

Part Name: Cover		Part Number: 04			Drawing Number: 04	
Revision No.: 1		Date: 18/10/2019			Planner: JASON CLEGG	
Material: Aluminium		Stock Size: 50x50x20mm			Quantity: 1	
Operation No.	Description	Machine	Speed (rpm)	Feed (mm/min)	Time (min)	Risk Assessment
401	Measure the dimensions of the raw material to ensure workpiece is 50x50x20mm. A 0.01mm tolerance is allowed for the two 50mm sides, and a 1mm tolerance for the 20mm dimension.	Calliper	-	-	1	-
402	Machine the two largest surfaces of block in order to produce thickness of 10mm	Mill with carbide cutter	$\frac{300.2 \cdot v}{d}$ (‘v’ will be provided by TAFE demonstrator when material is issued. ‘d’ is to be measured by student using rule.)	120	15	<ul style="list-style-type: none"> Articles of clothing or body parts getting trapped in rotating components of machine. Projectiles entering eyes, such as swarf. Cuts from sharp objects such as cutting edge of milling cutters. Injury due to incorrect lifting technique of heavy objects, such as vice. <p>Wear eye protection and tie down loose articles. Be careful when handling sharp objects. Gain assistance when lifting heavy objects and lift with legs whilst maintaining a straight back.</p> <p>[1]</p>
403	Measure surface dimension to ensure the dimensions of 50x50x10 is obtained.	Calliper	-	-	2	-
404	Mark four corner holes before drilling a 5.5 mm hole through the entire block at these locations.	Hole punch and drill press	2500 [2]	-	15	<ul style="list-style-type: none"> Articles of clothing or body parts getting trapped in rotating components of machine. Projectiles entering eyes, such as swarf. Cuts from sharp objects such as cutting edge of drill bit. <p>Wear eye protection and tie down loose articles. Be careful when handling sharp objects.</p>
405	Inspect hole positions	Calliper	-	-	2	-
406	Countersink each of the corner holes until	Drill press with	2500 [2]	-	15	<ul style="list-style-type: none"> Articles of clothing or body parts getting

	an outer diameter of 10.4mm is achieved. The angle of the countersink is 90 degrees.	countersinking bit. Hole punch.				<p>trapped in rotating components of machine.</p> <ul style="list-style-type: none"> ▪ Projectiles entering eyes, such as swarf. ▪ Cuts from sharp objects such as cutting edge of drill bit. <p>Wear eye protection and tie down loose articles. Be careful when handling sharp objects.</p>
407	Measure outer diameter of countersunk holes. Ensure outer diameter of 10.4mm.	Calliper	-	-	2	-
408	On either milled surface, mark the two valve hole points and drill an 8.6 mm hole through the entire block at these marks.	Hole punch and drill press	2500 [2]	-	10	<ul style="list-style-type: none"> ▪ Articles of clothing or body parts getting trapped in rotating components of machine. ▪ Projectiles entering eyes, such as swarf. ▪ Cuts from sharp elements such as cutting edge of drill bit. <p>Wear eye protection and tie down loose articles. Be careful when handling sharp objects.</p>
409	Inspect hole positions	Calliper	-	-	2	-
410	Tap each of the two 8.6 mm holes using a pitch of 1.5mm. Tap in clockwise direction on top face. Top face is the side which has the countersinks.	Tap and die	-	-	15	<ul style="list-style-type: none"> ▪ Ensure a good grip whilst tapping in order to prevent slips and collision of hand with hard surfaces ▪ Repetitive stress injury can result from repetitive high strains exerted on wrists. <p>Ensure hands and dye are dry before establishing grip. Place upper body above wrists in order to utilise body weight, as oppose to relying on wrist strength exclusively.</p>
411	Inspect each threaded hole	M10 bolt	-	-	3	-
412	Deburr edges of workpiece if necessary	File	-	-	5	<ul style="list-style-type: none"> ▪ Ensure a good grip whilst filing in order to prevent slips and collision of hand with hard surfaces ▪ Ensure hands and file are dry before establishing grip.

						<ul style="list-style-type: none"> File away from body to prevent file from striking body.
413	Inspect part by measuring dimensions and running finger gently across edges to ensure no burrs exist.	Calliper	-	-	5	<ul style="list-style-type: none"> When checking for burrs with fingers, do not run finger across edge of workpiece too hard and fast. This can cause cuts if burrs exist and/or edge is too sharp.

References

- [1] Sydney Institute of TAFE – ESC. 'Student Background Notes for Basic Machining Operations', 2008, Section 6, page 20.
- [2] R. Girling. 'Drill Press Speed Chart'. Retrieved from <http://www.raygirling.com/dpspeed.htm#twistbit>.