MACHINE DRAWING WITH AUTOCAD*

Course Name: B.Tech-ME

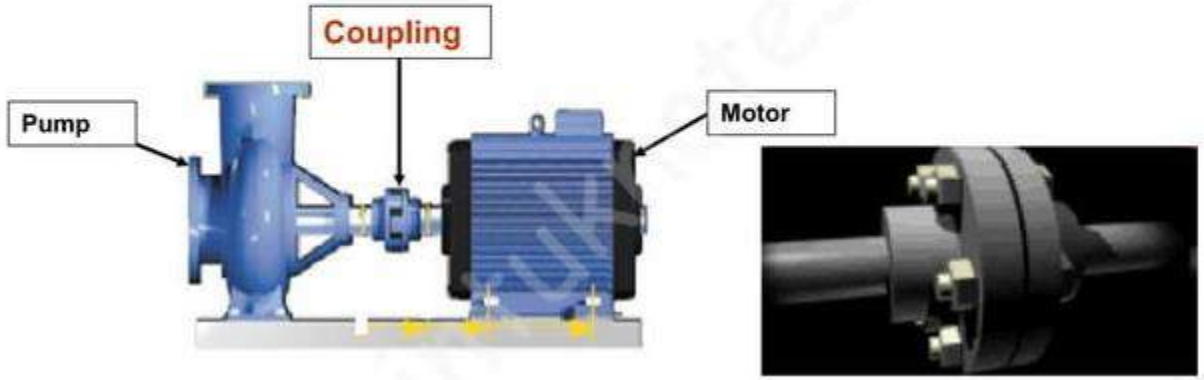
Semester: 3rd

Prepared by: Dr. Talwinder Singh Bedi

UNIT: III

Topic: Assembly and Disassembly

Coupling is a device used to connect two shafts together at their ends for the purpose of transmitting power



Rigid coupling

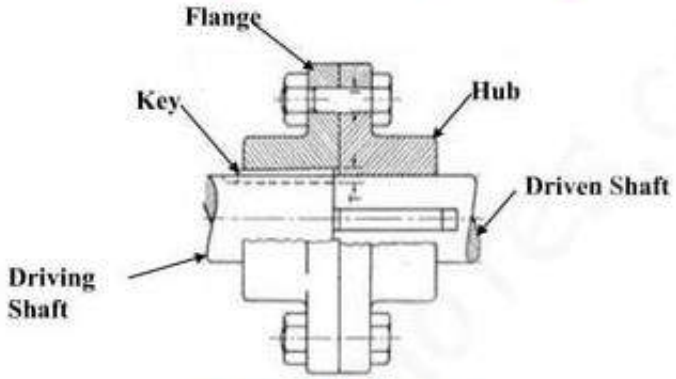
Flexible coupling

Universal coupling

- To provide connection of shafts of units made separately
- To allow misalignment of the shafts or to introduce mechanical flexibility.
- To reduce the transmission of shock loads
- To introduce protection against overloads.
- To alter the vibration characteristics

UNIT: III

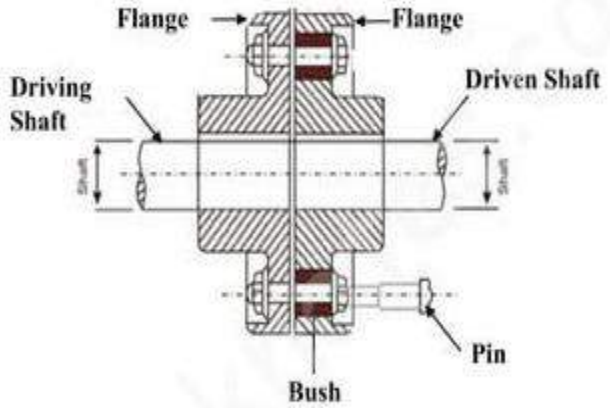
Rigid coupling



Flanged Coupling

- Rigid couplings are used when precise shaft alignment is required
- Simple in design and are more rugged
- Generally able to transmit more power than flexible couplings
- Shaft misalignments cannot be compensated

Flexible Coupling



- A flexible coupling permits with in certain limits, relative rotation and variation in the alignment of shafts
- Pins (Bolts) covered by rubber washer or bush is used connect flanges with nuts
- The rubber washers or bushes act as a shock absorbers and insulators.

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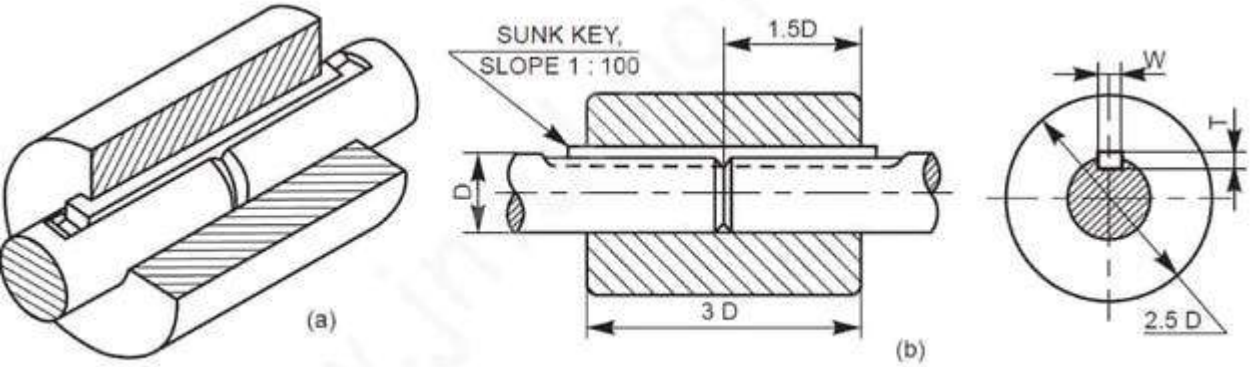
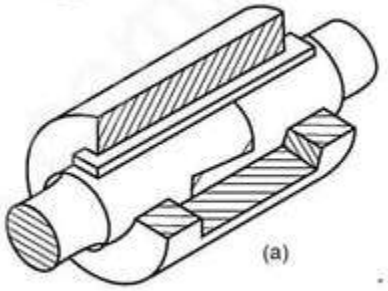
Butt-Muff Coupling

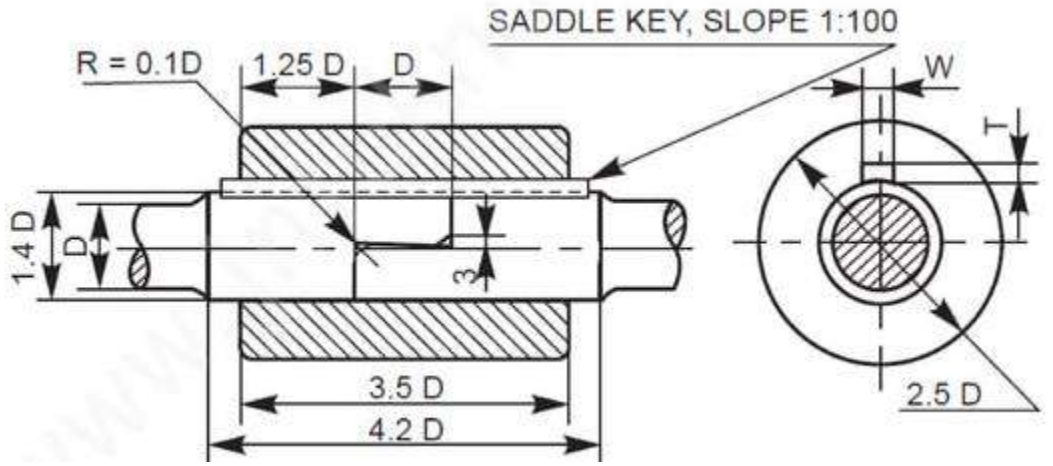
In this, the ends of the two shafts to be coupled butt against each other, with the sleeve keyed to them



Half-Lap Muff Coupling

In this, the ends of the shafts overlap each other for a short length. The taper provided in the overlap prevents the axial movement of the shafts. Here too, after placing the muff over the overlapping ends of the shafts, a saddle key(s) is(are) used to make the coupling

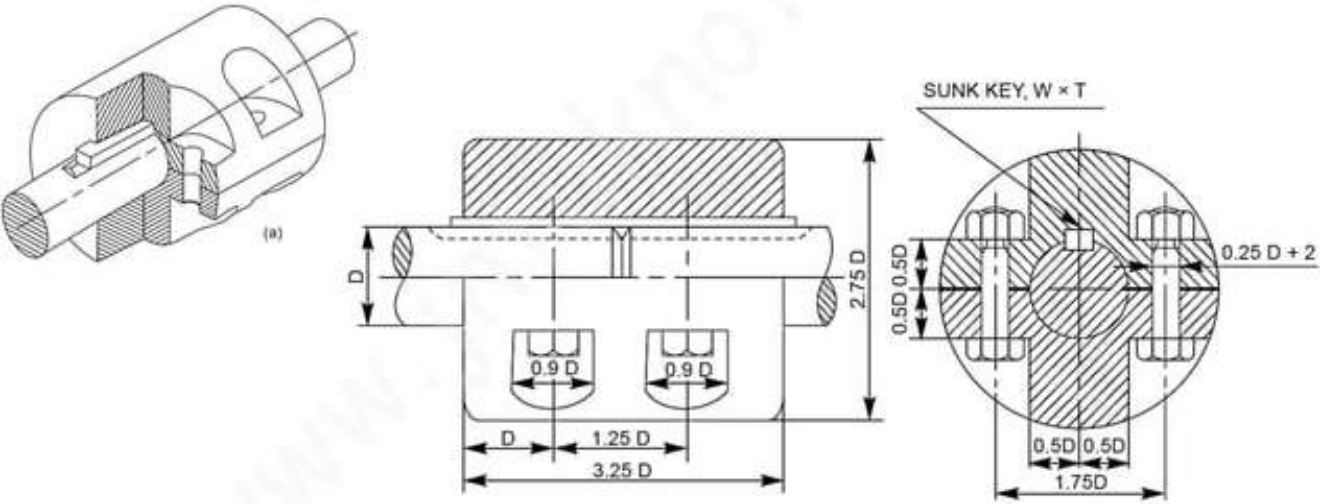




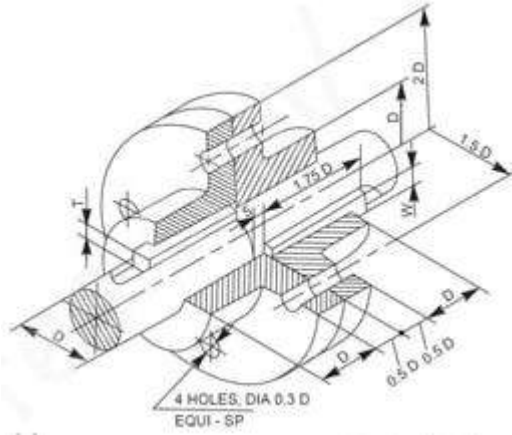
UNIT: III

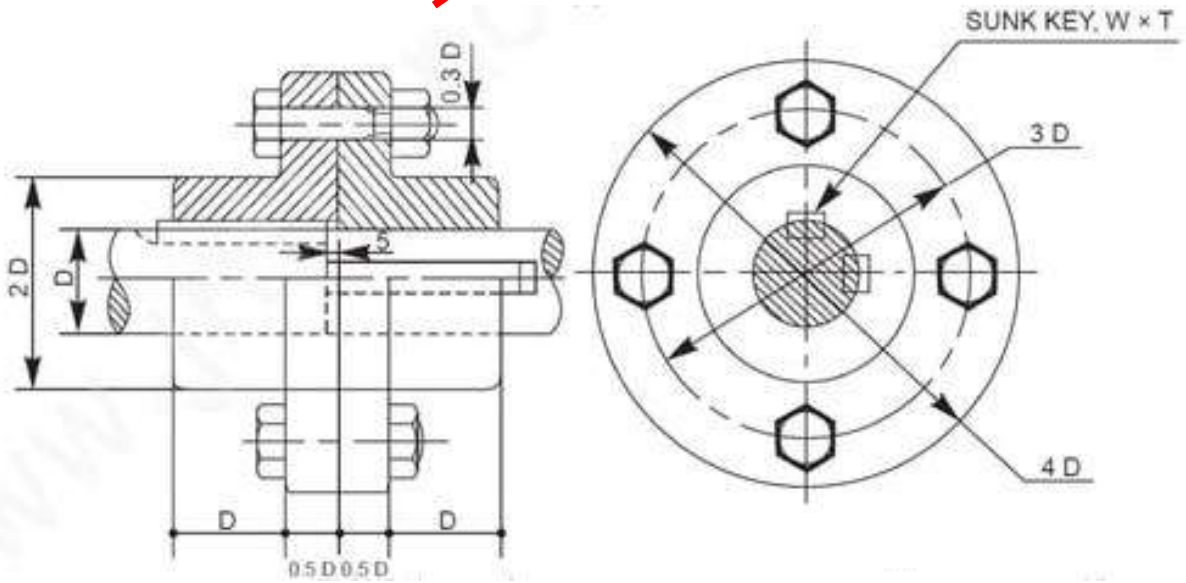
Split-Muff Coupling

- In this, the muff is split into two halves and are recessed. A number of bolts and nuts are used to connect the muff halves and the recesses provided accommodate the bolt heads and nuts.
- For making the coupling, a sunk key is first placed in position and then the muff halves are joined by bolts and nuts
- This type of coupling is used for heavy duty work, since both the key and friction grip transmit the power (torque).



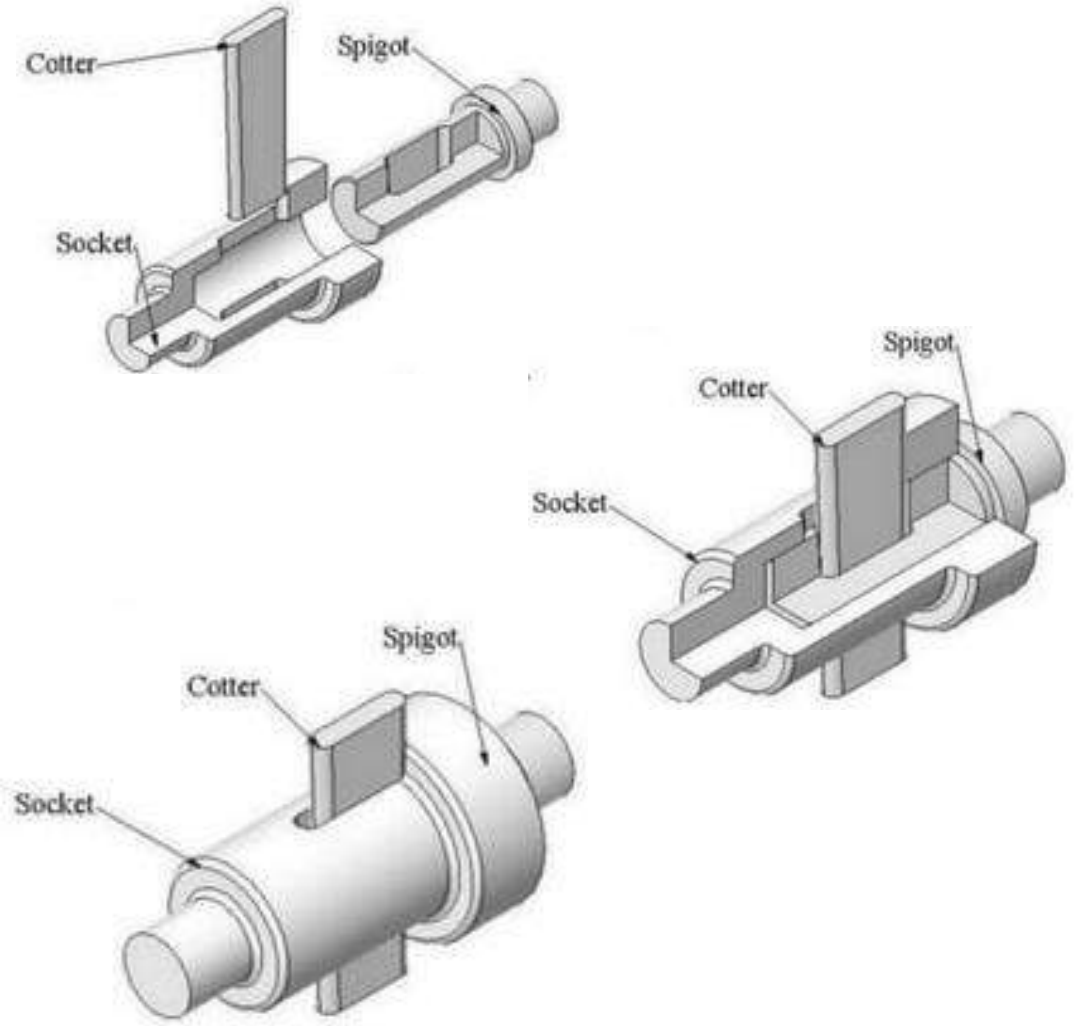
Flanged Coupling





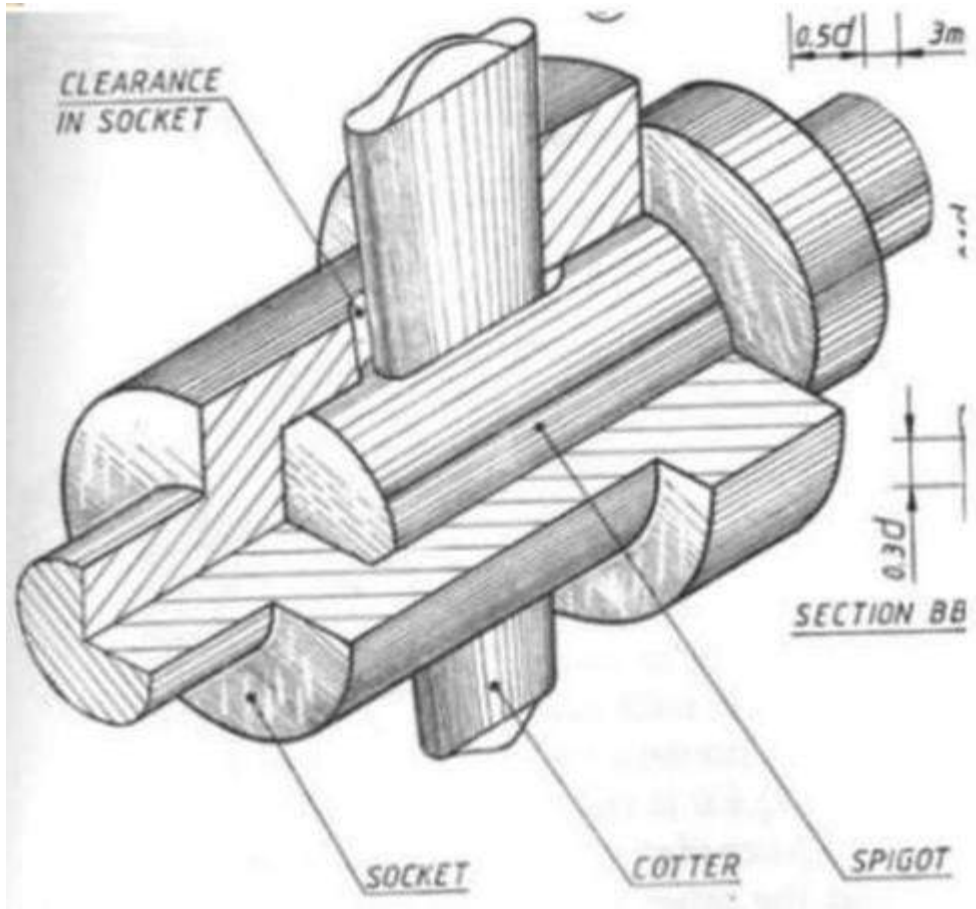
Cotter Joints

- A cotter is a flat wedge-shaped piece of steel as shown in figure.
- This is used to connect rigidly two rods which transmit motion in the axial direction, without rotation.
- These joints may be subjected to tensile or compressive forces along the axes of the rods.
- Examples of cotter joint connections are: connection of piston rod to the crosshead of a steam engine, valve rod and its stem etc.
- A typical cotter joint is as shown in figure.
- One of the rods has a socket end into which the other rod is inserted and the cotter is driven into a slot, made in both the socket and the rod.



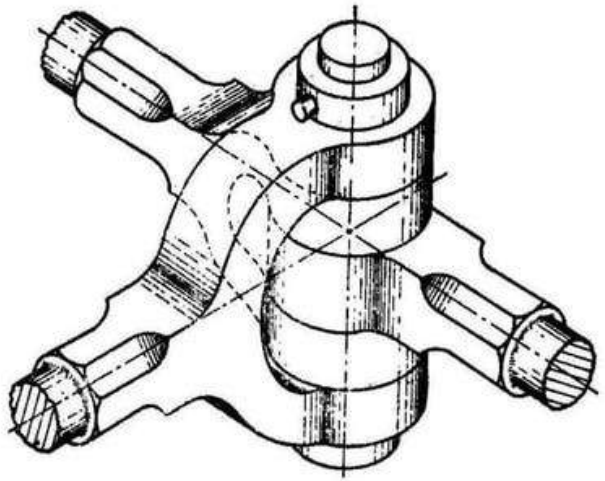
UNIT: III

Cotter Joints



Knuckle Joint

- Two or more rods subjected to tensile and compressive forces are fastened together
- Their axes are not in alignments but meet in a point
- The joint allows a small angular moment of one rod relative to another
- It can be easily connected and disconnected
- Applications: Elevator chains, valve rods, etc



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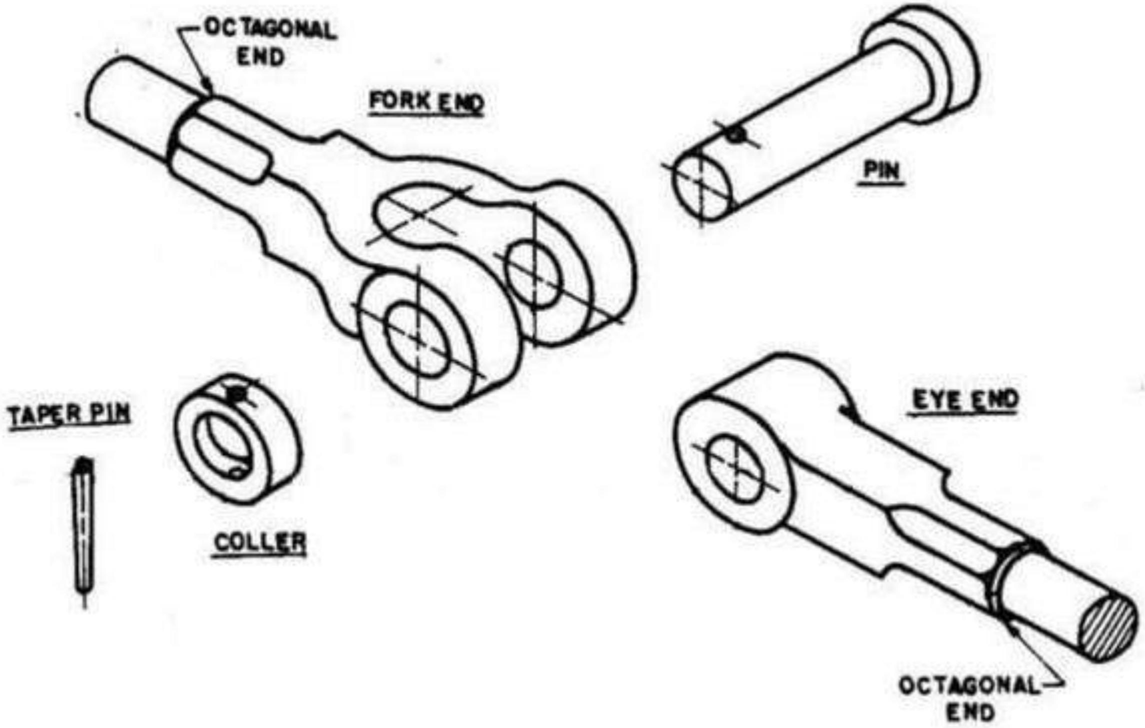
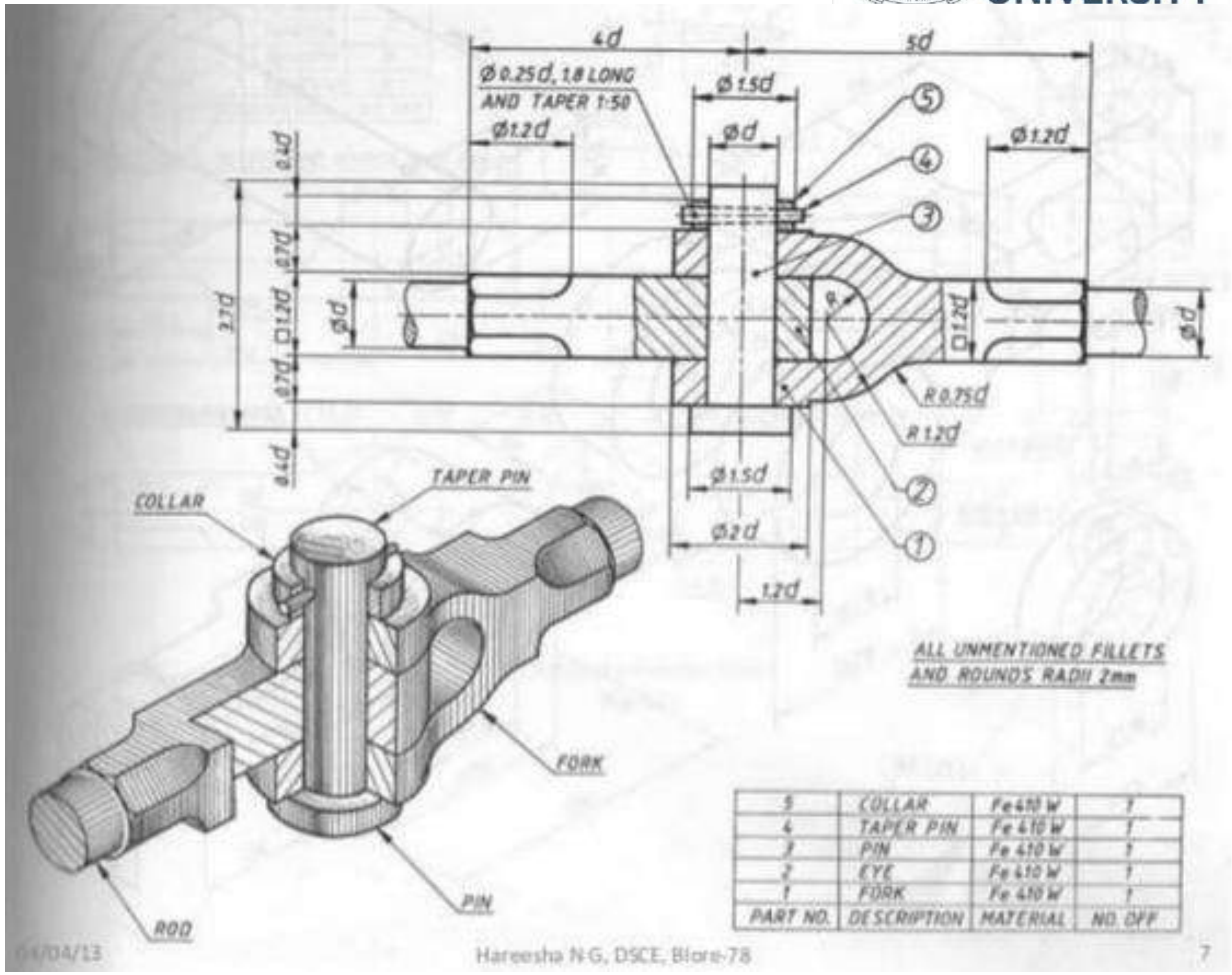
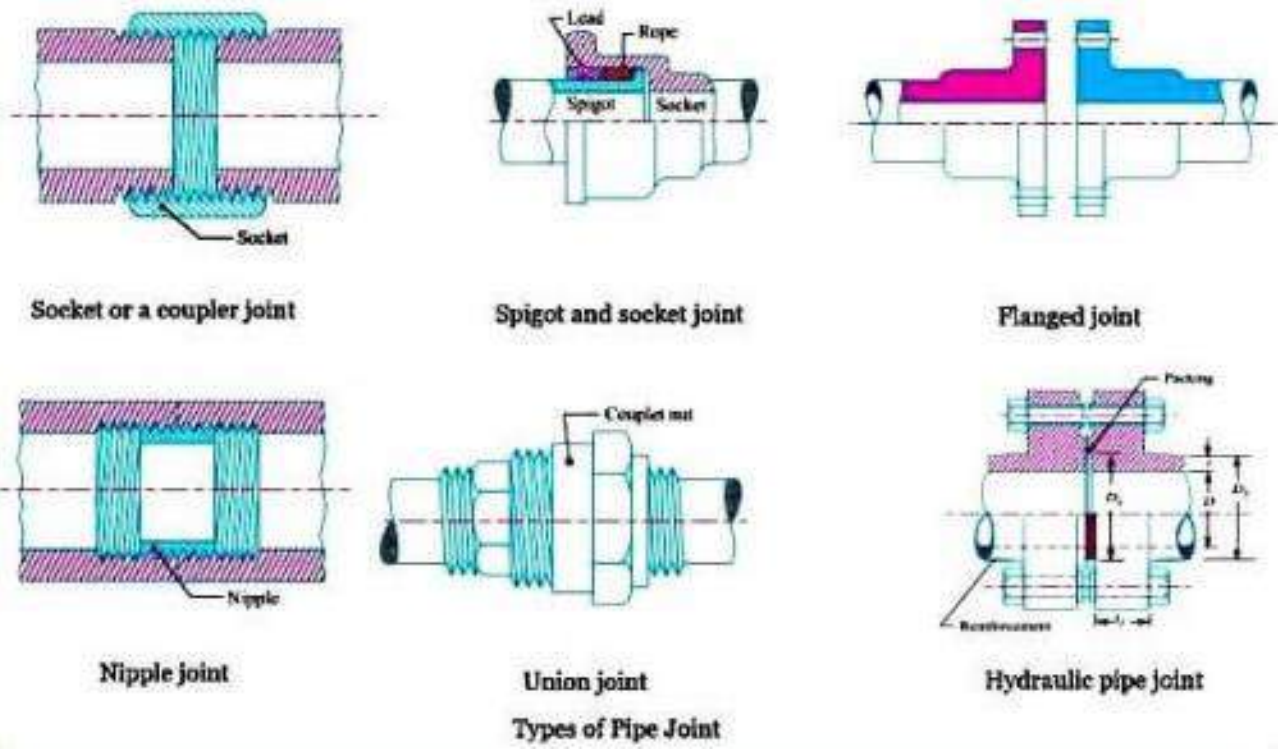




PART NO.	DESCRIPTION	MATERIAL	NO. OFF
5	COLLAR	Fe410 W	1
4	TAPER PIN	Fe 410 W	1
3	PIN	Fe 410 W	1
2	EYE	Fe 410 W	1
1	FORK	Fe 410 W	1

UNIT: III

Pipe and Pipe Joints



Socket or a coupler joint

Spigot and socket joint

Flanged joint

Nipple joint

Union joint

Hydraulic pipe joint

Types of Pipe Joint

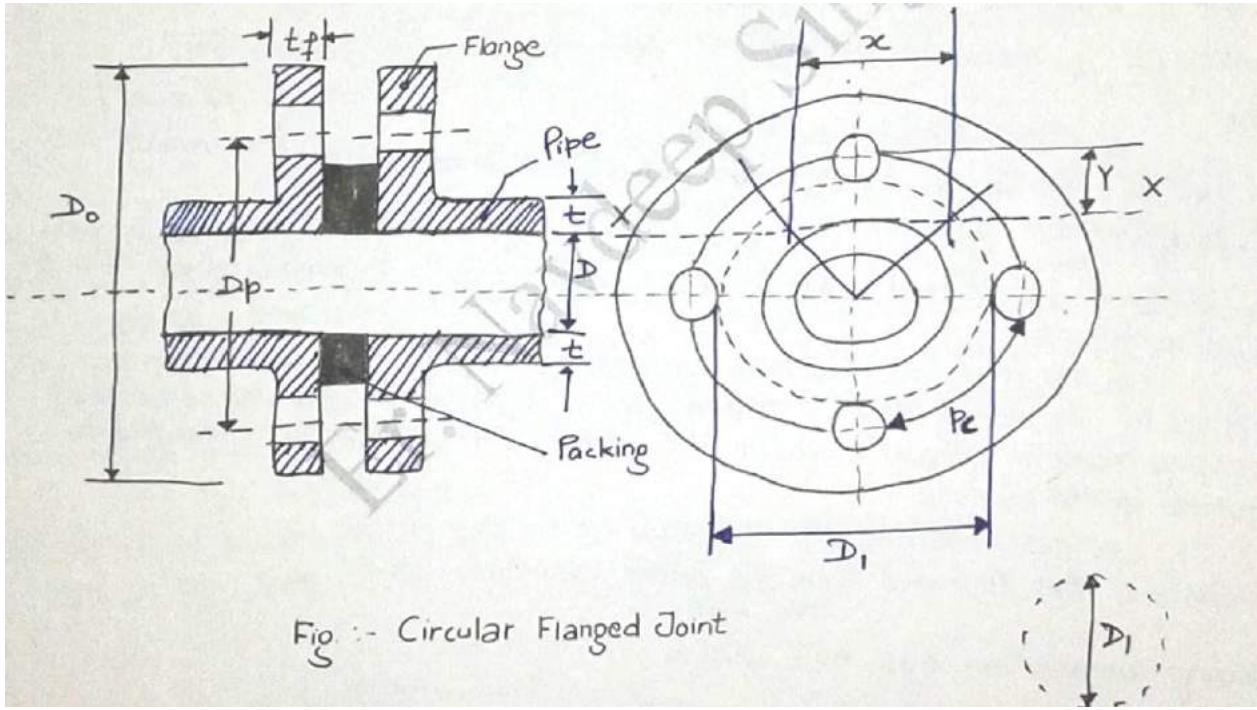
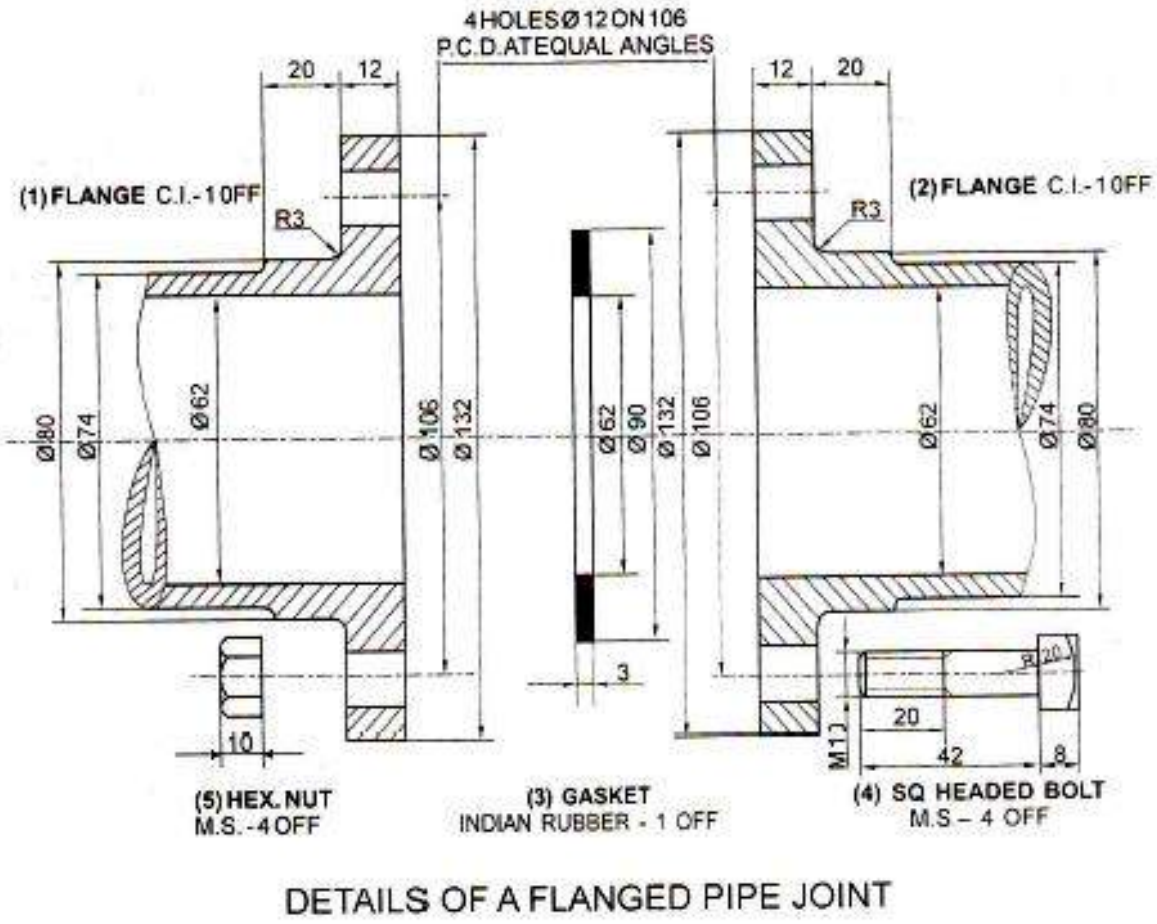


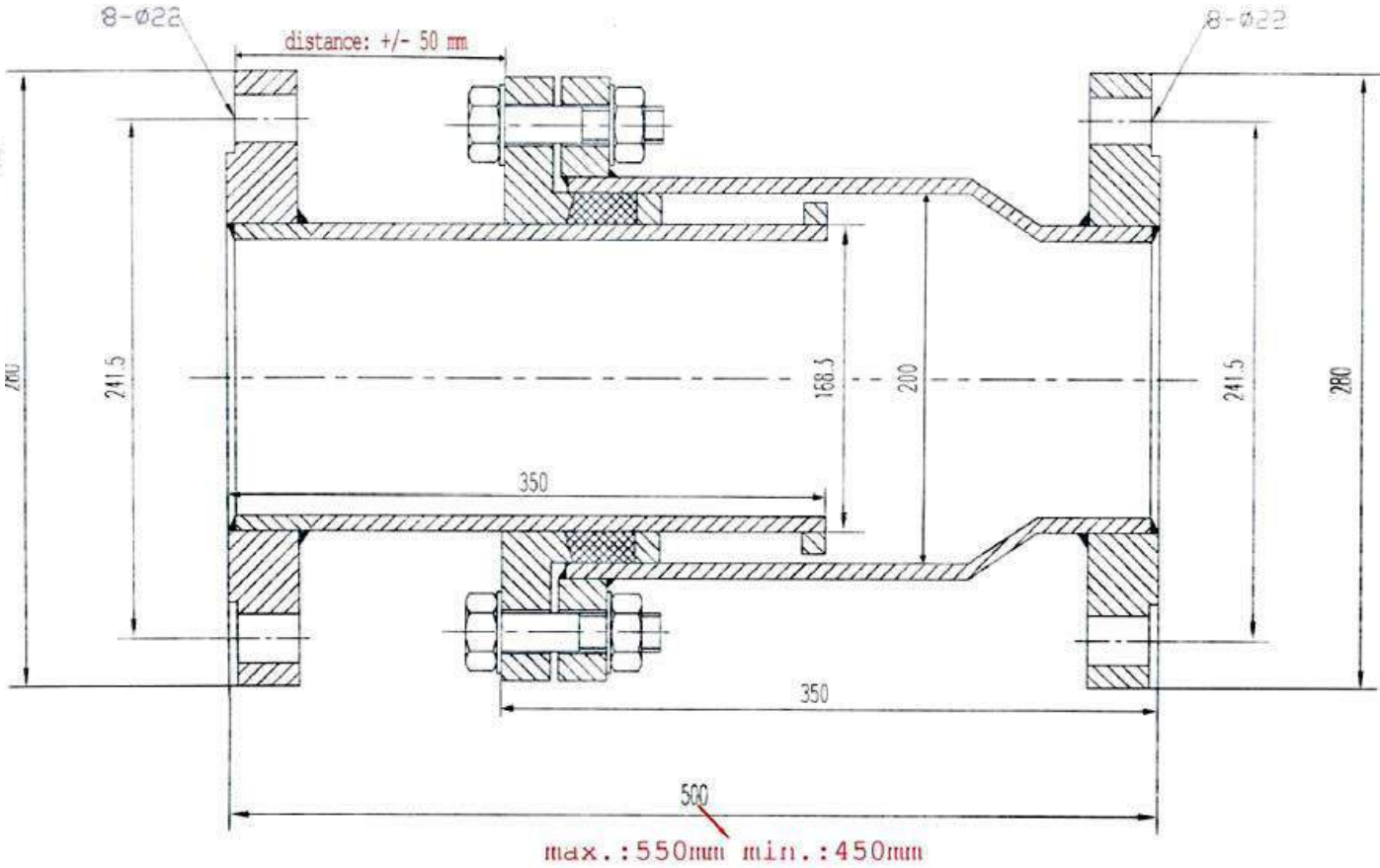
Fig :- Circular Flanged Joint

UNIT: III

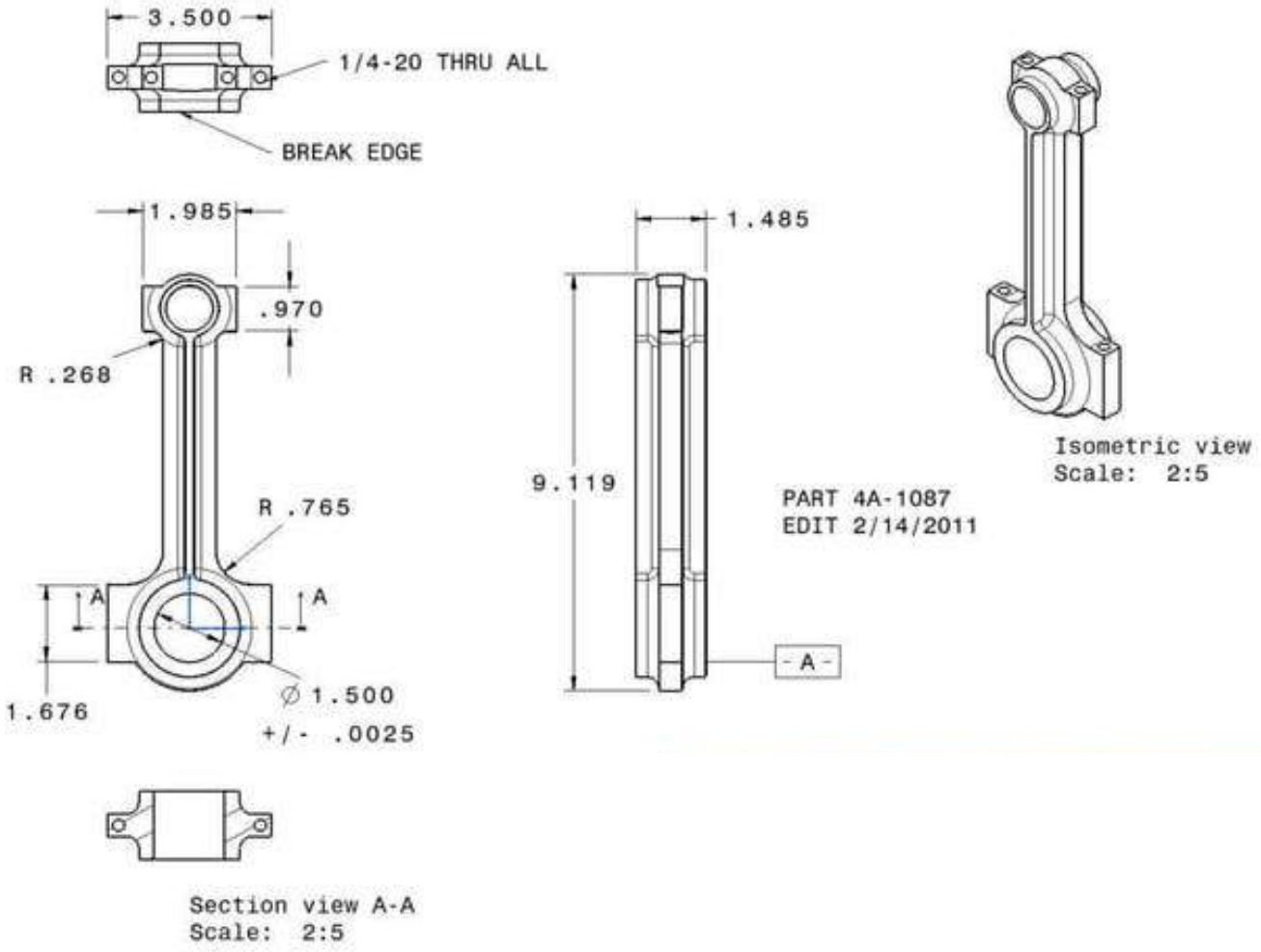
Pipe and Pipe Joints



DETAILS OF A FLANGED PIPE JOINT

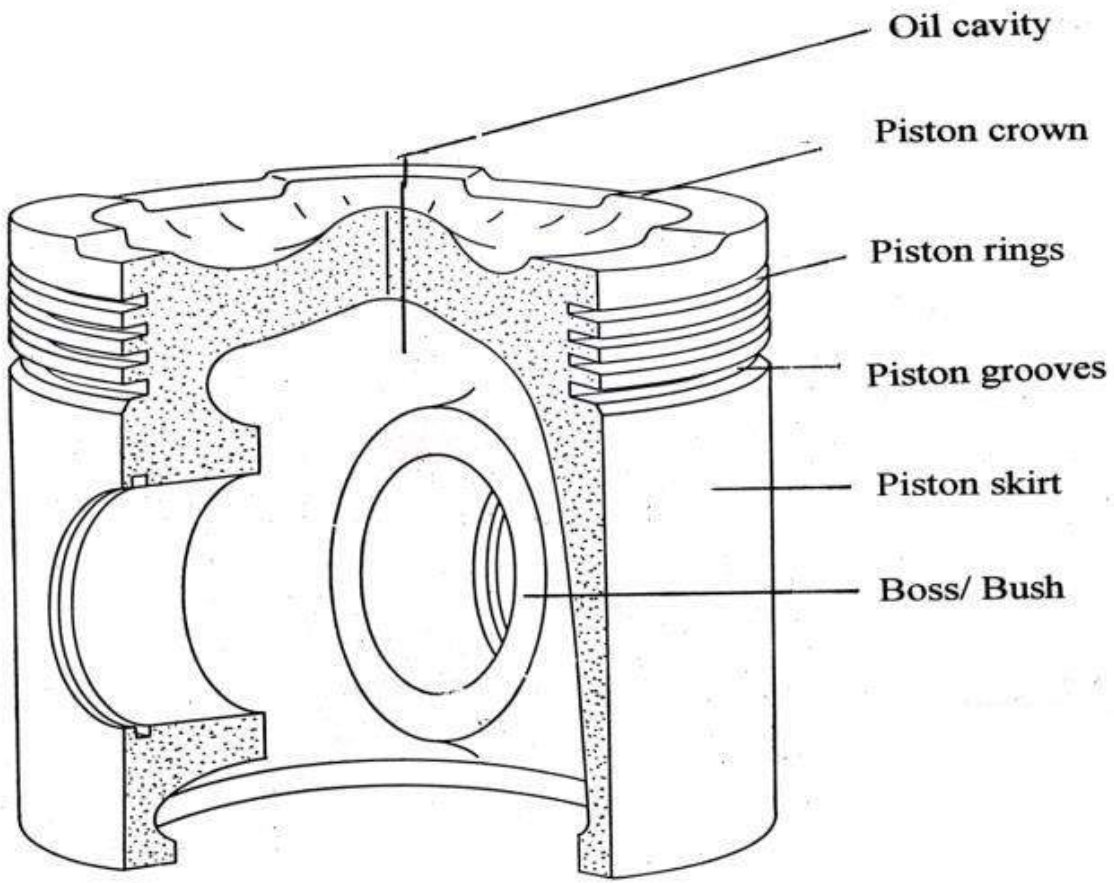


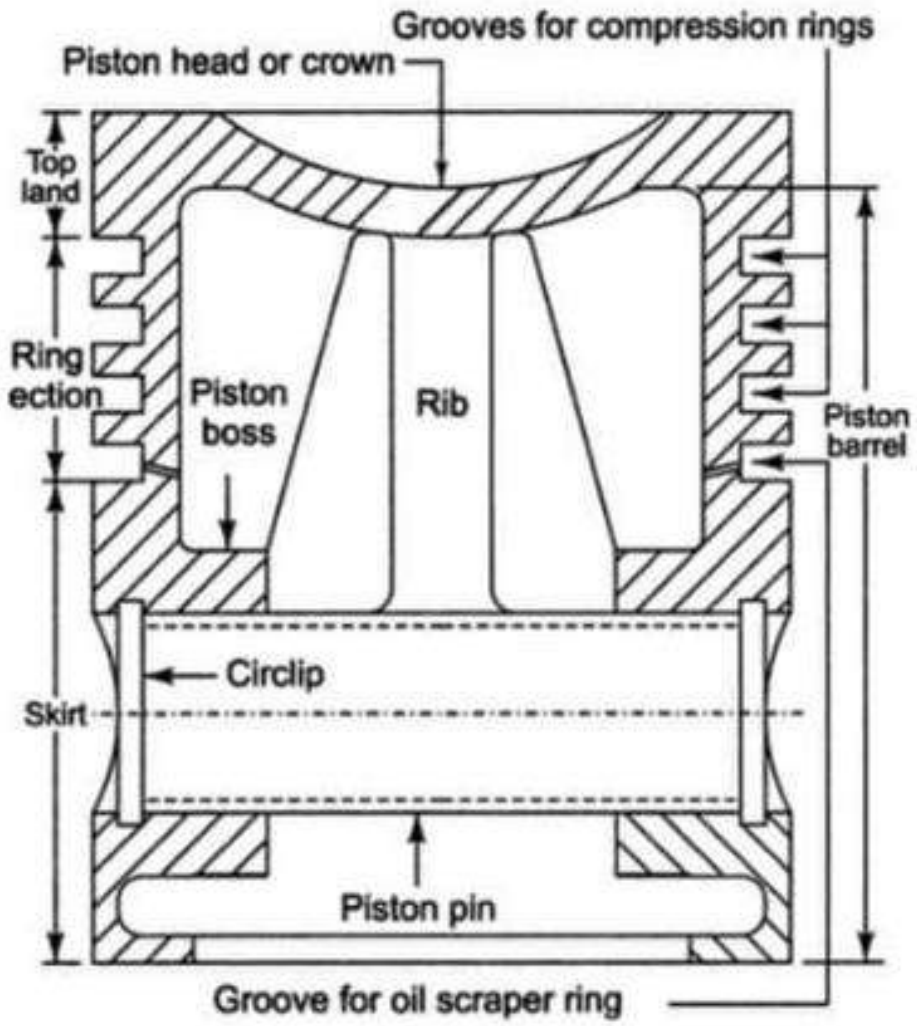
Connecting rod



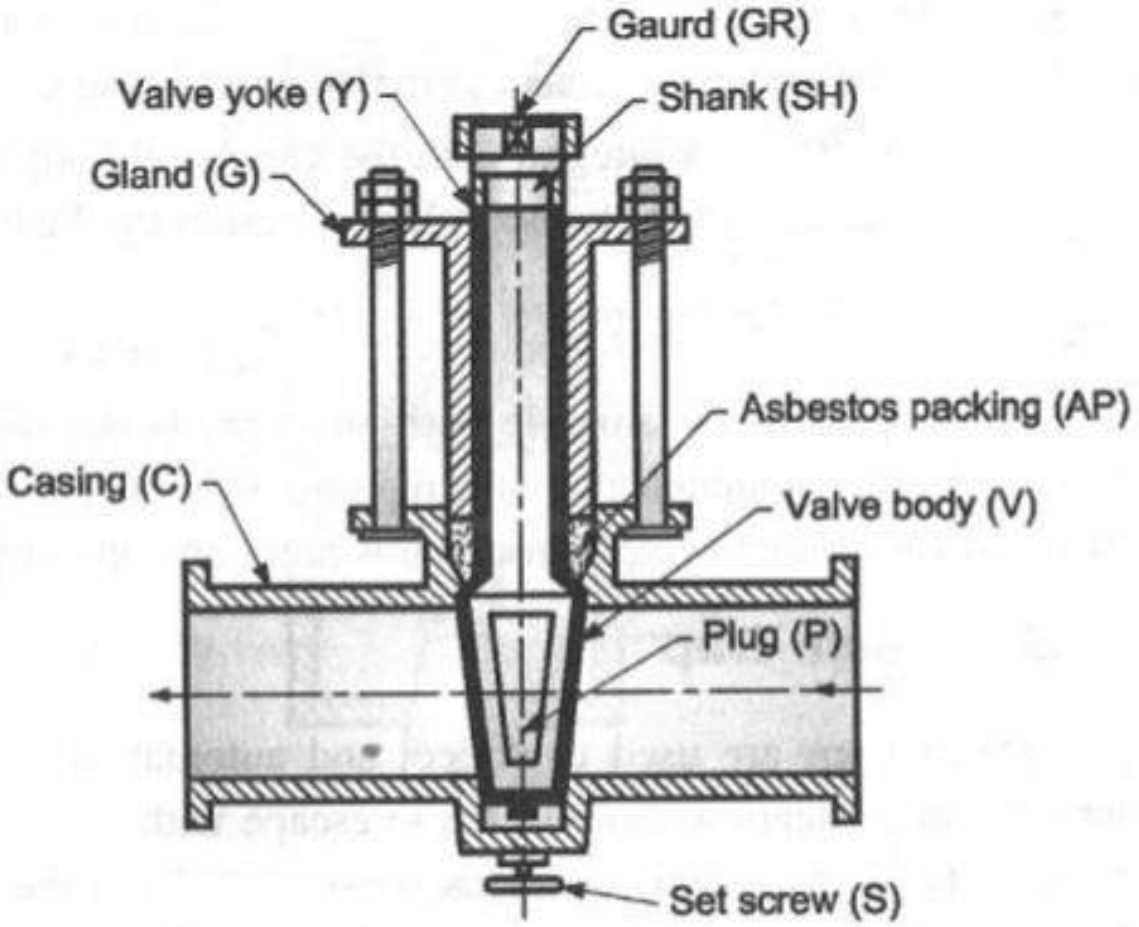
UNIT: III

Piston

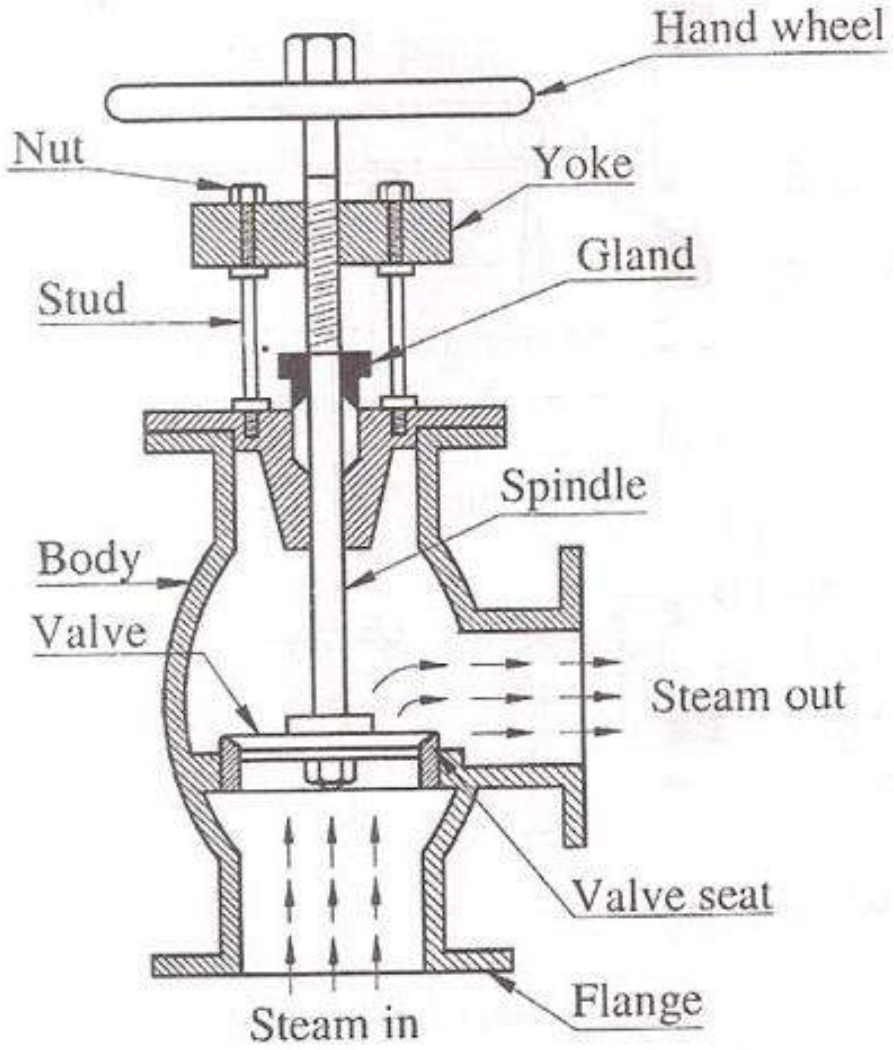




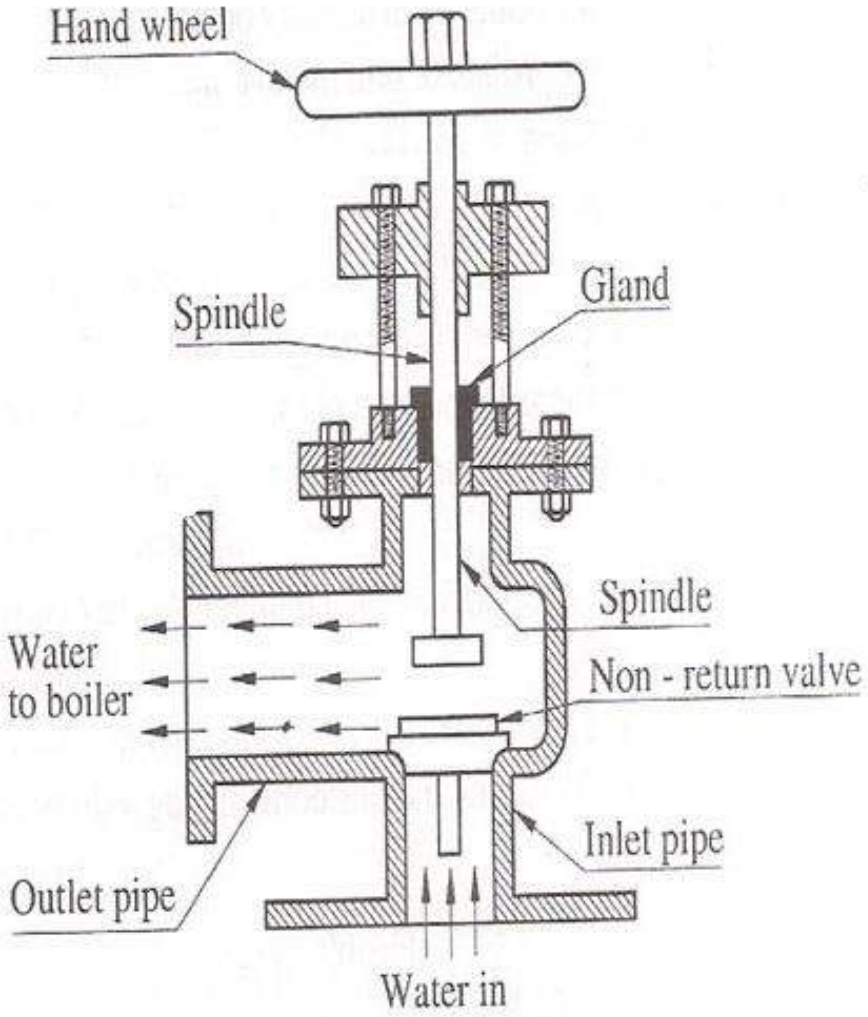
Blow off Cock



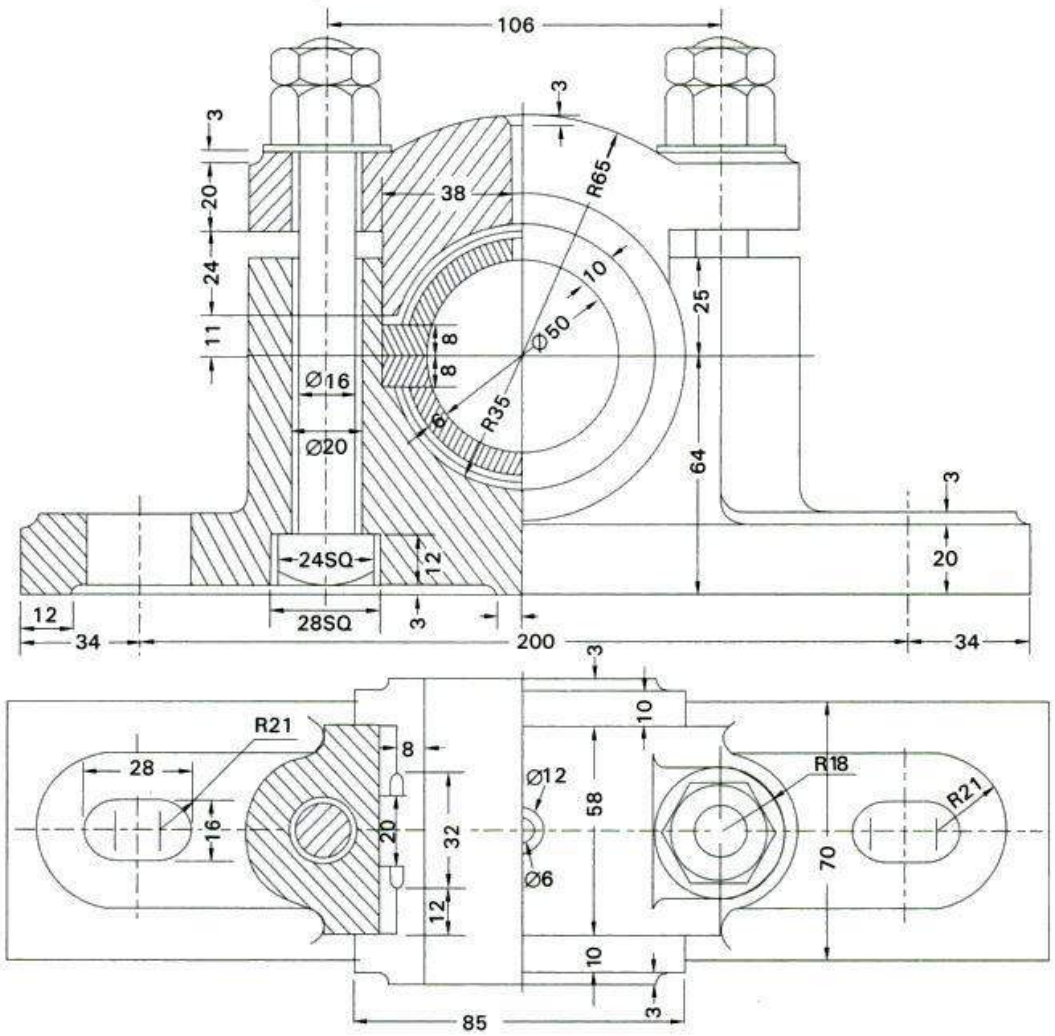
Steam stop valve

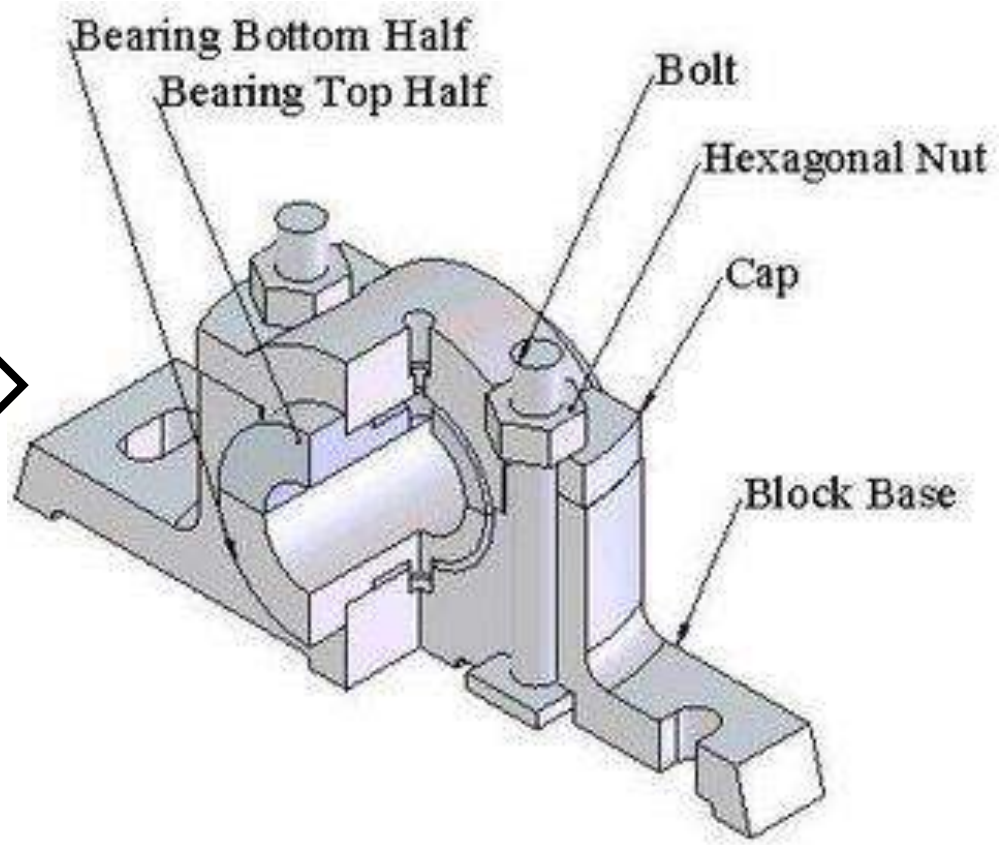


Feed check valve



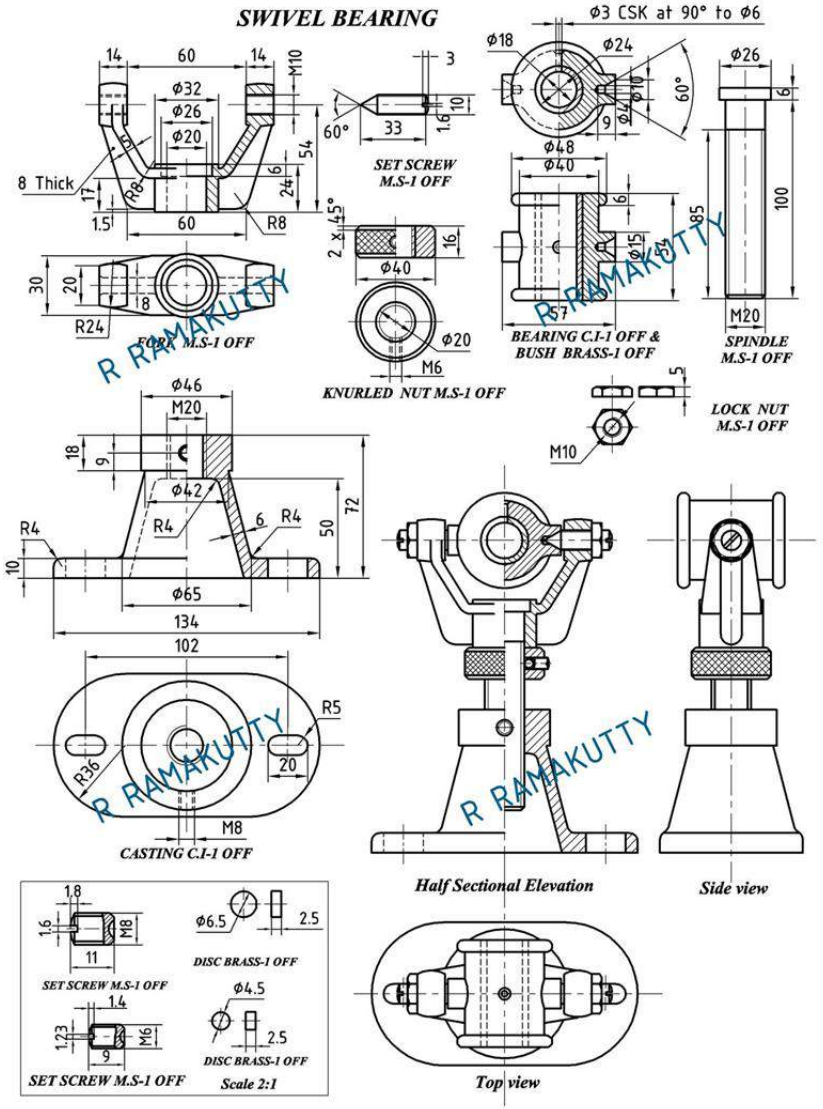
Plummer block

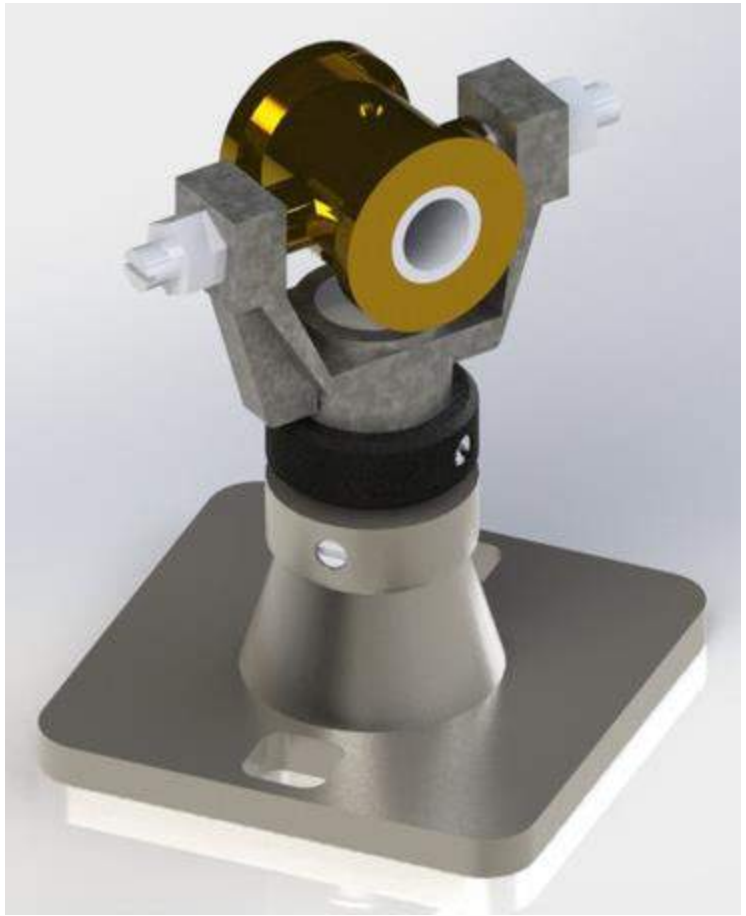




UNIT: III

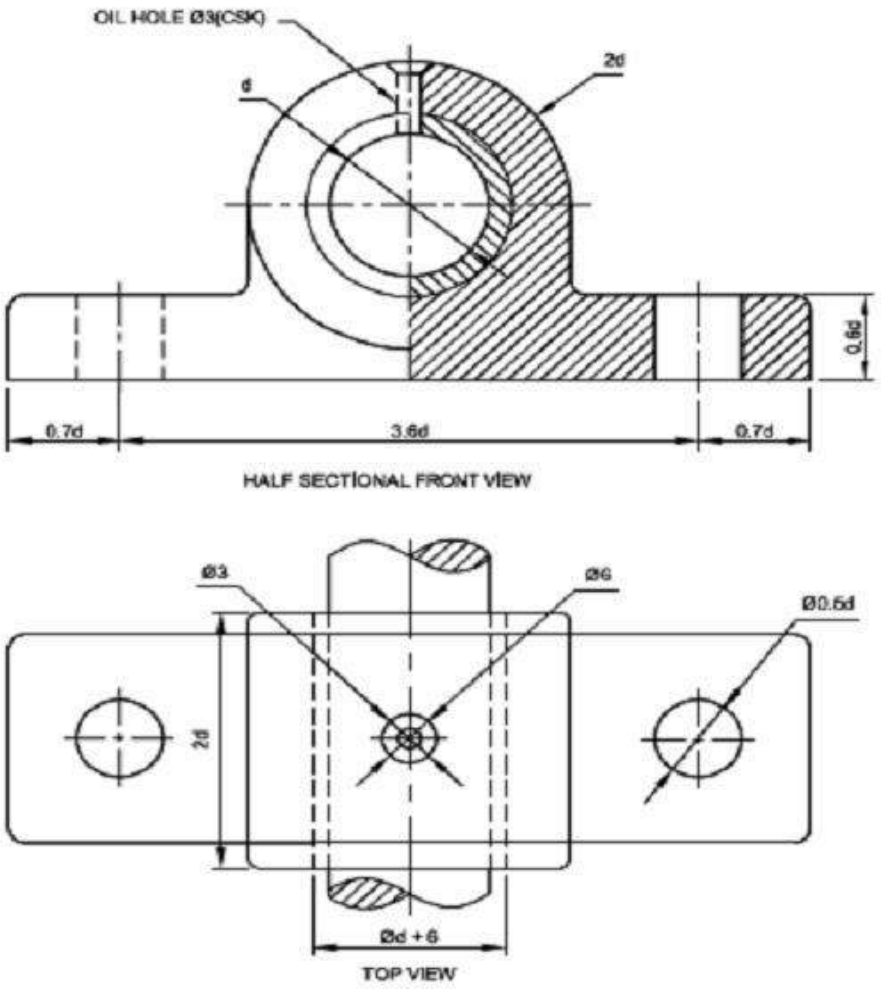
Swivel Bearing

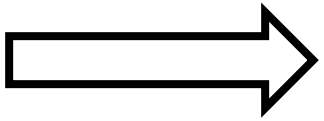


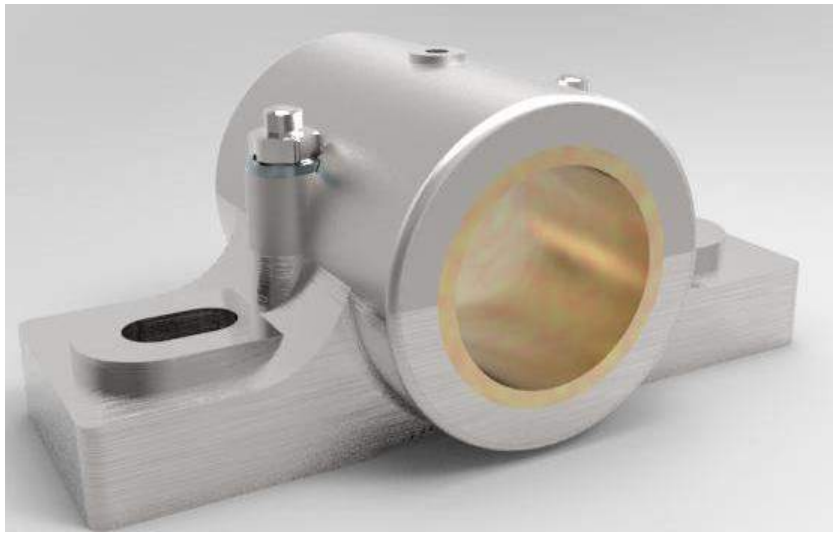


UNIT: III

Journal bearing

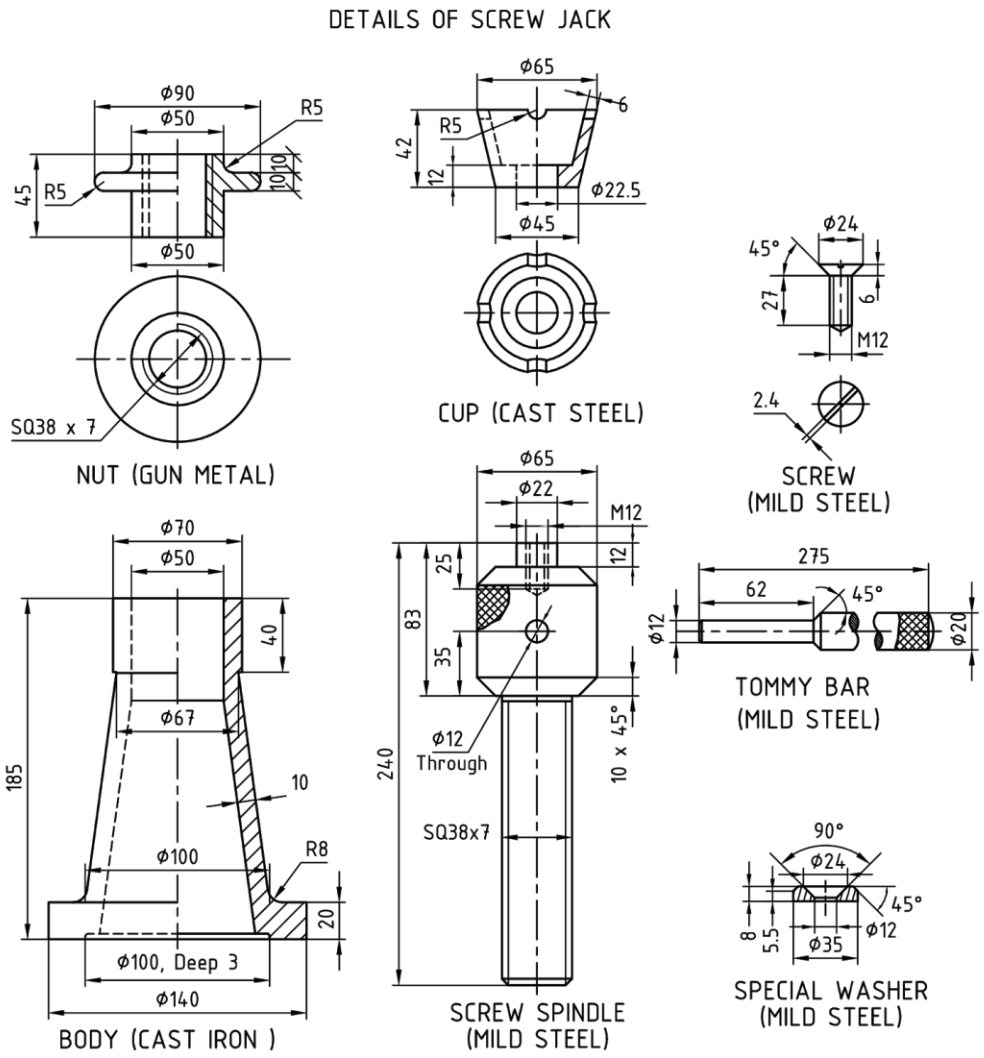






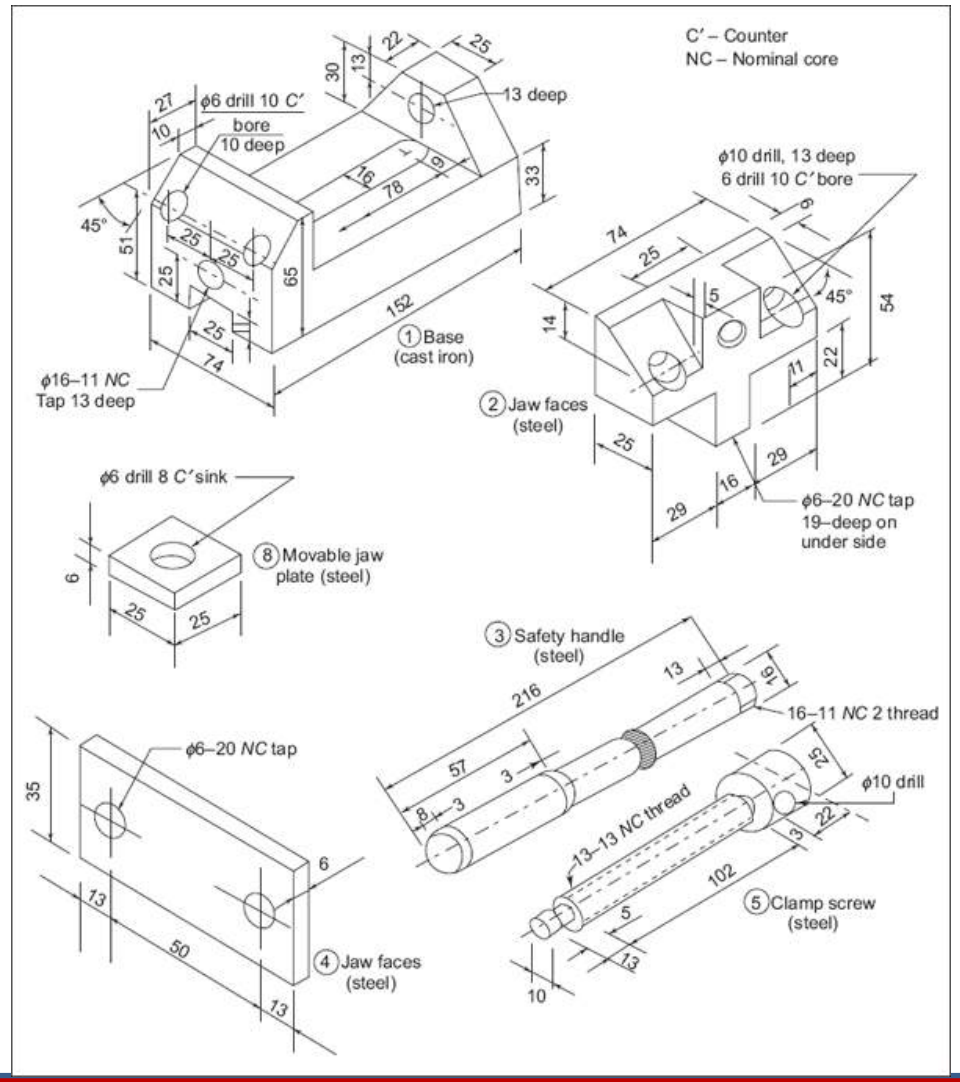
UNIT: III

Screw Jack



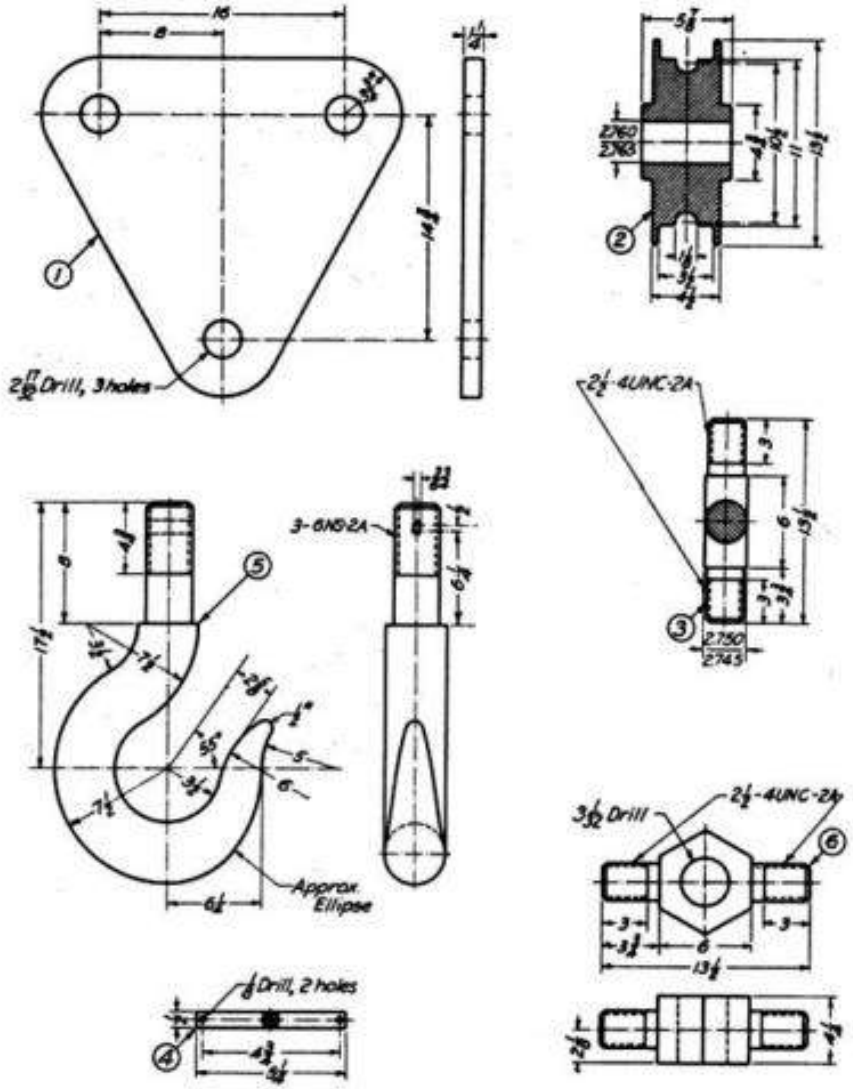
UNIT: III

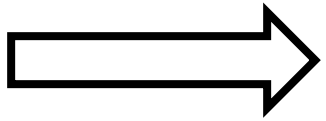
Drill Jig



UNIT: III

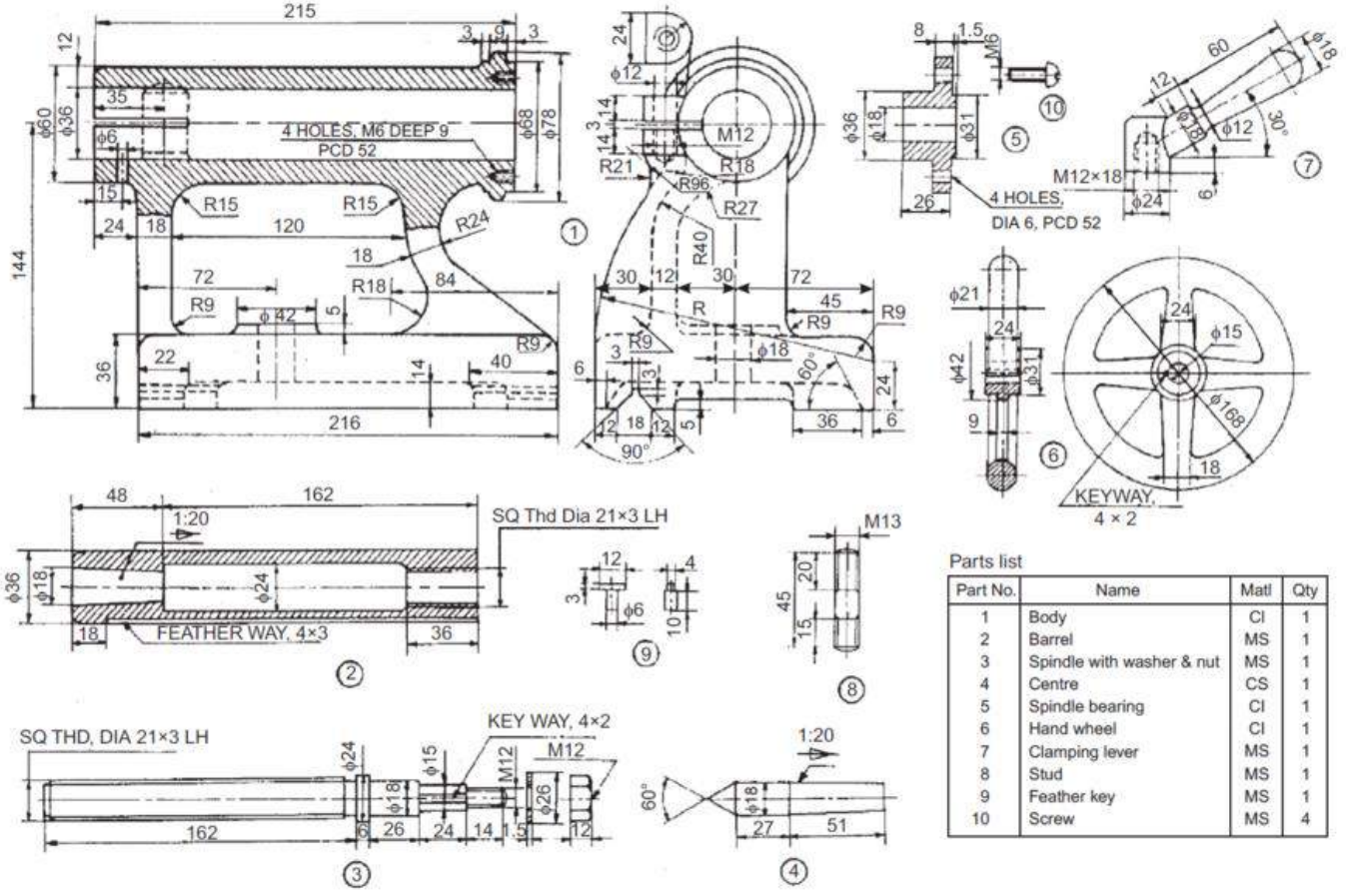
Crane Hook





UNIT: III

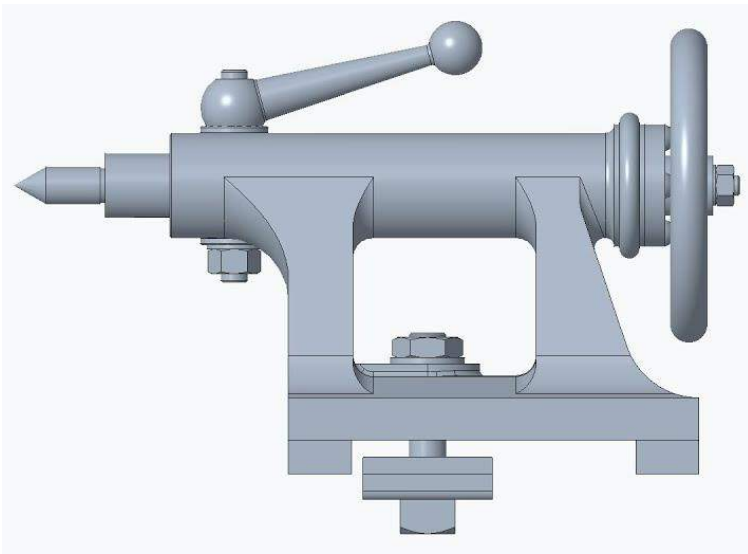
Tail stock



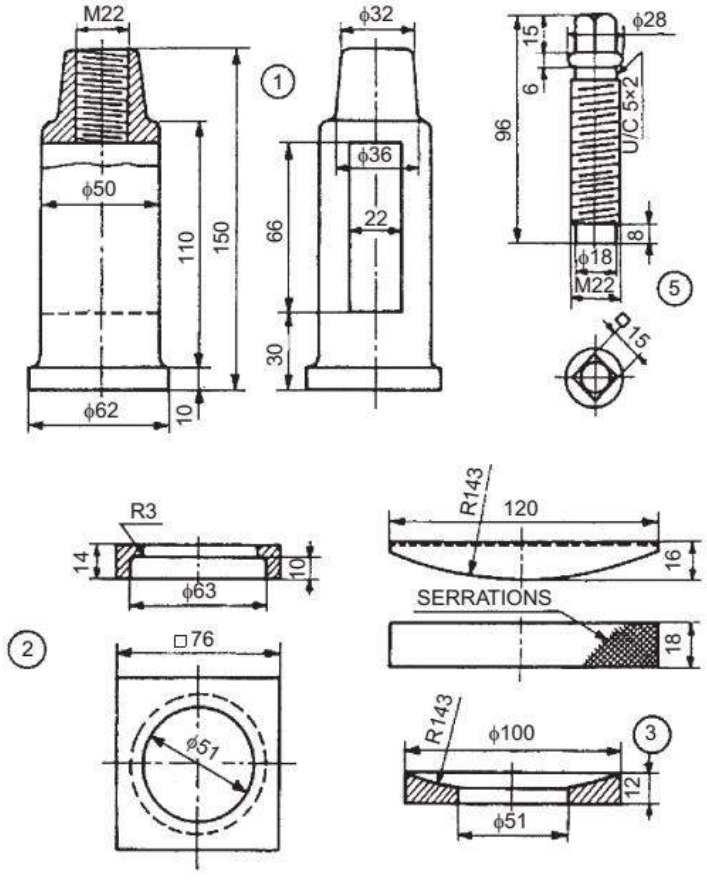
Parts list

Part No.	Name	Matl	Qty
1	Body	CI	1
2	Barrel	MS	1
3	Spindle with washer & nut	MS	1
4	Centre	CS	1
5	Spindle bearing	CI	1
6	Hand wheel	CI	1
7	Clamping lever	MS	1
8	Stud	MS	1
9	Feather key	MS	1
10	Screw	MS	4

Fig. 18.18 Lathe tail-stock



Tail post



Parts list

No.	Name	Matl	Qty
1	Piller	MCS	1
2	Block	MCS	1
3	Ring	MS	1
4	Wedge	MCS	1
5	Screw	TS	1