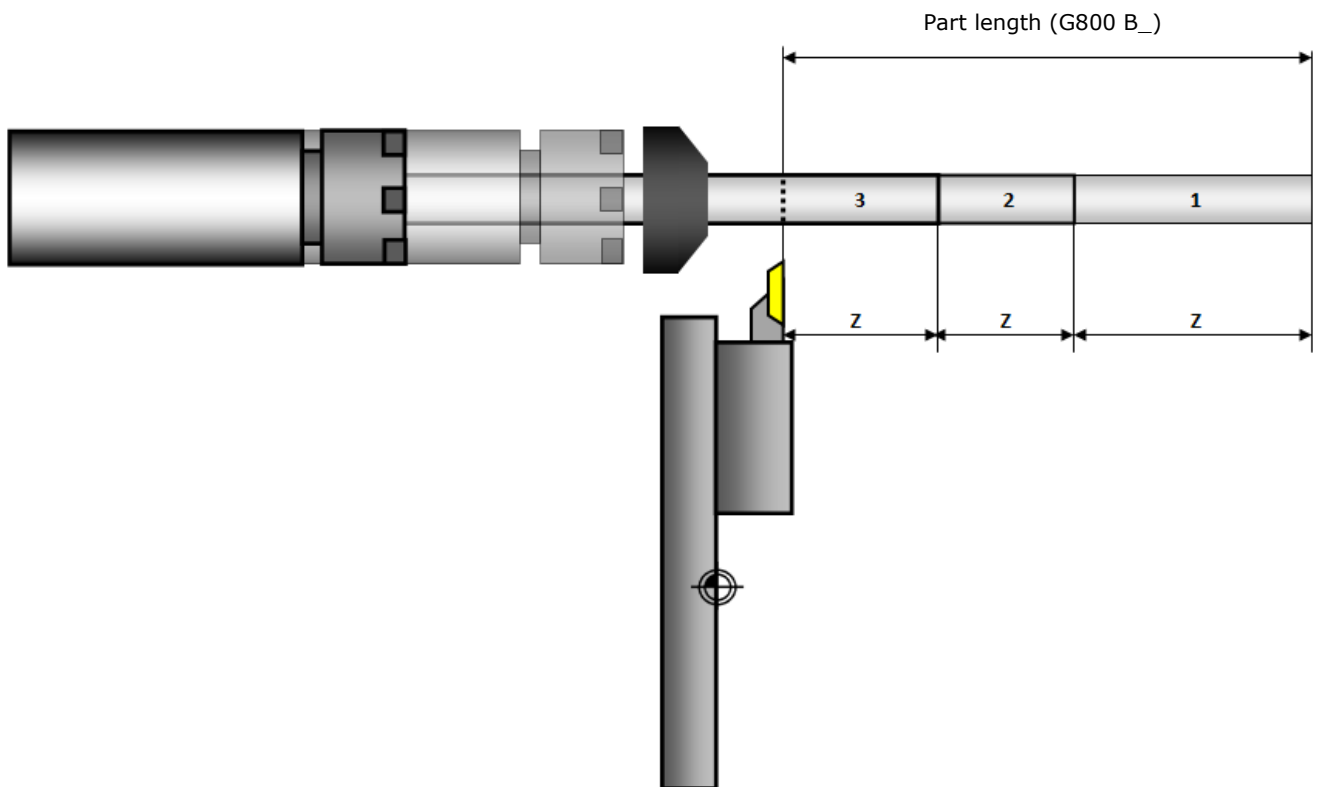# Long parts
ISO machines

Contents

1 Multiple feeding

1.1 Basic principle

On a machine, machining a part that is longer than the stroke of the machine main spindle in a single feeding is impossible.
This is why Tornos now offers the chance of feeding several times a given quantity of material for a single part.
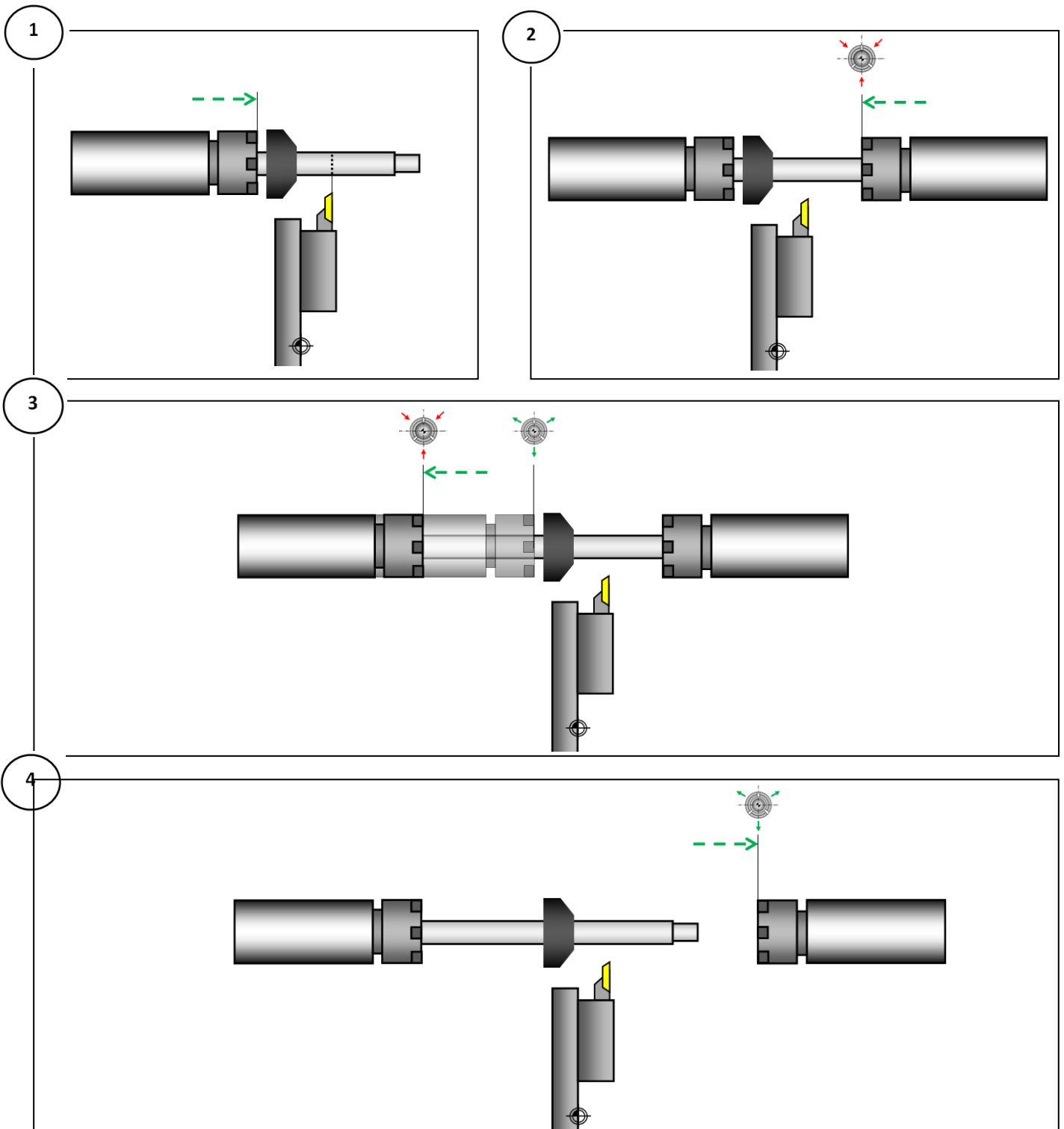

Example with 3 feedings:

TORNOS

1.2 Work sequence

To perform additional feeding, the work sequence is as follows:

1) Main spindle (hence the bar) positioned forward
2) Bar locked with the counter spindle (prevents the bar moving during feeding)
3) Feeding of a certain quantity of material
4) Bar released by counter spindle

1.3 Tornos macros

Tornos macros allow you to program this operation very simply.
To do so, the following macros play a fundamental role:

G800 (B_ K_)   Indicates the (B) and the number of feedings to machine a part (K)
G912 (Z_)   Indicates the quantity of material to feed
G924 (Z_)   Indicates the bar locking position

1.4 Sample Programming

"Cutting tool" channel	"Counter spindle" channel
G800 A12 **B80** C40 D5 **K2** **(part variables initialisation)** … …	
M9002	M9002
… G910	
M9003	M9003
N1 M120 …	N1 M120 …
M9004	M9004
G912 B300 **Z50** **(Feeding 1)** G0 W0.2 G0 X21 T110 D0 **(Cutting tool retraction)**	
M9005	M9005
… **(Mainwork machining)** … … …	… **(Backwork machining)** … … **(Part extraction)** …
M9006	M9006
M103 S300 P1 G0 Z-50 T110 D0 **(Bar positioning)**	M11 G4 X0.5 M404 S300 P4 M418
M9007	M9007
	G915 **G924 Z-25** **(bar locked)**
M9008	M9008
G912 B300 **Z30** **(Feeding 2)**	
M9009	M9009
	M11 G4 X0.5 G28 W0
M9010	M9010
… **(Mainwork machining continued)** …	… …

TORNOS

1.5 Model programs

Tornos now also provides program models that feature two feedings.
This will allow you to minimise and simplify your programming.

The machines which feature model programs are as follows:
- CT20
- EvoDECO 10/16/20/32
- SwissDT 13/26
- SwissGT 13/26/26B/32/32B
- SwissNano

1.6 Additional information

Ejection device:
It is important to know that, to eject long parts, sometimes an adapted ejection system needs to be arranged. Tornos offers optional long part ejection systems.

For ejection systems where the part crosses the counter spindle, the counter spindle collet has to have the same diameter as the largest part diameter.

Programming:
In the model programs delivered by Tornos there are 2 feedings, but additional feedings can naturally be added.

Long part ejections should be programmed by the user according to the ejection system fitted on the machine.

The number of feedings set in argument K of "G800" should correspond to the number of "G912" in the program.

When a part is machined using several feedings "G800 K_" arguments Z of G912 must under all circumstances be programmed.

The part length set in argument B of "G800" should correspond to the total values contained in arguments Z of "G912" in the program.

TISIS automatically checks that programming of arguments is consistent, and if this is not the case, any errors are underlined in the program.