

## Programming variables for cycles

Manufacturing several variants of workpieces is often required. To do that, different parts programs are usually created with different values. A simpler approach is to use R parameters or variables instead of program values. An additional benefit to be gained from programming variables is that the parameters can be reconciled and combined using mathematical functions. The Sinumerik Operate user interface makes implementing this complex programming even easier. This is true for the programming with programGuide as well as for ShopTurn and ShopMill. As shown in the “Groove” illustration, the values are replaced by parameters. These must be specified at the beginning of the program or can be loaded by another program. For example, a start program is created for machining that covers the different variants of the group of parts.

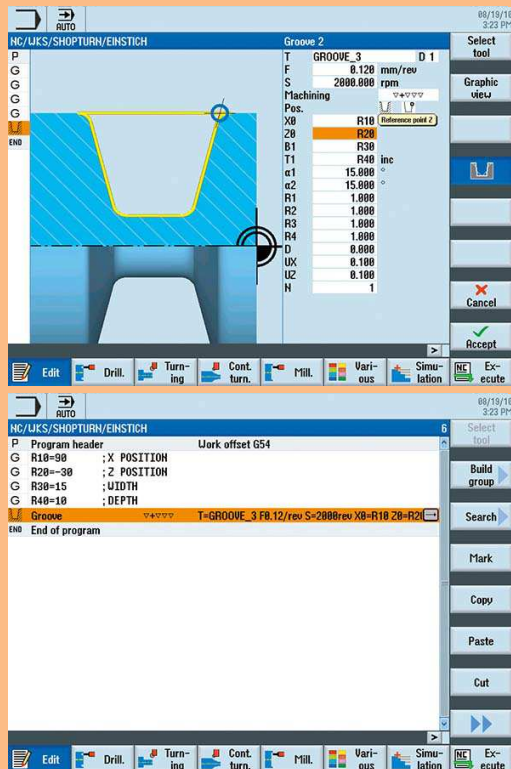
### Example for combining variables:

```
IF R20 = R10+2/(R5*3,1419)
```

```
R15=25
```

```
ENDIF
```

```
MSG(“MAXIMUM DIAMETER REACHED”)
```



By using parameters, cycles can be programmed even more flexibly

The parameters are specified directly in the program, just as in the image, or over an initial setup program