

# FORMAX<sup>®</sup>

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FD 87HD  
Hard Drive Punch

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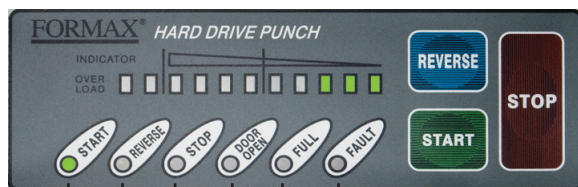
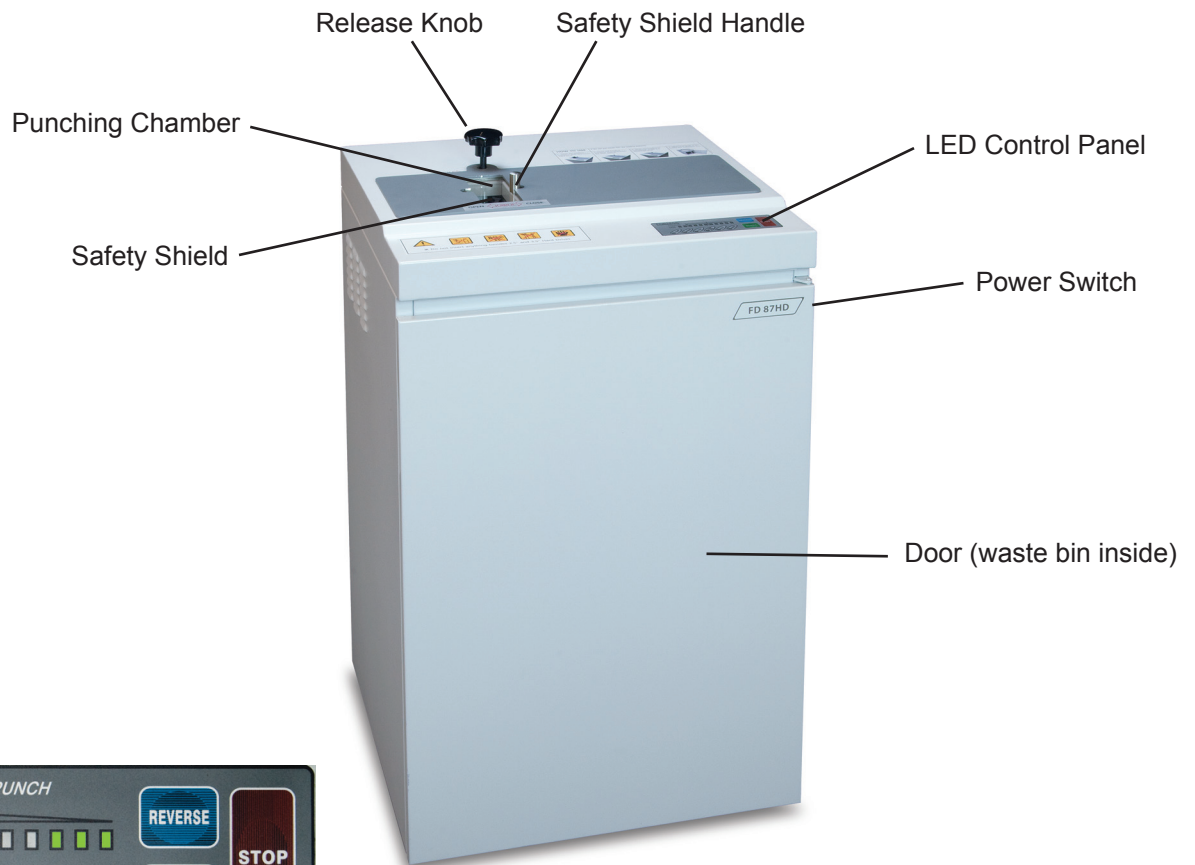
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## Specifications

Punch Hole Size:	.39" (10mm)
Hard Drive Size:	2 1/2" or 3 1/2"
Feed Opening:	4.65" (118mm)
Punching Cycle:	14 seconds
Dimensions:	19.68" W x 18.5" D x 35" H (500 x 470 x 890mm)
Weight:	154 lbs. (70kg)
Security Level:	H-3 (DIN 66399 standard)
Power Supply:	110V, 50-60Hz

## Set-up Guidelines

1. Install the FD 87HD on a level surface, away from heat sources and direct sunlight.
2. Insert plug into wall outlet with the appropriate voltage, 110V. If the outlet is shared with another electronic device, the total current should not exceed 30A (at 110V).



**Fault Indicator:** If there is a jam or other fault, LED will light and operation will stop

**Waste Bin Full:** If the waste bin is full, LED will light and operation will stop

**Door Open Sensor:** If the waste bin door or safety shield are open, LED will light and operation will stop

**AutoStop:** Automatically stops after each punching cycle

**AutoReverse:** In case of jam, motor automatically switches to reverse to protect the punching die

**Start:** Punch is operating

## Operation

1. Flip the power switch “ON”, located on the right side of the machine.
2. Slide open the safety shield on the top of the cabinet (Fig. 1).

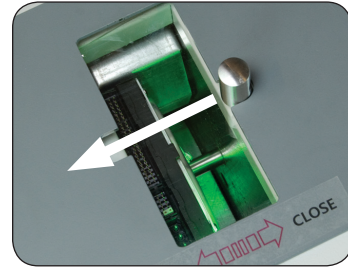


Fig. 1

3. Insert a hard drive into the punching chamber (Fig. 2).
4. Slide the safety shield closed.



Fig. 2

5. Press the green START button on the control panel (Fig. 3). The punching chamber will be illuminated by LED, and the punching die will puncture the hard drive. After a brief pause, the die will reverse direction. Once this has happened and the light goes out, the process is complete.

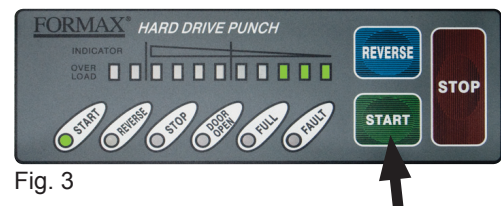


Fig. 3

6. Press the release button (Fig. 4) and the punctured hard drive will drop into the waste bin (Fig. 5).



Fig. 4



Fig. 5

## **Safety Precautions**

To avoid personal injury, and damage to the machine, observe the following safety precautions. Please keep these instructions for future reference.

**NOTE:** In case of emergency, push the ON/OFF button on the right side, or pull the plug out of the wall outlet.

- Keep hands, long hair, clothing, ties, jewelry and loose items away from the punching chamber.
- Do not use the hard drive punch for anything other than its intended purpose.
- Do not allow children to use the machine.
- Do not operate with a damaged power cord or plug, or when the machine is damaged in any manner.
- Unplug the hard drive punch when it is being moved, or if it is not in use for an extended period of time.
- Do not disconnect the power by pulling only the cord. Hold the plug when disconnecting.
- Keep the machine away from direct sunlight.
- Do not sit on the machine or place anything on top of it.
- Never open the fixed switch or cover.



## **Safety Devices and Other Features**

The FD 87HD is equipped with various safety features:

### **Automatic Reverse**

If the hard drive cannot be punched, the motor will automatically switch into reverse to prevent damage to the punching die.

### **Door Open / Safety Shield Open**

If the door or safety shield is open, the machine will not operate. Close the door or safety shield and press start to resume punching.

### **Waste Bin Full**

When the waste bin is full of punched hard drives, a weight sensor will activate the “FULL” light on the control panel. Open the door, remove the waste bin and empty it. Replace the waste bin, close the door and continue operation.

## **Daily Maintenance**

- Disconnect power by pulling power cord plug from wall outlet.
- To clean the exterior, wipe the surface with a soft cloth. If the surface is very dirty, use a neutral detergent, then wipe again with a soft cloth.

### **CAUTION:**

- Never put water directly on the surface of the machine.
- Never clean the case with benzene or thinner, since it will cause discoloration.
- Do not dismantle the machine. Contact your Formax Dealer for service.

## **TROUBLESHOOTING**

<b>PROBLEM:</b>	<b>CHECK THIS:</b>	<b>SOLUTION:</b>
Hard drive punch will not operate	Check that the power cord is plugged into an appropriate outlet	Plug cord into outlet
	Check voltage of power outlet (120VAC, 60Hz)	If necessary, find an alternate outlet with the appropriate voltage
	Check the wiring between the fuse connector on the PCB (page 9)	Reconnect, if necessary
	Check relay switch on Main PCB	Reconnect, if necessary
Main power is functioning but hard drive punch won't operate (Main PCB)	Check main power cable to see if it is properly connected to the Main PCB (page 9)	Reconnect, if necessary
	Check the Main PCB's printed circuit and wire disconnection of transformer	If there is a problem with the circuit and/or transformer, replace with new one
	Check the electrical contacts on the main control switch	Reconnect, if necessary
Main power is okay, but hard drive punch is not working (electrical) NOTE: Photo sensor should be connected with the main PCB during testing.	Check the outlet for correct voltage, 120V	Use different outlet, if necessary
	Check wire connection between photo sensor and Main PCB (page 9). If there is no output signal from Main PCB, hard drive punch will not operate.	Reconnect cable to sensor and Main PCB
	Photo sensor could be dirty	Remove photo sensor (page __) and clean it with a soft cloth
	Photo sensor sensitivity may need to be reset	Sensitivity measurement distance should be .4 inch (10mm). If distance is less than .4 inch, replace the photo sensor
	Check power relay contacts	Reconnect, or replace main PCB power relay if necessary. If printed circuit is damaged, replace the main PCB.
Full light will not go off	Check waste bin to see if it's full	Empty waste bin
Door Open light will not go off	Check cabinet door	Close door
	Check safety shield	Close safety shield
Punching die is not moving properly	Remove cover, check limit switches to see if they're properly connected to the power board	Reconnect switches, if necessary

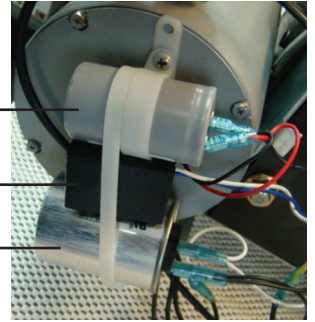
## Troubleshooting Motor Issues

If the motor doesn't work, check wiring connections to be sure they're attached properly. Check connections between motor and the following: start condenser, motor start relay and running condenser.



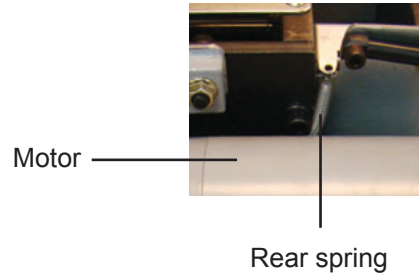
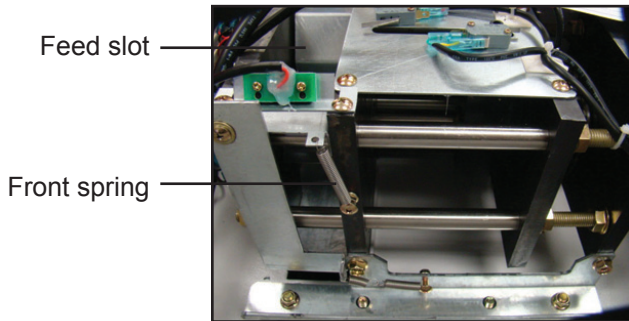
Reduction chain

Start condenser —  
Motor start relay —  
Running condenser —



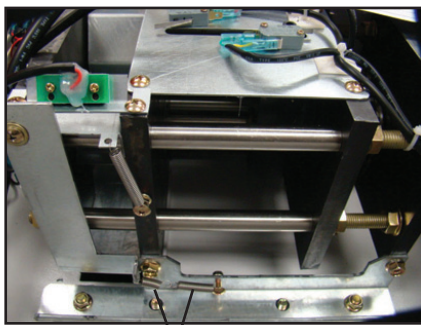
## Troubleshooting Feed Slot

If the feed slot does not adjust to fit both hard drive sizes (2.5" and 3.5"), one or both of the fixed springs may be damaged or broken. Replace the broken spring(s).



## Troubleshooting Feed Chamber Trap Door

If the feed chamber trap door does not operate (releasing the punch hard drive into the waste bin), the trap door springs may be damaged or broken. Replace the broken spring(s).



Front springs

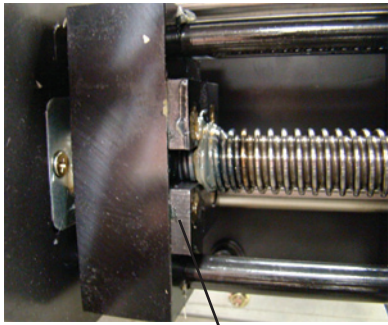


Rear springs

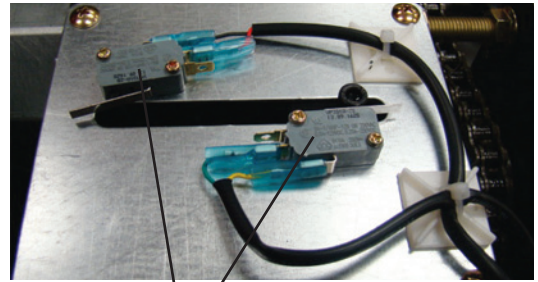


## Adjusting Drive Screw Mounting Bracket & Limit Switches

If the motor continues to run without punching, the drive screw mounting bracket may be loose or broken, due to a damaged limit switch. Check the bracket to see if it is loose or broken, and tighten or replace if necessary. Check the limit switches for proper operation and connection to the Main PCB. Reconnect or replace if necessary.



Screw fixing bracket

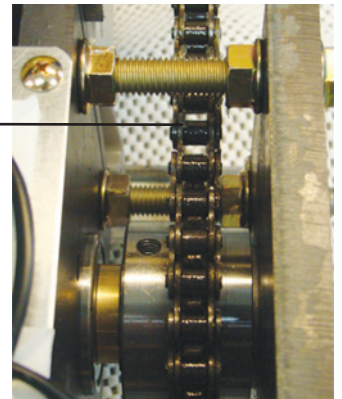


Limit switches

## Replacing the Motor Chain

If the motor continues to run without punching, the motor chain may be loose or broken. Check the rotation and condition of the chain and sprockets. Replace if necessary. Grease chain if needed.

Motor chain



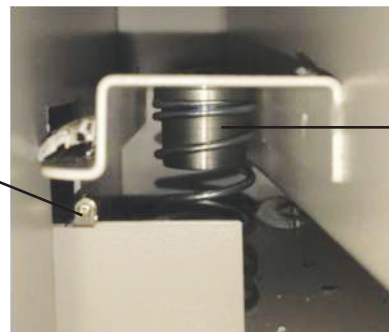
## Cleaning/Replacing the Waste Bin Full Switch

If the Bin Full LED does not light even if the waste bin is full, the full switch may be damaged, or there may be something jammed under it. Remove the waste bin and swing out the waste bin platform on its front hinge. Remove any foreign objects from under the switch. Check the switch wiring connections to the Main PCB. Replace the switch if it is damaged.



Waste bin full limit switch

Front hinge



Full plate spring

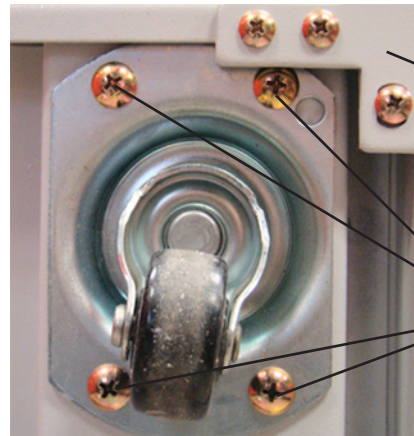


## Replacing Door Hinges & Casters

If the door is separated from the body housing, replace the upper and/or lower hinges. If the casters are damaged, remove screws and attach new casters with screw bolts.

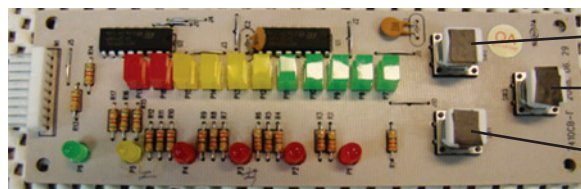


Top hinge



Bottom hinge

Caster screws

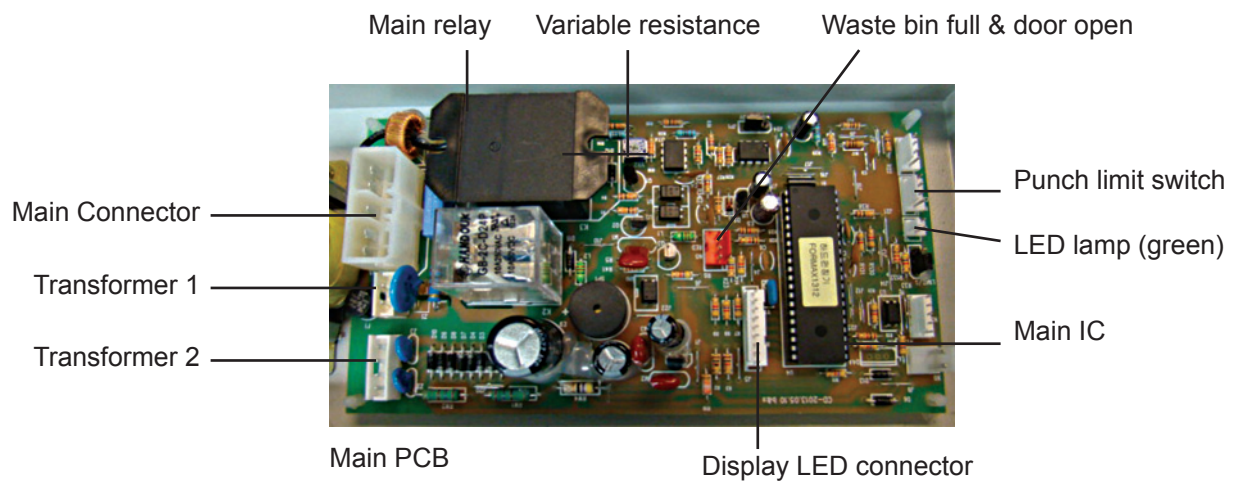


Reverse button

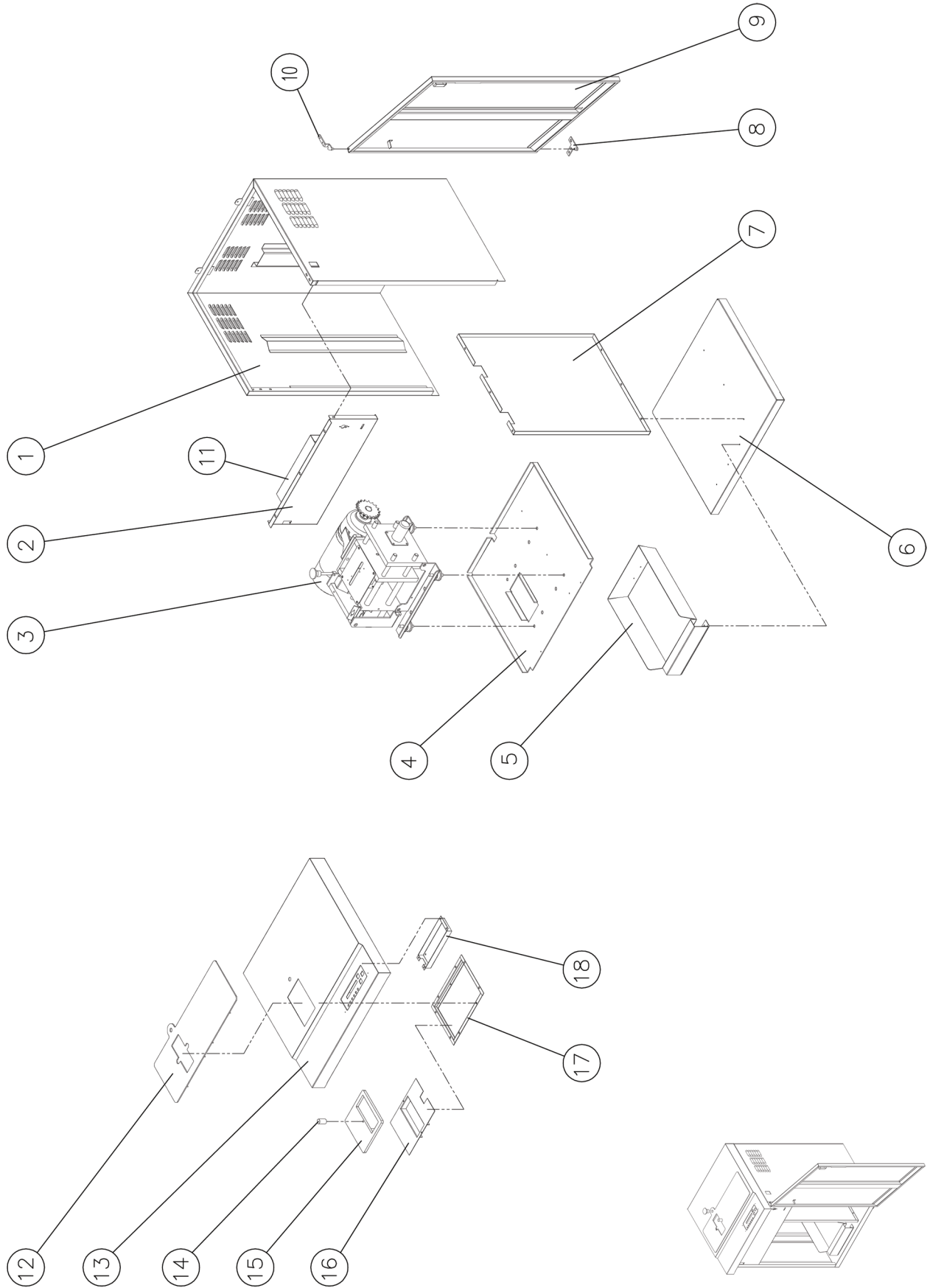
Stop button

Start button

Control Panel PCB



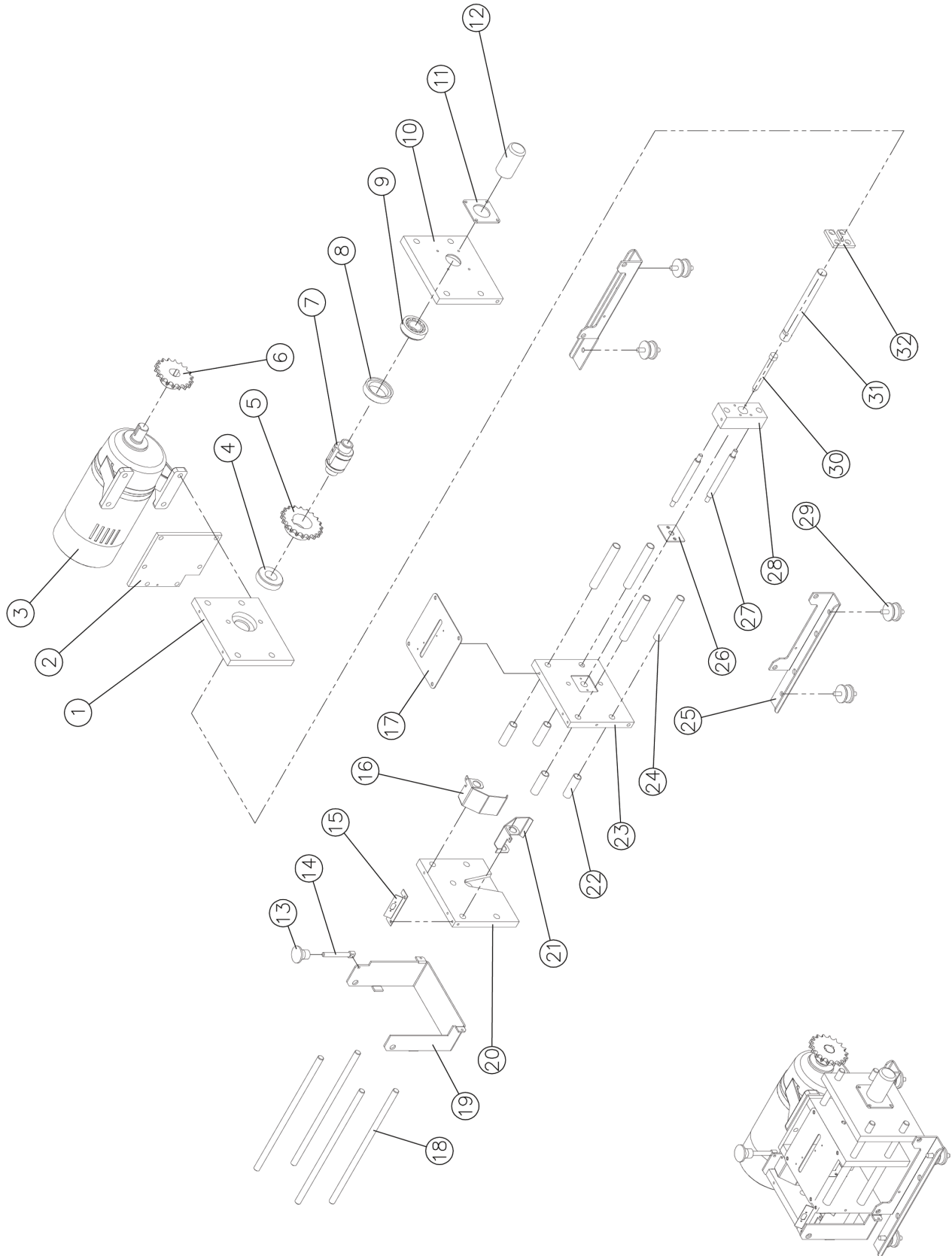
# PARTS LIST - CASE



## PARTS LIST - CASE

ITEM	PART #	DESCRIPTION	QTY
	FD-87HDA001	BODY CASE ASSEMBLY	1
1	FD-87HDA001	MAIN BODY	1
2	FD-87HDA002	FRONT PLATE	1
3	FD-87HDA003	PUNCHING BLOCK ASSEMBLY	1
4	FD-87HDA001	MIDDLE PLATE	1
5	FD-87HDA004	WASTE BIN PLATE	1
6	FD-87HDA001	BOTTOM PLATE	1
7	FD-87HDA001	VERTICAL PLATE	1
8	FD-87HDA005	BOTTOM DOOR HINGE	1
9	FD-87HDA006	DOOR	1
10	FD-87HDA007	TOP DOOR HINGE	1
11	FD-87HDA008	PCB BOX	1
	FD-87HDA009	TOP CASE ASSEMBLY	1
12	FD-87HDA009	TOP DECO PLATE	1
13	FD-87HDA009	TOP PLATE	1
14	FD-87HDA009	SAFETY SHIELD HANDLE	1
15	FD-87HDA009	SAFETY SHIELD	1
16	FD-87HDA009	TOP INSERT PLATE	1
17	FD-87HDA009	BOTTOM INSERT PLATE	1
18	FD-87HDA010	CONTROL PANEL BOX	1
	FD-87HDA011	CONTROL PANEL PCB	1
	FD-87HDA012	MAIN PCB	1

# PARTS LIST - PUNCHING BLOCK

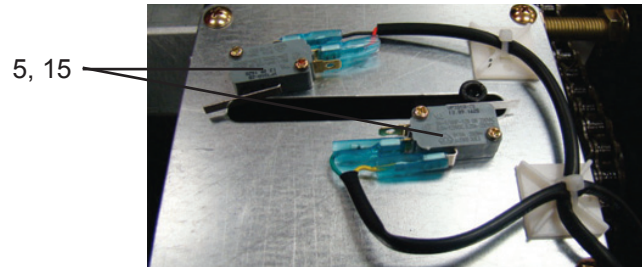
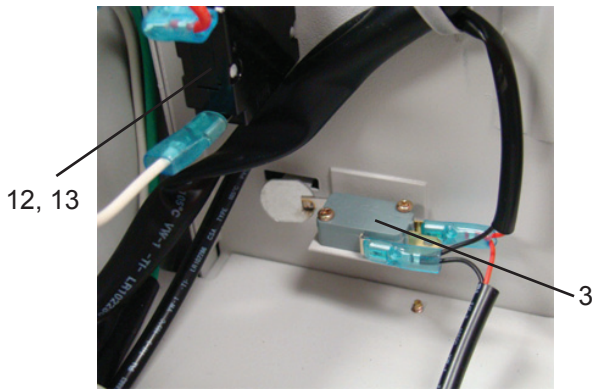
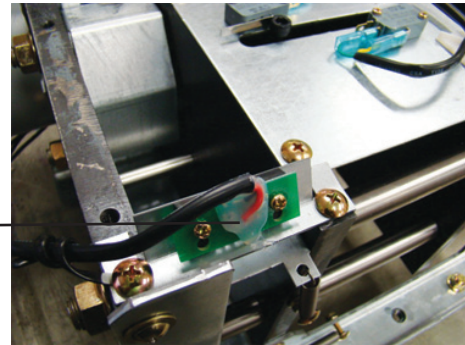
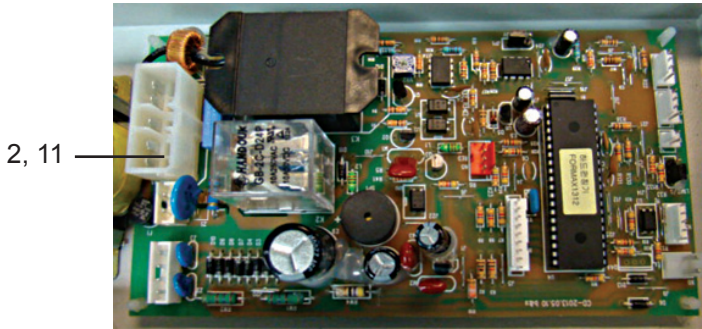
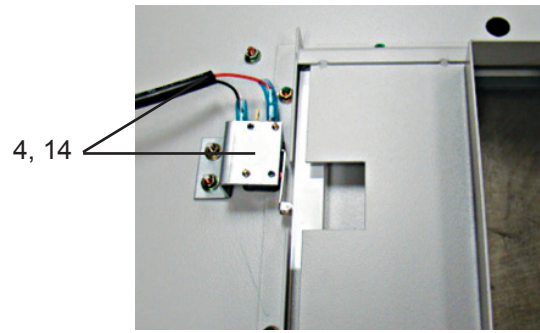
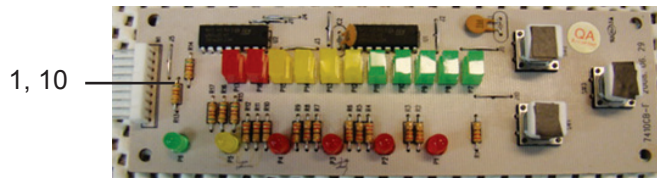


## PARTS LIST - PUNCHING BLOCK

ITEM	PART #	DESCRIPTION	QTY
1	FD-87HDB001	SIDE PLATE 2	1
2	FD-87HDB002	MOTOR PLATE	1
3	FD-87HDB003	MOTOR	1
4	FD-87HDB004	SPACER RING	1
5	FD-87HDB005	SPROCKET (SHAFT) #40, Z=12	1
6	FD-87HDB006	SPROCKET (SHAFT) #40, Z=20	1
7	FD-87HDB007	SCREW NUT	1
8	FD-87HDB008	SPACER RING	1
9	FD-87HDB009	TAPER BEARING	1
10	FD-87HDB010	SIDE PLATE 1	1
11	FD-87HDB011	SAFETY PLATE	1
12	FD-87HDB012	SAFETY PCAP	1
13	FD-87HDB013	PUSH HANDLE	1
14	FD-87HDB014	PUSH PIN	1
15	FD-87HDB015	LED BRACKET	1
16	FD-87HDB016	HARD GUIDE (RIGHT)	1
17	FD-87HDB017	SWITCH BRACKET	1
18	FD-87HDB018	POST SCREW	4
19	FD-87HDB019	OUTLET GUIDE	1
20	FD-87HDB020	SIDE PLATE 4	1
21	FD-87HDB021	HARD GUIDE (LEFT)	1
22	FD-87HDB022	SPACER PIPE (SMALL)	4
23	FD-87HDB023	SIDE PLATE 3	1
24	FD-87HDB024	SPACER PIPE (LARGE)	4
25	FD-87HDB025	VIBRATION PROOF BRACKET	1
26	FD-87HDB026	COVER PLATE	1
27	FD-87HDB027	GUIDE POST	2
28	FD-87HDB028	CONNECT BLOCK	1
29	FD-87HDB029	VIBRATION PROOF RUBBER	2
30	FD-87HDB030	PUNCH	1
31	FD-87HDB031	PUNCH SCREW	1
32	FD-87HDB032	FIX BRACKET	1



# PARTS LIST - ELECTRICAL



ITEM	PART #	DESCRIPTION	QTY
1	FD-87HDE001	CONTROL PANEL PCB	1
2	FD-87HDE002	MAIN PCB	1
3	FD-87HDE003	CABINET DOOR SWITCH	1
4	FD-87HDE004	SAFETY SHIELD SWITCH	1
5	FD-87HDE005	LIMIT SWITCHES	2
6	FD-87HDE006	PUNCHING CHAMBER LED	1
7	FD-87HDE007	LED MOUNTING SCREWS	2
8	FD-87HDE008	LED MOUNTING PLATE	1
9	FD-87HDE009	LED MOUNTING PLATE SCREWS	2
10	FD-87HDE010	CONTROL PANEL PCB WIRING	1
11	FD-87HDE011	MAIN PCB WIRING HARNESS	1
12	FD-87HDE012	CIRCUIT BREAKER	1
13	FD-87HDE013	CIRCUIT BREAKER WIRING	1
14	FD-87HDE014	SAFETY SHIELD SWITCH WIRING	1
15	FD-87HDE015	LIMIT SWITCH WIRING	2
16	FD-87HDE016	START CONDENSER	1
17	FD-87HDE017	MOTOR START RELAY	1
18	FD-87HDE018	RUNNING CONDENSER	1
19	FD-87HDE019	CONDENSER MOUNTING BRACKET	1
20	FD-87HDE020	CONDENSER MOUNTING BRACKET SCREWS	2

