The adjacent figure shows a simple assembly of two blocks using a mechanical fastener. The fastener used in this case has the following specification:

.500 - 20UNF -2A x 1.25
FIL HD CAP SCR

Below are top views of the two pieces of material with the hole representations shown. For each component, determine the specifications for the local note and write the note in the correct form and in the correct position. The drill and thread depths are indicated dimensionally on the assembly view for you to use. Assume a specified clearance of 1/32 of an inch is to be used.

For the clearance hole:

The clearance hole is a two step procedure:

- a hole is machined to accommodate the shank of the fastener and
- a hole is counterbored to accommodate the fastener head.

The hole for the shank of the fastener is simply a through hole of a diameter equal to the fastener diameter plus the clearance. In other words, .500 + 1/32 = .531. Since we will dimension in hundredths of an inch we will round to .53.

To compute the counterbore specification we will need more information. From the table of specifications for Cap Screws, obtain the dimensional information for the specified fastener. From this table we find that for a .500 diameter fillister head cap screw:

head diameter = .750
head height = .328
From this information we can determine the counterbore diameter and depth.

\[
\text{Counterbore diameter} = \text{head diameter} + \text{clearance} = .750 + \frac{1}{32} = .781
\]

or rounded to \( .78 \)

\[
\text{Counterbore depth} = \text{head height} = .328
\]

or rounded to \( .33 \)

The note is written to the circular view of the hole as a local note. The leader line should point to the center of the hole and the arrowhead should touch the representation of the last operation performed in producing the hole (in this case, the counterbore).

The threaded hole:

The tap drill diameter is taken from the standard thread table (Table 15). By cross referencing the nominal diameter (.500) with the thread form and series (UNF) and looking under the column for “tap drill” we obtain a drill size of 29/64. The decimal equivalent is .453.

The thread and drill depths were given to use in this problem, otherwise they would be computed from the fastener length and the situation at assembly.

The thread specification is the same as that of the thread with the exception of the ‘B’ in the class fit to indicate internal threads.

The note is written to the circular view of the hole as a local note. The leader line should point to the center of the hole and the arrowhead should touch the representation of the last operation performed in producing the hole (in this case, the threads).