How to Measure a Ship Head Auger Bit

1) Definition: We define “Ship Head” auger bits as wood boring auger bits with protruded cutting lips. These bits are generally furnished in hollow center, one flute construction without any outlining spurs.

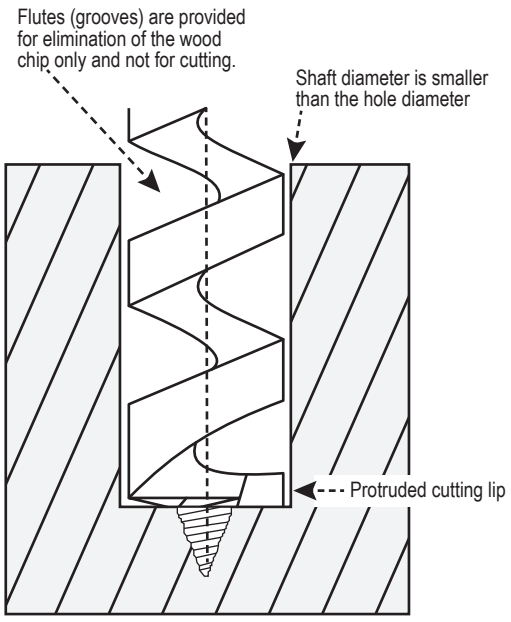

FIG. A

2) How it works: These bits are designed to drill holes in wood and similar materials rapidly and efficiently, requiring the least effort. The actual drilling is done by the protruded cutting lips. The fluted (grooved) portion of the bits is designed solely for the purpose of evacuating the wood chips towards the rear of the bits. The drill body is smaller than the holes produced by the bits, causing the least amount of friction between the wood and the tool.

3) How to measure the bit size: Attempts are often made to measure the size of the body portion (flute portion) of the bits - a mistaken notion that the thickness of the body portion determines the hole sizes. However, it is very difficult, if not impossible, to take the above measurements because of the odd shapes of the bits (FIG. A). It should also be noted that a measurement obtained in this way does not have any bearing on the actual hole size drilled.

The measurement which determines the hole size is the distance between the center of the screw point and the outer edge of the protruded cutting lips. However, it is also difficult to take this measurement because of the odd shaped parts involved.

This method we use to take this measurement for production is as follows (FIG. B):

A) Measure the distance between the opposite side of the screw point at its base and the outer edge of cutting lips (D1).
B) Measure the thickness of the screw point at the base (D2)
C) Subtract 1/2 of the (D2) measurement from (D1) to obtain radius (D) of the bit.
D) Multiply the above figure (radius) by a factor of 2 to obtain the diameter of the nominal bit size.

Slightly Exaggerated Sketch

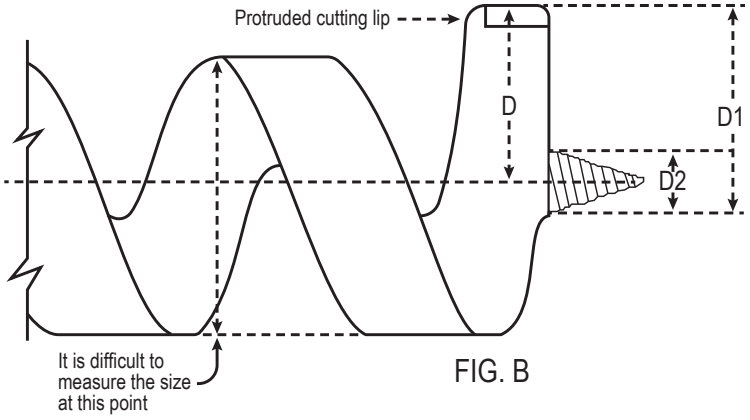

FIG. B

4) Nominal bit size and the actual hole size: It is often assumed that auger bits should produce holes equal to the nominal bit size. However, in actuality, the holes produced by this type of bit vary considerably depending upon various factors such as type of wood, dryness of the material etc., etc. Generally, the softer the materials, the smaller the size of the holes produced. Why? The screw point often moves around, especially in softer wood, during the drilling process and the holes produced often come out smaller.

Therefore, in all likelihood, the holes produced by ship head auger bits come out smaller than the normal bit sizes. Since work piece materials cannot be predicted, nominal bit sizes are selected by the theoretical hole size by most manufacturers of auger bits. When the hole size is critical, it is recommended that the users select bits slightly larger in nominal size. For example, for use with 1" bolts or dowels, 1-1/16" or 1-1 /8" nominal size bits should be used.

Other general reference material is available at www.icscuttingtools.com/reference.htm