2.9.22 TOOL LENGTH COMPENSATION (G43, G44, G49)

The tool length compensation function is for adding or subtracting the stored tool offset values to the Z-axis coordinate instruction values for the purpose of compensating for the deviations in tool length.

· G codes for tool length compensation

G code	Group	Meaning
G43	08	(+) direction
G44	08	(-) direction
G49	08	cancel

· G43 and G44 are modal functions, remaining effective when once commanded until cancellation by G49.

· G49 cancels tool length compensation effects.

· H00 also cancels tool length compensation effects.

· The tool length compensation function is programmed in the following format.

A. (G01)

G43(G44) Z··· H··· ;

With this command, the tool moves towards the Z coordinate position which is the sum of (or difference between) the H value and the Z value. As the result, the tool point is displaced from the specified Z-coordinate position by the distance specified by the H code.

B. (G01) Z··· ;

G43(G44) H··· ;

With this command, the tool is shifted by the distance specified by the G code.

C. G43(G44) Z··· H··· ;

H··· ; ····· (2)

With the command (2), the tool is shifted by the difference between the previous tool offset value and the new tool offset value.

· When G43, G44 and G49 are to be commanded, the accompanying 01 group G codes must be G00, G01 or G60. When G02 or G03 is used, this is regarded as an error.

· Direction of shift

The direction of tool shift is determined by the sign of tool offset value as programmed in the H code and by the G code used.

	Sign of tool offset value	
	+	-
G43	Plus direction	Minus direction
G44	Minus direction	Plus direction