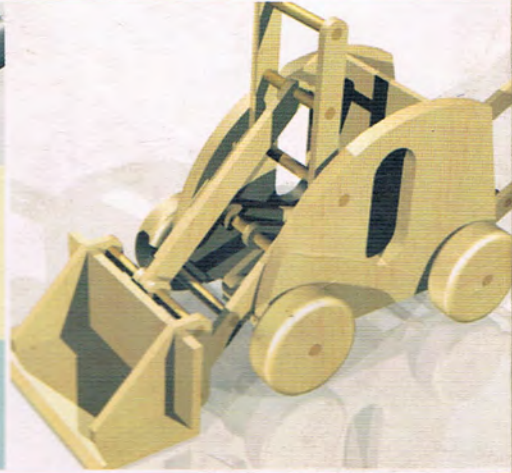
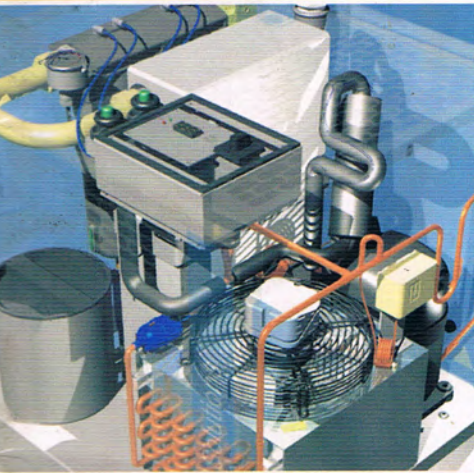
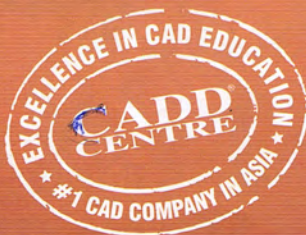


Foundation CAD

Project Workbook



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Mechanical
Professionals!**



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HATRONYKS

Name

Batch

Guides

Section I

Mr./Ms.

Theory Hour

Mr./Ms.

Hands On Hour

Mr./Ms.

Project Hour

Section II

Mr./Ms.

Theory Hour

Mr./Ms.

Hands On Hour

Mr./Ms.

Project Hour

Section III

Mr./Ms.

Theory Hour

Mr./Ms.

Hands On Hour

Mr./Ms.

Project Hour

HATRONYKS

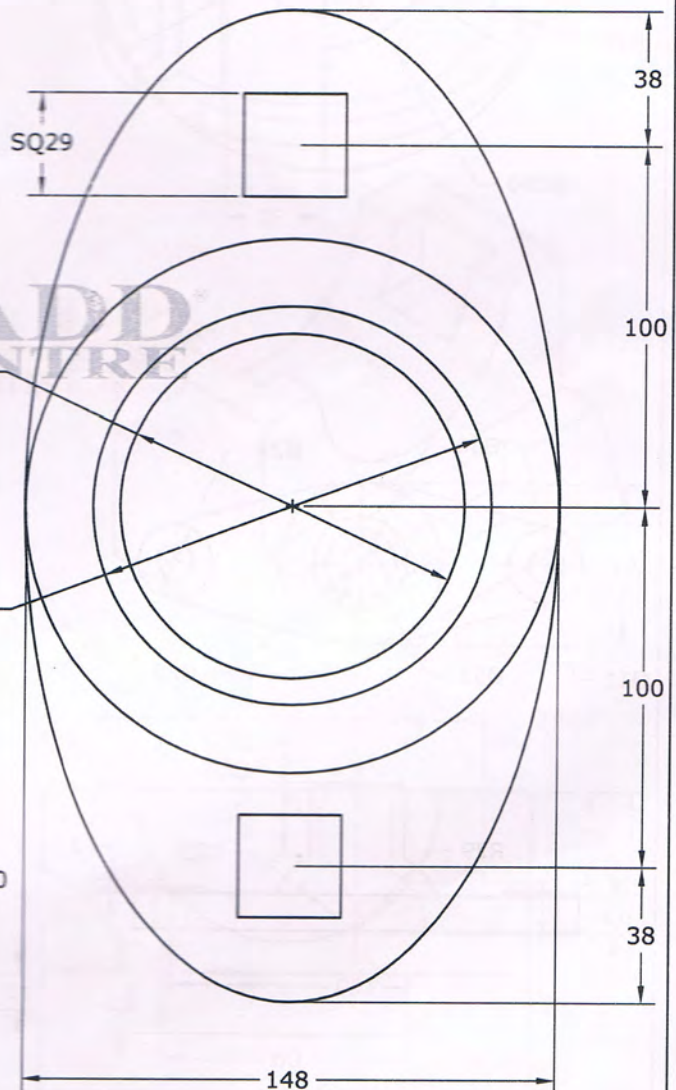
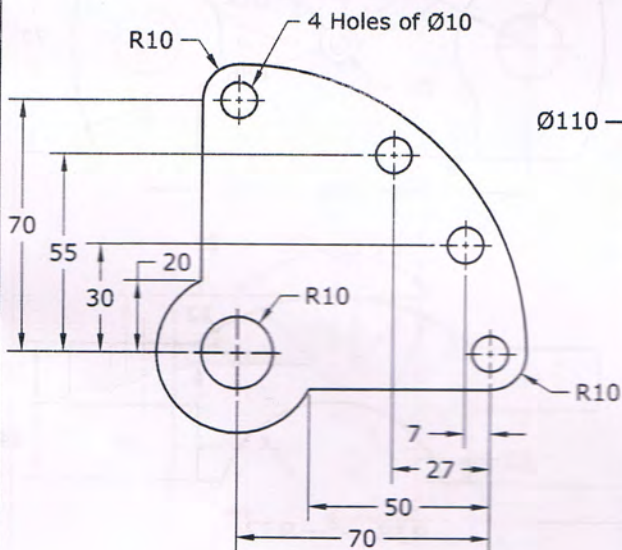
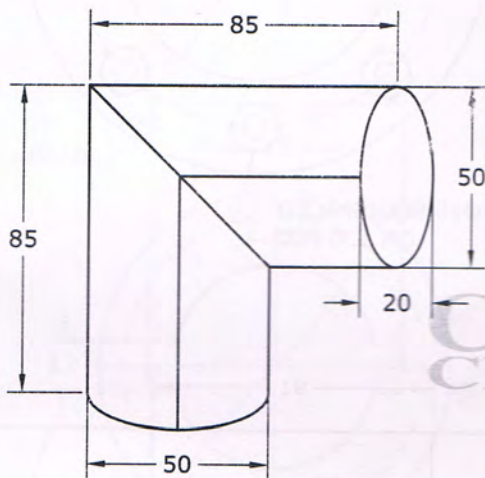
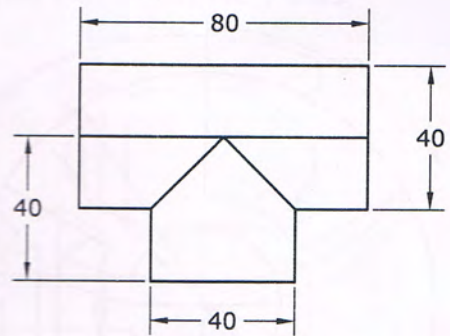
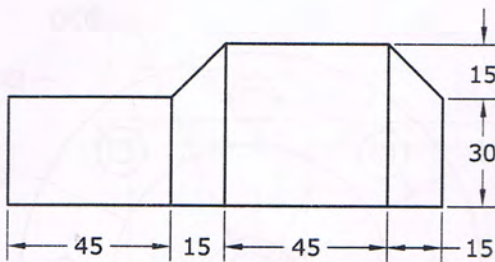
HATRONYKS

Exercise No: 01

File Name:

Duration: 120min

Actual Hours:

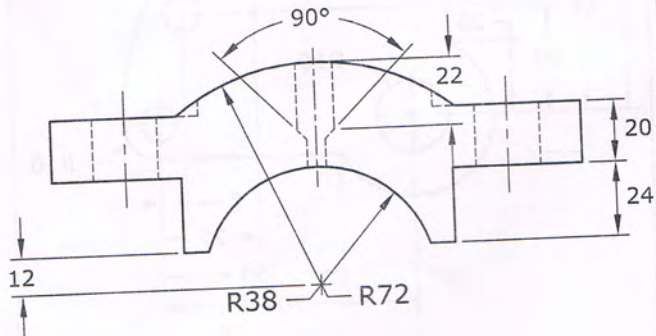
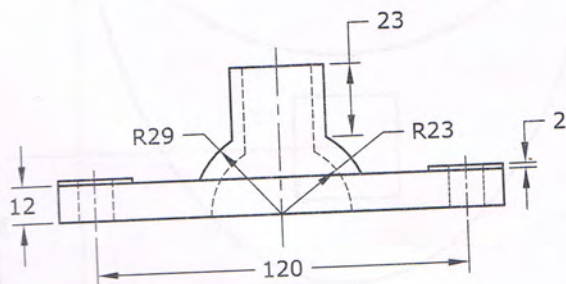
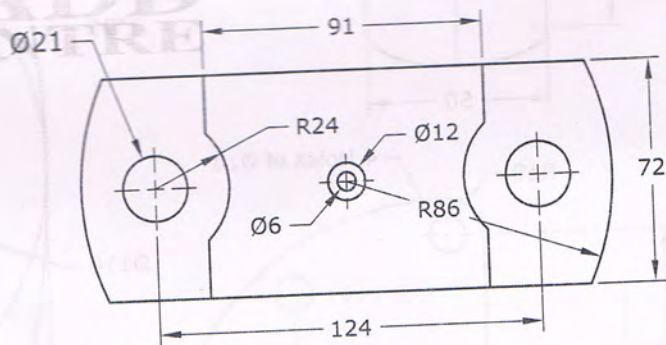
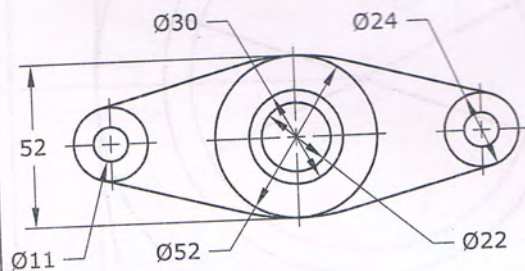
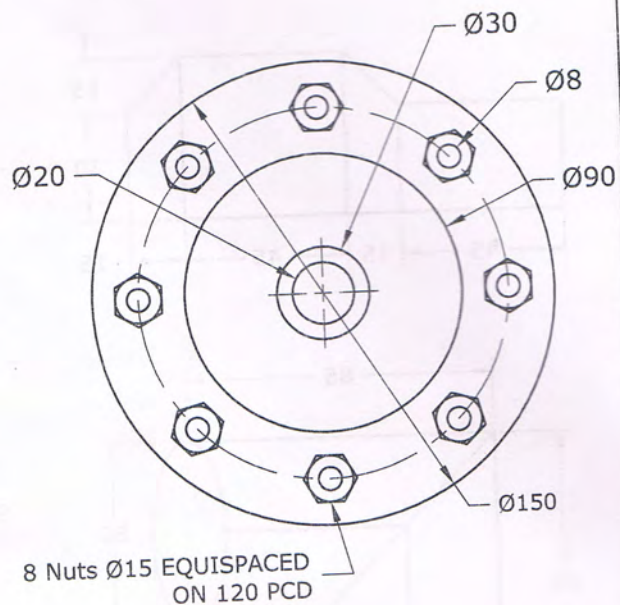
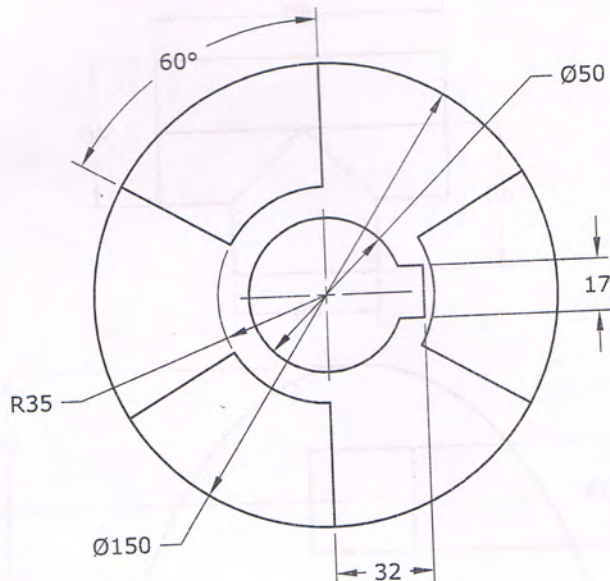


Exercise No: 02

File Name:

Duration: 120min

Actual Hours:



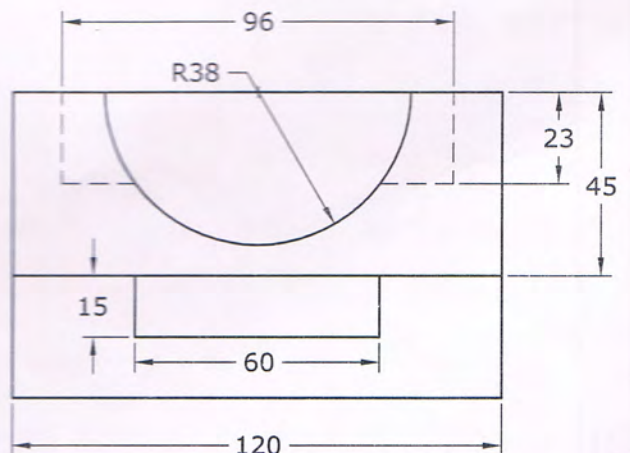
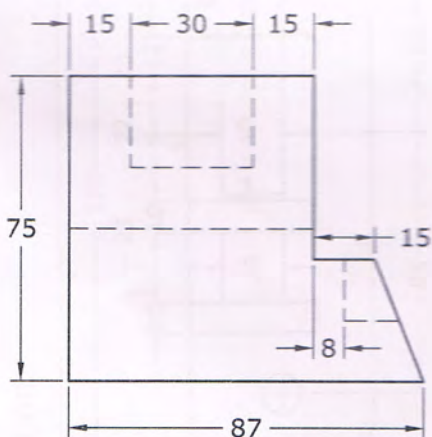
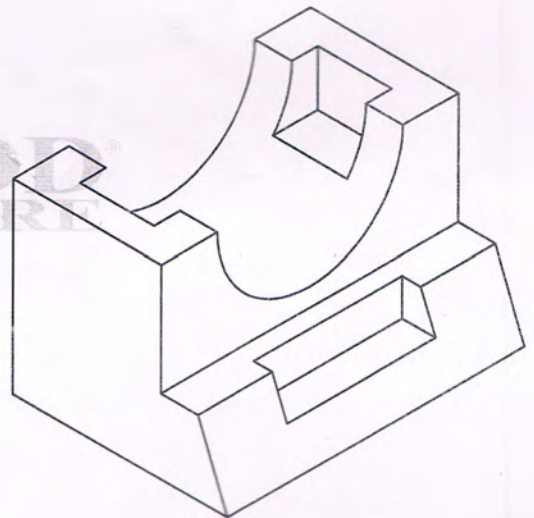
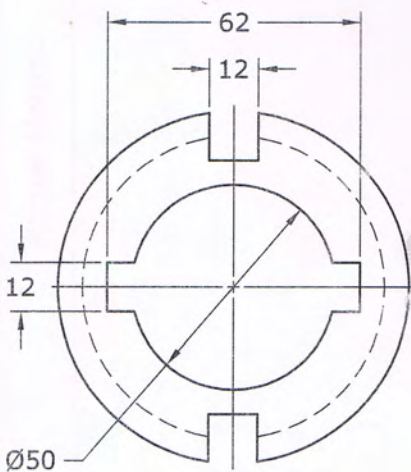
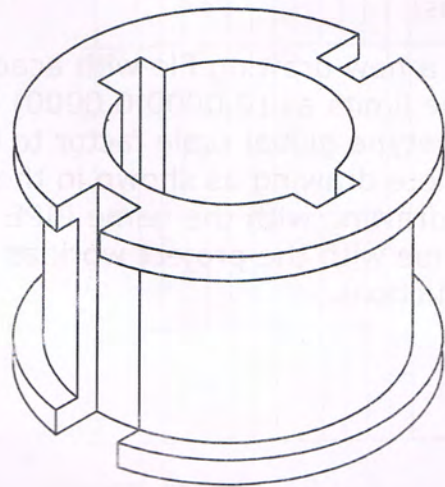
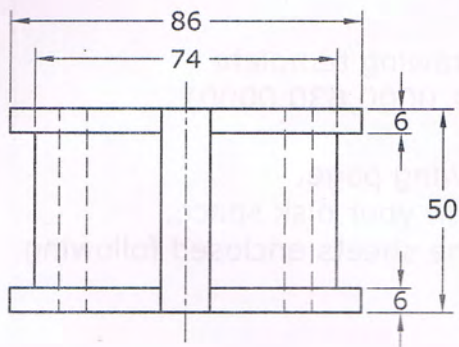
Exercise No: 03

File Name:

Duration: 120min

Actual Hours:

Draw isometric view from the given orthographic views

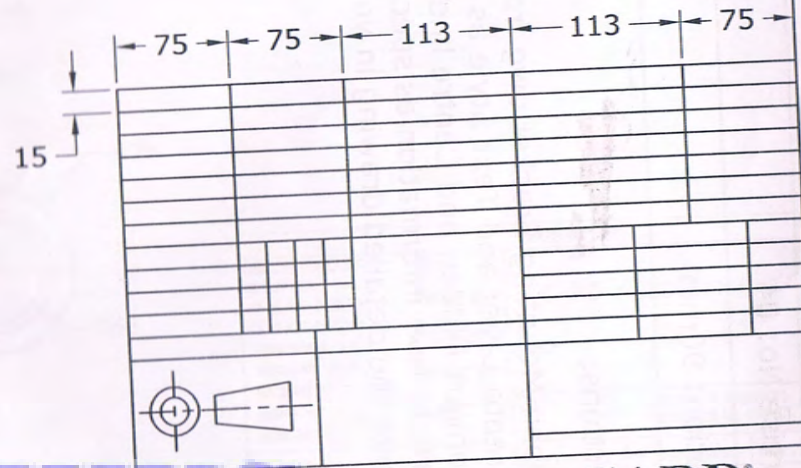
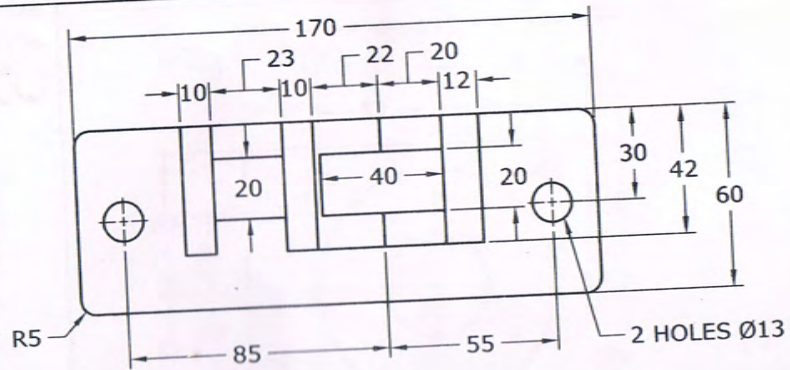


Project No: 01a

File Name:

Duration:

Actual Hours:



HATRONYKS

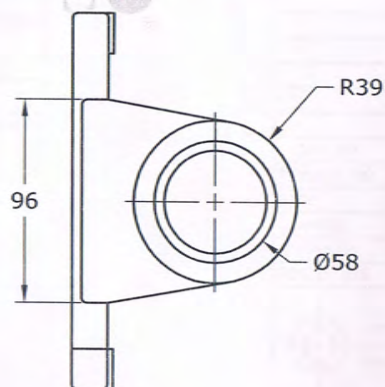
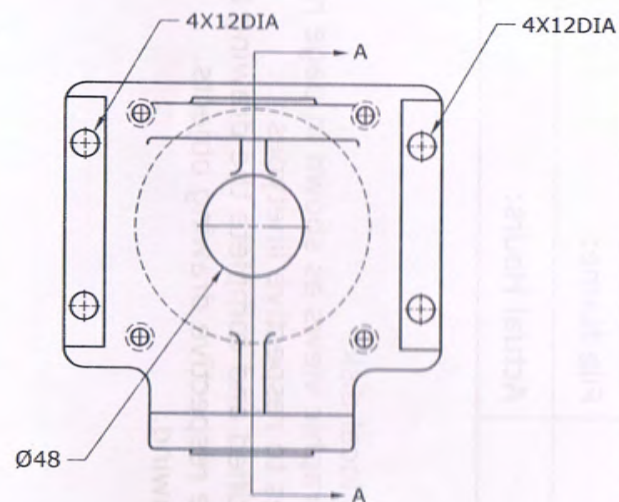
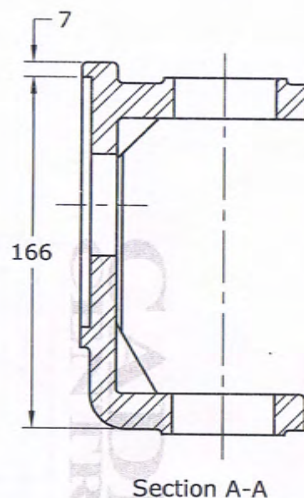
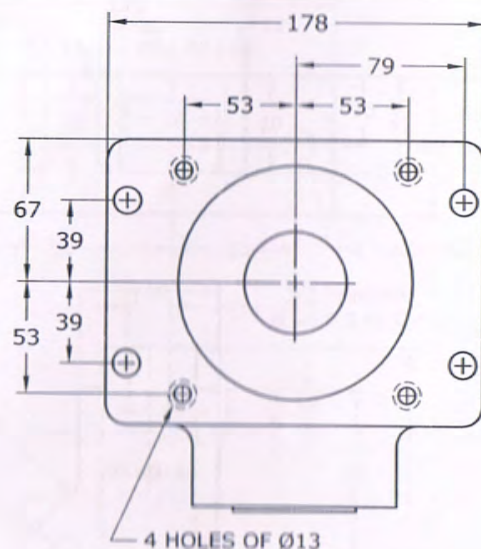
CADD
CENTRE

Exercise No: 04

File Name:

Duration:

Actual Hours:



ON ALL MACHINED SURFACES INDICATED
 6. PROVIDE 4.2 THK MACHINING STOCK
 ± 1.05 TWO PLACE DIMENSIONS
 $\pm 1^\circ$ ANGULAR

5. TOLERANCES

4. 1.5"–3.0" DRAFT

3. R2.1 CORNERS

2. R4.2 FILLETS

1. 10.85 WALL THICKNESS

CASTING NOTES UNLESS OTHERWISE SPECIFIED:

2. REMOVE ALL BURRS AND SHARP EDGES.

1. INTERPRET ALL DIMENSIONS AND TOLERANCES PER ANSI
 Y14.5M–1982

NOTES:

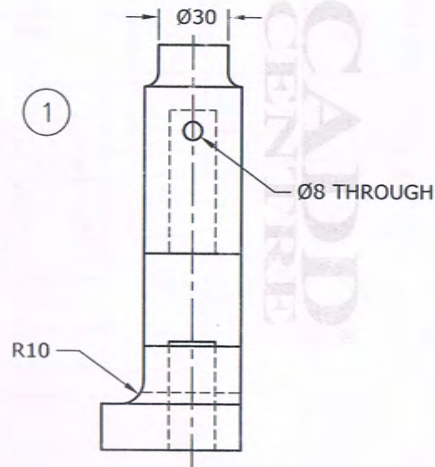
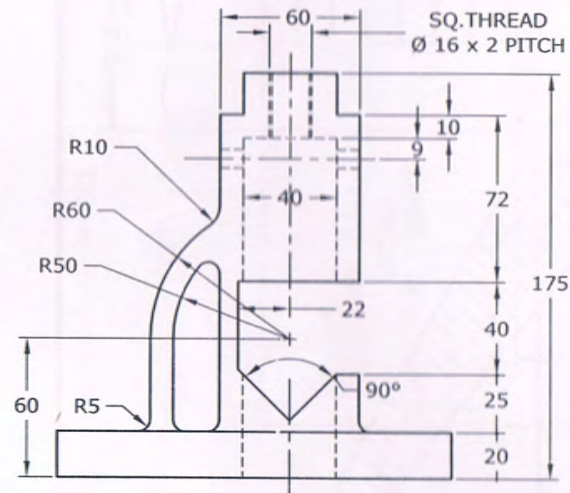
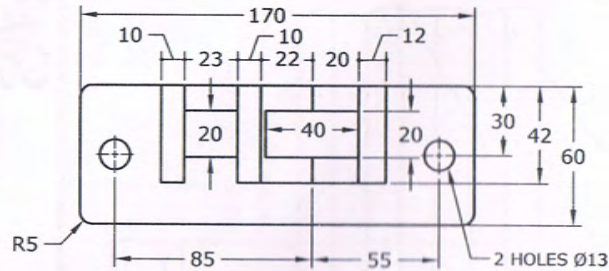
MATERIALS LIST			
UNLESS OTHERWISE SPECIFIED: 2 PLACE DEC. ± 0.02 3 PLACE DEC. ± 0.005 FRACTIONS $\pm 1/16$ ANGULAR $\pm 1/2^\circ$ MACHINE AT 125 GRIND 'G' HEAT TREAT USED ON	SCALE	CADD ASSOCIATES	
	DRAWN BY		
	CHECKED BY	CLIENT	
	APPVD. BY	TITLE	
	DATE	MOUNTING BRACKET (WORM GEAR DRIVE)	
SHEET NO. OF		D	DRAWING NO. REV.

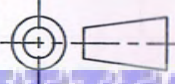
Project No: 01b

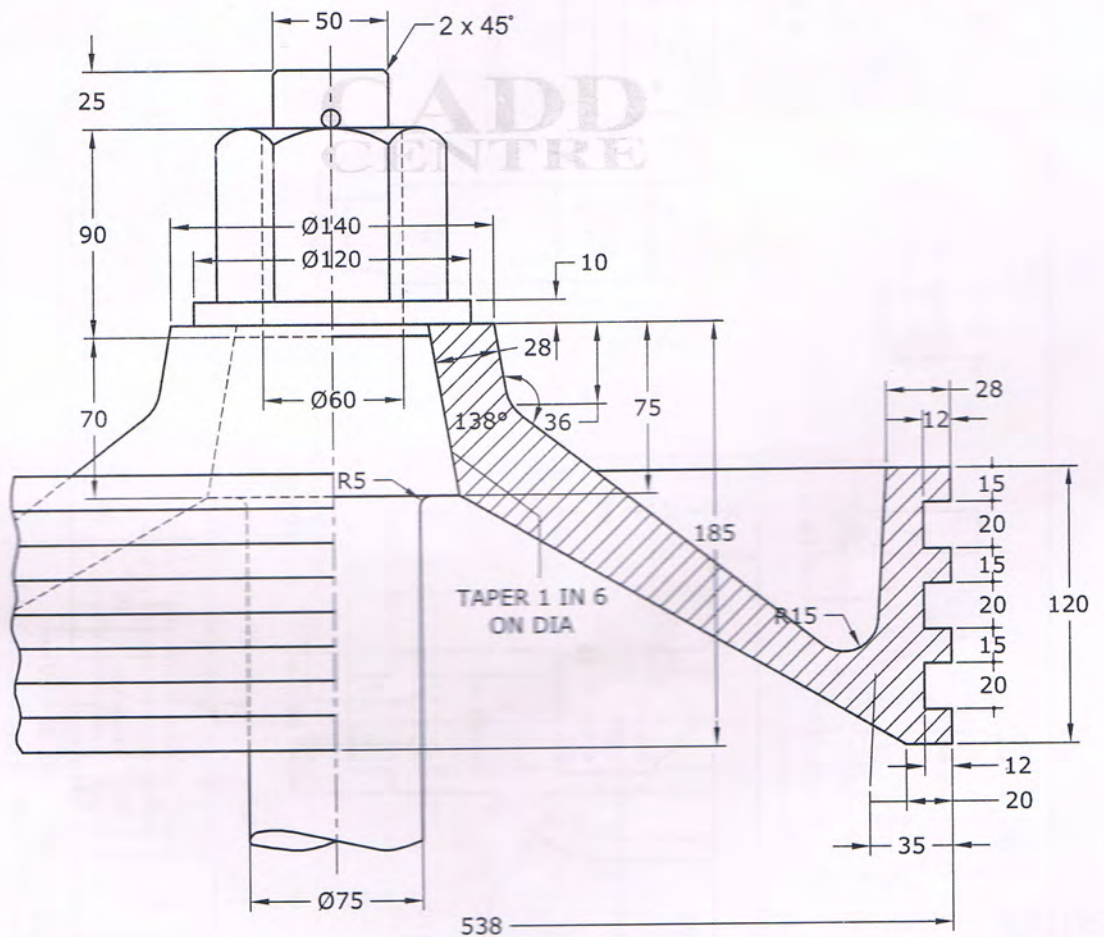
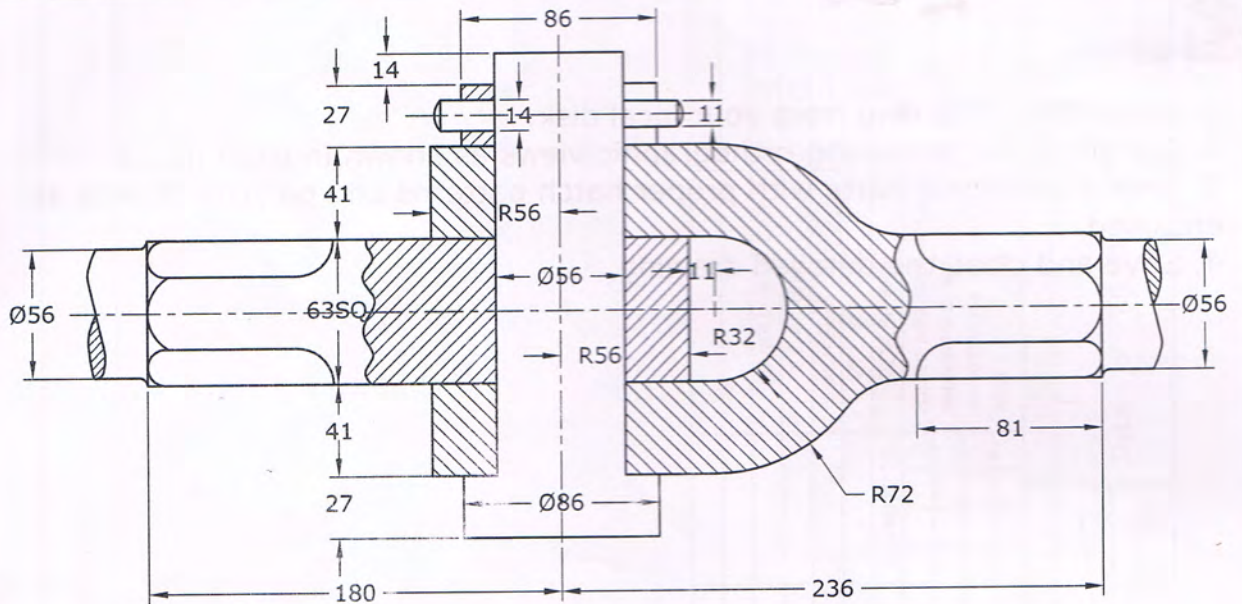
File Name:

Duration:

Actual Hours:



1		VICE BASE	CAST STEEL	1
ITEM NO.	DRAWING NO.	DESCRIPTION	MATERIAL	NO. OFF
REVISION NO.		UNLESS OTHERWISE STATED	DESIGNED	DATE
DATE		DIMENSIONS IN MM	DRAWN	
CHANGED		CHAMFERS 1 X 45°	CHECKED	
APPROVED		RADII 1	APPROVED	
SCALE: NTS				
		Details of PIPE VICE		
SHEET 1 OF 1				

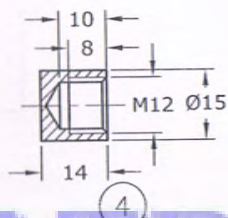
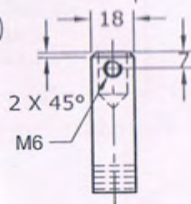
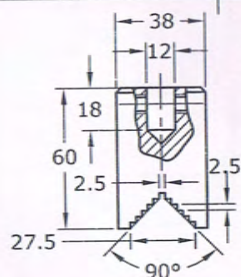
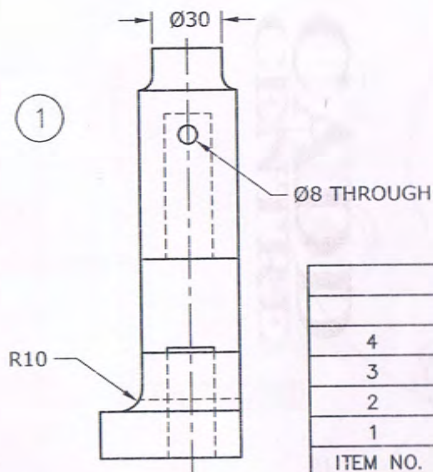
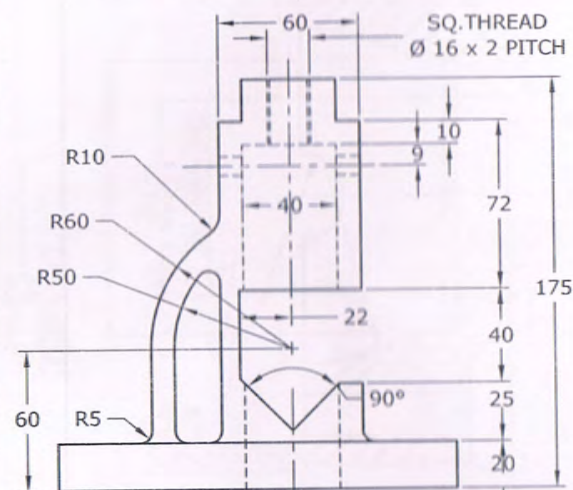
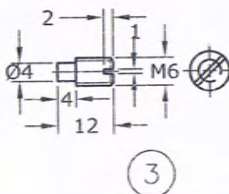
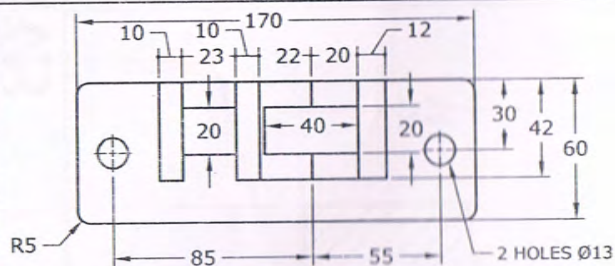


Project No: 01c

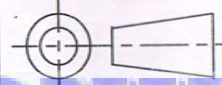
File Name:

Duration:

Actual Hours:



4		HANDLE BAR CAP	FE 410W	2
3		SET SCREW	FE 410W	1
2		MOVABLE JAW	CAST STEEL	1
1		VICE BASE	CAST STEEL	1
ITEM NO.	DRAWING NO.	DESCRIPTION	MATERIAL	NO. OFF
REVISION NO.		UNLESS OTHERWISE STATED	DESIGNED	DATE
DATE		DIMENSIONS IN MM	DRAWN	
CHANGED		CHAMFERS 1 X 45°	CHECKED	
APPROVED		RADII 1	APPROVED	
SCALE: NTS				



Details of PIPE VICE

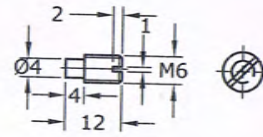
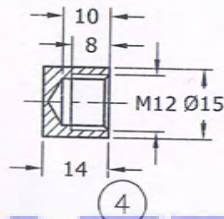
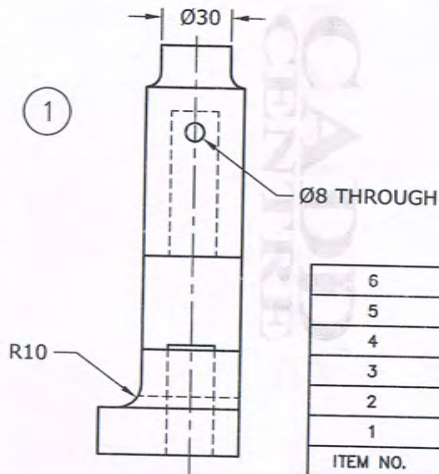
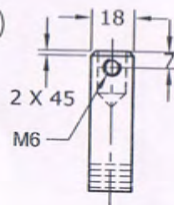
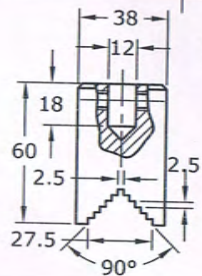
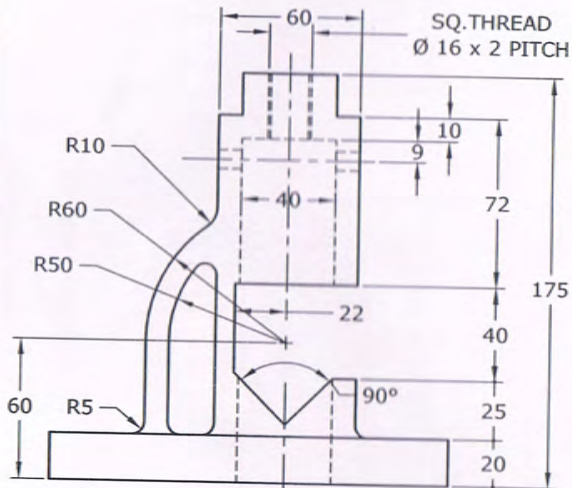
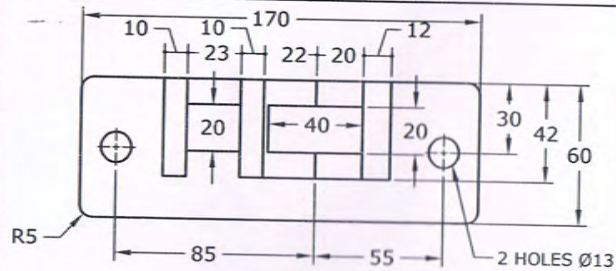
SHEET 1 OF 1

Project No: 01d

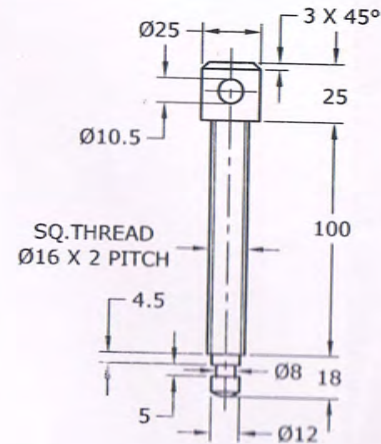
File Name:

Duration:

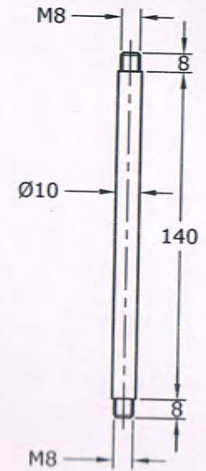
Actual Hours:



(3)

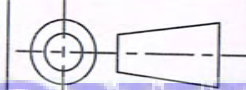


(5)



(6)

6		SCREW ROD	FE 410W	1
5		HANDLE BAR	FE 410W	1
4		HANDLE BAR CAP	FE 410W	2
3		SET SCREW	FE 410W	2
2		MOVABLE JAW	CAST STEEL	1
1		VICE BASE	CAST STEEL	1
ITEM NO.	DRAWING NO.	DESCRIPTION	MATERIAL	NO. OFF
REVISION NO.		UNLESS OTHERWISE STATED		
DATE		DIMENSIONS IN MM	DESIGNED	MATERIAL
CHANGED		CHAMFERS 1 X 45°	DRAWN	DATE
APPROVED		RADII 1	CHECKED	
SCALE: NTS			APPROVED	



Details of PIPE VICE

SHEET 1 OF 1

Project No: 01a

File Name:

Duration: 120min

Actual Hours:

Directions:

1. Begin a new drawing file with acadiso drawing template
2. Set the limits as (0.0000,0.0000) - (891.0000,630.0000).
3. Set linetype global scale factor to 0.25.
4. Complete drawing as shown in the following page.
5. Save drawing with the name PIPE VICE in your disk space.
6. Continue with the project work as per the sheets enclosed following the instructions.

**CADD
CENTRE**

Exercise No: 04

File Name:

Duration: 90min

Actual Hours:

Directions:

1. Open Mounting Bracket.dwg from AutoCAD Mechanical folder.
2. Create Layer and Text Style as necessary.
3. Convert Hidden and Centre lines to respective linetypes.
4. Create text information as specified and complete the drawing as enclosed.
4. Save the detailed drawing in your disk space.

CADD
CENTRE

Project No: 01b

File Name:

Duration: 120min

Actual Hours:

Directions:

1. Open PIPE VICE.dwg from your local disk.
2. Complete the remaining orthographic views as shown in page no.11
3. Convert Hidden and Centre lines to respective linetypes.
4. Create text information as specified and complete the drawing as enclosed.
4. Create Layers and assign to the respective drawing objects.
5. Save and close the detailed drawing.

**CADD
CENTRE**

Exercise No: 05

File Name:

Duration: 180min

Actual Hours:

Directions:

1. Open a new drawing file.
2. Set the limits as (0.0000,0.0000) - (420.0000,297.0000).
3. Set linetype global scale factor to 10.
4. Complete drawing as shown in the following page.
5. Save file in your local disk and close.

**CADD
CENTRE**

Project No: 01c

File Name:

Duration: 120min

Actual Hours:

Directions:

1. Open PIPE VICE.dwg from your local disk.
2. Complete the remaining orthographic views as shown in page no.15
3. Create additional parts with proper hatch patterns and polyline objects as enclosed.
4. Save and close the detailed drawing.

Exercise No: 06

File Name:

Duration: 120min

Actual Hours:

Directions:

1. Open CASE DIFFERENTIAL.dwg from AutoCAD Mechanical folder.
2. Complete the drawing adding dimensions, layers and text styles as enclosed in next page.
3. Save and close the detailed drawing.

**CADD
CENTRE**

Project No: 01d

File Name:

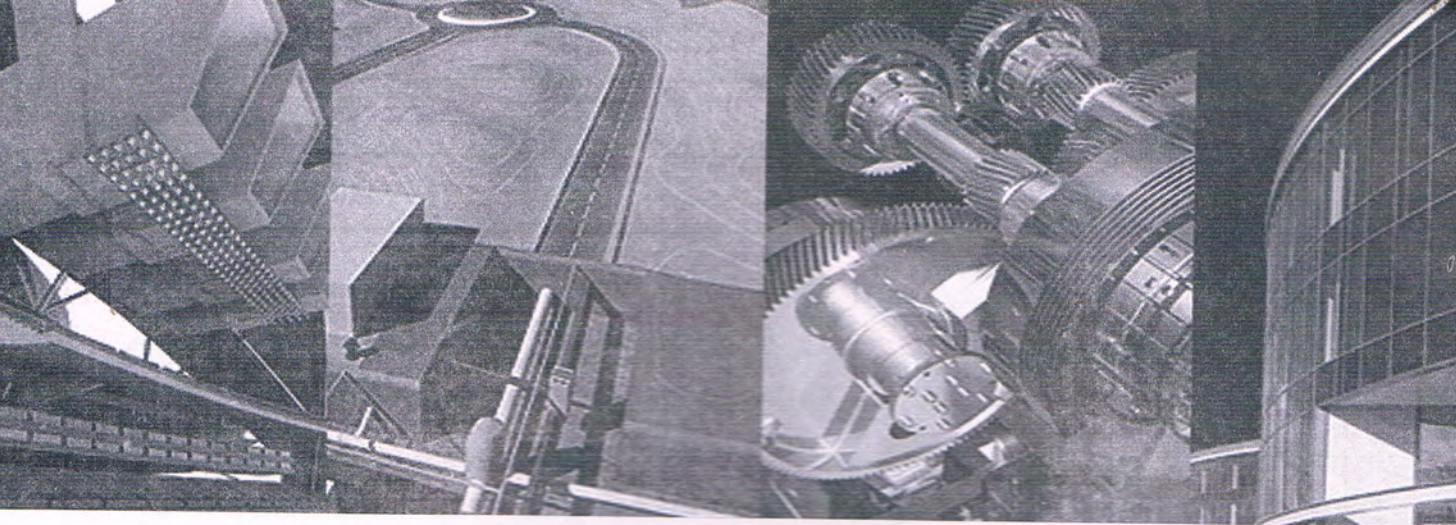
Duration: 90min

Actual Hours:

Directions:

1. Open PIPE VICE.dwg from your local disk.
2. Complete the remaining orthographic views as shown in page no.19
3. Create additional parts with proper hatch patterns and polyline objects as enclosed.
4. Save and close the detailed drawing.

**CADD
CENTRE**

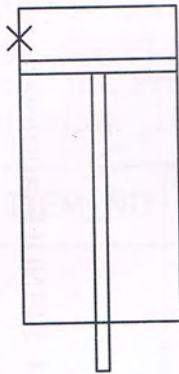


Section 2

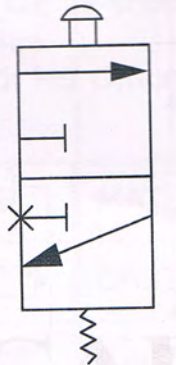
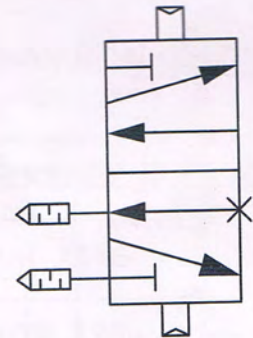
HATRONYKS

Directions:

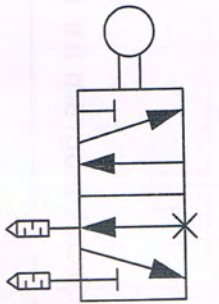
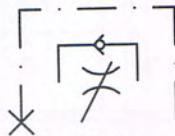
1. Create the following symbol as blocks assuming proportionate dimensions.
2. Define the insertion base point marked with X marks in the following drawings.
3. Use the defined blocks and construct a pneumatic circuit diagram for DRILL SPINDLE automation as given on the next page.
4. Save and close the drawing.



CYLINDER

SPRING RETURN
3/2 DC VALVE
PUSH BUTTON

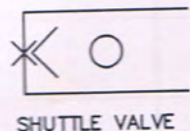
5/2 DC VALVE

LEVER CONTROL
5/2 DC VALVE

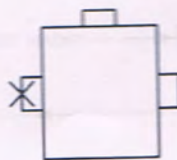
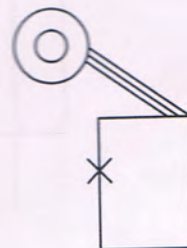
TIMER



CHECK VALVE



SHUTTLE VALVE

2 WAY TEE
CONNECTOR3 WAY TEE
CONNECTOR

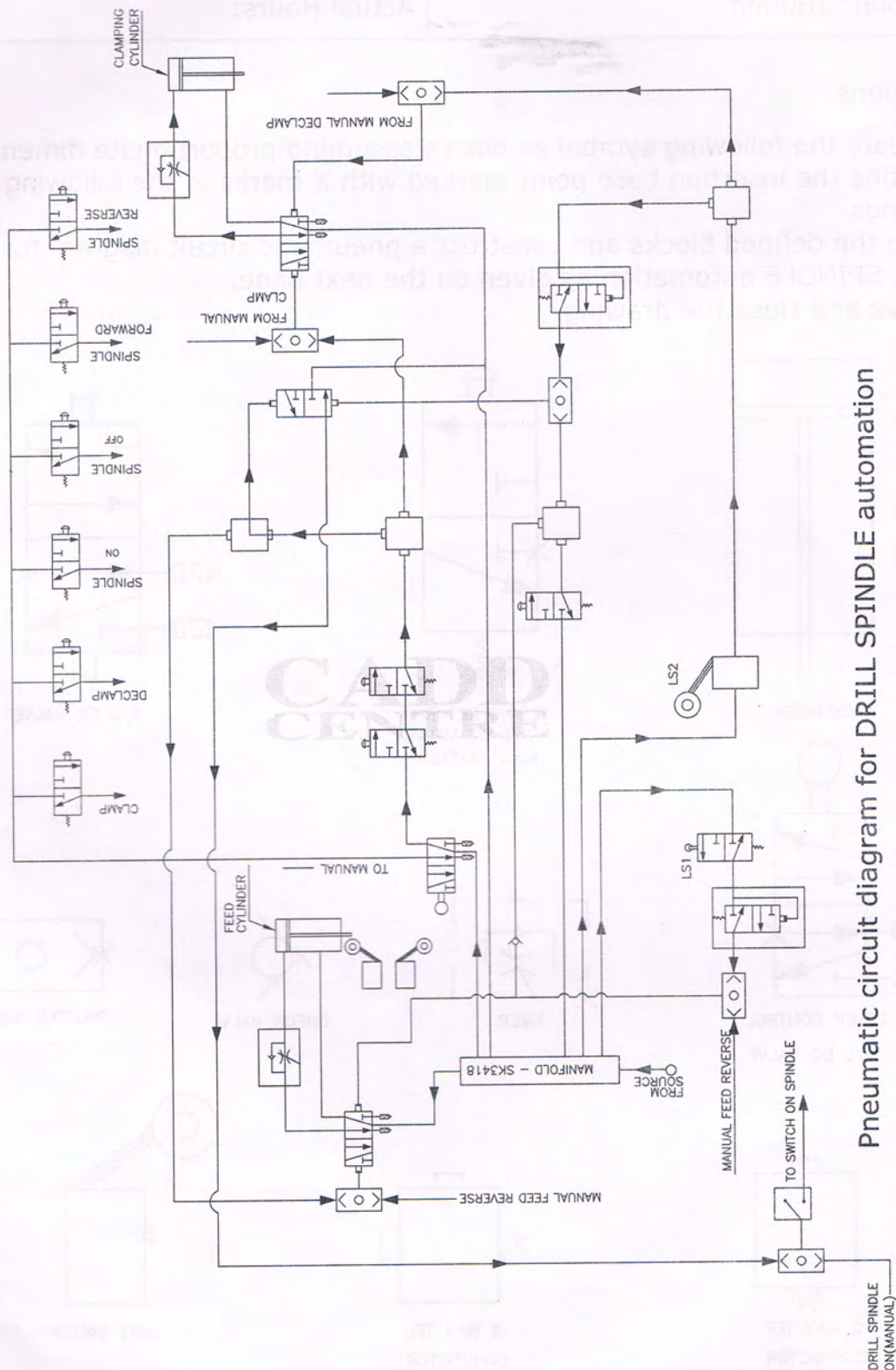
LIMIT SWITCH

Exercise No: 01

File Name:

Duration:

Actual Hours:



Pneumatic circuit diagram for DRILL SPINDLE automation

Exercise No: 02

File Name:

Duration: 120min

Actual Hours:

Directions:

1. Open the PIPE VICE.dwg and save as PIPE VICE_REV01.dwg.
2. Remove part list from the title block.
3. Add part list by defining a block with attribute as shown below.

ITEM_NO	PART_NAME	MATERIAL	NO.OFF
---------	-----------	----------	--------

5. Add part definitions to the file as shown in the next page.
6. Extract part list as an .xls file.
7. Open the extracted file with MS Office Excel. Add additional column as listed below.

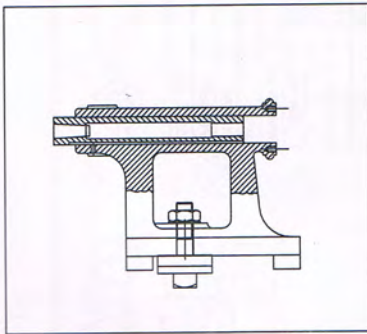
ITEM_NO	PART_NAME	MATERIAL	REFERENCE NO	NO.OFF
1	VICE BASE	CAST STEEL	VK 2346	1
2	MOVABLE JAW	CAST STEEL	PTR 233	1
3	SET SCREW	FE 410 W	GJB 456	2
4	HANDLE BAR CAP	FE 410 W	JSB 5678	2
5	HANDLE BAR	FE 410 W	NS 798	1
6	SCREW ROD	FE 410 W	PSA 332	1

8. Copy this table and paste as part list as shown in next page 27.

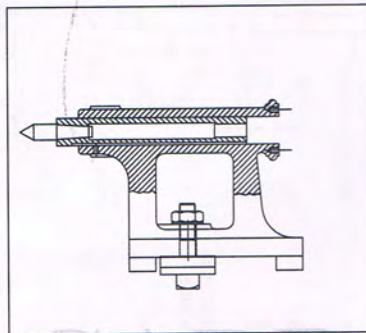
Directions:

Create a slide show presentation of assembling a TAILSTOCK using the procedure given below:-

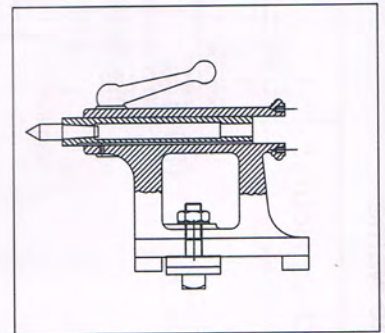
1. Copy slide library from AutoCAD Mechanical folder to your local disk.
2. Write a script to run the slide show.
3. The script should call all the slides sequentially.



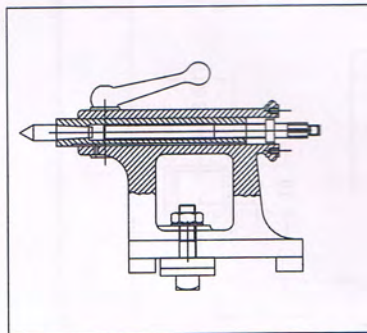
(SLIDE1)



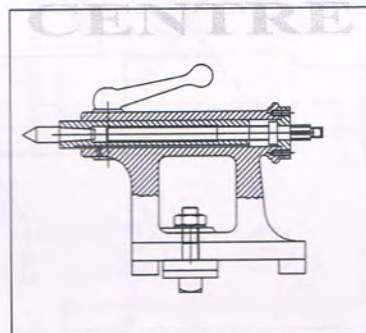
(SLIDE2)



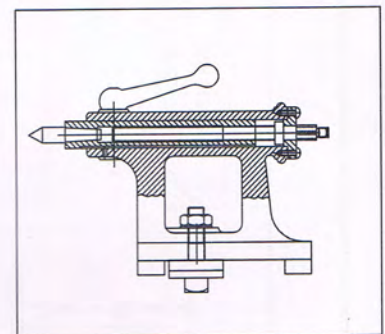
(SLIDE3)



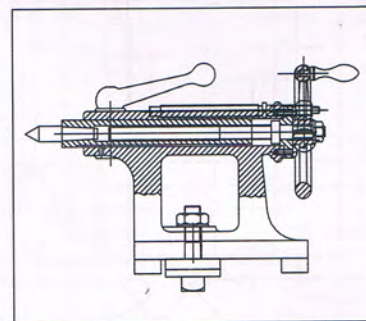
(SLIDE4)



(SLIDE5)



(SLIDE6)



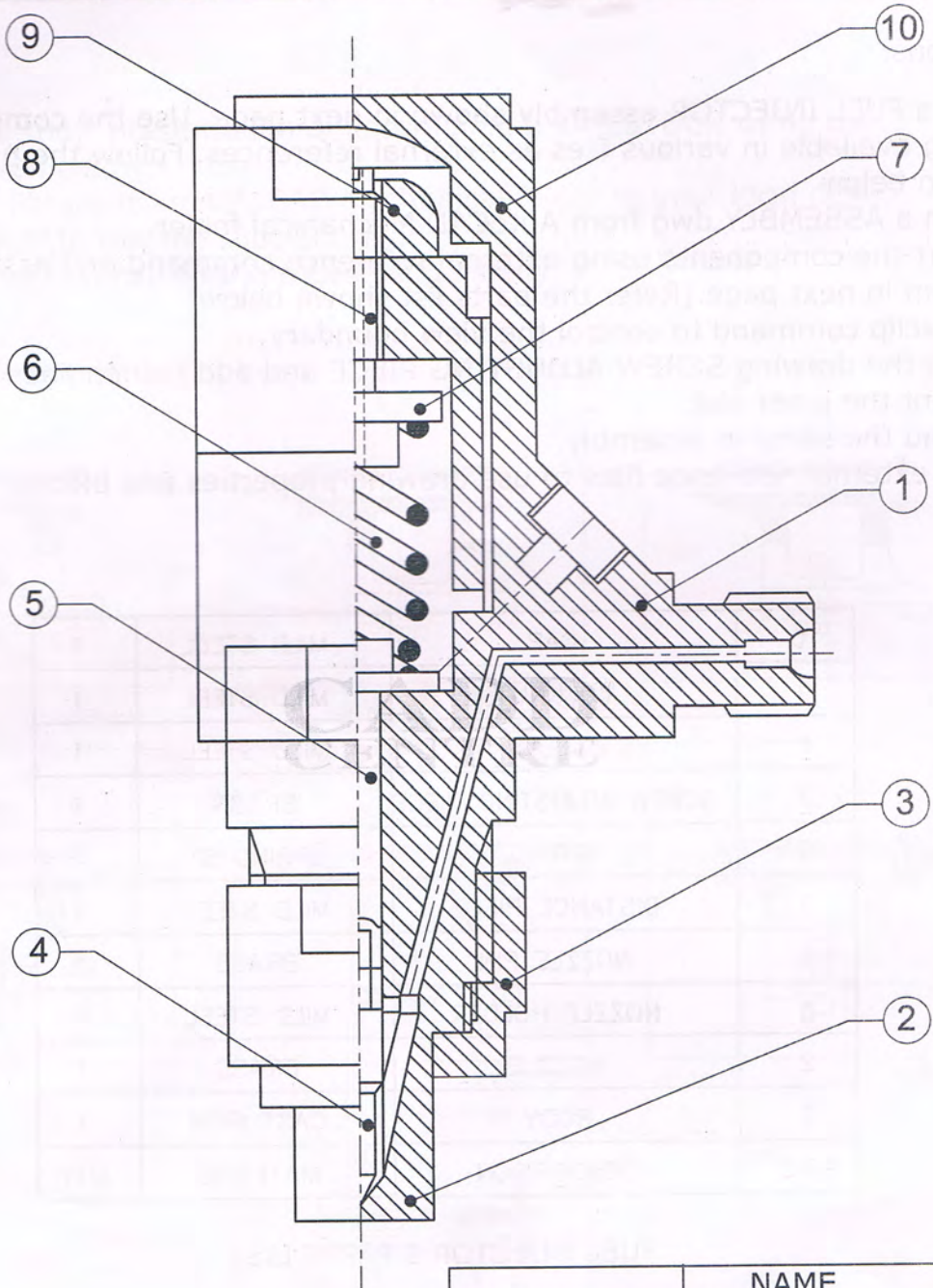
(SLIDE7)

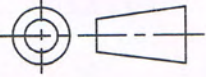
Exercise No: 04

File Name:

Duration:

Actual Hours:



	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
		Sectional view of FUEL INJECTOR

Exercise No: 05

File Name:

Duration: 330min

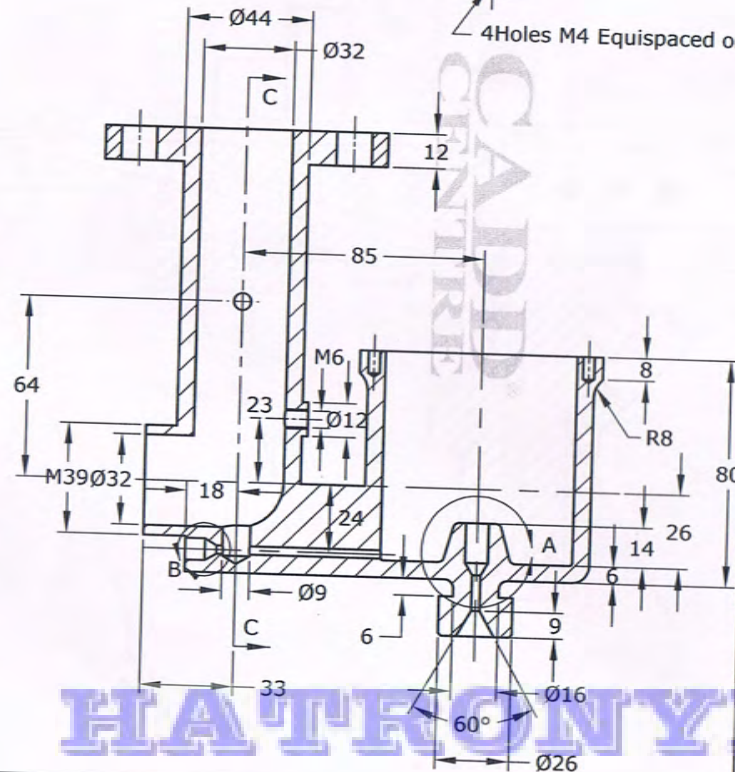
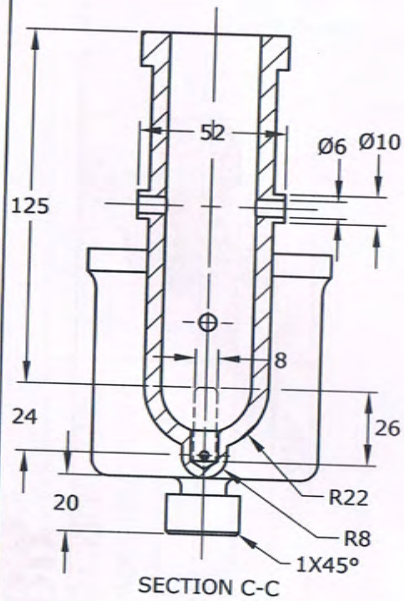
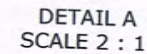
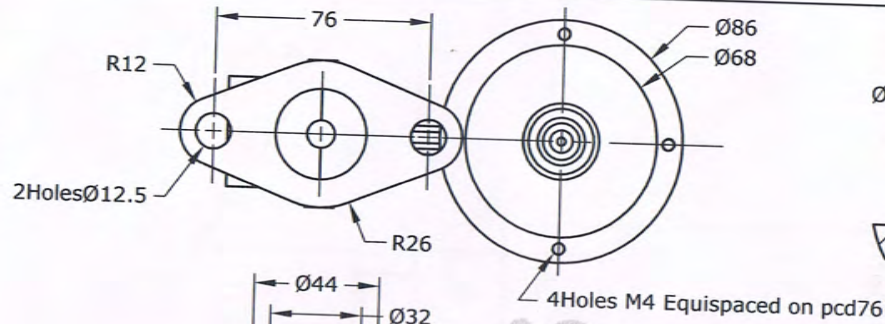
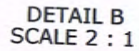
Actual Hours:

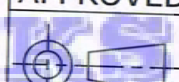
Directions:

1. Draw the following CARBURETTOR BODY as per dimensions.
2. Create layers and dimension styles as necessary.
3. Assign layers/dimension styles and complete detailed views as shown in the next page.
4. Create a layout by name CARBURRETOR.
5. Use ISO A4 as paper size and keep orientation to landscape.
6. Place the views in layout using floating view ports.
7. Complete detailed views with title block as shown in next page.
8. Publish to web in dwf format using PUBLISH command.

Duration:

Actual Hours:



	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	Details of Carburettor body	

Exercise No: 06	File Name:
Duration: 330min	Actual Hours:

Directions:

1. Create components as shown in next as per given dimensions.
2. Create layers and dimension styles as necessary.
3. Assign layers, dimension styles and complete detailed views as shown in the next page.
4. Create a layout by name PLUMMER BLOCK.
5. Use ISO A4 as paper size and keep orientation to landscape.
6. Place the views in layout using floating view ports.
7. Complete detailed views with title block as shown in next page.
8. Create a name dependent plot style with the following styles.
9. Apply plot styles to the layers and plot it.
10. Save and close the drawing.

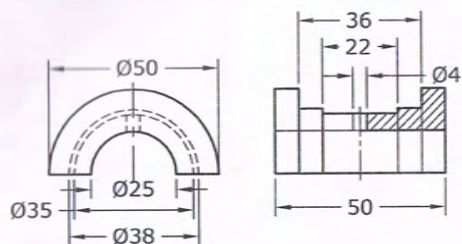
**CADD
CENTRE**

Exercise No: 06

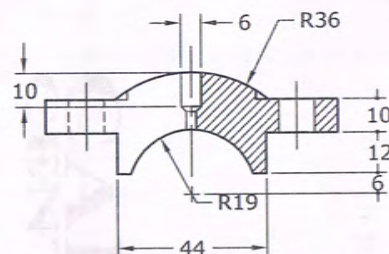
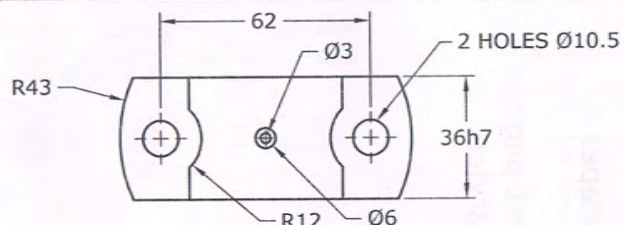
File Name:

Duration:

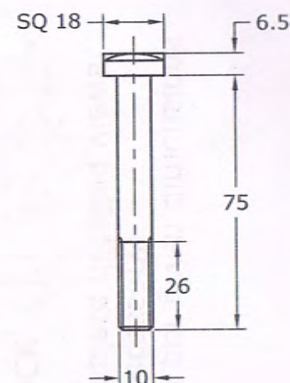
Actual Hours:



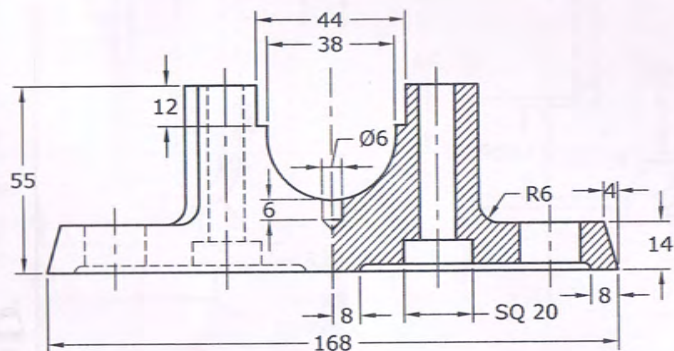
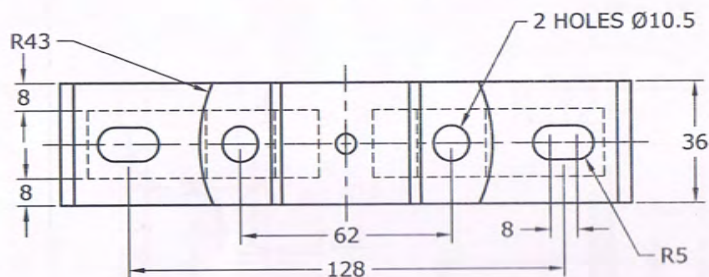
BEARING TOP HALF



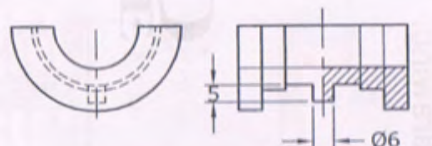
CAP



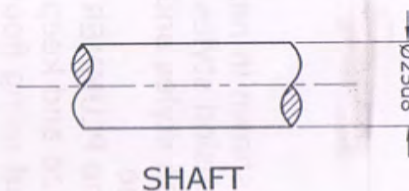
BOLT M10



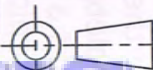
BODY

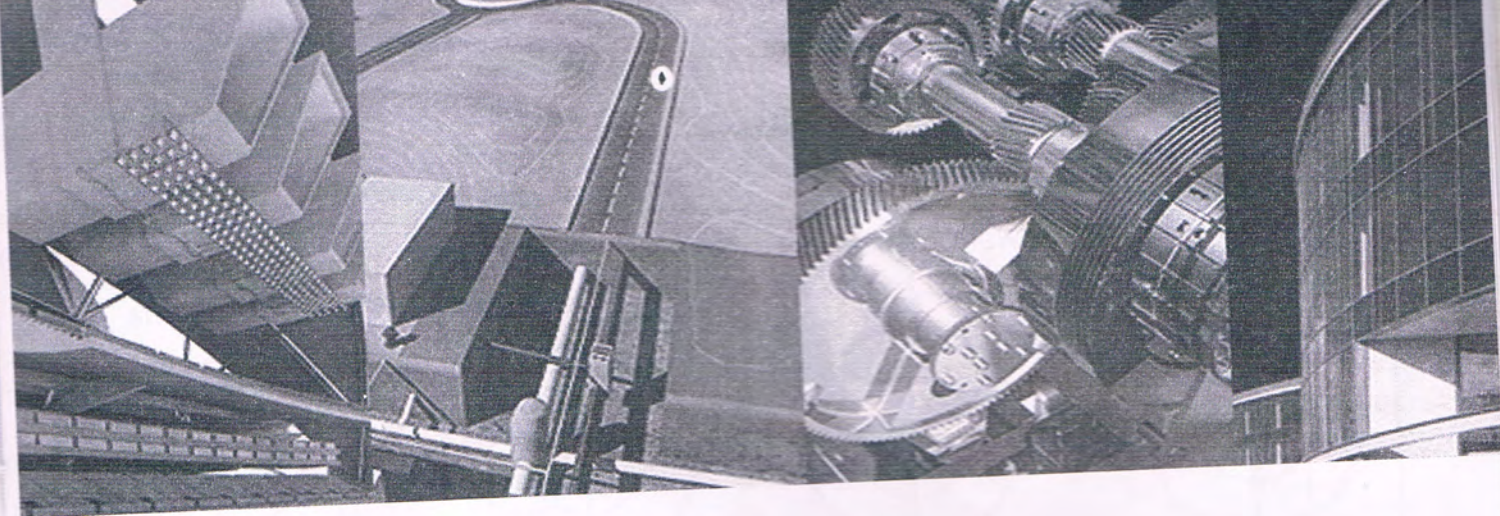


BEARING BOTTOM HALF



SHAFT

	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	Details of Plummer Block	



Section 3

HATRONYKS

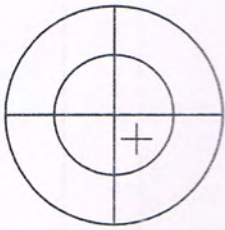
Exercise No: 01

File Name:

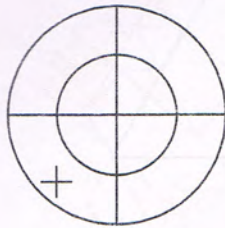
Duration: 30min

Actual Hours:

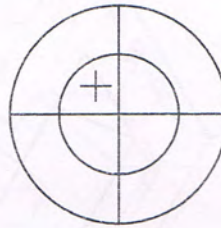
Using tripod and compass and match the views with viewpoints given as shown in the first example.



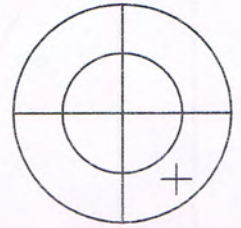
A



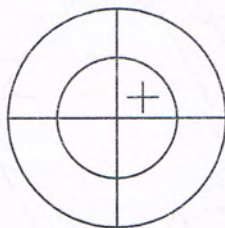
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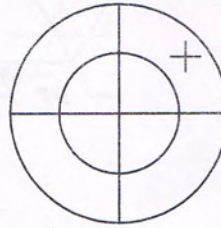
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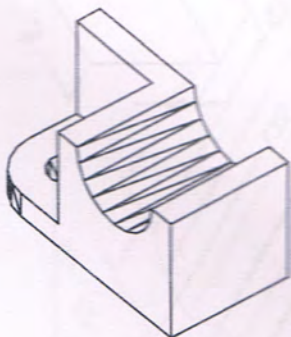
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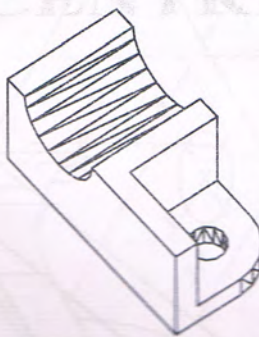
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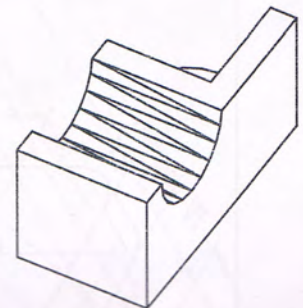
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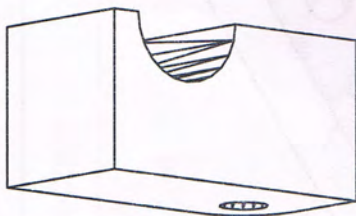
A



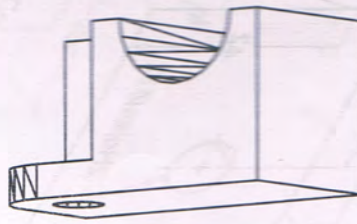
B



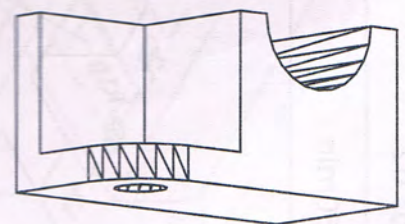
C



D



E



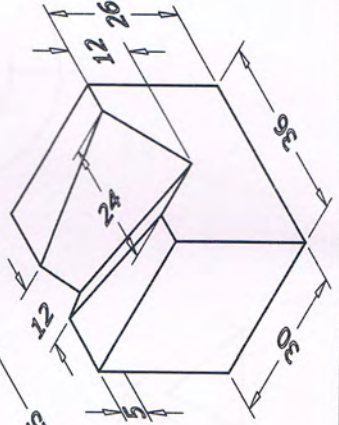
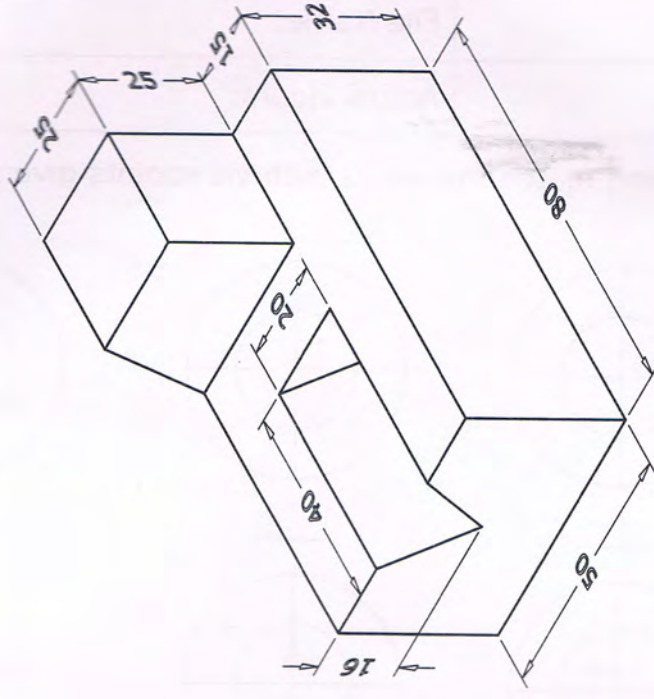
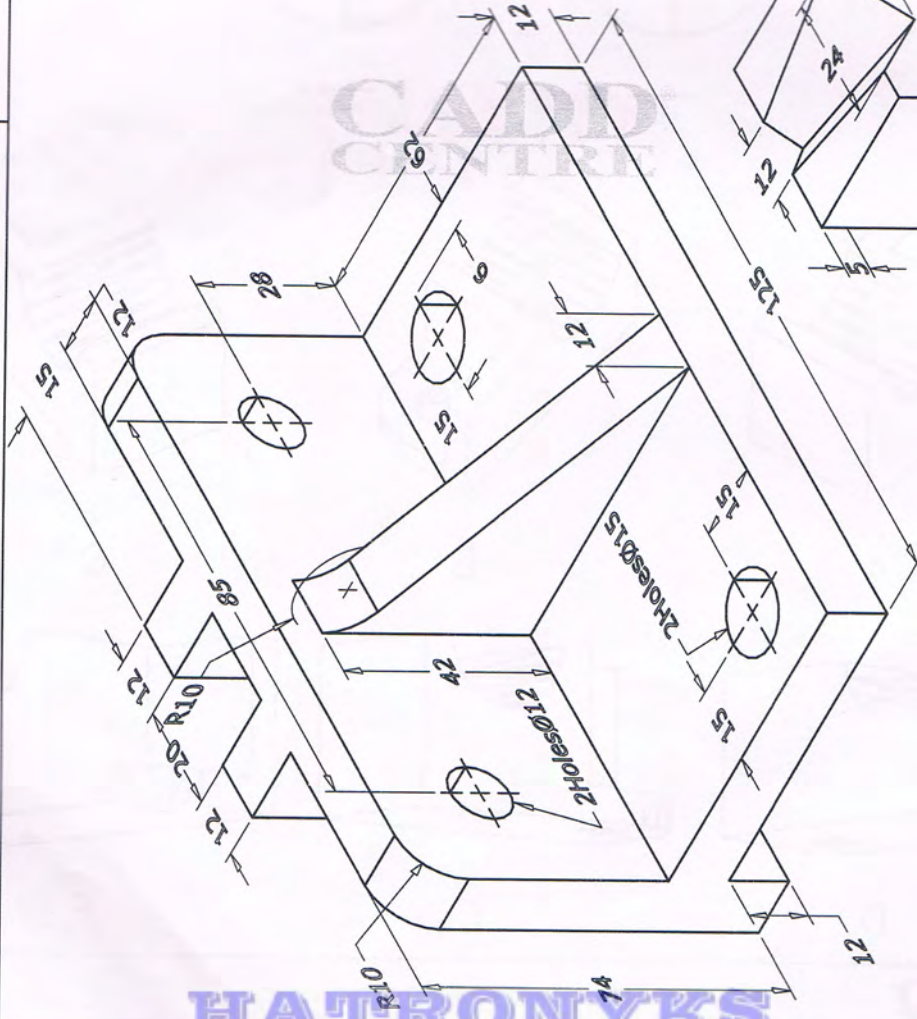
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Exercise No: 02

File Name:

Duration: 60min

Actual Hours:

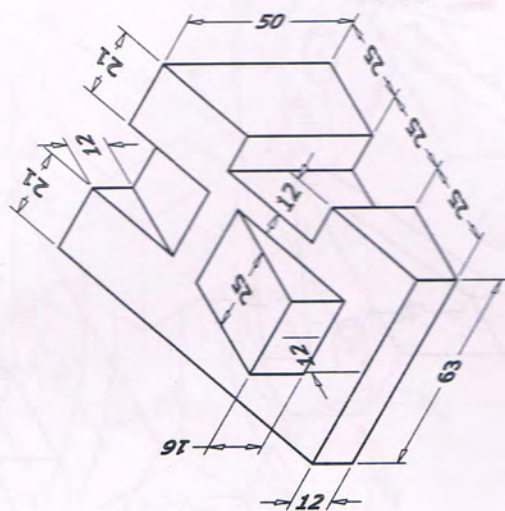
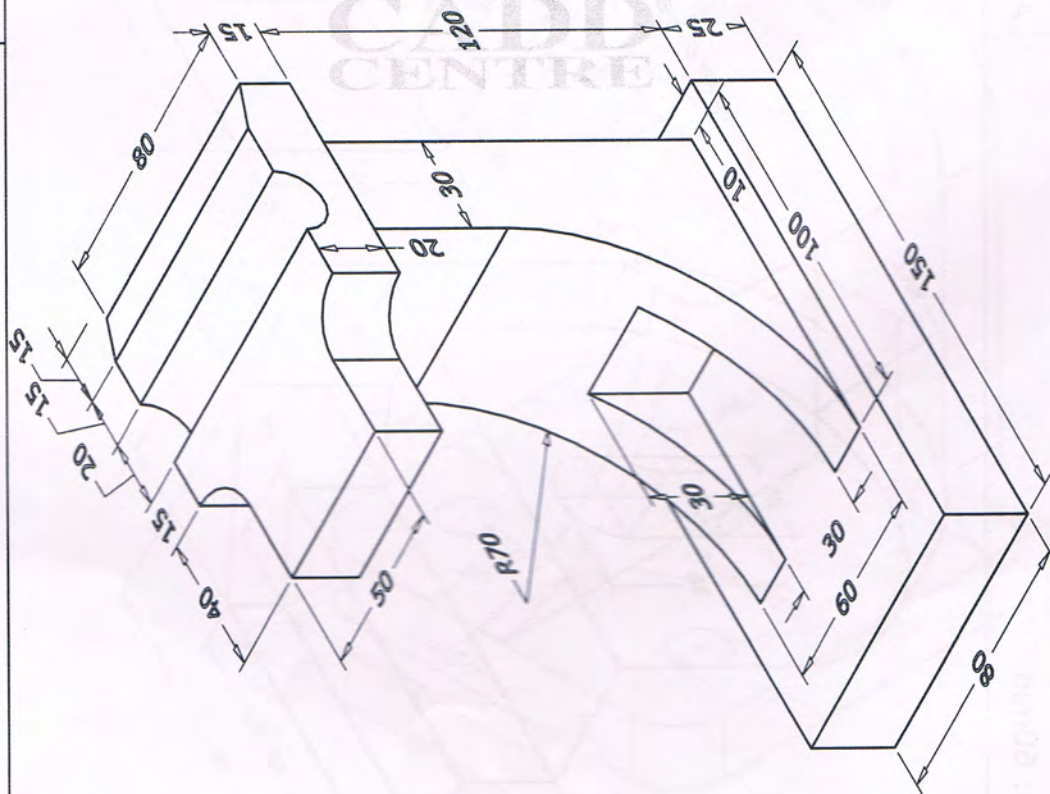


Exercise No: 03

File Name:

Duration: 60min

Actual Hours:



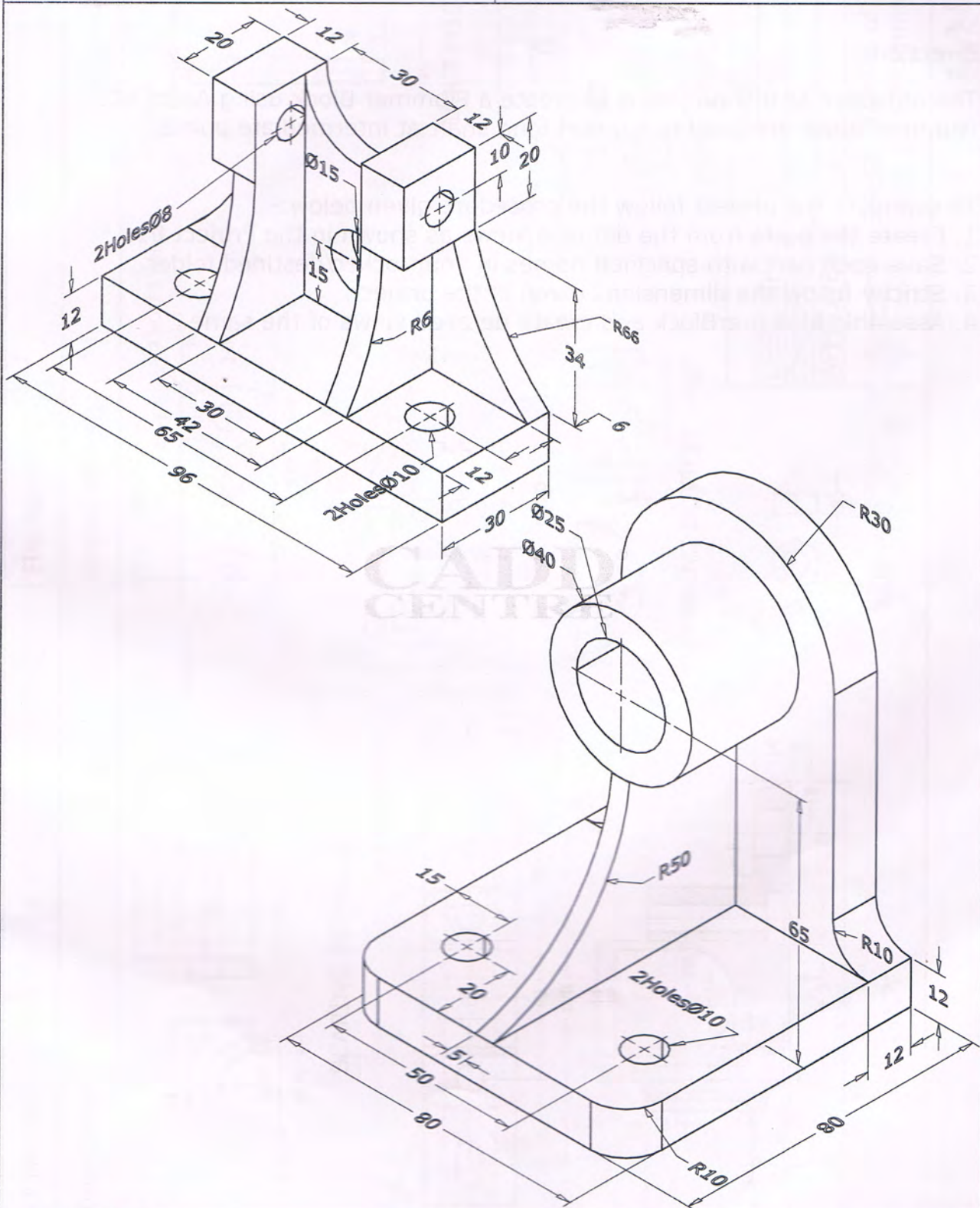
Exercise No: 04	File Name:
Duration: 60min	Actual Hours:

Exercise No: 05

File Name:

Duration: 60min

Actual Hours:



Project No: 01	File Name:
Duration: 210min	Actual Hours:

Directions:

The objective of this project is to create a Plummer Block using AutoCAD. Plummer Block are used to support long shaft at intermediate points.

To complete the project follow the procedure given below:-

1. Create the parts from the detailed views as shown in the Project 01.
2. Save each part with specified names in your locker/destined folder.
3. Strictly follow the dimensions given in the project.
4. Assemble PlummerBlock and create detailed views of the same.

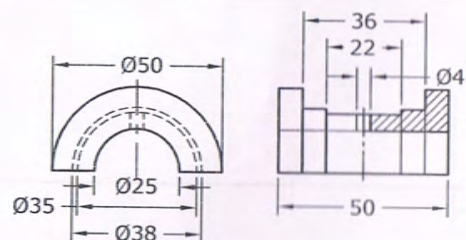
**CADD
CENTRE**

Project No: 01

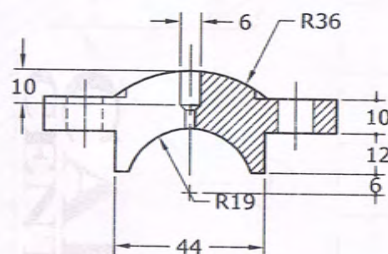
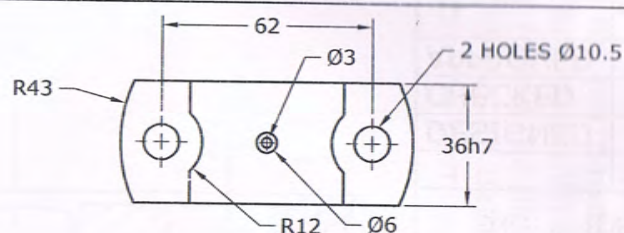
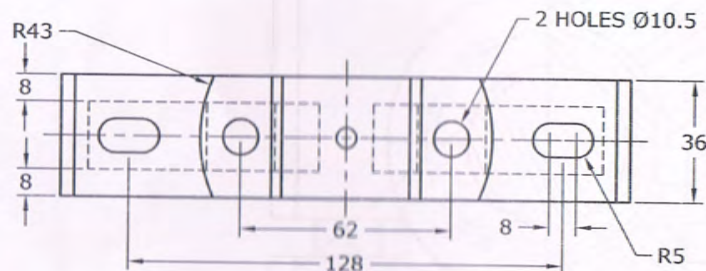
File Name:

Duration: 180min

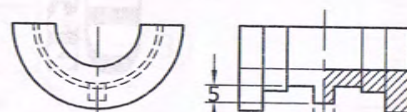
Actual Hours:



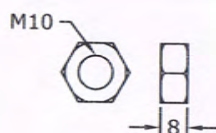
BEARING TOP HALF



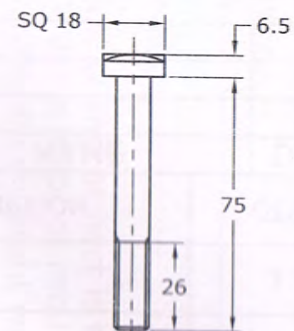
CAP



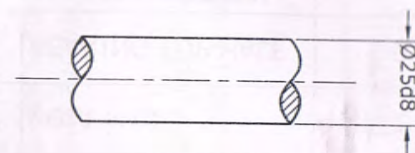
BEARING BOTTOM HALF



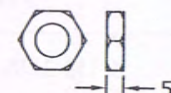
NUT M10



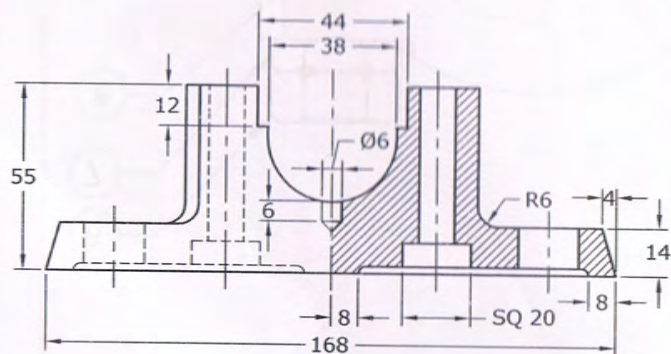
BOLT M10



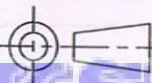
SHAFT



LOCKNUT M10



BODY

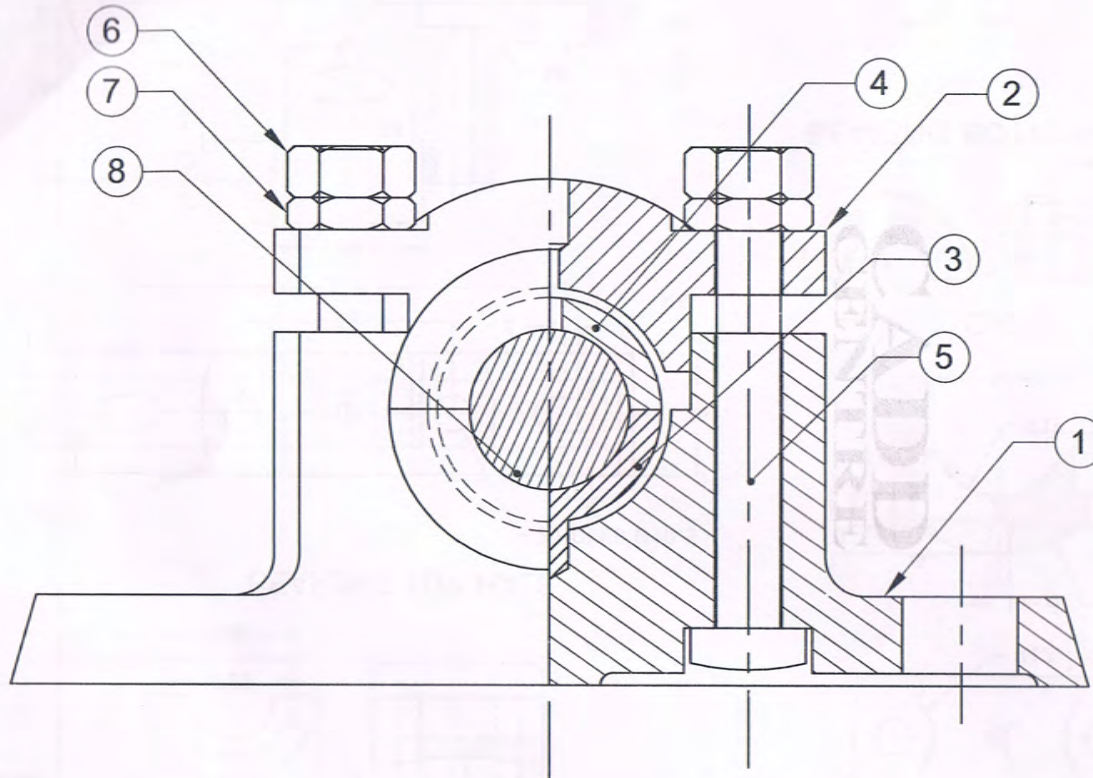
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 01\02	Details of Plummer Block

Project No: 01

File Name:

Duration: 30min

Actual Hours:



8	SHAFT	1
7	LOCK NUT M10	2
6	NUT M10	2
5	BOLT M10	1
4	BEARING TOP HALF	2
3	BEARING BOTTOM HALF	1
2	CAP	1
1	Body	1
SNO	DESCRIPTION	QTY

	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		

	SHEET 02\02	Details of Plummer Block Assembly
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HATRONYRS

Project No: 02

File Name:

Duration: 360min

Actual Hours:

Directions:

The objective of this project is to create a Feed Check Valve using AutoCAD. Feed Check Valve helps to regulate the supply of feed water to the boiler and enables to maintain constant water level.

To complete the project follow the procedure given below:-

1. Create the parts from the detailed views as shown in the Project 02.
2. Save each part with specified names in your locker/destined folder.
3. Strictly follow the dimensions given in the project.
4. Refer the design data book for standard parts.
5. Assemble the parts and create detailed views for the same.

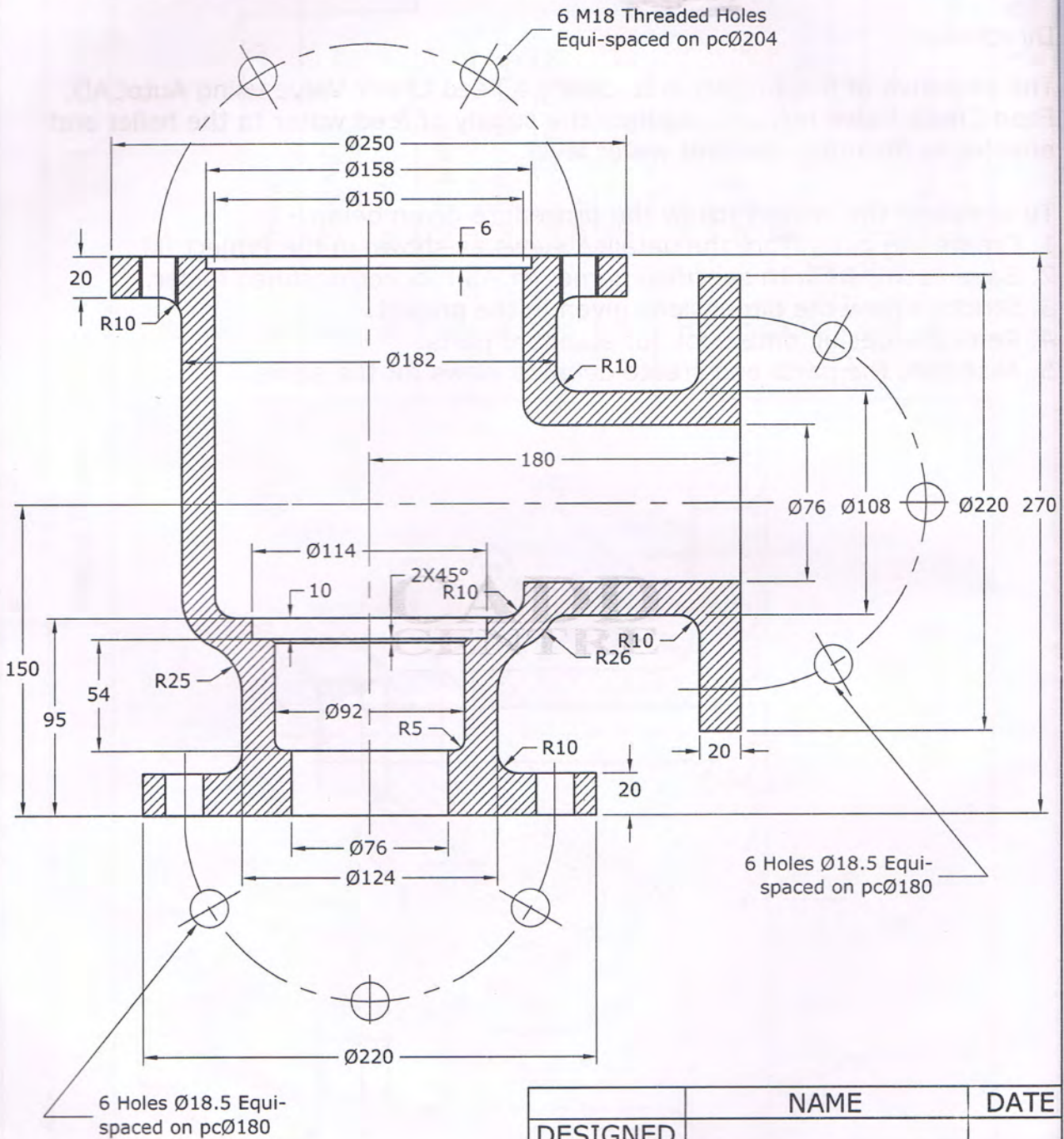
CADD[®]
CENTRE

Project No: 02

File Name:

Duration: 120min

Actual Hours:



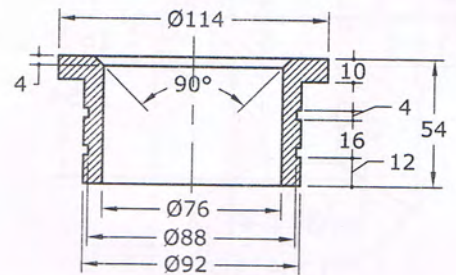
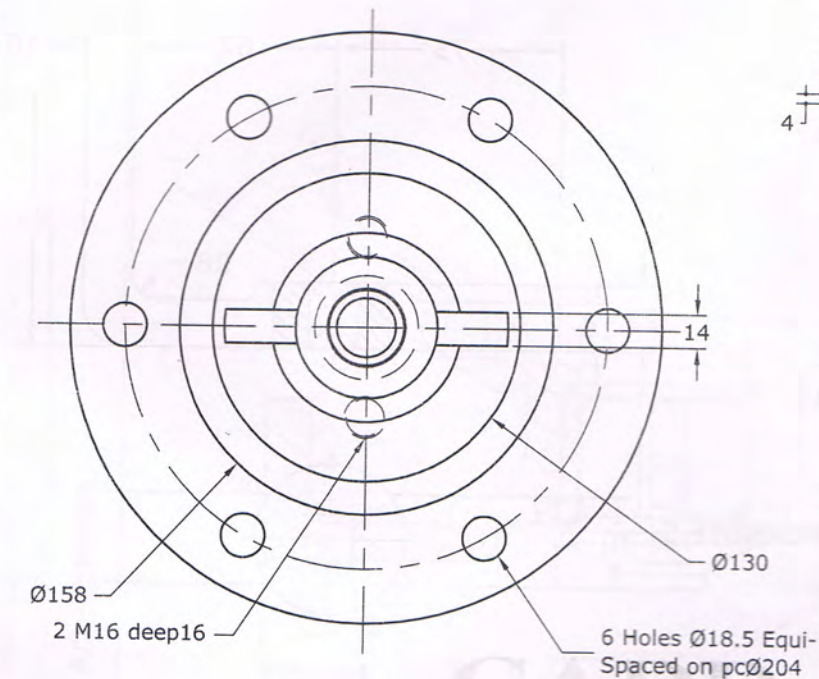
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 01/05	Details of Valve Body

Project No: 02

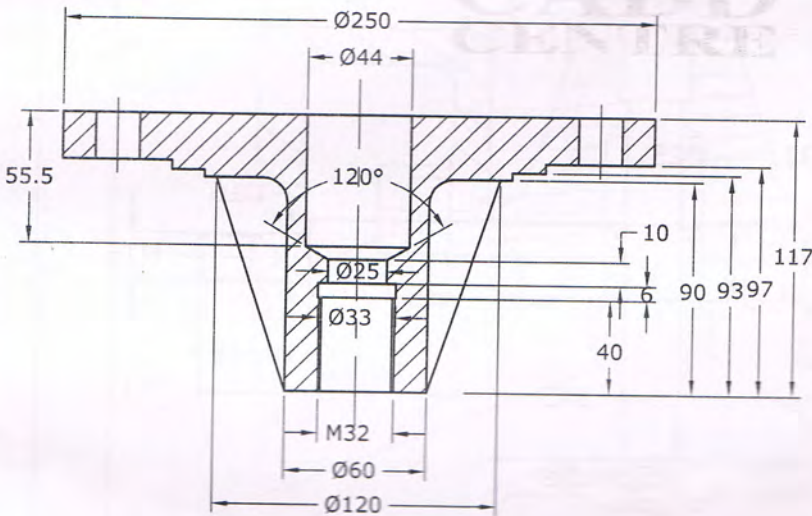
File Name:

Duration: 120min

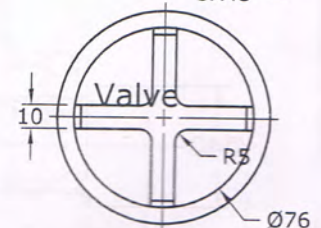
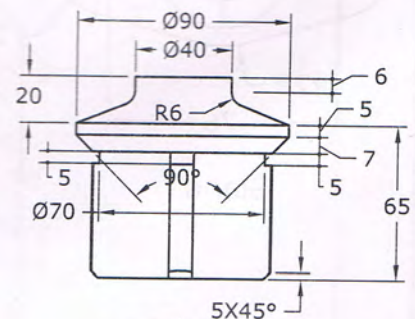
Actual Hours:



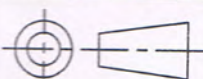
Valve seat



Cover



Spindle

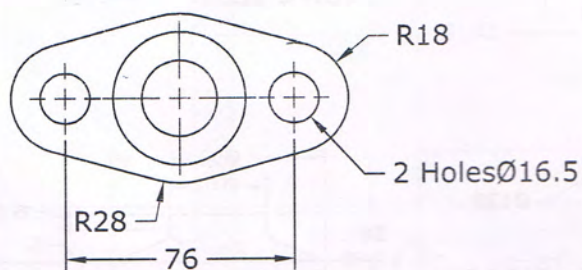
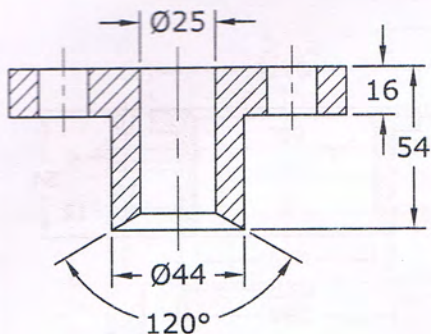
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
		
SHEET 02/05		

Project No: 02

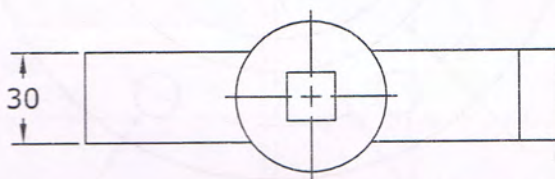
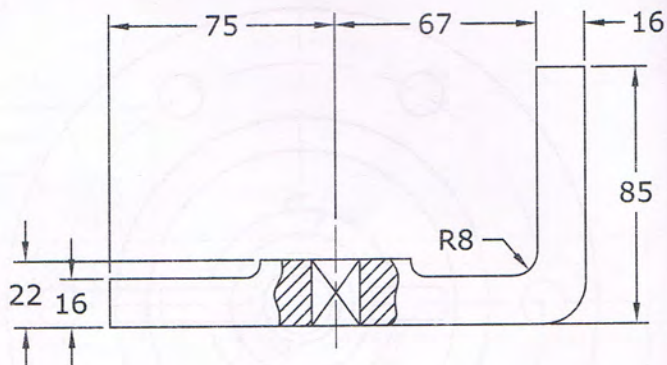
File Name:

Duration: 60min

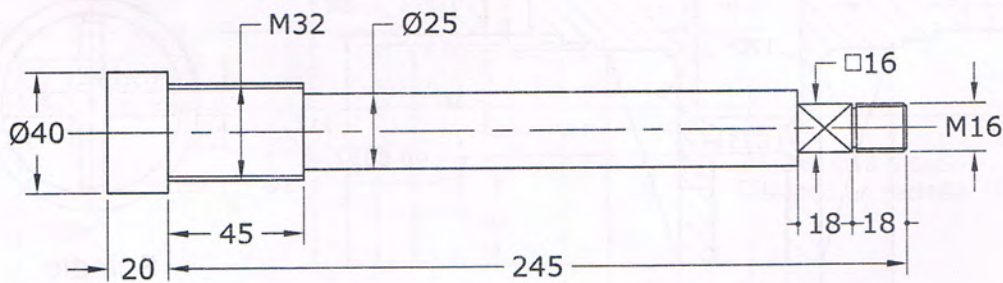
Actual Hours:



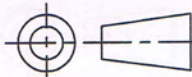
Gland



Handle



Spindle

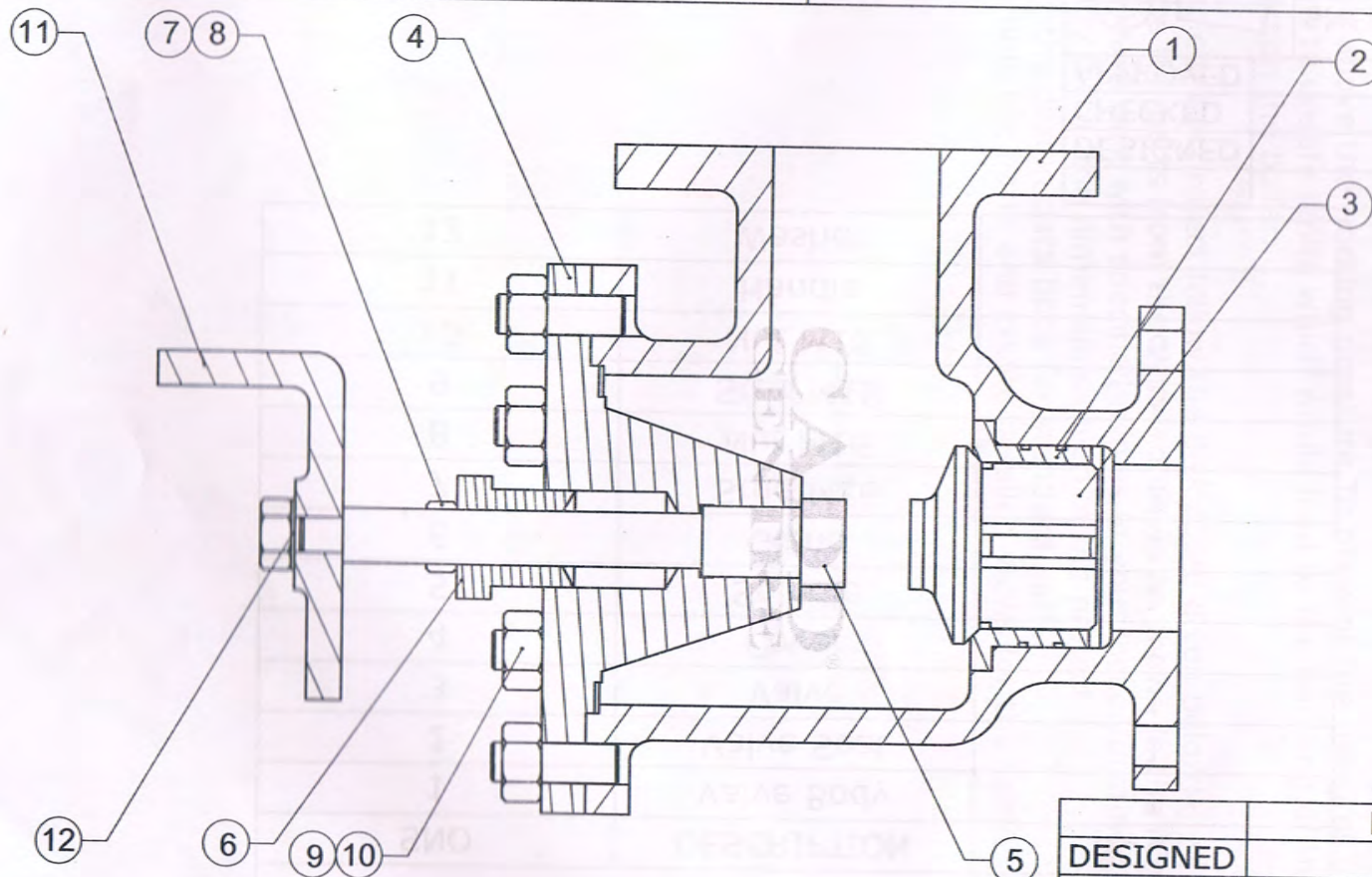
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
		SHEET 03/05

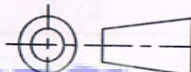
Project No: 02

File Name:

Duration: 60min

Actual Hours:



	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 04/05	Assembled view of Feed Check Valve

Project No: 02

File Name:

Duration:

Actual Hours:

PARTS LIST

SNO	DESCRIPTION	NOOFF
1	Valve Body	1
2	Valve Seat	1
3	Valve	1
4	Cover	1
5	Spindle	1
6	Gland	1
7	Stud M16	2
8	Nut M16	2
9	Stud M18	6
10	Nut M18	6
11	Handle	1
12	Washer	1

	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		



SHEET
05/05

Parts list of
Feed Check Valve

Project No: 03	File Name:
Duration: 360min	Actual Hours:

Directions:

The objective of this project is to create a Lever Safety Valve using AutoCAD. A safety valve releases the excess steam which would cause the raise of the pressure above the working pressure. To prevent the rising of the boiler pressure to unsafe limits which would lead to the bursting of the boiler, valve is mounted on the boiler.

To complete the project follow the procedure given below:-

1. Create the parts from the detailed views as shown in the Project 03.
2. Save each part with specified names in your locker/destined folder.
3. Strictly follow the dimensions given in the project.
4. Refer the design data book for standard parts.
5. Assemble the parts and create detailed views for the same.

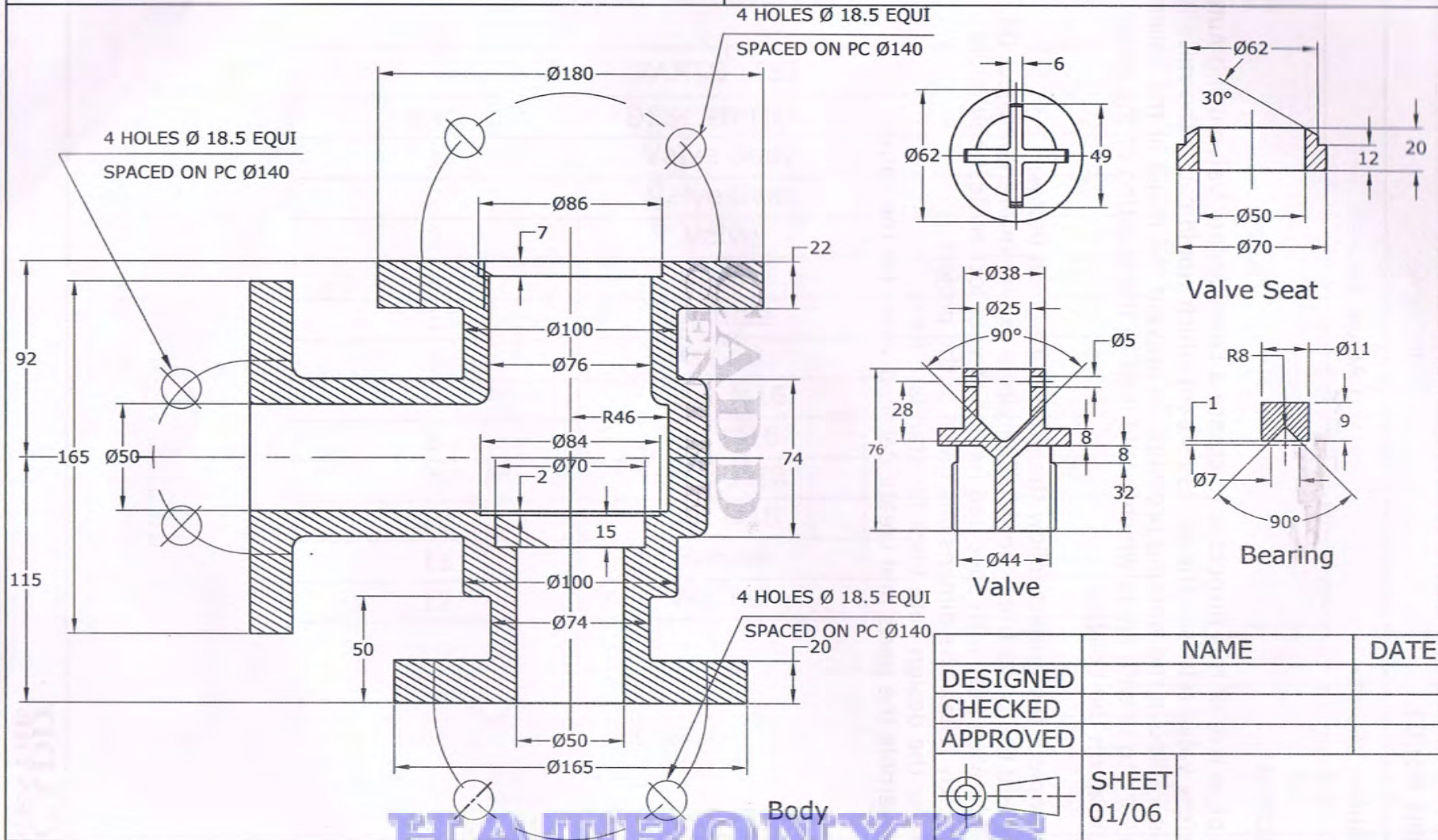
**CADD
CENTRE**

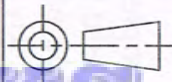
Project No: 03

File Name:

Duration: 120min

Actual Hours:



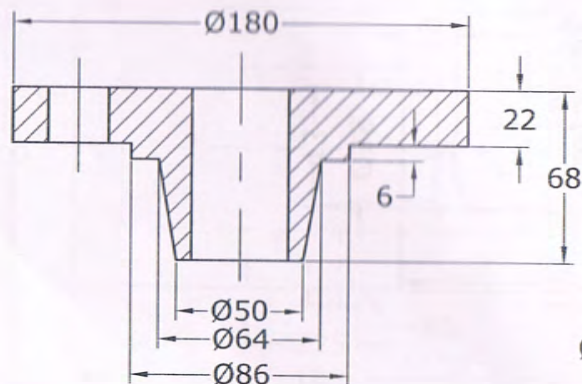
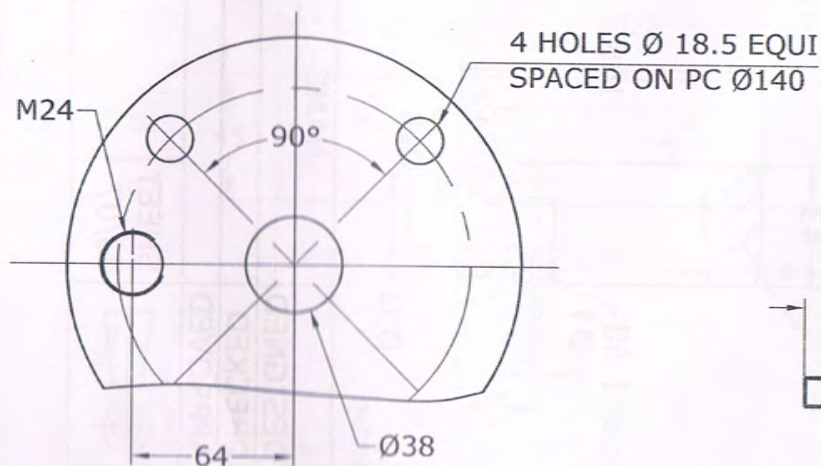
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 01/06	

Project No: 03

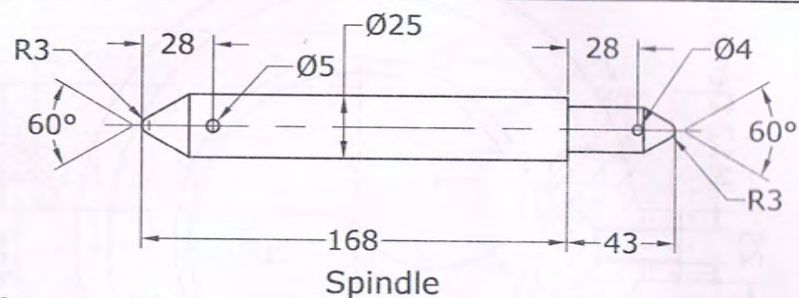
File Name:

Duration: 60min

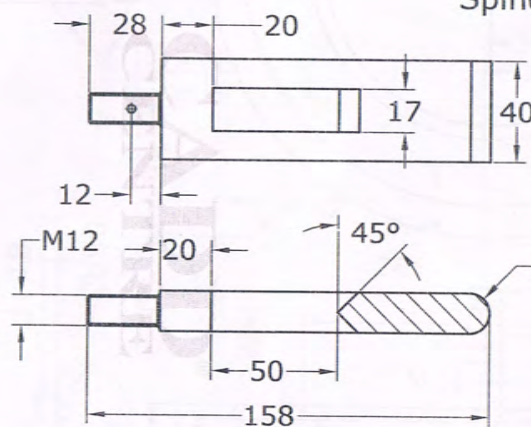
Actual Hours:



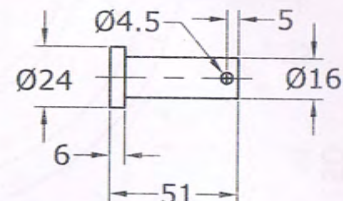
Cover



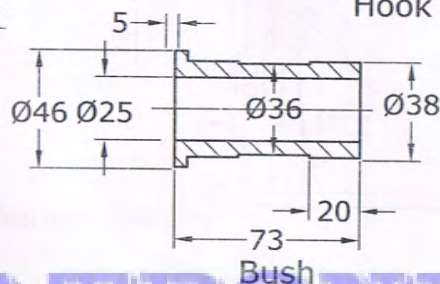
Spindle



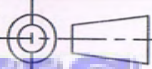
Hook



Pin No.2



Bush

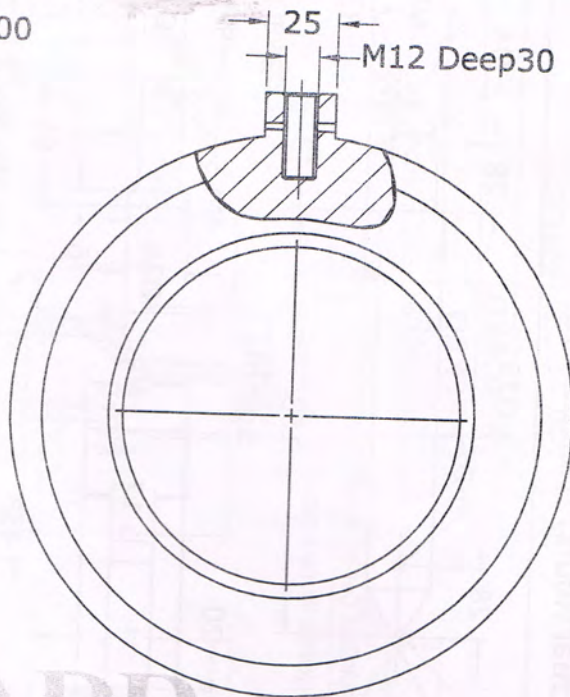
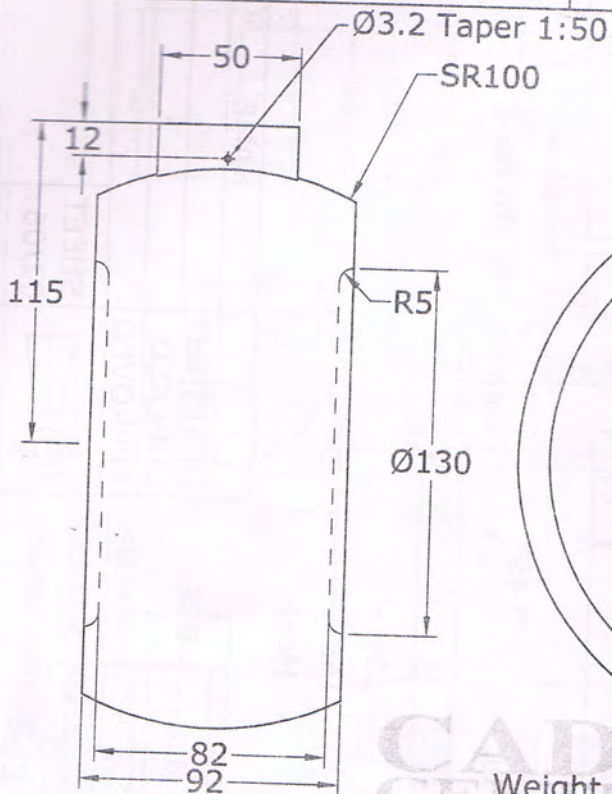
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 02/06	

Project No: 03

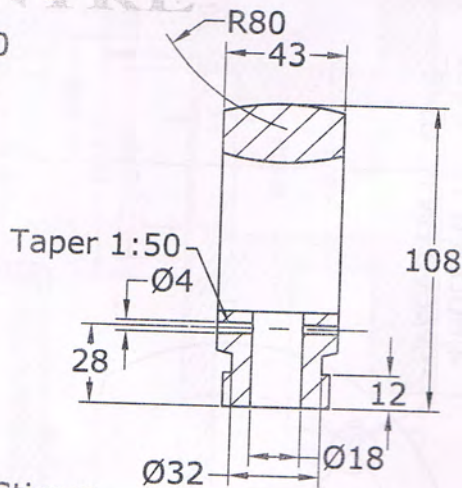
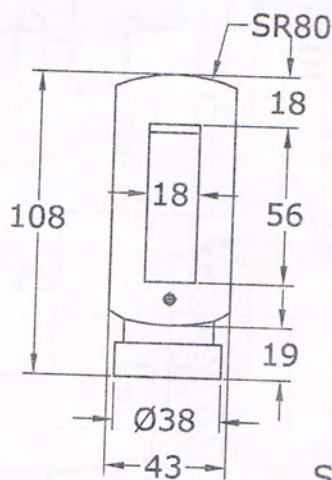
File Name:

Duration: 60min

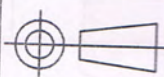
Actual Hours:



Weight



Stirrup

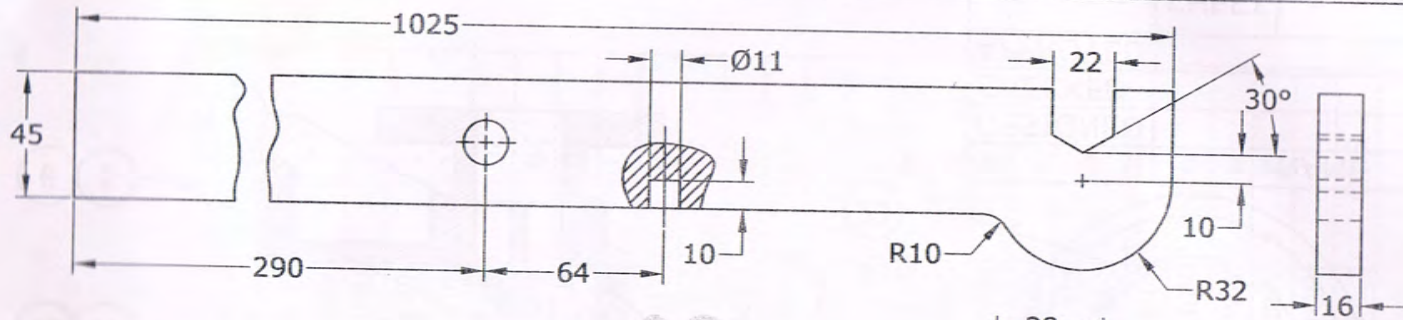
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 03/07	

Project No: 03

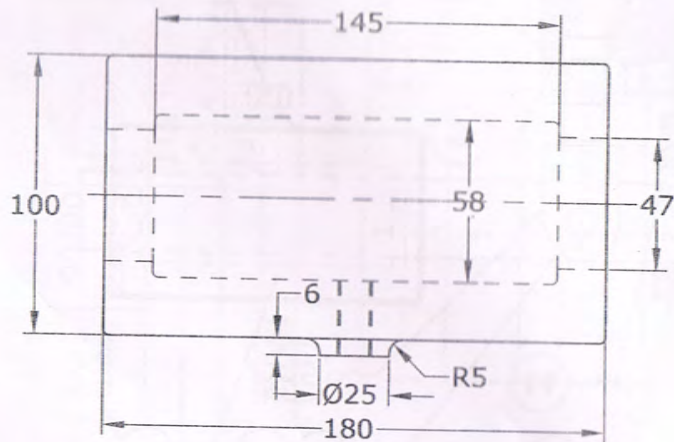
File Name:

Duration: 60min

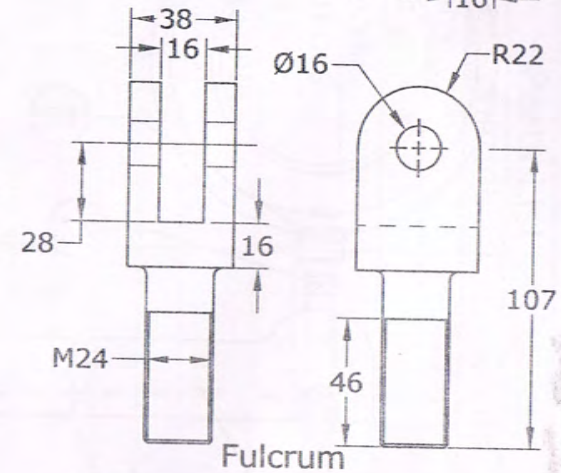
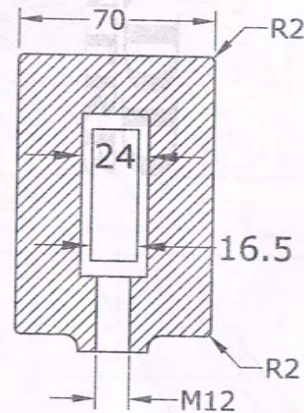
Actual Hours:



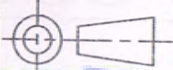
Lever



Counter Weight



Fulcrum

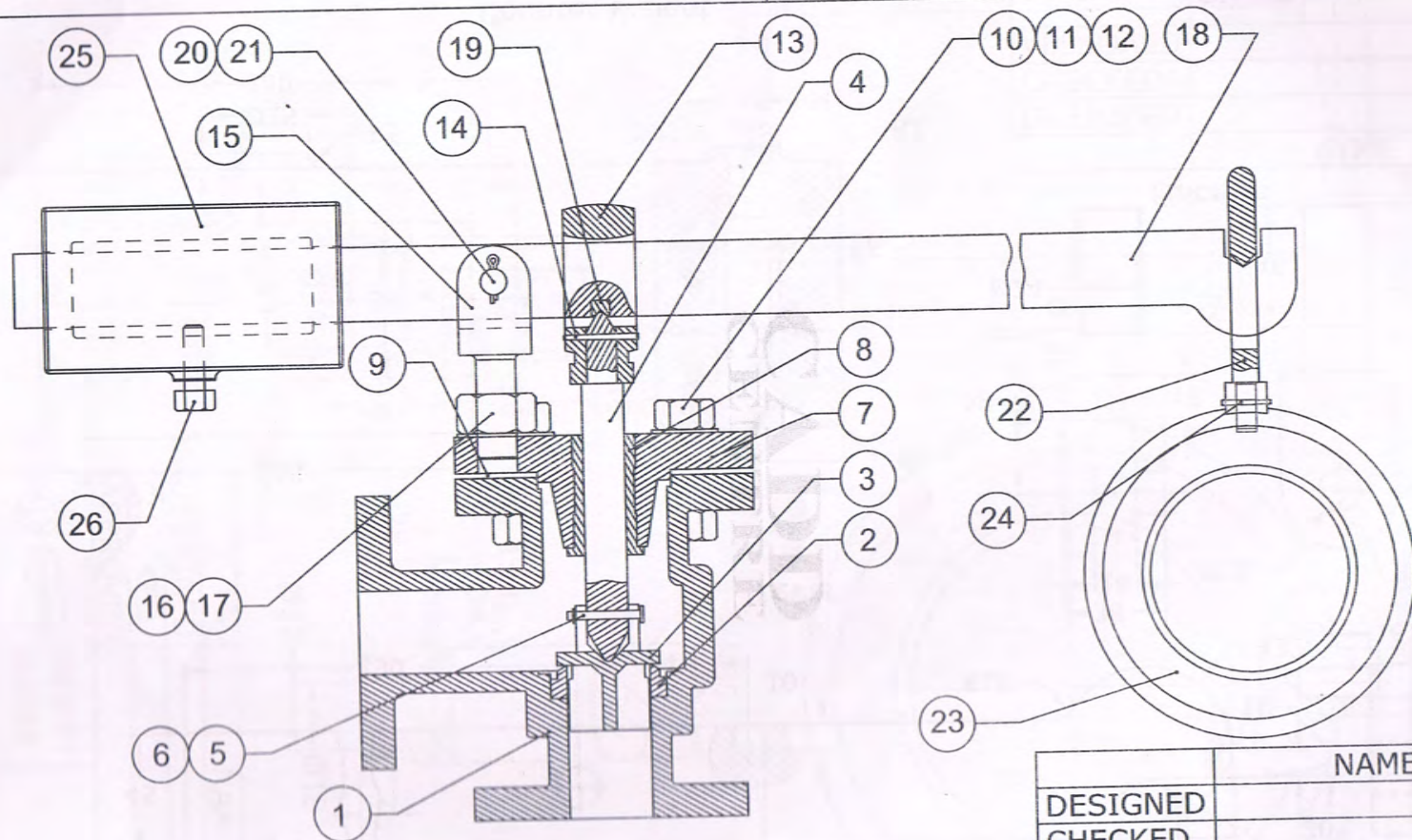
	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 04/06	

Project No: 03

File Name:

Duration: 60min

Actual Hours:



	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET 05/06	Assembled view of Lever Safety Valve

HATRONYNS

Project No: 03

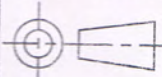
File Name:

Duration:

Actual Hours:

Parts List

SNO	DESCRIPTION	NOOFF
1	BODY	1
2	VALVE SEAT	1
3	VALVE	1
4	SPINDLE	1
5	PIN NO.1	1
6	SPLIT PIN Ø1.2x10L	1
7	COVER	1
8	BUSH	1
9	GASKET	1
10	BOLT M18X65L	4
11	NUT M18	4
12	WASHER M18	4
13	STIRRUP	1
14	TAPER PIN Ø4X45L	1
15	FULCRUM	1
16	NUT M24	1
17	WASHER M24	1
18	LEVER	1
19	BEARING	1
20	PIN NO.2	1
21	SPLIT Ø4X25L	1
22	HOOK	1
23	WEIGHT	1
24	TAPER PIN Ø3.2X30L	1
25	COUNTER WEIGHT	1
26	SCREW M12X45L	1

	NAME	DATE
DESIGNED		
CHECKED		
APPROVED		
	SHEET	Parts list of Lever Safety Valve
	06/06	