CNC - FANUC TURNING CYCLES

G code system			Group	Function
A	B	C		
G00	G00	G00	01	Positioning (Rapid traverse)
G01	G01	G01		Linear interpolation (Cutting feed)
G02	G02	G02		Circular interpolation CW or helical interpolation CW
G03	G03	G03		Circular interpolation CCW or helical interpolation CCW
G02.2	G02.2	G02.2		Involute interpolation CW
G02.3	G02.3	G02.3		Exponential interpolation CW
G02.4	G02.4	G02.4		3-dimensional coordinate system conversion CW
G03.2	G03.2	G03.2		Involute interpolation CCW
G03.3	G03.3	G03.3		Exponential interpolation CCW
G03.4	G03.4	G03.4		3-dimensional coordinate system conversion CCW
G04	G04	G04	00	Dwell
G04.1	G04.1	G04.1		G code preventing buffering
G05	G05	G05		AI contour control (command compatible with high precision contour control), High-speed cycle machining, High-speed binary program operation
G05.1	G05.1	G05.1		AI contour control / Nano smoothing / Smooth interpolation
G05.4	G05.4	G05.4		HRV3, 4 on/off
G06.2	G06.2	G06.2	01	NURBS interpolation
G07	G07	G07	00	Hypothetical axis interpolation
G07.1 (G107)	G07.1 (G107)	G07.1 (G107)		Cylindrical interpolation
G08	G08	G08		AI contour control (advanced preview control compatible command)
G09	G09	G09		Exact stop
G10	G10	G10		Programmable data input
G10.6	G10.6	G10.6		Tool retract and recover
G10.9	G10.9	G10.9		Programmable switching of diameter/radius specification
G11	G11	G11		Programmable data input mode cancel
G12.1 (G112)	G12.1 (G112)	G12.1 (G112)	21	Polar coordinate interpolation mode
G13.1 (G113)	G13.1 (G113)	G13.1 (G113)		Polar coordinate interpolation cancel mode
G17	G17	G17	16	XpYp plane selection
G17.1	G17.1	G17.1		Plane conversion function
G18	G18	G18		ZpXp plane selection
G19	G19	G19		YpZp plane selection
G20	G20	G70	06	Input in inch
G21	G21	G71		Input in mm
G22	G22	G22	09	Stored stroke check function on
G23	G23	G23		Stored stroke check function off
G25	G25	G25	08	Spindle speed fluctuation detection off
G26	G26	G26		Spindle speed fluctuation detection on

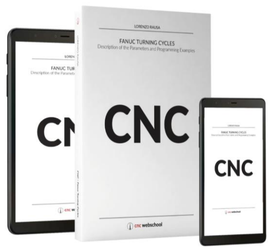
Fig. 1 List of Fanuc functions from G0 to G26

G code system			Group	Function
A	B	C		
G27	G27	G27	00	Reference position return check
G28	G28	G28		Return to reference position
G28.2	G28.2	G28.2		In-position check disable reference position return
G29	G29	G29		Movement from reference position
G30	G30	G30		2nd, 3rd and 4th reference position return
G30.1	G30.1	G30.1		Floating reference point return
G30.2	G30.2	G30.2		In-position check disable 2nd, 3rd, or 4th reference position return
G31	G31	G31		Skip function
G31.8	G31.8	G31.8		EGB-axis skip
G32	G33	G33	01	Threading
G34	G34	G34		Variable lead threading
G35	G35	G35		Circular threading CW
G36	G36	G36		Circular threading CCW (When bit 3 (G36) of parameter No. 3405 is set to 1) or Automatic tool offset (X axis) (When bit 3 (G36) of parameter No. 3405 is set to 0)
G37	G37	G37		Automatic tool offset (Z axis) (When bit 3 (G36) of parameter No. 3405 is set to 0)
G37.1	G37.1	G37.1		Automatic tool offset (X axis) (When bit 3 (G36) of parameter No. 3405 is set to 1)
G37.2	G37.2	G37.2		Automatic tool offset (Z axis) (When bit 3 (G36) of parameter No. 3405 is set to 1)
G38	G38	G38		Tool radius/tool nose radius compensation: with vector held
G39	G39	G39		Tool radius/tool nose radius compensation: corner rounding interpolation
G40	G40	G40	07	Tool radius/tool nose radius compensation : cancel
G41	G41	G41		Tool radius/tool nose radius compensation : left
G42	G42	G42		Tool radius/tool nose radius compensation : right
G41.2	G41.2	G41.2		3-dimensional cutter compensation : left (type 1)
G41.3	G41.3	G41.3		3-dimensional cutter compensation : (leading edge offset)
G41.4	G41.4	G41.4		3-dimensional cutter compensation : left (type 1) (FS16i-compatible command)
G41.5	G41.5	G41.5		3-dimensional cutter compensation : left (type 1) (FS16i-compatible command)
G41.6	G41.6	G41.6		3-dimensional cutter compensation : left (type 2)
G42.2	G42.2	G42.2		3-dimensional cutter compensation : right (type 1)
G42.4	G42.4	G42.4		3-dimensional cutter compensation : right (type 1) (FS16i-compatible command)
G42.5	G42.5	G42.5		3-dimensional cutter compensation : right (type 1) (FS16i-compatible command)
G42.6	G42.6	G42.6		3-dimensional cutter compensation : right (type 2)
G40.1	G40.1	G40.1	19	Normal direction control cancel mode
G41.1	G41.1	G41.1		Normal direction control left on
G42 .1	G42 .1	G42 .1		Normal direction control right on

Fig. 2. List of Fanuc functions from G27 to G42.1

G code system			Group	Function
A	B	C		
G43	G43	G43	23	Tool length compensation + (Bit 3 (TCT) of parameter No. 5040 must be "1".)
G44	G44	G44		Tool length compensation - (Bit 3 (TCT) of parameter No. 5040 must be "1".)
G43.4	G43.4	G43.4		Tool center point control (type 1) (Bit 3 (TCT) of parameter No. 5040 must be "1".)
G43.5	G43.5	G43.5		Tool center point control (type 2) (Bit 3 (TCT) of parameter No. 5040 must be "1".)
G43.7 (G44.7)	G43.7 (G44.7)	G43.7 (G44.7)		Tool offset (Bit 3 (TCT) of parameter No. 5040 must be "1".)
G44.1	G44.1	G44.1		Tool offset conversion (Bit 3 (TCT) of parameter No. 5040 must be "1".)
G49 (G49.1)	G49 (G49.1)	G49 (G49.1)		Tool length compensation cancel (Bit 3 (TCT) of parameter No. 5040 must be "1".)
G50	G92	G92	00	Coordinate system setting or max spindle speed clamp
G50.3	G92.1	G92.1		Workpiece coordinate system preset
-	G50	G50	18	Scaling cancel
-	G51	G51		Scaling
G50.1	G50.1	G50.1	22	Programmable mirror image cancel
G51.1	G51.1	G51.1		Programmable mirror image
G50.2 (G250)	G50.2 (G250)	G50.2 (G250)	20	Polygon turning cancel
G51.2 (G251)	G51.2 (G251)	G51.2 (G251)		Polygon turning
G50.4	G50.4	G50.4	00	Cancel synchronous control
G50.5	G50.5	G50.5		Cancel composite control
G50.6	G50.6	G50.6		Cancel superimposed control
G51.4	G51.4	G51.4		Start synchronous control
G51.5	G51.5	G51.5		Start composite control
G51.6	G51.6	G51.6		Start superimposed control
G52	G52	G52		Local coordinate system setting
G53	G53	G53		Machine coordinate system setting
G53.1	G53.1	G53.1		Tool axis direction control
G53.6	G53.6	G53.6		Tool center point retention type tool axis direction control
G54 (G54.1)	G54 (G54.1)	G54 (G54.1)	14	Workpiece coordinate system 1 selection
G55	G55	G55		Workpiece coordinate system 2 selection
G56	G56	G56		Workpiece coordinate system 3 selection
G57	G57	G57		Workpiece coordinate system 4 selection
G58	G58	G58		Workpiece coordinate system 5 selection
G59	G59	G59		Workpiece coordinate system 6 selection
G54.4	G54.4	G54.4	26	Workpiece setting error compensation
G60	G60	G60	00	Single direction positioning
G61	G61	G61	15	Exact stop mode
G62	G62	G62		Automatic corner override mode
G63	G63	G63		Tapping mode
G64	G64	G64		Cutting mode
G65	G65	G65	00	Macro call
G66	G66	G66		Macro modal call A

Fig. 3. List of Fanuc functions from G43 to G66



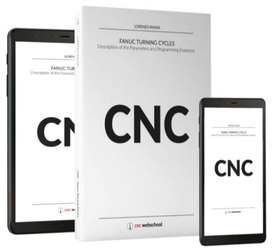
CNC - FANUC TURNING CYCLES

G code system A	G code system B	G code system C	Group	Function
G66.1	G66.1	G66.1	12	Macro modal call B
G67	G67	G67		Macro modal call A/B cancel
G68	G68	G68	04	Mirror image on for double turret or balance cutting mode
G68.1	G68.1	G68.1	17	Coordinate system rotation start or 3-dimensional coordinate system conversion mode on
G68.2	G68.2	G68.2		Tilted working plane indexing command
G68.3	G68.3	G68.3		Tilted working plane indexing command by tool axis direction
G68.4	G68.4	G68.4		Tilted working plane indexing command (incremental multi-command)
G69	G69	G69	04	Mirror image off for double turret or balance cutting mode cancel
G69.1	G69.1	G69.1	17	Coordinate system rotation cancel or 3-dimensional coordinate system conversion mode off
G70	G70	G72	00	Finishing cycle
G71	G71	G73		Stock removal in turning
G72	G72	G74		Stock removal in facing
G73	G73	G75		Pattern repeating cycle
G74	G74	G76		End face peck drilling cycle
G75	G75	G77		Outer diameter/internal diameter drilling cycle
G76	G76	G78		Multiple-thread cutting cycle
G71	G71	G72	01	Traverse grinding cycle
G72	G72	G73		Traverse direct sizing/grinding cycle
G73	G73	G74		Oscillation grinding cycle
G74	G74	G75		Oscillation direct sizing/grinding cycle
G80	G80	G80	10	Canned cycle cancel for drilling Electronic gear box : synchronization cancellation
G81.1	G81.1	G81.1	00	Chopping function/High precision oscillation function
G80.4	G80.4	G80.4	28	Electronic gear box: synchronization cancellation
G81.4	G81.4	G81.4		Electronic gear box: synchronization start
G80.5	G80.5	G80.5	27	Electronic gear box 2 pair: synchronization cancellation
G81.5	G81.5	G81.5		Electronic gear box 2 pair: synchronization start
G81	G81	G81	10	Spot drilling (FS15-T format) Electronic gear box : synchronization start
G82	G82	G82		Counter boring (FS15-T format)
G83	G83	G83		Cycle for face drilling
G83.1	G83.1	G83.1		High-speed peck drilling cycle (FS15-T format)
G83.5	G83.5	G83.5		High-speed peck drilling cycle
G83.6	G83.6	G83.6		Peck drilling cycle
G84	G84	G84		Cycle for face tapping
G84.2	G84.2	G84.2		Rigid tapping cycle (FS15-T format)
G85	G85	G85		Cycle for face boring
G87	G87	G87		Cycle for side drilling
G87.5	G87.5	G87.5		High-speed peck drilling cycle
G87.6	G87.6	G87.6		Peck drilling cycle
G88	G88	G88		Cycle for side tapping
G89	G89	G89		Cycle for side boring
G90	G77	G20	01	Outer diameter/internal diameter cutting cycle
G92	G78	G21		Threading cycle
G94	G79	G24		End face turning cycle

Fig. 4. List of Fanuc functions from G66.1 to G94

G code system A	G code system B	G code system C	Group	Function
G91.1	G91.1	G91.1	00	Maximum specified incremental amount check
G96	G96	G96	02	Constant surface speed control
G97	G97	G97		Constant surface speed control cancel
G96.1	G96.1	G96.1	00	Spindle indexing execution (waiting for completion)
G96.2	G96.2	G96.2		Spindle indexing execution (not waiting for completion)
G96.3	G96.3	G96.3		Spindle indexing completion check
G96.4	G96.4	G96.4		SV speed control mode ON
G93	G93	G93	05	Inverse time feed
G98	G94	G94		Feed per minute
G99	G95	G95		Feed per revolution
-	G90	G90	03	Absolute programming
-	G91	G91		Incremental programming
-	G98	G98	11	Canned cycle : return to initial level
-	G99	G99		Canned cycle : return to R point level

Fig. 5. List of Fanuc functions from G91.1 to G99



CNC - FANUC TURNING CYCLES

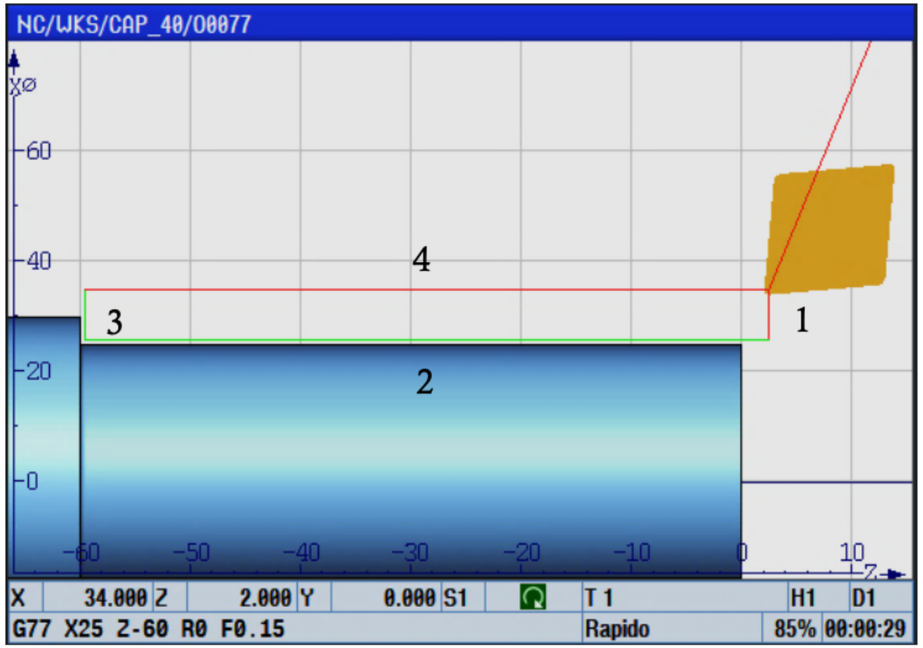


Fig. 6. G77: cycle movements

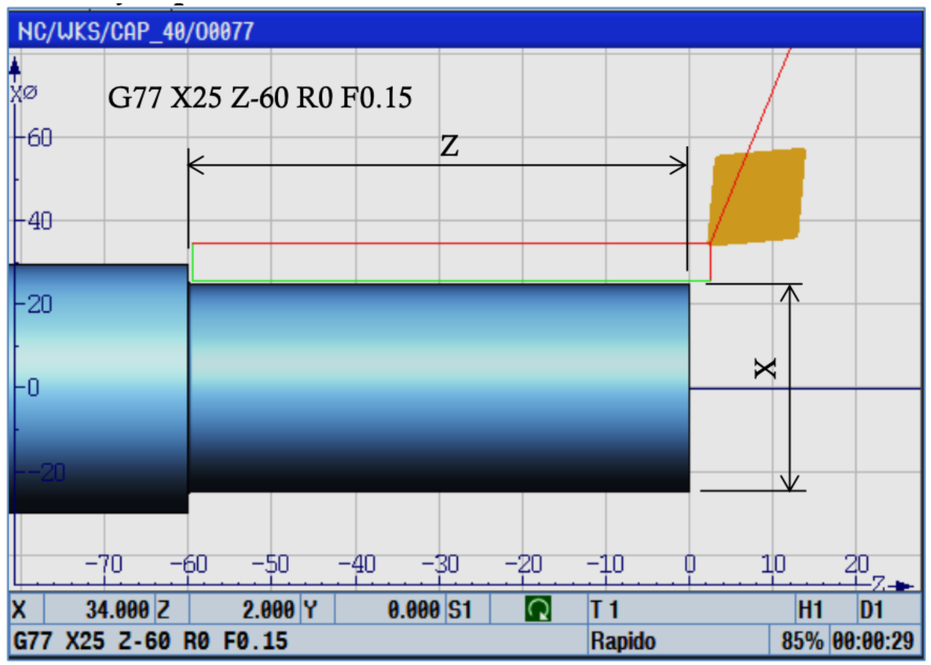
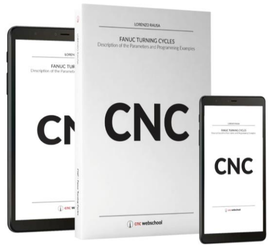


Fig. 7. G77: cycle parameters



CNC - FANUC TURNING CYCLES

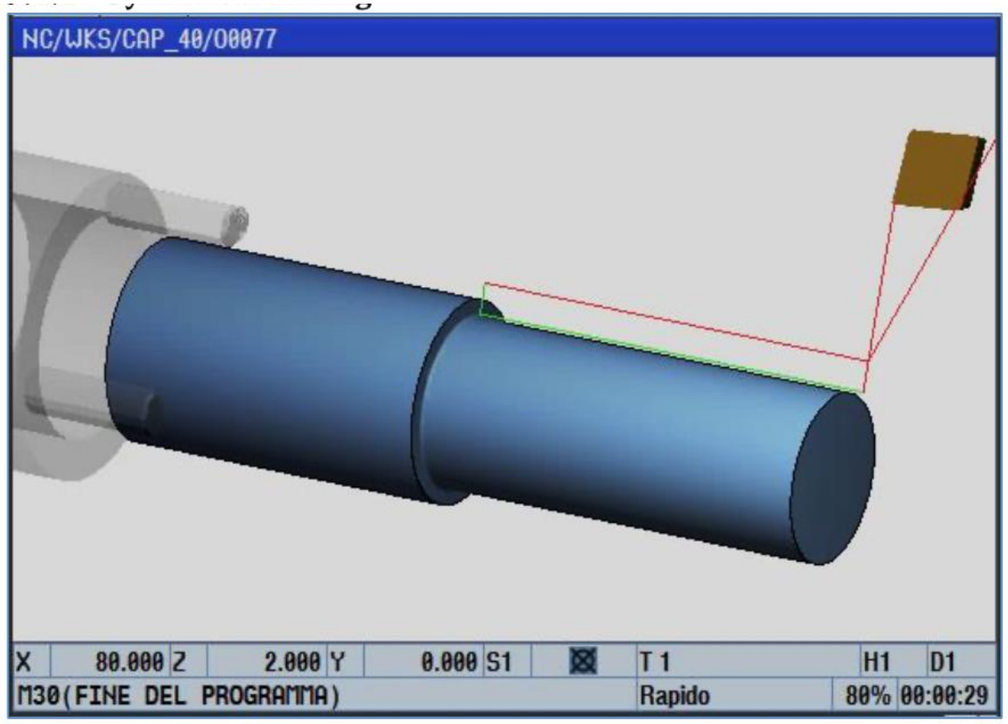


Fig. 8. G77: programming example

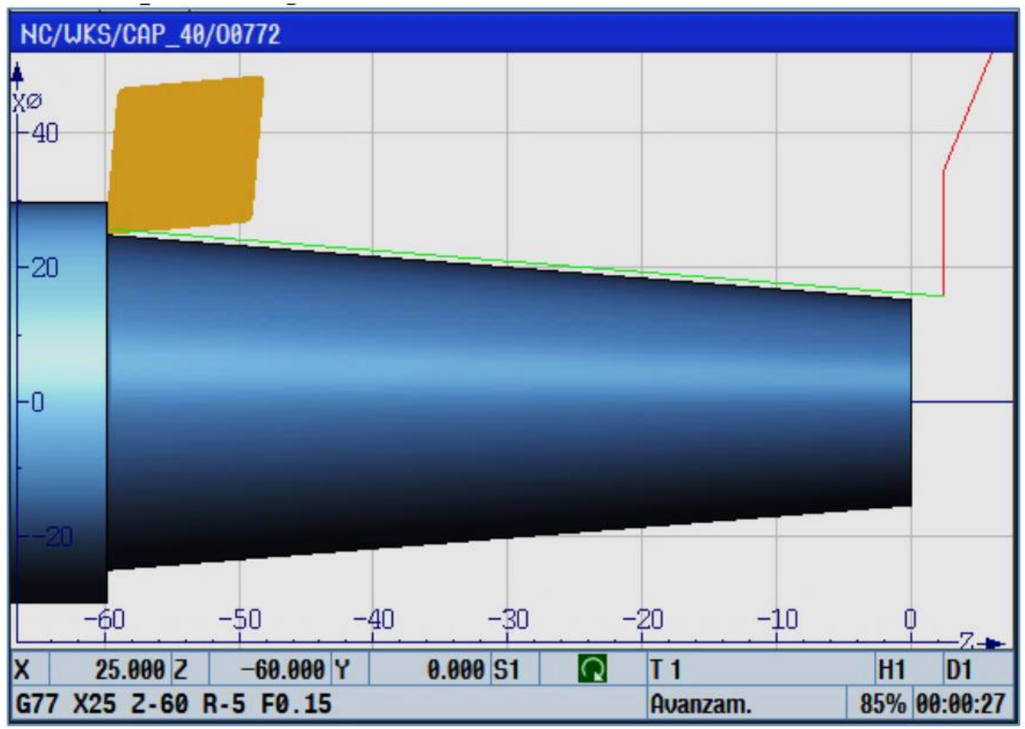
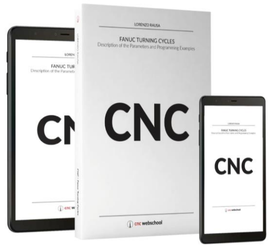


Fig. 9. G77: programming example



CNC - FANUC TURNING CYCLES

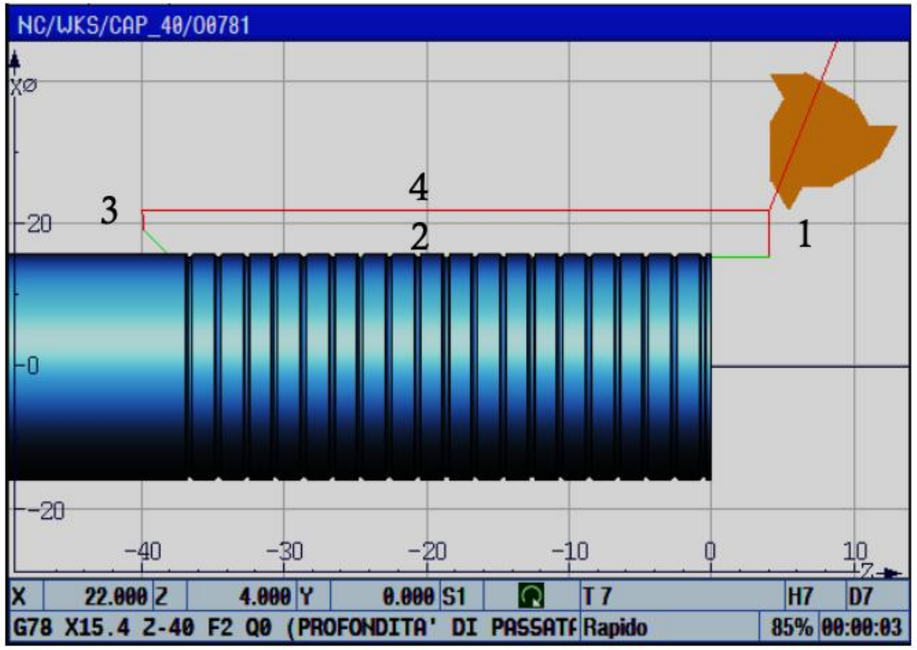


Fig. 10. G77: cycle movements

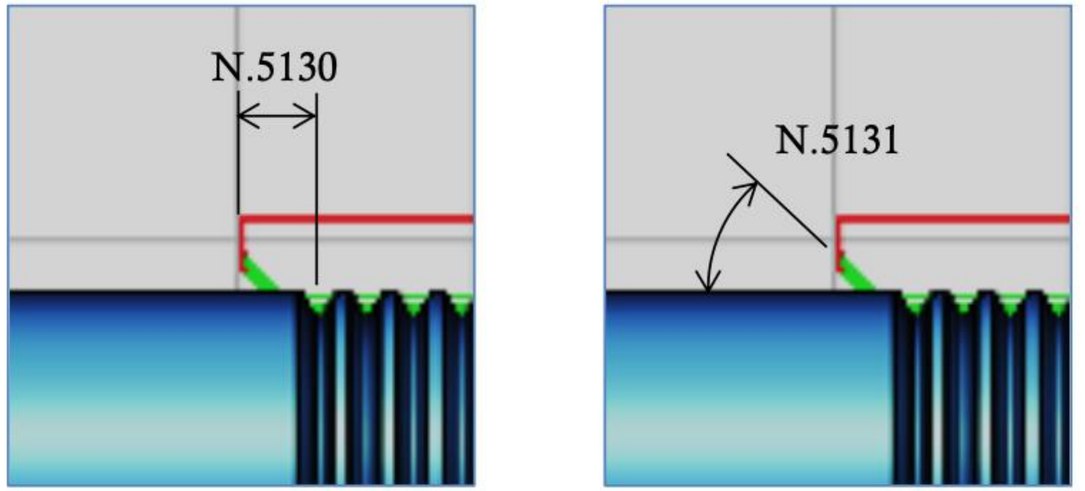
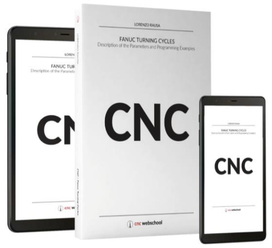


Fig. 11. These parameters define the thread exit direction.



CNC - FANUC TURNING CYCLES

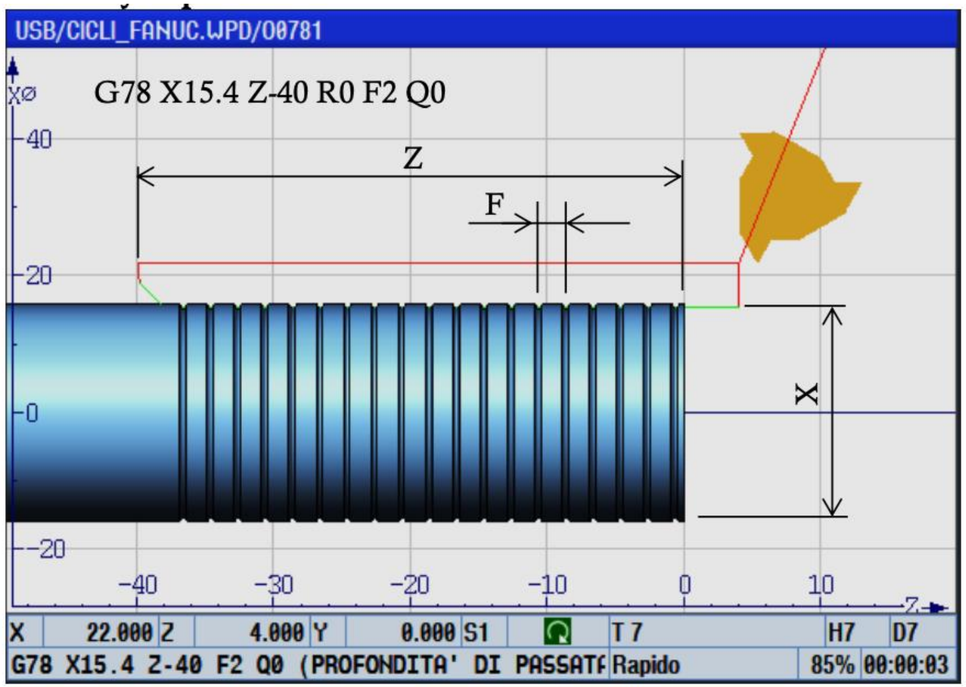


Fig. 12. G78: cycle parameters

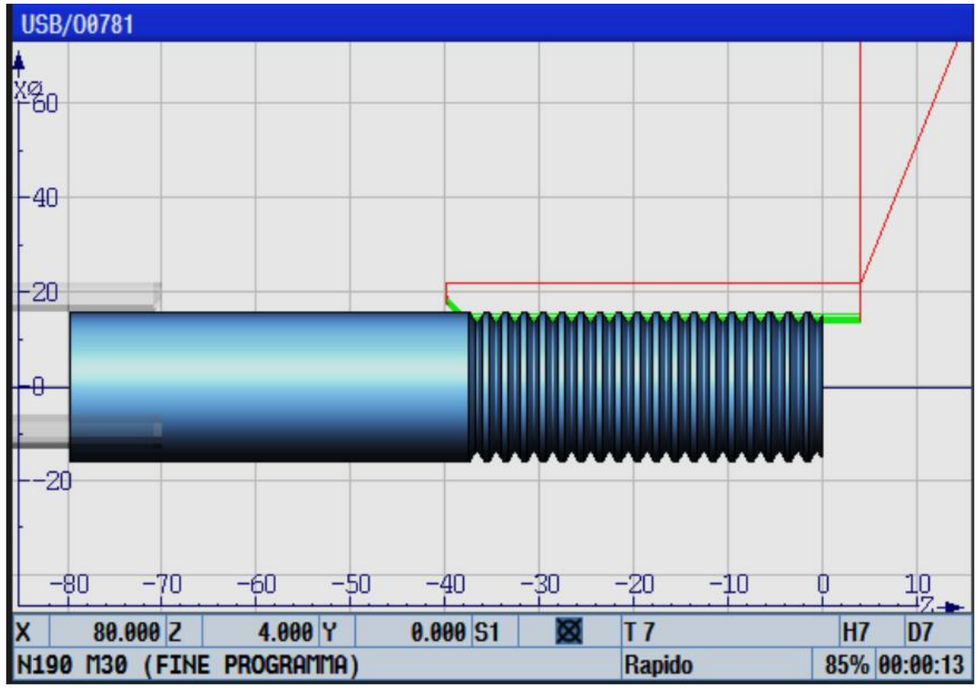
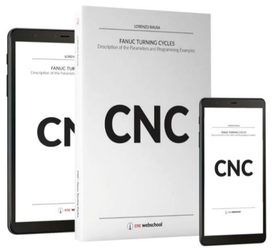


Fig. 13. G78: programming example



CNC - FANUC TURNING CYCLES

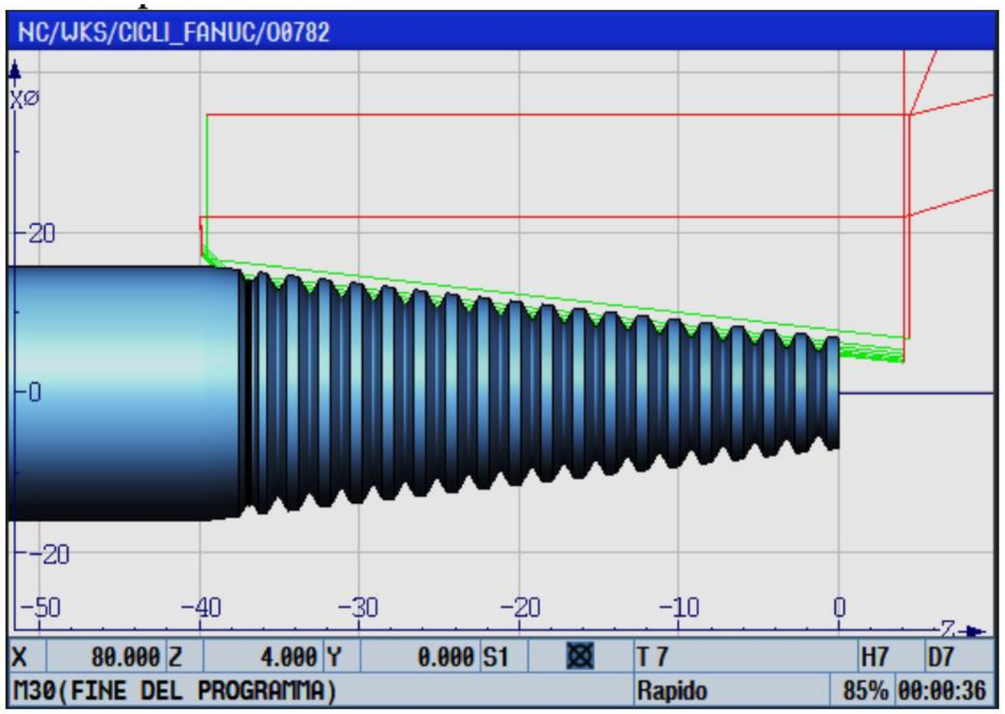


Fig. 14. G78: programming example

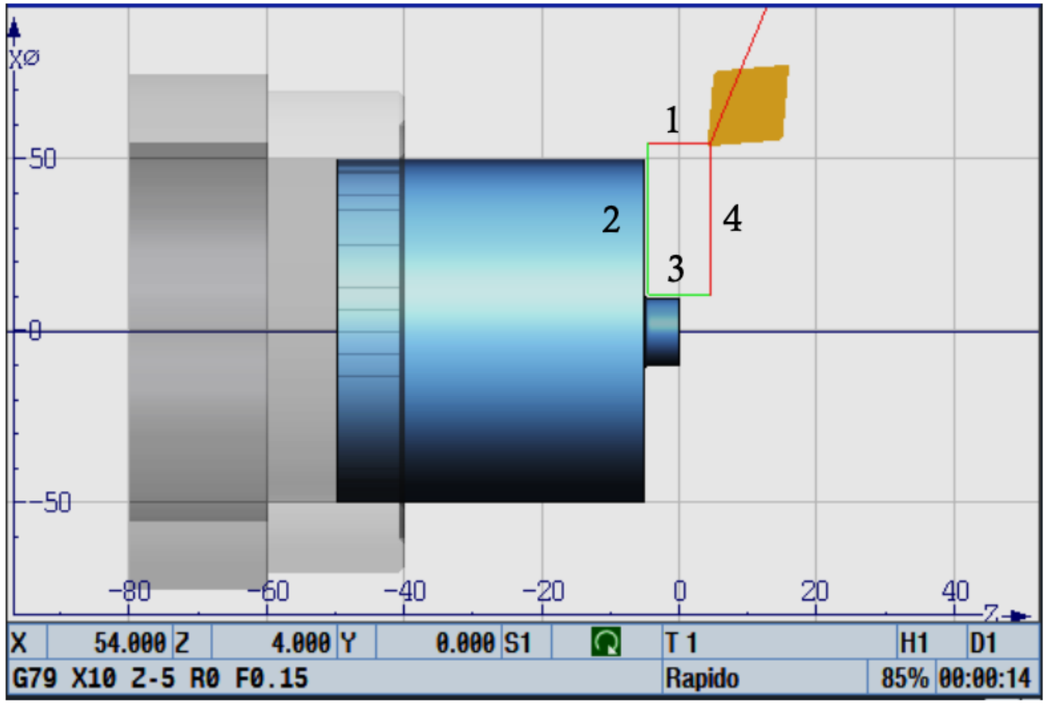
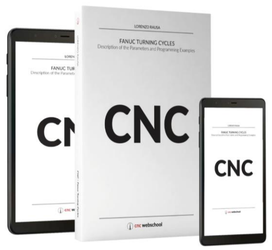


Fig. 15. G79: cycle movements



CNC - FANUC TURNING CYCLES

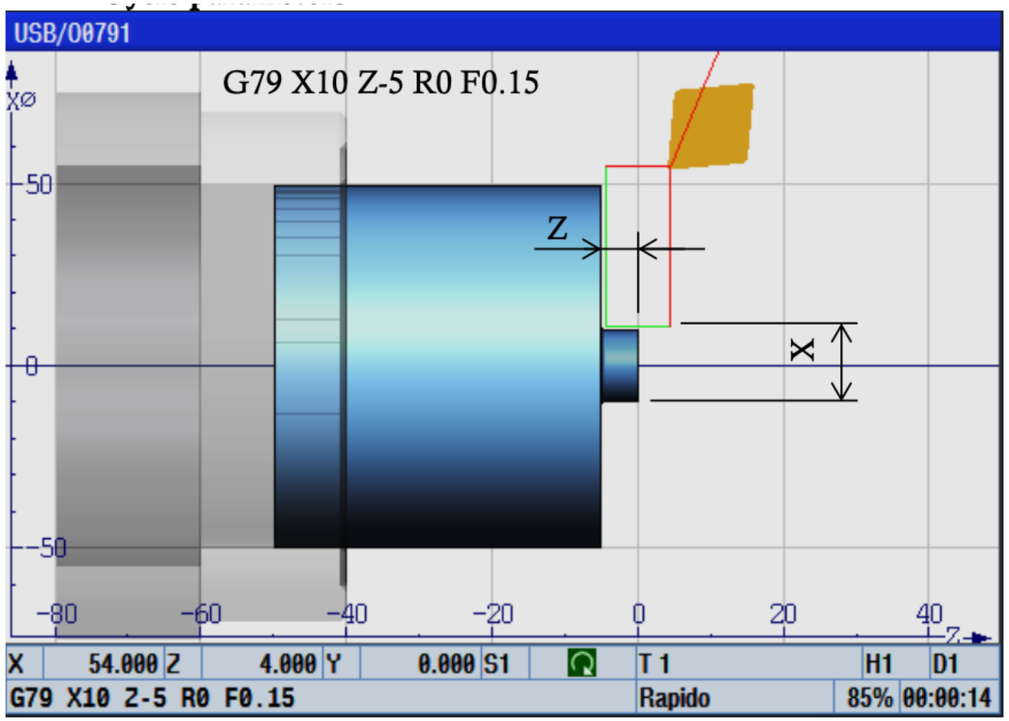


Fig. 16. G79: cycle parameters

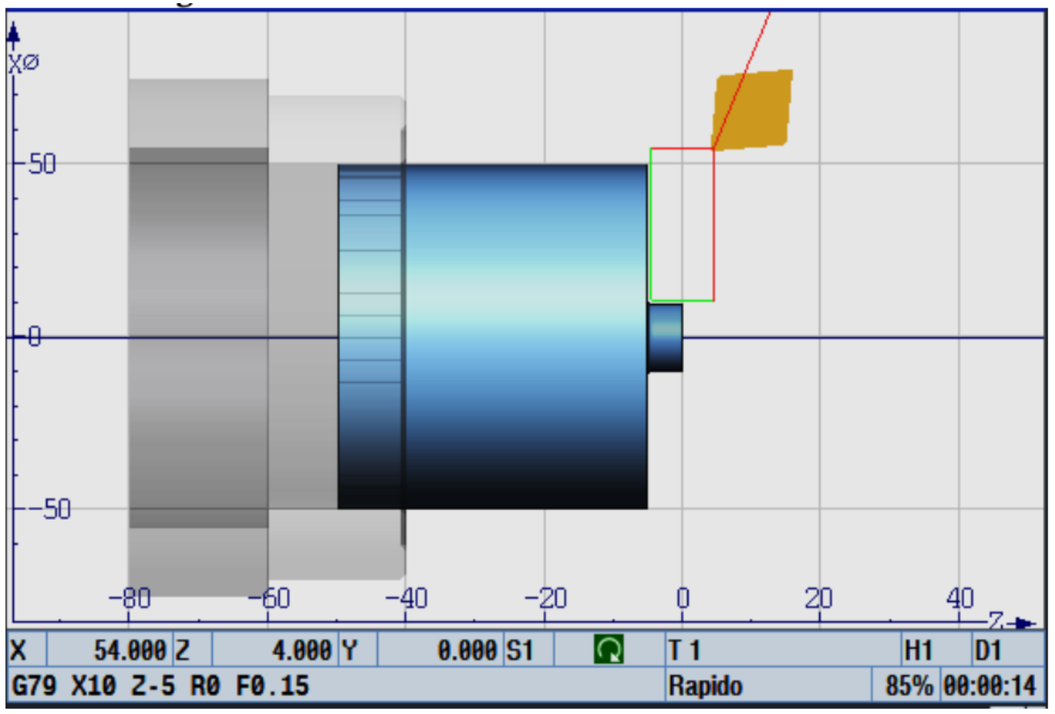
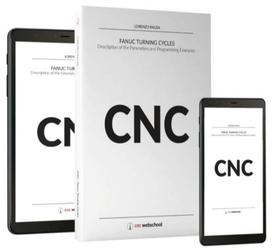


Fig. 17. G79: programming example



CNC - FANUC TURNING CYCLES

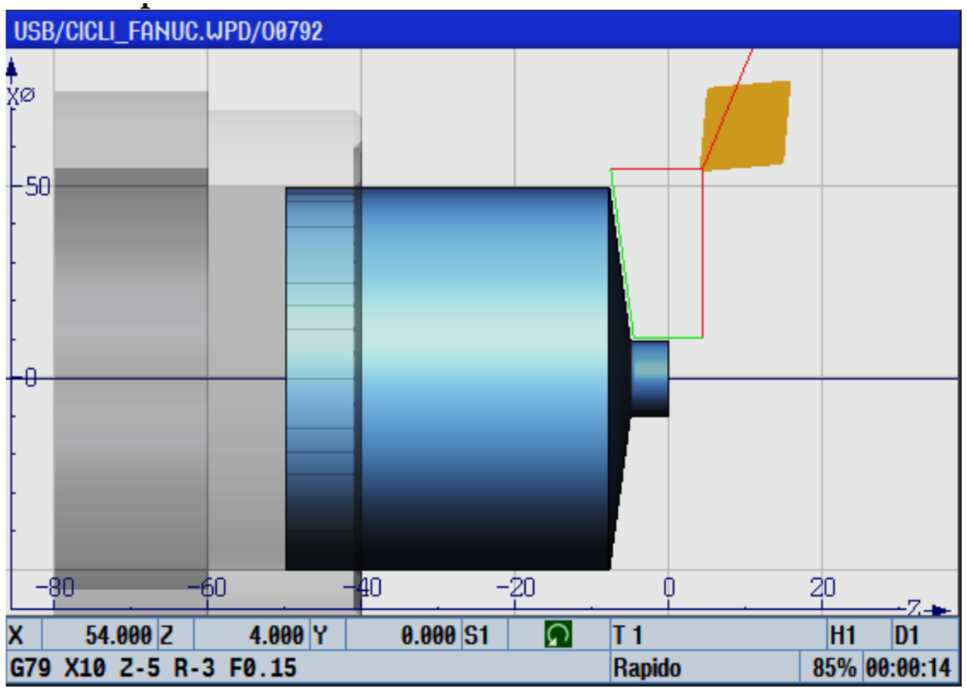


Fig. 18. G79: programming example

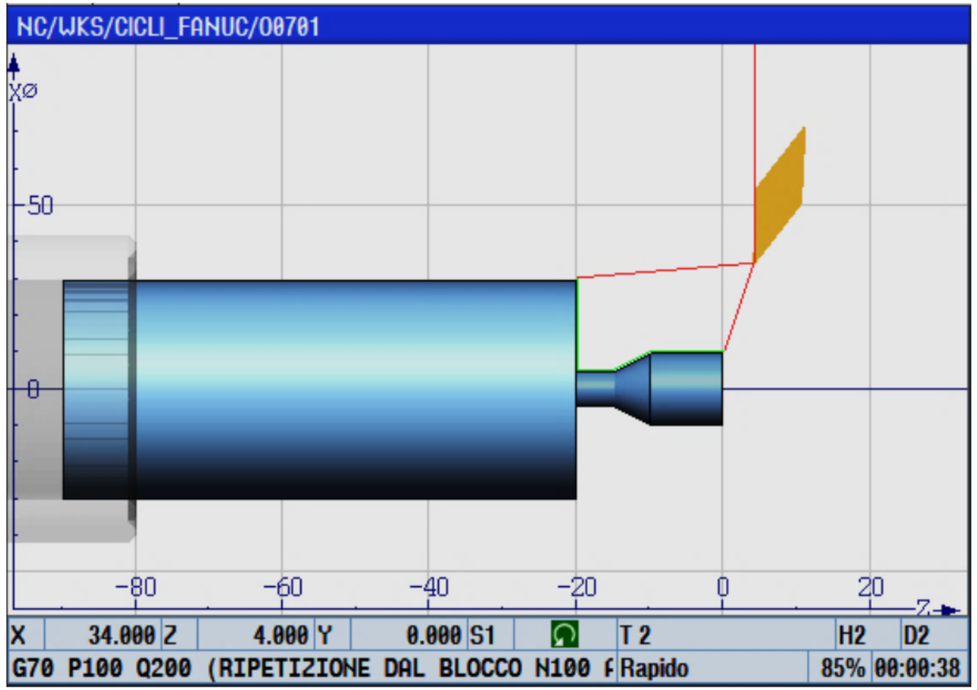
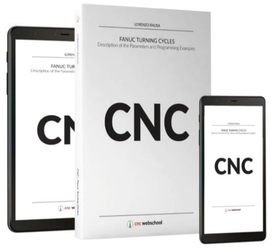


Fig. 19. G70: cycle movements



CNC - FANUC TURNING CYCLES

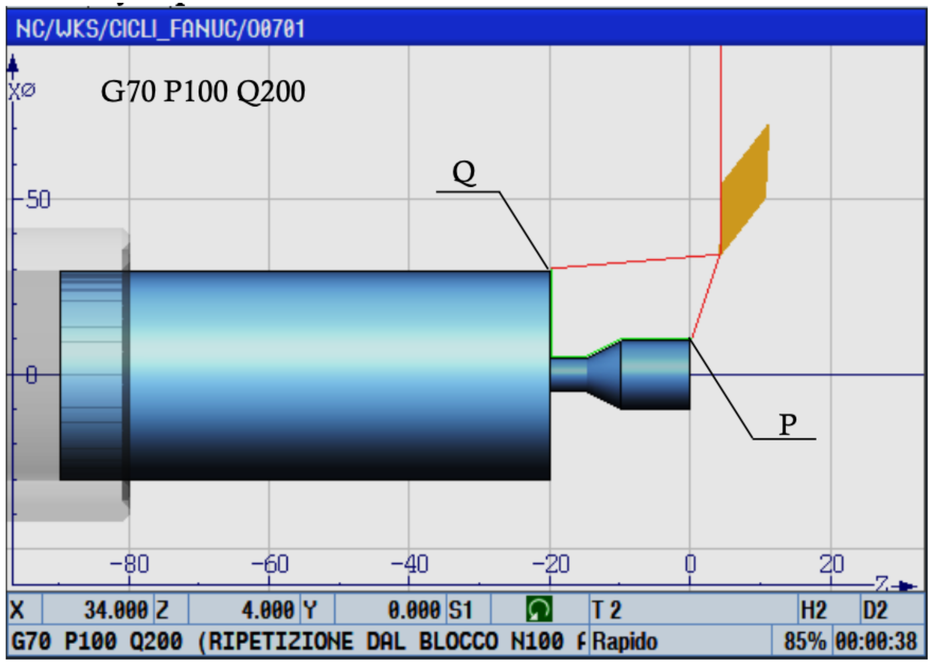


Fig. 20 G70: cycle parameters

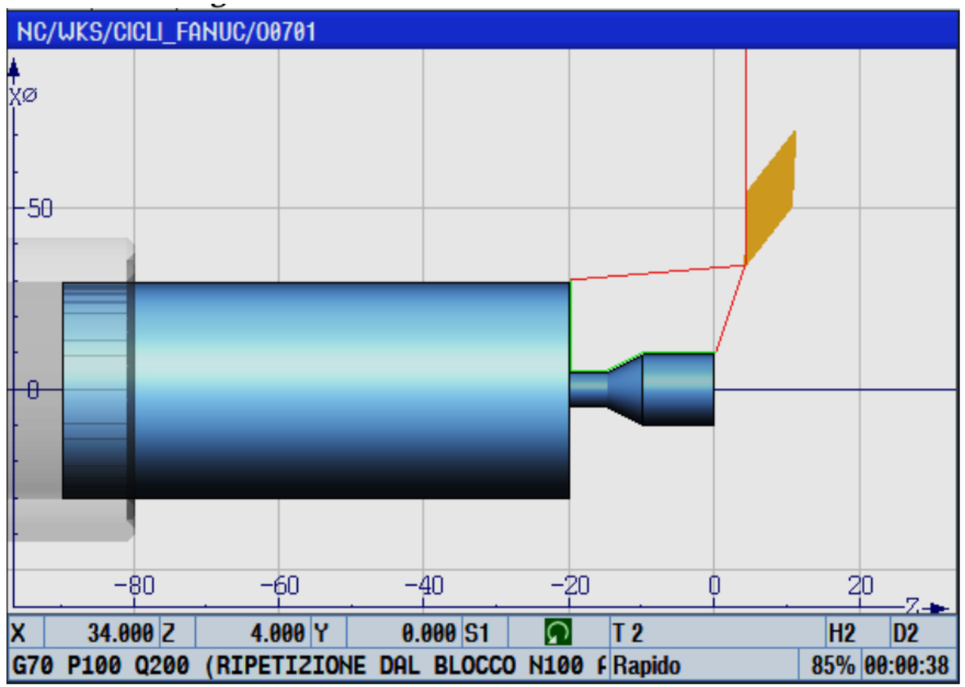
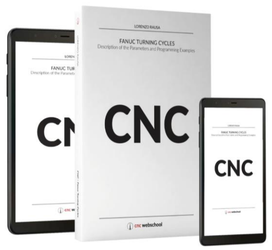


Fig. 21. G70: programming example



CNC - FANUC TURNING CYCLES

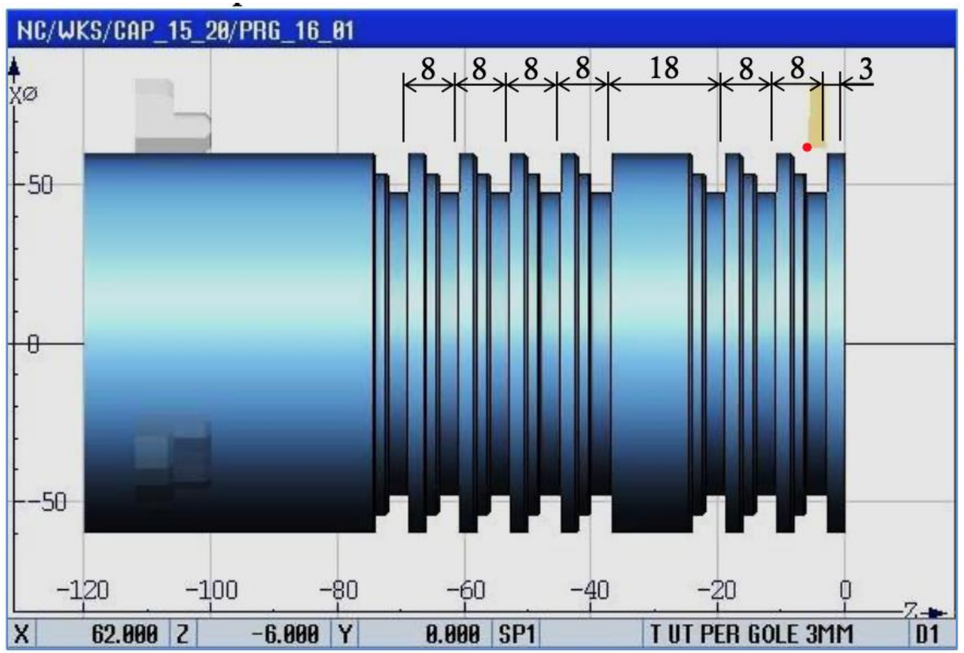


Fig. 22. G70: programming example

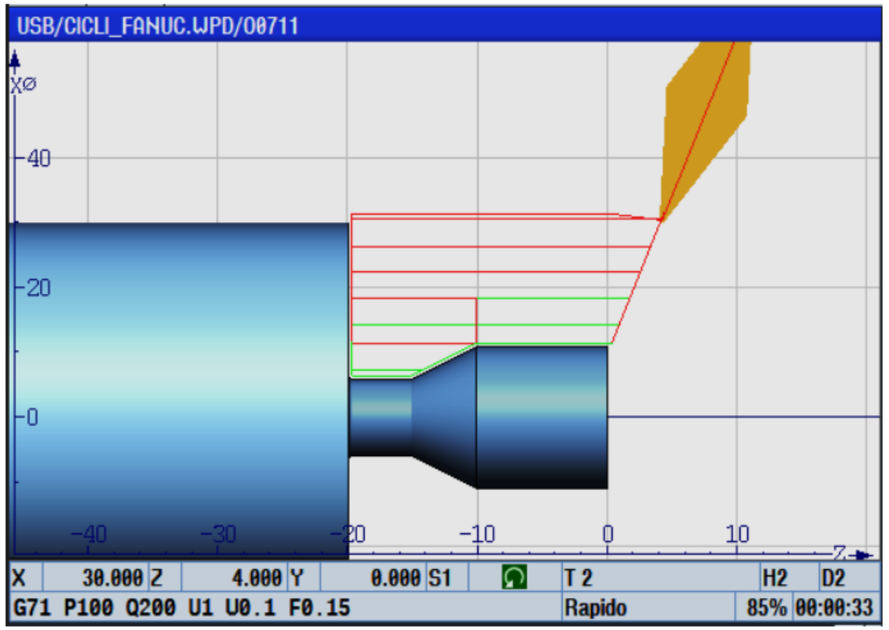
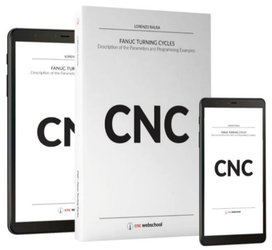


Fig. 23. G71: cycle movements



CNC - FANUC TURNING CYCLES

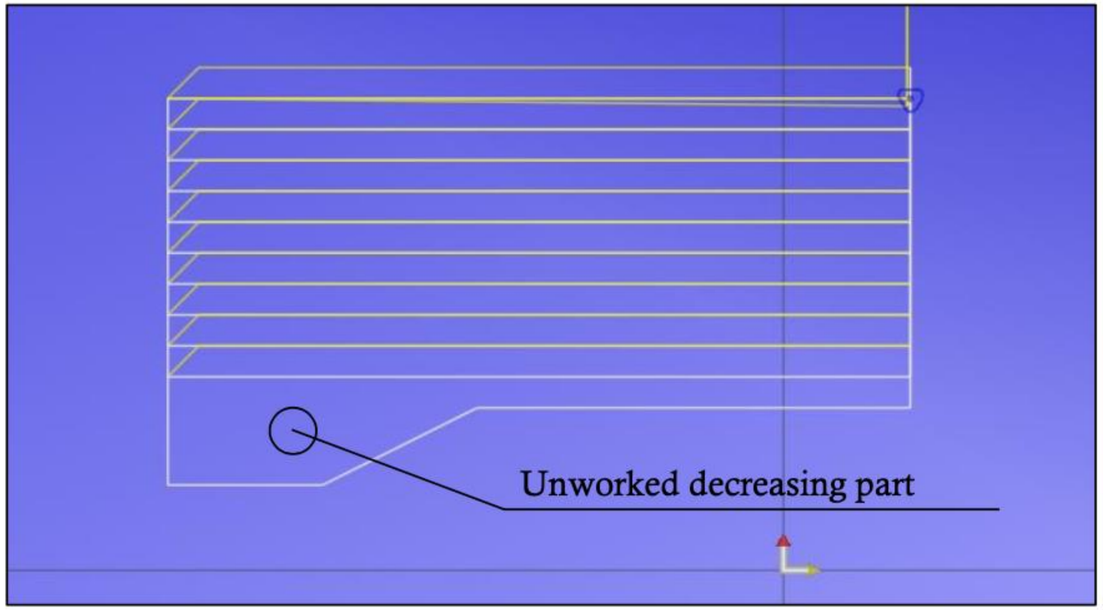


Fig. 24. G71: roughing cycle type 1

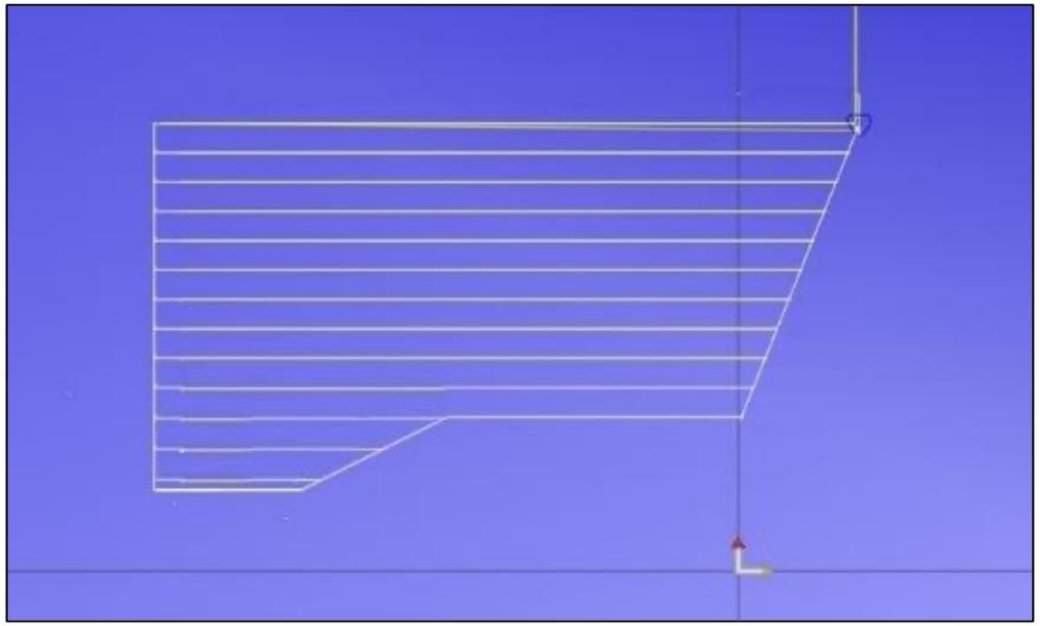
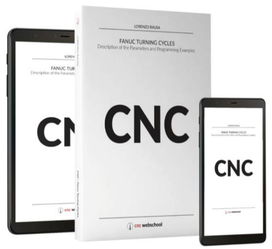


Fig. 25. G71: roughing cycle type 2



CNC - FANUC TURNING CYCLES

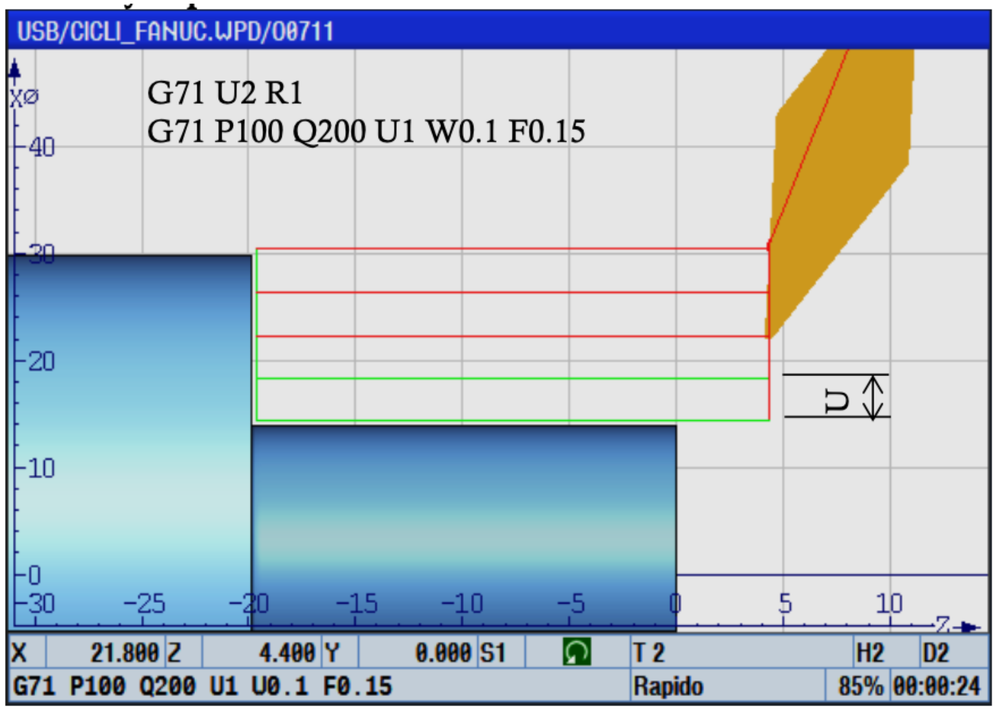


Fig. 26. G71: cycle parameters

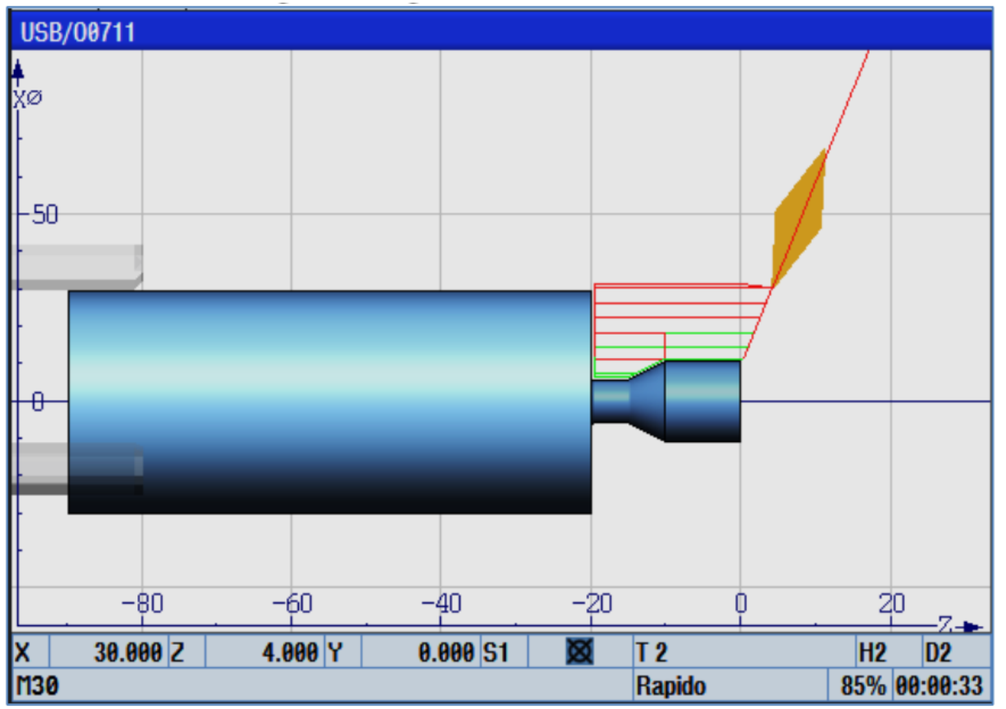
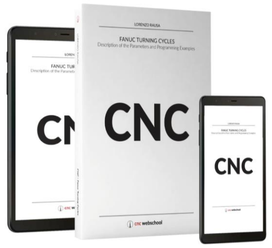


Fig. 27. G71: programming example



CNC - FANUC TURNING CYCLES

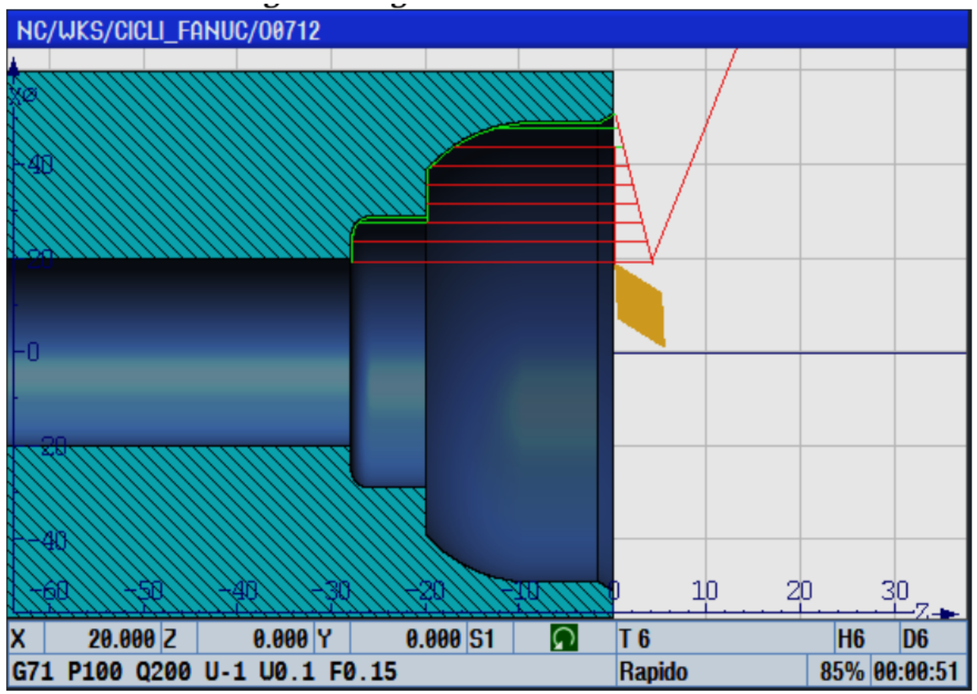


Fig. 28. G71: programming example

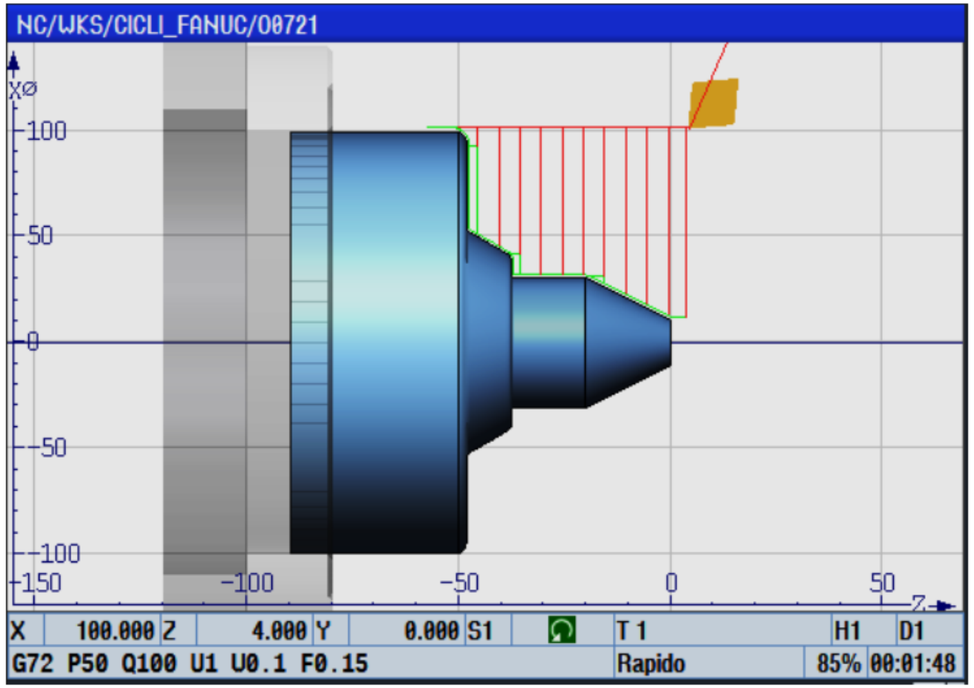
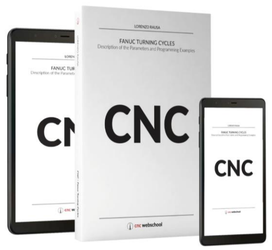


Fig. 29. G72: cycle movements



CNC - FANUC TURNING CYCLES

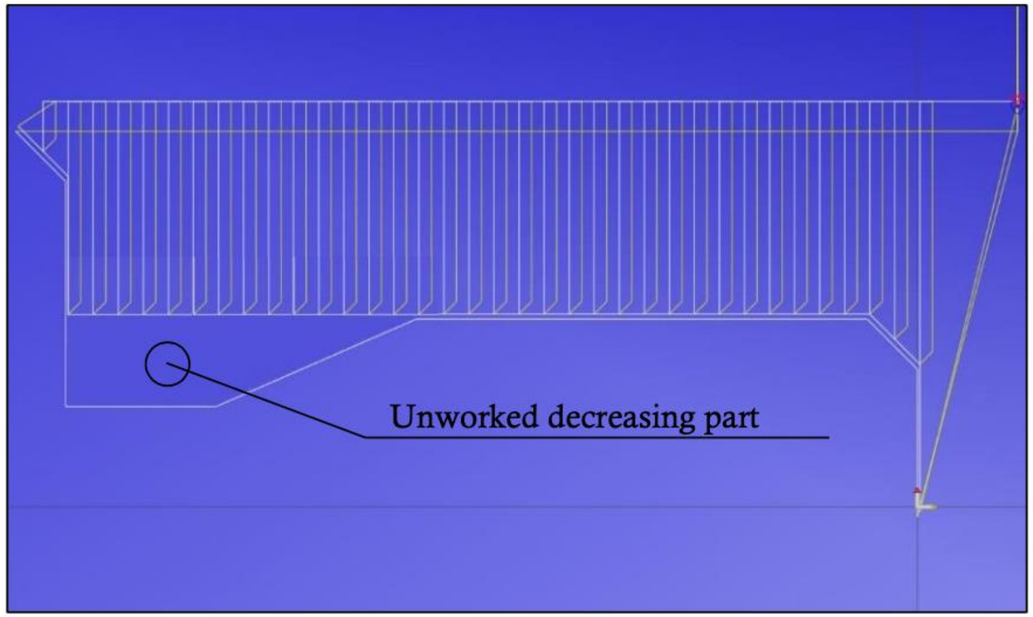


Fig. 30. G72: roughing cycle type 1

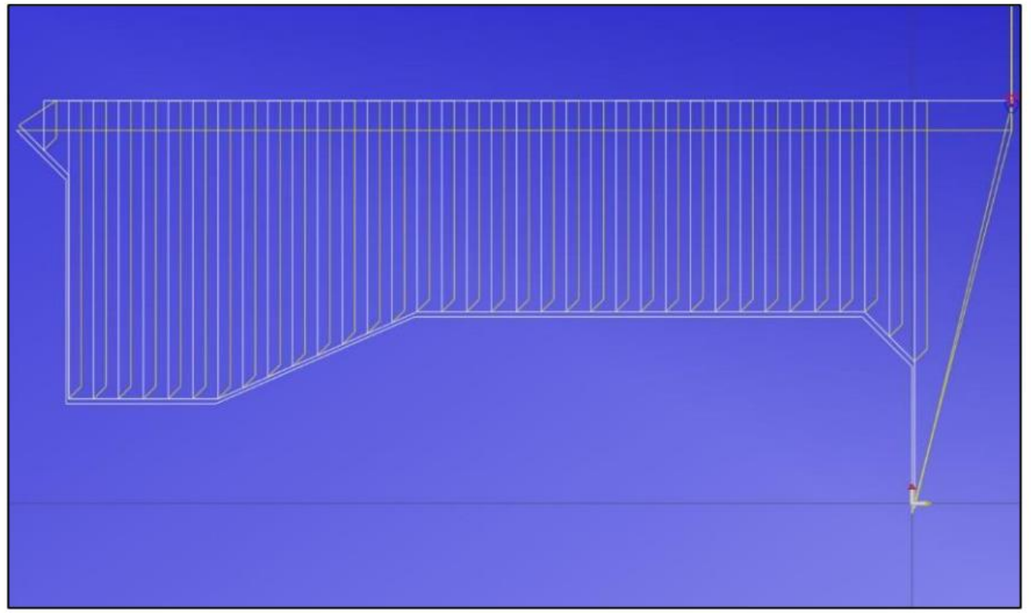
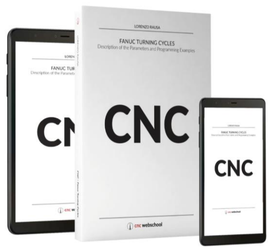


Fig. 31. G72: roughing cycle type 2



CNC - FANUC TURNING CYCLES

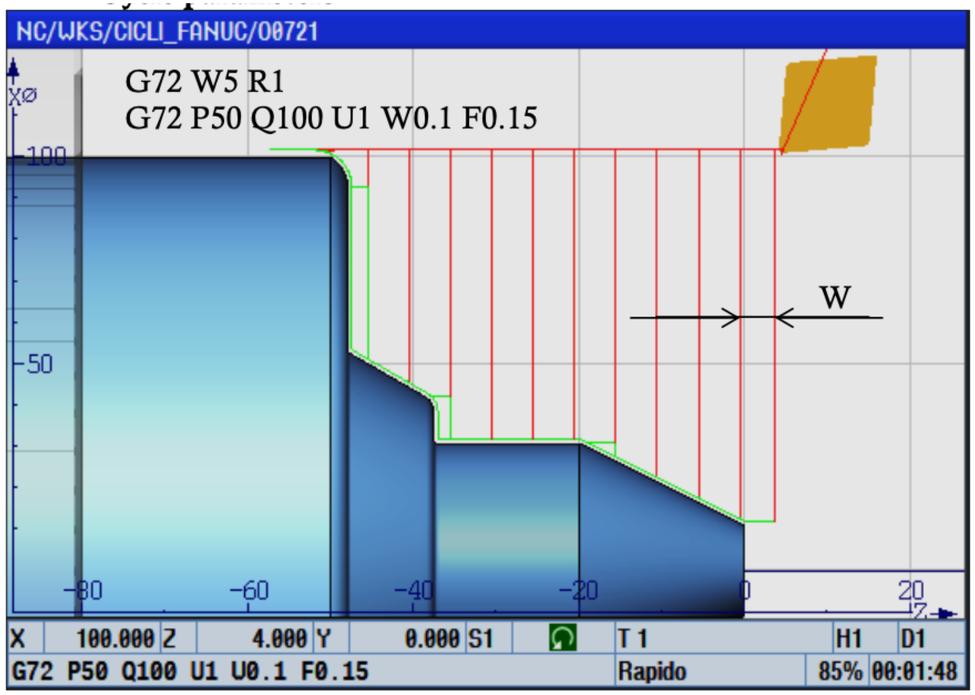


Fig. 32. G72: cycle parameters

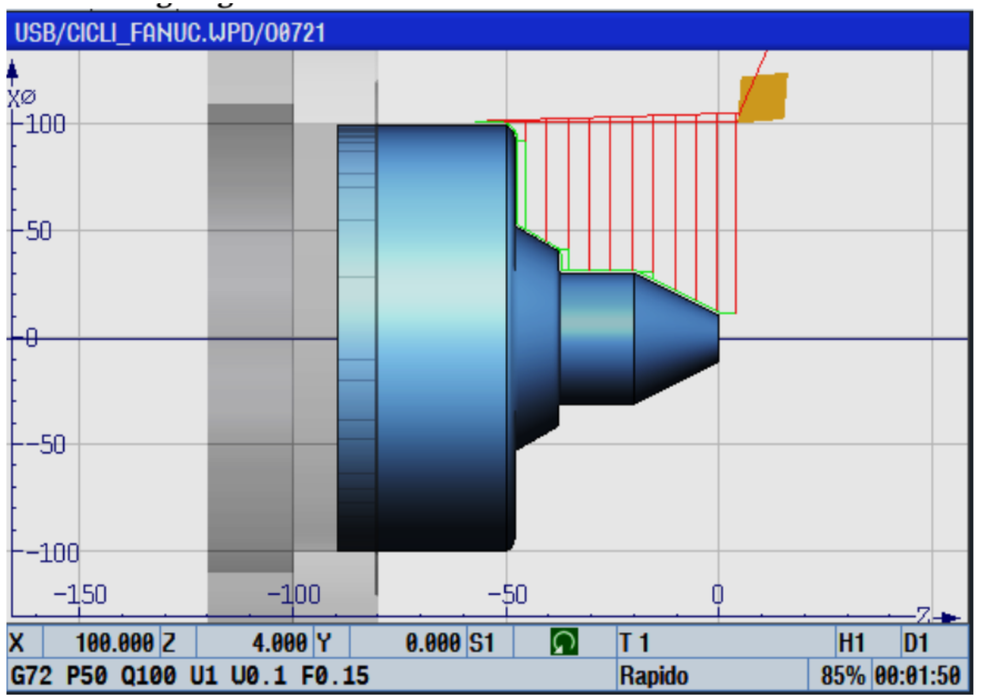
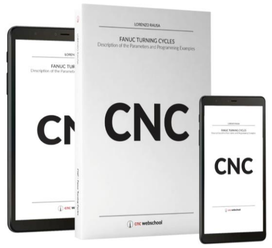


Fig. 33 .G72: programming example



CNC - FANUC TURNING CYCLES

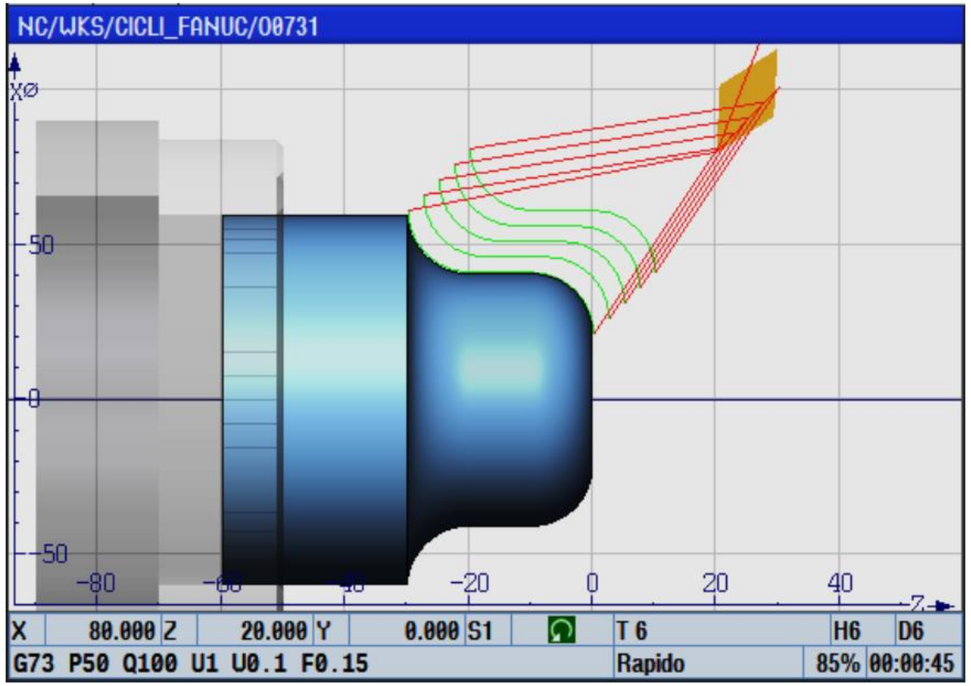


Fig. 34. G73: cycle movements

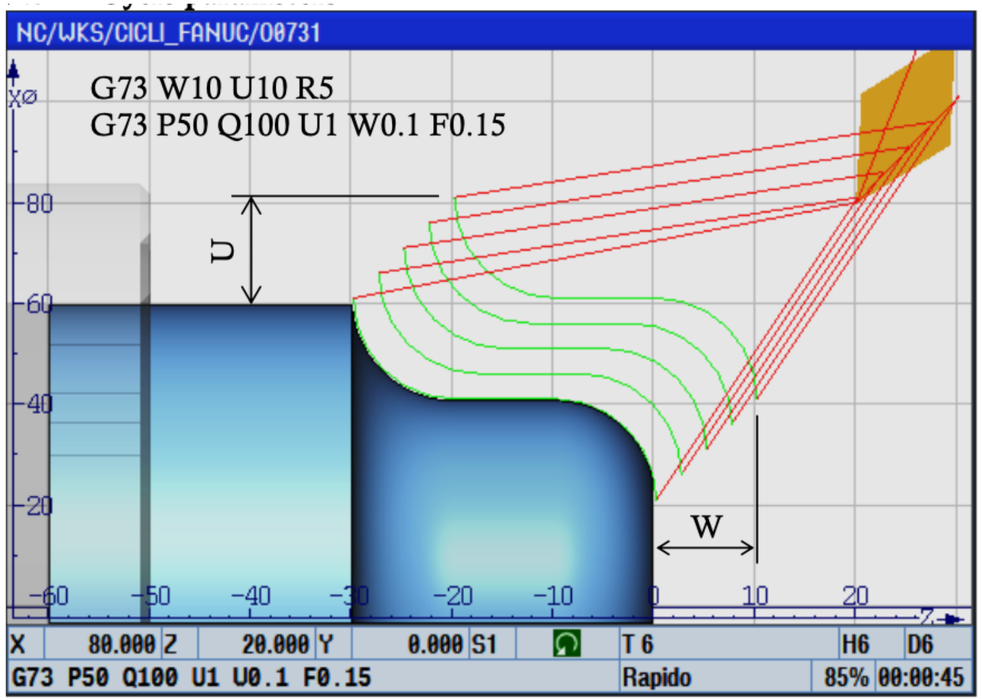
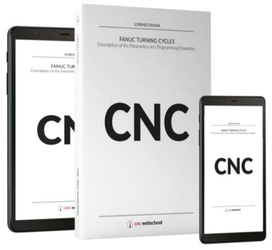


Fig. 35. G73: cycle parameters



CNC - FANUC TURNING CYCLES

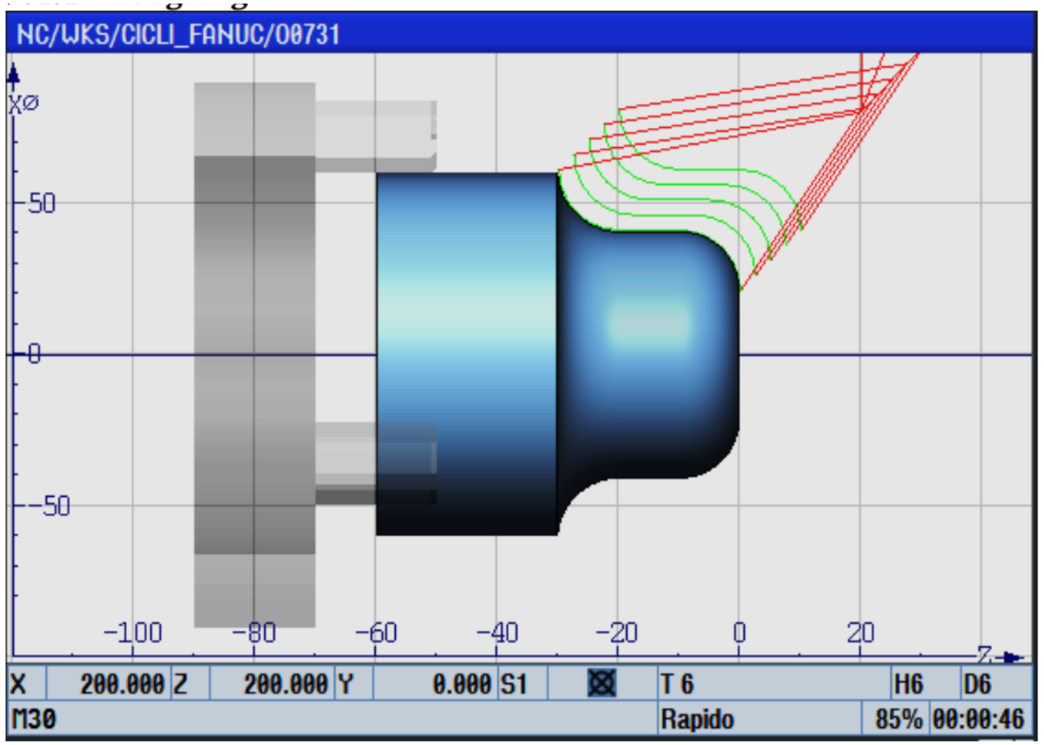


Fig. 36. G73: programming example

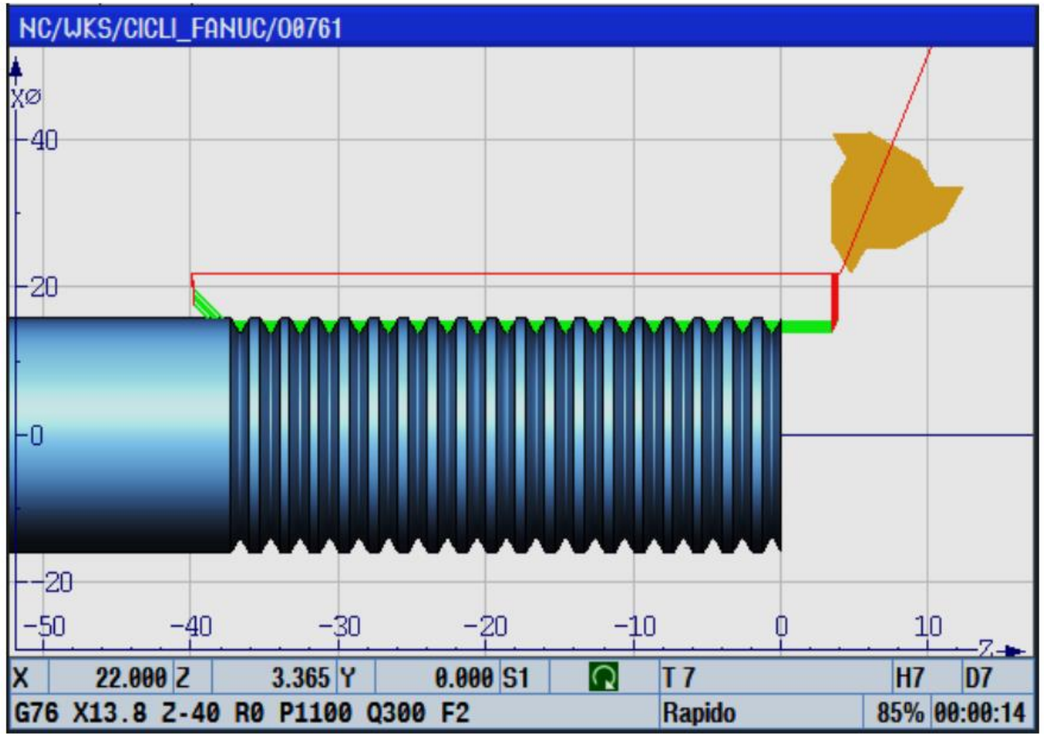
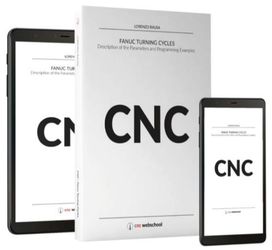


Fig. 37. G76: cycle movements



CNC - FANUC TURNING CYCLES

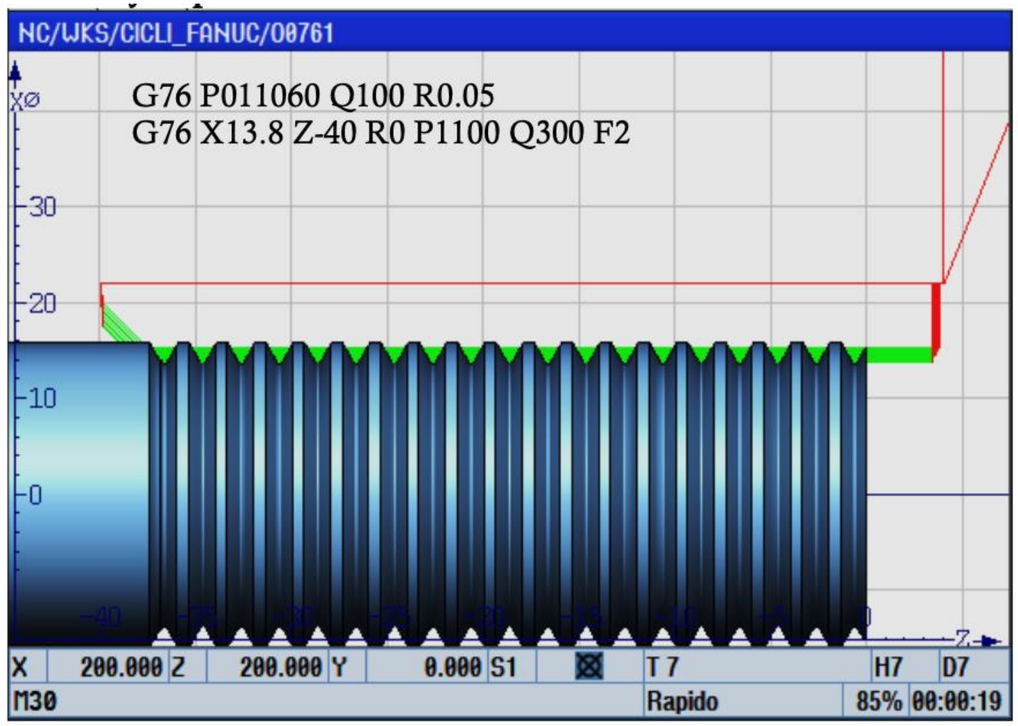


Fig. 38. G76: cycle parameters

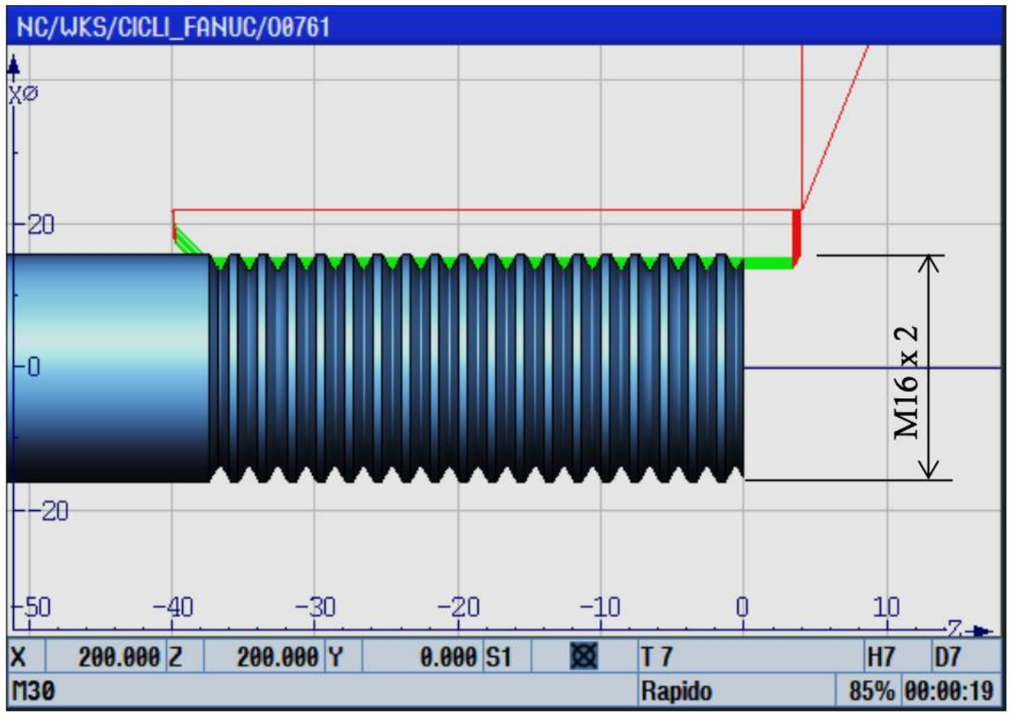
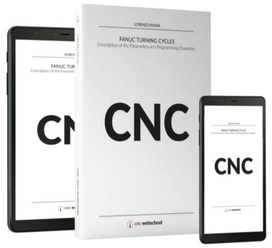


Fig. 39. G76: programming example



CNC - FANUC TURNING CYCLES

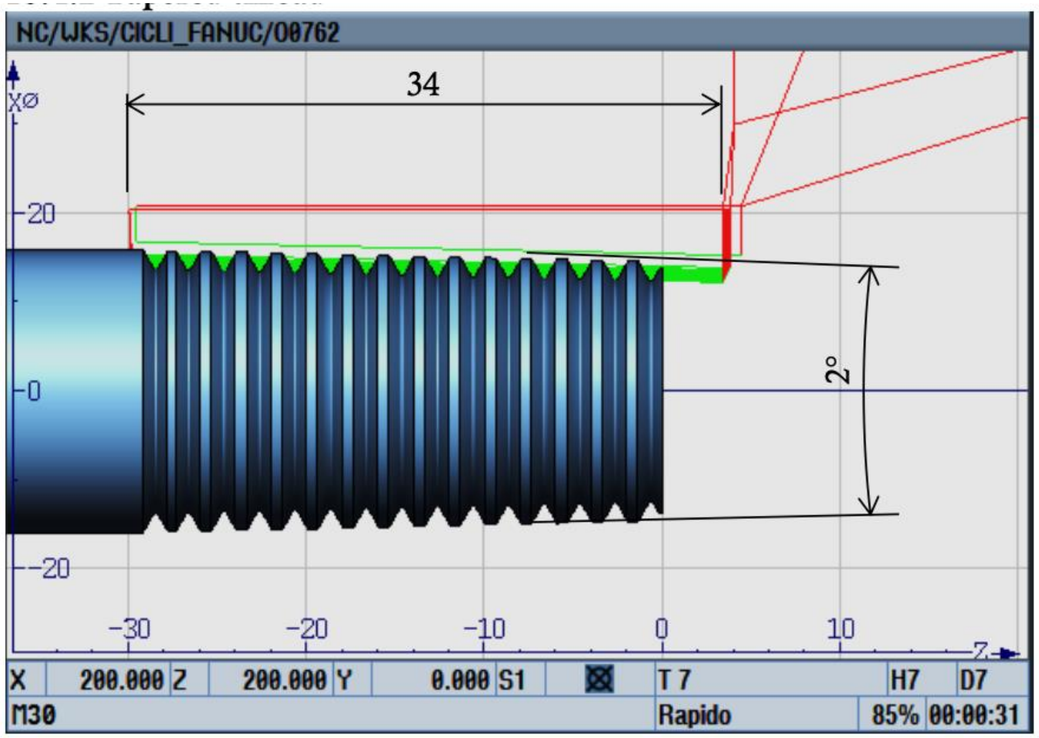


Fig. 40. G76: programming example

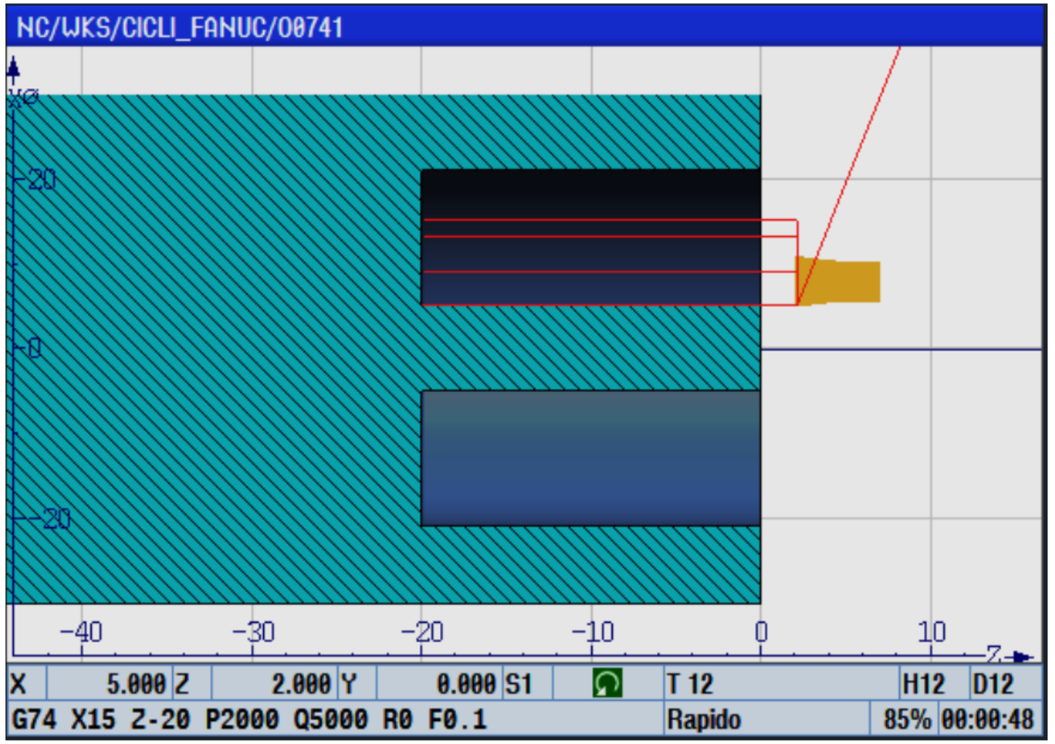
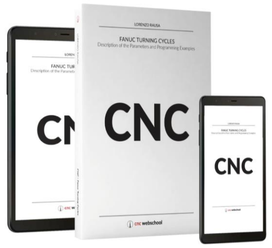


Fig. 41. G74: cycle movements



CNC - FANUC TURNING CYCLES

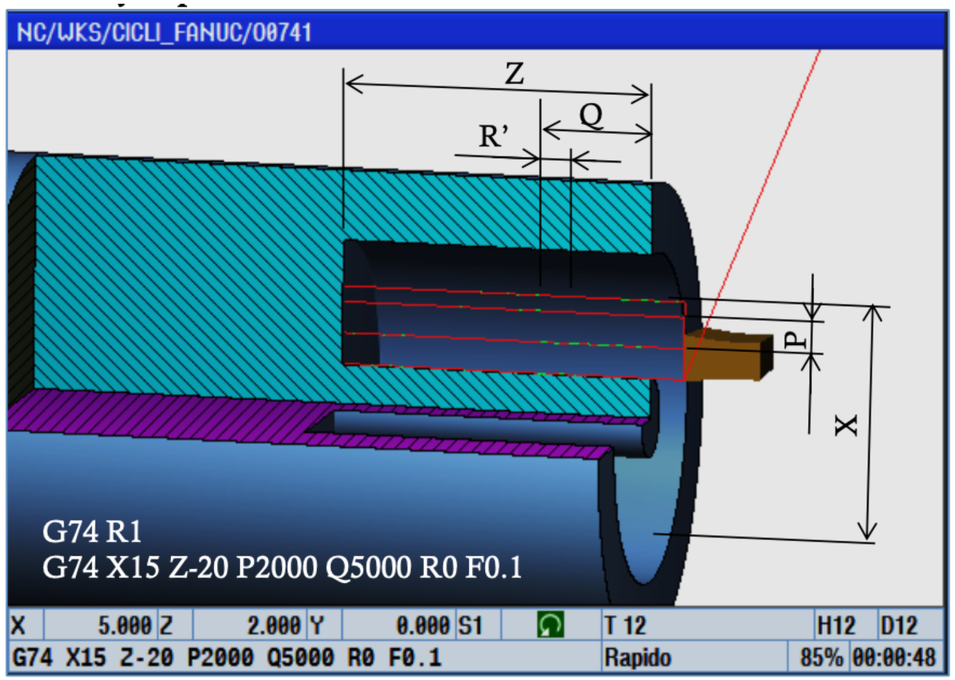


Fig. 42. G74: cycle parameters

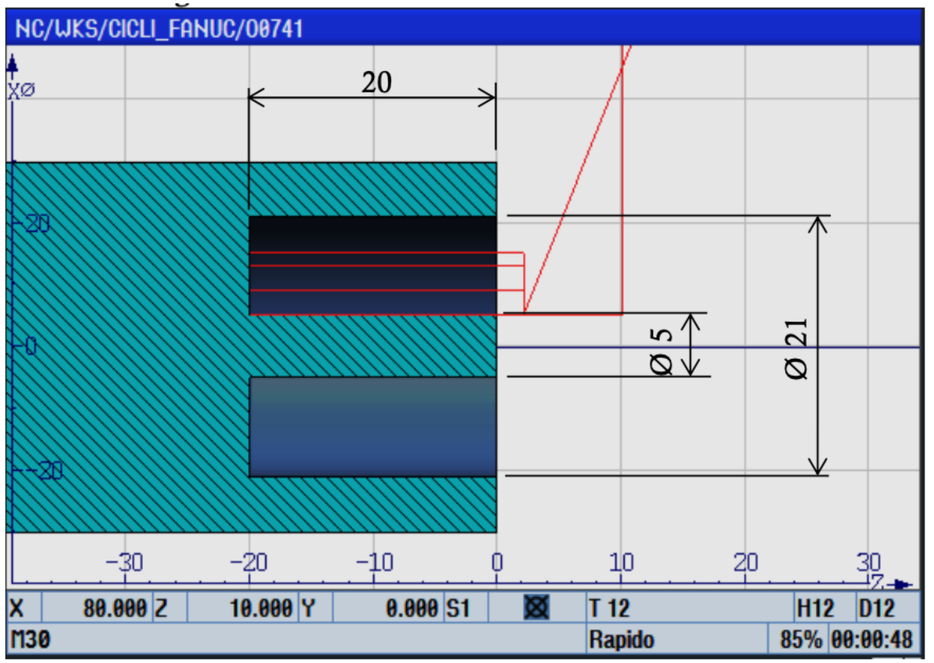
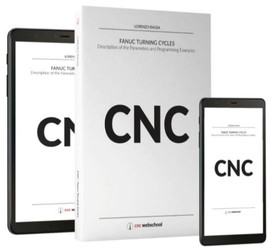


Fig. 43. G74: programming example



CNC - FANUC TURNING CYCLES

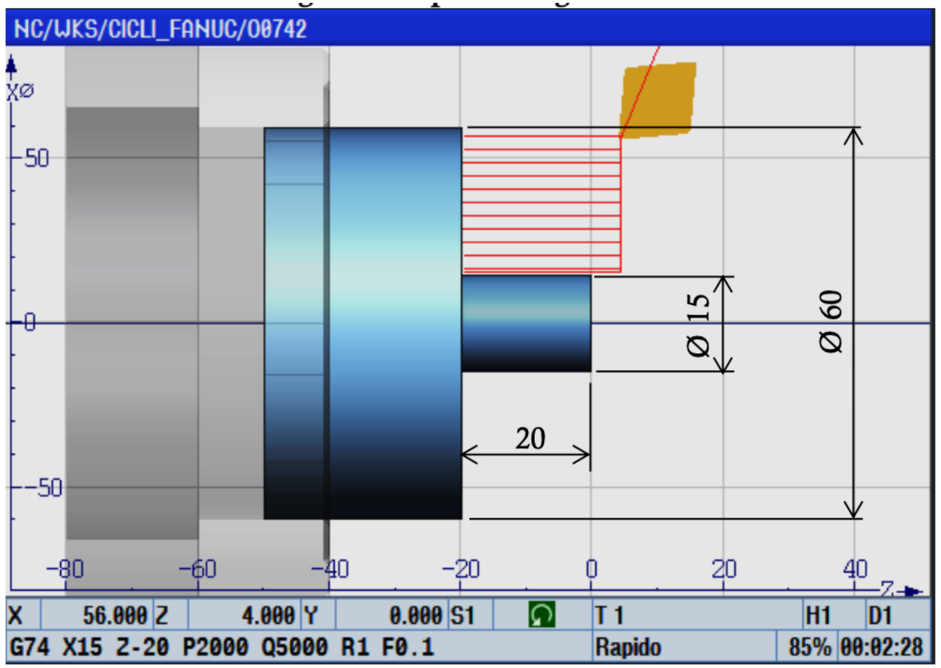


Fig. 44. G74: programming example

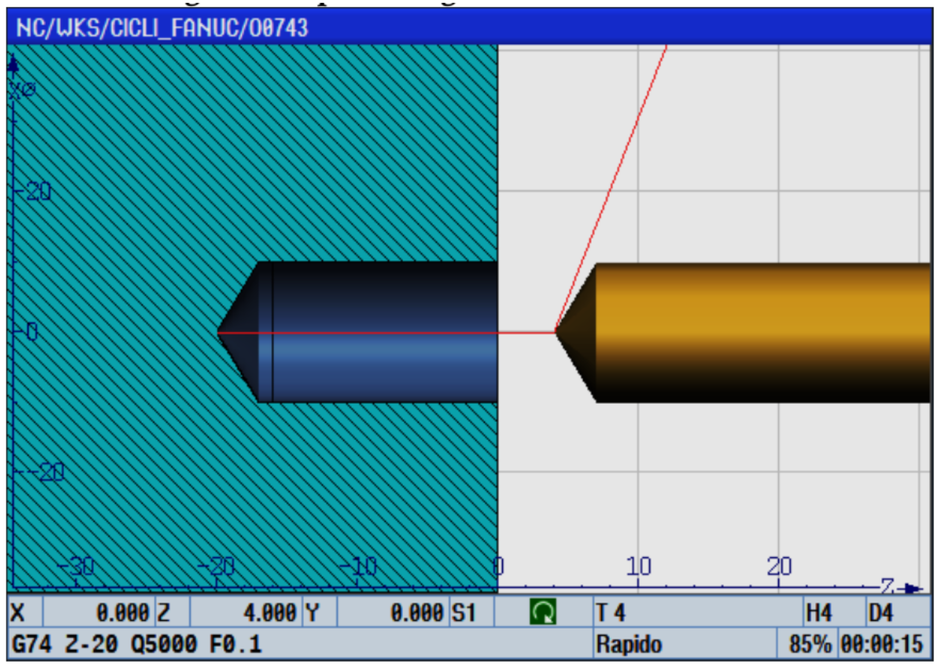
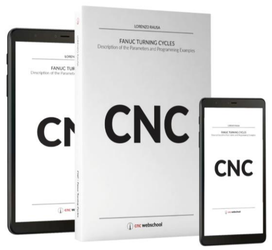


Fig. 45. G74: programming example



CNC - FANUC TURNING CYCLES

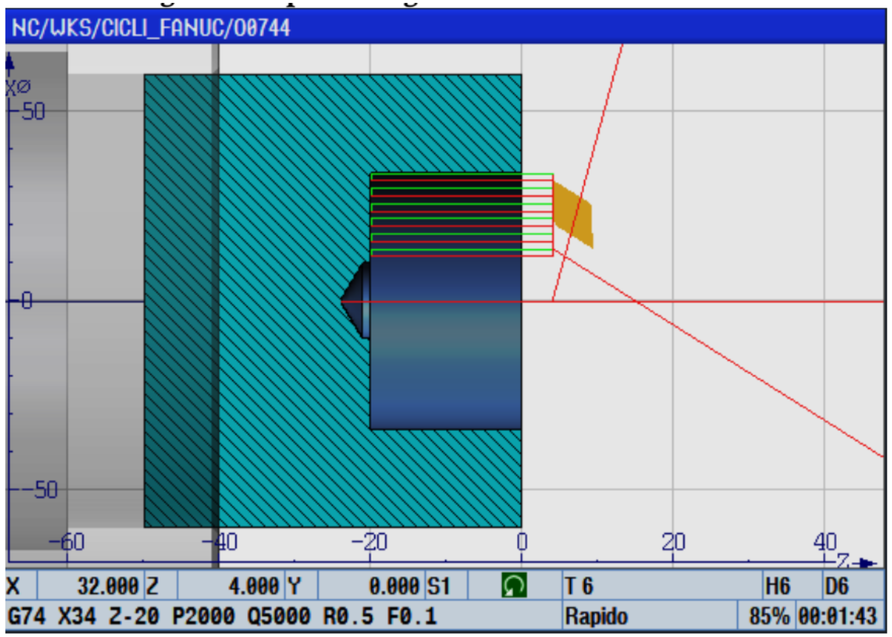


Fig. 46. G74: programming example

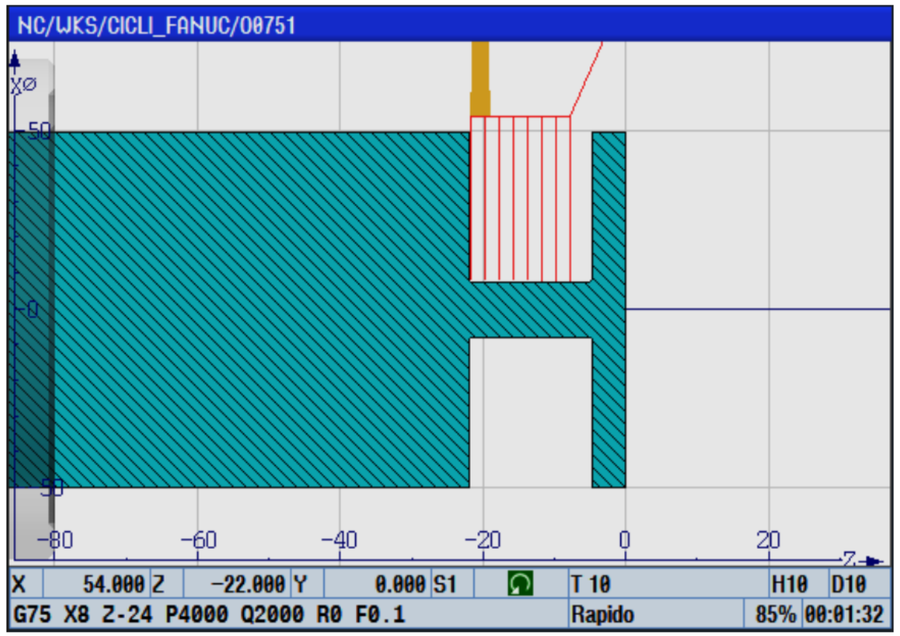
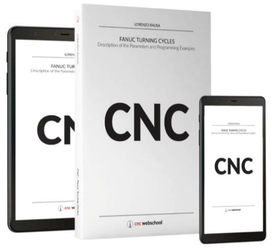


Fig. 47. G75: cycle movements



CNC - FANUC TURNING CYCLES

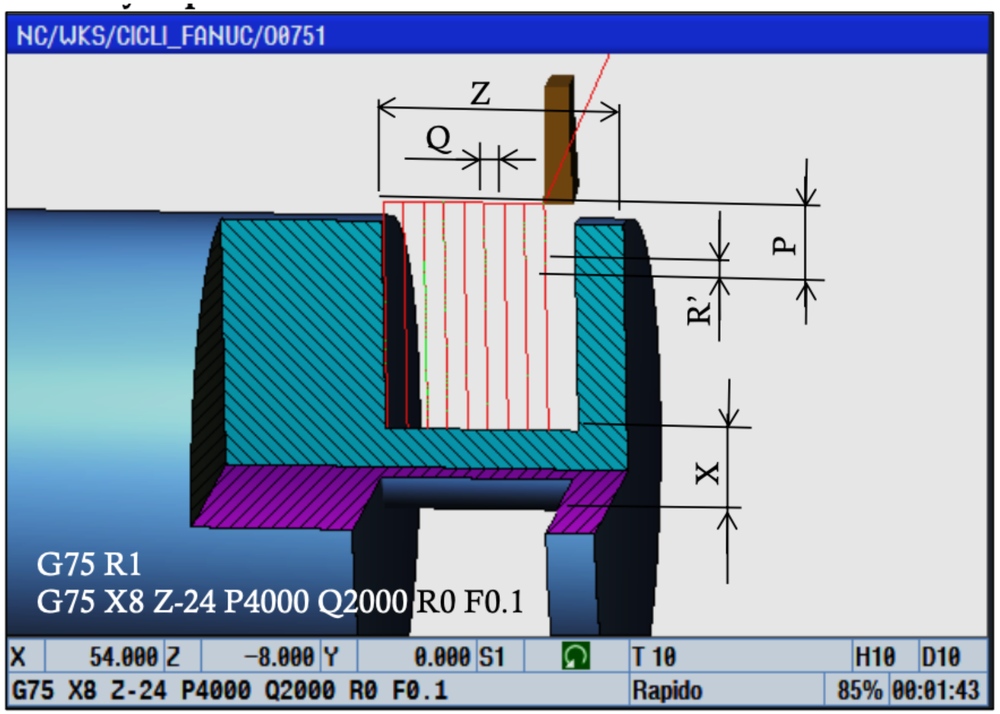


Fig. 48. G75: cycle parameters

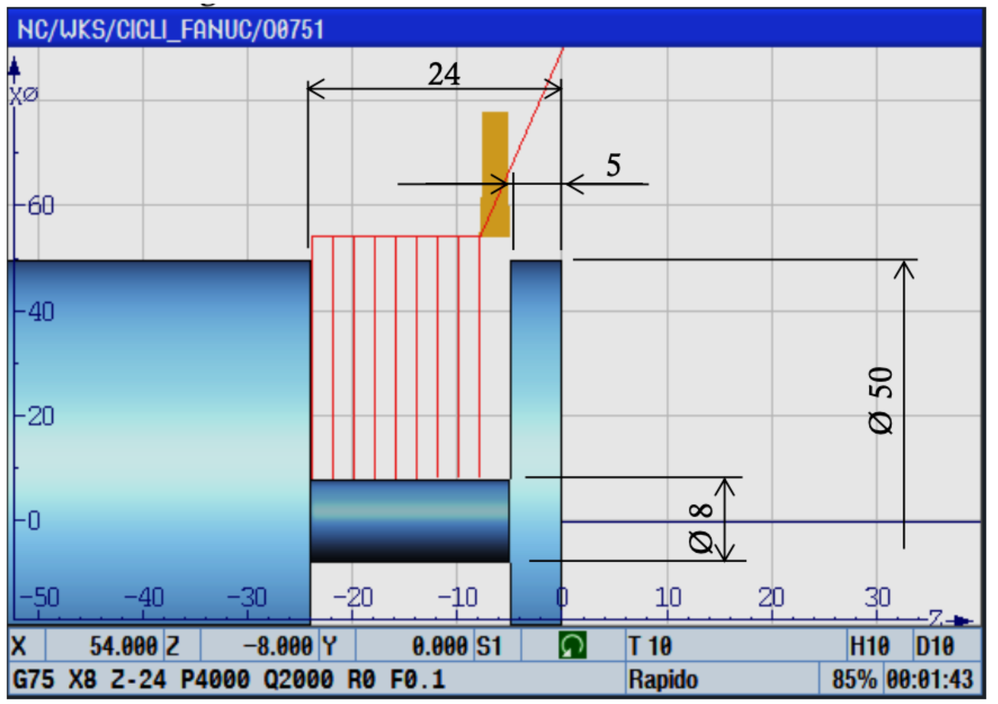
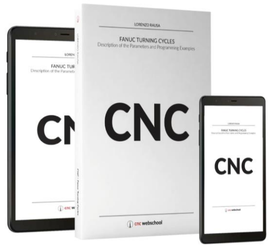


Fig. 49. G75: programming example



CNC - FANUC TURNING CYCLES

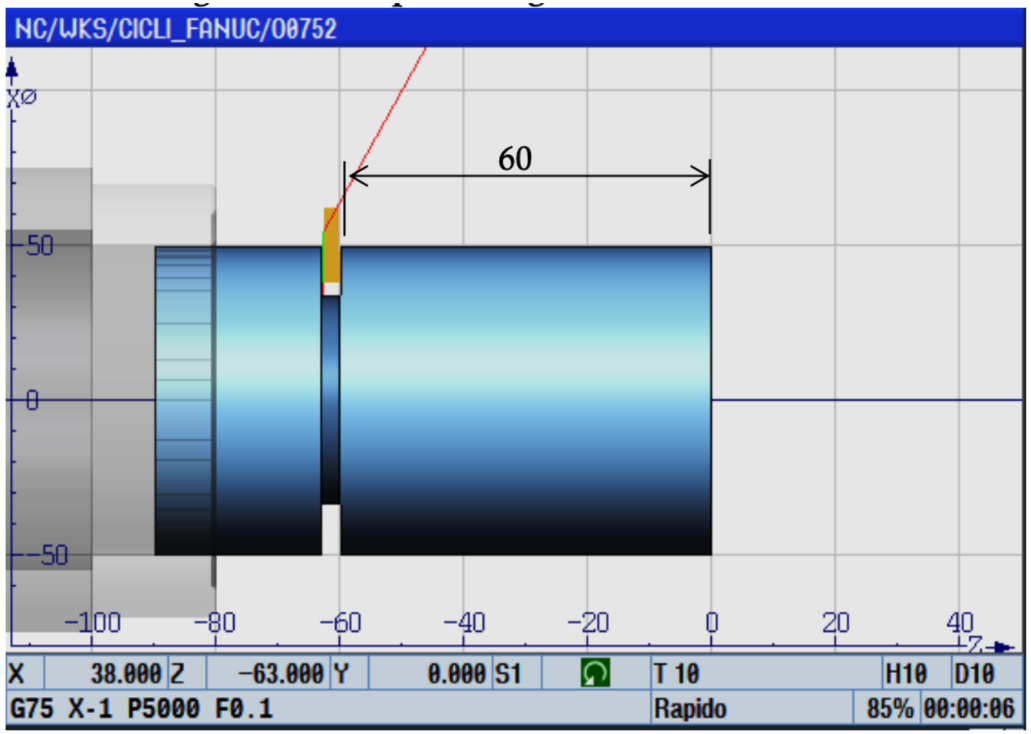


Fig. 50. G75: programming example

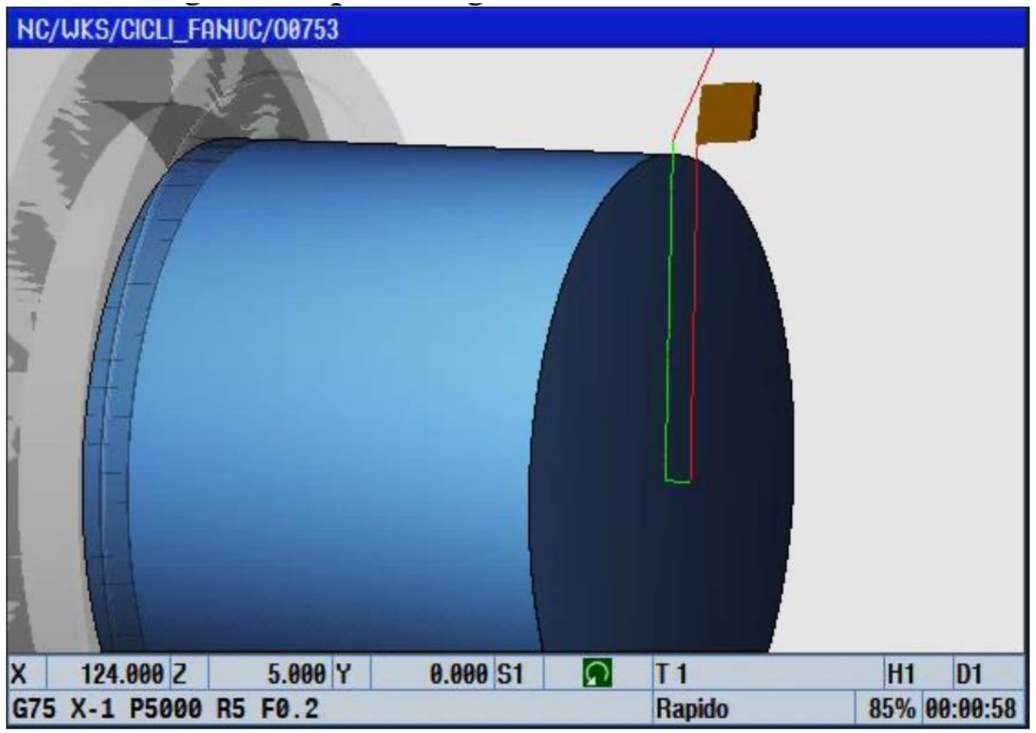
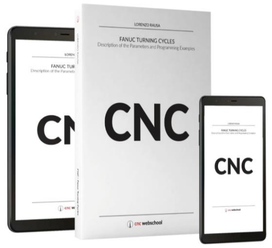


Fig. 51. G75: programming example



CNC - FANUC TURNING CYCLES

Fig. 52. G75: programming example

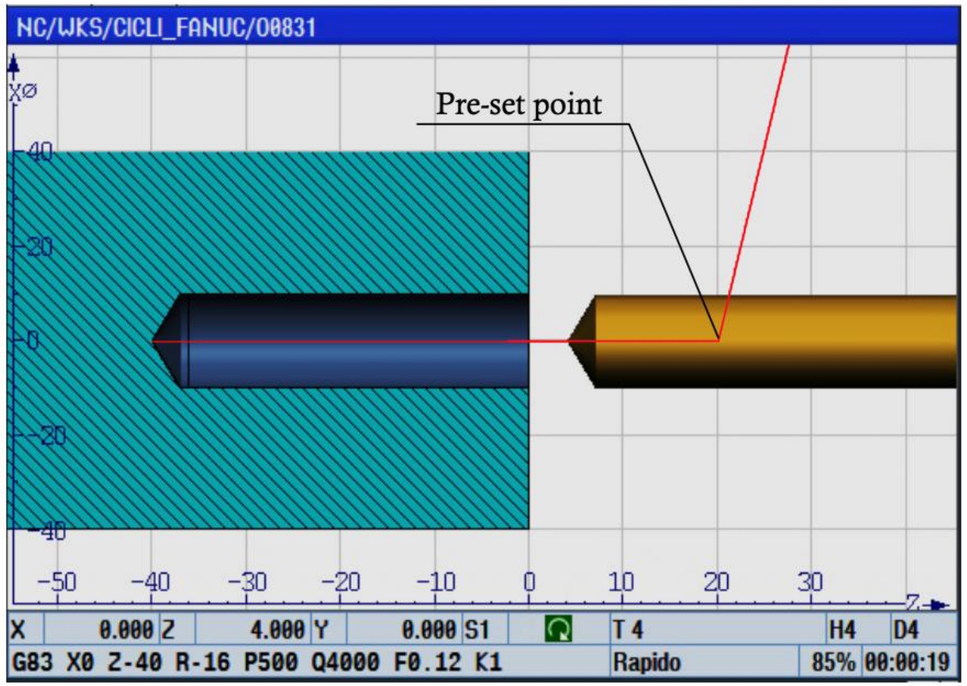
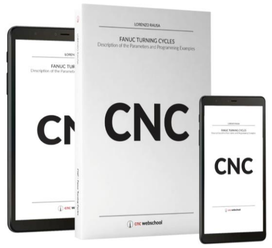


Fig. 53. G83: cycle movements



CNC - FANUC TURNING CYCLES

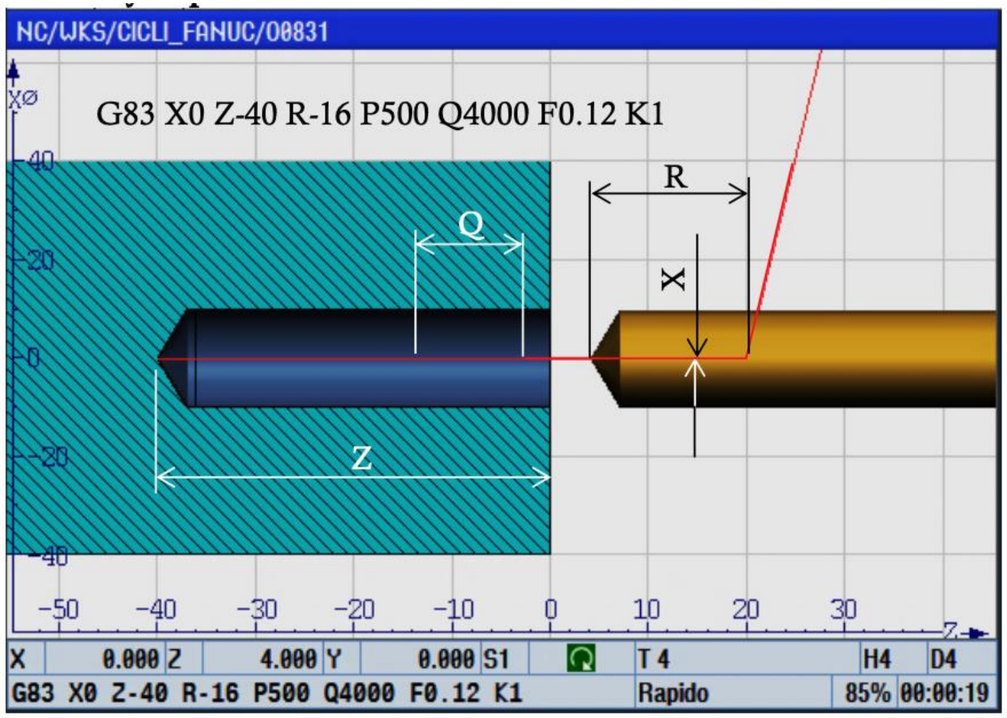


Fig. 54. G83: cycle parameters

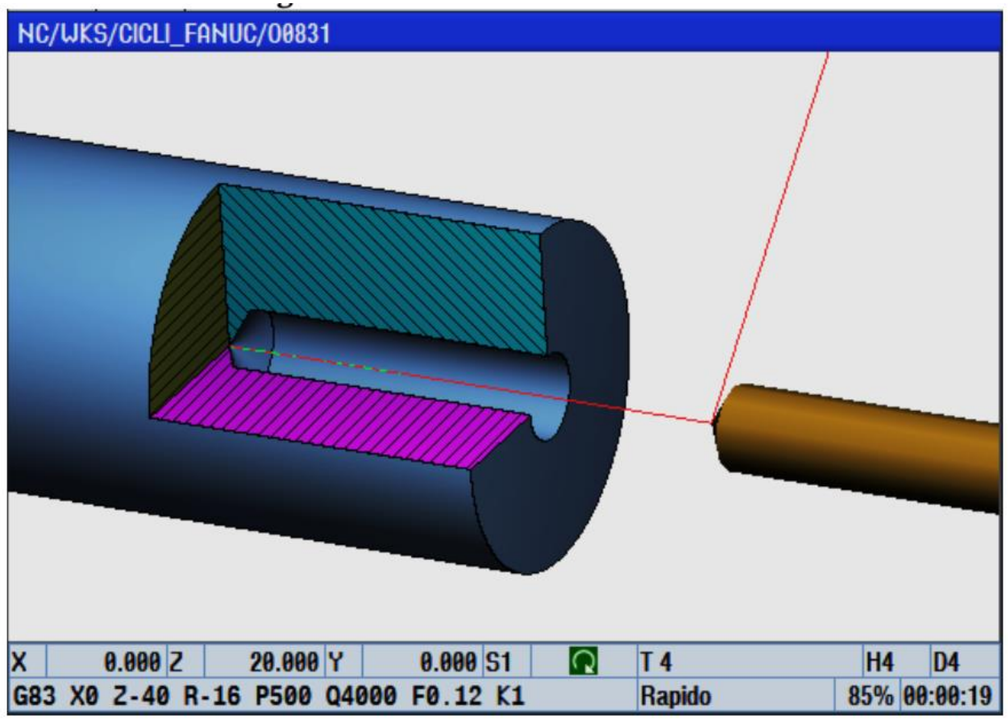
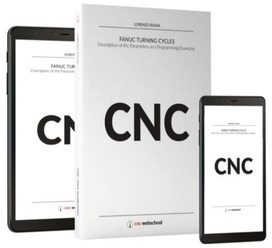


Fig. 55. G83: programming example



CNC - FANUC TURNING CYCLES

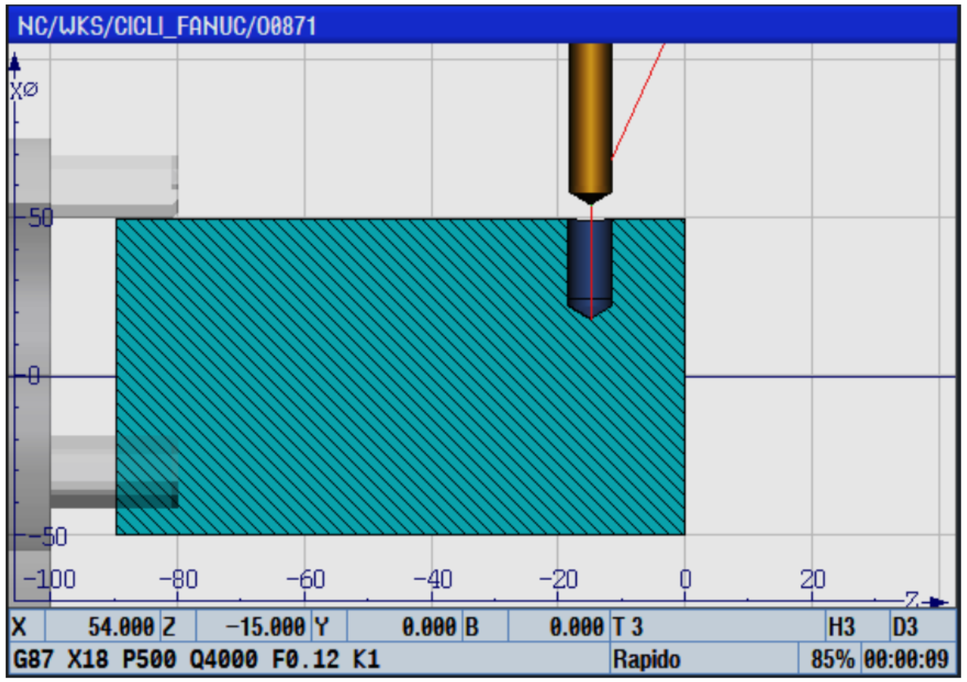


Fig. 56. G87: cycle movements

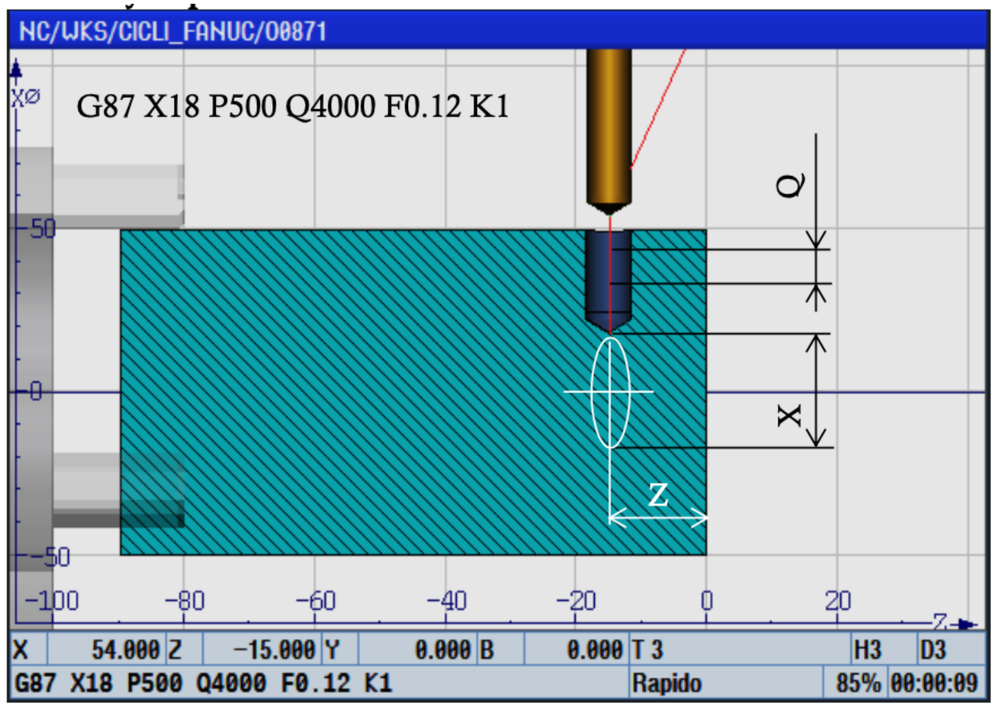
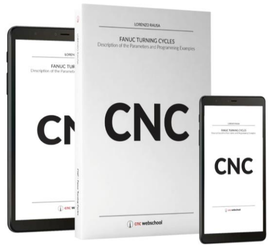


Fig. 57. G87: cycle parameters



CNC - FANUC TURNING CYCLES

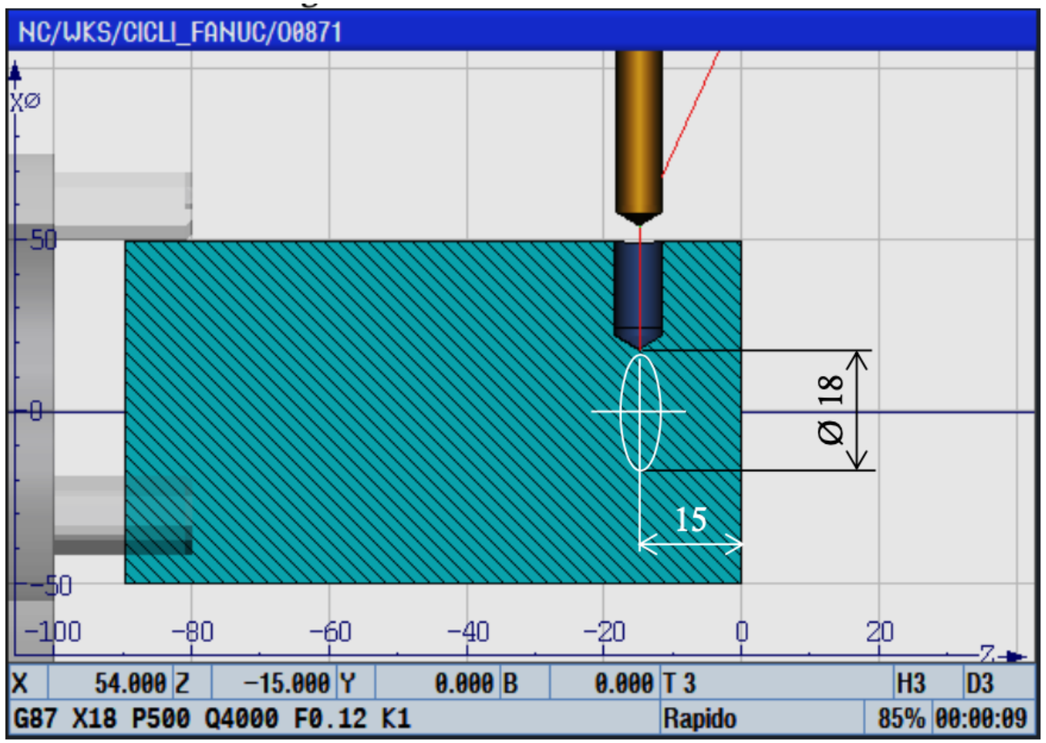


Fig. 58. G87: programming example

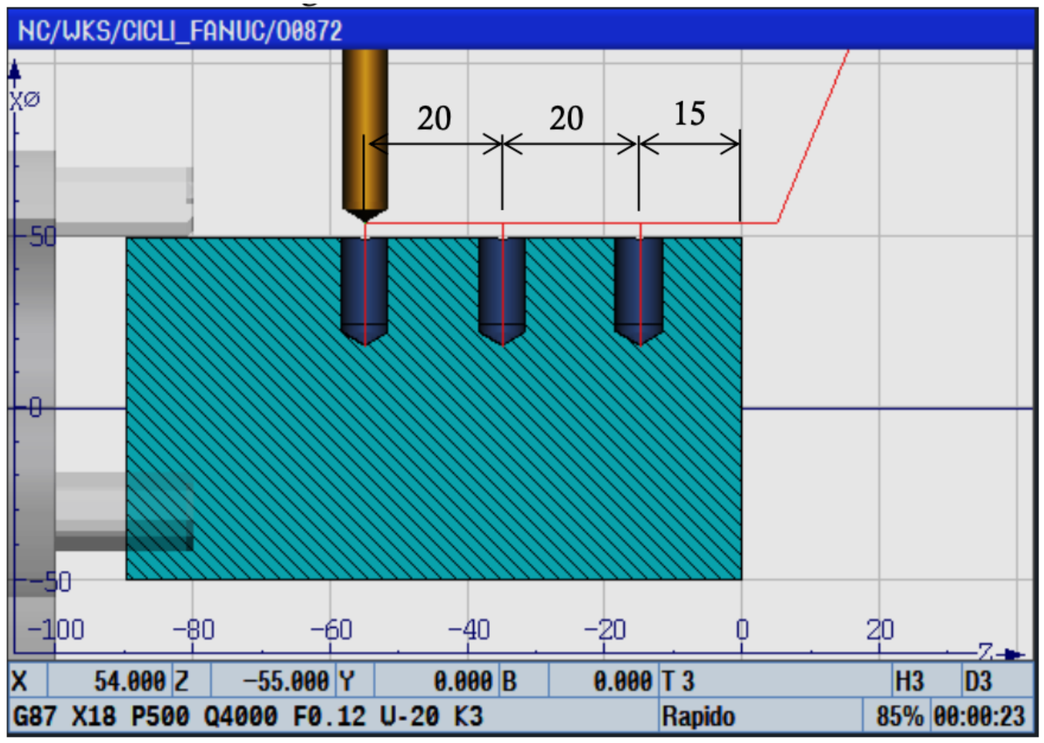
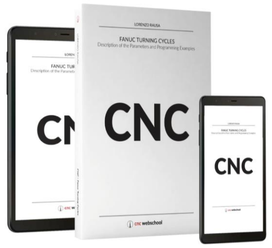


Fig. 59. G87: programming example



CNC - FANUC TURNING CYCLES

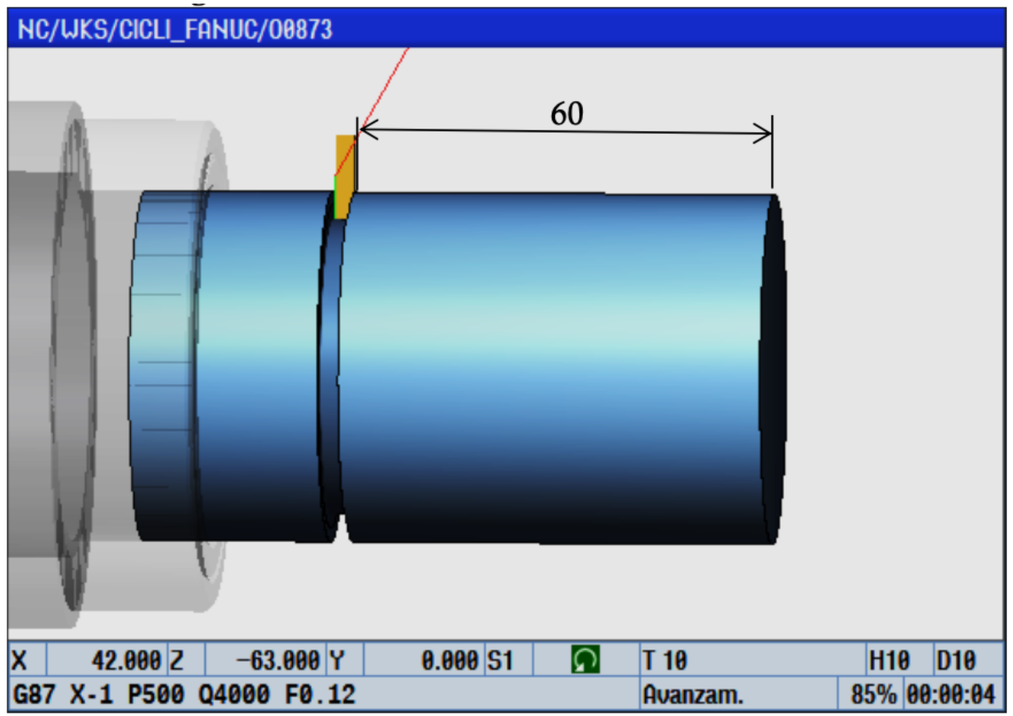


Fig. 60. G87: programming example

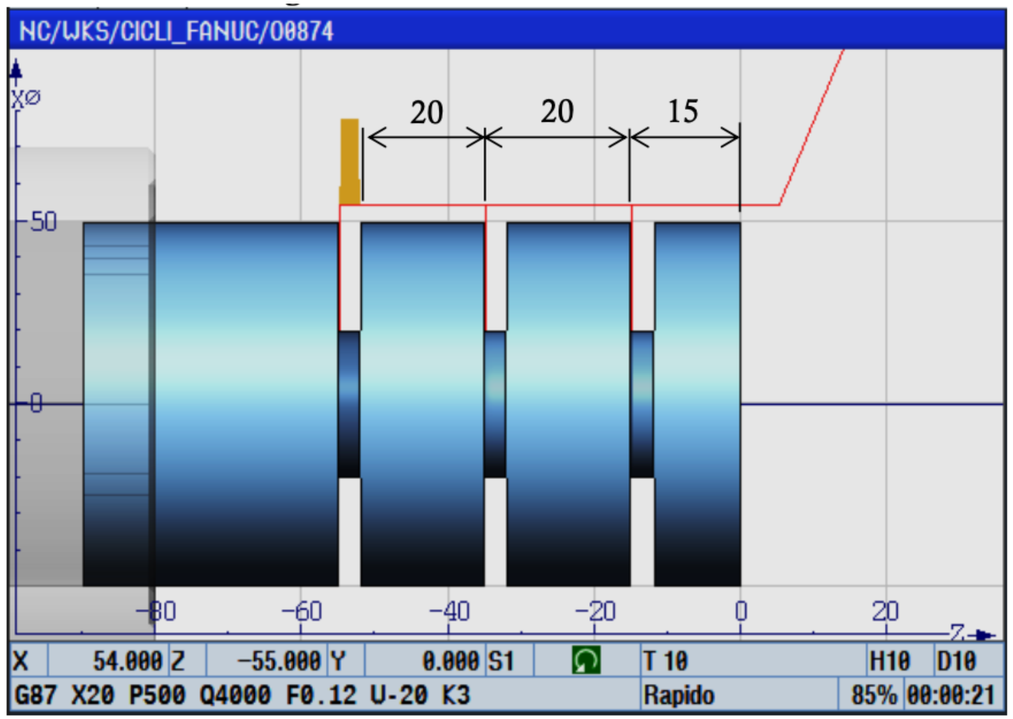
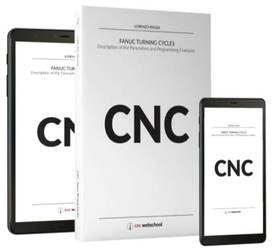


Fig. 61. G87: programming example



CNC - FANUC TURNING CYCLES

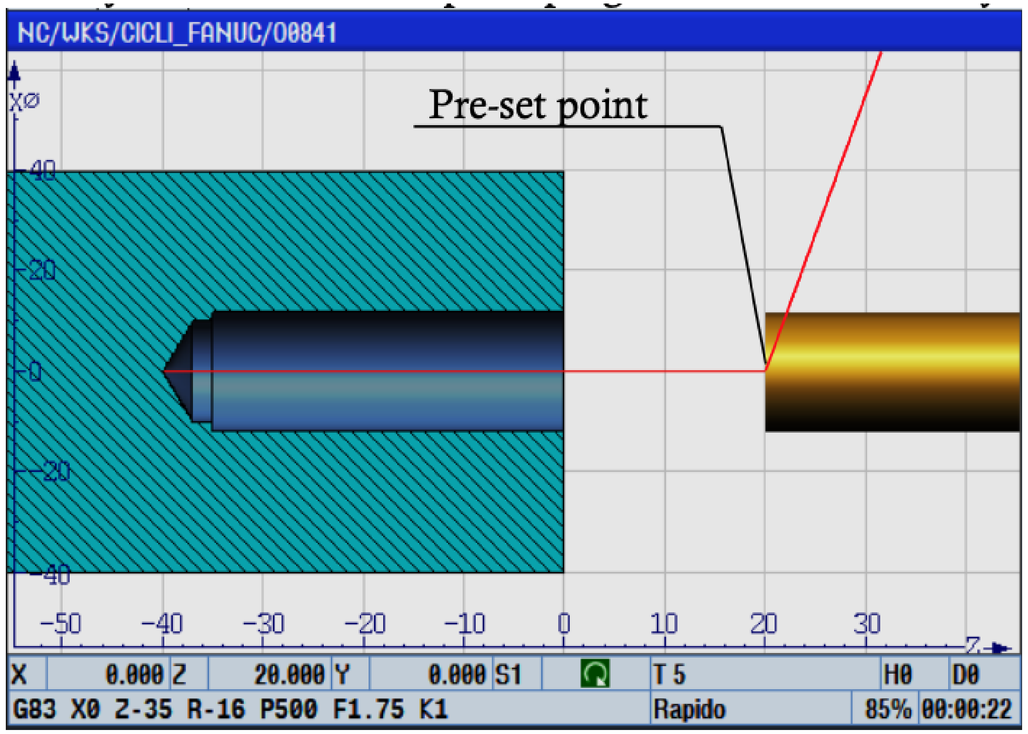


Fig. 62. G84: cycle movements

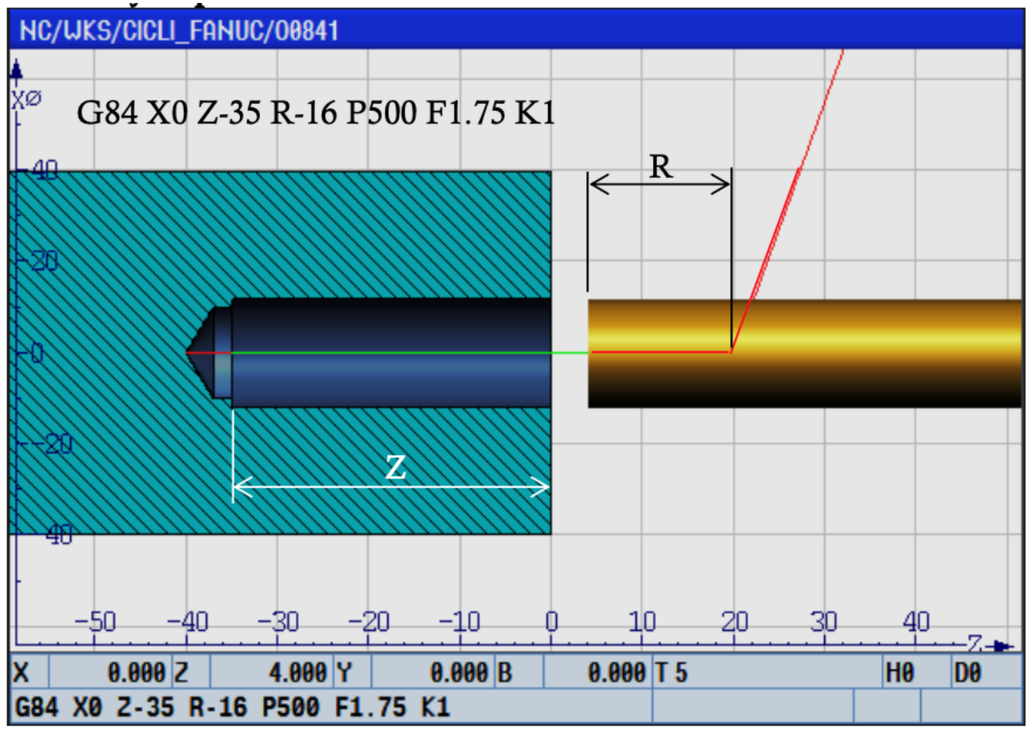
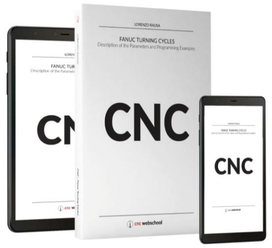


Fig. 63. G84: cycle parameters



CNC - FANUC TURNING CYCLES

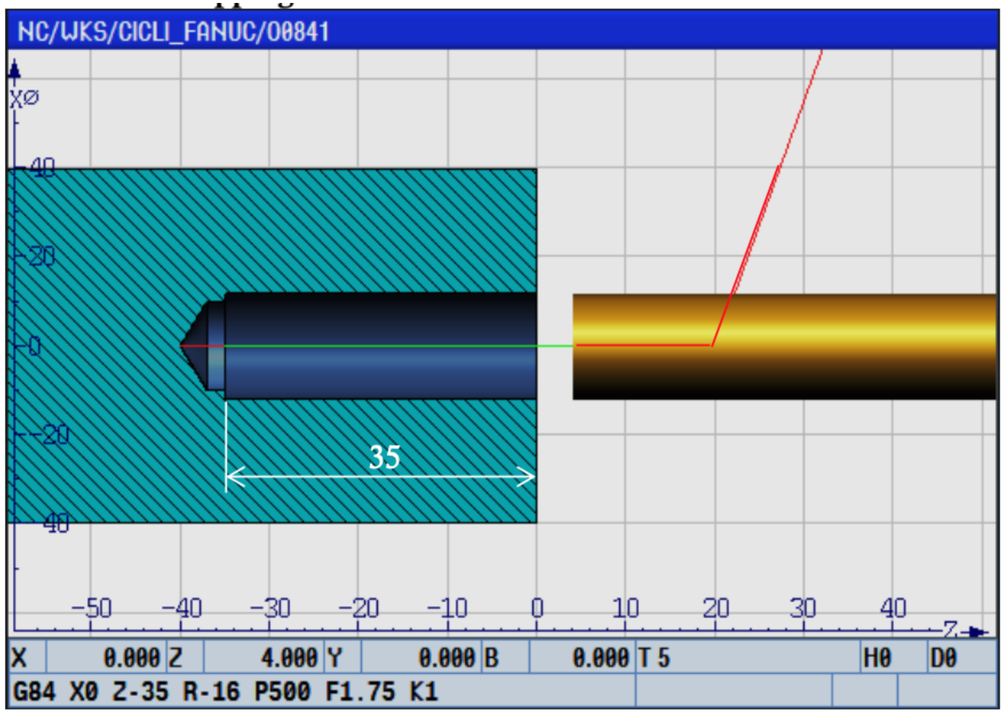


Fig. 64. G84: programming example

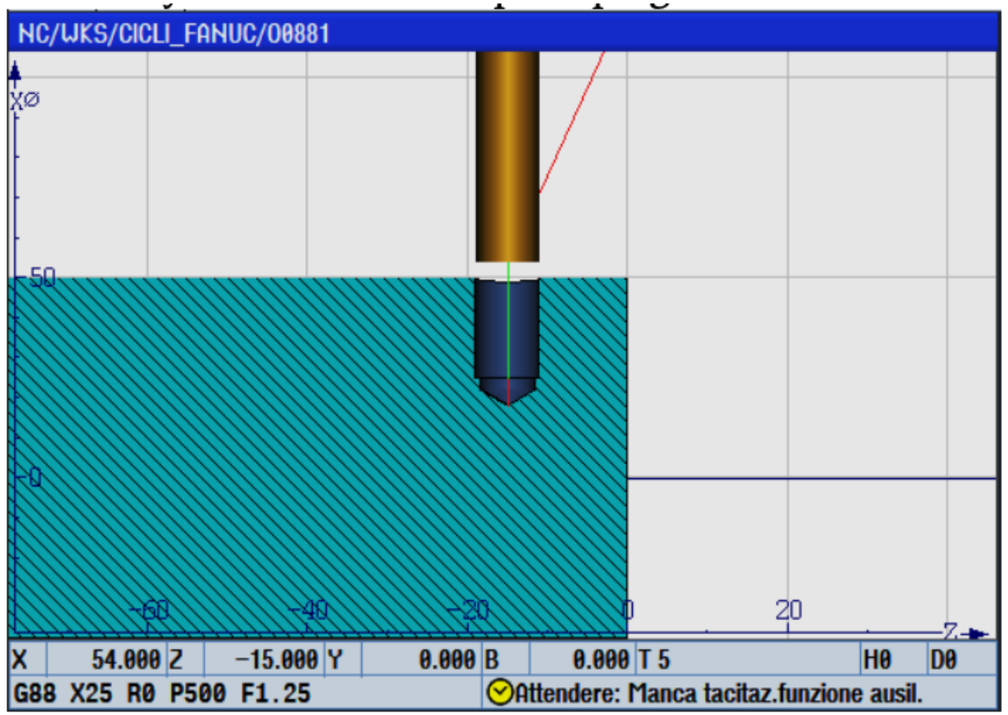
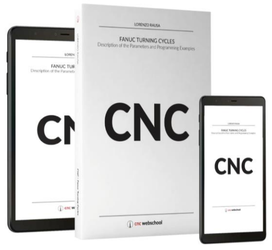


Fig. 65. G88: cycle movements



CNC - FANUC TURNING CYCLES

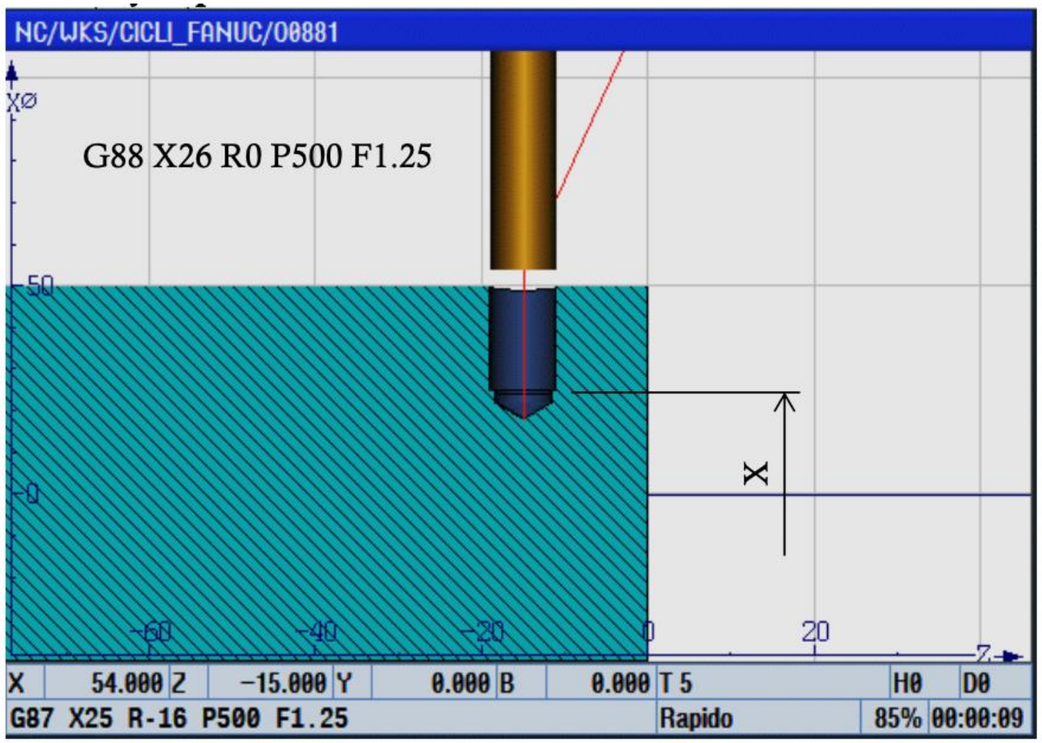


Fig. 66. G88: cycle parameters

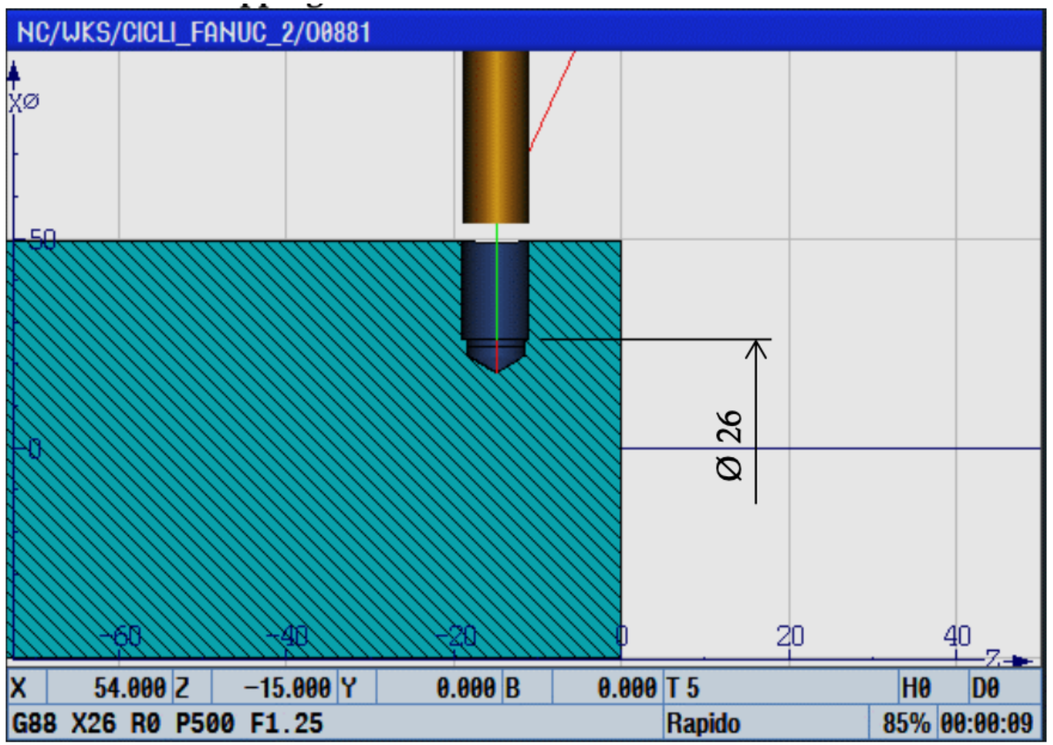
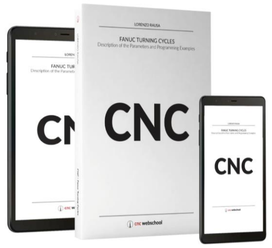


Fig. 67. G88: programming example



CNC - FANUC TURNING CYCLES

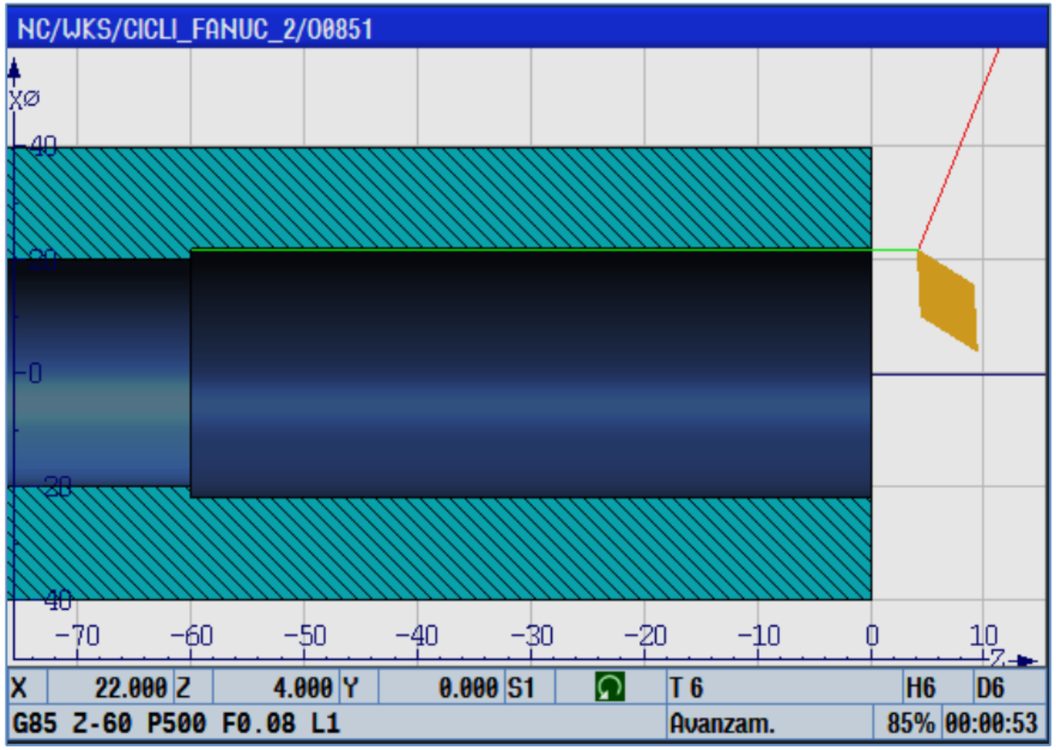


Fig. 68. G85: cycle movements

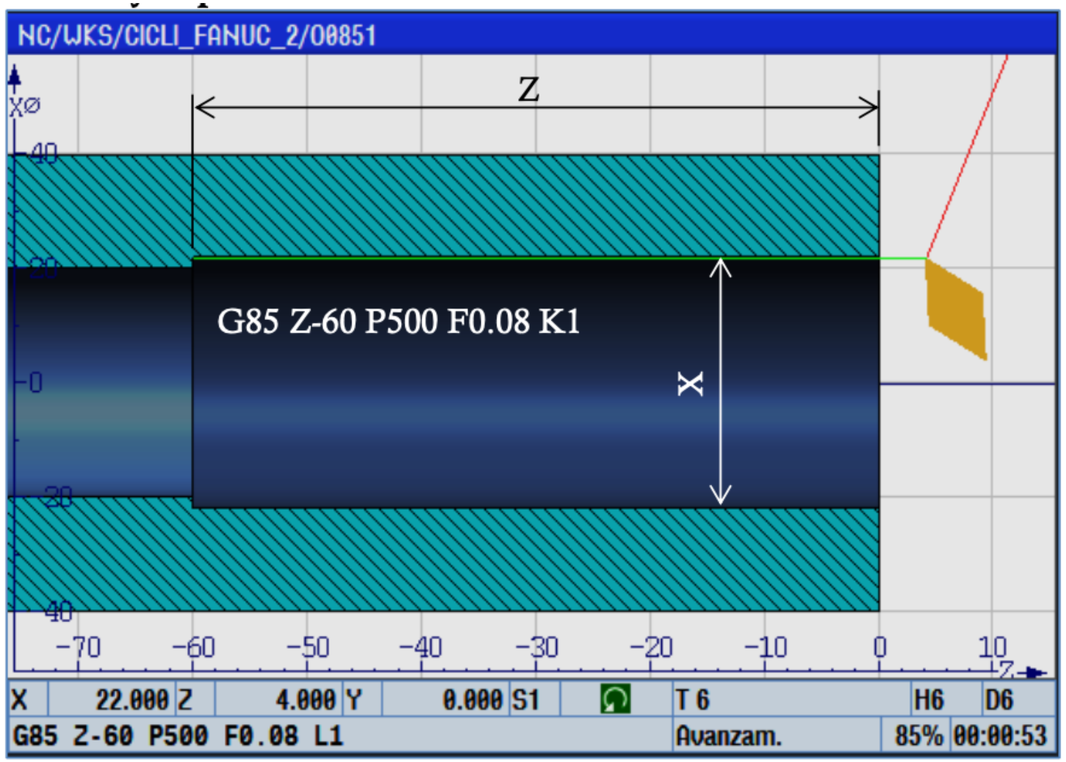
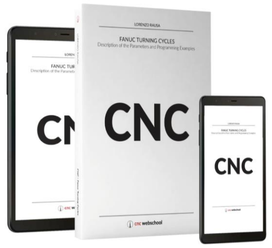


Fig. 69. G85: cycle parameters



CNC - FANUC TURNING CYCLES

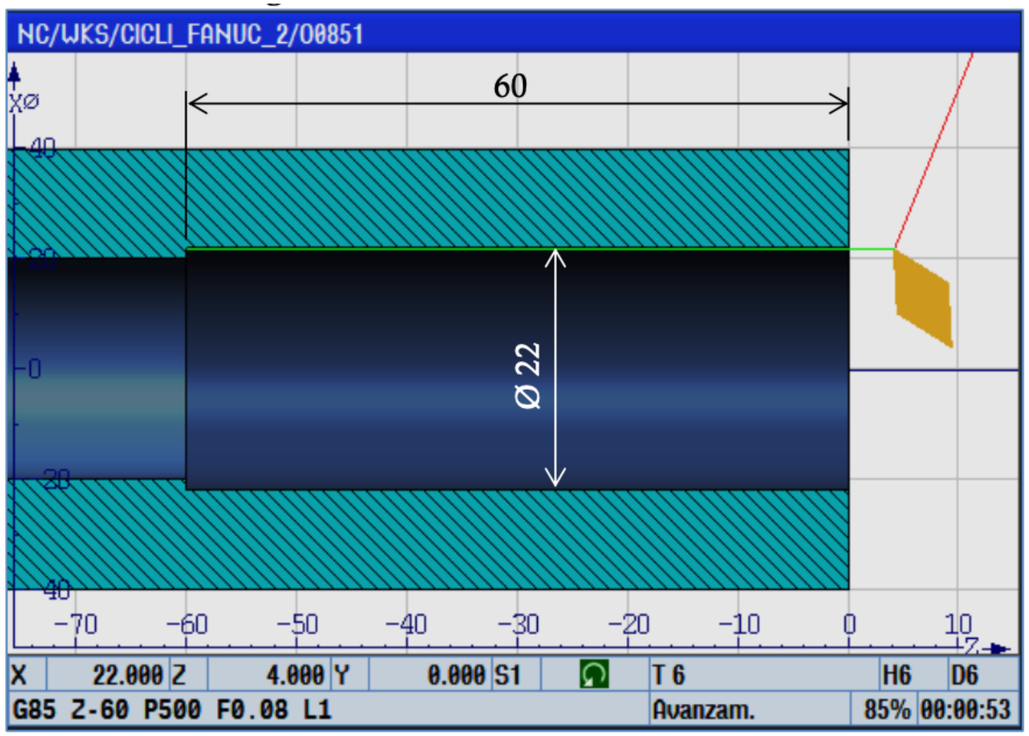


Fig. 70. G85: programming example

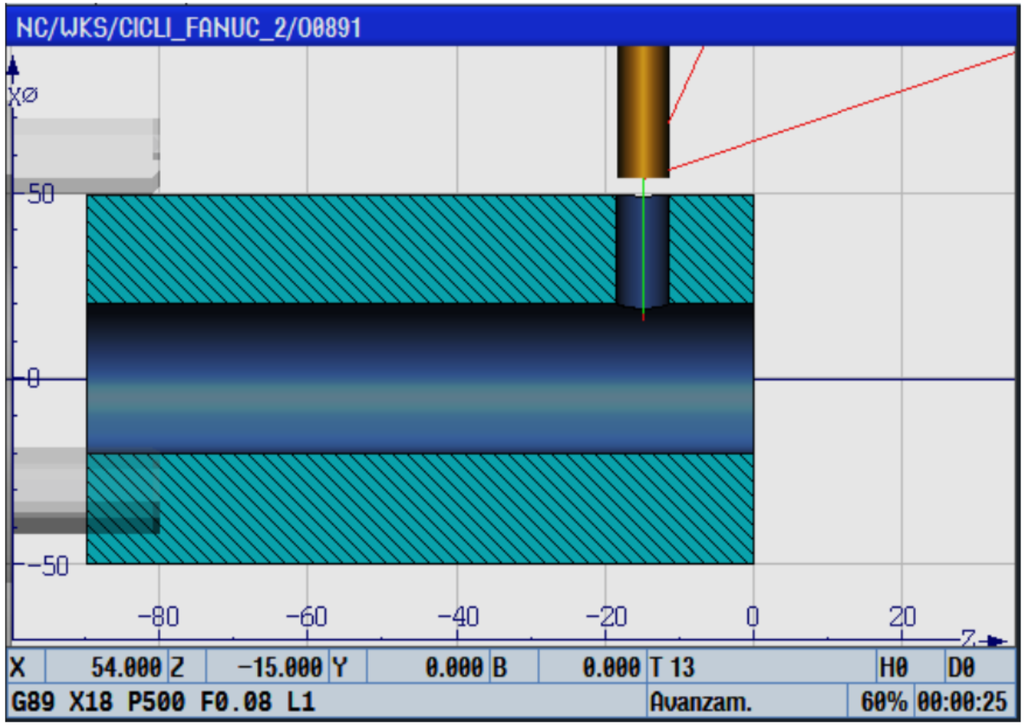
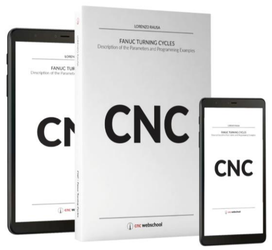


Fig. 71. G89: cycle movements



CNC - FANUC TURNING CYCLES

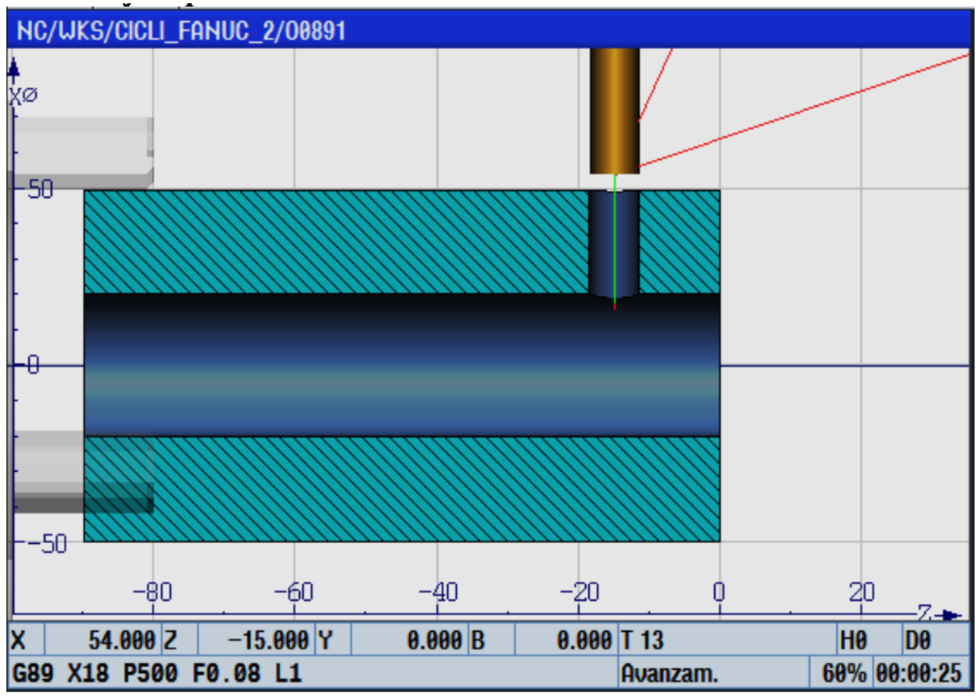


Fig. 72. G89: cycle parameters

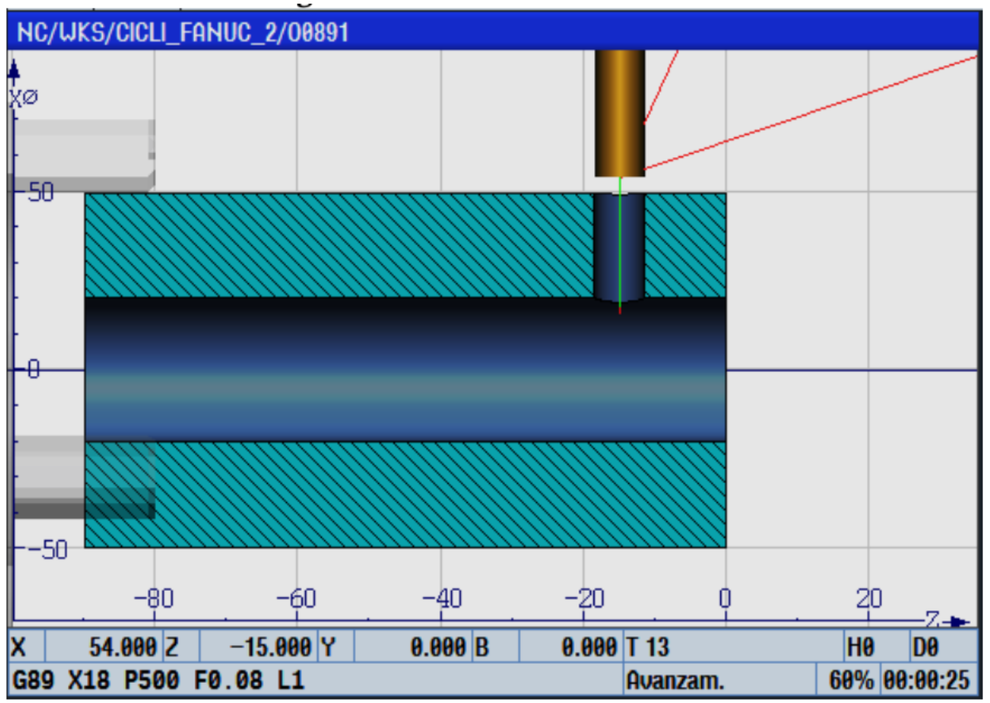


Fig. 73. G89: programming example