

Macro installation guide

3D Check

What is a macro program?

A macro program is a set of instructions written to automate complex machining tasks. These programs use variables and conditional logic to create flexible and reusable code, allowing for more efficient and precise control of CNC machines.

3D Check macro programs

3D Check is a test sequence which drives a QC20 ballbar to 29 static positions around a sphere. The test path in the machine controller is performed by using 6 nested macro part programs.

WARNING: 3D Check macros are based on the assumption that Z+ moves the spindle (or tool) away from the workpiece. Verify machine settings before execution.

Transfer macro programs to the machine controller

1. Download the macro programs from the Renishaw website: www.renishaw.com/carto-ballbar-connect
2. Using file explorer, navigate to the downloads folder on the PC.
3. Right click on the .ZIP folder (3D Check macro programs) and select 'Extract all' to extract the program files.
4. Select the folder for the machine controller under test.
5. Six part programs will then be displayed, with program ID's from 8700 to 8705.
6. Check the machine controller to ensure that these program ID's are not already in use.
7. If the program ID's are already in use in the machine control, then the 3D Check macro programs will need editing. Details can be found in **Appendix 1**.
8. Transfer the programs to the machine controller in the locations detailed below:

| Controller | Notes | Program location |
|------------|--|--------------------------|
| Fanuc | - | //CNC_MEM/USER/SYSTEM |
| Haas | - | MEMORY/ |
| Siemens | - | User/manufacturing cycle |
| Mazak | - | Main programs |
| Okuma | - | MD1 |
| Heidenhain | Transfer the BALLBAR folder containing the 6 programs. | TNC directory |

Running the macro part program

The macro program runs by entering a call line which is produced from the CARTO Ballbar Connect app. The macro call line changes based on machine controller and inputted ballbar length. See the table below for examples:

| | Macro call | Main program ID | Ballbar length | Program end |
|---------|--------------------|-----------------|----------------|-------------|
| Fanuc | G65 | P8700 | R100. | |
| Haas | G65 | P8700 | R100. | |
| Siemens | Extern L8700(REAL) | L8700 | (100) | M30 |
| Mazak | G65 | P8700 | R100. | |
| Okuma | CALL | 08700 | PR=100 | |

1. Set the machine controller to enable Manual Data Input mode (MDI).
2. From the CARTO Ballbar Connect app, copy the macro call line into the controller.
3. Follow the instructions within the app.

Heidenhain calling programs

NOTE: Heidenhain controllers do not allow calling macros directly from MDI. They require a calling program to be created. Details are below.

| | Macro call | Main program ID | Ballbar length |
|------------|------------------------|-----------------|----------------|
| Heidenhain | CALL PGM TNC:\BALLBAR\ | L8700.H | Q318=100 |

1. Create the calling program.
2. Enter the code from the CARTO Ballbar Connect app, using the PGM CALL command to call the macro program.
3. Load and execute the calling program in Program Run mode and follow the instructions within the app.

Appendix 1 – Changing macro program ID's

WARNING: Programs ranging in 8000-9999 are usually macro programs that are write protected. Changing or editing these programs can cause damage to machines and serious risk of injury to machine operators.

Text editor

This section demonstrates how to edit a program ID. To carry out this task a PC based text editor is required. For demonstration purposes, Notepad++ has been used.

The example shows editing the main program 8700 for the Fanuc 3D Check macro.

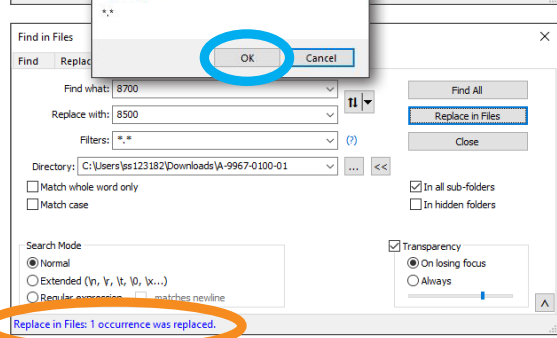
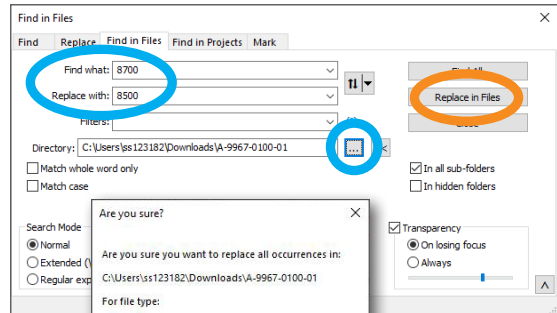
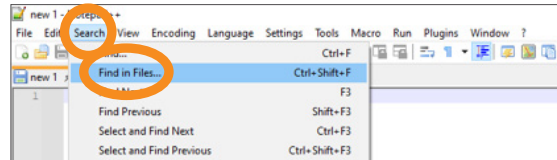
From the PC's start menu, open the text editor program.

1. To change the program ID, search and replace the program ID of all macro programs within the folder. Using Notepad++, this is done by selecting 'Search' and then 'Find in files'.
2. Enter the program ID to be changed and a suitable new alternative, then browse to the directory containing the 3D Check macro programs.
3. Select the 'Replace in files'.
4. In the dialogue box select 'OK' to apply changes.
5. The text editor will then confirm the instances changed.

NOTE: In this example, the list below shows the total of each 8700 replacement in all six programs:

8700 - 1 occurrence replaced
 8701 - 3 occurrences replaced
 8702 - 4 occurrences replaced
 8703 - 6 occurrences replaced
 8704 - 36 occurrences replaced
 8705 - 2 occurrences replaced

6. In File Explorer, navigate to the folder containing the 3D check macro programs. Edit the file name of the to the new ID.
7. This completes the macro update. The **mobile app** will need updating if program 8700 has been changed.

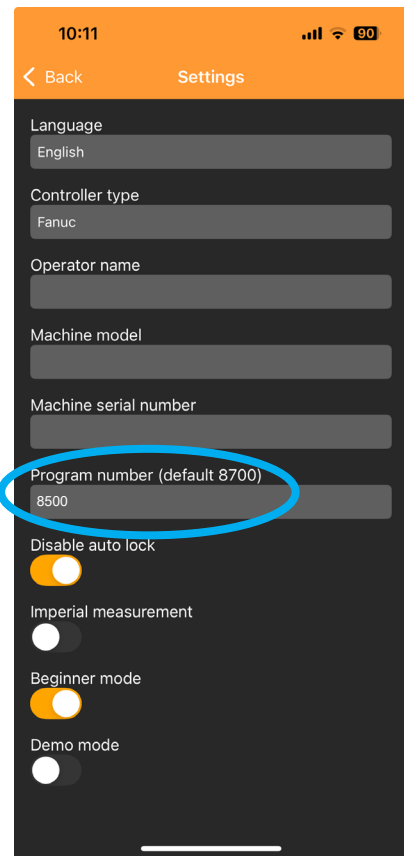
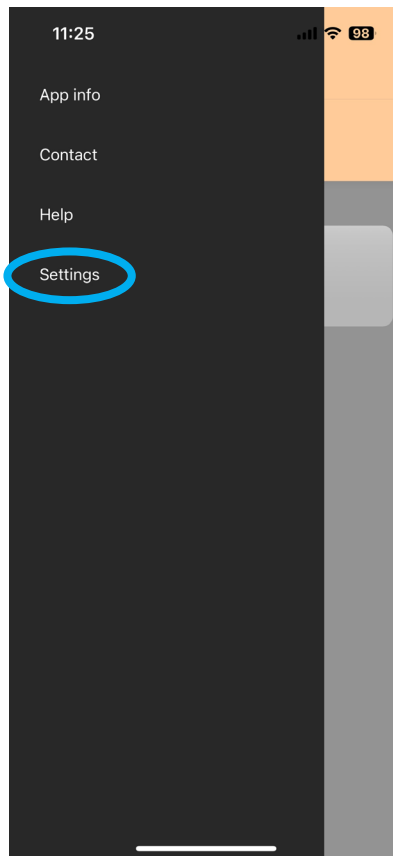
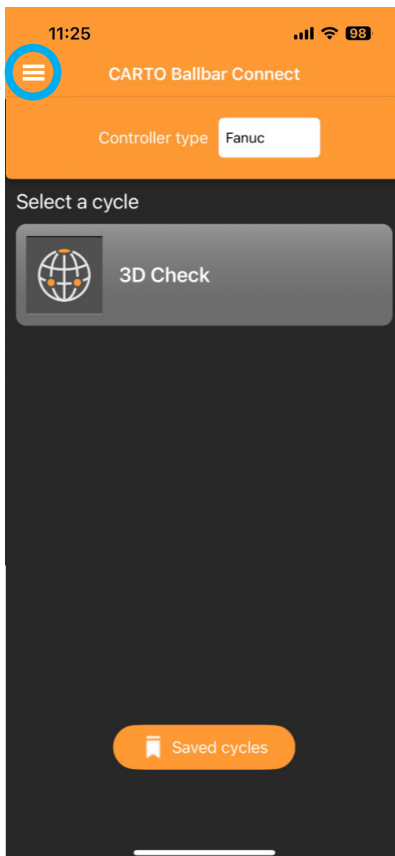


Mobile app



CAUTION: The following only applies if the main macro program ID (8700) has been changed. Any changes to subprogram ID's require no changes within the app.

1. Open the CARTO Ballbar Connect app.
2. Open the 'Settings' tab.
3. Select 'Settings'.
4. Edit 'Program number' and enter the new program number.
5. The app set up is now complete.



www.renishaw.com/carto-ballbar-connect

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