N100 CEL

Cnc machining center
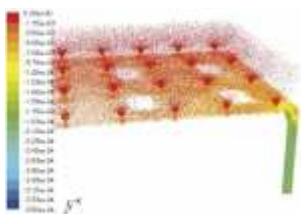
MAIN FEATURES

"BUMPERS": THE PERFECT COMBINATION OF SAFETY AND PRODUCTIVITY

"PRO-SPACE" PROTECTIONS: SAFE AND COMPACT

"HE" WORKTABLE: DESIGNED FOR EFFICIENCY AND SAVING

TECHNICAL DATA

AXES		MORBIDELLI N100 12	MORBIDELLI N100 15	MORBIDELLI N100 18	MORBIDELLI N100 22
Working area along X-Y-Z * axes	mm	2486-1255-150	3686-1555-150	3686-1860-150	**22-31** = 3086 2185-150 **22-43** = 4286 2185-150
Stroke along X-Y-Z axes	mm	3120-1685-250	4320-1985-250	4320-2285-250	**22-31** = 3770 2585-250 **22-43** = 4970 2585-250
Vectorial speed X-Y axes	m/min	35			
WORKING TABLE					
Type		Multifunction aluminium			
No. of stops for A area		No.4			
Vacuum pump (opt.)	m³/h	250/300			
BORING HEAD					
Vertical spindles	No. – rpm	7 (5X-3Y) 6.000 – 12 (8X-5Y) 6000			
Horizontal spindles (opt.)	No. – rpm	4 (2X-2Y) 6.000 – 6 (4X-2Y) 6000			
Integrated blade in X axis (opt.)	Ø mm – rpm	120 – 7500			
Motor power	kW (Hp)	2,2 (3)			
ELECTROSPINDLE					
Std. motor power (S6)	kW (Hp)	6,6 (9) – 9,5 (13)			
Max. speed	rpm	24000			
Side tool changer		8 places	10 places	11 places	13 places
INSTALLATION					
Installed motor power	KVA	23÷28,5			
Compressed air consumption	NL/min	400			
Extraction air consumption	m³/h	5300			
Exhaust air speed	m/sec	30			
Exhaust outlet diameter (electrospindle + borer + kit)	mm	250 **			
Total machine weight	kg	1950	2200	2500	**22-31** = 2550 **22-43** = 3200

* X distance between stops - Y maximum panel width - Z panel clearance
** Only electrospindle or electrospindle + borer: 200 mm diameter;
    3400 m³/h extraction air consumption
** with workpiece outfeed pusher installed on the machine:
    always 250 mm air conveyor diameter on the head

GENERAL FEATURES
CNC Working Centres capable to carry out wooden or similar materials machining.

Base and working table
Structure made of welded steel plates of rectangular section, with multifunction aluminium worktable and single area. Vacuum holes on the table set at 120 mm pitch, with plugs which can be easily removed by means of magnetic device (patent pending).
Grooves are set at 20 mm from each other for optimal fixing of the workpiece using rubber seals, or suitable to fix MODULSET or various type and shape of suction cups.
Automatic retractable reference stops for fixed references during workpiece positioning and for the program origin.

Mobile upright
Gantry structure, made of welded steel plates of rectangular section which supports the main operating group.

Operating unit
Consisting in boring head with vertical/horizontal spindles and integrated blade, plus SCM electrospindle with HSK63F rapid tool changer.

Movement of mobile upright and operating group
Sliding along "X", "Y" and "Z" axes of prismatic linear guides and preloaded recirculating ball bearings.
X and Y axes movement (mobile upright and saddle) with transmission by means of speed gear and rack and pinion with helicoidal teeth.
Z axis transmission through recirculating ball screws with preloaded system.
Group positioning and machine motion is carried out by means of digital brushless motor.

CNC CONTROL UNIT
Control Unit designed for Boring and Routing Centres.
Xilog Maestro software which can be installed on pc-office for all programming functions.

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

General features of the machine panel software and Xilog Maestro
Programming
– parametric graphic 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;
– self diagnosis and signalling of possible errors or damages in the user's language;
– single step 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 unction management for dynamic control of accelerations/decelerations
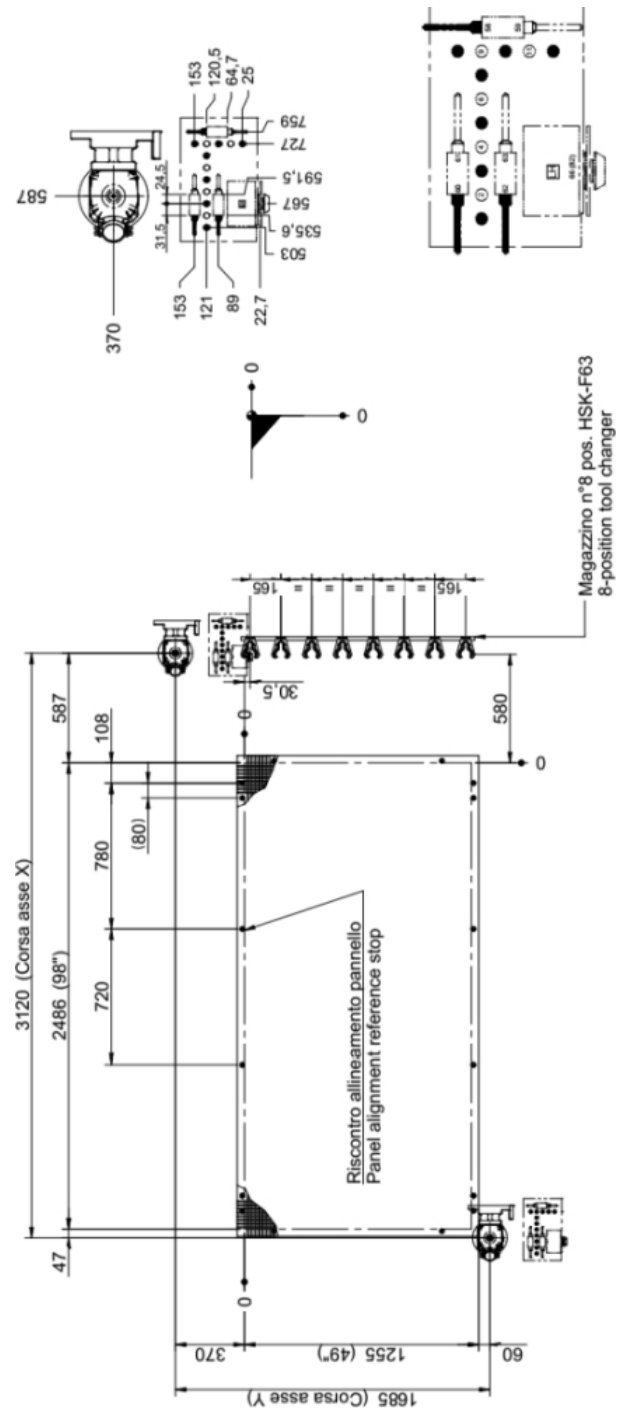
SAFETY REGULATIONS

Machine in conformity with the standard safety regulations according to the countries of machine destination.
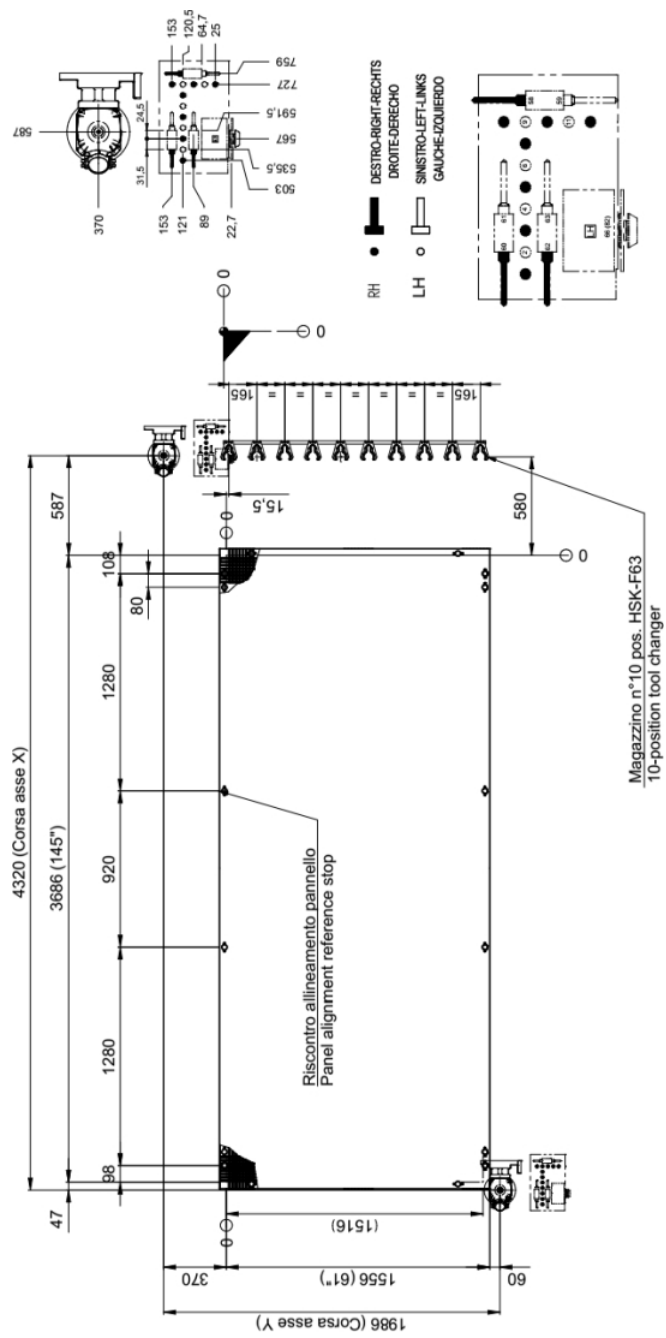
For some types of plastic material, there is a minimum difference of temperature on the working table.
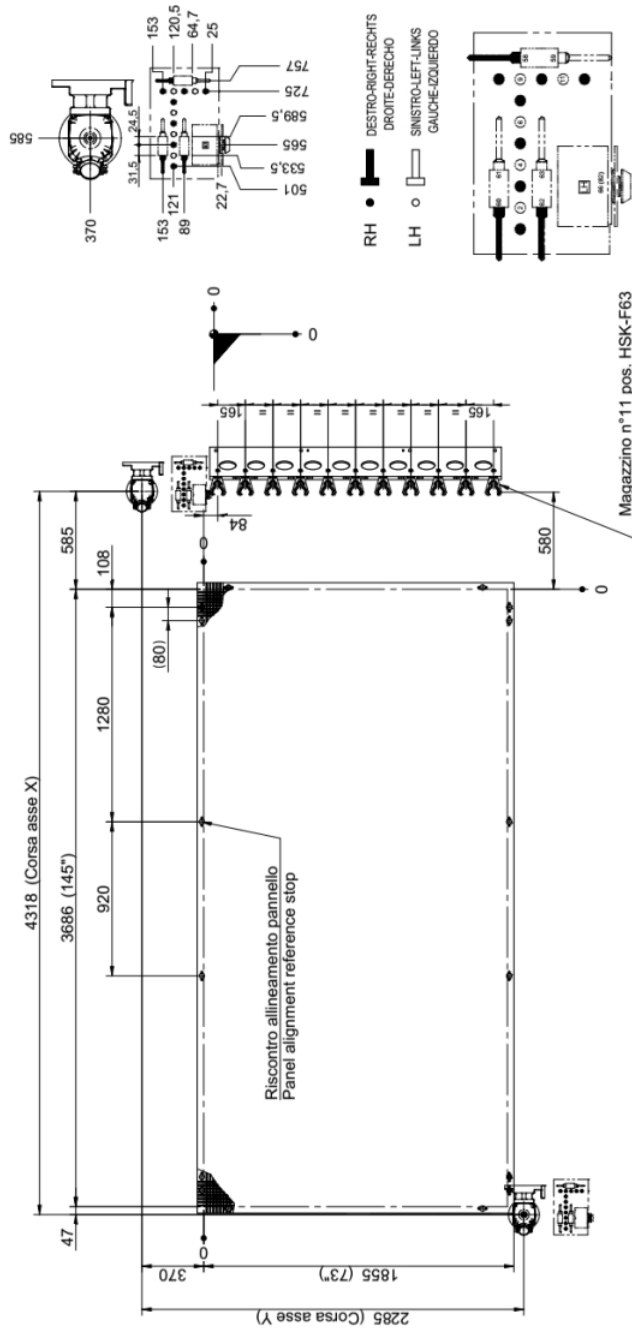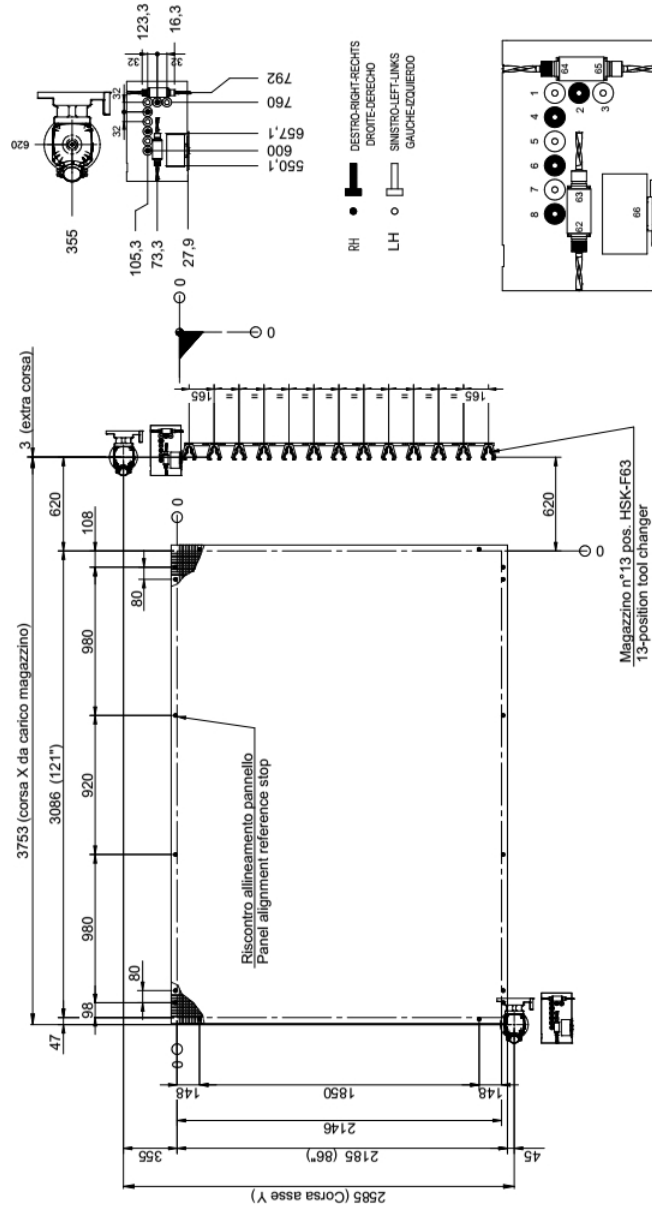
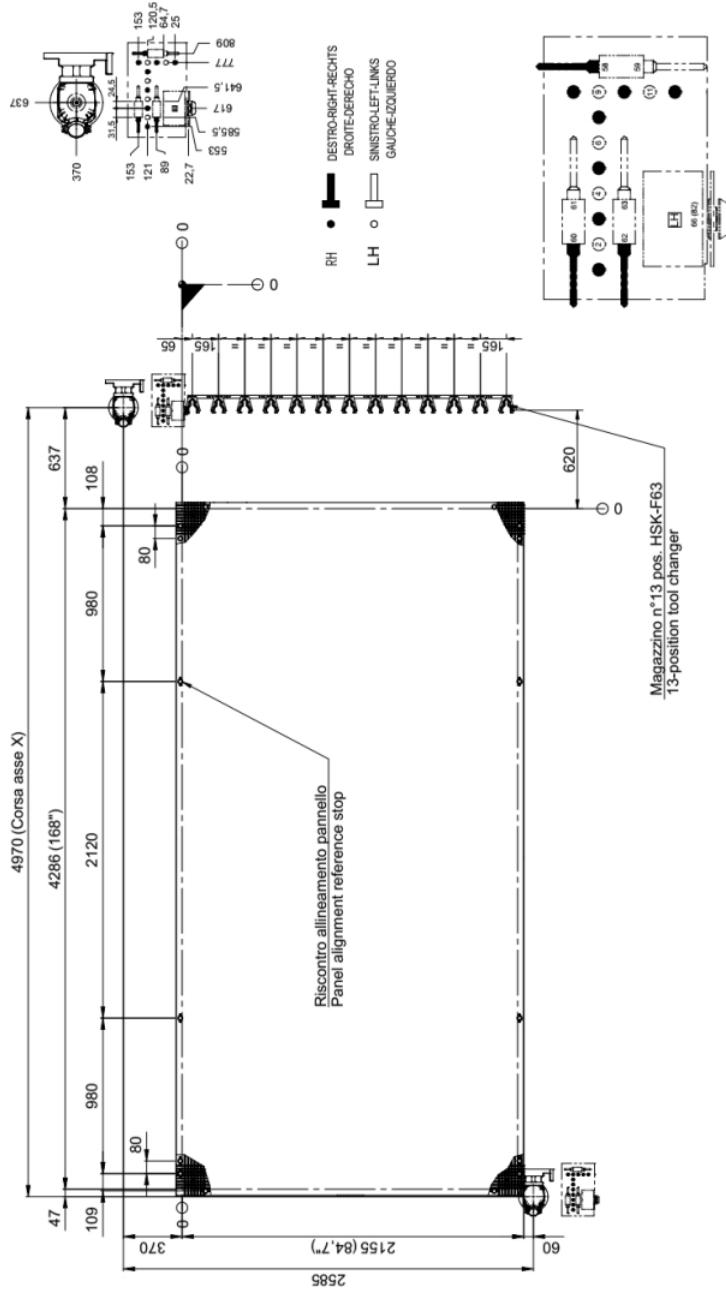**WORKING AREA**

Morbidelli N100 12

Morbidelli N100 15

Magazzino n°10 pos. HSK-F63
10-position tool changer

Riscontro allineamento pannello
Panel alignment reference stop

DESTRO-RIGHT-RECHTS
DROITE-DERECHO
RH

SINISTRO-LEFT-LINKS
GAUCHE-IZQUIERDO
LH

4320 (Corsa asse X)
3686 (145")

1986 (Corsa asse Y)
1556 (61")
(1516)

Morbidelli N100 18

RH ● DESTRO-RIGHT-RECHTS
DROITE-DERECHO

LH ○ SINISTRO-LEFT-LINKS
GAUCHE-IZQUIERDO

Magazzino n°11 pos. HSK-F63

Riscontro allineamento pannello
Panel alignment reference stop

4318 (Corsa asse X)
3686 (145")

2285 (Corsa asse Y)
1855 (73")

Morbidelli N100 22-31

Dimensional drawing with the following labels:

- 123,3
- 16,3
- 792
- 760
- 657,1
- 600
- 550,1
- 620
- 355
- 105,3
- 73,3
- 27,9
- 32
- RH — DESTRO-RIGHT-RECHTS / DROITE-DERECHO
- LH — SINISTRO-LEFT-LINKS / GAUCHE-IZQUIERDO
- 0
- 3 (extra corsa)
- 3753 (corsa X da carico magazzino)
- 3086 (121")
- 620
- 108
- 80
- 980
- 920
- 980
- 98
- 47
- 148
- 1850
- 2146
- 2185 (86")
- 355
- 45
- 2585 (Corsa asse Y)
- 165
- 620
- Riscontro allineamento pannello / Panel alignment reference stop
- Magazzino n°13 pos. HSK-F63 / 13-position tool changer
- 1 2 3 4 5 6 7 8 63 64 65 66 62

8

Morbidelli N100 22-43

Magazzino n°13 pos. HSK-F63
13-position tool changer

Riscontro allineamento pannello
Panel alignment reference stop

DESTRO-RIGHT-RECHTS
DROITE-DERECHO
SINISTRO-LEFT-LINKS
GAUCHE-IZQUIERDO

RH
LH

4970 (Corsa asse X)

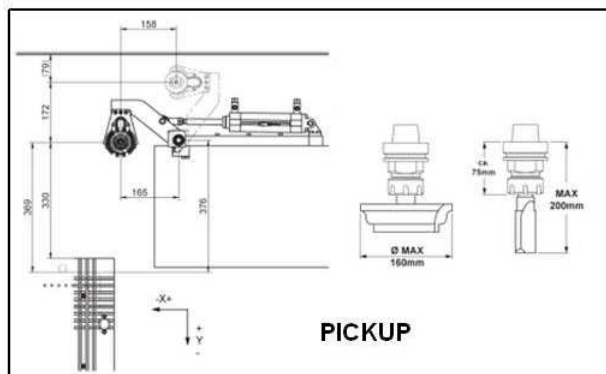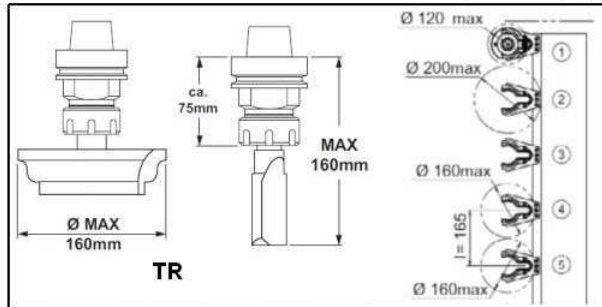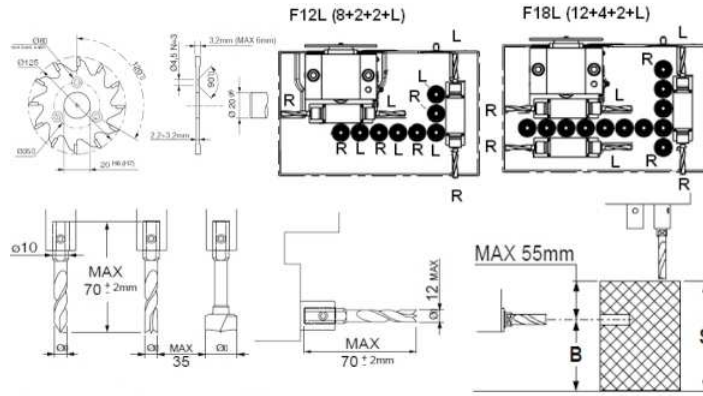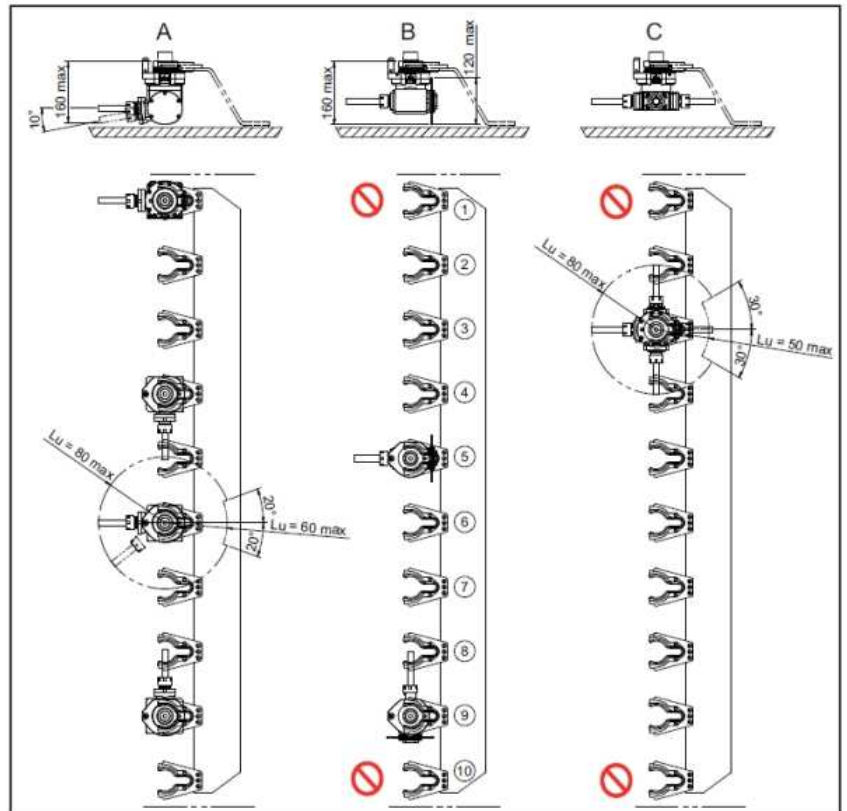**Z axis**

measurements shown in the drawings are THEORETICAL, as they are subject to slight variations due to adjustments of the various units.
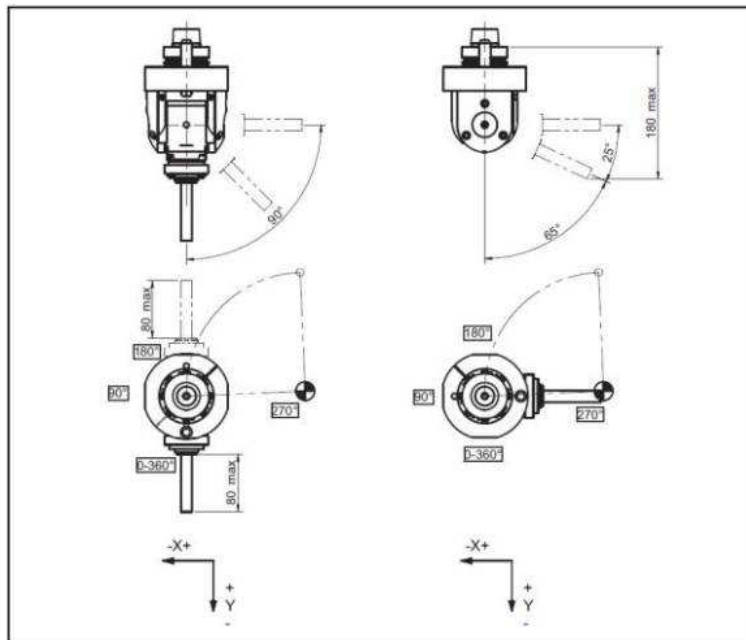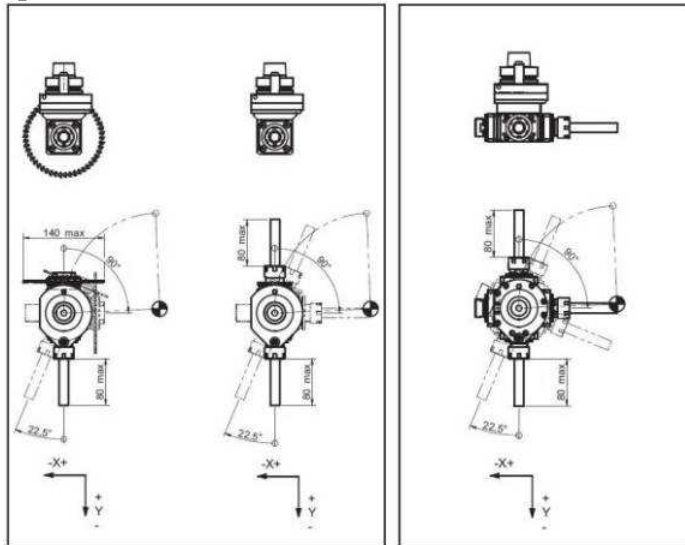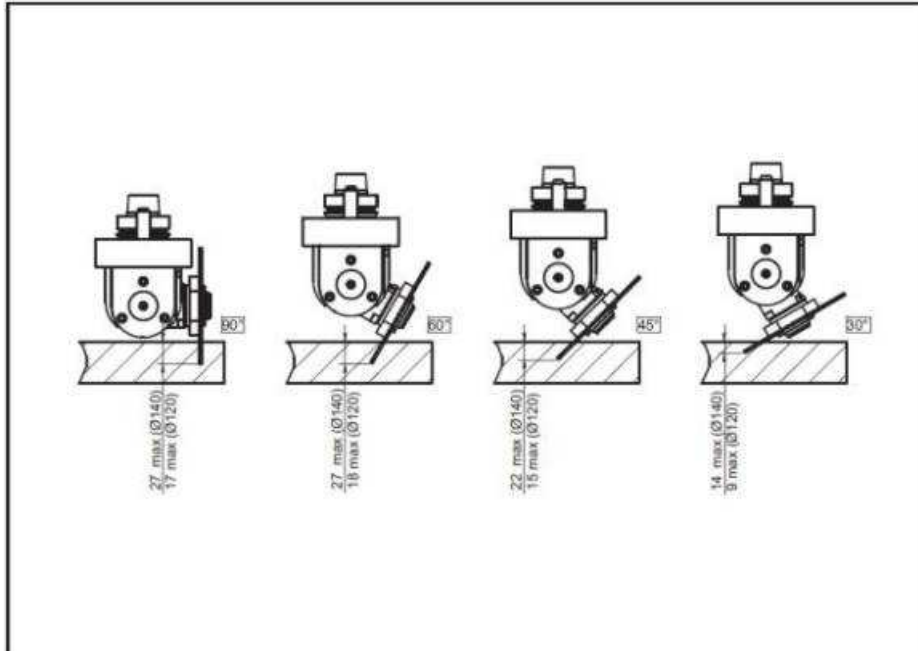
TOOL FEATURES

F12L (8+2+2+L)

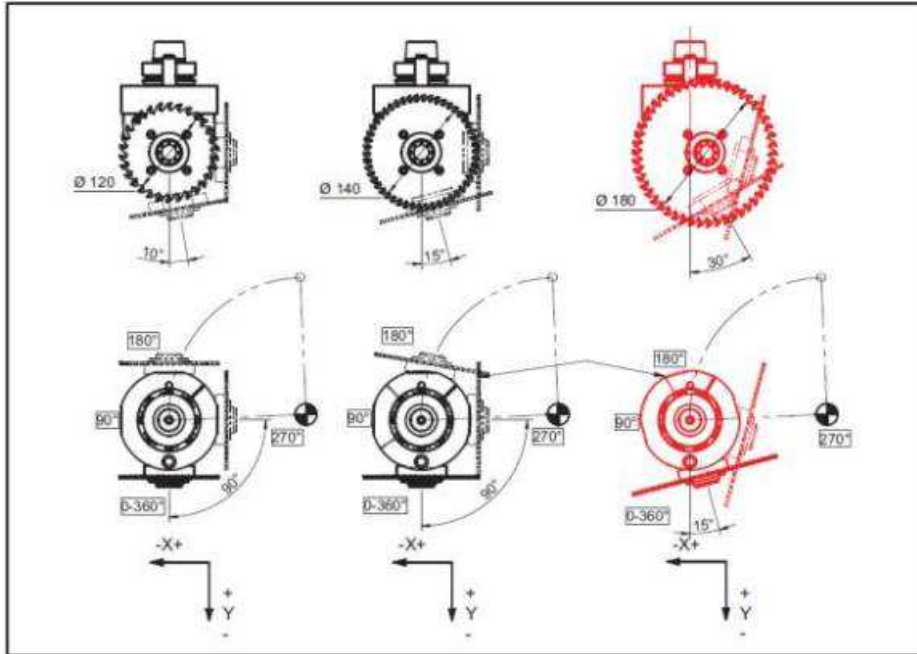F18L (12+4+2+L)

TR

PICKUP

Angular-driven heads

- TR linear tool-changer

- rear pickup

Production code: N100 CEL

| 10.99.52 | C.E. safety norms | N. 1 |

| R0.22.93 | morbidelli n100 12 D 2486x1255 Z150 | N. 1 |

The composition includes the following devices:

9,5kW - 13Hp electrospindle

It includes:
– HSK F 63 quick release tool-holder
– 1500 - 24000 rpm spindle speed
– (S1/**S6**) 8/**9,5** kW (11/**13**Hp) constant motor power from 12000 to 18000 rpm
– right and left rotation
– static inverter for continuous speed and rapid shutdown of rotation
– exhaust hood around whole perimeter

F12 boring unit

It includes:

– no.   12independent vertical   spindles (7right and 5left)
– attachment for bits: M10 / 11 mm diameter
    – Centre-to-centre distance   between axes: 32 mm
– rotation speed: 4.000 rpm
– 2,2 k motor power
– vertical   ON/OFF stroke of whole unit: 250mm
– vertical ON/OFF stroke of each spindle: 60 mm

Inverter for boring head
It allows the rotating speed programming up to 6000 rpm maximum for the drilling bits and 7500rpm for the blade, exploiting the same inverter of the electrospindle.

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

Mobile control panel with PC-Office

It allows the programming directly on the machine without necessity of the programming in office.
It is equipped with:
– Personal Computer
– Windows XP operating system available in the following languages: Italian, English, German, French, Spanish
– 17" LCD colour display
– Qwerty keyboard
– Mobile control panel

Presetting for Hiteco angular driven heads
It allows the angular driven heads fitting on electrospindle, with fixed mechanical coupling with reference pin.

Air blower on electrospindle

It allows to convey a cooling air blow on the tool, during the machining.

Presetting for angular driven heads

It allows the angular driven heads fitting on electrospindle, with fixed mechanical coupling with reference pin.

TR8 tool changer for S12

8 positions tool changer for tool and heads with 160mm max. total length.

No. 1 HSK 63 right tool-holder for expansible collets (ER32)

"HE" high performance aluminium multifunction worktable

"HE" High efficiency aluminium table, with single area. Vacuum holes set at 120 mm pitch, closure by means of rapid magnetic system "patent pending". Grooves are set at 20mm from each other for fixing of the workpiece using rubbers seals.

No. 4 right rear stops for "D" field
of which no. 1 side stop and no. 3 rear stops.

Left rear stops for "A" field
of which no. 1 side stop and no. 3 rear stops for no. 8 total stops (A+D).
This code includes:
Vacuum area for half or entire working area
It allows to convey all vacuum on half working area (left or right) or on the entire working area (left and right)
 Alternated work process
It allows to lock a workpiece on a side when machining on the opposite one

Centralised lubrication with manual pump

The correct grease level on the machine moving parts is always maintained by means of a manual pump (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*

Workpieces outfeed pusher on the left side

Automatic workpiece pusher connected to the machines movement in the X axis.
It can push the workpieces up to a total weight of Kg 150
Maximum thickness (support panel included): 40 mm
Furthermore, it is equipped with an exhaust system that automatically cleans the machine during the unloading phase. This exhaust system automatically connects to the centralised conveyor of the machine, avoiding the necessity of other extraction pipes. Automatic adjustment of the pusher height through a lining on the support panel (included in the machine supply). Unloading table with height adjustment and it is equipped with independent exhaust system.
- exhaust outlet diameter: 200 mm
- exhaust air speed: 30 m/sec
- exhaust air consumption: 3400 m³/h

Workpieces outfeed belt on left side

Powered belt capables to move the workpieces from the machine table, up to the unloading position. This position is equipped with photocell automatic detecting system for the belt start/stop and pushbutton for the belt manual speed.

Lifting device

The device allows to lift a panel stack up to the worktable height.
Technical features:
– min. workpiece dimensions (X-Y-Z): 1600-900-10 mm
– max. workpiece thickness: 30 mm
  (total workpiece thickness, support panel included: 40 mm)
– max. panel stack weight: 3000 kg
– max. panel stack height: 600 mm
– max. panel stack misalignment: 30X - 5Y mm

Infeed and alignment device for panels

Automatic device that allows to align the panels, available on the stack, with the machine, and to convey them in the work table infeed area. The aligner is equipped with a suction cup for the panel gripping and a system measuring the workpiece surface for the height alignment with the machine.

Lifting tool changer

The device, by means of lifting the rack tool changer, allows the panel passage from the lifting device to the worktable. During this operation the machine is positioned in a neutral area.

Workpiece loading with suction cups

These automatic devices take the workpiece from the infeed position and move it into the working position. The devices include an air blower that ensures the panel gripping also in high dust conditions.
Max. workpiece thickness: 30 mm (total workpiece thickness, support panel included: 40 mm).
Total weight of the single panel to be loaded 150 kg
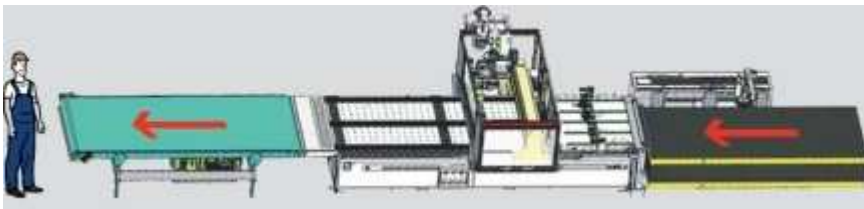
Working flow direction

It is possible to install the Pratix S cell with the working flow towards right side (option).

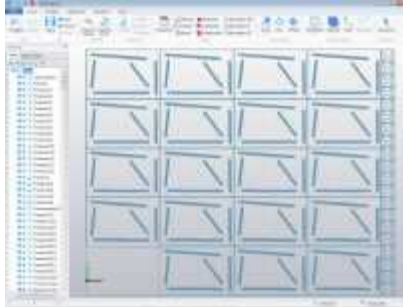**Xilog Maestro programming software**

Minimum characteristics required for the software installation in office:
– Operating system: Windows XP Professional (SP2), Windows Vista or Windows 7
– Processor: Intel compatible, 2GHz minimum; multicore

processor is advisable
– Memory ram: 1GB minimum, 2GB are advisable
– Space on hard disc: 5GB
– Graphic card: Open GL compatible

Nesting rectangular module for Xilog Maestro

Hardware key for nesting Xilog Maestro (USB port)

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 and operator's interface

N.B.   - Internet connection at customer's charge is necessary
          - network cable and PC not included

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

63.03.56   250/300 m³/h 50/60 Hz vacuum pump   N. 1

63.04.05   Tool holder with higher capacity   N. 1
Side tool holder with reduced inter axis, in order to accommodate a higher number of tools.
Furthermore this code includes the **exhaust hood** with on-off automatic positioning and manual adjustment on 4 different positions
The new available places of the tool-holders are the following:
TR8: no. 11 places; TR10 no. 14 places; TR11 no. 16 places; TR13 no. 19 places.

63.03.19   Retractable stops for E and H fields managed by NC   N. 1
The device includes:
no. 3 front stops and no. 1 left lateral stop for E field; no. 3 front stops and no. 1 right lateral stop for H field. Total 8 stops.

63.03.54   Tool length detection device   N. 1

Electromechanical device located on the side of the bottom frame and able to detect the tool length through a dedicated software cycle.

The length just evaluated will be sent to the Numerical Control which update automatically the tool database in sight of any successive machining program (it

is strongly suggested involving parametric programming to take full advantage from this practical function).

63.01.34 **Automatic centralised lubrication**   **N. 1**

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

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

63.03.59	**Additional key for Xilog Maestro (USB port)**	**N. 1**
08.32.12	**Wooden blocks**	**N. 1**
08.91.31	**Additional packing: mat + lifter device**	**N. 1**