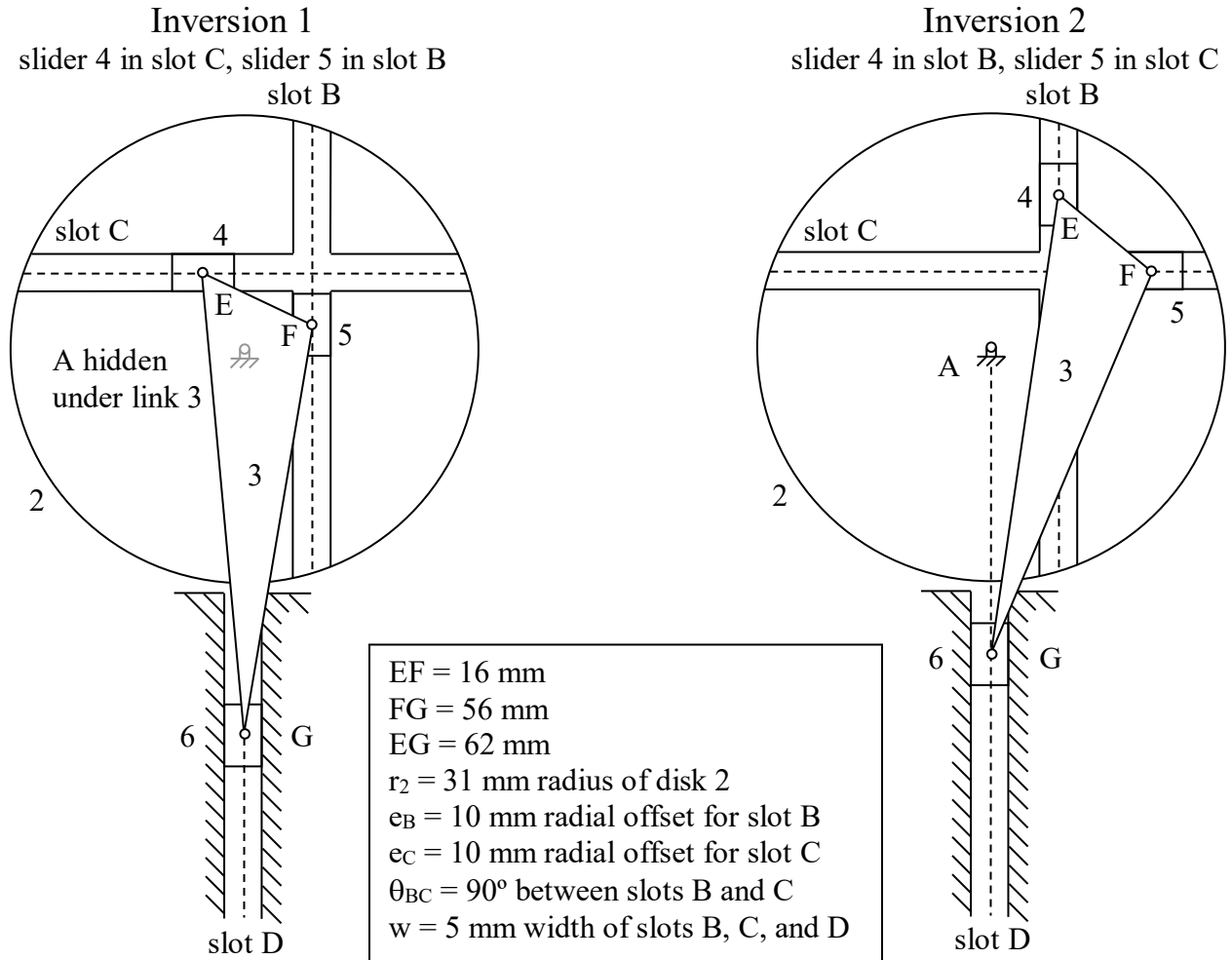1) Use Working Model (WM) to model the two inversions of the Wanzer needle bar mechanism shown below. Provide position, velocity and acceleration MATLAB graphs for point G as a function of rotation angle with disk 2 rotating at constant 240 rpm CW. Attach a screen shot of your WM mechanism and provide hard copy of your code.

Which of these inversions would be used for a sewing machine? Why?

Inversion 1
slider 4 in slot C, slider 5 in slot B

Inversion 2
slider 4 in slot B, slider 5 in slot C

EF = 16 mm
FG = 56 mm
EG = 62 mm
r_2 = 31 mm radius of disk 2
e_B = 10 mm radial offset for slot B
e_C = 10 mm radial offset for slot C
θ_{BC} = 90° between slots B and C
w = 5 mm width of slots B, C, and D

2) Check your WM velocity solution for Inversion 2 using instantaneous centers at the position shown below with disk 2 rotating at constant 240 rpm CW. The mechanism is drawn to scale full size. Show your work.

V_G _____