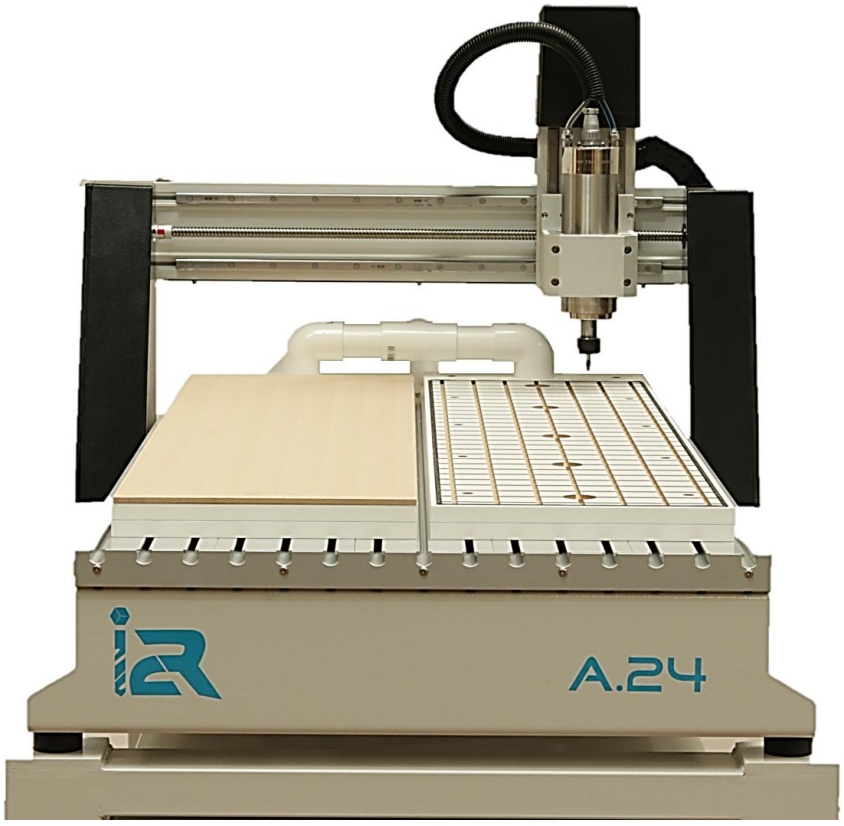
Vacuum Table User Guide



IMAGINATION TO REALITY

BG Precision

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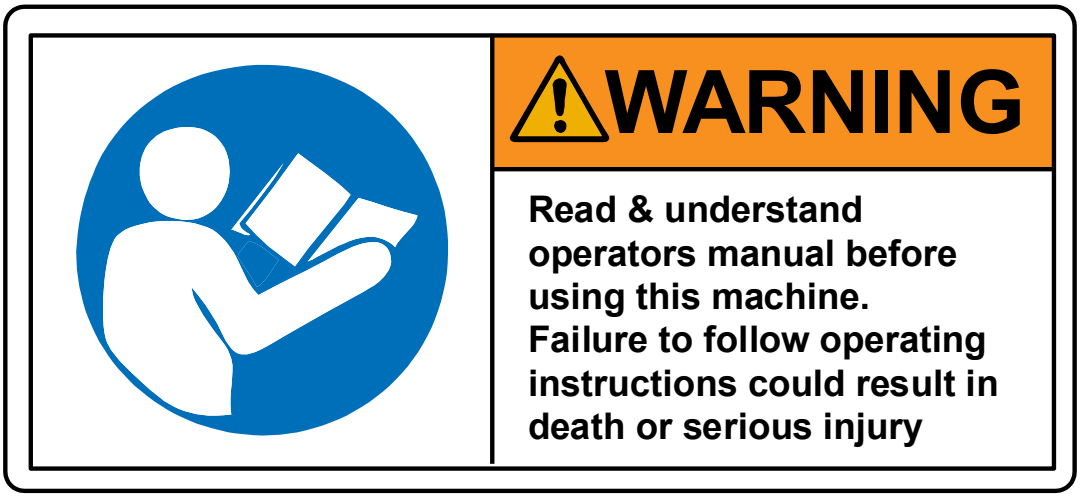
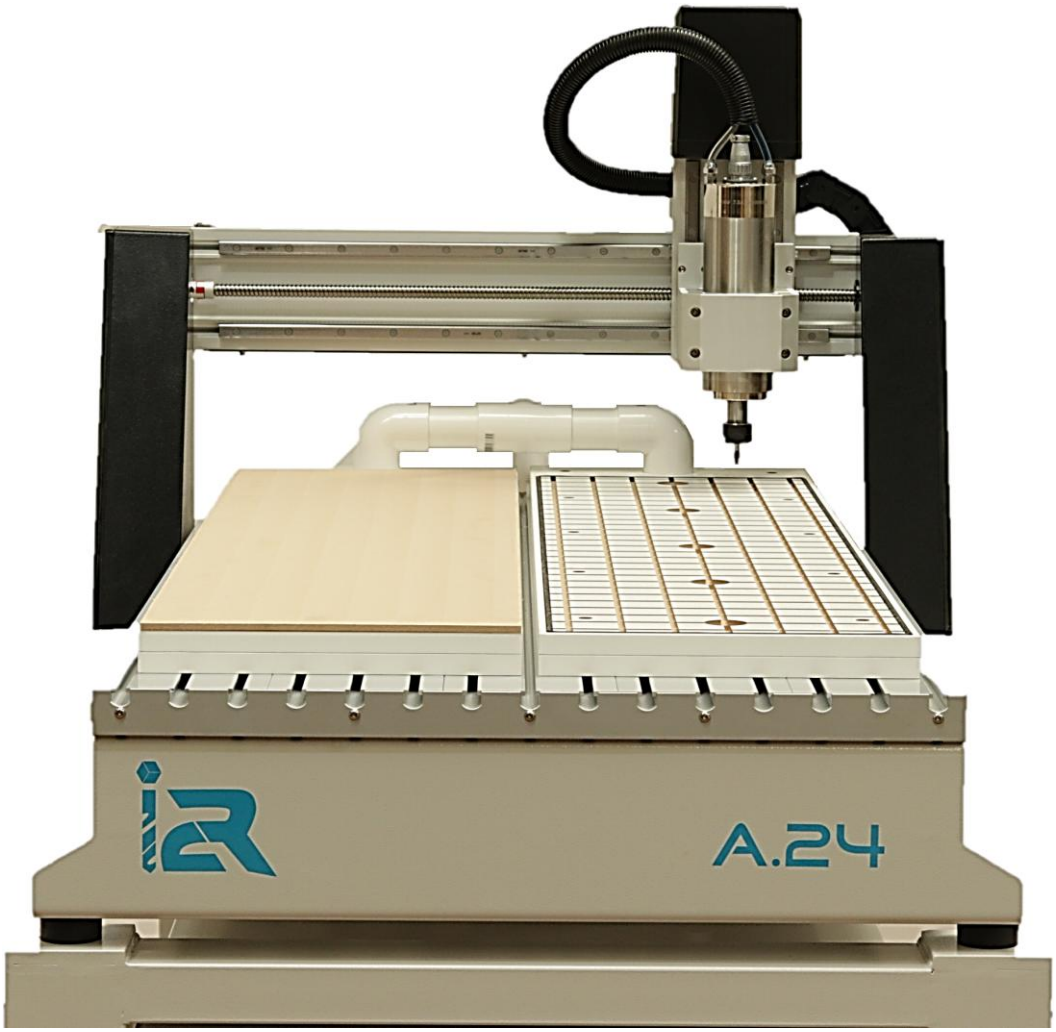


Before using/powering on the machine, the device should be carefully checked to make sure all connections are secure, and the device is technically sound as highlighted in this user manual.

The purpose of this guideline is to describe the purpose and installation of our vacuum table systems.

The Vacuum table kit consists of the top and bottom surface of the tables itself, MDF Spoil board, Vacuum Pump, Pod Filter, Safety Relief and required plumbing fittings.

The vacuum table is effective for holding down flat sheet work on your CNC machine without the need for clamps or other fixture methods. It is NOT suitable for small part hold down or items that don't have a large flat surface area.



Vacuum Tables generate hold-down force or pressure difference between the vacuum pressure under the part and the atmospheric pressure**.** The hold-down force is proportional to that pressure difference and the surface area exposed to the difference. In short, **the larger the surface area of the part you are holding, the more hold down force there is**.

Vacuum Tables are not designed to hold down individual small parts. With this in mind, please note that small parts can be cut from a flat sheet if the surface area of the vacuumed part remains suitably large. **We recommend that at least 1/3rd of the surface of vacuum table is covered**. If the flat sheet is only 1/3rd the size of the vacuum table, you can use offcuts to cover up the remaining exposed areas to improve vacuum. There are also several steps you can take during the process of toolpath generation, for example, selecting the order of cutting from the smallest to the largest part, and choosing a very small 'last pass' height, etc.

The i2R CNC Vacuum Table is designed to sit directly on the Aluminium T-slot Table on your CNC. It is fixed in place using T-slot bolts provided.

A Spoil Board is a sacrificial material placed on top of the machine bed and is intended to be replaced, as necessary. It protects the machine bed (or in this case the Vacuum Table) and allows re-surfacing when necessary. This helps to maintain a truly flat surface to mount material and help maintain accuracy every time.

The MDF spoil board provided should be laid directly on top of the vacuum table to protect the table from overcut and the MDF is porous enough to still pull a vacuum and generate hold-down force. The MDF also help spread the vacuum force uniformly over the surface of the material it is holding.

Just as MDF Spoil board is porous and can be used to spread the vacuum, the sheet you wish to cut may leak vacuum if it is made of anything permeable (foam board, MDF, that sort of thing) or if you introduce too many through holes into it during the machining.

It is recommended after installing the vacuum table on the CNC machine you resurface both sides of the MDF Spoil board.

The main reason for resurfacing the spoil board is to ensure its surface is parallel with the motion of the CNC gantry. Also, this removes the factory wax coating applied during manufacturing of the MDF

which reduces the effectiveness of the vacuum dramatically. Therefore, it is important to resurface both sides.

It is recommended that after resurfacing specific to your set up, you mark top, left and right so if the MDF spoil board is removed, you know what orientation it should be relocated and saves having to resurface again.

Remember to **turn vacuum on first** when setting zero for Z-datum as the datum point setting could be off by a mm or two if the sheet is not vacuumed and held down tight.

BG Precision is not responsible for incorrect use of this document and each user should verify all settings are appropriate for your application. All responsibility for safe and appropriate use of the i2R CNC machine and accessories lies solely with the operator of the machine.

SAFETY NOTE

MDF (and nearly all manufactured wood products) dust can be harmful if inhaled, swallowed, or comes in contact with skin. MDF "may cause sensitisation by inhalation and skin contact" and "may cause cancer by inhalation". We recommend you wear an approved dust respirator, protective gloves, protective clothing, eye protection and face protection. You must avoid inhalation by ensuring good ventilation in working areas. As the inhalation risk is reasonably high, mechanical extraction, air filtration and ventilation are recommended. Ensure good hygiene is maintained when emptying bags, cleaning filters etc. When machining/cutting, wear approved dust respirator to avoid inhalation of wood dust created during the cutting process. Dust will contain wood fibre and may also contain formaldehyde-based resin. Refer to your supplier's MSDS for more detail.