



Academy

PROGRAMMING
USING
MANUAL GUIDE I



PROBLEMS WITH ISO CODE?

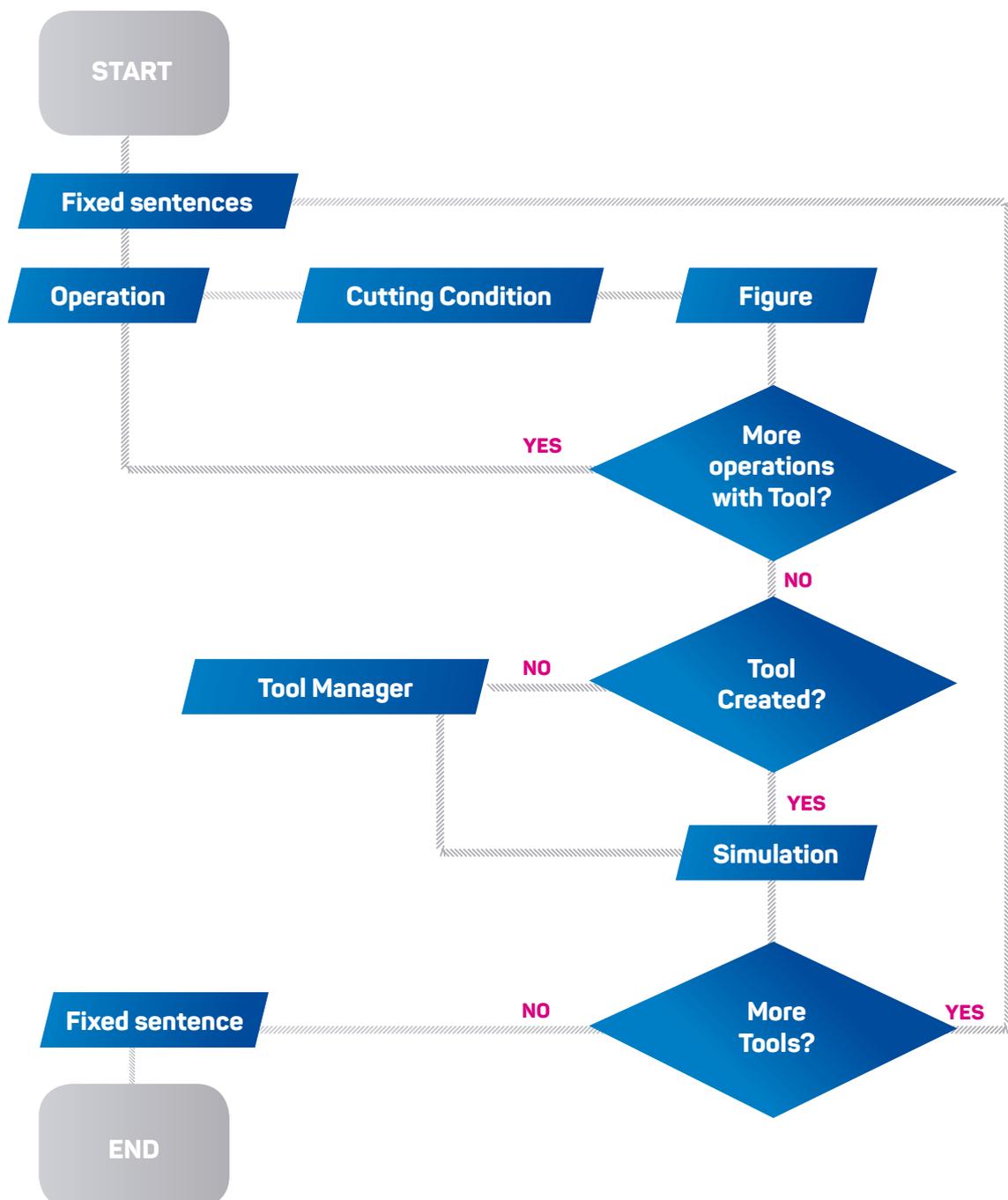
With the CNC lathes from CMZ it is not a problem, all of them use FANUC's Manual Guide i programming system, which will guide us through programming without needing to know ISO G-code. Using this tool we will be able to program a large number of operations on the CNC lathe, with screens and explanatory diagrams to guide us.

As well as the Manual Guide i, we have fixed sentences which we will use to complete everything we need to create a program from scratch, without having to know the different ISO programming sentences.

This document explains the different steps to follow in order to create a program using the Manual Guide i.

MANUAL GUIDE I

The programming process with the Manual Guide i is very systematic. It consists of selecting the tool, the operation and finally the figure we are going to make. The program creation process can be summed up in the following flow chart.



Flow chart for creating a program

Everything apart from the operations is programmed in ISO, that is the great advantage of the Fanuc control. To make this part of the programming easier we will use what are called fixed forms. The fixed forms are program parts that we habitually repeat, which are saved in the memory, to be entered when necessary. Some examples of fixed form are: tool changes, start program, activation of the C axis, etc.

Operations are programmed using the Manual Guide i. For all of the operations, first of all we set the cutting conditions and the figure conditions, each of which will create a different program block. It is necessary to keep in mind that the blocks that are written in the program will be difficult to understand, which will make it difficult to follow the process of the machining. It is possible to convert the program created with Manual Guide i into ISO G-code. We will make the conversion into ISO G-code when we simulate the program by activating the conversion option.

Before carrying out the simulation we need to create the tool in the tool manager. In the Manager we can create it by hand or export it from a catalogue that we have previously uploaded into the machine.

PROGRAMMING EXAMPLE

In this example programming we will lay out the steps to follow for a rough finish turning operation.

- ▼ To start the program we use the start program fixed sentence. When we enter it, it will write everything we need to start the program for us, all we need to do is change the question marks that appear to set the workpiece zero point, the first tool, the head speed, feed rate and a position to start the machining. We will adjust this data each time.

```

G10 P0 Z?
G1998 S1
(INsert BLANK)
T? (TOOL)
G92 S2000
M81
G96 G95 S? F? M3 M2000 M8
GO X? Z?
%
```

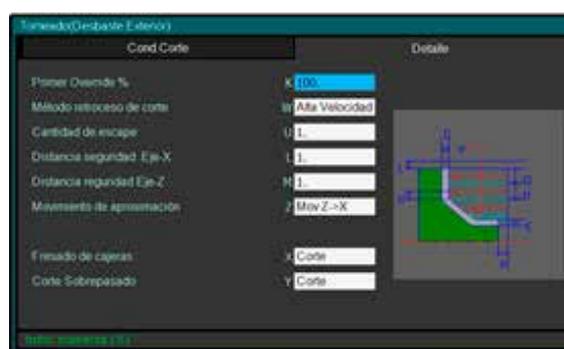
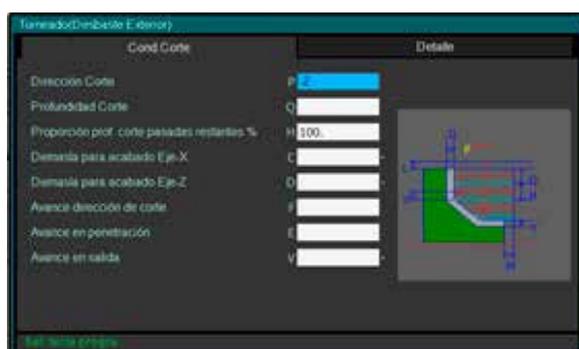
▼ The next step will be to create the first operation, a rough finish turning operation.

▼ To create a rough finish operation, the first thing to do is enter the Manual Guide i.

▼ We will find the machining cycle button on the lower menu in one of the sub-menus.



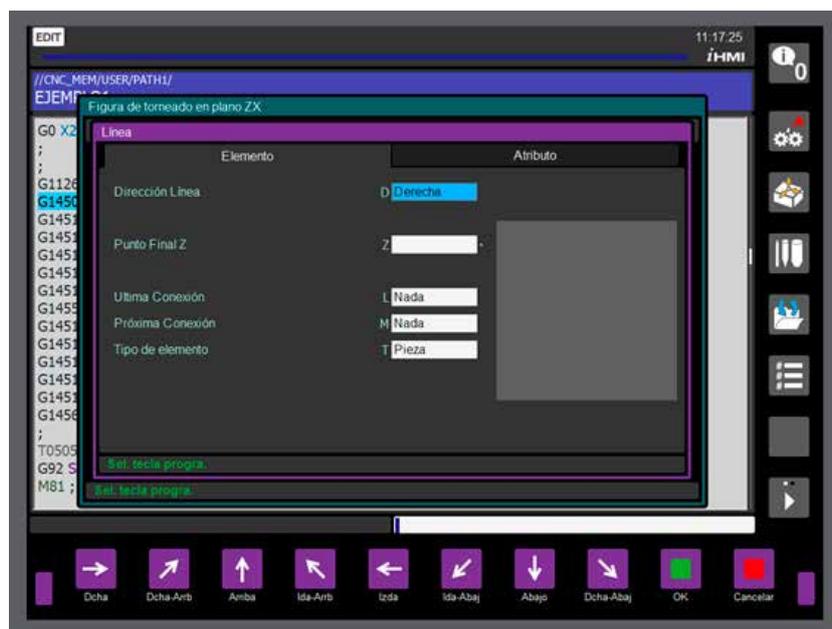
▼ We select the process, and at this moment it will ask us to fill in the data for cutting, as it appears in the following figure.



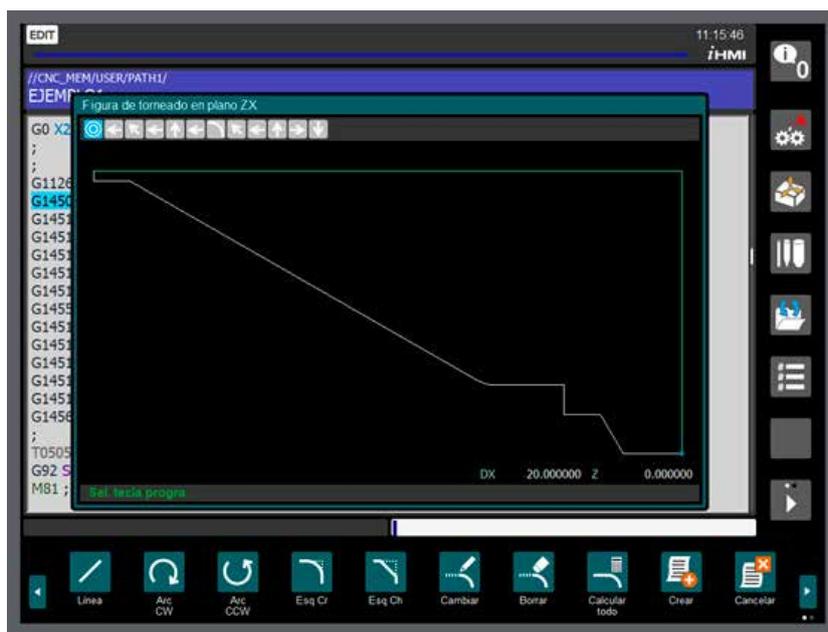
Screens for cutting conditions for rough finish turning task

After filling in the cutting conditions, the programme will ask us to fill in the geometric data for the operation. In this case, for rough finish turning, it does it for us directly on the following screen. If it were a milling operation, where there are more options for the geometry of the operation, first we would have to choose the type of figure.

To set the turning figure we will set a start point and, using lines, we will draw the profile. We will draw the lines bit by bit using the data that the interface asks us for. These will change depending on the direction of the line we have chosen.



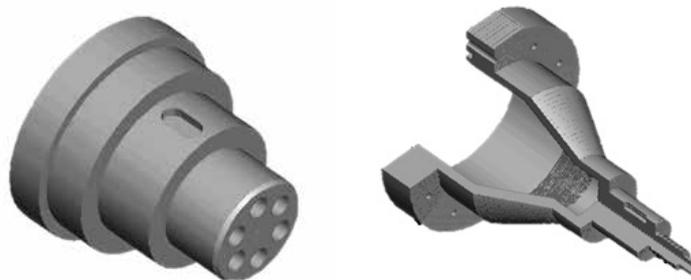
Input data for creating lines



Workpiece milling profile

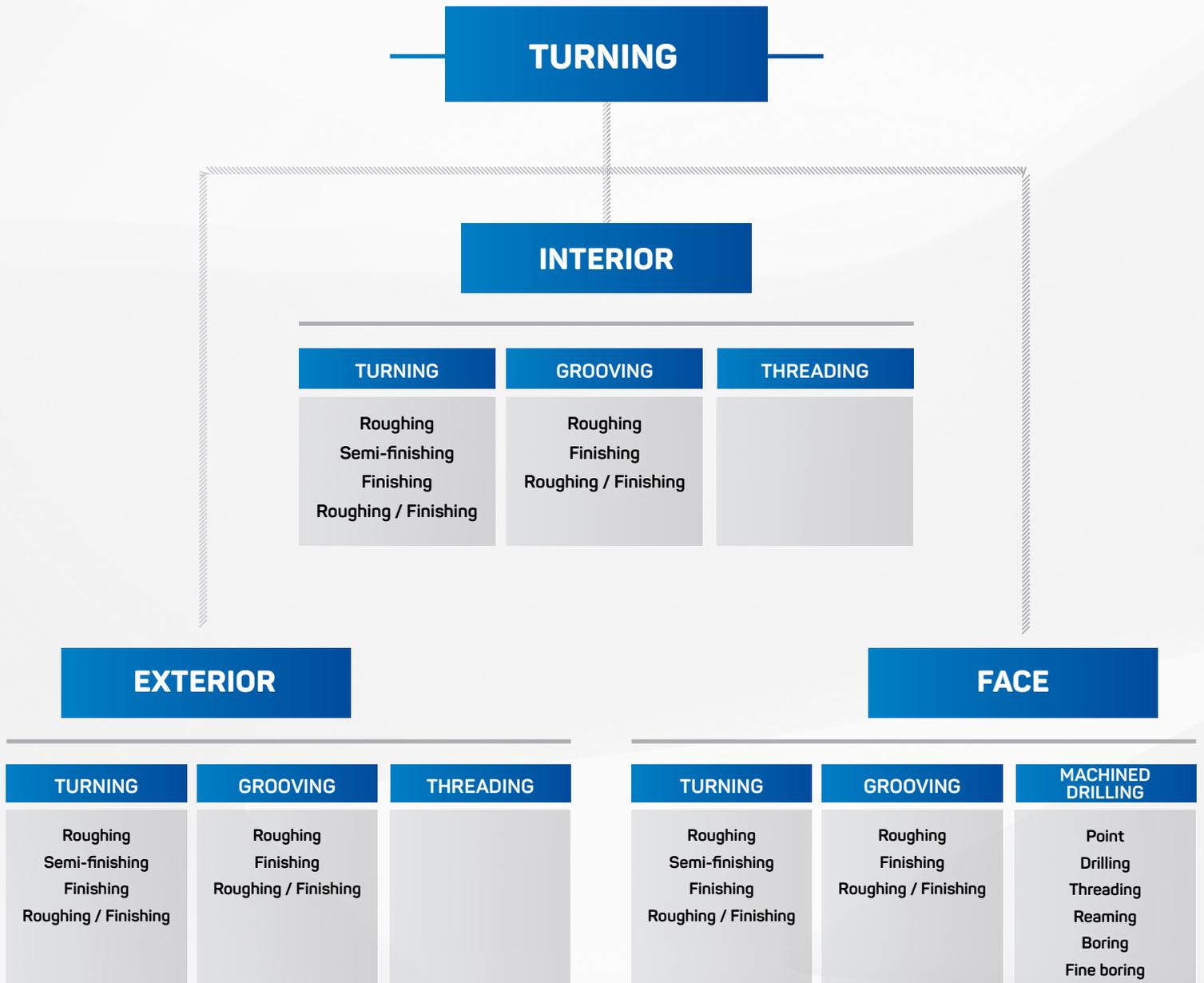
Once the figure is finished we will be able to write it into the program and the MGi will create the necessary command lines to set the operation. After creating it we will need to simulate the operation to check that it is properly set up.

In order to simulate the program we need to create the tool in the tool manager. To do so, we can create tool from the tool manager or load it from the tool catalogue. With the tool created, we will now be ready to simulate the operation. With the simulation we will be able to check that all of the data the Manual Guide i asks us for has been interpreted and entered correctly. After finishing this operation, following the flow diagram, we will continue with further operations or we will end the program. In the following image you can see different examples of simulated pieces in the Manual Guide i.



SUMMARY OF OPERATIONS IN MANUAL GUIDE I

As well as external milling, using this same process, we can set up a wide variety of operations.



MILLING

CONTOURING

EXTERNAL WALL

Roughing
Internal finishing
Side finishing
Chamfer

INTERNAL WALL

Roughing
Internal finishing
Side finishing
Chamfer

PARTIAL

Roughing
Internal finishing
Side finishing
Chamfer

MACHINED DRILLING

Point
Drilling
Threading
Reaming
Boring
Fine boring

FACING

Roughing
Finishing

STAMPING

Roughing
Internal finishing
Side finishing
Chamfer

POCKETS

Roughing
Internal finishing
Side finishing
Chamfer
Residual

SLOTS

Roughing
Internal finishing
Side finishing
Chamfer
C axis

SPECIAL

Engraving

TA SERIES



Z400 MODEL



Z640 MODEL



Z1100 MODEL

TX SERIES



Y3 MODEL



Y2 QUATRO MODEL

TD SERIES



Z800 MODEL



Z1350 MODEL



Z2200 MODEL



Z3200 MODEL

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