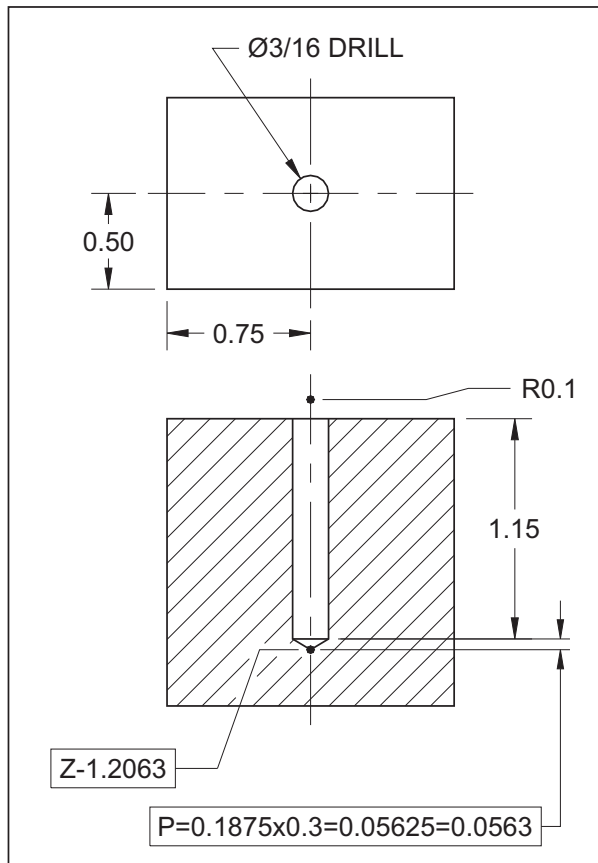


Peck Drilling 3

➡ These are the correct answers for the five questions - with comments listed below:

- ❑ 1 - Drill point length is 0.0563
- ❑ 2 - Final Z-depth is Z-1.2063
- ❑ 3 - Each Q-depth will be 0.4355
- ❑ 4 - The last peck depth will be 0.4353
- ❑ 5 - G99 G83 X0.75 Y0.5 R0.1 Z-1.2063 Q0.4355 F8.0



This project is very similar to the previous one (26-08), with one exception - the calculated Q-value is beyond the required four decimal places and must be rounded.

First, calculate the tool point length and add it to the given hole depth (full diameter depth), in order to calculate the Z-depth for the program. Calculate the tool tip length first:

$$0.1875 \times 0.3 = 0.05625$$

... rounded to 0.0563 - four decimal places

This value will be added to the full diameter hole depth, to find the Z-depth for the G83/G73 fixed cycle:

$$1.15 + 0.0563 = 1.2063$$

... programmed as Z-1.2063 in the fixed cycle

Since the Z-axis start position is at Z0.1 (R0.1 in the cycle), the total travel length of the tool will be 0.10 more, 1.3063. The number of required pecks is three, over the total distance to travel of 1.3063. The result of $1.3063/3$ is 0.43543333 as the theoretical Q-value. Since rounding to four decimal places is required, the Q-value depth will be programmed as Q0.4354 in the fixed cycle:

G99 G83 X0.75 Y0.5 R0.1 Z-1.2063 Q0.4354 F8.0

Take care in rounding! Correct mathematical rounding of 0.43543333 to four decimal places is 0.4354, but that does not meet the requirement of always rounding upwards. The minimum correct Q-value will be Q0.4355. Compare the following calculations:

With Q0.4354 in the cycle, there will be *four* pecks - $0.4354 + 0.4354 + 0.4354 + 0.0001 = 1.3063$. By adding only one tenth to the Q-value, the number of pecks will be three: $0.4355 + 0.4355 + 0.4353 = 1.3063$. The rounding upwards only influences the actual peck depth only slightly! As you can see from the examples, even value of 0.0001 inch can influence the actual number of pecks, and the overall cycle time. The final - and correct - programming of the G83/G73 cycle will be:

G99 G83 X0.75 Y0.5 R0.1 Z-1.2063 Q0.4355 F8.0