

## Rapid Positioning Q+A

➔ Answers to questions:

1. Rapid motion from **A** to **B** along the X-axis, will take  $(20.738 \times 60) / 600 = 2.07$  seconds
2. Rapid motion from **A** to **B** along the Y-axis, will take  $(8.85 \times 60) / 600 = 0.89$  seconds
3. The X and Y motions take place simultaneously and the rapid rate for both axes is the same.  
The correct answer is 2.07 seconds, which is the travel time of the X-axis, traveling longer (see answers 1-2).
4. For the X-axis, the rapid travel time will be  $(20.738 \times 60) / 400 = 3.11$  seconds,  
for the Y-axis the rapid travel time will be  $(8.85 \times 60) / 350 = 1.52$  seconds,  
the correct answer is 3.11 seconds, which is longer of the two.
5. From point **A** to point **B** - For the X-axis, the rapid travel time will be  $(93.7 \times 60) / 12000 = 0.47$  seconds,  
for the Y-axis the rapid travel time will be  $(70 \times 60) / 10000 = 0.42$  seconds, total of 0.47 seconds  
From point **B** to point **C** - For the X-axis, the rapid travel time will be  $(141 \times 60) / 12000 = 0.71$  seconds,  
for the Y-axis the rapid travel time will be  $(44.2 \times 60) / 10000 = 0.27$  seconds, total of 0.71 seconds  
  
From point **C** to point **A** - For the X-axis, the rapid travel time will be  $(234.7 \times 60) / 12000 = 1.17$  seconds,  
for the Y-axis the rapid travel time will be  $(25.8 \times 60) / 10000 = 0.15$  seconds, total of 1.17 seconds  
  
The total rapid between points A-B-C-A will be:  $0.47 + 0.71 + 1.17 = 2.35$  seconds
6.  $X = (234.7 \times 60) / 20000 = 0.7$  seconds,  $Y = (25.8 \times 60) / 20000 = 0.08$  seconds, answer is 0.7 seconds.
7. The XY axes should be programmed first, then the Z-axis.
8. The Z-axis should be programmed first, then the XY axes.
9. The Z-axis should be programmed first, then the X-axis.
10. The X-axis should be programmed first, then the Z-axis.
11. Rapid rate is  $(920 \times 60) / 4.6 = 12000$  mm/min
12. Any active cutting feedrate has no influence on the rapid motion. The time will be  $(500 \times 60) / 10000 = 3$  seconds.
13. The XY location is irrelevant. From machine zero, the Z-axis will travel  $543 - 20.0 = 523$  mm, than another 18 mm,  
for the total of 541 mm. At the rate of 8000 mm/min, the travel time will be  $(541 \times 60) / 8000 = 4.06$  seconds.
14. The machine will rapid at the current rapid rate, the feedrate will be stored in memory for the next cutting motion.