PRA Keys	1=very low
P = Probabilities of occurences	2=low
S = Seriousness of Failure	3=moderate
D = Likelihood defect reaches custor	4=high
R = Risk priority	5=very high

							PRA					
No	**Category**	**Part name Part No**	**Function**	**Failure Mode**	**Mechanism & Cause of failure**	**Effects of failure**	**Current control**	**P**	**S**	**D**	**R**	**Recommended Corrective Action**	**Actions taken**
1	Circuitry	Solenoid Electromagnet	Pushing the Pins to generate Braille	No signal	Loose connection/ faulty wire	Letter not displayed correctly	none	2	5	2	20	Replace Faulty wire/ conncection	
2	Circuitry	Solenoid Electromagnet	Pushing the Pins to generate Braille	Break	Wear and tear/ extensive force applied	Solenoid not working	none	2	5	1	10	Replace solenoid	
3	Circuitry	Microcontroller	Controlling the pins	No Output/power	Faulty Microcontroller/loose connection	Device not working	none	2	5	1	10	check connections/replace microcontroller	
4	Case/Membrane	Casing	Enclosing the circuit	Sharp Edges	Damage to the casing	Risk of injury during handling device	none	3	4	3	36	Replace casing	
5	Circuitry	Camera	Capturing the picture to be converted to text	Blurry/no image	Damaged / dirty camera	Algorithm not able to detect text	none	2	5	2	20	Replace/clean camera, test before shipping	
6	Circuitry	Camera	Capturing the picture to be converted to text	No signal	Faulty Camera/loose connection	Algorithm not able to detect text	none	2	5	3	30	Check connections/replace camera, test before shipping	
7	Circuitry	Battery	Powering the circuit	No power	Faulty/uncharged battery	No power	none	4	4	4	64	Charge/replace battery	
8	Circuitry	Battery	Powering the circuit	Leaks/explodes	Cold/hot temperatures, faulty battery	Nopower, potential injury	none	2	5	1	10	Enclose battery in separate area in casing/ replace if already damaged	
9	Circuitry	Diode	Prevents Current Discharge	Not working	Burned/damage	Potential Damage to circuit	none	3	4	4	48	Check Before Shipping/ replace diode if necessary	
10	Circuitry	Transistor	Enables driving large amounts of current	Not working	Faulty/ wrongly wired	Not enough power in the circuit	none	3	5	1	15	Check wiring/rotation and replace f necessary	
11	Case/Membrane	Elastic membrane		elastic membrane not sealed	Adheseve agent loose effect	high-pressure fluid leak, user may get wet or even hurt, product doesn't workt	none	2	5	2	20	reapply adhesive agent, check before shipping	
12		Cavity and pipes		cavity and pipes are not hermetic	Wear and tear , material defect	high-pressure fluid leak, user may get wet or even hurt, product doesn't work	none	3	4	3	36	Reseal/replace pipes	
13	Character pin	Pins		passive pin and arrays wear up	pins don't get pushed up properly	Wear	none	3	5	3	45	Regular Maintainance	
14	Case/Membrane	Elastic membrane		elastic membrane permanently deformed	material defects/Too many times of use	Pins stay up/ wrong letter displayed	none	2	3	4	24	Replace Membrane	
15	Circuitry	PCB/electronics		Not working	Exposure to weather and liquids	Damage to circuit	none	3	5	3	45	Minimal water resistance or presence of seal that doesn't allow liquids to flow through the character holes.	
16	Character pin	Pins	Create characters in cell	Getting jammed	While depressed, mechanism shifts	Letter not displayed correctly	none	2	5	3	30	Ensure mechanism tolerances and some built-in correction for small shifts	
17	Character pin	Character springs	Springs character in braille cell	Deformation	User pushes individual character back into hole deforming spring	Character becomes unusable		3	5	2	30	Implement structure to prevent spring from sliding down	
18	Circuitry	resistor	Reduces current in circuit	Overheating	Faulty component	Current too high in circuit - damage to other componenets	none	2	4	2	16	Replace component/test device before shipping	
19	Machinery	Soldering iron	to join wires together	overheats	faulty device	skin burns and injury	none	3	3	1	9	buy new soldering iron	
20	Machinery	3D printer	to print components of device	miss-threads plastic	tangled thread	component not properly made	none	2	2	1	4	stop printing process and rethread plastic	
21	Machinery	Wire cutters	to cut wires	misused	slippage	cuts user's hand	none	2	2	1	4	take care when using	
22	Machinery	Laser cutter	to cut plastic/pvc used in device	cuts incorrectly	plastic not aligned correctly	component not properly made	none	2	2	1	4	check plastic sheet is aligned	
23	Machinery	Drill	to drill holes	wrong size hole is drilled	wrong drill head used/ miscallibrated	wrong hole size	none	1	2	1	2	recallibrate drill/ swap drill head	

24	Assembly	Magnetic shielding	Reduce magnetic interference	Surrounding pins moving	Misplacement or damage during assembly	cells may become unusable; Interference with outside electronics	none	3	5	1	15	Inspection and QA after assembly
25	Assembly	PCB	electric circuitry	Signal loss	Scratched leads during assembly	Device not working	none	2	5	1	10	