

CNC MACHINE TYPE GIANT-42



□ **Numerical control machine type GIANT-42** with 5 interpolated axis to grind and polish the edge and the bevel on shaped glasses with internal curves, external curves and straightline sides.

It is possible to work any shape and profile by means of linear and circular axis interpolation.

In addition to the grinding and polishing of the edge and bevel, the machine can also perform the following operations:

- Holes
- Notches
- Pin and screw inserts
- Internal and external millings and routings
- Bevelling
- Sawing by means of angular group (optional)
- Grooving on shapes by means of aggregate groups (optional)

The machine has a special cerium oxide spraying unit to polish the edge and the bevel with felt and a minimum consumption of nebulized cerium oxide.

The machine is equipped with a unique system for edge polishing, which allows to keep a constant pressure on the entire perimeter of the glass. This allows a perfect polishing on all types of edge shapes.

The machine is equipped with a special head on which it is possible to stack one bevelling wheel or two diamond wheels and one polishing wheel for grinding and polishing the edge.

The dimensions of **500** diamond or polishing wheels can be memorized into the CNC.

The working table can be divided into two independent sections.

The machine is equipped with two rotating tool cribs at 8+8 position with automatic selection for tool withdrawal and deposit and electronic system to check the tool crib state.

The machine is also equipped with a double system for automatic compensation of polishing wheel consumption and with an electronic measuring system for diamond wheel consumption.

More than one glass sheet can be ground and polished on the working table. Loading/unloading operations are made manually by the operator himself.

The machine is complete with software program to position the special stops for centering the glass and to position the suckers for fixing it on the table.

The working table is in a 20mm thickness **aluminium** (not PVC). This assures more flatness and long life.

The basement is produced in a single part without parts assembled with bolts. This allows a more strength and rigidity of the machine.

All guides and ball screws are produced in H Class (highest precision class).

All Brushless motors and drives are Yaskawa/Omron, Japan, with full digital technology.
GIANT-42 is designed and built open (without unessential walls) in order to facilitate the work of the operator when preparing or checking the machine.

The machine is equipped with CNI Numerical Controller, which gives a lot of information to the operator both for processing and maintenance, such as:

- Real digital ammeter that gives to the operator the exact pressure of the polishing wheels while working.
- PLC Debug software to assist customer when there is a problem with the machine. This program helps finding what part of the machine is sending / receiving the signal and what part of the machine is not.
- Program Debug software to assist an operator or programmer when a program does not run the way it should. This software displays the line of program the machine is executing at that time, and by this information the operator can better see where he needs to modify the program.
- Error message help centre, when the machine displays an error message, the operator can click a button to see on the display what that message means.
- Program editor allows the operator to adjust the program at the machine. He can also do a graphic and see the movement of the tools in order to check the direction. This will also check eventual program errors before start working the glass.
- Teleassistance by Internet

The machine is programmed by means of CAD-CAM system (included) using a Personal Computer (not included). Some characteristics of CAD-CAM software are:

- Create basic shapes like rectangles with sharp or rounded corners or polygons with any number of sides by just few clicks
- Powerful and easy to use like “Auto CAD” drawing instruments.
- Customisable library of shapes
- Easy and fast association of working types (tool association) to the glass profile.
- Automatic entry of a service drill for internal routing.
- Very easy stop and vacuum pad positioning.
- Check tool path for control of stops and suckers interference
- Time and cost calculation reports
- Import / export of drawings by DXF files
- Program transmission via CD or Ethernet card

The machine is equipped with an automatic programmable lubrication system. This insures that the machine can always be properly lubricated

GIANT-42 is also equipped with a teleassistance system by Internet (including 5 mt cable for connection to Company network). This system allows LOVATI technicians to directly connect to the machine installed at customer's factory and to help operators in problem solving.

GIANT-42 is equipped with a special strong and powerful head (12kW) with 90 degrees maximum inclination (from vertical to horizontal position). Because of its peculiarity, it gives the best results in grinding the bevel and flat edge on high thickness glasses and with any type of required inclination by using cup wheels instead of peripheral wheels. **GIANT-42** is equipped with high precision spindle, with internal water cooling system, with 12 kW. The spindle high power and the sturdiness and rigidity of the machine structure allow to work glass sheets with 80 mm max thickness.

GIANT42 is supplied complete with the following tools:

- n.1 diamond drill bit dia. 22 mm
- n.1 diamond router dia.20mm, h.40 – G27 6S
- n.1 diamond wheel dia.100, throat 7,5x2, UNIC grain, glass 6 mm
- n.1 diamond wheel dia.100, throat 10x25, UNIC grain, glass 8 mm
- n.1 diamond wheel dia.100, trapezoidal 8x4x2, UNIC grain, glass 6 mm
- n.1 diamond wheel dia.100, flat band 12 mm, rough grain, glass 10 mm
- n.1 diamond wheel dia.100, trapezoidal 12x8x2, fine grain, glass 10 mm
- n.10 polishing wheels dia.100mm
- n.1 cup diamond wheels dia.150 mm for bevel, rough grain
- n.1 cup resin wheels dia.150 mm for bevel, medium grain
- n.1 cup resin wheels dia.150 mm for bevel, fine grain
- n.1 resin wheels dia.150 mm for bevel, very fine grain
- n.3 cup felt wheels dia.150 mm for polishing with cerium oxide
- **1+1 diamond wheel 4 mm glass pencil edge and flat edge**

The machine is supplied complete with:

- CAD-CAM software with possibility of using parametric figure
- Ethernet card for connection between CNC and PC
- Teleassistance by Internet
- WiFi key
- 5 mt cable for connection to Company's network
- Gauging device for shape
- Software for grooving, straight, skip and pattern
- Software for routing bit and diamond wheel oscillation during grinding
- Software for decorating on glass surface
- DXF software to import or export drawing from/to other system



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- Software for suckers and centering stops positioning
- Automatic lubrication plant with timer
- Suckers with rectified rubber surface to prevent any glass flection:
 - Suction cups \varnothing 150 mm (8 pcs)
 - Suction cups \varnothing 95 mm (8 pcs)
- Squaring stops (6 pcs)
- Conic ISO40 tool-holders (16 pcs)
- Polishing wheel dresser
- Cerium oxide sprayer to polish with felt
- Spindle cooling system in closed circuit
- Water cooling system inside and outside the wheel to get faster working speed and higher quality
- Alarm system and self-diagnostic functions to provide safe and efficient operations
- Water recirculating tank for wheels cooling system, complete with high pressure punp
- Possibility to do working simulation
- Air compressed gun
- User & maintenance manual
- CE Certification



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TECHNICAL DATA	GIANT-42
X AXIS STROKE	4800 mm
Y AXIS STROKE	2200 mm
Z AXIS STROKE	450 mm
X AXIS SPEED TRANSLATION	30 mt/min.
Y AXIS SPEED TRANSLATION	30 mt/min.
Z AXIS SPEED TRANSLATION	25 mt/min.
C AXIS ROTATION RANGE	Continuous – no limit
A AXIS OSCILLATION RANGE	182 degrees (91 degrees in two directions)
GLASS DIMENSIONS WITH HEAD IN VERTICAL POSITION	4000 x 2000 mm
GLASS DIMENSIONS WITH HEAD AT 90 DEGREES POSITION	3550 x 1550 mm
GLASS THICKNESS	4 mm min – 80 mm max
HEAD INCLINATION	from 0 to 91 degrees in two directions
DIAMETER OF THE WHEEL	150 mm max
WORKING TABLE HEIGHT	900 mm
PROGRAMMABLE SPINDLE ROUNDS	0 to 12.000 r.p.m.
SPINDLE ROTATION DIRECTION	Left and right
SPINDLE POWER	12 KW
TOTAL INSTALLED POWER	27 KW
COMPRESSED AIR PRESSURE	7 BAR minimum
OVERALL DIMENSIONS	7700 x 3300 x 3000 mm