

## 1 Brief description

**Aim of the module:**

In this module you learn how to structure a part program clearly and functionally.

**Description of the module:**

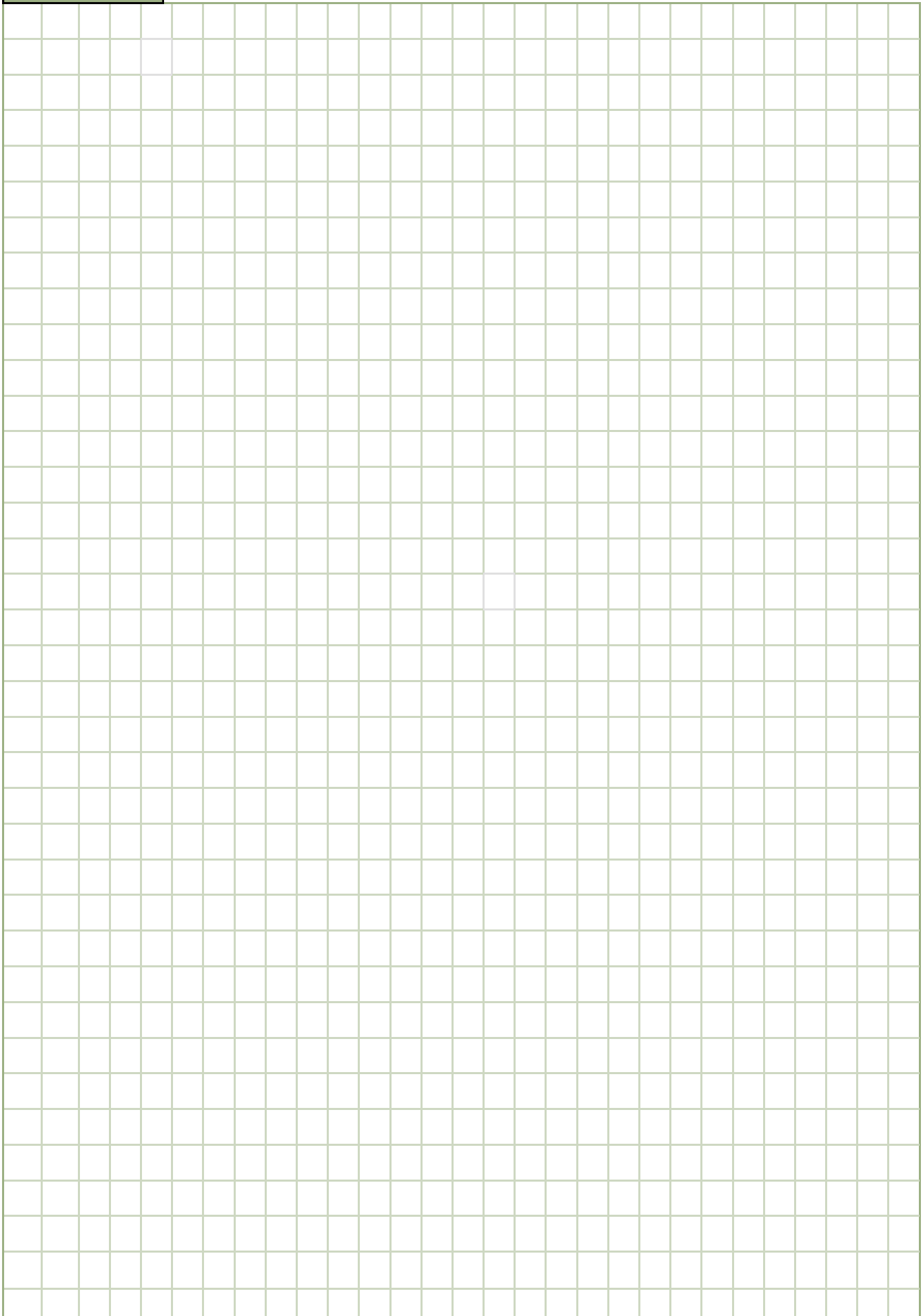
This module describes the programming structure of NC-programs.

**Content:**

Basic principles of programming

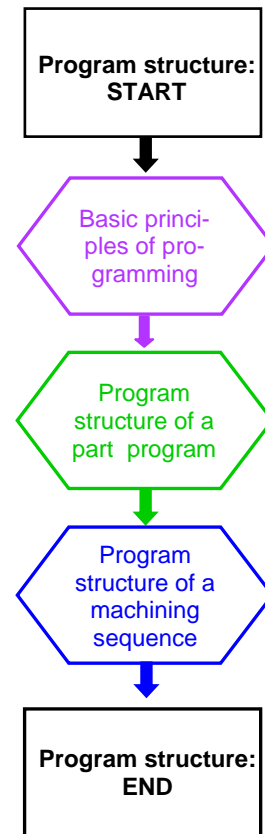
Program structure of a part program

Program structure of a machining sequence



**Program structure: Description**

This module describes the programming structure of NC-programs.



Notes

Notes

**Certain principles should be followed during the creation of part programs:**

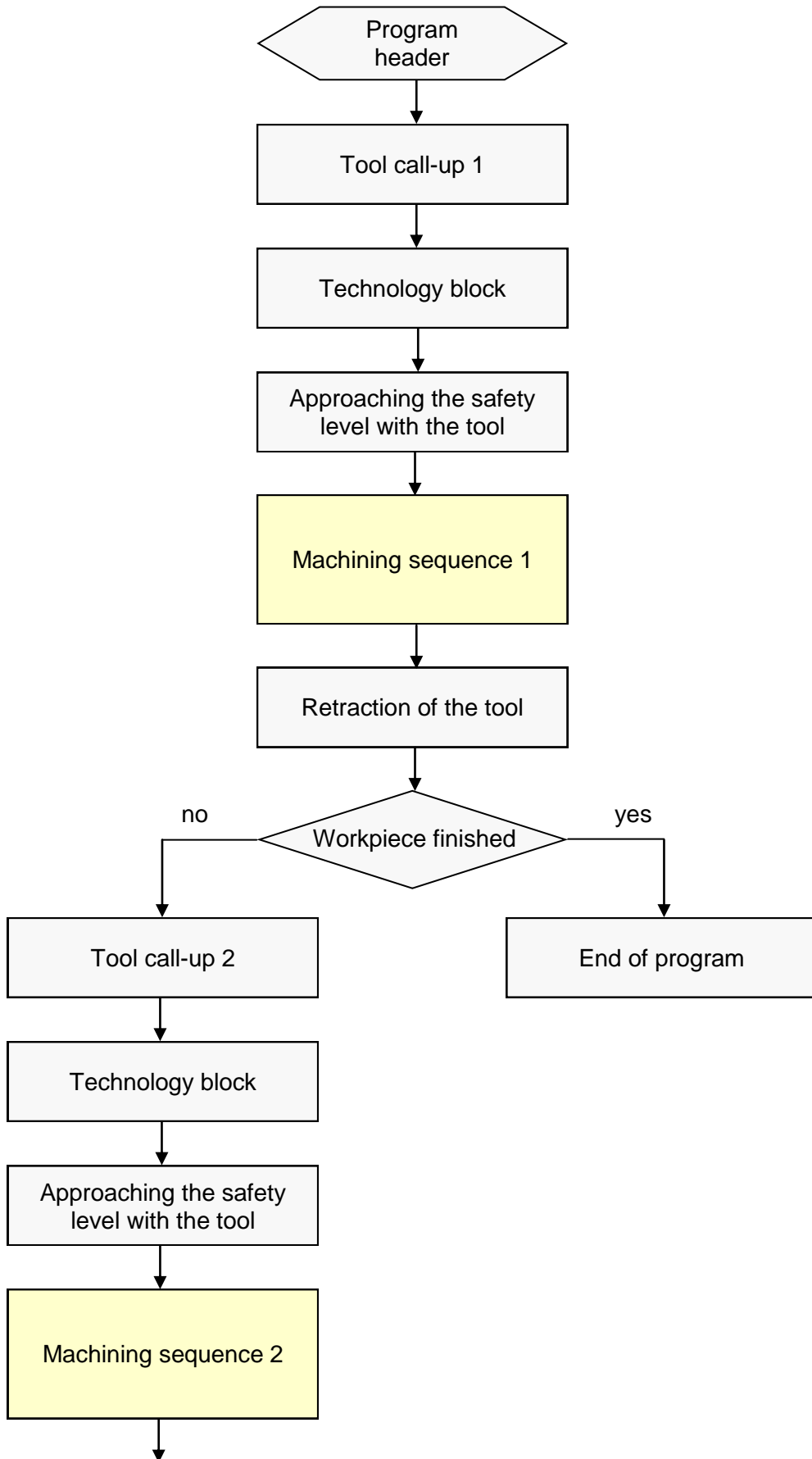
- The program must ensure that an unlimited number of work pieces can be produced with the quality (tolerances, surface quality, form and position deviation, etc.) required on the drawing with a minimum of production time and the least possible material wastage.
- It is always the motion of the tool along the drawn ideal contour of the work piece.
- If tolerances are shown, the programming is always referred to the middle of the tolerance.  
Example:  $\varnothing 20 + 0,1$  - programmed value = 20,05.

Precise dimension corrections can be carried out on the machine by means of the wear correction feature for the tool.

- The program should exhibit a clear and concise structure and should contain comments wherever possible to ensure that other users can understand the layout easily at later stages.

The following flow chart represents a possible suggestion for a suitable structure of the main program.

Notes

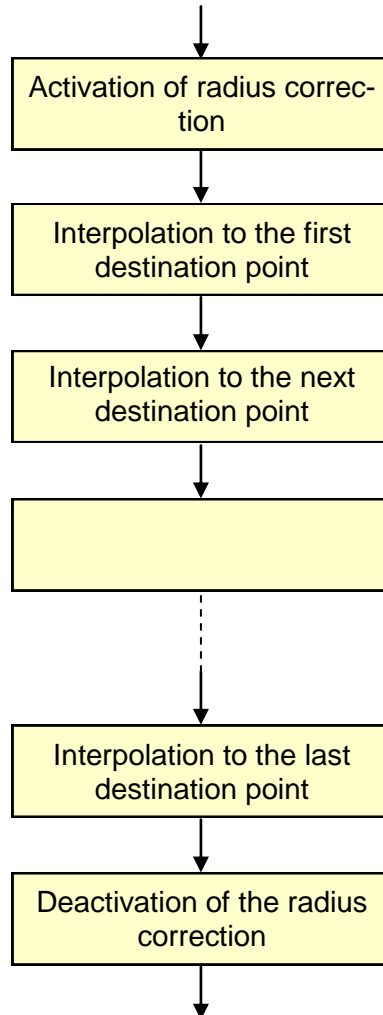


## Notes

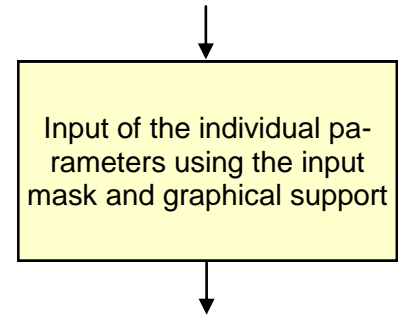
The programming of the machining sequence can be achieved by means of description of the individual steps using departure commands (e.g. G00, G01, G02, etc.) or by means of machining cycles.

The following representation refers to the flow chart in section 2 of this manual and describes a possible machining sequence.

## Programming with G-Codes



## Programming using cycles



The following criteria should be kept in mind when selecting between the two described possibilities:

- Availability of the cycles on the respective machine.
- Machining time required with cycles or with G-codes.
- The relation of the number of work pieces to the required programming extent.