TABLE JIG
TABLE JIG

• This also called as turn over jig because the work piece is located from the face that is to be drilled and clamped in the jig.

• Then the jig is turned over for drilling.

• This jig is also known as open jig as the work piece is not having any enclousre of the jig body around it, so it presents no problem in chip disposal
• Figure below shows a turn over jig or open jig,
• The jig is seated on the four foot nuts when locating and clamping the work piece, and inverted to the position shown when machining.
• This type is easy to load and swarf clearance is no problem.
Figure 2.27. Turnover Jig

- Foot nut
- Location post
- Workpiece
- C-Washer (Chained to base)
- Quick-action nut
- Sliding V
- Drill
- Drill cream
DISADVANTAGE

• Main disadvantage is the lack of support given to work piece beneath the point of cutting.
• Only the surface be drilled, loading and drilling forces are generally directed towards the clamping devices. Therefore clamping device should be rigid enough to withstand drilling force.
INDEXING JIGS

Indexing jigs are used to drill holes on periphery of cylindrical work at the required angular positions. An indexing device is provided in the jig.
The drill is fed through the bush to drill the first hole. Then locking device is released, the indexing device is pressed down. The workpiece is indexed for drilling next hole. The indexing is done with the help of a rotating member and an indexing device.
The fig shows a simple indexing drill jig to produce four radial holes in the workpiece shown. The workpiece is located and clamped to a movable member that can be indexed to bring the workpiece to the required position relative to the cutter or drill bush and then locked in that position until the feature is being machined. The locking device must be separate from the workpiece clamp.
APPLICATION OF INDEXING

Fig shows LINEAR INDEXING in which a long strip that is drilled in several places along its length. One drill bush is required.
Figure shows ROTATIONAL INDEXING in which the workpiece is rotated about an axis. It is used when holes have to be drilled on a large pitch circle.
AUTOMATIC DRILL JIG

In machining and assembly operations, auxiliary time forms quite a large percentage of standard time per piece. The auxiliary operations have to be done hundred of times per day. If done manually it may cause considerable fatigue to operator and reduces efficiency else the time spent.
By automatic, it is economically justified by the rate of operation and assures high efficiency.

Automated jigs and fixtures should exclude possibility for incorrect location of workpiece
Drive mechanism in Automatic drill jigs are :-

• Mechanical
• Pneumatic
• Hydraulic
• Pneumohydraulic
• Electrical
Pneumatic Drives

Pneumatic drives essentially require the air cylinder.

Air operated devices are widely used due to ready availability of the compressed air

Advantages of Pneumatic :-

• Relative simplicity of low cost
• Quick action and reliability in service
• Capable of withstanding overloads.
Air operated drilling jig

1. Cam 1
2. Cam 2
3. Control valve
4. Pneumatic cylinder
Advantages of Hydraulic Drives:-

- Relatively small and compact due to high working pressure (400-600 N/mm²)
- Working fluid is oil, therefore no external lubrication
- Noiseless, smooth, higher efficiency (upto 80-90%)
- Small delay time (0.01-0.22 sec)
- Capable of withstanding overloads and easy to automate.
Hydraulic operated drive
Mechanical Drives:-

Motor driven clamping devices are used in turret-lathe group, and other automatic jigs.
Torque from the motor shaft is transferred through a reducer and a clutch to a screw which drives a nut linked to the rod of clamping devices. Torque is controlled by adjusting the strength of the torque-control spring.