morbidelli m400f

CNC MACHINING CENTRE

MAIN FEATURES

"PRISMA" 5 AXIS MACHINING UNIT:
QUALITY AND PRODUCTIVITY AT THE HIGHEST LEVEL

"XILOG MAESTRO" SOFTWARE:
SIMPLY INTELLIGENT

MULTI-FUNCTION TABLE:
PERFECT STABILITY OVER A LONG TIME

TECHNICAL DATA

		MORBIDELLI M400F
AXES		
Working area along X axis (inside the stop)	mm	3650 - 4970 - 6170
Working area along Y axis (maximum panel to be loaded on rear stops)	mm	1320 1600 1840 2120
Panel clearance Z / No. of axes Z	mm	170 / 1
Panel length (for alternated work process)	mm	1650 - 2350 - 3000
Vectorial speed X-Y axes "pro-speed"	m/min	85
Stroke along Z axis	m/min	30
INSTALLATION		
Installed motor power	KVA	62÷82
Compressed air consumption	NL/min	400
Exhaust air consumption	m³/h	4430
Exhaust air speed	m/sec	25
Exhaust outlet diameter	mm	250

GENERAL FEATURES

CNC working centre to carry out wooden or similar materials machining with gantry structure and multifunction worktable, capable to carry out:
- vertical drilling on the panel surface
- horizontal drilling on all 4 sides
- grooving with disc cutter
- 3-4-5 axes standard routing operations

BASE AND MOBILE UPRIGHT

The base frame and moving gantry are the two elements that form the basic machine structure. They have been designed and built so that they constantly guarantee top quality finishing even during the most demanding stages of machining.

They are made with thick plate metal with stiffening ribs at the points subject to the greatest stresses, able to assure the maximum accuracy and high finishing quality even during machining in which heavy material removal is required.

Machining conditions are simulated during the design stage using a three-dimensional CAD solid modeling system, to highlight any areas of the structure subject to deformation.

All mechanical machining is performed on machining centres with a single positioning operation to guarantee the strict planar, perpendicular and precision tolerances.

AXES DISPLACEMENT

The displacement of all axes has been carried out by high precision rectified linear guides with pre-loaded recirculating ball pads to assure the maximum movement at high speeds and elevated accelerations.

Absolute positioning precision of the **mobile upright** (X axis) is carried out by

rack and pinion; while the recirculating ball screw assures absolute positioning precision of the **operating unit** along the mobile upright (Y and Z axes).

MOTORS, DISPLACEMENT DEVICES AND INVERTER
The perfect mechanical dynamic and high positioning precision is driven by high quality Brushless motors and Inverter sized to obtain the high speed performance of the displacement of up to 90 m/min providing maximum quality and finishing results.

CNC CONTROL UNIT
Control Unit designed for Boring and Routing Centres and Xilog Maestro operator interface installed on PC.

Pc-Office
– Windows 7 operating system
– 17" LCD colour display
– Qwerty keyboard (english layout)
– mobile control panel
– **Xilog Maestro** interface machine software

General features of the Xilog Maestro software

Programming
– parametric, graphic and ISO programming
– import of the DXF files (2D: the "SPLILINE", "POLYLINE 3D", "ELLIPSE" geometries cannot be imported; with autocad 2014 it is possible to export ellipses like polylines using the "PELLIPSE"variable)
– linear and circular interpolation on the three directions, with linear interpolation in the space and helicoidal interpolation in the selected direction
– guided editor with graphic and syntactic help screens for boring and routing operations
– automatic optimisation of boring and tool change cycles
– panel origin change to carry out processing of workpieces with special shapes or profiles
– CAD/CAM Routocam (SCM) - AlphaCam complete interface
Included accessories
– on-line calculator of computed data
– use of bar codes with already integrated software
– selfdiagnosis and signalling of possible errors or damages in the user's language
– single step operation for manual control of individual program steps
Configuration
– operator interface in user's language (I - GB - F - D - E)
– machining head graphic configuration
– double override which allows to adjust the operating unit positioning and working speed
– automatic machining speed selection
– SCM CNC - JERK function management for dynamic control of accelerations/decelerations

SAFETY REGULATIONS

Machine in conformity with the standard safety regulations according to the countries of machine destination.

NOTE

All versions are delivered with the "pro-speed" version with bumpers and photocells.

The customer can also select the installation of the machine with the "pro-space" version without front photocells - in this case the speed of the X axis is limited to 25 m/min due to the reduced crosswise overall dimension.
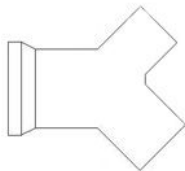
Standard devices for basic machine:

Remote machine control
to transfer the control commands and allows their use next to the machine.

Control panel with lengthened cables
It allows the cables lengthening from 2,5 mt to 6 mt.

Centralized exhaust hood

Air conveyor which groups all the machine exhaust outlets and allows to connect it to the general dust collector system through one main exhaust outlet.

Inside the main dust collector are fitted pneumatic cylinders that control automatically the opening/closing of each exhaust outlet when the operating unit is switched on/off.

Inverter for boring head
It allows the rotating speed programming up to 8.000 rpm maximum for the drilling bits and 10.000 rpm for the blade, exploiting the same inverter of the electrospindle.

High performance aluminium multifunction worktable
High capacity vacuum aluminium alloy table, with "T" slots and 2 working fields.
Vacuum holes set at 120 mm pich (with screw closure). Grooves are set at 40 mm from each other for fixing of the workpiece using rubbers seals.

Automatic centralised lubrication

The correct grease level on the machine moving parts is always maintained by means of an electronic control (X, Y, Z axis).

Presetting for up to 2 vacuum pumps

Pneumatic presetting to retrofit up to 100 or 250 m³/h vacuum pumps.
N.B.   - Electrical connection is not foreseen
- Connections at customer's charge

Hardware key for Xilog Maestro

TELESOLVE teleservice via internet

Teleservice system to connect the machine pc with the service centre via internet.
Software equipment: connecting program which allows:
– operator's interface visualisation
– signals diagnosis
– on-line verification and modification of the status of configurations, parameters and machine programs
– data back-up and files transfer operations
– upgrade operations for machine logics ans operator's interface

Production code: M400F

10.99.20	**Basic machine in conformity with CE Norms**	N. 1
R2.35.41	**MORBIDELLI M400 F 3650x2120**	N. 1
52.35.79	**-C- equipment**	N. 1
93.07.31	**Volt 400 EU**	N. 1
93.12.01	**Frequency 50 Hz**	N. 1
63.03.73	**Upgrade to "TECPAD" remote control with 7" touch-screen colour display**	N. 1

Mobile control panel which allows the machine control for all programs   execution, the manual control of axes, the errors management and the graphic positioning of rails and pods.

Mobile control panel able to fullfill multiple operations on the machine.

It is equipped with:
- n.2 override potentiometers to manage speed on operative devices (i.e. drilling bits rotation, main axes speed etc.)
- n.19 buttons on keypad: 6 keys are command keys, useful for a direct machine control while the remaining 13 keys are function keys, useful for navigating and operating through the panels of the software application (i.e. managing the positioning of pods and rails during set-up phase). The letter or the symbol printed on the keys reminds the function
- n.1 red push-button to activate emergency state
- a rubber protection against accidental damages
- a left side handle to give the operator the ability to act easily on commands with the right hand free
- back side magnets to allow the operator an easy and immediate placement on the metallic parts of the machine so to have both hands free.

52.37.67   Additional pushbutton   **N. 1**

Positioned on the LEFT side of the loading area. It allows:
- Program start
- <u>With ProSpeed machine version</u>: Reset of the maximum movement speed when the operator goes out from the loading area
- <u>With Matic table:</u> set up ot the work table

F18L boring head (12+4+2+blade in X)   **N. 1**

It includes:
- no. **12** independent vertical spindles (7 right and 5 left)
- attachment for bits: 10 mm diameter
- rapid bits locking with 1 screw
- centre-to-centre distance between axes: 32 mm
- no. **3** horizontal double drilling heads (1+1), **2** along X and **1** along Y direction (attachment for bits: 10 mm diameter)
- rotation speed: 4.500 rpm, with inverter: 8000 rpm maximum
- no. **1** integrated blade along X axis (*125 mm max. diameter*)
- rotation speed: 5.500 rpm, with inverter: 10.000 rpm maximum
- 2,2 kW motor power
- vertical pneumatic ON/OFF stroke of each vertical spindle: 60 mm
- vertical pneumatic ON/OFF stroke of each horizontal head: 75 mm

63.04.28   **"Prisma 5" 5-axes group "KT" version (upgrade from "KS")**   **N. 1**
It includes:
– HSK F 63 quick release tool-holder
– 1500 - 20000 rpm spindle speed
– (S1/**S6**) 11/**12** kW (15/**16,5** Hp) motor power from 9000 rpm
– right and left rotation
– static inverter for continuous speed and rapid shutdown of rotation
– B axis rotation: ±185°
– C axis rotation: ± 320°
– C axis locking with TTS system (Total Torque System, SCM patent)
– liquid cooling
– exhaust hood around whole perimeter with pneumatic exclusion
– positioning speed of B and C axes: 7000 °/min

Liquid cooling group   **N. 1**
It allows to maintain a constant liquid temperature for the electrospindle cooling, avoiding the overheating.
It includes:
– liquid pump
– liquid-cooling radiator
N.B. Only for electrospindles with liquid cooling

Presetting for angle-driven heads with preloading device - 5 axes   **N. 1**
It allows the angular-driven heads fitting on electrospindle and eliminates any mechanical coupling plays.

R16 automatic tool-changer   **N. 1**
positioned on the operating unit support beam. It can house no.16 continuously positioned tools with 80 mm diameter or no. 8 tools with 160 mm maximum diameter .
 - 8 kg max. tool weight
 - 48 Kg max. total weight

TR12 - Side tool holder   **N. 1**
12 positions side tool changer for tools and heads.
– 300 mm (3 axes) or 350 mm (5 axes) maximum tool diameter
– 130 mm centre-to-centre distance between the positions
– 8 kg maxim weight for each tool

52.22.87   **Panel thickness detection device**   **N. 1**
Electromechanical device located on board of the operating unit and able to detect the thickness of the panel to be machined or the baseboard supporting the panel to be machined.

The thickness just evaluated will be sent to the Numerical Control which wil update automatically the panel data in sight of the successive machining program which recalled this function (it is strongly suggested involving parametric programming to take full advantage from this practical function).

| **52.22.86** | **Measuring device for tool length** | **N. 1** |

It allows to measure directly on the machine the length of the tool installed on the electrospindle.

| | **Removable stops for A and D fields controlled by NC** | **N. 1** |

The device includes: no. 2 front stops and no.1 side left sotp for A field,
no. 2 front stops and no. 1 side right stop for D field. Total 6 stops.

| **52.36.29** | **500/600 m3/h 50/60 Hz high capacity vacuum** | **N. 1** |

This system foresees no. 2 vacuum pumps and a special connecting system that provides a high air flow between work tables and the vacuum pumps. It is suggested for very transpirant material.

| **63.03.59** | **Additional key for Xilog Maestro (USB port)** | **N. 1** |

| **63.00.53** | **"GENIO" CAD/CAM Software for NESTING processing** | **N. 1** |

CAD/CAM "**Genio**" which already includes the
NESTING option for GENIO cad/cam
Characteristics:
– AutoCad® OEM application.
– CAD environment with engine and AutoCad® functionality
– On view 2D or 3D design possibility.
– Drawing with Orthogonal functionality, various Osnap functions.
– Various Zoom possibilities.
– Tools and suction cups data import from Xilog/Xilog Plus machine control.
– Tools data and suction cups position programming
– Cancellation, alteration, displacement and copies of geometries and processings.
– Geometrical and symmetrical work programmes (Mirror function).
– Rectangular and circular series programming of geometries and processings (Array function).
– Manual dimensioning of any entity, both for video and for print
– Customized lay-out prints.
– Copy, paste, move functions.
– Parametric macro programmes to customise programs.
– Standard and optimized drillings and holes lines, on any working surface directly as processings or applicable to

already created geometries.
- vertical routings, applicable to any processable geometry.
- Choice of starting point for closed tool runs.
- Speed change for routing processing.
- Linear or concentric interpolation on closed solid geometry of any form. Automatic recognition of the internal parts only on linear internal routings.
- Management of work sequences by manual, duplication/deactivation, cancellation, modification.
- Text and symbols, read by true type fonts, managed as workable geometries
- Block of various entities which can be included in any design.
- Connection with digitizer for point making on a profile
- Export programmes for CNC Working Centre with Xilog control.
- Import programmes for Xilog XXL format.
- Automatic check for programmes feasibility
- Import and export of file, DXF format.
- Visualisation of tool run with solid 3 D view.
- Management of work with cone-shaped tools on all solid or closed geometric shapes.
- On line AutoCAD® OEM manual.
- Direct connection with AUTOCAD® 14, 2000, LT, LT2000.
- Desk top with colours and customised toolbar.

Hardware and software requirements.
- PC Pentium® II or higher with RAM on board 64 MB or higher
- Free space on 200 MB Hard Disk or higher
- Floppy disk 3,5" 1,44 MB
- 800x600 graphic card, 65.000 colours (1024x768 with advised 24 Bit colours)
- CD ROM
- Mouse
- Parallel interface.
- Compatible Windows printer
- Windows® 95 or Windows® 98 or Windows® ME or Windows® NT or Windows® 2000 or Windows® XP operational system

52.21.99   Wooden blocks area X=3650   **N. 1**

W9.90.01   Exw   **N. 1**

10.99.91   Machine language: ENGLISH   **N. 1**