

Description of component, subsystem, or function	Symptom (what?)	Effect (so what)
DrumBeat Lighting	LEDs do not light up	No light
	No LED flash when drum is hit	No light
	Constant random LED flashing	Blinding random light/ effect ruined
	LEDs Constant white light	No light response, constant white light
Structure Lighting	No response to remote control	No user input light controls
Control System	Beest does not does not beep.	Performance is not completed.
	Beest makes weird noises and spins slightly while completing slow movements.	Performance is not completed.
	Beest keeps moving.	People get run over
	Beest spins	People get run over
Wheels	Key Way sheared	wheel will not drive
	Broken Chain	Wheel will not drive

	Broken or stuck Gears	wheel will have no drive and could lock up
	molded wheel(s) broken.	will drive uneven
	Broken shaft	Beest will not be movable
	Quick release falls off	Wheel would fall off/ potential of getting hurt
	locking Hub pin shears	wheel would not engage
Frame	Frame connection breaks	Bar for frame unconnects
	Part of structure buckles or bends	Could fall on someone or hurt drums or electronics
	Part of structure falls off	Could fall on someone or hurt drums or electronics
	Beest tips over	Could hurt player or those around.

Very Probable

5

Catastrophic

4

20

Critical

3

15

Marginal

2

10

Negligible

1

5

Severity of Effect

Catastrophic

The failure causes substantial damage to the product (including people), requiring repair.

Critical

The failure causes significant damage to the product requiring repair.

Marginal

The failure causes some damage to the product potentially requiring repair.

Negligible

The failure causes no significant damage.

Probability of Failure

Very Probable

Probable

Occasional

Remote

Improbable

Every time

Most times

Observed multiple times during the project.

Might be possible during the project.

Maybe observed once during the project or pr

Failure mode (why?)	Probability of failure	Severity of effect	Risk priority
Batteries not plugged in/dead battery	2	1	2
LEDs not plugged into the board	2	1	2
Piezo Sensor Fallen off drum	2	1	2
Piezo sensor broken from impact	1	2	2
Board touching metal	2	1	2
Trinket Programming has reset	1	2	2
Trinket has been fried	1	3	3
RC input wire has become disconnected	2	1	2
Loose wires	2	2	4
Dead batteries	3	2	6
On/Off switch failed closed and Emergency Switch Failed closed	1	4	4
Controller turned on after Beest	2	4	8
Controller turned off before Beest	2	4	8
too much torque	1	3	3
weak link or wheel gets jamed	2	2	4

sheared keyway, broken teeth, foreign material stuck between gears	1	3	3
imperfection in rubber/jammed bearing	1	2	2
too much weight	1	4	4
Not properly latched, locking pin fails	1	4	4
material fails, too much torque	1	1	1
Too much weight on frame	1	3	3
Too much weight	1	4	4
Connecting pin doesn't attach	1	3	3
too much weight on top	1	4	4

Probable	Occasional	Remote	Improbable
4	3	2	1
16	12	8	4
12	9	6	3
8	6	4	2
4	3	2	1

product itself or related items

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redicted to happen after hand off.

Remedial action
Check battery connection
Check LED connection to board
Reconnect Piezo sensor to the drum head
Remove broken sensor, solder new sensor to the board
Place insulator between board and drum
Reprogram trinket
Program replacement trinket and replace fried trinket
Reconnect reciever wire
Resoder wires and secure all connections
Charge batteries, do not overuse, have extra batteries, get larger batteries
Add more redundancies to the system.
Set output of the code when receiving a lack of signal to zero.
Set output of the code when receiving a lack of signal to zero.
Replace keyway with larger size.
replace broken link

Remove any jamming material and replace broken parts.
Replace broken wheel with spare.
If large amount of weight are to be used. Design shaft accordingly
Make sure wheel locks are properly installed before moving.
design a larger locking hub pin to account for larger load.
Replace with spare connection
Add support members
Use set screws as well as connecting pins for total secure connection
Design top frame so that center of mass is low

