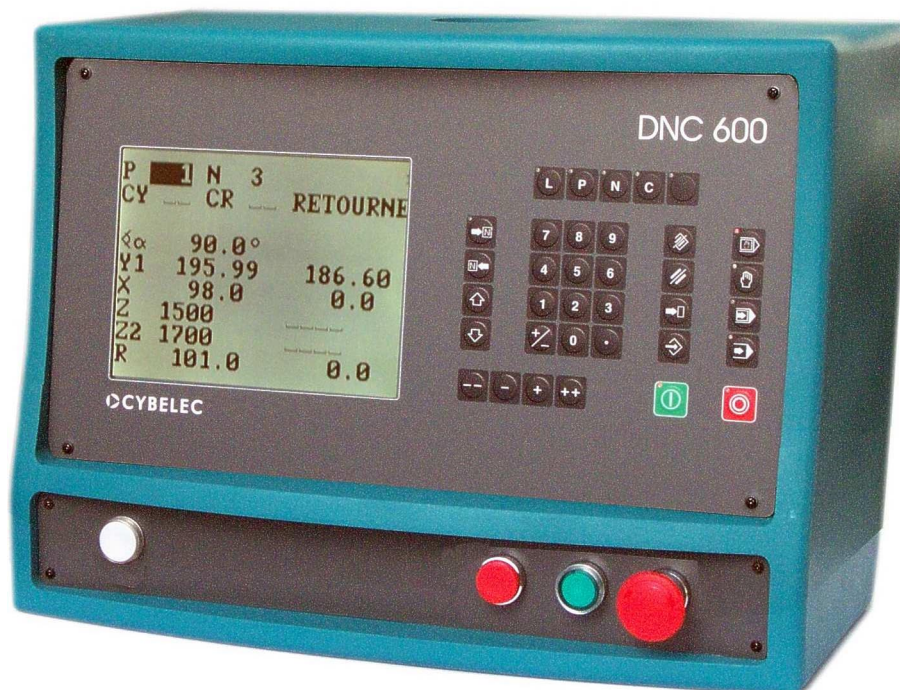


## Numerical Control

## DNC 600

Numerical control DNC 600 specifically destined for sheetmetal working. Depending on the installed software, it can be used for synchronized or non-synchronized press-brakes, of up-stroking or down-stroking type, for shears, for tube bending machines, for automatic machines, etc. (see list of versions below).

The numerical control DNC 600 can in its standard version control up to 4 axes, whereof two are synchronized hydraulic axes, specifically destined for press-brakes. A special option allows to have 2 other more axes to manage up to a maximum of 6 axes. The large monochrome screen and a simplified keyboard with large keys make the DNC easy to program. The software enables the machine manufacturer to configure the axes, the inputs/outputs and the auxiliary functions according to his needs.



## Versions

- |                 |   |
|-----------------|---|
| DNC 600 PS, PSS | Numerical control for synchronized press-brakes. Configurable from version PS, the version PSS is destined for single cylinder presses.<br>Max. configuration: Y1-Y2, X, R, Z1-Z2 or X-X1, X1-X2, etc. (Max. 4 motor axes).                         |
| DNC 600 PC      | Like DNC 600 PS, but for press-brakes with mechanical (or hydraulic) stops and beam control by means of a linear encoder. Max. 4 motor axes.<br>Max. configuration: Y0-Y, X, Z1-Z2 or X-X1, X1-X2, X, Z, etc.                                       |
| DNC 600 P       | Like DNC 600 PC, but without beam control by means of a linear encoder.<br>Max. configuration: Y, X, X1, R or other combinations. (Max. 4 motor axes)   |
| DNC 600 GS      | For shears with max. 4 axes. For this application a specific software controls all the typical functions for this machine, such as X backgauge, X1-X2 frontgauges, free axes (feeding, evacuator, etc.), blade gap, rake angle, cutting depth, etc. |
| DNC 600 X       | Universal numerical control 1-2 axes for diverse applications.<br>1-2 numerical high speed axes, programmable cycles, delay functions, cams, etc.<br>Ideal for automatic machines with programmable axes.   |
| DNC 600 C       | Numerical control for tube bending machines 3 axes.   |
| DNC 600 PV      | Numerical control for straight side presses.  |

## Axes and auxiliary functions for press-brakes

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The elements listed hereafter are available and can be configured in all numerical controls supplied with the standard software (limited to the number of hardware available axes and inputs/outputs).

<b>Y1 – Y2</b>	Synchronized axes for the beam (servo-valves, proportional valves). Should current output be needed, this would require the MSV 400 accessory, an external amplifier to be mounted inside the electrical cabinet (see data sheet of MSV 400).
<b>Yo – Y</b>	Press with mechanical stop: Yo = beam position measurement. Y = management of the depth stop.
<b>X, X1, X2</b>	Main backgauge axes.
<b>X1 ABS, X2 REL</b>	Secondary gauge axes in absolute or relative mode.
<b>R, R2</b>	Backgauge height adjustment axes.
<b>Z, Z2</b>	Axes for left/right movement of backgauge.
<b>Pressure Crowning</b>	Voltage output (0-10VDC) for pressure valve control. Voltage output (0-10VDC) for adjustment of hydraulic crowning. Should current output be needed, CYBELEC recommends the MVP 403 accessory, an external amplifier to be mounted inside the electrical cabinet.
<b>F1 to F5</b>	Configurable auxiliary functions (possibly, the number of AFs may be limited, depending on the type of function and management). Voltage output (0-10VDC) or 24VDC digital outputs, with or without position control by means of a potentiometrical position transducer. Special controls for gauge fingers, bending aids, die movement.
<b>Languages</b>	8 languages from a choice of 11 are available in the DNC, splitted in 2 groups. Group1 ) French, German, English, Italian, Danish, Swedish, Finnish, Norwegian Group2 ) French, German, English, Italian, Portuguese, Netherlandish, Spanish
<b>M1, M2 ***</b>	Axes for adjustment / movement of the die. (Caution: while using this option some other axes will become unavailable).
<b>X3, X4 ***</b>	Frontgauge axes (caution: with this option the "Z" axes are no longer available).
<b>BM10 ***</b>	Remote control unit BM10 with handwheel and display, allowing remote-controlled axis movements.
<b>Languages ***</b>	Greek, or other languages (with extra costs).
<b>24-32 I/O ***</b>	Module to reach 24 inputs and 24 outputs or 32 inputs and 32 outputs.

\*\*\* Options to be ordered especially.

## Axes and auxiliary functions for shears

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The elements listed hereafter are available and can be configured in all numerical controls supplied with the standard software (limited to the number of hardware available axes and inputs/outputs).

<b>X, X1-X2</b>	Backgauge or frontgauge axes.
<b>Free axes</b>	Axes, which function is freely attributable (feeding, evacuator, manipulator, etc.) dependent or independent of the shear cycle.
<b>Special shears</b>	<ul style="list-style-type: none"><li>• 3 special functions make it possible to automatically handle the blade gap, the rake angle and the cutting length according to the programmed material and thickness.</li><li>• 5 pre-programmed types of material.</li><li>• Backgauge clearance during the cutting process (yes / no).</li><li>• Blade gap with one or two motors.</li><li>• Management of the cutting length by delay or by potentiometer.</li><li>• Automatic backgauge correction according to the blade gap.</li><li>• Sequence repetition, sub-programs, chaining of programs.</li></ul>
<b>24-32 I/O ***</b>	Module to reach 24 inputs and 24 outputs or 32 inputs and 32 outputs.

\*\*\* Options to be ordered especially.

## Axes and auxiliary functions for DNC 600 X

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The elements listed hereafter are available and can be configured in all numerical controls supplied with the standard software (limited to the number of hardware available axes and inputs/outputs).

<b>X, Y</b>	Digital axes (position supplied by an incremental position encoder) for the control of a DC or AC brushless motor, hydraulic or AC 1 or 2 speeds, with or without brake. Programming possibilities in absolute mode, relative incremental mode, relative mode with position being set to 0, relative mode specific to transmission, "cam" mode (enabling to carry out an operation at a given position without stopping the axis), rotating mode. Possibility of selecting a different speed for each sequence, and a particular acceleration / deceleration for each product. Change of target and/or speed per sequence (without travel interruption). Sequence repetition, sub-programs, conditional or unconditional chaining of programs. Possibility of masking certain fields, or to inhibit access to them. Delays can be programmed in each sequence. Cycle counter. Constant or variable corrections.
<b>F1-F8</b>	Auxiliary functions: digital 0 or 24 VDC outputs analog digital outputs controlling a movement which position is controlled by a potentiometer (axis with 1 or 2 speeds). voltage voltage outputs from 0 to 10 VDC according to the programmed value.
<b>24-32 I/O ***</b>	Module to reach 24 inputs and 24 outputs or 32 inputs and 32 outputs.

\*\*\* Options to be ordered especially.

## Other options

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<b>Others</b>	There are a great number of manufacturer-specific options. Other options can be developed upon request.
<b>Handle</b>	To be mounted on the bottom of the DNC (see last page).

## Standard characteristics

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Multiprocessor design using ASIC and SMD components. This allows high integration and ensures great reliability.  
Keyboard with large keys.  
Monochrome graphic LCD (STN) screen 9".  
Internal SRAM memory.  
FLASH memory with updating possibility of the software via RS232.  
2 RS232-ports.  
N2X axes with high speed counting (250 Khz) with PID regulator and programmable resolution.  
Conversion Inch/mm, TON/TONS, etc.  
16 inputs (24 or 32 in option)  
16 outputs (24 or 32 in option)

## General technical characteristics

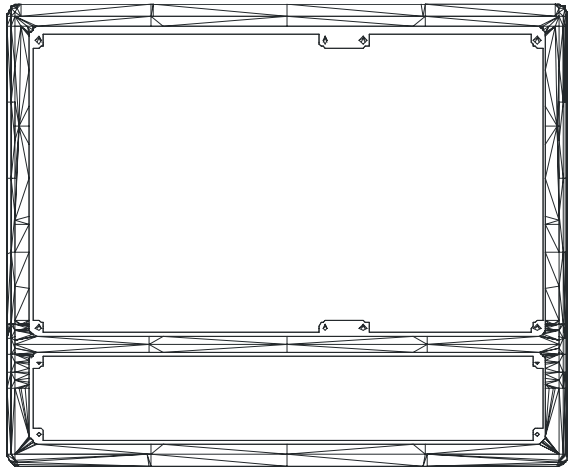
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Power supplies	DNC: + 24 VDC (min. 18 – max. 35 VDC) max. 1 A (DNC) 20 W. Electrical cabinet: + 24 VDC $\pm$ 10% for the digital inputs/outputs.
Encoder inputs	Line driver. Ⓢ On this DNC, the inverted signals are compulsory.
Power supply for encoders	5 VDC (supplied by the DNC) max. 900 mA for all encoders.
Digital inputs	Optocoupled inputs 24 VDC stabilized $\pm$ 3 %.
Analogic inputs	According to configuration 0-5, 0-10, 0-24 VDC.
Digital outputs	Optocoupled short circuit proof outputs. Source 24 VDC max. 0.3 A / output.
Voltage outputs (axes, functions)	0-10 VDC output impedance $Z_{out} < 100 \Omega$ , load $Z_L \geq 10 k\Omega$ .
Temperature, pollution level, relative humidity, and height during work	Min. 5° Celsius, max. 40° Celsius. Pollution level 2. Relative humidity HR1 (50 to 95%). Max. height 2000 m.

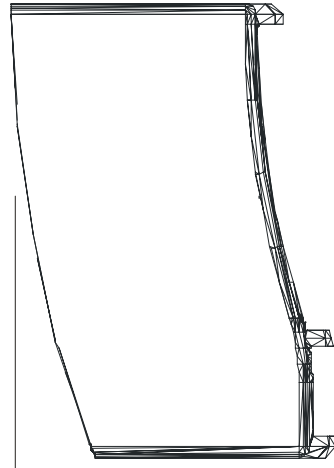
## EC Directives

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Directives	Our numerical controls comply with the EC Directives 89/336/EEC and 73/23/EEC.
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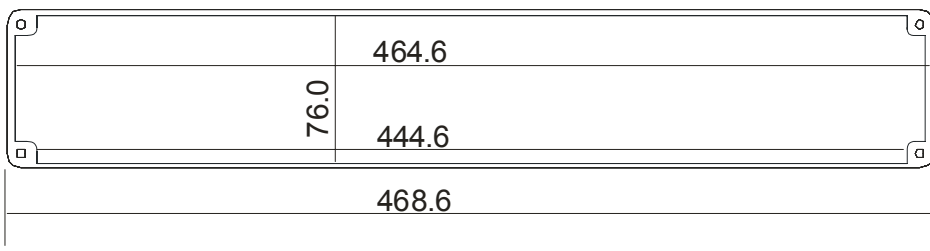
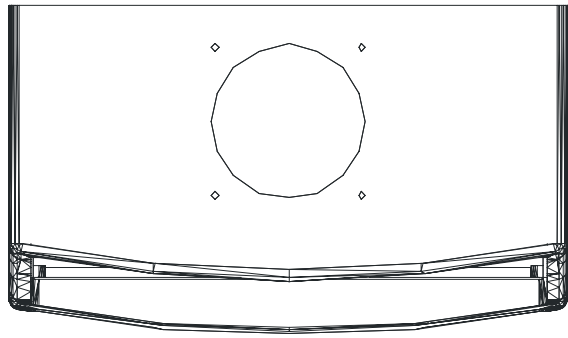
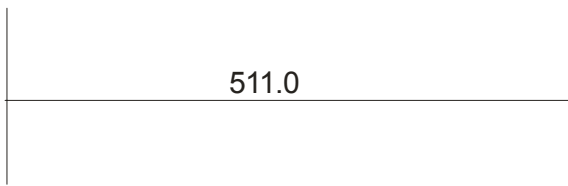


418.0



299.0

511.0



76.0

464.6

444.6

468.6

80.0