PART DESIGN (RATCHET WHEEL)

From this diagram we have to know,

- Selection of plane
- Drawing circle
- Pad the profile
- Pocket definition
- Circular pattern
- Symmetry constraint
- Trimming
- Chamfer
- Fillet
- Rotate options
- Views



CATIA v5 software is used to modeling this object.

Prepared By Veerapandian.K Mechanical Engineering.

For video tutorial click the link https://www.youtube.com/watch?v=Me67MYvTZ_0



WORKING STEPS

- ✓ Open the CATIA software.
- ✓ Start/mechanical design/part design.
- ✓ Select the suitable plane, select the sketch icon.
- ✓ After selection of selection the plane rotates to normal.
- ✓ Draw the circle with diameter of 120mm.



- ✓ After circle completion give exit work bench.
- ✓ Then put pad for 10mm length.



- ✓ Select the face of the circle to draw another more circle on the pad circle already exist.
- ✓ Draw circle again for 120mm diameter. Then draw a circle 104mm.



- ✓ Draw the line from centre of the circle.
- ✓ Draw another one line cross from inner circle. Put 70 degree angle for that line.
- ✓ Trim the all excess portion.



Pocket Definition	? X		
-First Limit			
Type: Up to last			
Limit: No selection			
Offset: 0mm			
Profile/Surface			
Selection: Sketch.2		A R	
Reverse Side		A A A A A A A A A A A A A A A A A A A	
Mirrored extent			1
Reverse Direction			
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- ✓ After completing the pocket select pocket to crown.
- \checkmark Pick the circular pattern then give instance 20.
- \checkmark Preview the component.

	Circular Pattern Definition
	Axial Reference Crown Definition
	Instance(s) : 20
	Angular spacing : 18deg
	Total angle : 360deg
	Reference Direction Reference element: Face.1 Reverse
	Object to Pattern
	Object: Pocket.1 Veerapendien•K
	More>>
	OK Cancel Preview
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 \checkmark Then select the face of the ratchet wheel, draw a circle to 50mm diameter.



- $\checkmark~$ Put pad definition for the circle to 6 mm.
- \checkmark Do this action for another face of the circle.

Type	Dimension -				>
Limit Pro	No selection			<	
Selec	tion: Sketch.3		LIM	2	Ŕ
Rev	i ick verse Side			19 9	P P
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	More>>	1	<u> </u>		\mathbf{V}
	OK Cancel Pre	eview	4		

- ✓ Then select the face of the circle draw again a circle to 25mm diameter.
- ✓ Draw the rectangle put symmetry. Give dimensions as per diagram.



 $\checkmark~$ Trim the unwanted portions.



✓ After trim the element select exit work bench, then give pocket definition.
<complex-block></complex-block>
<text></text>
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✓ Circle distance between centre of the main element is 38mm.
Pocket Definition First Limit Type Up to last Up to last Offset Omm Profile/Surface Selection: Sketch.6 Image: Sketch.6 Thick Image: Selection: Nerverse Direction Nerverse Voora pandatar: K Merverse Image: Selection: Nerverse
✓ Put circular pattern give complete crown for 3 instances.
Circular Pattern Definition Axial Reference Complete crown Instance(s): Angular spacing: 120deg Example Total angle: 300deg Example Reference Direction

Reference element: Face.2

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OK Scancel Preview

More>>

Reverse

Object to Pattern -Object: Pocket.3

Keep specifications

 \checkmark Sketch the fillet on the inner edge of the circle.



✓ Put the chamfer for 1.5mm length.

	Chamfer Definition	? ×
	Mode: Length1/ Length 1: 1.5mm Angle: 45deg Object(s) to chamfer: 2 Edges Propagation: Tangence Reverse OK Cance	YAngle
- Cost		

