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Section 6: Troubleshooting

Bowling in Progress

The following information and procedures should be used for correcting pinsetter stops, or malfunctions. Follow safety guidelines in the Servicing section.

When a pinsetter experiences a stop, the Pinsetter CPU, will shut down the pinsetter, and turn on a flashing red trouble light located on top of the elevator assembly. Typically a code indicating the problem encountered will display on top of the Nexgen box.

Pinsetter Clearing Procedure After Stop

1. When approaching the pinsetter from the rear, turn off the rear mechanic's stop switch. When approaching the pinsetter from the front, turn the stop/run switch on top of the Nexgen Controller to the stop position.

2. When mounting and crossing between the pinsetters, visually look for jammed pins on shark switch assembly, or distributor.

3. To determine the detected reason for the stop, look at the Diagnostic Display located on the top of the Nexgen Controller (*Figure 6-1*).

(1) DIAGNOSTIC DISPLAY

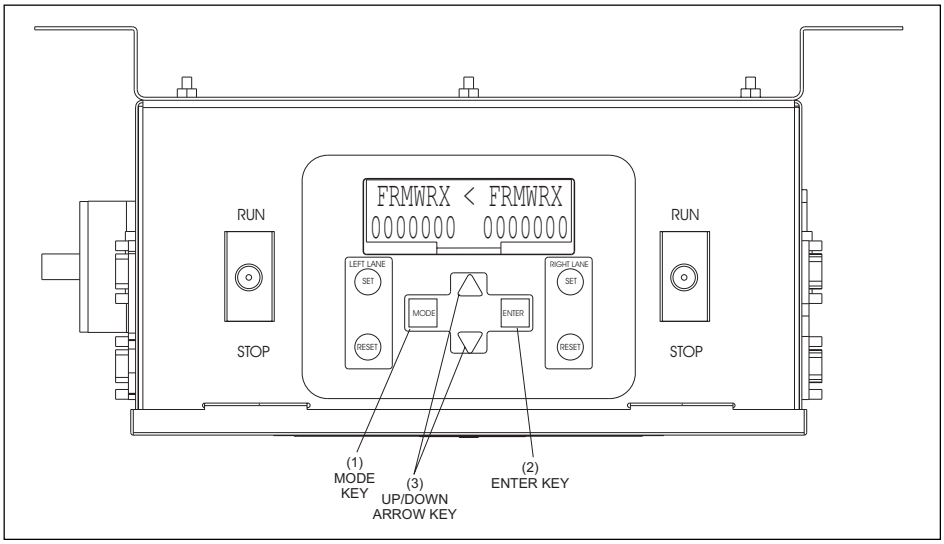

Figure 6-1. Top of Nexgen Controller.

Table 6-1 lists the error codes that may be displayed when the Pinsetter CPU has detected a problem with the pinsetter.

The Error Display symbol indicates which switch failed to act normally. A description and possible cause of failing are contained in this section of the manual.

Table 6-2 lists invalid machine states and switch positions.

Std. Code	Extended Code	
P0	Pin OOR	Out-of-Range
01	Pin1 Ld	Pin Loading Time Out Pin 1
02	Pin2 Ld	Pin Loading Time Out Pin 2
03	Pin3 Ld	Pin Loading Time Out Pin 3
04	Pin4 Ld	Pin Loading Time Out Pin 4
05	Pin5 Ld	Pin Loading Time Out Pin 5
06	Pin6 Ld	Pin Loading Time Out Pin 6
07	Pin7 Ld	Pin Loading Time Out Pin 7
08	Pin8 Ld	Pin Loading Time Out Pin 8
09	Pin9 Ld	Pin Loading Time Out Pin 9
10	Pin10 Ld	Pin Loading Time Out Pin 10
50	Detect10	#10 Pin Not Detected in Diagnostics
51	Detect1	#1 Pin Not Detected in Diagnostics
52	Detect2	#2 Pin Not Detected in Diagnostics
53	Detect3	#3 Pin Not Detected in Diagnostics
54	Detect4	#4 Pin Not Detected in Diagnostics
55	Detect5	#5 Pin Not Detected in Diagnostics
56	Detect6	#6 Pin Not Detected In Diagnostics
57	Detect7	#7 Pin Not Detected in Diagnostics
58	Detect8	#8 Pin Not Detected in Diagnostics
59	Detect9	#9 Pin Not Detected in Diagnostics
60	A Found	Switch A is Not Expected But Found
61	B Found	Switch B is Not Expected But Found
62	C Found	Switch C is Not Expected But Found
63	D Found	Switch D is Not Expected But Found
64	SMFound	Switch SM is Not Expected But Found
65	G Found	Switch G is Not Expected But Found
66	STFound	Switch ST Is Not Expected But Found
67	OORFound	SW. OOR is Not Expected But Found
70	A Ntfnd	Switch A Expected But Not Found
71	B Ntfnd	Switch B Expected But Not Found
72	C Ntfnd	Switch C Expected But Not Found
73	D Ntfnd	Switch D Expected But Not Found
74	SM Ntfnd	Switch SM Expected But Not Found
75	G Ntfnd	Switch G Expected But Not Found
76	STNtfnd	Switch ST Expected But Not Found
90	Invld 0	Invalid Machine State 0
91	Invld 1	Invalid Machine State 1
92	Invld 2	Invalid Machine State 2
93	Invld 3	Invalid Machine State 3
94	Invld 4	Invalid Machine State 4
95	Invld 5	Invalid Machine State 5
EJ	ElevJam	Elevator Jam
EL	Pin Cnt	Pin Count Switch Shorted for 5 Seconds
J1	TS1 Jam	Jam Switch TS1
J2	TS2 Jam	Jam Switch TS2 (Tower)
	BA	Accelerator Motor (overload)

Table 6-1. Error Display

Invalid Machine State	Spotting Tongs Switch	Table		Sweep Assembly			
		Position	"A" Switch	"G" Switch		"SM" Switch	
0 (90) (Invld 0)	Closed	Home	Closed	Open	Sweep Up	Open	Not Forward
1 (91) (Invld 1)	Closed	Not Home	Open	Open	Sweep Up	Open	Not Forward
2 (92) (Invld 2)	Closed	Not Home	Open	Closed	Sweep Down	Open	Not Forward
3 (93) (Invld 3)	Open	Home	Closed	Open	Sweep Up	Open	Not Forward
4 (94) (Invld 4)	Open	Not Home	Open	Open	Sweep Up	Open	Not Forward
5 (95) (Invld 5)	Open	Not Home	Open	Closed	Sweep Down	Open	Not Forward

Table 6-2. Invalid Machine States.

NOTE: *Some errors or problems with the pinsetter may not be detected by the Pinsetter CPU. Examples are ball accelerator problems or scoring errors.*

4. Clear the jam, repair or replace the failed part, or make the adjustment.

5. Turn the STOP/RUN switch to the run position.

NOTE: *When working on a pinsetter always observe proper safety procedures. Refer to the* "Safety Guidelines" *outlined at the beginning of this manual.*

6. If the machine will not restart, recheck the error code diagnostic display. If an invalid state is displayed, you must return the table (up) or sweep (forward) to its home position.

Cable Repair

1. When a cable is “inoperative” on a pinsetter, swap the cable with a spare cable, or with one from another pinsetter to see if the one in question is good or bad.

    a. To repair a cable, carefully inspect connections on each end of the cable for damage, such as bent or broken pins or loose, crimped connections and hold down springs. Ribbon cables generally cannot be repaired and must be replaced.

    b. Use an ohm meter or the “SW DIAG” mode of the Nexgen box for checking continuity through pins and wires. Refer to *“Nexgen”* Section for cable drawings. On long cables, jumper two pins and check the other ends with meter for continuity.

Error Code Description and Causes

STD. CODE	EXTENDED CODE *	FAILURE DESCRIPTION	POSSIBLE CAUSES
PO	Pin OOR	TABLE CAN'T PICK UP PINS, OUT-OF-RANGE - The Table was unable to lower to it's normal detecting height.	1. A bowling pin has been moved off its normal spot when the bowler rolled the ball. The table came down and it was resting on top of the pin. Turn off the power, clear any fallen pins still on the playing surface of the lane, and turn power back on. 2. The OOR switch mounted on the tower is not being actuated. Check the switch and actuating cam for proper adjustment. Check the wiring and connections between the switch and P-1/P-23 on the Nexgen Controller. 3. Table is not lowering properly. Check for binds in the table racks or the chain lowering mechanism.
01 02 03 04 05 06 07 08 09 10	Pin1 Ld Pin2 Ld Pin3 Ld Pin4 Ld Pin5 Ld Pin6 Ld Pin7 Ld Pin8 Ld Pin9 Ld Pin10 Ld	PIN LOADING TIME OUT A pin was not loaded into the pinholder within 90 seconds.	1. Pins jammed in one of the distributor lanes preventing the pin station form receiving a pin. 2. Pin holder switch not working properly. Check for broken switch or wiring. 3. Pin Holder solenoid not energizing. Check the solenoid, the wiring and the Nexgen Controller. 4. Table height too high, preventing the pin from dropping properly into the pin holder to make the switch. 5. Table height too low preventing the pin holder's open gripper from pushing up on the pin release lever to drop the pin. Also check individual pin release lever for proper positioning. 6. Pin count switch not functioning properly. 7. For Nexgen Electronics, swap the CPU PCB. Also, swap the interconnecting cables to help isolate the problem.

CODE	EXTENDED CODE*	FAILURE DESCRIPTION	POSSIBLE CAUSES
50 51 52 53 54 55 56 57 58 59	Detect10 Detect1 Detect2 Detect3 Detect4 Detect5 Detect6 Detect7 Detect8 Detect9	PIN NOT DETECTED IN DIAGNOSTICS - These ten codes are used during Machine Cycling diagnostics only. If a standing pin is not detected when the pinsetter is operating in this mode, the pinsetter will stop and display the code for the pin not detected. To activate this option set the Enable 50 Err setup option to "Y"	1. Check the pin detector plate for proper positioning. Is it level from left to right. 2. Check the Stroke Limiter height adjustment. 3. Check the setting table levelness. 4. Check the angle "1" and "2" adjustment.
60	A Found	SWITCH A NOT EXPECTED BUT FOUND - Pinsetter CPU has requested that the table be lowered but the "A" switch is still being held closed.	1. Table Motor or brake defective preventing table from being lowered. 2. The wiring between the switch and P-1/P-23 on the Nexgen Controller is defective. 3. Bad Connection on the H.V. PCB or Bad H.V. PCB (Nexgen) 4. Faulty A-Switch
61	B Found	SWITCH B NOT EXPECTED BUT FOUND - This switch was actuated at the wrong time or continuously.	1. Switch "B" on the switch cluster is shorted. Check the wiring and the switch. 2. Table motor or brake defective
62	C Found	SWITCH C NOT EXPECTED BUT FOUND - This switch was actuated at the wrong time or continuously.	1. Switch "C" on the switch cluster is shorted. Check the wiring and the switch. Nexgen CPU defective. Check the wiring and swap the PCBs with a working lane pair. 2. Table motor or brake defective.
63	D Found	SWITCH D NOT EXPECTED BUT FOUND - This switch was actuated at the wrong time or continuously.	1. Switch "D" on the switch cluster is shorted. Check the wiring and the switch. 2. Table motor or brake defective 3. Nexgen CPU defective. Check the wiring and swap the PCBs with a working lane pair.
64	SMFound	SWITCH SM NOT EXPECTED BUT FOUND - This sweep motor switch is actuated when it should not have been.	1. Sweep motor defective. 2. Sweep motor brake defective or stuck on the motor shaft. 3. No power to the sweep motor and/or brake. Check wiring for damage and proper hookup. 4. "SM" switch shorted. Wiring between the Nexgen Controller and the switch is shorted. 5. Sweep wagon or sweep arms binding or roller out of adjustment.

CODE	EXTENDED CODE *	FAILURE DESCRIPTION	POSSIBLE CAUSES
65	G Found	SWITCH G NOT EXPECTED BUT WAS FOUND - This error is detected when the sweep is down when it should be up in the raised "waiting for a ball" position.	1. Replacement table motor is wired so so the table is running backwards. 2. Sweep release assembly defective. Check for broken parts, missing spring or a sticky solenoid plunger. 3. Sweep release assembly out of alignment causing it to miss the sweep during the clockwise rotation of the table shaft. 4. Sweep wagon's forward position out of adjustment. Check both sweep arms and make sure both sweep craNK links on the sweep shaft are tight. "G" Switch shorted. Wiring between the Nexgen Controller and the switch is shorted.
66	STFound	SWITCH ST NOT EXPECTED BUT WAS FOUND - Spotting tong switch is actuated when it should not have been. This means that the tongs are in thier open position when they should have closed.	1. Spotting tong solenoid not energizing. Check fuses on Nexgen CPU PCB. 2. Spotting tong clutch slipping. Clean, reset tension and readjust. 3. One or more set of spotting tongs damaged or binding. 4. Drive gears on the square shaft or out of adjustment. 5. "ST" shorted or wiring on the table damaged.
67	OORFound	SWITCH OOR NOT EXPECTED BUT FOUND - The Out-of-Range switch, located on the tower, is actuated when it should not have been.	1. The "OOR" switch is shorted or damaged. 2. The wiring from the switch to the Nexgen Controller is faulty. 3. The Nexgen Controller CPU may be defective.
70	A Ntfnd	SWITCH A EXPECTED BUT NOT FOUND - Table is not at the fully raised to "home" position.	1. "A" switch is defective or out of adjustment. 2. Table motor or brake defective. 3. Check wiring connections and motor and brake connections. 4. Reversing fuses on Nexgen High Voltage PCB that are blown.
71	BNtfnd	SWITCH B EXPECTED BUT NOT FOUND - "B" switch was not made when table lowered to detect or set pins.	1. Switch "B" defective or out of adjustment. 2. The wiring from the switch to the Nexgen Controller is faulty 3. The Nexgen Controller CPU PCB may be defective. 4. Reversing fuses on Nexgen High Voltage PCB that are blown 5. Table motor or brake is defective

CODE	EXTENDED CODE *	FAILURE DESCRIPTION	POSSIBLE CAUSES
72	C Ntfnd	SWITCH C EXPECTED BUT NOT FOUND - Switch "C" is not actuated as expected during a pinsetter cycle.	1. Table motor or brake defective. 2. Check wiring from Nexgen Controller H.V. PCB to table motor and brake. 3. Table motor wired to run backward. Reverse any two of the "hot" leads coming into the motor terminal block. 4. Switch "C" defective or adjusted too far away from the magnetic switch activator. 5. The Nexgen Controller CPU PCB may be defective. 6. Reversing fuses on Nexgen High Voltage PCB that are blow.n 7. Table motor or brake is defective.
73	D Ntfnd	SWITCH D EXPECTED BUT NOT FOUND - "D" switch was not made when table lowered to detect or set pins.	1. Switch "D" defective or out of adjustment. 2. The wiring from the switch to the Nexgen box is shorted. The Nexgen Controller 3. CPU PCB may be defective. 4. Reversing fuses on Nexgen High Voltage PCB that are blown 5. Table motor or brake is defective
74	SM Ntfnd	SWITCH SM EXPECTED BUT NOT FOUND - This error indicates that the sweep is not forward or is unable to stop at the forward position.	1. Sweep motor brake not preventing the motor from coasting. 2. "SM" switch not being actutated. 3. The Nexgen Controller CPU PCB may be defective. 4. Defective Nexgen High Voltage PCB.
75	G Ntfnd	SWITCH G EXPECTED BUT NOT FOUND - Indicates that the sweep did not lower all the way down to the guarding "ready to sweep" position.	1. Sweep down on top of a pin or ball. 2. Sweep release solenoid defective. 3. Sweep release mechanism damaged or defective. 4. Switch "G" out of adjustment. 5. The wiring between the Nexgen Controller and the sweep release solenoid or "G" switch is defective. 6. The Nexgen Controller CPU PCB may be defective.
76	STNfnd	SWITCH ST EXPECTED BUT NOT FOUND - Indicates that the spotting tongs are not all the way open.	1. Spotting tong clutch - clean and adjust. 2. Spotting tong switch damaged or out of adjustment. 3. Spotting tong solenoid not working properly. 4. The wiring between the Nexgen Controller and the switch is loose or damaged. 5. Spotting tongs not working properly - damaged or binding. A replacement set of tongs could have been installed out of time with the other tongs.

CODE	EXTENDED CODE *	FAILURE DESCRIPTION	POSSIBLE CAUSES
90 91 92 93 94 95	Invld 0 Invld 1 Invld 2 Invld 3 Invld 4 Invld 5	INVALID MACHINE STATES 0-5 These states are situations which the Pinsetter CPU is not able to determine where the table, sweep and spotting tongs are. Most times this is caused by an incomplete clearing of a table or sweep jam by the mechanic.	1. Check the position of the table, sweep and spotting tongs. Moving the sweep to the fully forward position will normally allow the pinsetter to restart itself. 2. The sweep is not making the "SM" switch in order for the table motor to run. 3. The table is not "up" making the "A" switch in order for the sweep motor to run. 4. Check the "SM" switch with the sweep forward. 5. Check the "G" switch the sweep up. 6. Check the "A" switch with the table up. 7. Check the "ST" switch with the tongs fully open. 8. Check the Nexgen Controller CPU PCB cables for proper connections, both internally and externally.
EL	Pin Cnt	Pin count switch closed continuously.	1. Pin jam at the Shark assembly pin guides. 2. Switch is stuck in the closed position. 3. The wiring between the Nexgen Controller and the switch is shorted. 4. The Nexgen Controller CPU PCB is defective.
EJ	Elev Jam	ELEVATOR JAM - Elevator shovels not rotating properly. "EC" switch on elevator not being pulsed by a pin shovel at least once every 6 seconds.	1. Elevator pin shovel flipped and wedged in the elevator. 2. Pin caught in the elevator preventing rotation of the shovels. 3. Transport drive has a bind which prevents the rear distributor shaft from rotating elevator fast enough to keep pulsing "EC" switch. 4. Distributor motor defective. 5. Belt drive from the motor to the distributor shafts is too loose.
J1	TS1 Jam	JAM SWITCH TS1 - The switch is made when the rear pin holder swing shaft is unable to return to the horizontal position after setting pins.	1. A pin, broken part or tool is stuck in the table preventing rotation of the swing shafts. 2. The TS1 jam mechanism is out of adjustment and allows the switch to be made during proper rotation of the swing shafts. 3. The TS1 switch or its wiring to the Nexgen Controller is shorted.
J2	TS2 Jam	JAM SWITCH TS2 (TOWER) - This switch is made when the table is prevented from raising to its home position.	1. A pin, broken part or tool is wedged between the table and distributor. 2. The table height adjustment is wrong allowing the table to be pulled up against the distributor. Check the Angle "1" & "2" adjustment of the table and the table height in the raised position adjustments. 3. Check the TS2 adjustment to make sure the spring tension is adjusted properly. 4. The wiring to the Nexgen Controller is possibly shorted.
*	BA	BALL ACCELERATOR- Thermal protection activated or accelerator cable not connected.	1. Ball or pin stuck in accelerator clear obstruction. 2. Accelerator(AS) cable broken or disconnected. Check accelerator cable.

NOTE: *Nexgen Electronics displays either Standard Code or Extended Code*

**= Nexgen Electronics only*

Problem/Cause/Corrective Action

PROBLEM	CAUSE	CORRECTIVE ACTION
1. Ball does not return.	1. Pins in accelerator. 2. Adjoining machine transport band binding ball door. 3. Ball doors do not move freely. 4. Pin stuck between transport band and ball cushion board. 5. Transport band drive belt broken, or slipping. 6. Broken transport band. 7. Faulty ball door solenoid. 8. Accelerator flat belt. 9. Ball fell off transition track.	1. Remove pins. 2. Adjust transport band. 3. Adjust or lubricate ball door. 4. Adjust ball cushion. 5. Replace or weld belt. See Servicing section. 6. Replace transport band. 7. Replace or adjust solenoid. 8. Tighten or replace belt as required. 9. Remove capping, retrieve ball and clear any obstruction on or near the track.
2. Ball door blocked by pins.	1. Ball cushion not adjusted properly. 2. Loose transport band. 3. Loose transport band drive belt. 4. Worn transport band. 5. Ball door not adjusted properly.	1. Adjust ball cushion. 2. Tighten transport band. 3. Cut off a piece and weld back together. 4. Replace transport band. 5. Adjust ball door.

PROBLEM	CAUSE	CORRECTIVE ACTION
3. Pinsetter does not turn on properly.	1. TS1 or TS2 safety switch actuated. 2. Photocell not adjusted properly. 3. Faulty switch "A" or "SM". 4. Nexgen Controller main switch is off. The main power cable is unplugged, the mechanic's rear stop switch is not on. 5. Main house breaker box (if two pinsetters are down.) 6. Incorrect line voltage. 7. Pinsetter set to wrong mode.	1. Determine cause of trouble, repair, and restart machine. 2. Adjust ball detector. 3. Replace or adjust switch. 4. Turn on all switches. Check plugs and connectors. 5. Reset breakers. 6. Have line voltage corrected. 7. Set machine to proper mode
4. Pinsetter cycles independently. (One cycle only.) CAUTION: Camera flash may cause pinsetter to cycle independantly.	1. Photocell not adjusted properly. 2. Loose reflector mounting. 3. Faulty power supply connections. 4. Nexgen mode setting is wrong. 5. Incoming 3 phase power surge, or is out of balance	1. Check for proper hardware and adjust. 2. Remount with proper hardware and adjust. 3. Tighten connections. 4. Place pinsetter mode in 10-pin mode (stand alone pinsetters) or in (Frmwrx) mode if attached to the Frameworx scorer. 5. As a last resort, consult a qualified electrician to help identify the surge and correct the problem.

PROBLEM	CAUSE	CORRECTIVE ACTION
5. Pinsetter cycles continuously.	1. "SET" switch on mechanic's rear control box stuck or faulty. 2. Bowler's reset button stuck or cable is shorted.	1. Replace or repair as needed. 2. Check reset button, check cable, repair or replace.
6a. No pinsetter motor will operate.	1. Safety switches TS1 or TS2 actuated. 2. Manager's remote control unit not turned on. (Stand Alone pinsetters only) 3. Faulty Nexgen H.V. PCB	1. Determine cause of trouble, repair, and restart machine. 2. Turn on switch. 3. Relplace Nexgen H.V. PCB.
6b. Individual motor does not operate.	1. Main house breaker box or faulty power supply connections. 2. Faulty cables. 3. Damaged motor. 4. All above checked faulty Nexgen CPU or H.V. PCB.	1. Check breaker box and tighten power connections. 2. Check for shorted or loose pins, continuity, faulty connectors. Repair or replace. 3. Replace motor. 4. Power down and exchange faulty box.
7. Pinsetter fails to sweep.	1. Pin under or on top of sweep. 2. Faulty switch G, OOR or SM. 3. Sweep wagon guide rollers not adjusted properly. 4. Broken or worn sweep drive belt.	1. Remove pin. 2. Adjust or replace switch. 3. Adjust guide rollers. 4. Replace belt.

PROBLEM	CAUSE	CORRECTIVE ACTION
8. Sweep motor runs continuously.	1. Sweep motor brake defective. 2. Faulty switch SM. 3. All above checked. Faulty electronic assemblies or Nexgen CPU or H.V. PCB.	1. Adjust motor. 2. Adjust or replace switch. 3. Power down and exchange faulty box. or PCBs.
9. Pins jammed in distributor.	1. Oil/grease on pins or belts. 2. Belts not tensioned properly, dragging in rails. 3. Distributor belts off or broken. 4. Broken pin slider in pin station. 5. Front distributor and idler gears do not have proper tooth gap or belts are not tensioned properly. 6. Belts not level on distributor or riding in top of belt rail.	1. Clean with all-purpose cleaner. 2. Remove section of belt and weld back together, lubricate belt 3. Replace or weld belt. 4. Replace as required. 5. Adjust for proper tooth gap. Replace or weld belt for proper tension. 6. Adjust pulleys so the belts ride properly in rail
10. Shark switch not flipping to load pins on the right pin side.	1. Shark solenoid. 2. Pin count switch not closing.	1. Change solenoid or make sure solenoid is plugged in. 2. Check wiring to Nexgen Controller. Adjust switch, replace or repair switch or wirining.
11. Incorrect score.	1. Pin detect switch. 2. Pin detection height is not correct. 3. Angle "1" or "2" not adjusted 4. Broken pin detector plate.	1. Switch actuator or switch is sticking. 2. Adjust stroke limiter. 3. Adjust angle "1" or "2". 4. Replace pin detector plate.

PROBLEM	CAUSE	CORRECTIVE ACTION
12. Pins jammed in overflow chute.	1 Dirty pins and/or dirt built up in pin overflow chute.	1. Clean pins with pin cleaner and/or clean chute with all purpose cleaner.
13. Pin elevator turns continuously.	1. Faulty Nexgen CPU or H.V. PCB .	1. Replace Nexgen CPU or H.V. PCB.
14. Pinsetter runs for six seconds then turns off.	1. Elevator switch defective. 2. Pin jam in elevator. 3. Faulty Nexgen CPU PCB .	1. Replace or adjust switch. 2. Remove pins. 3. Replace faulty electronic assembly.
15. Table motor runs continuously.	1. Faulty switch A, or cam misadjusted. 2. Missing screw on switch actuator. 3. Faulty Nexgen CPU or H.V. PCB .	1. Adjust or replace actuator. 2. Replace screw or switch actuator. cam as required. 3. Replace faulty electronic assembly.
16. Table sets pins but sweep stays down.	1. Sweep not fully forward. 2. Sweep attenuator stop screw not adjusted properly. 3. Sweep pick up chain not adjusted to proper length. 4. Sweep contacting gutter adapter blocks. 5. Sweep release assembly bound. 6. Table motor running backwards. 7. Nexgen controller set table delay set to "N"	1. Move sweep manually by turning middle pulley. 2. Adjust stop screw. 3. Adjust to proper length using screw on end of chain. 4. Adjust sweep board. 5. Free bind in sweep release assembly. 6. Re-wire motor for correct rotaion. 7. Set table delay to "Y".

PROBLEM	CAUSE	CORRECTIVE ACTION
17. Full table lowers but does not release all pins.	1. Setting table not adjusted for proper height. 2. Faulty pin holder solenoids or pin holder microswitches. 3. Faulty electrical connections.	1. Adjust setting table. 2. Repair or replace faulty solenoid or microswitch. 3. Repair connections.
18. Table does not set full rack of pins.	1. Faulty pin holder switches or switch finger. 2. Pin detectors not allowed free movement. 3. Faulty pin holder solenoid(s), or cable harness's. 4. Faulty stroke limiter solenoid.	1. Replace switch or switch finger. 2. Determine cause and adjust as required. 3. Replace solenoid(s). Check harness cable and connectors. 4. Check stroke limiter solenoid and wiring.
19. Table makes long stroke only.	1. Stroke limiter not adjusted properly. 2. Faulty solenoid. 3. Faulty cable.	1. Adjust stroke limiter. 2. Replace or adjust solenoid as required. 3. Repair or replace cable.
20. Table makes short stroke only.	1. Faulty pin holder switch. 2. Faulty stroke limiter solenoid. 3. Pin holder shaft latch not adjusted properly. 4. Faulty cable.	1. Replace switch or adjust . 2. Replace solenoid as required. 3. Adjust pin holder shaft latch. 4. Repair or replace cable.

PROBLEM	CAUSE	CORRECTIVE ACTION
21. Table does not set pins after second ball or table is not full.	1. Pin jam in distributor. 2. Bent pin distributor guide tabs. 3. Faulty pin holder solenoid. 4. Table not adjusted to proper height. 5. Broken pin station on distributor. 6. Not enough pins in machine. 7. Broken pin holder electrical connections. 8. Faulty electronics. 9. Faulty pin holder switch or switch actuator.	1. Remove jam. 2. Adjust as required. 3. Replace solenoid as required. 4. Adjust table. 5. Replace as required. 6. Be certain 22 pins are in machine. 7. Repair connections. 8. Change the Nexgen CPU PCB. 9. Repair pin holder switch or switch actuator.
22. Table is full but does not lower.	1. Faulty pinholder microswitches. 2. H.V. fuse Is blown (Nexgen). 3. Faulty Nexgen CPU or H.V. PCB . 4. Pin holder switch actuator sticking. 5. Pin detector plate stuck up. 6. Pin holder out of postion detector plate hangs up.	1. Adjust or replace microswitches. 2. Replace reversing fuses 3. Replace faulty box or PCB. 4. Repair 5. Check clearance between plate and pin holders. 6. Adjust pin holder assembly.
23. Pins wobble or fall over while being set.	1. Pin holders not plumb. 2. Table not adjusted for proper height. 3. Table is not completely level. 4. Faulty table spring. 5. Pin bottoms are worn.	1. Make sure pin holders are vertical. 2. Adjust table height. 3. Level table. 4. Replace spring. 5. Scrap or repair worn pins.

PROBLEM	CAUSE	CORRECTIVE ACTION
24. Pin holder double loads.	1. Pin holder switch sticks. 2. Switch actuator sticks. 3. Pin detector plate stuck up. 4. Pin not seated in pin holder. 5. Pin holder switch finger cracked. 6. Broken wires or loose pin holder switch connectors. 7. Bad Nexgen PCB or loose connection	1. Replace Switch 2. Lube, check switch actuator. 3. Check detector plate pins, pin holder location in relation to other pin holders. 4. Check pin holder position and table height. 5. Replace switch finger. 6. Check table harness and switch wires. 7. Check connections and replace Nexgen PCB as needed.
25. Spotting tongs do not close - table does not pick up standing pins.	1. Tong drive clutch dirty or lubricated. 2. Tong drive shaft clutch not adjusted to proper tension. 3. Faulty spotting tong solenoid. 4. Faulty spotting tong switch or out-of-range switch. 5. Spotting tongs are obstructed. 6. Faulty Nexgen CPU. 7. Stroke limiter Assembly set too high (score strike)	1. Remove all lubricants and dirt from clutch face. 2. Adjust tension. 3. Change solenoid, check cable. 4. Adjust or replace switches as required. 5. Clear obstruction. 6. Change the Nexgen CPU PCB. 7. Adjust stroke limiter.
26. Pins drop from tongs.	1. Missing or worn tong insert. 2. Broken tong. 3. Tong out of time with other tongs 4. Spotting tong drive shaft clutch not adjusted to proper tension. 5. Table gears obstructed. 6. Faulty cables. 7. Switches B or D are faulty or not adjusted properly.	1. Replace tong insert. 2. Replace broken tong. 3. Check for proper movement of tongs. Realign tong an drive gear. 4. Adjust for proper tension. 5. Clear obstruction. 6. Repair or replace cables. 7. Adjust switch for gap. Replace if switch is faulty.
27. Ball accelerator belt not centering.	1. Front pulley not bolted correctly or front yoke is loose (parts incorrectly installed.)	1. Loosen bolts on yoke and operate accelerator. Align both yoke halves until the belt runs true. Tighten bolts.

PROBLEM	CAUSE	CORRECTIVE ACTION
28. Pinsetter operates erratically.	1. Faulty switch A. 2. Loose or faulty cables and connections. 3. Switches B, C, or D, (on switch cluster) or switch OOR (on setting table guide tower) not adjusted properly. 4. Setting table height not adjusted properly. 5. Belts not tensioned properly. 6. Damaged pinsetter parts. 7. Pin holder latch not adjusted properly. 8. Release levers damaged or not adjusted properly. 9. Switch adjustment faulty or faulty assembly. 10. Photocell adjustment not correct. 11. Faulty motor rotation. 12. Main power supply on too low a voltage. 13. Faulty switch cluster cable, trouble light, and ball door cable. 14. Faulty, ball lift cable, foul & optical trigger cable. 15. After above checked, electronics.	1. Replace switch. 2. Use solenoid and cable checker. 3. Adjust switches or cam for B, C, or D and OOR. 4. Adjust table height. 5. Check all belts for proper tension. Replace or weld belts as required. 6. Repair or replace parts. 7. Adjust latch. 8. Replace levers or adjust as required. 9. Check switch mountings. Check adjustments. 10. Adjust ball detect. 11. Determine proper rotation and adjust to proper phase status. 12. Use proper line voltage. 13. Substitute spare cable (to check). 14. Check cables and repair or exchange. 15. Change the Nexgen CPU or H.V. PCB