**Ball Peen Hammer**

**Objective:** The student is expected to understand and demonstrate the following operations.

1. Practice various lathe operations

1. Read work drawings

1. Threads and classes of fits
2. Assemble machined parts

1. Observe the necessity of tolerances

1. See how planning a job leads to “Pay Off”
2. Tolerance of ±0.005” unless otherwise specified

**Requirements:**

1. Study the drawings first

1. Read the steps (Procedures)

1. Ask questions

1. Wear the proper PPE

1. Begin your work

1. Work carefully

*Revision 1: 7/30/2019*

**Ball Peen Hammer**

Die Cut



**Handle Procedures:**

1. Cut and deburr material ¾" Hot Roll Round (HRR) -6 ¾ " long.
2. Center, center drill and face both ends of stock.
3. Take stock out 3 ½" and center with live center in center hole. Make sure to set-up the dial indicator as close to the jaws as possible.
4. Turn down stock to .620 diameter.
5. Bring stock in and center 1" out.
6. Face off center hole cut out.
7. Set-up compound rest at 45 degrees and cut angle 1/8" long.
8. Turn stock around and center with aluminum pads 5 ½" out.
9. Turn down the handle body to .500 diameter.
10. Set-up the round nose tool and turn the body down to .437 diameter.
11. Set-up the turning tool and turn down for the threads down to .372 diameter. (Tolerance of ±0.001”)
12. Set-up die to cut 3/8" — 24 threads per inch (TPI).
13. Set-up threading tool and cut out threads.
14. Set-up lathe and knurling tool to form medium knurls.
15. Knurl the 2 ½" long handle and clean.
16. Deburr and polish all machined surfaces.



**Head Procedures:**

 **Lathe Operations:**

1. Cut and deburr material 1" H.R.R. — 4" long.
2. Chuck up, center 1 ½" out and face one end only.
3. Turn down head diameter to .875, 1" long.
4. Set-up compound rest to 45 degrees and cut face chamfer 1/8" long.
5. Turn around and chuck-up head with aluminum pads ¾" in the jaws.
6. Turn down body diameter to .812.
7. Turn down ball diameter to .750 as per drawing.
8. Set-up the threading tool to cut the grove line as per drawing.
9. Set-up the radius tool and turn down the grove on the .812 diameter down to .700.
10. Turn down the grove on the .750 diameter down to .600.
11. Turn the ball radius by using a flat file at a 45° angle to produce the desired shape. (Ask lab assistant for assistance in this step)

 **Milling Operations:**

1. Set-up the parallel bars on the milling vise.
2. Set-up soft caps on the vise jaws and set-up hammer head into the vise jaws.
3. Set-up the edge finder and locate center of hole on head.
4. Set-up the center drill and drill center hole.
5. Set-up the Q drill bit in the collet and drill tap hole ½" deep.
6. Set-up the ½" end mill and cut counter bore .1 deep.
7. Tap the hole with the 3/8"-24 TPI taper tap and then with the bottoming tap.
8. Clean out tapped hole and check thread fit with the ball peen hammer handle.
9. Set-up on lathe and deburr polish.