

Job: Hammer	Date: 26/10/2023	Practical group: Monday 12pm	Name: Max Walker
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Key:

elimination

Substitution

Engineering controls

Administration controls

PPE

Step:	Equipment used	Description/parameters	Possible hazards	Risk level	Safety controls	Revised risk level
Gather materials from storeroom	<ul style="list-style-type: none"> 25mm DIA Brass 25mm DIA Aluminium 25mm DIA BMS 10 DIA BMS 	Retrieve the various materials from the storeroom and move to the workshop.	<p>Trip hazards on the floor</p> <p>Strain from carrying heavy material</p>	M	<p>Remove all trip hazards</p> <p>Carry smaller or lighter amounts of material at a time.</p> <p>Practice manual handling</p> <p>Clear path of people before moving material</p> <p>Wear PPE such as boots or gloves</p>	L
Mark and cut material to length	Cold saw, scribe	<p>Mark out the following lengths on each Rod with a scribe and then cut to length on the Cold saw:</p> <ul style="list-style-type: none"> Cut 25mm DIA brass x2 at 22mm, 1x 35mm Cut 25mm DIA Aluminium x1 at 35mm 	<p>Metal shards or swarf can cause injury to eye</p> <p>Cuts risks from metal Burs after cutting material</p>	H	<p>Lock material in vice while cutting</p> <p>Check that all electrical cords are not damaged before use</p> <p>Wear PPE such as glasses</p>	M

		<ul style="list-style-type: none"> • Cut 25mm DIA BSM x1 at 52mm • Cut 10 DIA BSM x1 at 265mm 	Powered machinery = electrical hazard			
Construction of brass handle ends (face, turn, chamfer, drill, tap)	Metal lathe ,2x 25 DIA brass at 22mm, M10 tap, 9mm drill bit , Centre drill	<p>Begin the set-up of the lathes for brass. Set the speed to 600RPM and clamp the brass into the chuck. Face all edges until faces are smooth and free of any burs that can cause cuts. Turn the lathe cutting tool to straight to turn the length of the brass to create a better exterior.</p> <p>Change the angle of the lathe cutting tool to 45 degrees to cut a 2mm chamfer to one face each. From this, move the tail stock towards the piece and instal a centre drill as a countersink to begin the drilling process. Using an 9mm drill bit, drill through the centre of the brass handle ends. Ensure you pull out the drill bit to reduce the head and allow the swarf to remove. Stop the lathe once the drill bit has reached the other side. Set up the M10 tap onto the lathe</p>	<p>Powered machinery = electrical hazard</p> <p>Metal shards or swarf can cause injury to eye</p> <p>High speed chuck can cause injury to hands or hair</p> <p>Burn injuries from hot metal after drilling</p>	H	<p>Turn off and isolate power when touching the chuck, drill bits or workpiece. Remove all swarf and dust on the lathe before using. Don't stick the work piece 3x the DIA out the chuck. Use correct cutting speed on lathe</p> <p>Apply coolant went tapping to reduce heat.</p> <p>Training before use.</p> <p>Wear safety glasses and correct PPE clothing. Wear hairnet if hair is long.</p>	M

		to ensure the thread is cutting straight. Apply coolant while tapping to reduce heat that is produced while cutting the thread.				
Taping the BMS Rod	Scribe, ruler, M12 dice, lathe, coolant, 10mm DIA rod	Mark out 125mm from one end of the rod and another 25mm on the other. This will be tapped for the handle and the hammer head to sit on. Start the tapping process with the 10 DIA rod in the chuck of the lathe and attach the M12 dice, this will start the tap to create the thread. The chuck will need to be spun along with the tailstock to ensure the tap is straight. Once started, you can move to the vice where you need to tap until you reach the mark. Apply coolant frequently as the metal can get hot and warp. To reduce this, turn the dice with half turns, this will also remove swarf. once completed complete another pass through to ensure the thread has cut smoothly. Remove the dice and repeated the process for	<p>Burns injuries from hot swarf and metal.</p> <p>Metal shards or swarf can cause injury to eye.</p> <p>Hand injuries when turning chuck.</p> <p>Strain from turning dice.</p> <p>Hair getting tangled or caught into dice.</p>	M	<p>Apply coolant and turn dice slower to reduce the heat of the BMS.</p> <p>Keep hands away from material</p> <p>Ensure work area is clean from debris .</p> <p>Wear glasses and tie hair back</p>	L

		the other side until you reach your scribe mark.				
Gluing handle	Part A and B for epoxy glue 2x 25mm Brass ends at 22mm Rag Wooden stick	Gather the two brass handle ends and the 25mm acrylic hex and create a pattern. Once chosen, go into a ventilated area such as outdoors and mix part A and Part B to create Epoxy to glue. Use different mixing sticks to prevent different parts from mixing into the same container. Mix vigorously until the epoxy looks like a cream like colour. Wind one brass end along the thread and then apply the pattern of acrylic. Only apply small amount of epoxy to prevent squeeze out which will look to be cleaned with a rag. Wind the other Brass end to the handle once the length has been filled. Allow the handle to dry for 24 hours.	Chemical risk from epoxy	L	Applying glue outside in ventilated area. Can use a different alternative for glue if needed. Don't have hands in direct contact with epoxy	L
Construction of Brass and Aluminium hammer heads	Lathe, scribe, M10 Dice, coolant	Set the lathe to the correct speed when working with the Brass or Aluminium. Brass at 600RPM and the Aluminium at 257RPM . Both ends of each material needs to be faced	Powered machinery = electrical hazard	H	Remove any dust or left over swarf that is sitting on the lathe that could be expelled into the air	M

		<p>before being worked on to ensure the faces are straight and clean from burs. At the correct speed depending on your metal, turn only 5mm across the piece until the DIA is 10mm. This will allow the head to fit into the BMS mid component. Start the tapping process with the hammer head in the chuck of the lathe and attach the M10 dice, this will start the tap to create the thread. The chuck will need to be spun along with the tailstock to ensure the tap is straight. Once started, you can move to the vice to finish off the cut. Work slowly to reduce the chance of it damaging. The opposite faces will also need a 2mm chamfer which will need the lathe cutting tool to be turned at 45 degrees.</p>	<p>High speed chuck can cause injury to hands or hair</p> <p>Dust or metal swarf from sanding can cause eye injury</p> <p>Hair getting tangled or caught into dice.</p>		<p>when the lathe starts.</p> <p>Use vice</p> <p>Use correct cutting speed on lathe.</p> <p>Don't stick the work piece 3x the DIA out the chuck.</p> <p>Check that all electrical cords are not damaged before use. Correct training before use.</p> <p>Wear safety glasses and correct PPE clothing, tie hair back</p>	
Drilling and tapping the BMS hammer mid component	<p>Lathe</p> <p>M12 Tap</p> <p>10.5mm drill bit</p> <p>15mm drill bit</p> <p>BMS 25 DIA at 52mm</p>	<p>Set up the lathe at 360RPM for BMS. Face each edge to remove any burs and create a smooth/flat edge. The mid component needs to be centre drilled first to create a</p>	<p>Powered machinery = electrical hazard</p>	H	<p>Remove any dust or left over swarf that is sitting on the lathe that could be expelled into the air</p>	

		<p>countersink so it can be drilled next with a 10.5 mm drill bit through its entirety to allow the heads to screw in. Ensure the tailstock is tight before drilling. Next drill slightly again to the hole create a chamfer with the 15mm drill bit to allow an easier fit for the hammer heads. The M12 tap should be set up on the lathe to begin the process and then transferred to a vice. Tap each side to ensure each head to screw easily into the mid component.</p>	<p>High speed chuck can cause injury to hands or hair</p> <p>Dust or metal swarf from sanding can cause eye injury</p> <p>Burns from hot material caused from drilling</p>		<p>when the lathe starts.</p> <p>Use correct cutting speed on lathe.</p> <p>Don't stick the work piece 3x the DIA out the chuck.</p> <p>Check that all electrical cords are not damaged before use. Correct training before use. Don't touch hot metal.</p> <p>Wear safety glasses and correct PPE clothing. Wear hairnet if hair is long.</p>	
Turning the handle on the lathe	Lathe Glued handle	<p>Set the lathe to the correct speed, 600 RPM for Brass and 1090RPM for plastic. Ensure the lathe cutting tool is straight and slowly turn to create a flush fit between the brass and the acrylic.</p>	<p>Powered machinery = electrical hazard</p> <p>High speed chuck can cause injury to hands or hair</p> <p>plastic or metal swarf from sanding can cause eye injury</p>	H	<p>Remove any dust or left over swarf that is sitting on the lathe that could be expelled into the air when the lathe starts.</p> <p>Use correct cutting speed on lathe.</p> <p>Don't stick the work piece 3x the DIA out the chuck.</p>	M

					<p>Check that all electrical cords are not damaged before use. Correct training before use.</p> <p>Wear safety glasses and correct PPE clothing</p>	
Drill Milling the head components	Drill Mill, Centre drill bit, 8.5 drill bit, 11 drill bit, ruler, scribe	Mark the centre of the assembled hammer head component and then clamp it down to the mill drill. The clamp shouldn't touch the chuck, from this line up the centre drill bit with the centre mark on L3 speed until there is a chamfer. change speed to L2 and 8.5mm drill bit through the first wall. Change speed to L1 and 11mm drill bit to create small chamfer.	<p>Powered machinery = electrical hazard</p> <p>High speed drill can cause injury to hands, hair</p> <p>Metal shards or swarf can cause injury to eye</p>	H	<p>Turn off and isolate power when touching the chuck or drill bits.</p> <p>Use clamps and guards</p> <p>Check that all electrical cords are not damaged before use. Correct training before use.</p> <p>Wear safety glasses and correct PPE clothing</p>	M
Tapping the head component	Drill mill M10 tap Vice	With the head assembly still clamped on the drill mill, use a M10 chamfer tap in the drill chuck to start the tapping process. From this complete the rest of the tapping in a vice and turn by hand. Once completed, change to a plug	<p>Powered machinery = electrical hazard</p> <p>Metal shards or swarf can cause injury to eye</p>	M	<p>Turn off and isolate power when touching the chuck or drill bits</p> <p>Use vice</p> <p>Wear glasses and tie hair back</p>	L

		M10 tap to complete the same process.				
Sanding and poshing assembled hammer	Sandpaper 200-1400 grit Brasso polish Clean rag	Sand each component of the hammer on the lathe starting with 200 grit and then moving up towards 1400 grit paper. Each component can be polished with brasso which can be applied on the lathe with a clean rag ensuring the rag doesn't touch the chuck.	<p>Powered machinery = electrical hazard</p> <p>High speed chuck can cause injury to hands or hair</p> <p>Dust or metal swarf from sanding can cause eye injury</p> <p>Chemical risk of using brasso</p>	H	<p>Remove any dust or left over swarf that is sitting on the lathe that could be expelled into the air when the lathe starts.</p> <p>Keep hands away from chuck or revolving piece at all time</p> <p>Wear glasses when on the lathe and wear gloves when applying brasso.</p> <p>Wear hairnet if hair is long.</p>	M







