

NC 10/20 S1/2 • NC 200 PB • NC 203 PB

Programmable Positioning NC's

- Press brakes
- Shears
- Saws
- Simple handlers
- Etc.

FAGOR



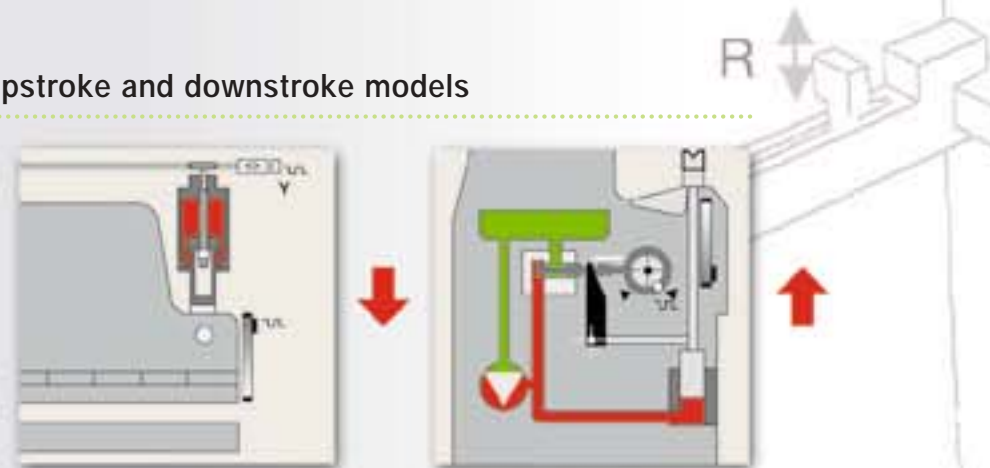


Direct programming of bending angle

Compensations	<ul style="list-style-type: none"> • Tool • Sheet metal elasticity, thickness and resistance • Control of pressure and machine deformation.
Corrections	<ul style="list-style-type: none"> • TEACH-IN editing, by direct request of the angle • In cycle, by storing new data associated with each sequence

For conventional 2-axis upstroke and downstroke models

- They control the X and Y axes, position and depth.
- The Fagor NC 203 PB admits a linear encoder to also control the intermediate positions of the ram.



Keyboard



Save energy. Keep reading while the display is off



Search home (I₀)



Access special operating modes, parameter setting, communication through the RS-232-C serial line, etc.



Select the X and Y axes respectively



Validate operations



Program bending angle or die width



EDITOR

Up to 9 punches + 9 dies may be defined indicating:

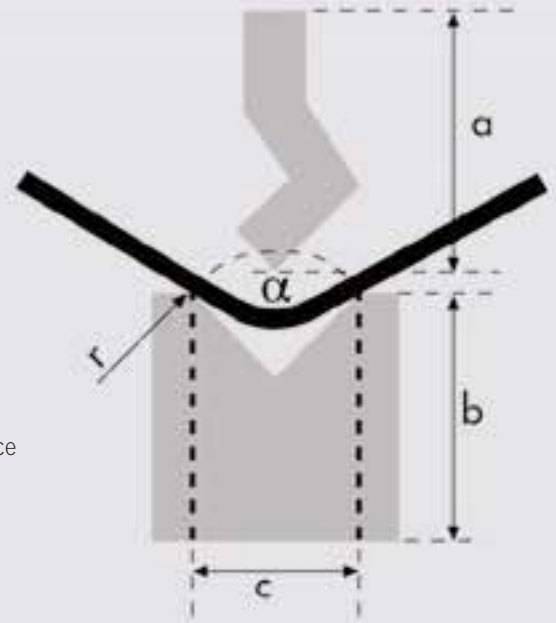
- Punch height (a)
- Die height (b)
- Die opening (c)
- Edge radius (r)

The general data must be programmed:

- Active punch-die set
- Type of material
- Thickness and resistance

And the particular data for each block:

- XY bending position
- Angle (α)
- Sheet metal length
- Top dead point
- Attributes



TEACH-IN

It may be used to edit step by step, by previously correcting the angle, with all the resources of the Manual mode.



MANUAL

The axes are controlled from the keyboard by indicating the X distance, the Y depth or the angle α .

The BCD inputs may be used and select the type of movement using an external switch: Continuous, incremental or free.

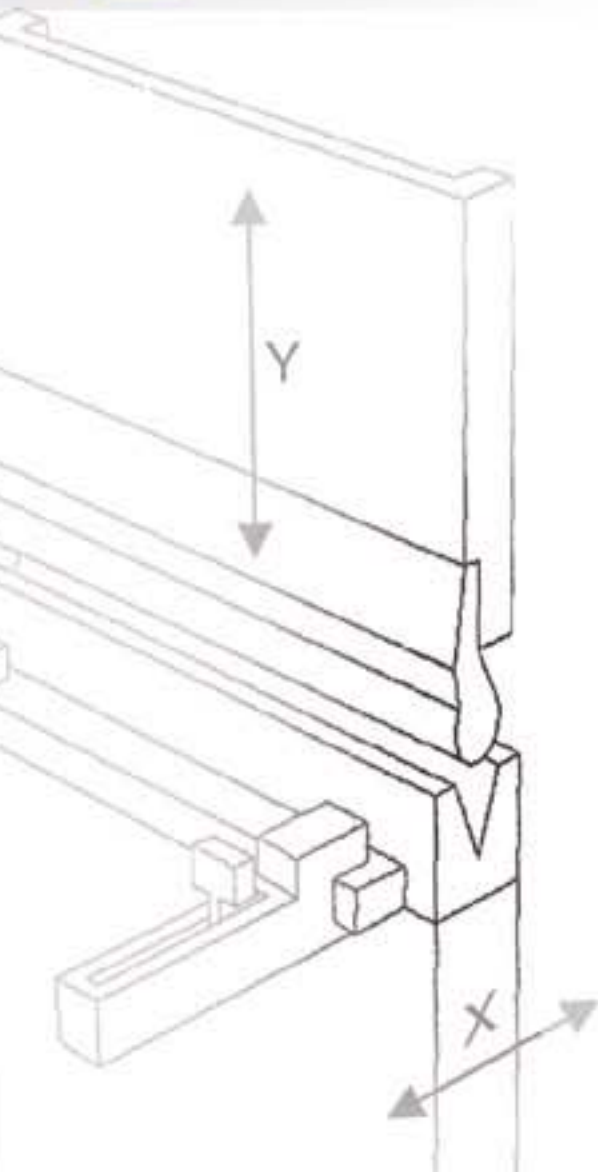
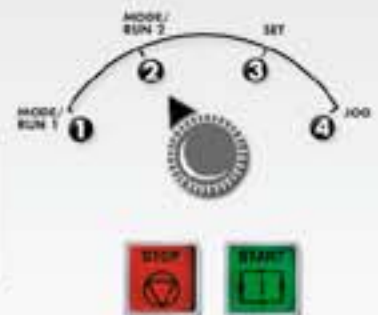


EXECUTION

Synchronized block transition:

- Using a contact pressure gage or an electronic transductor
- Using an encoder or linear potentiometric transductor.

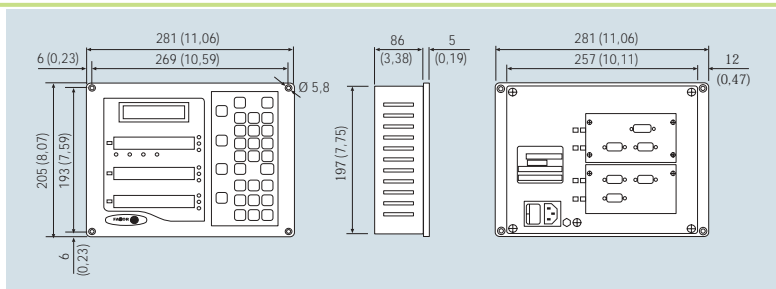
The BCD inputs may be used to select 4 execution modes using an external switch.



Technical characteristics

Memory	<ul style="list-style-type: none"> • 200 memory blocks • 9 tools: punch + die • 4-digit program number 	Programming	In mm or inches
Positioning	Open or closed loop with in-position zone	Inputs	<ul style="list-style-type: none"> • 2x2 hardware limits for X and Y axes • 3 external BCD switches, MANUAL panel • 3 optional duplicated keys • Emergency input • Block feed in automatic cycle • X axis retraction • EXECUTION mode selection, 4 modes • Footswitch connection • Mechanical pressure gage or P/V transductor
Display	Actual (real) position		
Auxiliary keys	Possibility of three external keys duplicated on the pendant	Multifunction outputs depending on model	<ul style="list-style-type: none"> • 2 enable axes/activate brakes • 2 fast/slow X, Y • 2 X, Y direction • 2 analog outputs associated with fast/ slow • 1 R axis (to raise the backstop X or auxiliary output) • IN POS, X, Y axes in position • Manual mode • Analog voltage for pressure • 3 Ram control
Safety features	<ul style="list-style-type: none"> • Software travel limits • Hardware travel limits • Emergency input 		
Resolution	Selectable with a correction factor between 0 and 100%		
Leadscrew backlash	Unidirectional approach with direction selection		
Error codes	Emergency input, out of limits, etc.		
Communication	Access to a PC for uploading/downloading programs and tool tables		
Languages	6 languages plus another one defined by the user		

Dimensions in mm (inches)

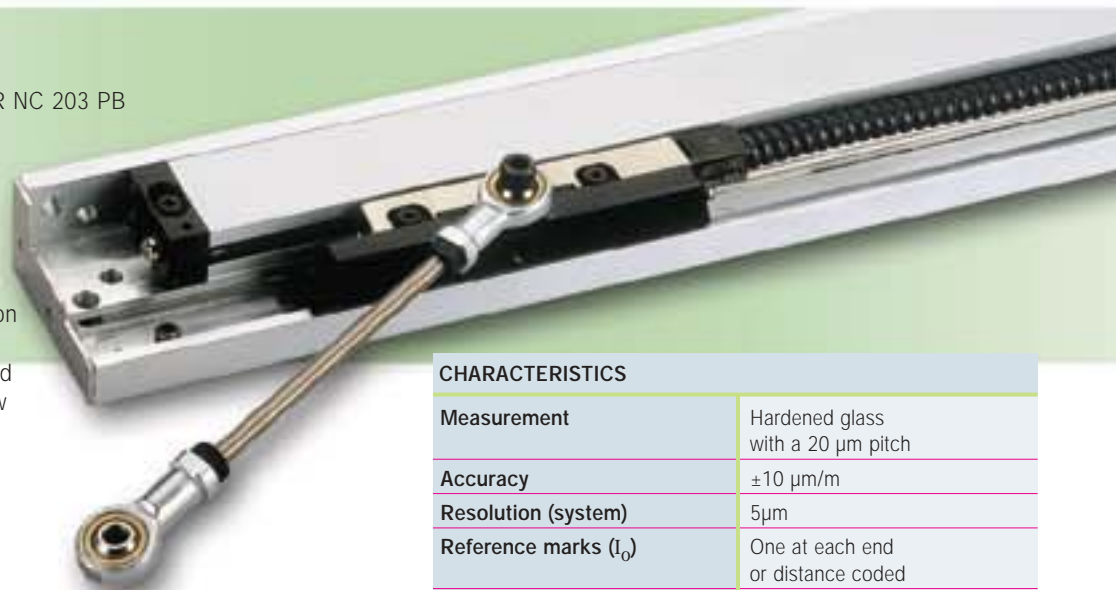


Linear Encoder for press brake applications with FAGOR NC 203 PB

When using the FAGOR NC 203 PB with the linear encoder MTD-xxx-P-2I it is not necessary to use the travel limit switches that identify the ram positions.

- Speed change position in the ram approach stage (end of fast feed and beginning of slow feed).
- Sheet metal contact.
- End of bend.
- Top dead point.

The linear encoder MTD-xxx-P-2I is especially designed for press brakes, it has an independent side guide that compensates for machine deflection.



CHARACTERISTICS

Measurement	Hardened glass with a 20 µm pitch
Accuracy	±10 µm/m
Resolution (system)	5µm
Reference marks (I ₀)	One at each end or distance coded
Output signals	Differential TTL
Measuring length	170, 220, 270, 320, 370, 420 and 470 mm

Order Identification

- MTD-(measuring length)-P-2I
For example: MTD-170-P-2I

FAGOR NC's for SHEARS

NC 10 S1 • NC 20 S1 • NC 10 S2 • NC 20 S2



	Simple	Programmable
1 axis	NC 10 S1	NC 10 S2
2 axes	NC 20 S1	NC 10 S2

Features

- Control of holders.
- Optional retraction of the X axis backstop before the cut.
- Shear travel control with a timer
- Automatic shear return with sensitive foot switch.
- Parts counter.
- Display and feedback in mm / inches.
- Mechanical backlash compensation and unidirectional approach.
- Automatic home search.
- Soft and Hard travel limits.

Manual

JOG movement or to a preset position.

Editor (S2)

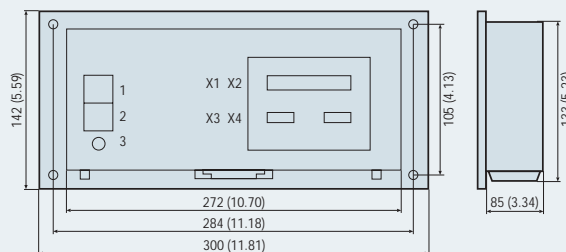
- 10 programs x 10 blocks.
- It stores XY positions and number of repetitions.
- Batch programming.

Execution (S2)

Block start with CYCLE START key or synchronized with foot switch.

Technical characteristics	Resolution	From 1 to 0.0001 mm
	Display	Actual (real) position
	Inputs	<ul style="list-style-type: none"> • 2x2 hardware limits (X and Y axes) and home switches • External emergency • Y axis release • 3 Y axis set position sensors • Foot switch • 2 switches for shear up/down
	Outputs	<ul style="list-style-type: none"> • 2 axis enables • 2 Fast / Slow (X and Y axes) • 2 Direction • 2 analog outputs to control in open or closed loop • 2 to control shear up / down • 1 Activate sheet holders • 1 Positioning axis, for foot switch enabling relay • 1 Pressure valve

Dimensions in mm (inches)





Backed by a worldwide leader group

Besides its wide range of DRO's, FAGOR has been manufacturing CNC systems for over 20 years making it one of the most relevant manufacturer of automation systems in the world.

Fagor Automation exports more than 65% of its total production to the industrialized world through an excellent distribution network in Europe, America and Asia offering an unmatched after-sales service.

FAGOR is part of Mondragón Cooperative Corporation, one of the most important European corporations, with 60,000 employees in three divisions: Financial, Industrial and Distribution.

The group's sales in excess of \$ 8 Billion.

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