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Homework 3

1. They are not as foolproof as most other types, which may result in inaccurate machining by a careless operator. Orientation of the hole pattern to workpiece datums may not be as accurate as with other types. However, the accuracy of the hole pattern within the template jig itself is comparable to that of any conventional jig. They are not practical when locating datums are dimensioned regardless of feature size.
2. Drill jig bushings position and guide the tools that do the cutting. They are availabe in hardened steel or carbide.

* Headless-press-fit bushings: most popular and least expensive. They are used in single size cutting tool applications where light axial loads are expected. They are generally used where replacement is not anticipated during the expected life of the tool.
* Head-press-fit bushings: used for permanent installations requiring greater bearing area or where heavy axial loads that could force the bushing through the jig hole are anticipated.
* Slip Renewable Bushings and Slip Fixed Renewable Bushings: used with a headless liner or a head liner where multiple operations, such as drilling and reaming or drilling and tapping, are to be performed on the same hole; or where long production runs require occasional changing of the bushing to maintain jig integrity.
* Oil groove bushings: designed to provide complete lubrication between the cutting tool and bushing when maximum cooling is required during a machining operation.
* Template Bushings: used with thin template materials ranging from 0.063-0.375 in. thick, to provide low cost tooling.
* Rotary Bushings: feature precision tapered roller or ball bearings capable of handling high thrust and/or radical loads encountered in some jig applications, such as supporting a piloted cutting tool for extremely close machining.

1. Consider all of the steps that are listed in table 5-1 (pg. 167-168) in order.
2. Indexing fixtures
3. Vise Jaw Fixtures: modified vise jaw inserts machined to suit a particular workpiece.
4. Jigs: workholders designed to hols, locate, and support a workpiece whileguiding the cutting tool throughout its cutting cycle.

Fixtures: workholders designed to hold, locate, and support a workpiece during the machining cycle.

1. X1,Y1, X2, Y2
2. It is necessary to check for and control the interference between any cutting edge of the cutting tool and any part of the workholder during possible contact of the workholder and cutting tool. Gage or setupblocks are a common means of reference for cutter setting. In many cases, the reference may be a designated surface on a locator. In its correct position, the cutter should clear the setting surface by at least 0.03 in.
3. A. Vise Jaw Fixture

B. Plate Jig

C. Channel Jig

D. Template Jig

10. The workpiece is located and clamped inside the box. The boring bar is then passed through the part and the pilot bearing is aligned in the bore on the opposite side of the jig. The part is then bored by feeding the rotating boring bar into the part. This is used when extreme accuracy is of prime importance. Boring fixtures are designed to hold the workpiece while it is being bored. They differ from boring jigs in that they don’t have any provision for guiding or supporting the boring bar. Boring fixtures are normally used for large parts with large holes where the boring bar is rigid enough to provide additional support.