Mechanical design test: Kinematics

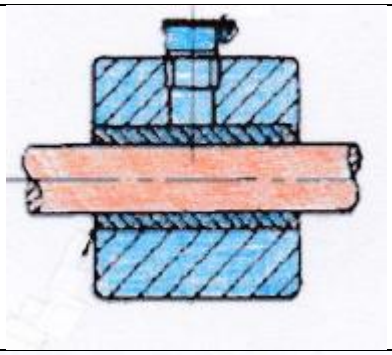
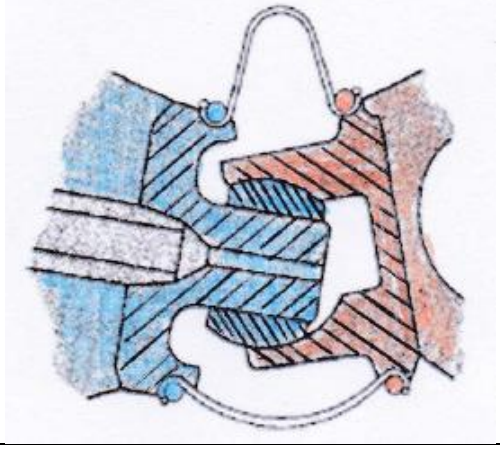
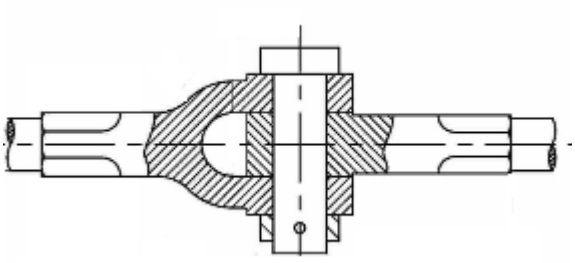
Name:

Duration: 30min, no documents authorized

Parts 1 and 2 are independent.

Part 1 – Identification of standalone joints

Below are three different joints taken from some larger mechanism. Their respective groups of parts are colored in blue and red (you should **colour yourself the third one**) . Fill-in the name of these joints with a correctly oriented symbol.

Local drawing of the joint	Name a joint and place a **correctly oriented** symbol
	
	
Colour-in the drawing below using a different colour for each group of parts 	

Part 2 – Scotch Yoke

A scotch yoke mechanism transforms a revolute motion into reciprocating translation. Here, it is used to drive a double action pump.

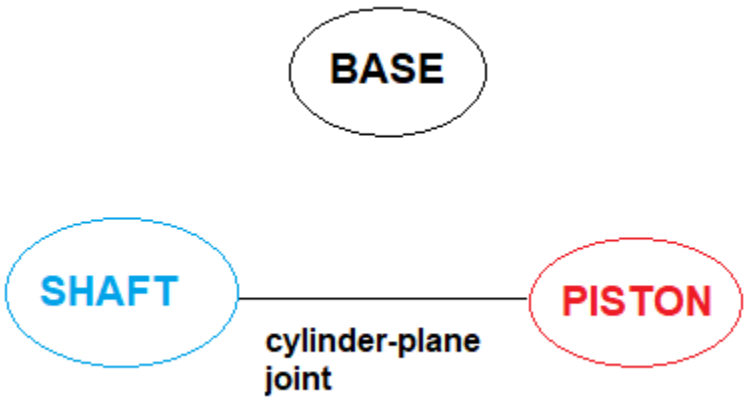
It is composed of three groups of parts colored on page 3:

WHITE – BASE

BLUE – SHAFT

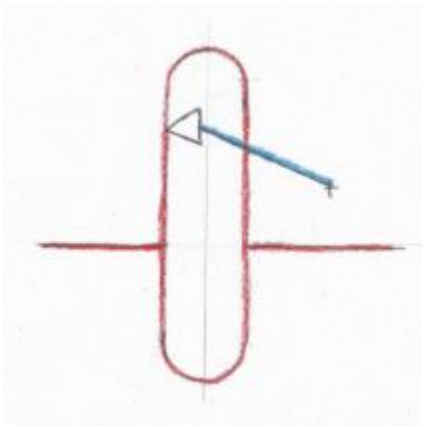
RED – PISTON

Q4. Complete the bubble diagram of joints below (name and orientation)



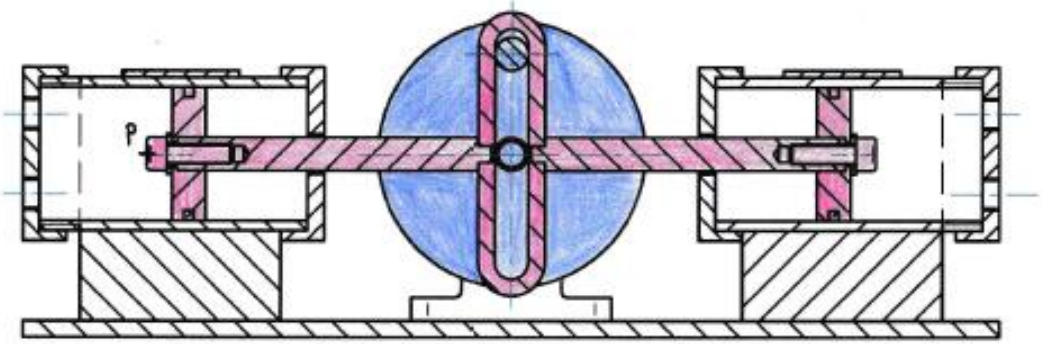
Q5. On Page 3, mark the extreme left position of the point P (in cross-section A-A) during operation.

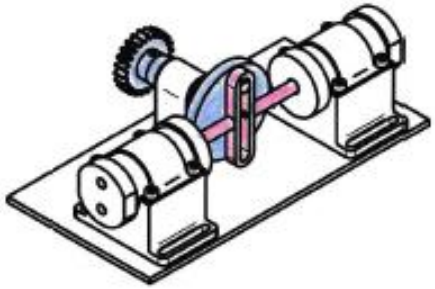
Q6. Complete below the kinematic diagram of the system by using correct symbols.

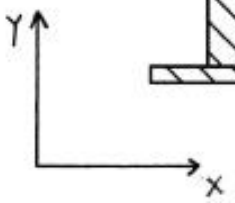



Y
X

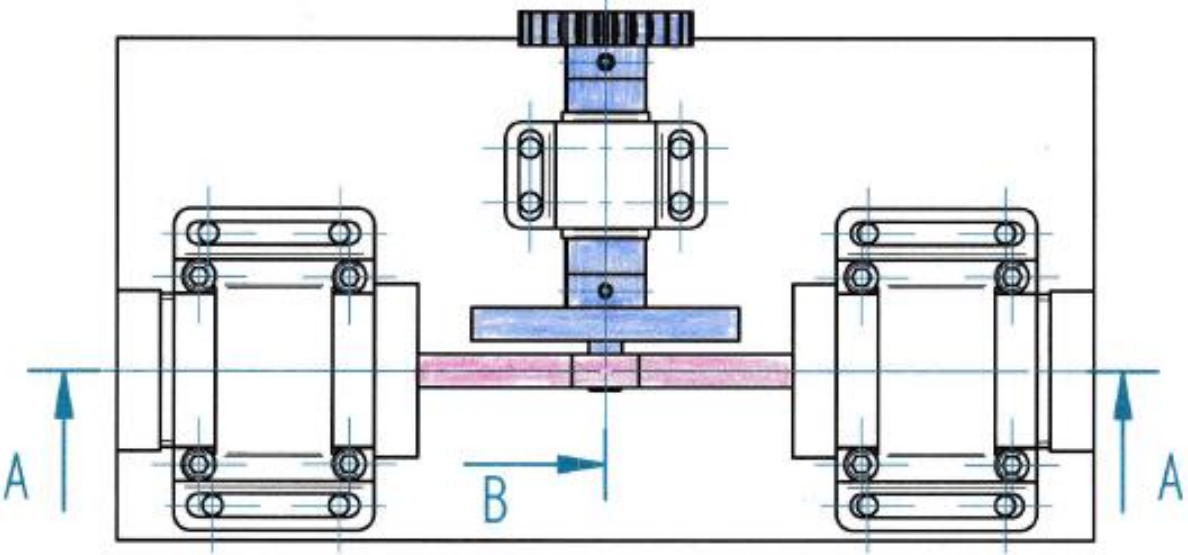
A-A







B

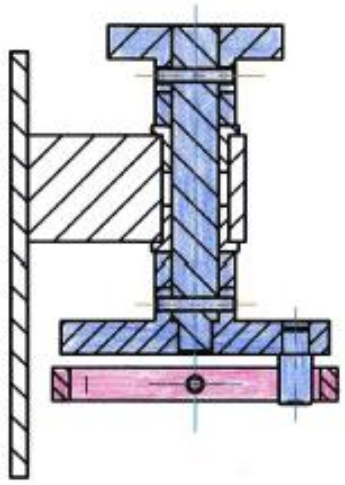


B

A

A

B-B



SCALE 1:2

assembly_vertical2.dft