

Appendix

C

Threads Challenge 1

Using the values in the table below, draw a threaded fastener as a 0.25 – 20 UNC – 2A x 0.75 long screw with pan head as shown below. Place a 45° chamfer off the root or minor diameter at the beginning of the screw thread. Remember the depth of the thread (H) to find the offset to the minor diameter is derived by the formula:

$$H = 0.541266 \times P; \text{ where } P \text{ is the pitch or distance between threads.}$$

The radius on top of the pan head shape is a half of the pan head height.

Screw Size	Major Diameter	Pitch Diameter	Pan Head Dia.	Pan Head Ht	Slot Width and Depth
0.25 -20 UNC	0.2408 Min.	0.2146	0.492	0.144	0.075 / 0.096

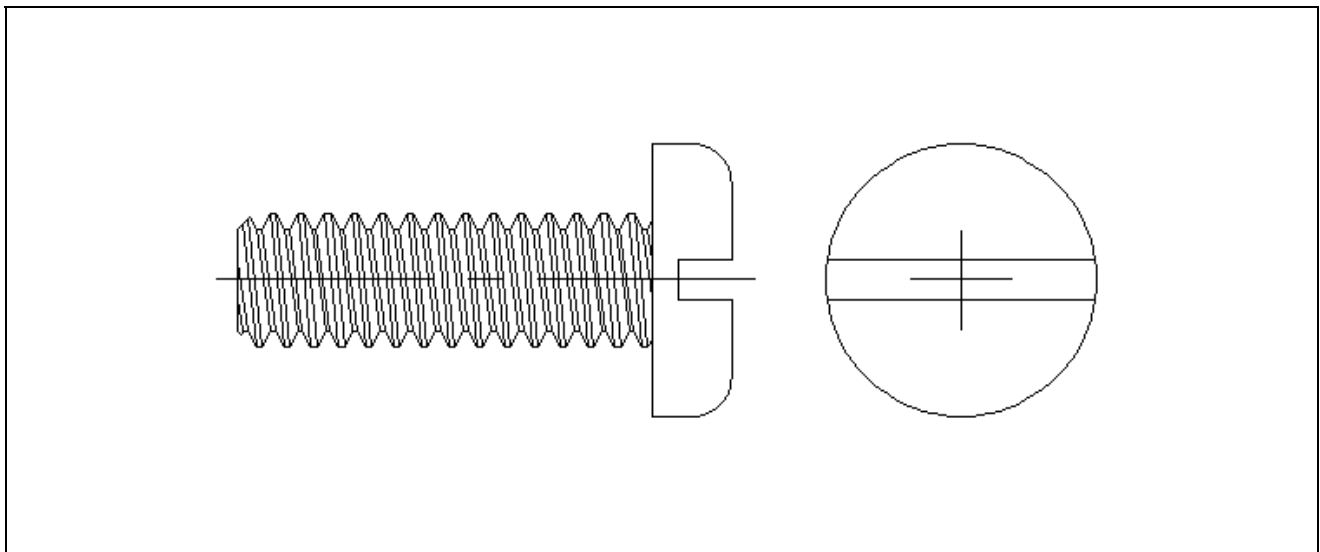


Figure C.1 – Pan Head Screw

*** World Class CAD Challenge 8-48 * - Draw a pan head screw with 0.25 – 20 UNC – 2A x 0.75 long thread in 15 minutes. Save the drawing as Screw, Pan Head 0.25-20 x 0.75.dwg.**

Send your best time and a copy of your drawing for verification to the authors of these problems to have your name, location and time posted. See the web site for instructions.

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Threads Challenge 2

On a 12.0 wide by 16.0 tall, 0.1875 thick aluminum plate, draw eight sets of four 10 – 32 UNF – 2B x 0.125 long internal threads. The first 10 – 32 UNF -2B tapped hole is 0.875 off the side and 1.875 off the bottom of the plate. There is 1.75 between the holes from the first to the second column. The hole pattern is shown on the bracket.

After drawing the front view of the plate with the 32 tapped holes, draw the right orthographic view, showing the tapped holes with simplified method.

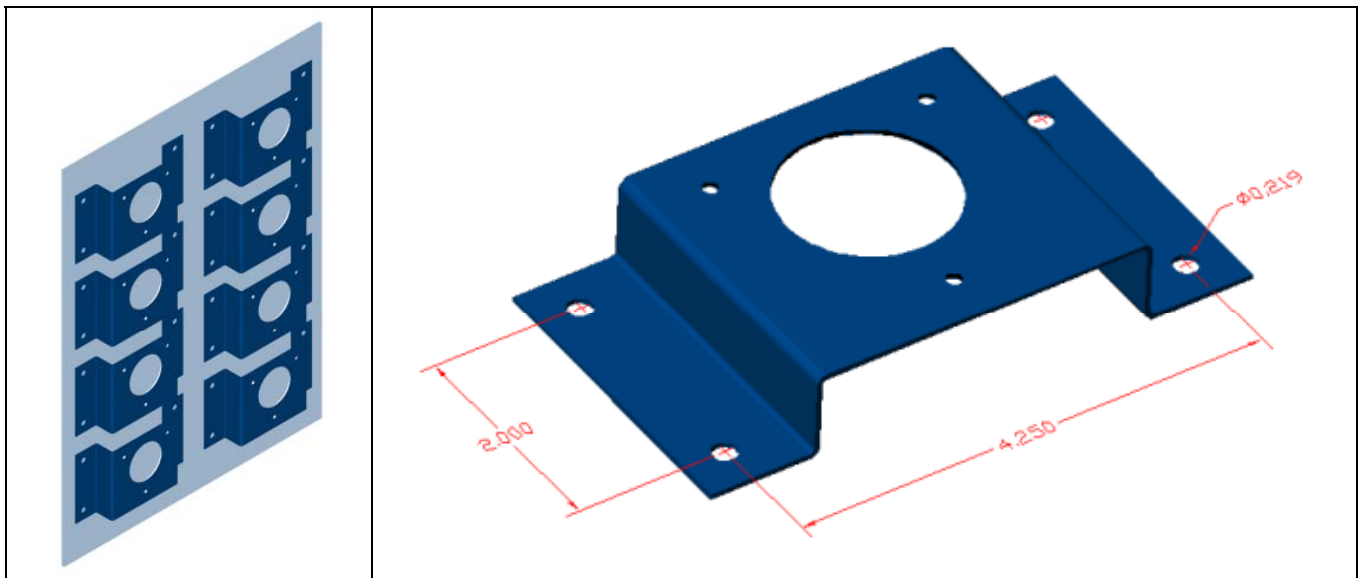


Figure C.2 – Drill and Tapping Holes for a Bracket on a Plate

*** World Class CAD Challenge 8-49 * - Draw eight sets of four 10 – 32 UNF – 2B x 0.125 long internal threads on a 0.1875 thick, 12.0 x 16.0 plate in 30 minutes. Save the drawing as Plate with 10-32 Internal Threads.dwg.**

Send your best time and a copy of your drawing for verification to the authors of these problems to have your name, location and time posted. See the web site for instructions.

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Threads Challenge 1

The flagpole bracket for a complex is a one of a kind application and the contractor would like a custom welding made. From the engineers sketch, create three part drawings, and an XREF assembly showing $\frac{1}{4}$ circular fillet weld and $\frac{1}{4}$ continuous fillet weld to connect the flat steel plates. The plates are $\frac{1}{2}$ hot-rolled steel.

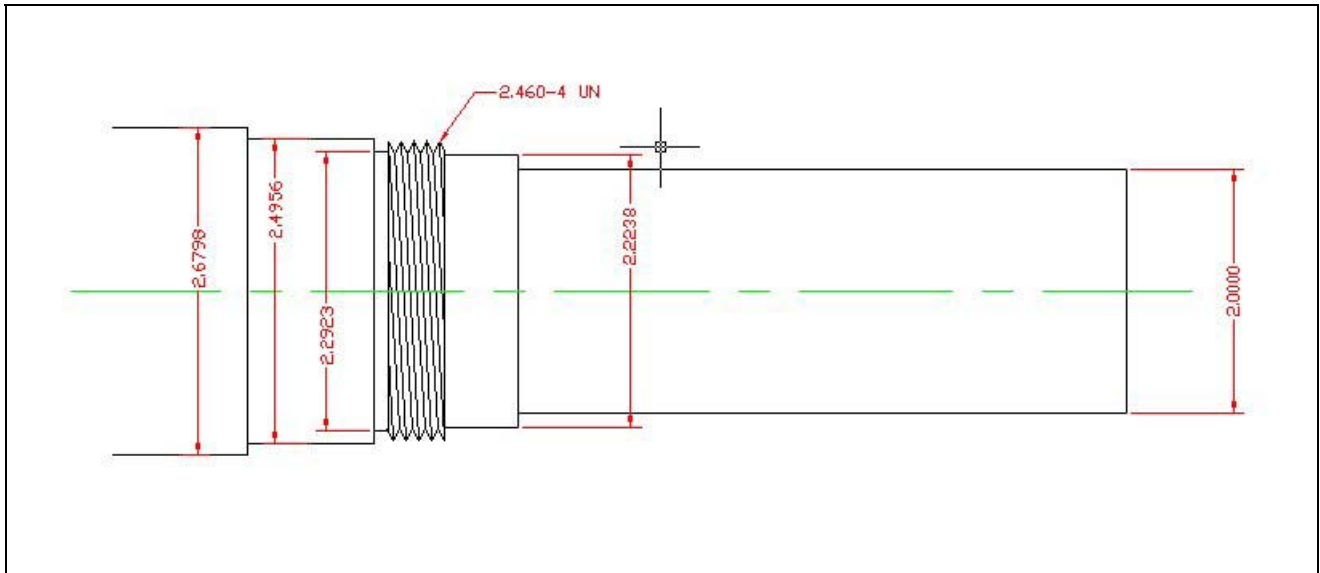


Figure C.3 – Rotor Shaft

* World Class CAD Challenge 08-50 * - Draw the shaft end with the 2.460-4UN thread in 30 minutes. Save the drawing as Threaded Shaft.dwg.

Send your best time and a copy of your drawing for verification to the authors of these problems to have your name, location and time posted. See the web site for instructions.

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