

A P P L I C A T I O N N O T E

Doc No.: TN30-26
Date: Jan 2003
Version: 1.0
Subject: Path generation in the Motion Coordinator

The Trio *Motion* Coordinator uses trigonometry and/or Pythagoras theorem to generate path motion. The MERGE command when set ON will combine all move segments seamlessly for constant speed motion. Such motion is used on glue laying, and 2D cutter systems.

The path parameters in a 2D interpolated move are calculated as follows:

Straight lines:

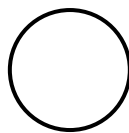


MOVE (X, Y)

The path distance is $\text{SQR}(X^2 + Y^2)$

SPEED = programmed_speed is used to calculate the X and Y speeds using the inverse of the above pythagoras expression.

Arcs of Circles



MOVECIRC (X, Y, I, J, dir)

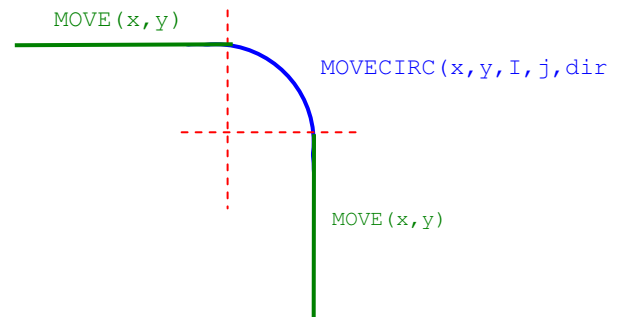
X and Y are the coordinates of the relative endpoint

I and J are the coordinates of the relative centre

$$\text{Radius} = \text{SQRT}(I^2 + J^2)$$

$$\text{Angle} = 180 - 2 * (\arctan(J/I) + \arctan(Y/X))$$

$$\text{pathlength} = (\text{angle}/360) * 2*PI*\text{radius}$$



The above changes depending on the quadrant you are moving through.

X and Y speeds are modulated by sine/cosine profiles.