

# Points to Consider When Selecting a Router

When selecting a depaneling Router, the most important feature to look for is the Routing Spindle. The Spindle must be well rated to take the load of the cut. High Frequency spindles running on DC brushless motor allows for spindle speed changes up to **60,000 RPMs!** The Spindle runout (concentricity) must be near perfect and should not be more than 0.002mm. These Spindles normally requires minimum or no maintenance at all. Spindles must preferably be **Air Cooled** as water cooled spindle requires maintenance and an additional water pump, heat exchanger, hoses and therefore more related problems..



The machine build must be sturdy and with minimum vibration. This will result in a faster and smoother edge cut and enhance the router bit tool life. Features like **tool bit optimisation** increases tool life by maximising the use on the length of the cutting flutes. The user input the number of cuts (in mm) before the spindle automatically moves downwards (normally by 2mm) to engage in the bit new cutting edge. Some system even prompt the user to change tooling bit before it wears off and get broken.

Select a system that uses **motors that provide a close loop positional feed back system** for driving the axis which uses precision slides and ball screws. Some manufacturers uses stepper motors which are cheaper and which do not provide a close loop positional feedback system. Stepper motors are also slow and noisy.

Ensure that the software must run on the **latest operating software** and not on old version DOS or even on Windows 98. Imagine the frustration of trying to get a replacement when the system breakdown! Worst still the old cards which uses the ISA slots are no longer available on most mother boards. It may render the whole machine being a white elephant .

During the routing process, minimum dust must be deposited onto the board. A brush enclosing the routing bit serves two purposes. First, it creates a vacuum chamber like. Secondly, it loosened up any dust depositing onto the boards and contains it from flying around. By doing so, no antistatic air fans/guns are required.

**Vacuum Bag Full - Alarm** is an important feature as it protects the exhaust pump from overworking and getting burnt. When the vacuum bag is full, the suction power is greatly reduced and this will result in the dust created during the routing process to be deposited onto the work piece or around the machine. Alarm via the monitor is normally activated via a pre-set vacuum switch located in the Vacuum bag compartment. A **Build in Vacuum Cleaner** using the same build in vacuum pump gives good reason for the maintenance technicians to be happy about. Afterall, sometimes looking for a vacuum cleaner is difficult and the end result is that the machine is not properly serviced.

Finally, look out for the routing capacity. The size of the worktables and ensure that the routing area covers the whole routing table. Programs must be able to run separate models on different tables. The distance from the spindle to the edge of the worktable must be minimum to reduce non-value added traveling time. There must be a programmable servo driven Z axis stroke (not air cylinder) to reduce the Z non value added movements. Camera, laser pointer are a must to assist in the programming. Supporting options like fiducial board recognition referencing, Gerber/CAD data transfer, broken bit detection are available.

From: KNTan PTS System (S) Pte Ltd.