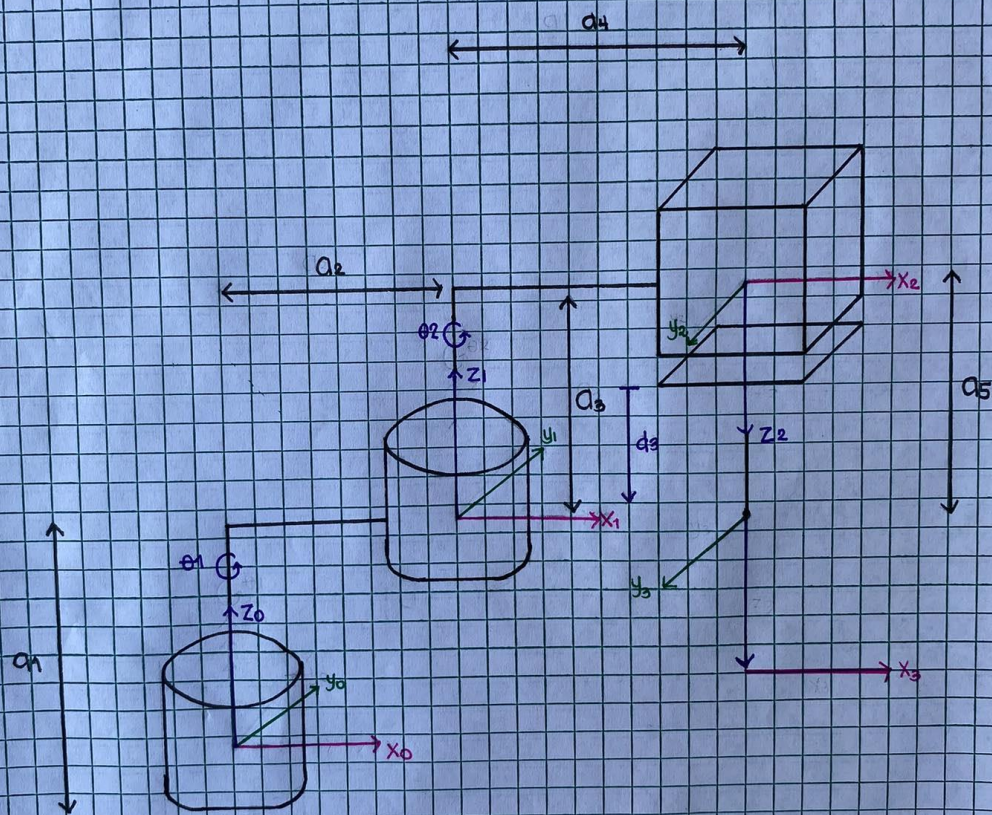


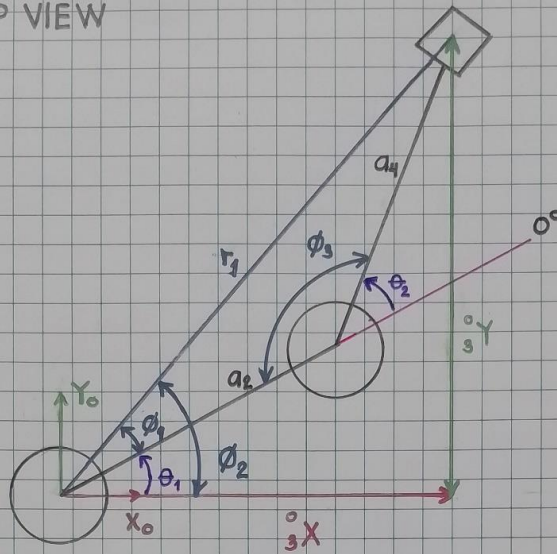
SCARA MANIPULATOR

SCARA MANIPULATOR (RRP)



TOP VIEW

TOP VIEW



EQUATIONS:

$$\phi_2 = \theta_1 + \phi_1$$

$$\theta_1 = \phi_2 - \phi_1$$

(4)

$$\phi_2 = \tan^{-1}\left(\frac{{}_3Y}{{}_3X}\right)$$

(1)

$$r_1 = \sqrt{({}_3Y)^2 + ({}_3X)^2}$$

(2)

$$\phi_1 = \cos^{-1}\left(\frac{a_4^2 - r_1^2 - a_2^2}{-2r_1a_2}\right)$$

(3)

$$180^\circ = \phi_3 + \theta_2$$

$$\theta_2 = 180^\circ - \phi_3$$

(6)

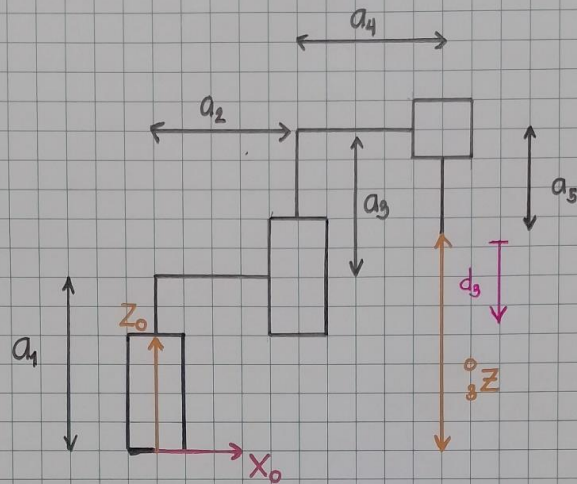
$$\phi_3 = \cos^{-1}\left(\frac{r_1^2 - a_2^2 - a_4^2}{-2a_2a_4}\right)$$

(5)



FRONT VIEW

FRONT VIEW



EQUATIONS:

$${}^0_3Z = a_1 + a_2 - a_5 - d_3$$

$$d_3 = a_1 + a_2 - a_5 - {}^0_3Z \quad (7)$$

