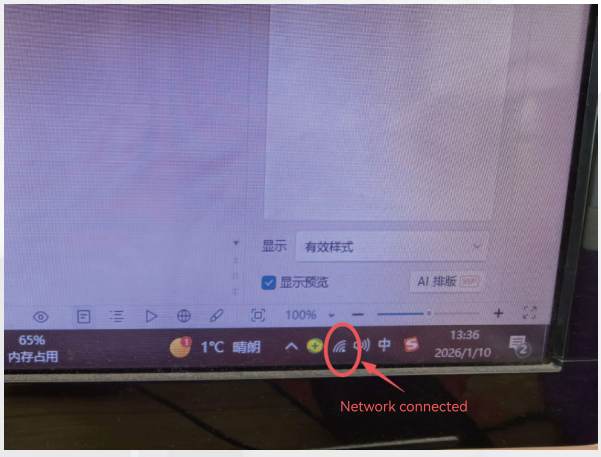


② Check the network cable communication between the front desk computer and the switch, and between the switch and the scoring computers.

5. Network Connection Abnormalities

The front desk computer requires a network connection to log in to the bowling software. Check the network icon in the taskbar at the bottom right of the computer to ensure a normal network connection (No connection / Connected).





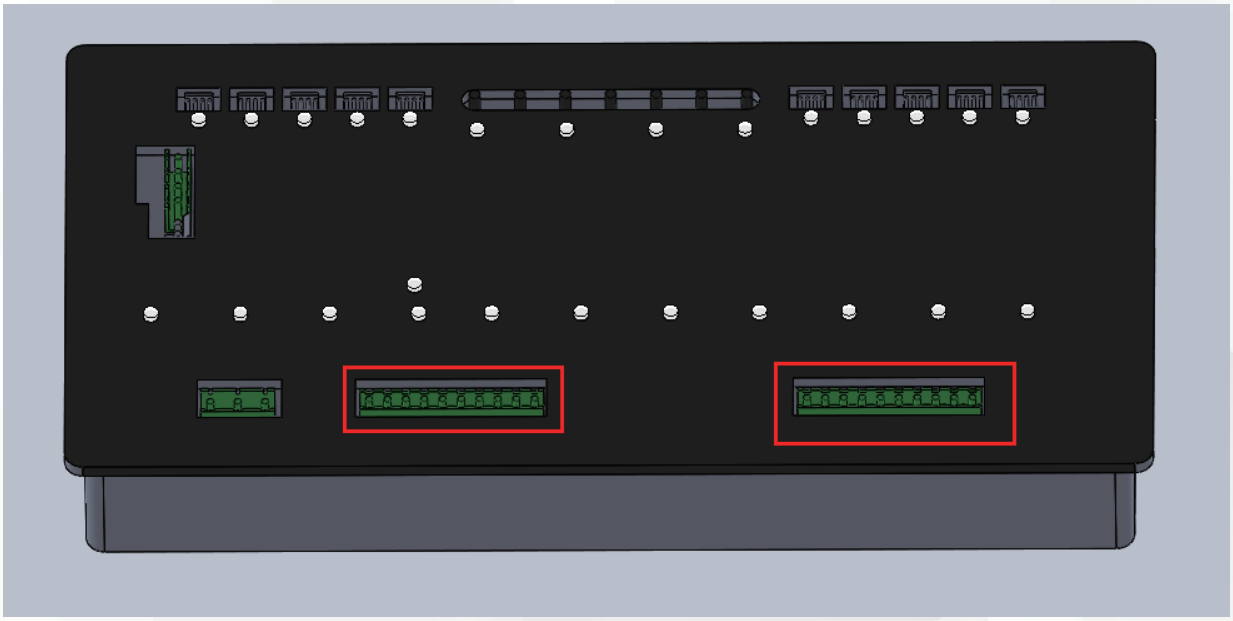
二、Operation and Fault Resolution of the Bowling Equipment Electrical Control Box

1. Fault Clear Process

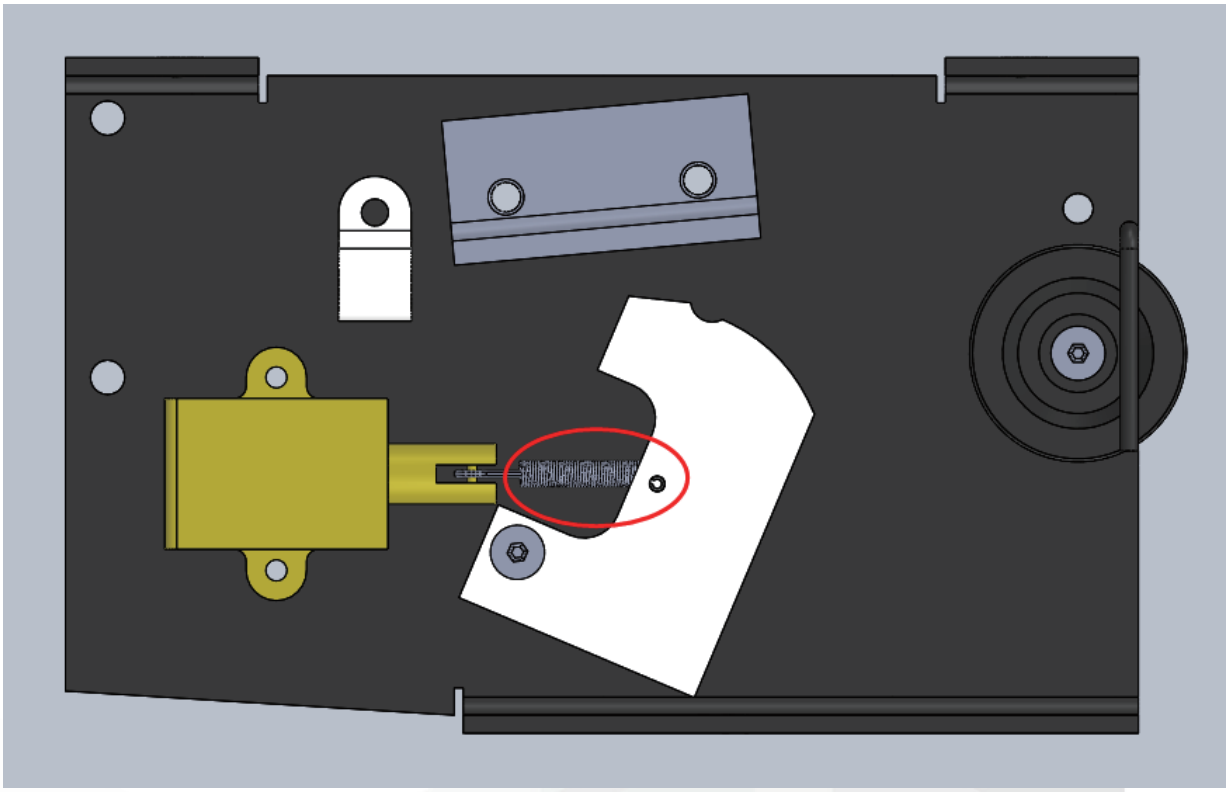
1.On the main keyboard, select the corresponding lane to activate the function key mode (press EVEN/ODD first, then MANUAL MODE) (the [K] icon will be displayed in the corresponding lane area on the screen).
2.Press the PROG ZERO key and wait for the equipment of the designated lane to restart.
3.Wait for the equipment restart process to complete (takes 8 to 15 seconds).
4.On the main keyboard again, select the corresponding lane to activate the function key mode (press EVEN/ODD first, then MANUAL MODE) (the [K] icon will be displayed in the corresponding lane area on the screen).
5.Press the reset button on the electrical control box to synchronize the main control program and scoring system of the designated lane.
6.Wait for the equipment to complete the pin reset action according to the current scoring status (takes 5 to 10 seconds).
7.Operate the main keyboard to set the corresponding lane to automatic bowling and scoring mode (press EVEN/ODD first, then MANUAL MODE) (the [K] icon in the corresponding lane area on the screen will disappear).
8.Resume normal bowling.
Note: Corresponding tutorial videos are available in the front desk computer files, and you may consult the installation technician for details.

2. Fault Code Table (Turn off the main power switch before maintenance)

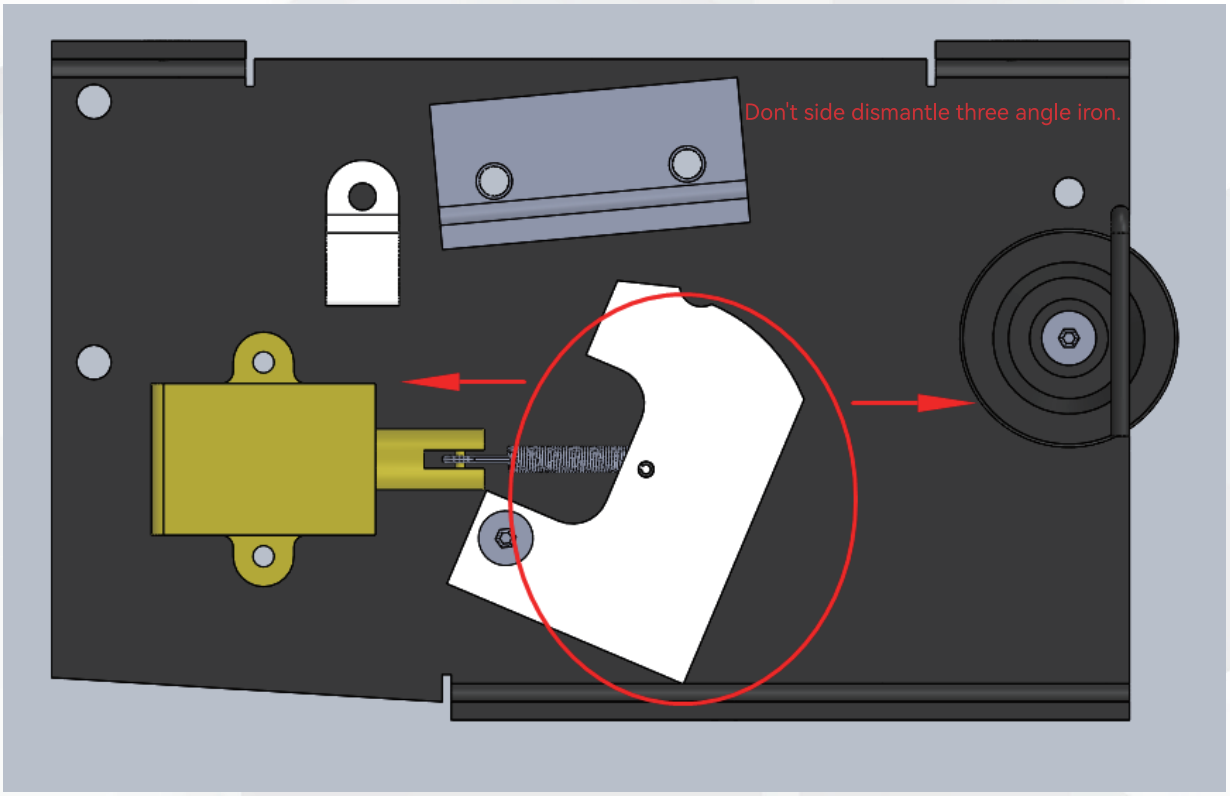
(1) Fault Codes 40-49: Pin 1~10 Fault (Code 40 = Pin 1 Fault; Code 41 = Pin 2 Fault; ... ; Code 49 = Pin 10 Fault)
No inspection is required if the screen occasionally displays Fault Codes 40~49 or 50~59.
If Fault Codes 40~49 appear more than 3 times a day, inspect the following four items:
①Check if the solenoid valve power cord is properly connected to the I/O board connector.



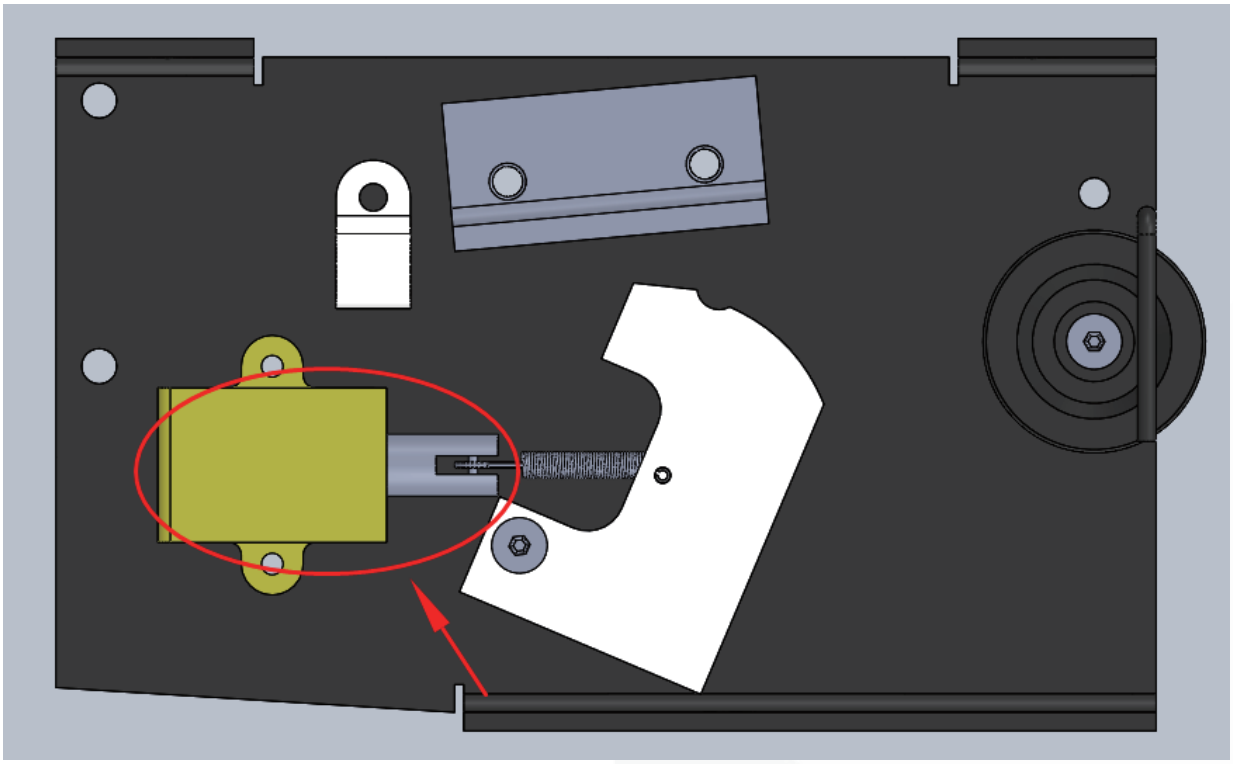
②Check if the small spring of the white lock block is damaged.



③ Check if the white lock block moves smoothly (judge by manually moving it back and forth after disassembly). D o not dismantle the triangular iron.



④ Check if the solenoid valve is functioning (during equipment operation).



Fault Codes 50-59:

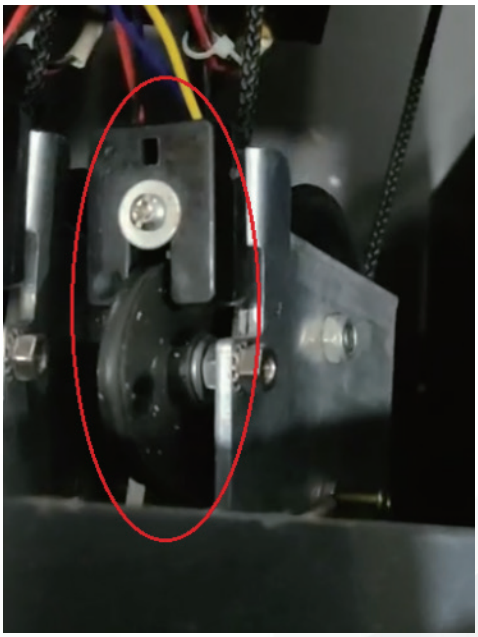
Pin 1~10 Fault (Code 50 = Pin 1 Fault; Code 51 = Pin 2 Fault; ... ; Code 59 = Pin 10 Fault)

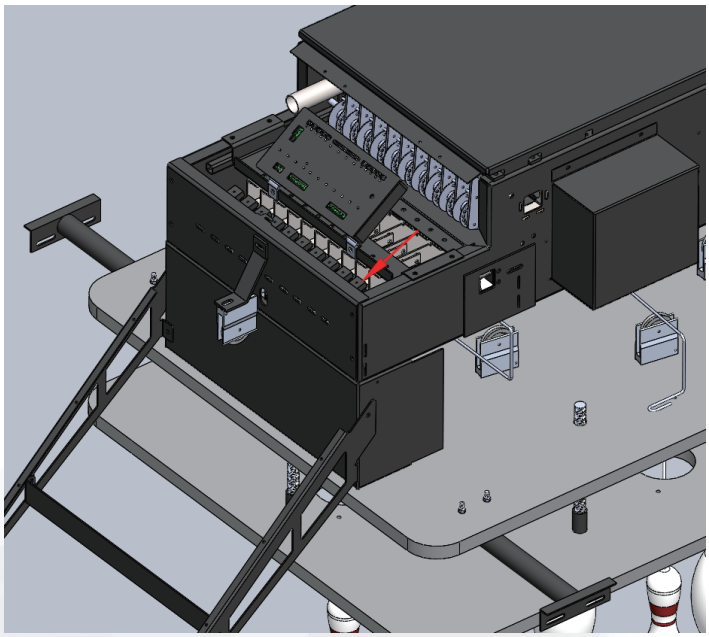


No inspection is required if the screen occasionally displays Fault Codes 40~49 or 50~59.

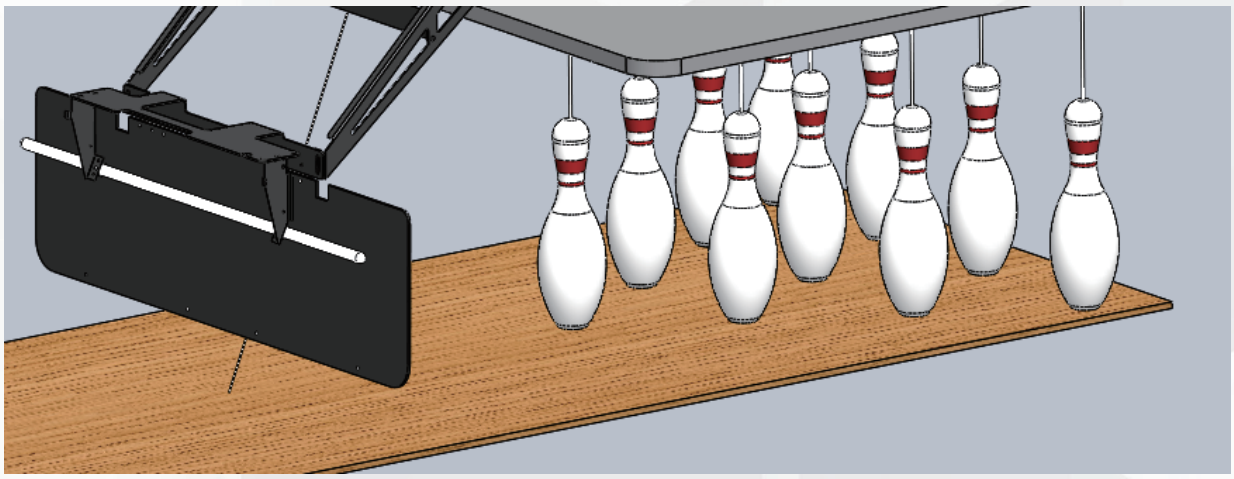
If Fault Codes 50~59 appear more than 5 times a day, conduct inspections as follows **(take Fault Code 58 as an example):**

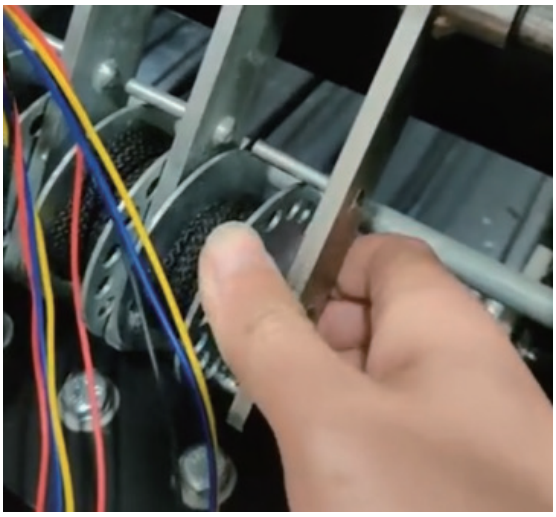
①Check if the small black photoelectric wheel runs smoothly; lift the black wheel to rotate it away from the string, or check for jamming when the pin drops down **(locate the small black wheel corresponding to the faulty pin)** (see the small black wheel figure).

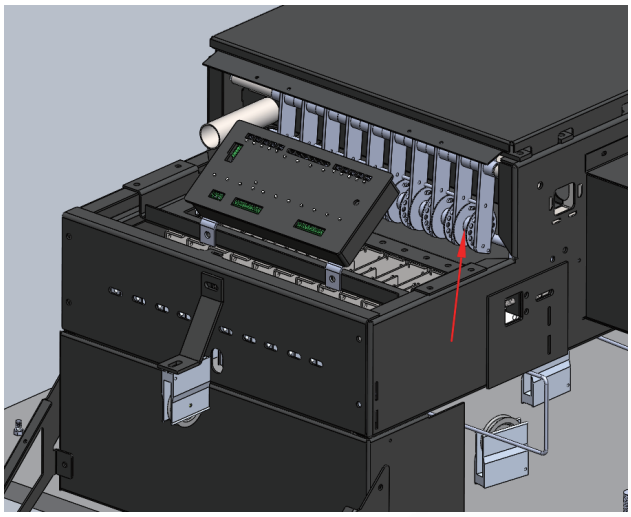




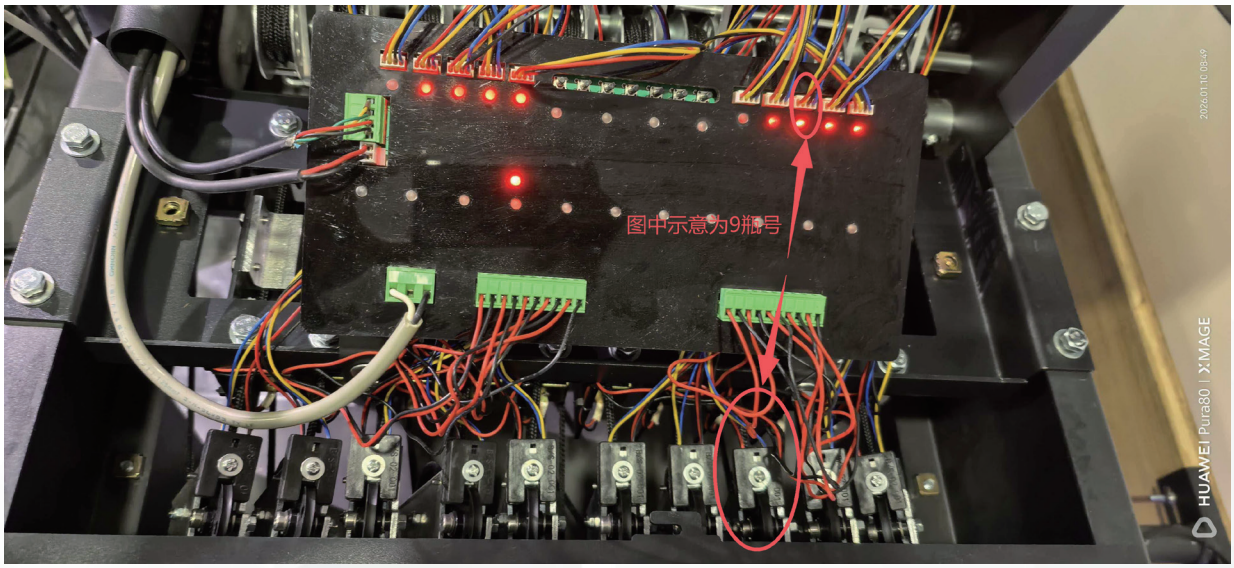
②Check if the Pin lifting string for Pin 9 **(matching Fault Code 58)** is too tight: When the equipment is on standby and all pins are placed on the pin deck, verify if the bottom of Pin 9 is level with the bottoms of other pins. If the bottom of Pin 9 is higher than others, adjust the Pin lifting string for Pin 9 (see the figure of bowling pin bottoms at the same level) (see the string pulley adjustment figure).

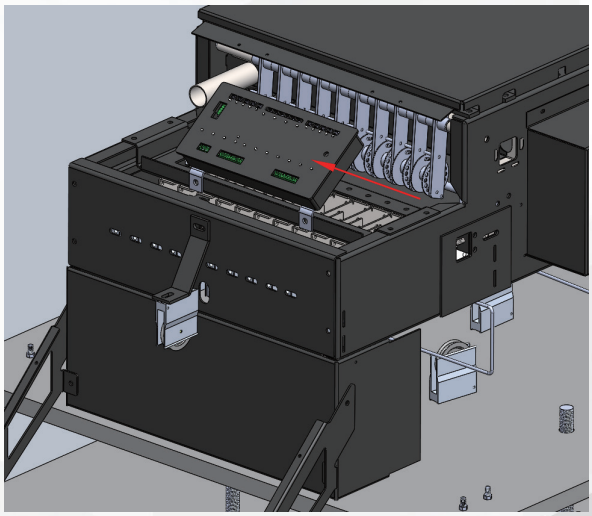






③When rotating the small black photoelectric wheel, check if the indicator light on the I/O board for Pin 9 flashes, and verify the normal connection of the corresponding wires on the I/O board (see the clear figure of I/O wires and the corresponding wires).





④Ensure the photoelectric wheel is fully attached to the string below it.

⑤Tutorial videos for the above fault troubleshooting methods and replacement procedures for other faulty components are available for reference in the front desk computer files, including:

1)Pin Cone replacement;

2)Pin lifting string replacement;

3)Solenoid valve assembly disassembly and internal part replacement;

4)Diode replacement/Small black wheel adjustment;

5)Fault Clear;

6)Pin Cone replacement;

7)Pin lifting string adjustment;

8)Equipment chain tension adjustment;

9)Accelerator core disassembly,

10)etc.

If no issues are found after the above inspections, or if the fault is not listed, please contact our company's after-sales service team.

AFTER-SALES SUPPORT

Six. After-Sales Support, Warranty and Remote Technical Assistance

Equipment Warranty Period

1-year warranty for bowling equipment

3-year warranty for bowling lane panels

Lifetime after-sales service support

Warranty Coverage Description

For damaged spare parts related to the bowling equipment within the warranty period, we will provide the parts for free and bear the relevant shipping costs.

Technical Support Methods After Installation

Our engineers will provide on-site training for local equipment maintenance staff and front desk service personnel on bowling equipment operation and fault troubleshooting, and will provide permanent remote technical service support — including remote assistance in handling system problems and timely responses to faults that cannot be resolved by local maintenance staff.

Remote Technical Support Process

Establish a WhatsApp or WeChat discussion group and send details of the problems that cannot be resolved by local maintenance staff. We will respond and communicate promptly to ensure the bowling equipment of the owner is restored to normal operation as quickly as possible.

Fault Feedback and Response Time

When on-site maintenance staff cannot resolve a bowling equipment fault, send a detailed fault description and related videos to the after-sales service discussion group. We will provide timely and effective responses during China's working hours, and give step-by-step processing instructions in the form of text, pictures and videos.