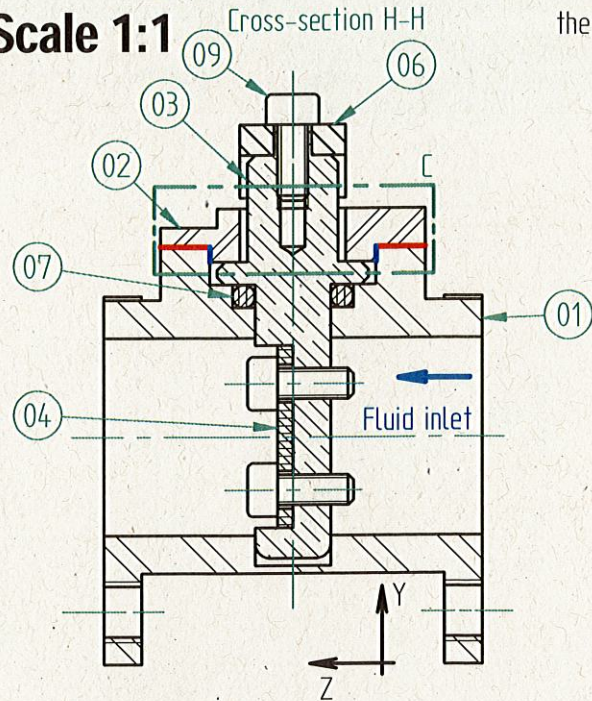
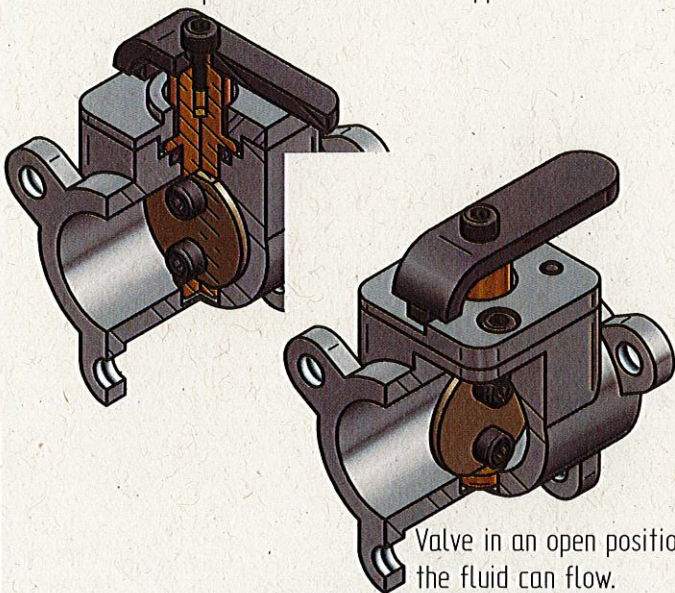


Assembly drawing Mechanical Valve

Scale 1:1 Cross-section H-H

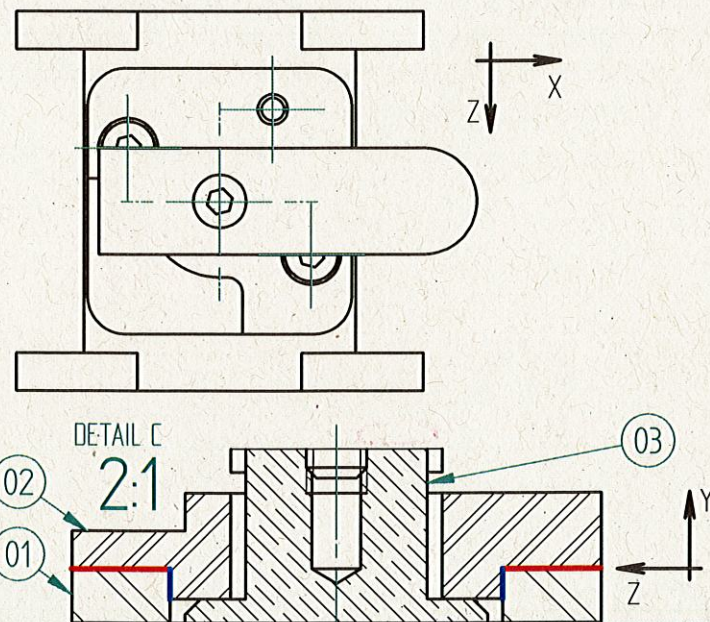
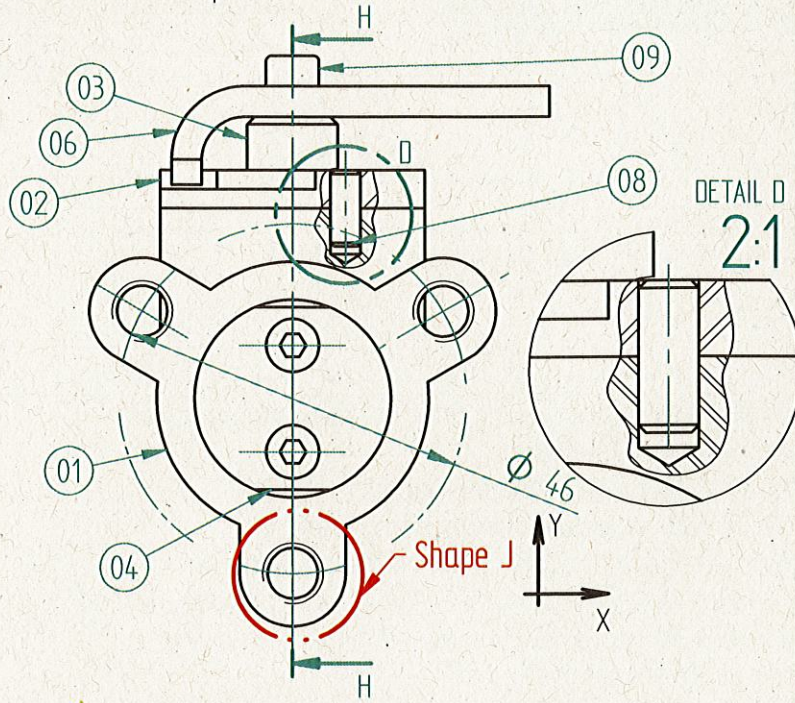


Valve in a closed position: fluid flow is stopped



Valve in an open position the fluid can flow.

A valve: it is a tap which allows the control and/or stopping of a fluid such as water in a plumbing installation. By turning the Lever (06) by 90°, the Axle (03) also turns by 90°. The Plug (04) is in connection with the Axle (03). The position of the plug can therefore block the valve conduit and stop the fluid.



2 : Analysis of the bill of parts (~2pts)

E - Complete the missing information in the columns Description and Material

H - Check the correct box in the following columns: Reused, Recycled, Incinerated, Composted, Landfill.

Rep	Qté	Description	Material	Reused	Recycled	Incinerated	Composted	Landfill
09	5	CHC screws	Steel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
08	1	Positioning pin	Steel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07	1	O-ring	Rubber	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
06	1	Lever	Steel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04	1	Plug	ABS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03	1	Axle	copper	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02	1	Lid	Aluminium	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01	1	Body	aluminium	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

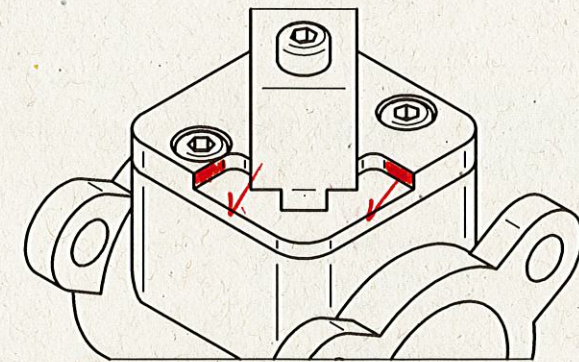
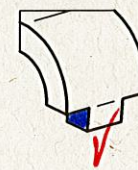
Mech. Design- Paper exam S1 (1h)

Mechanical valve

Last name : ...BOCQUET.....
First name : ...Titouan.....
Group : 62.....

1 : Understanding the mechanism (~6 pts)

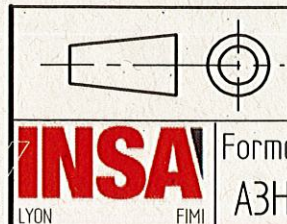
- A - Cross out the false statement(s):
 - we can see the positioning pin (08) thanks to a section H-H
 - the positioning pin (08) is only visible on 2 of the views of the drawing
 - the positioning pin (08) is placed in a blind hole on the body
 - the positioning pin (08) is placed in a through hole of the body
- B - When closing or opening the valve: give the numbers of the parts which make the same movement as the Lever (06)? ...9, 3, 4 ✓
- C - On the top view of the valve drawing, it is in position:
 - open / closed / intermediate (cross out the unnecessary entry(ies))
 ✓ open ✓ closed ✓ intermediate
- D - On the front view of the valve drawing, a shape J is indicated.
 How many J shapes are found on body 01: ...6 ✓
 What is the particularity of the hole located in shape J: it is threaded ✓
 What can be the function or interest of the J shapes for the implementation of the valve in a plumbing installation:
 It can be used to fix the valve to other parts or pipes. Screwing it help to make a good seal and avoid leaks.
- E - Complete the empty boxes in the 'Description' and 'Material' columns in the nomenclature.
- F - On the perspective views below:
 - Color in blue the surface(s) of the lever which block(s) its rotational movement(s) along the Y axis.
 - Color in red the surface(s) of the lid which block(s) the rotational movements along the Y axis of the lever



G - In detail view C: we can see that the lid is positioned on the body by a plane in red and by a cylinder in blue. Elements 09 allow the lid to be fixed on the body. The positioning pin makes it possible to block the rotation along Y between the body and the lid. We want to check the behavior of the valve if the positioning pin is not in place. Without a positioning pin, can the water pass through the closed valve position?
 YES ✓ NO (cross-out the wrong answer)

Explanation of your answer: There is already a screw to maintain the lid flush to lock the maximum position of the plug.

H - The valve is reaching the end of its life. what can be done with the constituting parts or materials? For each part, put a cross in one of the 5 columns of the nomenclature: Reused, Recycled, Incinerated, Composted, Landfill.



Mecanical design exam 2023

Mechanical valve

Feuille : 1 / 2

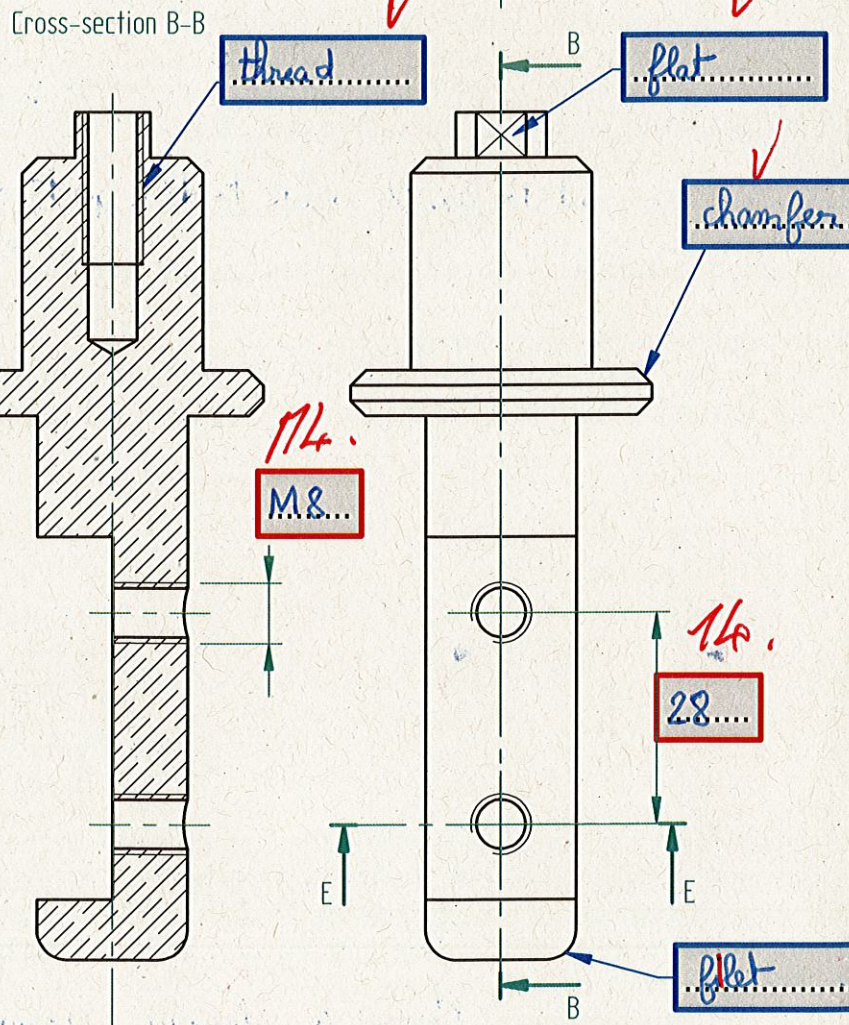
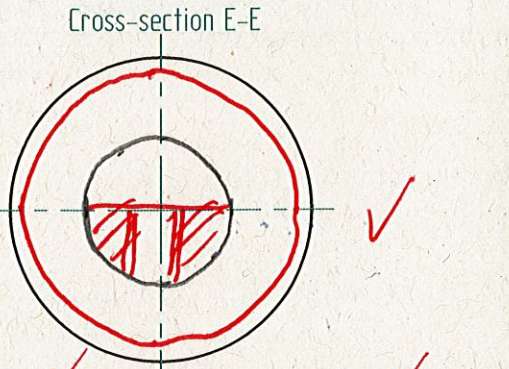
Date : 24/10/2023

Dessiné par : A. Toumine - D. Thomé

3 : Definition drawing (~6 pts)

- I - Complete the **bottom view of the Axle (03)** in E-E cross-section. Do not show hidden edges.
- J - In the drawing of the **plug (04)**: complete the **left view and the top view**. Do not show hidden edges.
- K - In the drawing of the plug (04): represent on all views the **construction lines in green** allowing the construction of the **shape marked I** corresponding to the **green edge**.
- L - Complete the **blue boxes** related to the Axle (03) and the Plug (04) with the **appropriate technical vocabulary**.
- M - Complete the **red boxes** related to the Axle (03) and the Plug (04) indicating the **dimensions measured on the drawings**.
- N-N' - Count the number of elementary surfaces on the Axle (03) and the Plug (04), complete the associated tables.

Axle (03) Scale 2:1

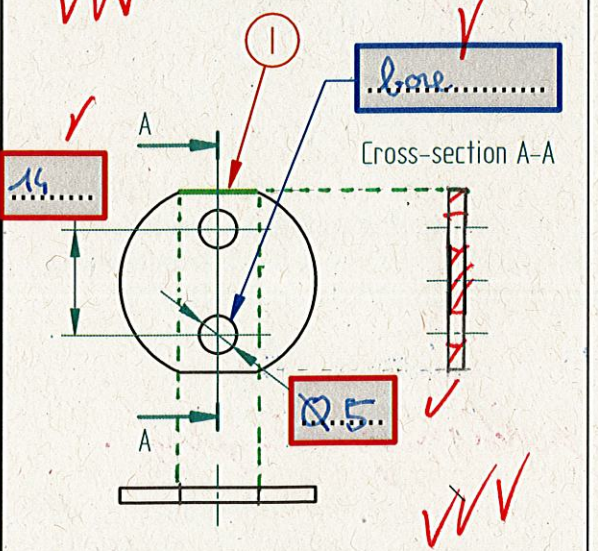


Axle (3)

N - Number of elementary surfaces

3	Planar	3	Helical
5	Cylindrical	0	Spherical
4	Conical	1	Toroidal

Plug (04) Scale 1:1



Plug (4)

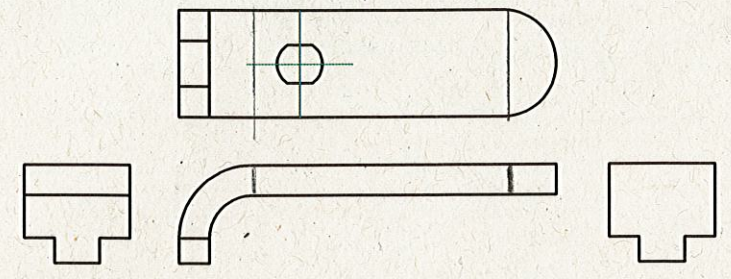
N - Number of elementary surfaces

4	Planar	0	Helical
4	Cylindrical	0	Spherical
0	Conical	0	Toroidal

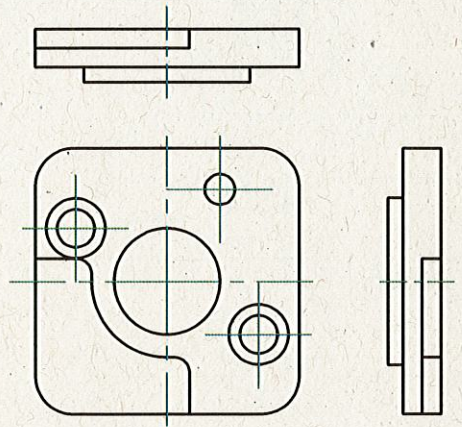
4 : Perspectives (~6 pts)

Last Name : BOCQUET
 First name : LitoJam
 Group : 62

Lever (06) Scale 1:1



Lid (02) Scale 1:1



O - Using the provided views, **draw the appearance of the following parts freehand**:

- the lever (06) in cavalier perspective.
- the lid (02) uncut in isometric perspective.

Do not draw hidden edges on perspectives. Choose an orientation allowing the shapes of the parts to be clearly defined: be careful, for the lid (02), you must draw 2 views to clearly show all the shapes of this part.

NB: You will choose a relevant scale which allows you to properly represent all the shapes of the part while respecting their proportion. Rectangular and isometric frames are provided below to assist with the drawing.

