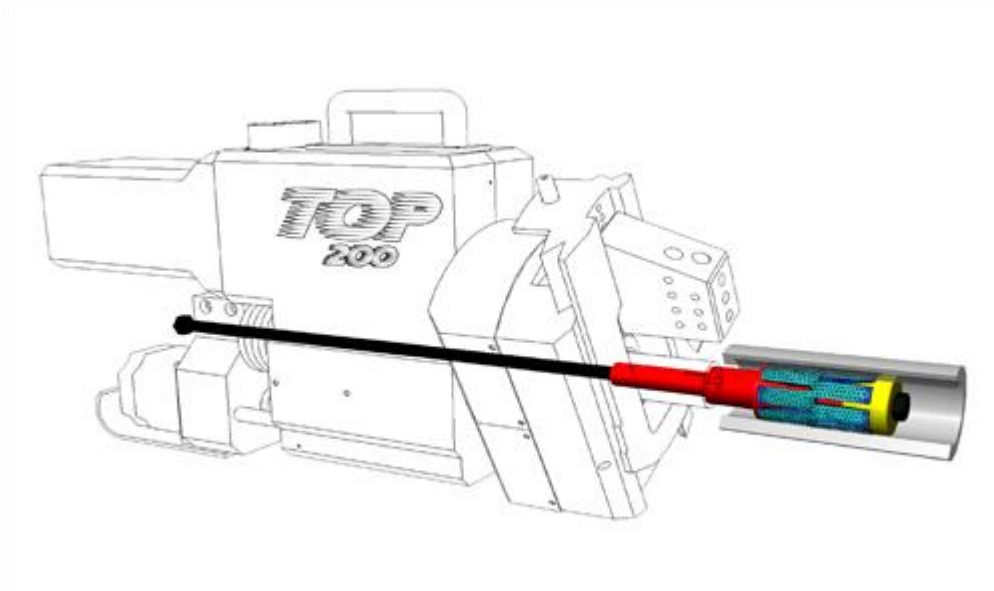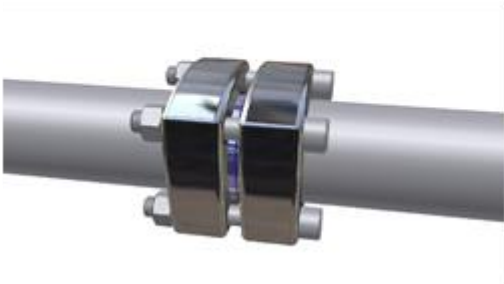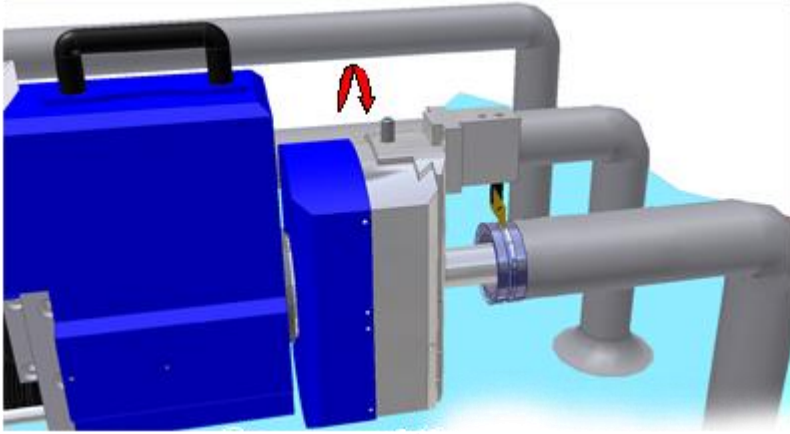# Portable Orbital Lathe (TOP)

This "revolutionary" Sir Meccanica achievement is a computerized, full-CNC lathe for precision outside, inside and face lapping of stationary tubing ends, that do not rotate and cannot be handled using conventional machine tools.

It performs all possible turning and thread cutting processes on-site. Equipped with latest-generation controller with touch screen technology, it can be programmed manually in place or via PC with CAD/CAM software. Tool path can be checked based on 3D simulation.

The 3D simulation allows you to verify the movement of the tool-holders.

What it is? Full CNC Portable Orbital Lathe

Lathe = Stock removing machine, whose cutting movement takes place thanks to the relative rotation between the piece and the cutting tool.

Orbital = machine whose tool traces circular paths around the piece to be worked on.

Portable = It is the machine that is installed and fastened on the piece, instead of the piece being fastened onto the machine.

Full CNC = The machine as well as the processes and parameters of machining are completely run and controlled by the computer.

The control panel is made up of one single body, allowing for an easy operation of the machine through a touch screen and a handwheel.

The software allows for editing/saving of the code of the tool's route in a standard g-code and m-code.

Some of the software's features are:

1.   Graphic display that shows the tool's route and real time updating

2.   Viewing in real time, of the x and z axis coordinates

3.   Possibility to define up to 253 cutting tools for the automatic compensation of the tool's route with the programmed parameters

What it does:

For "on-site" turning with extreme precision (completely run by a CNC control panel), on faces and internal and/or external extremities of cylindrical surfaces, of fixed tubular bodies which are immovable or impossible to rotate.

•   Straight line and/or curved - internal and/or external interpolations.

•   Standard and/or tapered threading.

•   Simple and/or profile facing.

•   Multilevel cylindrical grooves.
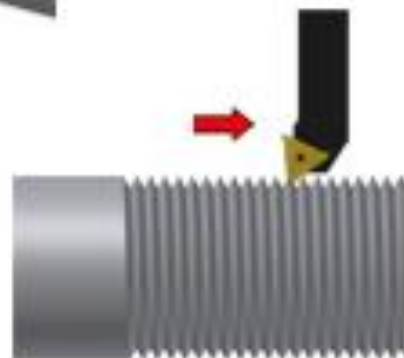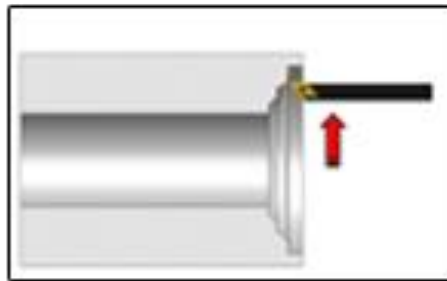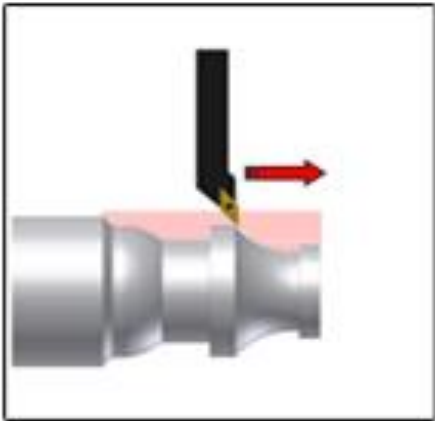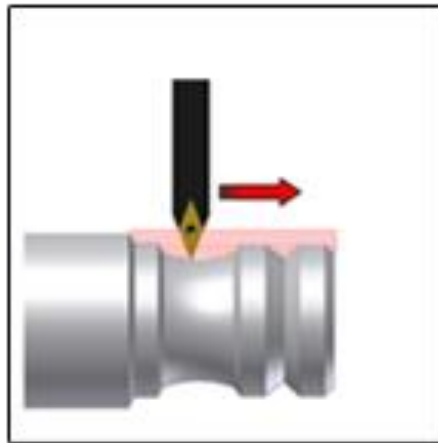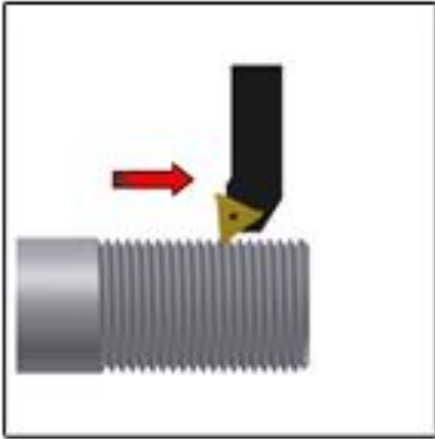
APPLICATION

The TOP can prove very useful in all types of technological and plant sectors, where there are fixed and immovable elements and tubular bodies of all kinds that must be repaired, engaged, modified within reduced or dangerous working space.

For example, it is possible to carry out:

Profiling and/or flanging of ends on which particular fittings must be inserted.

Creation of multilevel grooves for connections to devices.

Creation of threading for precision components (for liquids or gas) of varied types.

EASE OF USE

In order to simplify the use of this machine tool, Sir Meccanica has created a simple and innovative principle: "WIZARD SYSTEM" that eliminates programming in code, simplifying the operations for less expert users.

The computer term "WIZARD", coming from the English language, is meant to signify how a procedure that would otherwise be very complicated, becomes magically simple, thus enabling even non-qualified users to become experts.

"WIZARD" is an accessory software of the machine controller that, if installed in the main application of the controller, will allow the user to carry out complicated operations through a series of simple steps.

The main characteristics of Sir Meccanica's WIZZARD are:

Simplicity of use

Carrying out the same operations contained in the main application, but in an easier way.

The possibility to go "back" and modify the choices made

Use of a graphic interface

PORTABLE.

Traditional lathes are very cumbersome and cannot be moved from where they have been installed, therefore the piece to be machined must be taken to the machine and fastened; with the TOP it is the machine that is taken and fastened onto the piece to be worked on. The TOP occupies little space, especially where the machining takes place.

ORBITAL.

In the traditional lathes, the cutting movement is given by the rotation of the piece; in the TOP it is generated by the machine.

FASTENING AND SELF-CENTRING

The machine is installed on the tubular bodies, through an internal self-centering system at expansion appropriately conceived.

CNC CONTROL PANEL.

Electronic Characteristics

The CNC control activates a series of motors and guides, that control and coordinate the movement of the machine's axis, in order to place the tool in the scheduled position at the right moment.

The numeric control used is extremely simple and handy. The basic programming language is in accordance to ISO standards. The 3D graphics of the piece can be instantly zoomed to verify the details.

It has been designed taking into consideration the actual needs of the CNC lathe operators.

Simple and perceptive, with an interactive touch screen and display graphics.

It can even be used by personnel with low expertise in programming. The "conversational" programming standard allows for the creation of complicated profiles.

Easy to use. The routes of the tools can be quickly and directly created on the control panel, starting from the coordinates on the drawing.

The CNC has dynamic graphics for the simulation of the machining on the piece to be worked on.

The CNC interface is simple and intuitive. Besides the possibility to create programs manually, it is also possible to execute files created by sophisticated CAM programs without having to key in any command.

The three modalities FILE, JOG e MDI are fully supported and can be used together. It is possible to open a file and view it, give commands in MDI modality and pass onto the JOG modality without any limits.

A series of windows allow for a correct setting of the machining and for the viewing of the simulation of the tool's routes.