



WORKSHOP REPORT

Workshop Project



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TO:

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Project Name:

Revolver with a Rod

Objective:

In this workshop, we'll design and build a fully functional revolver model featuring a knurling rod. We'll learn to apply mechanical engineering principles, CAD skills, and hands-on manufacturing techniques to create an amazing working prototype.

Introduction

We're about to embark on a challenging yet rewarding project that will test our skills and push our imagination. Our mission: design and build a scaled-down revolver model with a unique twist – a knurling rod. We'll learn how to integrate this innovative feature into our design, making our project truly one-of-a-kind. Through this hands-on adventure, we'll gain valuable experience in: -

- Bringing our ideas to life with CAD software
- Mastering CNC machining and manufacturing processes
- Assembling and troubleshooting mechanical components
- Overcoming obstacles and optimizing your design.

Apparatus:

Machines:

- Lathe machine
- Big Lathe Machine
- Drilling Machine

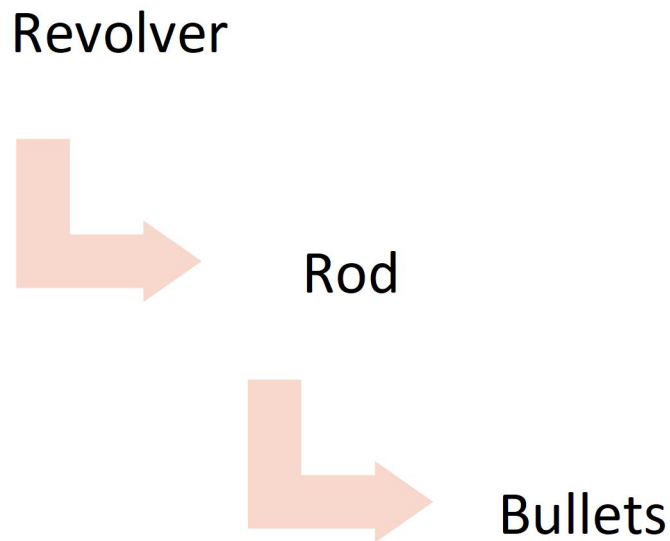
Tools:

- Sand Paper/File
- Vernier Calipers

Material Selection:

- Choose materials with appropriate strength and wear resistance (e.g., stainless steel for durability).
- We Choose Aluminum for the revolver.
- Mild Steel for the Rod and Bullets.

Assembly Tree:



.Procedure:

For Revolver:

- First of all, we start Facing and turning on aluminium piece. The piece had a diameter of 50mm and also a length of 50mm.
- Then we reduced its diameter to 40mm and also the length to 40mm.
- We mark the 6 points separately for the bullets holes.
- After that we did a centre drill on it of 10mm diameter.
- Then we did 6 holes of 8mm diameter on the points which we marked.
- We did these 6 holes on Drilling Machine.
- Then we did filing on it and also used a sand paper.

For Rod:

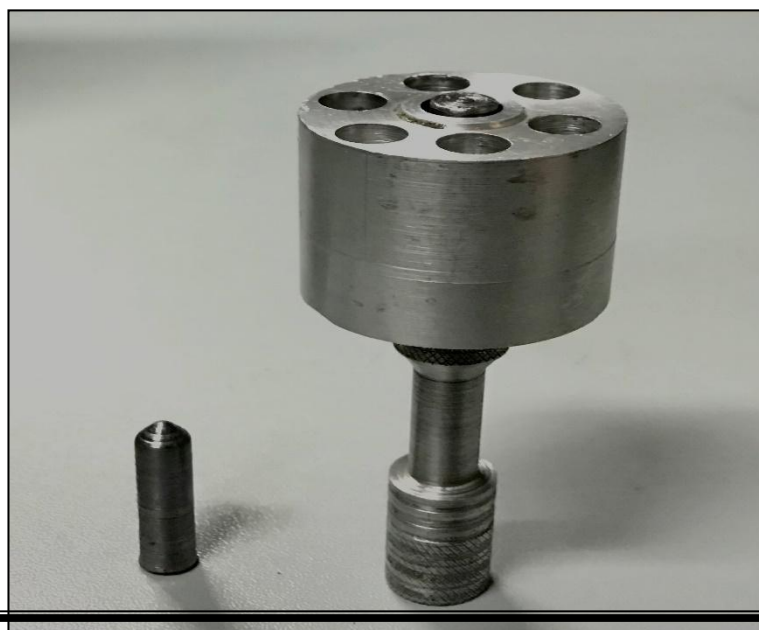
- On the rod, we start doing facing and turning first.
- We reduced its diameter from 20mm to 15mm, and length from 125mm to 120mm.
- After that we take a length of 40mm and reduced its diameter to 10mm to fix the revolver in it. So that almost at 9.8mm diameter it was working properly.
- Then we did a knurling on the other End with the length of 30mm.
- We did knurling on big lathe machine.

- ☑ We did the knurling on the other side from the length 40mm to 55mm.
- ☑ After that we did a grooving and turning in the inner remaining part.
- ☑ We took a diameter of 10mm inner side.
- ☑ So that our Rod has been created.

For the bullets:

- ☑ First of all we took a mild steel rod of at 40mm and 10mm diameter.
- ☑ We reduced its diameter from 10mm to 7.9 mm something and length to 40mm.
- ☑ Then we did taper turning on its one side to create a bullet shape.
- ☑ After that we did filling on it and used a sand paper to polish its surfaces.

Diagram



Conclusion

- * **Machining Skills:** The project demonstrates proficiency in various machining processes like turning (lathe), drilling, and possibly milling.
- * **Design & Functionality:** The tool's design appears to be functional and well-suited for its intended purpose.
- * **Material Selection:** The choice of material (likely aluminum) seems appropriate given the tool's intended use.

Precautions

* Safety:

- * **Eye Protection:** Always wear safety goggles while operating machinery.
- * **Hearing Protection:** If the machine is noisy, earplugs or earmuffs should be worn.
- * **Loose Clothing:** Tie back long hair and avoid wearing loose clothing that could get caught in the machinery.
- * **Sharp Edges:** Be cautious of sharp edges on the machined parts.

* Machining:

- * **Secure Workpiece:** Ensure the workpiece is securely clamped to the machine to prevent movement during operation.
- * **Correct Speeds and Feeds:** Use appropriate speeds and feeds for the material and cutting tool to avoid tool breakage and workpiece damage.
- * **Coolant:** Use coolant when necessary to reduce heat and improve cutting performance.
- * **Regular Tool Checks:** Inspect cutting tools for wear and replace them as needed.

* Design and Assembly:

- * **Clear Drawings:** Ensure that the design drawings are clear and accurate to avoid errors during manufacturing.
- * **Proper Tolerances:** Consider tolerances for the various components to ensure proper fit and function.
- * **Assembly Instructions:** Create clear assembly instructions to facilitate the final product.

* Testing and Inspection:

- * **Functional Testing:** Test the tool thoroughly to ensure it functions as intended.
- * **Dimensional Inspection:** Check for dimensional accuracy using appropriate measuring tools.

Additional Considerations

- * **Ergonomics:** Consider the ergonomics of the tool's design for comfortable and safe operation.
- * **Maintenance:** Plan for the tool's maintenance to ensure its longevity and continued functionality.

Work Distribution:

1. Arsel

Dimension of revolver and rod, drilling of holes, taper turning of bullets

2. Usman

Centre hole of revolver, taper turning, filling, and marking of holes at right dimensions.

3. Obaid

Turning of rod and revolver.

4. Noor Muhammad

Project Idea and manufacturing of bullets.

5. Talha

Providing material and facing of rod and revolver.