INSERT 1300

OMAL Horizontal Bore and Dowel Machine

The INSERT 1300 Horizontal **Bore, Glue, and Dowel** machine is a numerically controlled machine to drill, glue and insert dowels on horizontal pieces with FOUR loading zones.

The machine is designed to manufacture furniture or cabinets components.

It can be used as part of a work cell to increase production of point to point and Cnc routers by moving the horizontal drill and dowel operation or as a standalone machine.



Machine Cycle

The program is selected from the machine control and applied to the working list. Parts are manually loaded against one of the four reference stops. Holding clamps are activated for each working station through foot pedals. For longer parts the center reference can be removed or excluded and machine can work as single field. Once the parts are clamped the operator can start the drill and dowel operation. Parts are automatically released at the end of the working cycle and the operating head moves to next program provided that another panel has been loaded. The machine works in tandem if parts do not exceed 650 mm (1250 with 2500 mm working field). On each field is also possible to process different programs.

Premium features of Omal drill and dowel inserting machines

The dowel insertion revolver holds a dowel while a dowel is inserted plus checks via **fiber optic** sensor to see if next dowel is present to prevent misfeeds.

The OMAL "**SURE SHOT**" revolver system guarantees a dowel is inserted every time!

Cycle time of approximately **ONE second** for each bore, glue, and dowel insertion when holes are on 32 mm intervals.

No drip glue nozzle: Omal utilizes stainless steel pin and nozzle assembly precisely machined to ensure water/glue does not leak. Omal manufactures is own glue guns using a 3 seal system to avoid glue from seeping back through the needle. Programmable electronic control of glue amount. The injector unit is equipped (option) with an inductive sensor to verify glue is shot.

The machine is equipped standard with **one horizontal drilling unit and a single glue and dowel insertion unit** with standard set up for 8mm dowels (6 or 10 are also available with no extra charge).

The selection of the loading zone (left, left center, right center, or right) is executed by CNC. The center reference can be removed or excluded for large panels.

The standard machine is fitted with robust clamps suitable to **protect delicate materials** to hold panels horizontally for edge drilling.

Large Vibrator dowel hopper to avoid frequent refilling

Four working references and two zones

The machine is suitable to work with **traditional or pre-glued dowels**

Heavy duty steel frame to ensure maximum rigidity and avoid any possible vibration, movement of the carriage by ball screw on linear guides with brushless motor

Work bench made of phenolic anti-scratch material to protect most delicate panels and give proper support.

Centralized lubrication system for all linear bearings

Efficient Dust extraction system

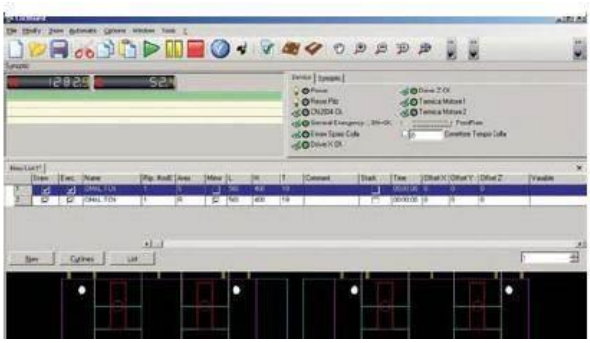
Equipped with left and back **safety protection fence**

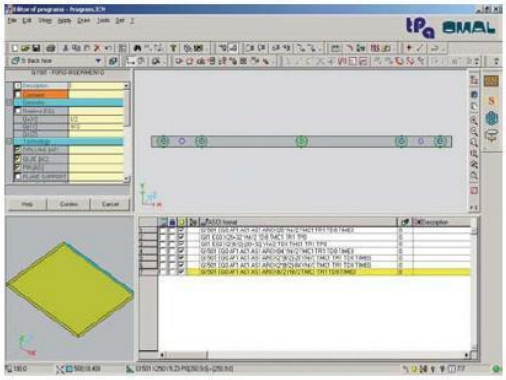
CE regulations

OMAL utilizes Wood System by TPA as the software interface for the machine. The user friendly software makes the machine extremely versatile. The machine is equipped with a full PC interface used for writing and storing programs. Programs can be written parametrically, can include IF/THEN conditional statements, and are generated using graphical icons (drill, glue, dowel check boxes). The selection of the offset of tools for inserting and for operations on different left and right hand references is automatic.

The machine is programmable in the X axis with precision brushless motor, ball nut and ball screw**.** The movement of the carriage is on linear rails with square guides.

The software has a list manager that allows different parts to be run in each field and to control the production sequence. Lists can be saved for future reference plus the machine can be controlled by bar code list and/or program names.





PC Numerical control:

Machine equipped with PC for control of all axis Operating System: Windows 10 IOT - Color 17” flat screen monitor
Ram 4 GB DDR4
SSD 128 GB
Complete keyboard + mouse Ethernet network card 10/100 Multitasking CNC
Connection to CNC with USB port

CNC Characteristics

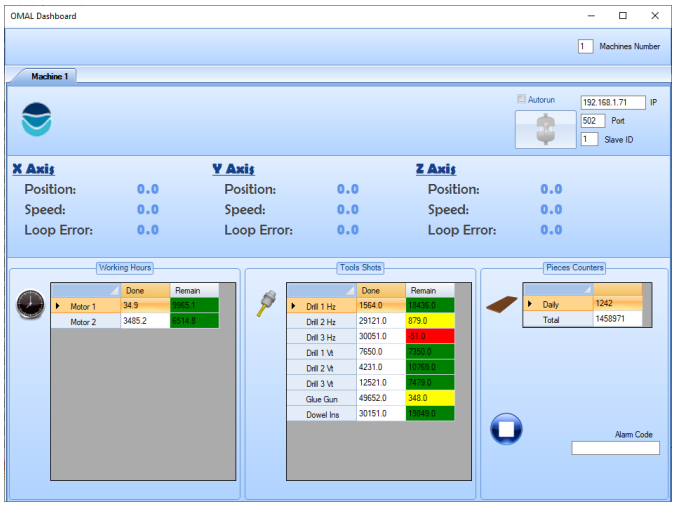
- 3 axis NC
- 3Mbit Fieldbus for input/output remote

- Very simple and intuitive software
- Automatic left, center, and right program
- List manager to sequence programs
- Graphic menu for selection of macros:
- Boring
- Boring + Gluing
- Boring + gluing + dowel insertion
- Gluing +dowel insertion
- Parametric programming
- Graphical aids
- Conditional programming with built in simulation checking
- Pre-programmed executive lists which can be edited run-time and structured into articles
- Internal self-diagnosis, historical report of alarms

Industry 4.0

Display showing motor hours and timers for each tool.
The thresholds for predictive maintenance can be set on the machine;
(e.g. replace belt or bearings when a certain number of motor hours are reached).
The system shows POPUP in the machine when the timers are reached or it can send a warning e-mail for maintenance.

<u>OPC UA data exchange protocol</u>



Screenshot office interface for industry 4.0

Code	Description	Image
AS-INSERT	Horizontal Bore and Dowel Machine	
VR-1300	Standard dimensions of pieces: -max width of pieces 1300 mm or 650x2 -height of pieces 10-40 mm X Axis: working area 1300 mm installed torque 2,4Nm head travel speed 60 m/min Z Axis: working area 60 mm installed torque 1 Nm head travel speed 15 m/min Y Axis: working area 50 mm installed torque 1 Nm head travel speed 15 m/min	
VR-Z manuale	Z Axis manual setting: working area	
VR-HZ DRILL	Horizontal Drilling Unit: -N° of independent drilling units 1 -drills rotation speed 6000 rpm -max depth of the holes 40 mm -max diameter of the drills 25 mm	

VR-SPINA8	Dowel Insertion Unit: -N° of dowel insertion units 1 -dowel dimension (other dimensions upon request) ø 8x30/40 std -max dowel projection 14mm -fiber optic sensor to check for dowel presence	
VR-BIDONI	Gluing Plant: - glue tank capacity 8 Lt - max glue density 900 cps - programmable electronic control of glue quantity - glue gun with inductive sensor to verify glue is shot - injector with double, reinforced seals to insure no leakage by needle	
VR-CE	CE REGULATIONS	
VR-VOLT 400	General Information: -Voltage 400V 3Ph+N 50Hz -Control voltage 24 V -Air pressure	
VR-Pallet 1300/1550	Packing on pallet for Insert 1300/1550	

Code	Description	Image
VR_4AREE	Kit for 4 working zones with complete with 4 buttons for the start and 2 electro valves	
VR_FOROPASS	Special table for Insert 1300 with a dedicated area for face through drilling	
VR_INVERTER	Handling of drilling speed with inverter from 4000 to 7000 rpm	
VR_KIT-SP	Setting of machine and kit for the use of two different dowel diameters	
VR-1550	Standard dimensions of pieces: -max width of pieces 1550 mm or 720x2 -height of pieces 10-40 mm X Axis: working area 1550 mm installed torque 2,4Nm head travel speed 90 m/min	
VR-2500	Standard dimensions of pieces: -max width of pieces 2500 mm or 1220x2 -height of pieces 10-40 mmX Axis: working area 2500 mm installed torque 2,4Nm head travel speed 90 m/min Z Axis: working area 60 mm installed torque 1 Nm head travel speed 15 m/min Y Axis: working area 50 mm installed torque 1 Nm head travel speed 15 m/min	
VR-3200	Standard dimensions of pieces: -max width of pieces 3200 mm or 1590 -height of pieces 10-40 mm X Axis: working area 3200 mm installed torque 2,4Nm head travel speed 90 m/min	
VR-ADJ STOP	Special central stop which can be manually set on any angle	
VR-BARCODE	Bar code and Qrcode reader gun wireless	
VR-CLAMP	Additional clamp	
VR-LASERX	Laser device to detect panel length	
VR-LASERZ	Laser device to detect panel thickness	

VR-MEMBRANA	Gluing plant with membrane pump. Pump equipped with stainless steel membrane, pressure regulator able to maintain a constant glue pressure also when the pump inverts the pumping cycle to check its correct operation + scale to control the presence of glue in the system to check its correct operation	
VR-POMPA 2-1	High pressure glue pump complete with pump support, glue/water switch for cleaning, glue filter and glue pressure regulator Pump equipped with stainless steel membrane, pressure regulator able to maintain a constant glue pressure also when the pump inverts the pumping cycle to check its correct operation + scale to control the presence of glue in the system to check its correct operation	
VR-SBANCO	Sensors for machine automatic start	
VR-SENSOR	Glue gun complete with a glue sensor to check its correct operation	
VR-SENSOR_SCALE	Glue gun complete with a glue sensor to check its correct operation + scale to control the presence of glue in the system to check its correct operation	
VR-SREF	Sinking side reference	
VR-TEFLON	Special teflon coated working table for Insert 1300 to protect painted panels and delicate surfaces	
VR-TRASF	Transformer for different voltage 400V 50/60 Hz	
VR-TRSCARICATA	Open frame for Insert 1300 to allow loading of panels larger than 1300 mm. (This option includes 1 side and 1 central sinking reference)	
VR-TRSCARICATA DOPPIA	Open frame on both sides for Insert 1300 to allow loading of panels larger than 1300 mm. (This option includes 2 side and 1 central sinking reference)	
VR-VIBRATOR	Extra vibrator support of two different dowel diameters	

VR-Z CNC	Z Axis CNC: -working area 40 mm -installed torque 1 Nm -head travel speed 15 m/min -N° of independent drilling unit 1 -drills rotation speed 4500 rpm -max depth of the holes 30 mm -max drilling distance from edge 50 mm -max diameter of the drills	