

BUSELLATO JET 3006 CNC MACHINING CENTER

Busellato's Jet Series of machining centers are designed for heavy duty routing, drilling and machining of solid wood pieces and flat panels. Busellato offers uncompromising high quality standards and is a ISO 9001 certified machine tool builder by IQNet and CISQ/ICIM. Busellato uses only world class suppliers for critical components not manufactured within The Delmac Group. These externally sourced components are sold and serviced on a worldwide basis and, of course, available in the US.

The Busellato Jet is constructed with a well dimensioned, triangular base of high performance, stress relieved steel. The heavy gauge steel, large footprint, and excellent design ensure vibration free machining. Busellato does not require the machine to be anchored in place nor do we utilize "cement" dampening additives to increase weight. The machine frame is a rigid, fixed arm design with large opening in "Z" for heavy duty applications requiring routing and angle machining of thick panels and solid wood pieces.

Busellato utilizes precision linear motion systems including square rails for all three axes specifically designed to provide high accuracy at travel rates of 75 meters per minute. In this way, the Busellato Jet ensures vibration free routing and milling when routing in the fully extended "Y" axis position. We utilize square rails for their superior strength, precision, double lip dust/grease seal and ability to be pre-loaded. Movement along the "X" axis is by AC brushless digital servo motor, precision "Alpha" reduction gear and helicoidal rack and pinion. Movement along the "Y" and "Z" axes is controlled by a hardened and ground, ball screw, driven by heavy duty AC brushless digital servo motor.

The BUSELLATO Jet employs a heavy duty, digital, programmable solid state frequency inverter. Our inverter supports programmable speed (RPM) control of the router(s). This feature allows the programmer/operator to optimize quality of cut and cutter life by balancing lineal and rotational speed in relation to the number of cutting flutes and material.

Busellato utilizes Z-axis pre-setting which pre-positions the drill(s) over the surface of the panel thus saving vertical travel distance when drilling. This feature enhances drilling quality while saving drilling cycle time.

The standard machine table is divided into two independent workstations, each with separate vacuum control (left hand and right hand). Each zone has two sets of Y-axis stops (mid and rear pins) and four lateral reference points. Thus, it is possible to operate in the left and right zones independently using the front and rear pin stops. In this way, the machine can be operated with up to four independent work zones in X or Y with separate vacuum control. Thus, loading and unloading operations do not effect the machining cycle. All reference pin stops ("0" point stops) are pneumatic cylinder with steel through-rod.

The alignment of all linear guides is achieved with a laser system. The parallel and linear tolerances are within 0.02mm) per linear meter. The testing procedure complies with ISO 230-2 regulations and includes the linear analysis of the axis in terms of average unidirectional deviation, inversion and repeatability values. In addition, the testing on the axis interpolation (circular control) is made with Ball-Bar Renishaw system.

The machine is equipped with a central lubrication system with progressive distribution. The system has a single feeding point for the group of distributors, which send automatically and safely, an adequate volume of lubrication to each lubrication point.

Each machine is supplied to customers complete with all testing and checks certificates, of course, together with a declaration of compliance with the Machines Direction Regulations.

MACHINE SAFETY:

The machine is equipped with **three** front safety mats, rear photo cells, and head shroud cover plus the machine is equipped with the following additional safety systems:

- push buttons for emergency stop
- software and hardware to monitor the safety distance
- check sensors for the vacuum and compressed air level

Safety during the working phase: The machine is equipped with inductive sensors to verify the position of the working units as well as the horizontal spindles in order to avoid possible collision with the locking devices or panel.

TECHNICAL SPECIFICATIONS:

USEFUL WORKING FIELD

-X axis	3050 mm (120.1") ✓
-Y axis	1220 mm (48") ✓
-Z axis	190 mm (7.5") ✓
-Maximum panel thickness	150mm (5.9") ✓

TOTAL AXIS STROKE

-X axis	3360 mm (132.3") ✓
-Y axis	1410 mm (55.5") ✓
-Z axis	190 mm (7.5") ✓

*See tool limitations subject to head configuration

Max. axes positioning speed:	X axis = 80 mt/minute
	Y axis = 70 mt/minute
	Z axis = 15 mt/minute ✓ ↓

-Operating pressure	6 bar/90 PSI
-Dust hood diameter	300 MM
-Dust extraction	4500 CFM
-Air fitting	5/8"
-Voltage(30 KVA transformer included)	220-480/60/3phase
-Machine weight with standard head	3700 Kg.

PC NUMERICAL CONTROL:

The PC Numerical Control is complete with Genesis software, featuring the following:

- Windows NT 32 bit operative system
- Panel programming Editor especially studied for boring/routing machines for the woodworking industry with the following possibilities:
 - programming of single drills, multiple drills, fitting drills and drills on the horizontal side;
 - programming, on the three Cartesian axes, of linear, circular and oval routings;
 - chamfering and connection programming with automatic change of speed;
 - programming of grooving and routings always oriented in respect to the Z vertical axis and in respect to an axis perpendicular to the Z axis; tool radius programming with automatic correction; parametric programming with the possibility to associate up to 111 parameters;
 - programming with mathematical, trigonometric, inverse trigonometric, transcendental and logical instructions; programming of conditioned programs skipping;
 - programming of origins in respect to the work piece; incremental or absolute programming;
 - programming of sub-programs with possibility of multiplication mirroring and rotation of the above; management of up to 160 tools; in line recall of the machine set up and tools specifications; graphic helps for all processings; multiple level zoom function;
- Evaluation of the theoretical and real execution time.
- Possibility to print ISO codes or a graphic print of the programmed work piece.
- Possibility to exclude selected types of processing.
- Execution of single programs repeatable up to 9.999.999 times and lists with sequences of 16.000 programs repeatable up to 9.999 times.

- Optimizer of the tool path with the possibility to choose the priority of processing.
- Automatic reduction of the feeding speed in relation to the inverter's absorption.
- Visualization of the r.p.m. and absorbed current.
- Tools archive with the possibility to set parameters for 200 different types of tools and draw visual icons for tool shapes.
- Manual and machine diagnostic functions in real time with intuitive management made easy by graphic helps.
- Logic status analyzer and oscilloscope function.
- Importation of ISO text files.
- Positioning of panel supports and vacuum cups.
- Axes speed control during interpolation and variable speed rotation for spindle from 0 to 100% by means of potentiometer.

Note: One copy of Genesis comes with the machine but the customer has full license to duplicate and use on other computer workstations

PERSONAL COMPUTER

Personal Computer Intel processor with Windows NT, 32 bit, 128 KB cache memory, 8.4 Gb Hard Disk, 64 Mb RAM, Floppy Disk 3 1/2", CD ROM 32X, 15" color screen, 2 I/F serial ports, parallel I/F, integrated modem, Ethernet card, complete with keyboard and mouse.

Integrated modem with PC Anywhere software for DMG's on-line technical support. Customer should arrange to have a direct, "clean" phone line for the modem connection to the machine. A second voice line is also helpful.

THE MACHINE IS EQUIPPED WITH:

Jig locking device for 2 working areas.

Each working area is equipped with 2 vacuum plugs for the jig-locking device.

- 71250** Air conditioning and pressurization system for the electrical cabinet. The system allows the temperature inside the electrical cabinet to be maintained at a suitable level and guarantees a dust free environment.
- 71027** Work stops for machine equipped with 4 working areas in Y, complete with 4 foot-pedals.
- 73099** Cooling system for the coolant liquid for HSK-F63 electrospindles complete with thermal exchange unit and pump for re-circulating the coolant liquid.
- 71131** Six (6) panel supports 1250mm long with pneumatic clamping on each running guide in X, complete with metric line. This type of panel support is particularly suitable for routing without jigs, horizontal drilling and machining using horizontal routers. Built of a strong aluminum structure, with vacuum cup guiding rails, it is equipped with two retractable pneumatic stops for DOUBLE "0" LINE (2 lines of stop).

- 6564** Six (6) vacuum cups 162x155 mm. – diam. 115 mm with pneumatic locking. Device can be positioned manually and locked pneumatically on the modules that make up the work bed. Cups are designed with special self-including valves that open automatically only for locking the panel, thereby avoiding loss of vacuum in the remaining vacuum cups not in use.
- 6563** Twelve (12) vacuum cups 88x155 mm. - diam. 70mm with pneumatic locking. Device can be positioned manually and locked pneumatically on the modules that make up the work bed. Cups are designed with special self-including valves that open automatically only for locking the panel, thereby avoiding loss of vacuum in the remaining vacuum cups not in use.
- 5942** Pre-arrangement for pushers and/or vertical clamps.
- 61069** Panel lifting unit for 4 panel supports with pneumatic movement mounted on the side of the panel supports.
- 6434** 100 m³/hr vacuum pump. Rotating pump with vanes for generating vacuum with an extraction capacity of 100 m³/hr. The vacuum pump's vane works in an oil bath. A tank for the oil collection is mounted on the pump's outlet and also serves as a silencer and fume reducer. 2,2 kW electric motor coupled by means of joint.
- 77053** TF 17+8 boring head
Working unit for vertical and horizontal drilling with independent spindles.
Made in light aluminium alloy with high mechanical properties, the unit is equipped with:
* 17 spindles with vertical outlets, 32 mm pitch, of which 10 spindles are along the X-axis and 7 spindles along the Y-axis.
* 3 double-outlet heads for horizontal drilling orientated in "X" axis, 32mm pitch.
* 1 double-outlet head for horizontal drilling orientated in "Y" axis.
* 1 integrated saw unit for 120mm-diam. blade in "X" axis.
All spindles rotate simultaneously and in alternate sequence, right and left. The independent insertion movement of each spindle, by means of pneumatic cylinders, allows both single and multiple drillings.
The special internal arrangement of the bearings that drive and support the spindle's axis gives high performance and durability to the whole unit.
The working unit is rotated by an asynchronous 2.2 kW electrical motor controlled by "inverter".
The motor, in turn, activates the kinematic chain made of special steel gears with wide, rectified and thermally hardened teeth.
The tool attachment is designed for 10mm cylindrical shanks.
- 73066** FRONT electrospindle 10.3 kW (14HP), HSK-F63 system, with "C" axis (0-360°) capability for automatic tool changes. This option provides the ability to use special aggregates that are controlled by a servo motor and programmable at any angle. It is recommended that the customer purchase one aggregate with the machine to facilitate up front training.
* Inverter driven electrical power
* Asynchronous three-phase 4-pole motor, maximum power 10.3 kW (14HP), 18000 rpm. with re-circulating liquid cooling system.

* Tool locking by Belleville washers, unlocking by pneumatic piston, 3 proximity sensors assure the correct locking, 1 sensor controls the spindle rotation.

The electrospindle unit is mounted on a carriage which slides on hardened steel, double section, linear guides with high mechanical endurance and pre-loaded and lubricated ball runner blocks which guarantee an equal loading capacity in all 4 directions. Pre-selection of the spindle is automatic by means of a pneumatic piston. The rotation sense, either LH or RH, is set by CNC.

621100 Automatic 10-position rotary tool changer for HSK-F63 electrospindle. The group is motorized and managed by CNC. Mounted on the boring head, it allows tool change without interrupting the pendulum working cycle.

73011 24000 r.p.m. ceramic bearing kit for 9.2 kW (12.5HP) / 10.3 kW (14HP) HSK-F63 electrospindle.

79054 Angular saw/router aggregate, manually adjustable 0-90° with respect to the vertical axis, mounted on HSK-F63 cone for electrospindle. Outfeed shaft 30 mm. diameter with ERG25 attachment for routing tool diameter 12mm. Threaded ring nut for mounting blade maximum diameter 180mm. in alternative (diameter to be verified for machine model). Maximum rotation speed 6000 r.p.m. with peaks of 9000 r.p.m. for short periods of time, programmable by control. (For electrospindles equipped with 0-360° CNC unit).

71070 1-outlet horizontal router 5.5 kW (7.5HP), RH rotation, controlled by inverter, max. rotation speed 18000 rpm., programmable by control. Vertical movement on hardened steel, double section, linear guides with high mechanical endurance and pre-loaded and lubricated ball runner blocks which guarantee an equal loading capacity in all 4 directions, pneumatic downstroke pre-selection. ERG32 tool attachment. XXXXXXXXXX

6064 Eight (8) HSK-F63 cone R.H. rotation for electrospindle with ERG40 COLLET attachment from 3 to 26 mm. diam. complete with nut and shank for locking cone.

XXXX Eight (8) ER 40 collets, customer to specify size.

Per Lindsay - 7/11/02
 3- 1/4" 1- 5/8"
 2- 3/8"
 2- 1/2"

6222 11 kW multi-function digital inverter for controlling all units on the machine.

4450/A "AUTOLINK" Seamless Link and "AUTOBAR" Bar Coding software

AutoLink (AL) is a seamless conversion program designed to automate the transfer of geometrical information from CAD and Cabinet Design programs to the **Busellato Machining Center**. The program will work with most any CAD system that generates a true DXF file. The system requirements are Windows 95/98/2000 or NT, Pentium processor 233 and 32 meg RAM.

AL is designed to be controlled from CAD so the operator has unlimited flexibility switching between screens. For AutoCAD (14 or 2000) users, Panel Maker is included making parts creation a snap. Drawing conversion is a one 'click' operation. Panel Maker provides a collection of dialog boxes for fast drawing generation. Dialog boxes are accessible within AutoCAD for: Border, Vertical Drilling, Horizontal Drilling, Groove Saw, and Routing.

If you use other CAD or Cabinet Design Systems, AL can be set to automatically or manually process DXF files from CAD or CDS, as well as automatically batch process the multiple DXF files exported by Cabinet Design Systems.

For all users, AutoLink will:

- Batch Process (generates binaries if desired)
- Automatically bring up the Busellato graphic program editor to view results
- Synthesize Lead-ins and Lead-outs with ramping if desired
- Z axis oscillation for the router to more evenly distribute bit wear
- Automatically move the start point of an inside cutout to prevent the corner overshoot
- Automatically route to depth in multiple passes when desired
- One line in the drawing can represent multiple passes or multiple routers .
- Breaks large drawings up into multiple G code programs when needed
- Pocket routing is easily done from a rectangle or rectangle with rounded corners in the drawing
- Complete control of routers from within drawing
- Can process drawings that use lines, arcs, circles and polylines
- Can route slopes from 2D drawings

- Supports horizontal routing
- Cursor help tells you what each item in AutoLink does just by placing the cursor on the item
- Generates a cutlist file and a .PTS file

AutoBar generates custom designed barcode labels in a user defined format from: G code program files, CSV files, or CPOUT files (labels are printed in the order the parts will be cut). Labels can include the part image and placement icon to assist the operator. Embedded codes in the barcode ready the machine for part placement and clamping. Panel support and vacuum cup layout is supported on bar code. AutoBar supports Scanpression (2D barcode) where the barcode contains the complete machining program.

If you desire to read barcodes at the machine, DMG recommends you purchase the DMG installed Symbol Scanner when the machine is purchased. DMG will provide phone support to the customer's system integrator for automatic printing and bar code integration with other systems: saws, printers, etc. On-site system integration can be purchased at DMG's standard published rates. Busellato has successful installations with the following software packages: AutoCAD, AutoCAD Lite, CadCode, CabnetWare, Cabinet Vision, Design CAD, Drill Mate (Pattern Systems), Easy CAD, Generic CAD, Holzma Cutrite, Keytrix Data Systems, Kreate, Microstation, and MicroVellum. One copy of Autolink is included with the machine and may not be copied.