

designsafe Report

Application: A Biaxial Tissue Stretcher Analyst Name(s): Krista Vedvik, Josh Leibowitz, Chris Zarins
 Description: Company:
 Product Identifier: Facility Location:
 Assessment Type: Preliminary
 Limits:
 Sources:
 Risk Scoring System: ANSI B11.0 (TR3) Two Factor

Guide sentence: When doing [task], the [user] could be injured by the [hazard] due to the [failure mode].

Item Id	User / Task	Hazard / Failure Mode	Initial Assessment		Risk Reduction Methods /Comments	Final Assessment		Status / Responsible /Reference
			Severity Probability	Risk Level		Severity Probability	Risk Level	
1-1-1	All Users Common Tasks	mechanical : crushing Hand/Fingers crushed between mounting plates due to linear actuator movement	Moderate Unlikely	Low	on-the-job training (OJT): Never insert your hand into the space above the bath while it is in use. Place controller out of reach of device to prevent physical contact with the device while it is operating	Moderate Remote	Negligible	In-process
1-1-2	All Users Common Tasks	mechanical : cutting / severing Poked by membrane punch	Moderate Unlikely	Low	eliminate by design: Create a template for the needles to insert into during membrane punching. The needles will insert into rods so that one's hand cannot come into contact with the needles during punching.	Moderate Remote	Negligible	In-process
1-1-3	All Users Common Tasks	mechanical : pinch point Fingers pinched in scissor jack	Minor Likely	Low	warning label(s)	Minor Unlikely	Negligible	In-process

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1-1-4	All Users Common Tasks	mechanical : crushing[2] Hand crushed under frame support when setting device on a surface	Moderate Unlikely	Low	on-the-job training (OJT): Always carry the device by the top of the frame. eliminate by design: Make the frame out of aluminum rather than stainless steel so it weighs less and catching a hand under the frame will likely not injure the user's hand.	Moderate Unlikely	Low	In-process
1-1-5	All Users Common Tasks	mechanical : pinch point[2] Fingers pinched inserting screws	Minor Unlikely	Negligible	Use a magnetic screwdriver to eliminate the need to hold the screw with the opposite hand during assembly. Wear thin, cloth gloves during assembly to prevent pinching.	Minor Remote	Negligible	In-process
1-1-6	All Users Common Tasks	mechanical : crushing[3] Foot crushed if device is dropped during transport	Moderate Unlikely	Low	on-the-job training (OJT):Always carry the device with two hands, holding it by the frame. Wear closed-toed shoes when operating and transporting the device.	Moderate Unlikely	Low	In-process
1-1-7	All Users Common Tasks	mechanical : cutting / severing[2] Body impaled by frame if user trips while carrying it upside down.	Serious Unlikely	Medium	on-the-job training (OJT): Never carry the device upside-down. eliminate by design: Make the frame supports fairly large and square so the force necessary for the frame support to impale a body part is greater than that caused by falling.	Serious Remote	Low	In-process

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1-1-8	All Users Common Tasks	mechanical : device instability End plate and actuators detach from frame and fall on the user.	Moderate Unlikely	Low	eliminate by design: Use large, long, tightly threaded screws to attach the endplate to the frame.	Moderate Remote	Negligible	In-process
1-1-9	All Users Common Tasks	electrical / electronic : energized equipment / live parts Serious electric shock upon contact with terminal block ports that supply a 5 A current.	Catastrophic Unlikely	Medium	eliminate by design: Create an enclosure for the terminal block. Hire someone experienced with electrical wiring to short the five ports together and connect each port to a controller.	Catastrophic Remote	Low	In-process
1-1-10	All Users Common Tasks	electrical / electronic : water / wet locations Electric shock due to culture medium spilling on linear actuator.	Moderate Unlikely	Low	eliminate by design: Mount linear actuators above the bath so if it spills in the incubator the fluid will not come into contact with the actuators.	Moderate Remote	Negligible	In-process
1-1-11	All Users Common Tasks	slips / trips / falls : slip Slipping due to spilling of the culture medium during bath transportation.	Minor Unlikely	Negligible	The bath will have a cover. Always place the cover on top of the bath when carrying it.	Minor Remote	Negligible	In-process
1-1-12	All Users Common Tasks	slips / trips / falls : trip Tripping over wires connecting controllers and linear actuators.	Moderate Unlikely	Low	Bundle the wires together and secure them to the wall since the device will be on a benchtop.	Moderate Remote	Negligible	In-process
1-1-13	All Users Common Tasks	heat / temperature : burns / scalds Skin irritation/burns due to contact with metal parts of device after a prolonged time in the incubator.	Minor Remote	Negligible	The incubator really isn't hot enough for the metal to be hot enough to cause burns, unless the user has a skin condition. Always wear gloves when removing the device from the incubator after an extended period of time.	Minor Remote	Negligible	In-process