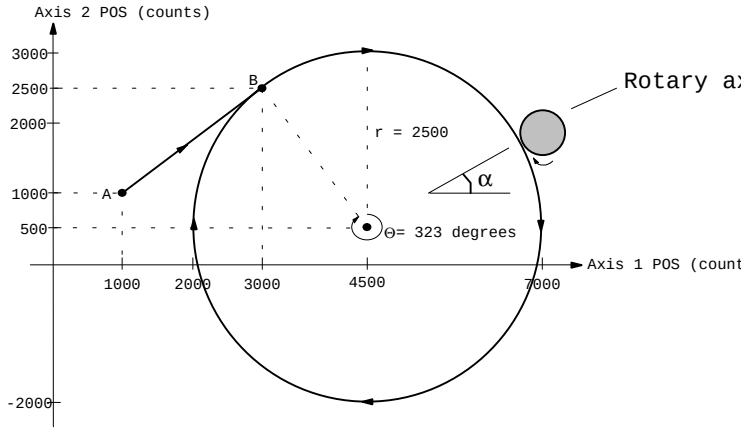
11 Rotary Axis Tangent

Rotary Axis Tangent to x-y Trajectory

This application requires the motion of a rotary axis to remain tangent to the path created by x and y axes. The x-y trajectory in this example is circular. Assuming 1000 encoder lines/mech. rev. (i.e. 4000 counts/rev), one radian move of rotary axis generates 637 encoder counts. Thus, in conjunction with α in radians, this conversion factor must be used.




```
#define  del_x  var1
#define  del_y  var2
#define  a      var3
#define  alpha  var4
#define  flag   var5
#define  rotary var6

plc_program:

    run_m_program(tangential_path)

end

tangential_path:
```

```
    flag = 1
    pos_preset (0x7,1000,1000,0)    ;preset to point A

; start AB line
linear_move_s(3,1000,0,3000,0.8,5000,0.0003,1000,0,2500,0.6,5000,0.00023)

    circle(3,1500,-2000,2500,1,0,0) ;continue with x-y circle
                                    ;compute position for rotary
                                    ;axis
    while (flag == 1)
        del_x = cvel1               ;obtain rate of change of position in
                                    ; x direction
        del_y = cvel2               ;obtain rate of change of position in
                                    ; y direction

        a = del_y/del_x             ;calculate tangent of alpha
        alpha = arctan(a)           ;find alpha in radians
        rotary = 637 * alpha        ;use conversion factor 637 to find
                                    ; encoder lines
        axmove(0x8, 0.5, rotary, 10)
                                    ;move rotary axis(3) to the computed
                                    ; position
    wend

end
```