2.9.23 TOOL POSITION OFFSET (G45 TO G48) (CONT'D)

5. Extension and reduction

Extension or reduction is determined by the sign of the tool offset value designated by a D code in addition to the G code.

	Sign of tool offset value	
	Positive	Negative
G45	Extension	Reduction
G46	Reduction	Extension
G47	Extension by double	Reduction by double
G48	Reduction by double	Extension by double

Note: In general, tool offset value should be "positive."

6. Values of extension and reduction

A. Programmed incremental move values are extended or reduced by the designated tool offset values or by twice their values.

G91 G00 G47 X6000 D10 ; D10 = 2000

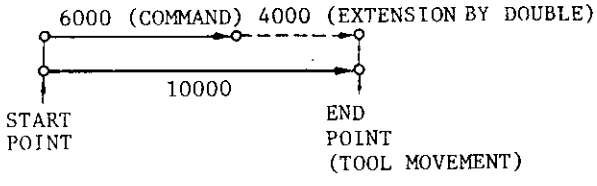

Fig. 2.62

B. Where extension or reduction is applied to an axis in the preceding block and the start point has already been offset, the total movement value is identical to that described above, but the distance is measured from the offset start point.

With an instruction same as that described above:

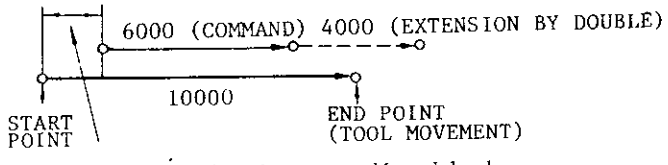

Fig. 2.63

Note: Where the tool offset value is larger than the programmed movement value, the direction of movement may be reversed when extension or reduction is applied.

G46 X1000 D10 ; D10 = 2000

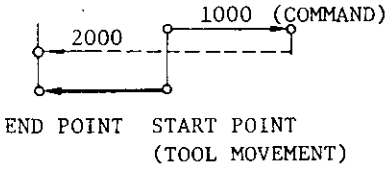

Fig. 2.64

7. The above applies to X and Y axes, but G45 to G48 may also be programmed to Z axis in the same manner.

8. Application to circular interpolation

If I, J, K are programmed in the block with G45 to G48, extension or reduction is made respectively in the same directions as X, Y, Z. Therefore, tool radius compensation is possible with 1/4 circle, 3/4 or full circle.

G91
G45 G02 X5000 Y5000 I5000 D10 ;
D10 = 2000

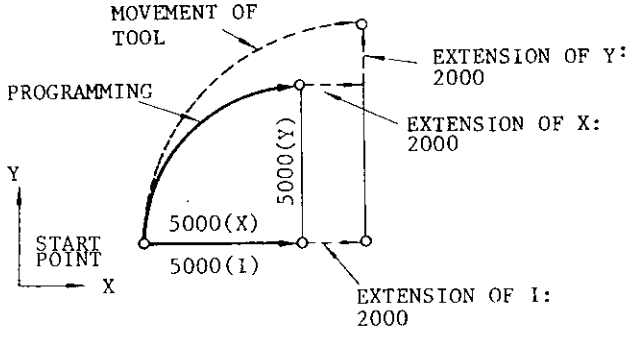

Fig. 2.65

In practice, correct radius compensation of circular arc is made if an offset is applied in the preceding block.

G91 G01 F··· ;
G46 X··· Y··· D10 ;
G45 Y··· ;

G45 G02 X··· Y··· I··· ;

G01 X··· ;