

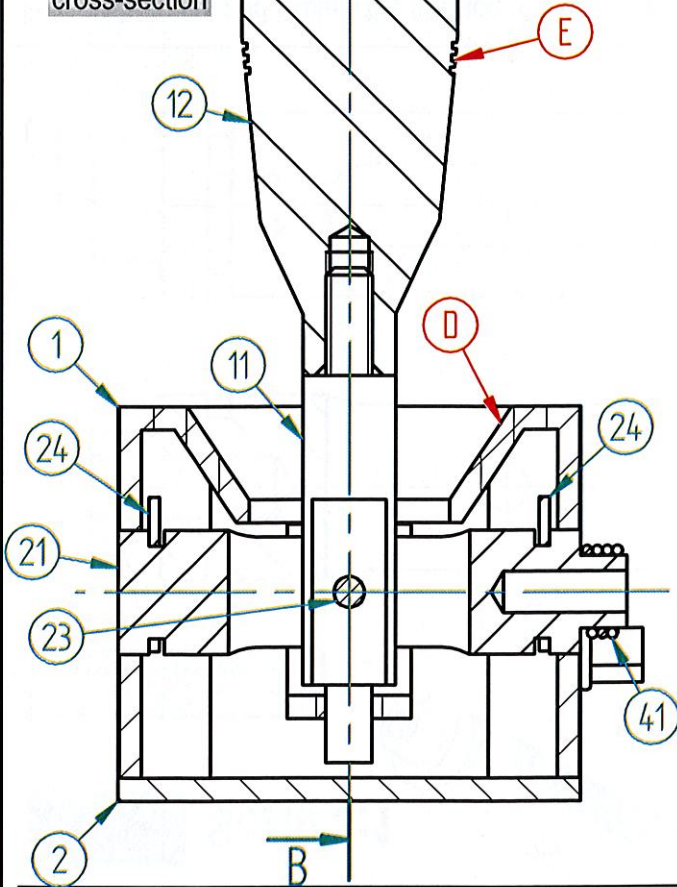
Assembly drawing

Scale 2:1

without the potentiometers

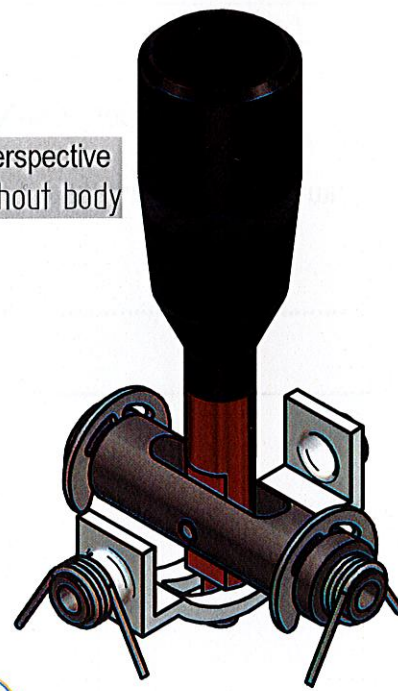
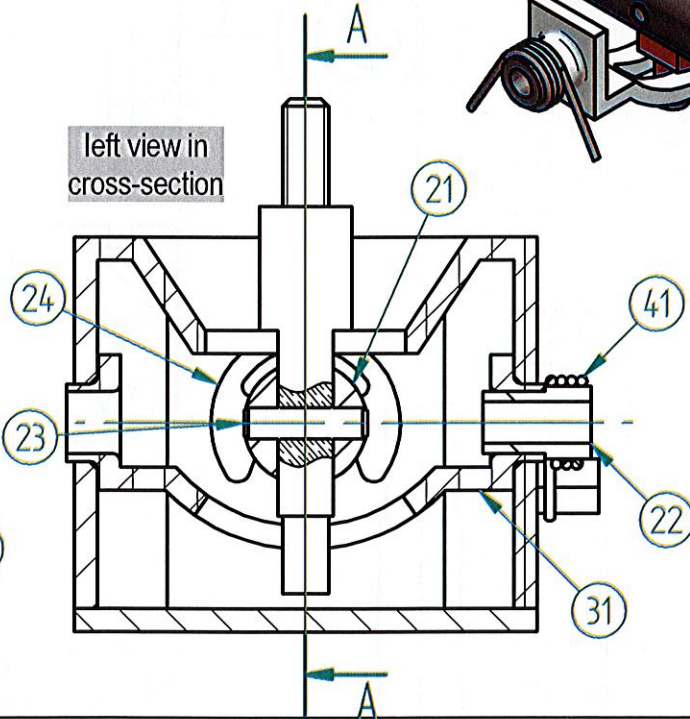
perspective without body

front view in cross-section



B-B sans bouton (12)

left view in cross-section



Mechanical design - Drawing exam S1 (1h)

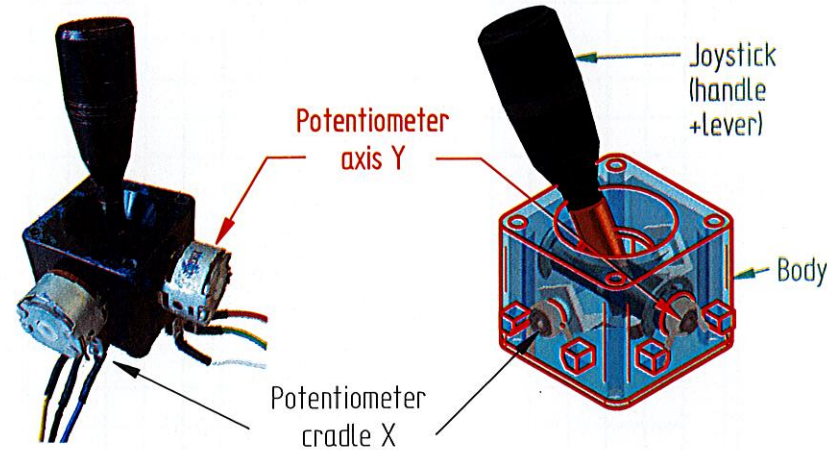
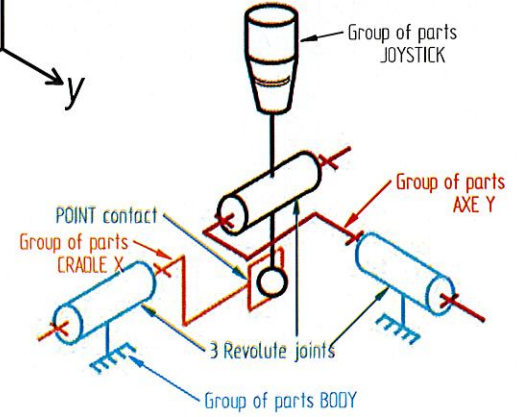
Product: JOYSTICK

LAST NAME :

First name :

Group :

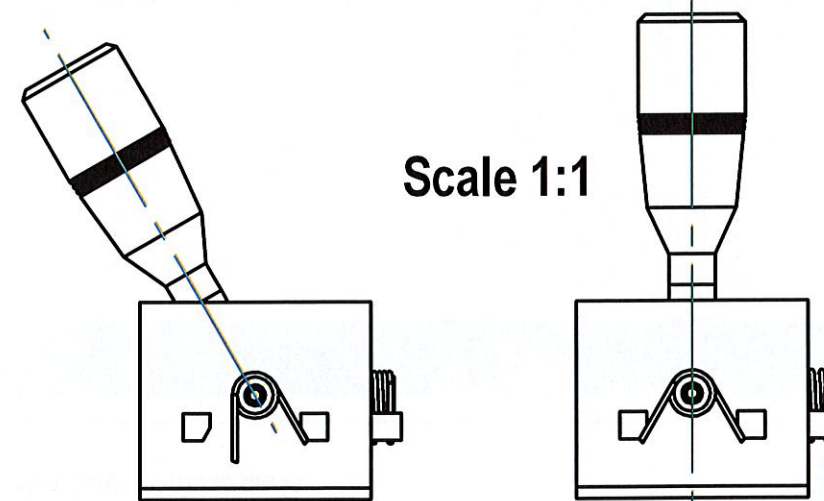
kinematic diagram



cradle X in tilted position

cradle X in standby position

Scale 1:1



Nota bene :
 You answer directly on the sheet for questions A to P
 You will need: ruler, pencil and colours
 Approx. rating: ~0,5pt / answer if not specified (P : 4pts)

A - Who is the beneficiary (client) of the system?

What is the system acting upon? (answer given)

Electrical resistance of potentiometers.

What is the purpose of the system ?

B - Which parts are involved in B1) input and B2) output motion

Show these motions by arrows

Input motion - Part :

Translation Rotation Displacement :
 Continuous Alternated ~30° (combined Rx Ry)

Output motion - Parts :

Translation Rotation Displacement (in x and y dir.) :
 Continuous Alternated

Provide order in which parts transmit (mechanical) action from the input to the output :

..... : to potentiometer X

..... : to potentiometer Y

C - Complete the empty boxes in the bill of parts with appropriate material

D - Provide name and explain the function of the shape D situated in the body (01) :

E - Provide name and explain the function of the shape E situated in the handle (12) :

F - What is the function of the springs (41)?

G - What is the function of the pin (23) ?

H - What is the function of parts (24) ?

41	2	torsion spring $\phi 6-0.65-3.25$	Steel	Standard part
31	1	cradle X	-----	3D print
24	2	snap ring	Steel	Standard part
23	1	pin 2x8	Steel	Standard part
22	1	potentiometer axle	Steel	Usinage (tournage)
21	1	axle Y	-----	Machining (lathe+milling machine)
12	1	handle	-----	Machining (lathe)
11	1	lever	-----	Machining (lathe+milling machine)
02	1	lid	Plastic ABS	Injection moulding
01	1	body	Plastic ABS	Injection moulding
N°	Qty	Name	Material	Comments

Projet : **Interro Conception papier S1 - 2021**

Titre (Nom de piece) : **Joystick** Echelle : 1:1,33

Format : **A3H**

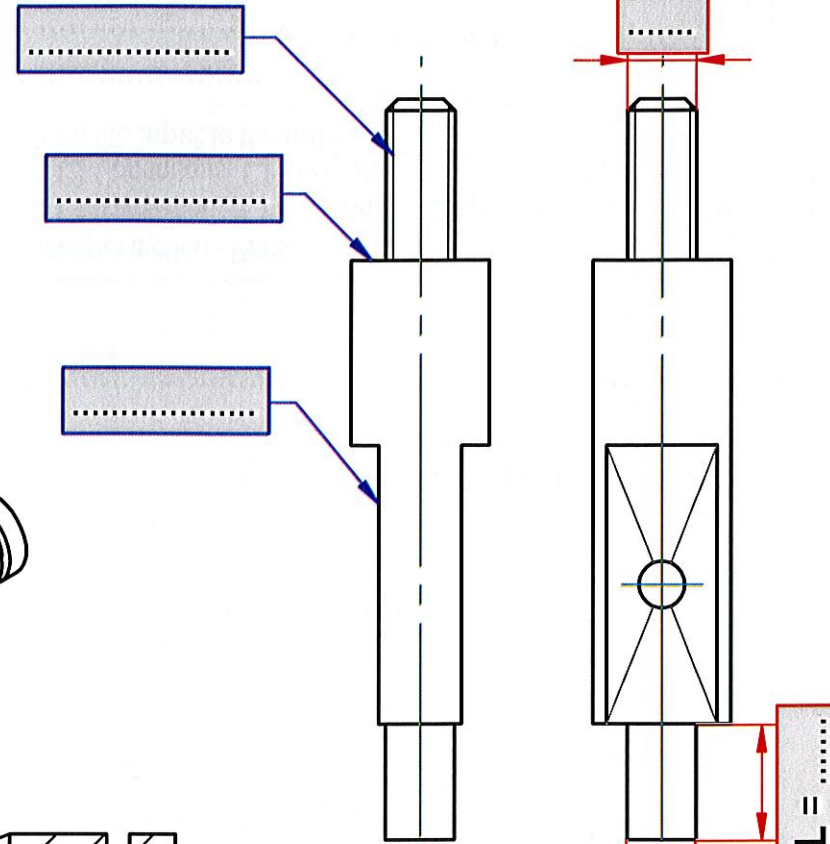
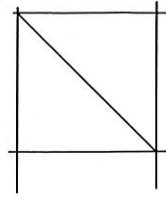
Pièce n° : _____ Qté : _____ Matière : _____ Rév. : _____

Definition drawing

O - Number of elementary surfaces	
Plane	Helical
Cylindrical	Spherical
Conical	Toroidal

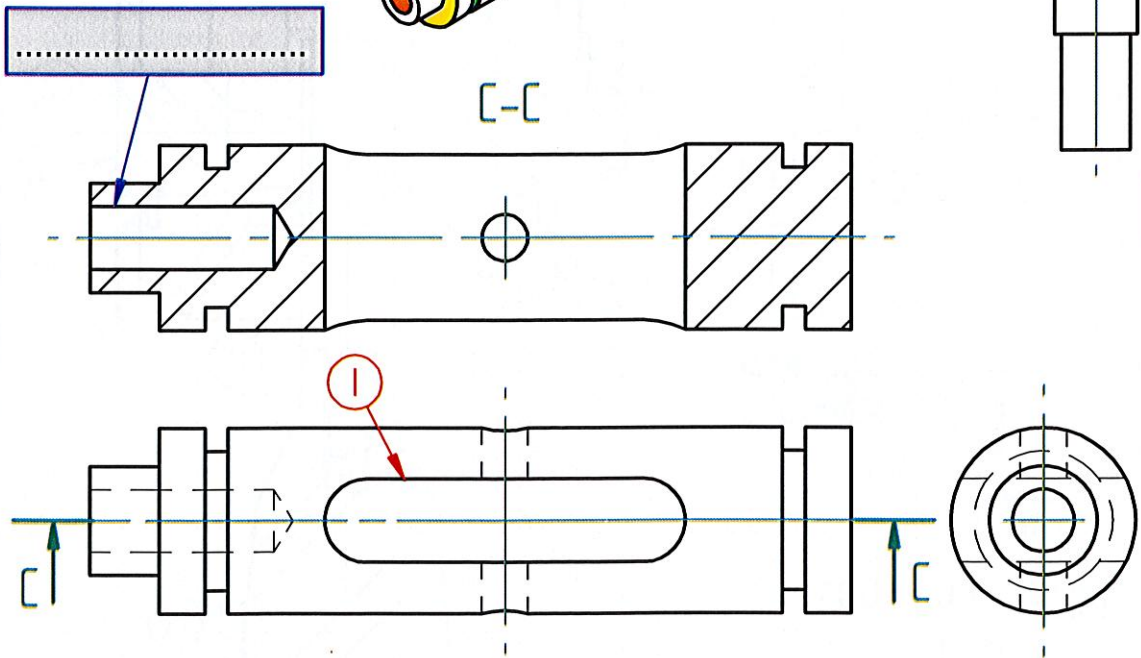
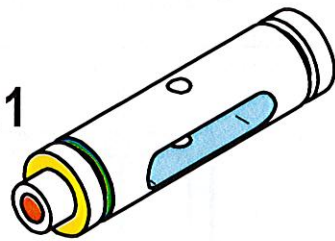
Lever

Scale 3:1



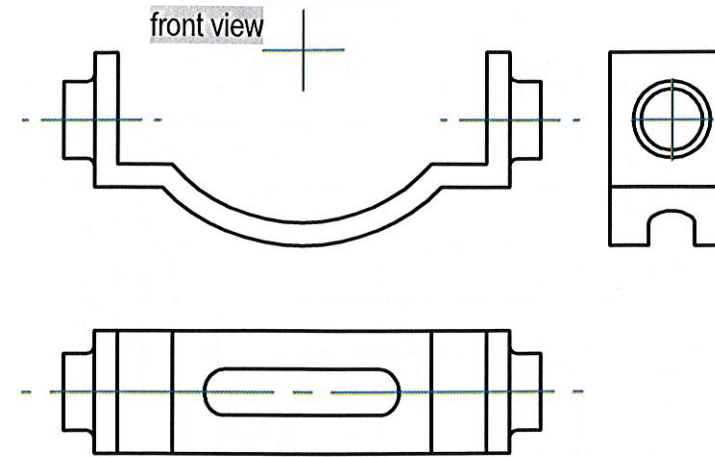
Axle Y

Scale 3:1



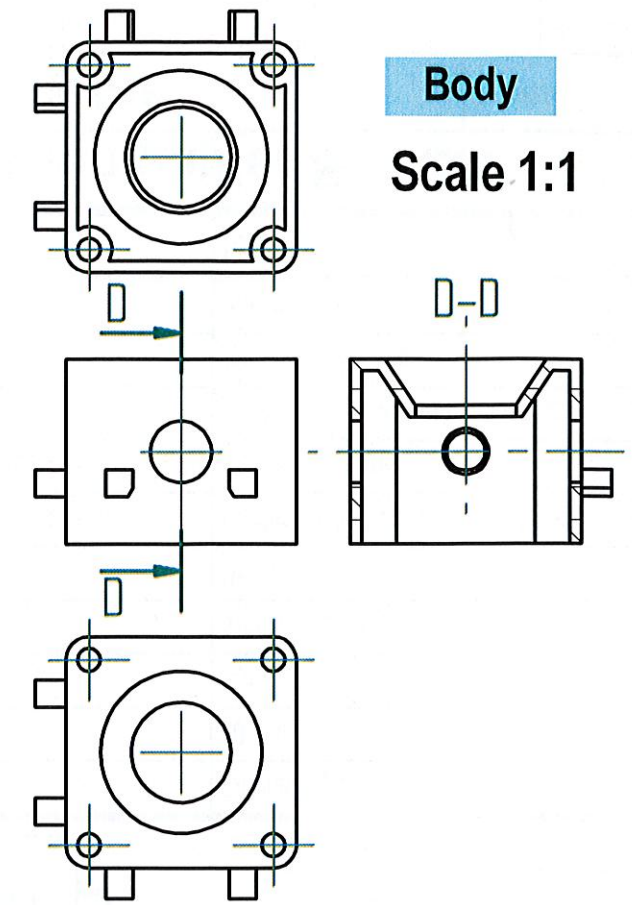
Cradle

Scale 2:1



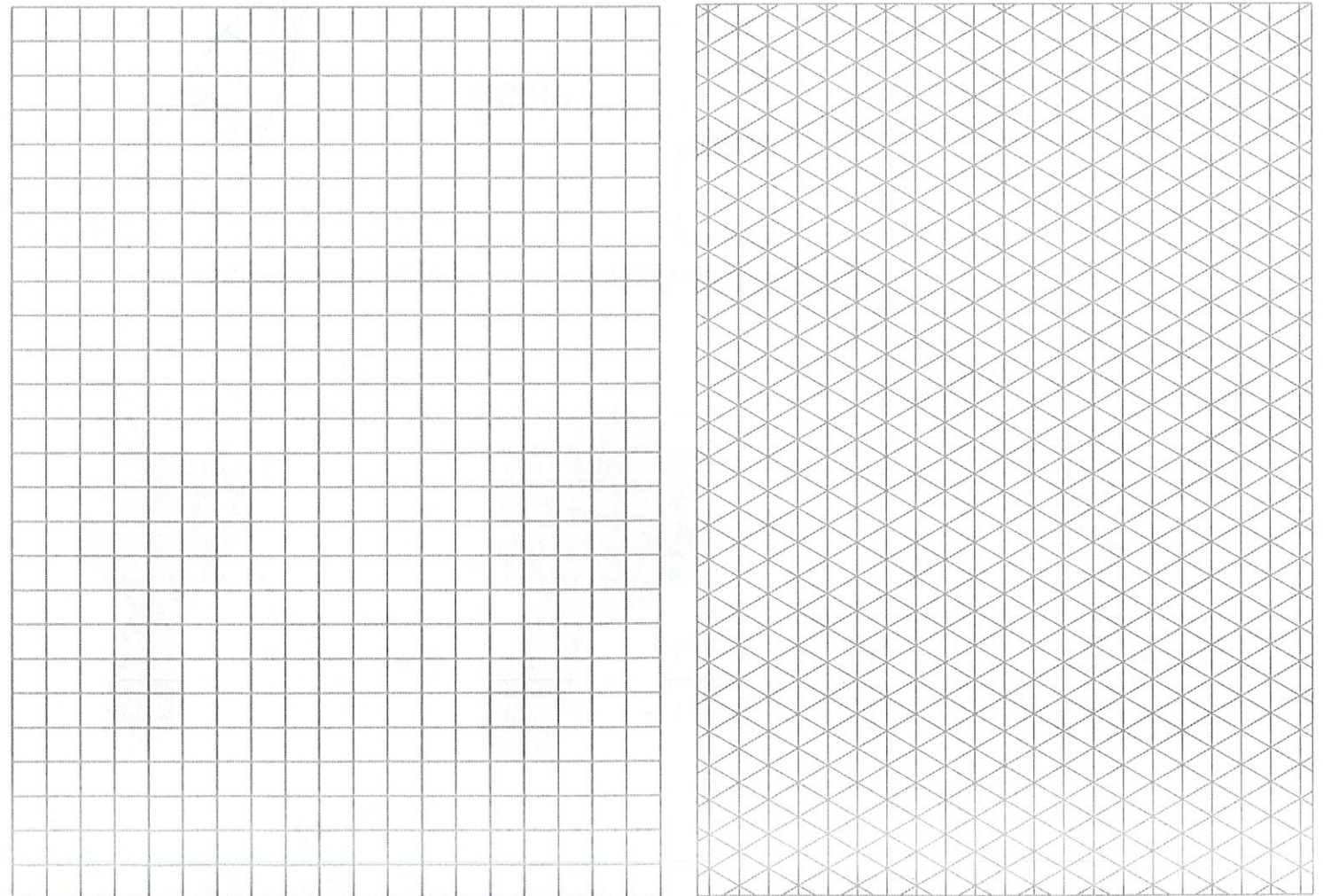
Body

Scale 1:1



P - Using the views above draw free-handedly : / 4pts
 - the cradle X (31) in Cavalier perspective, its front face should be oriented as the front view of the orthogonal projection.
 - the body (01) in isometric perspective.
 NB : You choose your own scale in order to properly represent the geometrical features of these parts.

Perspectives



- I - Provide name and explain the function of the **shape I** on the axle Y (21) :
.....
- J - Complete the blue boxes with appropriate technical terms.
- K - Using a ruler, measure the missing cotes in red.
- L - From the functional standpoint, deduce the maximum and minimum length L : $L_{min} = \dots\dots\dots$ mm, $L_{max} = \dots\dots\dots$ mm
- M - Draw auxiliary correspondence lines enabling to position a flat in the three view of the lever (11)
- N - There are four coloured surfaces of the axle Y (21). Color-in these surfaces as **visible** edges and/or surfaces in the three orthogonal views of the part.
- O - Count the number of elementary surfaces of the lever (11) and fill-in the table.