MACHINE DRAWING

(A8311)

Regulations: R22

Department of

MECHANICAL ENGINEERING

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Experiment 7

Experiment 7
Modeling of Stuffing Box Components

1. Description

Stuffing Box

It is used to prevent loss of fluid such as steam, between sliding or turning parts of machine elements. In a steam engine, when the piston rod reciprocates through the cylinder cover; stuffing box provided in the cylinder cover, prevents leakage of steam from the cylinder.

Figures shows the various parts of a stuffing box. At the base of stuffing box body 1, a bush 3 is placed such that the bevelled edge of the bush is at the inner side of the body. Gland 2 is placed at the other end of the body and is connected to the main body by means of studs 4 and nuts 5. The space between the reciprocating rod and the bush and the gland is packed with a packing material such as mineral fibres, leather, rubber or cork.

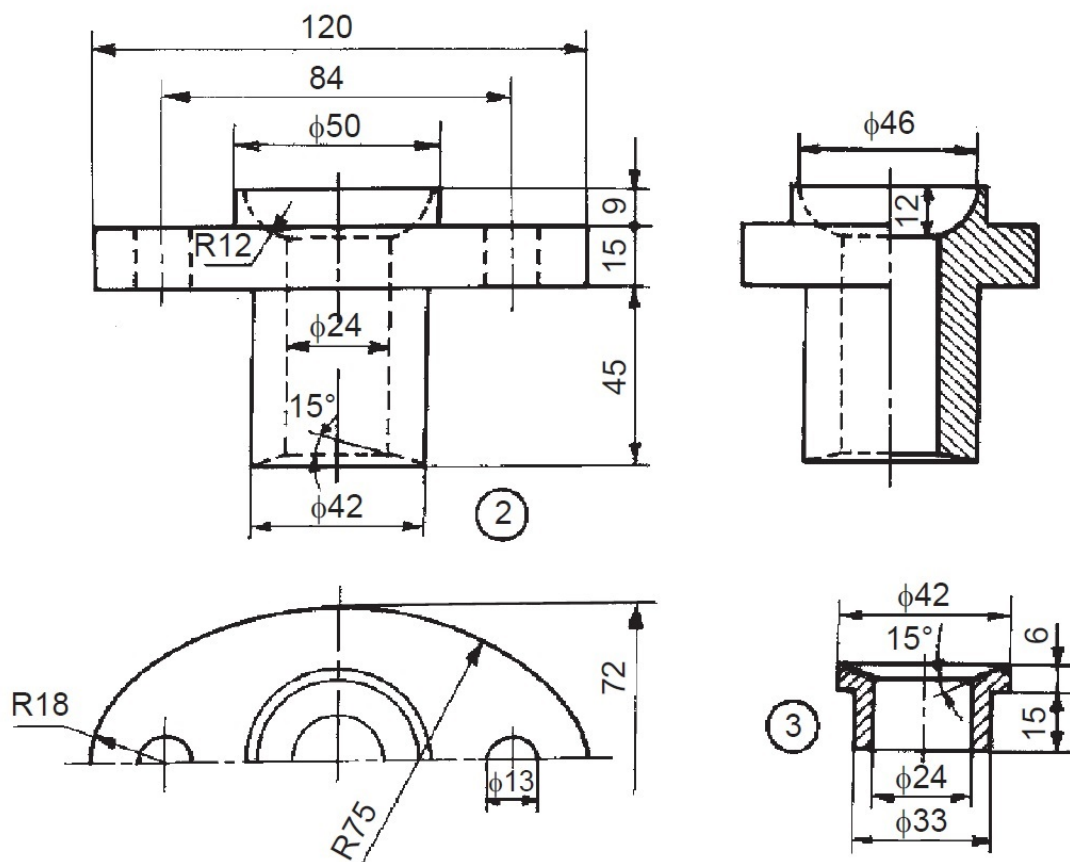## 2. Model the components of Stuffing Box in FUSION 360
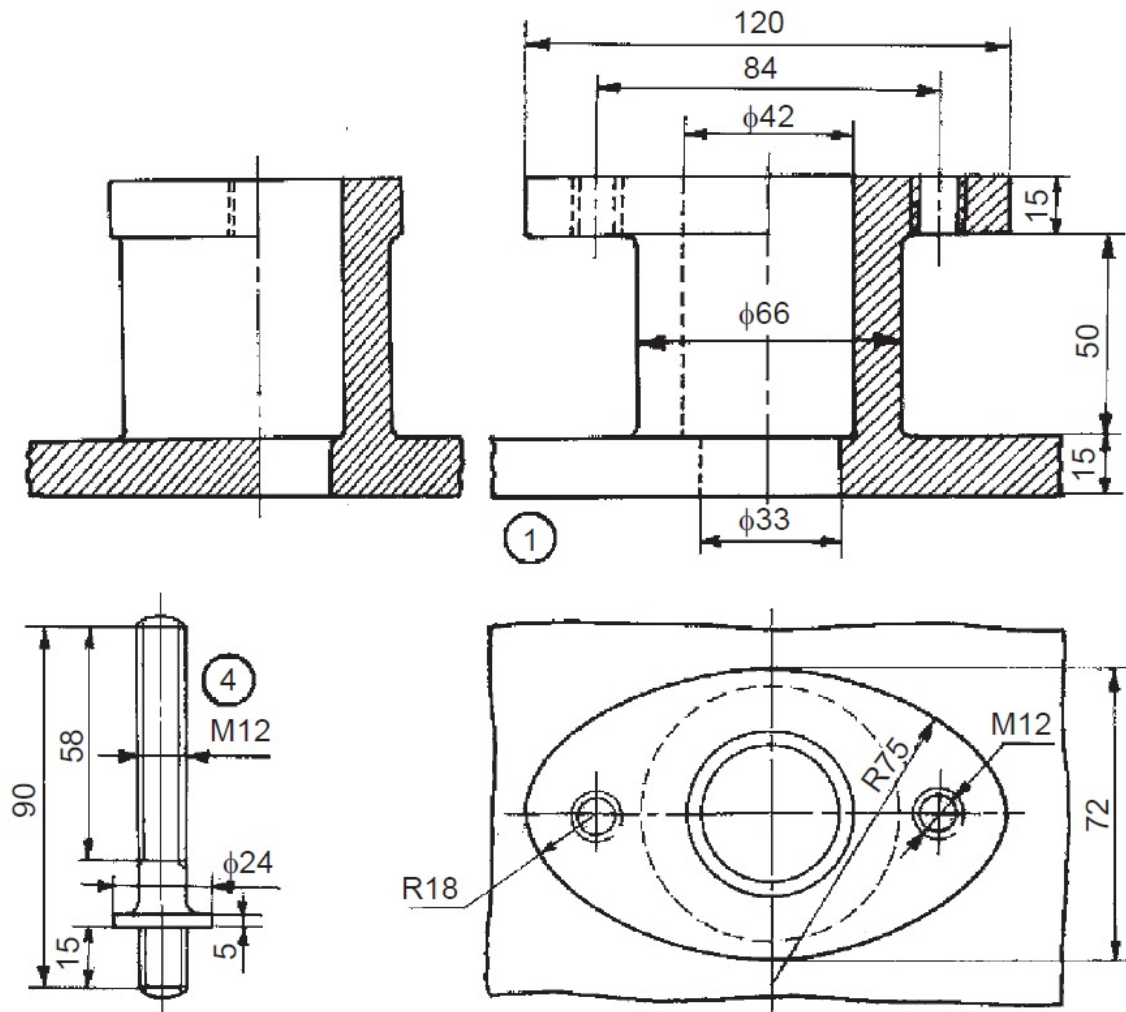

Fig.1 (2) Gland (3) Bush

Fig.2 (1) Body (4) Stud

3. Parts List

Part No.	Name of the Component	Material	Quantity
1	Body	CI	1
2	Gland	Brass	1
3	Stud	Brass	1
4	Stud	MS	2
5	Nut, M12	MS	2

Experiment 8

Experiment 8

Modeling of Screw Jack Components

1. Description

Screw Jack

Screw jacks are used for raising heavy loads through very small heights. Figures shows the details of one type of screw jack. In this, the screw 3 works in the nut 2 which is press fitted into the main body 1. The tommy bar 7 is inserted into a hole through the enlarged head of the screw and when this is turned, the screw will move up or down, thereby raising or lowering the load.
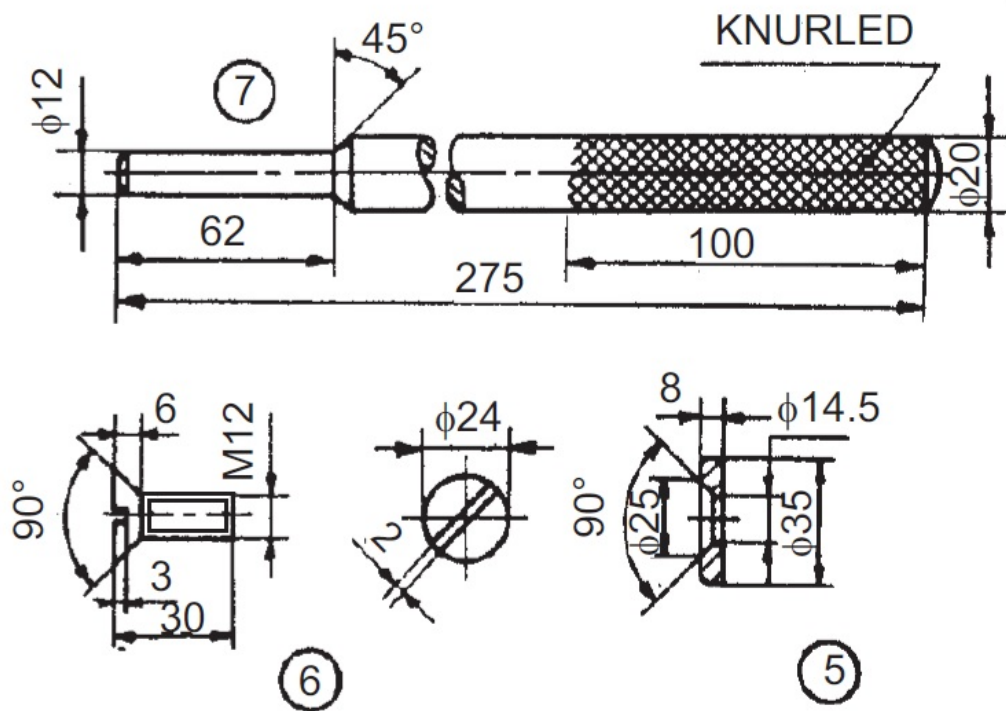
2. Model the components of Screw Jack in FUSION 360

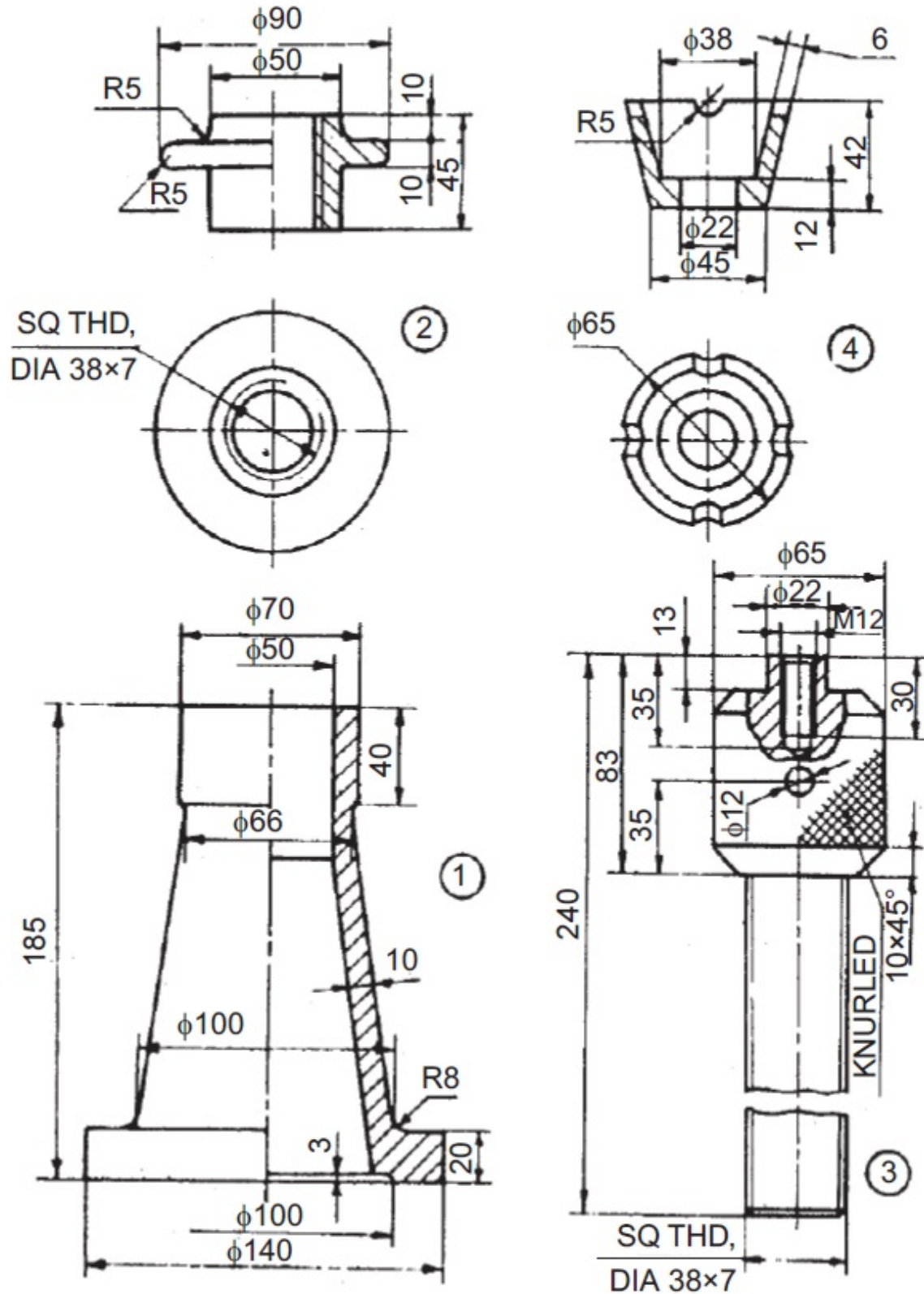Fig.1 (5) Washer (6) Screw (7) Tommy Bar

Fig.2 (1) Body (2) Nut (3) Screw (4) Cup

3. Parts List

Part No.	Name of the Component	Material	Quantity
1	Body	CI	1
2	Nut	GM	1
3	Screw	MS	1
4	Cup	CS	1
5	Washer	MS	1
6	Screw	MS	1
7	Tommy Bar	MS	1

Experiment 9

Experiment 9

Modeling of Non-Return Valve Components

1. Description

Non-Return Valve

Valve is a device used for regulating the flow of fluid. In the non-return valve, the pressure of the fluid allows the flow in one direction only.

When the inlet pressure of the fluid is greater than the pressure at the top of the valve, it gets lifted and allows the fluid to flow past. However, as the fluid pressure builds-up more at the top; the flow ceases and the fluid will not be permitted in the reverse direction, due to shutting of the valve automatically. It is used in boiler feed water system.

Figures shows the details of a non-return valve. The fluid enters at the bottom of the valve and leaves from the side. It consists of a body 1 with flanges at right angle, for the purpose of mounting the same. The valve seat 3 is introduced into the body from top and secured in place by set-screw 6. The valve 4 is also introduced from top and located in the valve seat. The valve seat allows free sliding of the valve in it. The studs 5 are first screwed into the body and after placing the cover 2, it is tightened with nuts.

As water with pressure enters at the bottom of the valve, the valve gets lifted in the valve seat, allowing free flow of water through the exit. However, the amount of lift of the valve is controlled by the cover.

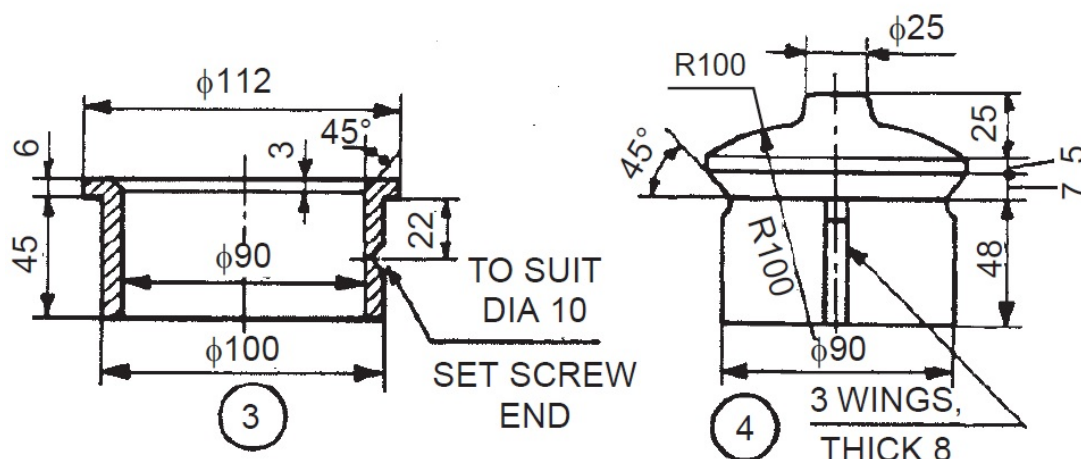### 2. Model the components of Non-Return Valve in FUSION 360
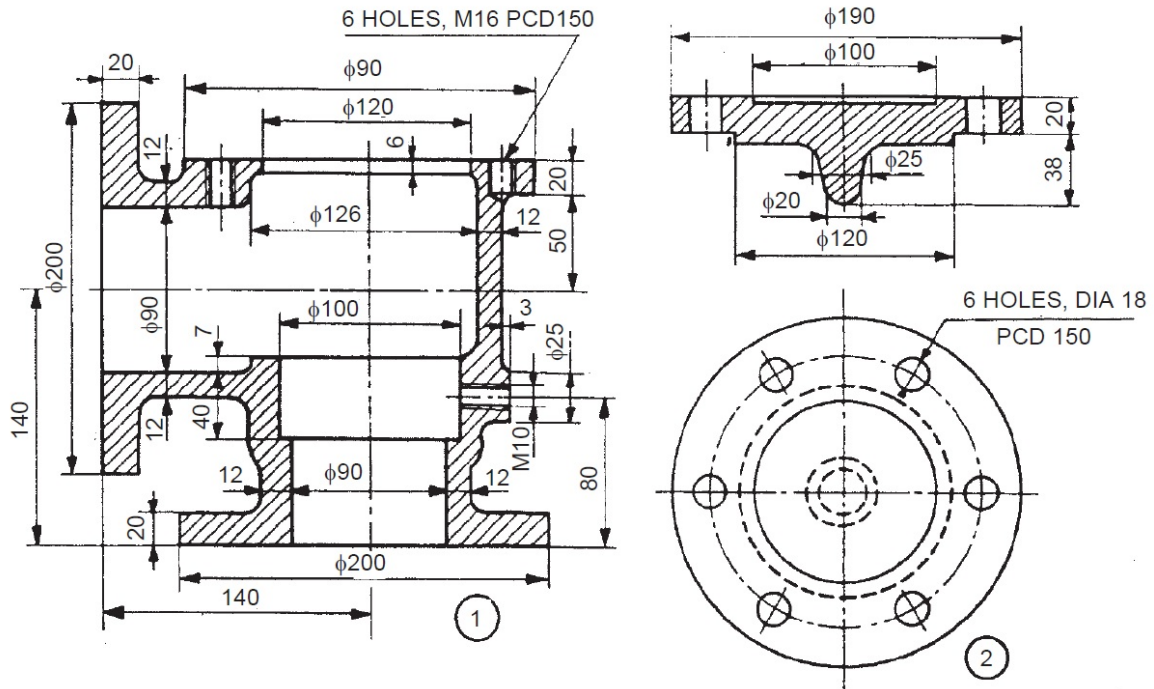

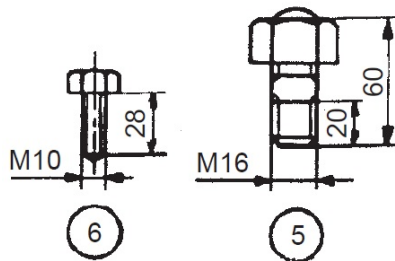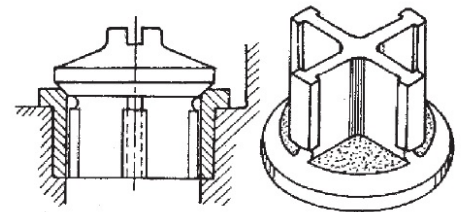Fig.1 (3) Valve Seat (4) Valve

Fig.2 (1) Body (2) Cover

Valve and the Seat

Fig.3 (5) Stud with Nut (6) Set Screw

3. Parts List

Part No.	Name of the Component	Material	Quantity
1	Body	Brass	1
2	Cover	Brass	1
3	Valve Seat	Bronze	1
4	Valve	Brass	1
5	Stud with Nut	MS	6
6	Set Screw	MS	1