Bài tập lớn AutoCAD - 2013

Yêu cầu:

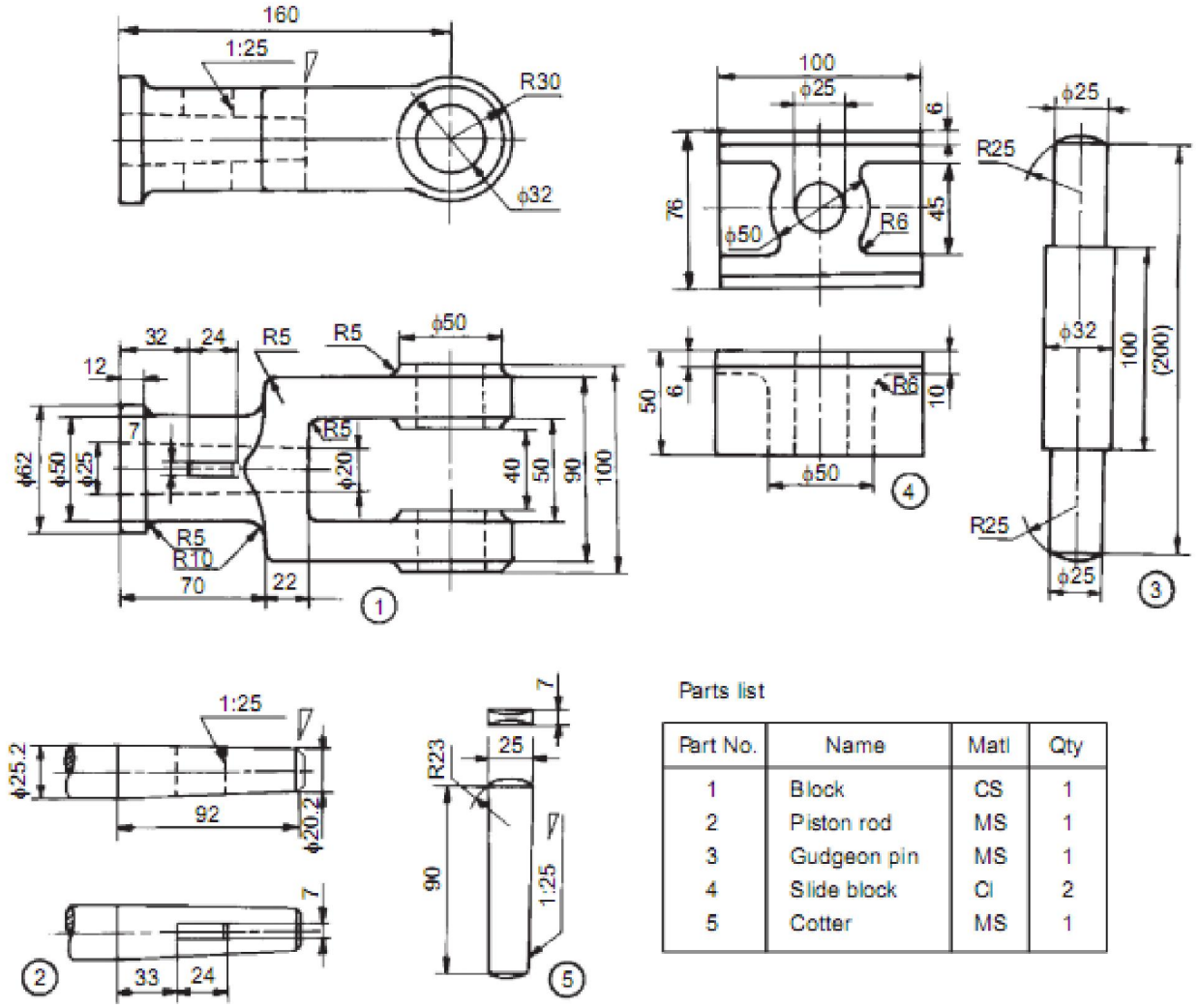
+ Nội dung:

- Xây dựng mô hình 3D cho các chi tiết.
- Lắp ráp các chi tiết với nhau.
- Tạo các hình chiếu hình cắt cho cụm lắp ráp.
- Ghi kích thước cho bản vẽ.

+ Hình thức:

- Nhóm trưởng gửi email báo cáo hàng tuần cho giảng viên trước 24h so với buổi thực hành của nhóm. Tên file: CAD-Nhom0X-BTL-0Y.dwg (X = số nhóm, Y = Lần gửi).
- Thời hạn từ : 5/11 đến 10h00 ngày 5/12/2013.
- Bài nộp cuối cùng gồm: File Bản vẽ yêu cầu, và File In khổ giấy A3.
- Nếu không thực hiện bài tập lớn sẽ không được thi.
- Nhóm trưởng theo dõi, phân chia công việc cho các nhóm viên. Nếu nhóm viên không làm có thể báo cáo cho giảng viên và loại bỏ nhóm viên ra khỏi nhóm.

Đề 1:



Parts list

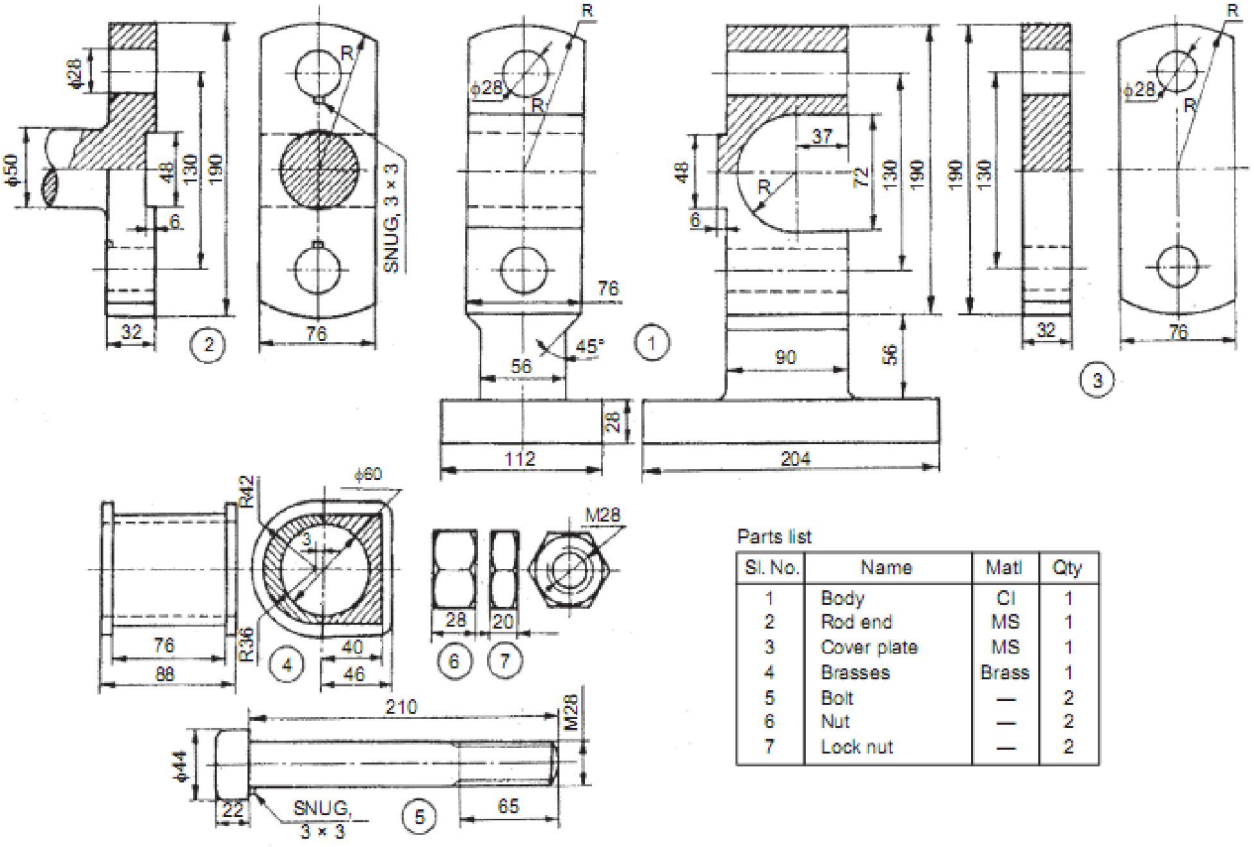
Part No.	Name	Matl	Qty
1	Block	CS	1
2	Piston rod	MS	1
3	Gudgeon pin	MS	1
4	Slide block	CI	2
5	Cotter	MS	1

Fig. 18.2 Steam engine crosshead

Crosshead is used in horizontal steam engines for connecting the piston rod and connecting rod Figure 18.2 shows the part drawings of a steam engine crosshead. The crosshead, with the help of slide block 4, reciprocates between two guides provided in the engine frame. The gudgeon pin 3 connects the slide blocks with the crosshead block 1. This acts as a pin joint for the connecting rod (not shown in figure). The piston rod 2 is secured to the crosshead block by means of the cotter 5 The assembly ensures reciprocating motion along a straight line for the piston rod and reciprocating cum oscillatory motion for the connecting rod.

Đề 2:

Figure 18.3 shows the details of another type of steam engine crosshead. It consists of a body or slide block 1, which slides in-between parallel guides in the frame of the engine. The piston rod end 2 is fitted to the crosshead with the help of bolts 5 and nuts 6 and 7 after placing the brasses 4, and cover plate 3 in position.

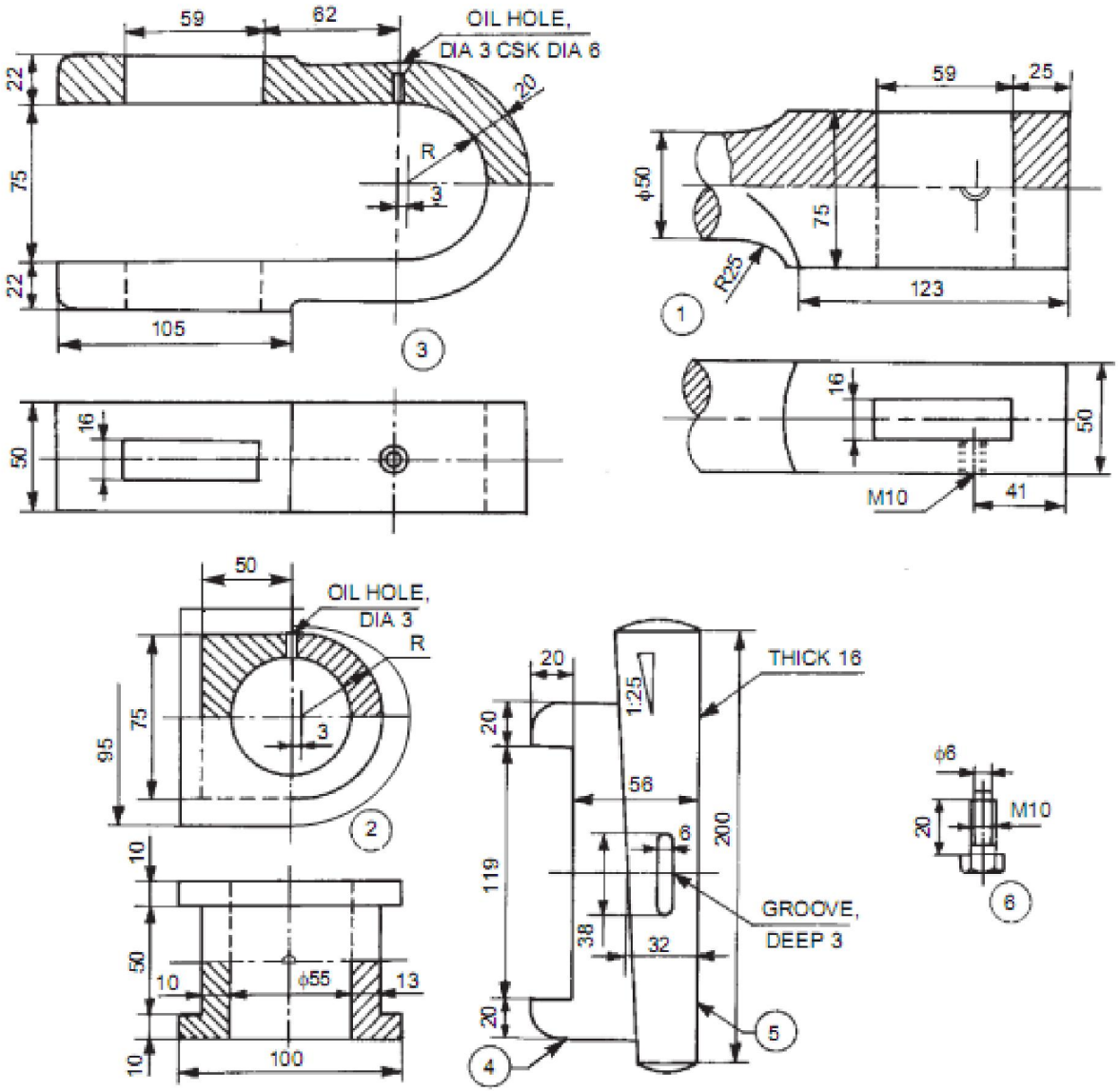


Parts list

Sl. No.	Name	Matl	Qty
1	Body	CI	1
2	Rod end	MS	1
3	Cover plate	MS	1
4	Brasses	Brass	1
5	Bolt	—	2
6	Nut	—	2
7	Lock nut	—	2

Fig. 18.3 Crosshead

Đề 3:



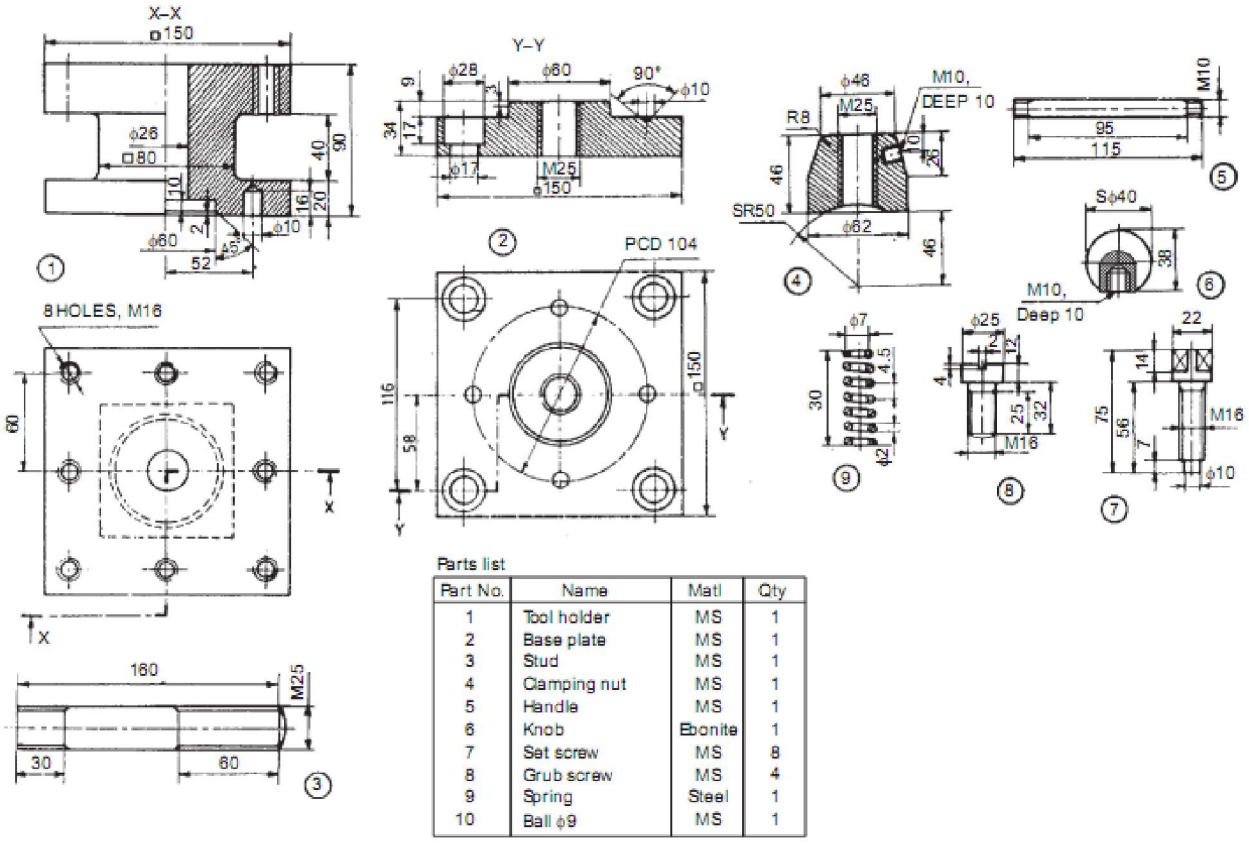
Parts list

Sl. No.	Name	Matl.	Qty.
1	Connecting rod	FS	1
2	Brasses	GM	2
3	Strap	MS	1
4	Jib	MS	1
5	Cotter	MCS	1
6	Set screw	MCS	1

Marine engines are used to produce high power and as such all the parts of the engine are sturdy and strong. The part drawings of a marine engine connecting rod end are shown in Fig. 18.5. It consists of two halves of the bearing brasses 3, which are placed around the crank pin. The cover end 2 and the rod end 1 are placed in position and fastened by

means of bolts 4 and nuts 5, after placing the leather packing 8 in-between the bearing brasses. Snug 7 in the bolts, prevents rotation of the bolts while they are tightened with the nuts. Split cotters 6 are used to prevent the loosening tendency of the nuts. Figure 19.2 shows the assembly drawing.

Đề 4:



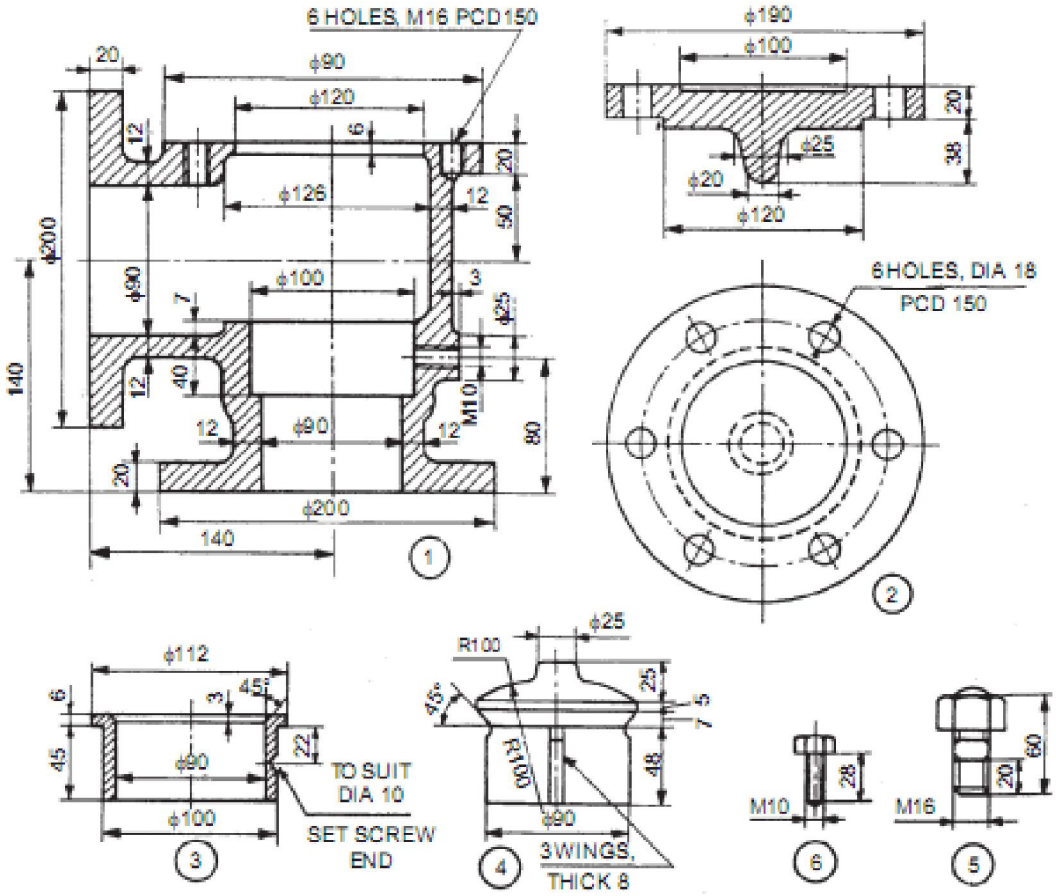
Parts list

Part No.	Name	Matl	Qty
1	Tool holder	MS	1
2	Base plate	MS	1
3	Stud	MS	1
4	Clamping nut	MS	1
5	Handle	MS	1
6	Knob	Ebonite	1
7	Set screw	MS	8
8	Grub screw	MS	4
9	Spring	Steel	1
10	Ball ϕ9	MS	1

Fig. 18.15 Square tool post

This is used to hold four different tools at a time. The tool holder may be rotated and clamped to facilitate the use of any one of the tools at a time. The details of the square tool post are shown in Fig. 18.15. The tool holder 1 is located on the base plate 2 by means of the stud 3. It can be fixed to the base plate in any position rigidly by the clamping nut 4 and handle 5. The knob 6 is fitted to the handle for smooth operation. The tools are held in the tool post by means of the set screws 7. EachAssembly Drawings 285 tool can be indexed readily by rotating the tool holder on the base plate and located in the correct position by the spring 9 and the ball 10. The ball is seated in the V-groove, provided for this purpose in the base plate.

Đề 5:



Parts list

No.	Name	Matl	Qty
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

Fig. 18.30 Non-return valve (Light duty)

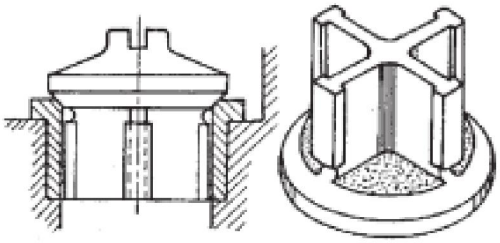
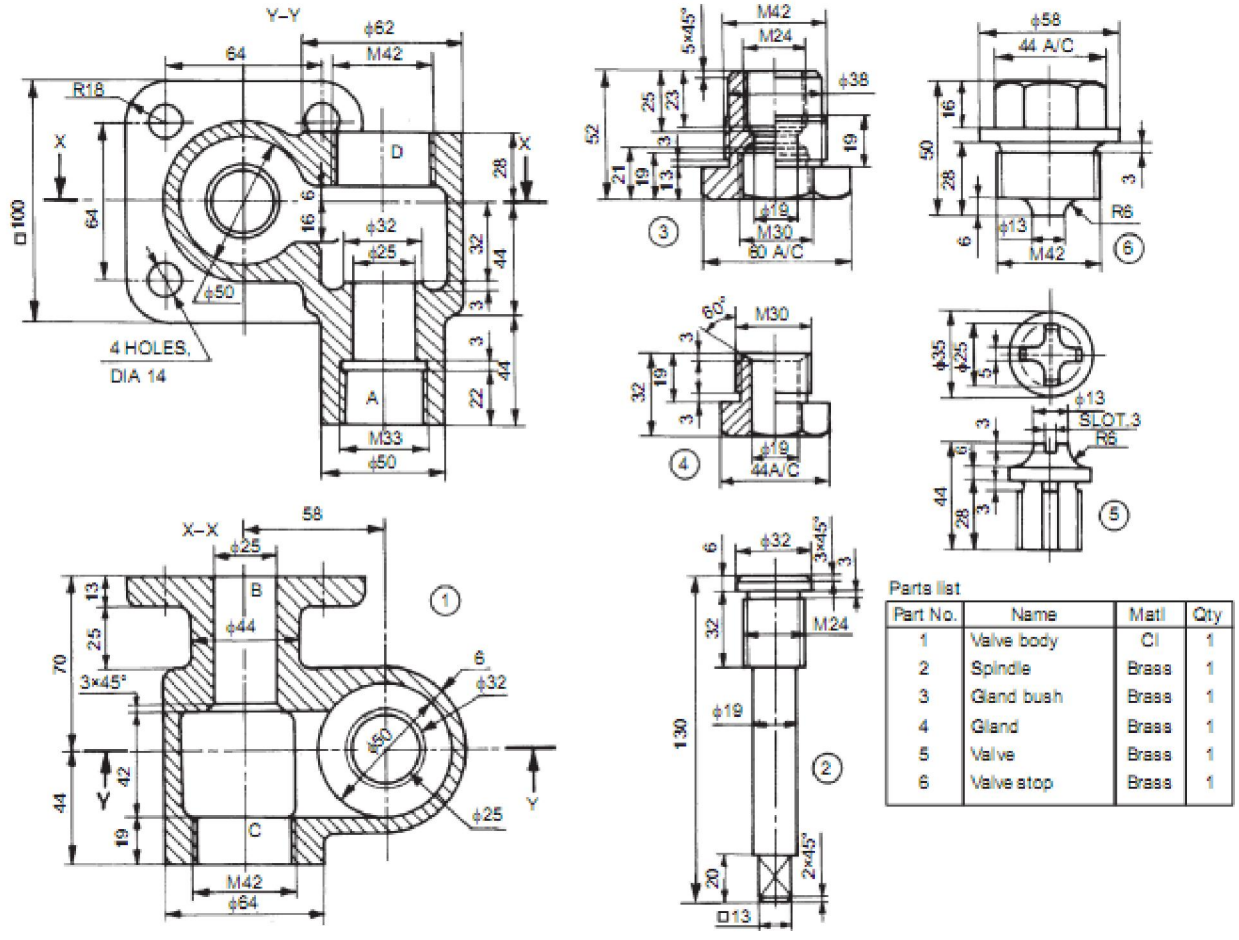


Fig. 18.31a Valve and the seat

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. Figure 18.30 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

Đề 6:



Parts list

Part No.	Name	Matl	Qty
1	Valve body	CI	1
2	Spindle	Brass	1
3	Gland bush	Brass	1
4	Gland	Brass	1
5	Valve	Brass	1
6	Valve stop	Brass	1

Fig. 18.31b Non-return valve

When a valve is operated by the pressure of a fluid, it is called a non-return valve, because, due to the reduction in the pressure of the fluid, the valve automatically shuts-off, ensuring non-return of the fluid. Figure 18.31a shows a brass/gun metal valve with a bevelled edge on the valve seat. The isometric view of the inverted valve shows the details of the webs. However, in the non-return valve, a separate valve seat is not provided

Figure 18.31b shows the details of a non-return valve. Fluid flow enters the valve at A (inlet) and leaves the valve at B (outlet). The gland bush 3 and the gland 4 are first assembled and screwed onto the spindle 2 and assembled into the valve body 1 at C. By operating the spindle, the fluid outlet B is either closed or kept open. The valve 5 is positioned in the body through the passage D and it is kept floating. The valve stop 6 is screwed into the body at D and is used to control the amount of lift of the valve. The fluid inlet connection to the valve is made at A. When the spindle is operated and the outlet is open; due to the pressure of the inlet fluid, valve is lifted and passage is established from A through B. When the pressure of the incoming fluid is reduced, the valve automatically shuts-off the inlet passage, ensuring non-return of the fluid in the opposite direction.