# CNC 8040
# CNC 8055-*i*
# CNC 8055
# TC

## Conversational CNC's


- Lathes
- Turning Centers

FAGOR

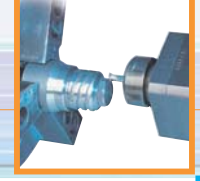
CNC 8040
CNC 8055-*i*
CNC 8055

# TC

## Introduction

Fagor user friendly conversational CNC's offer powerful and versatile programming features. Because of their outstanding capability, set-up time is minimized for both experienced and novice operators. The extensive use of graphics at the programming displays means that even complex machining tasks are easily dealt with, only the minimum of numerical data entry being required.

As standard, the CNC offers more than 10 working languages but all screens may be translated to the operator's own language.



## Tool calibration

It is a very simple and intuitive operation that does not require concepts such as tables, tool offsets, etc. Pressing the tool calibration key displays a help graphic.

Just set the dimensions of the master tool, select the tool to be calibrated and touch the part with it. The CNC picks up the actual tool dimensions and updates its internal tables for later machining operations.


## Startup assistance

**PLC logic analyzer**

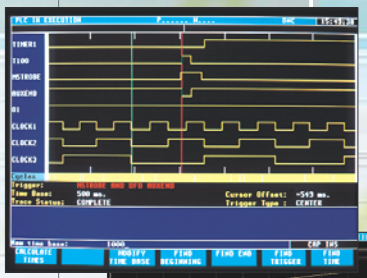
It is a tool to assist you when adjusting the PLC program. It captures data at the beginning of each PLC cycle and shows the status of the indicated resources.

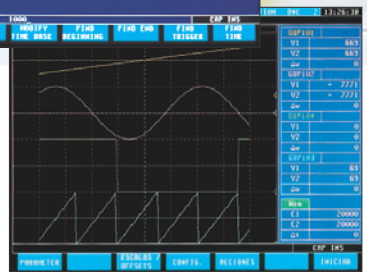
**Oscilloscope function**

It is a tool to assist you when adjusting the axes. Up to 4 variables may be shown simultaneously and manipulate CNC machine parameters and variables.

**Circle geometry test**

It helps improve the axis reversal peak. It consists of machining a circle, graphically comparing the theoretical path with the actual path and manipulating machine parameters until the desired result is achieved.

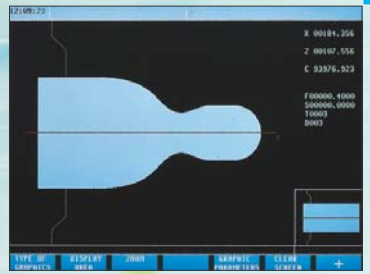


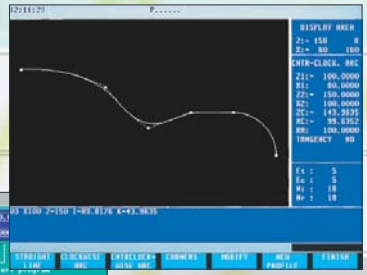


## Intelligent Profile Editor

Blueprints do not always show the starting and ending points of each section. Sometimes it suffices to just indicate the inclination angle of a section and other times it is enough to indicate that it is tangent to the previous section.

With the Intelligent Profile Editor no calculations are required, just enter the known data into the CNC. When there is more than one solution, all possible solutions are shown graphically so the operator can select the right one.




## Jog mode

Extremely easy to operate.

The screen offers the operator all the necessary information (axis position and feedrate, spindle speed, selected tool, etc.).

It is possible to preset the coordinates of the axes, modify the machining conditions, select a new tool as well as start and stop the spindle, etc.

The axes may be moved in several ways:

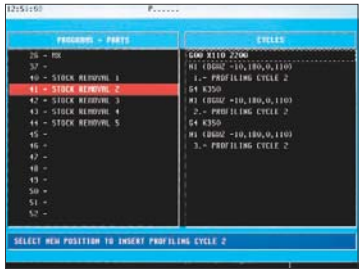
- using the JOG keys.
- using handwheels
- sending them to specific positions (target coordinate + CYCLE START)

## Parts saving

Part-programs may be made out of a combination of automatic operations and blocks edited in ISO code. The part-program directory shows the programs stored in memory (number and associated text) and the composition of the selected program (automatic operations and ISO block).

A part-program may be modified by adding or removing operations or by modifying a particular operation. It is possible to delete existing parts and create new ones from an existing one.

It is also possible to simulate a part-program or a particular operation before it is executed and take measurements on the graphic display to check that it will be executed properly.



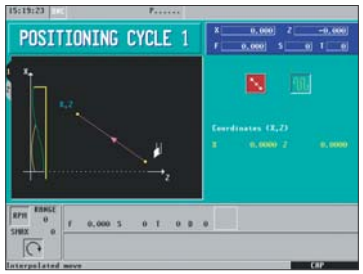
The automatic operations already implemented represent the main distinguishing feature of the conversational models. They have been designed to better adapt the usual workshop methods. They correspond to each operation of the part machining process.
The keys associated with the automatic operations have a descriptive icon and an LED that turns on when the operation is selected.

All the operations have:
- Interactive graphic assistance
- Geometry defining area
- Areas to set the machining conditions for the roughing and finishing stages.

Each operation has several editing levels or cycle types with their own screen. The left side of the screen shows tabs indicating the available levels and which one is selected.

## Positioning

To approach the part, transition between operations or withdrawal after machining.
Its 2 levels permit setting how the axes will move either one by one or both at the same time.

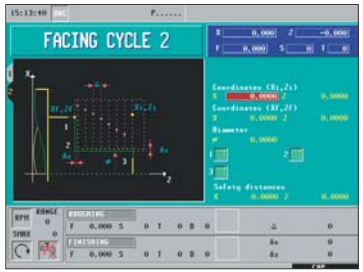



## Turning

Its 2 levels permit selecting, with an icon, the type of turning to be carried out: Inside or outside


## Facing

Like the rest of the Automatic operations, the screen graphic shows how the operation is carried out.
On its 2 levels only the machining conditions and the geometry data for facing need to be entered.

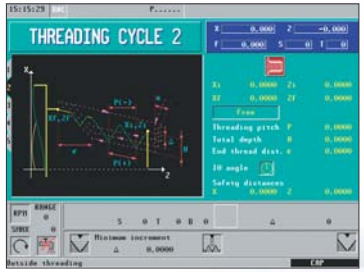


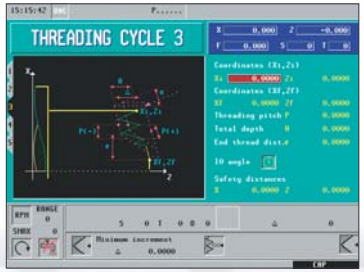

## Taper

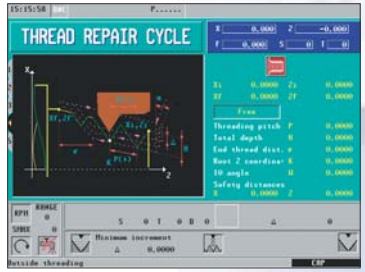
For taper turning.
In its 3 levels it is possible to select, with icons, the type of turning (inside or outside) and the shape of the part before and after the taper section.


## Threading

Its 5 levels permit making different types of threads: longitudinal, taper, on the face, multi-entry longitudinal threads and thread repair.
Longitudinal and taper threads may be inside or outside.
With thread repair it is possible to easily repair previously machined inside or outside threads.

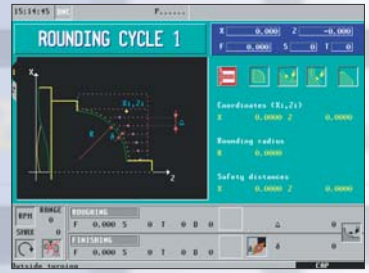


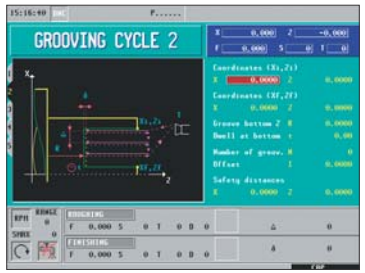

## Rounding

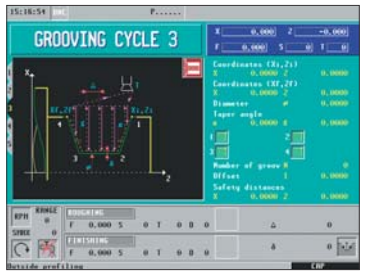
Its 2 levels permit selecting, with icons, the type of turning (inside or outside), the type of rounding (concave or convex) and the shape of the part before and after the taper section.



## Grooving

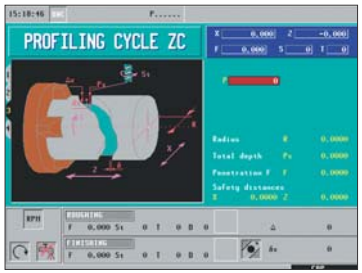
It has 5 levels: Side grooving, side grooving with incline walls, face grooving, face grooving with incline walls and cut-off operations.
On side grooving, the type of grooving (inside or outside) may be selected with icons.




## Profiles associated with the "C" axis

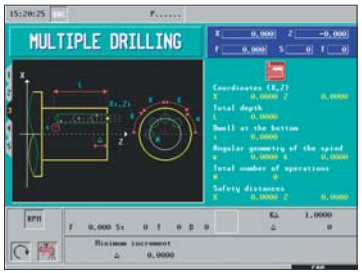
There are 2 levels, one for machining on the face of the part and the other one for machining on its side.
In both cases, the profile is defined using the profile editor and it allows selecting the type of tool compensation using an icon.

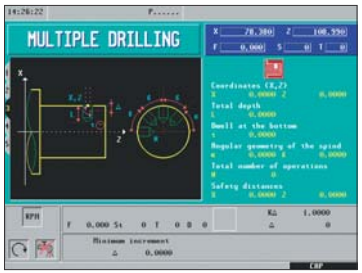




## Multiple drilling

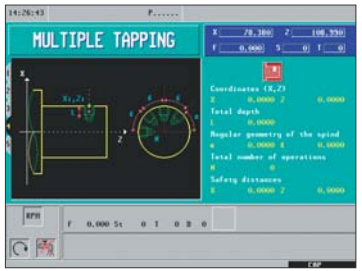
It allows repeating the same drill at different locations.
An icon may be used to select whether the holes will be drilled on the face or on the side of the part.



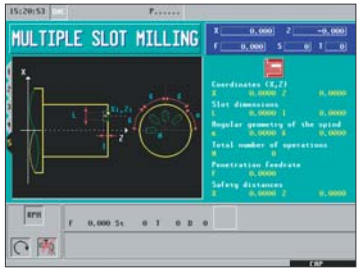

## Multiple tapping

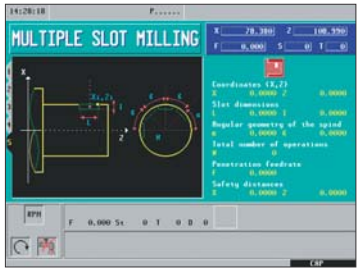
It allows repeating the same tapping at different locations.
An icon may be used to select whether the holes will be tapped on the face or on the side of the part.
Another icon may be used to select rigid tapping or regular tapping (with a clutch).


## Multiple slot milling

To repeat the defined slot at different locations.
An icon may be used to select whether the slots will be milled on the face or on the side of the part.



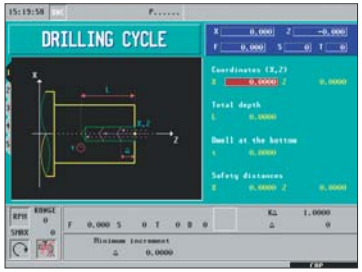




## Profile

2 levels, one to define the profile point to point and the other one to program the profile using the profile editor. With both levels, it is possible to select the type of profile (inside or outside) and the type of machining (paraxial or pattern repeat) using icons.


## Drilling

To drill holes on the face of the part. A dwell may be defined at the bottom.




## Tapping

To tap holes previously drilled on the face of the part.
The type of tapping may be selected with an icon:
Rigid tapping or regular tapping (with a clutch).

## CNC 8040/8055-i/8055 TC Technical Characteristics

| CONFIGURATION | 8040 | 8055-i | 8055 |
|---|---|---|---|
| **Axes and spindles** | | | |
| Maximum axis configuration | 2<br>▲ 4 | 2<br>▲ 4<br>▲ 7 (with digital interface) | 2<br>▲ 4<br>▲ 7 (with digital interface) |
| Maximum spindle configuration | 2 | | |
| C axis | – | ▲ (in 4-axis and 7-axis versions) | |
| Maximum axes + spindle configuration (analog + digital) | 5 | 8 | |
| Gantry axes | ● | ● | ● |
| Axis coupling via PLC | ● | ● | ● |
| Axis coupling by program | ● | ● | ● |
| **Memory** | | | |
| User memory (RAM) | 256 K<br>▲ 1 MB | 1 MB | 256 K<br>▲ 1 MB |
| Mem Key Card | 512 K<br>▲ 2 MB ▲ 24 MB | 4 MB<br>▲ 24 MB | 512 k ▲ 2 MB<br>▲ 4 MB ▲ 24MB |
| Integrated Hard Disk | – | – | ▲ |
| **Integrated PLC** | | | |
| PLC cycle time | 3 ms / 1000 instruc. | 3 ms / 1000 instruc.<br>▲ 1 ms / 1000 instruc. | 3 ms / 1000 instruc.<br>▲ 1 ms / 1000 instruc. |
| Equation programming system | ● | ● | ● |
| Logic analyzer | ● | ● | ● |
| **Communication** | | | |
| RS 232 (up to 115,200 Bd) | ● | ● | ● |
| RS 422 | – | – | ● |
| DNC (via RS 232) | ▲ | ▲ | ▲ |
| Ethernet | – | – | ▲ (with Hard Disk) |
| Telediagnosis via modem | ▲ | ▲ | ▲ |
| **Axis adjustment** | | | |
| Look Ahead | 75 blocks | | |
| Jerk control | ● | ● | ● |
| Feed forward / AC Forward | ● | ● | ● |
| Oscilloscope function (setup assistance) | ▲ | ▲ | ▲ |
| Circle geometry test (setup assistance) | ▲ | ▲ | ▲ |
| **System architecture** | | | |
| Hardware configuration | Central unit integrated into the monitor | | Modular Central Unit |
| Monitor | ▲ 10.4" Color VGA TFT LCD<br>▲ 10.4" Monochrome STN LCD | | ▲ 10.4" Color VGA TFT LCD<br>▲ 9" Monochrome CRT |
| Feedback inputs | 1 specific for spindle<br>2 specific for electronic handwheels<br>▲ 4 for axes, spindles or handwheels | | 8 feedback inputs for axes spindles and handwheels |
| Analog outputs (±10 V) | 1 specific for spindle<br>▲ 4 for axes or spindles | | 8 analog outputs for axes and spindles |
| Analog inputs (±5 V) | – | – | 8 |
| Probe inputs, 5 V (0.25mA) or 24V (0.30 mA) | 2 | 2 | 1 |
| Digital inputs and outputs (150 mA) | 16 I / 8 O<br>▲ 56 I / 32 O | 16 I / 8 O<br>▲ 56 I / 32 O | 40 I / 24 O<br>▲ 232 I / 120 O |
| CAN for remote-module connection | ▲ | ▲ | – |
| CPU turbo | – | – | ▲ |
| SERCOS for digital drive connection | ▲ | ▲ | ▲ |
| **Remote I/O modules (option)** | ▲ | ▲ | – |
| Possible nodes (CANopen) | 4 | 4 | – |
| Possible inputs / outputs at each node (24V 500 mA) | ▲ 72 I / 48 O | ▲ 72 I / 48 O | – |
| **System power supply** | | | |
| Central Unit | 24 Vdc | 24 Vdc | Universal AC |
| Remote I/O modules | 24 Vdc | 24 Vdc | – |
| **Feedback inputs** | | | |
| For axes | ▲ 4 inputs<br>TTL/1Vpp | ▲ 4 inputs<br>TTL/1Vpp | 4 inputs<br>TTL/Sinusoidal |
| For spindle | 1 TTL | 1 TTL | 4 inputs |
| For handwheels | 2 TTL | 2 TTL | TTL |

● Standard
▲ Option

## CNC 8040/8055-i/8055 TC Features

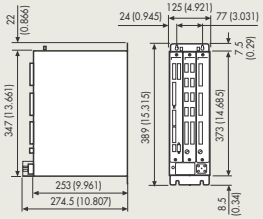
| FEATURES | 8040 | 8055-i | 8055 |
|---|---|---|---|
| **Spindle related** | | | |
| Spindle orientation M19 | ● | ● | ● |
| Spindle synchronism | ● | ● | ● |
| **Interpolation** | | | |
| Linear, Circular, Helical | ● | ● | ● |
| Tangential control | ▲ | ▲ | ▲ |
| Retrace function | ▲ | ▲ | ▲ |
| **Compensations** | | | |
| Tool radius and length | ● | ● | ● |
| Tool geometry | ● | ● | ● |
| Tool life monitoring | ▲ | ▲ | ▲ |
| **Graphics** | | | |
| Tool path | ● | ● | ● |
| Solid graphics | ● | ● | ● |
| **Operation related** | | | |
| Simulation with execution time estimate | ● | ● | ● |
| N block look-ahead to avoid tool collision | ● | ● | ● |
| **Programming related functions** | | | |
| Feedrate as an inverted function of time | ● | ● | ● |
| Profile editor | ● | ● | ● |
| **Canned cycles** | | | |
| Machining canned cycles | ● | ● | ● |
| Probing canned cycles | ▲ | ▲ | ▲ |
| Rigid tapping | ▲ | ▲ | ▲ |
| **Setup assistance** | | | |
| Oscilloscope function for axes | ▲ | ▲ | ▲ |
| Circle geometry test | ▲ | ▲ | ▲ |

● Standard
▲ Option

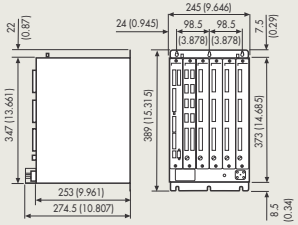
## •Compact Configuration

Central Unit

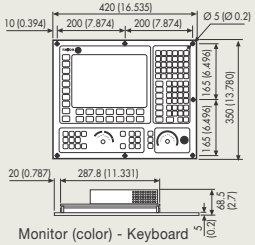
Monitor - Keyboard




3-width Central Unit




6-width Central Unit




Monitor (color) - Keyboard

## •Modular Configuration

Central Unit

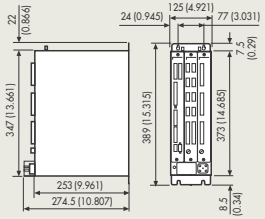
Monitor

TC Operator Panel

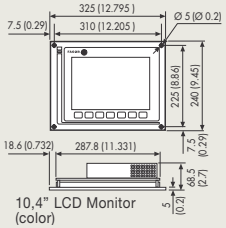
OPTIONAL

ISO panel(*)

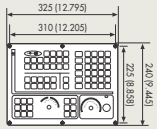
Keyboard switcher KS 50/55



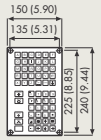

3-width Central Unit



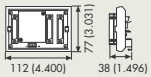

10,4" LCD Monitor (color)



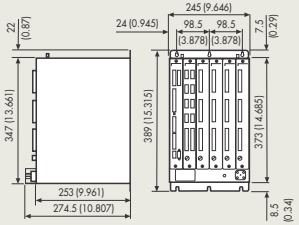

TC Operator Panel



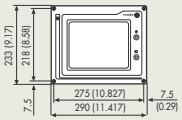

ISO panel(*)

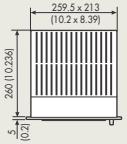



Keyboard switcher KS 50/55




6-width Central Unit




9" CRT Monitor (monochrome)

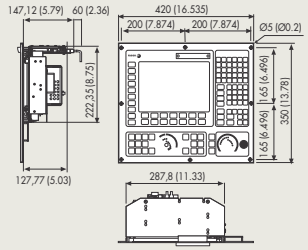
(*) Requires keyboard switcher KS 50/55





## •Compact Configuration (K)

Central Unit - Monitor - Keyboard



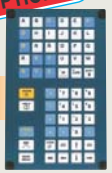

Central Unit - Monitor (color and monochrome) - Keyboard

## •Modular Configuration

Central Unit- Monitor

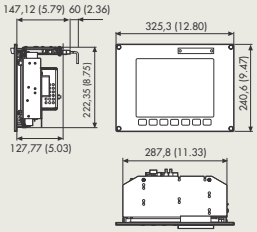
TC Operator Panel

OPTIONAL

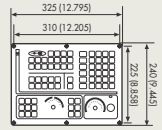


ISO panel(*)

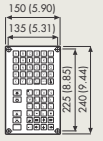
Keyboard switcher KS 50/55



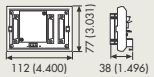

Central Unit - Monitor (color and monochrome)




TC Operator Panel




ISO panel(*)




Keyboard switcher KS 50/55

(*) Requires keyboard switcher KS 50/55

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