Plasma Easy
Computerised plasma cutting system

For more than twenty years we have been building computerised plasma cutting systems used mainly to cut pieces of sheet metal for air conditioning and exhaust plants, flues, fans, thermal insulation, as well as light-medium structural work.
This version of the Plasma Easy is the latest design evolution of the hundreds of machines already built and operating today in all continents around the world.
The system consists of a PC software package and a plasma cutting table (or gantry machine) in which the plasma torch paths are guided by a numeric control device linked to the machine through a PC floppy disk.

Il Software

We have applied all our years of experience to develop user-friendly software.
The parametric pieces (about 120) cover almost all the special pieces utilised in the air conditioning and ventilation sectors. Owing to the system’s incredible flexibility, special pieces can be made with the required machining allowances by any forming or seaming machine.
Pieces not in the catalogue can be designed using any external CAD program and, if saved in the DXF format, can be added to the catalogue.
The DXF importer will reconstruct the closed paths, assigning the best travel direction and cutting sequence.
The piece libraries can be subdivided according to user needs. If the piece generated by the program exceeds the size of the sheet metal, the excessive parts can be divided. The sheet metal selection process is also carried out by a database that the customer organizes based on his normal machining operations. It is also possible to save the typical machining parameters for a specific sheet metal in the same database. For example: machining speed, cutting groove width and current required at the plasma source.
If some pieces are frequently repeated in the production process, “standard” pieces can be created that are retrieved and inserted on the work list without having to resize.
After all the pieces have been selected, the system starts the automatic nesting process to arrange the parts formed on the cutting plans. The automatic set-up may be followed by a manual adjustment performed by the operator using a mouse.

The cutting plans are then saved on a floppy disk that, when inserted into the machine, transfers such information into the memory of the numeric control device that will then guide the torch through the cutting paths.

The system can also be used to produce a hardcopy of the plans to help the operator identify the cut pieces before removing them from the bench. Piercing operations can be numbered so that the operator can start again from the point required.

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**The Numeric Control Device**

Equipped with graphic functions, the numeric control device carries out the previously ordered cutting paths and the display visualises the cutting path while the machine is operating.

The numeric control device can be used to make automatic and manual cuts, fire-off movements, simulated movements and return to any point of the plan (home).

If power is cut off to the electric control panel, the numeric control device stores the current position in memory and restarts from that position when the power returns.

The machine can also start from any piercing point before or after the interruption.

The PC serial line link is only available as an optional.

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*some of the parametric shapes included in Carbowin catalogue*
The plasma source

Except for special requests, the machine is normally supplied with a 60-Amp plasma source that can easily cut sheet metal with a thickness of up to 8 millimetres, with an efficient work cycle. More powerful sources (up to 160 Amps) can also be implemented for special applications. In these cases, however, the standard torch height adjustment system must be modified.

With the standard system, in which support idle spheres are joined to the torch plate holder, sources up to 80 Amps are used to cut sheet metal with a thickness up to 8-10 millimetres. To set cutting priority for sheet metal with such a thickness, the torch can be pre-positioned to pierce the piece slightly above the normal work height. This extends the service life of the nozzles (Plasma Express with binary stand-off). To cut even thicker pieces (15 mm) and for more powerful sources, we can supply an adjustment system that automatically varies the torch height by means of arc voltage detection and a servomotor on the vertical axis (Plasma Express with electronic stand-off). In this last case the work height is set directly on the numeric control device.

Plasma Easy can be equipped with a wide range of plasma sources. Depending on the type of use, we can equip the machine with sources that deliver from a few amps (Cebora 3100) to 90 Amps (Cebora 9060) along with other valid solutions, such as Thermal Dynamics Pak Master, Hypertherm Powermax or Kjellberg Pa-S.
The drier

It might seem to be a small detail when compared to all other machine components, but it isn’t. Plasma Easy can be equipped with a wide range of plasma sources. Depending on the type of use, we can equip the machine with sources that deliver from a few amps (Cebora 3100) to 90 Amps (Cebora 9060) along with other valid solutions, such as Thermal Dynamics Pak Master, Hypertherm Powermax or Kjellberg Pa-S. A good drier extends the service life of both nozzles and torch electrodes by removing any moisture in the air that tends to make these parts oxidise faster. The drier can be built into the table or installed a short distance away or wherever the machine user prefers. The drier currently used is extremely efficient and quickly achieves optimum operating performance levels.

![Aier Drier](image)

The cutting table

The torch is moved along the cutting table by two pairs of preloaded rack-and-pinion devices on the X-axis and by one rack-and-pinion unit on the Y-axis. Special preloaded springs keep the pinions in contact with the racks, eliminating mechanical clearance and extending the system’s service life. Work speed and precision are truly outstanding thanks to the use of DC motors and low-clearance planetary gear units. We are absolutely certain that the machine’s precision limit is not inherent to the mechanics or electronics, but to the plasma tool.

The table frame can support iron sheet metal with a thickness of up to 15 millimetres. To cut even thicker sheet metal, Carbonini also manufactures a reinforced table with longitudinal beams that are larger than those utilized in the base version. To machine sheet metal with a workable area of more than 3000 x 1500 mm, Carbonini also makes a superior model: the Plasma Heavy.

In all cases, ground prismatic longitudinal guides are used along with a dustproof and easy-to-slide cross guide. The longitudinal guides are also protected against dust and shocks by special sheet metal tiles. The torch slides vertically on extremely rigid guides that also offer efficient dust protection. Special flow limiters installed on the piston entry point along with a pressure reducer slow down the torch plate as it impacts on the sheet metal. The thrust of the spheres on the sheet metal is offset by a spring that prevents scratching while the piece is being worked.
The Exhaust System

The exhaust system consists of a hood under the cutting table built into the mobile carriage that follows the torch. A flexible tube, with an oversized diameter (Ø 250 mm), connects the hood to the fan, or to the filter, removing the machining fumes from the system. The fan, the filter and the fume exhaust system are not included in the supply. Two special doors, located on the front of the hood, provide access to the interior to make periodic cleaning easier.