2.9.13 REFERENCE POINT CHECK (G27)[†] (CONT'D)

Reference point as meant here is a fixed point relative to the machine to which the tool returns by the manual reference point return motion or by G28 automatic reference point return motion. Refer to 6.1.15 MANUAL REFERENCE POINT RETURN SWITCH. The mirror image function can be applied to the G27 command. To avoid non-conformity errors, clear the mirror image mode with M94 (Mirror image off) before commanding G27.

2.9.14 AUTOMATIC RETURN TO REFERENCE POINT (G28)[†]

G28 X··· Y··· Z··· (α[†]···) ;

With this command, the tool is sent back to the reference point. The tool moves towards the specified points in rapid traverse, and automatically stops at the reference point.

The tool moves simultaneously in up to 3 axes (4 axes[†]). However, the tool will not move in the direction of the axis for which a coordinate instruction is omitted.

EXAMPLE

G28 X··· Y··· Z··· ;
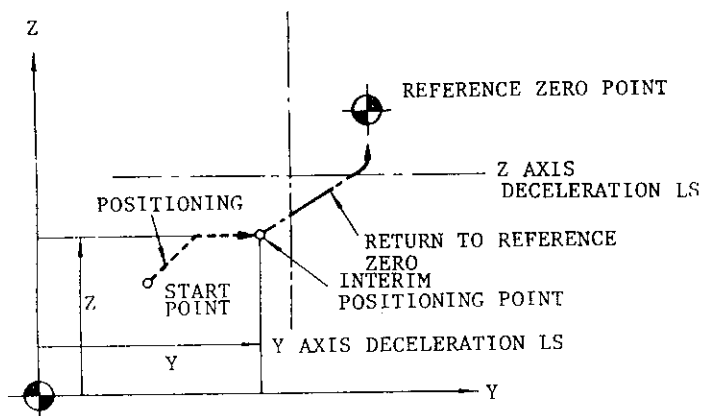

Fig. 2.28

"Return to reference point" involves the same series of motions as the manual return to reference point.

NOTES:

· If G28 is commanded in the tool radius compensation mode (G41, G42) or in a canned cycle, this is regarded as an input error "024."

· If G28 is commanded in the Mirror Image mode (M95), this constitutes an input error "058."

· The tool position offset command is not cancelled by G28. Make it a point to cancel it before commanding G28. If G28 is given in the tool position offset mode, the tool motion by the succeeding program becomes as described below. Care should be taken.

A. When the succeeding program is made in the incremental mode:
Tool moves by the amount of incremental value from the reference point. The tool offset is not effective.

B. When the succeeding program is made in the absolute mode:
Tool moves to the position which is specified by absolute value and tool offset value.

C. When G29 is given immediately after the G28:
By G29 command, the tool moves to the offset interim positioning point and the succeeding motion is made according to the item A and B.

· When returning the tool to the reference point for the first time after turning on the power supply, pay attention to the tool position. Refer to 6.2.1 MANUAL RETURN TO REFERENCE POINT[†].

Return to reference point in rapid traverse

In addition to the above " Automatic Return to Reference Point," "Rapid Traverse Return to Reference Point" function may be incorporated in the control. With this function, the motion sequence is as follows.

· After positioning at an interim positioning point B, the tool directly moves to the reference point in rapid traverse. The returning time is shorter than that with the ordinary return to reference in which deceleration LSs are used in all the axes.

· With the "Rapid Traverse Return to Reference Point," point B may not necessarily be within the reference point return possible area.

· The rapid traverse return to reference point becomes possible only after the tool has been returned once to the reference point in all the axes by manual operation or by G28, following the turning on of the power supply.

· Rapid traverse return to reference point is effective only with G28. Manual return motions are not changed by it.

· Where a 4th axis is used, when no command is given for the 4th axis in a G28 command, and when the tool has been returned to the reference point in the X, Y, and Z axes, the tool moves to the reference point in the rapid traverse return mode. If a command for the 4th axis is included in the command, the tool returns to the reference point in the ordinary return mode, unless the return motions in all the 4 axes have been completed.