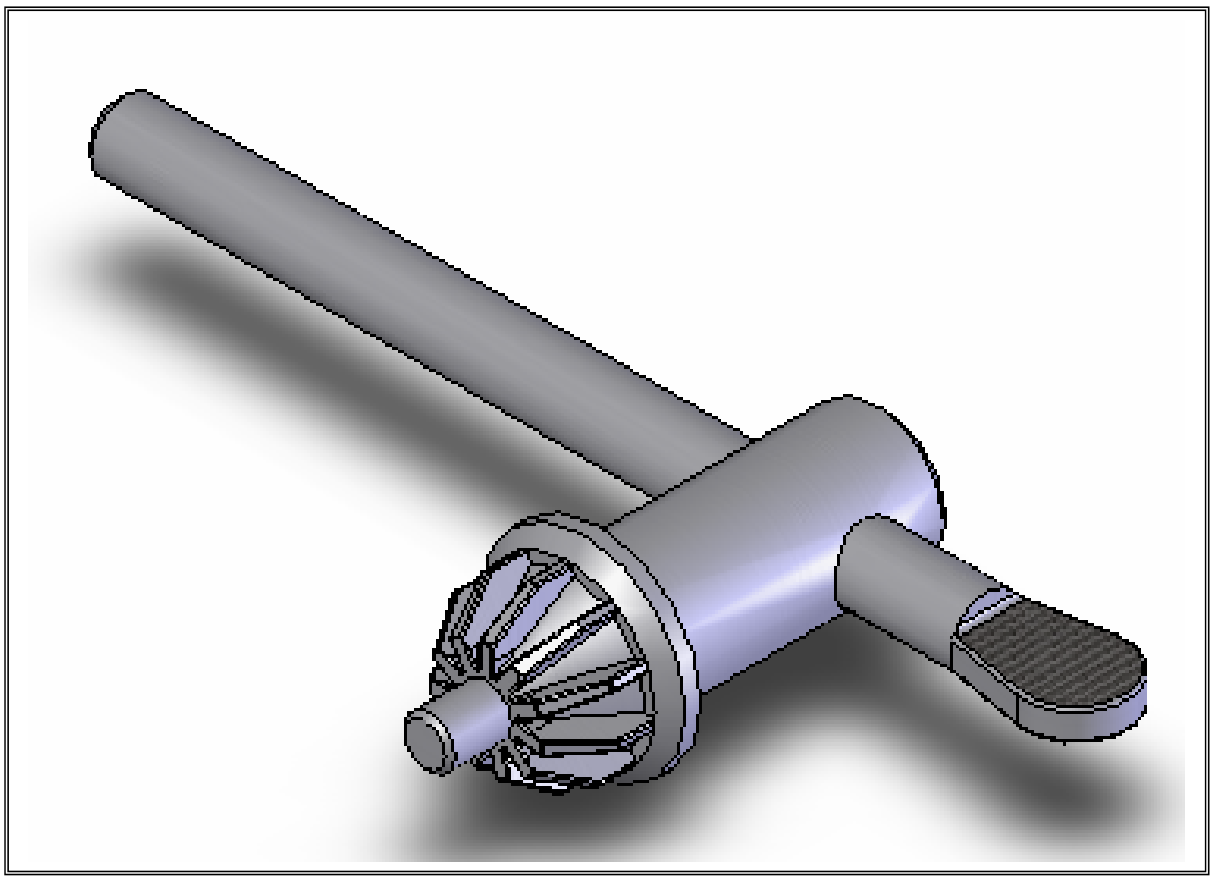
Drill Chuck Key



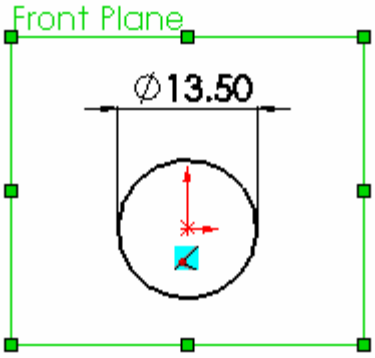
Prerequisite Knowledge	To complete this model you should have experience of the following: Sketching, Extrude Boss/Base.
Focus of Lesson	Revolve Boss/Base, Revolve Cut, Create a Spline Sketch, Use "Circular Pattern" features.
Commands used:	**Circle, Smart Dimension, Extrude Boss/Base, Linear Pattern, Shell, Fillet & Edit Material.**

Approach to Lesson:

Create sketch of Chuck Body

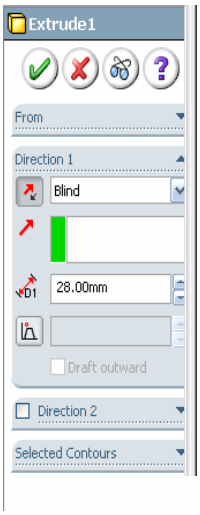
Create a circle on the **Front Plane** using the **Circle sketch** command and use **Smart Dimension** to dimension the sketch.

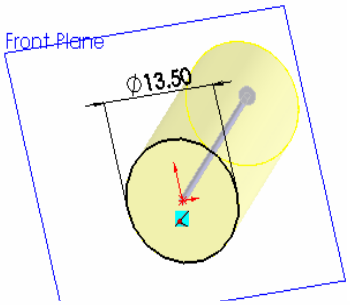
Rename the sketch as **"Body Sketch".**



Extruded Boss/Base

Extrude the sketch using **Extruded Boss/Base** command.
Select **Blind** as the end condition and a distance of 28mm.
Apply a 1mm chamfer to "rear" body face.
Rename the feature as **'Body of Key'**.

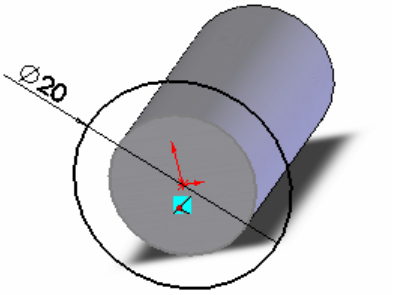




Create sketch for the Spline Base

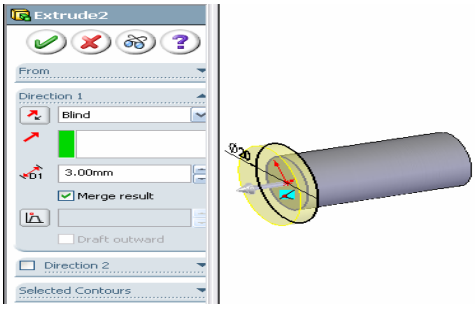
Select the front face of the body as the plane for this sketch.

Sketch with **Circle** and **Smart Dimension.**
Rename sketch as **"Spline Base Sketch".**



Extruded Boss/Base for Base of Spline

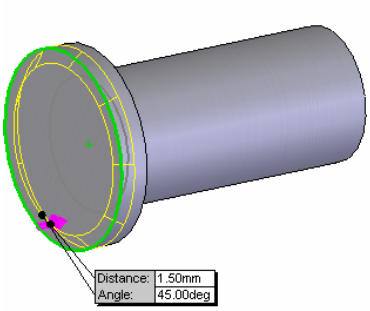
Extrude the sketch using **Blind** as the end condition and a distance of 3mm.
Rename the feature as **'Spline Base'.**



Apply Chamfer to the Base

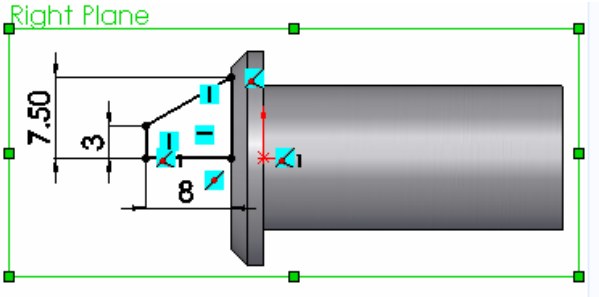
Apply a 1.5mm chamfer to the outside edge of the base using the **Chamfer** feature.

Rename the feature as **"Chamfer at base edge".**



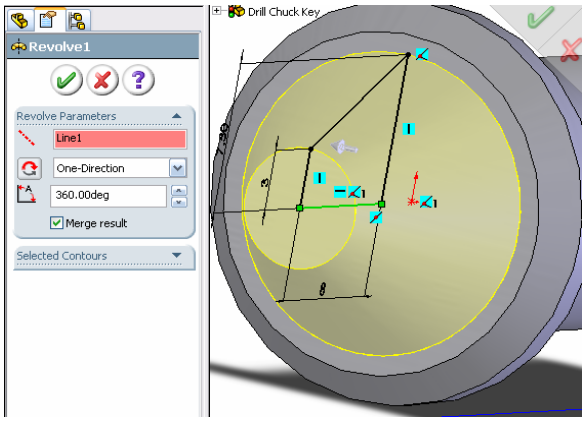
Create a Spline Body Sketch

Using the **Line Sketch** command & **Smart Dimension**, draw the sketch on the Front Plane.
Rename the sketch as **"Spline Body Sketch".**



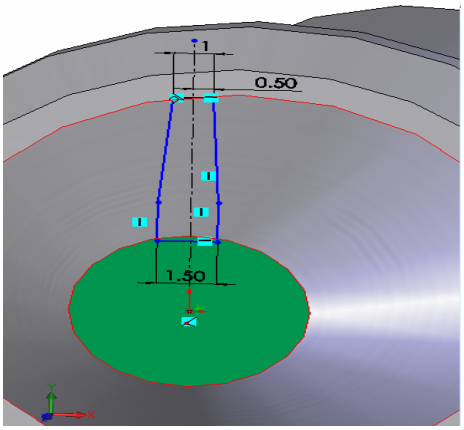
Revolved Boss/Base

Using **Revolved Boss/Base**, revolve the sketch around the horizontal line in the sketch.
Rename the feature as **"Revolved Spline Body".**



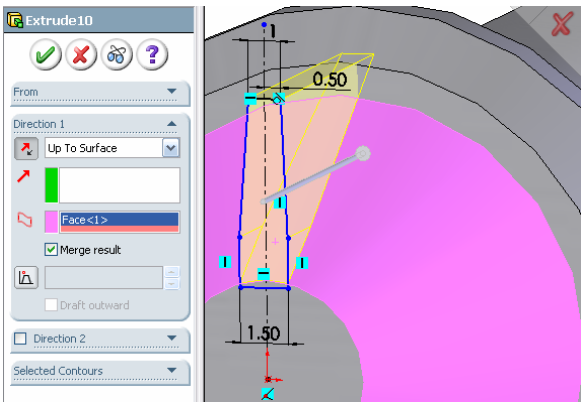
Create a Spline Sketch

Select the End Surface of the "**Revolved Spline Body"**.
Create a sketch using the **Line Sketch** & **Smart Dimension** commands.
Rename the sketch as **"Spline Sketch".**



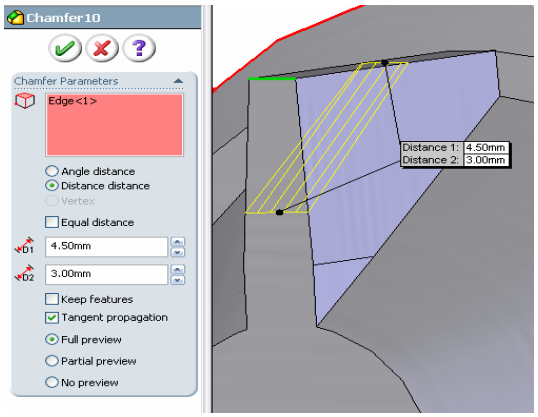
Extruded Boss/Base

Use **Extruded Boss/Base** command to extrude this sketch up to the "surface" of the **Spline Body.** Rename the feature as **"Single Spline".**



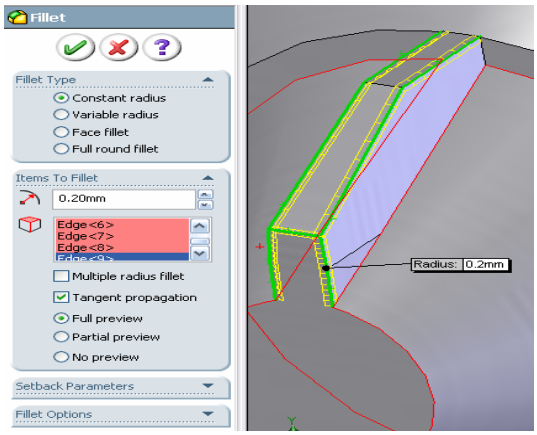
Chamfer on Spline

Apply a "**Distance/Distance" chamfer** to the top edge of the spline of 4.5mm & 3mm. Rename the chamfer as **"Spline Chamfer".**



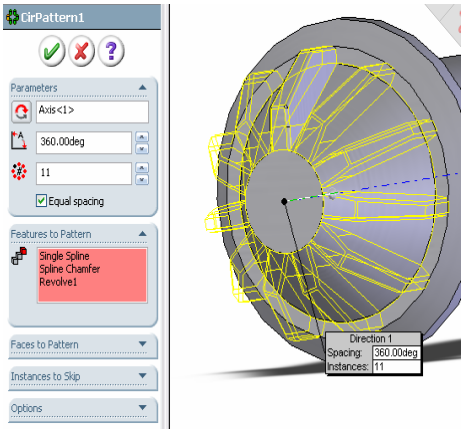
Fillet on Spline

Using the **Fillet Feature** command, apply a 0.2mm "Constant Radius" fillet to the Top & Front edges of the spline.
Rename the feature as **"Spline Fillet".**



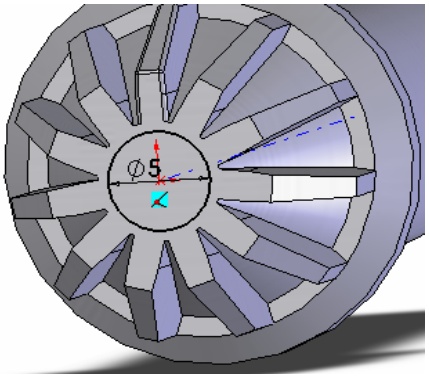
Circular Pattern

Using **"Circular Pattern"** features command, pattern the Spline feature 11 times around a "Temporary Axes" obtained from the "View" drop down menu.
Rename feature as **"Spline Pattern".**



Pin Sketch

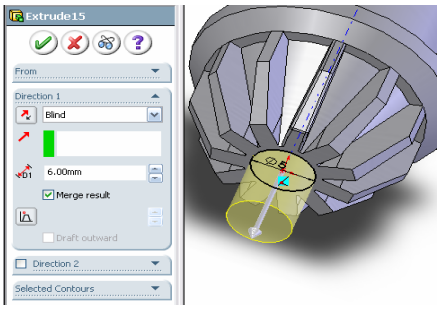
Sketch a diameter 5mm circle on the "front face" of the Body.
Rename the sketch **"Pin Sketch".**



Extruded Boss/Base

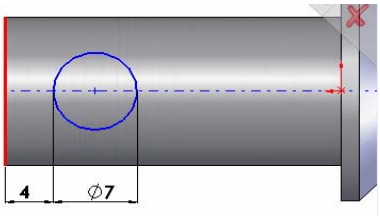
Blind Extrude the Pin Sketch a distance of 6mm.
Rename the feature as **"Pin Extrude".**

Apply a 2mm chamfer to the top surface of the Pin Body
Rename the feature as **"Pin Chamfer".**



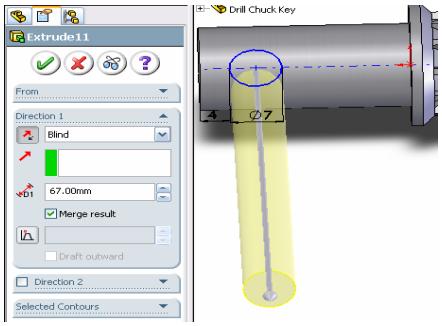
Handle Sketch

Sketch a **circle** on the Right Plane & **Smart Dimension** it.
Rename sketch as **"Handle Sketch".**



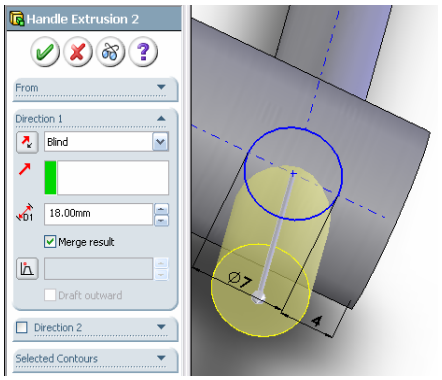
Extruded Boss/Base

Blind Extrude the handle sketch 67mm. Place a 1mm "chamfer" on the end of the handle.
Rename feature as **"Handle Extrude 1".**
Apply a 1mm **Chamfer** to the face of the handle.
Rename the feature as **"Handle Chamfer".**



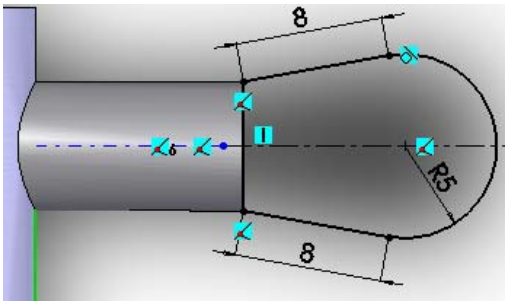
Extruded Boss/Base

"Show" the Handle Sketch and extrude it by 18mm.
Rename the feature **"Handle Extrusion 2".**



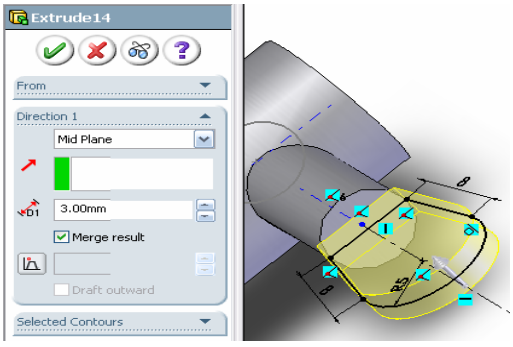
Thumb Grip Sketch

Using the **Line Sketch & Smart Dimension** commands sketch the thumb grip.
Rename the sketch as **"Thumb Grip Sketch".**



Extruded Boss/Base

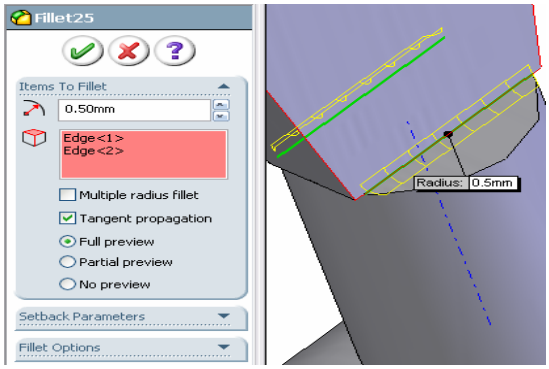
Mid Plane Extrude the Thumb Sketch 3mm.
Rename feature as **"Extruded Thumb Grip".**



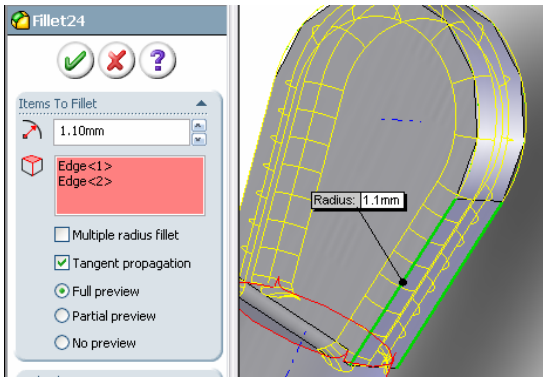
Fillets

Apply a 0.5mm fillet using a "Constant Radius Fillet".

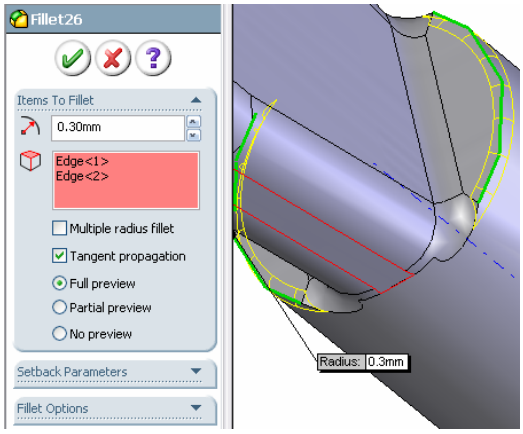
Rename feature **"Thumb Fillet 1".**



Apply a 1.**1mm "Constant Round" fillet** & rename fillet as **"Thumb Fillet 2".**

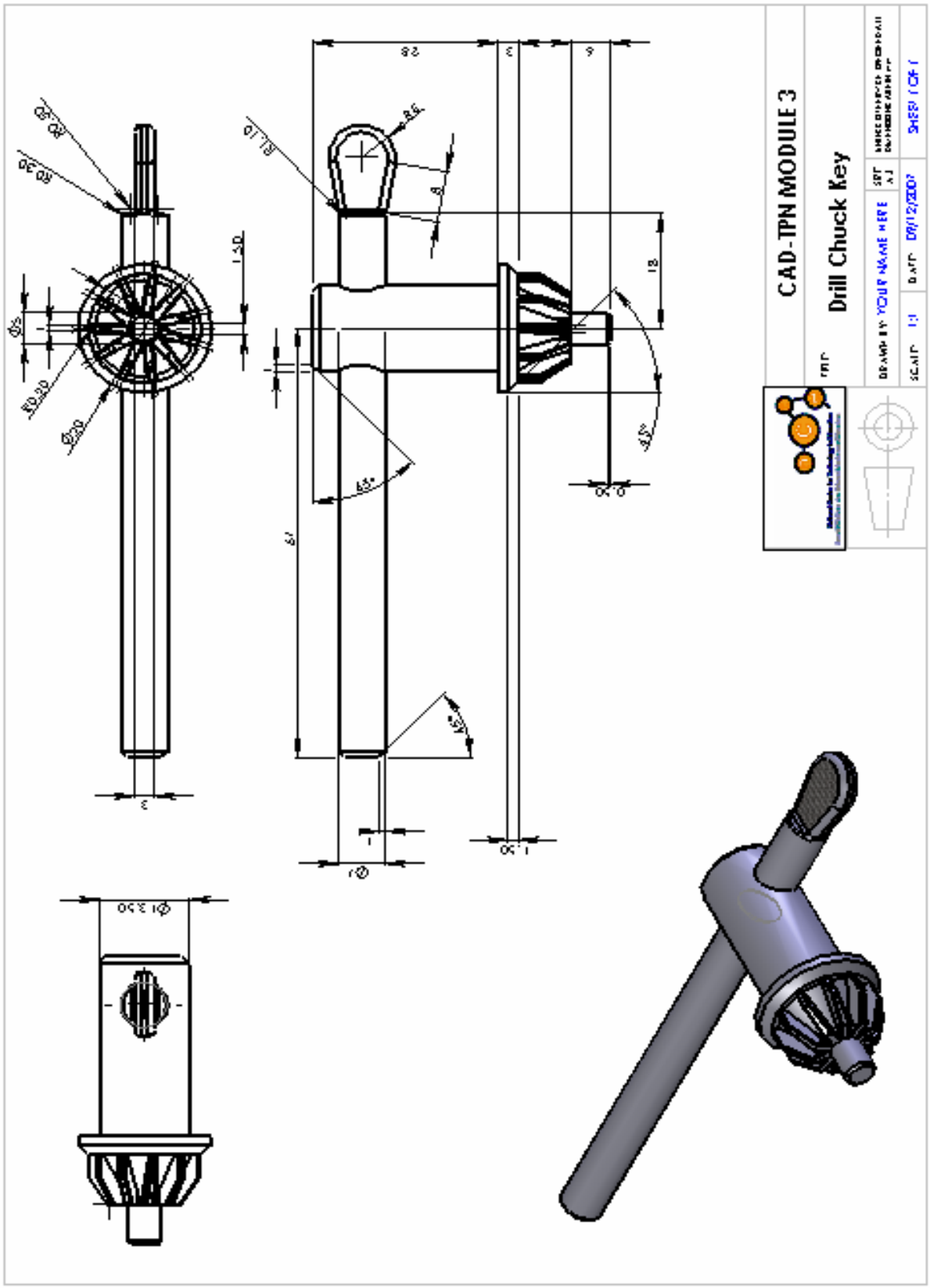


Apply a 0.2mm **"Constant Round" fillet** to the outer edge of the handle & rename the feature **"Thumb Fillet 3".**



Edit Material

"**Cast Carbon Steel**".
Apply a "**Knurl 2**" type texture/appearance to both **"Thumb Grip"** surfaces.


CAD-TPN MODULE 3
Drill Chuck Key