

arte

# Da Vinci CNC Router





### ART DA-VINCI (Heavy duty gantry CNC Routers)

ART Da-Vinci is a heavy-duty 3+1 axes CNC machining center, designed to cut and mill extruded composite, plastic and aluminum materials.

#### FRAME

Made from a combination of tubing and fabricated plates. Tubes have minimum of 9mm wall thickness. Stress relieved and sand blasted for final finishing.

#### TABLE:

Combination of ribbed tubes and plates machined and finished with grooved phenolic tabletop.

#### OPTIONAL LOCATING PINS:

Combination of 3 sides and 2 fronts, heavy duty locating pins controlled through program for squaring the piece on the table.

#### AXES DESCRIPTION

**AXIS 1: X AXIS**, moves back and forth along the length of the machine

**AXIS 2: Y AXIS**, moves back and forth along the width of the machine

**AXIS 3: Z AXIS**, moves up and down along the height of the machine

**AXIS 4: SPINDLE AXIS**, is to adjust the speed of spindle. The spindle can turn from 3000-24000 RPM and this speed is selectable through the program.

#### GENERAL DESCRIPTION OF THE MACHINE

A double sided supported gantry type machining center with the following specifications:

Work area:

X=121"

Y=61"

Z=8"

Traverse speed: (Maximum point-point positioning speed)

X=70 m/min

Y=70 m/min

Z=40 m/min

#### AXIS 1 (X) DESCRIPTION. (INCLUDED)

X is a linear axis along the length of the machine moving to back and forth of the work area. This axis is directly connected to a high precision planetary gearbox eliminating pulley and belt system hence adding higher accuracy and reliability.

X-Axis is mounted on four sets of four rows size (35) linear bearings and rail system.

Power and transmission on the X-Axis is provided by a powerful 2KW digital, brush less AC servo motor and drive system with extremely accurate 17 bit encoder feed back (131000 pulses/Revolution).

X-Axis is coupled to a high precision module 3 helical ground rack and pinion with zero backlash for ultimate accuracy and reliability.

#### AXIS 2 (Y) DESCRIPTION. (INCLUDED)

Y is a linear axis along the width of the machine moving to left and the right of the work area. This axis is directly connected to a high precision planetary gearbox eliminating pulley and belt system hence adding higher accuracy and reliability.

Y-Axis is mounted on four sets of four rows size (35) linear bearings and rail system.

Power and transmission on the Y-Axis is provided by a powerful 2KW digital, brush less AC servo motor and drive system, with extremely accurate 17 bit encoder feed back (131000 pulses/Revolution).

Y-Axis is coupled to a high precision helical grounded rack and pinion for ultimate accuracy and reliability.



### AXIS 3 (Z) DESCRIPTION, (INCLUDED)

Z is a vertical axis along the height of the machine up and down of the work area. This axis is directly connected to a high precision preloaded ball screw and ball nut eliminating pulley and belt system hence adding higher accuracy and reliability.

Z-Axis is mounted on four sets of size (30) four rows linear bearing and rail system.

Power and transmission on the Z-Axis is provided by a powerful 2KW digital, brush less AC servo motor and drive system, with extremely accurate 17 bit encoder feed back (131000 pulses/Revolution).

Z-Axis is coupled to a high precision ball screw and ball nut for ultimate accuracy and reliability.

Z-Axis is balanced with two pneumatic counterbalance cylinders for high repeatability and positioning speed.

### AXIS 4 (SPINDLE SPEED)

Spindle speed axis is a virtual axis, commanding proper speed to the spindle drive. Our machine is equipped with variable speed spindle, which can turn from a minimum of 3000 RPM to a maximum speed of 24000 RPM. The spindle speed is configurable through the programming menu.

### SPINDLE MOTOR

Standard air cooled, 4 poles ER-32 spindle motor . Power of the spindle can be from 5.5KW to 12KW at 380V. (Included)

Optional air cooled, 4 poles ISO-30 spindle motor for this application. Power of the spindle can be from 5.5KW to 12KW at 380V.

Optional liquid cooled, and 4 poles HSK F-63 spindle motor for this application. The HSK series of spindle provides the ultimate hold on the tool and that results to better finish in cuts and longer duty cycle. The spindle bearings are cooled by a heat exchange unit, (included) resulting to more reliability and less downtime due to spindle failure. Power of the spindle can be from 5.5KW to 12KW at 380V.

### OPTIONAL AUTOMATIC TOOL CHANGE (ATC)

Stationary bar type HSK-F63 or ISO-30 ATC with 10 tools capacity.

Stationary sliding bar type HSK-F63 or ISO-30 ATC with 10 tools capacity.

Rotary type ISO-30 or HSK-F63 ATC with 10 tools capacity. Tool crib is located on the left side of the x-axis. (HSK tool holders, collets and tooling is not included)

### ELECTRICAL CABINET, (INCLUDED)

All of our electrical components are CSA and CUL approved. The electrical systems on our machines are designed to work in extreme conditions and all are locally available for simple maintenance and lower overall cost of ownership.

Our electrical enclosure is a true Nema 12 dust proofed cabinet with standard flip over keyboard and mouse platform.

We use high flex shielded cables for all connections. The cables are carried by all enclosed cable tracks to protect them from chips and external elements.

The whole electrical system is approved by Ontario hydro and carries approval sticker.

### CONTROL SYSTEM, (INCLUDED)

Powerful, PC based CNC controller with Windows® XP operating system and 3 interpolated, 2 linear positioning axes.



Controller is capable to work on 3 surfaces of front, back and the top.

DXF converter generating machine codes automatically.

G\_code import capability.

Controller is running separately on a real time operating system while allowing the operator to work in a familiar Windows© environment.

User friendly interface allowing the operator to navigate through menus and options allowing them to edit or create programs right on the machine terminal eliminating the need for additional person for programming.

MDI menu for manual operations.

Tool database allows for information of up to 50 tools to be stored and called through the program. The machine would pick up first 10 tools available in ATC automatically and asks the operator to insert manually the rest of 40 tools, which are not in ATC. With this method although the number of ATC is only 10 but the tool change process extends to 50 tools during a programming cycle which speeds up the operation drastically.

Standard remote diagnostic allowing us to troubleshoot the machine from a remote location saving traveling time.

Automatic spindle warm-up cycle.

Optional macro program to allow for specific operations to be redefined and called up with the push of a button rather than being written each time in programming process. (Not included)

Optional CAD/CAM program. (Not included)

#### OPTIONAL HANDHELD PENDANT

The handheld pendant is equipped with the following functions.

Jog function on X, Y and Z axis enables the operator to jog the machine in forward and reverse mode.

Start and stop cycle buttons enables the operator to start or stop a program while he or she is closer to actual work piece.

Pause mode stops all motions and resume button continues existing motions enabling the operator to inspect validity of operation or a new program.

Federate override controls the overall speed of the machine from 0 to maximum traverse speed on all axes.

#### OPTIONAL SAFETY BARRIER

Safety barrier installed at the front of the machine activated when crossed and pauses all existing motions and resets by resume button. This option is an excellent safety feature to protect the operator from accidental contact with moving axes.

#### OPTIONAL DRILLING UNITS

Independent drilling units with the following specifications:

7+2 vertical and 3x2 horizontal drilling unit

7+2 vertical and 2x2 horizontal and a saw @ 0 degree

9+6 vertical and 3x2 horizontal

Saw unit rotating from 0 degree to 180 degrees.

#### OTHER SPECIFICATIONS

Power requirements for Canada : 600V 3 phases at 45 Amps.

Power requirements for U.S.A. : 460V 3 phases at 55 Amps.

Power requirements for Europe and Asia: 380V 3 phases at 70 Amps.

Air requirements: 7 bars or 100 PSI